BORR Team

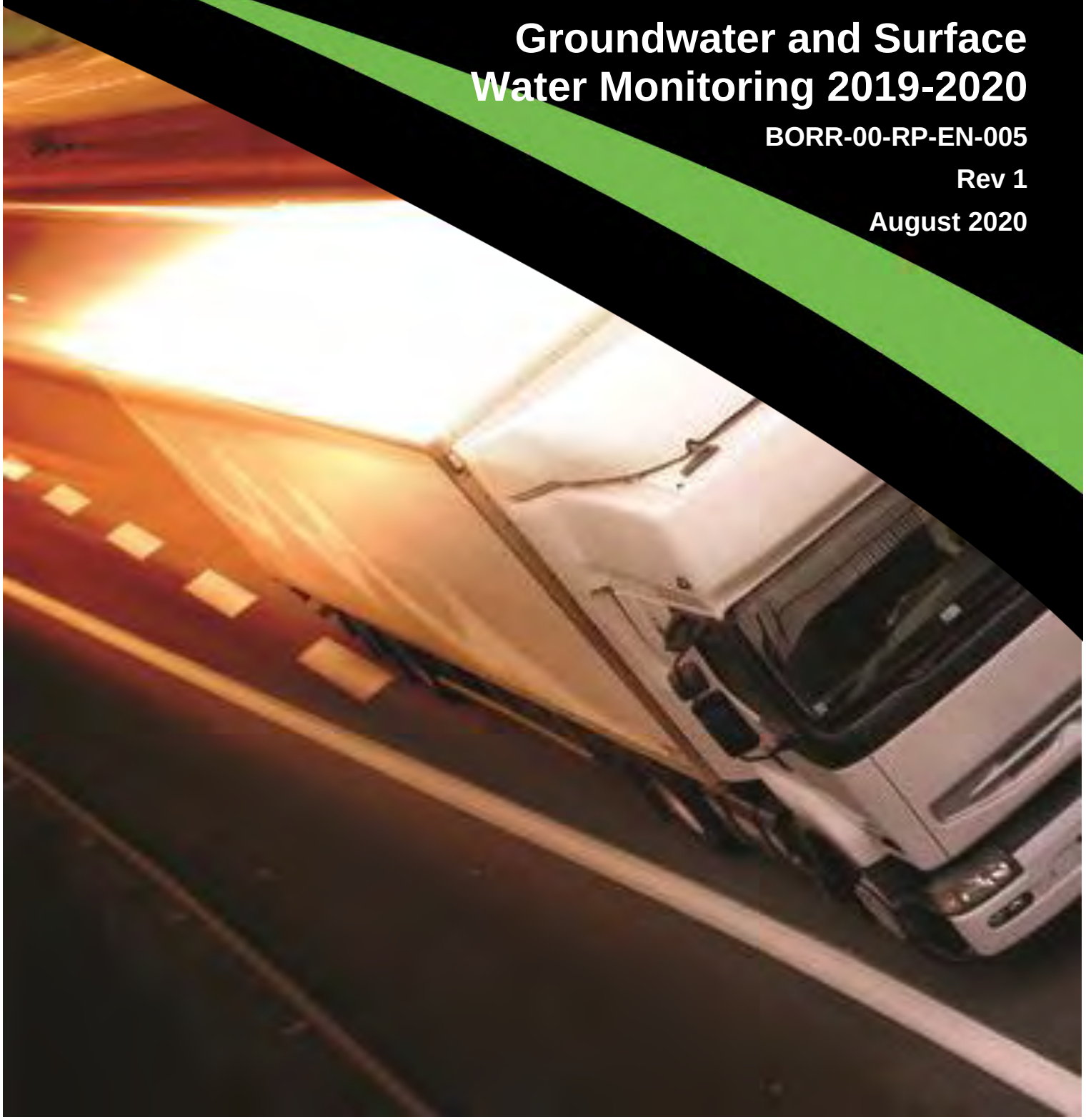
Bunbury Outer Ring Road Northern, Central and Southern Sections

Groundwater and Surface Water Monitoring 2019-2020

BORR-00-RP-EN-005

Rev 1

August 2020



EXECUTIVE SUMMARY

The Commissioner of Main Roads Western Australia (Main Roads) is proposing to construct and operate the Northern, Central and Southern sections of the Bunbury Outer Ring Road (BORR) project. BORR is a planned Controlled Access Highway linking the Forrest Highway and Bussell Highway. The completed project will provide a high standard route for access to the Bunbury Port, improve road user safety and facilitate proposed development to the east of the City of Bunbury. BORR will also provide an effective bypass of Bunbury for inter-regional traffic.

The purpose of this report is to document the findings of the 12-month water monitoring program (August 2019 – July 2020) which included field and laboratory analysis of water samples collected at 30 groundwater and 15 surface water locations along the proposed BORR alignment. This monitoring program has been undertaken prior to construction, and provides baseline information in the vicinity of the proposed BORR.

Groundwater and surface water samples were analysed for the following parameters: pH; electrical conductivity (EC); dissolved oxygen (DO); redox; temperature; total dissolved solids (TDS); acidity and alkalinity; major ions; nutrients; metals; benzene, toluene, ethylbenzene and xylene (BTEXN); total recoverable hydrocarbons (TRH); and organophosphate (OP) pesticides and glyphosate (surface water only).

During a review of the monitoring program, it was noted that a number of analytes were not detected or were just above laboratory limit of reporting (LOR) in the majority of groundwater or surface water locations, during the first six months of monitoring.

Based on these observations, the laboratory analysis suite was reduced in the last quarter of the 12-month monitoring period, from April to July 2020, for both groundwater and surface water samples. The reduced monitoring suite excluded BTEXN, TRH, PAHs, OP pesticides and glyphosate analytes.

Key findings of the 12-month groundwater and surface water monitoring program indicate the following:

- Low pH (< pH 6) was generally observed at groundwater locations in close proximity to waterways and in association with high to moderate risk Acid Sulfate Soil mapped areas.
- Elevated EC groundwater and surface water results were identified between Raymond Road and Boyanup-Picton Road and in association with the Collie River.
- In the BORR Central Section EC results were generally fresh for both groundwater and surface water locations with some seasonal increase in summer in the Preston River.
- Highest groundwater EC results, in BORR Southern Section, were recorded at BORR MW11 and MR MW05. BORR MW11 EC results indicate seasonal influence with EC reaching 24,600 µS/cm in December 2019, however EC levels recorded at MR MW05 were consistently high in the range of 19,900 to 23,500 µS/cm throughout the monitoring period.
- Several exceedances in the NPUG guidelines of ammonia (as N) were reported across four groundwater bores, several exceedances in the irrigation guidelines of phosphorus (total) were also reported for BORR_MW08a.
- Multiple exceedances in all nutrient analytes in the lowland river guidelines were found across several surface water locations, exceedances in ammonia (as N) in the slight to moderately disturbed guidelines were also reported.
- Exceedances of the NPUG guidelines for aluminium (total), aluminium (filtered), and iron (total) were reported across multiple groundwater bores. BH32.1 recorded multiple exceedances of the NPUG guidelines of Nickel (filtered).

- Elevated concentrations, above LOR and assessment criteria, were recorded for dissolved aluminium, copper, iron, manganese, nickel, zinc, total aluminium and total iron across the majority of groundwater and surface water locations, throughout the 12-month monitoring period.
- BTEXN (with the exception of one sample), PAH, OP pesticides and glyphosate were either not detected or below LOR in all groundwater or surface water samples.
- TRH did not exceed the relevant assessment criteria in all groundwater samples, however was detected above LOR within surface water samples.

This Report notes that lower than average rainfall levels were received in 2019 (550.0 mm) compared to the mean annual rainfall level (718.4 mm) for the Bunbury area. However, rainfall received in first six months of 2020 was above average for the Bunbury area.

The monitoring results for groundwater and surface water quality are consistent with the results of similar monitoring in the local area and are generally consistent with what would be expected for the area and the water resources sampled (Commander, 1984; DoW, 2009; BORR IPT, 2019a). The groundwater and surface water quality reflect the local hydrogeology and hydrology, and current and past land use. Elevated nutrients are considered likely to be due to cleared and agricultural land use throughout the Proposal Area.

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Document *Control*

Revision	Date	Description	Prepared	Reviewed	Approved
A	11/03/2020	Draft for Main Roads Review	BORR Team	CG	PM
0	31/03/2020	Interim six-month report final for issue	BORR Team	MB	FH
1	4/09/2020	Draft 12-month report for Main Roads review	BORR Team		

1 INTRODUCTION

1.1 Background

The Commissioner of Main Roads Western Australia (Main Roads) is proposing to construct and operate the Northern, Central and Southern sections of the Bunbury Outer Ring Road (BORR) project. BORR is a planned Controlled Access Highway linking the Forrest Highway and Bussell Highway. The completed project will provide a high standard route for access to the Bunbury Port, improve road user safety and facilitate proposed development to the east of the City of Bunbury. BORR will also provide an effective bypass of Bunbury for inter-regional traffic.

BORR forms a major component of the planned regional road network for the Greater Bunbury area. The land requirement for BORR was identified in the original draft Greater Bunbury Region Scheme (GBRS) in 1996, with the route advertised to the broader community as part of the GBRS assessment.

In late 2016, Main Roads WA commenced a planning review for a future South West Freeway (Forrest Highway, BORR and Bussell Highway between Mandurah and Busselton) spanning the Forrest and Bussell highways. This network forms the primary connection of Perth with Bunbury, Busselton and the broader South West Region, including the Ports of Fremantle, Bunbury and the proposed Outer Harbour at Kwinana.

The proposed BORR comprises three sections:

- 'BORR Northern Section' – Forrest Highway to Boyanup-Picton Road
- 'BORR Central Section' – Boyanup-Picton Road to South Western Highway, an existing four km section which was completed in May 2013, along with a 3 km extension of Willinge Drive southwards to South Western Highway
- 'BORR Southern Section' – South Western Highway (near Bunbury Airport) to Bussell Highway.

This document includes the BORR Northern, Central and Southern Sections (the Proposal Area).

1.2 Proposal description

The proposed BORR is located approximately 200 km south of Perth and occurs within the City of Bunbury and Shires of Capel, Dardanup and Harvey. The majority of land intersected by the proposed BORR alignment is zoned rural (cleared agricultural land) and primary regional road, with remaining land zoned as a mix of railways, urban, urban deferred, regional open space and industrial. The majority of the alignment is cleared with some areas of remnant vegetation which are predominately associated with road reserves and drainage lines.

The Proposal includes construction and operation of the BORR Northern, Central and Southern Sections. This comprises approximately 29.5 km of new freeway standard dual carriageway and associated bridges, interchanges and other road infrastructure including, but not limited to, culverts, lighting, noise barriers, fencing, landscaping, road safety barriers and signs.

1.3 Purpose of this report

The purpose of this report is to document the findings of the 12-month water monitoring program which included sampling at groundwater and surface water locations along the proposed BORR alignment. This monitoring program has been undertaken prior to construction, and provides baseline information of surface and ground water quality from sampling points within one kilometre the proposed BORR.

1.4 Scope of work

The following scope of works were completed:

- Groundwater sampling at 30 selected locations (subject to monitoring well condition) along the BORR alignment on a monthly basis
- Surface water sampling at 15 selected locations along the BORR alignment on a monthly basis
- Field measurement of groundwater levels and in situ field quality measurement at groundwater and surface water locations
- Submission of all collected samples to a National Association of Testing Authorities (NATA) accredited analytical laboratory for analysis
- Undertake works in accordance with a site-specific Job Safety and Environmental Assessment (JSEA) and adhere to quality assurance (QA) and quality control (QC) procedures

This report is a 12 months groundwater and surface water monitoring report detailing the methods and key findings of the monitoring program.

1.5 Limitations

This Report has been prepared by Bunbury Outer Ring Road Integrated Project Team (BORR IPT) for Main Roads Western Australia and may only be used and relied on by Main Roads Western Australia for the purpose agreed between BORR IPT and Main Roads Western Australia as set out in Section 1 of this report. BORR IPT otherwise disclaims responsibility to any person other than Main Roads Western Australia arising in connection with this report. BORR IPT also excludes implied warranties and conditions, to the extent legally permissible.

The services undertaken by BORR IPT in connection with preparing this report were limited to those specifically detailed in the report and are subject to the scope limitations set out in the report. The opinions, conclusions and any recommendations in this report are based on conditions encountered and information reviewed at the date of preparation of the report. BORR IPT has no responsibility or obligation to update this report to account for events or changes occurring subsequent to the date that the report was prepared. The opinions, conclusions and any recommendations in this report are based on assumptions made by BORR IPT described in this report. BORR IPT disclaims liability arising from any of the assumptions being incorrect.

BORR IPT has prepared this report on the basis of information provided by Main Roads Western Australia and others who provided information to BORR IPT (including Government authorities), which BORR IPT has not independently verified or checked beyond the agreed scope of work. BORR IPT does not accept liability in connection with such unverified information, including errors and omissions in the report which were caused by errors or omissions in that information.

Investigations undertaken in respect of this report are constrained by the particular site conditions, such as the location of buildings, services and vegetation. As a result, not all relevant site features and conditions may have been identified in this report. Site conditions (including the presence of hazardous substances and/or site contamination) may change after the date of this Report. BORR IPT does not accept responsibility arising from, or in connection with, any change to the site conditions. BORR IPT is also not responsible for updating this report if the site conditions change.

2 SITE SETTING

2.1 Climate

The Bunbury area experiences a Mediterranean climate and is characterised by warm, dry summers and cool, wet winters. Rainfall is largely received during the winter months as a result of cold fronts that regularly cross the South West coast. The closest BoM weather station is Bunbury (site number 009965), which is located at 33.36 °S, 115.64 °E (BOM, 2020).

Climate data from this station indicates the mean maximum temperature ranges from 30.0 C in February to 17.3 °C in July. The mean minimum temperature ranges from 15.9 C in February to 7.1 C in July. The mean annual rainfall is 718.4 mm, with approximately 121.9 rain days a year (BOM, 2020). The Bunbury area receives most of its annual rainfall during the winter months, with rainfall peaking in July with 140.1 mm (Table 2-1).

Annual rainfall in 2019 (550.0 mm) was below annual mean rainfall from 1995 to 2020 (718.4). Annual rainfall up to July in 2020 (468.0 mm), appeared to follow the 15-year annual mean rainfall trend, with similar cumulative totals up to July (448.5 mm) (Table 2-1).

Table 2-1 Rainfall recorded for the Bunbury region (Site No. 9965) (BOM, 2020)

RAINFALL (MM)	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
Mean rainfall	11.7	7.2	19.7	35.9	97.0	136.9	140.1	120.2	79.1	33.1	21.9	17.0	718.4
Rainfall 2019	10.6	0.0	21.2	16.2	34.8	182.0	94.6	91.8	30.0	53.2	15.4	0.2	550.0
Rainfall 2020	1.2	12.4	35.2	23.6	114.4	152.2	129.0	-	-	-	-	-	468.0 (total to July)

2.2 Topography

Topography ranges from 5 – 39 m Australian Height Datum (AHD) with the more elevated areas associated with the Spearwood sands and Bassendean sands and the least elevated areas associated with drainage lines (5 – 10 m AHD) (GoWA, 2020).

2.3 Surface water

2.3.1 Watercourses

The Proposal Area either intercepts or is within one kilometre of four rivers, as well as numerous tributaries and minor drainage lines, including:

- Brunswick River – located adjacent to the Proposal Area at its northern extent and flows to the Collie River
- Collie River – flows to the Leschenault Estuary which is located 3.25 km west of the Proposal Area at the closet point
- Ferguson River – flows to the Preston River
- Preston River – flows to the Leschenault Estuary.

These four rivers are located in the Northern and Central Sections of the Proposal Area and all have amenity, recreation and cultural value. The Preston and Ferguson Rivers and tributaries are proclaimed under the *Rights in Water and Irrigation Act 1914* (RIWI Act) and, the part of the Proposal Area that lies within the Leschenault Inlet Management Area is proclaimed under the *Waterways Conservation Act 1976* (GoWA, 2020).

There are no proclaimed rivers (under the RIWI Act) that intersect the Southern Section of the Proposal Area, however there are a number of minor drainage lines, including Five Mile Brook, which intersect the Proposal Area (GoWA, 2020).

The Northern Section of the Proposal Area lies within the Collie River Irrigation District, proclaimed under the RIWI Act, with a network of open channels supplying irrigation water to the rural properties during summer (GoWA, 2020).

There are numerous drains through agricultural parts of the Proposal Area, which have been constructed to mitigate seasonal waterlogging and flooding. The Water Corporation owns and manages a number of drains located on private property.

2.3.2 Wetlands of International Significance

There are no Ramsar wetlands (Ramsar Sites (DBCA-010)) located within 10 km of the Proposal Area. The Ramsar listed Peel-Yalgorup System is located approximately 20 km to the north of the Proposal and the Vasse-Wonnerup System is located approximately 19 km to the south west of the Proposal (GoWA, 2020).

There are no wetlands cited in "*A Directory of Important Wetlands in Australia*" (Directory of Important Wetlands in Australia – Western Australia (DBCA-045)) within the Proposal Area. The nearest wetland cited is the Benger Swamp which lies approximately 13 km to the north east of the Proposal Area (GoWA, 2020).

2.3.3 Geomorphic wetlands

Wetlands on the Swan Coastal Plain have been classified (Hill, Semeniuk, Semeniuk, & del Marco, 1996) using a geomorphic-hydrologic approach to wetland classification (Semeniuk & Semeniuk, 1995). Wetlands have also been evaluated and assigned an appropriate management category which provides guidance on the nature of wetland management and protection that the wetland should be afforded.

The spatial extent of the 46 wetlands mapped in the Geomorphic Wetlands of the Swan Coastal Plain (DBCA-019) dataset, occupy 75% of the Proposal Area when combined.

The majority of which comprises Multiple Use category wetlands in the Northern and Central Sections. The Proposal Area intersects four Conservation Category Wetlands (CCW), four Resource Enhancement (RE) and 38 Multiple Use (MU) and one Not Assessed Artificial Lake (GoWA, 2020).

2.3.4 Surface water quality

Nutrient levels were routinely monitored within the four rivers, intercepted by the Proposal Area, by the Department of Water (DoW) between 2004 and 2012 (DoW, 2012). This monitoring identified elevated nutrient and phosphorus levels in the Ferguson River, which was attributed to inputs from cattle, horses and lifestyle blocks. Nutrient and phosphorus loads were lowest in the Preston River. There are no proclaimed rivers (under the RIWI Act) that intersect the Southern Section of the Proposal Area, however there are a number of minor drainage lines (including Five Mile Brook) which overlap the Proposal Area (BORR IPT, 2019d).

In-situ surface water quality monitoring was undertaken by BORR IPT (BORR IPT, 2019b) and WRM (2019) at several surface water locations along the Northern and Central Sections of the BORR alignment in September 2018 and November 2018. The key findings of the in-situ surface water quality monitoring is summarised in Table 2-2.Table 2-2 Surface water quality monitoring for BORR Northern and Central Sections in September and November 2018

PARAMETER	FINDINGS	COMMENTS
EC (µS/cm)	183 - 3360	The Collie River and the tributary of the Preston River were recorded as brackish (EC 1780 µS/cm and 1300 µS/cm respectively) and also reported higher concentrations of sodium (236 mg/L, 183 mg/L) and chloride (582 mg/L, 401 mg/L) than the other surface water locations. The main artery of the Preston River and the two surface water bodies were recorded as freshwater (183 µS/cm – 579 µS/cm).
Temp. (°C)	12.8 – 27.0	Nil.
pH	6.0 – 8.7	Limited exceedances of the adopted assessment criteria range
DO% Sat	6 - 264	Seven of the twelve WRM sample locations recorded results outside the ANZECC/ ARMCANZ (2000) guideline of 80-120%. The DO recorded at Northern 7 was highly anoxic.
Eh (mV)	67 – 180.5	Nil.
Turbidity (NTU)	3.3 – 79.2	Nil.
Acid sulfate soil risk	Moderate to high	Refer to section 2.5.
Total Nitrogen and Phosphorus	-	Nutrient levels were generally elevated and consistent with historical information from DoW. Total Nitrogen and Total Phosphorus exceeded the adopted assessment criteria at JT03, SW01 and SW02. Total Oxidised Nitrogen exceeded the adopted assessment criteria at the Collie River and Preston River locations (SW03, SW04 and SW05).
BTEXN, TRH and PAHs	-	Concentrations of benzene, toluene, xylene and naphthalene (BTEXN), Total Recoverable Hydrocarbons (TRH) and Polyaromatic Hydrocarbons (PAHs) were negligible at all locations, with the exception of trace levels of toluene in the flooded area near the northern tie-in.
Metals	-	Concentrations of metals were also elevated and exceeded the ANZECC/ ARMCANZ (2000) water quality guidelines at all BORR IPT locations for aluminium (0.1 – 0.8 mg/L). The flooded area near the northern tie-in (SW02) also exceeded the water quality guidelines for zinc (0.016 mg/L)

[1]ANZECC/ARMCANZ (2000) criteria for south west Australia lowland rivers.

2.4 Groundwater

2.4.1 Groundwater areas

The entire proposed BORR alignment occurs within the Bunbury Groundwater Area, which is proclaimed under the RIWI Act (GoWA, 2020).

The primary groundwater units underlying the Proposal Area include:

- Superficial aquifer: a thin (5 – 40 m below ground level (bgl)) to absent, predominantly unconfined layer, which overlies the Leederville aquifer and is recharged by direct infiltration of rainfall
- Leederville aquifer: a confined formation ranging from 15 – 300 m bgl, which is recharged by downward seepage from the overlying Superficial aquifer and direct infiltration in outcrop areas
- Yarragadee aquifer: a confined formation (within the Proposal Area) underlying the Leederville aquifer and ranging from 600 m to 1200 m thick. The Yarragadee aquifer recharges by direct infiltration of rainfall where unconfined, and elsewhere through limited seepage from the overlying Leederville aquifer (DoW, 2009).

2.4.2 Groundwater depth

In 2018, the BORR IPT undertook a targeted investigation of groundwater as part of the ASS investigations for the BORR Northern and Central Sections. During the ASS investigation, 20 monitoring wells (including; BORR MW13 to BORR MW 22 and BORR MW 24 to BORR MW32) were sampled and analysed for a comprehensive suite of analytes by BORR IPT (2019a). Nine groundwater wells were installed throughout the Southern Section of the Proposal Area in 2018 for the targeted ASS investigations (BORR IPT, 2020b).

Additional monitoring wells were installed throughout the Proposal Area and data loggers have been installed at 49 monitoring wells to record water levels covering the entire proposed BORR alignment.

Water level data from telemetered and non-telemetered loggers confirmed that groundwater typically flows in a westerly direction towards the Indian Ocean (BORR IPT, 2019a). Groundwater across the Proposal Area is shallow, ranging (in bores monitored during the ASS investigations for the Northern, Central and Southern Sections) from 0.6 – 10.0 m bgl (5.48 – 20.2 m AHD) (BORR IPT, 2019a; BORR IPT, 2020b).

2.4.3 Groundwater quality

Groundwater quality results for the ASS investigation are included in the overarching management plans prepared separately for the Northern and Central Sections (BORR IPT, 2020b) and Southern Sections (BORR IPT, 2020b).

2.5 Acid sulfate soils

A desktop review of the DWER Acid Sulfate Soil (ASS) Risk Mapping for the Swan Coastal Plan (DWER-055) indicates that, the majority of the Proposal Area is mapped as containing a '*moderate to low risk of ASS occurring within 3 m of the natural soil surface but high to moderate risk beyond 3 m of the natural soil surface*' (GoWA, 2020).

There are also areas mapped as '*high to moderate risk of ASS occurring within 3 m of the natural soil surface*' generally where the Proposal Area intersects waterways such as the Collie, Preston River and Ferguson Rivers, Five Mile Brook, wetlands the east of the Capel Golf Course and west of Centenary Road intersection with Bussell Highway (GoWA, 2020).

Further onsite ASS investigations have been undertaken within the Northern, Central and Southern Sections. Overarching management plans, including results desktop and site investigations, have been prepared separately for the Northern and Central Sections (BORR IPT, 2020b) and Southern Sections (BORR IPT, 2020b), however further site specific investigations will be required following the detailed design phase and prior to construction work commencing.

2.6 Contaminated sites

A search of the DWER Contaminated Sites Database indicates there are no listed contaminated sites within the Proposal Area (GoWA, 2020).

The DWER Contaminated Sites Database does not provide details of sites that are listed as 'possibly contaminated – investigation required'. A further limitation to the DWER Contaminated Sites Database is unreported contaminated sites.

Contaminated sites constraints mapping was undertaken for the Proposal within the Northern, Central and Southern Sections (BORR IPT, 2019c; BORR IPT, 2020a). These assessments identified a number of land parcels within the Proposal Area that are considered to represent a potential contamination risk to human health or the environment associated with the construction of BORR Southern Section.

Impact of contaminated soil and/or water shall be addressed during the detailed design and construction management phase, as per site specific management plans developed for the BORR project.

3 METHODS

3.1 Monitoring locations

The monitoring locations comprised 30 groundwater and 15 surface water monitoring sites. The selected monitoring locations provide data for superficial aquifer groundwater and surface water quality at locations along the length of the proposed BORR alignment, as the Proposal is considered unlikely to impact on Leederville or Yarragadee aquifers.

The road formation will be built using both imported fill and cut-to-fill materials from the Proposal Area. The majority of the road alignment is in fill, with some cut material to be sourced from the approaches to the Collie River Crossing. The depth of excavation at cut locations will be determined by groundwater and design levels.

An overview of the groundwater and surface water monitoring sites is provided in Table 3-3**Error! Reference source not found.** and Table 3-4**Error! Reference source not found.**, respectively. The locations of monitoring sites are presented in Figure 1.

Table 3-1 Groundwater monitoring sites

BORE LOCATION CODE	BORR SECTION	EASTING (MGA94 ZONE 50)	NORTHING (MGA94 ZONE 50)	TOP OF CASING (TOC) LEVEL (m AHD)
BORR MW18	Northern	381674	6307714	15.96
BORR MW19	Northern	382876	6308095	17.07
BORR MW06	Southern	371109	6299068	11.62
BORR MW07**	Southern	372078	6300142	15.62
BORR MW08a	Southern	373588	6300392	15.95
BORR MW19b	Northern	382876	6308095	17.02
BORR MW20	Northern	383774	6308629	17.58
BORR MW22	Northern	385619	6312198	15.17
BORR MW22b	Northern	385619	6312198	15.13
BORR MW24	Northern	385483	6314484	13.13
BORR MW25	Northern	385207	6315417	13.84
BORR MW29	Northern	383985	6318170	18.42
BORR MW31	Northern	383651	6319208	13.71
BORR MW32	Northern	383416	6319757	8.25
BORR_MW37	Northern	385365	6316058	12.33
BORR_MW39	Northern	385503	6315005	12.17
BH9.2	Northern	385367	6315856	13.91
BH11.1	Northern	385500	6314628	1.89

BORE LOCATION CODE	BORR SECTION	EASTING (MGA94 ZONE 50)	NORTHING (MGA94 ZONE 50)	TOP OF CASING (TOC) LEVEL (m AHD)
BORR MW13	Central	378103	6305283	14.78
BORR MW14**	Central	378708	6305722	12.68
BORR MW15	Central	379881	6306346	15.12
BH32.1	Central	379095	6303937	13.12
BORR MW04	Southern	370118	6297060	9.45
BORR MW05	Southern	370681	6298315	12.24
BORR MW09	Southern	374241	6301013	16.45
BORR MW10	Southern	374848	6301753	19.35
BORR MW11	Southern	375286	6302605	20.8
BORR MW12	Southern	375843	6304181	19.63
BORR MW46*	Southern	373882.6	6305094.1	7.03
MR MW05	Southern	375313.5	6302185.3	20.51

* Note: Site BORR MW46 was included in the proposal for the monitoring program as MW (proposed) Centenary Road and the bore constructed prior to commencement of the monitoring in August.

** Note: Monitoring of BORR MW14 and BORR MW07 was discontinued following the first and second monitoring rounds, respectively, due to unfavourable monitoring well condition.

Table 3-2 Surface water monitoring sites

LOCATION CODE	BORR SECTION	DESCRIPTION	EASTING (MGA94 ZONE 50)	NORTHING (MGA94 ZONE 50)
JT01	Northern	Collie River	385486.8	6314503.1
MT01	Northern	Artificial lake (Lot 104 Clifton Road)	384205.7	6317974.5
North Creek 4	Northern	Millars Creek	385167	6311922
Northern 3	Northern	UFI 1720	385589	6314505
Northern 5	Northern	UFI 14329 adjacent to Ferguson River	381206	6307767
SW06	Northern	Raymond Road	384662	6315897
North Creek 2	Central	Preston River	379297	6303282
SW07	Central	Preston River – northern side of BORR (central)	378624	6305674
SW08	Central	Preston River – southern side of BORR (central)	378667	6305576

LOCATION CODE	BORR SECTION	DESCRIPTION	EASTING (MGA94 ZONE 50)	NORTHING (MGA94 ZONE 50)
SW09*	Central	Preston River tributary Lot 200/ 201 on Plan 74957	379383	6303199
WRM North Site 5	Central	Lot 514 on Plan 71851	377031	6304815
Southern 3	Southern	UFI 1106	376089	6304316
Southern 4	Southern		375225	6304694
SW10	Southern	Five Mile Creek	373337	6300496
SW11	Southern	Southern extent of BORR referral area	370214	6297229

* Note: SW09 was relocated to a tributary of the Preston River, east of the original site on the Preston River, due to the site being unsafe for access.

3.2 Standards and guidance

The groundwater and surface water quality monitoring and analysis program was undertaken in accordance with the following standards and guidance documents:

- Australian and New Zealand Environment and Conservation Council (ANZECC) & Agriculture and Resource Management Council of Australia and New Zealand (ARMCANZ) (2000) *Monitoring Guidelines Chapter 4*
- Australian Standard (1998) *5667.1 Water Quality – Sampling, Part 1: Guidance on the design of sampling programs, sampling techniques and the preservation and handling of samples (AS 5667.1:1998)*
- Department of Environment Regulation (DER – now DWER) (2014) *Assessment and management of contaminated sites – Contaminated Sites Guidelines.*
- Department of Health (2014), *Contaminated Sites Ground and Surface Water Chemical Screening Guidelines*, Department of Health.

3.3 Sampling methodology

Groundwater and surface water quality monitoring was undertaken monthly within a five day period by two environmental scientists.

Groundwater sampling methods are summarised in Table 3-3.

Table 3-3 Groundwater sampling methods overview

ACTION	METHODS
Preliminary tasks	Prior to commencing fieldwork each month, a JSEA was prepared and utilised. BORR IPT consulted with landowners, shires and Main Roads to gain authorisation to access private properties and road reserves for the selected monitoring dates.
Sampling and laboratory analysis	Groundwater depth of each monitoring well was measured using an electronic dip meter, prior to a sample being collected.

ACTION	METHODS
	Samples were collected at each location using a peristaltic pump with dedicated HDPE tubing installed in each monitoring well for the 12-month monitoring period to avoid cross contamination issues. Field parameters (temperature, electrical conductivity, pH, REDOX potential, dissolved oxygen, total dissolved solids) were measured using a calibrated YSI ProDSS water quality meter and recorded on field data sheets (included in Appendix C). Calibration certificates are included in **Error! Reference source not found.** . Visual and olfactory field observations were also noted on the field sheets. Following stabilisation of field parameters, groundwater samples were collected in laboratory prepared bottles and were immediately placed on ice and stored in a cool, dark environment (esky). Primary samples were then forwarded to Australian Laboratory Services (ALS) Environmental and split samples were forwarded to Eurofins-MGT (Eurofins), both of which are NATA accredited analytical laboratories. Samples were submitted within the specified holding times (excluding pH and reactive phosphorus), along with a chain of custody (CoC) form, and were placed on a standard 7-10 day turnaround. Samples were analysed for the groundwater suite detailed in Section 3.2. All groundwater samples required analysis for dissolved metals and were filtered to 0.45 microns in the field. All field and analytical results are summarised in Section 4.
Equipment and decontamination	Prior to and following collection of each sample, all disposable equipment was replaced with new equipment and all non-disposable equipment was decontaminated. The decontamination process involved washing down all relevant equipment with a phosphate free detergent, rinsing the equipment with deionized water, and a final rinsing with deionized water before commencing sampling at the next location. Dedicated nitrile gloves were worn for the collection of each sample.

Surface water sampling methodology is summarised in Table 3-4.

Table 3-4 Surface water sampling method overview

ACTION	METHODS
Preliminary tasks	Prior to commencing fieldwork each month, a JSEA was prepared and utilised. BORR IPT consulted with landowners, shires and Main Roads to gain authorisation to access private properties and road reserves for the selected monitoring dates.
Sampling and laboratory analysis	Field parameters (temperature, electrical conductivity, pH, REDOX potential, dissolved oxygen, total dissolved solids and turbidity) were measured at each surface water location using a calibrated YSI ProDSS water quality meter, which was left in the water body until field parameters had stabilised. Field parameters were recorded on field data sheets (included in Appendix C). Calibration certificates are included in **Error! Reference source not found.**. Visual and olfactory field observations were also noted on the field sheets. Surface water samples were collected at each location in a 1 L non-preserved bottle using an extendable sampling stick. The non-preserved bottle was used to transfer samples to laboratory prepared bottles, due to the presence of preservatives within the bottles. Samples were immediately placed on ice and stored in a cool, dark environment (esky). Primary samples were then forwarded to ALS Laboratory and split samples were forwarded to Eurofins, both of which are NATA accredited

ACTION	METHODS
	analytical laboratories. Samples were submitted within the specified holding times (excluding pH and reactive phosphorus), along with a CoC form, and were placed on a standard 7-10 day turnaround. Samples were analysed for the surface water suite detailed in 3.2. All surface water samples required analysis for dissolved metals and were filtered to 0.45 microns in the field. All field and analytical results are summarised in Section 4.
Equipment and decontamination	Prior to and following collection of each sample, all disposable equipment was replaced with new equipment and all non-disposable equipment was decontaminated. The decontamination process involved washing down all relevant equipment with a phosphate free detergent, rinsing the equipment with deionized water, and a final rinsing with deionized water before commencing sampling at the next location. Dedicated nitrile gloves were worn for the collection of each sample.

3.4 Laboratory analysis

ALS conducted the primary laboratory analysis of samples and Eurofins conducted the secondary laboratory analysis of split samples. Both laboratories completed internal quality assurance/ quality control (QA/QC) procedures as per their NATA accreditation. The groundwater and surface water quality analytical results are presented in Section 4.

Groundwater and surface water samples were analysed for the suites listed in Table 3-5.

Table 3-5 Laboratory analytical suites

LABORATORY ANALYTICAL SUITES	
Groundwater analytical suites	
Field parameters	pH, EC, DO (mg/L, % sat), redox, temperature (°C), TDS*
Inorganics	pH, EC (laboratory by titration), TDS (laboratory by gravimetric)**
Acidity and alkalinity	Alkalinity (carbonate as $CaCO_3$), alkalinity (bicarbonate as $CaCO_3$), alkalinity (hydroxide as $CaCO_3$), alkalinity (total as $CaCO_3$), acidity (as $CaCO_3$)
Major ions	Calcium, magnesium, potassium, sodium, chloride, sulfate, cations total, anions total, ionic balance, sulfide
Nutrients	Ammonium (as N), ammonia (as N), nitrogen (total oxidised) (as N), nitrogen (total), reactive phosphorus (as P), Kjeldahl nitrogen total, phosphorus (total).
Metals	Aluminium, cadmium, chromium, cobalt, copper, iron, lead, manganese, nickel, selenium, zinc
BTEXN	Benzene, toluene, ethylbenzene, xylene, naphthalene (sum of total)
TRH	Total recoverable hydrocarbons
Surface water analytical suites	
Field parameters	pH, EC, DO (mg/L, % sat), redox, temperature (°C), TDS*, turbidity (NTU)
Inorganics	pH, EC (laboratory by titration), TDS (laboratory by gravimetric)**

LABORATORY ANALYTICAL SUITES	
Acidity and alkalinity	Alkalinity (carbonate as $CaCO_3$), alkalinity (bicarbonate as $CaCO_3$), alkalinity (hydroxide as $CaCO_3$), alkalinity (total as $CaCO_3$), acidity (as $CaCO_3$)
Major ions	Calcium, magnesium, potassium, sodium, chloride, sulfate, cations total, anions total, ionic balance, sulfide
Nutrients	Ammonium (as N), ammonia (as N), nitrogen (total oxidised) (as N), nitrogen (total), reactive phosphorus (as P), Kjeldahl nitrogen total, phosphorus (total)
Metals	Aluminium, cadmium, chromium, cobalt, copper, iron, lead, manganese, nickel, selenium, zinc
BTEXN	Benzene, toluene, ethylbenzene, xylene, naphthalene (sum of total)
TRH	Total recoverable hydrocarbons
Pesticides and herbicides	OP pesticides, glyphosate

* Field TDS recorded from YSI ProDSS water quality meter - calculated from conductivity and temperature.

** Where available laboratory results for pH, EC and TDS have been reported. If laboratory results are missing or otherwise not available, field results are reported.

It was noted, during the six-month monitoring program review, that a number of analytes were not detected or just above laboratory LOR, in the majority of groundwater or surface water locations, during the first six months of monitoring.

Based on these observations, the laboratory analysis suite was reduced in the last quarter of the 12-month monitoring period, from April to July 2020, for both groundwater and surface water samples. The reduced monitoring suite excluded BTEXN, TRH, PAHs, OP pesticide and herbicide analytes. For further information refer to Section 4.2.3.

3.5 Assessment criteria

The following assessment criteria (adopted from the guidelines included in Section 3.1), were applied.

3.5.1 Groundwater criteria

- DER 2014 - *Non-potable Use Groundwater* (NPUG)
- ANZECC and ARMCANZ 2000 - *Irrigation – Short-term trigger values*[1].

3.5.2 Surface water criteria

- ANZECC and ARMCANZ 2000 - *Southwest Australia Lowland River Guidelines*
- ANZECC and ARMCANZ 2000 - *Fresh water Slight-Mod Disturbed.*

[1] GHD notes the ANZECC and ARMCANZ (2000), has now been superseded by now ANZAST (2018). However, preliminary review of these guidelines by GHD (and others) has identified a number of discrepancies with ANZECC (2000) which have yet to be clarified. As such, ANZECC (2000) criteria have been adopted for the purposes of this GME until the issues with ANZAST (2018) have been resolved.

4 RESULTS

4.1 Field observations

The following section discusses the field results for the monitoring events from August 2019 to July 2020. The concentration trend graphs of these events are presented in **Error! Reference source not found.**.

4.1.1 Groundwater level observations

Groundwater depth below ground level (BGL) was monitored from August 2019 to July 2020, in the locations outlined in Table 4-1. The groundwater depths have be provided in Table 4-1 as highest level BGL to lowest level BGL and have been converted to metres Australian Height Datum (m AHD) based on the surveyed top of casing (TOC) level.

Site MW14 was sampled in August 2019 and monitoring discontinued due to difficulty in obtaining samples. Similarly, monitoring of site MW07 was discontinued after sampling in September 2019.

Table 4-1 Observed groundwater elevations from August 2019 to July 2020

LOCATION ID	TOP OF CASING (TOC) LEVEL (m AHD)	GROUNDWATER DEPTH (m bTOC)	GROUNDWATER ELEVATION (m AHD)	COMMENTS
BORR MW04	9.45	3.882 – 4.810	5.570 – 4.640	
BORR MW05	12.24	5.635 – 6.782	6.610 – 5.458	
BORR MW06	11.62	5.311 – 6.730	6.310 – 4.890	
BORR MW07	15.62	9.999 – 10.099	5.621 – 5.520	Discontinued after Round 2.
BORR MW08a	15.95	2.073 – 4.288	13.880 – 11.662	
BORR MW09	16.45	3.140 – 4.550	13.310 – 11.900	
BORR MW10	19.35	1.361 – 2.315	17.990 – 17.035	
BORR MW11	20.8	0.954 – 3.980	19.846 – 16.820	Dry for January, February, April and May rounds. No recharge in March.
BORR MW12	19.63	1.495 – 2.466	18.130 – 17.164	
BORR MW13	14.78	0.221 – 1.511	14.559 – 13.269	
BORR MW14	12.68	6.251	6.429	Discontinued after first round.
BORR MW15	15.12	1.134 – 2.175	13.990 – 12.945	
BORR MW18	15.96	1.404 – 3.439	14.556 – 12.521	
BORR MW19	17.07	0.379 – 2.500	16.690 – 14.570	Dry for December, January, March and April rounds. Well ran dry and did not recharge to sample in February and June.

LOCATION ID	TOP OF CASING (TOC) LEVEL (m AHD)	GROUNDWATER DEPTH (m bTOC)	GROUNDWATER ELEVATION (m AHD)	COMMENTS
BORR MW19b	17.02	0.363 – 2.165	16.657 – 14.855	
BORR MW20	17.58	0.462 – 2.944	17.120 – 14.636	
BORR MW22	15.17	0.335 – 2.748	14.835 – 12.422	Dry all months except August, September, June and July.
BORR MW22b	15.13	0.396 – 9.970	14.734 – 5.160	
BORR MW24	13.13	7.582 – 8.448	5.548 – 4.682	
BORR MW29	18.42	5.499 – 6.321	12.920 – 12.099	
BORR MW31	13.71	2.965 – 4.063	10.750 – 9.647	
BORR MW32	8.25	0.862 – 2.653	7.388 – 5.597	
BORR_MW37	12.33	3.515 – 5.962	8.840 – 6.368	
BORR_MW39	12.17	7.164 – 8.442	5.006 – 3.728	
BORR MW46	7.03	3.498 – 4.630	3.473 – 2.459	
MR MW05	20.51	2.231 – 3.740	18.280 – 16.770	
BH9.2	13.91	1.409 – 3.700	12.501 – 10.210	
BH11.1	1.89	1.427 – 2.946	0.463 – -1.060	
BH32.1	13.12	2.707 – 4.394	10.413 – 8.726	

4.1.2 In-situ water quality observations

4.1.2.1 Groundwater

A summary of the main observations from groundwater field monitoring, from August 2019 to July 2020, is provided in Table 4-2.

Table 4-2 Groundwater field observations from August 2019 to July 2020

PARAMETER	OBSERVATION
pH	• Ranged generally between pH 3 – pH 7 • BH9.2, BORR MW24, BORR MW29, BORR MW18 and BH32.1 all had lower pH levels, ranging between pH 3.5 and pH 5
EC	• Generally ranged between 100 to 9,000 µS/cm with a minimum and maximum concentration of 144.6 µS/cm (at BORR MW15 in August 2019) and 25,192 µS/cm (at MR MW05 in January 2020) respectively. • Outliers included: - MR MW05 had the highest conductivity, ranging from 20,000 to 25, 192 µS/cm - BORR MW22b had a high EC, ranging from 12,500 to 14,000 µS/cm

PARAMETER	OBSERVATION
Redox potential	• Generally ranged between -330 and 300 mV with a minimum and maximum concentration of -330.5 mV (at BORR MW31 in May 2020) and 391.4 mV (at BORR MW24 in September 2019) respectively. • BH9.2, BORR MW18 and BORR MW24 had a reading above 300 mV at one or more of the monitoring events
DO (%)	• Generally ranged between 0.15 to 50% with a minimum and maximum concentration of 0.15% (at BORR MW13 in January 2020) and 76.3% (at BORR MW07 in September 2019) respectively. • BORR MW07, BORR MW14, BORR MW18, BORR MW22, BORR MW46 and BH9.2 had a reading above 50% at one or more of the monitoring events.
DO (ppm)	• Generally ranged between 0 to 4 ppm with a minimum and maximum concentration of 0.05 ppm (at BORR MW08a in January 2020) and 6.92 ppm (at BORR MW07 in September 2019) respectively. • BORR MW07, BORR MW18, BORR MW19, BORR MW22, BORR MW19b, BORR MW29, BORR_MW46 and MR MW05 had a reading above 4 ppm at one or more of the monitoring events
Temperature	• Ranged from 13.9 (at BORR MW19 in August 2019) to 24.5°C (at BORR MW13 in March 2020)
TDS	• Generally ranged between 90 and 6,000 ppm with a minimum and maximum concentration of 93.9 ppm (at BORR MW15 in August 2019) and 16,280 ppm (at MR MW05 in February 2020) respectively. • MR MW05 and BORR MW11 both had readings that varied between 6,000 and 16,300 ppm, varying at each monitoring event • BORR MW22b and BORR MW19 both had slightly high levels, ranging between 8,000 and 10,000 ppm.

4.1.2.2 Surface Water

A summary of the main observations from surface water field monitoring, from August 2019 to July 2020, has been provided in Table 4-3.

Table 4-3 Surface water field observations

PARAMETER	OBSERVATION
pH	• Generally ranged between pH 4 and pH 9 with a minimum and maximum concentration of pH 4.38 (at Northern 3 in April 2020) and pH 9.2 (at Southern 4 in May 2020) respectively. • Exceedances outside of the ANZECC & ARMCANZ 2000 - Southwest Australia Lowland River Guidelines were recorded in the following months: - August 2019: MT01, WRM North Site 5, Northern 3 - September 2019: MT01, WRM North Site 5, Northern 3, SW11 - October 2019: MT01, Northern 3, JT01 - November 2019: MT01, Northern 3, JT01, Southern 3 - December 2020: Northern 3, Southern 3, Southern 4 - January 2020: MT01, Southern 4, North Creek 2, SW01, SW07 - February 2020: North creek 2, Southern 4 - March 2020: North Creek 2, Southern 4, SW07, SW08

PARAMETER	OBSERVATION
	- April 2020: North Creek 2, Northern 3, Southern 4, SW07, SW08, SW09 - May 2020: Southern 4 - June 2020: MT01, Southern 4, SW07, SW08 - July 2020: Northern 3, WRM North Site 5
EC	• Generally ranged between 300 and 6,500 µS/cm with a minimum and maximum concentration of 280.2 µS/cm (at SW11 in August 2019) and 30,290 µS/cm (at Northern 3 in December 2019) respectively. • Outliers included: - Northern 3 had the highest level, peaking at 30,290 µS/cm during the December 2019 monitoring event, but generally ranged between 8,000 and 23,000 µS/cm - Southern 4 generally ranged between 5,000 and 16,000 µS/cm - JT01 and WRM North Site 5 had slightly higher readings close to 10,500 and 8,000 µS/cm respectively at one occasion each.
Redox potential	• Generally ranged between -30 and 200 mV with a minimum and maximum concentration of -179.4 mV (at SW09 in March 2020) and 301.3 mV (at Northern 3 in December 2019) respectively. • Outliers included: - Northern 3 had the highest readings, ranging between 200 and 300 mV - JT01, Southern 4, WRM North Site 5 and SW09 had negative readings between -179.4 and -45 on one or more occasions
DO (%)	• Generally ranged between 80 and 120% with a minimum and maximum concentration of 0.2% (at SW09 in September 2019) and 167.7% (SW11 in September 2019) respectively. • • Exceedances outside of the ANZECC and ARMCANZ 2000 - Southwest Australia Lowland River Guidelines (80-120%) were recorded in the following months: - August 2019: MT01, North Creek 4, Southern 4, SW10, SW09 - September 2019: SW09, MT01, JT01, SW10, Southern 3, Southern 4, SW11 - October 2019: Southern 3, WRM North Site 5, SW09, MT01, Northern 5 - November 2019: SW09, MT01, Southern 4, WRM North Site 5, JT01, Northern 5 - December 2020: SW07, North Creek 2, SW09, Northern 5, North Creek 4, Northern 3, SW06, MT01, JT01, Southern 4 - January 2020: SW09, SW06, North Creek 4, Southern 4, MT01 - February 2020: JT01, North creek 2, North creek 4, Northern 5, Southern 4, SW09 - March 2020: JT01, North creek 2, North creek 4, Southern 4, SW07, SW08, SW09 - April 2020: JT01, North Creek 4, Southern 4, SW09 - May 2020: JT01, North creek 4, Northern 3, Northern 5, Southern 4, SW06, SW09 - June 2020: JT01, North creek 4, Northern 5, Southern 4, SW06, SW09 - July 2020: MT01, Northern 3, SW09, SW10, WRM North Site 5
DO (ppm)	• Generally ranged between 0 – 11 ppm with a minimum and maximum concentration of 0.02 ppm (at SW09 in September 2019) and 14.73 ppm (at SW11 in September 2019) respectively. • Outliers included:

PARAMETER	OBSERVATION
	- SW11 had the highest reading of 14.73 ppm during the September 2019 monitoring event
Temperature	• Increased and decreased seasonally and ranged from 8.8 (at MT01 in August 2019) – 33.1 °C (at Northern 3 in December 2019)
TDS	• Generally ranged from 180 – 4,000 ppm with a minimum and maximum concentration of 181 ppm (at SW11 in September 2019) and 19,688.5 ppm (at Northern 3 in December 2019) respectively. • Outliers included: - Northern 3 had readings ranging from 4,760 ppm and peaking at 19,688 ppm - Southern 4 had higher readings varying between 5,000 and 10,500 ppm - JT01, Southern 3 and WRM North Site 5 had slightly higher values ranging between 4,020 and 6,800 ppm respectively at one or more occasions.
Turbidity	• Generally ranged from 0.5 to 100 NTU with a minimum and maximum concentration of 0.5 NTU (at Northern 3 in November 2019) and 1,424.44 NTU (at SW09 in February 2020) respectively. • Outliers included: - SW09 had the highest reading of 1,424.44 NTU during the February 2020 monitoring event as well as a few other outliers in one or more occasions. - SW08 also had slightly higher reading of 1340 NTU at one of the rounds. - MT01, Northern 3, WRM North site 5, SW06, SW07, SW08, SW09 and SW11 had readings above 100 NTU at one or more of the monitoring events • Turbidity was not measured during the October 2019 monitoring due to equipment malfunction.

4.2 Laboratory results

The following section discusses the laboratory results for the monitoring events from August 2019 to July 2020. The concentration trend graphs of these events are presented in **Error! Reference source not found.**.

4.2.1 Groundwater detects and exceedances

The laboratory results for the groundwater wells were assessed against the following criteria:

- DER 2014 - *Non-potable Use Groundwater* (NPUG)
- ANZECC & ARMCANZ 2000 - *Irrigation – Short-term trigger values*

Exceedances of these criteria were recorded for major ions, nutrients and metals at a range of sites across a number of monitoring events. These are identified in Table 4-4.

4.2.2 Surface water detects and exceedances

The surface water laboratory results were assessed against the following criteria:

- ANZECC & ARMCANZ 2000 - *Southwest Australia Lowland River Guidelines*
- ANZECC & ARMCANZ 2000 - *Fresh water Slight-Mod Disturbed*

Exceedances of these criteria were recorded for nutrients and metals at a range of sites across a number of monitoring events. These are identified in Table 4-5.

Table 4-4 Groundwater laboratory sample exceedances

ANALYTE		DER 2014 NPUG GUIDELINE VALUE	ANZECC 2000 IRRIGATION – SHORT TERM TRIGGER VALUES GUIDELINE VALUE	HIGHEST RECORDED CONCENTRATION	DER 2014 NPUG GUIDELINE VALUE EXCEEDANCES[2] RECORDED FROM AUGUST 2019 TO JULY 2020	ANZECC 2000 – IRRIGATION – SHORT TERM TRIGGER VALUES EXCEEDANCES[2] RECORDED FROM AUGUST 2019 TO JULY 2020
Major ions	Chloride	250 mg/L	-	8,630 mg/L – MR_MW05 (February 2020)	BH9.2 (10), BORR_MW25 (11), BORR_MW37 (12), BH11.1 (12), BH32.1 (11), BORR_MW04 (11), BORR_MW19b (10), BORR_MW20 (10), BORR_MW22 (1), BORR_MW22b (10), BORR_MW24 (11), MR_MW05 (12), BORR_MW11 (7), BORR_MW19 (5), BORR_MW05 (8)	
	Sulfate (Filtered)	1000 mg/L	-	1,140 mg/L - MR_MW05 (June 2020)	MR_MW05 (9)	
Nutrients	Nitrogen (Total)	-	25 mg/L	26 mg/L – BORR_MW13 (May 2020)		BORR_MW13 (1)
	Phosphorous (Total)	-	0.8 mg/L	30.6 mg/L - BORRR_MW14 (August 2019)		BH11.1 (2), BORR_MW08a (8), BORR_MW32 (1), BORR_MW39 (1),
	Ammonia (as N)	0.411 mg/L	-	5.80 mg/L - BORR_MW32 (August 2019)	BORR_MW06 (1), BORR_MW08a (1), BORR_MW10 (1), BORR_MW29 (12), BORR_MW31 (12), BORR_MW32 (11), BORR_MW15 (9), MR_MW05 (1)	
Metals	Aluminium (Total)	0.2 mg/L	20 mg/L	97.0 mg/L - BORR_MW07 (August 2019)	BH9.2 (11), BH11.1 (1), BH32.1 (11), BORR_MW04 (11), BORR_MW05 (11), BORR_MW06 (11), BORR_MW08a (11), BORR_MW10 (12), BORR_MW12 (11), BORR_MW15 (10), BORR_MW18 (10), BORR_MW19b (10), BORR_MW20 (10), BORR_MW22b(11), BORR_MW24 (11), BORR_MW25 (11), BORR_MW29 (12), BORR_MW31 (12), BORR_MW32 (12), BORR_MW37 (12), BORR_MW39 (12), BORR_MW46 (12), MR_MW05(12), BORR_MW09 (8), BORR_MW11 (7), BORR_MW13 (5), BORR_MW19 (5), BORR_MW22 (4)	BH9.2 (7), BORR_MW24 (5), BORR_MW32 (1), MR_MW05(1)
	Aluminium (Filtered)	0.2 mg/L	20 mg/L	34.2 mg/L - BH9.2 (February 2020)	BORR_MW05 (1), BORR_MW06 (4), BORR_MW08a (11), BORR_MW18 (9), BORR_MW29 (12), BORR_MW31 (12), BORR_MW32 (12), BH9.2 (8), BH32.1 (4), BORR_MW15 (4), BORR_MW22 (2), BORR_MW24 (2), BORR_MW39 (5)	BH9.2 (7)
	Cobalt (Filtered)	-	0.1 mg/L	1.58 mg/L - BH32.1 (September 2019)		BH32.1 (4), BORR_MW22b (9)
	Iron (Total)	0.3 mg/L	10 mg/L	364 mg/L - BORR_MW14 (August 2019)	BH11.1 (12), BORR_MW22b (11), BORR_MW25 (11), MR_MW05 (12), BH9.2 (11), BH32.1 (11), BORR_MW04 (11), BORR_MW05 (11), BORR_MW06 (11), BORR_MW08a (11), BORR_MW09 (2), BORR_MW10 (12), BORR_MW12 (11), BORR_MW13 (10), BORR_MW15 (10), BORR_MW19b (10), BORR_MW20 (10), BORR_MW24 (11), BORR_MW29 (12), BORR_MW31 (12), BORR_MW32 (12), BORR_MW37 (12), BORR_MW39 (12), BORR_MW18 (3), BORR_MW11 (7), BORR_MW19 (4), BORR_MW22 (4), BORR_MW46 (12)	BH11.1 (12), BORR_MW19b (1), BORR_MW20 (1), BORR_MW22b (9), BORR_MW24 (10), BORR_MW25 (10), MR_MW05 (12), BORR_MW13 (2), BORR_MW15 (1), BH9.2 (9), BH32.1 (10), BORR_MW04 (9), BORR_MW06 (3), BORR_MW06 (3), BORR_MW11 (4), BORR_MW37 (9), BORR_MW39 (3), BORR_MW46 (11)
	Iron (Filtered)	-	10 mg/L	74.2 mg/L – BH9.2 (February 2020)		BORR_MW06 (1), BORR_MW22b (9), MR_MW05 (8), BH11.1 (7), BH9.2 (8), BORR_MW13 (1), BORR_MW37 (4), BORR_MW46 (10), BH32.1 (1)
	Nickel (Filtered)	0.2 mg/L	2 mg/L	1.71 mg/L - BH32.1 (September 2019)	BH32.1 (4)	

Note: [2] Numbers within brackets represent the number of months the analyte exceeded the guideline value

Table 4-5 Surface water laboratory sample exceedances

ANALYTE		ANZECC 2000 – SW AUSTRALIA LOWLAND RIVER GUIDELINE VALUE	ANZECC 2000 FW SLIGHT-MOD DISTURBED GUIDELINE VALUE	HIGHEST RECORDED CONCENTRATION	ANZECC 2000 – SW AUSTRALIA LOWLAND RIVER GUIDELINE VALUE EXCEEDANCES[3] RECORDED FROM AUGUST 2019 TO JULY 2020	ANZECC 2000 FW SLIGHT-MOD DISTURBED GUIDELINE VALUE EXCEEDANCES[3] RECORDED FROM AUGUST 2019 TO JULY 2020
Nutrients	Ammonia (as N)	0.08 mg/L	0.9 mg/L	7.58 mg/L – Northern 3 (April 2020)	Northern 3 (3),), North Creek 4 (1), JT01 (3), Northern 5 (5), Southern 3 (1), Southern 4 (3), SW06 (3), SW11 (1), WRM North Site 5 (1)	MT01 (1), Northern 3 (4), Southern 4 (1)
	Nitrogen (Total Oxidised) (as N)	0.15 mg/L	-	3.84 mg/L - Northern 3 (April 2020)	JT01 (2), North Creek 2 (3), North Creek 4 (4), Northern 3 (2), Northern 5 (4), SW06 (4), SW07 (3), SW08 (3)	
	Nitrogen (Total)	1.2 mg/L	-	50.9 mg/L - WRM North Site 5 (November 2019)	MT01 (8), North Creek 2 (1), North Creek 4 (5), Northern 3 (7), Northern 5 (2), Southern 3 (4), Southern 4 (11), SW06 (8), SW07 (1), SW08 (2), SW09 (7), SW10 (3), SW11 (2), WRM North Site 5 (4)	
	Phosphorous (Total)	0.065 mg/L	-	15.5 mg/L - WRM North Site 5 (November 2019)	MT01 (8), Northern 3 (3), Northern 5 (12), Southern 3 (4), Southern 4 (11), SW06 (12), North Creek 4 (5), SW07 (1), SW08 (2), SW09 (9), SW10 (3), SW11 (1), WRM North Site 5 (4)	
Metals	Aluminium (Total)	-	0.055 mg/L	37.2 mg/L - WRM North Site 5 (November 2019)		JT01 (8), MT01 (8), North Creek 2 (8), North Creek 4 (11), Northern 3 (8), Northern 5 (9), Southern 3 (4), Southern 4 (11), SW06 (12), SW07 (9), SW08 (9), SW09(11), SW10 (3), SW11 (3), WRM North Site 5 (4)
	Aluminium (Filtered)	-	0.055 mg/L	2.57 mg/L - Northern 3 (December 2019)		MT01 (8), North Creek 2 (3), Northern 3 (8), Northern 5 (2), North Creek 4 (2), Southern 3 (4), Southern 4 (4), SW06 (2), SW07 (2), SW08 (3), SW09 (6), SW10 (3), SW11 (2), WRM North Site 5 (2)
	Cadmium (Filtered)	-	0.0002 mg/L	0.002 mg/L – Northern 3 (April 2020)		Northern 3 (3)
	Chromium (III + IV) (filtered)	-	0.001 mg/L	0.005 mg/L – SW07 (April 2020)		MT01 (3), SW07 (1), SW09 (2)
	Copper (Filtered)	-	0.0014 mg/L	0.05 mg/L – SW06 (July 2020)		JT01 (8), MT01 (8), North Creek 2 (8), North Creek 4 (11), Northern 3 (7), Northern 5 (12), Southern 3 (4), Southern 4 (11), SW06 (12), SW07 (9), SW08 (10), SW09 (9), SW10 (3), SW11 (3), WRM North Site 5 (4)
	Lead (Filtered)	-	0.005 mg/L	0.021 mg/L- MT01 (January 2020)		MT01 (2)
	Manganese (Filtered)	-	1.9 mg/L	8.16 mg/L Northern 3 (December 2019)		Northern 3 (3), WRM North Site 5 (1)
	Nickel (Filtered)	-	0.011 mg/L	0.062 mg/L - Northern 3 (December 2019)		JT01 (3), MT01 (3), North Creek 2 (4), North Creek 4 (4), Northern 3 (5), Northern 5 (2), Southern 3 (1), Southern 4 (4), SW06 (5), SW07 (1), SW08 (2), SW09 (3), SW10 (1), WRM North Site 5 (2)
	Zinc (Filtered)	-	0.008 mg/L	0.247 mg/L - Northern 3 (December 2019)	Northern 3 (3),), North Creek 4 (1), JT01 (3), Northern 5 (5), Southern 3 (1), Southern 4 (3), SW06 (3), SW11 (1), WRM North Site 5 (1)	MT01 (7), JT01 (8), North Creek 2 (9), North Creek 4 (11), Northern 3 (8), Northern 5 (10), Southern 3 (4), Southern 4 (11), SW08 (9), SW09 (10), SW06 (9), SW07 (10), SW10 (3), SW11 (3), WRM North Site 5 (4)

Note: 'Northern 5' was sampled and analysed for twice during the April 2020 monitoring round due to lab miscommunication.

[3] Numbers within brackets represent the number of months the analyte exceeded the guideline value

4.2.3 Non-detects in groundwater and surface water samples

It was noted, during the six-month monitoring program review, that a number of analytes were not detected or just above laboratory LOR, in the majority of groundwater or surface water locations, during the first six months of monitoring. Based on these observations, the laboratory analysis suite was reduced in the last quarter of the 12 month monitoring period, from April to July 2020, for both groundwater and surface water samples. The reduced monitoring suite excluded BTEXN, TRH, PAHs, OP pesticide and herbicide analytes included in Table 4-6. Note: Groundwater sampling analysis did not include OP pesticides and herbicide analytes within the entire 12-month monitoring period.

Table 4-6 Groundwater and surface water non-detects (ND)

ANALYTES	GROUNDWATER NON-DETECTS	SURFACE WATER NON-DETECTS
Acidity and alkalinity		
Alkalinity (Carbonate as $CaCO_3$)	ND	Detected
Alkalinity (hydroxide as $CaCO_3$)	ND	ND
Major ions		
Sulfide	Detected	ND
Metals		
Selenium (filtered)	Detected	ND
BTEXN		
Benzene	ND	ND
Toluene	ND	Detected
Ethylbenzene	ND	ND
Xylene (o)	ND	ND
Xylene (m & p)	ND	ND
Xylene Total	ND	ND
TRH - NEPM 2013		
F1 (C6-C10 minus BTEX)	ND	ND
F2 (>C10-C16 minus Naphthalene)	ND	ND
F4 (>C34-C40 Fraction)	ND	Detected
TRH - NEPM 1999		
C6-C9 Fraction	ND	ND
PAHs		
Naphthalene	ND	ND
OP pesticides		
Azinphos methyl	Not analysed	ND
Bolstar (Sulprofos)	Not analysed	ND
Bromophos-ethyl	Not analysed	ND
Carbophenothion	Not analysed	ND
Azinphos Ethyl	Not analysed	ND
Chlorfenvinphos	Not analysed	ND
Chlorpyrifos	Not analysed	ND

ANALYTES	GROUNDWATER NON-DETECTS	SURFACE WATER NON-DETECTS
Chlorpyrifos-methyl	Not analysed	ND
Coumaphos	Not analysed	ND
Demeton-O	Not analysed	ND
Demeton-S	Not analysed	ND
Demeton-S-methyl	Not analysed	ND
Diazinon	Not analysed	ND
Dichlorvos	Not analysed	ND
Dimethoate	Not analysed	ND
Disulfoton	Not analysed	ND
EPN	Not analysed	ND
Ethion	Not analysed	ND
Ethoprop	Not analysed	ND
Fenamiphos	Not analysed	ND
Fenitrothion	Not analysed	ND
Fensulfothion	Not analysed	ND
Fenthion	Not analysed	ND
Malathion	Not analysed	ND
Methyl parathion	Not analysed	ND
Mevinphos (Phosdrin)	Not analysed	ND
Monocrotophos	Not analysed	ND
Omethoate	Not analysed	ND
Parathion	Not analysed	ND
Phorate	Not analysed	ND
Pirimphos-ethyl	Not analysed	ND
Pirimiphos-methyl	Not analysed	ND
Profenofos	Not analysed	ND
Prothiofos	Not analysed	ND
Ronnel	Not analysed	ND
Sulfotepp	Not analysed	ND
Terbufos	Not analysed	ND
Trichloronate	Not analysed	ND
Tetrachlorvinphos	Not analysed	ND
Demeton-O & Demeton-S	Not analysed	ND
Temephos	Not analysed	ND
Trichlorfon	Not analysed	ND
Triazophos	Not analysed	ND
Herbicides		
Glyphosate	Not analysed	ND

5 CONCLUSIONS

This report summarises the findings of a 12-month water monitoring program (August 2019 – July 2020) which included field and laboratory analysis of water samples collected at 30 groundwater and 15 surface water locations along the proposed BORR alignment. This monitoring program has been undertaken prior to construction, and provides baseline information in the vicinity of the proposed BORR.

Groundwater and surface water samples were analysed for the following parameters: pH; EC; DO; redox; temperature; TDS; acidity and alkalinity; major ions; nutrients; metals; BTEXN; TRH; and OP pesticides (surface water only) and glyphosate (surface water only).

During a review of the monitoring program, it was noted that a number of analytes were not detected or were just above laboratory LOR in the majority of groundwater or surface water locations, during the first six months of monitoring. This included:

- BTEXN was not detected in groundwater or surface water samples, with exception of one slight reading at SW09
- PAH was not detected in groundwater or surface water samples
- OP pesticides and glyphosate were not detected in surface water samples (note groundwater sampling analysis did not include OP pesticides or glyphosate within the entire 12-month monitoring period)
- TRH was detected at five groundwater monitoring locations however did not exceed the relevant assessment criteria
- TRH was detected at nine surface water locations, however only four locations recorded TRH levels above laboratory LOR over more than one monitoring event (MT01, Northern 3, Southern 4 and SW09).

Based on these observations, the laboratory analysis suite was reduced in the last quarter of the 12-month monitoring period, from April to July 2020, for both groundwater and surface water samples. The reduced monitoring suite excluded BTEXN, TRH, PAHs, OP pesticide and herbicide analytes.

Key findings of the 12-month groundwater and surface water monitoring program indicate the following:

- Low pH (< pH 6) was generally observed at groundwater locations in close proximity to waterways and in association with high to moderate risk Acid Sulfate Soil mapped areas
- Elevated EC groundwater and surface water results were identified between Raymond Road and Boyanup-Picton Road and in association with the Collie River
- In the BORR Central Section EC results were generally fresh for both groundwater and surface water locations with some seasonal increase in summer in the Preston River
- Highest groundwater EC results in BORR Southern Section were recorded at BORR MW11 and MR MW05. BORR MW11 EC results indicate seasonal influence with EC reaching 24,600 µS/cm in December 2019, however EC levels recorded at MR MW05 were consistently high in the range of 19,900 to 23,500 µS/cm throughout the monitoring period.
- Several exceedances in the NPUG guidelines of Ammonia (as N) were reported across 4 groundwater bores, several exceedances in the irrigation guidelines of Phosphorus (Total) were also reported for BORR_MW08a.
- Multiple exceedances in all nutrient analytes in the lowland river guidelines were found across several surface water locations, exceedances in Ammonia (as N) in the slight to moderately disturbed guidelines were also reported

- Several exceedances in the NPUG guidelines of Aluminium (Total), Aluminium (Filtered), and Iron (Total) were reported across multiple groundwater bores. BH32.1 recorded multiple exceedances of the NPUG guidelines of Nickel (Filtered)
- Multiple exceedances in the irrigation guidelines of all metals except Nickel (Filtered) across different groundwater bores were reported
- Zinc (Filtered) exceeded lowland river guidelines for multiple surface water locations, all metals exceeded the slight to moderately disturbed guidelines across different surface water locations
- Total nitrogen (TN) and total phosphorus (TP) were generally consistent across all groundwater monitoring locations. With the exception of elevated levels of TN recorded at BORR MW13 and BORR MW18 and elevated TP levels at BORR MW08a, BORR MW32, BORR MW39 and BH11.1, which were above assessment criteria.
- Levels of acidity, alkalinity, major ions and metals, such as chloride, sulfate, iron and aluminium were also elevated (relevant to criteria or above LOR) in groundwater and surface water samples and are considered to be related to background chemistry and geology.
- BTEXN (with the exception of one sample), PAH, OP pesticides and glyphosate were not detected in groundwater or surface water samples.
- TRH did not exceed the relevant assessment criteria in groundwater samples, however was detected above LOR in surface water samples.

It is noted that lower than average rainfall levels were received in 2019 (550.0 mm) compared to the mean annual rainfall level (718.4 mm) for the Bunbury area. However, rainfall received in first six months of 2020 was above average for the Bunbury area.

It is considered the monitoring results for groundwater and surface water quality are consistent with the results of similar monitoring in the local area and are generally consistent with what would be expected for the area and the water resources sampled (Commander, 1984; Department of Water, 2009; BORR IPT, 2019a). The groundwater and surface water quality reflect the local hydrogeology and hydrology, and current and past land use.

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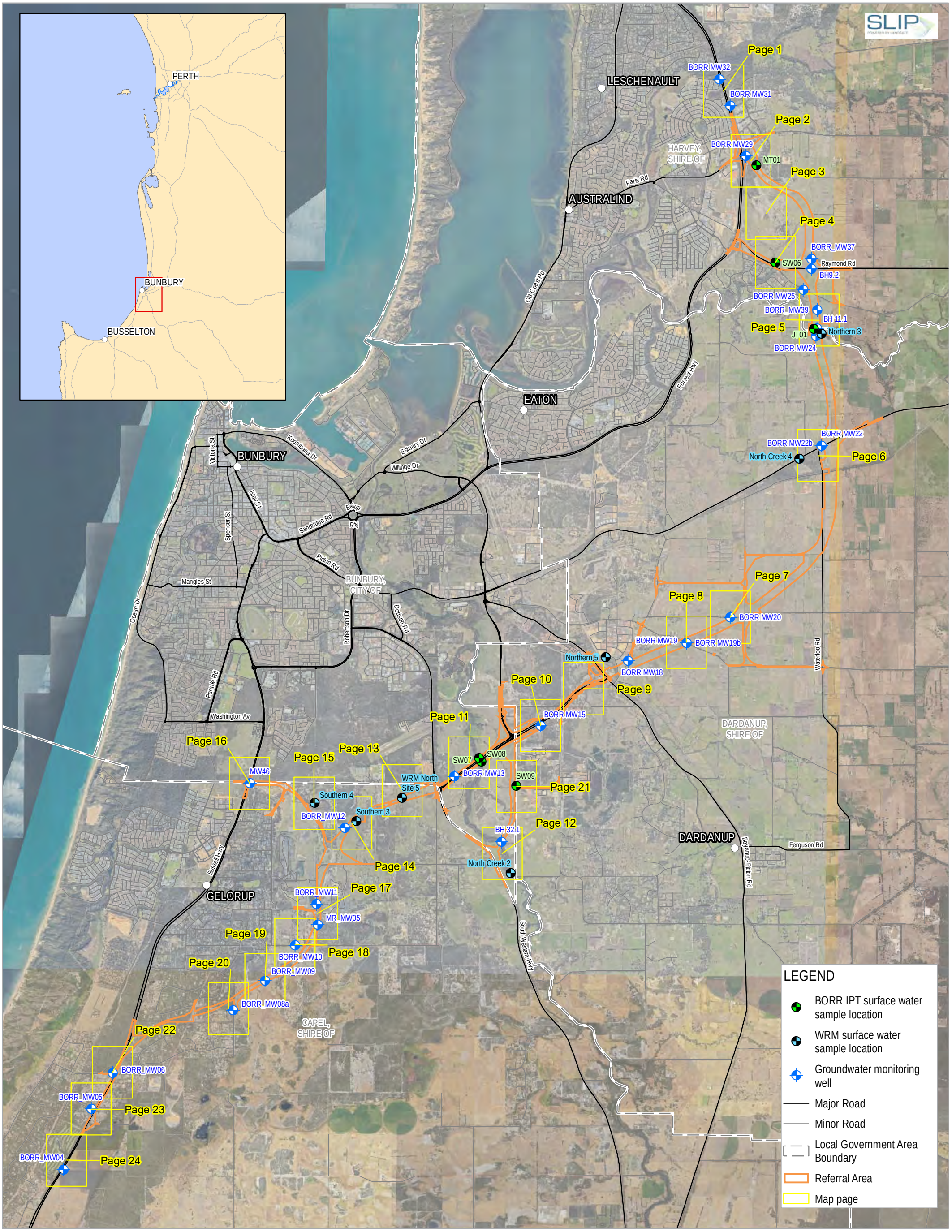
APPENDIX A

Figures

Figure 1 **Groundwater and surface water monitoring locations**



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Overview

FIGURE 1

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BRUNSWICK RIVER

BORR MW32

Watchem Rd

Kensington Lane

Waterford Way

Lochart Rd

Edenhope Rd

Sherwood Rd

Waverley Rd

P ROAD

Forrest Hwy

Billabong Ct

Howson Dr

P022225
156

P056727
2507

Carlingford Ct

Braidwood Dr

Kelson Way

Macquarie Dr

Barton Dr

Burwood Rd

BORR MW31

P ROAD

R 50303

P062543 2508

P016438 51

P022224 155

LEGEND

- Groundwater monitoring well
- Watercourse
- Major Road
- Minor Road
- Referral Area

SLIP

Paper Size ISO A3

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Metres

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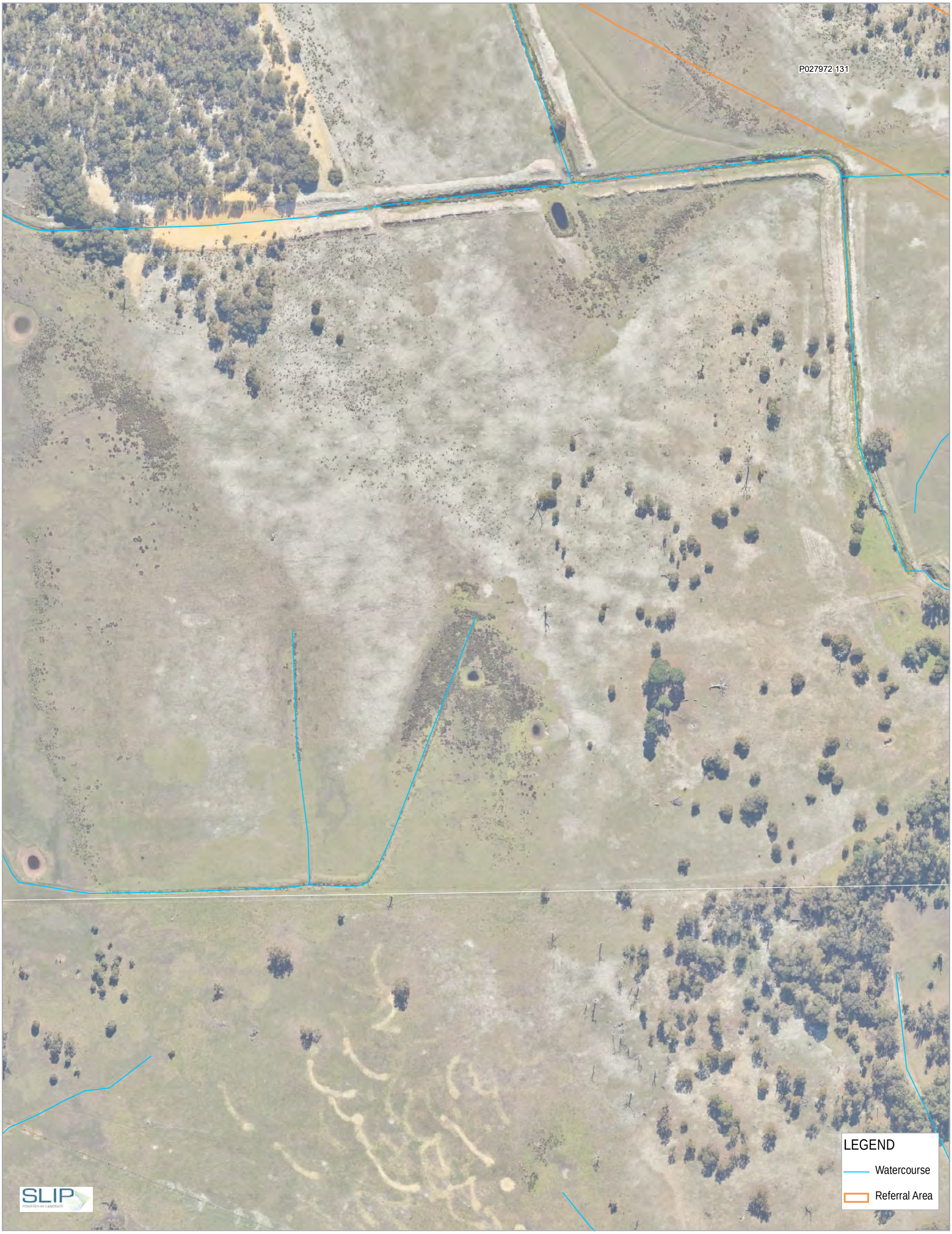

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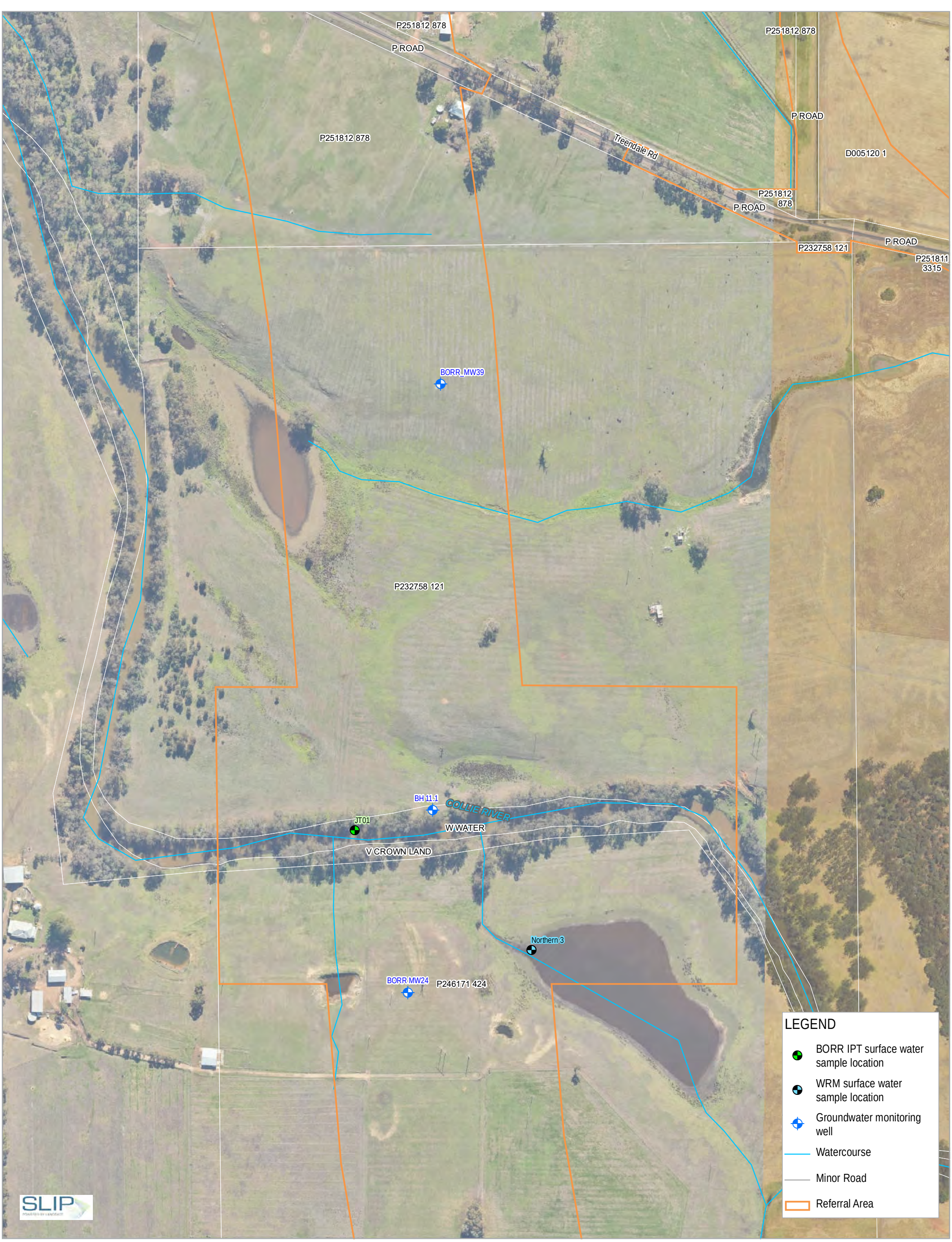

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P ROAD
P07 1855 600
P07 1856 593
Boyanup-Picton Rd
P301384 521
P401654 1
P301384 521
P ROAD
P ROAD
P ROAD
P ROAD
P ROAD
P ROAD
Bunbury Outer Ring Rd
P ROAD
P ROAD
Barcoo Cl
P021434 7
Resta Rd
D070804
8
P ROAD
SLIP

LEGEND
Watercourse
Major Road
Minor Road
Referral Area

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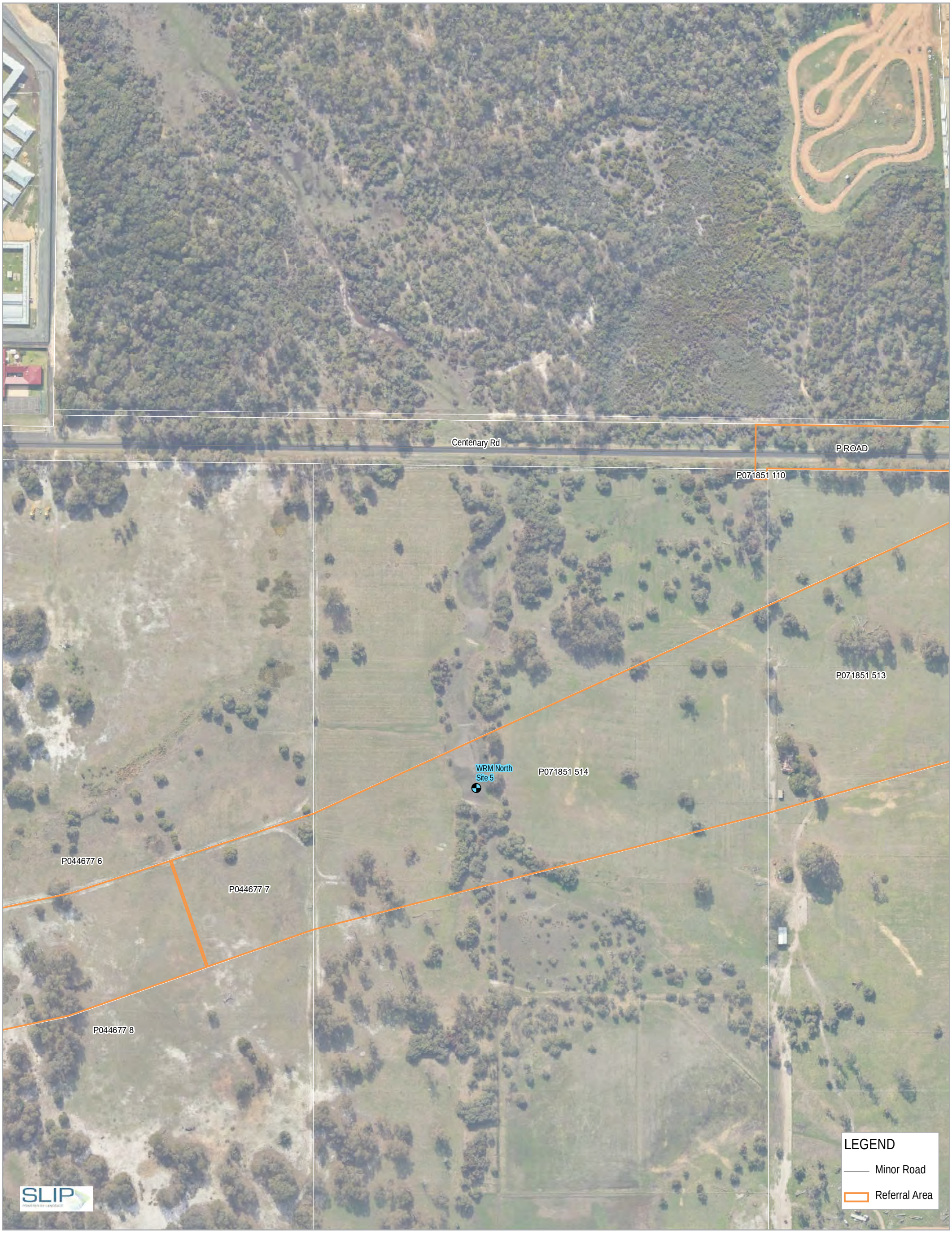

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Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 Perth Coastal Grid 1994

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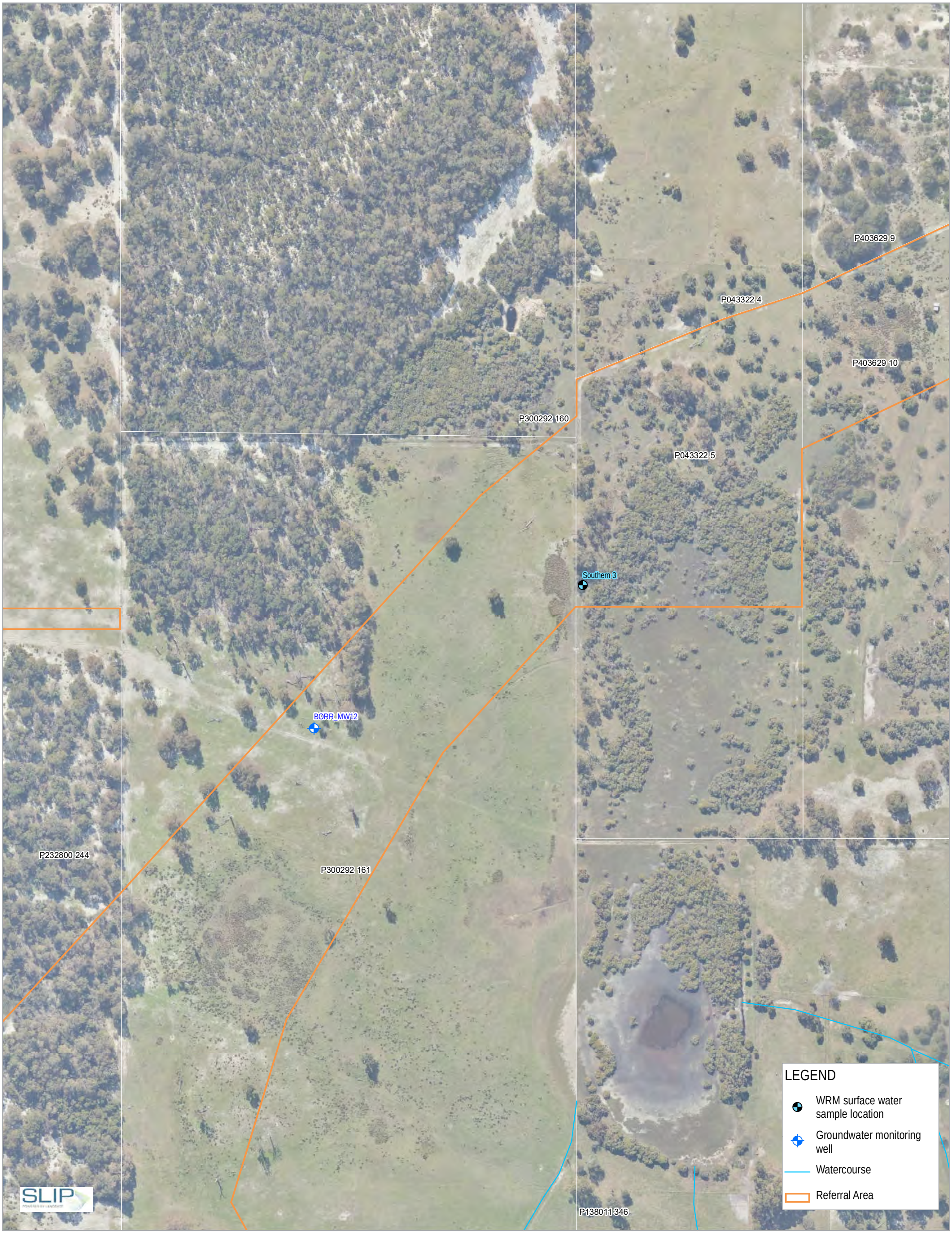

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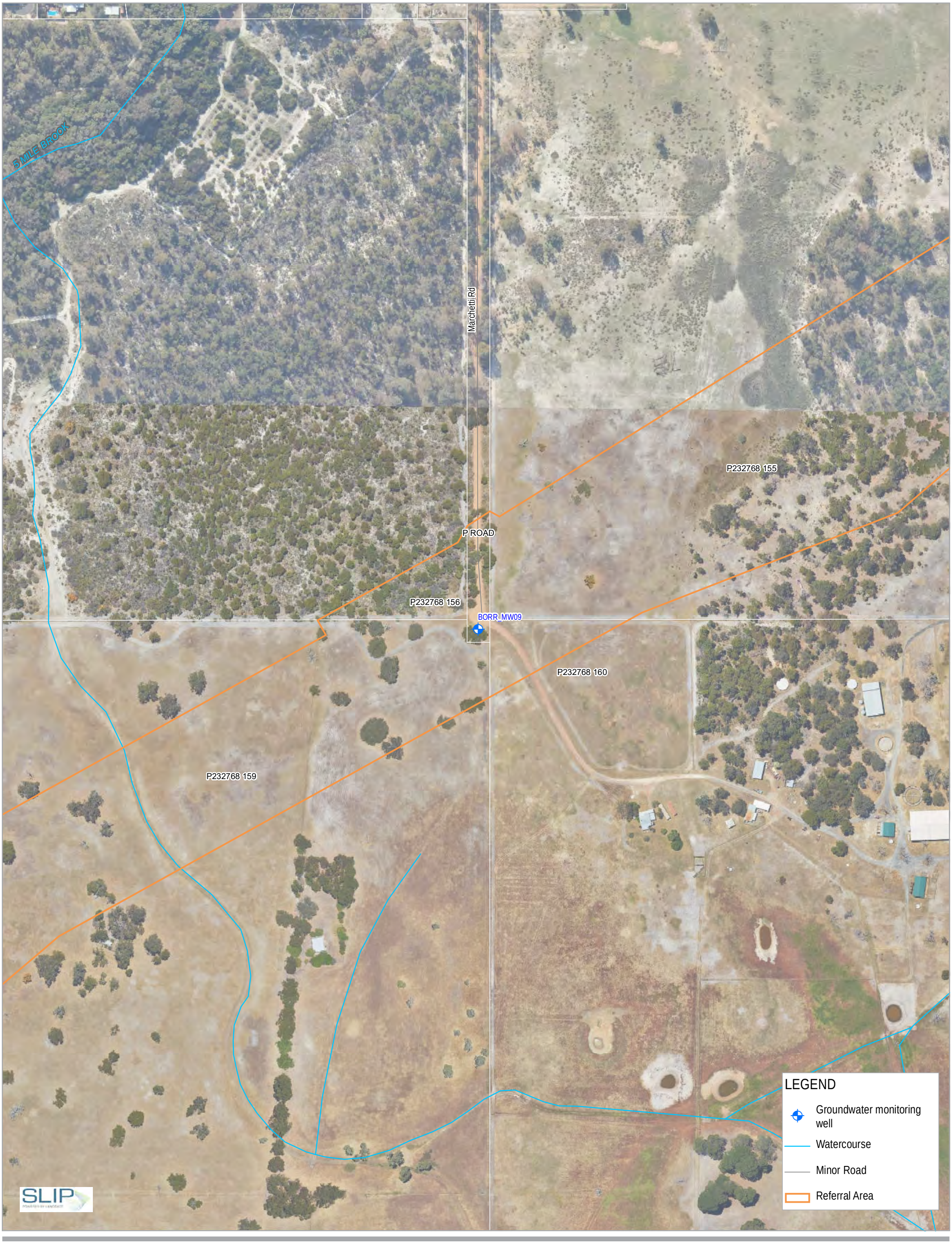

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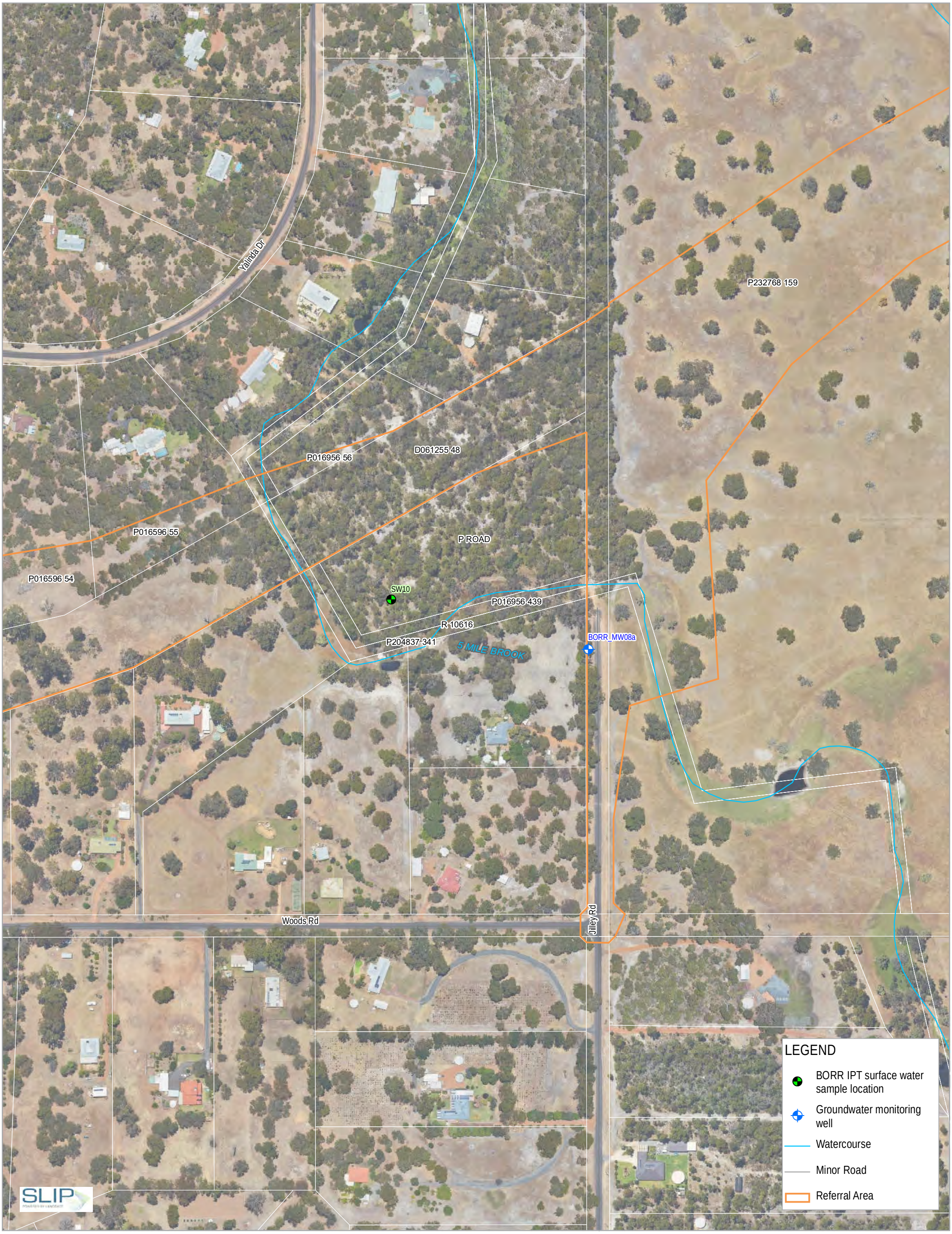

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P071847 503

SW09

P074957 200

P403618 104

P074957 201

P064565 500

LEGEND

BORR IPT surface water sample location

Watercourse

Minor Road

Referral Area

SLIP

Paper Size ISO A3

0 50 100

Metres

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APPENDIX B

Data quality management

Data quality management

Data quality management for the 12 month groundwater and surface water quality monitoring and analysis program will be undertaken in accordance with the standards and guidelines provided in Section 3.1, and is summarised below.

B.1 Quality systems

BORR IPT operates under a Practice of Quality Management System certified to AS/NZS ISO 90001:2000 and an Environmental Management System certified to ISO 14001:2004.

The Quality and Environmental management systems prescribe a structured approach to quality and environmental management, which covers:

- Job establishment and planning;
- Document control;
- Design control and review;
- Verification of deliverables;
- Job records;
- Internal project compliance audits; and
- The identification and management of significant environmental risks.

B.2 Field quality control procedures

Key quality control (QC) procedures include:

- Work was undertaken by an experienced GHD Environmental Scientist, according to industry accepted standards, using procedures documented in the GHD Practice Manual: Contaminated Sites Environmental Procedures
- Field QC procedures for the 12-month water quality monitoring program included sample collection, equipment decontamination, handling and transfer protocols
- Dedicated sampling equipment and disposable nitrile gloves were used to minimise the potential for cross-contamination
- Samples were collected and transferred directly into pre-treated laboratory supplied bottles. Bottles were completely filled and care was taken to minimise agitation and oxidation of the sample during transfer to the containers
- Samples were immediately preserved on ice in a chilled esky while on site. Upon completion of site work, the sealed esky was couriered to the laboratories. A sample receipt notice (SRN) was sent from the laboratory confirming that samples were received with the correct CoC
- Unique CoC documentation accompanied all samples.
- Water parameters were measured with a calibrated water quality meter. Equipment calibration certificates are provided in **Error! Reference source not found.**.

B.3 Quality assurance

A series of quality assurance (QA) procedures were implemented in order to maintain the quality of data collected by BORR IPT staff. QA procedures included:

- Use of standardised field sampling forms (provided in Appendix C)
- Use of standardised field sampling methods
- Documenting calibration and use of field instruments (provided in **Error! Reference source not found.**)

- Collection of quality control samples
- Use of laboratory supplied sample bottles and appropriate storage.

B.4 Fieldwork quality control

All fieldwork was conducted in accordance with AS/NZS 5667.11, which ensured that all samples were collected in a systematic and uniform method, for obtaining accurate and reliable analytical results. Key requirements of these procedures are listed below:

- Decontamination procedures: including the use of new disposable nitrile gloves, decontamination of non-disposable sampling equipment (i.e. interface meter) between each sampling event and the use of appropriate sample bottles, as provided by the NATA accredited laboratory
- Sample identification procedures: collected samples were placed within sample bottles of appropriate preparation (i.e. filtering) and preservation for the required laboratory analysis. All sample bottles were clearly labelled with a project number, sample location and sample date. The sample bottles were then transferred to a chilled esky for sample preservation prior to and during transport to the laboratory
- Calibration of field equipment: to ensure accuracy of measurements taken in the field, the rental supplier calibrated field equipment prior to dispatch. Calibration certificates are provided in **Error! Reference source not found.**
- CoC information requirements: CoC forms were completed and forwarded to the testing laboratory accompanying each batch of samples. The signed CoCs are provided in **Error! Reference source not found.**.
- QC sampling frequency: blind and split duplicate samples, as well as rinsate samples, field blanks and trip blanks, were collected at appropriate frequencies and analysed by the testing laboratories.

B.4.1 Sampling and analysis quality control

The *ASC NEPM* (NEPM, 2013) outlines the groundwater and surface water QC sampling protocol. The type and frequencies of groundwater and surface water QC samples colle

cted during the monitoring event were in line with the *ASC NEPM* (NEPM, 2013) as described below:

- *Blind duplicate*: blind duplicate samples were collected to identify any variation in analyte concentration between samples from the same sampling point and the repeatability of the primary laboratory's analysis
- *Split duplicate*: split duplicate samples were collected to provide an indication of the repeatability of the analytical results between NATA accredited laboratories
- *Rinsate blank*: rinsate blank samples are primarily used to assess the effectiveness of equipment decontamination procedures undertaken in the field. The sample is collected by passing laboratory supplied deionised water over the specific piece of decontaminated field equipment
- *Trip blank*: trip blank samples are used to assess the potential for introduction of contamination during transport and storage of field samples and are collected using laboratory supplied deionised water
- *Field blank*: field blank samples are used to assess the potential for introduction of contamination from ambient sources in the field during sampling and are collected using laboratory supplied deionised water.

The quality control sampling and analysis program undertaken is outlined in Table B-1.

Table B-1 Quality control sampling schedule

INVESTIGATION	MATRIX	SAMPLE TYPE	REQUIRED QC RATES	ACTUAL QC RATES
Groundwater	Water	Blind duplicate	1 per 20 primary samples	1 per 10 primary samples
	Water	Split duplicate	1 per 20 primary samples	1 per 20 primary samples
	Water	Rinsate blank	1 per item	1 per piece of reusable equipment (interface meter) – taken each day
	Water	Trip blank	1 per esky	1 per esky
	Water	Field blank	1 per day	1 per day
Surfacewater	Water	Blind duplicate	1 per 20 primary samples	1 per 10 primary samples
	Water	Split duplicate	1 per 20 primary samples	1 per 20 primary samples
	Water	Rinsate blank	1 per item	1 per piece of reusable equipment (sampling stick)
	Water	Trip blank	1 per esky	1 per esky
	Water	Field blank	1 per day	1 per day

B-4-2 Quality control duplicate results

An overview of the quality control samples collected over the 12-month monitoring period are provided in Table B-2. Certificates of Analysis provided by the primary (duplicate sample) and secondary (split sample) laboratories are included in **Error! Reference source not found.**.

Table B-2 Quality control duplicate samples

INVESTIGATION	PRIMARY SAMPLE FIELD ID/ LABORATORY SAMPLE ID	SAMPLE TYPE	QC SAMPLE FIELD ID	QC SAMPLE LAB REPORT NUMBER / LABORATORY SAMPLE ID	DATE SAMPLED
Groundwater	BORR_MW19 EP1908386-004	Duplicate	FD01	EP1908386-011	19/08/2019
	BORR_MW19 EP1908386-004	Split	FS01	672975 - M19-Au34641	19/08/2019
	BORR_MW04 EP1908496-007	Duplicate	FD03	EP1908496-008	21/08/2019
	BORR_MW18 EP1909465-005	Duplicate	FD01	EP1909465-013	16/09/2019
	BORR_MW18 EP1909465-005	Split	FS01	678265 - P19-Se32570	16/09/2019

INVESTIGATION	PRIMARY SAMPLE FIELD ID/ LABORATORY SAMPLE ID	SAMPLE TYPE	QC SAMPLE FIELD ID	QC SAMPLE LAB REPORT NUMBER / LABORATORY SAMPLE ID	DATE SAMPLED
	BORR_MW32 EP1909465-022	Duplicate	FD02	EP1909465-023	17/09/2019
	BORR_MW37 EP1910998-008	Duplicate	FD02	EP1910998-009	23/10/2019
	BH32.1 EP1910998-014	Duplicate	FD03	EP1910998-015	24/10/2019
	BH32.1 EP1910998-014	Split	FS01	685136 - P19-Oc44630	24/10/2019
	BORR MW19b EP1912183-009	Duplicate	FD01	EP1912183-012	18/11/2019
	BORR MW19b EP1912183-009	Split	FS01	689319 - P19-No29824	18/11/2019
	BORR_MW37 EP1912183-023	Duplicate	FD03	EP1912183-032	19/11/2019
	BORR MW19b EP1913499-017	Duplicate	FD01	EP1913499-021	17/12/2019
	BORR MW12 EP1913643-026	Duplicate	FD03	EP1913643-027	19/12/2019
	BORR MW12 EP1913643-026	Split	FS01	695412 - P20-Ja00520	19/12/2019
	BORR_MW05 EP2000762-009	Duplicate	FD01	EP2000762-014	20/01/2020
	BORR_MW12 EP2000814-002	Duplicate	FD03	EP2000814-004	22/01/2020
	BORR_MW12 EP2000814-002	Split	FS01	698442- P20-Ja23488	22/01/2020
	BORR_MW13 EP2001737014	Duplicate	FD02	EP2001737013	17/02/2020
	BORR_MW10 EP2001737023	Duplicate	FD03	EP2001737020	18/02/2020
	BORR_MW10 EP2001737023	Split	FS01	702937 - P20-Fe25017	18/02/2020
	BORR_MW13	Duplicate	FD01	EP2002914022	16/03/2020

INVESTIGATION	PRIMARY SAMPLE FIELD ID/ LABORATORY SAMPLE ID	SAMPLE TYPE	QC SAMPLE FIELD ID	QC SAMPLE LAB REPORT NUMBER / LABORATORY SAMPLE ID	DATE SAMPLED
	EP2002914009				
	BH11.1 EP2002914011	Duplicate	FD03	EP2002914025	17/03/2020
	BH11.1 EP2002914011	Split	FS01	708662 - M20-Ma27926	17/03/2020
	BH32.1 EP2004114011	Duplicate	FD01	EP2004114012	21/04/2020
	BORR_MW13 EP2004276023	Duplicate	FD03	EP2004276029	23/04/2020
	BH32.1 EP2004114011	Split	FS01	715089 - P20-Ap31439	21/04/2020
	BORR_MW05 EP2005242003	Duplicate	FD01	EP2005242004	18/05/2020
	BORR_MW05 EP2005242003	Duplicate	FD01	EP2005242004	18/05/2020
	BORR_MW05 EP2005242003	Split	FS01	720880 - P20-My30624	18/05/2020
	BORR_MW19b EP2006304010	Duplicate	FD01	EP2006304011	15/06/2020
	BORR_MW39 EP2006334003	Duplicate	FD02	EP2006334009	17/06/2020
	BORR_MW19b EP2006304010	Split	FS01	726271 - M20-Jn29288	15/06/2020
	BORR_MW37 EP2007640-010	Duplicate	WFD03	EP2007640012	20/07/2020
	BORR_MW32 EP2007638-012	Split	WFS01	733336 - P20-Jl36445	20/07/2020
	BORR_MW37 EP2007640-010	Split	WFS02	733336 - P20-Jl36446	20/07/2020
	BORR_MW32 EP2007638012	Duplicate	WFD02	EP2007638015	21/07/2020
	BORR_MW09 EP2007908003	Duplicate	WFD05	EP2007908006	27/07/2020

INVESTIGATION	PRIMARY SAMPLE FIELD ID/ LABORATORY SAMPLE ID	SAMPLE TYPE	QC SAMPLE FIELD ID	QC SAMPLE LAB REPORT NUMBER / LABORATORY SAMPLE ID	DATE SAMPLED
Surface water	SW01 EP1908386-015	Duplicate	FD02	EP1908386-024	20/08/2019
	JT01 EP1909465-029	Duplicate	FD03	EP1909465-031	17/09/2019
	SW06 EP1910998-023	Duplicate	FD01	EP1910998-026	23/10/2019
	MT01 EP1912183-029	Duplicate	FD02	EP1912183-031	19/11/2019
	MT01 EP1913643-001	Duplicate	FD02	EP1913643-028	19/12/2019
	SW06 EP2000762-022	Duplicate	FD02	EP2000762-025	21/01/2020
	North Creek 2 EP2001737004	Duplicate	FD01	EP2001737006	17/02/2020
	JT01 EP2002914024	Duplicate	FD02	EP2002914023	17/03/2020
	JT01 EP2004276007	Duplicate	FD02	EP2004276004	22/04/2020
	Northern 3 EP2005328009	Duplicate	FD03	EP2005328010	20/05/2020
	SW06 EP2006334013	Duplicate	FD03	EP2006334010	17/06/2020
	WRM North 3 EP2007638004	Duplicate	WFD01	EP2007638005	20/07/2020
	Southern 3 EP2007769015	Duplicate	WFD04	EP2007769016	23/07/2020

B.4.3 Relative percentage difference calculations

Blind and split duplicate samples were assessed by calculating the relative percentage difference (RPD) between the primary, blind (duplicate) and/or split (interlab duplicate) samples.

A quantitative measure of the accuracy of the analytical results reported was made by calculating the RPDs between the primary, blind and split results in accordance with the procedure described in AS 4482.1 – 2005 (Standards Australia, 2005). According to AS 4482.1 – 2005, typical RPDs are expected to range between 30% and 50%; however, this may be higher for organics and for low concentrations of analytes.

The percentage for RPD results are dependent on the magnitude of the results in comparison to the concentration x Estimated Quantitation Limit (EQL also called LOR) and have been generated in Esdat as shown in Table B-3 below.

Table B-3 RPD Ranges

Concentration x EQL	RPD (%)
1 – 10	81%
10 – 30	50%
> 30	30%

RPD exceedance results have been highlighted in yellow in the **Error! Reference source not found.**, for groundwater and surface water results, and discussed below.

B.4.3.1 Groundwater duplicate and split (interlab duplicate) RPD results

August 2019 monitoring event

Fifteen RPD exceedances were recorded for acidity, ionic balance, and some metals and nutrients in total. Fourteen of the fifteen exceedances showed the duplicates having a higher concentration than the primary samples and were above the laboratory limit of reporting (LOR).

Since both primary and duplicate samples are still within the same order of magnitude, overall, primary samples are deemed acceptable to use and are not expected to affect the outcomes of this report.

September 2019 monitoring event

Nine RPD exceedances were recorded for acidity, Total Kjeldahl Nitrogen and some metals in total. Five of the nine exceedances showed that the primary samples had a higher concentration than the duplicates and are also above the laboratory LOR. The remaining exceedances showed that the duplicates had a high concentration than the primary samples.

In both cases, the primary samples are acceptable since they are all within the same order of magnitude as the duplicates and the LOR.

October 2019 monitoring event

Five RPD exceedances were recorded for acidity, ionic balance, and some metals and nutrients in total. Three of the five exceedances showed that the primary samples have a higher concentration than the duplicates and are also above the laboratory LOR. For the remaining two exceedances, even though the duplicate sample concentrations are higher, they are still within the same order of magnitude as the primary samples.

Therefore, it is considered that using primary samples results will not have any impact on the report outcomes.

November 2019 monitoring event

Twelve RPD exceedances were recorded for acidity, ionic balance, and some metals in total. Eight of the 12 exceedances showed that the duplicates have a higher concentration than the primary samples and are also above the laboratory LOR.

Both primary and duplicate samples are still within the same order of magnitude overall and therefore primary samples are deemed acceptable to use and are not expected to affect the outcomes of this report.

December 2019 monitoring event

Two RPD exceedances were recorded for two of the blind duplicate samples for ionic balance and copper (filtered). In both cases, the primary samples had the higher concentrations that are above the laboratory LOR than the duplicate samples and therefore acceptable to use the primary results.

January 2020 monitoring event

Four RPD exceedances were recorded for acidity, ionic balance, aluminium and nitrogen (total oxidised) (as N) ranging from 38% to 73%. Three of the four exceedances resulted from the primary sample having a higher concentration than the duplicate/split samples and being above the LOR. All were within the same order of magnitude and therefore, it is acceptable to use the primary sample results.

February 2020 monitoring event

Six RPD exceedances were recorded for metals (zinc (filtered) and aluminium), ionic balance, ammonia (as N), chloride and total dissolved solids (TDS) in total. Five of the six exceedances showed the duplicates having a higher concentration than the primary samples and were above the laboratory LOR.

Since both primary and duplicate samples are still within the same order of magnitude overall, primary samples are deemed acceptable to use and are not expected to affect the outcomes of this report.

March 2020 monitoring event

Ten RPD exceedances were recorded for ionic balance, major ions (calcium and magnesium (filtered)), nitrogen total and some metals (zinc, copper and nickel (filtered) as well as iron and aluminium) in total. Three of the ten exceedances showed that the primary samples had a higher concentration than the duplicates and are also above the laboratory LOR. The remaining exceedances showed that the duplicates had a high concentration than the primary samples.

In both cases, the primary samples are acceptable since the majority are within the same order of magnitude as the duplicates .

April 2020 monitoring event

Six RPD exceedances were recorded for electrical conductivity, acidity, chloride, ionic balance and some metals (zinc and nickel (filtered)) in total. Two of the six exceedances showed that the primary samples have a higher concentration than the duplicates and are also above the laboratory LOR. For the remaining four exceedances, even though the duplicate sample concentrations are higher, they are still within the same order of magnitude as the primary samples .

Therefore, it is considered that using primary samples results will not have any impact on the report outcomes.

May 2020 monitoring event

Eight RPD exceedances were recorded for ionic balance and metals (zinc and copper (filtered) and aluminium). Five of the eight exceedances showed that the primary samples have a higher concentration than the duplicates and are also above the laboratory LOR.

Both primary and duplicate samples are still within the same order of magnitude overall and therefore primary samples are deemed acceptable to use and are not expected to affect the outcomes of this report.

June 2020 monitoring event

Nine RPD exceedances were recorded for alkalinity, acidity, ammonia as N and some metals (zinc, copper and nickel (filtered) and aluminium. Eight out of the nine exceedances showed that the duplicate samples had the higher concentrations that are above the laboratory LOR than the primary samples.

However, since they are both still within the same order of magnitude, it is not expected to have an impact on the outcomes of the report. Therefore, it is acceptable to use the primary sample results.

July 2020 monitoring event

Ten RPD exceedances were recorded for acidity, ionic balance, ammonia as N, total phosphorus, aluminium, iron (filtered) and zinc (filtered) ranging from 31% to 157%. Eight of the ten exceedances resulted from the duplicate/split samples having a higher concentration than the primary sample and being above the LOR. However, all were within the same order of magnitude and therefore, it is acceptable to use the primary sample results.

B.4.3.2 Surface water duplicate RPD results

August 2019 monitoring event

Three RPD exceedances were recorded for copper, nickel and zinc, in the range around 150 – 160%. However, the concentrations reported for the primary sample were higher and above the LOR than the duplicate sample, therefore primary sample will be used as it is more conservative.

September 2019 monitoring event

Three RPD exceedances were recorded for copper, nickel and zinc, in the range around 150%. However, the concentrations reported for the primary sample were higher and above the LOR than the duplicate sample, therefore primary sample will be used as it is more conservative.

There were also two RPD exceedances for alkalinity which was reported to be 69%. The duplicate sample had a higher concentration than the primary sample, however both samples were within the same order of magnitude therefore the primary sample is acceptable. There were also five exceedances for TRH components where the blind duplicate sample had higher concentrations than the primary samples that are also above the laboratory LOR. However, since both concentrations were within the same order of magnitude, it is acceptable to use the primary sample results.

October 2019 monitoring event

In the October 2019 monitoring round, there were RPD exceedances for major ions-ionic balance, ammonia, ammonium and copper. Except for ionic balance for which both samples had concentrations within the same order of magnitude, the primary sample also had the higher concentrations than the duplicate sample and was also just above the LOR. Therefore it is more conservative to adopt the primary sample results.

November 2019 monitoring event

Three RPD exceedances were recorded for copper, nickel and zinc, in the range around 150%. However, the concentrations reported for the primary sample were higher and above the LOR than the duplicate sample, therefore primary sample will be used as it is more conservative.

Aluminium and acidity also exceeded the RPD threshold where the concentration of the duplicate sample was higher than that of the primary sample, however since they were both within the same order of magnitude, it is not expected to have an impact on the outcomes of the report. Therefore, the primary sample is acceptable.

December 2019 monitoring event

There were three RPD exceedances for the blind duplicate sample for major ions-ionic balance, ammonia and ammonium. For these, the primary sample had higher concentrations than the blind duplicate sample and were also above the laboratory LOR, but both samples were below the criteria trigger values.

Therefore, the primary samples can be used since both are within the same order of magnitude and to be more conservative.

January 2020 monitoring event

There were two RPD exceedances for ionic balance and aluminium (100% and 106% respectively). In both cases, the primary sample had a higher concentration than the duplicate sample and was also above the laboratory LOR. Therefore, it is more conservative to use the primary sample results.

February 2020 monitoring event

There were no RPD exceedances for surface water duplicate sample in the February 2020 monitoring round.

March 2020 monitoring event

There was one exceedance for acidity (as $CaCO_3$). However, the concentration reported for the primary sample was higher and above the LOR than the duplicate sample, therefore primary sample will be used as it is more conservative.

April 2020 monitoring event

There were two RPD exceedances for major ions-ionic balance and copper (filtered). One of the two exceedances showed the primary sample had the higher concentrations than the duplicate sample and was also above the LOR. Both samples had concentrations within the same order of magnitude, therefore it is more conservative to adopt the primary sample results.

May 2020 monitoring event

There was one exceedance for ionic balance. However, the concentration reported for the primary sample was higher and above the LOR than the duplicate sample, therefore primary sample will be used as it is more conservative.

June 2020 monitoring event

There were four RPD exceedances for reactive phosphorous as P, major ions-ionic balance, and some metals (aluminium and nickel (filtered)). For these, two of the four exceedances showed that the primary sample had higher concentrations than the blind duplicate sample and were also above the laboratory LOR. Therefore, the primary samples can be used since both are within the same order of magnitude and to be more conservative.

July 2020 monitoring event

There was only one RPD exceedance for ionic balance at 179%. The duplicate sample had a higher concentration than the primary sample and was also above the laboratory LOR. However, given both are within the same order of magnitude, it is acceptable to use the primary sample results.

B.4.4 Quality control blank sample results

Only four rinsate blank samples had exceedances for three analytes over three of the monitoring events:

- Copper was detected to be at 0.009 and 0.008 mg/L, above the laboratory LOR (0.001) in two of the August 2019 monitoring event samples.
- Zinc was detected to be at 0.006 mg/L, above the laboratory LOR (0.005) in one of the September 2019 monitoring event samples.
- Nickel was detected to be at 0.003 mg/L, above the laboratory LOR (0.001) in the February 2020 monitoring event sample.

Since these were low concentrations and within the same order of magnitude, it is not expected to have an impact on the outcomes of the report and considered to be acceptable to use the results from those monitoring events.

The results of all blanks collected from the 2019 and 2020 groundwater and surface water monitoring rounds is given in **Error! Reference source not found.**.

B.5 Laboratory quality control

ALS Environmental was used as the primary laboratory and Eurofins was used as the secondary laboratory for analysis of samples. Both laboratories are NATA accredited and conducted their own completed internal quality assurance/ quality control (QA/QC) procedures.

B.5.1 Laboratory LORs

All laboratory LORs were below adopted assessment criteria levels (Table 4-4 and Table 4-5).

B.5.2 Laboratory quality assurance and quality control procedures

The following laboratory quality assurance and quality control procedures were used during the investigation.

B.5.2.1 Laboratory duplicate samples

Laboratory duplicate sample analysis is the analysis of a laboratory derived duplicate sample from the process batch, at a rate equivalent to one in 20 samples per analytical batch, or one sample per batch if less than 20 samples are analysed in a batch. A laboratory duplicate provides data on the analytical precision and reproducibility of the analytical results.

The permitted ranges for the RPD of laboratory duplicates are dependent on the magnitude of the results in comparison to the level of reporting as shown in Table B-4 below.

Table B-4 Permitted laboratory duplicate RPD Ranges

MAGNITUDE OF RESULTS	PERMITTED RPD RANGE
< 10 x limit of reporting (LOR)	No limit
10 – 20 x LOR	0 – 50%
> 20 x LOR	0 – 20%

B.5.2.2 Method blank samples

Method or analysis blank sample analysis are the analysis of a sample that is as free as possible of the analytes of interest, but has been prepared the same as the samples under investigation. The analysis is to ascertain if laboratory reagents, glassware and other laboratory consumables contribute to the observed concentration of analytes in the process batch. The method blank should return analyte concentrations as 'not detected'.

B.5.2.3 Laboratory control samples

Laboratory control spike analysis is the analysis of either a reference material or a control matrix fortified with analytes representative of the analyte class. The purpose of laboratory control spike samples is to monitor method precision and accuracy independent of the sample matrix. Typically, the percentage recovery of the laboratory control spike sample is compared to the dynamic recovery limits based on the statistical analysis of the processed laboratory control spike sample analysis. Recoveries must lie between 70% and 130%.

B.5.2.4 Matrix spike samples

Matrix spike sample analysis is the analysis of one or more replicate portions of samples from the batch, after fortifying the additional portion(s) with known quantities of the analyte(s) of interest. The percentage recovery of target analyte(s) from matrix spike samples is used to determine the bias of the method in the specific sample matrix. Recoveries must lie between 70% and 130%.

B.5.2.5 Surrogate spike samples

Surrogate spike samples are samples with known additions of known amounts of compounds, which are similar to the analytes of interests in terms of extractability, recovery through clean-up procedures and response to chromatographic or other measurement. Surrogate compounds may be alkylated or halogenated analogues or structural isomers of analytes of interest. The purpose of surrogate spikes, which are added immediately before the sample extraction step, is to provide a check for every analysis that no gross processing errors have occurred, which could have led to significant analyte loss or faulty calculation. Recoveries must lie between 50% and 150%.

B.5.2.6 Internal standards

Internal standards are known additions of known amounts of compounds, which are not found in real samples, will not interfere with quantification of analytes of interest and may be separately and independently quantified. The purpose of internal standards in instrumental techniques is to provide independent signals, which serve to check the consistency of the analytical step. Internal standards are often used for organic compounds and some inorganic compounds.

Laboratory quality assurance and quality control results

Details of the interpretive quality control assessment report from the primary and secondary laboratories (only primary results reviewed) is provided with the laboratory Certificate of Analysis in **Error! Reference source not found.**, with a summary of main observations presented in Table B-5 below.

Table B–5 Laboratory quality control results – internal RPDs and recovery ranges

DATE	LABORATORY REPORT REFERENCE	LABORATORY INTERNAL DUPLICATE SAMPLE (RPD) VALUE RANGE (%)	LABORATORY CONTROL SPIKE RECOVERY RANGE (%)	MATRIX SPIKE SAMPLE RECOVERY RANGE (%)
August 2019	EP1908386	0.0 – 38.6	75.9 – 124.0	70.0 – 126.0
	EP1908496	0.0 – 18.2	48.7 – 125.0	69.9 – 129.0
	672975-W (secondary/split)	<1.0 – 12.0	92.0 – 119.0	70.0 – 118.0
September 2019	EP1909465	0.0 – 83.4	56.9 – 127.0	66.5 – 123.0
	EP1909602	0.0 – 17.3	61.5 – 127.0	71.0 – 126.0
	678265-W (secondary/split)	<1.0 – 28.0	70.0 – 118.0	85.0 – 114.0
October 2019	EP1910866	0.0 – 16.0	76.6 – 126.0	71.5 – 124.0
	EP1910998	0.0 – 39.3	71.2 – 123.0	70.9 – 128.0
	EP1911129	0.0 -40.0	77.2 – 125.0	69.4 – 126.0
	685136-W (secondary/split)	<1.0 – 24.0	75.0 – 118.0	74.0 – 113.0
November 2019	EP1912183	0.0 – 152.0	64.8 – 129.0	75.9 – 129.0
	EP1912321	0.0 – 60.2	76.3 – 126.0	71.0 – 129.0
	689319-W (secondary/split)	<1.0 – 20.0	88.0 – 116.0	74.0 – 116.0

DATE	LABORATORY REPORT REFERENCE	LABORATORY INTERNAL DUPLICATE SAMPLE (RPD) VALUE RANGE (%)	LABORATORY CONTROL SPIKE RECOVERY RANGE (%)	MATRIX SPIKE SAMPLE RECOVERY RANGE (%)
December 2019	EP1913499	0.0 – 14.5	46.4 – 125.0	71.0 – 126.0
	EP1913643	0.0 – 117.0	44.4 – 129.0	55.2 – 128.0
	695412-W (secondary/split)	<1.0 – 73.0	87.0 – 109.0	71.0 – 118.0
January 2020	EP2000814	0.0 – 65.2	34.0 – 126.0	51.3 – 128.0
	EP2000762	0.0 – 51.8	46.7 – 128.0	56.0 – 128.0
	698442-W (secondary/split)	<1.0 – 83.0	75.0 – 118.0	50.0 – 130.0
February 2020	EP2001737	0.0 – 93.3	57.6 – 127.0	54.6 – 127.0
	EP2001851	0.0 – 57.6	49.5 – 128.0	49.0 – 130.0
	702937-W (secondary/split)	<1.0 – 16.0	84.0 – 125.0	78.0 – 112.0
March 2020	EP2002914	0.0 – 80.0	60.4 – 126.0	75.2 – 126.0
	EP2002968	0.0 – 18.5	50.3 – 128.0	44.0 – 130.0
	708662-W (secondary/split)	<1.0 – 140.0	82.0 – 121.0	72.0 – 121.0
April 2020	EP2004114	0.0 – 77.3	86.4 – 119.0	77.9 – 127.0
	EP2004276	0.0 – 51.0	79.4 – 128.0	77.4 – 127.0
	715089-W (secondary/split)	<1.0 – 29.0	87.0 – 115.0	78.0 – 107.0
May 2020	EP2005242	0.0 – 22.8	87.1 – 119.0	90.9 – 130.0
	EP2005328	0.0 – 39.0	74.1 – 120.0	81.5 – 118.0
	720880-W (secondary/split)	<1.0 – 12.0	84.0 – 117.0	61.0 – 115.0
June 2020	EP2006304	0.0 – 35.0	83.0 – 120.0	82.6 – 118.0
	EP2006334	0.0 – 139.0	87.2 – 123.0	77.6 – 128.0
	726271-W (secondary/split)	<1.0 – 190.0	78.0 – 125.0	11.0 – 109.0
July 2020	EP2007640	0.0 – 30.7	88.3 – 112.0	89.8 – 130.0
	EP2007638	0.0 – 29.2	67.3 – 124.0	23.5 – 129.0
	EP2007769	0.0 – 71.7	93.1 – 116.0	78.7 – 119.0

DATE	LABORATORY REPORT REFERENCE	LABORATORY INTERNAL DUPLICATE SAMPLE (RPD) VALUE RANGE (%)	LABORATORY CONTROL SPIKE RECOVERY RANGE (%)	MATRIX SPIKE SAMPLE RECOVERY RANGE (%)
	EP2007909	0.0 – 34.7	90.9 – 115.0	88.4 – 120.0
	EP2007908	0.0 – 131.0	81.4 – 115.0	68.7 – 117.0
	EP2007775	0.0 – 35.1	74.0 – 126.0	45.3 – 127.0

The primary quality control results for groundwater and surface water presented in Appendix B are summarised below:

Laboratory duplicate recovery

All duplicate recoveries, reported as RPDs, were calculated to be within defined criteria.

Laboratory control spike recovery

All laboratory control spike (LCS) recoveries were within control limits except for the following:

- July 2020 (EP2007908): Total Kjeldahl Nitrogen as N (Recovery greater than upper control limit)
- July 2020 (EP2007909): Total Kjeldahl Nitrogen as N (Recovery greater than upper control limit)

Matrix spike recovery

Matrix spike outliers were identified for both the groundwater and surface water samples during the analysis and included the following:

- August 2019 (EP1908386): OP pesticides (malanthion and omethoate- recovery less than the lower data quality objective), nitrite and nitrate as N and glyphosate (matrix spike recovery not determined, background level greater than or equal to 4 x spike level).
- September 2019 (EP1909465): OP pesticides (bromophos-ethyl – recovery less than the lower data quality objective).
- October 2019 (EP1910866): Nitrite and nitrate as N (matrix spike not determined or background level greater than or equal to 4 x spike level), OP pesticides (azinphos-ethyl and tetrachlorvinphos had recovery less than the lower data quality objective).
- October 2019 (EP1911129): Hexavalent chromium (recovery less than the lower data quality objective).
- November 2019 (EP1912183): OP pesticides (demeton-O, demeton-O and demeton-S, demeton-S, demeton-S-methyl, disulfoton, fenamiphos, fenthion, phorate, sulprofos, temephos, terbufos – all reported a recovery less than the lower data quality objective).
- December 2019 (EP1913499): OP pesticides (phorate – recovery less than the lower data quality objective).
- January 2020 (EP2000814): Ammonia as N and nitrite plus nitrate as N (NOx) (matrix spike recovery not determined or background level greater than or equal to 4 x spike level), OP pesticides (fenchlorphos (ronnel) – recovery less than the lower data quality objective).
- January 2020 (EP2000762): OP pesticides (azinphos-ethyl – recovery less than the lower data quality objective).
- February 2020 (EP2001737): OP pesticides (diazinon) (matrix spike recovery not determined, background level greater than or equal to 4 x spike level).

- February 2020 (EP2001851): OP pesticides (disulfoton) (recovery less than the lower data quality objective).
- March 2020 (EP2002968): OP pesticides (demeton-s-methyl – recovery less than the lower data quality objective).
- March 2020 (EP2002914): OP pesticides (ethion – recovery less than the lower data quality objective).
- April 2020 (EP2004114): Nitrite and nitrate as N (matrix spike not determined or background level greater than or equal to 4 x spike level)
- April 2020 (EP2004276): Sulfate (turbidimetric) as SO_4 and chloride (matrix spike recovery not determined or background level greater than or equal to 4 x spike level)
- May 2020 (EP2005242): Manganese (matrix spike recovery not determined or background level greater than or equal to 4 x spike level)
- June 2020 (EP2006334): Dissolved metals (cadmium, zinc and manganese) (matrix spike recovery not determined or background level greater than or equal to 4 x spike level)
- July 2020 (EP2007638): OP pesticides (azinphos-ethyl and parathion) – recovery less than the lower data quality objective).

Analytes for which the matrix spike recovery data were reported as greater than or equal to four times spike level have the possibility exists that higher than expected concentrations have been reported. However, given the concentrations were all reported below the adopted guidelines or, at or below the LOR, it is unlikely that the matrix spike results will impact the conclusions of this report.

For analytes that reported recovery less than the lower data quality objective (OP pesticides and hexavalent chromium), concentrations were all reported below the LOR and therefore should not impact on the conclusions of this report.

Method blanks

There were no method blank outliers identified.

Holding times

Minor holding time exceedances to laboratory defined criteria for extraction/preparation as well as analysis were noted in laboratory reports for various groundwater and surface water samples across the 12 monitoring events.

- August 2019 (EP1908386 and EP1908496): three exceedances for extraction/preparation (1 day) and six exceedances for analysis of pH, BTEXN, OP pesticides and hydrocarbons in total (1 – 5 days).
- September 2019 (EP1909465 and EP1909602): two exceedances for analysis of pH (2 – 6 days).
- October 2019 (EP1910866, EP1910998 and EP1911129): four exceedances for analysis of pH and OP pesticides in total. (1 – 9 days)
- November 2019 (EP1912183 and EP1912321): three exceedances for analysis of pH and OP pesticides in total. (1 – 12 days)
- December 2019 (EP1913499 and EP1913643): four exceedances for analysis of pH, alkalinity and OP pesticides in total. (1 – 16 days)
- January 2020 (EP2000814 and EP2000762): two exceedances for analysis of pH, OP pesticides and reactive phosphorus as P in total. (1 – 6 days)
- February 2020 (EP2001737 and EP2001851): five exceedances for analysis of pH, OP pesticides, reactive phosphorus as P and sulfide as S^{2-} in total (1 – 9 days).
- March 2020 (EP2002968 and EP2002914): three exceedance for analysis of pH and reactive phosphorus as P in total. (1 – 8 days)

- April 2020 (EP2004114 and EP2004276): three exceedances for analysis of pH and reactive phosphorus as P in total. (3 – 12 days)
- May 2020 (EP2005242 and EP2005328): five exceedances for analysis of pH, reactive phosphorus as P and sulfide as S^{2-} in total. (1 – 8 days)
- June 2020 (EP2006304 and EP2006334): three exceedances for analysis of pH and reactive phosphorus as P in total. (1 - 8 days)
- July 2020 (EP2007638, EP2007640, EP2007769, EP2007908, EP2007909, EP2007775): six exceedances for analysis of pH in total. (4 - 8 days)

These discrepancies predominantly relate to pH, OP pesticides, reactive phosphorus as P or sulfide as S^{2-} (hydrocarbons, BTEXN and alkalinity being one off occurrences) with holding times ranging between 1 and 16 days overdue (see laboratory report results in **Error! Reference source not found.**). The majority of these exceedances ranged between 1-3 days overdue.

pH should be analysed for as soon as possible on the day the sample is collected, however due to the distance of the locations from the laboratory, this was not possible. Therefore pH was also measured while out in the field using a YSI to give a primary indication of the water quality. For analysis of reactive phosphorus as P, groundwater samples have a laboratory recommended holding time of 2 days, while for OP pesticides and sulfide as S^{2-} it is 7 days and for BTEXN and TRH it is 14 days. However, it is considered that these exceedances were marginal and are unlikely to impact the outcomes of the report.

B.5 Quality control and assurance summary

The results of the QA/QC procedures indicate that the groundwater and surface water monitoring results derived from the field, laboratory and analysis can be considered to be valid and reliable, and can be used to analyse and interpret the quality of groundwater and surface water of the sites. The majority of the found exceedances appear to be related to the low concentrations of the analytes detected within the water samples. As the concentrations between the primary and blind duplicate/split samples seem to be within the same order of magnitude or at minor concentrations, it is considered that these small differences and inconsistencies are insignificant and negligible, and are unlikely to have a major impact on the results or the outcomes of the report.

APPENDIX C

Field observations and data sheets

Groundwater Monitoring – Field Sheet

Client:			BORE ID: BH89.2
Project:			Job No.: 61370411
Location:	Casing diameter: 50 mm		Date: 21/08/19

BORE CONSTRUCTION

Head-works	☐ Flush-mount	☐ Monument	☐ Casing only	☐ Locked	Measurement Point	☐ Top of PVC Casing	Total Depth: 8.829 m

BORE DEVELOPMENT

Method:	Date:	Undertaken By:	Vol. Removed: L
Comments (e.g. sediment content):			

PURGING DETAILS (measurement points in meters below top of casing as indicated above)

Method: Peri-pump	Water Quality Meter used: YSI Pro.		Undertaken By: EE/DS
Depth to water: 1.910m	Water Column: m	Req Purge Vol. [1]: L	Flow Rate: L/min
Presence of LNAPL ☐	Presence of DNAPL ☐	Thickness of NAPL: cm	Depth to NAPL: m
Pump intake: m			

PURGING MEASUREMENTS [2]

Vol. Purged (L)	Elapsed Time (min)	EC (µS/cm)	Temp. (°C)	TDS (ppm|mg/L)	pH	DO %Sat	DO (ppm|mg/L)	Eh (mV)	Water Level (m b TOC)
AS 5667.11: 1998 (<+/-)		10%	0.2°C	-	10%	10%	10%	-	-
1L	3min	1574	18.2	1022.83	5.89	35.6	3.32	113.8	1.910
2L	6min	1574	18.1	1023.13	5.86	32.5	3.05	131.0	1.910
3L	9min	1578	18.1	1025.55	5.85	31.9	3.00	136.7	1.910

Comments (e.g. condition of headworks, sheen, colour, odour, sediment load):

clear - light brown, low sed, no odour, no sheen.

SAMPLING DETAILS		Sample ID:
Time:	Vol. Removed: L	No of Sample Containers:
Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):		
Field Filtered ☐	Duplicate Samples ☐	Duplicate Sample ID:
Comments:		

CoC Number:	Checked by:	Date:

1 Bores to be purged dry, until pH, T and EC readings stabilise or a minimum of 3 to 5 times the water column volumes. Water column volumes can be calculated from the following casing volumes per unit length: 40 mm ID - 1 L/m; 50 mm ID – 2 L/m; 100 mm ID 8 L/m.

2 Calibration details to be recorded in the instrument –specific calibration book, or in field notes as required by local procedures.

Groundwater Monitoring – Field Sheet

Client:			BORE ID: BH 11.1
Project:			Job No.: 6137041
Location:	Casing diameter: 50 mm		Date: 20/08/19.

BORE CONSTRUCTION

Head-works	☐ Flush-mount	☐ Monument	☐ Casing only	☐ Locked	Measurement Point ☐ Top of PVC Casing	Total Depth: 5.155 m

BORE DEVELOPMENT

Method:	Date:	Undertaken By:	Vol. Removed: L

Comments (e.g. sediment content):

PURGING DETAILS (measurement points in meters below top of casing as indicated above)

Method: Peri-pump	Water Quality Meter used: YSI Pro.		Undertaken By: EE/10
Depth to water: 1.975 m	Water Column: m	Req Purge Vol. [1]: L	Flow Rate: L/min
Presence of LNAPL ☐	Presence of DNAPL ☐	Thickness of NAPL: cm	Depth to NAPL: m
Pump intake: m			

PURGING MEASUREMENTS [2]

Vol. Purged (L)	Elapsed Time (min)	EC (µS/cm)	Temp. (°C)	TDS (ppm|mg/L)	pH	DO %Sat	DO (ppm|mg/L)	Eh (mV)	Water Level (m b TOC)
AS 5667.11: 1998 (<+/-)		10%	0.2°C	-	10%	10%	10%	-	-
1L	3min	1722	18.8	1117.53	6.59	13.2	1.21	-23.7	1.975
2L	6min	1654	18.7	1073.88	6.64	10.2	0.94	-34.4	1.975
3L	9min.	1607	18.7	1043.72	6.68	9.0	0.83	-40.0	1.975
4L	12min	1575	18.6	1036.91	6.68	8.1	0.75	-43.2	1.975
5L	15min	1593	18.6	1034.89	6.68	7.7	0.71	-43.6	1.975

Comments (e.g. condition of headworks, sheen, colour, odour, sediment load):

no odour, clear to light brown, no sheen, low sed.

SAMPLING DETAILS		Sample ID:
Time:	Vol. Removed: L	No of Sample Containers:

Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):

Field Filtered ☐	Duplicate Samples ☐	Duplicate Sample ID:

Comments:

CoC Number:	Checked by:	Date:

1 Bores to be purged dry, until pH, T and EC readings stabilise or a minimum of 3 to 5 times the water column volumes. Water column volumes can be calculated from the following casing volumes per unit length: 40 mm ID - 1 L/m; 50 mm ID – 2 L/m; 100 mm ID 8 L/m.

2 Calibration details to be recorded in the instrument –specific calibration book, or in field notes as required by local procedures.

Groundwater Monitoring – Field Sheet

Client:			BORE ID: BH32.1
Project:			Job No.: 6137041
Location:	Casing diameter: 50 mm		Date: 22/08/19

BORE CONSTRUCTION

Head-works	☐ Flush-mount ☐ Monument ☐ Casing only ☐ Locked	Measurement Point ☐ Top of PVC Casing	Total Depth: 10.161 m

BORE DEVELOPMENT

Method:	Date:	Undertaken By:	Vol. Removed: L

Comments (e.g. sediment content):

PURGING DETAILS (measurement points in meters below top of casing as indicated above)

Method: Peri-pump	Water Quality Meter used: YSI Pro		Undertaken By: EE/DS
Depth to water: 3.651 m	Water Column: m	Req Purge Vol. [1]: L	Flow Rate: 1L/3min L/min
Presence of LNAPL ☐	Presence of DNAPL ☐	Thickness of NAPL: cm	Depth to NAPL: m
Pump intake: m			

PURGING MEASUREMENTS [2]

Vol. Purged (L)	Elapsed Time (min)	EC (µS/cm)	Temp. (°C)	TDS (ppm|mg/L)	pH	DO %Sat	DO (ppm|mg/L)	Eh (mV)	Water Level (m b TOC)
AS 5667.11: 1998 (<+/-)		10%	0.2°C	-	10%	10%	10%	-	-
1	3min	5524	18.4	3590.875	4.76	27.0	2.33	164.1	~3.65
2	6min	5527	18.5	3592.253	4.54	13.3	1.21	195.5	~3.65
3	9min	5524	18.5	3591.855	4.49	9.8	0.89	219.1	~3.65
4	12 min	5521	18.5	3588.660	4.48	8.9	0.82	228.2	~3.65
5	15min	5520	18.5	3587.999	4.48	8.8	0.81	230.0	~3.65

Comments (e.g. condition of headworks, sheen, colour, odour, sediment load):

Clear to light brown, no odour, no sheen, low sed.

SAMPLING DETAILS		Sample ID: BH32.1
Time:	Vol. Removed: L	No of Sample Containers: 8

Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):

Field Filtered ☐	Duplicate Samples ☐	Duplicate Sample ID:

Comments:

CoC Number:	Checked by:	Date:

1 Bores to be purged dry, until pH, T and EC readings stabilise or a minimum of 3 to 5 times the water column volumes. Water column volumes can be calculated from the following casing volumes per unit length: 40 mm ID - 1 L/m; 50 mm ID – 2 L/m; 100 mm ID 8 L/m.

2 Calibration details to be recorded in the instrument –specific calibration book, or in field notes as required by local procedures.

Groundwater Monitoring – Field Sheet

Client:			BORE ID: BORE-MW04
Project:			Job No.: 6137041
Location:	Casing diameter: 50 mm		Date: 21/08/19

BORE CONSTRUCTION

Head-works	☐ Flush-mount	☐ Monument	☐ Casing only	☐ Locked	Measurement Point ☐ Top of PVC Casing	Total Depth: 13.235 m

BORE DEVELOPMENT

Method:	Date:	Undertaken By:	Vol. Removed: L
Comments (e.g. sediment content):			

PURGING DETAILS (measurement points in meters below top of casing as indicated above)

Method: Peri-pump	Water Quality Meter used: YSI Pro.		Undertaken By: EE/DS.
Depth to water: 3.985 m	Water Column: m	Req Purge Vol. [1]: L	Flow Rate: L/min
Presence of LNAPL ☐	Presence of DNAPL ☐	Thickness of NAPL: cm	Depth to NAPL: m
Pump intake: m			

PURGING MEASUREMENTS [2]

Vol. Purged (L)	Elapsed Time (min)	EC (µS/cm)	Temp. (°C)	TDS (ppm|mg/L)	pH	DO %Sat	DO (ppm|mg/L)	Eh (mV)	Water Level (m b TOC)
AS 5667.11: 1998 (<+/-)		10%	0.2°C	-	10%	10%	10%	-	-
1L	3min	3800	18.1	2462.61	6.62	9.2	0.84	-49.8	3.985
2L	6min	3523	18.2	2284.56	6.65	6.7	0.63	-48.0	3.985
3L	9min	3463	18.2	2250.15	6.66	6.4	0.59	-47.4	3.985
4L	12min	3403	18.2	2210.59	6.67	6.0	0.56	-48.1	3.985

Comments (e.g. condition of headworks, sheen, colour, odour, sediment load):

Sulfury odour, no sheen, low sed, clear to light brown

SAMPLING DETAILS		Sample ID:
Time:	Vol. Removed: L	No of Sample Containers:
Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):		
Field Filtered ☐	Duplicate Samples ☐	Duplicate Sample ID: FD03
Comments:		

CoC Number:	Checked by:	Date:

1 Bores to be purged dry, until pH, T and EC readings stabilise or a minimum of 3 to 5 times the water column volumes. Water column volumes can be calculated from the following casing volumes per unit length: 40 mm ID - 1 L/m; 50 mm ID – 2 L/m; 100 mm ID 8 L/m.

2 Calibration details to be recorded in the instrument –specific calibration book, or in field notes as required by local procedures.

Groundwater Monitoring – Field Sheet

Client:			BORE ID: BORE_MW05
Project:			Job No.: 613704
Location:	Casing diameter: 50 mm		Date: 21/08/19

BORE CONSTRUCTION

Head-works	☐ Flush-mount ☐ Monument ☐ Casing only ☐ Locked	Measurement Point ☐ Top of PVC Casing	Total Depth: 8.020 m

BORE DEVELOPMENT

Method:	Date:	Undertaken By:	Vol. Removed: L

Comments (e.g. sediment content):

PURGING DETAILS (measurement points in meters below top of casing as indicated above)

Method: Peri-pump	Water Quality Meter used: YSI Pro.		Undertaken By: EE/DS
Depth to water: 5.709 m	Water Column: m	Req Purge Vol. [1]: L	Flow Rate: L/min
Presence of LNAPL ☐	Presence of DNAPL ☐	Thickness of NAPL: cm	Depth to NAPL: m
Pump intake: m			

PURGING MEASUREMENTS [2]

Vol. Purged (L)	Elapsed Time (min)	EC (µS/cm)	Temp. (°C)	TDS (ppm|mg/L)	pH	DO %Sat	DO (ppm|mg/L)	Eh (mV)	Water Level (m b TOC)
AS 5667.11: 1998 (<+/-)		10%	0.2°C	-	10%	10%	10%	-	-
1L	3min	1318	19.8	855.18	6.47	9.8	0.88	-23.2	5.709
2L	6min	1265	19.7	822.25	6.44	7.2	0.66	-34.1	5.709
3L	9min	1096	19.6	709.59	6.41	6.9	0.63	-41.8	5.709
4L	12min	1015	19.6	659.83	6.32	7.0	0.64	-43.0	5.709

Comments (e.g. condition of headworks, sheen, colour, odour, sediment load):

Light brown, sulfury odour, no sheen, low sed

SAMPLING DETAILS

		Sample ID:
Time:	Vol. Removed: L	No of Sample Containers:

Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):

Field Filtered ☐	Duplicate Samples ☐	Duplicate Sample ID:

Comments:

CoC Number:	Checked by:	Date:

1 Bores to be purged dry, until pH, T and EC readings stabilise or a minimum of 3 to 5 times the water column volumes. Water column volumes can be calculated from the following casing volumes per unit length: 40 mm ID - 1 L/m; 50 mm ID – 2 L/m; 100 mm ID 8 L/m.

2 Calibration details to be recorded in the instrument –specific calibration book, or in field notes as required by local procedures.

Groundwater Monitoring – Field Sheet

Client:			BORE ID: BKR_MW06
Project:			Job No.: 61377041
Location:	Casing diameter: 50 mm		Date: 21/08/19

BORE CONSTRUCTION

Head-works	☐ Flush-mount ☐ Monument ☐ Casing only ☐ Locked	Measurement Point	☐ Top of PVC Casing	Total Depth: 7.850 m

BORE DEVELOPMENT

Method:	Date:	Undertaken By:	Vol. Removed: L
Comments (e.g. sediment content):			

PURGING DETAILS (measurement points in meters below top of casing as indicated above)

Method: Peri-pump	Water Quality Meter used: YSI Pro.		Undertaken By: EE/DS
Depth to water: 5.341 m	Water Column: m	Req Purge Vol. [1]: L	Flow Rate: L/min
Presence of LNAPL ☐	Presence of DNAPL ☐	Thickness of NAPL: cm	Depth to NAPL: m
Pump intake: m			

PURGING MEASUREMENTS [2]

Vol. Purged (L)	Elapsed Time (min)	EC (µS/cm)	Temp. (°C)	TDS (ppm|mg/L)	pH	DO %Sat	DO (ppm|mg/L)	Eh (mV)	Water Level (m b TOC)
AS 5667.11: 1998 (<+/-)		10%	0.2°C	-	10%	10%	10%	-	-
1L	3min	906	19.3	588.95	6.94	6.7	0.62	-118.5	5.341
2L	6min	1035	19.4	673.0	7.19	5.4	0.50	-132.9	5.341
3L	9min	904	19.3	584.16	7.00	6.0	0.55	-129.5	5.341
4L	12min	756	19.3	485.69	6.75	8.7	0.84	-85.3	5.341
5L	15min	548	19.1	352.23	6.43	15.4	1.48	-37.4	5.341
6L	18min	501.0	19.1	322.80	6.26	16.0	1.47	-18.9	5.341

Comments (e.g. condition of headworks, sheen, colour, odour, sediment load):

Organic odour, clear yellow, low sed, no sheen.

SAMPLING DETAILS		Sample ID:
Time:	Vol. Removed: L	No of Sample Containers:
Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):		
Field Filtered ☐	Duplicate Samples ☐	Duplicate Sample ID:
Comments:		
CoC Number:	Checked by:	Date:

1 Bores to be purged dry, until pH, T and EC readings stabilise or a minimum of 3 to 5 times the water column volumes. Water column volumes can be calculated from the following casing volumes per unit length: 40 mm ID - 1 L/m; 50 mm ID – 2 L/m; 100 mm ID 8 L/m.

2 Calibration details to be recorded in the instrument –specific calibration book, or in field notes as required by local procedures.

Groundwater Monitoring – Field Sheet

Client:			BORE ID: MW1 BORE_MW07
Project:			Job No.: 61377041
Location:	Casing diameter: 50 mm		Date: 22/08/19

BORE CONSTRUCTION

Head-works	☐ Flush-mount	☐ Monument	☐ Casing only	☐ Locked	Measurement Point	☐ Top of PVC Casing	Total Depth: 11.578 m

BORE DEVELOPMENT

Method:	Date:	Undertaken By:	Vol. Removed: L

Comments (e.g. sediment content):

PURGING DETAILS (measurement points in meters below top of casing as indicated above)

Method: Peri-pump / Bailer	Water Quality Meter used: YSI Pro.		Undertaken By: EE/DS
Depth to water: 9.999 m	Water Column: m	Req Purge Vol. [1]: L	Flow Rate: L/min
Presence of LNAPL ☐	Presence of DNAPL ☐	Thickness of NAPL: cm	Depth to NAPL: m
Pump intake: m			

PURGING MEASUREMENTS [2]

Vol. Purged (L)	Elapsed Time (min)	EC (µS/cm)	Temp. (°C)	TDS (ppm|mg/L)	pH	DO %Sat	DO (ppm|mg/L)	Eh (mV)	Water Level (m b TOC)
AS 5667.11: 1998 (<+/-)		10%	0.2°C	-	10%	10%	10%	-	-
~~1L~~	~~3min~~	~~1213~~	~~18.1~~	~~786.72~~	~~6.12~~	~~42.8~~	~~4.04~~	~~48.1~~	~~9.999~~
~~2L~~	~~6min~~	~~1059~~	~~17.7~~	~~687.76~~	~~6.13~~	~~49.2~~	~~4.64~~	~~53.5~~	9.999
~~3L~~	~~9min~~								
-	~~18min~~ 9min	933	18.9	606.41	6.20	56.3	5.22	105.4	-

Comments (e.g. condition of headworks, sheen, colour, odour, sediment load): ~~slow~~ ready recharge rate

WELL NOT RECHARGING – Bailer used – milky brown, turbid, no sheen, no odour

SAMPLING DETAILS

Time:	Vol. Removed: L	Sample ID:
		No of Sample Containers:

Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):

Field Filtered ☐	Duplicate Samples ☐	Duplicate Sample ID:

Comments:

CoC Number:	Checked by:	Date:

1 Bores to be purged dry, until pH, T and EC readings stabilise or a minimum of 3 to 5 times the water column volumes. Water column volumes can be calculated from the following casing volumes per unit length: 40 mm ID - 1 L/m; 50 mm ID – 2 L/m; 100 mm ID 8 L/m.

2 Calibration details to be recorded in the instrument –specific calibration book, or in field notes as required by local procedures.

Groundwater Monitoring – Field Sheet

Client:			BORE ID: BOR MW03a
Project:			Job No.: 61537041
Location:	Casing diameter: 50 mm		Date: 22/08/19.

BORE CONSTRUCTION

Head-works	☐ Flush-mount ☐ Monument ☐ Casing only ☐ Locked	Measurement Point	☐ Top of PVC Casing	Total Depth: 5.734 m

BORE DEVELOPMENT

Method:	Date:	Undertaken By:	Vol. Removed: L

Comments (e.g. sediment content):

PURGING DETAILS (measurement points in meters below top of casing as indicated above)

Method: Peri-pump	Water Quality Meter used: YSI Pro.		Undertaken By: EE/DS
Depth to water: 2.189 m	Water Column: m	Req Purge Vol. [1]: L	Flow Rate: L/min
Presence of LNAPL ☐	Presence of DNAPL ☐	Thickness of NAPL: cm	Depth to NAPL: m
Pump intake: m			

PURGING MEASUREMENTS [2]

Vol. Purged (L)	Elapsed Time (min)	EC (µS/cm)	Temp. (°C)	TDS (ppm|mg/L)	pH	DO %Sat	DO (ppm|mg/L)	Eh (mV)	Water Level (m b TOC)
AS 5667.11: 1998 (<+/-)		10%	0.2°C	-	10%	10%	10%	-	-
1	3min	633	18.2	411.148	5.86	25.1	2.34	53.8	~2.19
2	6min	627	18.1	407.693	5.73	11.0	1.02	47.8	~2.19
3	9min	625	18.1	406.479	5.71	9.0	0.84	45.4	~2.19
4	12min	626	18.0	406.950	5.70	8.2	0.77	43.7	~2.19
5	15min	626	18.0	406.943	5.70	7.9	0.75	43.5	~2.19

Comments (e.g. condition of headworks, sheen, colour, odour, sediment load): clear-brown, sulfur odour, no sheen low sed.

SAMPLING DETAILS		Sample ID:
Time:	Vol. Removed: L	No of Sample Containers:

Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):

Field Filtered ☐	Duplicate Samples ☐	Duplicate Sample ID:

Comments:

CoC Number:	Checked by:	Date:

1 Bores to be purged dry, until pH, T and EC readings stabilise or a minimum of 3 to 5 times the water column volumes. Water column volumes can be calculated from the following casing volumes per unit length: 40 mm ID - 1 L/m; 50 mm ID – 2 L/m; 100 mm ID 8 L/m.

2 Calibration details to be recorded in the instrument –specific calibration book, or in field notes as required by local procedures.

Groundwater Monitoring – Field Sheet

Client:			BORE ID: BORE_MW09
Project:			Job No.: 61370411
Location:	Casing diameter: 50 mm		Date: 22/08/19

BORE CONSTRUCTION

Head-works	☐ Flush-mount ☐ Monument ☐ Casing only ☐ Locked	Measurement Point	☐ Top of PVC Casing
		Total Depth:	5.319 m

BORE DEVELOPMENT

Method:	Date:	Undertaken By:	Vol. Removed: L

Comments (e.g. sediment content):

PURGING DETAILS (measurement points in meters below top of casing as indicated above)

Method: Peri-pump	Water Quality Meter used: YSI Pro		Undertaken By: EE/DS.
Depth to water: 3.356m	Water Column: m	Req Purge Vol. [1]: L	Flow Rate: L/min
Presence of LNAPL ☐	Presence of DNAPL ☐	Thickness of NAPL: cm	Depth to NAPL: m
Pump intake: m			

PURGING MEASUREMENTS [2]

Vol. Purged (L)	Elapsed Time (min)	EC (µS/cm)	Temp. (°C)	TDS (ppm|mg/L)	pH	DO %Sat	DO (ppm|mg/L)	Eh (mV)	Water Level (m b TOC)
AS 5667.11: 1998 (<+/-)		10%	0.2°C	-	10%	10%	10%	-	-
1L	3min	533	18.2	345.40	5.86	28.4	2.67	135.5	3.356
2L	6min	444.1	18.1	288.43	5.66	37.0	3.51	142.4	3.356.
3L	9min	419.1	18.1	270.93	5.64	38.7	3.66	146.7	3.356
4L	12min	402.1	18.0	262.40	5.61	41.0	3.88	152.8	3.356.
5L	15min	403.7	18.0	262.58	5.61	40.1	3.80	157.6	3.356

Comments (e.g. condition of headworks, sheen, colour, odour, sediment load):

clear, no sheen, low to no sed, no odour

SAMPLING DETAILS		Sample ID:
Time:	Vol. Removed: L	No of Sample Containers: 8

Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):

Field Filtered ☐	Duplicate Samples ☐	Duplicate Sample ID:

Comments:

CoC Number:	Checked by:	Date:

1 Bores to be purged dry, until pH, T and EC readings stabilise or a minimum of 3 to 5 times the water column volumes. Water column volumes can be calculated from the following casing volumes per unit length: 40 mm ID - 1 L/m; 50 mm ID – 2 L/m; 100 mm ID 8 L/m.

2 Calibration details to be recorded in the instrument –specific calibration book, or in field notes as required by local procedures.

Groundwater Monitoring – Field Sheet

Client:			BORE ID: BORE-MW10
Project:			Job No.: 61370411
Location:	Casing diameter: 50 mm		Date: 22/08/19

BORE CONSTRUCTION

Head-works	☐ Flush-mount ☐ Monument ☐ Casing only ☐ Locked	Measurement Point	☐ Top of PVC Casing	Total Depth: 3.945 m

BORE DEVELOPMENT

Method:	Date:	Undertaken By:	Vol. Removed: L
Comments (e.g. sediment content):			

PURGING DETAILS (measurement points in meters below top of casing as indicated above)

Method: Peri-pump	Water Quality Meter used: YSI Pro		Undertaken By: EE/DS
Depth to water: 1.361 m	Water Column: m	Req Purge Vol. [1]: L	Flow Rate: L/min
Presence of LNAPL ☐	Presence of DNAPL ☐	Thickness of NAPL: cm	Depth to NAPL: m
Pump intake: m			

PURGING MEASUREMENTS [2]

Vol. Purged (L)	Elapsed Time (min)	EC (µS/cm)	Temp. (°C)	TDS (ppm|mg/L)	pH	DO %Sat	DO (ppm|mg/L)	Eh (mV)	Water Level (m b TOC)
AS 5667.11: 1998 (<+/-)		10%	0.2°C	-	10%	10%	10%	-	-
1L	3min	747	16.9	485.36	5.78	13.2	1.25	8.3	1.361
2L	6min	734	16.6	476.75	5.76	8.2	0.79	7.8	1.361
3L	9min	698	16.5	441.20	5.73	7.1	0.69	12.0	1.361
4L	12min	631	16.4	407.29	5.72	6.8	0.67	13.8	1.361

Comments (e.g. condition of headworks, sheen, colour, odour, sediment load):

Slightly milky, no sheen, slight organic odour, low sed.

SAMPLING DETAILS		Sample ID:
Time:	Vol. Removed: L	No of Sample Containers: 8
Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):		
Field Filtered ☐	Duplicate Samples ☐	Duplicate Sample ID:
Comments:		
CoC Number:	Checked by:	Date:

1 Bores to be purged dry, until pH, T and EC readings stabilise or a minimum of 3 to 5 times the water column volumes. Water column volumes can be calculated from the following casing volumes per unit length: 40 mm ID - 1 L/m; 50 mm ID – 2 L/m; 100 mm ID 8 L/m.

2 Calibration details to be recorded in the instrument –specific calibration book, or in field notes as required by local procedures.

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Groundwater Monitoring – Field Sheet

Client:			BORE ID: BORE_MW11
Project:			Job No.: 6137041
Location:	Casing diameter: 50 mm		Date: 21/08/19

BORE CONSTRUCTION

Head-works	☐ Flush-mount ☐ Monument ☐ Casing only ☐ Locked	Measurement Point ☐ Top of PVC Casing	Total Depth: 3.979 m

BORE DEVELOPMENT

Method:	Date:	Undertaken By:	Vol. Removed: L

Comments (e.g. sediment content):

PURGING DETAILS (measurement points in meters below top of casing as indicated above)

Method: 1.25l	Water Quality Meter used:		Undertaken By: CE/DS
Depth to water: ~~3.979~~ m	Water Column: m	Req Purge Vol. [1]: L	Flow Rate: L/min
Presence of LNAPL ☐	Presence of DNAPL ☐	Thickness of NAPL: cm	Depth to NAPL: m
Pump intake: m			

PURGING MEASUREMENTS [2]

Vol. Purged (L)	Elapsed Time (min)	EC (µS/cm)	Temp. (°C)	TDS (ppm|mg/L)	pH	DO %Sat	DO (ppm|mg/L)	Eh (mV)	Water Level (m b TOC)
AS 5667.11: 1998 (<+/-)		10%	0.2°C	-	10%	10%	10%	-	-
1L	3min	4814	17.1	3123.98	6.80	10.4	0.96	11.3	1.251
2L	6min	4703	17.0	3048.10	6.84	8.4	0.79	12.1	1.251
3L	9min	4565	16.9	2949.38	6.86	7.6	0.72	18.1	1.251
4L	12min	4308	16.6	2790.78	6.89	7.7	0.75	28.4	1.251
5L	15min	3982	16.4	258.25	6.90	10.2	0.99	41.4	1.251
6L	18min	3934	16.3	2552.86	6.90	11.0	1.07	~~45~~.4	1.251

Comments (e.g. condition of headworks, sheen, colour, odour, sediment load):

Light brown, no odour, no sheen, low sed

SAMPLING DETAILS		Sample ID:
Time:	Vol. Removed: L	No of Sample Containers:

Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):

Field Filtered ☐	Duplicate Samples ☐	Duplicate Sample ID:

Comments:

CoC Number:	Checked by:	Date:

1 Bores to be purged dry, until pH, T and EC readings stabilise or a minimum of 3 to 5 times the water column volumes. Water column volumes can be calculated from the following casing volumes per unit length: 40 mm ID - 1 L/m; 50 mm ID – 2 L/m; 100 mm ID 8 L/m.

2 Calibration details to be recorded in the instrument –specific calibration book, or in field notes as required by local procedures.

Groundwater Monitoring – Field Sheet

Client:			BORE ID: BORR_MW12
Project:			Job No.: 61370411
Location:	Casing diameter: 50 mm		Date: 21/08/19

BORE CONSTRUCTION

Head-works	☐ Flush-mount ☐ Monument ☐ Casing only ☐ Locked	Measurement Point	☐ Top of PVC Casing	Total Depth: 4.418 m

BORE DEVELOPMENT

Method:	Date:	Undertaken By:	Vol. Removed: L

Comments (e.g. sediment content):

PURGING DETAILS (measurement points in meters below top of casing as indicated above)

Method: Peri-pump	Water Quality Meter used: YSI Pro		Undertaken By: EE/DS
Depth to water: 1.554 m	Water Column: m	Req Purge Vol. [1]: L	Flow Rate: L/min
Presence of LNAPL ☐	Presence of DNAPL ☐	Thickness of NAPL: cm	Depth to NAPL: m
Pump intake: m			

PURGING MEASUREMENTS [2]

Vol. Purged (L)	Elapsed Time (min)	EC (µS/cm)	Temp. (°C)	TDS (ppm|mg/L)	pH	DO %Sat	DO (ppm|mg/L)	Eh (mV)	Water Level (m b TOC)
AS 5667.11: 1998 (<+/-)		10%	0.2°C	-	10%	10%	10%	-	-
1L	3min	1154	17.2	739.02	6.29	9.4	0.90	12.0	1.554
2L	6min	897	17.0	579.83	6.14	9.8	0.95	36.7	1.554
3L	9min	738	16.9	476.98	6.07	12.5	1.21	48.9	1.554.
4L	12min	681	16.8	441.74	6.03	13.5	1.31	55.6	1.554
5L	15min	647	16.8	419.67	6.00	13.0	1.26	57.8	1.554.

Comments (e.g. condition of headworks, sheen, colour, odour, sediment load):

light brown, no odour, no sheen, low to mod sed.

SAMPLING DETAILS		Sample ID:
Time:	Vol. Removed: L	No of Sample Containers:

Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):

Field Filtered ☐	Duplicate Samples ☐	Duplicate Sample ID:

Comments:

CoC Number:	Checked by:	Date:

1 Bores to be purged dry, until pH, T and EC readings stabilise or a minimum of 3 to 5 times the water column volumes. Water column volumes can be calculated from the following casing volumes per unit length: 40 mm ID - 1 L/m; 50 mm ID – 2 L/m; 100 mm ID 8 L/m.

2 Calibration details to be recorded in the instrument –specific calibration book, or in field notes as required by local procedures.

Groundwater Monitoring – Field Sheet

Client:			BORE ID: ~~BH~~ BORE-MW13
Project:			Job No.: 61570411
Location:	Casing diameter: 50 mm		Date: 19/08/19

BORE CONSTRUCTION

Head-works	☐ Flush-mount ☐ Monument	☐ Casing only ☐ Locked	Measurement Point	☐ Top of PVC Casing	Total Depth: 4.398 m

BORE DEVELOPMENT

Method:	Date:	Undertaken By:	Vol. Removed: L

Comments (e.g. sediment content):

PURGING DETAILS (measurement points in meters below top of casing as indicated above)

Method: Peri pump	Water Quality Meter used: YSI		Undertaken By: EE | DS
Depth to water: 0.356 m	Water Column: m	Req Purge Vol. [1]: L	Flow Rate: L/min
Presence of LNAPL ☐	Presence of DNAPL ☐	Thickness of NAPL: cm	Depth to NAPL: m
Pump intake: m			

PURGING MEASUREMENTS [2]

Vol. Purged (L)	Elapsed Time (min)	EC (µS/cm)	Temp. (°C)	TDS (ppm|mg/L)	pH	DO %Sat	DO (ppm|mg/L)	Eh (mV)	Water Level (m b TOC)
AS 5667.11: 1998 (<+/-)		10%	0.2°C	-	10%	10%	10%	-	-
1L	3min	911	15.6	586.51	6.62	22.3	2.16	120.2	~~0.356~~ 0.35
2L	6min	896	15.6	582.075	6.42	13.1	1.28	71.7	0.35
3L	9min	893	15.6	580.89	6.41	11.5	1.14	63.4	0.35
4L	12min	891	15.7	579.53	6.38	10.7	1.05	58.4	0.35
5L	15min	890	15.7	578.90	6.37	10.00	0.99	<7.0	

Comments (e.g. condition of headworks, sheen, colour, odour, sediment load):

Clear, no odour, no sheen, low sed.

SAMPLING DETAILS		Sample ID:
Time:	Vol. Removed: L	No of Sample Containers:

Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):

Field Filtered ☐	Duplicate Samples ☐	Duplicate Sample ID:

Comments:

CoC Number:	Checked by:	Date:

1 Bores to be purged dry, until pH, T and EC readings stabilise or a minimum of 3 to 5 times the water column volumes. Water column volumes can be calculated from the following casing volumes per unit length: 40 mm ID - 1 L/m; 50 mm ID – 2 L/m; 100 mm ID 8 L/m.

2 Calibration details to be recorded in the instrument –specific calibration book, or in field notes as required by local procedures.

Groundwater Monitoring – Field Sheet

Client:			BORE ID: RORR-MW14
Project:			Job No.: 61370411
Location:	Casing diameter: 50 mm		Date: 19/08/19

BORE CONSTRUCTION

Head-works	☐ Flush-mount	☐ Monument	☐ Casing only	☐ Locked	Measurement Point	☐ Top of PVC Casing ☐ Top of Casing	Total Depth: 7.295 m

BORE DEVELOPMENT

Method:	Date:	Undertaken By:	Vol. Removed: L

Comments (e.g. sediment content):

PURGING DETAILS (measurement points in meters below top of casing as indicated above)

Method: Bailer	Water Quality Meter used: YSI		Undertaken By: EE/DS
Depth to water: 6.251 m	Water Column: m	Req Purge Vol. [1]: L	Flow Rate: L/min
Presence of LNAPL ☐	Presence of DNAPL ☐	Thickness of NAPL: cm	Depth to NAPL: m
Pump intake: m			

PURGING MEASUREMENTS [2]

Vol. Purged (L)	Elapsed Time (min)	EC (µS/cm)	Temp. (°C)	TDS (ppm|mg/L)	pH	DO %Sat	DO (ppm|mg/L)	Eh (mV)	Water Level (m b TOC)
AS 5667.11: 1998 (<+/-)		10%	0.2°C	-	10%	10%	10%	-	-
~~1L~~	~~3 min~~	358.4	22.0	232.97	6.70	92.8	8.04	166.1	
~~2L~~	~~6 min~~								
~~3L~~	~~9 min~~								

Comments (e.g. condition of headworks, sheen, colour, odour, sediment load): very slow recharge
Orange, high sed, no odour, no sheen - tried to filter in field but pump did not work (too turbid) - bailer used. too turbid. Please field filter at lab.

SAMPLING DETAILS		Sample ID:
Time:	Vol. Removed: L	No of Sample Containers:

Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):

Field Filtered ☐	Duplicate Samples ☐	Duplicate Sample ID:

Comments:

CoC Number:	Checked by:	Date:

1 Bores to be purged dry, until pH, T and EC readings stabilise or a minimum of 3 to 5 times the water column volumes. Water column volumes can be calculated from the following casing volumes per unit length: 40 mm ID - 1 L/m; 50 mm ID – 2 L/m; 100 mm ID 8 L/m.

2 Calibration details to be recorded in the instrument –specific calibration book, or in field notes as required by local procedures.

Groundwater Monitoring – Field Sheet

Client:			BORE ID: BORR_MW15
Project:			Job No.: 6137041
Location:	Casing diameter: 50 mm		Date: 19/08/19

BORE CONSTRUCTION

Head-works	☐ Flush-mount ☐ Monument ☐ Casing only ☐ Locked	Measurement Point	☐ Top of PVC Casing	Total Depth: 3.742 m

BORE DEVELOPMENT

Method: Peri pump	Date:	Undertaken By: EE/IO	Vol. Removed: L

Comments (e.g. sediment content):

PURGING DETAILS (measurement points in meters below top of casing as indicated above)

Method: Peri pump	Water Quality Meter used: YSI PRO		Undertaken By: EE/IO
Depth to water: 1.253 m	Water Column: m	Req Purge Vol. [1]: L	Flow Rate: L/min
Presence of LNAPL ☐	Presence of DNAPL ☐	Thickness of NAPL: cm	Depth to NAPL: m
Pump intake: m			

PURGING MEASUREMENTS [2]

Vol. Purged (L)	Elapsed Time (min)	EC (µS/cm)	Temp. (°C)	TDS (ppm|mg/L)	pH	DO %Sat	DO (ppm|mg/L)	Eh (mV)	Water Level (m b TOC)
AS 5667.11: 1998 (<+/-)		10%	0.2°C	-	10%	10%	10%	-	-
1L	3min	147.7	16.5	95.74	5.73	16.2	1.56	4.6	1.253
2L	6 min	144.1	16.5	93.63	5.69	13.0	1.26	2.4	1.253
3L	9 min	144.6	16.4	93.99	5.67	12.0	1.17	-2.3	1.253

Comments (e.g. condition of headworks, sheen, colour, odour, sediment load):

Clear to light brown, sulfury odour, no sheen, low to no sed.

SAMPLING DETAILS		Sample ID:
Time:	Vol. Removed: L	No of Sample Containers:

Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):

Field Filtered ☐	Duplicate Samples ☐	Duplicate Sample ID:

Comments:

CoC Number:	Checked by:	Date:

1 Bores to be purged dry, until pH, T and EC readings stabilise or a minimum of 3 to 5 times the water column volumes. Water column volumes can be calculated from the following casing volumes per unit length: 40 mm ID - 1 L/m; 50 mm ID – 2 L/m; 100 mm ID 8 L/m.

2 Calibration details to be recorded in the instrument –specific calibration book, or in field notes as required by local procedures.

Groundwater Monitoring – Field Sheet

Client:			BORE ID: Background Bore_MW +3
Project:			Job No.: 61377041
Location:	Casing diameter: 50 mm		Date: 19/08/19.

BORE CONSTRUCTION

Head-works	☐ Flush-mount ☐ Monument	☐ Casing only ☐ Locked	Measurement Point ☐ Top of PVC Casing ☐ Top of Casing	Total Depth: 3.972 m

BORE DEVELOPMENT

Method:	Date:	Undertaken By:	Vol. Removed: L
Comments (e.g. sediment content):			

PURGING DETAILS (measurement points in meters below top of casing as indicated above)

Method: Peri, YSI	Water Quality Meter used:		Undertaken By: EE/DS.
Depth to water: 1.501 m	Water Column: m	Req Purge Vol. [1]: L	Flow Rate: L/min
Presence of LNAPL ☐	Presence of DNAPL ☐	Thickness of NAPL: cm	Depth to NAPL: m
Pump intake: m			

PURGING MEASUREMENTS [2]

Vol. Purged (L)	Elapsed Time (min)	EC (µS/cm)	Temp. (°C)	TDS (ppm|mg/L)	pH	DO %Sat	DO (ppm|mg/L)	Eh (mV)	Water Level (m b TOC)
AS 5667.11: 1998 (<+/-)		10%	0.2°C	-	10%	10%	10%	-	-
1L	3min	262.3	16.8	170.64	4.75	40.5	3.88	174.8	1.501
2L	6min	260.8	16.6	169.40	4.57	36.3	3.54	215.9	1.501
3L	9min	16.5	255.5	165.56	4.53	36.9	3.62	227.0	1.501
4L	12min	253.0	16.4	164.74	4.54	38.3	3.70	236.8	1.501

Comments (e.g. condition of headworks, sheen, colour, odour, sediment load):

Clear, no odour, no sheen, low-no sed.

SAMPLING DETAILS		Sample ID:
Time:	Vol. Removed: L	No of Sample Containers:
Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):		
Field Filtered ☐	Duplicate Samples ☐	Duplicate Sample ID:
Comments:		

CoC Number:	Checked by:	Date:

1 Bores to be purged dry, until pH, T and EC readings stabilise or a minimum of 3 to 5 times the water column volumes. Water column volumes can be calculated from the following casing volumes per unit length: 40 mm ID - 1 L/m; 50 mm ID – 2 L/m; 100 mm ID 8 L/m.

2 Calibration details to be recorded in the instrument –specific calibration book, or in field notes as required by local procedures.

Groundwater Monitoring – Field Sheet

Client:			BORE ID: BORE-MW19
Project:			Job No.: 61370411
Location:	Casing diameter: 50 mm		Date: 19/08/19

BORE CONSTRUCTION

Head-works	☐ Flush-mount ☐ Monument ☐ Casing only ☐ Locked	Measurement Point ☐ Top of PVC Casing	Total Depth: 2.589 m

BORE DEVELOPMENT

Method:	Date:	Undertaken By:	Vol. Removed: L

Comments (e.g. sediment content):

PURGING DETAILS (measurement points in meters below top of casing as indicated above)

Method:	Water Quality Meter used:		Undertaken By: EE/DS
Depth to water: 0.379 m	Water Column: m	Req Purge Vol. [1]: L	Flow Rate: L/min
Presence of LNAPL ☐	Presence of DNAPL ☐	Thickness of NAPL: cm	Depth to NAPL: m
Pump intake: m			

PURGING MEASUREMENTS [2]

Vol. Purged (L)	Elapsed Time (min)	EC (µS/cm)	Temp. (°C)	TDS (ppm|mg/L)	pH	DO %Sat	DO (ppm|mg/L)	Eh (mV)	Water Level (m b TOC)
AS 5667.11: 1998 (<+/-)		10%	0.2°C	-	10%	10%	10%	-	-
1L	3min	17746	15.9	0220.19	6.56	14.7	1.34	35.0	0.38
2L	6min	6045	15.6	3880.64	6.46	8.8	2.00	63.2	0.38
3L	9min	3801	14.6	2405.77	6.36	24.4	2.48	72.4	0.38
4L	12 min	2505	14.1	1603.79	6.21	29.9	3.05	91.9	0.38
5L	15min	2366	13.9	1539.84	6.16	29.1	2.97	103.9	0.38
6L	18 min	2364	13.9	1532.40	6.15	28.7	2.94	112.2	0.38

Comments (e.g. condition of headworks, sheen, colour, odour, sediment load):

clear, no odour, no sheen, low to no sed

SAMPLING DETAILS

Time:	Vol. Removed: L	Sample ID:
		No of Sample Containers:

Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):

Field Filtered ☑	Duplicate Samples ☑	Duplicate Sample ID: FQ01, FS01

Comments:

CoC Number:	Checked by:	Date:

1 Bores to be purged dry, until pH, T and EC readings stabilise or a minimum of 3 to 5 times the water column volumes. Water column volumes can be calculated from the following casing volumes per unit length: 40 mm ID - 1 L/m; 50 mm ID – 2 L/m; 100 mm ID 8 L/m.

2 Calibration details to be recorded in the instrument –specific calibration book, or in field notes as required by local procedures.

Groundwater Monitoring – Field Sheet

Client:			BORE ID: BORE-MW196
Project:			Job No.: 61370411
Location:	Casing diameter: 50 mm		Date: 19/08/19

BORE CONSTRUCTION

Head-works	☒ Flush-mount ☐ Monument ☐ Casing only ☐ Locked	Measurement Point ☐ Top of PVC Casing	Total Depth: 12.135 m

BORE DEVELOPMENT

Method:	Date:	Undertaken By:	Vol. Removed: L
Comments (e.g. sediment content):			

PURGING DETAILS (measurement points in meters below top of casing as indicated above)

Method: Peri-pump, YSI	Water Quality Meter used: YSI Pro		Undertaken By: EE/DS.
Depth to water: 0.515 m	Water Column: m	Req Purge Vol. [1]: L	Flow Rate: 1L/3min L/min
Presence of LNAPL ☐	Presence of DNAPL ☐	Thickness of NAPL: cm	Depth to NAPL: m
Pump intake: m			

PURGING MEASUREMENTS [2]

Vol. Purged (L)	Elapsed Time (min)	EC (µS/cm)	Temp. (°C)	TDS (ppm|mg/L)	pH	DO %Sat	DO (ppm|mg/L)	Eh (mV)	Water Level (m b TOC)
AS 5667.11: 1998 (<+/-)		10%	0.2°C	-	10%	10%	10%	-	-
1L	3min	2320	18.1	1518.61	5.72	21.8	1.95	42.6	0.515
2L	6min	2379	18.2	1546.01	5.64	9.8	0.91	34.1	0.515
3L	9 min	2378	18.2	1545.42	5.65	8.8	0.81	25.5	0.515
4L	12 min	2377	18.2	1545.17	5.65	7.9	0.74	15.0	0.515
5L	15min	2376	18.2	1544.20	5.66	7.4	0.69	7.5	0.515

Comments (e.g. condition of headworks, sheen, colour, odour, sediment load):

clear, slightly cloudy, brown, no odour, no sheen, low sed.

SAMPLING DETAILS		Sample ID:
Time:	Vol. Removed: L	No of Sample Containers:
Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):		
Field Filtered ☐	Duplicate Samples ☐	Duplicate Sample ID:
Comments:		

CoC Number:	Checked by:	Date:

1 Bores to be purged dry, until pH, T and EC readings stabilise or a minimum of 3 to 5 times the water column volumes. Water column volumes can be calculated from the following casing volumes per unit length: 40 mm ID - 1 L/m; 50 mm ID – 2 L/m; 100 mm ID 8 L/m.

2 Calibration details to be recorded in the instrument –specific calibration book, or in field notes as required by local procedures.

Groundwater Monitoring – Field Sheet

Client:			BORE ID: ~~MW20~~ BORR_MW20
Project:			Job No.: ~~6130~~ 6137041
Location:	Casing diameter: 50 mm		Date: 19/8

BORE CONSTRUCTION

Head-works	☒ Flush-mount ☐ Monument	☐ Casing only ☐ Locked	Measurement Point ☐ Top of PVC Casing	Total Depth: 14.600 m

BORE DEVELOPMENT

Method:	Date:	Undertaken By:	Vol. Removed: L

Comments (e.g. sediment content):

PURGING DETAILS (measurement points in meters below top of casing as indicated above)

Method: Peri pump	Water Quality Meter used: YSI Pro		Undertaken By: DS/EE
Depth to water: 0.462 m	Water Column: m	Req Purge Vol. [1]: L	Flow Rate: 1 L/3min L/min
Presence of LNAPL ☐	Presence of DNAPL ☐	Thickness of NAPL: cm	Depth to NAPL: m
Pump intake: m			

PURGING MEASUREMENTS [2]

Vol. Purged (L)	Elapsed Time (min)	EC (µS/cm)	Temp. (°C)	TDS (ppm|mg/L)	pH	DO %Sat	DO (ppm|mg/L)	Eh (mV)	Water Level (m b TOC)
AS 5667.11: 1998 (<+/-)		10%	0.2°C	-	10%	10%	10%	-	-
1	3min	5750	17.6	3737.18	5.45	20.3	1.88	191.4	0.462
2	6min	5728	17.8	3720.52	5.44	16	1.49	194.8	0.462
3	9 min	5663	17.8	3672.99	5.44	15.1	1.39	190.0	0.462
4	12 min	5525	17.8	3580.31	5.45	13.4	1.25	180.5	0.462
5	15 min	5407	17.8	3513.17	5.46	12.1	1.13	171.3	0.462

Comments (e.g. condition of headworks, sheen, colour, odour, sediment load): muddy - organic odour, clear - light brown, no sheen, low to no sed

SAMPLING DETAILS		Sample ID: BORR_MW20
Time:	Vol. Removed: L	No of Sample Containers:

Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):

Field Filtered ☐	Duplicate Samples ☐	Duplicate Sample ID:

Comments:

CoC Number:	Checked by:	Date:

1 Bores to be purged dry, until pH, T and EC readings stabilise or a minimum of 3 to 5 times the water column volumes. Water column volumes can be calculated from the following casing volumes per unit length: 40 mm ID - 1 L/m; 50 mm ID – 2 L/m; 100 mm ID 8 L/m.

2 Calibration details to be recorded in the instrument –specific calibration book, or in field notes as required by local procedures.

Groundwater Monitoring – Field Sheet

Client:			BORE ID: BORE-MW22
Project:			Job No.: 6137041
Location:	Casing diameter: 50 mm		Date: 19/02/19

BORE CONSTRUCTION

Head-works	☐ Flush-mount ☐ Monument ☐ Casing only ☐ Locked	Measurement Point	☐ Top of PVC Casing	Total Depth: 1.485 m

BORE DEVELOPMENT

Method:	Date:	Undertaken By:	Vol. Removed: L
Comments (e.g. sediment content):			

PURGING DETAILS (measurement points in meters below top of casing as indicated above)

Method: Peri pump	Water Quality Meter used: YSI pro		Undertaken By: EE/DS
Depth to water: 0.335 m	Water Column: m	Req Purge Vol. [1]: L	Flow Rate: L/min
Presence of LNAPL ☐	Presence of DNAPL ☐	Thickness of NAPL: cm	Depth to NAPL: m
Pump intake: m			

PURGING MEASUREMENTS [2]

Vol. Purged (L)	Elapsed Time (min)	EC (µS/cm)	Temp. (°C)	TDS (ppm|mg/L)	pH	DO %Sat	DO (ppm|mg/L)	Eh (mV)	Water Level (m b TOC)
AS 5667.11: 1998 (<+/-)		10%	0.2°C	-	10%	10%	10%	-	-
1L	3min	715	14.2	460.10	6.68	36.6	3.75	-3.7	0.335
2L	6min	629	14.2	408.62	6.53	34.4	3.52	6.6	0.335
3L	9min	620	14.3	402.46	6.52	33.8	3.43	11.4	0.335

Comments (e.g. condition of headworks, sheen, colour, odour, sediment load):

clear, no odour, no sheen, low sed.

SAMPLING DETAILS		Sample ID:
Time:	Vol. Removed: L	No of Sample Containers:
Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):		
Field Filtered ☐	Duplicate Samples ☐	Duplicate Sample ID:
Comments:		

CoC Number:	Checked by:	Date:

1 Bores to be purged dry, until pH, T and EC readings stabilise or a minimum of 3 to 5 times the water column volumes. Water column volumes can be calculated from the following casing volumes per unit length: 40 mm ID - 1 L/m; 50 mm ID – 2 L/m; 100 mm ID 8 L/m.

2 Calibration details to be recorded in the instrument –specific calibration book, or in field notes as required by local procedures.

Groundwater Monitoring – Field Sheet

Client:			BORE ID: BORR_MW22b
Project:			Job No.: 6137041
Location:	Casing diameter: 50 mm		Date: 19/08/19

BORE CONSTRUCTION

Head-works	☐ Flush-mount ☐ Monument ☐ Casing only ☐ Locked	Measurement Point	☐ Top of PVC Casing	Total Depth: 13.200 m

BORE DEVELOPMENT

Method:	Date:	Undertaken By:	Vol. Removed: L

Comments (e.g. sediment content):

PURGING DETAILS (measurement points in meters below top of casing as indicated above)

Method: Peri pump	Water Quality Meter used: YSI Pro		Undertaken By: EE/DS.
Depth to water: 2.745 m	Water Column: m	Req Purge Vol. [1]: L	Flow Rate: 1L/3min L/min
Presence of LNAPL ☐	Presence of DNAPL ☐	Thickness of NAPL: cm	Depth to NAPL: m
Pump intake: m			

PURGING MEASUREMENTS [2]

Vol. Purged (L)	Elapsed Time (min)	EC (µS/cm)	Temp. (°C)	TDS (ppm|mg/L)	pH	DO %Sat	DO (ppm|mg/L)	Eh (mV)	Water Level (m b TOC)
AS 5667.11: 1998 (<+/-)		10%	0.2°C	-	10%	10%	10%	-	-
1	3min	13369	19.1	8702.31	5.40	10.9	0.93	-93.4	2.745
2	6min	13536	19.2	8800.71	5.38	8.1	0.71	-95.8	2.745
3	9 min	13567	19.2	8819.74	5.41	7.4	0.65	102.3	2.745
4	12 min	13560	19.3	8812.31	5.39	6.7	0.59	-90.3	2.745
5	15 min	13543	19.3	8801.24	5.41	6.4	0.56	-88.9	2.745

Comments (e.g. condition of headworks, sheen, colour, odour, sediment load):

organic odour, dark brown to grey, clear, mod sed, no sheen.

SAMPLING DETAILS

Time:	Vol. Removed: L	Sample ID: BORR_MW22b
		No of Sample Containers: 8

Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):

Field Filtered ☐	Duplicate Samples ☐	Duplicate Sample ID:

Comments:

CoC Number:	Checked by:	Date:

1 Bores to be purged dry, until pH, T and EC readings stabilise or a minimum of 3 to 5 times the water column volumes. Water column volumes can be calculated from the following casing volumes per unit length: 40 mm ID - 1 L/m; 50 mm ID – 2 L/m; 100 mm ID 8 L/m.

2 Calibration details to be recorded in the instrument –specific calibration book, or in field notes as required by local procedures.

Groundwater Monitoring – Field Sheet

Client:			BORE ID: BORE_MW24
Project:			Job No.: 61370411
Location:	Casing diameter: 50 mm		Date: 20/08/19

BORE CONSTRUCTION

Head-works	☐ Flush-mount	☐ Monument	☐ Casing only	☐ Locked	Measurement Point ☐ Top of PVC Casing	Total Depth: 9.860 m

BORE DEVELOPMENT

Method:	Date:	Undertaken By:	Vol. Removed: L
Comments (e.g. sediment content):			

PURGING DETAILS (measurement points in meters below top of casing as indicated above)

Method: Peri-pump	Water Quality Meter used: YSI Pro.		Undertaken By: EE / IO
Depth to water: 7.840m	Water Column: m	Req Purge Vol. [1]: L	Flow Rate: L/min
Presence of LNAPL ☐	Presence of DNAPL ☐	Thickness of NAPL: cm	Depth to NAPL: m
Pump intake: m			

PURGING MEASUREMENTS [2]

Vol. Purged (L)	Elapsed Time (min)	EC (µS/cm)	Temp. (°C)	TDS (ppm|mg/L)	pH	DO %Sat	DO (ppm|mg/L)	Eh (mV)	Water Level (m b TOC)
AS 5667.11: 1998 (<+/-)		10%	0.2°C	-	10%	10%	10%	-	-
1L	3min	1888	19.7	1227.14	4.12	27.7	2.50	277.2	7.840
2L	6min	1889	19.7	1227.93	4.10	24.7	2.26	303.9	7.840
3L	9min.	1885	19.7	1225.51	4.11	24.6	2.24	316.9	7.840
4L	12min	1882	19.7	1222.89	4.12	23.9	2.16	324.6	7.840
~~5L~~	~~15~~								

Comments (e.g. condition of headworks, sheen, colour, odour, sediment load):

No odour, no sheen, low sed, cloudy light brown.

SAMPLING DETAILS		Sample ID:
Time:	Vol. Removed: L	No of Sample Containers:
Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):		
Field Filtered ☐	Duplicate Samples ☐	Duplicate Sample ID:
Comments:		

CoC Number:	Checked by:	Date:

1 Bores to be purged dry, until pH, T and EC readings stabilise or a minimum of 3 to 5 times the water column volumes. Water column volumes can be calculated from the following casing volumes per unit length: 40 mm ID - 1 L/m; 50 mm ID – 2 L/m; 100 mm ID 8 L/m.

2 Calibration details to be recorded in the instrument –specific calibration book, or in field notes as required by local procedures.

Groundwater Monitoring – Field Sheet

Client:			BORE ID: BORE_MW25
Project:			Job No.: 6137041
Location:	Casing diameter: 50 mm		Date: 21/08/19

BORE CONSTRUCTION

Head-works	☐ Flush-mount ☐ Monument	☐ Casing only ☐ Locked	Measurement Point ☐ Top of PVC Casing	Total Depth: 13.139 m

BORE DEVELOPMENT

Method:	Date:	Undertaken By:	Vol. Removed: L

Comments (e.g. sediment content):

PURGING DETAILS (measurement points in meters below top of casing as indicated above)

Method: peri-pump	Water Quality Meter used: YSI Pro.		Undertaken By: EE/DS
Depth to water: 6.926 m	Water Column: m	Req Purge Vol. [1]: L	Flow Rate: L/min
Presence of LNAPL ☐	Presence of DNAPL ☐	Thickness of NAPL: cm	Depth to NAPL: m
Pump intake: m			

PURGING MEASUREMENTS [2]

Vol. Purged (L)	Elapsed Time (min)	EC (µS/cm)	Temp. (°C)	TDS (ppm|mg/L)	pH	DO %Sat	DO (ppm|mg/L)	Eh (mV)	Water Level (m b TOC)
AS 5667.11: 1998 (<+/-)		10%	0.2°C	-	10%	10%	10%	-	-
1L	3 min	3753	18.6	2439.57	5.58	8.4	0.77	53.4	6.926.
2L	6 min	3752	18.6	2440.98	5.51	7.3	0.67	60.8	6.926
3L	9 min	3747	18.5	2439.41	5.49	6.7	0.62	61.8	6.926.
4L	12 min	3736	18.6	2427.89	5.48	6.5	0.60	60.7	6.926.

Comments (e.g. condition of headworks, sheen, colour, odour, sediment load):

Clear to cloudy, organic odour, low to no sed, no sheen

SAMPLING DETAILS

Time:	Vol. Removed: L	Sample ID:
		No of Sample Containers:

Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):

Field Filtered ☐	Duplicate Samples ☐	Duplicate Sample ID:

Comments:

CoC Number:	Checked by:	Date:

1 Bores to be purged dry, until pH, T and EC readings stabilise or a minimum of 3 to 5 times the water column volumes. Water column volumes can be calculated from the following casing volumes per unit length: 40 mm ID - 1 L/m; 50 mm ID – 2 L/m; 100 mm ID 8 L/m.

2 Calibration details to be recorded in the instrument –specific calibration book, or in field notes as required by local procedures.

Groundwater Monitoring – Field Sheet

Client:		BORE ID: BORE_MW29.
Project:		Job No.: 6137041
Location:	Casing diameter: 50 mm	Date: 21/08/19

BORE CONSTRUCTION

Head-works	☐ Flush-mount	☐ Monument	☐ Casing only	☐ Locked	Measurement Point: ☐ Top of PVC Casing	Total Depth: 8.431 m

BORE DEVELOPMENT

Method:	Date:	Undertaken By:	Vol. Removed: L

Comments (e.g. sediment content):

PURGING DETAILS (measurement points in meters below top of casing as indicated above)

Method: Peri-pump	Water Quality Meter used: YSI Pro		Undertaken By: EE/DS
Depth to water: 5.684 m	Water Column: m	Req Purge Vol. [1]: L	Flow Rate: L/min
Presence of LNAPL ☐	Presence of DNAPL ☐	Thickness of NAPL: cm	Depth to NAPL: m
Pump intake: m			

PURGING MEASUREMENTS [2]

Vol. Purged (L)	Elapsed Time (min)	EC (µS/cm)	Temp. (°C)	TDS (ppm|mg/L)	pH	DO %Sat	DO (ppm|mg/L)	Eh (mV)	Water Level (m b TOC)
AS 5667.11: 1998 (<+/-)		10%	0.2°C	-	10%	10%	10%	-	-
1L	3min	975	18.1	634.38	5.00	9.9	0.92	40.7	5.684
2L	6min	979	18.1	635.94	5.00	7.5	0.70	41.1	5.684
3L	9min	975	18.1	633.88	5.09	6.7	0.63	37.5	5.684
4L	12min	969	18.1	629.63	5.02	6.4	0.60	80.4	5.864.

Comments (e.g. condition of headworks, sheen, colour, odour, sediment load):

clear to light, sulfury odour, no sheen, lowseed.

SAMPLING DETAILS		Sample ID:
Time:	Vol. Removed: L	No of Sample Containers:

Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):

Field Filtered ☐	Duplicate Samples ☐	Duplicate Sample ID:

Comments:

CoC Number:	Checked by:	Date:

1 Bores to be purged dry, until pH, T and EC readings stabilise or a minimum of 3 to 5 times the water column volumes. Water column volumes can be calculated from the following casing volumes per unit length: 40 mm ID - 1 L/m; 50 mm ID – 2 L/m; 100 mm ID 8 L/m.

2 Calibration details to be recorded in the instrument –specific calibration book, or in field notes as required by local procedures.

Groundwater Monitoring – Field Sheet

Client:			BORE ID: BORR_MW31
Project:			Job No.: 6137041
Location:	Casing diameter: 50 mm		Date: 21/8/19

BORE CONSTRUCTION

Head-works	☐ Flush-mount	☐ Monument	☐ Casing only	☐ Locked	Measurement Point	☐ Top of PVC Casing	Total Depth: 6.029 m

BORE DEVELOPMENT

Method:	Date:	Undertaken By:	Vol. Removed: L

Comments (e.g. sediment content):

PURGING DETAILS (measurement points in meters below top of casing as indicated above)

Method: Peri	Water Quality Meter used: YSI Pro		Undertaken By: EE/DS
Depth to water: 3.474 m	Water Column: m	Req Purge Vol. [1]: L	Flow Rate: L/min
Presence of LNAPL ☐	Presence of DNAPL ☐	Thickness of NAPL: cm	Depth to NAPL: m
Pump intake: m			

PURGING MEASUREMENTS [2]

Vol. Purged (L)	Elapsed Time (min)	EC (µS/cm)	Temp. (°C)	TDS (ppm|mg/L)	pH	DO %Sat	DO (ppm|mg/L)	Eh (mV)	Water Level (m b TOC)
AS 5667.11: 1998 (<+/-)		10%	0.2°C	-	10%	10%	10%	-	-
1L	3min	280.5	16.2	182.92	5.27	19.3	1.82	149.7	3.474
2L	6min	278.2	16.9	180.78	5.21	11.5	1.11	99.4	3.474
3L	9min	~~278.2~~	17.0	179.99	~~5.21~~	10.3	0.99	67.0	3.474
		277.0	~~17.0~~		5.18				
4L	12min	275.3	17.0	178.80	5.17	9.6	0.91	51.0	3.474

Comments (e.g. condition of headworks, sheen, colour, odour, sediment load):

clear to light brown, sulfury odour, no sheen, low sed.

SAMPLING DETAILS		Sample ID:
Time:	Vol. Removed: L	No of Sample Containers:

Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):

Field Filtered ☐	Duplicate Samples ☐	Duplicate Sample ID:

Comments:

CoC Number:	Checked by:	Date:

1 Bores to be purged dry, until pH, T and EC readings stabilise or a minimum of 3 to 5 times the water column volumes. Water column volumes can be calculated from the following casing volumes per unit length: 40 mm ID - 1 L/m; 50 mm ID – 2 L/m; 100 mm ID 8 L/m.

2 Calibration details to be recorded in the instrument –specific calibration book, or in field notes as required by local procedures.

Groundwater Monitoring – Field Sheet

Client:			BORE ID: BORR-MW32
Project:			Job No.: 61370411
Location:	Casing diameter: 50 mm		Date: 20/08/19

BORE CONSTRUCTION

Head-works	☐ Flush-mount ☐ Monument ☐ Casing only ☐ Locked	Measurement Point	☐ Top of PVC Casing	Total Depth: 5.075 m

BORE DEVELOPMENT

Method:	Date:	Undertaken By: EE / DIO	Vol. Removed: L

Comments (e.g. sediment content):

PURGING DETAILS (measurement points in meters below top of casing as indicated above)

Method: Peri pump	Water Quality Meter used: YSI Pro.		Undertaken By:
Depth to water: 2.120m	Water Column: m	Req Purge Vol. [1]: L	Flow Rate: L/min
Presence of LNAPL ☐	Presence of DNAPL ☐	Thickness of NAPL: cm	Depth to NAPL: m
Pump intake: m			

PURGING MEASUREMENTS [2]

Vol. Purged (L)	Elapsed Time (min)	EC (µS/cm)	Temp. (°C)	TDS (ppm|mg/L)	pH	DO %Sat	DO (ppm|mg/L)	Eh (mV)	Water Level (m b TOC)
AS 5667.11: 1998 (<+/-)		10%	0.2°C	-	10%	10%	10%	-	-
1L	3min	358.9	17.5	233.03	4.95	16.6	1.55	-3.3	2.120
2L	6min	324.7	17.4	210.46	5.15	8.7	0.83	-11.7	2.120
3L	9min	319.6	17.4	206.63	5.17	7.8	0.74	-14.2	2.120
4L	12min	317.0	17.5	206.17	5.21	7.3	0.70	-15.7	2.120

Comments (e.g. condition of headworks, sheen, colour, odour, sediment load):

organic odour, milky brown, mod sed, no sheen

SAMPLING DETAILS		Sample ID:
Time:	Vol. Removed: L	No of Sample Containers:

Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):

Field Filtered ☐	Duplicate Samples ☐	Duplicate Sample ID:

Comments:

CoC Number:	Checked by:	Date:

1 Bores to be purged dry, until pH, T and EC readings stabilise or a minimum of 3 to 5 times the water column volumes. Water column volumes can be calculated from the following casing volumes per unit length: 40 mm ID - 1 L/m; 50 mm ID – 2 L/m; 100 mm ID 8 L/m.

2 Calibration details to be recorded in the instrument –specific calibration book, or in field notes as required by local procedures.

Groundwater Monitoring – Field Sheet

Client:			BORE ID: BORE-MW37
Project:			Job No.: 61370411
Location:	Casing diameter: 50 mm		Date: 21/08/19.

BORE CONSTRUCTION

Head-works	☐ Flush-mount	☐ Monument	☐ Casing only	☐ Locked	Measurement Point ☐ Top of PVC Casing	Total Depth: 11.591 m

BORE DEVELOPMENT

Method: Peristaltic pump	Date:	Undertaken By:	Vol. Removed: L

Comments (e.g. sediment content):

PURGING DETAILS (measurement points in meters below top of casing as indicated above)

Method: Peri-Pump	Water Quality Meter used: YSI Pro.		Undertaken By: EE/DS.
Depth to water: 4.764 m	Water Column: m	Req Purge Vol. [1]: L	Flow Rate: L/min
Presence of LNAPL ☐	Presence of DNAPL ☐	Thickness of NAPL: cm	Depth to NAPL: m
Pump intake: m			

PURGING MEASUREMENTS [2]

Vol. Purged (L)	Elapsed Time (min)	EC (µS/cm)	Temp. (°C)	TDS (ppm|mg/L)	pH	DO %Sat	DO (ppm|mg/L)	Eh (mV)	Water Level (m b TOC)
AS 5667.11: 1998 (<+/-)		10%	0.2°C	-	10%	10%	10%	-	-
1L	3min	3524	18.6	2291.61	5.48	13.0	1.16	45.2	4.764
2L	6min	3542	18.8	2302.53	5.35	8.4	0.96	61.1	4.764
3L	9min	3539.	18.9	2300.85	5.34	7.1	0.65	57.3	4.764
4L	12min	~~2296.50~~	18.9	2296.50	5.36	6.7	0.61	51.3	4.764
		3531	~~18.~~						
5L	15min	3524	18.9	229098	5.35	6.4	0.58	48.2	4.764

Comments (e.g. condition of headworks, sheen, colour, odour, sediment load):

Organic odour, clear, no sheen, low to no sed.

SAMPLING DETAILS		Sample ID:
Time:	Vol. Removed: L	No of Sample Containers:

Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):

Field Filtered ☐	Duplicate Samples ☐	Duplicate Sample ID:

Comments:

CoC Number:	Checked by:	Date:

1 Bores to be purged dry, until pH, T and EC readings stabilise or a minimum of 3 to 5 times the water column volumes. Water column volumes can be calculated from the following casing volumes per unit length: 40 mm ID - 1 L/m; 50 mm ID – 2 L/m; 100 mm ID 8 L/m.

2 Calibration details to be recorded in the instrument –specific calibration book, or in field notes as required by local procedures.

Groundwater Monitoring – Field Sheet

Client:			BORE ID: BORR – MW39
Project:			Job No.: 6137041
Location:	Casing diameter: 50 mm		Date: 20/08/19

BORE CONSTRUCTION

Head-works	☑ Flush-mount	☐ Monument	☐ Casing only	☐ Locked	Measurement Point	☑ Top of PVC Casing	Total Depth: 13.965 m

BORE DEVELOPMENT

Method:	Date:	Undertaken By:	Vol. Removed: L

Comments (e.g. sediment content):

PURGING DETAILS (measurement points in meters below top of casing as indicated above)

Method: Peri-pump	Water Quality Meter used: ~~Horiba~~ YSI Pro		Undertaken By: EE/IO
Depth to water: 7.672m	Water Column: m	Req Purge Vol. [1]: L	Flow Rate: L/min
Presence of LNAPL ☐	Presence of DNAPL ☐	Thickness of NAPL: cm	Depth to NAPL: m
Pump intake: m			

PURGING MEASUREMENTS [2]

Vol. Purged (L)	Elapsed Time (min)	EC (µS/cm)	Temp. (°C)	TDS (ppm|mg/L)	pH	DO %Sat	DO (ppm|mg/L)	Eh (mV)	Water Level (m b TOC)
AS 5667.11: 1998 (<+/-)		10%	0.2°C	-	10%	10%	10%	-	-
1L	3min	404.8	19.0	262.64	5.27	9.2	0.85	145.0	7.672
2L	6min	408.2	18.9	265.07	5.24	7.4	0.68	165.1	7.672
3L	9min	373.4	18.9	242.10	5.20	6.8	0.64	178.0	7.672
4L	12min	366.6	18.8	238.17	5.16	6.7	0.63	190.0	7.672
5L	15min	369.2	18.8	239.88	5.16	6.7	0.63	191.5	7.672

Comments (e.g. condition of headworks, sheen, colour, odour, sediment load):

No odour, no sheen, orange-light Brn, low to no seds.

SAMPLING DETAILS		Sample ID: BORR_MW39
Time:	Vol. Removed: L	No of Sample Containers: 8

Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):

Field Filtered ☑	Duplicate Samples ☐	Duplicate Sample ID:

Comments:

CoC Number:	Checked by:	Date:

1 Bores to be purged dry, until pH, T and EC readings stabilise or a minimum of 3 to 5 times the water column volumes. Water column volumes can be calculated from the following casing volumes per unit length: 40 mm ID - 1 L/m; 50 mm ID – 2 L/m; 100 mm ID 8 L/m.

2 Calibration details to be recorded in the instrument –specific calibration book, or in field notes as required by local procedures.

Groundwater Monitoring – Field Sheet

Client:			BORE ID: BORE-MW 46
Project:			Job No.: 61370411
Location:	Casing diameter: 50 mm		Date: 21/08/19

BORE CONSTRUCTION

Head-works	☐ Flush-mount	☐ Monument	☐ Casing only	☐ Locked	Measurement Point	☐ Top of PVC Casing ☐ Top of Casing	Total Depth: 5.990 m

BORE DEVELOPMENT

Method:	Date:	Undertaken By:	Vol. Removed: L

Comments (e.g. sediment content):

PURGING DETAILS (measurement points in meters below top of casing as indicated above)

Method:	Water Quality Meter used:		Undertaken By: EE/DS.
Depth to water: 3.585m	Water Column: m	Req Purge Vol. [1]: L	Flow Rate: L/min
Presence of LNAPL ☐	Presence of DNAPL ☐	Thickness of NAPL: cm	Depth to NAPL: m
Pump intake: m			

PURGING MEASUREMENTS [2]

Vol. Purged (L)	Elapsed Time (min)	EC (µS/cm)	Temp. (°C)	TDS (ppm|mg/L)	pH	DO %Sat	DO (ppm|mg/L)	Eh (mV)	Water Level (m b TOC)
AS 5667.11: 1998 (<+/-)		10%	0.2°C	-	10%	10%	10%	-	-
1L	3min	306.2	18.6	193.64	6.46	54.4	5.08	87.5	3.585
2L	6min	247.7	18.6	160.25	6.34	53.3	4.98	90.2	3.585
3L	9min	238.0	18.6	154.60	6.28	52.7	4.92	93.1	3.585
4L	12min	235.8	18.7	153.18	6.25	52.6	4.89	93.0	3.585

Comments (e.g. condition of headworks, sheen, colour, odour, sediment load):

clear to light brown, low sed, no sheen, no odour.

SAMPLING DETAILS		Sample ID:
Time:	Vol. Removed: L	No of Sample Containers:

Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):

Field Filtered ☐	Duplicate Samples ☐	Duplicate Sample ID:

Comments:

CoC Number:	Checked by:	Date:

1 Bores to be purged dry, until pH, T and EC readings stabilise or a minimum of 3 to 5 times the water column volumes. Water column volumes can be calculated from the following casing volumes per unit length: 40 mm ID - 1 L/m; 50 mm ID – 2 L/m; 100 mm ID 8 L/m.

2 Calibration details to be recorded in the instrument –specific calibration book, or in field notes as required by local procedures.

Groundwater Monitoring – Field Sheet

Client:		BORE ID: MR-MW05
Project:		Job No.: 613704
Location:	Casing diameter: 50 mm	Date: 22/08/19

BORE CONSTRUCTION

Head-works: ☐ Flush-mount ☐ Monument ☐ Casing only ☐ Locked	Measurement Point: ☐ Top of PVC Casing	Total Depth: 4.884 m

BORE DEVELOPMENT

Method:	Date:	Undertaken By:	Vol. Removed: L

Comments (e.g. sediment content):

PURGING DETAILS (measurement points in meters below top of casing as indicated above)

Method: Peri-pump	Water Quality Meter used: YSI Pro.		Undertaken By: EEDS
Depth to water: 2.428 m	Water Column: m	Req Purge Vol. [1]: L	Flow Rate: L/min
Presence of LNAPL ☐	Presence of DNAPL ☐	Thickness of NAPL: cm	Depth to NAPL: m
Pump intake: m			

PURGING MEASUREMENTS [2]

Vol. Purged (L)	Elapsed Time (min)	EC (µS/cm)	Temp. (°C)	TDS (ppm|mg/L)	pH	DO %Sat	DO (ppm|mg/L)	Eh (mV)	Water Level (m b TOC)
AS 5667.11: 1998 (<+/-)		10%	0.2°C	-	10%	10%	10%	-	-
1L	3min	23535	17.7	5317.80	5.58	9.2	0.80	66.2	2.428
2L	6min	23709	17.6	5416.69	5.60	8.0	0.69	62.0	2.428
3L	9min	23732	17.6	5424.22	5.61	7.4	0.65	60.1	2.428
4L	12min	23681	17.5	5385.02	5.62	7.1	0.62	58.9	2.428

Comments (e.g. condition of headworks, sheen, colour, odour, sediment load):

light brown, sulphury odour, no sheen, mod sed.

SAMPLING DETAILS		Sample ID:
Time:	Vol. Removed: L	No of Sample Containers: 8

Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):

Field Filtered ☐	Duplicate Samples ☐	Duplicate Sample ID:

Comments:

CoC Number:	Checked by:	Date:

1 Bores to be purged dry, until pH, T and EC readings stabilise or a minimum of 3 to 5 times the water column volumes. Water column volumes can be calculated from the following casing volumes per unit length: 40 mm ID - 1 L/m; 50 mm ID – 2 L/m; 100 mm ID 8 L/m.

2 Calibration details to be recorded in the instrument –specific calibration book, or in field notes as required by local procedures.

Groundwater Monitoring – Field Sheet

Client:		BORE ID:	BH9.2
Project:		Job No.:	6137041
Location:	Casing diameter: 50 mm	Date:	17/09/19

BORE CONSTRUCTION

Head-works	☑ Flush-mount	☐ Monument	☐ Casing only	☐ Locked	Measurement Point	☐ Top of PVC Casing	Total Depth: 8.851 m

BORE DEVELOPMENT

Method:	Date:	Undertaken By:	Vol. Removed: L

Comments (e.g. sediment content):

PURGING DETAILS (measurement points in meters below top of casing as indicated above)

Method: Peri-pump	Water Quality Meter used: YSI Pro		Undertaken By: EE/DS
Depth to water: 1.659m	Water Column: m	Req Purge Vol. [1]: L	Flow Rate: L/min
Presence of LNAPL ☐	Presence of DNAPL ☐	Thickness of NAPL: cm	Depth to NAPL: m
Pump intake: m			

PURGING MEASUREMENTS [2]

Vol. Purged (L)	Elapsed Time (min)	EC (µS/cm)	Temp. (°C)	TDS (ppm|mg/L)	pH	DO %Sat	DO (ppm|mg/L)	Eh (mV)	Water Level (m b TOC)
AS 5667.11: 1998 (<+/-)		10%	0.2°C	-	10%	10%	10%	-	-
1L	3min	2110	18.8	1373	5.86	23.1	2.12	147.2	1.659
2L	6min	2138	18.7	1390	5.85	21.4	1.98	163.1	1.659
3L	9min	2140	18.7	1391	5.84	20.7	1.92	173.3	1.659
4L	12min	~~2141~~	18.7	1392	5.84	20.4	1.90	177.0	1.659

Comments (e.g. condition of headworks, sheen, colour, odour, sediment load):

Clear, low to mod sed, no odour, no sheen.

SAMPLING DETAILS		Sample ID:
Time:	Vol. Removed: L	No of Sample Containers: 8

Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):

Field Filtered ☑	Duplicate Samples ☐	Duplicate Sample ID:

Comments:

CoC Number:	Checked by:	Date:

1 Bores to be purged dry, until pH, T and EC readings stabilise or a minimum of 3 to 5 times the water column volumes. Water column volumes can be calculated from the following casing volumes per unit length: 40 mm ID - 1 L/m; 50 mm ID – 2 L/m; 100 mm ID 8 L/m.

2 Calibration details to be recorded in the instrument –specific calibration book, or in field notes as required by local procedures.

Groundwater Monitoring – Field Sheet

Client:			BORE ID: BH11.1
Project:			Job No.: 61370411
Location:	Casing diameter: 50 mm		Date: 17/09/19

BORE CONSTRUCTION

Head-works				Measurement Point		Total Depth:
	☒ Flush-mount	☐ Monument	☐ Casing only ☐ Locked		☐ Top of PVC Casing	5.071 m

BORE DEVELOPMENT

Method:	Date:	Undertaken By:	Vol. Removed: L

Comments (e.g. sediment content):

PURGING DETAILS (measurement points in meters below top of casing as indicated above)

Method: Peri-pump	Water Quality Meter used: YSI Pro.		Undertaken By: EE/DS
Depth to water: 1.863 m	Water Column: m	Req Purge Vol. [1]: L	Flow Rate: L/min
Presence of LNAPL ☐	Presence of DNAPL ☐	Thickness of NAPL: cm	Depth to NAPL: m
Pump intake: m			

PURGING MEASUREMENTS [2]

Vol. Purged (L)	Elapsed Time (min)	EC (µS/cm)	Temp. (°C)	TDS (ppm|mg/L)	pH	DO %Sat	DO (ppm|mg/L)	Eh (mV)	Water Level (m b TOC)
AS 5667.11: 1998 (<+/-)		10%	0.2°C	-	10%	10%	10%	-	-
1L	3min	1660	19.6	1079	6.59	7.5	0.60	-52.7	1.863
2L	6min	1619	19.5	1052	6.66	3.2	0.29	-66.9	1.863
3L	9min	1578	19.4	1025	6.71	2.2	0.20	-71.3	1.863
4L	12min	1558	19.4	1012	6.73	1.9	0.17	-72.8	1.863
5L	15min	1548	19.4	1006	6.73	1.7	0.16	-72.7	1.863

Comments (e.g. condition of headworks, sheen, colour, odour, sediment load):

yellow to light brown, low sed, no sheen, no odour.

SAMPLING DETAILS		Sample ID:
Time:	Vol. Removed: L	No of Sample Containers: 8

Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):

Field Filtered ☑	Duplicate Samples ☐	Duplicate Sample ID:

Comments:

CoC Number:	Checked by:	Date:

1 Bores to be purged dry, until pH, T and EC readings stabilise or a minimum of 3 to 5 times the water column volumes. Water column volumes can be calculated from the following casing volumes per unit length: 40 mm ID - 1 L/m; 50 mm ID – 2 L/m; 100 mm ID 8 L/m.

2 Calibration details to be recorded in the instrument –specific calibration book, or in field notes as required by local procedures.

Groundwater Monitoring – Field Sheet

Client: MRWA			BORE ID: BH32.1
Project: BORR Groundwater sampling – ~~30~~ Sept.			Job No.: 6137041
Location:	Casing diameter: 50 mm		Date: 16/9

BORE CONSTRUCTION

Head-works	☒ Flush-mount ☐ Monument	☐ Casing only	☐ Locked	Measurement Point ☐ Top of PVC Casing	Total Depth: 10.13 m

BORE DEVELOPMENT

Method:	Date:	Undertaken By:	Vol. Removed: L

Comments (e.g. sediment content):

PURGING DETAILS (measurement points in meters below top of casing as indicated above)

Method: Peri pump	Water Quality Meter used: YSI pro		Undertaken By: DS/EE
Depth to water: 3.46 m	Water Column: m	Req Purge Vol. [1]: L	Flow Rate: L/min
Presence of LNAPL ☐	Presence of DNAPL ☐	Thickness of NAPL: cm	Depth to NAPL: m
Pump intake: m			

PURGING MEASUREMENTS [2]

Vol. Purged (L)	Elapsed Time (min)	EC (µS/cm)	Temp. (°C)	TDS (ppm|mg/L)	pH	DO %Sat	DO (ppm|mg/L)	Eh (mV)	Water Level (m b TOC)
AS 5667.11: 1998 (<+/-)		10%	0.2°C	-	10%	10%	10%	-	-
1L	3min	7087	19.3	4621	4.60	8.1	0.71	40.7	3.46
2L	6min	7166	19.2	4658	4.60	4.6	0.41	13.1	3.46
3L	9min	7137	19.2	4637	4.61	3.9	0.35	11.1	3.46
4L	12min	7103	19.3	4615	4.61	2.1	0.19	10.4	3.46.
5L	15min	7072	19.3	4596	4.61	1.7	0.16	9.3	3.46

Comments (e.g. condition of headworks, sheen, colour, odour, sediment load):

No odour, no sheen, low sed, clear to light brown

SAMPLING DETAILS		Sample ID:
Time:	Vol. Removed: L	No of Sample Containers: 8

Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):

Field Filtered ☑	Duplicate Samples ☐	Duplicate Sample ID:

Comments:

CoC Number:	Checked by:	Date:

1 Bores to be purged dry, until pH, T and EC readings stabilise or a minimum of 3 to 5 times the water column volumes. Water column volumes can be calculated from the following casing volumes per unit length: 40 mm ID - 1 L/m; 50 mm ID – 2 L/m; 100 mm ID 8 L/m.

2 Calibration details to be recorded in the instrument –specific calibration book, or in field notes as required by local procedures.

Groundwater Monitoring – Field Sheet

Client:			BORE ID: BORE MW04
Project:			Job No.: 61370241
Location:	Casing diameter: 50 mm		Date: 18/09/19

BORE CONSTRUCTION

Head-works	☒ Flush-mount	☐ Monument	☐ Casing only	☐ Locked	Measurement Point	☐ Top of PVC Casing	Total Depth: 13.135 m

BORE DEVELOPMENT

Method:	Date:	Undertaken By:	Vol. Removed: L

Comments (e.g. sediment content):

PURGING DETAILS (measurement points in meters below top of casing as indicated above)

Method: peri-pump	Water Quality Meter used: YSI Pro.		Undertaken By: EE/LO
Depth to water: 3.882 m	Water Column: m	Req Purge Vol. [1]: L	Flow Rate: L/min
Presence of LNAPL ☐	Presence of DNAPL ☐	Thickness of NAPL: cm	Depth to NAPL: m
Pump intake: m			

PURGING MEASUREMENTS [2]

Vol. Purged (L)	Elapsed Time (min)	EC (µS/cm)	Temp. (°C)	TDS (ppm|mg/L)	pH	DO %Sat	DO (ppm|mg/L)	Eh (mV)	Water Level (m b TOC)
AS 5667.11: 1998 (<+/-)		10%	0.2°C	-	10%	10%	10%	-	-
1L	3min	3255	18.4	2115	6.70	4.2	0.38	-70.9	3.882
2L	6min	3230	18.4	2098	6.72	2.9	0.27	-76.4	3.882
3L	9min	3196	18.4	2077	6.73	2.4	0.22	-81.7	3.882
4L	12min	3090	17.9	2008	6.77	1.8	0.17	-93.6	3.882
5L	15min	3075	17.9	1998	6.77	1.6	0.15	-94.7	3.882

Comments (e.g. condition of headworks, sheen, colour, odour, sediment load):

clear - cloudy, no sheen, med sed, slight sulfur odour.

SAMPLING DETAILS		Sample ID:
Time:	Vol. Removed: L	No of Sample Containers: 8

Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):

Field Filtered ☑	Duplicate Samples ☐	Duplicate Sample ID:

Comments:

CoC Number:	Checked by:	Date:

1 Bores to be purged dry, until pH, T and EC readings stabilise or a minimum of 3 to 5 times the water column volumes. Water column volumes can be calculated from the following casing volumes per unit length: 40 mm ID - 1 L/m; 50 mm ID – 2 L/m; 100 mm ID 8 L/m.

2 Calibration details to be recorded in the instrument –specific calibration book, or in field notes as required by local procedures.

Groundwater Monitoring – Field Sheet

Client:			BORE ID: BORR MW05
Project:			Job No.: 61370411
Location:	Casing diameter: 50 mm		Date: 19/09/19

BORE CONSTRUCTION

Head-works	☒ Flush-mount	☐ Monument	☐ Casing only	☐ Locked	Measurement Point: ☐ Top of PVC Casing	Total Depth: 7.566 m

BORE DEVELOPMENT

Method:	Date:	Undertaken By:	Vol. Removed: L

Comments (e.g. sediment content):

PURGING DETAILS (measurement points in meters below top of casing as indicated above)

Method: Peri-pump	Water Quality Meter used: YSI Pro		Undertaken By: EE/IO
Depth to water: 5.647m	Water Column: m	Req Purge Vol. [1]: L	Flow Rate: L/min
Presence of LNAPL ☐	Presence of DNAPL ☐	Thickness of NAPL: cm	Depth to NAPL: m
Pump intake: m			

PURGING MEASUREMENTS [2]

Vol. Purged (L)	Elapsed Time (min)	EC (µS/cm)	Temp. (°C)	TDS (ppm|mg/L)	pH	DO %Sat	DO (ppm|mg/L)	Eh (mV)	Water Level (m b TOC)
AS 5667.11: 1998 (<+/-)		10%	0.2°C	-	10%	10%	10%	-	-
1L	3min	1273	19.7	826	6.65	4.2	0.38	-96.9	5.647
2L	6min	1200	19.8	779	6.60	3.3	0.31	-90.4	5.647
3L	9min	1149	19.8	746	6.57	2.8	0.25	-86.2	5.647
4L	12min	1119	19.7	726	6.55	2.5	0.22	-85.8	5.647
5L	15min	1077	19.8	699	6.52	2.3	0.21	-87.3	5.647
6L	18min	1071	19.8	696	6.52	2.2	0.20	-87.7	5.647

Comments (e.g. condition of headworks, sheen, colour, odour, sediment load):

Clear, Sulfur odour, low sed, no sheen.

SAMPLING DETAILS		Sample ID:
Time:	Vol. Removed: L	No of Sample Containers: 8

Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):

Field Filtered ☑	Duplicate Samples ☐	Duplicate Sample ID:

Comments:

CoC Number:	Checked by:	Date:

1 Bores to be purged dry, until pH, T and EC readings stabilise or a minimum of 3 to 5 times the water column volumes. Water column volumes can be calculated from the following casing volumes per unit length: 40 mm ID - 1 L/m; 50 mm ID – 2 L/m; 100 mm ID 8 L/m.

2 Calibration details to be recorded in the instrument –specific calibration book, or in field notes as required by local procedures.

Groundwater Monitoring – Field Sheet

Client:		BORE ID:	BORE MW06
Project:		Job No.:	61370411
Location:	Casing diameter: 50 mm	Date:	18/09/19

BORE CONSTRUCTION

Head-works					Measurement Point		Total Depth:	
	☒ Flush-mount	☐ Monument	☐ Casing only	☐ Locked		☐ Top of PVC Casing	8.006	m

BORE DEVELOPMENT

Method:	Date:	Undertaken By:	Vol. Removed: L

Comments (e.g. sediment content):

PURGING DETAILS (measurement points in meters below top of casing as indicated above)

Method: Peri-pump	Water Quality Meter used: YSI Pro.		Undertaken By: EE / ~~BS~~ IO
Depth to water: 5.413 m	Water Column: m	Req Purge Vol. [1]: L	Flow Rate: L/min
Presence of LNAPL ☐	Presence of DNAPL ☐	Thickness of NAPL: cm	Depth to NAPL: m
Pump intake: m			

PURGING MEASUREMENTS [2]

Vol. Purged (L)	Elapsed Time (min)	EC (µS/cm)	Temp. (°C)	TDS (ppm|mg/L)	pH	DO %Sat	DO (ppm|mg/L)	Eh (mV)	Water Level (m b TOC)
AS 5667.11: 1998 (<+/-)		10%	0.2°C	-	10%	10%	10%	-	-
1L	3min	915	19.9	594	7.29	3.2	0.28	-90.2	5.413
2L	6min	882	19.9	571	7.26	2.2	0.19	-178.3	5.413
3L	9min	793	19.9	513	7.13	2.1	0.19	-145.2	5.143
4L	12min	720	19.8	465	7.00	3.0	0.27	-116.2	5.143
5L	15min	553	19.8	357	6.82	5.0	0.47	-79.0	5.143
6L	18min	412.1	19.7	266	6.60	11.6	1.07	-44.3	5.143
7L	21min	408.8	19.7	265	6.43	15.1	1.37	-28.8	5.143
8L	24min	402.1	19.7	262	6.43	14.8	1.35	-26.4	5.143

Comments (e.g. condition of headworks, sheen, colour, odour, sediment load):

Slight sulfur odour, no sheen, yellow-cloudy, low to mod sed.

SAMPLING DETAILS		Sample ID:
Time:	Vol. Removed: L	No of Sample Containers: 8

Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):

Field Filtered ☑	Duplicate Samples ☐	Duplicate Sample ID:

Comments:

CoC Number:	Checked by:	Date:

1 Bores to be purged dry, until pH, T and EC readings stabilise or a minimum of 3 to 5 times the water column volumes. Water column volumes can be calculated from the following casing volumes per unit length: 40 mm ID - 1 L/m; 50 mm ID – 2 L/m; 100 mm ID 8 L/m.

2 Calibration details to be recorded in the instrument –specific calibration book, or in field notes as required by local procedures.

Groundwater Monitoring – Field Sheet

Client:			BORE ID: BORE NW07
Project:			Job No.: 6137041
Location:	Casing diameter: 50 mm		Date: 18/09/19

BORE CONSTRUCTION

Head-works	☐ Flush-mount ☐ Monument ☐ Casing only ☐ Locked	Measurement Point	☐ Top of PVC Casing	Total Depth: 11.767 m

BORE DEVELOPMENT

Method:	Date:	Undertaken By:	Vol. Removed: L

Comments (e.g. sediment content):

PURGING DETAILS (measurement points in meters below top of casing as indicated above)

Method: bailer	Water Quality Meter used: YSI Pro		Undertaken By:
Depth to water: 10.099 m	Water Column: m	Req Purge Vol. [1]: L	Flow Rate: L/min
Presence of LNAPL ☐	Presence of DNAPL ☐	Thickness of NAPL: cm	Depth to NAPL: m
Pump intake: m			

PURGING MEASUREMENTS [2]

Vol. Purged (L)	Elapsed Time (min)	EC (µS/cm)	Temp. (°C)	TDS (ppm|mg/L)	pH	DO %Sat	DO (ppm|mg/L)	Eh (mV)	Water Level (m b TOC)
AS 5667.11: 1998 (<+/-)		10%	0.2°C	-	10%	10%	10%	-	-
—	—	508	20.0	330	6.28	76.3	@6.92	83.6	@10.099

Comments (e.g. condition of headworks, sheen, colour, odour, sediment load):

Bailed not pumped – recharge rate too slow first round
milky light brown, turbid, no sheen, no odour, mod sed.

SAMPLING DETAILS		Sample ID:
Time:	Vol. Removed: L	No of Sample Containers: 8

Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):

Field Filtered ☑	Duplicate Samples ☐	Duplicate Sample ID:

Comments:

CoC Number:	Checked by:	Date:

1 Bores to be purged dry, until pH, T and EC readings stabilise or a minimum of 3 to 5 times the water column volumes. Water column volumes can be calculated from the following casing volumes per unit length: 40 mm ID - 1 L/m; 50 mm ID – 2 L/m; 100 mm ID 8 L/m.

2 Calibration details to be recorded in the instrument –specific calibration book, or in field notes as required by local procedures.

Groundwater Monitoring – Field Sheet

Client:			BORE ID: BORE MW08a
Project:			Job No.: 61370411
Location:	Casing diameter: 50 mm		Date: 18/09/19

BORE CONSTRUCTION

Head-works			Measurement Point		Total Depth:
☒ Flush-mount	☐ Monument	☐ Casing only ☐ Locked	☐ Top of PVC Casing		5.828 m

BORE DEVELOPMENT

Method:	Date:	Undertaken By:	Vol. Removed: L
Comments (e.g. sediment content):			

PURGING DETAILS (measurement points in meters below top of casing as indicated above)

Method: Peri-pump	Water Quality Meter used: YSI Pro		Undertaken By: EE / 10
Depth to water: 2.073 m	Water Column: m	Req Purge Vol. [1]: L	Flow Rate: L/min
Presence of LNAPL ☐	Presence of DNAPL ☐	Thickness of NAPL: cm	Depth to NAPL: m
Pump intake: m			

PURGING MEASUREMENTS [2]

Vol. Purged (L)	Elapsed Time (min)	EC (µS/cm)	Temp. (°C)	TDS (ppm|mg/L)	pH	DO %Sat	DO (ppm|mg/L)	Eh (mV)	Water Level (m b TOC)
AS 5667.11: 1998 (<+/-)		10%	0.2°C	-	10%	10%	10%	-	-
1L	3min	524	18.5	341	5.84	2.8	0.26	-27.7	2.073
2L	6min	530	18.4	344	5.83	2.1	0.20	-32.4	2.073
3L	9min	530	18.4	345	5.82	1.8	0.17	-35.4	2.073.
4L	12min	530	18.4	345	5.82	1.6	0.15	-37.4	2.078

Comments (e.g. condition of headworks, sheen, colour, odour, sediment load):

clear yellow, no Sulfur odour, low seal, no Sheen.

SAMPLING DETAILS		Sample ID:
Time:	Vol. Removed: L	No of Sample Containers: 8

Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):

Field Filtered ☑	Duplicate Samples ☐	Duplicate Sample ID:

Comments:

CoC Number:	Checked by:	Date:

1 Bores to be purged dry, until pH, T and EC readings stabilise or a minimum of 3 to 5 times the water column volumes. Water column volumes can be calculated from the following casing volumes per unit length: 40 mm ID - 1 L/m; 50 mm ID – 2 L/m; 100 mm ID 8 L/m.

2 Calibration details to be recorded in the instrument –specific calibration book, or in field notes as required by local procedures.

Groundwater Monitoring – Field Sheet

Client:		BORE ID:	BORE MW09
Project:		Job No.:	6137041
Location:	Casing diameter: 50 mm	Date:	18/09/19

BORE CONSTRUCTION

Head-works	☒ Flush-mount	☐ Monument	☐ Casing only	☐ Locked	Measurement Point: ☐ Top of PVC Casing

Total Depth: 5.305 m

BORE DEVELOPMENT

Method:	Date:	Undertaken By:	Vol. Removed: L

Comments (e.g. sediment content):

PURGING DETAILS (measurement points in meters below top of casing as indicated above)

Method: Peri-pump	Water Quality Meter used: YSI Pro		Undertaken By: EE/10
Depth to water: 3.140 m	Water Column: m	Req Purge Vol. [1]: L	Flow Rate: L/min
Presence of LNAPL ☐	Presence of DNAPL ☐	Thickness of NAPL: cm	Depth to NAPL: m
Pump intake: m			

PURGING MEASUREMENTS [2]

Vol. Purged (L)	Elapsed Time (min)	EC (µS/cm)	Temp. (°C)	TDS (ppm|mg/L)	pH	DO %Sat	DO (ppm|mg/L)	Eh (mV)	Water Level (m b TOC)
AS 5667.11: 1998 (<+/-)		10%	0.2°C	-	10%	10%	10%	-	-
1L	3min	495.0	18.3	316	5.96	32.7	3.10	129.0	3.140
2L	6min	384.6	18.2	247	5.98	41.9	3.96	127.1	3.140
3L	9min	372.2	18.2	243	5.95	44.1	4.15	130.4	3.140
4L	12min	401.2	18.2	261	5.91	41.8	3.92	134.2	3.140
5L	15min	401.0	18.2	262	5.91	41.3	3.89	136.8	3.140

Comments (e.g. condition of headworks, sheen, colour, odour, sediment load):

Clear, no odour, no sheen, low sed.

SAMPLING DETAILS		Sample ID:
Time:	Vol. Removed: L	No of Sample Containers: 8

Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):

Field Filtered ☑	Duplicate Samples ☐	Duplicate Sample ID:

Comments:

CoC Number:	Checked by:	Date:

1 Bores to be purged dry, until pH, T and EC readings stabilise or a minimum of 3 to 5 times the water column volumes. Water column volumes can be calculated from the following casing volumes per unit length: 40 mm ID - 1 L/m; 50 mm ID – 2 L/m; 100 mm ID 8 L/m.

2 Calibration details to be recorded in the instrument –specific calibration book, or in field notes as required by local procedures.

Groundwater Monitoring – Field Sheet

Client:			BORE ID: BORR MW10
Project:			Job No.: 61370411
Location:	Casing diameter: 50 mm		Date: 18/09/19

BORE CONSTRUCTION

Head-works	☒ Flush-mount	☐ Monument	☐ Casing only	☐ Locked	Measurement Point	☐ Top of PVC Casing	Total Depth: 4.114 m

BORE DEVELOPMENT

Method:	Date:	Undertaken By:	Vol. Removed: L
Comments (e.g. sediment content):			

PURGING DETAILS (measurement points in meters below top of casing as indicated above)

Method: Peri-pump	Water Quality Meter used: YSI Pro.		Undertaken By: EE/IO
Depth to water: 1.375m	Water Column: m	Req Purge Vol. [1]: L	Flow Rate: L/min
Presence of LNAPL ☐	Presence of DNAPL ☐	Thickness of NAPL: cm	Depth to NAPL: m
Pump intake: m			

PURGING MEASUREMENTS [2]

Vol. Purged (L)	Elapsed Time (min)	EC (µS/cm)	Temp. (°C)	TDS (ppm|mg/L)	pH	DO %Sat	DO (ppm|mg/L)	Eh (mV)	Water Level (m b TOC)
AS 5667.11: 1998 (<+/-)		10%	0.2°C	-	10%	10%	10%	-	-
1L	3min	501	16.8	323	6.06	3.1	0.30	-9.0	1.375
2L	6min	463.3	16.6	300	6.08	2.0	0.19	-5.4	1.375
3L	9min	454.9	16.6	295	6.09	1.8	0.17	-3.6	1.375
4L	12min	450.3	16.6	293	6.09	1.7	0.16	-2.4	1.375

Comments (e.g. condition of headworks, sheen, colour, odour, sediment load):

Clear, low to med sed, no odour, no sheen.

SAMPLING DETAILS		Sample ID:
Time:	Vol. Removed: L	No of Sample Containers: 8
Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):		
Field Filtered ☑	Duplicate Samples ☐	Duplicate Sample ID:
Comments:		

CoC Number:	Checked by:	Date:

1 Bores to be purged dry, until pH, T and EC readings stabilise or a minimum of 3 to 5 times the water column volumes. Water column volumes can be calculated from the following casing volumes per unit length: 40 mm ID - 1 L/m; 50 mm ID – 2 L/m; 100 mm ID 8 L/m.

2 Calibration details to be recorded in the instrument –specific calibration book, or in field notes as required by local procedures.

Groundwater Monitoring – Field Sheet

Client:			BORE ID: BORE MW11
Project:			Job No.: 61370441
Location:	Casing diameter: 50 mm		Date: 19/09/19

BORE CONSTRUCTION

Head-works	☒ Flush-mount	☐ Monument	☐ Casing only	☐ Locked	Measurement Point ☐ Top of PVC Casing	Total Depth: m

BORE DEVELOPMENT

Method:	Date:	Undertaken By:	Vol. Removed: L

Comments (e.g. sediment content):

PURGING DETAILS (measurement points in meters below top of casing as indicated above)

Method: Peri-pump	Water Quality Meter used: YSI Pro		Undertaken By: EE/IO
Depth to water: 1.392 m	Water Column: m	Req Purge Vol. [1]: L	Flow Rate: L/min
Presence of LNAPL ☐	Presence of DNAPL ☐	Thickness of NAPL: cm	Depth to NAPL: m
Pump intake: m			

PURGING MEASUREMENTS [2]

Vol. Purged (L)	Elapsed Time (min)	EC (µS/cm)	Temp. (°C)	TDS (ppm|mg/L)	pH	DO %Sat	DO (ppm|mg/L)	Eh (mV)	Water Level (m b TOC)
AS 5667.11: 1998 (<+/-)		10%	0.2°C	-	10%	10%	10%	-	-
1L	3min	2067	17.5	1340	7.03	3.9	0.37	-56.6	1.392
2L	6min	1903	17.3	1239	7.03	6.2	0.60	-38.4	1.392
3L	9min	2185	17.2	1429	7.04	7.9	0.76	-42.4	1.392
4L	12min	2318	17.3	1515	7.04	7.4	0.70	-51.6	1.392
5L	15min	2494	17.3	1627	7.04	7.2	0.69	-57.5	1.392

Comments (e.g. condition of headworks, sheen, colour, odour, sediment load):

light yellow, slight sulfur odour, no sheen, low sed.

SAMPLING DETAILS		Sample ID:
Time:	Vol. Removed: L	No of Sample Containers: 8

Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):

Field Filtered ☑	Duplicate Samples ☐	Duplicate Sample ID:

Comments:

CoC Number:	Checked by:	Date:

1 Bores to be purged dry, until pH, T and EC readings stabilise or a minimum of 3 to 5 times the water column volumes. Water column volumes can be calculated from the following casing volumes per unit length: 40 mm ID - 1 L/m; 50 mm ID – 2 L/m; 100 mm ID 8 L/m.

2 Calibration details to be recorded in the instrument –specific calibration book, or in field notes as required by local procedures.

Groundwater Monitoring – Field Sheet

Client:			BORE ID: ~~MW12~~ BORE MW12
Project:			Job No.: 61570411
Location:	Casing diameter: 50 mm		Date: 18/09/19.

BORE CONSTRUCTION

Head-works				Measurement Point		Total Depth: m
	☒ Flush-mount	☐ Monument	☐ Casing only	☐ Locked	☐ Top of PVC Casing	4.395

BORE DEVELOPMENT

Method:	Date:	Undertaken By:	Vol. Removed: L

Comments (e.g. sediment content):

PURGING DETAILS (measurement points in meters below top of casing as indicated above)

Method: Peri-pump	Water Quality Meter used: YSI Pro.		Undertaken By: EE/IO
Depth to water: 1.495 m	Water Column: m	Req Purge Vol. [1]: L	Flow Rate: L/min
Presence of LNAPL ☐	Presence of DNAPL ☐	Thickness of NAPL: cm	Depth to NAPL: m
Pump intake: m			

PURGING MEASUREMENTS [2]

Vol. Purged (L)	Elapsed Time (min)	EC (µS/cm)	Temp. (°C)	TDS (ppm|mg/L)	pH	DO %Sat	DO (ppm|mg/L)	Eh (mV)	Water Level (m b TOC)
AS 5667.11: 1998 (<+/-)		10%	0.2°C	-	10%	10%	10%	-	-
1L	3min	835	17.7	535	6.47	5.4	0.51	-35.1	1.495.
2L	6min	551	17.6	357	6.32	4.6	0.44	-10.4	1.495.
3L	9min	523	17.7	340	6.27	3.9	0.37	-7.0	1.495
4L	12min	520	17.7	338	6.26	3.7	0.35	-3.9	1.495.
5L	15min	526	17.7	342	6.26	3.5	0.33	-2.0	1.495

Comments (e.g. condition of headworks, sheen, colour, odour, sediment load):

Clear, low to mod sed, no sheen, no odour.

SAMPLING DETAILS		Sample ID:
Time:	Vol. Removed: L	No of Sample Containers: 8.

Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):

Field Filtered ☑	Duplicate Samples ☐	Duplicate Sample ID:

Comments:

CoC Number:	Checked by:	Date:

1 Bores to be purged dry, until pH, T and EC readings stabilise or a minimum of 3 to 5 times the water column volumes. Water column volumes can be calculated from the following casing volumes per unit length: 40 mm ID - 1 L/m; 50 mm ID – 2 L/m; 100 mm ID 8 L/m.

2 Calibration details to be recorded in the instrument –specific calibration book, or in field notes as required by local procedures.

Groundwater Monitoring – Field Sheet

Client:			BORE ID: BORE MW13
Project:			Job No.: 61370411
Location:	Casing diameter: 50 mm		Date: 16/09/19

BORE CONSTRUCTION

Head-works	☒ Flush-mount	☐ Monument	☐ Casing only	☐ Locked	Measurement Point	☐ Top of PVC Casing	Total Depth: 4.346 m

BORE DEVELOPMENT

Method:	Date:	Undertaken By:	Vol. Removed: L

Comments (e.g. sediment content):

PURGING DETAILS (measurement points in meters below top of casing as indicated above)

Method: Peri-pump	Water Quality Meter used: YSI Pro		Undertaken By: EE/DS
Depth to water: 0.485 m	Water Column: m	Req Purge Vol. [1]: L	Flow Rate: L/min
Presence of LNAPL ☐	Presence of DNAPL ☐	Thickness of NAPL: cm	Depth to NAPL: m
Pump intake: m			

PURGING MEASUREMENTS [2]

Vol. Purged (L)	Elapsed Time (min)	EC (µS/cm)	Temp. (°C)	TDS (ppm|mg/L)	pH	DO %Sat	DO (ppm|mg/L)	Eh (mV)	Water Level (m b TOC)
AS 5667.11: 1998 (<+/-)		10%	0.2°C	-	10%	10%	10%	-	-
1L	3min	906	17.2	589	6.70	7.8	0.72	116.3	0.485
2L	6min	885	17.1	575	6.64	4.3	0.41	115.3	0.485
3L	9min	841	17.1	546	6.53	3.5	0.33	113.4	0.485
4L	12min	822	17.1	534	6.47	2.3	0.22	102.8	0.485
5L	15min	811	17.1	527	6.43	1.9	0.18	75.7	0.485

Comments (e.g. condition of headworks, sheen, colour, odour, sediment load):

no odour, no sheen, low sed, clear to light brown.

SAMPLING DETAILS		Sample ID:
Time:	Vol. Removed: L	No of Sample Containers: 8

Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):

Field Filtered ☑	Duplicate Samples ☐	Duplicate Sample ID:

Comments:

CoC Number:	Checked by:	Date:

1 Bores to be purged dry, until pH, T and EC readings stabilise or a minimum of 3 to 5 times the water column volumes. Water column volumes can be calculated from the following casing volumes per unit length: 40 mm ID - 1 L/m; 50 mm ID – 2 L/m; 100 mm ID 8 L/m.

2 Calibration details to be recorded in the instrument –specific calibration book, or in field notes as required by local procedures.

Groundwater Monitoring – Field Sheet

Client:			BORE ID: BORE MW15
Project:			Job No.: 61370411
Location:	Casing diameter: 50 mm		Date: 16/09/19

BORE CONSTRUCTION

Head-works				Measurement Point		Total Depth:	
	☒ Flush-mount	☐ Monument	☐ Casing only ☐ Locked		☐ Top of PVC Casing	3.739	m

BORE DEVELOPMENT

Method:	Date:	Undertaken By:	Vol. Removed: L

Comments (e.g. sediment content):

PURGING DETAILS (measurement points in meters below top of casing as indicated above)

Method: Peri-Pump	Water Quality Meter used: YSI Pro		Undertaken By: EE IDS
Depth to water: 1.134 m	Water Column: m	Req Purge Vol. [1]: L	Flow Rate: L/min
Presence of LNAPL ☐	Presence of DNAPL ☐	Thickness of NAPL: cm	Depth to NAPL: m
Pump intake: m			

PURGING MEASUREMENTS [2]

Vol. Purged (L)	Elapsed Time (min)	EC (µS/cm)	Temp. (°C)	TDS (ppm|mg/L)	pH	DO %Sat	DO (ppm|mg/L)	Eh (mV)	Water Level (m b TOC)
AS 5667.11: 1998 (<+/-)		10%	0.2°C	-	10%	10%	10%	-	-
1L	3min	151.6	17.7	98	5.92	3.5	0.32	-10.7	1.134
2L	6min	150.8	17.6	98	5.89	1.9	0.18	-41.9	1.134
3L	9min	152.2	17.6	99	5.88	1.4	0.13	-64.1	1.134
4L	12min	154.2	17.6	100	5.88	1.2	0.12	-79.1	1.134

Comments (e.g. condition of headworks, sheen, colour, odour, sediment load):

Muddy odour, no sheen, low sed, clear to light brown

SAMPLING DETAILS		Sample ID:
Time:	Vol. Removed: L	No of Sample Containers: 8

Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):

Field Filtered ☑	Duplicate Samples ☐	Duplicate Sample ID:

Comments:

CoC Number:	Checked by:	Date:

1 Bores to be purged dry, until pH, T and EC readings stabilise or a minimum of 3 to 5 times the water column volumes. Water column volumes can be calculated from the following casing volumes per unit length: 40 mm ID - 1 L/m; 50 mm ID – 2 L/m; 100 mm ID 8 L/m.

2 Calibration details to be recorded in the instrument –specific calibration book, or in field notes as required by local procedures.

Groundwater Monitoring – Field Sheet

Client:			BORE ID: RORK MW18
Project:			Job No.: 61377041
Location:	Casing diameter: 50 mm		Date: 16/09/19

BORE CONSTRUCTION

Head-works	☐ Flush-mount ☐ Monument ☐ Casing only ☐ Locked	Measurement Point	☐ Top of PVC Casing	Total Depth: 3.966	m

BORE DEVELOPMENT

Method:	Date:	Undertaken By:	Vol. Removed: L
Comments (e.g. sediment content):			

PURGING DETAILS (measurement points in meters below top of casing as indicated above)

Method: Peri-pump	Water Quality Meter used: YSI Pro.		Undertaken By: EE/DS
Depth to water: 1.537 m	Water Column: m	Req Purge Vol. [1]: L	Flow Rate: L/min
Presence of LNAPL ☐	Presence of DNAPL ☐	Thickness of NAPL: cm	Depth to NAPL: m
Pump intake: m			

PURGING MEASUREMENTS [2]

Vol. Purged (L)	Elapsed Time (min)	EC (µS/cm)	Temp. (°C)	TDS (ppm|mg/L)	pH	DO %Sat	DO (ppm|mg/L)	Eh (mV)	Water Level (m b TOC)
AS 5667.11: 1998 (<+/-)		10%	0.2°C	-	10%	10%	10%	-	-
1L	3min	257.5	18.0	166	5.03	47.2	4.46	214.5	1.537
2L	6min	242.6	17.3	157	4.73	46.7	4.48	237.9	1.537
3L	9min	239.2	17.2	155	4.70	46.4	4.47	248.2	1.537
4L	12min	234.8	17.1	153	4.68	46.3	4.46	256.8	1.537
5L	15min	231.6	17.1	150	4.69	46.0	4.43	259.8	1.537

Comments (e.g. condition of headworks, sheen, colour, odour, sediment load):

no odour, clear, no sheen, low to no sed

SAMPLING DETAILS		Sample ID:
Time:	Vol. Removed: L	No of Sample Containers: 8
Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):		
Field Filtered ☑	Duplicate Samples ☑	Duplicate Sample ID: FD01 FS01
Comments:		

CoC Number:	Checked by:	Date:

1 Bores to be purged dry, until pH, T and EC readings stabilise or a minimum of 3 to 5 times the water column volumes. Water column volumes can be calculated from the following casing volumes per unit length: 40 mm ID - 1 L/m; 50 mm ID – 2 L/m; 100 mm ID 8 L/m.

2 Calibration details to be recorded in the instrument –specific calibration book, or in field notes as required by local procedures.

Groundwater Monitoring – Field Sheet

Client:			BORE ID: BORR MW 9
Project:			Job No.: 6137041
Location:	Casing diameter: 50 mm		Date: 16/09/19

BORE CONSTRUCTION

Head-works	☒ Flush-mount	☐ Monument	☐ Casing only	☐ Locked	Measurement Point	☐ Top of PVC Casing	Total Depth: 2.561 m

BORE DEVELOPMENT

Method:	Date:	Undertaken By:	Vol. Removed: L

Comments (e.g. sediment content):

PURGING DETAILS (measurement points in meters below top of casing as indicated above)

Method: Peri-pump	Water Quality Meter used: YSI Pro		Undertaken By: EE/DS
Depth to water: 0.751 m	Water Column: m	Req Purge Vol. [1]: L	Flow Rate: L/min
Presence of LNAPL ☐	Presence of DNAPL ☐	Thickness of NAPL: cm	Depth to NAPL: m
Pump intake: m			

PURGING MEASUREMENTS [2]

Vol. Purged (L)	Elapsed Time (min)	EC (µS/cm)	Temp. (°C)	TDS (ppm|mg/L)	pH	DO %Sat	DO (ppm|mg/L)	Eh (mV)	Water Level (m b TOC)
AS 5667.11: 1998 (<+/-)		10%	0.2°C	-	10%	10%	10%	-	-
1L	3min	8748	17.0	5591	6.78	6.1	0.56	-67.7	0.751
2L	6min	5522	16.9	3556	6.61	4.9	0.47	-50.1	0.751
3L	9min	3137	17.0	2011	6.36	12.7	1.25	-9.9	0.751
4L	12min	2605	17.1	1682	6.28	9.5	0.90	11.1	0.751
5L	15min	2523	17.1	1636	6.26	8.3	0.78	26.3	0.751
6L	18min	2492	17.1	1621	6.25	5.8	0.55	36.8	0.751
7L	21min	2512	17.1	1633	6.25	5.4	0.51	43.3	0751

Comments (e.g. condition of headworks, sheen, colour, odour, sediment load):

Slight organic odour, no sheen, clear, low to no sed

SAMPLING DETAILS		Sample ID:
Time:	Vol. Removed: L	No of Sample Containers: 8

Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):

Field Filtered ☑	Duplicate Samples ☐	Duplicate Sample ID:

Comments:

CoC Number:	Checked by:	Date:

1 Bores to be purged dry, until pH, T and EC readings stabilise or a minimum of 3 to 5 times the water column volumes. Water column volumes can be calculated from the following casing volumes per unit length: 40 mm ID - 1 L/m; 50 mm ID – 2 L/m; 100 mm ID 8 L/m.

2 Calibration details to be recorded in the instrument –specific calibration book, or in field notes as required by local procedures.

Groundwater Monitoring – Field Sheet

Client:			BORE ID: BORE MW19B
Project:			Job No.: 61370411
Location:	Casing diameter: 50 mm		Date: 16/09/19

BORE CONSTRUCTION

Head-works	☒ Flush-mount	☐ Monument	☐ Casing only	☐ Locked	Measurement Point	☐ Top of PVC Casing	Total Depth: 12.124 m

BORE DEVELOPMENT

Method:	Date:	Undertaken By:	Vol. Removed: L

Comments (e.g. sediment content):

PURGING DETAILS (measurement points in meters below top of casing as indicated above)

Method: Peri-pump	Water Quality Meter used: YSI Pro		Undertaken By: DE/DS
Depth to water: 0.531 m	Water Column: m	Req Purge Vol. [1]: L	Flow Rate: L/min
Presence of LNAPL ☐	Presence of DNAPL ☐	Thickness of NAPL: cm	Depth to NAPL: m
Pump intake: m			

PURGING MEASUREMENTS [2]

Vol. Purged (L)	Elapsed Time (min)	EC (µS/cm)	Temp. (°C)	TDS (ppm|mg/L)	pH	DO %Sat	DO (ppm|mg/L)	Eh (mV)	Water Level (m b TOC)
AS 5667.11: 1998 (<+/-)		10%	0.2°C	-	10%	10%	10%	-	-
1L	3min	2321	19.3	1508	5.94	4.8	0.43	-51.8	0.531
2L	6min	2319	19.3	1507	5.93	2.9	0.26	-69.8	0.531
3L	9min	2317	19.3	1506	5.93	2.3	0.21	-80.8	0.531
4L	12 min	2307	19.3	1500	5.93	1.8	0.16	-89.1	0.531

Comments (e.g. condition of headworks, sheen, colour, odour, sediment load):

Slight organic odour, clear, no sheen, low sed

SAMPLING DETAILS		Sample ID:
Time:	Vol. Removed: L	No of Sample Containers: 8

Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):

Field Filtered ☑	Duplicate Samples ☐	Duplicate Sample ID:

Comments:

CoC Number:	Checked by:	Date:

1 Bores to be purged dry, until pH, T and EC readings stabilise or a minimum of 3 to 5 times the water column volumes. Water column volumes can be calculated from the following casing volumes per unit length: 40 mm ID - 1 L/m; 50 mm ID – 2 L/m; 100 mm ID 8 L/m.

2 Calibration details to be recorded in the instrument –specific calibration book, or in field notes as required by local procedures.

Groundwater Monitoring – Field Sheet

Client:			BORE ID: BORE MW20
Project:			Job No.: 6137041
Location:	Casing diameter: 50 mm		Date: 16/09/19

BORE CONSTRUCTION

Head-works	☒ Flush-mount	☐ Monument	☐ Casing only	☐ Locked	Measurement Point	☐ Top of PVC Casing	Total Depth: 13.118 m

BORE DEVELOPMENT

Method:	Date:	Undertaken By:	Vol. Removed: L

Comments (e.g. sediment content):

PURGING DETAILS (measurement points in meters below top of casing as indicated above)

Method: Peri-pump	Water Quality Meter used: 451 Pro		Undertaken By: EE/OS
Depth to water: 0.491 m	Water Column: m	Req Purge Vol. [1]: L	Flow Rate: L/min
Presence of LNAPL ☐	Presence of DNAPL ☐	Thickness of NAPL: cm	Depth to NAPL: m
Pump intake: m			

PURGING MEASUREMENTS [2]

Vol. Purged (L)	Elapsed Time (min)	EC (µS/cm)	Temp. (°C)	TDS (ppm|mg/L)	pH	DO %Sat	DO (ppm|mg/L)	Eh (mV)	Water Level (m b TOC)
AS 5667.11: 1998 (<+/-)		10%	0.2°C	-	10%	10%	10%	-	-
1L	3min	4361	18.9	2832	5.56	7.9	0.71	153.5	0.491
2L	6min	4320	18.8	2807	5.56	3.8	0.54	150.6	0.491
3L	9min	4315	18.8	2805	5.56	2.9	0.27	149.4	0.491

Comments (e.g. condition of headworks, sheen, colour, odour, sediment load):

no odour, no sheen, clear to light brown, low sed.

SAMPLING DETAILS		Sample ID:
Time:	Vol. Removed: L	No of Sample Containers: 8

Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):

Field Filtered ☑	Duplicate Samples ☐	Duplicate Sample ID:

Comments:

CoC Number:	Checked by:	Date:

1 Bores to be purged dry, until pH, T and EC readings stabilise or a minimum of 3 to 5 times the water column volumes. Water column volumes can be calculated from the following casing volumes per unit length: 40 mm ID - 1 L/m; 50 mm ID – 2 L/m; 100 mm ID 8 L/m.

2 Calibration details to be recorded in the instrument –specific calibration book, or in field notes as required by local procedures.

Groundwater Monitoring – Field Sheet

Client:			BORE ID: Bore mw22
Project:			Job No.: 6137041
Location:	Casing diameter: 50 mm		Date: 16/9

BORE CONSTRUCTION

Head-works	☒ Flush-mount	☐ Monument	☐ Casing only	☐ Locked	Measurement Point	☐ Top of PVC Casing	Total Depth: 1.435 m

BORE DEVELOPMENT

Method:	Date:	Undertaken By:	Vol. Removed: L
Comments (e.g. sediment content):			

PURGING DETAILS (measurement points in meters below top of casing as indicated above)

Method: Peri pump	Water Quality Meter used: YSI		Undertaken By: EE/DS
Depth to water: 0.53 m	Water Column: m	Req Purge Vol. [1]: L	Flow Rate: L/min
Presence of LNAPL ☐	Presence of DNAPL ☐	Thickness of NAPL: cm	Depth to NAPL: m
Pump intake: m			

PURGING MEASUREMENTS [2]

Vol. Purged (L)	Elapsed Time (min)	EC (µS/cm)	Temp. (°C)	TDS (ppm|mg/L)	pH	DO %Sat	DO (ppm|mg/L)	Eh (mV)	Water Level (m b TOC)
AS 5667.11: 1998 (<+/-)		10%	0.2°C	-	10%	10%	10%	-	-
1L	3min	1258	17.1	810	6.83	11.2	1.08	-35.9	0.53
2L	6min	648	17.0	418	6.80	10.1	0.95	-50.0	~~0.53~~ 0.26 0.44
3L	9min	670	~~17.8~~ 17.8	486	6.55	27.9	2.63	19.4	~~0.53~~
~~4L~~	~~12min~~		~~17.8~~						well ran dry slow recharge

Comments (e.g. condition of headworks, sheen, colour, odour, sediment load):

clear, no odour, no sheen, low sed.

SAMPLING DETAILS		Sample ID:
Time:	Vol. Removed: L	No of Sample Containers: 8

Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):

Field Filtered ☑	Duplicate Samples ☐	Duplicate Sample ID:

Comments: * well ran dry - waited about 30mins to sample.

CoC Number:	Checked by:	Date:

1 Bores to be purged dry, until pH, T and EC readings stabilise or a minimum of 3 to 5 times the water column volumes. Water column volumes can be calculated from the following casing volumes per unit length: 40 mm ID - 1 L/m; 50 mm ID – 2 L/m; 100 mm ID 8 L/m.

2 Calibration details to be recorded in the instrument –specific calibration book, or in field notes as required by local procedures.

Groundwater Monitoring – Field Sheet

Client: MRWA			BORE ID: BORR MW22b
Project: BORR Groundwater Sampling – Sept. round			Job No.: 6137041
Location:	Casing diameter: 50 mm		Date: 16/9

BORE CONSTRUCTION

Head-works	☒ Flush-mount	☐ Monument	☐ Casing only	☐ Locked	Measurement Point	☐ Top of PVC Casing	Total Depth: 13.050 m

BORE DEVELOPMENT

Method:	Date:	Undertaken By:	Vol. Removed: L

Comments (e.g. sediment content):

PURGING DETAILS (measurement points in meters below top of casing as indicated above)

Method: Peri	Water Quality Meter used: VS1		Undertaken By: EE/DS
Depth to water: 2.591 m	Water Column: m	Req Purge Vol. [1]: L	Flow Rate: L/min
Presence of LNAPL ☐	Presence of DNAPL ☐	Thickness of NAPL: cm	Depth to NAPL: m
Pump intake: m			

PURGING MEASUREMENTS [2]

Vol. Purged (L)	Elapsed Time (min)	EC (µS/cm)	Temp. (°C)	TDS (ppm|mg/L)	pH	DO %Sat	DO (ppm|mg/L)	Eh (mV)	Water Level (m b TOC)
AS 5667.11: 1998 (<+/-)		10%	0.2°C	-	10%	10%	10%	-	-
1	3min	12832	20.5	8347	5.52	30.0	2.50	-19.6	~2.40
2	6min	12790	20.3	8345	5.30	4.5	0.38	-50.3	~2.40
3	9min	12812	20.3	8342	5.48	2.5	0.21	-69.3	~2.40
4	12min	12794	20.3	8313	5.52	2.5	0.21	-78.8	~2.40
5	15min	12766	20.3	8297	5.60	2.0	0.18	-82.1	~2.40
6	18min	12759	20.3	8295	5.60	1.9	0.16	-82.2	~2.40

Comments (e.g. condition of headworks, sheen, colour, odour, sediment load): organic odour, no sheen, clear - pale brown, low sed. load

SAMPLING DETAILS [4]

Time:	Vol. Removed: L	Sample ID: BORR MW22b
		No of Sample Containers: 8

Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):

Field Filtered ☑	Duplicate Samples ☐	Duplicate Sample ID:

Comments:

CoC Number:	Checked by:	Date:

1 Bores to be purged dry, until pH, T and EC readings stabilise or a minimum of 3 to 5 times the water column volumes. Water column volumes can be calculated from the following casing volumes per unit length: 40 mm ID - 1 L/m; 50 mm ID – 2 L/m; 100 mm ID 8 L/m.

2 Calibration details to be recorded in the instrument –specific calibration book, or in field notes as required by local procedures.

Groundwater Monitoring – Field Sheet

Client:			BORE ID: BORR MW 24
Project:			Job No.: 61370411
Location:	Casing diameter: 50 mm		Date: 17/09/19

BORE CONSTRUCTION

Head-works	☒ Flush-mount	☐ Monument	☐ Casing only	☐ Locked	Measurement Point ☐ Top of PVC Casing	Total Depth: 9.878 m

BORE DEVELOPMENT

Method:	Date:	Undertaken By:	Vol. Removed: L

Comments (e.g. sediment content):

PURGING DETAILS (measurement points in meters below top of casing as indicated above)

Method: Peri-pump	Water Quality Meter used: YSI Pro.		Undertaken By: EE/DS
Depth to water: 7.771 m	Water Column: m	Req Purge Vol. [1]: L	Flow Rate: L/min
Presence of LNAPL ☐	Presence of DNAPL ☐	Thickness of NAPL: cm	Depth to NAPL: m
Pump intake: m			

PURGING MEASUREMENTS [2]

Vol. Purged (L)	Elapsed Time (min)	EC (µS/cm)	Temp. (°C)	TDS (ppm|mg/L)	pH	DO %Sat	DO (ppm|mg/L)	Eh (mV)	Water Level (m b TOC)
AS 5667.11: 1998 (<+/-)		10%	0.2°C	-	10%	10%	10%	-	-
1L	3min	1785	20.3	1160	4.27	24.2	2.16	336.9	7.771
2L	6min	~~1779~~	20.3	1155	4.28	21.9	1.97	357.1	7.771
3L	9min	1764	20.3	1146	4.29	21.3	1.91	376.6	7.771
4L	12min	1766	20.3	1148	4.29	20.8	1.87	391.4	7.771

Comments (e.g. condition of headworks, sheen, colour, odour, sediment load):

milky light brown, no sheen, low sed, no odour

SAMPLING DETAILS		Sample ID:
Time:	Vol. Removed: L	No of Sample Containers:

Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):

Field Filtered ☑	Duplicate Samples ☐	Duplicate Sample ID:

Comments:

CoC Number:	Checked by:	Date:

1 Bores to be purged dry, until pH, T and EC readings stabilise or a minimum of 3 to 5 times the water column volumes. Water column volumes can be calculated from the following casing volumes per unit length: 40 mm ID - 1 L/m; 50 mm ID – 2 L/m; 100 mm ID 8 L/m.

2 Calibration details to be recorded in the instrument –specific calibration book, or in field notes as required by local procedures.

Groundwater Monitoring – Field Sheet

Client:		BORE ID:	BORE MW25
Project:		Job No.:	6137041
Location:	Casing diameter: 50 mm	Date:	17/09/19

BORE CONSTRUCTION

Head-works	☒ Flush-mount	☐ Monument	☐ Casing only	☐ Locked	Measurement Point	☐ Top of PVC Casing	Total Depth: 13.010 m

BORE DEVELOPMENT

Method:	Date:	Undertaken By:	Vol. Removed: L

Comments (e.g. sediment content):

PURGING DETAILS (measurement points in meters below top of casing as indicated above)

Method: Peri-pump	Water Quality Meter used: YSI Pro		Undertaken By: EE/DS
Depth to water: 6.351 m	Water Column: m	Req Purge Vol. [1]: L	Flow Rate: L/min
Presence of LNAPL ☐	Presence of DNAPL ☐	Thickness of NAPL: cm	Depth to NAPL: m
Pump intake: m			

PURGING MEASUREMENTS [2]

Vol. Purged (L)	Elapsed Time (min)	EC (µS/cm)	Temp. (°C)	TDS (ppm|mg/L)	pH	DO %Sat	DO (ppm|mg/L)	Eh (mV)	Water Level (m b TOC)
AS 5667.11: 1998 (<+/-)		10%	0.2°C	-	10%	10%	10%	-	-
1L	3min	3694	18.8	2402	5.74	4.9	0.43	-34.1	6.351
2L	6min	3714	18.8	2414	5.72	3.2	0.30	-40.5	6.351
3L	9min	3685	18.8	2394	5.64	2.3	0.21	-37.8	6.351
4L	12min	3662	18.8	2380	5.61	1.8	0.17	-39.4	6.351
5L	15min	3660	18.8	2379	5.59	1.5	0.14	-42.0	6.351
6L	18min	3657	18.7	2377	5.59	1.4	0.13	-43.4	6.351

Comments (e.g. condition of headworks, sheen, colour, odour, sediment load):

Cloudy yellow, no muddy odour, no sheen, low set.

SAMPLING DETAILS		Sample ID:
Time:	Vol. Removed: L	No of Sample Containers: 8

Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):

Field Filtered ☑	Duplicate Samples ☐	Duplicate Sample ID:

Comments:

CoC Number:	Checked by:	Date:

1 Bores to be purged dry, until pH, T and EC readings stabilise or a minimum of 3 to 5 times the water column volumes. Water column volumes can be calculated from the following casing volumes per unit length: 40 mm ID - 1 L/m; 50 mm ID – 2 L/m; 100 mm ID 8 L/m.

2 Calibration details to be recorded in the instrument –specific calibration book, or in field notes as required by local procedures.

Groundwater Monitoring – Field Sheet

Client:			BORE ID: BORE MW29
Project:			Job No.: 61370411
Location:	Casing diameter: 50 mm		Date: 17/09/19

BORE CONSTRUCTION

Head-works				Measurement Point		Total Depth:	
	☒ Flush-mount	☐ Monument	☐ Casing only ☐ Locked		☐ Top of PVC Casing	8.451	m

BORE DEVELOPMENT

Method:	Date:	Undertaken By:	Vol. Removed: L

Comments (e.g. sediment content):

PURGING DETAILS (measurement points in meters below top of casing as indicated above)

Method: Peri-pump	Water Quality Meter used: YSI Pro.		Undertaken By: EE/DS
Depth to water: 5.499 m	Water Column: m	Req Purge Vol. [1]: L	Flow Rate: L/min
Presence of LNAPL ☐	Presence of DNAPL ☐	Thickness of NAPL: cm	Depth to NAPL: m
Pump intake: m			

PURGING MEASUREMENTS [2]

Vol. Purged (L)	Elapsed Time (min)	EC (µS/cm)	Temp. (°C)	TDS (ppm|mg/L)	pH	DO %Sat	DO (ppm|mg/L)	Eh (mV)	Water Level (m b TOC)
AS 5667.11: 1998 (<+/-)		10%	0.2°C	-	10%	10%	10%	-	-
1L	3min	870	18.8	566	5.22	5.0	0.45	-58.1	5.499.
2L	6min	868	18.8	564	5.20	3.0	0.27	-76.1	5.499
3L	9min	866	18.8	563	5.19	2.6	0.24	-89.7	5.499
4L	12 min	867	18.8	564	5.19	2.3	0.21	-103.5	5.499
5L	15 min	867	18.8	563	5.19	2.0	0.19	-110.9	5.499

Comments (e.g. condition of headworks, sheen, colour, odour, sediment load):

brown, mod sed, strong sulfurodour, no sheen.

SAMPLING DETAILS

Time:	Vol. Removed: L	Sample ID:	No of Sample Containers: 8

Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):

Field Filtered ☑	Duplicate Samples ☐	Duplicate Sample ID:

Comments:

CoC Number:	Checked by:	Date:

1 Bores to be purged dry, until pH, T and EC readings stabilise or a minimum of 3 to 5 times the water column volumes. Water column volumes can be calculated from the following casing volumes per unit length: 40 mm ID - 1 L/m; 50 mm ID – 2 L/m; 100 mm ID 8 L/m.

2 Calibration details to be recorded in the instrument –specific calibration book, or in field notes as required by local procedures.

Groundwater Monitoring – Field Sheet

Client:			BORE ID: BORE MW31
Project:			Job No.: 6137041
Location:	Casing diameter: 50 mm		Date: 17/09/19

BORE CONSTRUCTION

Head-works				Measurement Point		Total Depth:	
	☒ Flush-mount	☐ Monument	☐ Casing only ☐ Locked		☐ Top of PVC Casing	6.010	m

BORE DEVELOPMENT

Method:	Date:	Undertaken By:	Vol. Removed: L
Comments (e.g. sediment content):			

PURGING DETAILS (measurement points in meters below top of casing as indicated above)

Method: Peri-pump	Water Quality Meter used: 451 Pro.		Undertaken By: EE/DS
Depth to water: 2.965m	Water Column: m	Req Purge Vol. [1]: L	Flow Rate: L/min
Presence of LNAPL ☐	Presence of DNAPL ☐	Thickness of NAPL: cm	Depth to NAPL: m
Pump intake: m			

PURGING MEASUREMENTS [2]

Vol. Purged (L)	Elapsed Time (min)	EC (µS/cm)	Temp. (°C)	TDS (ppm|mg/L)	pH	DO %Sat	DO (ppm|mg/L)	Eh (mV)	Water Level (m b TOC)
AS 5667.11: 1998 (<+/-)		10%	0.2°C	-	10%	10%	10%	-	-
1L	3min	265.6	18.5	173	5.45	5.8	0.53	56.3	2.965
2L	6min	264.4	18.4	172	5.40	3.8	0.35	39.8	2.965
3L	9min	263.7	18.4	171	5.39	2.7	0.26	25.2	2.965
4L	12min	262.7	18.4	171	5.38	2.1	0.20	12.2	2.965
5L	15min	262.3	18.4	170	5.38	1.8	0.17	4.6	2.965

Comments (e.g. condition of headworks, sheen, colour, odour, sediment load):

Sulfur odour, light brown, moderate sed, no sheen

SAMPLING DETAILS		Sample ID:
Time:	Vol. Removed: L	No of Sample Containers: 8

Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):

Field Filtered ☑	Duplicate Samples ☐	Duplicate Sample ID:

Comments:

CoC Number:	Checked by:	Date:

1 Bores to be purged dry, until pH, T and EC readings stabilise or a minimum of 3 to 5 times the water column volumes. Water column volumes can be calculated from the following casing volumes per unit length: 40 mm ID - 1 L/m; 50 mm ID – 2 L/m; 100 mm ID 8 L/m.

2 Calibration details to be recorded in the instrument –specific calibration book, or in field notes as required by local procedures.

Groundwater Monitoring – Field Sheet

Client:			BORE ID: BORE MW32
Project:			Job No.: 61370411
Location:	Casing diameter: 50 mm		Date: 17/09/19

BORE CONSTRUCTION

Head-works	☒ Flush-mount ☐ Monument	☐ Casing only ☐ Locked	Measurement Point ☐ Top of PVC Casing	Total Depth: 5.030 m

BORE DEVELOPMENT

Method:	Date:	Undertaken By:	Vol. Removed: L
Comments (e.g. sediment content):			

PURGING DETAILS (measurement points in meters below top of casing as indicated above)

Method: Peri-pump	Water Quality Meter used: YSI Pro.		Undertaken By: ~~EE~~ DS
Depth to water: 2.011 m	Water Column: m	Req Purge Vol. [1]: L	Flow Rate: L/min
Presence of LNAPL ☐	Presence of DNAPL ☐	Thickness of NAPL: cm	Depth to NAPL: m
Pump intake: m			

PURGING MEASUREMENTS [2]

Vol. Purged (L)	Elapsed Time (min)	EC (µS/cm)	Temp. (°C)	TDS (ppm|mg/L)	pH	DO %Sat	DO (ppm|mg/L)	Eh (mV)	Water Level (m b TOC)
AS 5667.11: 1998 (<+/-)		10%	0.2°C	-	10%	10%	10%	-	-
1L	3min	316	18.3	205	5.67	5.7	0.52	-64.0	2.011
2L	6min	313.8	18.2	204	5.65	3.3	0.31	-84.1	2.011
~~3L~~ 3L	9min	312.1	18.2	203	5.64	2.4	0.22	-94.6	2.011
4L	12min	310.7	18.2	202	5.64	2.1	0.20	-100.4	2.011

Comments (e.g. condition of headworks, sheen, colour, odour, sediment load):

Sulfur odour, clear to light brown, no sheen, low to mod sed

SAMPLING DETAILS

Time:	Vol. Removed: L	Sample ID:
		No of Sample Containers: 8

Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):

Field Filtered ☑	Duplicate Samples ☑	Duplicate Sample ID: FD02.

Comments:

CoC Number:	Checked by:	Date:

1 Bores to be purged dry, until pH, T and EC readings stabilise or a minimum of 3 to 5 times the water column volumes. Water column volumes can be calculated from the following casing volumes per unit length: 40 mm ID - 1 L/m; 50 mm ID – 2 L/m; 100 mm ID 8 L/m.

2 Calibration details to be recorded in the instrument –specific calibration book, or in field notes as required by local procedures.

Groundwater Monitoring – Field Sheet

Client:			BORE ID: BORR MW46
Project:			Job No.: 61370411
Location:	Casing diameter: 50 mm		Date: 19/09/19

BORE CONSTRUCTION

Head-works	☒ Flush-mount	☐ Monument	☐ Casing only	☐ Locked	Measurement Point	☐ Top of PVC Casing	Total Depth: 6.128 m

BORE DEVELOPMENT

Method:	Date:	Undertaken By:	Vol. Removed: L

Comments (e.g. sediment content):

PURGING DETAILS (measurement points in meters below top of casing as indicated above)

Method: Peri-pump	Water Quality Meter used: YSI PP		Undertaken By: EE/10
Depth to water: 3.556 m	Water Column: m	Req Purge Vol. [1]: L	Flow Rate: L/min
Presence of LNAPL ☐	Presence of DNAPL ☐	Thickness of NAPL: cm	Depth to NAPL: m
Pump intake: m			

PURGING MEASUREMENTS [2]

Vol. Purged (L)	Elapsed Time (min)	EC (µS/cm)	Temp. (°C)	TDS (ppm|mg/L)	pH	DO %Sat	DO (ppm|mg/L)	Eh (mV)	Water Level (m b TOC)
AS 5667.11: 1998 (<+/-)		10%	0.2°C	-	10%	10%	10%	-	-
1L	3min	576	19.3	374	5.71	3.1	0.28	9.9	3.556
2L	6min	575	19.5	373	5.71	2.0	0.18	13.9	3.556
3L	9min	576	19.5	374	5.71	1.7	0.16	16.3	3.556

Comments (e.g. condition of headworks, sheen, colour, odour, sediment load):

cloudy light brown, slight sulfur odour, no sheen, low to mid SL.

SAMPLING DETAILS

Time:	Vol. Removed: L	Sample ID:
		No of Sample Containers: 8

Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):

Field Filtered ☑	Duplicate Samples ☐	Duplicate Sample ID:

Comments:

CoC Number:	Checked by:	Date:

1 Bores to be purged dry, until pH, T and EC readings stabilise or a minimum of 3 to 5 times the water column volumes. Water column volumes can be calculated from the following casing volumes per unit length: 40 mm ID - 1 L/m; 50 mm ID – 2 L/m; 100 mm ID 8 L/m.

2 Calibration details to be recorded in the instrument –specific calibration book, or in field notes as required by local procedures.

Groundwater Monitoring – Field Sheet

Client:			BORE ID: BORE-MW37
Project:			Job No.: 61370 41
Location:	Casing diameter: 50 mm		Date: 17/09/19

BORE CONSTRUCTION

Head-works	☒ Flush-mount	☐ Monument	☐ Casing only	☐ Locked	Measurement Point	☐ Top of PVC Casing	Total Depth: 11.555 m

BORE DEVELOPMENT

Method:	Date:	Undertaken By:	Vol. Removed: L

Comments (e.g. sediment content):

PURGING DETAILS (measurement points in meters below top of casing as indicated above)

Method: Peri-pump	Water Quality Meter used: YSI Pro.		Undertaken By: EE/DS
Depth to water: 3.515 m	Water Column: m	Req Purge Vol. [1]: L	Flow Rate: L/min
Presence of LNAPL ☐	Presence of DNAPL ☐	Thickness of NAPL: cm	Depth to NAPL: m
Pump intake: m			

PURGING MEASUREMENTS [2]

Vol. Purged (L)	Elapsed Time (min)	EC (µS/cm)	Temp. (°C)	TDS (ppm|mg/L)	pH	DO %Sat	DO (ppm|mg/L)	Eh (mV)	Water Level (m b TOC)
AS 5667.11: 1998 (<+/-)		10%	0.2°C	-	10%	10%	10%	-	-
1L	3min	3465	19.8	2252	5.48	4.1	0.37	-21.1	3.515
2L	6min	3456	19.9	2247	5.37	3.0 2.5	0.27	[illegible]	3.515
3L	9min	3447	19.9	2240	5.39	2.1	0.19	-3.2	3.515
4L	12min	3438	20.0	2235	5.41	1.9	0.17	-6.9	3.515
5L	15min	3431	20.0	2230	5.43	1.8	0.16	-10.5	3.515
6L	18min	3432	20.0	2224	5.43	1.6	0.15	-14.0	3.515

Comments (e.g. condition of headworks, sheen, colour, odour, sediment load):

Slight organic odour, clear-cloudy, no sheen, low to no sed -

SAMPLING DETAILS

Time:	Vol. Removed: L	Sample ID:
		No of Sample Containers: 8

Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):

Field Filtered ☑	Duplicate Samples ☐	Duplicate Sample ID:

Comments:

CoC Number:	Checked by:	Date:

1 Bores to be purged dry, until pH, T and EC readings stabilise or a minimum of 3 to 5 times the water column volumes. Water column volumes can be calculated from the following casing volumes per unit length: 40 mm ID - 1 L/m; 50 mm ID – 2 L/m; 100 mm ID 8 L/m.

2 Calibration details to be recorded in the instrument –specific calibration book, or in field notes as required by local procedures.

Groundwater Monitoring – Field Sheet

Client:			BORE ID: BOR_MW39
Project:			Job No.: 6137041
Location:	Casing diameter: 50 mm		Date: 17/09/19

BORE CONSTRUCTION

Head-works	☒ Flush-mount	☐ Monument	☐ Casing only	☐ Locked	Measurement Point: ☐ Top of PVC Casing	Total Depth: 13.928 m

BORE DEVELOPMENT

Method:	Date:	Undertaken By:	Vol. Removed: L

Comments (e.g. sediment content):

PURGING DETAILS (measurement points in meters below top of casing as indicated above)

Method:	Water Quality Meter used:		Undertaken By: ~~EE~~ DS
Depth to water: 7.271 m	Water Column: m	Req Purge Vol. [1]: L	Flow Rate: L/min
Presence of LNAPL ☐	Presence of DNAPL ☐	Thickness of NAPL: cm	Depth to NAPL: m
Pump intake: m			

PURGING MEASUREMENTS [2]

Vol. Purged (L)	Elapsed Time (min)	EC (µS/cm)	Temp. (°C)	TDS (ppm|mg/L)	pH	DO %Sat	DO (ppm|mg/L)	Eh (mV)	Water Level (m b TOC)
AS 5667.11: 1998 (<+/-)		10%	0.2°C	-	10%	10%	10%	-	-
1L	3min	291.9	20.1	190	5.40	7.0	0.62	162.1	7.271
2L	6min	289.3	20.1	188	5.33	3.8	0.34	174.1	7.271
3L	9min	290.4	20.0	189	5.29	2.9	0.26	179.4	7.271
4L	12min	289.6	20.0	188	5.28	2.2	0.20	183.7	7.271
5L	15min	288.9	20.0	188	5.28	1.9	0.18	186.6	7.271

Comments (e.g. condition of headworks, sheen, colour, odour, sediment load):

milky to light brown, no sheen, low sed, no odour

SAMPLING DETAILS		Sample ID:
Time:	Vol. Removed: L	No of Sample Containers: 8

Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):

Field Filtered ☑	Duplicate Samples ☐	Duplicate Sample ID:

Comments:

CoC Number:	Checked by:	Date:

1 Bores to be purged dry, until pH, T and EC readings stabilise or a minimum of 3 to 5 times the water column volumes. Water column volumes can be calculated from the following casing volumes per unit length: 40 mm ID - 1 L/m; 50 mm ID – 2 L/m; 100 mm ID 8 L/m.

2 Calibration details to be recorded in the instrument –specific calibration book, or in field notes as required by local procedures.

Groundwater Monitoring – Field Sheet

Client:			BORE ID: MR MW05
Project:			Job No.: 61370411
Location:	Casing diameter: 50 mm		Date: 19/09/19

BORE CONSTRUCTION

Head-works	☒ Flush-mount	☐ Monument	☐ Casing only	☐ Locked	Measurement Point: ☐ Top of PVC Casing	Total Depth: 5.036 m

BORE DEVELOPMENT

Method:	Date:	Undertaken By:	Vol. Removed: L

Comments (e.g. sediment content):

PURGING DETAILS (measurement points in meters below top of casing as indicated above)

Method: Peri-pump	Water Quality Meter used: YSI Pro.		Undertaken By: EE/IO
Depth to water: 2.547 m	Water Column: m	Req Purge Vol. [1]: L	Flow Rate: L/min
Presence of LNAPL ☐	Presence of DNAPL ☐	Thickness of NAPL: cm	Depth to NAPL: m
Pump intake: m			

PURGING MEASUREMENTS [2]

Vol. Purged (L)	Elapsed Time (min)	EC (µS/cm)	Temp. (°C)	TDS (ppm|mg/L)	pH	DO %Sat	DO (ppm|mg/L)	Eh (mV)	Water Level (m b TOC)
AS 5667.11: 1998 (<+/-)		10%	0.2°C	-	10%	10%	10%	-	-
1L	3min	22907	17.5	14892	5.76	4.2	0.36	-23.3	2.547
2L	6min	22874	17.6	14878	5.77	2.6	0.23	-25.9	2.547
3L	9min	22870	17.6	14864	5.79	2.0	0.17	-29.5	2.547
4L	12min	22813	17.6	14828	5.79	1.8	0.16	-30.9	2.547

Comments (e.g. condition of headworks, sheen, colour, odour, sediment load):

clear to light yellow, no sheen, lowered, Sulfur odour.

SAMPLING DETAILS		Sample ID:
Time:	Vol. Removed: L	No of Sample Containers: 8

Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):

Field Filtered ☑	Duplicate Samples ☐	Duplicate Sample ID:

Comments:

CoC Number:	Checked by:	Date:

1 Bores to be purged dry, until pH, T and EC readings stabilise or a minimum of 3 to 5 times the water column volumes. Water column volumes can be calculated from the following casing volumes per unit length: 40 mm ID - 1 L/m; 50 mm ID – 2 L/m; 100 mm ID 8 L/m.

2 Calibration details to be recorded in the instrument –specific calibration book, or in field notes as required by local procedures.

Groundwater Monitoring – Field Sheet

Client:			BORE ID: BH9.2
Project:			Job No.: 6137041
Location:	Casing diameter: 50 mm		Date: 23/10/19

BORE CONSTRUCTION

Head-works	☑ Flush-mount	☐ Monument	☐ Casing only	☐ Locked	Measurement Point	☐ Top of PVC Casing	Total Depth: 8.896 m

BORE DEVELOPMENT

Method:	Date:	Undertaken By:	Vol. Removed: L

Comments (e.g. sediment content):

PURGING DETAILS (measurement points in meters below top of casing as indicated above)

Method: Peri-pump	Water Quality Meter used: YSI Pro		Undertaken By: EE/PY
Depth to water: 2.504 m	Water Column: m	Req Purge Vol. [1]: L	Flow Rate: L/min
Presence of LNAPL ☐	Presence of DNAPL ☐	Thickness of NAPL: cm	Depth to NAPL: m
Pump intake: m			

PURGING MEASUREMENTS [2]

Vol. Purged (L)	Elapsed Time (min)	EC (µS/cm)	Temp. (°C)	TDS (ppm|mg/L)	pH	DO %Sat	DO (ppm|mg/L)	Eh (mV)	Water Level (m b TOC)
AS 5667.11: 1998 (<+/-)		10%	0.2°C	-	10%	10%	10%	-	-
1L	4min	7872	19.1	5116.83	3.93	3.9	0.35	274.0	
2L	8 min.	7869	19.1	5114.92	3.94	2.9	0.26	275.2	
3L	12min.	7862	19.3	5111.28	3.93	2.3	0.21	276.5	
4L	16 min.	7864	19.3	5111.71	3.93	2.0	0.18	276.9	

Comments (e.g. condition of headworks, sheen, colour, odour, sediment load):

Clear, no odour, no sheen, low to no sed.

SAMPLING DETAILS		Sample ID:
Time:	Vol. Removed: L	No of Sample Containers: 8

Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):

Field Filtered ☑	Duplicate Samples ☐	Duplicate Sample ID:

Comments:

CoC Number:	Checked by:	Date:

1 Bores to be purged dry, until pH, T and EC readings stabilise or a minimum of 3 to 5 times the water column volumes. Water column volumes can be calculated from the following casing volumes per unit length: 40 mm ID - 1 L/m; 50 mm ID – 2 L/m; 100 mm ID 8 L/m.

2 Calibration details to be recorded in the instrument–specific calibration book, or in field notes as required by local procedures.

Groundwater Monitoring – Field Sheet

Client:			BORE ID: BH11.1
Project:			Job No.: 6137641
Location:	Casing diameter: 50 mm		Date: 23/10/19

BORE CONSTRUCTION

Head-works	☑ Flush-mount	☐ Monument	☐ Casing only	☐ Locked	Measurement Point: ☐ Top of PVC Casing	Total Depth: 5.058 m

BORE DEVELOPMENT

Method:	Date:	Undertaken By:	Vol. Removed: L
Comments (e.g. sediment content):			

PURGING DETAILS (measurement points in meters below top of casing as indicated above)

Method: Peri-pump	Water Quality Meter used: YSI Pro.		Undertaken By: EE/PY
Depth to water: 1.812 m	Water Column: m	Req Purge Vol. [1]: L	Flow Rate: 0.3L/min
Presence of LNAPL ☐	Presence of DNAPL ☐	Thickness of NAPL: cm	Depth to NAPL: m
Pump intake: m			

PURGING MEASUREMENTS [2]

Vol. Purged (L)	Elapsed Time (min)	EC (µS/cm)	Temp. (°C)	TDS (ppm|mg/L)	pH	DO %Sat	DO (ppm|mg/L)	Eh (mV)	Water Level (m b TOC)
AS 5667.11: 1998 (<+/-)		10%	0.2°C	-	10%	10%	10%	-	-
1L	8min	1781	19.2	1156.05	6.82	4.9	0.44	-75.3	~1.812
2L	6min	1684	19.2	1093.49	6.89	3.5	0.33	-83.6	~1.812
3L	9min	1618	19.1	1051.90	6.94	2.7	0.25	-88.4	~1.812
4L	12min	1615	19.1	1049.22	6.95	2.3	0.21	-89.3	~1.812

Comments (e.g. condition of headworks, sheen, colour, odour, sediment load):

clear light yellow, no odour, no sheen, low to mod sed

SAMPLING DETAILS		Sample ID:
Time:	Vol. Removed: L	No of Sample Containers: 8
Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):		
Field Filtered ☑	Duplicate Samples ☐	Duplicate Sample ID:
Comments:		

CoC Number:	Checked by:	Date:

1 Bores to be purged dry, until pH, T and EC readings stabilise or a minimum of 3 to 5 times the water column volumes. Water column volumes can be calculated from the following casing volumes per unit length: 40 mm ID - 1 L/m; 50 mm ID – 2 L/m; 100 mm ID 8 L/m.

2 Calibration details to be recorded in the instrument –specific calibration book, or in field notes as required by local procedures.

Groundwater Monitoring – Field Sheet

Client:			BORE ID: BH32.1
Project:			Job No.: 6370411
Location:	Casing diameter: 50 mm		Date: 24/10/19

BORE CONSTRUCTION

Head-works	☑ Flush-mount	☐ Monument	☐ Casing only	☐ Locked	Measurement Point	☐ Top of PVC Casing	Total Depth: 10.139 m

BORE DEVELOPMENT

Method:	Date:	Undertaken By:	Vol. Removed: L

Comments (e.g. sediment content):

PURGING DETAILS (measurement points in meters below top of casing as indicated above)

Method: Peri-pump	Water Quality Meter used: YSI Pro		Undertaken By: EE/PY
Depth to water: 3.960 m	Water Column: m	Req Purge Vol. [1]: L	Flow Rate: L/min
Presence of LNAPL ☐	Presence of DNAPL ☐	Thickness of NAPL: cm	Depth to NAPL: m
Pump intake: m			

PURGING MEASUREMENTS [2]

Vol. Purged (L)	Elapsed Time (min)	EC (µS/cm)	Temp. (°C)	TDS (ppm|mg/L)	pH	DO %Sat	DO (ppm|mg/L)	Eh (mV)	Water Level (m b TOC)
AS 5667.11: 1998 (<+/-)		10%	0.2°C	-	10%	10%	10%	-	-
1L	3 min	8646	19.1	5615.36	4.09	4.9	0.44	309.0	
2L	6 min	8333	19.1	5411.08	4.13	3.6	0.32	320.1	
3L	9 min	7998	19.1	5197.04	4.19	3.0	027	319.6	
4L	12 min	7334	19.1	4754.45	4.32	2.4	0.22	308.1	
5L	15 min	6831	19.1	4430.22	4.42	2.1	0.19	300.8	
6L	18 min	6498	19.1	4166.67	4.51	2.0	0.18	291.0	
7L	21 min	6250	19.1	4067.61	4.54	1.9	0.17	285.6	

Comments (e.g. condition of headworks, sheen, colour, odour, sediment load):

Clear, slight metallic odour, no sheen, low to mod sed.

SAMPLING DETAILS		Sample ID:
Time:	Vol. Removed: L	No of Sample Containers: 8

Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):

Field Filtered ☑	Duplicate Samples ☑	Duplicate Sample ID: FD03, FS01

Comments:

CoC Number:	Checked by:	Date:

1 Bores to be purged dry, until pH, T and EC readings stabilise or a minimum of 3 to 5 times the water column volumes. Water column volumes can be calculated from the following casing volumes per unit length: 40 mm ID - 1 L/m; 50 mm ID – 2 L/m; 100 mm ID 8 L/m.

2 Calibration details to be recorded in the instrument –specific calibration book, or in field notes as required by local procedures.

Groundwater Monitoring – Field Sheet

Client:			BORE ID: BOR MW04
Project:			Job No.: 6137041
Location:	Casing diameter: 50 mm		Date: 28/10/19

BORE CONSTRUCTION

Head-works	☑ Flush-mount	☐ Monument	☐ Casing only	☐ Locked	Measurement Point: ☐ Top of PVC Casing

Total Depth: 8.195 m

BORE DEVELOPMENT

Method:	Date:	Undertaken By:	Vol. Removed: L

Comments (e.g. sediment content):

PURGING DETAILS (measurement points in meters below top of casing as indicated above)

Method: Peri-pump	Water Quality Meter used: YSI Pro		Undertaken By: DE/DS
Depth to water: 4.095m	Water Column: m	Req Purge Vol. [1]: L	Flow Rate: L/min
Presence of LNAPL ☐	Presence of DNAPL ☐	Thickness of NAPL: cm	Depth to NAPL: m
Pump intake: m			

PURGING MEASUREMENTS [2]

Vol. Purged (L)	Elapsed Time (min)	EC (µS/cm)	Temp. (°C)	TDS (ppm|mg/L)	pH	DO %Sat	DO (ppm|mg/L)	Eh (mV)	Water Level (m b TOC)
AS 5667.11: 1998 (<+/-)		10%	0.2°C	-	10%	10%	10%	-	-
1L	3min	4292	19.2	2793.90	6.60	9.0	0.80	-21.6	~4.095
2L	6min	4341	19.2	2821.95	6.63	4.3	0.39	-21.6	~4.095
3L	9min	4336	19.2	2818.68	6.63	3.8	0.34	-22.4	~4.095
4L	12min	4334	19.2	2816.70	6.63	3.5	0.32	-22.9	~4.095

Comments (e.g. condition of headworks, sheen, colour, odour, sediment load):

SAMPLING DETAILS		Sample ID:
Time:	Vol. Removed: L	No of Sample Containers: 8

Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):

Field Filtered ☑	Duplicate Samples ☐	Duplicate Sample ID:

Comments: * request moving around well

CoC Number:	Checked by:	Date:

1 Bores to be purged dry, until pH, T and EC readings stabilise or a minimum of 3 to 5 times the water column volumes. Water column volumes can be calculated from the following casing volumes per unit length: 40 mm ID - 1 L/m; 50 mm ID – 2 L/m; 100 mm ID 8 L/m.

2 Calibration details to be recorded in the instrument –specific calibration book, or in field notes as required by local procedures.

Groundwater Monitoring – Field Sheet

Client:		BORE ID:	BORE MW05
Project:		Job No.:	6137041
Location:	Casing diameter: 50 mm	Date:	28/10/19

BORE CONSTRUCTION

Head-works	☑ Flush-mount	☐ Monument	☐ Casing only	☐ Locked	Measurement Point	☐ Top of PVC Casing	Total Depth: 8.021 m

BORE DEVELOPMENT

Method:	Date:	Undertaken By:	Vol. Removed: L

Comments (e.g. sediment content):

PURGING DETAILS (measurement points in meters below top of casing as indicated above)

Method: Peri-pump	Water Quality Meter used: YSI PRO		Undertaken By: EE/DS
Depth to water: 5.635 m	Water Column: m	Req Purge Vol. [1]: L	Flow Rate: L/min
Presence of LNAPL ☐	Presence of DNAPL ☐	Thickness of NAPL: cm	Depth to NAPL: m
Pump intake: m			

PURGING MEASUREMENTS [2]

Vol. Purged (L)	Elapsed Time (min)	EC (µS/cm)	Temp. (°C)	TDS (ppm|mg/L)	pH	DO %Sat	DO (ppm|mg/L)	Eh (mV)	Water Level (m b TOC)
AS 5667.11: 1998 (<+/-)		10%	0.2°C	-	10%	10%	10%	-	-
1L	3min	1466	21.2	945.41	6.94	25.0	2.15	-41.8	~5.635
2L	6min	1379	21.4	897.40	6.76	14.0	1.22	-41.8	~5.635
3L	9 min	1367	21.0	888.27	6.68	12.0	1.05	-42.8	~5.635
4L	12 min	1359	20.9	883.90	6.63	8.8	0.74	-44.6	~5.635
5L	15min	1350	20.8	880.00	6.59	7.0	0.63	-45.0	~5.635
6L	18min	1340	20.8	880.00	6.54	6.0	0.53	-47.7	~5.635

Comments (e.g. condition of headworks, sheen, colour, odour, sediment load):

cloudy brown, slight sulfur odour, no sheen, low to mod sed.

SAMPLING DETAILS		Sample ID:
Time:	Vol. Removed: L	No of Sample Containers: 8

Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):

Field Filtered ☑	Duplicate Samples ☐	Duplicate Sample ID:

Comments:

CoC Number:	Checked by:	Date:

1 Bores to be purged dry, until pH, T and EC readings stabilise or a minimum of 3 to 5 times the water column volumes. Water column volumes can be calculated from the following casing volumes per unit length: 40 mm ID - 1 L/m; 50 mm ID – 2 L/m; 100 mm ID 8 L/m.

2 Calibration details to be recorded in the instrument –specific calibration book, or in field notes as required by local procedures.

Groundwater Monitoring – Field Sheet

Client:			BORE ID: BORE MW06
Project:			Job No.: 6137041
Location:	Casing diameter: 50 mm		Date: 28/10/19

BORE CONSTRUCTION

Head-works	☑ Flush-mount	☐ Monument	☐ Casing only	☐ Locked	Measurement Point: ☐ Top of PVC Casing	Total Depth: 7.851 m

BORE DEVELOPMENT

Method:	Date:	Undertaken By:	Vol. Removed: L

Comments (e.g. sediment content):

PURGING DETAILS (measurement points in meters below top of casing as indicated above)

Method: Peri-pump	Water Quality Meter used: YSI Pro		Undertaken By: EE/DS
Depth to water: 5.311 m	Water Column: m	Req Purge Vol. [1]: L	Flow Rate: L/min
Presence of LNAPL ☐	Presence of DNAPL ☐	Thickness of NAPL: cm	Depth to NAPL: m
Pump intake: m			

PURGING MEASUREMENTS [2]

Vol. Purged (L)	Elapsed Time (min)	EC (µS/cm)	Temp. (°C)	TDS (ppm|mg/L)	pH	DO %Sat	DO (ppm|mg/L)	Eh (mV)	Water Level (m b TOC)
AS 5667.11: 1998 (<+/-)		10%	0.2°C	-	10%	10%	10%	-	-
1L	3min	6966	20.4	625.12	6.97	8.0	0.70	-159.4	~5.311
2L	6min	937	20.3	608.42	7.00	4.7	0.42	-142.3	~5.311
3L	9min	927	20.3	608	7.00	4.3	0.38	-140.7	~5.311

Comments (e.g. condition of headworks, sheen, colour, odour, sediment load):

Clear brown, mod sed, slight sulfur odour, no sheen

SAMPLING DETAILS		Sample ID:
Time:	Vol. Removed: L	No of Sample Containers: 8

Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):

Field Filtered ☑	Duplicate Samples ☐	Duplicate Sample ID:

Comments:

CoC Number:	Checked by:	Date:

1 Bores to be purged dry, until pH, T and EC readings stabilise or a minimum of 3 to 5 times the water column volumes. Water column volumes can be calculated from the following casing volumes per unit length: 40 mm ID - 1 L/m; 50 mm ID – 2 L/m; 100 mm ID 8 L/m.

2 Calibration details to be recorded in the instrument–specific calibration book, or in field notes as required by local procedures.

Groundwater Monitoring – Field Sheet

Client: MRWA			BORE ID: BORR MW08a
Project: GW + SW Sampling			Job No.: 6137041
Location:	Casing diameter: 50 mm		Date: 28/10/19

BORE CONSTRUCTION

Head-works	☑ Flush-mount	☐ Monument	☐ Casing only	☐ Locked	Measurement Point: ☐ Top of PVC Casing	Total Depth: 6.725 m

BORE DEVELOPMENT

Method:	Date:	Undertaken By:	Vol. Removed: L

Comments (e.g. sediment content):

PURGING DETAILS (measurement points in meters below top of casing as indicated above)

Method: Peri-pump	Water Quality Meter used: YSI PRO		Undertaken By: EE/DS
Depth to water: 2.720m	Water Column: m	Req Purge Vol. [1]: L	Flow Rate: L/min
Presence of LNAPL ☐	Presence of DNAPL ☐	Thickness of NAPL: cm	Depth to NAPL: m
Pump intake: m			

PURGING MEASUREMENTS [2]

Vol. Purged (L)	Elapsed Time (min)	EC (µS/cm)	Temp. (°C)	TDS (ppm|mg/L)	pH	DO %Sat	DO (ppm|mg/L)	Eh (mV)	Water Level (m b TOC)
AS 5667.11: 1998 (<+/-)		10%	0.2°C	-	10%	10%	10%	-	-
1L	4min	661	19.4	419.110	6.31	11.6	1.03	-45.7	~5.72
2L	8min	603	19.1	391.066	6.15	6.3	0.57	-47.9	~5.72
3L	12min	593	19.0	384.290	6.10	5.5	0.49	-48.3	~5.72
4L	16min	586	19.0	380.623	6.06	4.5	0.41	-48.7	~5.72
5L	20min	585	19.0	380.701	6.05	4.1	0.39	-48.9	~5.72

Comments (e.g. condition of headworks, sheen, colour, odour, sediment load):

cloudy brown, organic odour, no sheen, low to med sed.

SAMPLING DETAILS		Sample ID:
Time:	Vol. Removed: L	No of Sample Containers: 8

Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):

Field Filtered ☑	Duplicate Samples ☐	Duplicate Sample ID:

Comments:

CoC Number:	Checked by:	Date:

1 Bores to be purged dry, until pH, T and EC readings stabilise or a minimum of 3 to 5 times the water column volumes. Water column volumes can be calculated from the following casing volumes per unit length: 40 mm ID - 1 L/m; 50 mm ID – 2 L/m; 100 mm ID 8 L/m.

2 Calibration details to be recorded in the instrument –specific calibration book, or in field notes as required by local procedures.

Groundwater Monitoring – Field Sheet

Client:			BORE ID: BORE MW09
Project:			Job No.: 6137041
Location:	Casing diameter: 50 mm		Date: 23/10/19

BORE CONSTRUCTION

Head-works	☑ Flush-mount ☐ Monument ☐ Casing only ☐ Locked	Measurement Point	☐ Top of PVC Casing
		Total Depth: 5.298 m	

BORE DEVELOPMENT

Method:	Date:	Undertaken By:	Vol. Removed: L

Comments (e.g. sediment content):

PURGING DETAILS (measurement points in meters below top of casing as indicated above)

Method: Peri-pump	Water Quality Meter used: YSI Pro.		Undertaken By: EE/PY
Depth to water: 3.161 m	Water Column: m	Req Purge Vol. [1]: L	Flow Rate: L/min
Presence of LNAPL ☐	Presence of DNAPL ☐	Thickness of NAPL: cm	Depth to NAPL: m
Pump intake: m			

PURGING MEASUREMENTS [2]

Vol. Purged (L)	Elapsed Time (min)	EC (µS/cm)	Temp. (°C)	TDS (ppm|mg/L)	pH	DO %Sat	DO (ppm|mg/L)	Eh (mV)	Water Level (m b TOC)
AS 5667.11: 1998 (<+/-)		10%	0.2°C	-	10%	10%	10%	-	-
1 L	3 min	391.7	18.7	253.08	6.17	33.2	3.12	152.4	
2 L	6 min.	305.3	18.6	198.10	6.15	45.3	4.23	162.2	
3 L	9 min	300.7	18.5	195.48	6.09	43.0	4.02	171.7	
4 L	12 min	302.4	18.5	196.65	6.08	41.7	3.90	175.3	
5 L	15 min	300.8	18.5	194.52	6.07	41.4	3.87	178.2	

Comments (e.g. condition of headworks, sheen, colour, odour, sediment load):

Clear, no odour, no sheen, low to no sed.

SAMPLING DETAILS		Sample ID:
Time:	Vol. Removed: L	No of Sample Containers: 8

Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):

Field Filtered ☑	Duplicate Samples ☐	Duplicate Sample ID:

Comments:

CoC Number:	Checked by:	Date:

1 Bores to be purged dry, until pH, T and EC readings stabilise or a minimum of 3 to 5 times the water column volumes. Water column volumes can be calculated from the following casing volumes per unit length: 40 mm ID - 1 L/m; 50 mm ID – 2 L/m; 100 mm ID 8 L/m.
Calibration details to be recorded in the instrument-specific calibration book, or in field notes as required by local procedures.

Groundwater Monitoring – Field Sheet

Client:			BORE ID: BORE MW10
Project:			Job No.: 61370411
Location:	Casing diameter: 50 mm		Date: 23/10/19

BORE CONSTRUCTION

Head-works	☑ Flush-mount	☐ Monument	☐ Casing only	☐ Locked	Measurement Point: ☐ Top of PVC Casing	Total Depth: 3.922 m

BORE DEVELOPMENT

Method:	Date:	Undertaken By:	Vol. Removed: L

Comments (e.g. sediment content):

PURGING DETAILS (measurement points in meters below top of casing as indicated above)

Method: Peri-pump	Water Quality Meter used: YSI Pro		Undertaken By: EE/PY
Depth to water: 1.464 m	Water Column: m	Req Purge Vol. [1]: L	Flow Rate: L/min
Presence of LNAPL ☐	Presence of DNAPL ☐	Thickness of NAPL: cm	Depth to NAPL: m
Pump intake: m			

PURGING MEASUREMENTS [2]

Vol. Purged (L)	Elapsed Time (min)	EC (µS/cm)	Temp. (°C)	TDS (ppm|mg/L)	pH	DO %Sat	DO (ppm|mg/L)	Eh (mV)	Water Level (m b TOC)
AS 5667.11: 1998 (<+/-)		10%	0.2°C	-	10%	10%	10%	-	-
1L	3 min	801	17.5	519.78	5.92	3.4	0.33	-13.4	
2L	6 min	647	17.4	419.05	5.89	2.4	0.23	-9.3	
3L	9 min	525	17.3	340.52	5.86	1.9	0.18	-0.2	
4L	12 min	484.6	17.3	314.40	5.85	1.7	0.16	2.9	
5L	15 min	450.4	17.3	292.63	5.83	1.5	0.14	3.8	
6L	18 min	440.8	17.4	286.36	5.83	1.5	0.14	4.4	

Comments (e.g. condition of headworks, sheen, colour, odour, sediment load):

Clear, no odour, no sheen, low sed

SAMPLING DETAILS

Time:	Vol. Removed: L	Sample ID: No of Sample Containers: 8

Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):

Field Filtered ☑	Duplicate Samples ☐	Duplicate Sample ID:

Comments:

CoC Number:	Checked by:	Date:

1 Bores to be purged dry, until pH, T and EC readings stabilise or a minimum of 3 to 5 times the water column volumes. Water column volumes can be calculated from the following casing volumes per unit length: 40 mm ID - 1 L/m; 50 mm ID – 2 L/m; 100 mm ID 8 L/m.

2 Calibration details to be recorded in the instrument –specific calibration book, or in field notes as required by local procedures.

Groundwater Monitoring – Field Sheet

Client:			BORE ID: BORE MW11
Project:			Job No.: 61370411
Location:	Casing diameter: 50 mm		Date: 23/10/19

BORE CONSTRUCTION

Head-works	☑ Flush-mount	☐ Monument	☐ Casing only	☐ Locked	Measurement Point: ☐ Top of PVC Casing	Total Depth: 3.873 m

BORE DEVELOPMENT

Method:	Date:	Undertaken By:	Vol. Removed: L

Comments (e.g. sediment content):

PURGING DETAILS (measurement points in meters below top of casing as indicated above)

Method: Peri-pump	Water Quality Meter used: YSI Pro		Undertaken By: EE/YP
Depth to water: 1.472 m	Water Column: m	Req Purge Vol. [1]: L	Flow Rate: L/min
Presence of LNAPL ☐	Presence of DNAPL ☐	Thickness of NAPL: cm	Depth to NAPL: m
Pump intake: m			

PURGING MEASUREMENTS [2]

Vol. Purged (L)	Elapsed Time (min)	EC (µS/cm)	Temp. (°C)	TDS (ppm|mg/L)	pH	DO %Sat	DO (ppm|mg/L)	Eh (mV)	Water Level (m b TOC)
AS 5667.11: 1998 (<+/-)		10%	0.2°C	-	10%	10%	10%	-	-
~~0.5~~ 1L	5 min.	12934	17.9	3409.82	6.86	7.8	0.71	52.9	
1.5L	7.5 min.	12963	17.9	3426.24	6.88	7.1	0.64	51.3	
2L	10 min	12993	17.9	3446.25	6.90	6.4	0.58	46.7	
2.5 L	12.5 min	13049	17.9	3482.67	6.92	6.2	0.56	41.0	(3.873 – 2.890
3 L	15 min.	13072	17.9	3497.91	6.93	6.3	0.57	32.4	

Comments (e.g. condition of headworks, sheen, colour, odour, sediment load):

Clear yellow, low sed., no odour, no sheen.

SAMPLING DETAILS		Sample ID:
Time:	Vol. Removed: L	No of Sample Containers: 8

Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):

Field Filtered ☑	Duplicate Samples ☐	Duplicate Sample ID:

Comments: Slow recharge.

CoC Number:	Checked by:	Date:

1 Bores to be purged dry, until pH, T and EC readings stabilise or a minimum of 3 to 5 times the water column volumes. Water column volumes can be calculated from the following casing volumes per unit length: 40 mm ID - 1 L/m; 50 mm ID – 2 L/m; 100 mm ID 8 L/m.

2 Calibration details to be recorded in the instrument –specific calibration book, or in field notes as required by local procedures.

Groundwater Monitoring – Field Sheet

Client:		BORE ID: BORE MW12
Project:		Job No.: 61370411
Location:	Casing diameter: 50 mm	Date: 22/10/19

BORE CONSTRUCTION

Head-works	☑ Flush-mount ☐ Monument	☐ Casing only	☐ Locked	Measurement Point ☐ Top of PVC Casing	Total Depth: 4.393 m

BORE DEVELOPMENT

Method:	Date:	Undertaken By:	Vol. Removed: L

Comments (e.g. sediment content):

PURGING DETAILS (measurement points in meters below top of casing as indicated above)

Method: Peri-pump	Water Quality Meter used: YSI Pro		Undertaken By: EE/AY
Depth to water: 1.646 m	Water Column: m	Req Purge Vol. [1]: L	Flow Rate: ~0.25 L/min
Presence of LNAPL ☐	Presence of DNAPL ☐	Thickness of NAPL: cm	Depth to NAPL: m
Pump intake: m			

PURGING MEASUREMENTS [2]

Vol. Purged (L)	Elapsed Time (min)	EC (µS/cm)	Temp. (°C)	TDS (ppm|mg/L)	pH	DO %Sat	DO (ppm|mg/L)	Eh (mV)	Water Level (m b TOC)
AS 5667.11: 1998 (<+/-)		10%	0.2°C	-	10%	10%	10%	-	-
1L	4 min.	786	18.6	509.031	6.59	5.3	0.49	-54.2	
2L	8 min.	662	18.5	428.350	6.37	3.5	0.32	-31.8	
3L	12 min.	620	18.4	403.000	6.30	2.8	0.26	-21.6	
4L	16 min	605	18.5	392.486	6.26	2.2	0.20	-14.9	
5L	20 min.	591	18.6	384.286	6.24	1.8	0.16	-8.6	
9L	~30 min	560	18.9	363.598	6.19	2.1	0.19	-3.1	

Comments (e.g. condition of headworks, sheen, colour, odour, sediment load):

SAMPLING DETAILS

		Sample ID:
Time:	Vol. Removed: L	No of Sample Containers:

Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):

Field Filtered ☐	Duplicate Samples ☐	Duplicate Sample ID:

Comments:

CoC Number:	Checked by:	Date:

1 Bores to be purged dry, until pH, T and EC readings stabilise or a minimum of 3 to 5 times the water column volumes. Water column volumes can be calculated from the following casing volumes per unit length: 40 mm ID - 1 L/m; 50 mm ID – 2 L/m; 100 mm ID 8 L/m.

2 Calibration details to be recorded in the instrument –specific calibration book, or in field notes as required by local procedures.

Groundwater Monitoring – Field Sheet

Client:			BORE ID: RDRR MW13
Project:			Job No.: 61370441
Location:	Casing diameter: 50 mm		Date: 21/10/19

BORE CONSTRUCTION

Head-works	☑ Flush-mount	☐ Monument	☐ Casing only	☐ Locked	Measurement Point ☐ Top of PVC Casing	Total Depth: 4.878 m

BORE DEVELOPMENT

Method:	Date:	Undertaken By:	Vol. Removed: L

Comments (e.g. sediment content):

PURGING DETAILS (measurement points in meters below top of casing as indicated above)

Method: Peri-pump	Water Quality Meter used: YSI Pro		Undertaken By: EE IDS
Depth to water: 0.748 m	Water Column: m	Req Purge Vol. [1]: L	Flow Rate: L/min
Presence of LNAPL ☐	Presence of DNAPL ☐	Thickness of NAPL: cm	Depth to NAPL: m
Pump intake: m			

PURGING MEASUREMENTS [2]

Vol. Purged (L)	Elapsed Time (min)	EC (µS/cm)	Temp. (°C)	TDS (ppm|mg/L)	pH	DO %Sat	DO (ppm|mg/L)	Eh (mV)	Water Level (m b TOC)
AS 5667.11: 1998 (<+/-)		10%	0.2°C	-	10%	10%	10%	-	-
1L	3min	777	17.9	502.92	6.45	10.7	1.01	96.7	~0.748
2L	6min	737	17.8	478.189	6.37	6.5	0.60	92.9	~0.75
3L	9min	725	17.8	470.859	6.34	5.4	0.51	89.1	~0.75
4L	12min	717	17.8	466.435	6.31	4.8	0.45	66.0	~0.75
5L	15min	720	17.8	467.955	6.31	3.9	0.37	55.0	~0.75
6L	18min	721	17.8	468.277	6.31	3.6	0.35	54.2	~0.75

Comments (e.g. condition of headworks, sheen, colour, odour, sediment load):

clear, slight sulfur odour, no sheen, low sed

SAMPLING DETAILS

Time:	Vol. Removed: L	Sample ID:
		No of Sample Containers: 8

Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):

Field Filtered ☑	Duplicate Samples ☐	Duplicate Sample ID:

Comments:

CoC Number:	Checked by:	Date:

1 Bores to be purged dry, until pH, T and EC readings stabilise or a minimum of 3 to 5 times the water column volumes. Water column volumes can be calculated from the following casing volumes per unit length: 40 mm ID - 1 L/m; 50 mm ID – 2 L/m; 100 mm ID 8 L/m.

2 Calibration details to be recorded in the instrument –specific calibration book, or in field notes as required by local procedures.

Groundwater Monitoring – Field Sheet

Client:			BORE ID: BORE MW15
Project:			Job No.: 61370411
Location:	Casing diameter: 50 mm		Date: 21/10/19

BORE CONSTRUCTION

Head-works	☑ Flush-mount	☐ Monument	☐ Casing only	☐ Locked	Measurement Point: ☐ Top of PVC Casing	Total Depth: 3.728 m

BORE DEVELOPMENT

Method:	Date:	Undertaken By:	Vol. Removed: L

Comments (e.g. sediment content):

PURGING DETAILS (measurement points in meters below top of casing as indicated above)

Method: Peri-pump	Water Quality Meter used: YSI Pro		Undertaken By: EE/DS
Depth to water: 1.335 m	Water Column: m	Req Purge Vol. [1]: L	Flow Rate: L/min
Presence of LNAPL ☐	Presence of DNAPL ☐	Thickness of NAPL: cm	Depth to NAPL: m
Pump intake: m			

PURGING MEASUREMENTS [2]

Vol. Purged (L)	Elapsed Time (min)	EC (µS/cm)	Temp. (°C)	TDS (ppm|mg/L)	pH	DO %Sat	DO (ppm|mg/L)	Eh (mV)	Water Level (m b TOC)
AS 5667.11: 1998 (<+/-)		10%	0.2 °C	-	10%	10%	10%	-	-
1L	3min	197.2	19.2	127.26	6.13	9.8	0.89	9.9	~1.335
2L	6min	185.9	19.0	120.85	6.03	7.2	0.66	-5.5	~1.335
3L	9min	185.9	19.0	120.87	5.98	5.9	0.54	-29.4	~1.335
4L	12min	187.3	19.0	121.75	5.97	4.4	0.41	-49.4	~1.335
5L	15min	187.9	19.0	122.16	5.98	4.0	0.37	-56.8	~1.335

Comments (e.g. condition of headworks, sheen, colour, odour, sediment load):

clear, low to med sed, sulfur odour, no sheen

SAMPLING DETAILS		Sample ID:
Time:	Vol. Removed: L	No of Sample Containers: 8

Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):

Field Filtered ☑	Duplicate Samples ☐	Duplicate Sample ID:

Comments:

CoC Number:	Checked by:	Date:

1 Bores to be purged dry, until pH, T and EC readings stabilise or a minimum of 3 to 5 times the water column volumes. Water column volumes can be calculated from the following casing volumes per unit length: 40 mm ID - 1 L/m; 50 mm ID – 2 L/m; 100 mm ID 8 L/m.

2 Calibration details to be recorded in the instrument –specific calibration book, or in field notes as required by local procedures.

Groundwater Monitoring – Field Sheet

Client:			BORE ID: BORR.in MW18
Project:			Job No.: 6137041
Location:	Casing diameter: 50 mm		Date: 21/10/19

BORE CONSTRUCTION

Head-works	☑ Flush-mount ☐ Monument	☐ Casing only ☐ Locked	Measurement Point ☐ Top of PVC Casing	Total Depth: 3.965 m

BORE DEVELOPMENT

Method:	Date:	Undertaken By:	Vol. Removed: L

Comments (e.g. sediment content):

PURGING DETAILS (measurement points in meters below top of casing as indicated above)

Method: Peri-pump	Water Quality Meter used: YSI Pro		Undertaken By: EIDS
Depth to water: 1.721 m	Water Column: m	Req Purge Vol. [1]: L	Flow Rate: L/min
Presence of LNAPL ☐	Presence of DNAPL ☐	Thickness of NAPL: cm	Depth to NAPL: m
Pump intake: m			

PURGING MEASUREMENTS [2]

Vol. Purged (L)	Elapsed Time (min)	EC (µS/cm)	Temp. (°C)	TDS (ppm|mg/L)	pH	DO %Sat	DO (ppm|mg/L)	Eh (mV)	Water Level (m b TOC)
AS 5667.11: 1998 (<+/-)		10%	0.2°C	-	10%	10%	10%	-	-
1	3min	210.0	19.5	131.518	5.56	81.5	7.40	160.1	~1.7
2	6min	199.2	18.4	129.886	5.00	72.8	6.82	178.2	~1.7
3	9min	225.6	18.2	147.35	4.67	65.6	6.17	193.4	~1.7
4	12min	245.9	18.2	159.02	5.70	61.2	5.76	196.6	~1.7
5	15min	252.3	18.2	164.89	4.56	59.0	5.55	199.3	~1.7
6	18min	260.2	18.2	169.98	4.55	56.4	5.31	200.1	~1.7

Comments (e.g. condition of headworks, sheen, colour, odour, sediment load):

Clear, no odour, no sheen, low to no Sed.

SAMPLING DETAILS

		Sample ID:
Time:	Vol. Removed: L	No of Sample Containers: 9

Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):

Field Filtered ☑	Duplicate Samples ☐	Duplicate Sample ID:

Comments:

CoC Number:	Checked by:	Date:

1 Bores to be purged dry, until pH, T and EC readings stabilise or a minimum of 3 to 5 times the water column volumes. Water column volumes can be calculated from the following casing volumes per unit length: 40 mm ID - 1 L/m; 50 mm ID – 2 L/m; 100 mm ID 8 L/m.

2 Calibration details to be recorded in the instrument –specific calibration book, or in field notes as required by local procedures.

Groundwater Monitoring – Field Sheet

Client:			BORE ID: BORE MW19
Project:			Job No.: 6137041
Location:	Casing diameter: 50 mm		Date: 21/10/19

BORE CONSTRUCTION

Head-works	☑ Flush-mount	☐ Monument	☐ Casing only	☐ Locked	Measurement Point: ☐ Top of PVC Casing	Total Depth: 2.529 m

BORE DEVELOPMENT

Method: Peri-pump	Date:	Undertaken By:	Vol. Removed: L

Comments (e.g. sediment content):

PURGING DETAILS (measurement points in meters below top of casing as indicated above)

Method: Peri-pump	Water Quality Meter used: YSI Pro		Undertaken By: EE/DS
Depth to water: 1.187 m	Water Column: m	Req Purge Vol. [1]: L	Flow Rate: L/min
Presence of LNAPL ☐	Presence of DNAPL ☐	Thickness of NAPL: cm	Depth to NAPL: m
Pump intake: m			

PURGING MEASUREMENTS [2]

Vol. Purged (L)	Elapsed Time (min)	EC (µS/cm)	Temp. (°C)	TDS (ppm|mg/L)	pH	DO %Sat	DO (ppm|mg/L)	Eh (mV)	Water Level (m b TOC)
AS 5667.11: 1998 (<+/-)		10%	0.2°C	-	10%	10%	10%	-	-
1L	3min	14656	19.2	9405.10	6.75	4.2	0.36	-136.3	~1.187
2L	6min	11131	19.3	7102.95	6.74	4.6	0.42	-115.7	~1.187
~~3L~~	~~9min~~		~~19.4~~						~~na80~~
* well ran dry at ~2L. Waited 20mins and took reading and sampled.									
3L	29min	14985	20.1	9775.55	6.68	14.7	1.21	-81.7	~0.80

Comments (e.g. condition of headworks, sheen, colour, odour, sediment load):

* could not sample - well did not recharge

SAMPLING DETAILS		Sample ID:
Time:	Vol. Removed: L	No of Sample Containers: 8

Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):

Field Filtered ☑	Duplicate Samples ☐	Duplicate Sample ID:

Comments:

CoC Number:	Checked by:	Date:

1 Bores to be purged dry, until pH, T and EC readings stabilise or a minimum of 3 to 5 times the water column volumes. Water column volumes can be calculated from the following casing volumes per unit length: 40 mm ID - 1 L/m; 50 mm ID – 2 L/m; 100 mm ID 8 L/m.

2 Calibration details to be recorded in the instrument –specific calibration book, or in field notes as required by local procedures.

Groundwater Monitoring – Field Sheet

Client:			BORE ID: BORR MW196
Project:			Job No.: 6137041
Location:	Casing diameter: 50 mm		Date: 21/10/19

BORE CONSTRUCTION

Head-works	☑ Flush-mount	☐ Monument	☐ Casing only	☐ Locked	Measurement Point: ☐ Top of PVC Casing	Total Depth: 12.118 m

BORE DEVELOPMENT

Method:	Date:	Undertaken By:	Vol. Removed: L

Comments (e.g. sediment content):

PURGING DETAILS (measurement points in meters below top of casing as indicated above)

Method: Peri-pump	Water Quality Meter used: YSI Pro		Undertaken By: EE/DS
Depth to water: 0.877 m	Water Column: m	Req Purge Vol. [1]: L	Flow Rate: L/min
Presence of LNAPL ☐	Presence of DNAPL ☐	Thickness of NAPL: cm	Depth to NAPL: m
Pump intake: m			

PURGING MEASUREMENTS [2]

Vol. Purged (L)	Elapsed Time (min)	EC (µS/cm)	Temp. (°C)	TDS (ppm|mg/L)	pH	DO %Sat	DO (ppm|mg/L)	Eh (mV)	Water Level (m b TOC)
AS 5667.11: 1998 (<+/-)		10%	0.2°C	-	10%	10%	10%	-	-
1L	3min	2487	19.9	1613.51	5.94	5.1	0.45	-44.3	~0.877
2L	6min	2448	20.0	1590.75	5.85	3.0	0.27	-47.3	~0.877
3L	9min	2445	20.0	1589.90	5.84	2.7	0.25	-48.0	~0.87

Comments (e.g. condition of headworks, sheen, colour, odour, sediment load): Clear, no odour, low-no sed, no sheen

SAMPLING DETAILS

Time:	Vol. Removed: L	Sample ID:
		No of Sample Containers: 8

Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):

Field Filtered ☑	Duplicate Samples ☐	Duplicate Sample ID:

Comments:

CoC Number:	Checked by:	Date:

1 Bores to be purged dry, until pH, T and EC readings stabilise or a minimum of 3 to 5 times the water column volumes. Water column volumes can be calculated from the following casing volumes per unit length: 40 mm ID - 1 L/m; 50 mm ID – 2 L/m; 100 mm ID 8 L/m.

2 Calibration details to be recorded in the instrument –specific calibration book, or in field notes as required by local procedures.

Groundwater Monitoring – Field Sheet

Client:			BORE ID: BORE MW20
Project:			Job No.: 6137041
Location:	Casing diameter: 50 mm		Date: 21/10/19

BORE CONSTRUCTION

Head-works	☑ Flush-mount	☐ Monument	☐ Casing only	☐ Locked	Measurement Point	☐ Top of PVC Casing

Total Depth: 14.291 m

BORE DEVELOPMENT

Method:	Date:	Undertaken By:	Vol. Removed: L

Comments (e.g. sediment content):

PURGING DETAILS (measurement points in meters below top of casing as indicated above)

Method: Peri-pump	Water Quality Meter used: YSI Pro		Undertaken By: ~~EE~~/DS
Depth to water: 0.931 m	Water Column: m	Req Purge Vol. [1]: L	Flow Rate: L/min
Presence of LNAPL ☐	Presence of DNAPL ☐	Thickness of NAPL: cm	Depth to NAPL: m
Pump intake: m			

PURGING MEASUREMENTS [2]

Vol. Purged (L)	Elapsed Time (min)	EC (µS/cm)	Temp. (°C)	TDS (ppm|mg/L)	pH	DO %Sat	DO (ppm|mg/L)	Eh (mV)	Water Level (m b TOC)
AS 5667.11: 1998 (<+/-)		10%	0.2°C	-	10%	10%	10%	-	-
1L	3min	4492	19.7	2919.82	5.76	9.0	0.80	74.3	~0.931
2L	6 min	4457	19.6	2896.35	5.73	6.1	0.55	77.0	~0.931
3L	9 min	4460	19.6	2899.82	5.73	4.8	0.43	77.6	~0.931
4L	12 min	4452	19.6	2893.76	5.73	4.0	0.36	76.7	~0.931

Comments (e.g. condition of headworks, sheen, colour, odour, sediment load):

clear light brown, low to nosed, no sheen, no odour

SAMPLING DETAILS

Time:	Vol. Removed: L	Sample ID:
		No of Sample Containers: 8

Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):

Field Filtered ☑	Duplicate Samples ☐	Duplicate Sample ID:

Comments:

CoC Number:	Checked by:	Date:

1 Bores to be purged dry, until pH, T and EC readings stabilise or a minimum of 3 to 5 times the water column volumes. Water column volumes can be calculated from the following casing volumes per unit length: 40 mm ID - 1 L/m; 50 mm ID – 2 L/m; 100 mm ID 8 L/m.

2 Calibration details to be recorded in the instrument –specific calibration book, or in field notes as required by local procedures.

Groundwater Monitoring – Field Sheet

Client:			BORE ID: BORE MW22b
Project:			Job No.: 6137041
Location:	Casing diameter: 50 mm		Date: 24/10/19

BORE CONSTRUCTION

Head-works	☑ Flush-mount	☐ Monument	☐ Casing only	☐ Locked	Measurement Point ☐ Top of PVC Casing	Total Depth: 13.073 m

BORE DEVELOPMENT

Method:	Date:	Undertaken By:	Vol. Removed: L

Comments (e.g. sediment content):

PURGING DETAILS (measurement points in meters below top of casing as indicated above)

Method: Peri-pump	Water Quality Meter used: YSI Pro.		Undertaken By: EE/RY
Depth to water: 2.640 m	Water Column: m	Req Purge Vol. [1]: L	Flow Rate: L/min
Presence of LNAPL ☐	Presence of DNAPL ☐	Thickness of NAPL: cm	Depth to NAPL: m
Pump intake: m			

PURGING MEASUREMENTS [2]

Vol. Purged (L)	Elapsed Time (min)	EC (µS/cm)	Temp. (°C)	TDS (ppm|mg/L)	pH	DO %Sat	DO (ppm|mg/L)	Eh (mV)	Water Level (m b TOC)
AS 5667.11: 1998 (<+/-)		10%	0.2°C	-	10%	10%	10%	-	-
1L	3 min.	13867	20.7	9017.89	5.40	3.8	0.33	-22.1	
2L	6 min.	13858	20.7	9006.42	5.42	3.1	0.26	-33.9	
3L	9 min.	13814	20.7	8976.91	5.49	2.3	0.19	-33.8	
4L	12 min.	13740	20.8	8930.74	5.56	2.0	0.17	-28.7	
5L	15 min	13720	20.8	8918.38	5.55	1.8	0.15	-24.5	3.250m

Comments (e.g. condition of headworks, sheen, colour, odour, sediment load):

Clear, slight sulfur odour, no sheen, low sediments

SAMPLING DETAILS		Sample ID:
Time:	Vol. Removed: L	No of Sample Containers: 8

Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):

Field Filtered ☑	Duplicate Samples ☐	Duplicate Sample ID:

Comments: Slow recharge rate. End of monitory Depth to low reading : 3.250 m.

CoC Number:	Checked by:	Date:

1 Bores to be purged dry, until pH, T and EC readings stabilise or a minimum of 3 to 5 times the water column volumes. Water column volumes can be calculated from the following casing volumes per unit length: 40 mm ID - 1 L/m; 50 mm ID – 2 L/m; 100 mm ID 8 L/m.

2 Calibration details to be recorded in the instrument –specific calibration book, or in field notes as required by local procedures.

Groundwater Monitoring – Field Sheet

Client:			BORE ID: BORE MW24
Project:			Job No.: 637041
Location:	Casing diameter: 50 mm		Date: 22/10/19

BORE CONSTRUCTION

Head-works	☑ Flush-mount	☐ Monument	☐ Casing only	☐ Locked	Measurement Point ☐ Top of PVC Casing	Total Depth: 9.873 m

BORE DEVELOPMENT

Method:	Date:	Undertaken By:	Vol. Removed: L

Comments (e.g. sediment content):

PURGING DETAILS (measurement points in meters below top of casing as indicated above)

Method: Peri-pump	Water Quality Meter used: YSI Pro		Undertaken By: EE/PY
Depth to water: 7.808m	Water Column: m	Req Purge Vol. [1]: L	Flow Rate: 0.125 L/min
Presence of LNAPL ☐	Presence of DNAPL ☐	Thickness of NAPL: cm	Depth to NAPL: m
Pump intake: m			

PURGING MEASUREMENTS [2]

Vol. Purged (L)	Elapsed Time (min)	EC (µS/cm)	Temp. (°C)	TDS (ppm|mg/L)	pH	DO %Sat	DO (ppm|mg/L)	Eh (mV)	Water Level (m b TOC)
AS 5667.11: 1998 (<+/-)		10%	0.2°C	-	10%	10%	10%	-	-
0.5L	~~8min~~	~~1888~~ 1887	21.1	~~1227.87~~	4.39	29.9	2.65	253.0	~8.029
1L	8min	1885	21.0	1225.15	4.38	27.0	2.39	266.0	~8.052
1.5L	12min	1882	21.0	1223.47	4.38	24.3	2.14	279.8	~8.074
2L	16min	1881	21.0	1222.89	4.38	23.3	2.06	302.7	~8.074

Comments (e.g. condition of headworks, sheen, colour, odour, sediment load):

milky-clayey brown, no odour, no sheen, low to mod sed, mod turbidity

SAMPLING DETAILS		Sample ID:
Time:	Vol. Removed: L	No of Sample Containers: 8

Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):

Field Filtered ☑	Duplicate Samples ☐	Duplicate Sample ID:

Comments:

CoC Number:	Checked by:	Date:

1 Bores to be purged dry, until pH, T and EC readings stabilise or a minimum of 3 to 5 times the water column volumes. Water column volumes can be calculated from the following casing volumes per unit length: 40 mm ID - 1 L/m; 50 mm ID – 2 L/m; 100 mm ID 8 L/m.

2 Calibration details to be recorded in the instrument –specific calibration book, or in field notes as required by local procedures.

Groundwater Monitoring – Field Sheet

Client:			BORE ID: BORE MW25
Project:			Job No.: 6139041
Location:	Casing diameter: 50 mm		Date: 23/10/19

BORE CONSTRUCTION

Head-works	☑ Flush-mount	☐ Monument	☐ Casing only	☐ Locked	Measurement Point: ☐ Top of PVC Casing	Total Depth: 13.125 m

BORE DEVELOPMENT

Method:	Date:	Undertaken By:	Vol. Removed: L

Comments (e.g. sediment content):

PURGING DETAILS (measurement points in meters below top of casing as indicated above)

Method: Peri pump	Water Quality Meter used: YSI Pro		Undertaken By: BE / PG
Depth to water: 6.802 m	Water Column: m	Req Purge Vol. [1]: L	Flow Rate: L/min
Presence of LNAPL ☐	Presence of DNAPL ☐	Thickness of NAPL: cm	Depth to NAPL: m
Pump intake: m			

PURGING MEASUREMENTS [2]

Vol. Purged (L)	Elapsed Time (min)	EC (µS/cm)	Temp. (°C)	TDS (ppm|mg/L)	pH	DO %Sat	DO (ppm|mg/L)	Eh (mV)	Water Level (m b TOC)
AS 5667.11: 1998 (<+/-)		10%	0.2°C	-	10%	10%	10%	-	-
1 L	4 min	3933	19.4	2556.56	5.85	4.9	0.45	-23.4	
2.5L	8 min	3899	19.7	2533.27	5.76	4.2	0.38	-15.3	
2L	12 min	3897	19.5	2533.278	5.81	3.3	0.30	-19.8	
2.5L	16 min	3896	19.5	2531.67	5.79	3.4	0.31	-20.4	
3L	20 min	3892	19.5	2529.86	5.81	3.3	0.30	-20.3	
3.5L	25 min	3900	19.5	2535.28	5.81	2.7	0.25	-21.1	

Comments (e.g. condition of headworks, sheen, colour, odour, sediment load):

cloudy white, no odour, no sheen, low sed.

SAMPLING DETAILS		Sample ID:
Time:	Vol. Removed: L	No of Sample Containers: 8

Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):

Field Filtered ☑	Duplicate Samples ☐	Duplicate Sample ID:

Comments:

CoC Number:	Checked by:	Date:

1 Bores to be purged dry, until pH, T and EC readings stabilise or a minimum of 3 to 5 times the water column volumes. Water column volumes can be calculated from the following casing volumes per unit length: 40 mm ID - 1 L/m; 50 mm ID – 2 L/m; 100 mm ID 8 L/m.

2 Calibration details to be recorded in the instrument –specific calibration book, or in field notes as required by local procedures.

Groundwater Monitoring – Field Sheet

Client:		BORE ID: BORR MW29
Project:		Job No.: 61370491
Location:	Casing diameter: 50 mm	Date: 24/10/19

BORE CONSTRUCTION

Head-works	☑ Flush-mount	☐ Monument	☐ Casing only	☐ Locked	Measurement Point	☐ Top of PVC Casing ☐ Top of Casing	Total Depth: 8.428 m

BORE DEVELOPMENT

Method:	Date:	Undertaken By:	Vol. Removed: L

Comments (e.g. sediment content):

PURGING DETAILS (measurement points in meters below top of casing as indicated above)

Method:	Water Quality Meter used:		Undertaken By:
Depth to water: 5.562 m	Water Column: m	Req Purge Vol. [1]: L	Flow Rate: L/min
Presence of LNAPL ☐	Presence of DNAPL ☐	Thickness of NAPL: cm	Depth to NAPL: m
Pump intake: m			

PURGING MEASUREMENTS [2]

Vol. Purged (L)	Elapsed Time (min)	EC (µS/cm)	Temp. (°C)	TDS (ppm|mg/L)	pH	DO %Sat	DO (ppm|mg/L)	Eh (mV)	Water Level (m b TOC)
AS 5667.11: 1998 (<+/-)		10%	0.2°C	-	10%	10%	10%	-	-
1L	3 min	872	19.8	566.98	5.32	4.4	0.40	-28.7	
2L	6 min.	870	19.7	565.82	5.24	2.5	0.23	-29.7	
3L	9 min	867	19.8	563.70	5.20	2.0	0.18	-32.7	
4L	12 min.	862	19.7	560.58	5.19	1.7	0.15	-31.0	
5L	15 min.	860	19.7	559.02	5.19	1.5	0.14	-42.8	

Comments (e.g. condition of headworks, sheen, colour, odour, sediment load):

Strong sulfur odour, clean light yellow, no sheen
Low to Mod sed

SAMPLING DETAILS		Sample ID:
Time:	Vol. Removed: L	No of Sample Containers: 8

Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):

Field Filtered ☑	Duplicate Samples ☐	Duplicate Sample ID:

Comments:

CoC Number:	Checked by:	Date:

1 Bores to be purged dry, until pH, T and EC readings stabilise or a minimum of 3 to 5 times the water column volumes. Water column volumes can be calculated from the following casing volumes per unit length: 40 mm ID - 1 L/m; 50 mm ID – 2 L/m; 100 mm ID 8 L/m.

2 Calibration details to be recorded in the instrument –specific calibration book, or in field notes as required by local procedures.

Groundwater Monitoring – Field Sheet

Client:			BORE ID: BORR MW31
Project:			Job No.: 61377041
Location:	Casing diameter: 50 mm		Date: 24/10/19

BORE CONSTRUCTION

Head-works	☑ Flush-mount	☐ Monument	☐ Casing only	☐ Locked	Measurement Point: ☐ Top of PVC Casing	Total Depth: 6.021 m

BORE DEVELOPMENT

Method:	Date:	Undertaken By:	Vol. Removed: L

Comments (e.g. sediment content):

PURGING DETAILS (measurement points in meters below top of casing as indicated above)

Method: Peri-pump	Water Quality Meter used: YSI Pro		Undertaken By: EE/RY
Depth to water: 3.413 m	Water Column: m	Req Purge Vol. [1]: L	Flow Rate: L/min
Presence of LNAPL ☐	Presence of DNAPL ☐	Thickness of NAPL: cm	Depth to NAPL: m
Pump intake: m			

PURGING MEASUREMENTS [2]

Vol. Purged (L)	Elapsed Time (min)	EC (µS/cm)	Temp. (°C)	TDS (ppm|mg/L)	pH	DO %Sat	DO (ppm|mg/L)	Eh (mV)	Water Level (m b TOC)
AS 5667.11: 1998 (<+/-)		10%	0.2°C	-	10%	10%	10%	-	-
1L	3 min	271.5	18.8	176.49	5.35	3.4	0.31	-13.3	
2L	6 min.	270.6	18.8	175.88	5.33	2.2	0.21	-14.7	
3L	9 min.	267.3	18.7	173.72	5.33	1.9	0.18	-20.7	
4L	12 min	264.8	18.7	172.08	5.33	1.7	0.16	-23.5	

Comments (e.g. condition of headworks, sheen, colour, odour, sediment load):

Clear light yellow, Sulfur odour, no sheen, low to moderate sed.

SAMPLING DETAILS		Sample ID:
Time:	Vol. Removed: L	No of Sample Containers: 8

Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):

Field Filtered ☑	Duplicate Samples ☐	Duplicate Sample ID:

Comments:

CoC Number:	Checked by:	Date:

1 Bores to be purged dry, until pH, T and EC readings stabilise or a minimum of 3 to 5 times the water column volumes. Water column volumes can be calculated from the following casing volumes per unit length: 40 mm ID - 1 L/m; 50 mm ID – 2 L/m; 100 mm ID 8 L/m.

2 Calibration details to be recorded in the instrument –specific calibration book, or in field notes as required by local procedures.

Groundwater Monitoring – Field Sheet

Client:			BORE ID: BORE MW 32
Project:			Job No.: 6137041
Location:	Casing diameter: 50 mm		Date: 24/10/19

BORE CONSTRUCTION

Head-works	☑ Flush-mount	☐ Monument	☐ Casing only	☐ Locked	Measurement Point: ☐ Top of PVC Casing; Total Depth: 5.038 m

BORE DEVELOPMENT

Method:	Date:	Undertaken By:	Vol. Removed: L

Comments (e.g. sediment content):

PURGING DETAILS (measurement points in meters below top of casing as indicated above)

Method: peri-pump	Water Quality Meter used: YSI Pro		Undertaken By: EE/PY
Depth to water: 2.185 m	Water Column: m	Req Purge Vol. [1]: L	Flow Rate: L/min
Presence of LNAPL ☐	Presence of DNAPL ☐	Thickness of NAPL: cm	Depth to NAPL: m
Pump intake: m			

PURGING MEASUREMENTS [2]

Vol. Purged (L)	Elapsed Time (min)	EC (µS/cm)	Temp. (°C)	TDS (ppm|mg/L)	pH	DO %Sat	DO (ppm|mg/L)	Eh (mV)	Water Level (m b TOC)
AS 5667.11: 1998 (<+/-)		10%	0.2°C	-	10%	10%	10%	-	-
1 L	3 min	438.5	18.3	284.48	5.58	3.9	0.36	-11.1	
2 L	6 min.	370.1	18.7	239.78	5.58	2.8	0.26	-15.8	
3 L	9 min.	313.9	18.7	202.91	5.61	2.4	0.23	-15.3	
4 L	12 min.	297.5	18.8	193.38	5.61	2.6	0.24	-14.6	

Comments (e.g. condition of headworks, sheen, colour, odour, sediment load):

Clear yellow, sulfur odour, no sheen, low sed

SAMPLING DETAILS

		Sample ID:
Time:	Vol. Removed: L	No of Sample Containers: 8

Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):

Field Filtered ☑	Duplicate Samples ☐	Duplicate Sample ID:

Comments:

CoC Number:	Checked by:	Date:

1 Bores to be purged dry, until pH, T and EC readings stabilise or a minimum of 3 to 5 times the water column volumes. Water column volumes can be calculated from the following casing volumes per unit length: 40 mm ID - 1 L/m; 50 mm ID – 2 L/m; 100 mm ID 8 L/m.

2 Calibration details to be recorded in the instrument –specific calibration book, or in field notes as required by local procedures.

Groundwater Monitoring – Field Sheet

Client:			BORE ID: BORR MW46
Project:			Job No.: 637041
Location:	Casing diameter: 50 mm		Date: 24/10/19

BORE CONSTRUCTION

Head-works	☑ Flush-mount	☐ Monument	☐ Casing only	☐ Locked	Measurement Point	☐ Top of PVC Casing	Total Depth: 5.984 m

BORE DEVELOPMENT

Method:	Date:	Undertaken By:	Vol. Removed: L

Comments (e.g. sediment content):

PURGING DETAILS (measurement points in meters below top of casing as indicated above)

Method: Peri-pump	Water Quality Meter used: YSI Pro		Undertaken By: ~~EE~~/PY
Depth to water: 3.523m	Water Column: m	Req Purge Vol. [1]: L	Flow Rate: L/min
Presence of LNAPL ☐	Presence of DNAPL ☐	Thickness of NAPL: cm	Depth to NAPL: m
Pump intake: m			

PURGING MEASUREMENTS [2]

Vol. Purged (L)	Elapsed Time (min)	EC (µS/cm)	Temp. (°C)	TDS (ppm|mg/L)	pH	DO %Sat	DO (ppm|mg/L)	Eh (mV)	Water Level (m b TOC)
AS 5667.11: 1998 (<+/-)		10%	0.2°C	-	10%	10%	10%	-	-
1L	4min.	467.9	20.2	304.58	5.51	5.4	0.49	61.2	
2L	8min.	503.0	20.3	326.84	5.55	3.8	0.35	59.3	
3L	12min	524.0	20.2	341.77	5.55	3.2	0.29	59.7	
4L	16 min.	535.0	20.3	347.80	5.56	3.0	0.27	58.0	

Comments (e.g. condition of headworks, sheen, colour, odour, sediment load):

Clear light yellow, mod sed, no odour, no sheen

SAMPLING DETAILS		Sample ID:
Time:	Vol. Removed: L	No of Sample Containers: 8

Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):

Field Filtered ☑	Duplicate Samples ☐	Duplicate Sample ID:

Comments:

CoC Number:	Checked by:	Date:

1 Bores to be purged dry, until pH, T and EC readings stabilise or a minimum of 3 to 5 times the water column volumes. Water column volumes can be calculated from the following casing volumes per unit length: 40 mm ID - 1 L/m; 50 mm ID – 2 L/m; 100 mm ID 8 L/m.

2 Calibration details to be recorded in the instrument –specific calibration book, or in field notes as required by local procedures.

Groundwater Monitoring – Field Sheet

Client:			BORE ID: BORE_MW37
Project:			Job No.: 6137041
Location:	Casing diameter: 50 mm		Date: 23/10/19

BORE CONSTRUCTION

Head-works	☑ Flush-mount	☐ Monument	☐ Casing only	☐ Locked	Measurement Point	☐ Top of PVC Casing	Total Depth: 11.555 m

BORE DEVELOPMENT

Method:	Date:	Undertaken By:	Vol. Removed: L

Comments (e.g. sediment content):

PURGING DETAILS (measurement points in meters below top of casing as indicated above)

Method: Peri-pump	Water Quality Meter used: YSI Pro		Undertaken By: EE/BJ
Depth to water: 4.477m	Water Column: m	Req Purge Vol. [1]: L	Flow Rate: L/min
Presence of LNAPL ☐	Presence of DNAPL ☐	Thickness of NAPL: cm	Depth to NAPL: m
Pump intake: m			

PURGING MEASUREMENTS [2]

Vol. Purged (L)	Elapsed Time (min)	EC (µS/cm)	Temp. (°C)	TDS (ppm|mg/L)	pH	DO %Sat	DO (ppm|mg/L)	Eh (mV)	Water Level (m b TOC)
AS 5667.11: 1998 (<+/-)		10%	0.2°C	-	10%	10%	10%	-	-
1L	3 min	3602	20.1	2342.15	5.46	4.1	0.36	42.7	
2L	6 min.	3581	20.0	2327.04	5.46	3.0	0.27	55.1	
3L	9 min	3567	20.0	2318.48	5.49	2.6	0.23	49.2	
4L	12 min.	3562	19.9	2315.19	5.49	2.3	0.21	44.2	

Comments (e.g. condition of headworks, sheen, colour, odour, sediment load):

Clear, slight organic odour, no sheen, low to no sed.

SAMPLING DETAILS		Sample ID:
Time:	Vol. Removed: L	No of Sample Containers: 8

Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):

Field Filtered ☑	Duplicate Samples ☑	Duplicate Sample ID: FD02

Comments: Internal lab QA/QC sample

CoC Number:	Checked by:	Date:

1 Bores to be purged dry, until pH, T and EC readings stabilise or a minimum of 3 to 5 times the water column volumes. Water column volumes can be calculated from the following casing volumes per unit length: 40 mm ID - 1 L/m; 50 mm ID – 2 L/m; 100 mm ID 8 L/m.

2 Calibration details to be recorded in the instrument –specific calibration book, or in field notes as required by local procedures.

Groundwater Monitoring – Field Sheet

Client:			BORE ID: BORE MW39
Project:			Job No.: 6137041
Location:	Casing diameter: 50 mm		Date: 23/10/19

BORE CONSTRUCTION

Head-works	☑ Flush-mount	☐ Monument	☐ Casing only	☐ Locked	Measurement Point: ☐ Top of PVC Casing	Total Depth: ~~7.452~~ 13.793 m

BORE DEVELOPMENT

Method:	Date:	Undertaken By:	Vol. Removed: L

Comments (e.g. sediment content):

PURGING DETAILS (measurement points in meters below top of casing as indicated above)

Method: Peri-pump	Water Quality Meter used: YSI Pro		Undertaken By: EE | PY
Depth to water: 7.452 m	Water Column: m	Req Purge Vol. [1]: L	Flow Rate: L/min
Presence of LNAPL ☐	Presence of DNAPL ☐	Thickness of NAPL: cm	Depth to NAPL: m
Pump intake: m			

PURGING MEASUREMENTS [2]

Vol. Purged (L)	Elapsed Time (min)	EC (µS/cm)	Temp. (°C)	TDS (ppm|mg/L)	pH	DO %Sat	DO (ppm|mg/L)	Eh (mV)	Water Level (m b TOC)
AS 5667.11: 1998 (<+/-)		10%	0.2°C	-	10%	10%	10%	-	-
1L	4min	312-2	19.8	202.84	5.44	4.0	0.35	186.3	~7.452
2L	8 min	306.1	19.8	198.97	5.39	2.8	0.26	196.7	~7.452
3L	12 min	298.1	19.8	193.65	5.37	2.6	0.24	202.8	~7.452
4L	16 min.	295.0	20.2	191.75	5.36	2.7	0.25	206.4	~ "
5L	20mm.	294.5	20.2	191.45	5.35	2.6	0.24	208.3	~ "

Comments (e.g. condition of headworks, sheen, colour, odour, sediment load):

cloudy white, no odour, no sheen, low sed

SAMPLING DETAILS		Sample ID:
Time:	Vol. Removed: L	No of Sample Containers: 8

Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):

Field Filtered ☑	Duplicate Samples ☐	Duplicate Sample ID:

Comments:

CoC Number:	Checked by:	Date:

1 Bores to be purged dry, until pH, T and EC readings stabilise or a minimum of 3 to 5 times the water column volumes. Water column volumes can be calculated from the following casing volumes per unit length: 40 mm ID - 1 L/m; 50 mm ID – 2 L/m; 100 mm ID 8 L/m.

2 Calibration details to be recorded in the instrument –specific calibration book, or in field notes as required by local procedures.

Groundwater Monitoring – Field Sheet

Client:			BORE ID: MR MW05
Project:			Job No.: 61370411
Location:	Casing diameter: 50 mm		Date: 28/10/19

BORE CONSTRUCTION

Head-works	☑ Flush-mount	☐ Monument	☐ Casing only	☐ Locked	Measurement Point	☐ Top of PVC Casing	Total Depth: 4.886 m

BORE DEVELOPMENT

Method:	Date:	Undertaken By:	Vol. Removed: L

Comments (e.g. sediment content):

PURGING DETAILS (measurement points in meters below top of casing as indicated above)

Method: Pkn-Pump	Water Quality Meter used: YSI PRO		Undertaken By: BE/DS
Depth to water: 2.231 m	Water Column: m	Req Purge Vol. [1]: L	Flow Rate: L/min
Presence of LNAPL ☐	Presence of DNAPL ☐	Thickness of NAPL: cm	Depth to NAPL: m
Pump intake: m			

PURGING MEASUREMENTS [2]

Vol. Purged (L)	Elapsed Time (min)	EC (µS/cm)	Temp. (°C)	TDS (ppm|mg/L)	pH	DO %Sat	DO (ppm|mg/L)	Eh (mV)	Water Level (m b TOC)
AS 5667.11: 1998 (<+/-)		10%	0.2°C	-	10%	10%	10%	-	-
1L	3min	23866	18.8	5476.77	5.77	9.2	0.77	-8.5	~2.231
2L	6min	23776	18.7	5453.32	5.77	6.2	0.53	-8.8	~2.231
3L	9min	23758	18.8	5441.07	5.77	5.2	0.45	-13.4	~2.231
4L	12min	23746	18.7	5435.52	5.77	5.3	0.45	-13.9	~2.231

Comments (e.g. condition of headworks, sheen, colour, odour, sediment load):

Cloudy, slight sulfur odour, no sheen, low sed

SAMPLING DETAILS

Time:	Vol. Removed: L	Sample ID:
		No of Sample Containers: 8

Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):

Field Filtered ☑	Duplicate Samples ☐	Duplicate Sample ID:

Comments:

CoC Number:	Checked by:	Date:

1 Bores to be purged dry, until pH, T and EC readings stabilise or a minimum of 3 to 5 times the water column volumes. Water column volumes can be calculated from the following casing volumes per unit length: 40 mm ID - 1 L/m; 50 mm ID – 2 L/m; 100 mm ID 8 L/m.

2 Calibration details to be recorded in the instrument –specific calibration book, or in field notes as required by local procedures.

Groundwater Monitoring – Field Sheet

Client:			BORE ID: BH9.2
Project:			Job No.: 61370411
Location:	Casing diameter: 50 mm		Date: 19/11/19

BORE CONSTRUCTION

Head-works	☑ Flush-mount	☐ Monument	☐ Casing only	☐ Locked	Measurement Point ☐ Top of PVC Casing	Total Depth: 8.855 m

BORE DEVELOPMENT

Method:	Date:	Undertaken By:	Vol. Removed: L

Comments (e.g. sediment content):

PURGING DETAILS (measurement points in meters below top of casing as indicated above)

Method: peri-pump	Water Quality Meter used: YSI Pro.		Undertaken By: EE/DS
Depth to water: 2.773 m	Water Column: m	Req Purge Vol. [1]: L	Flow Rate: L/min
Presence of LNAPL ☐	Presence of DNAPL ☐	Thickness of NAPL: cm	Depth to NAPL: m
Pump intake: m			

PURGING MEASUREMENTS [2]

Vol. Purged (L)	Elapsed Time (min)	EC (µS/cm)	Temp. (°C)	TDS (ppm|mg/L)	pH	DO %Sat	DO (ppm|mg/L)	Eh (mV)	Water Level (m b TOC)
AS 5667.11: 1998 (<+/-)		10%	0.2°C	-	10%	10%	10%	-	-
1L	3 min.	8251	19.6	5364	4.06	8.3	0.66	211.8	
2L	6 min.	8258	19.4	5367	4.09	3.8	0.34	207.5	
3L	9 min	8258	19.3	5367	4.10	3.2	0.29	207.0	
4L	12 min	8259	19.3	5368	4.10	3.0	0.27	206.8	

Comments (e.g. condition of headworks, sheen, colour, odour, sediment load):

Clear, mod sed, no sheen, muddy odour.

SAMPLING DETAILS		Sample ID:
Time: 11:05am	Vol. Removed: L	No of Sample Containers: 8

Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):

Field Filtered ☑	Duplicate Samples ☐	Duplicate Sample ID:

Comments:

CoC Number:	Checked by:	Date:

1 Bores to be purged dry, until pH, T and EC readings stabilise or a minimum of 3 to 5 times the water column volumes. Water column volumes can be calculated from the following casing volumes per unit length: 40 mm ID - 1 L/m; 50 mm ID – 2 L/m; 100 mm ID 8 L/m.

2 Calibration details to be recorded in the instrument –specific calibration book, or in field notes as required by local procedures.

Groundwater Monitoring – Field Sheet

Client:		BORE ID: BH11.1
Project:		Job No.: 637041
Location:	Casing diameter: 50 mm	Date: 19/11/19

BORE CONSTRUCTION

Head-works				Measurement Point		Total Depth:
	☑ Flush-mount	☐ Monument	☐ Casing only ☐ Locked		☐ Top of PVC Casing	5.077 m

BORE DEVELOPMENT

Method:	Date:	Undertaken By:	Vol. Removed: L

Comments (e.g. sediment content):

PURGING DETAILS (measurement points in meters below top of casing as indicated above)

Method: Peri-pump	Water Quality Meter used: YSI Pro		Undertaken By: EE/DS
Depth to water: 2.946 m	Water Column: m	Req Purge Vol. [1]: L	Flow Rate: L/min
Presence of LNAPL ☐	Presence of DNAPL ☐	Thickness of NAPL: cm	Depth to NAPL: m
Pump intake: m			

PURGING MEASUREMENTS [2]

Vol. Purged (L)	Elapsed Time (min)	EC (µS/cm)	Temp. (°C)	TDS (ppm|mg/L)	pH	DO %Sat	DO (ppm|mg/L)	Eh (mV)	Water Level (m b TOC)
AS 5667.11: 1998 (<+/-)		10%	0.2°C	-	10%	10%	10%	-	-
1	3min	1704	20.2	1108	6.50	15.8	1.33	14.7	
2	6min	1708	20.0	1110	6.49	6.4	0.57	-38.9	
3	9min	1706	20.0	1109	6.50	5.2	0.46	-49.1	
4	12min	1704	20.0	1108	6.50	4.8	0.43	-50.8	

Comments (e.g. condition of headworks, sheen, colour, odour, sediment load): clear-brown, no odour, no sheen, mod. sed.

SAMPLING DETAILS		Sample ID:
Time: 9:30am	Vol. Removed: L	No of Sample Containers: 8 + additional lab orange bottle

Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):

Field Filtered ☑	Duplicate Samples ☐	Duplicate Sample ID:

Comments:

CoC Number:	Checked by:	Date:

1 Bores to be purged dry, until pH, T and EC readings stabilise or a minimum of 3 to 5 times the water column volumes. Water column volumes can be calculated from the following casing volumes per unit length: 40 mm ID - 1 L/m; 50 mm ID – 2 L/m; 100 mm ID 8 L/m.

2 Calibration details to be recorded in the instrument –specific calibration book, or in field notes as required by local procedures.

Groundwater Monitoring – Field Sheet

Client:			BORE ID: RH32.1
Project:			Job No.: 6137041
Location:	Casing diameter: 50 mm		Date: 18/11/19

BORE CONSTRUCTION

Head-works	☑ Flush-mount	☐ Monument	☐ Casing only	☐ Locked	Measurement Point	☐ Top of PVC Casing	Total Depth: 9.995 m

BORE DEVELOPMENT

Method:	Date:	Undertaken By:	Vol. Removed: L
Comments (e.g. sediment content):			

PURGING DETAILS (measurement points in meters below top of casing as indicated above)

Method: Peri-pump	Water Quality Meter used: YSI Pro		Undertaken By: EE/DS
Depth to water: 4.125 m	Water Column: m	Req Purge Vol. [1]: L	Flow Rate: L/min
Presence of LNAPL ☐	Presence of DNAPL ☐	Thickness of NAPL: cm	Depth to NAPL: m
Pump intake: m			

PURGING MEASUREMENTS [2]

Vol. Purged (L)	Elapsed Time (min)	EC (µS/cm)	Temp. (°C)	TDS (ppm|mg/L)	pH	DO %Sat	DO (ppm|mg/L)	Eh (mV)	Water Level (m b TOC)
AS 5667.11: 1998 (<+/-)		10%	0.2°C	-	10%	10%	10%	-	-
1L	3min	6610	20.6	4833	4.14	16.2	1.40	120.8	
2L	6min	6913	20.1	4494	4.14	6.60	0.55	132.9	
3L	9min	6901	20.1	4487	4.13	4.90	0.42	143.7	
4L	12min	6765	20.1	4392	4.14	3.80	0.34	160.2	
5L	15min	6702	20.1	4345	4.16	3.60	0.32	162.5	

Comments (e.g. condition of headworks, sheen, colour, odour, sediment load):

clear, med sed, metallic odour, no sheen.

SAMPLING DETAILS		Sample ID:
Time:	Vol. Removed: L	No of Sample Containers: 8
Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):		
Field Filtered ☑	Duplicate Samples ☐	Duplicate Sample ID:
Comments:		
CoC Number:	Checked by:	Date:

1 Bores to be purged dry, until pH, T and EC readings stabilise or a minimum of 3 to 5 times the water column volumes. Water column volumes can be calculated from the following casing volumes per unit length: 40 mm ID - 1 L/m; 50 mm ID – 2 L/m; 100 mm ID 8 L/m.

2 Calibration details to be recorded in the instrument –specific calibration book, or in field notes as required by local procedures.

Groundwater Monitoring – Field Sheet

Client: MRWA			BORE ID: BORE MW04
Project: GW + SW Sampling			Job No.: 61370411
Location:	Casing diameter: 50 mm		Date: 20/11/19

BORE CONSTRUCTION

Head-works	☑ Flush-mount	☐ Monument	☐ Casing only	☐ Locked	Measurement Point: ☐ Top of PVC Casing

Total Depth: 13.209 m

BORE DEVELOPMENT

Method:	Date:	Undertaken By:	Vol. Removed: L

Comments (e.g. sediment content):

PURGING DETAILS (measurement points in meters below top of casing as indicated above)

Method: Peri-pump	Water Quality Meter used: YSI Pro		Undertaken By: EE/OS
Depth to water: 4.165 m	Water Column: m	Req Purge Vol. [1]: L	Flow Rate: L/min
Presence of LNAPL ☐	Presence of DNAPL ☐	Thickness of NAPL: cm	Depth to NAPL: m
Pump intake: m			

PURGING MEASUREMENTS [2]

Vol. Purged (L)	Elapsed Time (min)	EC (µS/cm)	Temp. (°C)	TDS (ppm|mg/L)	pH	DO %Sat	DO (ppm|mg/L)	Eh (mV)	Water Level (m b TOC)
AS 5667.11: 1998 (<+/-)		10%	0.2°C	-	10%	10%	10%	-	-
1	3min	4337	18.4	2823	6.81	13.8	1.21	-38.5	~4.17
2	6min	4354	18.4	2831	6.67	6.8	0.60	-36.1	~4.17
3	9min	4355	18.7	2831	6.61	4.5	0.41	-33.5	~4.17
4	12min	4361	18.8	2835	6.59	4.1	0.37	-32.5	~4.17
5	15min	4360	18.8	2834	6.59	3.9	0.35	-32.0	~4.17

Comments (e.g. condition of headworks, sheen, colour, odour, sediment load):

cloudy yellow, no odour, no sheen, low to mod sed.

SAMPLING DETAILS

Time: 11am.	Vol. Removed: L	Sample ID:
		No of Sample Containers: 8

Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):

Field Filtered ☑	Duplicate Samples ☐	Duplicate Sample ID:

Comments:

CoC Number:	Checked by:	Date:

1 Bores to be purged dry, until pH, T and EC readings stabilise or a minimum of 3 to 5 times the water column volumes. Water column volumes can be calculated from the following casing volumes per unit length: 40 mm ID - 1 L/m; 50 mm ID – 2 L/m; 100 mm ID 8 L/m.

2 Calibration details to be recorded in the instrument –specific calibration book, or in field notes as required by local procedures.

Groundwater Monitoring – Field Sheet

Client:			BORE ID: BORRMW05
Project:			Job No.: 6137041
Location:	Casing diameter: 50 mm		Date: 20/11/19

BORE CONSTRUCTION

Head-works	☑ Flush-mount	☐ Monument	☐ Casing only	☐ Locked	Measurement Point: ☐ Top of PVC Casing	Total Depth: 8.010 m

BORE DEVELOPMENT

Method:	Date:	Undertaken By:	Vol. Removed: L

Comments (e.g. sediment content):

PURGING DETAILS (measurement points in meters below top of casing as indicated above)

Method: Peri pump	Water Quality Meter used: YSI Pro		Undertaken By: EE/DS
Depth to water: 5.689 m	Water Column: m	Req Purge Vol. [1]: L	Flow Rate: L/min
Presence of LNAPL ☐	Presence of DNAPL ☐	Thickness of NAPL: cm	Depth to NAPL: m
Pump intake: m			

PURGING MEASUREMENTS [2]

Vol. Purged (L)	Elapsed Time (min)	EC (µS/cm)	Temp. (°C)	TDS (ppm|mg/L)	pH	DO %Sat	DO (ppm|mg/L)	Eh (mV)	Water Level (m b TOC)
AS 5667.11: 1998 (<+/-)		10%	0.2°C	-	10%	10%	10%	-	-
1L	3 min	1367	20.5	887	6.58	5.7	0.51	-69.4	
2L	6 min	1338	20.4	870	6.51	4.2	0.37	~~-73.4~~	
3L	9 min	1321	20.4	858	6.48	3.5	0.32	-76.5	
4L	12 min	1311	20.4	851	6.46	3.3	0.30	-76.2	

Comments (e.g. condition of headworks, sheen, colour, odour, sediment load):

Clear yellow, no odour, low sed, no sheen.

SAMPLING DETAILS

		Sample ID:
Time:	Vol. Removed: L	No of Sample Containers: 8

Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):

Field Filtered ☑	Duplicate Samples ☐	Duplicate Sample ID:

Comments:

CoC Number:	Checked by:	Date:

1 Bores to be purged dry, until pH, T and EC readings stabilise or a minimum of 3 to 5 times the water column volumes. Water column volumes can be calculated from the following casing volumes per unit length: 40 mm ID - 1 L/m; 50 mm ID – 2 L/m; 100 mm ID 8 L/m.

2 Calibration details to be recorded in the instrument –specific calibration book, or in field notes as required by local procedures.

Groundwater Monitoring – Field Sheet

Client:			BORE ID: BORE MW06
Project:			Job No.: 61370411
Location:	Casing diameter: 50 mm		Date: 20/11/19

BORE CONSTRUCTION

Head-works	☑ Flush-mount	☐ Monument	☐ Casing only	☐ Locked	Measurement Point: ☐ Top of PVC Casing	Total Depth: 7.855 m

BORE DEVELOPMENT

Method:	Date:	Undertaken By:	Vol. Removed: L

Comments (e.g. sediment content):

PURGING DETAILS (measurement points in meters below top of casing as indicated above)

Method: Peri-pump	Water Quality Meter used: YSI Pro		Undertaken By: EE/DS
Depth to water: 5.395 m	Water Column: m	Req Purge Vol. [1]: L	Flow Rate: L/min
Presence of LNAPL ☐	Presence of DNAPL ☐	Thickness of NAPL: cm	Depth to NAPL: m
Pump intake: m			

PURGING MEASUREMENTS [2]

Vol. Purged (L)	Elapsed Time (min)	EC (µS/cm)	Temp. (°C)	TDS (ppm|mg/L)	pH	DO %Sat	DO (ppm|mg/L)	Eh (mV)	Water Level (m b TOC)
AS 5667.11: 1998 (<+/-)		10%	0.2°C	-	10%	10%	10%	-	-
1L	3min	1012	20.5	657	6.75	7.2	0.62	-83.4	
2L	6min	985	20.4	639	6.73	4.0	0.36	-87.2	
3L	9min	943	20.1	612	6.68	3.5	0.32	-85.5	
4L	12min	921	20.0	597	6.64	3.3	0.30	-82.6	
5L	15min	882	20.1	571	6.59	3.3	0.30	-78.6	

Comments (e.g. condition of headworks, sheen, colour, odour, sediment load):

Cloudy brown, no odour, no sheen, low to mod sed.

SAMPLING DETAILS		Sample ID:
Time:	Vol. Removed: L	No of Sample Containers: 8

Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):

Field Filtered ☑	Duplicate Samples ☐	Duplicate Sample ID:

Comments:

CoC Number:	Checked by:	Date:

1 Bores to be purged dry, until pH, T and EC readings stabilise or a minimum of 3 to 5 times the water column volumes. Water column volumes can be calculated from the following casing volumes per unit length: 40 mm ID - 1 L/m; 50 mm ID – 2 L/m; 100 mm ID 8 L/m.

2 Calibration details to be recorded in the instrument –specific calibration book, or in field notes as required by local procedures.

Groundwater Monitoring – Field Sheet

Client: MRWA			BORE ID: BORE MW08a
Project: Bore GW and SW			Job No.: 6137041
Location:	Casing diameter: 50 mm		Date: 21/11/19

BORE CONSTRUCTION

Head-works				Measurement Point		Total Depth:
	☑ Flush-mount	☐ Monument	☐ Casing only ☐ Locked		☐ Top of PVC Casing	5.847 m

BORE DEVELOPMENT

Method:	Date:	Undertaken By:	Vol. Removed: L

Comments (e.g. sediment content):

PURGING DETAILS (measurement points in meters below top of casing as indicated above)

Method: Peri-pump	Water Quality Meter used: YSI Pro.		Undertaken By: EE/IO
Depth to water: 3.088 m	Water Column: m	Req Purge Vol. [1]: L	Flow Rate: L/min
Presence of LNAPL ☐	Presence of DNAPL ☐	Thickness of NAPL: cm	Depth to NAPL: m
Pump intake: m			

PURGING MEASUREMENTS [2]

Vol. Purged (L)	Elapsed Time (min)	EC (µS/cm)	Temp. (°C)	TDS (ppm|mg/L)	pH	DO %Sat	DO (ppm|mg/L)	Eh (mV)	Water Level (m b TOC)
AS 5667.11: 1998 (<+/-)		10%	0.2°C	-	10%	10%	10%	-	-
1L	3min	688	18.6	444	6.08	6.8	0.63	-40.9	
2L	6min	642	18.7	417	~~6.08~~	~~6.06~~	0.46	-45.5	
3L	9min	634	18.7	412	5.99	4.0	0.37	-48.4	
4L	12min	630	18.8	409	5.97	3.4	0.32	-53.7	
5L	15min	621	18.7	403	5.95	3.1	0.29	-56.7	

Comments (e.g. condition of headworks, sheen, colour, odour, sediment load):

Cloudy yellow, sulfur odour, no sheen, low to mod sed.

SAMPLING DETAILS		Sample ID:
Time:	Vol. Removed: L	No of Sample Containers: 8

Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):

Field Filtered ☑	Duplicate Samples ☐	Duplicate Sample ID:

Comments:

CoC Number:	Checked by:	Date:

1 Bores to be purged dry, until pH, T and EC readings stabilise or a minimum of 3 to 5 times the water column volumes. Water column volumes can be calculated from the following casing volumes per unit length: 40 mm ID - 1 L/m; 50 mm ID – 2 L/m; 100 mm ID 8 L/m.

2 Calibration details to be recorded in the instrument –specific calibration book, or in field notes as required by local procedures.

Groundwater Monitoring – Field Sheet

Client: Karara MRNA			BORE ID: BORE MW09
Project: BORE GW and SW monitoring.			Job No.: 6137041
Location:	Casing diameter: 50 mm		Date: 21/11/19

BORE CONSTRUCTION

Head-works	☑ Flush-mount	☐ Monument	☐ Casing only	☐ Locked	Measurement Point	☐ Top of PVC Casing	Total Depth: 5.476 m

BORE DEVELOPMENT

Method:	Date:	Undertaken By:	Vol. Removed: L
Comments (e.g. sediment content):			

PURGING DETAILS (measurement points in meters below top of casing as indicated above)

Method: Peri-pump	Water Quality Meter used: YSI Pro		Undertaken By: EE/IO
Depth to water: 3.423m	Water Column: m	Req Purge Vol. [1]: L	Flow Rate: L/min
Presence of LNAPL ☐	Presence of DNAPL ☐	Thickness of NAPL: cm	Depth to NAPL: m
Pump intake: m			

PURGING MEASUREMENTS [2]

Vol. Purged (L)	Elapsed Time (min)	EC (µS/cm)	Temp. (°C)	TDS (ppm|mg/L)	pH	DO %Sat	DO (ppm|mg/L)	Eh (mV)	Water Level (m b TOC)
AS 5667.11: 1998 (<+/-)		10%	0.2°C	-	10%	10%	10%	-	-
1L	3min	246.8	19.0	160	6.09	33.8	3.15	30.6	
2L	6min	213.3	19.0	139	6.02	42.8	4.00	39.0	
3L	9min	209.1	19.0	136	5.93	38.3	3.58	47.1	
4L	12min	213.4	19.0	139	5.92	38.4	3.59	51.6	

Comments (e.g. condition of headworks, sheen, colour, odour, sediment load):

clear, no odour, no sheen, low to no sed.

SAMPLING DETAILS		Sample ID:
Time:	Vol. Removed: L	No of Sample Containers: 8
Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):		
Field Filtered ☑	Duplicate Samples ☐	Duplicate Sample ID:
Comments:		

CoC Number:	Checked by:	Date:

1 Bores to be purged dry, until pH, T and EC readings stabilise or a minimum of 3 to 5 times the water column volumes. Water column volumes can be calculated from the following casing volumes per unit length: 40 mm ID - 1 L/m; 50 mm ID – 2 L/m; 100 mm ID 8 L/m.

2 Calibration details to be recorded in the instrument –specific calibration book, or in field notes as required by local procedures.

Groundwater Monitoring – Field Sheet

Client: MRWA			BORE ID: BORR MW10
Project: BORR GW and SW monitoring			Job No.: 6137041
Location:	Casing diameter: 50 mm		Date: 21/11/19

BORE CONSTRUCTION

Head-works	☐ Flush-mount	☐ Monument	☐ Casing only	☐ Locked	Measurement Point	☐ Top of PVC Casing	Total Depth: 4.082 m

BORE DEVELOPMENT

Method:	Date:	Undertaken By:	Vol. Removed: L

Comments (e.g. sediment content):

PURGING DETAILS (measurement points in meters below top of casing as indicated above)

Method: Peri-pump	Water Quality Meter used: YSI Pro		Undertaken By: EE/IO
Depth to water: 1.740 m	Water Column: m	Req Purge Vol. [1]: L	Flow Rate: L/min
Presence of LNAPL ☐	Presence of DNAPL ☐	Thickness of NAPL: cm	Depth to NAPL: m
Pump intake: m			

PURGING MEASUREMENTS [2]

Vol. Purged (L)	Elapsed Time (min)	EC (µS/cm)	Temp. (°C)	TDS (ppm|mg/L)	pH	DO %Sat	DO (ppm|mg/L)	Eh (mV)	Water Level (m b TOC)
AS 5667.11: 1998 (<+/-)		10%	0.2°C	-	10%	10%	10%	-	-
1L	3min	489.7	18.5	318	5.70	6.5	0.59	37.8	
2L	6 min	439.5	18.4	286	5.69	3.4	0.31	25.1	
3L	9 min	432.0	18.4	281	5.68	2.8	0.27	18.4	
4L	12 min	489.1	18.7	285	5.68	2.6	0.25	16.0	

Comments (e.g. condition of headworks, sheen, colour, odour, sediment load):

Clear, no odour, no sheen, low to mod sed.

SAMPLING DETAILS		Sample ID:
Time:	Vol. Removed: L	No of Sample Containers: 8

Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):

Field Filtered ☑	Duplicate Samples ☐	Duplicate Sample ID:

Comments:

CoC Number:	Checked by:	Date:

1 Bores to be purged dry, until pH, T and EC readings stabilise or a minimum of 3 to 5 times the water column volumes. Water column volumes can be calculated from the following casing volumes per unit length: 40 mm ID - 1 L/m; 50 mm ID – 2 L/m; 100 mm ID 8 L/m.

2 Calibration details to be recorded in the instrument –specific calibration book, or in field notes as required by local procedures.

Groundwater Monitoring – Field Sheet

Client:			BORE ID: BORE MW11
Project:			Job No.: 6137041
Location:	Casing diameter: 50 mm		Date: 20/11/19

BORE CONSTRUCTION

Head-works	☑ Flush-mount	☐ Monument	☐ Casing only	☐ Locked	Measurement Point: ☐ Top of PVC Casing	Total Depth: 3.971 m

BORE DEVELOPMENT

Method:	Date:	Undertaken By:	Vol. Removed: L

Comments (e.g. sediment content):

PURGING DETAILS (measurement points in meters below top of casing as indicated above)

Method: Peri-pump	Water Quality Meter used: YSI Pro		Undertaken By: EE/DS
Depth to water: 1.462 m	Water Column: m	Req Purge Vol. [1]: L	Flow Rate: L/min
Presence of LNAPL ☐	Presence of DNAPL ☐	Thickness of NAPL: cm	Depth to NAPL: m
Pump intake: m			

PURGING MEASUREMENTS [2]

Vol. Purged (L)	Elapsed Time (min)	EC (µS/cm)	Temp. (°C)	TDS (ppm|mg/L)	pH	DO %Sat	DO (ppm|mg/L)	Eh (mV)	Water Level (m b TOC)
AS 5667.11: 1998 (<+/-)		10%	0.2°C	-	10%	10%	10%	-	-
1L	3min	20658	18.7	13452	6.79	12.6	1.05	59.1	
2L	6min	20881	18.6	13573	6.87	7.9	0.68	51.9	
3L	9min	20913	18.8	13595	6.90	7.3	0.63	56.7	
4L	12min	20925	18.9	13601	6.91	7.1	0.61	60.1	

Comments (e.g. condition of headworks, sheen, colour, odour, sediment load):

clear orange-brown, no odour, no sheen, mod sed.

SAMPLING DETAILS		Sample ID:
Time:	Vol. Removed: L	No of Sample Containers: 8

Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):

Field Filtered ☑	Duplicate Samples ☐	Duplicate Sample ID:

Comments:

CoC Number:	Checked by:	Date:

1 Bores to be purged dry, until pH, T and EC readings stabilise or a minimum of 3 to 5 times the water column volumes. Water column volumes can be calculated from the following casing volumes per unit length: 40 mm ID - 1 L/m; 50 mm ID – 2 L/m; 100 mm ID 8 L/m.

2 Calibration details to be recorded in the instrument –specific calibration book, or in field notes as required by local procedures.

Groundwater Monitoring – Field Sheet

Client:			BORE ID: BORE MW12
Project:			Job No.: 6137041
Location:	Casing diameter: 50 mm		Date: 20/11/19

BORE CONSTRUCTION

Head-works	☑ Flush-mount	☐ Monument	☐ Casing only	☐ Locked	Measurement Point: ☐ Top of PVC Casing	Total Depth: 4.442 m

BORE DEVELOPMENT

Method:	Date:	Undertaken By:	Vol. Removed: L

Comments (e.g. sediment content):

PURGING DETAILS (measurement points in meters below top of casing as indicated above)

Method: Peri-pump	Water Quality Meter used: YSI Pro		Undertaken By: EE/DS
Depth to water: 1.730 m	Water Column: m	Req Purge Vol. [1]: L	Flow Rate: L/min
Presence of LNAPL ☐	Presence of DNAPL ☐	Thickness of NAPL: cm	Depth to NAPL: m
Pump intake: m			

PURGING MEASUREMENTS [2]

Vol. Purged (L)	Elapsed Time (min)	EC (µS/cm)	Temp. (°C)	TDS (ppm|mg/L)	pH	DO %Sat	DO (ppm|mg/L)	Eh (mV)	Water Level (m b TOC)
AS 5667.11: 1998 (<+/-)		10%	0.2°C	-	10%	10%	10%	-	-
1L	3min	659	18.8	427	6.41	3.6	0.33	-28.8	
2L	6min	608	18.8	394	6.29	3.1	0.28	-21.9	
3L	9min	589	18.8	382	6.23	2.9	0.27	-17.7	
4L	12min	583	18.8	379	6.21	2.8	0.26	-16.2	

Comments (e.g. condition of headworks, sheen, colour, odour, sediment load):

Clear, no odour, no sheen, pro low to no sed.

SAMPLING DETAILS		Sample ID:
Time:	Vol. Removed: L	No of Sample Containers: 8

Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):

Field Filtered ☑	Duplicate Samples ☐	Duplicate Sample ID:

Comments:

CoC Number:	Checked by:	Date:

1 Bores to be purged dry, until pH, T and EC readings stabilise or a minimum of 3 to 5 times the water column volumes. Water column volumes can be calculated from the following casing volumes per unit length: 40 mm ID - 1 L/m; 50 mm ID – 2 L/m; 100 mm ID 8 L/m.

2 Calibration details to be recorded in the instrument –specific calibration book, or in field notes as required by local procedures.

Groundwater Monitoring – Field Sheet

Client:			BORE ID: BORE MW3
Project:			Job No.: 6137041
Location:	Casing diameter: 50 mm		Date:

BORE CONSTRUCTION

Head-works	☑ Flush-mount	☐ Monument	☐ Casing only	☐ Locked	Measurement Point	☐ Top of PVC Casing	Total Depth: 4.372 m

BORE DEVELOPMENT

Method:	Date:	Undertaken By:	Vol. Removed: L

Comments (e.g. sediment content):

PURGING DETAILS (measurement points in meters below top of casing as indicated above)

Method: Peri-pump	Water Quality Meter used: YSI Pro.		Undertaken By: EE/DS
Depth to water: 0.85 m	Water Column: m	Req Purge Vol. [1]: L	Flow Rate: L/min
Presence of LNAPL ☐	Presence of DNAPL ☐	Thickness of NAPL: cm	Depth to NAPL: m
Pump intake: m			

PURGING MEASUREMENTS [2]

Vol. Purged (L)	Elapsed Time (min)	EC (µS/cm)	Temp. (°C)	TDS (ppm|mg/L)	pH	DO %Sat	DO (ppm|mg/L)	Eh (mV)	Water Level (m b TOC)
AS 5667.11: 1998 (<+/-)		10%	0.2°C	-	10%	10%	10%	-	-
1L	3min	739	19.2	486	6.13	2.8	0.29	25.1	
2L	6min	753	19.1	490	6.12	2.4	0.23	20.2	
		756	19.1	491	6.13	2.2	0.20	15.8	

Comments (e.g. condition of headworks, sheen, colour, odour, sediment load):

Clear light yellow, no sheen, low sed, no odour

SAMPLING DETAILS		Sample ID:
Time:	Vol. Removed: L	No of Sample Containers: 8

Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):

Field Filtered ☑	Duplicate Samples ☐	Duplicate Sample ID:

Comments:

CoC Number:	Checked by:	Date:

1 Bores to be purged dry, until pH, T and EC readings stabilise or a minimum of 3 to 5 times the water column volumes. Water column volumes can be calculated from the following casing volumes per unit length: 40 mm ID - 1 L/m; 50 mm ID – 2 L/m; 100 mm ID 8 L/m.

2 Calibration details to be recorded in the instrument –specific calibration book, or in field notes as required by local procedures.

Groundwater Monitoring – Field Sheet

Client:			BORE ID: BORE MW15
Project:			Job No.: 61370411
Location:	Casing diameter: 50 mm		Date: 19/11/19

BORE CONSTRUCTION

Head-works	☑ Flush-mount	☐ Monument	☐ Casing only	☐ Locked	Measurement Point	☐ Top of PVC Casing	Total Depth: 3.739 m

BORE DEVELOPMENT

Method:	Date:	Undertaken By:	Vol. Removed: L

Comments (e.g. sediment content):

PURGING DETAILS (measurement points in meters below top of casing as indicated above)

Method: Peri-pump	Water Quality Meter used: YSI Pro.		Undertaken By: EE/DS
Depth to water: 1.451 m	Water Column: m	Req Purge Vol. [1]: L	Flow Rate: L/min
Presence of LNAPL ☐	Presence of DNAPL ☐	Thickness of NAPL: cm	Depth to NAPL: m
Pump intake: m			

PURGING MEASUREMENTS [2]

Vol. Purged (L)	Elapsed Time (min)	EC (µS/cm)	Temp. (°C)	TDS (ppm|mg/L)	pH	DO %Sat	DO (ppm|mg/L)	Eh (mV)	Water Level (m b TOC)
AS 5667.11: 1998 (<+/-)		10%	0.2 °C	-	10%	10%	10%	-	-
1L	3 min	210.8	20.5	137	5.67	8.8	0.77	17.8	
2L	6 min	205.9	20.2	134	5.61	4.7	0.42	9.4	
3L	9 min	~~204.4~~	~~20.2~~	~~133~~					
		204.4	20.2	133	5.60	4.2	0.36	5.1	
4L	12 min	202.7	20.1	132	5.59	3.7	0.33	1.2	
5L	15 min	202.3	20.1	131	5.59	3.5	0.32	-1.5	

Comments (e.g. condition of headworks, sheen, colour, odour, sediment load):

Clear orange, mod to high sed, muddy odour, no sheen

SAMPLING DETAILS

Time: 2:30pm.	Vol. Removed: L	Sample ID:
		No of Sample Containers: 8

Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):

Field Filtered ☑	Duplicate Samples ☐	Duplicate Sample ID:

Comments:

CoC Number:	Checked by:	Date:

1 Bores to be purged dry, until pH, T and EC readings stabilise or a minimum of 3 to 5 times the water column volumes. Water column volumes can be calculated from the following casing volumes per unit length: 40 mm ID - 1 L/m; 50 mm ID – 2 L/m; 100 mm ID 8 L/m.

2 Calibration details to be recorded in the instrument –specific calibration book, or in field notes as required by local procedures.

Groundwater Monitoring – Field Sheet

Client:			BORE ID: BORE MW18
Project:			Job No.: 6137044
Location:	Casing diameter: 50 mm		Date: 18/11/19

BORE CONSTRUCTION

Head-works	☑ Flush-mount	☐ Monument	☐ Casing only	☐ Locked	Measurement Point: ☐ Top of PVC Casing

Total Depth: 3.948 m

BORE DEVELOPMENT

Method:	Date:	Undertaken By:	Vol. Removed: L

Comments (e.g. sediment content):

PURGING DETAILS (measurement points in meters below top of casing as indicated above)

Method: Peri-pump	Water Quality Meter used: YSI Pro.		Undertaken By: EE/DS
Depth to water: 1.825 m	Water Column: m	Req Purge Vol. [1]: L	Flow Rate: L/min
Presence of LNAPL ☐	Presence of DNAPL ☐	Thickness of NAPL: cm	Depth to NAPL: m
Pump intake: m			

PURGING MEASUREMENTS [2]

Vol. Purged (L)	Elapsed Time (min)	EC (µS/cm)	Temp. (°C)	TDS (ppm|mg/L)	pH	DO %Sat	DO (ppm|mg/L)	Eh (mV)	Water Level (m b TOC)
AS 5667.11: 1998 (<+/-)		10%	0.2°C	-	10%	10%	10%	-	-
1L	3 min	320.1	20.0	208	4.46	52.7	4.79	92.9	
2L	6 min	316.6	20.0	206	4.44	52.5	4.78	95.2	
3L	9 min	316.6	20.0	206	4.44	51.6	4.68	97.1	

Comments (e.g. condition of headworks, sheen, colour, odour, sediment load):

clear, ionised to no odour, no sheen.

SAMPLING DETAILS		Sample ID:
Time:	Vol. Removed: L	No of Sample Containers: 8

Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):

Field Filtered ☑	Duplicate Samples ☐	Duplicate Sample ID:

Comments:

CoC Number:	Checked by:	Date:

1 Bores to be purged dry, until pH, T and EC readings stabilise or a minimum of 3 to 5 times the water column volumes. Water column volumes can be calculated from the following casing volumes per unit length: 40 mm ID - 1 L/m; 50 mm ID – 2 L/m; 100 mm ID 8 L/m.

2 Calibration details to be recorded in the instrument –specific calibration book, or in field notes as required by local procedures.

Groundwater Monitoring – Field Sheet

Client:			BORE ID: BORR MW19
Project:			Job No.: 6187041
Location:	Casing diameter: 50 mm		Date: 18/11/19

BORE CONSTRUCTION

Head-works	☑ Flush-mount	☐ Monument	☐ Casing only	☐ Locked	Measurement Point	☐ Top of PVC Casing	Total Depth: 2.541 m

BORE DEVELOPMENT

Method:	Date:	Undertaken By:	Vol. Removed: L

Comments (e.g. sediment content):

PURGING DETAILS (measurement points in meters below top of casing as indicated above)

Method: Peri-pump	Water Quality Meter used: YSI Pro.		Undertaken By: EE/DS
Depth to water: 1.395 m	Water Column: m	Req Purge Vol. [1]: L	Flow Rate: L/min
Presence of LNAPL ☐	Presence of DNAPL ☐	Thickness of NAPL: cm	Depth to NAPL: m
Pump intake: m			

PURGING MEASUREMENTS [2]

Vol. Purged (L)	Elapsed Time (min)	EC (µS/cm)	Temp. (°C)	TDS (ppm|mg/L)	pH	DO %Sat	DO (ppm|mg/L)	Eh (mV)	Water Level (m b TOC)
AS 5667.11: 1998 (<+/-)		10%	0.2°C	-	10%	10%	10%	-	-
1L	3min	14210	22.2	9226	6.57	6.0	0.50	9.2	
2L	6 min	13732	22.5	8884	6.63	4.9	0.41	-36.6	
3L	9 min	12842	22.8	8310	6.66	4.8	0.40	-80.7	
4L	12min	12343	22.7	7990	6.68	4.8	0.40	-98.7	

Comments (e.g. condition of headworks, sheen, colour, odour, sediment load):

cloudy light brown, no sheen, low to mod sed, sulphur odour

SAMPLING DETAILS		Sample ID:
Time:	Vol. Removed: L	No of Sample Containers: 8

Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):

Field Filtered ☑	Duplicate Samples ☑	Duplicate Sample ID: ~~FD01, FS01~~

Comments:

CoC Number:	Checked by:	Date:

1 Bores to be purged dry, until pH, T and EC readings stabilise or a minimum of 3 to 5 times the water column volumes. Water column volumes can be calculated from the following casing volumes per unit length: 40 mm ID - 1 L/m; 50 mm ID – 2 L/m; 100 mm ID 8 L/m.

2 Calibration details to be recorded in the instrument –specific calibration book, or in field notes as required by local procedures.

Groundwater Monitoring – Field Sheet

Client:			BORE ID: RORMW196
Project:			Job No.: 6137041
Location:	Casing diameter: 50 mm		Date: 18/11/19

BORE CONSTRUCTION

Head-works	☑ Flush-mount	☐ Monument	☐ Casing only	☐ Locked	Measurement Point	☐ Top of PVC Casing	Total Depth: 12.001 m

BORE DEVELOPMENT

Method:	Date:	Undertaken By:	Vol. Removed: L

Comments (e.g. sediment content):

PURGING DETAILS (measurement points in meters below top of casing as indicated above)

Method: Peri-pump	Water Quality Meter used: YSI Pro		Undertaken By: EE/DS
Depth to water: 1.146 m	Water Column: m	Req Purge Vol. [1]: L	Flow Rate: L/min
Presence of LNAPL ☐	Presence of DNAPL ☐	Thickness of NAPL: cm	Depth to NAPL: m
Pump intake: m			

PURGING MEASUREMENTS [2]

Vol. Purged (L)	Elapsed Time (min)	EC (µS/cm)	Temp. (°C)	TDS (ppm|mg/L)	pH	DO %Sat	DO (ppm|mg/L)	Eh (mV)	Water Level (m b TOC)
AS 5667.11: 1998 (<+/-)		10%	0.2°C	-	10%	10%	10%	-	-
1L	3min	2358	21.3	1532	5.76	4.3	0.37	-72.7	
2L	6 min	2335	21.0	1517	5.74	3.5	0.31	-78.3	
3L	9min	2314	21.2	1504	5.75	3.2	0.28	-83.9	
4L	12 min	2298	21.0	1493	5.75	2.4	0.21	-86.4	

Comments (e.g. condition of headworks, sheen, colour, odour, sediment load):

Clear, low sed, no sheen, sulfur odour.

SAMPLING DETAILS		Sample ID:
Time:	Vol. Removed: L	No of Sample Containers: 8

Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):

Field Filtered ☑	Duplicate Samples ☑	Duplicate Sample ID: FD01, ~~FD01~~ FS01

Comments:

CoC Number:	Checked by:	Date:

1 Bores to be purged dry, until pH, T and EC readings stabilise or a minimum of 3 to 5 times the water column volumes. Water column volumes can be calculated from the following casing volumes per unit length: 40 mm ID - 1 L/m; 50 mm ID – 2 L/m; 100 mm ID 8 L/m.

2 Calibration details to be recorded in the instrument –specific calibration book, or in field notes as required by local procedures.

Groundwater Monitoring – Field Sheet

Client:			BORE ID: BORE MW20
Project:			Job No.: 61370411
Location:	Casing diameter: 50 mm		Date: 21/11/19

BORE CONSTRUCTION

Head-works	☑ Flush-mount	☐ Monument	☐ Casing only	☐ Locked	Measurement Point: ☐ Top of PVC Casing

Total Depth: 14.318 m

BORE DEVELOPMENT

Method:	Date:	Undertaken By:	Vol. Removed: L

Comments (e.g. sediment content):

PURGING DETAILS (measurement points in meters below top of casing as indicated above)

Method: Peri-pump	Water Quality Meter used: YSI Pro		Undertaken By: EE/IO
Depth to water: 1.323 m	Water Column: m	Req Purge Vol. [1]: L	Flow Rate: L/min
Presence of LNAPL ☐	Presence of DNAPL ☐	Thickness of NAPL: cm	Depth to NAPL: m
Pump intake: m			

PURGING MEASUREMENTS [2]

Vol. Purged (L)	Elapsed Time (min)	EC (µS/cm)	Temp. (°C)	TDS (ppm|mg/L)	pH	DO %Sat	DO (ppm|mg/L)	Eh (mV)	Water Level (m b TOC)
AS 5667.11: 1998 (<+/-)		10%	0.2°C	-	10%	10%	10%	-	-
1L	3min	4392	20.4	2810	5.66	4.2	0.35	55.1	
2L	6min	4277	20.1	2780	5.61	2.9	0.26	62.4	
3L	9min	4299	20.3	2782	5.59	2.5	0.23	67.1	
4L	12min	4295	20.1	2778	5.59	2.5	0.22	69.4	

Comments (e.g. condition of headworks, sheen, colour, odour, sediment load):

cloudy, no odour, no sheen, low to mod sed.

SAMPLING DETAILS		Sample ID:
Time:	Vol. Removed: L	No of Sample Containers: 8

Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):

Field Filtered ☑	Duplicate Samples ☐	Duplicate Sample ID:

Comments:

CoC Number:	Checked by:	Date:

1 Bores to be purged dry, until pH, T and EC readings stabilise or a minimum of 3 to 5 times the water column volumes. Water column volumes can be calculated from the following casing volumes per unit length: 40 mm ID - 1 L/m; 50 mm ID – 2 L/m; 100 mm ID 8 L/m.

2 Calibration details to be recorded in the instrument –specific calibration book, or in field notes as required by local procedures.

Groundwater Monitoring – Field Sheet

Client: MRWA			BORE ID: BORR MW22
Project: BORR GW/SW Sampling			Job No.: 61397041
Location:	Casing diameter: 50 mm		Date: 18/11/19

BORE CONSTRUCTION

Head-works	☑ Flush-mount	☐ Monument	☐ Casing only	☐ Locked	Measurement Point	☐ Top of PVC Casing	Total Depth: 1.347 m

BORE DEVELOPMENT

Method:	Date:	Undertaken By:	Vol. Removed: L

Comments (e.g. sediment content):

PURGING DETAILS (measurement points in meters below top of casing as indicated above)

Method: Peri-pump	Water Quality Meter used: YSI Pro.		Undertaken By: EE/DS.
Depth to water: 1.193 m	Water Column: m	Req Purge Vol. [1]: L	Flow Rate: L/min
Presence of LNAPL ☐	Presence of DNAPL ☐	Thickness of NAPL: cm	Depth to NAPL: m
Pump intake: m			

PURGING MEASUREMENTS [2]

Vol. Purged (L)	Elapsed Time (min)	EC (µS/cm)	Temp. (°C)	TDS (ppm|mg/L)	pH	DO %Sat	DO (ppm|mg/L)	Eh (mV)	Water Level (m b TOC)
AS 5667.11: 1998 (<+/-)		10%	0.2°C	-	10%	10%	10%	-	-

Comments (e.g. condition of headworks, sheen, colour, odour, sediment load): ran dry —

SAMPLING DETAILS		Sample ID:
Time:	Vol. Removed: L	No of Sample Containers:

Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):

Field Filtered ☐	Duplicate Samples ☐	Duplicate Sample ID:

Comments:

CoC Number:	Checked by:	Date:

1 Bores to be purged dry, until pH, T and EC readings stabilise or a minimum of 3 to 5 times the water column volumes. Water column volumes can be calculated from the following casing volumes per unit length: 40 mm ID - 1 L/m; 50 mm ID – 2 L/m; 100 mm ID 8 L/m.

2 Calibration details to be recorded in the instrument –specific calibration book, or in field notes as required by local procedures.

Groundwater Monitoring – Field Sheet

Client: MRWA			BORE ID: BOAR MW22b
Project: BOAR GW/SW Sampling			Job No.: 6137041
Location:	Casing diameter: 50 mm		Date: 18.11.19

BORE CONSTRUCTION

Head-works	☐ Flush-mount	☐ Monument	☐ Casing only	☐ Locked	Measurement Point	☐ Top of PVC Casing	Total Depth: 13.005 m

BORE DEVELOPMENT

Method:	Date:	Undertaken By:	Vol. Removed: L

Comments (e.g. sediment content):

PURGING DETAILS (measurement points in meters below top of casing as indicated above)

Method: Peri	Water Quality Meter used: YSI		Undertaken By:
Depth to water: 2.924 m	Water Column: m	Req Purge Vol. [1]: L	Flow Rate: L/min
Presence of LNAPL ☐	Presence of DNAPL ☐	Thickness of NAPL: cm	Depth to NAPL: m
Pump intake: m			

PURGING MEASUREMENTS [2]

Vol. Purged (L)	Elapsed Time (min)	EC (µS/cm)	Temp. (°C)	TDS (ppm|mg/L)	pH	DO %Sat	DO (ppm|mg/L)	Eh (mV)	Water Level (m b TOC)
AS 5667.11: 1998 (<+/-)		10%	0.2°C	-	10%	10%	10%	-	-
1	3min	13439	22.6	8739	5.47	14.5	1.09	-83.9	~2.9
2	6min	13419	21.9	8723	5.37	6.0	0.54	-84.6	~2.9
3	9min	13395	21.7	8706	5.34	4.6	0.38	-84.6	~2.9
4	12min	13385	21.6	8703	5.33	4.1	0.34	-84.4	~2.9
5	15	13387	21.5	8700	5.33	3.9	0.33	-84.0	~2.9

Comments (e.g. condition of headworks, sheen, colour, odour, sediment load): clear - grey, no odour, no sheen, low sed

SAMPLING DETAILS

Time:	Vol. Removed: L	Sample ID:
		No of Sample Containers: 8

Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):

Field Filtered ☑	Duplicate Samples ☐	Duplicate Sample ID:

Comments:

CoC Number:	Checked by:	Date:

1 Bores to be purged dry, until pH, T and EC readings stabilise or a minimum of 3 to 5 times the water column volumes. Water column volumes can be calculated from the following casing volumes per unit length: 40 mm ID - 1 L/m; 50 mm ID – 2 L/m; 100 mm ID 8 L/m.

2 Calibration details to be recorded in the instrument –specific calibration book, or in field notes as required by local procedures.

Groundwater Monitoring – Field Sheet

Client:			BORE ID: BORE MW24
Project:			Job No.: 61370411
Location:	Casing diameter: 50 mm		Date: 20/11/19

BORE CONSTRUCTION

Head-works	☑ Flush-mount	☐ Monument	☐ Casing only	☐ Locked	Measurement Point	☐ Top of PVC Casing	Total Depth: 9.837 m

BORE DEVELOPMENT

Method:	Date:	Undertaken By:	Vol. Removed: L

Comments (e.g. sediment content):

PURGING DETAILS (measurement points in meters below top of casing as indicated above)

Method: Peri-pump	Water Quality Meter used: YSI Pro		Undertaken By: EE/DS
Depth to water: 7.940 m	Water Column: m	Req Purge Vol. [1]: L	Flow Rate: L/min
Presence of LNAPL ☐	Presence of DNAPL ☐	Thickness of NAPL: cm	Depth to NAPL: m
Pump intake: m			

PURGING MEASUREMENTS [2]

Vol. Purged (L)	Elapsed Time (min)	EC (µS/cm)	Temp. (°C)	TDS (ppm|mg/L)	pH	DO %Sat	DO (ppm|mg/L)	Eh (mV)	Water Level (m b TOC)
AS 5667.11: 1998 (<+/-)		10%	0.2 °C	-	10%	10%	10%	-	-
1L	3min	1829	20.7	1189	4.34	19.5	1.73	222.2	
2L	6 min	1830	21.0	1189	4.28	18.0	1.60	238.1	
3L	9 min	1831	20.9	~~1230~~ 1189	4.28	17.6	1.56	248.5	
4L	12min	1831	20.9	1189	4.28	17.4	1.55	253.6	

Comments (e.g. condition of headworks, sheen, colour, odour, sediment load):

cloudy light brown, no odour, no sheen, low to mod sed.

SAMPLING DETAILS		Sample ID:
Time:	Vol. Removed: L	No of Sample Containers: 8

Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):

Field Filtered ☑	Duplicate Samples ☐	Duplicate Sample ID:

Comments:

CoC Number:	Checked by:	Date:

1 Bores to be purged dry, until pH, T and EC readings stabilise or a minimum of 3 to 5 times the water column volumes. Water column volumes can be calculated from the following casing volumes per unit length: 40 mm ID - 1 L/m; 50 mm ID – 2 L/m; 100 mm ID 8 L/m.

2 Calibration details to be recorded in the instrument –specific calibration book, or in field notes as required by local procedures.

Groundwater Monitoring – Field Sheet

Client:			BORE ID: BORR MW25
Project:			Job No.: 6137041
Location:	Casing diameter: 50 mm		Date: 19/11/19

BORE CONSTRUCTION

Head-works	☑ Flush-mount	☐ Monument	☐ Casing only	☐ Locked	Measurement Point ☐ Top of PVC Casing	Total Depth: 12.900 m

BORE DEVELOPMENT

Method:	Date:	Undertaken By:	Vol. Removed: L

Comments (e.g. sediment content):

PURGING DETAILS (measurement points in meters below top of casing as indicated above)

Method: Peri-pump	Water Quality Meter used: YSI Pro		Undertaken By: EE/DS
Depth to water: 7.177 m	Water Column: m	Req Purge Vol. [1]: L	Flow Rate: L/min
Presence of LNAPL ☐	Presence of DNAPL ☐	Thickness of NAPL: cm	Depth to NAPL: m
Pump intake: m			

PURGING MEASUREMENTS [2]

Vol. Purged (L)	Elapsed Time (min)	EC (µS/cm)	Temp. (°C)	TDS (ppm|mg/L)	pH	DO %Sat	DO (ppm|mg/L)	Eh (mV)	Water Level (m b TOC)
AS 5667.11: 1998 (<+/-)		10%	0.2°C	-	10%	10%	10%	-	-
1L	3min	3730	19.2	2421	5.53	8.1	0.71	14.7	
2L	6min	3662	19.1	2380	5.52	4.1	0.37	-3.5	
3L	9min	3655	19.0	2375	5.52	3.4	0.31	-14.1	
4L	12min	3647	19.0	2370	5.53	3.2	0.29	-19.9	

Comments (e.g. condition of headworks, sheen, colour, odour, sediment load):

cloudy, low to mod sed, slight organic odour, no sheen.

SAMPLING DETAILS		Sample ID:
Time: 11:20am	Vol. Removed: L	No of Sample Containers: 8

Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):

Field Filtered ☑	Duplicate Samples ☐	Duplicate Sample ID:

Comments:

CoC Number:	Checked by:	Date:

1 Bores to be purged dry, until pH, T and EC readings stabilise or a minimum of 3 to 5 times the water column volumes. Water column volumes can be calculated from the following casing volumes per unit length: 40 mm ID - 1 L/m; 50 mm ID – 2 L/m; 100 mm ID 8 L/m.

2 Calibration details to be recorded in the instrument –specific calibration book, or in field notes as required by local procedures.

Groundwater Monitoring – Field Sheet

Client:			BORE ID: BORE MW29
Project:			Job No.: 6137041
Location:	Casing diameter: 50 mm		Date: 19/11/19

BORE CONSTRUCTION

Head-works	☑ Flush-mount	☐ Monument	☐ Casing only	☐ Locked	Measurement Point ☐ Top of PVC Casing	Total Depth: 8.441 m

BORE DEVELOPMENT

Method:	Date:	Undertaken By:	Vol. Removed: L

Comments (e.g. sediment content):

PURGING DETAILS (measurement points in meters below top of casing as indicated above)

Method: Peri-pump	Water Quality Meter used: YSI PRO		Undertaken By: EE/DS
Depth to water: 5.575m	Water Column: m	Req Purge Vol. [1]: L	Flow Rate: L/min
Presence of LNAPL ☐	Presence of DNAPL ☐	Thickness of NAPL: cm	Depth to NAPL: m
Pump intake: m			

PURGING MEASUREMENTS [2]

Vol. Purged (L)	Elapsed Time (min)	EC (µS/cm)	Temp. (°C)	TDS (ppm|mg/L)	pH	DO %Sat	DO (ppm|mg/L)	Eh (mV)	Water Level (m b TOC)
AS 5667.11: 1998 (<+/-)		10%	0.2°C	-	10%	10%	10%	-	-
1L	3min	787	19.9	511	5.15	6.1	0.54	-45.0	
2L	6min.	785	19.6	510	5.13	4.5	0.41	-52.7	
3L	9min	783	19.5	509	5.12	4.0	0.36	-57.1	
4L	12min	782	19.5	508	5.12	3.7	0.33	-58.9	

Comments (e.g. condition of headworks, sheen, colour, odour, sediment load):

orange-brown, mod sed, sulfur odour, no sheen

SAMPLING DETAILS

Time: 1:00pm	Vol. Removed: L	Sample ID: No of Sample Containers: 8

Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):

Field Filtered ☑	Duplicate Samples ☐	Duplicate Sample ID:

Comments:

CoC Number:	Checked by:	Date:

1 Bores to be purged dry, until pH, T and EC readings stabilise or a minimum of 3 to 5 times the water column volumes. Water column volumes can be calculated from the following casing volumes per unit length: 40 mm ID - 1 L/m; 50 mm ID – 2 L/m; 100 mm ID 8 L/m.

2 Calibration details to be recorded in the instrument –specific calibration book, or in field notes as required by local procedures.

Groundwater Monitoring – Field Sheet

Client:			BORE ID: BORRMW31
Project:			Job No.: 6137041
Location:	Casing diameter: 50 mm		Date: 19/11/19

BORE CONSTRUCTION

Head-works	☑ Flush-mount	☐ Monument	☐ Casing only	☐ Locked	Measurement Point	☐ Top of PVC Casing ☐ Top of Casing	Total Depth: 6.030 m

BORE DEVELOPMENT

Method:	Date:	Undertaken By:	Vol. Removed: L

Comments (e.g. sediment content):

PURGING DETAILS (measurement points in meters below top of casing as indicated above)

Method: Peri-pump	Water Quality Meter used: YSI Pro		Undertaken By: EE/DS
Depth to water: 3.521 m	Water Column: m	Req Purge Vol. [1]: L	Flow Rate: L/min
Presence of LNAPL ☐	Presence of DNAPL ☐	Thickness of NAPL: cm	Depth to NAPL: m
Pump intake: m			

PURGING MEASUREMENTS [2]

Vol. Purged (L)	Elapsed Time (min)	EC (µS/cm)	Temp. (°C)	TDS (ppm|mg/L)	pH	DO %Sat	DO (ppm|mg/L)	Eh (mV)	Water Level (m b TOC)
AS 5667.11: 1998 (<+/-)		10%	0.2°C	-	10%	10%	10%	-	-
1L	3min	272.4	19.9	177	5.27	6.5	0.56	-58.3	
2L	6min	272	19.8	177	5.26	4.4	0.39	-62.0	
3L	9min	271.5	19.8	176	5.25	3.7	0.33	-64.0	
4L	12min	271.2	19.7	176	5.25	3.2	0.29	-66.0	
5L	15min	271	19.7	176	5.25	2.9	0.28	-66.0	

Comments (e.g. condition of headworks, sheen, colour, odour, sediment load):

Clear brown, low to mod sed, no sheen, sulfur odour.

SAMPLING DETAILS		Sample ID:
Time: 12:30pm.	Vol. Removed: L	No of Sample Containers: 8

Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):

Field Filtered ☑	Duplicate Samples ☐	Duplicate Sample ID:

Comments:

CoC Number:	Checked by:	Date:

1 Bores to be purged dry, until pH, T and EC readings stabilise or a minimum of 3 to 5 times the water column volumes. Water column volumes can be calculated from the following casing volumes per unit length: 40 mm ID - 1 L/m; 50 mm ID – 2 L/m; 100 mm ID 8 L/m.

2 Calibration details to be recorded in the instrument –specific calibration book, or in field notes as required by local procedures.

Groundwater Monitoring – Field Sheet

Client:			BORE ID: BORE MW32
Project:			Job No.: 6137041
Location:	Casing diameter: 50 mm		Date: 19/11/19

BORE CONSTRUCTION

Head-works	☑ Flush-mount	☐ Monument	☐ Casing only	☐ Locked	Measurement Point: ☐ Top of PVC Casing	Total Depth: 3.001 m

BORE DEVELOPMENT

Method:	Date:	Undertaken By:	Vol. Removed: L

Comments (e.g. sediment content):

PURGING DETAILS (measurement points in meters below top of casing as indicated above)

Method: Peri-pump	Water Quality Meter used: YSI Pro		Undertaken By: EE/DS
Depth to water: 2.268 m	Water Column: m	Req Purge Vol. [1]: L	Flow Rate: L/min
Presence of LNAPL ☐	Presence of DNAPL ☐	Thickness of NAPL: cm	Depth to NAPL: m
Pump intake: m			

PURGING MEASUREMENTS [2]

Vol. Purged (L)	Elapsed Time (min)	EC (µS/cm)	Temp. (°C)	TDS (ppm|mg/L)	pH	DO %Sat	DO (ppm|mg/L)	Eh (mV)	Water Level (m b TOC)
AS 5667.11: 1998 (<+/-)		10%	0.2°C	-	10%	10%	10%	-	-
1L	3min	411.4	20.3	267	5.64	8.2	0.72	-71.9	
2L	6min	400.6	20.3	260	5.62	5.6	0.50	-72.9	
3L	9 min	390.8	20.3	253	5.60	4.6	0.41	-73.4	
4L	12 min	377.9	20.4	245	5.59	4.1	0.37	-74.3	
5L	15 min	370.0	20.4	240	5.59	4.0	0.36	-74.6	

Comments (e.g. condition of headworks, sheen, colour, odour, sediment load):

clear brown, sulfur odour, no sheen, low to mod sed.

SAMPLING DETAILS		Sample ID:
Time: 12pm	Vol. Removed: L	No of Sample Containers: 8

Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):

Field Filtered ☑	Duplicate Samples ☐	Duplicate Sample ID:

Comments:

CoC Number:	Checked by:	Date:

1 Bores to be purged dry, until pH, T and EC readings stabilise or a minimum of 3 to 5 times the water column volumes. Water column volumes can be calculated from the following casing volumes per unit length: 40 mm ID - 1 L/m; 50 mm ID – 2 L/m; 100 mm ID 8 L/m.

2 Calibration details to be recorded in the instrument –specific calibration book, or in field notes as required by local procedures.

Groundwater Monitoring – Field Sheet

Client:			BORE ID: BORE MW46
Project:			Job No.: 6137041
Location:	Casing diameter: 50 mm		Date: 20/11/19

BORE CONSTRUCTION

Head-works	☑ Flush-mount	☐ Monument	☐ Casing only	☐ Locked	Measurement Point: ☐ Top of PVC Casing	Total Depth: 5.975 m

BORE DEVELOPMENT

Method:	Date:	Undertaken By:	Vol. Removed: L

Comments (e.g. sediment content):

PURGING DETAILS (measurement points in meters below top of casing as indicated above)

Method: Peri-pump	Water Quality Meter used: YSI Pro		Undertaken By: EE/DS
Depth to water: 3.572 m	Water Column: m	Req Purge Vol. [1]: L	Flow Rate: L/min
Presence of LNAPL ☐	Presence of DNAPL ☐	Thickness of NAPL: cm	Depth to NAPL: m
Pump intake: m			

PURGING MEASUREMENTS [2]

Vol. Purged (L)	Elapsed Time (min)	EC (µS/cm)	Temp. (°C)	TDS (ppm|mg/L)	pH	DO %Sat	DO (ppm|mg/L)	Eh (mV)	Water Level (m b TOC)
AS 5667.11: 1998 (<+/-)		10%	0.2°C	-	10%	10%	10%	-	-
1L	3min	376.8	20.0	246	5.90	23.0	2.07	30.0	
2L	6min	406.4	20.1	265	5.87	19.9	1.81	31.5	
3L	9min	425.9	20.1	277	5.86	18.1	1.64	32.5	
4L	12min	432.2	20.1	281	5.85	17.9	1.63	33.5	

Comments (e.g. condition of headworks, sheen, colour, odour, sediment load):

& clear orange, no odour, no sheen, low to mod Sed.

SAMPLING DETAILS		Sample ID:
Time:	Vol. Removed: L	No of Sample Containers: 8

Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):

Field Filtered ☑	Duplicate Samples ☐	Duplicate Sample ID:

Comments:

CoC Number:	Checked by:	Date:

1 Bores to be purged dry, until pH, T and EC readings stabilise or a minimum of 3 to 5 times the water column volumes. Water column volumes can be calculated from the following casing volumes per unit length: 40 mm ID - 1 L/m; 50 mm ID – 2 L/m; 100 mm ID 8 L/m.

2 Calibration details to be recorded in the instrument –specific calibration book, or in field notes as required by local procedures.

Groundwater Monitoring – Field Sheet

Client:			BORE ID: BORE_MW37
Project:			Job No.: 61370411
Location:	Casing diameter: 50 mm		Date: 19/11/19

BORE CONSTRUCTION

Head-works	☑ Flush-mount	☐ Monument	☐ Casing only	☐ Locked	Measurement Point	☐ Top of PVC Casing ☐ Casing	Total Depth: 11.588 m

BORE DEVELOPMENT

Method:	Date:	Undertaken By:	Vol. Removed: L
Comments (e.g. sediment content):			

PURGING DETAILS (measurement points in meters below top of casing as indicated above)

Method: Peri-pump	Water Quality Meter used: YSI PRO		Undertaken By: EE/DS.
Depth to water: 4.911 m	Water Column: m	Req Purge Vol. [1]: L	Flow Rate: L/min
Presence of LNAPL ☐	Presence of DNAPL ☐	Thickness of NAPL: cm	Depth to NAPL: m
Pump intake: m			

PURGING MEASUREMENTS [2]

Vol. Purged (L)	Elapsed Time (min)	EC (µS/cm)	Temp. (°C)	TDS (ppm|mg/L)	pH	DO %Sat	DO (ppm|mg/L)	Eh (mV)	Water Level (m b TOC)
AS 5667.11: 1998 (<+/-)		10%	0.2°C	-	10%	10%	10%	-	-
1L	3 min	3456	21.1	2247	5.30	7.2	0.60	108.7	
2L	6 min	3453	20.8	2244	5.32	3.9	0.34	89.1	
3L	9 min	3450	20.8	2243	5.33	3.6	0.32	83.7	
4L	12 min	3451	20.8	2243	5.33	3.5	0.31	80.4	

Comments (e.g. condition of headworks, sheen, colour, odour, sediment load): clear, organic odour, no sheen, low-mod sed.

SAMPLING DETAILS		Sample ID:
Time: Nam 10:30am	Vol. Removed: L	No of Sample Containers: 8

Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):

Field Filtered ☑	Duplicate Samples ☑	Duplicate Sample ID: FD03.
Comments:		

CoC Number:	Checked by:	Date:

1 Bores to be purged dry, until pH, T and EC readings stabilise or a minimum of 3 to 5 times the water column volumes. Water column volumes can be calculated from the following casing volumes per unit length: 40 mm ID - 1 L/m; 50 mm ID – 2 L/m; 100 mm ID 8 L/m.

2 Calibration details to be recorded in the instrument –specific calibration book, or in field notes as required by local procedures.

Groundwater Monitoring – Field Sheet

Client:			BORE ID: BORE-MW59
Project:			Job No.: 61570411
Location:	Casing diameter: 50 mm		Date: 19/11/19

BORE CONSTRUCTION

Head-works	☑ Flush-mount	☐ Monument	☐ Casing only	☐ Locked	Measurement Point	☐ Top of PVC Casing	Total Depth: 13.672 m

BORE DEVELOPMENT

Method:	Date:	Undertaken By:	Vol. Removed: L

Comments (e.g. sediment content):

PURGING DETAILS (measurement points in meters below top of casing as indicated above)

Method: Peri-pump	Water Quality Meter used: YSI Pro		Undertaken By: EE/DS
Depth to water: 7.669 m	Water Column: m	Req Purge Vol. [1]: L	Flow Rate: L/min
Presence of LNAPL ☐	Presence of DNAPL ☐	Thickness of NAPL: cm	Depth to NAPL: m
Pump intake: m			

PURGING MEASUREMENTS [2]

Vol. Purged (L)	Elapsed Time (min)	EC (µS/cm)	Temp. (°C)	TDS (ppm|mg/L)	pH	DO %Sat	DO (ppm|mg/L)	Eh (mV)	Water Level (m b TOC)
AS 5667.11: 1998 (<+/-)		10%	0.2°C	-	10%	10%	10%	-	-
1L	3min	331.6	20.5	214	5.27	11.2	0.94	80.6	
2L	6min	310.9	20.4	202	5.14	5.2	0.46	106.1	
3L	9min	307.4	20.4	200	5.11	4.5	0.40	117.0	
4L	12min	306.3	20.4	199	5.10	4.4	0.39	120.2	

Comments (e.g. condition of headworks, sheen, colour, odour, sediment load):

Cloudy orange-brown, no sheen, no odour, low sed.

SAMPLING DETAILS		Sample ID:
Time: 10am	Vol. Removed: L	No of Sample Containers: 8

Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):

Field Filtered ☑	Duplicate Samples ☐	Duplicate Sample ID:

Comments:

CoC Number:	Checked by:	Date:

1 Bores to be purged dry, until pH, T and EC readings stabilise or a minimum of 3 to 5 times the water column volumes. Water column volumes can be calculated from the following casing volumes per unit length: 40 mm ID - 1 L/m; 50 mm ID – 2 L/m; 100 mm ID 8 L/m.

2 Calibration details to be recorded in the instrument –specific calibration book, or in field notes as required by local procedures.

Groundwater Monitoring – Field Sheet

Client: MRWA			BORE ID: MRMW05
Project: BORE GW and SW monitoring			Job No.: 61370411
Location:	Casing diameter: 50 mm		Date: 21/11/19

BORE CONSTRUCTION

Head-works	☑ Flush-mount	☐ Monument	☐ Casing only	☐ Locked	Measurement Point	☐ Top of PVC Casing	Total Depth: 5.056 m

BORE DEVELOPMENT

Method:	Date:	Undertaken By:	Vol. Removed: L

Comments (e.g. sediment content):

PURGING DETAILS (measurement points in meters below top of casing as indicated above)

Method: Peri-pump	Water Quality Meter used: YSI Pro		Undertaken By: EE/IO
Depth to water: 2.393 m	Water Column: m	Req Purge Vol. [1]: L	Flow Rate: L/min
Presence of LNAPL ☐	Presence of DNAPL ☐	Thickness of NAPL: cm	Depth to NAPL: m
Pump intake: m			

PURGING MEASUREMENTS [2]

Vol. Purged (L)	Elapsed Time (min)	EC (µS/cm)	Temp. (°C)	TDS (ppm|mg/L)	pH	DO %Sat	DO (ppm|mg/L)	Eh (mV)	Water Level (m b TOC)
AS 5667.11: 1998 (<+/-)		10%	0.2°C	-	10%	10%	10%	-	-
1L	3min	22827	18.7	14842	5.69	4.3	0.37	5.8	
2L	6min	22764	18.8	14794	5.66	2.7	0.23	-18.5	
3L	9min	22656	18.5	14723	5.64	2.5	0.22	-22.9	
4L	12min	22555	18.5	14658	5.62	2.1	0.19	-25.7	
5L	15min	22500	18.6	14623	5.61	2.1	0.18	-26.0	

Comments (e.g. condition of headworks, sheen, colour, odour, sediment load):

cloudy, slight sulfur odour, mod sed, no sheen.

SAMPLING DETAILS		Sample ID:
Time:	Vol. Removed: L	No of Sample Containers: 8

Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):

Field Filtered ☑	Duplicate Samples ☐	Duplicate Sample ID:

Comments:

CoC Number:	Checked by:	Date:

1 Bores to be purged dry, until pH, T and EC readings stabilise or a minimum of 3 to 5 times the water column volumes. Water column volumes can be calculated from the following casing volumes per unit length: 40 mm ID - 1 L/m; 50 mm ID – 2 L/m; 100 mm ID 8 L/m.

2 Calibration details to be recorded in the instrument –specific calibration book, or in field notes as required by local procedures.

Groundwater Monitoring – Field Sheet

Client:			BORE ID: BH9.2
Project:			Job No.: 6137044
Location:	Casing diameter: 50 mm		Date: 17/12/19

BORE CONSTRUCTION

Head-works	☑ Flush-mount	☐ Monument	☐ Casing only	☐ Locked	Measurement Point	☐ Top of PVC Casing	Total Depth: 8.870 m

BORE DEVELOPMENT

Method:	Date:	Undertaken By:	Vol. Removed: L

Comments (e.g. sediment content):

PURGING DETAILS (measurement points in meters below top of casing as indicated above)

Method: Peri-pump	Water Quality Meter used: YSI Pro.		Undertaken By: EE/RK
Depth to water: 3.444 m	Water Column: m	Req Purge Vol. [1]: L	Flow Rate: L/min
Presence of LNAPL ☐	Presence of DNAPL ☐	Thickness of NAPL: cm	Depth to NAPL: m
Pump intake: m			

PURGING MEASUREMENTS [2]

Vol. Purged (L)	Elapsed Time (min)	EC (µS/cm)	Temp. (°C)	TDS (ppm|mg/L)	pH	DO %Sat	DO (ppm|mg/L)	Eh (mV)	Water Level (m b TOC)
AS 5667.11: 1998 (<+/-)		10%	0.2°C	-	10%	10%	10%	-	-
1L	3min	7899	20.5	5134.35		2.0	0.18		~3.444
2L	6min	7883	20.3	5123.95		1.5	0.13		~3.444
3L	9min	7886	20.4	5125.90		1.3	0.11		~3.444
4L	12min	7884	20.5	5124.60	4.02	1.2	0.10	204.8	~3.444

Comments (e.g. condition of headworks, sheen, colour, odour, sediment load):

slight organic odour, clear, low sed, no sheen

SAMPLING DETAILS		Sample ID:
Time:	Vol. Removed: L	No of Sample Containers: 8

Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):

Field Filtered ☑	Duplicate Samples ☐	Duplicate Sample ID:

Comments:

CoC Number:	Checked by:	Date:

1 Bores to be purged dry, until pH, T and EC readings stabilise or a minimum of 3 to 5 times the water column volumes. Water column volumes can be calculated from the following casing volumes per unit length: 40 mm ID - 1 L/m; 50 mm ID – 2 L/m; 100 mm ID 8 L/m.

2 Calibration details to be recorded in the instrument –specific calibration book, or in field notes as required by local procedures.

Groundwater Monitoring – Field Sheet

Client:			BORE ID: BH11.1
Project:			Job No.: 6137041
Location:	Casing diameter: 50 mm		Date: 18/12/19

BORE CONSTRUCTION

Head-works	☑ Flush-mount	☐ Monument	☐ Casing only	☐ Locked	Measurement Point	☐ Top of PVC Casing ☐ Casing	Total Depth: ≤.081 m

BORE DEVELOPMENT

Method:	Date:	Undertaken By:	Vol. Removed: L
Comments (e.g. sediment content):			

PURGING DETAILS (measurement points in meters below top of casing as indicated above)

Method: Peri-pump	Water Quality Meter used: YSI PRO		Undertaken By: EE/PK
Depth to water: 1.954 m	Water Column: m	Req Purge Vol. [1]: L	Flow Rate: L/min
Presence of LNAPL ☐	Presence of DNAPL ☐	Thickness of NAPL: cm	Depth to NAPL: m
Pump intake: m			

PURGING MEASUREMENTS [2]

Vol. Purged (L)	Elapsed Time (min)	EC (µS/cm)	Temp. (°C)	TDS (ppm|mg/L)	pH	DO %Sat	DO (ppm|mg/L)	Eh (mV)	Water Level (m b TOC)
AS 5667.11: 1998 (<+/-)		10%	0.2°C	-	10%	10%	10%	-	-
1L	3 min	1629	20.4	1058.85		4.0	0.34		~1.954
2L	6 min	1608	20.1	1045.20		2.2	0.20		~1.954
3L	9 min	1560	20.3	1014.00		1.7	0.15		~1.954
4L	12 min	1544	20.0	1003.60		1.5	0.13		~1.954
5L	15 min	1533	19.9	996.45		1.3	0.12		~1.954
6L	18 min	1522	19.7	989.30		1.2	0.10		~1.954
7L	21 min	1521	19.7	988.65	6.74	1.1	0.10	-103.0	~1.954

Comments (e.g. condition of headworks, sheen, colour, odour, sediment load):

lowsed, clear, no odour, no sheen

SAMPLING DETAILS		Sample ID:
Time:	Vol. Removed: L	No of Sample Containers: 8

Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):

Field Filtered ☑	Duplicate Samples ☐	Duplicate Sample ID:

Comments:

CoC Number:	Checked by:	Date:

1 Bores to be purged dry, until pH, T and EC readings stabilise or a minimum of 3 to 5 times the water column volumes. Water column volumes can be calculated from the following casing volumes per unit length: 40 mm ID - 1 L/m; 50 mm ID – 2 L/m; 100 mm ID 8 L/m.

2 Calibration details to be recorded in the instrument –specific calibration book, or in field notes as required by local procedures.

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Groundwater Monitoring – Field Sheet

Client:			BORE ID: BH32.1
Project:			Job No.: 6137041
Location:	Casing diameter: 50 mm		Date: 16/12/19

BORE CONSTRUCTION

Head-works				Measurement Point		Total Depth:
	☑ Flush-mount	☐ Monument	☐ Casing only ☐ Locked		☐ Top of PVC Casing	10.190 m

BORE DEVELOPMENT

Method:	Date:	Undertaken By:	Vol. Removed: L

Comments (e.g. sediment content):

PURGING DETAILS (measurement points in meters below top of casing as indicated above)

Method: peri-pump	Water Quality Meter used: YSI Pro.		Undertaken By: EE/PK
Depth to water: 4.215 m	Water Column: m	Req Purge Vol. [1]: L	Flow Rate: L/min
Presence of LNAPL ☐	Presence of DNAPL ☐	Thickness of NAPL: cm	Depth to NAPL: m
Pump intake: m			

PURGING MEASUREMENTS [2]

Vol. Purged (L)	Elapsed Time (min)	EC (µS/cm)	Temp. (°C)	TDS (ppm|mg/L)	pH	DO %Sat	DO (ppm|mg/L)	Eh (mV)	Water Level (m b TOC)
AS 5667.11: 1998 (<+/-)		10%	0.2°C	-	10%	10%	10%	-	-
1L	3min	1203	20.3	781.95		2.2	0.20		~4.215
2L	6min	1169	20.2	759.85		1.5	0.14		~4.215
3L	9min	1170	20.1	760.50		1.1	0.09		~4.215
4L	12min	1167	19.9	758.55		0.9	0.08		~4.215
5L	15min	1166	19.9	757.90	5.57	0.8	0.08	62.7	~4.215

Comments (e.g. condition of headworks, sheen, colour, odour, sediment load):

clear, low mod sed, no sheen, slight sulfur odour metallic

SAMPLING DETAILS

Time: 11:30am	Vol. Removed: L	Sample ID: No of Sample Containers: 8

Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):

Field Filtered ☑	Duplicate Samples ☐	Duplicate Sample ID:

Comments:

CoC Number:	Checked by:	Date:

1 Bores to be purged dry, until pH, T and EC readings stabilise or a minimum of 3 to 5 times the water column volumes. Water column volumes can be calculated from the following casing volumes per unit length: 40 mm ID - 1 L/m; 50 mm ID – 2 L/m; 100 mm ID 8 L/m.

2 Calibration details to be recorded in the instrument –specific calibration book, or in field notes as required by local procedures.

Groundwater Monitoring – Field Sheet

Client:			BORE ID: BORE MW04
Project:			Job No.: 61377041
Location:	Casing diameter: 50 mm		Date: 16/12/19

BORE CONSTRUCTION

Head-works	☑ Flush-mount	☐ Monument	☐ Casing only	☐ Locked	Measurement Point	☐ Top of PVC Casing ☐ Top of Casing	Total Depth: 13.285 m

BORE DEVELOPMENT

Method:	Date:	Undertaken By:	Vol. Removed: L

Comments (e.g. sediment content):

PURGING DETAILS (measurement points in meters below top of casing as indicated above)

Method: Peri-pump	Water Quality Meter used: YSI Pro		Undertaken By: EG/RK
Depth to water: 4.380m	Water Column: m	Req Purge Vol. [1]: L	Flow Rate: L/min
Presence of LNAPL ☐	Presence of DNAPL ☐	Thickness of NAPL: cm	Depth to NAPL: m
Pump intake: m			

PURGING MEASUREMENTS [2]

Vol. Purged (L)	Elapsed Time (min)	EC (µS/cm)	Temp. (°C)	TDS (ppm|mg/L)	pH	DO %Sat	DO (ppm|mg/L)	Eh (mV)	Water Level (m b TOC)
AS 5667.11: 1998 (<+/-)		10%	0.2°C	-	10%	10%	10%	-	-
1L	3min	4276	19.5	2779.40		2.9	0.26		~4.380
2L	6min	4272	19.3	2776.80		2.0	0.18		~4.380
3L	9min	4261	19.2	2769.65		1.4	0.13		~4.380
4L	12min	4203	19.1	2731.95		1.1	0.10		~4.380
5L	15min	4120	19.1	2678.00		1.0	0.09		~4.380
6L	18min	4040	19.2	2626.00	6.68	1.0	0.09	-63.7	~4.380

Comments (e.g. condition of headworks, sheen, colour, odour, sediment load):

cloudy yellow, low|mod sed, slight sulfur odour, no sheen

SAMPLING DETAILS		Sample ID:
Time:	Vol. Removed: L	No of Sample Containers: 8

Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):

Field Filtered ☑	Duplicate Samples ☐	Duplicate Sample ID:

Comments:

CoC Number:	Checked by:	Date:

1 Bores to be purged dry, until pH, T and EC readings stabilise or a minimum of 3 to 5 times the water column volumes. Water column volumes can be calculated from the following casing volumes per unit length: 40 mm ID - 1 L/m; 50 mm ID – 2 L/m; 100 mm ID 8 L/m.

2 Calibration details to be recorded in the instrument –specific calibration book, or in field notes as required by local procedures.

Groundwater Monitoring – Field Sheet

Client:			BORE ID: BOKR MW05
Project:			Job No.: 6137041
Location:	Casing diameter: 50 mm		Date: 16/12/19

BORE CONSTRUCTION

Head-works	☑ Flush-mount ☐ Monument	☐ Casing only ☐ Locked	Measurement Point	☐ Top of PVC Casing	Total Depth: 8.055 m

BORE DEVELOPMENT

Method:	Date:	Undertaken By:	Vol. Removed: L
Comments (e.g. sediment content):			

PURGING DETAILS (measurement points in meters below top of casing as indicated above)

Method: Peri-pump	Water Quality Meter used: YSI PRO		Undertaken By: EE/PK
Depth to water: 5.778 m	Water Column: m	Req Purge Vol. [1]: L	Flow Rate: L/min
Presence of LNAPL ☐	Presence of DNAPL ☐	Thickness of NAPL: cm	Depth to NAPL: m
Pump intake: m			

PURGING MEASUREMENTS [2]

Vol. Purged (L)	Elapsed Time (min)	EC (µS/cm)	Temp. (°C)	TDS (ppm|mg/L)	pH	DO %Sat	DO (ppm|mg/L)	Eh (mV)	Water Level (m b TOC)
AS 5667.11: 1998 (<+/-)		10%	0.2°C	-	10%	10%	10%	-	-
1L	3min	1263	20.8	820.95		2.1	0.19		~5.778
2L	6 min	1248	20.9	811.20		1.4	0.12		~5.778
3L	9min	1143	20.8	742.95		1.2	0.11		~5.778
4L	12 min	1134	20.7	737.10	6.67	1.2	0.11	-82.4	~5.778

Comments (e.g. condition of headworks, sheen, colour, odour, sediment load):

clear yellow, slight sulfur odour, no sheen, low sed.

SAMPLING DETAILS		Sample ID:
Time:	Vol. Removed: L	No of Sample Containers: 8
Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):		
Field Filtered ☑	Duplicate Samples ☐	Duplicate Sample ID:
Comments:		

CoC Number:	Checked by:	Date:

1 Bores to be purged dry, until pH, T and EC readings stabilise or a minimum of 3 to 5 times the water column volumes. Water column volumes can be calculated from the following casing volumes per unit length: 40 mm ID - 1 L/m; 50 mm ID – 2 L/m; 100 mm ID 8 L/m.

2 Calibration details to be recorded in the instrument–specific calibration book, or in field notes as required by local procedures.

Groundwater Monitoring – Field Sheet

Client:			BORE ID: BORE MW06
Project:			Job No.: 613704
Location:	Casing diameter: 50 mm		Date: 16/12/19

BORE CONSTRUCTION

Head-works	☑ Flush-mount	☐ Monument	☐ Casing only	☐ Locked	Measurement Point	☐ Top of PVC Casing ☐ Top of Casing	Total Depth: 7.875 m

BORE DEVELOPMENT

Method:	Date:	Undertaken By:	Vol. Removed: L

Comments (e.g. sediment content):

PURGING DETAILS (measurement points in meters below top of casing as indicated above)

Method: Peri-pump	Water Quality Meter used: YSI Pro		Undertaken By: EE/PK
Depth to water: 5.505 m	Water Column: m	Req Purge Vol. [1]: L	Flow Rate: L/min
Presence of LNAPL ☐	Presence of DNAPL ☐	Thickness of NAPL: cm	Depth to NAPL: m
Pump intake: m			

PURGING MEASUREMENTS [2]

Vol. Purged (L)	Elapsed Time (min)	EC (µS/cm)	Temp. (°C)	TDS (ppm|mg/L)	pH	DO %Sat	DO (ppm|mg/L)	Eh (mV)	Water Level (m b TOC)
AS 5667.11: 1998 (<+/-)		10%	0.2°C	-	10%	10%	10%	-	-
1L	3min	1081	21.2	702.65		1.6	0.14		~5.505
2L	6min	1002	21.0	651.30		1.2	0.11		~5.505
3L	9min	902	20.9	586.30		1.1	0.09		~5.505
4L	12min	846	20.9	549.90	6.58	1.1	0.09	-76.8	~5.505

Comments (e.g. condition of headworks, sheen, colour, odour, sediment load):

cloudy yellow, sulfur odour, no sheen, low/mod sed

SAMPLING DETAILS

Time:	Vol. Removed: L	Sample ID:
		No of Sample Containers: 8

Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):

Field Filtered ☑	Duplicate Samples ☐	Duplicate Sample ID:

Comments:

CoC Number:	Checked by:	Date:

1 Bores to be purged dry, until pH, T and EC readings stabilise or a minimum of 3 to 5 times the water column volumes. Water column volumes can be calculated from the following casing volumes per unit length: 40 mm ID - 1 L/m; 50 mm ID – 2 L/m; 100 mm ID 8 L/m.

2 Calibration details to be recorded in the instrument –specific calibration book, or in field notes as required by local procedures.

Groundwater Monitoring – Field Sheet

Client:			BORE ID: BORE MW08a
Project:			Job No.: 6137041
Location:	Casing diameter: 50 mm		Date: 19/12/19

BORE CONSTRUCTION

Head-works	☑ Flush-mount	☐ Monument	☐ Casing only	☐ Locked	Measurement Point	☐ Top of PVC Casing	Total Depth: 5.734 m

BORE DEVELOPMENT

Method:	Date:	Undertaken By:	Vol. Removed: L
Comments (e.g. sediment content):			

PURGING DETAILS (measurement points in meters below top of casing as indicated above)

Method: Peri-pump	Water Quality Meter used: YSI PD		Undertaken By: EE/PK
Depth to water: 3.333 m	Water Column: m	Req Purge Vol. [1]: L	Flow Rate: L/min
Presence of LNAPL ☐	Presence of DNAPL ☐	Thickness of NAPL: cm	Depth to NAPL: m
Pump intake: m			

PURGING MEASUREMENTS [2]

Vol. Purged (L)	Elapsed Time (min)	EC (µS/cm)	Temp. (°C)	TDS (ppm|mg/L)	pH	DO %Sat	DO (ppm|mg/L)	Eh (mV)	Water Level (m b TOC)
AS 5667.11: 1998 (<+/-)		10%	0.2 °C	-	10%	10%	10%	-	-
1L	3min	604	18.8	392.60		3.2	0.29		~3.333
2L	6min	608	18.6	395.20		1.5	0.14		~3.333
3L	9min	604	18.5	392.60		1.1	0.10		~3.333
4L	12 min	603	18.5	391.95		0.9	0.09		~3.333
5L	15 min	602	18.5	391.30	5.98	0.9	0.08	-39.4	

Comments (e.g. condition of headworks, sheen, colour, odour, sediment load):

cloudy yellow, slight organic odour, low/mod sed, no sheen

SAMPLING DETAILS		Sample ID:
Time:	Vol. Removed: L	No of Sample Containers: 8
Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):		
Field Filtered ☑	Duplicate Samples ☐	Duplicate Sample ID:
Comments:		

CoC Number:	Checked by:	Date:

1 Bores to be purged dry, until pH, T and EC readings stabilise or a minimum of 3 to 5 times the water column volumes. Water column volumes can be calculated from the following casing volumes per unit length: 40 mm ID - 1 L/m; 50 mm ID – 2 L/m; 100 mm ID 8 L/m.

2 Calibration details to be recorded in the instrument –specific calibration book, or in field notes as required by local procedures.

Groundwater Monitoring – Field Sheet

Client:			BORE ID: BORMW09
Project:			Job No.: 61370411
Location:	Casing diameter: 50 mm		Date: 19/12/19

BORE CONSTRUCTION

Head-works	☑ Flush-mount	☐ Monument	☐ Casing only	☐ Locked	Measurement Point	☐ Top of PVC Casing ☐ Total Depth: 5.329 m

BORE DEVELOPMENT

Method:	Date:	Undertaken By:	Vol. Removed: L
Comments (e.g. sediment content):			

PURGING DETAILS (measurement points in meters below top of casing as indicated above)

Method: Peri-pump	Water Quality Meter used: YSI PIO		Undertaken By: EE/PK
Depth to water: 3.443m	Water Column: m	Req Purge Vol. [1]: L	Flow Rate: L/min
Presence of LNAPL ☐	Presence of DNAPL ☐	Thickness of NAPL: cm	Depth to NAPL: m
Pump intake: m			

PURGING MEASUREMENTS [2]

Vol. Purged (L)	Elapsed Time (min)	EC (µS/cm)	Temp. (°C)	TDS (ppm|mg/L)	pH	DO %Sat	DO (ppm|mg/L)	Eh (mV)	Water Level (m b TOC)
AS 5667.11: 1998 (<+/-)		10%	0.2°C	-	10%	10%	10%	-	-
1L	3min	293.00	20.2	190.45		9.9	0.90		~3.443
2L	6min	269.30	21.2	175.05		12.7	1.14		~3.443
3L	9min	235.80	21.0	153.27		18.2	1.63		~3.443
4L	12min	217.20	20.6	141.18		19.4	1.75		~3.443
5L	15min	216.80	20.6	140.92		19.2	1.72		~3.443
6L	18min	216.40	20.7	140.66		19.0	1.70		~3.443
7L	21min	216.30	20.6	140.56	6.07	18.8	1.69	70.6	~3.443

Comments (e.g. condition of headworks, sheen, colour, odour, sediment load):

clear, low/no sed, no sheen, no odour

SAMPLING DETAILS		Sample ID:
Time:	Vol. Removed: L	No of Sample Containers: 8
Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):		
Field Filtered ☑	Duplicate Samples ☐	Duplicate Sample ID:
Comments:	Internal lab QA/QC	
CoC Number:	Checked by:	Date:

1 Bores to be purged dry, until pH, T and EC readings stabilise or a minimum of 3 to 5 times the water column volumes. Water column volumes can be calculated from the following casing volumes per unit length: 40 mm ID - 1 L/m; 50 mm ID – 2 L/m; 100 mm ID 8 L/m.

2 Calibration details to be recorded in the instrument –specific calibration book, or in field notes as required by local procedures.

Groundwater Monitoring – Field Sheet

Client:			BORE ID: BORR MW09
Project:			Job No.: 6137041
Location:	Casing diameter: 50 mm		Date: 19/12/19

BORE CONSTRUCTION

Head-works	☑ Flush-mount ☐ Monument	☐ Casing only ☐ Locked	Measurement Point ☐ Top of PVC Casing	Total Depth: 3.946 m

BORE DEVELOPMENT

Method:	Date:	Undertaken By:	Vol. Removed: L
Comments (e.g. sediment content):			

PURGING DETAILS (measurement points in meters below top of casing as indicated above)

Method: Peri-pump	Water Quality Meter used: YSI Pro		Undertaken By: EE/PK
Depth to water: 1.823 m	Water Column: m	Req Purge Vol. [1]: L	Flow Rate: L/min
Presence of LNAPL ☐	Presence of DNAPL ☐	Thickness of NAPL: cm	Depth to NAPL: m
Pump intake: m			

PURGING MEASUREMENTS [2]

Vol. Purged (L)	Elapsed Time (min)	EC (µS/cm)	Temp. (°C)	TDS (ppm|mg/L)	pH	DO %Sat	DO (ppm|mg/L)	Eh (mV)	Water Level (m b TOC)
AS 5667.11: 1998 (<+/-)		10%	0.2 °C	-	10%	10%	10%	-	-
1L	3min	814.0	19.5	529.10		2.0	0.18		~1.823
2L	6min	741.0	19.4	481.65		1.2	0.11		~1.823
3L	9min	612.0	19.2	397.8		1.0	0.09		~1.823
4L	12min	545.0	19.4	354.25		0.8	0.08		~1.823
5L	15min	485.3	19.5	315.45		0.7	0.07		~1.823
6L	18min	468.1	19.6	304.27	5.79	0.8	0.07	-8.1	~1.823

Comments (e.g. condition of headworks, sheen, colour, odour, sediment load):

clear, low/no sed, no odour, no sheen

SAMPLING DETAILS

Time:	Vol. Removed: L	Sample ID:
		No of Sample Containers: 8

Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):

Field Filtered ☑	Duplicate Samples ☐	Duplicate Sample ID:

Comments:

CoC Number:	Checked by:	Date:

1 Bores to be purged dry, until pH, T and EC readings stabilise or a minimum of 3 to 5 times the water column volumes. Water column volumes can be calculated from the following casing volumes per unit length: 40 mm ID - 1 L/m; 50 mm ID – 2 L/m; 100 mm ID 8 L/m.

2 Calibration details to be recorded in the instrument –specific calibration book, or in field notes as required by local procedures.

Groundwater Monitoring – Field Sheet

Client:		BORE ID:	BORE MW11
Project:		Job No.:	6137041
Location:	Casing diameter: 50 mm	Date:	19 | 12 | 19

BORE CONSTRUCTION

Head-works	☑ Flush-mount	☐ Monument	☐ Casing only	☐ Locked	Measurement Point	☐ Top of PVC Casing	Total Depth: 3.952 m

BORE DEVELOPMENT

Method:	Date:	Undertaken By:	Vol. Removed: L
Comments (e.g. sediment content):			

PURGING DETAILS (measurement points in meters below top of casing as indicated above)

Method: Peri-pump	Water Quality Meter used: YSI Pro		Undertaken By: EE | PK
Depth to water: 1.557m	Water Column: m	Req Purge Vol. [1]: L	Flow Rate: L/min
Presence of LNAPL ☐	Presence of DNAPL ☐	Thickness of NAPL: cm	Depth to NAPL: m
Pump intake: m			

PURGING MEASUREMENTS [2]

Vol. Purged (L)	Elapsed Time (min)	EC (µS/cm)	Temp. (°C)	TDS (ppm|mg/L)	pH	DO %Sat	DO (ppm|mg/L)	Eh (mV)	Water Level (m b TOC)
AS 5667.11: 1998 (<+/-)		10%	0.2°C	-	10%	10%	10%	-	-
1L	3 min	23892	19.1	15529.80		2.0	0.17		~1.557
2L	6 min	23913	19.1	15543.45		2.1	0.18		~1.557
3L	9 min	23917	19.2	15546.05	7.21	2.2	0.19	-16.3	~1.557

Comments (e.g. condition of headworks, sheen, colour, odour, sediment load):

Clear yellow, low to nosed, no sheen, no odour.

SAMPLING DETAILS

Time:	Vol. Removed: L	Sample ID:
		No of Sample Containers: 8

Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):

Field Filtered ☑	Duplicate Samples ☐	Duplicate Sample ID:

Comments:

CoC Number:	Checked by:	Date:

1 Bores to be purged dry, until pH, T and EC readings stabilise or a minimum of 3 to 5 times the water column volumes. Water column volumes can be calculated from the following casing volumes per unit length: 40 mm ID - 1 L/m; 50 mm ID – 2 L/m; 100 mm ID 8 L/m.

2 Calibration details to be recorded in the instrument –specific calibration book, or in field notes as required by local procedures.

Groundwater Monitoring – Field Sheet

Client:		BORE ID:	BORHMW12
Project:		Job No.:	613704
Location:	Casing diameter: 50 mm	Date:	19/12/19

BORE CONSTRUCTION

Head-works				Measurement Point		Total Depth:	
	☑ Flush-mount	☐ Monument	☐ Casing only ☐ Locked		☐ Top of PVC Casing	4.419	m

BORE DEVELOPMENT

Method:	Date:	Undertaken By:	Vol. Removed: L
Comments (e.g. sediment content):			

PURGING DETAILS (measurement points in meters below top of casing as indicated above)

Method: Peri-pump	Water Quality Meter used: YSI Pro		Undertaken By: EE/PK
Depth to water: 1.911 m	Water Column: m	Req Purge Vol. [1]: L	Flow Rate: L/min
Presence of LNAPL ☐	Presence of DNAPL ☐	Thickness of NAPL: cm	Depth to NAPL: m
Pump intake: m			

PURGING MEASUREMENTS [2]

Vol. Purged (L)	Elapsed Time (min)	EC (µS/cm)	Temp. (°C)	TDS (ppm|mg/L)	pH	DO %Sat	DO (ppm|mg/L)	Eh (mV)	Water Level (m b TOC)
AS 5667.11: 1998 (<+/-)		10%	0.2°C	-	10%	10%	10%	-	-
1L	3 min	546	19.7	354.90		1.8	0.16		~1.91
2L	6 min	539	19.7	350.35		1.3	0.12		~1.91
3L	9 min	537	19.7	349.05		1.1	0.10		~1.91
4L	12 min	534	19.7	347.10	6.46	1.0	0.09	-21.5	~1.91

Comments (e.g. condition of headworks, sheen, colour, odour, sediment load):

SAMPLING DETAILS

Time:	Vol. Removed: L	Sample ID:
		No of Sample Containers: 8

Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):

Field Filtered ☑	Duplicate Samples ☐	Duplicate Sample ID:

Comments:

CoC Number:	Checked by:	Date:

1 Bores to be purged dry, until pH, T and EC readings stabilise or a minimum of 3 to 5 times the water column volumes. Water column volumes can be calculated from the following casing volumes per unit length: 40 mm ID - 1 L/m; 50 mm ID – 2 L/m; 100 mm ID 8 L/m.

2 Calibration details to be recorded in the instrument –specific calibration book, or in field notes as required by local procedures.

Groundwater Monitoring – Field Sheet

Client:			BORE ID: BORE MW13
Project:			Job No.: 61370441
Location:	Casing diameter: 50 mm		Date: 16/12/19

BORE CONSTRUCTION

Head-works				Measurement Point		Total Depth:
	☑ Flush-mount	☐ Monument	☐ Casing only ☐ Locked		☐ Top of PVC Casing	~~0.95~~ 4.39 m

BORE DEVELOPMENT

Method:	Date:	Undertaken By:	Vol. Removed: L

Comments (e.g. sediment content):

PURGING DETAILS (measurement points in meters below top of casing as indicated above)

Method: peri-pump	Water Quality Meter used: YSI PVD		Undertaken By: EE/PK
Depth to water: ~~0.95~~ m	Water Column: m	Req Purge Vol. [1]: L	Flow Rate: L/min
Presence of LNAPL ☐	Presence of DNAPL ☐	Thickness of NAPL: cm	Depth to NAPL: m
Pump intake: m			

PURGING MEASUREMENTS [2]

Vol. Purged (L)	Elapsed Time (min)	EC (µS/cm)	Temp. (°C)	TDS (ppm|mg/L)	pH	DO %Sat	DO (ppm|mg/L)	Eh (mV)	Water Level (m b TOC)
AS 5667.11: 1998 (<+/-)		10%	0.2°C	-	10%	10%	10%	-	-
1L	8min	783	21.2	508.95		2.9	0.25		~0.95
2L	6 min	795	21.0	516.75		2.1	0.19		~0.95
3L	9min	800	21.2	520		1.8	0.16		~0.95
4L	12min	802	20.9	521.3		1.5	0.13		~0.95
5L	15min	804	20.8	522.6		1.2	0.10		~0.95
6L	18min	804	20.7	522.6	6.27	1.1	0.09	-42.1	~0.95.

Comments (e.g. condition of headworks, sheen, colour, odour, sediment load):

clear light brown, no odour, low/mod sed, no sheen

SAMPLING DETAILS

Time: 10:30am	Vol. Removed: L	Sample ID:
		No of Sample Containers: 8

Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):

Field Filtered ☑	Duplicate Samples ☐	Duplicate Sample ID:

Comments:

CoC Number:	Checked by:	Date:

1 Bores to be purged dry, until pH, T and EC readings stabilise or a minimum of 3 to 5 times the water column volumes. Water column volumes can be calculated from the following casing volumes per unit length: 40 mm ID - 1 L/m; 50 mm ID – 2 L/m; 100 mm ID 8 L/m.

2 Calibration details to be recorded in the instrument –specific calibration book, or in field notes as required by local procedures.

Groundwater Monitoring – Field Sheet

Client:			BORE ID: BORE MW15
Project:			Job No.: 6137041
Location:	Casing diameter: 50 mm		Date: 16/12/19

BORE CONSTRUCTION

Head-works	☑ Flush-mount	☐ Monument	☐ Casing only	☐ Locked	Measurement Point ☐ Top of PVC Casing	Total Depth: 3.736 m

BORE DEVELOPMENT

Method:	Date:	Undertaken By:	Vol. Removed: L

Comments (e.g. sediment content):

PURGING DETAILS (measurement points in meters below top of casing as indicated above)

Method: peri-pump	Water Quality Meter used: YSI Pro		Undertaken By: EE/PK
Depth to water: 1.628 m	Water Column: m	Req Purge Vol. [1]: L	Flow Rate: L/min
Presence of LNAPL ☐	Presence of DNAPL ☐	Thickness of NAPL: cm	Depth to NAPL: m
Pump intake: m			

PURGING MEASUREMENTS [2]

Vol. Purged (L)	Elapsed Time (min)	EC (µS/cm)	Temp. (°C)	TDS (ppm|mg/L)	pH	DO %Sat	DO (ppm|mg/L)	Eh (mV)	Water Level (m b TOC)
AS 5667.11: 1998 (<+/-)		10%	0.2°C	-	10%	10%	10%	-	-
1L	3min	195.0	21.9	126.75		2.0	0.17		~1.628
2L	6min	192.4	21.9	125.06		1.5	0.13		~1.628
3L	9min	189.0	21.9	122.85		1.1	0.10		~1.628
4L	12min	186.7	22.0	121.36		0.9	0.08		~1.628
5L	15min	184.7	22.0	120.05	5.86	0.9	0.07	-35.4	~1.628

Comments (e.g. condition of headworks, sheen, colour, odour, sediment load):

clear light brown, slight sulfur odour, low sed
no sheen

SAMPLING DETAILS		Sample ID:
Time:	Vol. Removed: L	No of Sample Containers: 8

Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):

Field Filtered ☑	Duplicate Samples ☐	Duplicate Sample ID:

Comments:

CoC Number:	Checked by:	Date:

1 Bores to be purged dry, until pH, T and EC readings stabilise or a minimum of 3 to 5 times the water column volumes. Water column volumes can be calculated from the following casing volumes per unit length: 40 mm ID - 1 L/m; 50 mm ID – 2 L/m; 100 mm ID 8 L/m.

2 Calibration details to be recorded in the instrument –specific calibration book, or in field notes as required by local procedures.

Groundwater Monitoring – Field Sheet

Client:			BORE ID: BORE MW18
Project:			Job No.: 6137041
Location:	Casing diameter: 50 mm		Date: 17/12/19

BORE CONSTRUCTION

Head-works	☑ Flush-mount	☐ Monument	☐ Casing only	☐ Locked	Measurement Point: ☐ Top of PVC Casing	Total Depth: 3.973 m

BORE DEVELOPMENT

Method:	Date:	Undertaken By:	Vol. Removed: L

Comments (e.g. sediment content):

PURGING DETAILS (measurement points in meters below top of casing as indicated above)

Method: Peri-pump	Water Quality Meter used: YSI Pro		Undertaken By: BE/PK
Depth to water: 2.035m	Water Column: m	Req Purge Vol. [1]: L	Flow Rate: L/min
Presence of LNAPL ☐	Presence of DNAPL ☐	Thickness of NAPL: cm	Depth to NAPL: m
Pump intake: m			

PURGING MEASUREMENTS [2]

Vol. Purged (L)	Elapsed Time (min)	EC (µS/cm)	Temp. (°C)	TDS (ppm|mg/L)	pH	DO %Sat	DO (ppm|mg/L)	Eh (mV)	Water Level (m b TOC)
AS 5667.11: 1998 (<+/-)		10%	0.2°C	-	10%	10%	10%	-	-
1L	3min	296.4	20.9	192.66		35.9	3.20		~2.035
2L	6min	316.2	20.7	205.53		32.0	2.87		~2.035
3L	9min	320.6	20.5	208.39		30.4	2.73		~2.035
4L	12min	321.8	20.6	209.17		30.0	2.70		~2.035
5L	15min	322.7	20.5	209.76	5.12	29.8	2.69	188.7	~2.035

Comments (e.g. condition of headworks, sheen, colour, odour, sediment load):

clear, low to no sed, no odour, no sheen.

SAMPLING DETAILS		Sample ID:
Time:	Vol. Removed: L	No of Sample Containers: 8

Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):

Field Filtered ☑	Duplicate Samples ☐	Duplicate Sample ID:

Comments:

CoC Number:	Checked by:	Date:

1 Bores to be purged dry, until pH, T and EC readings stabilise or a minimum of 3 to 5 times the water column volumes. Water column volumes can be calculated from the following casing volumes per unit length: 40 mm ID - 1 L/m; 50 mm ID – 2 L/m; 100 mm ID 8 L/m.

2 Calibration details to be recorded in the instrument –specific calibration book, or in field notes as required by local procedures.

Groundwater Monitoring – Field Sheet

Client:			BORE ID: BORR MW19
Project:			Job No.: 6137041
Location:	Casing diameter: 50 mm		Date: 17/12/19

BORE CONSTRUCTION

Head-works	☑ Flush-mount	☐ Monument	☐ Casing only	☐ Locked	Measurement Point	☐ Top of PVC Casing ☐ Top of Casing	Total Depth: 2.530 m

BORE DEVELOPMENT

Method:	Date:	Undertaken By:	Vol. Removed: L

Comments (e.g. sediment content):

PURGING DETAILS (measurement points in meters below top of casing as indicated above)

Method: Peri-pump	Water Quality Meter used: YSI Pro		Undertaken By: BE/PK
Depth to water: 1.890 m	Water Column: m	Req Purge Vol. [1]: L	Flow Rate: L/min
Presence of LNAPL ☐	Presence of DNAPL ☐	Thickness of NAPL: cm	Depth to NAPL: m
Pump intake: m			

PURGING MEASUREMENTS [2]

Vol. Purged (L)	Elapsed Time (min)	EC (µS/cm)	Temp. (°C)	TDS (ppm|mg/L)	pH	DO %Sat	DO (ppm|mg/L)	Eh (mV)	Water Level (m b TOC)
AS 5667.11: 1998 (<+/-)		10%	0.2°C	-	10%	10%	10%	-	-
1L	4min	13243	24.0	8607.95		7.2	0.58		~1.890
2L	8 min	12907	23.9	8389.55		7.1	0.57		~1.890
3L	12 min	12772	24.0	8301.80		8.0	0.66		~1.890
4L	16 min	12693	25.8	8250.45		4.6	1.14		~1.890
* well not recharging – could not sample									

Comments (e.g. condition of headworks, sheen, colour, odour, sediment load):

* could not sample – well ran dry

SAMPLING DETAILS		Sample ID:
Time:	Vol. Removed: L	No of Sample Containers:

Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):

Field Filtered	Duplicate Samples ☐	Duplicate Sample ID:

Comments:

CoC Number:	Checked by:	Date:

1 Bores to be purged dry, until pH, T and EC readings stabilise or a minimum of 3 to 5 times the water column volumes. Water column volumes can be calculated from the following casing volumes per unit length: 40 mm ID - 1 L/m; 50 mm ID – 2 L/m; 100 mm ID 8 L/m.

2 Calibration details to be recorded in the instrument –specific calibration book, or in field notes as required by local procedures.

Groundwater Monitoring – Field Sheet

Client:			BORE ID: BORE MW196
Project:			Job No.: 61370411
Location:	Casing diameter: 50 mm		Date: 17/12/19

BORE CONSTRUCTION

Head-works	☑ Flush-mount	☐ Monument	☐ Casing only	☐ Locked	Measurement Point: ☐ Top of PVC Casing	Total Depth: 12.224 m

BORE DEVELOPMENT

Method:	Date:	Undertaken By:	Vol. Removed: L

Comments (e.g. sediment content):

PURGING DETAILS (measurement points in meters below top of casing as indicated above)

Method: Peri-pump	Water Quality Meter used: YSI Pro		Undertaken By: EE/PK
Depth to water: 1.567 m	Water Column: m	Req Purge Vol. [1]: L	Flow Rate: L/min
Presence of LNAPL ☐	Presence of DNAPL ☐	Thickness of NAPL: cm	Depth to NAPL: m
Pump intake: m			

PURGING MEASUREMENTS [2]

Vol. Purged (L)	Elapsed Time (min)	EC (µS/cm)	Temp. (°C)	TDS (ppm|mg/L)	pH	DO %Sat	DO (ppm|mg/L)	Eh (mV)	Water Level (m b TOC)
AS 5667.11: 1998 (<+/-)		10%	0.2°C	-	10%	10%	10%	-	-
1L	3min	2178	21.4	1415.70		2.6	0.22		~1.567
2L	6min	2022	21.1	1314.30		1.5	0.13		~1.567
3L	9min	1969	21.3	1279.85		1.3	0.11		~1.567
4L	12min	1952	21.3	1268.80		1.1	0.09		~1.567
5L	15min	1968	21.2	1279.2	5.93	1.0	0.08	14.3	~1.567

Comments (e.g. condition of headworks, sheen, colour, odour, sediment load):

cloudy, no sheen, slight organic odour, low sed.

SAMPLING DETAILS		Sample ID:
Time:	Vol. Removed: L	No of Sample Containers: 8

Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):

Field Filtered ☐	Duplicate Samples ☑	Duplicate Sample ID: FD01

Comments:

CoC Number:	Checked by:	Date:

1 Bores to be purged dry, until pH, T and EC readings stabilise or a minimum of 3 to 5 times the water column volumes. Water column volumes can be calculated from the following casing volumes per unit length: 40 mm ID - 1 L/m; 50 mm ID – 2 L/m; 100 mm ID 8 L/m.

2 Calibration details to be recorded in the instrument –specific calibration book, or in field notes as required by local procedures.

Groundwater Monitoring – Field Sheet

Client:			BORE ID: BORE MW20
Project:			Job No.: 6137041
Location:	Casing diameter: 50 mm		Date: 17/12/19

BORE CONSTRUCTION

Head-works	☑ Flush-mount ☐ Monument ☐ Casing only ☐ Locked	Measurement Point	☐ Top of PVC Casing	Total Depth: 14.230 m

BORE DEVELOPMENT

Method:	Date:	Undertaken By:	Vol. Removed: L

Comments (e.g. sediment content):

PURGING DETAILS (measurement points in meters below top of casing as indicated above)

Method: Peri-pump	Water Quality Meter used: YSI Pro		Undertaken By: EE/PK
Depth to water: 1.494 m	Water Column: m	Req Purge Vol. [1]: L	Flow Rate: L/min
Presence of LNAPL ☐	Presence of DNAPL ☐	Thickness of NAPL: cm	Depth to NAPL: m
Pump intake: m			

PURGING MEASUREMENTS [2]

Vol. Purged (L)	Elapsed Time (min)	EC (µS/cm)	Temp. (°C)	TDS (ppm|mg/L)	pH	DO %Sat	DO (ppm|mg/L)	Eh (mV)	Water Level (m b TOC)
AS 5667.11: 1998 (<+/-)		10%	0.2°C	-	10%	10%	10%	-	-
1L	3min	4046	21.3	2629.90		2.1	0.18		~1.494
2L	6min	4050	21.2	2632.50		1.5	0.13		~1.494
3L	9min	4049	21.2	2631.85		1.1	0.10		~1.494
4L	12min	4063	21.0	2640.95		0.9	0.08		~1.494
5L	15min	4081	21.0	2652.65		0.8	0.07		~1.494
6L	18min	4082	21.2	2653.30	5.73	0.8	0.07	71.3	~1.494

Comments (e.g. condition of headworks, sheen, colour, odour, sediment load):

cloudy, low sed, no sheen, slight organic odour

SAMPLING DETAILS		Sample ID:
Time: 11:30am	Vol. Removed: L	No of Sample Containers: 8

Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):

Field Filtered ☑	Duplicate Samples ☐	Duplicate Sample ID:

Comments:

CoC Number:	Checked by:	Date:

1 Bores to be purged dry, until pH, T and EC readings stabilise or a minimum of 3 to 5 times the water column volumes. Water column volumes can be calculated from the following casing volumes per unit length: 40 mm ID - 1 L/m; 50 mm ID – 2 L/m; 100 mm ID 8 L/m.

2 Calibration details to be recorded in the instrument –specific calibration book, or in field notes as required by local procedures.

Groundwater Monitoring – Field Sheet

Client:			BORE ID: BORE MW 22
Project:			Job No.: 6137041
Location:	Casing diameter: 50 mm		Date: 17/12/19

BORE CONSTRUCTION

Head-works	☑ Flush-mount	☐ Monument	☐ Casing only	☐ Locked	Measurement Point	☐ Top of PVC Casing	Total Depth: 1.359 m

BORE DEVELOPMENT

Method:	Date:	Undertaken By:	Vol. Removed: L

Comments (e.g. sediment content):

PURGING DETAILS (measurement points in meters below top of casing as indicated above)

Method:	Water Quality Meter used:		Undertaken By: EE/PK
Depth to water: DRY m	Water Column: m	Req Purge Vol. [1]: L	Flow Rate: L/min
Presence of LNAPL ☐	Presence of DNAPL ☐	Thickness of NAPL: cm	Depth to NAPL: m
Pump intake: m			

PURGING MEASUREMENTS [2]

Vol. Purged (L)	Elapsed Time (min)	EC (µS/cm)	Temp. (°C)	TDS (ppm|mg/L)	pH	DO %Sat	DO (ppm|mg/L)	Eh (mV)	Water Level (m b TOC)
AS 5667.11: 1998 (<+/-)		10%	0.2°C	-	10%	10%	10%	-	-

Comments (e.g. condition of headworks, sheen, colour, odour, sediment load):

WELL DRY

SAMPLING DETAILS		Sample ID:
Time:	Vol. Removed: L	No of Sample Containers:

Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):

Field Filtered ☐	Duplicate Samples ☐	Duplicate Sample ID:

Comments:

CoC Number:	Checked by:	Date:

1 Bores to be purged dry, until pH, T and EC readings stabilise or a minimum of 3 to 5 times the water column volumes. Water column volumes can be calculated from the following casing volumes per unit length: 40 mm ID - 1 L/m; 50 mm ID – 2 L/m; 100 mm ID 8 L/m.

2 Calibration details to be recorded in the instrument –specific calibration book, or in field notes as required by local procedures.

Groundwater Monitoring – Field Sheet

Client:			BORE ID: BORE MW226
Project:			Job No.: 6137041
Location:	Casing diameter: 50 mm		Date: 17/12/19

BORE CONSTRUCTION

Head-works	☑ Flush-mount	☐ Monument	☐ Casing only	☐ Locked	Measurement Point: ☐ Top of PVC Casing	Total Depth: 13.050 m

BORE DEVELOPMENT

Method:	Date:	Undertaken By:	Vol. Removed: L

Comments (e.g. sediment content):

PURGING DETAILS (measurement points in meters below top of casing as indicated above)

Method: Peri-pump	Water Quality Meter used: YSI Pro		Undertaken By: EE/PK
Depth to water: 3.123 m	Water Column: m	Req Purge Vol. [1]: L	Flow Rate: L/min
Presence of LNAPL ☐	Presence of DNAPL ☐	Thickness of NAPL: cm	Depth to NAPL: m
Pump intake: m			

PURGING MEASUREMENTS [2]

Vol. Purged (L)	Elapsed Time (min)	EC (µS/cm)	Temp. (°C)	TDS (ppm|mg/L)	pH	DO %Sat	DO (ppm|mg/L)	Eh (mV)	Water Level (m b TOC)
AS 5667.11: 1998 (<+/-)		10%	0.2°C	-	10%	10%	10%	-	-
1L	3min	12689	21.9	8234.85		2.4	0.20		~3.123
2L	6min	12650	21.4	8222.50		1.3	0.11		~3.123
3L	9min	12536	22.5	8148.40		1.8	0.15		~3.123
4L	12min	12544	22.6	8158.60		1.5	0.12		~3.123
5L	15min	12540	22.6	8151.00	5.61	1.4	0.11	-36.1	~3.123

Comments (e.g. condition of headworks, sheen, colour, odour, sediment load):

Bboard clear, Sulfur odour, no sheen, mod sed.

SAMPLING DETAILS		Sample ID:
Time:	Vol. Removed: L	No of Sample Containers: 8

Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):

Field Filtered ☑	Duplicate Samples ☐	Duplicate Sample ID:

Comments:

CoC Number:	Checked by:	Date:

1 Bores to be purged dry, until pH, T and EC readings stabilise or a minimum of 3 to 5 times the water column volumes. Water column volumes can be calculated from the following casing volumes per unit length: 40 mm ID - 1 L/m; 50 mm ID – 2 L/m; 100 mm ID 8 L/m.

2 Calibration details to be recorded in the instrument –specific calibration book, or in field notes as required by local procedures.

Groundwater Monitoring – Field Sheet

Client:			BORE ID: BORE MW24
Project:			Job No.: 61370411
Location:	Casing diameter: 50 mm		Date: 18/12/19

BORE CONSTRUCTION

Head-works	☑ Flush-mount	☐ Monument	☐ Casing only	☐ Locked	Measurement Point	☐ Top of PVC Casing	Total Depth: 10.986 m

BORE DEVELOPMENT

Method:	Date:	Undertaken By:	Vol. Removed: L

Comments (e.g. sediment content):

PURGING DETAILS (measurement points in meters below top of casing as indicated above)

Method: Peri-pump	Water Quality Meter used: YSI Pro		Undertaken By: EE/PK
Depth to water: 8.024m	Water Column: m	Req Purge Vol. [1]: L	Flow Rate: L/min
Presence of LNAPL ☐	Presence of DNAPL ☐	Thickness of NAPL: cm	Depth to NAPL: m
Pump intake: m			

PURGING MEASUREMENTS [2]

Vol. Purged (L)	Elapsed Time (min)	EC (µS/cm)	Temp. (°C)	TDS (ppm|mg/L)	pH	DO %Sat	DO (ppm|mg/L)	Eh (mV)	Water Level (m b TOC)
AS 5667.11: 1998 (<+/-)		10%	0.2°C	-	10%	10%	10%	-	-
1L	3min	1772	23.0	1151.80		11.4	0.97		~8.024
2L	6 min	1778	22.7	1155.70		11.8	1.01		~8.024
3L	9 min	1764	22.7	1146.60		11.0	0.95		~8.024
4L	12min	1766	22.9	1147.90	4.47	11.0	0.94	190.8	~8.024

Comments (e.g. condition of headworks, sheen, colour, odour, sediment load):

milky light brown, no odour, low sed, no sheen

SAMPLING DETAILS		Sample ID:
Time:	Vol. Removed: L	No of Sample Containers: 8

Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):

Field Filtered ☑	Duplicate Samples ☐	Duplicate Sample ID:

Comments:

CoC Number:	Checked by:	Date:

1 Bores to be purged dry, until pH, T and EC readings stabilise or a minimum of 3 to 5 times the water column volumes. Water column volumes can be calculated from the following casing volumes per unit length: 40 mm ID - 1 L/m; 50 mm ID – 2 L/m; 100 mm ID 8 L/m.

2 Calibration details to be recorded in the instrument –specific calibration book, or in field notes as required by local procedures.

Groundwater Monitoring – Field Sheet

Client:			BORE ID: BORRMW25
Project:			Job No.: 6137041
Location:	Casing diameter: 50 mm		Date: 17/12/19

BORE CONSTRUCTION

Head-works	☑ Flush-mount	☐ Monument	☐ Casing only	☐ Locked	Measurement Point	☐ Top of PVC Casing ☐ Casing	Total Depth: 12.922 m

BORE DEVELOPMENT

Method:	Date:	Undertaken By:	Vol. Removed: L
Comments (e.g. sediment content):			

PURGING DETAILS (measurement points in meters below top of casing as indicated above)

Method: Peri-pump	Water Quality Meter used: YSI PRO		Undertaken By: EE/PK
Depth to water: 7.528m	Water Column: m	Req Purge Vol. [1]: L	Flow Rate: L/min
Presence of LNAPL ☐	Presence of DNAPL ☐	Thickness of NAPL: cm	Depth to NAPL: m
Pump intake: m			

PURGING MEASUREMENTS [2]

Vol. Purged (L)	Elapsed Time (min)	EC (µS/cm)	Temp. (°C)	TDS (ppm|mg/L)	pH	DO %Sat	DO (ppm|mg/L)	Eh (mV)	Water Level (m b TOC)
AS 5667.11: 1998 (<+/-)		10%	0.2°C	-	10%	10%	10%	-	-
1L	3min	3678	20.0	2390.70		5.1	0.45		~7.528
2L	6min	3639	20.1	2365.35		2.4	0.22		~7.528
3L	9min	3613	20.4	2348.45		1.9	0.16		~7.528
4L	12min	3601	20.4	2340.65		1.5	0.13		~7.528
5L	15min	3587	20.3	2331.55		1.3	0.12		~7.528
6L	18min	3612	20.3	2347.80	5.79	1.3	0.12	-70.6	~7.528

Comments (e.g. condition of headworks, sheen, colour, odour, sediment load):

cloudy, low sed, no sheen, slight sulfur odour

SAMPLING DETAILS		Sample ID:
Time:	Vol. Removed: L	No of Sample Containers: 8

Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):

Field Filtered ☑	Duplicate Samples ☐	Duplicate Sample ID:

Comments:

CoC Number:	Checked by:	Date:

1 Bores to be purged dry, until pH, T and EC readings stabilise or a minimum of 3 to 5 times the water column volumes. Water column volumes can be calculated from the following casing volumes per unit length: 40 mm ID - 1 L/m; 50 mm ID – 2 L/m; 100 mm ID 8 L/m.

2 Calibration details to be recorded in the instrument –specific calibration book, or in field notes as required by local procedures.

Groundwater Monitoring – Field Sheet

Client:			BORE ID: BORE MW29
Project:			Job No.: 61359041
Location:	Casing diameter: 50 mm		Date: 18/12/19

BORE CONSTRUCTION

Head-works	☑ Flush-mount	☐ Monument	☐ Casing only	☐ Locked	Measurement Point	☐ Top of PVC Casing ☐ Total Depth: 8.445 m

BORE DEVELOPMENT

Method:	Date:	Undertaken By:	Vol. Removed: L
Comments (e.g. sediment content):			

PURGING DETAILS (measurement points in meters below top of casing as indicated above)

Method: Peri-pump	Water Quality Meter used: YSI Pro		Undertaken By: EE/PK
Depth to water: 5.853 m	Water Column: m	Req Purge Vol. [1]: L	Flow Rate: L/min
Presence of LNAPL ☐	Presence of DNAPL ☐	Thickness of NAPL: cm	Depth to NAPL: m
Pump intake: m			

PURGING MEASUREMENTS [2]

Vol. Purged (L)	Elapsed Time (min)	EC (µS/cm)	Temp. (°C)	TDS (ppm|mg/L)	pH	DO %Sat	DO (ppm|mg/L)	Eh (mV)	Water Level (m b TOC)
AS 5667.11: 1998 (<+/-)		10%	0.2°C	-	10%	10%	10%	-	-
1L	3min	748	20.7	486.20		2.4	0.21		~5.853
2L	6min	727	19.7	472.55		1.2	0.11		~5.853
3L	9min	719	19.7	467.35		1.0	0.09		~5.853
4L	12min	716	19.7	465.40		0.9	0.08		~5.853
5L	15min	711	19.7	462.15	5.33	0.9	0.08	-246	~5.853

Comments (e.g. condition of headworks, sheen, colour, odour, sediment load):

clear yellow, strong sulfur odour, moderate sed, no sheen

SAMPLING DETAILS

Time:	Vol. Removed: L	Sample ID:
		No of Sample Containers: 8

Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):

Field Filtered ☑	Duplicate Samples ☐	Duplicate Sample ID:

Comments:

CoC Number:	Checked by:	Date:

1 Bores to be purged dry, until pH, T and EC readings stabilise or a minimum of 3 to 5 times the water column volumes. Water column volumes can be calculated from the following casing volumes per unit length: 40 mm ID - 1 L/m; 50 mm ID – 2 L/m; 100 mm ID 8 L/m.

2 Calibration details to be recorded in the instrument –specific calibration book, or in field notes as required by local procedures.

Groundwater Monitoring – Field Sheet

Client:			BORE ID: BORE MW31
Project:			Job No.: 61357041
Location:	Casing diameter: 50 mm		Date: 18/12/19

BORE CONSTRUCTION

Head-works	☑ Flush-mount	☐ Monument	☐ Casing only	☐ Locked	Measurement Point	☐ Top of PVC Casing	Total Depth: 5.976 m

BORE DEVELOPMENT

Method:	Date:	Undertaken By:	Vol. Removed: L

Comments (e.g. sediment content):

PURGING DETAILS (measurement points in meters below top of casing as indicated above)

Method: Peri-pump	Water Quality Meter used: YSI Pro		Undertaken By: EE/PK
Depth to water: 3.667m	Water Column: m	Req Purge Vol. [1]: L	Flow Rate: L/min
Presence of LNAPL ☐	Presence of DNAPL ☐	Thickness of NAPL: cm	Depth to NAPL: m
Pump intake: m			

PURGING MEASUREMENTS [2]

Vol. Purged (L)	Elapsed Time (min)	EC (µS/cm)	Temp. (°C)	TDS (ppm|mg/L)	pH	DO %Sat	DO (ppm|mg/L)	Eh (mV)	Water Level (m b TOC)
AS 5667.11: 1998 (<+/-)		10%	0.2°C	-	10%	10%	10%	-	-
1L	3min	269.3	20.1	175.05		2.8	0.25		
2L	6min	266.9	20.1	173.49		1.4	0.13		
3L	9min	266.0	20.0	172.90	5.41	1.5	0.14	-26.1	

Comments (e.g. condition of headworks, sheen, colour, odour, sediment load): no sheen

clear yellow, low/mod sed, strong sulfur odour

SAMPLING DETAILS		Sample ID:
Time:	Vol. Removed: L	No of Sample Containers: 8

Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):

Field Filtered ☑	Duplicate Samples ☐	Duplicate Sample ID:

Comments:

CoC Number:	Checked by:	Date:

1 Bores to be purged dry, until pH, T and EC readings stabilise or a minimum of 3 to 5 times the water column volumes. Water column volumes can be calculated from the following casing volumes per unit length: 40 mm ID - 1 L/m; 50 mm ID – 2 L/m; 100 mm ID 8 L/m.

2 Calibration details to be recorded in the instrument –specific calibration book, or in field notes as required by local procedures.

Groundwater Monitoring – Field Sheet

Client:			BORE ID: BORE MW32
Project:			Job No.: 6137041
Location:	Casing diameter: 50 mm		Date: 18/12/19

BORE CONSTRUCTION

Head-works	☑ Flush-mount	☐ Monument	☐ Casing only	☐ Locked	Measurement Point	☐ Top of PVC Casing	Total Depth: ~~5.052~~ 5.052 m

BORE DEVELOPMENT

Method:	Date:	Undertaken By:	Vol. Removed: L
Comments (e.g. sediment content):			

PURGING DETAILS (measurement points in meters below top of casing as indicated above)

Method: Peri-pump	Water Quality Meter used: YSI Pro		Undertaken By: EE/PK
Depth to water: 2.414m	Water Column: m	Req Purge Vol. [1]: L	Flow Rate: L/min
Presence of LNAPL ☐	Presence of DNAPL ☐	Thickness of NAPL: cm	Depth to NAPL: m
Pump intake: m			

PURGING MEASUREMENTS [2]

Vol. Purged (L)	Elapsed Time (min)	EC (µS/cm)	Temp. (°C)	TDS (ppm|mg/L)	pH	DO %Sat	DO (ppm|mg/L)	Eh (mV)	Water Level (m b TOC)
AS 5667.11: 1998 (<+/-)		10%	0.2°C	-	10%	10%	10%	-	-
1L	3min	435.8	19.9	288.27	~~5.64~~	~~3.0~~	0.26		~2.414
2L	6min	414.7	19.5	269.56		1.9	0.17		~2.414
3L	9min	396.7	19.5	257.86		1.6	0.14		~2.414
4L	12min	337.7	19.3	219.51		1.2	0.11		~2.414
5L	15min	314.1	19.4	204.17	5.64	1.2	0.11	-22.3	~2.414

Comments (e.g. condition of headworks, sheen, colour, odour, sediment load):

clear yellow, sulfur odour, low/mod sed, no sheen

SAMPLING DETAILS		Sample ID:
Time:	Vol. Removed: L	No of Sample Containers: 8
Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):		
Field Filtered ☑	Duplicate Samples ☐	Duplicate Sample ID:
Comments:		

CoC Number:	Checked by:	Date:

1 Bores to be purged dry, until pH, T and EC readings stabilise or a minimum of 3 to 5 times the water column volumes. Water column volumes can be calculated from the following casing volumes per unit length: 40 mm ID - 1 L/m; 50 mm ID – 2 L/m; 100 mm ID 8 L/m.

2 Calibration details to be recorded in the instrument –specific calibration book, or in field notes as required by local procedures.

Groundwater Monitoring – Field Sheet

Client:			BORE ID: BORE_MW37
Project:			Job No.: 61370441
Location:	Casing diameter: 50 mm		Date: 18/12/19

BORE CONSTRUCTION

Head-works	☑ Flush-mount	☐ Monument	☐ Casing only	☐ Locked	Measurement Point	☐ Top of PVC Casing	Total Depth: 11.564 m

BORE DEVELOPMENT

Method:	Date:	Undertaken By:	Vol. Removed: L

Comments (e.g. sediment content):

PURGING DETAILS (measurement points in meters below top of casing as indicated above)

Method: Peri-pump	Water Quality Meter used: YSI Pro		Undertaken By: EE/BK
Depth to water: 5.346m	Water Column: m	Req Purge Vol. [1]: L	Flow Rate: L/min
Presence of LNAPL ☐	Presence of DNAPL ☐	Thickness of NAPL: cm	Depth to NAPL: m
Pump intake: m			

PURGING MEASUREMENTS [2]

Vol. Purged (L)	Elapsed Time (min)	EC (µS/cm)	Temp. (°C)	TDS (ppm|mg/L)	pH	DO %Sat	DO (ppm|mg/L)	Eh (mV)	Water Level (m b TOC)
AS 5667.11: 1998 (<+/-)		10%	0.2°C	-	10%	10%	10%	-	-
1L	3min	3387	20.7	2201.55		2.4	0.21		~5.346
2L	6min	3391	20.8	2204.15		1.7	0.15		~5.346
3L	9min	3392	20.7	2204.80		1.5	0.13		~5.346
4L	12min	3383	20.7	2198.95		1.3	0.11		~5.346
5L	15min	3384	20.7	2199.60		1.1	0.10		~5.346
6L	18min	3381	20.7	2197.65	5.53	1.1	0.10	49.2	~5.346

Comments (e.g. condition of headworks, sheen, colour, odour, sediment load):

Clear, no odour, low to no sed, no sheen.

SAMPLING DETAILS		Sample ID:
Time:	Vol. Removed: L	No of Sample Containers: 8

Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):

Field Filtered ☑	Duplicate Samples ☐	Duplicate Sample ID:

Comments:

CoC Number:	Checked by:	Date:

1 Bores to be purged dry, until pH, T and EC readings stabilise or a minimum of 3 to 5 times the water column volumes. Water column volumes can be calculated from the following casing volumes per unit length: 40 mm ID - 1 L/m; 50 mm ID – 2 L/m; 100 mm ID 8 L/m.

2 Calibration details to be recorded in the instrument –specific calibration book, or in field notes as required by local procedures.

Groundwater Monitoring – Field Sheet

Client:			BORE ID: BORE_MW39
Project:			Job No.: 6137041
Location:	Casing diameter: 50 mm		Date: 18/12/19

BORE CONSTRUCTION

Head-works	☑ Flush-mount	☐ Monument	☐ Casing only	☐ Locked	Measurement Point	☐ Top of PVC Casing	Total Depth: 13.768 m

BORE DEVELOPMENT

Method:	Date:	Undertaken By:	Vol. Removed: L

Comments (e.g. sediment content):

PURGING DETAILS (measurement points in meters below top of casing as indicated above)

Method: Peri-pump	Water Quality Meter used: YSI Pro		Undertaken By: EE/PK
Depth to water: 7.924m	Water Column: m	Req Purge Vol. [1]: L	Flow Rate: L/min
Presence of LNAPL ☐	Presence of DNAPL ☐	Thickness of NAPL: cm	Depth to NAPL: m
Pump intake: m			

PURGING MEASUREMENTS [2]

Vol. Purged (L)	Elapsed Time (min)	EC (µS/cm)	Temp. (°C)	TDS (ppm|mg/L)	pH	DO %Sat	DO (ppm|mg/L)	Eh (mV)	Water Level (m b TOC)
AS 5667.11: 1998 (<+/-)		10%	0.2°C	-	10%	10%	10%	-	-
1L	3min	358.4	21.3	232.96		3.7	0.32		~7.924
2L	6min	335.6	21.4	218.14		2.7	0.24		~7.924
3L	9min	317.2	21.2	206.18		2.2	0.20		~7.924
4L	12min	311.3	20.8	202.35		2.1	0.19		~7.924
5L	15min	309.0	20.9	200.85		2.0	0.17		~7.924
6L	18min	309.5	20.9	201.18	5.32	1.9	0.17	180.1	~7.924

Comments (e.g. condition of headworks, sheen, colour, odour, sediment load):

cloudy, low | no sed, no odour, no sheen

SAMPLING DETAILS		Sample ID:
Time:	Vol. Removed: L	No of Sample Containers: 8

Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):

Field Filtered ☑	Duplicate Samples ☐	Duplicate Sample ID:

Comments:

CoC Number:	Checked by:	Date:

1 Bores to be purged dry, until pH, T and EC readings stabilise or a minimum of 3 to 5 times the water column volumes. Water column volumes can be calculated from the following casing volumes per unit length: 40 mm ID - 1 L/m; 50 mm ID – 2 L/m; 100 mm ID 8 L/m.

2 Calibration details to be recorded in the instrument –specific calibration book, or in field notes as required by local procedures.

Groundwater Monitoring – Field Sheet

Client:			BORE ID: BORE MW46
Project:			Job No.: 61370411
Location:	Casing diameter: 50 mm		Date: 19/12/19

BORE CONSTRUCTION

Head-works	☑ Flush-mount	☐ Monument	☐ Casing only	☐ Locked	Measurement Point	☐ Top of PVC Casing	Total Depth: 5.993 m

BORE DEVELOPMENT

Method:	Date:	Undertaken By:	Vol. Removed: L

Comments (e.g. sediment content):

PURGING DETAILS (measurement points in meters below top of casing as indicated above)

Method: Peri-pump	Water Quality Meter used: YSI Pro		Undertaken By: EE/PK
Depth to water: 3.891 m	Water Column: m	Req Purge Vol. [1]: L	Flow Rate: L/min
Presence of LNAPL ☐	Presence of DNAPL ☐	Thickness of NAPL: cm	Depth to NAPL: m
Pump intake: m			

PURGING MEASUREMENTS [2]

Vol. Purged (L)	Elapsed Time (min)	EC (µS/cm)	Temp. (°C)	TDS (ppm|mg/L)	pH	DO %Sat	DO (ppm|mg/L)	Eh (mV)	Water Level (m b TOC)
AS 5667.11: 1998 (<+/-)		10%	0.2°C	-	10%	10%	10%	-	-
1L	3min	398.4	21.0	258.96		8.3	0.73		~3.891
2L	6min	411.6	21.0	267.54		6.5	0.57		~3.891
3L	9min	418.4	21.0	271.96	5.97	6.1	0.54	8.2	~3.891

Comments (e.g. condition of headworks, sheen, colour, odour, sediment load):

cloudy yellow, low/mod sed, no odour, no sheen

SAMPLING DETAILS		Sample ID:
Time:	Vol. Removed: L	No of Sample Containers: 8

Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):

Field Filtered ☑	Duplicate Samples ☐	Duplicate Sample ID:

Comments:

CoC Number:	Checked by:	Date:

1 Bores to be purged dry, until pH, T and EC readings stabilise or a minimum of 3 to 5 times the water column volumes. Water column volumes can be calculated from the following casing volumes per unit length: 40 mm ID - 1 L/m; 50 mm ID – 2 L/m; 100 mm ID 8 L/m.

2 Calibration details to be recorded in the instrument –specific calibration book, or in field notes as required by local procedures.

Groundwater Monitoring – Field Sheet

Client:			BORE ID: MR MW05
Project:			Job No.: 6137041
Location:	Casing diameter: 50 mm		Date: 19/12/19

BORE CONSTRUCTION

Head-works	☑ Flush-mount	☐ Monument	☐ Casing only	☐ Locked	Measurement Point	☐ Top of PVC Casing	Total Depth: 4.870 m

BORE DEVELOPMENT

Method:	Date:	Undertaken By:	Vol. Removed: L

Comments (e.g. sediment content):

PURGING DETAILS (measurement points in meters below top of casing as indicated above)

Method: Peri-pump	Water Quality Meter used: YSI Pro		Undertaken By: EE/PK
Depth to water: 2.231 m	Water Column: m	Req Purge Vol. [1]: L	Flow Rate: L/min
Presence of LNAPL ☐	Presence of DNAPL ☐	Thickness of NAPL: cm	Depth to NAPL: m
Pump intake: m			

PURGING MEASUREMENTS [2]

Vol. Purged (L)	Elapsed Time (min)	EC (µS/cm)	Temp. (°C)	TDS (ppm|mg/L)	pH	DO %Sat	DO (ppm|mg/L)	Eh (mV)	Water Level (m b TOC)
AS 5667.11: 1998 (<+/-)		10%	0.2°C	-	10%	10%	10%	-	-
1L	3min	21437	18.5	13934.05		3.3	0.28		~2.231
2L	6min	21385	18.5	13900.25		2.7	0.23		~2.231
3L	9min	21583	18.5	14028.95		1.8	0.16		~2.231
4L	12min	21532	18.5	13995.80	5.78	1.9	0.16	-43.5	~2.231

Comments (e.g. condition of headworks, sheen, colour, odour, sediment load):

Cloudy, low to mod sed, sulfur odour, no sheen.

SAMPLING DETAILS		Sample ID:
Time:	Vol. Removed: L	No of Sample Containers: 8

Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):

Field Filtered ☑	Duplicate Samples ☐	Duplicate Sample ID:

Comments:

CoC Number:	Checked by:	Date:

1 Bores to be purged dry, until pH, T and EC readings stabilise or a minimum of 3 to 5 times the water column volumes. Water column volumes can be calculated from the following casing volumes per unit length: 40 mm ID - 1 L/m; 50 mm ID – 2 L/m; 100 mm ID 8 L/m.

2 Calibration details to be recorded in the instrument –specific calibration book, or in field notes as required by local procedures.

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Groundwater Monitoring – Field Sheet

Client:		BORE ID: BH9.2
Project:		Job No.:
Location:	Casing diameter: 50 mm	Date: 21.1.20

BORE CONSTRUCTION

Head-works: ☐ Flush-mount ☐ Monument ☐ Casing only ☐ Locked	Measurement Point: ☐ Top of PVC Casing	Total Depth: 8.861 m	

BORE DEVELOPMENT

Method:	Date:	Undertaken By:	Vol. Removed: L

Comments (e.g. sediment content):

PURGING DETAILS (measurement points in meters below top of casing as indicated above)

Method:	Water Quality Meter used:		Undertaken By: LC/AH/PK
Depth to water: 3.392 m	Water Column: m	Req Purge Vol. [1]: L	Flow Rate: L/min
Presence of LNAPL ☐	Presence of DNAPL ☐	Thickness of NAPL: cm	Depth to NAPL: m
Pump intake: m			

PURGING MEASUREMENTS [2]

Vol. Purged (L)	Elapsed Time (min)	EC (µS/cm)	Temp. (°C)	TDS (ppm|mg/L)	pH	DO %Sat	DO (ppm|mg/L)	Eh (mV)	Water Level (m b TOC)
AS 5667.11: 1998 (<+/-)		10%	0.2°C	-	10%	10%	10%	-	-
-	1	8632	20.7	5612.9	3.72	16.6	1.26	168.8	3.392
1	4	8612	20.5	5598.4	3.68	4.3	0.37	190.7	
1.8	7	8621	20.4	5604.2	3.67	2.3	0.20	218.8	
2.4	10	8629	20.4	5609.15	3.67	1.8	0.15	229.7	
2.8	12	8639	20.4	5615.2	3.67	1.6	0.14	232.0	
3.1	14	8634	20.5	5612.25	3.67	1.5	0.13	233.5	

Comments (e.g. condition of headworks, sheen, colour, odour, sediment load):

clear, no odour, low sed, no sheen good

SAMPLING DETAILS		Sample ID:
Time:	Vol. Removed: L	No of Sample Containers:

Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):

Field Filtered ☐	Duplicate Samples ☐	Duplicate Sample ID:

Comments:

CoC Number:	Checked by:	Date:

1 Bores to be purged dry, until pH, T and EC readings stabilise or a minimum of 3 to 5 times the water column volumes. Water column volumes can be calculated from the following casing volumes per unit length: 40 mm ID - 1 L/m; 50 mm ID – 2 L/m; 100 mm ID 8 L/m.

2 Calibration details to be recorded in the instrument –specific calibration book, or in field notes as required by local procedures.

Groundwater Monitoring – Field Sheet

Client:			BORE ID: BH11.1
Project:			Job No.:
Location:	Casing diameter: 50 mm		Date: 22.1.20

BORE CONSTRUCTION

Head-works: ☐ Flush-mount ☐ Monument ☐ Casing only ☐ Locked	Measurement Point: ☐ Top of PVC Casing	Total Depth: 5.081 m	

BORE DEVELOPMENT

Method:	Date:	Undertaken By:	Vol. Removed: L
Comments (e.g. sediment content):			

PURGING DETAILS (measurement points in meters below top of casing as indicated above)

Method:	Water Quality Meter used:		Undertaken By: AH/PK
Depth to water: 2.700 m	Water Column: m	Req Purge Vol. [1]: L	Flow Rate: L/min
Presence of LNAPL ☐	Presence of DNAPL ☐	Thickness of NAPL: cm	Depth to NAPL: m
Pump intake: m			

PURGING MEASUREMENTS [2]

Vol. Purged (L)	Elapsed Time (min)	EC (µS/cm)	Temp. (°C)	TDS (ppm|mg/L)	pH	DO %Sat	DO (ppm|mg/L)	Eh (mV)	Water Level (m b TOC)
AS 5667.11: 1998 (<+/-)		10%	0.2°C	-	10%	10%	10%	-	-
—	1	1900	21.7	1240.21	6.59	13.9	1.17	-68.6	~2.7
0.8	3	1804	21.1	1172.03	6.53	3.7	0.32	-82.0	
1.3	6	1766	21.0	1147.42	6.53	2.4	0.22	-85.6	
1.8	9	1730	21.1	1124.01	6.55	1.8	0.16	-88.6	
2.3	11	1703	21.2	1106.62	6.55	1.4	0.13	-92.7	
2.7	13	1689	21.4	1097.70	6.56	1.3	0.12	-94.1	

Comments (e.g. condition of headworks, sheen, colour, odour, sediment load):

Good, NO Sheen, clear, no odour, low seds

SAMPLING DETAILS

Time:	Vol. Removed: L	Sample ID:
		No of Sample Containers:

Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):

Field Filtered ☐	Duplicate Samples ☐	Duplicate Sample ID:

Comments:

CoC Number:	Checked by:	Date:

1 Bores to be purged dry, until pH, T and EC readings stabilise or a minimum of 3 to 5 times the water column volumes. Water column volumes can be calculated from the following casing volumes per unit length: 40 mm ID - 1 L/m; 50 mm ID – 2 L/m; 100 mm ID 8 L/m.

2 Calibration details to be recorded in the instrument –specific calibration book, or in field notes as required by local procedures.

Groundwater Monitoring – Field Sheet

Client:			BORE ID: BH32.1
Project:			Job No.:
Location:	Casing diameter: 50 mm		Date: 20.1.20

BORE CONSTRUCTION

Head-works	☐ Flush-mount ☐ Monument ☐ Casing only ☐ Locked	Measurement Point	☐ Top of PVC Casing	Total Depth: 10.142 m

BORE DEVELOPMENT

Method:	Date:	Undertaken By:	Vol. Removed: L

Comments (e.g. sediment content):

PURGING DETAILS (measurement points in meters below top of casing as indicated above)

Method:	Water Quality Meter used:		Undertaken By: IO | PK | AH
Depth to water: 4.324 m	Water Column: m	Req Purge Vol. [1]: L	Flow Rate: L/min
Presence of LNAPL ☐	Presence of DNAPL ☐	Thickness of NAPL: cm	Depth to NAPL: m
Pump intake: m			

PURGING MEASUREMENTS [2]

Vol. Purged (L)	Elapsed Time (min)	EC (µS/cm)	Temp. (°C)	TDS (ppm|mg/L)	pH	DO %Sat	DO (ppm|mg/L)	Eh (mV)	Water Level (m b TOC)
AS 5667.11: 1998 (<+/-)		10%	0.2°C	-	10%	10%	10%	-	-
-	1	1298	20.2	843.6	5.44	5.8	0.51	73.2	~4.3
1	4	1297	20.4	843.3	5.30	3.0	0.27	104.1	↓
1.8	7	1297	20.6	843.5	5.28	1.7	0.16	105.2	
2.7	10	1296	20.4	842.0	5.27	1.4	0.14	89.2	

Comments (e.g. condition of headworks, sheen, colour, odour, sediment load):

Good, no sheen, cloudy, slight odour, low sed.

SAMPLING DETAILS

		Sample ID:
Time:	Vol. Removed: L	No of Sample Containers:

Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):

Field Filtered ☐	Duplicate Samples ☐	Duplicate Sample ID:

Comments:

CoC Number:	Checked by:	Date:

1 Bores to be purged dry, until pH, T and EC readings stabilise or a minimum of 3 to 5 times the water column volumes. Water column volumes can be calculated from the following casing volumes per unit length: 40 mm ID - 1 L/m; 50 mm ID – 2 L/m; 100 mm ID 8 L/m.

2 Calibration details to be recorded in the instrument –specific calibration book, or in field notes as required by local procedures.

Groundwater Monitoring – Field Sheet

Client:			BORE ID: BORR_MW04
Project:			Job No.:
Location:	Casing diameter: 50 mm		Date: 20·1·20

BORE CONSTRUCTION

Head-works	☑ Flush-mount ☐ Monument ☐ Casing only ☐ Locked	Measurement Point	☑ Top of PVC Casing	Total Depth: 13·108 m

BORE DEVELOPMENT

Method:	Date:	Undertaken By:	Vol. Removed: L
Comments (e.g. sediment content):			

PURGING DETAILS (measurement points in meters below top of casing as indicated above)

Method: low flow	Water Quality Meter used: 451		Undertaken By: TO / PK / AH
Depth to water: 4·623 m	Water Column: m	Req Purge Vol. [1]: L	Flow Rate: L/min
Presence of LNAPL ☐	Presence of DNAPL ☐	Thickness of NAPL: cm	Depth to NAPL: m
Pump intake: m			

PURGING MEASUREMENTS [2]

Vol. Purged (L)	Elapsed Time (min)	EC (µS/cm)	Temp. (°C)	TDS (ppm|mg/L)	pH	DO %Sat	DO (ppm|mg/L)	Eh (mV)	Water Level (m b TOC)
AS 5667.11: 1998 (<+/-)		10%	0.2 °C	-	10%	10%	10%	-	-
-	1	4703	20·5	3067·5	6·42	1·3	0·12	-45·1	~4.6
0·8	3	4676	20·0	3037·4	6·43	1·1	0·10	-42·1	|
1·6	7	4588	19·9	2977·7	6·44	0·9	0·09	-42·3	|
2	10	4536	19·9	2941·7	6·47	0·9	0·09	-44·1	▽

Comments (e.g. condition of headworks, sheen, colour, odour, sediment load):

good - no sheen, green/brown, no odour, high secs

SAMPLING DETAILS		Sample ID: BORR_MW04
Time:	Vol. Removed: L	No of Sample Containers: 8
Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):		
Field Filtered ☑	Duplicate Samples ☐	Duplicate Sample ID:
Comments:		
CoC Number:	Checked by:	Date:

1 Bores to be purged dry, until pH, T and EC readings stabilise or a minimum of 3 to 5 times the water column volumes. Water column volumes can be calculated from the following casing volumes per unit length: 40 mm ID - 1 L/m; 50 mm ID – 2 L/m; 100 mm ID 8 L/m.

2 Calibration details to be recorded in the instrument –specific calibration book, or in field notes as required by local procedures.

Groundwater Monitoring – Field Sheet

Client:		BORE ID: BORR-MW05
Project:		Job No.:
Location:	Casing diameter: 50 mm	Date: 20.1.20

BORE CONSTRUCTION

Head-works	☑ Flush-mount	☐ Monument	☐ Casing only	☐ Locked	Measurement Point: ☑ Top of PVC Casing; Total Depth: 8.004 m

BORE DEVELOPMENT

Method:	Date:	Undertaken By:	Vol. Removed: L

Comments (e.g. sediment content):

PURGING DETAILS (measurement points in meters below top of casing as indicated above)

Method: L/F	Water Quality Meter used: YSI		Undertaken By: IO/PK/AH
Depth to water: 5.874 m	Water Column: m	Req Purge Vol. [1]: L	Flow Rate: L/min
Presence of LNAPL ☐	Presence of DNAPL ☐	Thickness of NAPL: cm	Depth to NAPL: m
Pump intake: m			

PURGING MEASUREMENTS [2]

Vol. Purged (L)	Elapsed Time (min)	EC (µS/cm)	Temp. (°C)	TDS (ppm|mg/L)	pH	DO %Sat	DO (ppm|mg/L)	Eh (mV)	Water Level (m b TOC)
AS 5667.11: 1998 (<+/-)		10%	0.2°C	-	10%	10%	10%	-	-
0.4	2	1365	22.2	886.8	6.51	4.5	0.58	-30.9	~5.8
1.2	6	1330	22.2	862.4	6.39	2.9	0.25	-38.1	↓
1.8	10	1236	22.0	803.0	6.34	4.3	0.37	-29.5	
2.4	12	1237	21.9	804.6	6.32	4.3	0.37	-29.9	

Comments (e.g. condition of headworks, sheen, colour, odour, sediment load):

good - clear yellow, low sed, no sheen, slight sulphur odour

SAMPLING DETAILS		Sample ID: BORR-MW05
Time:	Vol. Removed: L	No of Sample Containers: 8

Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):

Field Filtered ☑	Duplicate Samples ☑	Duplicate Sample ID: FD01

Comments:

CoC Number:	Checked by:	Date:

1 Bores to be purged dry, until pH, T and EC readings stabilise or a minimum of 3 to 5 times the water column volumes. Water column volumes can be calculated from the following casing volumes per unit length: 40 mm ID - 1 L/m; 50 mm ID – 2 L/m; 100 mm ID 8 L/m.

2 Calibration details to be recorded in the instrument –specific calibration book, or in field notes as required by local procedures.

Groundwater Monitoring – Field Sheet

Client:			BORE ID: BORR_MW06
Project:			Job No.:
Location:	Casing diameter: 50 mm		Date: 20.1.20

BORE CONSTRUCTION

Head-works	☑ Flush-mount ☐ Monument ☐ Casing only ☐ Locked	Measurement Point	☑ Top of PVC Casing
		Total Depth: m	7.831

BORE DEVELOPMENT

Method:	Date:	Undertaken By:	Vol. Removed: L
Comments (e.g. sediment content):			

PURGING DETAILS (measurement points in meters below top of casing as indicated above)

Method: L/F	Water Quality Meter used: YSI		Undertaken By: IO/PK/AH
Depth to water: 5.634 m	Water Column: m	Req Purge Vol. [1]: L	Flow Rate: L/min
Presence of LNAPL ☐	Presence of DNAPL ☐	Thickness of NAPL: cm	Depth to NAPL: m
Pump intake: m			

PURGING MEASUREMENTS [2]

Vol. Purged (L)	Elapsed Time (min)	EC (µS/cm)	Temp. (°C)	TDS (ppm|mg/L)	pH	DO %Sat	DO (ppm|mg/L)	Eh (mV)	Water Level (m b TOC)
AS 5667.11: 1998 (<+/-)		10%	0.2°C	-	10%	10%	10%	-	-
-	1	649	22.0	371.8	6.81	2.8	0.24	-105.1	NS.6
1.5	6	401.1	21.7	260.1	6.82	3.0	0.27	-65.2	
2.4	10	397.1	21.8	257.9	6.17	2.6	0.23	-61.1	
3	13	395.2	21.9	256.8	6.13	1.9	0.16	-64.2	
3.5	16	395.6	22.1	257.1	6.12	1.8	0.15	-65.8	

Comments (e.g. condition of headworks, sheen, colour, odour, sediment load):

good - cloudy yellow, low/mod sed, no sheen, sulphur odour

SAMPLING DETAILS

Time:	Vol. Removed: L	Sample ID: BORR_MW06
		No of Sample Containers: 8

Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):

Field Filtered ☑	Duplicate Samples ☐	Duplicate Sample ID:
Comments:		

CoC Number:	Checked by:	Date:

1 Bores to be purged dry, until pH, T and EC readings stabilise or a minimum of 3 to 5 times the water column volumes. Water column volumes can be calculated from the following casing volumes per unit length: 40 mm ID - 1 L/m; 50 mm ID – 2 L/m; 100 mm ID 8 L/m.

2 Calibration details to be recorded in the instrument –specific calibration book, or in field notes as required by local procedures.

Groundwater Monitoring – Field Sheet

Client:			BORE ID: BORE_MW08a
Project:			Job No.:
Location:	Casing diameter: 50 mm		Date: 20.1.20

BORE CONSTRUCTION

Head-works	☐ Flush-mount ☐ Monument ☐ Casing only ☐ Locked	Measurement Point	☐ Top of PVC Casing	Total Depth: 5.741 m

BORE DEVELOPMENT

Method:	Date:	Undertaken By:	Vol. Removed: L
Comments (e.g. sediment content):			

PURGING DETAILS (measurement points in meters below top of casing as indicated above)

Method:	Water Quality Meter used:		Undertaken By: IO/PK/AH
Depth to water: 3.594 m	Water Column: m	Req Purge Vol. [1]: L	Flow Rate: L/min
Presence of LNAPL ☐	Presence of DNAPL ☐	Thickness of NAPL: cm	Depth to NAPL: m
Pump intake: m			

PURGING MEASUREMENTS [2]

Vol. Purged (L)	Elapsed Time (min)	EC (µS/cm)	Temp. (°C)	TDS (ppm|mg/L)	pH	DO %Sat	DO (ppm|mg/L)	Eh (mV)	Water Level (m b TOC)
AS 5667.11: 1998 (<+/-)		10%	0.2°C	-	10%	10%	10%	-	-
-	1	589	20.6	382.7	5.84	7.8	0.64	27.4	~3.5
0.5	4	589	21.2	381.6	5.74	1.9	0.16	-3.9	
1	7	583	21.5	379.5	5.64	2.1	0.18	-23.7	
1.5	10	596	21.1	387.4	5.59	0.6	0.05	-29.2	
1.8	12	600	21.0	389.6	5.58	0.7	0.05	-31.2	

Comments (e.g. condition of headworks, sheen, colour, odour, sediment load): good

light brown, low sed, sulfur odour, no sheen

SAMPLING DETAILS		Sample ID:
Time:	Vol. Removed: L	No of Sample Containers:
Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):		
Field Filtered ☐	Duplicate Samples ☐	Duplicate Sample ID:
Comments:		

CoC Number:	Checked by:	Date:

1 Bores to be purged dry, until pH, T and EC readings stabilise or a minimum of 3 to 5 times the water column volumes. Water column volumes can be calculated from the following casing volumes per unit length: 40 mm ID - 1 L/m; 50 mm ID – 2 L/m; 100 mm ID 8 L/m.

2 Calibration details to be recorded in the instrument –specific calibration book, or in field notes as required by local procedures.

Groundwater Monitoring – Field Sheet

Client:			BORE ID: BORE_MW09
Project:			Job No.:
Location:	Casing diameter: 50 mm		Date: 21.1.20

BORE CONSTRUCTION

Head-works: ☐ Flush-mount ☐ Monument ☐ Casing only ☐ Locked	Measurement Point: ☐ Top of PVC Casing	Total Depth: 5.333 m	

BORE DEVELOPMENT

Method:	Date:	Undertaken By:	Vol. Removed: L
Comments (e.g. sediment content):			

PURGING DETAILS (measurement points in meters below top of casing as indicated above)

Method:	Water Quality Meter used:		Undertaken By: IO/PK/AH
Depth to water: 3.703 m	Water Column: m	Req Purge Vol. [1]: L	Flow Rate: L/min
Presence of LNAPL ☐	Presence of DNAPL ☐	Thickness of NAPL: cm	Depth to NAPL: m
Pump intake: m			

PURGING MEASUREMENTS [2]

Vol. Purged (L)	Elapsed Time (min)	EC (µS/cm)	Temp. (°C)	TDS (ppm|mg/L)	pH	DO %Sat	DO (ppm|mg/L)	Eh (mV)	Water Level (m b TOC)
AS 5667.11: 1998 (<+/-)		10%	0.2°C	-	10%	10%	10%	-	-
-	1	871	22.2	555.3	6.99	17.4	1.48	14.2	~3.7
0.5	4	365.4	22.0	232.9	6.35	24.1	2.11	46.4	↓
1.2	7	250.2	22.0	163.2	6.19	22.5	1.96	59.3	↓
1.8	10	238.8	21.7	154.8	6.12	23.3	2.05	69.3	↓
2.2	13	242.4	21.6	158.1	6.06	21.4	1.88	78.9	▽

Comments (e.g. condition of headworks, sheen, colour, odour, sediment load): good
clear, no odour, no sheen, low sed

SAMPLING DETAILS		Sample ID:
Time:	Vol. Removed: L	No of Sample Containers:
Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):		
Field Filtered ☐	Duplicate Samples ☐	Duplicate Sample ID:
Comments:		

CoC Number:	Checked by:	Date:

1 Bores to be purged dry, until pH, T and EC readings stabilise or a minimum of 3 to 5 times the water column volumes. Water column volumes can be calculated from the following casing volumes per unit length: 40 mm ID - 1 L/m; 50 mm ID – 2 L/m; 100 mm ID 8 L/m.

2 Calibration details to be recorded in the instrument –specific calibration book, or in field notes as required by local procedures.

Groundwater Monitoring – Field Sheet

Client:			BORE ID: BORE_MW10
Project:			Job No.:
Location:	Casing diameter: 50 mm		Date: 21.1.20

BORE CONSTRUCTION

Head-works	☐ Flush-mount ☐ Monument ☐ Casing only ☐ Locked	Measurement Point	☐ Top of PVC Casing	Total Depth: 3.952 m

BORE DEVELOPMENT

Method:	Date:	Undertaken By:	Vol. Removed: L
Comments (e.g. sediment content):			

PURGING DETAILS (measurement points in meters below top of casing as indicated above)

Method: 3 L|F	Water Quality Meter used: YSI		Undertaken By: IO|DC|AH
Depth to water: 2.026m	Water Column: m	Req Purge Vol. [1]: L	Flow Rate: L/min
Presence of LNAPL ☐	Presence of DNAPL ☐	Thickness of NAPL: cm	Depth to NAPL: m
Pump intake: m			

PURGING MEASUREMENTS [2]

Vol. Purged (L)	Elapsed Time (min)	EC (µS/cm)	Temp. (°C)	TDS (ppm|mg/L)	pH	DO %Sat	DO (ppm|mg/L)	Eh (mV)	Water Level (m b TOC)
AS 5667.11: 1998 (<+/-)		10%	0.2°C	-	10%	10%	10%	-	-
—	1	878	21.5	571.9	5.91	11.2	0.91	-93.7	~2
0.8	4	838	21.5	543.2	5.77	4.1	0.36	-86.2	
1.6	7	660	21.9	426.4	5.71	3.3	0.29	-64.1	
2.4	10	580	22.2	365.0	5.69	3.2	0.28	-55.7	
3.8	12	526	22.2	341.2	5.68	3.2	0.28	-51.0	
3.2	14	510	22.0	331.5	5.67	3.1	0.27	-48.8	

Comments (e.g. condition of headworks, sheen, colour, odour, sediment load):

good, no sheen/odour, grey with mod seds.

SAMPLING DETAILS		Sample ID: BORE_MW10
Time:	Vol. Removed: L	No of Sample Containers: 8
Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):		
Field Filtered ☑	Duplicate Samples ☐	Duplicate Sample ID:
Comments:		

CoC Number:	Checked by:	Date:

1 Bores to be purged dry, until pH, T and EC readings stabilise or a minimum of 3 to 5 times the water column volumes. Water column volumes can be calculated from the following casing volumes per unit length: 40 mm ID - 1 L/m; 50 mm ID – 2 L/m; 100 mm ID 8 L/m.

2 Calibration details to be recorded in the instrument –specific calibration book, or in field notes as required by local procedures.

Groundwater Monitoring – Field Sheet

Client:			BORE ID: BORR-MW11
Project:			Job No.:
Location:	Casing diameter: 50 mm		Date: 21-1-20

BORE CONSTRUCTION

Head-works	☐ Flush-mount ☐ Monument ☐ Casing only ☐ Locked	Measurement Point	☐ Top of PVC Casing
Total Depth: 3.924 m			

BORE DEVELOPMENT

Method:	Date:	Undertaken By:	Vol. Removed: L
Comments (e.g. sediment content):			

PURGING DETAILS (measurement points in meters below top of casing as indicated above)

Method:	Water Quality Meter used:		Undertaken By:
Depth to water: 3.721 m	Water Column: m	Req Purge Vol. [1]: L	Flow Rate: L/min
Presence of LNAPL ☐	Presence of DNAPL ☐	Thickness of NAPL: cm	Depth to NAPL: m
Pump intake: m			

PURGING MEASUREMENTS [2]

Vol. Purged (L)	Elapsed Time (min)	EC (µS/cm)	Temp. (°C)	TDS (ppm|mg/L)	pH	DO %Sat	DO (ppm|mg/L)	Eh (mV)	Water Level (m b TOC)
AS 5667.11: 1998 (<+/-)		10%	0.2 °C	-	10%	10%	10%	-	-

Comments (e.g. condition of headworks, sheen, colour, odour, sediment load):

WELL DRY - NOT RECHARGING

SAMPLING DETAILS		Sample ID:
Time:	Vol. Removed: L	No of Sample Containers:
Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):		
Field Filtered ☐	Duplicate Samples ☐	Duplicate Sample ID:
Comments:		

CoC Number:	Checked by:	Date:

1 Bores to be purged dry, until pH, T and EC readings stabilise or a minimum of 3 to 5 times the water column volumes. Water column volumes can be calculated from the following casing volumes per unit length: 40 mm ID - 1 L/m; 50 mm ID – 2 L/m; 100 mm ID 8 L/m.

2 Calibration details to be recorded in the instrument –specific calibration book, or in field notes as required by local procedures.

Groundwater Monitoring – Field Sheet

Client:		BORE ID: BORE-MW12
Project:		Job No.:
Location:	Casing diameter: 50 mm	Date: 22.1.20

BORE CONSTRUCTION

Head-works	☐ Flush-mount	☐ Monument	☐ Casing only	☐ Locked	Measurement Point ☐ Top of PVC Casing	Total Depth: 4.412 m

BORE DEVELOPMENT

Method:	Date:	Undertaken By:	Vol. Removed: L

Comments (e.g. sediment content):

PURGING DETAILS (measurement points in meters below top of casing as indicated above)

Method:	Water Quality Meter used:		Undertaken By: AH/PK
Depth to water: 2.116 m	Water Column: m	Req Purge Vol. [1]: L	Flow Rate: L/min
Presence of LNAPL ☐	Presence of DNAPL ☐	Thickness of NAPL: cm	Depth to NAPL: m
Pump intake: m			

PURGING MEASUREMENTS [2]

Vol. Purged (L)	Elapsed Time (min)	EC (µS/cm)	Temp. (°C)	TDS (ppm|mg/L)	pH	DO %Sat	DO (ppm|mg/L)	Eh (mV)	Water Level (m b TOC)
AS 5667.11: 1998 (<+/-)		10%	0.2°C	-	10%	10%	10%	-	-
—	1	865	21.6	561.7	7.21	14.4	1.24	-107.8	2.116
0.8	4	726	21.7	469.3	6.59	4.2	0.37	-77.3	
1.5	7	632	21.8	410.2	6.3	2.5	0.22	-63.7	
2	10	607	21.8	393.86	6.19	2.0	0.17	-57.8	
2.8	13	606	21.8	394.15	6.12	1.6	0.14	-54.4	
3.5	15	599	21.9	388.89	6.08	1.3	0.11	-51.2	
4.0	17	590	21.9	382.52	6.06	1.2	0.11	-49.8	

Comments (e.g. condition of headworks, sheen, colour, odour, sediment load):

clear, no odour, no sheen, low sed good

SAMPLING DETAILS

		Sample ID:
Time:	Vol. Removed: L	No of Sample Containers:

Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):

Field Filtered ☐	Duplicate Samples ☐	Duplicate Sample ID:

Comments:

CoC Number:	Checked by:	Date:

1 Bores to be purged dry, until pH, T and EC readings stabilise or a minimum of 3 to 5 times the water column volumes. Water column volumes can be calculated from the following casing volumes per unit length: 40 mm ID - 1 L/m; 50 mm ID – 2 L/m; 100 mm ID 8 L/m.

2 Calibration details to be recorded in the instrument –specific calibration book, or in field notes as required by local procedures.

Groundwater Monitoring – Field Sheet

Client:		BORE ID: BORR-MW13
Project:		Job No.:
Location:	Casing diameter: 50 mm	Date: 20.1.20

BORE CONSTRUCTION

Head-works: ☐ Flush-mount ☐ Monument ☐ Casing only ☐ Locked	Measurement Point: ☐ Top of PVC Casing	Total Depth: 4.392 m	

BORE DEVELOPMENT

Method:	Date:	Undertaken By:	Vol. Removed: L

Comments (e.g. sediment content):

PURGING DETAILS (measurement points in meters below top of casing as indicated above)

Method:	Water Quality Meter used:		Undertaken By: IO/PK/AH
Depth to water: 1.188 m	Water Column: m	Req Purge Vol. [1]: L	Flow Rate: L/min
Presence of LNAPL ☐	Presence of DNAPL ☐	Thickness of NAPL: cm	Depth to NAPL: m
Pump intake: m			

PURGING MEASUREMENTS [2]

Vol. Purged (L)	Elapsed Time (min)	EC (µS/cm)	Temp. (°C)	TDS (ppm|mg/L)	pH	DO %Sat	DO (ppm|mg/L)	Eh (mV)	Water Level (m b TOC)
AS 5667.11: 1998 (<+/-)		10%	0.2°C	-	10%	10%	10%	-	-
-	1	921	23.4	601.2	6.54	9.3	0.77	-123.7	~1.1
1	4	932	23.2	605.7	6.18	4.9	0.41	-117.7	
1.8	7	954	23.1	619.9	6.10	2.7	0.23	-103.8	
2.6	10	961	23.1	624.5	6.09	2	0.17	-97.7	
3.3	13	962	23.1	625.1	6.08	1.8	0.15	-93.1	

Comments (e.g. condition of headworks, sheen, colour, odour, sediment load):

Good, no sheen, ~~slight~~ sulfur odour, low seds, light brown

SAMPLING DETAILS

Sample ID: BORR-MW13		
Time:	Vol. Removed: L	No of Sample Containers: 8

Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):

Field Filtered ☑	Duplicate Samples ☐	Duplicate Sample ID:

Comments:

CoC Number:	Checked by:	Date:

1 Bores to be purged dry, until pH, T and EC readings stabilise or a minimum of 3 to 5 times the water column volumes. Water column volumes can be calculated from the following casing volumes per unit length: 40 mm ID - 1 L/m; 50 mm ID – 2 L/m; 100 mm ID 8 L/m.

2 Calibration details to be recorded in the instrument –specific calibration book, or in field notes as required by local procedures.

Groundwater Monitoring – Field Sheet

Client:			BORE ID: BORR-MW15
Project:			Job No.: 61370410833Z
Location:	Casing diameter: 50 mm		Date: 20.1.20

BORE CONSTRUCTION

Head-works	☒ Flush-mount	☐ Monument	☐ Casing only	☐ Locked	Measurement Point: ☒ Top of PVC Casing

Total Depth: 3.755 m

BORE DEVELOPMENT

Method:	Date:	Undertaken By:	Vol. Removed: L

Comments (e.g. sediment content):

PURGING DETAILS (measurement points in meters below top of casing as indicated above)

Method: low flow	Water Quality Meter used: YSI		Undertaken By: PK/10
Depth to water: 1.844 m	Water Column: m	Req Purge Vol. [1]: L	Flow Rate: L/min
Presence of LNAPL ☐	Presence of DNAPL ☐	Thickness of NAPL: cm	Depth to NAPL: m
Pump intake: m			

PURGING MEASUREMENTS [2]

Vol. Purged (L)	Elapsed Time (min)	EC (µS/cm)	Temp. (°C)	TDS (ppm|mg/L)	pH	DO %Sat	DO (ppm|mg/L)	Eh (mV)	Water Level (m b TOC)
AS 5667.11: 1998 (<+/-)		10%	0.2°C	-	10%	10%	10%	-	-
—	1	242.8	24.1	156.3	6.31	10.1	0.81	-10.2	~1.8
1	4	216.1	24.0	140.4	5.72	3.1	0.26	31.9	↓
1.5	7	212.1	24.0	137.7	5.68	2.3	0.19	-3.8	
2.1	10	210.2	24.2	136.5	5.68	1.9	0.16	-29.1	

Comments (e.g. condition of headworks, sheen, colour, odour, sediment load):

Broken, no sheen, clear, no odour, low seds

SAMPLING DETAILS

Time:	Vol. Removed: L	Sample ID: BORR_MW15
		No of Sample Containers: 8

Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):

Field Filtered ☑	Duplicate Samples ☐	Duplicate Sample ID:

Comments:

CoC Number:	Checked by:	Date:

1 Bores to be purged dry, until pH, T and EC readings stabilise or a minimum of 3 to 5 times the water column volumes. Water column volumes can be calculated from the following casing volumes per unit length: 40 mm ID - 1 L/m; 50 mm ID – 2 L/m; 100 mm ID 8 L/m.

2 Calibration details to be recorded in the instrument –specific calibration book, or in field notes as required by local procedures.

Groundwater Monitoring – Field Sheet

Client:			BORE ID: BORE_MW18
Project:			Job No.:
Location:	Casing diameter: 50 mm		Date: 22.1.20

BORE CONSTRUCTION

Head-works	☐ Flush-mount ☐ Monument	☐ Casing only ☐ Locked	Measurement Point ☐ Top of PVC Casing	Total Depth: 3.974 m

BORE DEVELOPMENT

Method:	Date:	Undertaken By:	Vol. Removed: L
Comments (e.g. sediment content):			

PURGING DETAILS (measurement points in meters below top of casing as indicated above)

Method:	Water Quality Meter used:		Undertaken By: AH/PK
Depth to water: 2.244m	Water Column: m	Req Purge Vol. [1]: L	Flow Rate: L/min
Presence of LNAPL ☐	Presence of DNAPL ☐	Thickness of NAPL: cm	Depth to NAPL: m
Pump intake: m			

PURGING MEASUREMENTS [2]

Vol. Purged (L)	Elapsed Time (min)	EC (µS/cm)	Temp. (°C)	TDS (ppm|mg/L)	pH	DO %Sat	DO (ppm|mg/L)	Eh (mV)	Water Level (m b TOC)
AS 5667.11: 1998 (<+/-)		10%	0.2°C	-	10%	10%	10%	-	-
-	1	605	22.2	388.2	7.6	44.6	3.81	162.5	~2.244
0.8	4	429.1	22.0	278.30	5.81	31.7	2.77	239	
1.2	7	407.1	21.9	264.61	4.99	28.5	2.49	257.6	
1.8	10	417.8	22.0	271.62	4.68	25.4	2.21	269.3	
2.2	12	411.8	22.2	267.52	4.59	26.0	2.27	276.4	

Comments (e.g. condition of headworks, sheen, colour, odour, sediment load):

good, clear, no sheen, no odour, low/no sed

SAMPLING DETAILS		Sample ID:
Time:	Vol. Removed: L	No of Sample Containers: 10
Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):		
Field Filtered ☐	Duplicate Samples ☐	Duplicate Sample ID:
Comments:		

CoC Number:	Checked by:	Date:

1 Bores to be purged dry, until pH, T and EC readings stabilise or a minimum of 3 to 5 times the water column volumes. Water column volumes can be calculated from the following casing volumes per unit length: 40 mm ID - 1 L/m; 50 mm ID – 2 L/m; 100 mm ID 8 L/m.

2 Calibration details to be recorded in the instrument –specific calibration book, or in field notes as required by local procedures.

Groundwater Monitoring – Field Sheet

Client:			BORE ID: BORR_MW19
Project:			Job No.:
Location:	Casing diameter: 50 mm		Date: 22.1.20

BORE CONSTRUCTION

Head-works	☐ Flush-mount ☐ Monument ☐ Casing only ☐ Locked	Measurement Point	☐ Top of PVC Casing	Total Depth: 2.36 m

BORE DEVELOPMENT

Method:	Date:	Undertaken By:	Vol. Removed: L

Comments (e.g. sediment content):

PURGING DETAILS (measurement points in meters below top of casing as indicated above)

Method:	Water Quality Meter used:		Undertaken By:
Depth to water: 2.36 m	Water Column: m	Req Purge Vol. [1]: L	Flow Rate: L/min
Presence of LNAPL ☐	Presence of DNAPL ☐	Thickness of NAPL: cm	Depth to NAPL: m
Pump intake: m			

PURGING MEASUREMENTS [2]

Vol. Purged (L)	Elapsed Time (min)	EC (µS/cm)	Temp. (°C)	TDS (ppm|mg/L)	pH	DO %Sat	DO (ppm|mg/L)	Eh (mV)	Water Level (m b TOC)
AS 5667.11: 1998 (<+/-)		10%	0.2 °C	-	10%	10%	10%	-	-

Comments (e.g. condition of headworks, sheen, colour, odour, sediment load):

DRY

SAMPLING DETAILS		Sample ID:
Time:	Vol. Removed: L	No of Sample Containers:

Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):

Field Filtered ☐	Duplicate Samples ☐	Duplicate Sample ID:

Comments:

CoC Number:	Checked by:	Date:

1 Bores to be purged dry, until pH, T and EC readings stabilise or a minimum of 3 to 5 times the water column volumes. Water column volumes can be calculated from the following casing volumes per unit length: 40 mm ID - 1 L/m; 50 mm ID – 2 L/m; 100 mm ID 8 L/m.

2 Calibration details to be recorded in the instrument –specific calibration book, or in field notes as required by local procedures.

Groundwater Monitoring – Field Sheet

Client:			BORE ID: BORE-MW19D
Project:			Job No.:
Location:	Casing diameter:	50 mm	Date: 22/1/20

BORE CONSTRUCTION

Head-works	☐ Flush-mount	☐ Monument	☐ Casing only	☐ Locked	Measurement Point	☐ Top of PVC Casing	Total Depth: 12.126 m

BORE DEVELOPMENT

Method:	Date:	Undertaken By:	Vol. Removed: L

Comments (e.g. sediment content):

PURGING DETAILS (measurement points in meters below top of casing as indicated above)

Method:	Water Quality Meter used:		Undertaken By: ~~AH~~ PK
Depth to water: 1.931 m	Water Column: m	Req Purge Vol. [1]: L	Flow Rate: L/min
Presence of LNAPL ☐	Presence of DNAPL ☐	Thickness of NAPL: cm	Depth to NAPL: m
Pump intake: m			

PURGING MEASUREMENTS [2]

Vol. Purged (L)	Elapsed Time (min)	EC (µS/cm)	Temp. (°C)	TDS (ppm|mg/L)	pH	DO %Sat	DO (ppm|mg/L)	Eh (mV)	Water Level (m b TOC)
AS 5667.11: 1998 (<+/-)		10%	0.2°C	-	10%	10%	10%	-	-
-	1	2351	22.2	1538.1	5.51	33.8	2.81	51.1	1.931
0.8	4	2442	20.8	1587.3	5.62	4.8	0.42	11.2	
1.4	7	2345	20.8	1523.4	5.73	3.0	0.26	-4.0	
2.0	11	2313	20.9	1502.8	5.76	2.3	0.21	-8.8	
2.4	14	2276	20.9	1480.29	5.78	1.9	0.17	-11.5	
3.0	17	2276	20.9	1478.19	5.79	1.7	0.15	-13.5	
3.2	19	2275	20.9	1479.12	5.79	1.5	0.13	-15	
3.8	21	2300	20.9	1496.63	5.76	1.4	0.12	-13.2	

Comments (e.g. condition of headworks, sheen, colour, odour, sediment load):

Sulfur odour, no sheen, light yellow, low/mod sed

SAMPLING DETAILS

Time:	Vol. Removed: L	Sample ID:
		No of Sample Containers:

Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):

Field Filtered ☐	Duplicate Samples ☐	Duplicate Sample ID:

Comments:

CoC Number:	Checked by:	Date:

1 Bores to be purged dry, until pH, T and EC readings stabilise or a minimum of 3 to 5 times the water column volumes. Water column volumes can be calculated from the following casing volumes per unit length: 40 mm ID - 1 L/m; 50 mm ID – 2 L/m; 100 mm ID 8 L/m.

2 Calibration details to be recorded in the instrument –specific calibration book, or in field notes as required by local procedures.

Groundwater Monitoring – Field Sheet

Client:			BORE ID: BOPR_MW20
Project:			Job No.:
Location:	Casing diameter: 50 mm		Date: 22.1.20

BORE CONSTRUCTION

Head-works: ☐ Flush-mount ☐ Monument ☐ Casing only ☐ Locked	Measurement Point: ☐ Top of PVC Casing	Total Depth: 14.34 m	

BORE DEVELOPMENT

Method:	Date:	Undertaken By:	Vol. Removed: L

Comments (e.g. sediment content):

PURGING DETAILS (measurement points in meters below top of casing as indicated above)

Method:	Water Quality Meter used:		Undertaken By: PK / AH
Depth to water: 1.62 m	Water Column: m	Req Purge Vol. [1]: L	Flow Rate: L/min
Presence of LNAPL ☐	Presence of DNAPL ☐	Thickness of NAPL: cm	Depth to NAPL: m
Pump intake: m			

PURGING MEASUREMENTS [2]

Vol. Purged (L)	Elapsed Time (min)	EC (µS/cm)	Temp. (°C)	TDS (ppm|mg/L)	pH	DO %Sat	DO (ppm|mg/L)	Eh (mV)	Water Level (m b TOC)
AS 5667.11: 1998 (<+/-)		10%	0.2 °C	-	10%	10%	10%	-	-
–	1	4551	22.5	2957.60	5.67	39.8	3.26	92.2	∿1.62
0.5	3	4523	21.2	2940.50	5.55	7.0	0.60	91.7	
1.1	6	4513	20.8	293334	5.54	3.3	0.29	89.2	
1.7	9	4518	20.7	293674	5.54	2.5	0.22	87.6	
2.3	12	4526	20.5	2941.00	5.55	1.9	0.17	86.3	
2.6	14	4527	20.5	2942.67	5.55	1.7	0.15	85.8	

Comments (e.g. condition of headworks, sheen, colour, odour, sediment load):

cloudy, slight muddy odour, no sheen, mod sed

SAMPLING DETAILS		Sample ID:
Time:	Vol. Removed: L	No of Sample Containers:

Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):

Field Filtered ☐	Duplicate Samples ☐	Duplicate Sample ID:

Comments:

CoC Number:	Checked by:	Date:

1 Bores to be purged dry, until pH, T and EC readings stabilise or a minimum of 3 to 5 times the water column volumes. Water column volumes can be calculated from the following casing volumes per unit length: 40 mm ID - 1 L/m; 50 mm ID – 2 L/m; 100 mm ID 8 L/m.

2 Calibration details to be recorded in the instrument –specific calibration book, or in field notes as required by local procedures.

Groundwater Monitoring – Field Sheet

Client:		BORE ID: BORE_MW22
Project:		Job No.:
Location:	Casing diameter: 50 mm	Date: 23.1.20

BORE CONSTRUCTION

Head-works	☐ Flush-mount ☐ Monument ☐ Casing only ☐ Locked	Measurement Point ☐ Top of PVC Casing	Total Depth: 1.35 m

BORE DEVELOPMENT

Method:	Date:	Undertaken By:	Vol. Removed: L

Comments (e.g. sediment content):

PURGING DETAILS (measurement points in meters below top of casing as indicated above)

Method:	Water Quality Meter used:		Undertaken By:
Depth to water: m	Water Column: m	Req Purge Vol. [1]: L	Flow Rate: L/min
Presence of LNAPL ☐	Presence of DNAPL ☐	Thickness of NAPL: cm	Depth to NAPL: m
Pump intake: m			

PURGING MEASUREMENTS [2]

Vol. Purged (L)	Elapsed Time (min)	EC (µS/cm)	Temp. (°C)	TDS (ppm|mg/L)	pH	DO %Sat	DO (ppm|mg/L)	Eh (mV)	Water Level (m b TOC)
AS 5667.11: 1998 (<+/-)		10%	0.2 °C	-	10%	10%	10%	-	-

Comments (e.g. condition of headworks, sheen, colour, odour, sediment load):

SAMPLING DETAILS		Sample ID:
Time:	Vol. Removed: L	No of Sample Containers:

Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):

Field Filtered ☐	Duplicate Samples ☐	Duplicate Sample ID:

Comments: DRY

CoC Number:	Checked by:	Date:

1 Bores to be purged dry, until pH, T and EC readings stabilise or a minimum of 3 to 5 times the water column volumes. Water column volumes can be calculated from the following casing volumes per unit length: 40 mm ID - 1 L/m; 50 mm ID – 2 L/m; 100 mm ID 8 L/m.

2 Calibration details to be recorded in the instrument –specific calibration book, or in field notes as required by local procedures.

Groundwater Monitoring – Field Sheet

22B

Client:		BORE ID: BARK_MW~~22~~B
Project:		Job No.:
Location:	Casing diameter: 50 mm	Date: 23.1.20

BORE CONSTRUCTION

Head-works	☐ Flush-mount ☐ Monument ☐ Casing only ☐ Locked	Measurement Point ☐ Top of PVC Casing	Total Depth: 13.047 m

BORE DEVELOPMENT

Method:	Date:	Undertaken By:	Vol. Removed: L

Comments (e.g. sediment content):

PURGING DETAILS (measurement points in meters below top of casing as indicated above)

Method:	Water Quality Meter used:		Undertaken By:
Depth to water: 3.602 m	Water Column: m	Req Purge Vol. [1]: L	Flow Rate: L/min
Presence of LNAPL ☐	Presence of DNAPL ☐	Thickness of NAPL: cm	Depth to NAPL: m
Pump intake: m			

PURGING MEASUREMENTS [2]

Vol. Purged (L)	Elapsed Time (min)	EC (µS/cm)	Temp. (°C)	TDS (ppm|mg/L)	pH	DO %Sat	DO (ppm|mg/L)	Eh (mV)	Water Level (m b TOC)
AS 5667.11: 1998 (<+/-)		10%	0.2 °C	-	10%	10%	10%	-	-
-	1	13668	22.4	8894.55	5.80	12.0	0.94	-26.4	3.60
0.5	3	13555	23.5	8829.9	5.77	5.8	0.47	-40.6	
1	6	13830	22.9	8987.41	5.63	3.4	0.28	-32.8	
1.6	9	13780	22.2	8956	5.61	2.5	0.21	-39.6	
2	11	13803	22.7	89736	5.55	2.2	0.18	-39.1	
2.5	13	13864	22.6	9011.003	5.53	2.0	0.17	-38.5	

Comments (e.g. condition of headworks, sheen, colour, odour, sediment load): destroyed
sulfur odour, no sheen, milky, mod sed

SAMPLING DETAILS		Sample ID:
Time:	Vol. Removed: L	No of Sample Containers:

Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):

Field Filtered ☐	Duplicate Samples ☐	Duplicate Sample ID:

Comments:

CoC Number:	Checked by:	Date:

1 Bores to be purged dry, until pH, T and EC readings stabilise or a minimum of 3 to 5 times the water column volumes. Water column volumes can be calculated from the following casing volumes per unit length: 40 mm ID - 1 L/m; 50 mm ID – 2 L/m; 100 mm ID 8 L/m.

2 Calibration details to be recorded in the instrument –specific calibration book, or in field notes as required by local procedures.

Groundwater Monitoring – Field Sheet

Client:			BORE ID: BORE_MW24
Project:			Job No.:
Location:	Casing diameter: 50 mm		Date: 23.1.20

BORE CONSTRUCTION

Head-works	☐ Flush-mount ☐ Monument ☐ Casing only ☐ Locked	Measurement Point	☐ Top of PVC Casing
		Total Depth: 9.867 m	

BORE DEVELOPMENT

Method:	Date:	Undertaken By:	Vol. Removed: L
Comments (e.g. sediment content):			

PURGING DETAILS (measurement points in meters below top of casing as indicated above)

Method:	Water Quality Meter used:		Undertaken By:
Depth to water: 8.384 m	Water Column: m	Req Purge Vol. [1]: L	Flow Rate: L/min
Presence of LNAPL ☐	Presence of DNAPL ☐	Thickness of NAPL: cm	Depth to NAPL: m
Pump intake: m			

PURGING MEASUREMENTS [2]

Vol. Purged (L)	Elapsed Time (min)	EC (µS/cm)	Temp. (°C)	TDS (ppm|mg/L)	pH	DO %Sat	DO (ppm|mg/L)	Eh (mV)	Water Level (m b TOC)
AS 5667.11: 1998 (<+/-)		10%	0.2 °C	-	10%	10%	10%	-	-
—	1	1980	21.8	1283.57	4.54	24.9	2.12	237.4	8.384
0.8	3	1884	21.2	1223.60	4.35	16.4	1.45	285.3	
1.4	7	1849	21.3	1201.40	4.34	12.7	1.12	302.2	
1.8	9	1857	21.2	1206.85	4.33	11.6	1.03	310.5	
2.1	11	1870	21.2	1215.51	4.29	11.1	0.98	331.1	
2.3	13	1873	21.4	1217.40	4.28	10.8	0.95	352.4	
2.8	15	1877	21.4	1219.00	4.27	10.7	0.94	369.9	

Comments (e.g. condition of headworks, sheen, colour, odour, sediment load):

Good, no sheen, light brown to brown in colour, high sed no odour

SAMPLING DETAILS

Time:	Vol. Removed: L	Sample ID:
		No of Sample Containers:

Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):

Field Filtered ☐	Duplicate Samples ☐	Duplicate Sample ID:

Comments:

CoC Number:	Checked by:	Date:

1 Bores to be purged dry, until pH, T and EC readings stabilise or a minimum of 3 to 5 times the water column volumes. Water column volumes can be calculated from the following casing volumes per unit length: 40 mm ID - 1 L/m; 50 mm ID – 2 L/m; 100 mm ID 8 L/m.

2 Calibration details to be recorded in the instrument –specific calibration book, or in field notes as required by local procedures.

Groundwater Monitoring – Field Sheet

Client:			BORE ID: ~~BORE~~ MW25
Project:			Job No.:
Location:	Casing diameter: 50 mm		Date: 23.1.20

BORE CONSTRUCTION

Head-works	☐ Flush-mount	☐ Monument	☐ Casing only	☐ Locked	Measurement Point	☐ Top of PVC Casing ☐ Top of Casing	Total Depth: 13.017 m

BORE DEVELOPMENT

Method:	Date:	Undertaken By:	Vol. Removed: L
Comments (e.g. sediment content):			

PURGING DETAILS (measurement points in meters below top of casing as indicated above)

Method:	Water Quality Meter used:		Undertaken By: AH/PK
Depth to water: 7.902 m	Water Column: m	Req Purge Vol. [1]: L	Flow Rate: L/min
Presence of LNAPL ☐	Presence of DNAPL ☐	Thickness of NAPL: cm	Depth to NAPL: m
Pump intake: m			

PURGING MEASUREMENTS [2]

Vol. Purged (L)	Elapsed Time (min)	EC (µS/cm)	Temp. (°C)	TDS (ppm|mg/L)	pH	DO %Sat	DO (ppm|mg/L)	Eh (mV)	Water Level (m b TOC)
AS 5667.11: 1998 (<+/-)		10%	0.2°C	-	10%	10%	10%	-	-
—	1	3990	19.1	2591.40	5.60	12.8	1.12	71.9	~7.9
1	4	3952	18.9	2568.4	~~5.50~~ 5.5	3.6	0.33	36.0	|
1.8	7	3954	18.9	2570.17	5.5	2.2	0.20	15.6	|
2.2	10	3973	19.0	2580.36	5.53	1.7	0.16	2.7	|
2.8	13	3980	19.0	2587.46	5.55	1.5	0.14	-4.2	|
3.2	15	3989	19.0	2593.04	5.55	1.4	0.12	-9.2	|
3.6	18	3997	19.0	2598.17	5.56	1.26	0.11	-13.6	D

Comments (e.g. condition of headworks, sheen, colour, odour, sediment load): good

milky, mod ~~turbid~~ sed, no sheen, slight sulphur odour

SAMPLING DETAILS		Sample ID:
Time:	Vol. Removed: L	No of Sample Containers: 10
Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):		
Field Filtered ☐	Duplicate Samples ☐	Duplicate Sample ID:
Comments:		

CoC Number:	Checked by:	Date:

1 Bores to be purged dry, until pH, T and EC readings stabilise or a minimum of 3 to 5 times the water column volumes. Water column volumes can be calculated from the following casing volumes per unit length: 40 mm ID - 1 L/m; 50 mm ID – 2 L/m; 100 mm ID 8 L/m.

2 Calibration details to be recorded in the instrument –specific calibration book, or in field notes as required by local procedures.

Groundwater Monitoring – Field Sheet

Client:			BORE ID: BORR_MW29
Project:			Job No.:
Location:	Casing diameter: 50 mm		Date: 21.1.20

BORE CONSTRUCTION

Head-works	☐ Flush-mount ☐ Monument ☐ Casing only ☐ Locked	Measurement Point	☐ Top of PVC Casing	Total Depth: 8.540 m

BORE DEVELOPMENT

Method:	Date:	Undertaken By:	Vol. Removed: L

Comments (e.g. sediment content):

PURGING DETAILS (measurement points in meters below top of casing as indicated above)

Method:	Water Quality Meter used:		Undertaken By: LB/PK/AH
Depth to water: 6.320 m	Water Column: m	Req Purge Vol. [1]: L	Flow Rate: L/min
Presence of LNAPL ☐	Presence of DNAPL ☐	Thickness of NAPL: cm	Depth to NAPL: m
Pump intake: m			

PURGING MEASUREMENTS [2]

Vol. Purged (L)	Elapsed Time (min)	EC (µS/cm)	Temp. (°C)	TDS (ppm|mg/L)	pH	DO %Sat	DO (ppm|mg/L)	Eh (mV)	Water Level (m b TOC)
AS 5667.11: 1998 (<+/-)		10%	0.2°C	-	10%	10%	10%	-	-
-	1	865.0	22.5	562.0	5.51	5.6	0.48	-6.6	~6.3
0.8	4	831.0	21.1	540.1	5.16	2.2	0.18	2.8	↓
1.5	7	813.0	21.0	528.5	5.09	1.3	0.11	3.0	
2.2	10	811.0	21.0	527.3	5.07	1.4	0.12	3.8	

Comments (e.g. condition of headworks, sheen, colour, odour, sediment load):

Good, no sheen, slight yellow, slight odour, slight sed's

SAMPLING DETAILS		Sample ID:
Time:	Vol. Removed: L	No of Sample Containers:

Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):

Field Filtered ☐	Duplicate Samples ☐	Duplicate Sample ID:

Comments:

CoC Number:	Checked by:	Date:

1 Bores to be purged dry, until pH, T and EC readings stabilise or a minimum of 3 to 5 times the water column volumes. Water column volumes can be calculated from the following casing volumes per unit length: 40 mm ID - 1 L/m; 50 mm ID – 2 L/m; 100 mm ID 8 L/m.

2 Calibration details to be recorded in the instrument –specific calibration book, or in field notes as required by local procedures.

Groundwater Monitoring – Field Sheet

Client:		BORE ID: BORR_MW31
Project:		Job No.:
Location:	Casing diameter: 50 mm	Date: 21.1.20

BORE CONSTRUCTION

Head-works	☐ Flush-mount	☐ Monument	☐ Casing only	☐ Locked	Measurement Point	☐ Top of PVC Casing	Total Depth: 6.033 m

BORE DEVELOPMENT

Method:	Date:	Undertaken By:	Vol. Removed: L
Comments (e.g. sediment content):			

PURGING DETAILS (measurement points in meters below top of casing as indicated above)

Method:	Water Quality Meter used:		Undertaken By: IO / PK / ~~AH~~
Depth to water: 3.607 m	Water Column: m	Req Purge Vol. [1]: L	Flow Rate: L/min
Presence of LNAPL ☐	Presence of DNAPL ☐	Thickness of NAPL: cm	Depth to NAPL: m
Pump intake: m			

PURGING MEASUREMENTS [2]

Vol. Purged (L)	Elapsed Time (min)	EC (µS/cm)	Temp. (°C)	TDS (ppm|mg/L)	pH	DO %Sat	DO (ppm|mg/L)	Eh (mV)	Water Level (m b TOC)
AS 5667.11: 1998 (<+/-)		10%	0.2°C	-	10%	10%	10%	-	-
—	1	294.1	21.4	190.0	5.24	8.1	0.69	-3.8	3.6
0.8	4	291.4	21.2	189.4	5.17	2.9	0.26	-11.4	↓
1.5	8	289.4	21.1	188.0	5.14	1.7	0.15	-11.5	↓
2.0	11	287.0	21.1	186.6	5.14	1.5	0.14	-10.2	↓
2.5	13	287.1	21.0	186.5	5.13	1.4	0.13	-9.8	↓

Comments (e.g. condition of headworks, sheen, colour, odour, sediment load):

sulfur odour, light yellow-brown, no sheen, low sed

SAMPLING DETAILS		Sample ID:
Time:	Vol. Removed: L	No of Sample Containers: 11
Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):		
Field Filtered ☐	Duplicate Samples ☐	Duplicate Sample ID:
Comments:		

CoC Number:	Checked by:	Date:

1 Bores to be purged dry, until pH, T and EC readings stabilise or a minimum of 3 to 5 times the water column volumes. Water column volumes can be calculated from the following casing volumes per unit length: 40 mm ID - 1 L/m; 50 mm ID – 2 L/m; 100 mm ID 8 L/m.

2 Calibration details to be recorded in the instrument –specific calibration book, or in field notes as required by local procedures.

Groundwater Monitoring – Field Sheet

Client:			BORE ID: BORR_MW32
Project:			Job No.:
Location:	Casing diameter:	50 mm	Date: ~~21.2~~ 21.1.20

BORE CONSTRUCTION

Head-works	☐ Flush-mount	☐ Monument	☐ Casing only	☐ Locked	Measurement Point	☐ Top of PVC Casing ☐ Casing	Total Depth: 5.042 m

BORE DEVELOPMENT

Method:	Date:	Undertaken By:	Vol. Removed: L

Comments (e.g. sediment content):

PURGING DETAILS (measurement points in meters below top of casing as indicated above)

Method:	Water Quality Meter used:		Undertaken By: LO/PR/AH
Depth to water: 2.59 m	Water Column: m	Req Purge Vol. [1]: L	Flow Rate: L/min
Presence of LNAPL ☐	Presence of DNAPL ☐	Thickness of NAPL: cm	Depth to NAPL: m
Pump intake: m			

PURGING MEASUREMENTS [2]

Vol. Purged (L)	Elapsed Time (min)	EC (µS/cm)	Temp. (°C)	TDS (ppm|mg/L)	pH	DO %Sat	DO (ppm|mg/L)	Eh (mV)	Water Level (m b TOC)
AS 5667.11: 1998 (<+/-)		10%	0.2°C	-	10%	10%	10%	-	-
0.5	2	449.9	21.3	292.2	5.49	3.2	0.28	-17.1	~2.5
1	4	442.2	22.3	287.1	5.43	3.0	0.26	-24.4	↓
1.5	7	359.9	21.6	231.2	5.45	2.2	0.19	-24.4	
2	10	318.6	21.7	205.7	5.45	1.5	0.13	-20.5	
2.5	12	304.3	21.6	197.3	5.45	1.5	0.13	-18.8	

Comments (e.g. condition of headworks, sheen, colour, odour, sediment load): good

light yellow, sulfur odour, low sed, no sheen

SAMPLING DETAILS

Time:	Vol. Removed: L	Sample ID:
		No of Sample Containers:

Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):

Field Filtered ☐	Duplicate Samples ☐	Duplicate Sample ID:

Comments:

CoC Number:	Checked by:	Date:

1 Bores to be purged dry, until pH, T and EC readings stabilise or a minimum of 3 to 5 times the water column volumes. Water column volumes can be calculated from the following casing volumes per unit length: 40 mm ID - 1 L/m; 50 mm ID – 2 L/m; 100 mm ID 8 L/m.
Calibration details to be recorded in the instrument –specific calibration book, or in field notes as required by local procedures.

Groundwater Monitoring – Field Sheet

Client:			BORE ID: BORE_MW37
Project:			Job No.:
Location:	Casing diameter: 50 mm		Date: 21.1.20

BORE CONSTRUCTION

Head-works: ☐ Flush-mount ☐ Monument ☐ Casing only ☐ Locked	Measurement Point: ☐ Top of PVC Casing	Total Depth: 11.569 m	

BORE DEVELOPMENT

Method:	Date:	Undertaken By:	Vol. Removed: L

Comments (e.g. sediment content):

PURGING DETAILS (measurement points in meters below top of casing as indicated above)

Method:	Water Quality Meter used:		Undertaken By: IO/PK/AH
Depth to water: 5.737 m	Water Column: m	Req Purge Vol. [1]: L	Flow Rate: L/min
Presence of LNAPL ☐	Presence of DNAPL ☐	Thickness of NAPL: cm	Depth to NAPL: m
Pump intake: m			

PURGING MEASUREMENTS [2]

Vol. Purged (L)	Elapsed Time (min)	EC (µS/cm)	Temp. (°C)	TDS (ppm|mg/L)	pH	DO %Sat	DO (ppm|mg/L)	Eh (mV)	Water Level (m b TOC)
AS 5667.11: 1998 (<+/-)		10%	0.2°C	-	10%	10%	10%	-	-
—	1	3751	21.6	2437.36	5.24	17.4	1.45	139.4	~5.737
0.8	4	3737	21.4	2429.18	5.27	3.9	0.34	126.5	
1.2	7	3724	21.3	2419.75	5.26	2.5	0.22	119.4	
1.8	10	3723	21.2	2419.02	5.26	1.9	0.16	113.7	
2.2	12	3709	21.2	2410.42	5.27	1.6	0.14	107.3	
2.6	14	3692	21.2	2399.81	5.27	1.3	0.11	99.6	
2.8	16	3681	21.2	2392.38	5.29	1.2	0.10	94.1	

Comments (e.g. condition of headworks, sheen, colour, odour, sediment load):

no sheen, no odour, low/mod sed, clear

SAMPLING DETAILS

Time:	Vol. Removed: L	Sample ID:
		No of Sample Containers:

Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):

Field Filtered ☐	Duplicate Samples ☐	Duplicate Sample ID:

Comments:

CoC Number:	Checked by:	Date:

1 Bores to be purged dry, until pH, T and EC readings stabilise or a minimum of 3 to 5 times the water column volumes. Water column volumes can be calculated from the following casing volumes per unit length: 40 mm ID - 1 L/m; 50 mm ID – 2 L/m; 100 mm ID 8 L/m.

2 Calibration details to be recorded in the instrument –specific calibration book, or in field notes as required by local procedures.

Groundwater Monitoring – Field Sheet

Client:		BORE ID: BOAR_MW39
Project:		Job No.:
Location:	Casing diameter: 50 mm	Date: 22.1.20

BORE CONSTRUCTION

Head-works: ☐ Flush-mount ☐ Monument ☐ Casing only ☐ Locked	Measurement Point: ☐ Top of PVC Casing	Total Depth: 13.92 m	

BORE DEVELOPMENT

Method:	Date:	Undertaken By:	Vol. Removed: L
Comments (e.g. sediment content):			

PURGING DETAILS (measurement points in meters below top of casing as indicated above)

Method:	Water Quality Meter used:		Undertaken By: AH/PK
Depth to water: 8.19 m	Water Column: m	Req Purge Vol. [1]: L	Flow Rate: L/min
Presence of LNAPL ☐	Presence of DNAPL ☐	Thickness of NAPL: cm	Depth to NAPL: m
Pump intake: m			

PURGING MEASUREMENTS [2]

Vol. Purged (L)	Elapsed Time (min)	EC (µS/cm)	Temp. (°C)	TDS (ppm|mg/L)	pH	DO %Sat	DO (ppm|mg/L)	Eh (mV)	Water Level (m b TOC)
AS 5667.11: 1998 (<+/-)		10%	0.2°C	-	10%	10%	10%	-	-
-	1	349.1	22.7	221.68	5.77	39.7	3.04	161.4	~8.19
0.5	3	314.1	21.1	203.902	5.24	7.6	0.66	183.0	
1	6	309.0	20.8	200.711	5.10	4.1	0.36	195.3	
1.6	9	333.0	20.6	215.98	4.98	2.4	0.21	196.3	
2	11	354	20.6	204.55	4.95	2.0	0.18	204.3	
2.3	13	305.7	20.6	198.6	4.90	1.7	0.15	214.3	
2.6	15	303.5	20.6	197.2	4.88	1.55	0.14	220.4	

Comments (e.g. condition of headworks, sheen, colour, odour, sediment load):

Good, no sheen, light brown in colour, no odour, mod sed

SAMPLING DETAILS		Sample ID:
Time:	Vol. Removed: L	No of Sample Containers:
Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):		
Field Filtered ☐	Duplicate Samples ☐	Duplicate Sample ID:
Comments:		

CoC Number:	Checked by:	Date:

1 Bores to be purged dry, until pH, T and EC readings stabilise or a minimum of 3 to 5 times the water column volumes. Water column volumes can be calculated from the following casing volumes per unit length: 40 mm ID - 1 L/m; 50 mm ID – 2 L/m; 100 mm ID 8 L/m.

2 Calibration details to be recorded in the instrument –specific calibration book, or in field notes as required by local procedures.