Roe Highway Widening

Targeted Flora, Vegetation and Wetland Assessment

Main Roads Western Australia

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→ The Power of Commitment



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GHD Pty Ltd | ABN 39 008 488 373

999 Hay Street, Level 10

Perth, Western Australia 6000, Australia

T +61 8 6222 8222 | **F** +61 8 6222 8555 | **E** permail@ghd.com | **ghd.com**

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Executive Summary

Roe Highway is a strategic freight route carrying high freight volumes and has been identified as a future Smart Freeway. Main Roads Western Australia (Main Roads) has commenced planning for the widening of Roe Highway (H018) between Kwinana Freeway and Tonkin Highway (9.88 to 29.26 SLK) from its current four lanes (i.e. two in each direction) configuration, to the ultimate eight lane (i.e. four lanes in each direction) configuration by 2036.

GHD Pty Ltd (GHD) was commissioned by Main Roads to undertake a Detailed and Targeted Flora and Vegetation Survey, including a Floristic Community Type Assessment (FCT) of the Roe Highway Design Envelope (DE) and offsets areas. The combined are referred to as the survey area and cover 330.22 hectares (ha).

This report is subject to, and must be read in conjunction with, the limitations set out in section 1.2 and the assumptions and qualifications contained throughout the Report.

Vegetation

The survey area contains a mixture of cleared areas, remnant native vegetation and roadside revegetation. Cleared areas which included infrastructure such as roads and houses made up the majority of the survey area and accounted for 141.72 ha (42.92%). Remnant native vegetation occurred as isolated patches either side of Roe Highway making up 53.34 ha (16.15%) of the survey area. Five remnant native vegetation types were mapped within the survey area. This included three Banksia woodlands and two wetland / riparian types. Roadside revegetation was grouped into six vegetation types that covered 135.16 ha (40.93%) of the survey area.

Floristic analyses were undertaken to determine relationships between mapped vegetation types and quadrats in the survey area and Swan Coastal Plain (SCP) Floristic Community Types (FCTs) defined by Gibson et al. (1994). From this analysis five FCTs were identified, 4, 11, 21c, 23a and 28. Of these FCTs, FCT 21c is listed as a Priority Ecological Community (PEC).

The survey confirmed the presence of three Threatened Ecological Communities (TECs) / PECs within the survey area. These TECs / PECs were confined to areas of remnant native vegetation and included:

– Banksia Woodlands of the SCP TEC and PEC
– Tuart Woodlands and Forests of the SCP TEC and PEC
– Low lying Banksia attenuata woodlands or shrublands (FCT 21c) PEC.

Vegetation condition was variable throughout the survey area and ranged from Very Good to Completely Degraded. Apart from Cleared areas, most of the survey area was in Degraded or Completely Degraded condition (142.00 ha, 43.00%). The western extent of the survey area was in better condition than the eastern extent with remnant bushland in good or better condition.

Flora

Two hundred and ninety-nine vascular flora species were recorded in the survey area during the field survey. This total comprised 204 native taxa, 90 introduced taxa and five naturalised taxa. Two Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) and WA *Biodiversity Conservation Act 2016* (BC Act) listed flora were recorded within the survey area:

– *Caladenia huegelii* listed as Endangered under the EPBC Act and Critically Endangered under the BC Act
– *Grevillea thelemanniana* listed as Critically Endangered under the EPBC Act and BC Act.

A Department of Biodiversity, Conservation and Attractions (DBCA) P4 species was also recorded, however this species is considered naturalised in the area. The likelihood of occurrence assessment post-field survey concluded three taxa were known and recorded in the survey area during the survey and two taxa could possibly occur.

Of the 90 were introduced taxa, eight species are listed as Declared Pest (DP) plants in WA under the *Biosecurity and Agriculture Management Act 2007* (BAM Act), with three also listed as Weeds of National Significance (WoNS).

Wetlands

Twenty-four geomorphic wetlands had been mapped across the survey area by DBCA. A Preliminary wetland evaluation was carried out on five wetlands (three Conservation Category Wetlands (CCWs) and two Resource Enhancement Wetlands (REWs)). Four of the assessed wetlands were assigned to a Conservation Category as they met one or more of the preliminary criteria. Upon completion it was determined that a secondary evaluation was required on one of the REW as it did not meet the preliminary criteria as detailed in DBCA (2017a) to meet the Conservation Category. Results from the secondary evaluation indicated that wetland UFI 14956 recorded the most intermediate scores and therefore supports an intermediate level of attributes, functions and values. Wetland UFI 14956 has appropriately been assigned a RE management category

The remaining 19 wetlands intersecting the survey area were not evaluated, as they had been subject to high levels of clearing or fragmentation, had lost functionality, or were classified as a Dryland by DBCA.

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1. Introduction

1.1 Background

Roe Highway is a strategic freight route carrying high freight volumes and has been identified as a future Smart Freeway, to be implemented based on Maximum Sustainable Flow Rate requirements contained in the Smart Freeways guidelines. Main Roads Western Australia (Main Roads) has commenced planning for the widening of Roe Highway (H018) between Kwinana Freeway and Tonkin Highway (9.88 to 29.26 straight line kilometre (SLK)) from its current four lanes (i.e. 2 in each direction) configuration, to the ultimate 8 lane (i.e. 4 lanes in each direction) configuration by 2036.

GHD Pty Ltd (GHD) was commissioned by Main Roads to undertake a Detailed and Targeted Flora and Vegetation Survey, including a Floristic Community Type Assessment (FCT) and wetland assessment of the Roe Highway Design Envelope (DE) and offset areas.

1.2 Purpose of this report

The purpose of the assessment was to delineate key flora, vegetation, FCTs, and surface water values (wetlands) within the DE and offset areas. The outcomes of the report will be used to inform the environmental assessment and approvals process and refinement of the design.

1.3 Project location

1.3.1 Survey area

The survey area is located along the alignment of Roe Highway The survey area consists of two sections:

– DE along the alignment of Roe Highway from the Kwinana Freeway interchange to the Tonkin Highway interchange (302.42 ha)
– Offset areas located adjacent to the DE at the Kwinana Freeway-Roe Highway interchange and east of Karel Avenue (six areas covering a total of 27.80 ha)

The two sections combined are referred to as the survey area, and cover 330.22 hectares (ha). The survey area is approximately 19 kilometres (km) long (Figure 1, Appendix A).

1.3.2 Context area

A context area was defined for assessment and included a 500 m buffer of the survey area.

1.3.3 Study area

A study area was defined for the desktop based searches and included a 5 km buffer of the survey area.

1.4 Scope of works

The scope of work was to undertake a vegetation, flora and wetland assessment of the survey area. The following actions were completed to fulfil the scope:

– A desktop assessment of the study area prior to the field survey, to identify biological features, which may be in, or near the survey area
– A two phase Detailed and Targeted, Flora and Vegetation Survey, including FCT analysis, and assessment of the presence of specific significant flora species and ecological communities
– A wetland assessment to inform on wetland condition and assess conservation values

– Preparation of a technical report covering the Detailed and Targeted, Flora and Vegetation Survey and Wetland Assessment
– Provision of survey data in electronic format consistent with Index of Biodiversity Surveys for Assessments (IBSA) and Main Roads data standards.

1.5 Report limitations and assumptions

This report has been prepared by GHD for Main Roads and may only be used and relied on by Main Roads for the purpose agreed between GHD and Main Roads as set out in section 1.2 of this report.

GHD otherwise disclaims responsibility to any person other than Main Roads arising in connection with this report. GHD also excludes implied warranties and conditions, to the extent legally permissible.

The services undertaken by GHD 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. GHD 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 GHD described in this report. GHD disclaims liability arising from any of the assumptions being incorrect.

GHD has prepared this report on the basis of information provided by Main Roads and others who provided information to GHD (including Government authorities), which GHD has not independently verified or checked beyond the agreed scope of work. GHD 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.

The opinions, conclusions and any recommendations in this report are based on information obtained from, and testing undertaken at or in connection with, specific sample points. Site conditions at other parts of the site may be different from the site conditions found at the specific sample points.

Site conditions may change after the date of this report. GHD does not accept responsibility arising from, or in connection with, any change to the site conditions. GHD is also not responsible for updating this report if the site conditions change.

This report has assessed desktop environmental aspects and biological factors in the field for the survey area. Should these areas change or be refined, further assessment may be required.

1.6 Relevant legislation, conservation codes and background information

In Western Australia (WA) significant communities and flora are protected under both Federal and State Government legislation. In addition, regulatory bodies also provide a range of guidance and information on expected standards and protocols for environmental surveys. The following legislation is applicable to this assessment:

– *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act)
– *Environmental Protection Act 1986* (EP Act)
– *Biodiversity Conservation Act 2016* (BC Act)
– *Biosecurity and Agriculture Management Act 2007* (BAM Act).

An overview of key legislation and guidelines, conservation codes and background information relevant to this report are provided in Appendix B.

2. Methodology

2.1 Desktop assessment

Prior to the commencement of the field survey, a desktop assessment was undertaken to identify relevant environmental information pertaining to the study area and to assist in survey design. The information sources utilised in the desktop assessment are presented in Table 1.

A pre-survey significant flora likelihood of occurrence assessment was completed as part of the desktop assessment.

Table 1 Desktop information sources

Aspect	Information source
Climate	Bureau of Meteorology (BoM) Climate Data Online (BoM 2025)
Geology, landforms and soil	Department of Primary Industries and Regional Development (DPIRD) soil landscape mapping (DPIRD-064) (Department of Primary Industries and Regional Development 2022)
Environmentally Sensitive Areas (ESAs)	Department of Water and Environmental Regulation (DWER) mapping of Environmentally Sensitive Areas (ESA) (DWER-046) (Department of Water and Environmental Regulation 2020)
Conservation reserves and areas	Department of Biodiversity, Conservation and Attractions (DBCA) – Legislated Lands and Waters (DBCA – 011) (DBCA 2024b) DBCA – Lands of Interest (DBCA-012) (DBCA 2024a) Bush Forever sites (Government of Western Australia 2000a)
Hydrology	Public Drinking Water Source Areas (DWER-033) (DWER 2018a) *Rights in Water and Irrigation Act 1914* (RIWI Act), Surface Water Areas and Irrigation Districts (DWER-037) (DWER 2018b) RIWI Act, Groundwater Areas (DWER-034) (DWER 2018c) RIWI Act, Rivers (DWER-036) (DWER 2018d) Waterways Conservation Act Management Areas (DWER-072) (DWER 2018e) Ramsar Sites (DBCA-010) (DBCA 2017b) Directory of Important Wetlands in Australia - Western Australia (DBCA-045) (DBCA 2018) Geomorphic wetlands of the Swan Coastal Plain (DBCA 2024c) Rivers and streamlines (DWER-031) (DWER 2018f) Swan and Canning River - Development Control Area (DBCA-028) (DBCA 2019a)
Vegetation	Pre-European Vegetation (DPIRD-006) (DPIRD 2019) Native Vegetation Extent (DPIRD-005) (DPIRD 2023) State-wide Vegetation Statistics (DBCA 2019b) Broad vegetation mapping of the survey area (Beard 1979) (Heddle et al. 1980) Regional biogeography, including of Interim Biogeographic Regionalisation of Australia (IBRA) mapping (DCCEEW 2023a) and detailed subregional information from the Department of Conservation and Land Management (CALM) biodiversity audit (CALM 2002)
Threatened and Priority Ecological Communities (TECs and PECs)	The DBCA TEC and Priority Ecological Community (PEC) database to determine the potential for TECs or PECs within the study area as provided by Main Roads (DBCA 2024d)
Significant flora	DBCA Threatened and Priority Flora database (TPFL) and WA Herbarium database (WAHERB) as provided by Main Roads (DBCA 2024e) DBCA *NatureMap* (DBCA 2024f) (Appendix C)
Matters of National Environmental Significance	EPBC Act Protected Matters Search Tool (PMST) (Department of Climate Change, Energy, the Environment and Water (DCCEEW 2024)) (Appendix C)

2.2 Wetland assessment

The wetland assessment was carried out in accordance with DBCA guidelines 'A methodology for the evaluation of wetlands on the Swan Coastal Plain' (DBCA 2017c) This document provides an evaluation process for the identification of a wetland management category. The wetland assessment was conducted using a combination of field survey data and publicly available datasets referred to in the DBCA evaluation methodology, including Ramsar Sites (DBCA 2017b), the Directory of Important Wetlands in Australia (DIWA) (DBCA 2018), DBCA Legislated Lands and Waters (2024b) Lands of Interest (2024a), Geomorphic Wetlands (DBCA 2024c) and the Environmental Protection Authority (EPA) Redbook Recommended Conservation Reserves (DBCA 2017a).

Wetlands were selected for the DBCA preliminary evaluation if they met all the following criteria:

– Intersected the survey area, either partially or fully
– A management category of Resource Enhancement (RE) or Conservation (CC)
– Aerial imagery showing remnant vegetation. This was then ground-truthed during the field survey to determine it the vegetation represented wetland vegetation.

2.3 Field survey

2.3.1 Survey timing and personnel

GHD Senior Botanists Angela Benkovic (flora licence no. FB62000080-3) and Alex Sleep (flora licence no. FB62000557) completed a Two Phase, Detailed flora and vegetation survey, Targeted Flora search and Wetland Assessment. In total 20 person days were used to complete the field survey component (Table 2).

Table 2 Survey timing

Date	Survey type	Survey effort
29 July – 31 July 2024	Wetland assessment, Targeted Flora survey *Drakaea elastica.* Phase 1 quadrats	6 person days
16 – 20 September 2024	Targeted Flora *Caladenia huegelii,* Detailed flora and vegetation survey and wetland assessment	10 person days
27 – 28 November 2024	Detailed flora and vegetation survey	4 person days

2.3.2 Guiding documents

The survey methodology and data collection by GHD was consistent with relevant aspects of:

– Technical Guidance – Flora and Vegetation Surveys for Environmental Impact Assessment (EPA 2016)
– A methodology for the evaluation of wetlands on the Swan Coastal Plain (DBCA 2017c)
– Methods for survey and identification of Western Australian threatened ecological communities (DBCA 2024g)
– Draft Survey Guidelines for Australia's Threatened Orchids (DCCEEW 2013)
– Technical guidance on the Threatened Ecological Community Tuart (*Eucalyptus gomphocephala*) Woodlands and Forests of the Swan Coastal Plain (Main Roads Western Australia 2021a)
– Technical guidance on the Threatened Ecological Community - *Banksia* Woodlands of the Swan Coastal Plain (Main Roads Western Australia 2021b)
– Approved Conservation Advice for the *Banksia* Woodlands of the Swan Coastal Plain Ecological Community (TSSC 2016)
– Approved Conservation Advice (incorporating listing advice) for the Tuart (*Eucalyptus gomphocephala*) woodlands and forests of the Swan Coastal Plain ecological community (DEE 2019)

2.3.3 Data collection and storage

The survey methods involved a combination of quadrats, relevés and field notes. Sampling was undertaken from 17 quadrats, 21 relevés and opportunistic collections. Quadrats measuring 10 x 10 m or 100m^2 as per regulatory

expectations for the Swan Coastal Plain (SCP) bioregion were established. Quadrats that showed affinities to TEC communities were sampled twice (July and September or November). In areas of poor-quality vegetation, relevés using a search area of approximately 100 m^2 were conducted to assist with mapping. Sample sites are presented on Figure 2, Appendix A.

A minimum of three quadrats were located within each identified vegetation type, where possible. In some instances, less than three quadrats were described per vegetation type, this was due to the limited area and geographic range of the vegetation type and/or the degraded condition of the vegetation. Vegetation type MP had one quadrat sampled due to the restricted size of the vegetation type. Vegetation ErMr was sampled by relevés only as the vegetation was in Degraded or Completely Degraded condition. Quadrat data collected as part of the Kwinana Freeway Widening Project (GHD 2025c) was used to supplement vegetation type data where appropriate. The Kwinana Freeway Widening Project included a detailed flora and vegetation survey of a nearby area (extending south from the Kwinana Roe Highway intersection to Safety Bay Road) in spring 2024. Further details on supplementary data is provided below under *Significant vegetation and Floristic Community Types.*

Field data at each quadrat and relevé was recorded on a pro-forma data sheet and included the parameters detailed in Table 3. Flora field data collection for the survey was undertaken using Stonex S580+ tablets with S580 DGPS units to achieve centimetre-level accuracy. Data was synced to the cloud at the conclusion of each field day. GPS devices were used to capture survey effort (track logs) and are displayed on Figure 2 ,Appendix A. Field photographs were stored and where applicable have been provided as part of the deliverables.

Table 3 Data collected at each quadrat and relevé

Aspect	Measurement
Collection attributes	Site code, personnel/recorder, date, photograph
Physical features	Aspect, slope, landform, soil attributes, ground surface cover, leaf and wood litter.
Location	Coordinates recorded in GDA2020 datum using Stonex S580+ tablets with S580 DGPS to an accuracy of approximately ± 1cm
Vegetation condition	Vegetation condition was assessed using the condition rating scale adapted by the EPA (EPA 2016) for South West and Interzone Botanical Province.
Disturbance	Level and nature of disturbances (e.g. weed presence, fire and time since last fire, impacts from grazing, clearing).
Flora	List of dominant flora from each structural layer, list of all species within the quadrat including average height and cover (using National Vegetation Information System (NVIS)).

2.3.4 Vegetation types

Vegetation types were identified and boundaries delineated using a combination of aerial photography, topographical features and field data/observations. Vegetation types were described based on structure, dominant taxa and cover characteristics as defined by quadrat data, relevé data, black cockatoo tree point data (GHD 2025a) and field observations. Where vegetation types aligned, quadrat and relevé data from the Kwinana Freeway Widening Project survey (GHD 2025c) were used to supplement the Roe Highway survey data (refer to *Significant vegetation and Floristic Community Types (FCT)* below*)*. Vegetation type descriptions follow NVIS and are consistent with NVIS Level V (Association). At Level V up to three taxa per stratum are used to describe the association (NVIS Technical Working Group 2017).

Much of the survey area has been previously disturbed and subject to landscaping or revegetation with infill planting of a range of different species, including locally native species, native species occurring outside their native range (for example *Melaleuca nesophila*), non-native species and commercially available cultivars. Vegetation types were divided up into remnant vegetation types (naturally occurring) and roadside vegetation/ revegetation. In the determination of remnant vegetation compared to roadside revegetation/ vegetation a number of aspects were considered including:

– Species composition
– Structural formation
– Age of individual plants/trees

– Landform – is the landform/ground level naturally occurring or is it part of freeway infrastructure for example battered slopes.
– Mapping of native vegetation extent (DPIRD 2023).

2.3.5 Context vegetation mapping

Context area mapping was undertaken by extrapolation of survey data, aerial imagery and a review of nearby Gibson et al. (1994) and Keighery et al. (2012) quadrats to broadly identify vegetation patterns and vegetation units. No ground-truthing of the context area was undertaken.

2.3.6 Vegetation condition

The vegetation condition was assessed and mapped in accordance with the vegetation condition rating scale for the South West and Interzone Botanical Provinces (devised by Keighery (1994) and adapted by EPA ((2016). The scale recognises the intactness of vegetation and consists of six rating levels. The vegetation condition rating scale is outlined in Appendix B.

2.3.7 Significant vegetation and Floristic Community Types (FCT)

Floristic analyses were undertaken to determine relationships between the sampled quadrats described from the survey area as well as between sampled quadrats from the survey area and the SCP FCTs defined by Gibson et al. (1994) and Government of Western Australia (2000b, 2000a). Two datasets are available and include the Gibson et al. (1994) dataset (referred to as the Gibson Dataset) and the Keighery et al. (2012) dataset (previously accessed through NatureMap (DBCA 2024f) referred to as the Keighery Dataset). The Gibson dataset includes floristic data for 509 sites across the SCP and the Keighery Dataset includes floristic data from the Gibson Dataset as well as data from more than 500 additional sites.

Due to the fragmented and modified remnant vegetation within the survey area it was difficult to locate vegetation in good or better condition to enable three or more quadrats per vegetation type to be sampled. Therefore, quadrat data from the Kwinana Freeway Widening Project survey (GHD 2025c) was used to supplement the number of samples to provide more context for vegetation type mapping and a more robust statistical analysis. GHD quadrats included in the analysis included Roe01 to Roe17 and Kwin01 to Kwin10. Quadrat data for both Roe and Kwin quadrats are provided in Appendix D.

To assist in delineating GHD vegetation types an analysis was completed on GHD quadrats only. Introduced and annual species were not removed for statistical analysis. This was due to the weed dominance in the wetland quadrats, that would have resulted in insufficient native species to undertake an analysis. The GHD quadrat analysis is provided in Appendix D.

Analysis methods using GHD quadrats against SCP datasets followed those outlined in DBCA (2024g). These included:

– Analysis of GHD quadrats from the Kwinana and Roe survey area with the Gibson Dataset
– Analysis of GHD quadrats from the Kwinana and Roe survey area with the Keighery Dataset
– Single site insertion (SSI) analysis of GHD quadrats from Roe survey area with the Gibson Dataset
– SSI analysis of GHD quadrats from the Roe survey area with the Keighery Dataset.

Prior to the analyses, the Gibson and Keighery datasets were updated by GHD to reflect current flora nomenclature. For all the above analyses introduced and annual species were not removed from the Gibson or Keighery datasets as they were unable to be removed from the GHD quadrats.

SSI analysis involves running analyses for each quadrat, one at a time, with the respective datasets. SSI is considered an alternate and more reliable means of deriving a classification for each quadrat as it causes less ‘disruption’ of the clustering of the datasets (DBCA 2024g).

Primer v7 (Clarke and Gorley 2015) software was used to conduct the analyses, and analysis methods were undertaken with reference to the methods utilised by Gibson et al. (1994). A Cluster analysis using the Bray-Curtis similarity measure (no overall transform or weighting) was undertaken to produce a similarity matrix. Using Group average cluster mode a dendrogram was created. Similarity matrices and dendrograms were used to infer

vegetation type and FCT relationships. It is important to note that statistical analyses such as classifications are not absolute. To provide further support for the inferences made, taxon lists from quadrats were also compared to the typical species lists for SCP FCTs presented in Gibson et al. (1994) as well as consideration of landforms, soils, topography and geographical distribution data.

Banksia woodlands of the SCP TEC

Data captured in quadrats was used to determine the presence of the *Banksia* woodlands of the SCP TEC (Banksia Woodlands TEC) within the survey area based on the key diagnostic characteristics and condition thresholds listed within the Approved Conservation Advice (TSSC 2016) and Main Roads technical guidance (Main Roads Western Australia 2021b) . At least one quadrat was captured within each mapped Banksia woodland patch.

Small scale variations, gaps and disturbances (tracks, paths, breaks in vegetation including exposed soil, leaf litter, watercourses and drainage lines) that did not significantly alter the overall functionality of the TEC were included in the mapping of Banksia patches. Conversely, breaks in native vegetation cover of 30 m or more from the tree canopy, including housing, extensive cleared areas and bitumen roads, were excluded from patches as per the Approved Conservation Advice (Threatened Species Scientific Committee 2016).

Tuart Woodlands and Forests of the SCP TEC

Quadrat data and key diagnostic characteristics and condition thresholds listed within the Approved Conservation Advice (DEE 2019) and Main Roads technical guidance (Main Roads Western Australia 2021a) were used to determine the presence of the Tuart (*Eucalyptus gomphocephala*) Woodlands and Forests of the SCP TEC (Tuart Woodlands and Forests TEC) within the survey area. At least one quadrat was captured within each Tuart patch and tree canopy was mapped.

Small scale variations, gaps and disturbances (tracks, paths, breaks in vegetation including exposed soil, leaf litter, watercourses and drainage lines) that did not significantly alter the overall functionality of the TEC were included in the mapping of tuart patches. Conversely, breaks in tree canopy cover of >60m constituted multiple patches present as per Approved Conservation Advice (Threatened Species Scientific Committee 2016). A DBCA TEC/PEC report form was completed for significant communities identified in the survey area and are attached in Appendix D.

2.3.8 Targeted Flora searches

Habitats and vegetation types in the survey area considered to have the potential to support significant flora (based on previously recorded significant flora records and associated habitat preference information) were targeted in the field. Planted and highly modified vegetation were generally not targeted as these areas did not provide habitat for significant flora given the historic disturbances and clearing. For potential significant orchid species, habitats were searched then grid searched at a suitable distance apart as per Draft Survey Guidelines for Australia's Threatened Orchids (DCCEEW 2013). Where significant flora taxa were identified their location and number of plants present were recorded using Stonex S580+ tablets with S580 DGPS.

2.3.9 Flora inventory, identification and nomenclature

A flora inventory was compiled from species listed in described quadrats, relevés and from opportunistic floristic records throughout the survey area. Species well known to the survey botanists were identified in the field; all other species were collected and assigned a unique collection number to facilitate tracking. All specimens collected during the field assessment were dried and processed in accordance with the requirements of the WA Herbarium. Species were identified by the use of taxonomic literature, electronic keys and online electronic databases. A DBCA Threatened and Priority flora report form was completed for significant flora identified in the survey area and are attached in Appendix D.

2.4 Limitations

2.4.1 Desktop

The desktop assessment includes the EPBC Act PMST that is based on bioclimatic modelling for the potential presence of species. As such, this does not represent actual records of the species within the area. The records from the DBCA searches of significant flora provide more accurate information for the general area. However, some records of collections cannot be dated and often misrepresent the current range of the species.

2.4.2 Field survey

The EPA (2016) Technical Guidance states that flora and fauna survey reports for environmental impact assessment in WA should contain a section describing the limitations of the survey methods used. The limitations and constraints associated with this field survey are discussed in Table 4. Based on this assessment, the survey effort has not been subject to any constraints that affect the thoroughness of the assessment, and the conclusions formed.

Table 4 Field survey limitations

Aspect	Constraint	Comment
Sources of information and availability of contextual information.	Nil	The vegetation types of the SCP (north of Pinjarra) were mapped by Beard at a scale of 1:250,000 in the 1960s and 1970s (later digitised) with the entire area later mapped at a scale of 1:1,000,000 (Beard 1979). Vegetation complexes of the SCP (south of Lancelin) have been mapped at a scale of 1:250,000 and compiled into a dataset (DBCA 2018a). The majority of the SCP was described by Heddle, Loneragan and Havel (1980) with the far southern section completed by Webb et al (2016). Information at a local scale is available for Bush Forever Sites (Government of Western Australia 2000a).
Scope (what life forms were sampled etc.)	Nil	Vascular flora were sampled during the survey. Non-vascular flora and aquatic flora were not surveyed.
Proportion of flora collected and identified (based on sampling, timing and intensity)	Minor	The Two-Phase Detailed flora and vegetation survey, Wetland assessment and Targeted flora survey were undertaken from July to November 2024, which is within the recommended timing for flora surveys in the South West and Interzone Botanical Province region (September-November) (EPA 2016). A full flora species list is provided in Appendix D.
Flora determination	Minor	Flora determination was undertaken by the survey botanists in the field. Species that could not be identified in the field were collected and identified using appropriate taxonomic keys. Two taxa were only identified to family only, seven taxa were only able to be identified to genus only and six were tentatively identified to species due to lack of flowering/fruiting material or the specimen was in a juvenile form. One taxon, *Dodonaea* sp. may possibly be *Dodonaea hackettiana* (P4). One plant was observed by the survey botanist on an onramp between Kwinana Freeway and Roe Highway. The area was unsafe to stop and so the plant was unable to be collected. All other collections not identified to species level are not similar to known significant flora (as identified in the desktop searches). The taxonomy and conservation status of the WA flora is dynamic. This report was prepared with reliance on taxonomy and conservation status current at the time report development, but it should be noted this may change in response to ongoing research and review of International Union for Conservation Nature criteria.
Completeness and further work which might be needed (e.g. was the relevant area fully surveyed)	Minor	The survey area was considered adequately surveyed to compile a representative list of species, as well as to describe and map vegetation at a level appropriate to inform environmental assessment. Mapping of the context area was conducted at a desktop level using extrapolation, Gibson *et al*. (1994) plots, Keighery *et al*. (2012) plots, and Google Maps Street View. Therefore, assigned vegetation types can only be considered indicative, as their presence has not been confirmed by on-ground survey.

Aspect	Constraint	Comment
Mapping reliability	Minor	The survey was conducted using high-resolution aerial imagery obtained from Landgate, topographical features, previous vegetation mapping (Heddle *et al*. 1980 and Webb *et al*. 2016) and field data. Data was recorded in the field using hand-held GPS tools (e.g. Samsung tablet, Garmin GPS and Stonex S580+ tablets with S580 DGPS). Certain atmospheric factors and other sources of error can affect the accuracy of GPS receivers, including tree canopies. Sample sites, significant flora and significant weed locations used Stonex S580+ tablets with S580 DGPS, these devices are accurate to within ± 1cm.
Timing/weather/ season/cycle	Nil	The field survey was conducted during late winter to early spring (July to November 2024). This is within the recommended survey timing for flora and vegetation surveys within the South-West botanical province (EPA 2016). In the three months prior to the survey (May-July) 447.6 mm of rainfall was recorded at the Jandakot Airport weather recording station (site no. 009172), which is located approximately 1 km from the survey area. This total is comparable to the long-term average for the same period (May-July, 429 mm) (BoM 2025), therefore the season is not considered to be a limitation.
Disturbances (e.g. fire, flood, accidental human intervention)	Nil	The majority of the survey area has been subjected to urban development; however, these disturbances did not affect field survey or the results and conclusions formed.
Intensity (in retrospect, was the intensity adequate)	Nil	The vascular flora of the survey area was sampled in accordance with EPA (2016) as part of phase 1. The supplementary flora survey (phase 2) included targeted searches for significant species and supplementary quadrats and relevés to assist in defining vegetation communities of significance. A sufficient species inventory was recorded during the survey as well. The survey area was sufficiently covered by GHD botanists using 20 person days.
Resources	Nil	Adequate resources were employed during the field survey.
Access restrictions	Minor	The survey area was in some parts, unable to be accessed on foot, due to the freeway restrictions (safety in parking), high security fencing, noise walls and suburb boundaries. In some parts of the survey area the survey was completed via vehicle (driven as slow as safely possible) to map vegetation types, condition and make assessments for significant vegetation and potential significant flora habitat. In this instance vegetation mapping was done through aerial imagery and extrapolation. Potential significant flora habitat was judged on the density of weeds in the understorey and vegetation. The limitation here is that a full detailed search significant flora was not possible in some areas.
Experience levels	Nil	The botanists who executed the survey are practitioners suitably qualified and experienced. Botanists Alex Sleep and Angela Benkovic both have over 15 years of experience each in undertaking flora and vegetation surveys on the SCP.

3. Desktop assessment

3.1 Climate

The survey area is located within the Perth metropolitan area and is characterised by a mediterranean climate with hot, dry summers and mild, wet winters.

At the Jandakot Airport weather station (site number: 009172) the mean maximum temperature is 31.7°C in summer (Feb) and 18.1°C in winter (July) and the mean minimum temperature is 17.2°C in summer (Feb) and 7.2 in winter (July) (BoM 2025). The highest mean rainfall is received in July with 173 mm and the lowest mean rainfall is received in December with 9.8 mm. The mean annual rainfall is 806.2 mm (BoM 2025). Plate 1 illustrates the monthly climate statistics for Jandakot Airport.

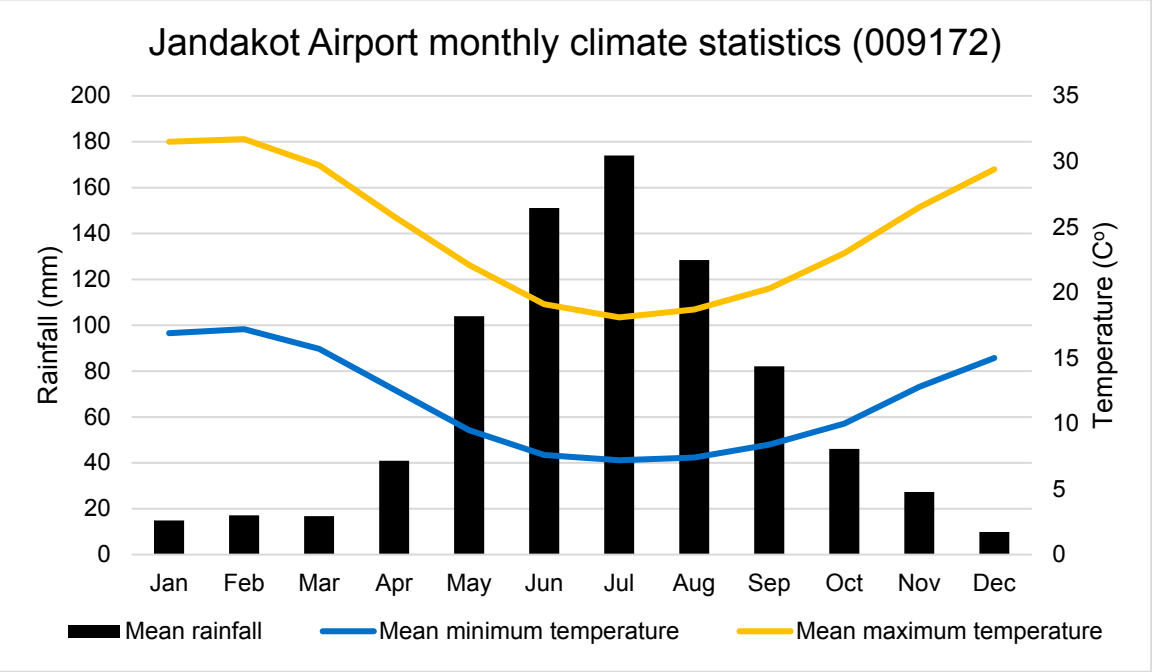


Plate 1 ***Jandakot Airport monthly climate statistics (BoM weather station: 009172)***

3.2 Geology, soils and landforms

The survey area is located at the SCP, a low-lying area of sand, limestone and fluvial deposits located between the Darling Scarp and the Indian Ocean. Colluvial and aeolian sand areas represent three phases of Quaternary marine sand dune development and include a complex series of seasonal freshwater wetlands, alluvial river flats, coastal limestones and several offshore islands (Mitchell et al. 2002).

The survey area overlays the following geological unit (DMIRS 2018):

– Coolyena Group – characterised by a composition of chalk, greensand, glauconitic sandstone, siltstone, marl; and glauconite

The survey area is located across the following two unique soil landscape zones (DPIRD 2025):

– Bassendean Zone (zone 212): Mid Pleistocene Bassendean sand. Fixed dunes inland from coastal dune zone. Non-calcareous sands, podsolised soils with low-lying wet areas.
– Pinjarra Zone (zone 213): Alluvial deposits (early Pleistocene to Recent) between the Bassendean Dunes Zone and the Darling Scarp, colluvial and shelf deposits adjacent to the Darling Scarp. Clayey to sandy alluvial soils with wet areas.

Land zones have been further classified into soil-landscape systems (DPIRD 2022). The survey area is located across two soil landscape systems as described below:

– Bassendean system (212Bs): SCP from Busselton to Jurien. Sand dunes and sandplains with pale deep sand, semi-wet and wet soil. Banksia-paperbark woodlands and mixed heaths.
– Pinjarra system (213Pj): SCP from Perth to Capel. Poorly drained coastal plain with variable alluvial and aeolian soils. Variable vegetation includes Jarrah, marri, wandoo, paperbark sheoaks and flooded gum.

The survey area is predominantly located across a moderate to low acid sulfate soil risk area (DWER 2017). The northwestern half of the survey area intersects multiple high risk acid sulfate soil areas.

3.3 Land use

Land use constraints are mapped in Figure 3, Appendix A.

3.3.1 Conservation reserves

The survey area intersects one conservation area associated with the Canning River (un-named, R 48327) and is situated immediately adjacent to three other conservation areas (Greater Brixton Street (Kenwick) Wetlands, R 49200; Dundas Road Nature Reserve, R 5313; and Beeliar Conservation Park, R 53313). A further 14 conservation estates and reserves are located within the study area.

3.3.2 Environmentally Sensitive Areas

The survey area intersects multiple ESA's, predominantly associated with Bush Forever reserves, TEC's and wetlands.

3.3.3 Bush forever

The survey area intersects four Bush Forever sites and lies immediately adjacent to an additional four Bush Forever sites. Further information on the Bush Forever sites located within and immediately adjacent to the survey area are listed in Table 5.

Table 5 Bush Forever sites located within or immediately adjacent to the survey area

Site No.	Name	Location in proximity to the survey area
319	Dundas Rd, Forrestfield	Immediately north of the survey area
282	Tomah Road Bushland, Wattle Grove	Immediately adjacent to the survey area
387	Greater Brixton Street Wetlands, Kenwick	Immediately adjacent to the survey area
224	Canning River Regional Park and Adjacent Bushland, Riverton to Langford	Intersects the boundary of the survey area along Kenwick Link and Roe Hwy.
246	Southern Rivers, Beckenham to Martin/Kelmscott	Intersects the boundary of the survey area along Roe Hwy.
456	Nicholson Road Bushland, Langford/Thornlie	Intersects the boundary of the survey area along Roe Hwy.
245	Ken Hurst Park, Leeming/Canning	Intersects the boundary of the survey area along Roe Hwy.
388	Jandakot Airport, Jandakot	Immediately adjacent to the survey boundary

3.4 Hydrology

The DWER geographic data layers identified the following hydrology and hydrogeology aspects proclaimed under the RIWI Act within the survey area (Table 6). The hydrology constraints are illustrated in Figure 4, Appendix A.

Table 6 Hydrology aspects within the survey area

Aspect	Details	Results
Groundwater Areas	Groundwater areas proclaimed under the RIWI Act	The survey area is within the Perth Groundwater and Jandakot Groundwater areas
Surface Water Areas	Surface water areas proclaimed under the RIWI Act	The survey area does not intersect any RIWI Act Surface water areas
Irrigation District	Irrigation Districts proclaimed under the RIWI Act	The survey area does not intersect any RIWI Act Irrigation Districts
Rivers	Rivers proclaimed under the Rights in RIWI Act	The survey area crosses the RIWI Act Canning River and is part of the Swan Canning River Development Control Area
Public Drinking Water Source Areas (PDWSA)	PDWSA is a collective term used for the description of Water Reserves, Catchment Areas and Underground Pollution Control Areas declared (gazetted) under the provisions of the *Country Area Water Supply Act 1947*	The south-western end of the survey area intersects a PDWSA, the Jandakot Underground Water Pollution Control Area. The intersected area contains PDWSA Protection priority P1 and P3 areas
Waterways Management Areas	Areas proclaimed under *the Waterway Conservation Act 1976*	The survey area doesn't fall within any Waterway Management areas

3.4.1 Rivers

The Canning River crosses underneath the survey area between Spencer Road and Kenwick Link. The Canning River is listed under the RIWI Act and is a gazetted boundary within the Swan and Canning River - Development Control Area. Several minor tributaries associated with the Canning River also interest the survey area at various locations. These tributaries are east of the Canning River intersecting with the survey area

3.4.2 Wetlands

Globally and nationally significant wetlands

The desktop assessment identified one wetland system of global Ramsar significance occurring within the study area, the Thomsons and Forestdale Lakes wetland system (DBCA 2017b). Thomson Lake is 4.9 km southwest of the survey area, while Forestdale Lake is to the south of the survey area, outside the study area.

Four wetlands listed in the Directory of Important Wetlands in Australia were identified within the study area, Booragoon Lake, Brixton Street Swamps, Perth Airport Woodland Swamps and Swan-Canning Estuary (DBCA 2018). The survey area intersects the mapped area of the Brixton Street Wetland, however the intersecting area has been cleared and does not support wetland vegetation.

Geomorphic wetlands of the SCP

Wetlands cover more than 25% of the SCP, with approximately 75% of these occurring as seasonally waterlogged flats or basins. The geomorphic classification system developed by Semeniuk and Semeniuk (1987, 1995) have been used to classify wetlands on the SCP into types based on the shape of the host landform and hydrological regime. Descriptions on wetland management categories and landform types are provided in Appendix B.

Consanguineous suites

Wetlands on SCP have been grouped into 62 recognised consanguineous suites based on similar regional features such as "*wetland's classification, geometry, stratigraphy, inferred origin and hydrology*" (Semeniuk 1988, DBCA 2017c). The survey area intersects six consanguineous suites, namely Bibra, Jandakot, Bennet Brook, Swan River, Keysbrook and Mungala, however wetlands of the survey area only occur in the Swan River and Mungala suites.

Wetland management categories

Wetlands in the Geomorphic Wetlands Dataset (DBCA 2024c) are assigned management categories to guide management and protection. Wetlands on the SCP have been assigned either a Conservation, Resource Enhancement or Multiple Use management category (Appendix B).

Approximately 36.3% of the survey area has been mapped as geomorphic wetlands by DBCA (2024c), totalling 120.0 ha across 24 wetlands (Appendix E) . These are currently assigned the following conservation categories:

– Conservation – five wetlands, intersecting 11.8 ha (3.5%) of the survey area
– Resource Enhancement – six wetlands, intersecting 8.3 ha (2.5%) of the survey area
– Multiple Use – thirteen wetlands, intersecting 99.9 ha (30.3%) of the survey area.

3.5 Vegetation

3.5.1 Regional biogeography

The survey area lies within the Perth subregion of the SCP bioregion as described by IBRA. The SCP is a low lying coastal plain, mainly covered with woodlands. It is dominated by Banksia or Tuart on sandy soils, *Casuarina obesa* on outwash plains, and paperbark in swampy areas. In the east, the plain rises to duricrusted Mesozoic sediments dominated by Jarrah woodland. The climate is Warm Mediterranean. The Perth subregion is composed of colluvial and aeolian sands, alluvial river flats, coastal limestone. Heath and/or Tuart woodlands on limestone, Banksia and Jarrah Banksia woodlands on Quaternary marine dunes of various ages, Marri on colluvial and alluvials (CALM 2002).

3.5.2 Broad vegetation and extents

Vegetation associations

Broad-scale (1:250,000) pre-European vegetation mapping of the area has been completed by Beard (1979) at an association level. The mapping indicates four vegetation associations intersect the survey area:

– 968: Woodland southwest - Jarrah, marri and wandoo (*Eucalyptus marginata, Corymbia calophylla, E. wandoo)*.
– 1001: Low forest, woodland or low woodland with scattered trees (Jarrah, *Banksia* spp. or *Allocasuarina* spp.)
– 1009: Woodland southwest - Jarrah, marri and wandoo (*Eucalyptus marginata, Corymbia calophylla, E. wandoo*
– 1018: Woodland / Low woodland / Low forest or Woodland.

The pre-European mapping has been adapted and digitised by Shepherd et al. (2002). The extent of vegetation associations has been determined by the state-wide vegetation remaining extent calculations maintained by DBCA, most recently updated in 2019 (GoWA 2019). The current remaining extent of the vegetation associations within the survey area at the IBRA bioregion and IBRA subregion is less than 30% while at the Local Government Area (LGA) level there is less than 20% remaining (Table 7).

Table 7 Extents of vegetation associations mapped within the survey area

Vegetation association	Scale		Pre-European extent (ha)	Current extent (ha)	Remaining (%)	% current extent in all DBCA managed land (proportion of current extent)
968	Statewide: WA		296,877.84	95,048.82	32.02	57.64
	IBRA Bioregion	Swan Coastal Plain	136,188.20	9,017.32	6.62	21.61
	IBRA Sub-region	Perth	136,188.20	9,017.32	6.62	21.61
	Local Government Authority	City of Canning	80.09	38.88	3.89	53.92
		City of Gosnells	3,643.73	339.99	9.33	26.18

Vegetation association	Scale		Pre-European extent (ha)	Current extent (ha)	Remaining (%)	% current extent in all DBCA managed land (proportion of current extent)
		City of Kalamunda	663.60	95.15	14.34	-
1001	Statewide: WA		57,410.23	12,660.76	22.05	14.19
	IBRA Bioregion	Swan Coastal Plain	57,410.23	12,660.76	22.05	14.19
	IBRA Sub-region	Perth	57,410.23	12,660.76	22.05	14.19
	Local Government Authority	City of Canning	5,025.15	329.53	6.56	5.55
		City of Cockburn	7,328.39	2,002.93	27.33	14.92
		City of Gosnells	5,173.51	593.99	11.48	0.78
		City of Kalamunda	1,473.91	111.08	7.54	25.87
		City of Melville	1,503.38	150.43	10.01	-
1009	Statewide: WA		18,225.88	3,004.07	16.48	3.57
	IBRA Bioregion	Swan Coastal Plain	18,184.82	2,983.06	16.40	3.60
	IBRA Sub-region	Perth	18,183.22	2,982.33	16.40	3.60
	Local Government Authority	City of Canning	329.24	1.41	0.43	-
		City of Kalamunda	510.49	23.29	4.56	-
1018	Statewide: WA		14,059.36	2,444.87	17.39	4.58
	IBRA Bioregion	Swan Coastal Plain	14,059.36	2,444.87	17.39	4.58
	IBRA Sub-region	Perth	13,946.31	2,418.49	17.34	4.63
	Local Government Authority	City of Canning	79.42	0.00	0.00	-
		City of Kalamunda	450.12	37.07	8.23	39.91

Vegetation complexes

Regional vegetation has also been mapped by Heddle et al. (1980) based on major geomorphic units on the SCP. This mapping indicates four vegetation complexes are mapped within the survey area:

– Southern River Complex: Open woodland of *Corymbia calophylla* (Marri) - *Eucalyptus marginata* (Jarrah) - Banksia species with fringing woodland of *Eucalyptus rudis* (Flooded Gum) - *Melaleuca rhaphiophylla* (Swamp Paperbark) along creek beds

– Bassendean Complex – Central and South: Vegetation ranges from woodland of *Eucalyptus marginata* (Jarrah) - *Allocasuarina fraseriana* (Sheoak) - Banksia species to low woodland of Melaleuca species, and sedgelands on the moister sites. This area includes the transition of *Eucalyptus marginata* (Jarrah) to *Eucalyptus todtiana* (Pricklybark) in the vicinity of Perth

– Guildford Complex: A mixture of open forest to tall open forest of *Corymbia calophylla* (Marri) - *Eucalyptus wandoo* (Wandoo) - *Eucalyptus marginata* (Jarrah) and woodland of *Eucalyptus wandoo* (Wandoo) (with rare occurrences of *Eucalyptus lane-poolei* (Salmon White Gum)). Minor components include *Eucalyptus rudis* (Flooded Gum) - *Melaleuca rhaphiophylla* (Swamp Paperbark)

– Swan Complex: Fringing woodland of *Eucalyptus rudis* (Flooded Gum) - *Melaleuca rhaphiophylla* (Swamp Paperbark) with localised occurrence of low open forest of *Casuarina obesa* (Swamp Sheoak) and *Melaleuca cuticularis* (Saltwater Paperbark).

GoWA (2019b) assessed the vegetation complexes mapped by Heddle et al. (1980) against presumed pre-European extents within the SCP (Table 8) and relevant LGA (Table 9).

Table 8 Extents of vegetation complexes on the SCP mapped within the survey area (GoWA 2019b)

Vegetation complex	Pre-European extent (ha)	Current extent (ha)	Remaining (%)	% Current extent in all DBCA managed lands
Southern River Complex	58,781.48	10,832.18	18.43	1.60
Bassendean Complex-Central and South	87,476.26	23,508.66	26.87	5.00
Guildford Complex	90,513.13	4,607.91	5.09	0.32
Swan Complex	15,194.13	2,062.03	13.57	0.93

Table 9 Extents of vegetation complexes in the LGA mapped within the survey area (GoWA 2019b)

Vegetation complex	LGA	Pre-European extent (ha)	Current extent (ha)	% of pre-European extent	Proportion of the vegetation within the LGA %
Southern River Complex	City of Gosnells	4,835.92	554.28	11.46	8.23
	City of Kalamunda	2,317.00	224.15	9.67	3.94
	City of Canning	1,645.62	150.43	9.14	2.80
Bassendean Complex-Central and South	City of Canning	3,814.26	206.96	5.43	4.36
	City of Melville	2,235.87	174.89	7.82	2.56
	City of Cockburn	6,809.99	1,730.87	25.42	7.78
Guildford Complex	City of Gosnells	1,966.15	162.44	8.26	2.17
Swan Complex	City of Gosnells	925.20	144.11	15.58	6.09

3.5.3 Significant ecological communities

A review of the DBCA TEC and PEC database and the EPBC Act PMST identified the potential presence of 22 TECs/PECs within the study area. These TECs and PECs are presented in Table 10 and presented on Figure 5, Appendix A.

The survey area intersects seven significant ecological communities or their mapped buffers:

– Banksia Woodlands TEC and PEC (the extents of this community have been inferred by DBCA and not ground truthed).
– Herb rich saline shrublands in clay pans (SCP07) TEC
– Herb rich shrublands in clay pans (SCP08) TEC
– Shrublands on dry clay flats (SCP10a) TEC
– *Corymbia calophylla - Kingia australis* woodlands on heavy soils, SCP (SCP3a) TEC
– Shrublands and Woodlands on Muchea Limestone of the SCP TEC
– Southern wet shrublands, SCP (SCP02) TEC.

Table 10 Threatened and Priority Ecological Communities within the study area

Community name	Status		Description	Presence in vicinity of the survey area (DBCA 2024d)
	EPBC Act	BC Act/ DBCA		
Assemblages of plants and invertebrate animals of tumulus (organic mound) springs of the SCP	EN	CR	This ecological community is the assemblage of plants, animals and other organisms associated with a type of peatland that is found on the Swan Coastal Plain in southwest Western Australia. It is an assemblage of plants and invertebrates living on mounds of peat that have accumulated in areas of continuous groundwater discharge at the junction of the Guildford Clays and the Bassendean Sands on the Swan Coastal Plain. The peat and surrounds provide a stable, permanently moist series of microhabitats. Intact vegetated tumulus springs have been identified at numerous locations (Department of Environment and Conservation 2005).	The EPBC Act PMST identified this community, however, the closest known record is more than 10 km south of the survey area.
Banksia attenuata woodlands over species rich dense shrublands (SCP20a). *Commonly a component of EPBC Act listed Banksia Woodlands TEC*	EN	CR	The community has been recorded from sands near Koondoola and Banksia Grove, and at the base of the Darling Scarp between Wannamal and Maddington. This community is generally very species rich. It is usually dominated by *Banksia attenuata* (slender banksia), occasionally with *Eucalyptus marginata* (jarrah) with *Bossiaea eriocarpa* (common brown pea), *Conostephium pendulum* (pearl flower), *Hibbertia huegelii, Hibbertia hypericoides* (yellow buttercups), *Petrophile linearis* (pixie mops), *Scaevola repens*, *Stirlingia latifolia* (blueboy), *Mesomelaena pseudostygia* and *Alexgeorgea nitens* being common in the understorey (DBCA 2023a).	There are multiple records occurring within 5 km of the survey area.
Banksia attenuata and/or *Eucalyptus marginata* woodlands of the eastern side of the SCP (SCP20b). *Commonly a component of EPBC Act listed Banksia Woodlands TEC*	EN	CR	The community is found on a range of soil and landform units at the base of the Darling Scarp that are described in Churchward and McArthur (1978). The community occurs largely on the Forrestfield unit (Ridge Hill Shelf), Guildford unit or at the confluence of Guildford with Forrestfield but also occurs on the Southern River unit. The community is generally very species rich. Most occurrences of this community type are *Eucalyptus marginata – Banksia attenuata* woodlands but Banksia *woodlands* and heaths are also found, with *Mesomelaena pseudostygia*, Morelotia *octandra*, *Banksia dallanneyi* (couch honeypot), *Desmocladus fasciculatus*, and *Chamaescilla corymbosa* (blue squill) being common in the understorey (DBCA 2023a).	There are multiple records occurring within 5 km of the survey area
Banksia ilicifolia woodlands (SCP22)	EN	P3	Low lying sites generally consisting of *Banksia ilicifolia – B. attenuata* woodlands, but *Melaleuca preissiana* woodlands and scrubs are also recorded. Occurs on Bassendean and Spearwood systems in the central Swan Coastal Plain north of Rockingham.	There are multiple records occurring within 5 km of the survey area.

Community name	Status		Description	Presence in vicinity of the survey area (DBCA 2024d)
	EPBC Act	BC Act/ DBCA		
Commonly a component of EPBC Act listed Banksia Woodlands TEC			Typically has very open understorey, and sites are likely to be seasonally waterlogged (DBCA 2023a).	
Banksia Woodlands TEC	EN	P3	This ecological community is a woodland associated with the Swan Coastal Plain of southwest Western Australia. A key diagnostic feature is a prominent tree layer of Banksia, with scattered eucalypts and other tree species often present among or emerging above the Banksia canopy. The understorey is a species rich mix of sclerophyllous shrubs, graminoids and forbs. The ecological community is characterised by a high endemism and considerable localised variation in species composition across its range. The Banksia Woodlands ecological community is largely restricted to the Perth and Dandaragan subregions of the Swan Coastal Plain, from around Jurien Bay in the north to Dunsborough in the south. The ecological community also extends into immediately adjacent areas on the Whicher and Darling escarpments and subregions of the Jarrah Forests bioregion, to the south and east, where pockets of Banksia Woodlands may also occur (TSSC 2016)	There are multiple records occurring within the survey and the study area.
Central Northern Darling Scarp Granite Shrubland Community	Not listed	P4	Shrublands and heath on deeper loams and red earths on fragmented granite/quartzite. Heath species typically consist of the taller shrubs *Xanthorrhoea acanthostachya* and *Allocasuarina humilis* over smaller proteaceous and myrtaceous shrubs, namely *Melaleuca* aff. *scabra*, *Baeckea camphorosmae* and to a lesser extent, the proteaceous shrubs *Dryandra armata*, *Hakea incrassata* and *Hakea undulata*. Located in central region of the Northern Darling Scarp near Perth (DBCA 2023b)	Records located along the Darling Scarp approximately 4 km east of the survey area
Clay Pans of the SCP Includes the following WA listed TECs: – Herb rich saline shrublands in clay pans (SCP07) – Herb rich shrublands in clay pans (SCP08) – Dense shrublands on clay flats (SCP09) – Shrublands on dry clay flats (SCP10a)	CR	EN	The ecological community generally occurs as a shrubland (less commonly as a low, open woodland) over a ground layer of geophytes, herbs and sedges which are characteristic of the wetter parts of the sites (Threatened Species Scientific Committee 2012). There are no dominant species which characterise the entire ecological community (Threatened Species Scientific Committee 2012). The ecological community, however, shows similar landform and vegetation structural features across its range. A distinctive feature of these clay pan wetlands is the suite of geophytes and annual flora that germinates, grows and flowers sequentially as these areas dry over summer, producing a floral display for over three months (Threatened Species Scientific Committee 2012). The clay pans have very high species richness, a number of local endemics and are the most floristically diverse of the Swan Coastal Plain wetlands (Threatened Species Scientific Committee 2012).	The EPBC Act PMST identified this TEC as likely to occur in the study area. There are multiple records of SCP07, SCP08 and SCP10a within and immediately adjacent to the survey area.

Community name	Status		Description	Presence in vicinity of the survey area (DBCA 2024d)
	EPBC Act	BC Act/ DBCA		
Claypans with mid dense shrublands of *Melaleuca lateritia* over herbs PEC *Component of the EPBC Act listed Claypans of the SCP TEC*	CR	P1	Claypans (predominantly basins) usually dominated by a shrubland of *Melaleuca lateritia* occurring both on the coastal plain and the adjacent plateau. These claypans are characterized by aquatic (*Hydrocotyle lemnoides* – Priority 4) and amphibious taxa (e.g. *Glossostigma diandrum, Villarsia capitata* and *Eleocharis keigheryi* - DRF) (DBCA 2023b).	There is one record of this TEC occurring within the study area located in Southern River.
Corymbia calophylla — Eucalyptus marginata woodlands on sandy clay soils of the southern SCP (SCP3b)	Not listed	EN	The community is known from the eastern side of the Swan Coastal Plain largely between Wannamal and Dunsborough. Most occurrences of the community are dominated by both *Corymbia calophylla* (marri) and *Eucalyptus marginata* (jarrah) with additional common taxa comprising low shrubs, sedges, grasses and herbs. These include *Bossiaea eriocarpa* (common brown pea), *Conostylis juncea*, *Hibbertia hypericoides* (yellow buttercups), *Morelotia octandra*, *Chamaescilla corymbosa* (blue squill), *Desmocladus fasciculatus*, *Banksia dallanneyi* (couch honeypot), *Mesomelaena tetragona* (semaphore sedge), *Babingtonia camphorosmae* (camphor myrtle), *Lepidosperma squamatum*, *Neurachne alopecuroidea* (foxtail mulga grass), *Philotheca spicata* (pepper and salt), *Burchardia congesta* (milkmaids), *Caesia micrantha* (pale grass-lily), *Kingia australis* (kingia), *Drosera erythrorhiza* (red ink sundew), *Lomandra hermaphrodita* and *Caladenia flava* (cowslip orchid) (DBCA 2023a).	There is one record located less than 4 km east of the survey area.
Corymbia calophylla - Kingia australis woodlands on heavy soils, SCP (SCP3a)	EN	CR	The community has been recorded from heavy soils of the eastern side of the southern Swan Coastal Plain largely between Capel and Chittering. Typical native taxa in the community are the tree *Corymbia calophylla* (marri), the shrubs *Banksia dallanneyi* (couch honeypot), *Philotheca spicata* (pepper and salt), *Kingia australis* (kingia) and *Xanthorrhoea preissii* (balga), and the herbs, rushes and sedges *Cyathochaeta avenacea*, *Dampiera linearis* (common dampiera), *Haemodorum laxum*, *Desmocladus fasciculatus*, *Mesomelaena tetragona* (semaphore sedge) and *Morelotia octandra* (DBCA 2023a). This ecological community aligns with WA Stated listed TEC *Corymbia calophylla – Kingia australis* woodlands on heavy soils on the Swan Coastal Plain (FCT 3a).	There are multiple records occurring within the survey area and study area.
Corymbia calophylla - Xanthorrhoea preissii woodlands and shrublands of the SCP (SCP3c)	EN	CR	Plant community located on heavy soils of the eastern side of the Swan Coastal Plain between Bullsbrook, and Waterloo near Bunbury. Dominant species in the community are the trees *Corymbia calophylla* and occasionally *Eucalyptus wandoo*; the shrubs *Xanthorrhoea preissii, Acacia pulchella, Banksia nivea,*	There are records occurring within 5 km of the northern end of the survey area.

Community name	Status		Description	Presence in vicinity of the survey area (DBCA 2024d)
	EPBC Act	BC Act/ DBCA		
			Gompholobium marginatum, and *Hypocalymma angustifolia* and the herbs *Burchardia congesta*, *Cyathochaeta avenacea* and *Neurachne alopecuroidea.* The introduced species *Briza maxima* and *Romulea rosea* are also common (English and Blyth 2000). This ecological community aligns with WA Stated listed TEC *Corymbia calophylla – Xanthorrhoea preissii* woodlands and shrublands on the Swan Coastal Plain (FCT 3c).	
Empodisma peatlands of southwestern Australia	EN	Not listed	Empodisma peatlands predominantly occur in the Warren bioregion and the Southern Jarrah Forest subregion of the Jarrah Forest IBRA bioregion. Some occurrences may also occur in high rainfall areas of the Perth (Swan Coastal Plain), Northern Jarrah Forest (Jarrah Forest) and Fitzgerald (Esperance) subregions where climatic, stratigraphic and topographic conditions are suitable for Empodisma peatlands to form. These occurrences are typically within 50km of the Warren bioregion but isolated occurrences may occur further north and east (DCCEEW 2023b).	The EPBC Act PMST identified this TEC as may occur in the study area. It was not identified in the DBCA database search.
Honeymyrtle shrubland on limestone ridges of the SCP Bioregion Includes the following WA listed TECs: – *Melaleuca huegelii - Melaleuca systena* shrublands on limestone ridges (SCP26a)	CR	CR	The Honeymyrtle shrubland is an assemblage of plants, animals and other organisms associated with a type of warm temperate shrubland or heath, dominated by *Melaleuca huegelii* (chenille honeymyrtle), *M. systena* (coastal honeymyrtle), and/or *Banksia sessilis* (parrot bush). It is known from a small number of locations in the Swan Coastal Plain IBRA1 Bioregion (SWA). It is a shrub-dominated ecological community, with sclerophyll shrubs forming thickets or heaths, above a typically diverse ground layer of herbs, including sedges, Restionaceae and occasional grasses. Honeymyrtle shrubland only occurs on the slopes and tops of limestone ridges on the Swan Coastal Plain. Its plants provide food for a variety of nectar-, seed- and fruit-eating birds, and browsing for mammals. The associated rocky and sandy substrates provide ample reptile basking sites, and the shrub layer gives them cover. (DBCA 2023a). This ecological community corresponds to the Critically Endangered WA Threatened Ecological Community 'Melaleuca huegelii – M. systena shrublands of limestone ridges (floristic community type 26a as originally described in Gibson et al. 1994)'	The EPBC Act PMST identified this TEC as likely to occur in the study area. One record located more than 5 km south of the survey area.
Low lying *Banksia attenuata* woodlands or shrublands (SCP21c)	EN	P3	This type occurs sporadically between Gingin and Bunbury and is largely restricted to the Bassendean system. The type tends to occupy lower lying wetter sites and is variously dominated by *Melaleuca preissiana, Banksia attenuata, B. menziesii, Regelia ciliata, Eucalyptus marginata* or *Corymbia calophylla*. Structurally,	There are records occurring within the study area.

Community name	Status		Description	Presence in vicinity of the survey area (DBCA 2024d)
	EPBC Act	BC Act/ DBCA		
			this community type may be either a woodland or occasionally shrubland (DBCA 2023a)	
Northern Spearwood shrublands and woodlands (SCP24)	Not listed.	P3	Heaths with scattered *Eucalyptus gomphocephala* occurring on deeper soils north from Woodman Point. Most sites occur on the Cottesloe unit of the Spearwood system. The heathlands in this group typically include *Banksia sessilis, Calothamnus quadrifidus*, and *Schoenus grandifloras* (DBCA 2023b).	The nearest record is located approximately 5 km south of the survey area
Sedgelands in Holocene dune swales of the southern SCP Includes the following WA listed TECs: – Sedgelands in Holocene dune swales (SCP19a) – Woodlands over sedgelands in Holocene dune swales (SCP19b)	EN	CR	The ecological community described in this conservation advice is the assemblage of plants, animals and other organisms associated with a type of wetland that is found on the Swan Coastal Plain IBRA bioregion in southwest Western Australia. It is primarily an assemblage of sedge and shrub species occurring in seasonally inundated, linear wetlands (damplands and occasionally sumplands under the WA geomorphic classification system in swales on sands or sandy-loams, between Holocene dunes (Department of Environment and Conservation 2011)	There are no records within 5 km of the survey area.
Shrublands and Woodlands on Muchea Limestone of the SCP	EN	EN	The community occurs on the heavy soils of the eastern side of the Swan Coastal Plain and has been recorded between Beermullah and Wokalup. Known patches include wetland and well-drained habitats, in a variety of landforms. It is defined on the basis of substrates with a limestone influence. Many of the species are commonly associated with the limestone soils that occur on the coast, and do not generally occur further inland. Typical and common native species in areas of best developed limestone are: the tree *Casuarina obesa* (swamp sheoak); the mallees *Eucalyptus decipiens* (redheart) and *Eucalyptus foecunda* (narrow-leaved red mallee); the shrubs *Melaleuca huegelii* (chenille honey-myrtle), *Alyogyne huegelii* (lilac hibiscus), *Grevillea curviloba* (endangered), *Grevillea evanescens* (priority 1) and *Melaleuca systena* (coastal honeymyrtle); and the herb *Thysanotus arenarius* (sand-dune fringed lily). Where the limestone substrate is less well developed and limestone may occur as nodules or chunks, the flora assemblages can be influenced by other characteristics of the substrate, such as clay content (DBCA 2023a).	There are multiple records within the survey area and study area.
Shrublands and Woodlands of the eastern side of the SCP (SCP20c)	EN	CR	The community occurs mainly on the transitional soils of the Ridge Hill Shelf, on the Swan Coastal Plain adjacent to the Darling Scarp, but also extends marginally onto the alluvial clays deposited on the eastern fringe of the Swan Coastal Plain. It has been recorded between Stratton and Maddington. It generally comprises a	There are multiple records located within 5 km of the northern end of the survey area.

Community name	Status		Description	Presence in vicinity of the survey area (DBCA 2024d)
	EPBC Act	BC Act/ DBCA		
			shrubland or woodland of *Banksia attenuata* (slender banksia) and *Banksia menziesii* (firewood banksia), sometimes with *Allocasuarina fraseriana* (western sheoak), over a shrub layer that can include the species *Adenanthos cygnorum* (woolybush), *Hibbertia huegelii, Scaevola repens* var. *repens* (fan flower), *Allocasuarina humilis* (dwarf sheoak), *Bossiaea eriocarpa* (common brown pea), *Hibbertia hypericoides* (yellow buttercups) and *Stirlingia latifolia* (blueboy). A suite of herbs including *Conostylis aurea* (golden conostylis), *Trachymene pilosa* (native parsnip), *Lomandra hermaphrodita*, *Burchardia congesta* (milkmaids) and *Patersonia occidentalis* (purple flag), and the sedges *Mesomelaena pseudostygia* (semaphore sedge) and *Lyginia barbata* usually occur in the community (DBCA 2023a).	
Southern wet shrublands, SCP (SCP02)	Not listed	CR	The community typically comprises shrublands or open woodlands. It occurs on seasonally inundated sandy clay soils that are restricted to small remnants on the eastern side of the Swan Coastal Plain. It has been recorded from Forrestfield to Chapman Hill. The community has moderate species richness with the occurrence of species reflecting the wetter nature of the sites. Typical and common native taxa in the community are the shrubs *Kingia australis* (kingia), *Pericalymma ellipticum* (swamp teatree), *Hakea ceratophylla* (horned leaf hakea), *Calothamnus lateralis*, *Hypocalymma angustifolium* (white myrtle), *Eutaxia virgata*, *Stirlingia latifolia* (blueboy), *Banksia dallanneyi* (couch honeypot) and herbs, rushes and sedges including *Dampiera linearis* (common dampiera), *Comesperma virgatum* (milkwort), *Stylidium brunonianum* (pink fountain triggerplant), *Thysanotus multiflorus* (many-flowered fringe lily) and *Mesomelaena tetragona* (semaphore sedge) (DBCA 2023a).	There are multiple records occurring within the northern end of the survey area
Subtropical and Temperate Coastal Saltmarsh	VU	P3	The Subtropical and Temperate Coastal Saltmarsh (hereafter Coastal Saltmarsh) ecological community occurs within a relatively narrow margin of the Australian coastline, within the subtropical and temperate climatic zones south of the South-east Queensland bioregion boundary along the east coast and south of (and including) Shark Bay on the west coast. The Coastal Saltmarsh ecological community is mainly associated with the soft substrate shores of estuaries and embayments (sandy and/or muddy) and on some open, low wave energy coasts. Associated sediments generally consist of poorly-sorted anoxic sandy silts and clays, and may have salinity levels that are much higher than seawater due to evaporation. Although soil type does not seem to limit the development of saltmarsh vegetation, the	There are records occurring within 5 km of the survey area.

Community name	Status		Description	Presence in vicinity of the survey area (DBCA 2024d)
	EPBC Act	BC Act/ DBCA		
			drainage characteristics of coastal soils, along with tidal patterns and elevation, can strongly influence the distribution of flora and fauna within the Costal Saltmarsh ecological community.	
Tuart Woodlands and Forests of the SCP	CR	P3	The Tuart woodlands and forests occur on the Swan Coastal Plain in Western Australia, from Jurien, approximately 200 km north of Perth, to the Sabina River, near Busselton, 225 km south of Perth. Mostly confined to Quindalup Dunes and Spearwood Dunes but can also occur on the Bassendean dunes and Pinjarra Plain. It can occur on the banks of rivers and wetlands. Tuart is the key upper canopy species although it may co-occur with trees of other species. Trees commonly co-occurring with Tuart include *Agonis flexuosa* (peppermint), *Banksia grandis*, *Banksia attenuata*, *Eucalyptus marginata*; and less commonly, *Corymbia calophylla*, *Banksia menziesii* and *Banksia prionotes*. An understorey of native plants is typically present, which may include grasses, herbs and shrubs. The description, area and condition thresholds that apply to the EPBC-listed TEC, also apply to the Priority ecological community of the same name. (DBCA 2023b)	There are multiple records located within 5 km of the southern end of the survey area.
Wooded wetlands which support colonial waterbird nesting areas	Not listed	P2	Includes Chandala, Booragoon Lake, unnamed wetland near Pinjarra and McCarleys Swamp. Melaleuca dominated, fresh-brackish. (DBCA 2023b).	There is one record located within 5 km of the southern end of the survey area.

3.6 Flora

3.6.1 Flora diversity

The *NatureMap* database identified 2,695 terrestrial flora taxa previously recorded within a 5 km radius of the survey area, consisting of 1,705 species of dicotyledons, 22 species of ferns, eight species of gymnosperms and 960 species of monocots. The *NatureMap* results are provided in Appendix C.

3.6.2 Significant flora

The EPBC Act PMST (DCCEEW 2024), *NatureMap* (DBCA 2007-) and DBCA TPFL and WAHerb databases (DBCA 2024e) identified the presence/potential presence of 93 significant flora species within the study area. The desktop searches recorded:

– One species listed as Presumed Extinct (EX) under the BC Act
– Twenty five species listed as Threatened under the EPBC Act and/or BC Act.
– Nine species listed as Priority 1 (P1) by DBCA.
– Eleven species listed as P2 by DBCA
– Thirty-two species listed as P3 by DBCA
– Fifteen species listed as P4 by DBCA

The location of significant flora as recorded by the DBCA database is presented on Figure 5, Appendix A. A likelihood of occurrence assessment has been conducted for the significant flora species identified in the desktop searches in Appendix D. The pre-survey likelihood of occurrence assessment determined that of the 93 significant flora taxa identified by the desktop assessment:

– Nineteen are highly unlikely to occur, due to the survey area being outside the species currently known distribution
– Twenty-five are unlikely to occur, due to distance of records from the survey area and limited to no habitat potentially occurring within the survey area.
– Forty-six possibly occur due to the proximity of known records and potential for habitat to occur within the survey area. Many of these have been recorded from the Brixton Street Wetlands (BSW) or Greater Brixton Street Wetlands (GBSW) that are located adjacent to the survey area.
– Three are likely to occur, as listed in Table 11.

Table 11 Likelihood of occurrence assessment - significant flora species identified as likely to occur within the survey area pre-survey

Taxon	EPBC Act	BC Act/ DBCA	Pre-survey Likelihood of Occurrence within the survey area
Tripterococcus sp. Brachylobus (A.S. George 14234)	-	P4	Likely. Previously recorded within the survey area (WA Herbarium record, 1990)
Styphelia filifolia	-	P3	Likely. Previously recorded at a number of locations north and south of survey area at the western end. Recorded in 2002 in Banksia woodland slightly south of the Kwinana Freeway interchange (185 m)
Caladenia huegelii	CR	EN	Likely. Known from intact areas of Banksia woodland around the western end of the survey area, including within the survey area where it intersects Ken Hurst Park, Leeming

4. Field survey results

4.1 Vegetation

4.1.1 Vegetation types

The survey area contained a mixture of cleared areas, remnant native vegetation and roadside revegetation. Cleared areas which included infrastructure such as roads and houses made up the majority of the survey area and accounted for 141.72 ha (42.92%).

Remnant native vegetation occurred as isolated patches either side of Roe Highway making up 53.34 ha (16.15%) of the survey area. Five remnant native vegetation types were mapped within the survey area. This included three *Banksia* woodlands and two wetland / riparian types:

– BmBa – *Banksia menziesii, B. attenuata* woodland generally lacked an emergent layer of *Eucalyptus* spp. or *Allocasuarina fraseriana*

– BaBmBi – *Banksia menziesii, B. attenuata* and *B ilicifolia* woodland, which occurred in wetter, low lying areas of the landscape with loamy soils

– EgBspp. – *Eucalyptus gomphocephala* and *Banksia* spp. woodland had an isolated to co-dominant layer of *Eucalyptus gomphocephala*

– ErMr – *Eucalyptus rudis* over *Melaleuca rhaphiophylla +/- M. preissiana* woodland

– MP – *Melaleuca preissiana* damplands.

Floristic analysis undertaken of GHD quadrats (only) supported the definition of vegetation types described above (see section 4.1.3 for further details).

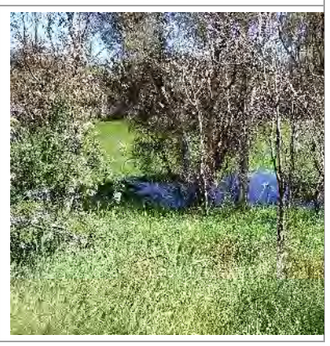
Remnant native vegetation was observed to be more intact at the western end of the survey area, whilst east of South Street native vegetation was observed to be more fragmented and highly modified due to weed invasion. The dominant remnant native vegetation type was BmBa which covered 35.71 ha (10.81%) of the survey area. Along with the other Banksia woodland types (BaBmBi and EgBspp.), this vegetation type was mapped predominately within the western extent of the survey area. Vegetation type ErMr was mapped using relevés only as the vegetation was too degraded to warrant quadrat based sampling. This vegetation type was mapped in fragmented patches in the central part and at the eastern end of the survey area where wetland remnants and the Canning River occurred near Roe Highway. Vegetation type MP – *Melaleuca preissiana* damplands occurred in one area at the very eastern end of the survey area. This type area was represented by one quadrat due to its restricted extent in the survey area.

Roadside revegetation was grouped into six vegetation types that covered 135.16 ha (40.93%) of the survey area. Some areas mapped as Isolated *Banksia* spp. were revegetated by Main Roads circa 2005. The *Banksia* revegetation used native endemic species to establish native vegetation and provide a natural buffer to adjacent remnants. The diversity and condition of these areas was good. However, the height and density of the upper storey *Banksia* spp. were too low (<2m and <10%, respectively) to be considered *Banksia* woodland at the time of the survey. Other areas mapped as revegetated occasionally contained isolated occurrences of remnant native trees or shrubs, however these areas no longer represented an intact remnant native vegetation type so were mapped as roadside revegetation. Mixed shrubland was the dominant roadside revegetation and was mapped in patches along the entire length of the survey area with 77.19 ha (23.4%).

Descriptions, extents and representative photographs for remnant native vegetation types are presented in Table 12 and for roadside revegetation types are presented in Table 13. Vegetation type mapping is provided in Figure 6, Appendix A and site data is presented in Appendix D.

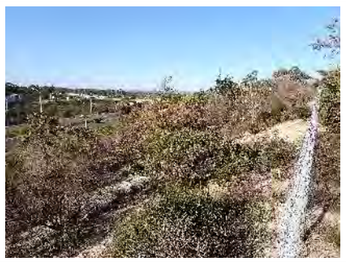
A summary of the remnant native vegetation types, roadside revegetation types and cleared areas for the DE and offset areas is provided in Table 14.

Table 12 Remnant native vegetation types identified within the survey area

Vegetation type	Vegetation type description	Landform and soils	Condition range	Extent (ha) / % of survey area	Sample location and FCT alignment	Photograph
BmBa – *Banksia attenuata B. menziesii* woodland	*Banksia menziesii* and *Banksia attenuata* woodland over *Hibbertia hypericoides, Scholtzia involucrata, Styphelia conostephioides* low shrubland over *Patersonia occidentalis, Desmocladus flexuosus* and *Lyginia barbata* open herb/sedgeland	Bassendean system, sandy soils	Very Good to Completely Degraded	DE: 17.76 ha Offset: 17.95 ha Survey area: 35.71 ha, 10.81%	Roe01, Roe06, Roe07, Roe08, Roe09, Roe12, Roe13, Roe14, Roe 15, Roe16, Roe02R, Roe04R and Kwin05 FCT 23a	
BaBmBi – *Banksia attenuata*, *B. menziesii* and *B. ilicifolia* woodland	*Banksia attenuata. B. menziesii* and B ilicifolia woodland over *Xanthorrhoea preissii* and *Hibbertia subvaginata* low open shrubland over *Dasypogon bromeliifolius, Phlebocarya ciliata* and *Schoenus caespititius* open herb/sedgeland	Pinjarra and Bassendean system, loamy sand	Very Good to Degraded	DE: 3.41 ha Offset: 3.44 ha Survey area: 6.85 ha, 2.07%	Roe03, Roe04, Roe05, Roe11, Roe15R and Roe19R FCT 21c	
EgBspp. – *Eucalyptus gomphocephala* and *Banksia* spp. woodland	+/- *Eucalyptus gomphocephala* tall open woodland over *Banksia attenuata* and *B. menziesii* woodland over *Acacia pulchella* var. *pulchella, Xanthorrhoea preissii* and *Hibbertia hypericoides* low open shrubland over *Mesomelaena pseudostygia* and **Ehrharta calycina* sedgeland/ grassland	Bassendean system, sandy soils	Very Good to Completely Degraded	DE: 1.86 ha Offset: 4.28 ha Survey area: 6.14 ha, 1.86%	Roe02, Roe10, Kwin01, Kwin02, Kwin03, Kwin10, Kwin02R, Kwin03R and Kwin05R FCT 28	
ErMr – *Eucalyptus rudis* over *Melaleuca rhaphiophylla +/- M. preissiana* woodland	*Eucalyptus rudis* over *Melaleuca rhaphiophylla +/- M. preissiana* over *Kunzea glabrescens and *Schinus terebinthifolia* tall sparse shrubland over weedy grasses	Pinjarra and Bassendean system, loamy sand	Degraded to Completely Degraded	DE: 3.58 ha Offset: 0 ha Survey area: 3.58 ha, 1.08%	Roe06R. Roe8R, Roe11R, Roe14R, Roe20R, Roe21R, Kwin06, Kwin07, Kwin08, Kwin09, Kwin19R, Kwin14R, Kwin07R, Kwin16R, Kwin18R and Kwin11R FCT 11	

Vegetation type	Vegetation type description	Landform and soils	Condition range	Extent (ha) / % of survey area	Sample location and FCT alignment	Photograph
Mp – *Melaleuca preissiana* damplands	*Melaleuca preissiana* low woodland over **Gaudium laevigatum* and *Pericalymma ellipticum ?var. floribundum* over *Hypocalymma angustifolium, Xanthorrhoea preissii* and *Melaleuca seriata* low shrubland over *Phlebocarya ciliata* and *Dasypogon bromeliifolius* herbland	Pinjarra and Bassendean system, sandy soils	Very Good to Degraded	DE: 1.06 ha Offset: 0 ha Survey area: 1.06 ha, 0.32%	Roe17 FCT 4	

Table 13 Roadside revegetation types

Roadside revegetation type	Description	Condition range	Extent	Sample location	Photograph
Isolated *Corymbia calophylla*	Isolated stands of *Corymbia calophylla* over scattered natives and weeds	Completely Degraded	DE:12.98 ha Offset: 0 ha Survey area: 12.98 ha, 3.93%	Roe07R, Roe10R, Roe12R and Roe13R	
Isolated *Eucalyptus* spp.	Native and naturalised *Eucalyptus* spp. over scattered natives and weeds	Completely Degraded	DE: 21.61 ha Offset: 0 ha Survey area: 21.61 ha, 6.55%	Kwin04R, Kwin20R, Kwin13R, Kwin15R, Roe01R, Roe03R and Roe09R	
Isolated *Banksia* spp.	Isolated *Banksia menziesii* and *B. attenuata* over scattered natives and weeds	Completely Degraded to Good	DE: 15.46 ha Offset: 1.25 ha Survey area: 16.71 ha, 5.06%	Kwin01R Kwin17R, Kwin08R, Roe05R and Roe17R	
Pinus spp.	Isolated *Pinus* spp. over scattered natives and weeds	Completely Degraded	DE: 0.03 ha Offset: 0.10 ha Survey area: 0.13 ha, 0.04%	-	

Roadside revegetation type	Description	Condition range	Extent	Sample location	Photograph
Mixed shrubs	Native and introduced shrubs	Completely Degraded	DE: 77.24 ha Offset: 0 ha Survey area: 77.24 ha, 23.39%	Roe16R, Roe18R and Kwin12R	
Modified Wetland	Modified wetland/ drainage area	Completely Degraded to Degraded	DE: 6.49 ha Offset: 0 ha Survey area: 6.49 ha, 1.96%	Kwin06R	
Cleared	Cleared areas, infrastructure, roads		DE: 140.94 ha Offset: 0.78 ha Survey area 141.72 ha, 42.92%	-	

Note: The above revegetated vegetation types may include isolated remnant native trees and or shrubs, however the majority of the area has been historically cleared and revegetated and no longer represents an intact native vegetation type.

Table 14 Vegetation types mapped within the survey area

Offset area	Type	Vegetation type(s)	Extent
DE	Remnant native vegetation	BaBmBi, BmBa, EgBspp., ErMr, Mp	27.67
	Roadside revegetation	Isolated Banksia spp., Isolated Corymbia calophylla, Isolated Eucalyptus spp., Mixed shrubland, Modified Wetland, Pinus spp.	133.81
	Cleared		140.94
	Total		**302.42**
A	Remnant native vegetation	BmBa	5.43
	Roadside revegetation	Isolated Banksia spp.	0.13
	Cleared	Cleared	0.13
	Total		**5.68**
B1	Remnant native vegetation	BmBa	0.27
	Roadside revegetation	Isolated Banksia spp.	0.001
	Total		**0.27**
B2	Remnant native vegetation	BaBmBi, BmBa	3.92
	Roadside revegetation	Isolated Banksia spp.	0.78
	Total	**Cleared**	**4.69**
C	Remnant native vegetation	BaBmBi, BmBa	5.39
	Cleared		0.15
	Total		**5.54**
D	Remnant native vegetation	BmBa, EgBspp.	6.60
	Roadside revegetation	Pinus spp.	0.10
	Total		**6.70**
E	Remnant native vegetation	BmBa	4.07
	Roadside revegetation	Isolated Banksia spp.	0.34
	Cleared		0.50
	Total		**4.91**

4.1.2 Context area

Context area mapping was undertaken by extrapolation of survey data, aerial imagery and a review of nearby Gibson et al. (1994) and Keighery et al. (2012) quadrats to broadly identify vegetation patterns and vegetation types. The extrapolation of vegetation type mapping for the context area identified fourteen types as well as cleared areas. Of these, three types did not occur within the survey area and were mapped based on quadrat sampling by Gibson et al. (1994) and Keighery et al. (2012). Two of the types represent known FCTs, the Southern wet shrublands (FCT 2) and *Banksia attenuata* woodlands over species rich dense shrublands (FCT 20a). The third type comprised low lying areas likely dominated by dampland and claypan vegetation.

The extrapolation of vegetation type mapping for the context area determined the following extents (and percentage of the context area):

– BmBa (106.21ha, 4.4%)
– BaBmBi (17.37, 0.7%)
– EgBspp. (39.09 ha, 1.6%)
– ErMr (274.11 ha (3.7%)

– Mp (9.73 ha, 0.4%)
– Southern wet shrublands (FCT 2) (14.16, 0.6%)
– *Banksia attenuata* woodlands over species rich dense shrublands (FCT 20a) (9.44, 0.4%)
– Damplands and claypans (84.95, 3.5%)
– Isolated *Banksia* spp. (2.78 ha, 0.1%)
– Isolated *Corymbia calophylla* (21.10 ha, 0.9%)
– Isolated *Eucalyptus* spp. (144.90 ha, 6.0%)
– Mixed Shrubland (55.50 ha, 2.3%)
– Modified wetland drainage area (46.23 ha, 1.9%)
– *Pinus* sp. (0.98 ha, 0.04%)
– Cleared (1766.88, 73.36%)

Vegetation type mapping for the context area is illustrated in Figure 6, Appendix A.

4.1.3 Floristic Community Types

GHD quadrat analysis

Floristic analysis of the GHD quadrats demonstrated that the Banksia vegetation types grouped together at more than 35% similarity. Nine of the ten quadrats that represented BmBa showed strong resemblance to each other by grouping together on a large clade at 42.52%. Similarly, the four quadrats that represented BaBmBi also showed strong similarity and grouped together at 44.09%. This clade of BaBmBi also contained a single quadrat of BmBa (Roe13), which may indicate the presence of an ecotone. Quadrat Roe17 represented dampland vegetation type MP, this quadrat separated out from all other Roe quadrats. There were no quadrats from the Roe survey area to represent ErMr, these areas were too degraded for quadrats so relevés were used to describe the vegetation (Appendix D).

SCP quadrat analyses

Floristic analyses were undertaken to determine relationships between vegetation types and quadrats in the survey area (referred to as Roe quadrats) and SCP FCTs defined by Gibson et al. (1994). Analyses were run using two scenarios on the Gibson and Keighery datasets, with:

– Gibson:
  - All species (base quadrat data) (Stress: 0.15)
  - Removal of single species (species only recorded once in both datasets) (Stress: 0.15)
– Keighery:
  - All species (base quadrat data) (Stress: 0.19)
  - Removal of single species (species only recorded once in both datasets) (Stress: 0.19)

A third scenario was also run which removing all introduced species. However the results proved even more inconclusive due to the dominance of weeds and lack of native species in some GHD quadrats.

As the removal of single species did not affect the stress value of the results, the first scenario presence and absence of all species, has been used to lessen the degree of data manipulation.

Gibson analysis

The cluster analysis and the resulting dendrogram using the Gibson and GHD datasets showed GHD vegetation types mostly grouping together with a couple of outliers. Most of the Roe quadrats associated with vegetation type BmBa clustered together and formed a larger clade with Gibson quadrats from predominantly FCT 23a at 38.4% similarity.

Roe quadrats (Roe03, Roe04, Roe05 and Roe11) mapped as BaBmBi also clustered together and then grouped on a clade with two quadrats from Gibson FCT 21a and another two from FCT 23a at around 31%. However, when an SSI analysis was performed on GHD BaBmBi quadrats Roe03, 04, 05 and 11, they clustered with 21c at

32.56% < 41.93% similarity. Therefore, the vegetation type represented by these quadrats, BaBmBi has been aligned to FCT 21c.

One quadrat (Roe17) was established in a dampland vegetation type Mp, this clustered with FCT 4 in the combined dataset analysis and the SSI analysis. ErMr was sampled using relevés for the Roe survey area as vegetation in this vegetation type for Roe was found to be too Degraded for quadrats. During recent surveys for the Kwinana Freeway Widening Project survey (GHD 2025c) two quadrats were assessed in the same ErMr vegetation type. The FCT analysis of these quadrats aligned vegetation type ErMr to FCT 11.

This preliminary analysis indicates that, statistically, the vegetation types recorded in the GHD quadrats are representative of Gibson FCTs that occur within the area. The dendrogram of the cluster analysis is presented in Appendix D. Nodes that showed no association with GHD vegetation types have been collapsed, to simplify viewing of the dendrogram.

Keighery analysis

The cluster analysis and the resulting dendrogram using the Keighery and GHD datasets showed a closer grouping of GHD vegetation types with each other. Fifteen out of seventeen Roe quadrats clustered together and did not group with Keighery FCTs until a lower similarity (29 %). Roe10 in GHD vegetation type EgBspp. grouped with multiple quadrats from FCT 24, 25 and 30b. Vegetation type MP, quadrat Roe17 grouped with wetland communities and clustered with predominately FCT 4, which was consistent with the Gibson analysis.

Preliminary analysis using the Keighery dataset indicates that, statistically, the vegetation recorded in the GHD quadrats do not have strong affinities to Keighery FCTs. The dendrogram of the cluster analysis is presented in Appendix D. Nodes that had no association with GHD vegetation types have been collapsed to simplify viewing of the dendrogram.

Floristic Community Type assignment

DBCA (2024g) recommends using the Single Site Insertion (SSI) method as its common for localised quadrat data (e.g. GHD quadrats from the survey area) to group together when analysed against regional datasets such as Gibson and Keighery. FCT assignment for the quadrats of the survey area were supported by the SSI statistical analysis results from the Gibson dataset, Keighery dataset or in some cases both.

Table 15 shows the results of the similarity matrix for each GHD quadrat using SSI. It should be noted that the data analysis only performs a presence/absence comparison, it includes no consideration of dominant taxa within each vegetation type. Therefore, in addition to the statistical analysis the experience of the survey botanists, landform characteristics and key dominant species within each vegetation type was also used to assign the appropriate FCT to GHD vegetation types. Table 16 provides an analysis against the common species of the FCT.

Quadrats Roe01, Roe14 and Roe15 in vegetation type BmBa showed high similarities (>45.54%) to FCT23a for both datasets. Other quadrats for vegetation type BmBa (Roe05, Roe06, Roe07, Roe08, Roe09, Roe12, Roe13 and Roe16) showed high similarities to FCT23a, but also grouped with other FCTs, therefore land system and typical and common species (Gibson et al. 1994) were also factored considered in assigning them to FCT23a.

GHD quadrats Roe02 and Roe10 represented vegetation type EgBspp. and were determined to be FCT 28. There were several considerations made in the FCT28 determination, as the two quadrats also showed affinities to FCT 21a. Gibson et al. (1994) found FCT 28 to be largely restricted to the Spearwood system, which does not occur within the survey area. However, there is a precedent of some Keighery sites of FCT28 occurring on the Bassendean system, with one example beel01 (FCT 28) located 2.5 km north west of the EgBspp. within the survey area (Keighery et al. 2012). The closest occurrence of FCT 21a is ~10km south to the survey area. Vegetation type EgBspp. has high frequencies of species from group Q, which is representative of both FCT 28 and 21a (as listed in Gibson et al. 1994) and low frequencies of native and weedy annuals from group A, which is representative of FCT 21a. Final determination for EgBspp. as FCT 28 was based on the proximity of Keighery site beel01 to the survey area, the SSI analysis/ similarity matrix and dominance of *Eucalyptus gomphocephala* in the overstorey.

Table 15 Floristic Community Type determination

Quadrat (Vegetation type)	Single Site Insertion (Gibson Dataset)				Single Site Insertion (Keighery Dataset)				Final Determination
	Similarity	FCT	SCP Q	Dendrogram	Similarity	FCT	SCP Q	Dendrogram	
Roe01 DE (BmBa)	50	23a	Kens01	Clustered with 21c at 40.96%, then formed part of a larger clade with quadrats from FCT 20a, 21a, 23a and 28	46.66	23a	WARB-3	Clustered with a couple of quadrats from 21c at 34.48%, then formed a larger clade with 1a, 21c, 21b, 23b, 21a, 23a, and 25	23a- due to land system, typical and common species such as *Banksia menziesii*, *Bossiaea eriocarpa, Scholtzia involucrata, Conostylis juncea, Lyginia barbata* and *Patersonia occidentalis* (Gibson et al. 1994), and supported by statistical analysis
	45.45	23a	perth04		52.00	23a	YULE-1		
	45.54	23a	perth08		45.54	23a	YULE-2		
Roe02 Offset D (EgBspp.)	42.71	23a	Cresw01	Clustered with quadrats from 28 at 41.38%, then formed part of a larger clade with quadrats from FCT 26b, 24, 25 and 28 at 34.79%	43.47	28	NEER-2	Clustered with two quadrats from FCT 6 at 41.18%, then formed a larger clade with FCTs 28, 21c, 20c, 20a, 20b, 21a, 21c, 23b, 1a, 21b, and 25	28- due to proximity, typical and common species such as *Banksia attenuata, Hibbertia hypericoides, Mesomelaena pseudostygia, Acacia pulchella var pulchella*, *Gompholobium tomentosum* and *Trachymene pilosa* (Gibson et al. 1994,) and supported by statistical analysis
	46.84	28	Hepb01		45.16	28	NEER-6		
	44.82	23a	Light01		44.00	23a	YULE-1		
Roe03 DE (BaBmBi)	42.50	23b	ELE03	Clustered with a large clade with quadrats representing 21c and 22 at 24.51%	35.13	21c	low06b	Clustered with two quadrats from 21c 30.09%, then formed a larger clade with FCT's 4, and 22	21c- due to land system, typical and common species such as *Banksia attenuata*, *B. menziesii, Gompholobium tomentosum, Scholtzia involucrata* and *Trachymene pilosa* (Gibson et al. 1994) and supported by statistical analysis
	40.67	21c	ELE22		42.85	21c	low07		
	38.59	21c	ELE27		36.36	21a	low12a		
Roe04 Offset C (BaBmBi)	31.74	23b	5D01	Part of a large clade at 15.34 % similarity with FCTS 20d, 20a, 21a, 21c, 22, 23a, 23b, 23c, S09, 23b, 28	31.16	1a	AUSTRA-1	Clustered with several quadrats from FCT 21c at 26.12%, then formed a larger clade with FCTs 21c, 4 and 22 at 21.44%	21c- due to land system, typical and common species such as *Banksia attenuata*, *B. menziesii, Lomandra caespitosa, Trachymene pilosa* and *Dasypogon bromeliifolius* (Gibson et al. 1994) and supported by statistical analysis
	31.74	21a	cas02		34.28	21c	low06b		
	32.65	21c	ELE25		33.33	21c	low07		

Quadrat (Vegetation type)	Single Site Insertion (Gibson Dataset)				Single Site Insertion (Keighery Dataset)				Final Determination
	Similarity	FCT	SCP Q	Dendrogram	Similarity	FCT	SCP Q	Dendrogram	
Roe05 Offset B2 (BmBa)	46.42	S09	ELE21	Clustered with quadrats from FCTs 21a at 40.9%, then again at 36.57% with FCTs 23a	43.83	23a	HARRY-4	Clustered with several quadrats from 21c at 37.84%, then formed a larger clade with 23b, 21a, 23a, 1a, 21b, 21c and 25 at 30.74%	21c- due to land system, typical and common species such as *Banksia attenuata*, *B. menziesii, Petrophile linearis, Scholtzia involucrata* and *Trachymene pilosa* (Gibson et al. 1994), and supported by statistical analysis
	41.93	21c	ELE22		44.18	23a	hurst04		
	42.42	23b	ELE28		49.31	21c	low07		
Roe06 Offset E (BmBa)	56.52	23b	ELE17	Clustered with one quadrat from 20a and multiple quadrats from 23a at 48.78%	53.22	23a	hurst03	Clustered with a quadrat from 21a at 48.6%, then formed a larger clade with 21a and 23a at 41.86%	23a- due to land system, typical and common species such as *Banksia attenuata, B. menziesii, Bossiaea eriocarpa, Gompholobium tomentosum, Scholtzia involucrata* and *Lyginia barbata* (Gibson et al. 1994), and supported by statistical analysis
	53.12	23a	Light02		57.65	28	NINE-2		
	55.17	23a	Tele01		51.32	23a	YULE-2		
Roe07 Offset B2 (BmBa)	47.19	21a	Cavs10	Clustered with one quadrat of 21c at 39.02% then became part of a larger clade with FCTs 20a, 23a, 21a, 28 at 35.32%	45.04	23a	hurst03	Clustered with two quadrats from 21c at 32.56%, then formed a large clade with FCTs 21c, 23b, 21a, 23a, 21b, 1a and 25 at 30.96%	23a- due to land system, typical and common species such as *Banksia attenuata, B. menziesii, Bossiaea eriocarpa, Gompholobium tomentosum, Scholtzia involucrata* and *Patersonia occidentalis* (Gibson et al. 1994), and supported by statistical analysis
	46.31	23b	ELE03		45.09	23a	WHITE-1		
	46.15	23b	ELE28		46.46	23a	YULE-1		
Roe08 Offset E (BmBa)	54.05	23a	Cresw01	Clustered with 23a and 20a at 51.35%, then formed a larger clade with FCT 23a at 49.8%	45.16	20a	LAND-1	Clustered with several quadrats from 21c at 41.23%, then formed a larger clade with FCTs 23b, 21a, 23a at 35.69%	23a- due to land system, typical and common species such as *Banksia attenuata, B. menziesii, Bossiaea eriocarpa, Gompholobium tomentosum, Scholtzia involucrata* and *Lyginia barbata* (Gibson et al. 1994), and supported by statistical analysis.
	54.34	23b	ELE17		46.29	23a	YULE-1		
	55.93	23a	perth04		45.87	23a	YULE-2		
Roe09 DE (BmBa)	40.00	21a	Cavs10	Clustered with 23c at 34.67% then formed a larger clade with 21b, 21c, 23a, 21a,	43.29	28	HARRY-2	Clustered with several quadrats from FCT 5 at 42.42%, then formed a clade with quadrats from FCT 21c at 25.46%	23a- due to land system and typical and common species such as *Banksia attenuata, B. menziesii, Bossiaea eriocarpa* and *Hibbertia hypericoides*
	40.86	23a	Crews01		43.13	23a	hurst03		
	40.00	23a	jand02		45.94	28	NEER-5		

Quadrat (Vegetation type)	Single Site Insertion (Gibson Dataset)				Single Site Insertion (Keighery Dataset)				Final Determination
	Similarity	FCT	SCP Q	Dendrogram	Similarity	FCT	SCP Q	Dendrogram	
				28, 20a, 20b, 25 at 28.5%					(Gibson et al. 1994). This was a degraded quadrat that would have skewed result
Roe10 Offset D (EgBspp.)	34.48	25	Gmaid01	Formed into a large clade with FCTs 25, 24, 26b and 28 at 25.89%	42.85	28	DEPOT-1	Clustered with several quadrats from FCT 24 at 36.28% and again at 35.63%	28- due to land system, typical and common species such as *Hibbertia hypericoides, Xanthorrhoea preissii, Mesomelaena pseudostygia, Conostephium pendulum* and *Trachymene pilosa* (Gibson et al. 1994,) and supported by statistical analysis
	36.36	28	sams01		41.46	24	KERO-2		
	34.28	28	yela01		41.73	28	WARI-1		
Roe11 DE (BaBmBi)	44.77	21a	cas02	Clustered with 21a at 42.7% then formed a larger clade with FCTs 23a at 36.88%	41.97	1a	AUSTRA-1	Clustered with several quadrats from 21c at 33.27%	21c - due to land system, typical and common species such as *Banksia attenuata*, *Gompholobium tomentosum*, *Lomandra caespitosa*, *Trachymene pilosa* and *Dasypogon bromeliifolius* (Gibson et al. 1994) and supported by statistical analysis
	46.80	4	ELE07		37.83	21c	low06b		
	43.58	21a	Hamp03		38.55	28	NINE-2		
Roe12 Offset D (BmBa)	50.98	23a	Crews01	Clustered with 21b and 21a at 40.65%, then formed a large clade with 20a, 23a, 28, 21a at 37.7%	47.05/47.05	21b/23a	MANEA-3/ WHITE-1	Clustered with a large clade from FCTs 21b, 1a and 21a at 38.29%	23a- due to land system, typical and common species such as *Banksia attenuata, Bossiaea eriocarpa, Gompholobium tomentosum, Hibbertia hypericoides, Lyginia barbata* and *Lomandra hermaphrodita* (Gibson et al. 1994), and supported by statistical analysis
	48.19	23b	ELE17		47.27	21a	REDL-1		
	47.70	23a	jand02		51.02	21b	RUAB-1		
Roe13 Offset A (BmBa)	47.05	23a	beel02	Clustered with 23a initially at 53.76%, then formed a clade with 23a and 21a	51.32	23a	hurst01	Clustered with a quadrat from FCT 24 at 47.83%, then formed a clade with FCTs 21c at 40.46% and another larger clade with FCTs 23a, 23b, 21a at 35.84%	23a- due to land system, typical and common species such as *Banksia attenuata, Bossiaea eriocarpa, Gompholobium tomentosum, Lyginia barbata* and *Styphelia conostephioides* (Gibson et al. 1994), and supported by statistical analysis
	53.76	23a	jand04		50.87	23a	hurst03		
	48.00	23a	perth09		47.82	24	THOM-2		

Quadrat (Vegetation type)	Single Site Insertion (Gibson Dataset)				Single Site Insertion (Keighery Dataset)				Final Determination
	Similarity	FCT	SCP Q	Dendrogram	Similarity	FCT	SCP Q	Dendrogram	
Roe14 DE (BmBa)	52.63	23a	Light01	Clustered with 23a at 49.54%, then formed a clade with 23a and 28	49.50	23a	WHITE-1	Clustered with 21c at 37.89%, then formed a larger clade with quadrats from FCT 20c at 35.04%	23a- due to land system, typical and common species such as *Banksia attenuata, B. menziesii, Scholtzia involucrata* and *Styphelia conostephioides* (Gibson et al. 1994), and supported by statistical analysis
	52.63	23a	Light02		53.06	23a	YULE-1		
	53.70	23a	perth04		50.50	23a	YULE-2		
Roe15 Offset A (BmBa)	54.12	23a	Cresw01	Clustered with 28 at 46.55%, then formed a larger clade with FCTs 23a, 21a, 28, 20a at 40.75%	53.54	23a	hurst03	Clustered with a quadrat from FCT 24 at 49.52%, then formed a clade with FCTs 21c, 23b, 21a, 23a, 21a at 36.66%	23a- due to land system, typical and common species such as *Banksia attenuata, B. menziesii, Bossiaea eriocarpa, Gompholobium tomentosum Scholtzia involucrata* and *Styphelia conostephioides* (Gibson et al. 1994), and supported by statistical analysis
	52.8	23a	jand02		54.23	23a	WHITE-1		
	53.43	23a	Light01		55.65	23a	YULE-1		
Roe16 Offset C (BmBa)	48.59	23b	ELE03	Formed into a larger clade with FCTs 20a, 23a, 21a, 28	48.78	23a	hurst03	Clustered with several quadrats from 23a 45.99%, then formed a large clade with FCTs 23b and 23a at 39.89%	23a- due to land system, typical and common species such as *Banksia attenuata, B. menziesii, Bossiaea eriocarpa, Scholtzia involucrata* and *Styphelia conostephioides* (Gibson et al. 1994), and supported by statistical analysis
	50.52	23b	ELE17		52.72	23a	hurst04		
	48.81	23a	Light02		52.63	23a	WHITE-1		
Roe17 DE (Mp)	37.68	4	cas04	Formed into a large clade with predominately FCT 4 and additionally FCTS 21a, S02, 22, 5, 21c	30.00	23a	hurst01	Formed part of a larger clade with FCTs 11, 4, 9 and 5 at 20.57%	4- due to land system, typical and common species such as *Melaleuca preissiana, Hypocalymma angustifolium, Pericalymma ellipticum, Xanthorrhoea preissii and Dasypogon bromeliifolius* (Gibson et al. 1994), and supported by statistical analysis
	38.59	4	ELE40		28.00	23a	hurst02		
	37.68	4	perth10		28.57	4	WHITE-2		

Table 16 Typical and common species occurrence in Gibson et al (1994) quadrats compared with GHD quadrats

Quadrat	Typical and common species occurrence in FCT quadrats (Gibson et al. 1994)	
	Typical species >50%	**Common species 50>30%**
Roe02	23a - 13	23a - 7
	28 - 15	28 - 7
Roe05	23a -15	23a - 6
	21c - 15	21c - 8
Roe11	21a - 9	21a - 6
	21c - 12	21c - 3

4.1.4 Vegetation condition

The survey area includes infrastructure such as roads and cycle paths (141.72 ha, 42.92%), which have been mapped as cleared and not assigned a condition score. There was 142.00 ha (43.00%) of vegetation in Degraded to Completely Degraded condition. The remaining 46.51 ha, (14.08%) are patches of vegetation that ranged from Good to Very Good condition.

The areas rated as Good or Very Good condition were generally fenced off with pedestrian access either prevented or inhibited. Weedy grasses, particularly **Ehrharta calycina, *E. longiflora* and **Briza maxima* along with herbs **Gladiolus caryophyllaceus* and **Ursinia anthemoides* were common but not dominant in areas mapped as Good or Very Good condition. Vegetation that was in Degraded or Completely Degraded condition had lost its basic vegetation structure with the understorey and midstorey dominated by weeds with little to no native species present.

Relevé Roe02R in vegetation type BmBa was burnt less than one year ago. Most of the vegetation was recovering well, however the area was rated as Degraded at the time of the survey. Over time this area may recover and the vegetation condition improve (to Good condition), and therefore meet the key criteria set out by Threatened Species Scientific Committee (TSSC, 2016) to be considered significant (see section 4.1.5).

A summary of the vegetation condition ratings for remnant native vegetation types, roadside revegetation types and cleared areas for the DE and offset areas is provided in Table 14. Vegetation condition mapping is provided in Figure 7, Appendix A.

Table 17 Vegetation condition ratings mapped within the survey area

Offset area	Type	Vegetation condition rating	Extent
DE	Remnant native vegetation	Very Good	7.94
		Good	6.88
		Degraded	10.20
		Completely Degraded	2.65
	Roadside revegetation	Good	6.10
		Degraded	5.68
		Completely Degraded	122.03
	Cleared	Cleared	140.94
	Total		**302.42**
A	Remnant native vegetation	Very Good	5.08
		Good	0.34
	Roadside revegetation	Completely Degraded	0.13
	Cleared	Cleared	0.13
	Total		**5.68**

Offset area	Type	Vegetation condition rating	Extent
B1	Remnant native vegetation	Very Good	0.27
	Roadside revegetation	Good	0.001
	Total		**0.27**
B2	Remnant native vegetation	Very Good	3.30
		Good	0.61
	Roadside revegetation	Good	0.78
	Total		**4.69**
C	Remnant native vegetation	Very Good	4.95
		Degraded	0.19
		Completely Degraded	0.24
	Cleared		0.15
	Total		**5.54**
D	Remnant native vegetation	Very Good	6.54
		Good	0.06
	Roadside revegetation	Completely Degraded	0.10
	Total		**6.70**
E	Remnant native vegetation	Very Good	2.63
		Good	0.68
		Degraded	0.76
	Roadside revegetation	Good	0.34
	Cleared		0.50
	Total		**4.91**

4.1.5 Significant ecological communities

The desktop assessment identified the presence / potential presence of 22 TECs / PECs in the study area, of which seven intersected the survey area. These intersects include a buffer around the known TEC / PEC and do not represent the community boundary. The known characteristics of each TEC / PEC were compared with the survey results including species diversity, composition and landform and the FCT analysis. The outcome of this examination concluded the following TECs/PECs do not occur within the survey area:

– SCP3a *Corymbia calophylla - Kingia australis* woodlands on heavy soils
– Clay Pans of the SCP (including SCP07, SCP08, SCP10a)
– Shrublands and Woodlands on Muchea Limestone of the SCP
– SCP02 Southern wet shrublands, SCP

The TEC and PEC assessment confirmed the presence of three TECs / PECs within the survey area. Further details on each TEC / PEC are provided in the subsequent sections, with their locations mapped in Figure 8A and B, Appendix A.

It is noted that not all occurrences of vegetation types that are representative of a TEC / PEC met the key diagnostic characteristics. Each patch of the vegetation type was assessed to determine the extent of TEC / PEC.

Tuart (*Eucalyptus gomphocephala*) woodlands and forests of the SCP TEC and PEC

The Tuart Woodlands and Forests TEC occurs on the SCP from Jurien, approximately 200 km north of Perth, to the Sabina River, near Busselton, 225 km south of Perth. The community is most commonly found on the

Spearwood dune systems, also occurring on the Quindalup dune systems and in some places also on the Bassendean dune systems (DEE, 2019).

The Tuart Woodlands and Forests TEC was recorded within the survey area. As the description, area and condition thresholds that apply to the EPBC Act listed TEC (DEE, 2019), also apply to the State listed PEC (DBCA 2023b), any areas considered to be the TEC are also inferred as the PEC.

Vegetation type EgBspp. has potential to form part of the Tuart Woodlands and Forests TEC and PEC when the key diagnostic characteristics and condition and patch size thresholds are met. Four patch assessments were undertaken across the survey area in areas supporting Tuart vegetation. One patch located within the DE and Offset area D (Patch 01) was considered representative of the Tuart Woodlands and Forests TEC and PEC. The majority of this patch (4.04 ha) was mapped as vegetation type EgBspp. with the patch boundaries extending into adjacent vegetation types within the survey area and context area. The Tuart Woodlands and Forests TEC patch within the survey area covered 4.84 ha, with a further 0.10 ha in the context area, making the total patch size 4.94 ha. The majority of this patch (93.8%) was in Very Good condition.

Two other patches of Tuart vegetation in the survey area (Patch 02 and Patch 03) did not meet the key diagnostic characteristics and condition and patch size thresholds of the Tuart Woodlands and Forests TEC. This was due to a combination of patch size, lack of mature Tuarts and poor vegetation condition.

A summary of the patch assessment is included in Table 18. Patch assessment data is provided in Appendix D and Tuart patch mapping is shown on Figure 8A, Appendix A.

Table 18 Patch assessment of Tuart Woodland and Forests TEC within the survey area

Patch ID	Location	Assessment sites	Meets diagnostic criteria	Condition Category	Patch size (ha)	TEC?
1	DE and Offset D	Roe02 Roe10	Yes	High	DE: 0.55 Offset D: 4.29 Context area: 0.10 Total: 4.94	Yes
2	DE	-	Yes	Poor	0.71	No
3	DE		No	Poor	0.33	No

Banksia Woodlands TEC and PEC

The Banksia Woodlands TEC and PEC are restricted to the SCP IBRA bioregion and immediately adjacent areas, including the Dandaragan Plateau, from Jurien Bay in the north, to Dunsborough in the south, and northwest on the Whicher and Darling escarpments . The ecological community typically occurs on well drained, low nutrient soils on sandplain landforms, particularly deep Bassendean and Spearwood sands and occasionally on Quindalup sands (TSS 2016).

Three vegetation types, BmBa, BaBmBi. and EgBspp. mapped within the survey area showed affinities to the Banksia Woodlands TEC and PEC, as outlined in TSSC (2016). Specifically:

– The survey area occurs in the SCP IBRA bioregion
– The survey area occurs on sandplain landform, notably Spearwood and Bassendean sands
– The vegetation types have a low woodland structure and the upper sclerophyllous layer is dominated or co-dominated by *Banksia attenuata* and/or *B. menziesii*. The understorey consists of a mid-ground sclerophyllous shrub layer and/or a herbaceous ground layer of rushes, sedges and perennial and ephemeral forbs that sometimes includes grasses.

The vegetation types BmBa (FCT 23a), BaBmBi (FCT 21c) and EgBspp (FCT 28) were assessed against the TSSC (2016) key characteristics. Seven patches of the Banksia Woodlands TEC and PEC were mapped within the survey area. There is 10.25 ha of the Banksia Woodlands TEC and PEC in the DE, 25.23 ha in the offset areas and 50.60 ha within the context area. It is noted that 4.94 ha of the Banksia Woodlands TEC also meets the Tuart Woodlands and Forests TEC criteria.

A further seven patches were assessed as not meeting the diagnostic criteria, size and/or condition thresholds to be the Banksia Woodlands TEC and PEC. At the time of the survey Releve Roe02R within the DE was conducted in an area of Banksia woodland (patch 10) that had been impacted by recent fire (<1 year). The vegetation within this area was rated as Degraded, as the fire had impacted the vegetation structure including presence and diversity of mid- and ground strata. Depending on the recovery of this vegetation, the size of this patch would be considered Banksia Woodlands TEC and PEC should the vegetation recover to Good condition in the future.

A summary of the patch assessment is included in Table 19. Patch assessment data is provided in Appendix D and Banksia patch mapping is shown on Figure 8B, Appendix A.

Low lying *Banksia attenuata* woodlands or shrublands PEC (FCT 21c)

The Low lying *Banksia attenuata* woodlands or shrublands PEC (FCT 21c) occurs sporadically between Gingin and Bunbury and is largely restricted to the Bassendean system. The PEC tends to occupy lower lying wetter sites and is variously dominated by *Melaleuca preissiana, Banksia attenuata, B. menziesii, Regelia ciliata, Eucalyptus marginata* or *Corymbia calophylla*. Structurally, this community type may be either a woodland or occasionally shrubland (DBCA 2023b).

Field observations and quadrat data confirmed similarities between vegetation type BaBmBi and Low lying *Banksia attenuata* woodlands PEC (FCT 21c). Statistical FCT analysis also showed GHD quadrats Roe03, Roe04, Roe05 and Roe11 had a high similarity to the PEC (FCT 21c).

The key characteristics of the Low lying *Banksia attenuata* woodlands PEC met by BaBmBi were:

– Occurs on the SCP on the Bassendean system
– Vegetation structure of a woodland positioned within lower lying wetter areas of the landscape
– Typical and common species including *Melaleuca preissiana, Banksia attenuata, B. menziesii, Eucalyptus marginata* either singly or in combination. Other typical or common flora include *Lyginia barbata, Trachymene pilosa, Patersonia occidentalis, Dasypogon bromeliifolius, Gompholobium tomentosum, Petrophile linearis, Xanthorrhoea preissii, Burchardia congesta, Lomandra caespitosa, Hibbertia subvaginata* and *Phlebocarya ciliata.*

There was 4.36 ha of the Low lying *Banksia attenuata* woodlands or shrublands PEC within the survey area. This includes 0.92 ha within the DE, 1.85 ha within Offset B2 and 1.58 ha within Offset C. All of the Low lying *Banksia attenuata* woodlands or shrublands PEC represents Banksia Woodlands TEC and PEC (included in Patch 5).

Table 19 Patch assessment of Banksia Woodlands TEC and PEC within the survey area

Patch ID	Location	Assessment sites	Vegetation types	Meets diagnostic criteria	Condition Category	Patch size (ha)	TEC?	Comments
1	DE and Offset E	Roe06, Roe08	BmBa	Y	Good to Very Good	DE: 1.87 Offset E: 4.05 Total: 5.92	Yes	Patch meets size and condition thresholds for Banksia Woodlands TEC.
2	DE and Offset D	Roe02, Roe10, Roe12	BmBa, EgBspp.	Y	Very Good	DE: 1.48 Offset D: 6.60 Context area: 6.27 Total: 14.35	Yes	Patch meets size and condition thresholds for Banksia Woodlands TEC.
3	DE	Kwin10	EgBspp.	Y	Very Good	DE: 0.10 Context area: ~6.68 Total: 6.78	Yes	Patch meets size and condition thresholds for Banksia Woodlands TEC
4	DE	Roe14	BmBa	Y	Good to Very Good	DE: 1.46 Context area: 3.57 Total: 5.03	Yes	Patch meets size and condition thresholds for Banksia Woodlands TEC
5	DE, Offset B1, B2 and C	Roe16, Roe04, Roe03, Roe05, Roe07	BmBa BaBmBi	Y	Very Good to Completely Degraded	DE: 3.10 Offset B1: 0.27 Offset B2: 3.92 Offset C: 5.39 Context area: 23.19 Total: 35.86	Yes	Patch meets size and condition thresholds for Banksia Woodlands TEC
6	DE, Offset A	Roe13, Roe 15	BmBa	Y	Very Good to Degraded	DE: 2.16 Offset A: 5.01 Context area: 3.33 Total: 10.49	Yes	Patch meets size and condition thresholds for Banksia Woodlands TEC
7	DE	No sites	BmBa	Y	Good	DE: 0.08 Context area: 7.56 Total: 7.64	Yes	Patch meets size and condition thresholds for Banksia Woodlands TEC
8	DE	No sites	BmBa	Y	Good	DE: 0.55	No	Patch does not meet size and condition thresholds for Banksia Woodlands TEC.
9	DE	No sites	BmBa	Y	Good	DE: 0.90	No	Patch does not meet size and condition thresholds for Banksia Woodlands TEC.

Patch ID	Location	Assessment sites	Vegetation types	Meets diagnostic criteria	Condition Category	Patch size (ha)	TEC?	Comments
10	DE	Roe02R	BmBa	Y	Degraded	DE: 2.22	No	Patch does not meet size and condition thresholds for Banksia Woodlands TEC.
11	DE	No sites	BmBa	Y	Very Good	DE: 0.71	No	Patch does not meet size and condition thresholds for Banksia Woodlands TEC.
12	DE	No sites	BmBa	Y	Degraded	DE: 1.05	No	Patch does not meet size and condition thresholds for Banksia Woodlands TEC.
13	DE	Roe09, Roe15R, Roe11	BmBa	Y	Good to Degraded	DE: 4.59	No	Less than 2 ha of patch in Good condition Patch does not meet size and condition thresholds for Banksia Woodlands TEC.
14	DE	Roe05R	BmBa	N	Completely Degraded	DE: 0.73	No	Patch does not meet diagnostic criteria, size and condition thresholds for Banksia Woodlands TEC.
Total						**DE: 10.25** **Offset: 25.23** **Context area: 50.60**	**Yes**	

4.2 Other significant vegetation

The Canning River crosses underneath the survey area and the vegetation associated with this watercourse is considered other significant vegetation. The Canning River is also classified as a REW (UFI 16126). The vegetation in this area was mapped as ErMr in Completely Degraded condition as the area was smothered by **Rubus ulmifolius*, **Schinus terebinthifolia* and weedy grasses. Underneath the overpass was also evidence of a squatter's camp. However north and south of this section the vegetation was more representative of a functioning REW likely to provide important habitat for *Westralunio carteri* (Carters Freshwater Mussel) and *Hydromys chrysogaster* (Native Water Rat) (GHD 2025b). Plate 2 shows a photograph taken near Releve Roe11R that show invasive weeds and or cleared river banks. No other locally significant vegetation was recorded for the survey area.



Plate 2 ***Invasive weeds dominating the Canning River within the survey area***

4.3 Flora

4.3.1 Flora diversity

Two hundred and ninety-nine vascular flora taxa (including species, subspecies, varieties, forms and specimens not identified to species level) from 64 families and 194 genera, were recorded in the survey area. Two hundred and four of the flora recorded were native taxa, five were naturalised and 90 were introduced. The dominant families for the survey area included:

– Myrtaceae – 32 species

– Fabaceae – 26 species

– Proteaceae – 22 species

The inventory of flora recorded within the survey area is provided in Appendix D.

Vegetation type BmBa was the most floristically diverse with 142 taxa, 120 taxa of which were native, ErMr was the least diverse with 27 taxa, 13 taxa were native. The most floristically diverse quadrat was Roe15 from vegetation type BmBa with 61 taxa (50 native) and the least was from the quadrat Roe04, vegetation type BaBmBi with 27 taxa (21 native).

A species accumulation curve was generated using PRIMER to assess adequacy of sampling effort within the survey area (Plate 3). The species accumulation curve for the survey area, based on flora recorded within quadrats is approaching an asymptote for UGE but slightly rising for bootstrap. The bootstrap estimate of species richness generated from this data indicates that 207 species could be expected from the survey area based on the diversity recorded within quadrats, UGE estimate is 181. The total taxa recorded within the quadrats was 181

however the total for the survey area including opportunistic species was 299 flora taxa. Therefore, the sampling effort for survey area is considered representative of the floristic diversity in the area.

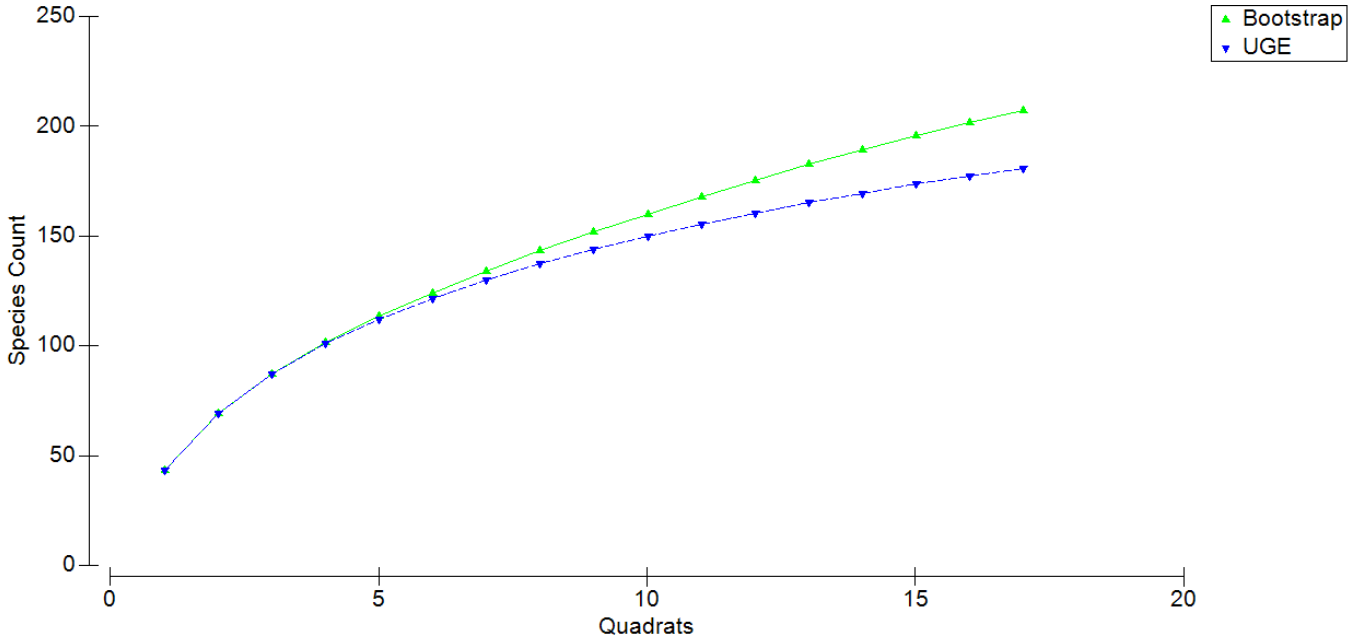


Plate 3 *Flora species accumulation curve for the Roe survey area*

4.3.2 Significant flora

Two EPBC Act and BC Act listed Threatened flora species were recorded within the survey area:

– *Caladenia huegelii*
– *Grevillea thelemanniana*

One other significant species *Grevillea olivacea* (P4), as listed by DBCA was recorded within the survey area. However, this species is considered naturalised. No other species of local or regional significance were recorded within the survey area. Locations of these significant flora are shown in Figure 8A, Appendix A and listed in Appendix D.

Caladenia huegelii

Caladenia huegelii (Grand Spider Orchid) is listed as Endangered under the EPBC Act and Critically Endangered under the BC Act. It is a tuberous perennial herb that grows between 0.25-0.6 m high. It produces green, cream to red flowers from September to October and is found growing in grey or brown sand to clay loam (Western Australian Herbarium 1998). It is easily distinguished from other *Caladenia* species in its tall stature and relatively long labellum fringe hairs (Hoffman and Brown 2011) (Plate 4).

Caladenia huegelii is found on the SCP within 20 km of the coast, from just north of Perth to the Busselton area over a distance of 250 km. *Caladenia huegelii* was currently known from 33 extant populations with surveys conducted in the 2000's and over 1,614 mature plants recorded (DEC 2008).

Four individuals were recorded within the survey area from four separate locations during the field survey. Details on these individuals are presented in Table 20.

Three additional plants were recorded outside the survey area, within Ken Hurst Park between 40 to 60 m south of the survey area.

Table 20 Caladenia huegelii records from the survey area

Location	Abundance	Vegetation type and condition	Notes
Offset A	1	BmBa, Very Good	John Connell Reserve.
Offset B2	1	BmBa, Good	Ken Hurst Park. Previous record from population 6, subpopulation B. Population extends from ca. 300-400 m SW of Hollingsworth Wy, along Roe highway. At this location 62 individuals were counted in 2012.
Offset B2	1	BmBa, Very Good	Ken Hurst Park. Previous record from population 6, subpopulation C. Population extends from ca. 660-800 m SW of Hollingsworth Wy, along Roe highway. At this location 19 individuals were counted in 2012.
Offset C	1	BaBmBi, Good	Ken Hurst Park.


(a)

(b)

Plate 4 Caladenia huegelii flower, showing long labellum fringe hairs (a) Showing the height of Caladenia huegelii (b)

Grevillea thelemanniana

Grevillea thelemanniana is listed as Critically Endangered under the EPBC Act and BC Act. *Grevillea. thelemanniana* is an erect to spreading lignotuberous shrub that can grow to 1.2 m high and 5 x 5 m in size (Threatened Species Scientific Committee 2018a). Plants regenerate after disturbance such as slashing and clearing for firebreaks (Threatened Species Scientific Committee 2018a). *Grevillea thelemanniana* occurs on sandy clay soil in flat seasonally wet damplands (Threatened Species Scientific Committee 2018a).

Grevillea thelemanniana is only known from one location in Kenwick. The one population occurs across numerous landholdings including nature reserve, private property, and road and rail reserve (Threatened Species Scientific Committee 2018a). The majority of plants are within an area known as the Greater Brixton Street wetlands.

Three individuals were recorded from one location during the field survey, with two individuals in the survey area and one individual adjacent to the survey area. They were recorded within the DE in roadside vegetation type Isolated *Corymbia calophylla* adjacent to the Brixton Street bridge and adjacent to a known population of the species within Brixton Street Wetlands (Plate 5).



(a)



(b)

Plate 5 Grevillea thelemanniana habit (a) and location in the survey area (b)

Grevillea olivacea

Although *Grevillea olivacea* is listed as significant flora by DBCA it is considered to be planted within the survey area and outside its natural range and habitat. The natural range of *G. olivacea* (P4) is north of the survey area in the Geraldton Sandplains and northern part of the Swan Coastal Plain (Dandaragan Plateau) IBRA regions, however it is commonly used around the Perth metropolitan area as a horticultural species ((Western Australian Herbarium 1998)). *Grevillea olivacea* was recorded in multiple locations within the survey area.

Likelihood of occurrence

A likelihood of occurrence assessment was conducted post-field survey for significant flora taxa identified in the desktop assessment (Appendix D). The assessment took into account previous records, habitat requirements, efficacy of the survey, intensity of the survey, flowering times and the cryptic nature of species.

The likelihood of occurrence assessment post-field survey concluded two taxa were known and recorded in the survey area during the survey, *Caladenia huegelii* (T) and *Grevillea thelemanniana* (T). Two taxa were considered to possibly occur:

– *Poranthera moorokatta* (P2) - A small short-lived annual species which may not have been visible during the survey. Suitable habitat for this species occurs within Banksia woodlands in good or better condition. Poranthera specimens were collected from the survey area, however, all were identified as the common *P. microphylla.*

– *Dodonaea hackettiana* (P4) - was possibly observed on the edge of a slip lane. However, the area was too dangerous to pull over and so the plant was unable to be collected for identification.

A high number (46) of species were identified pre-survey as having the potential to occur within the survey area due to their proximity of known records. Many of these records are from the GBSW and BSW area.

The GBSW is an area of about 120 ha of remnant native vegetation of the lower catchment of the Yule Brook, which is part of a gently sloping alluvial fan formation that extends from the foothills of the Darling Range to the Canning River (Davis and Tauss 2011). The complex stratigraphy and hydrology of this area manifests as a diverse array of fine-scale habitats (V&C Semeniuk Research Group 2001). This has resulted in high levels of diversity, with 650 flora species recorded, including locally restricted species and distinct vegetation communities (EPA 2022). Apart from the GBSW, most of the alluvial soils of the lower catchment of the Yule Brook were historically cleared for farming (Davis and Tauss 2011).

Areas within the survey area that are adjacent to GBSW have been previously cleared and are separated by a railway corridor. These areas generally consisted of planted tree and shrubs species with an understorey colonised by invasive species such as **Watsonia meriana* and **Eragrostis curvula.* Plate 6 shows vegetation within the survey area located approximately 75 m northwest of Brixton Street Wetlands. The narrow strip of vegetation along the edge of the Brixton Street crossing is cleared (Plate 7).

Potential habitats for significant flora in the vicinity of Canning River were also found to be highly disturbed due to existing infrastructure, previous clearing and public access (Plate 8).

All remaining significant flora identified by the desktop assessment are unlikely or highly unlikely to occur post survey. This is due to a combination of distance of known records from the survey area, timing of the survey aligning to key flowering / visibility of the taxa, intensity of the field survey and the high level of disturbance, weed dominance and clearing throughout the survey area



Plate 6 Vegetation within the survey area located approximately 75 m northwest of Brixton Street Wetlands



Plate 7 Vegetation along side the Brixton Street crossing of the wetlands. Road is elevated above and area immediately adjacent is cleared/weeds





Plate 8 Survey area intersects the Canning River

4.3.3 Introduced flora

Ninety introduced flora species were recorded within the survey area representing 30% of the total flora species recorded. Of the 90 introduced species eight species are listed as Declared Pest (DP) plants in WA under the BAM Act, three are also listed as Weeds of National Significance (WoNS) (Australian Weeds Committee, 2012):

- **Asparagus asparagoides* (DP and WoNS)
- **Opuntia stricta* (DP and WoNS)
- **Rubus ulmifolius* (DP and WoNS)
- **Echium plantagineum* (DP)
- **Ferraria crispa* (DP)
- **Gomphocarpus fruticosus* (DP)

– **Moraea flaccida* (DP)
– **Zantedeschia aethiopica* (DP).

The locations of significant weeds within the survey area are presented in Figure 7,Appendix A.

4.4 Wetlands

The desktop assessment identified that over 36.3 % of the survey area has been mapped as geomorphic wetlands by DBCA (2024c), totalling 120 ha across 24 wetlands. Of the these wetlands, three CCW and two Resource REWs were evaluated using the criteria detailed by DBCA (2017c) to provide supporting information for environmental approvals for the Project.

The remaining 20 Geomorphic Wetlands were not evaluated, as they met one or more of the following criteria:

– comprised predominantly cleared land or highly disturbed road verges
– categorised as a Dryland by DBCA assigned a management category of 'not applicable'
– did not represent functioning wetlands where they intersected the survey area, due to fragmentation, degradation, clearing or were classified as a Multiple Use Wetland (MUW)

A summary of the of wetlands assessed is provided in Table 21 and their locations shown in Figure 9, Appendix A. Further information on the wetland assessment is provided below and in Appendix E.

Table 21 Geomorphic Wetlands within the survey area which were evaluated using DBCA methodology (2017c).

UFI	Wetland name	Type	Category	Area intersected by survey area (ha)
9046	Tomah Road Swamp	Sumpland	Conservation	0.1
14956	Unknown	Dampland	Resource Enhancement	0.2
15074	Unknown	Palusplain	Conservation	11.4
16126	Hester Park Canning River	Floodplain	Resource Enhancement	1.8
15255/ 13365	Unknown (associated with Brixton Street Wetland) and Brixton Street Wetland	Palusplain	Conservation	0.24

4.4.1 Preliminary evaluation

The preliminary evaluation criteria (outlined in (DBCA 2017c) section 5.4 and Table 3) provide the first step in determining the management category for a wetland. This initial assessment is used to determine whether a wetland or a portion of a wetland should be considered high conservation value. If a 'Yes' can be answered to any of the seven preliminary evaluation criteria then the wetland is considered to support the highest level of attributes, values and functions and automatically assigned to a Conservation category.

Four of the assessed wetlands were assigned to a Conservation category as they met one or more of the preliminary criteria. UFI 16126 met criteria numbers 2 and 3, as it was dominated by vegetation in a good condition, intersected System 6 Conservation Reserve M75 and contains critical breeding and feeding habitat for Carter's Freshwater Mussel (Vulnerable).

One wetland, UFI 14956 did not meet any of the preliminary criteria and so a secondary evaluation was conducted.

4.4.2 Secondary assessment

A secondary evaluation provides additional information on the wetlands attributes, functions and values. In a secondary evaluation, the information collected through the desktop and site assessment is used to assess against the 42 criteria outlined in Table 4 of the DBCA wetland evaluation guidelines (2017) wetland evaluation guidelines. A secondary evaluation was undertaken for UFI 14956 and is provide in Appendix E.

Results from the secondary evaluation indicated that wetland UFI 14956 recorded the most intermediate scores and therefore supports an intermediate level of attributes, functions and values. Wetland UFI 14956 has appropriately been assigned a Resource Enhancement management category.

5. Discussion

5.1 Vegetation

The survey area is located along Roe Highway and is within a modified environment on the extensively cleared SCP. It contained a mixture of cleared areas, remnant native vegetation and roadside revegetation. Five remnant vegetation types were mapped, three Banksia woodland communities and two wetland/ riparian vegetation communities. Remnant vegetation made up 16.15% of the survey area, of which 8.38% occurred in the DE and 7.77% occurred in the offset areas. Six vegetation types were used to define roadside revegetation; these areas were generally highly modified, and split based on upper canopy species to align with Black Cockatoo foraging habitat. Roadside revegetation made up 40.93% of the survey area with 40.52% occurring within the DE.

Floristic analyses were undertaken to determine relationships between mapped vegetation types and quadrats in the survey area and SCP FCTs defined by Gibson et al. (1994). From this analysis five FCTs were identified, 4, 11, 21c, 23a and 28. FCTs 4 and 11 are grouped as seasonal wetland community types and are both generally found on the Bassendean system landform (Gibson et al. 1994). FCTs 21c, 23a and 28 are all Banksia dominated communities found on the Bassendean and Spearwood systems (Gibson et al. 1994). Of these FCTs, FCT 21c is listed as a PEC by the DBCA.

The survey confirmed the presence of three TECs / PECs within the survey area. These TECs / PECs were confined to areas of remnant native vegetation within the survey area.

Seven patches of the Banksia Woodlands TEC and PEC were mapped within the survey area. The patches were largely confined to the western end of the survey area where intact native vegetation was observed. Six of the seven mapped patches extended out of the survey area including Patch 5 which extends into Ken Hurst Park, Patch 6 which is adjacent to John Connell Reserve and Patch 7 which within Farrington Bushland (Beeliar Conservation Park). Part of Patch 5 was also classified as FCT 21c, Low lying *Banksia attenuata* woodlands or shrublands.

One patch of the Tuart Woodlands and Forests TEC and PEC was mapped in the survey area, located within the DE and Offset area D. This patch was also mapped as Banksia Woodlands TEC patch 1.

5.2 Flora

Two hundred and ninety-nine vascular flora species were recorded in the survey area during the field survey. This total comprised 204 native taxa, 90 introduced taxa and five naturalised taxa. The species diversity of the survey area is reflective of the modified and extensively cleared environment in which it occurs.

Two EPBC Act and BC Act listed flora were recorded within the survey area. *Caladenia huegelii* is listed as Endangered under the EPBC Act and Critically Endangered under the BC Act. Four individuals were recorded during the field survey within the offset areas A, B2 and C. The individuals recorded in Offset B2 and C are from a known population of *C. huegelii* in Ken Hurst Park. The individual recorded from John Connell Reserve is a new record. There is suitable habitat for *C. huegelii* outside of the survey area within Ken Hurst Park and in other areas of Banksia woodland.

Grevillea thelemanniana is listed as Critically Endangered under the EPBC Act and BC Act. Two individuals were recorded within the survey area in roadside vegetation bordering Brixton Street Wetland. This is a known population of the species. One priority species was also record, *Grevillea olivacea* (P4). Although *G. olivacea* is a priority species it is considered to be planted within the survey area and outside its natural range and habitat.

A likelihood of occurrence assessment post-field survey concluded that an additional two taxa were considered to possibly occur, *Poranthera moorokatta* (P2) and *Dodonaea hackettiana* (P4).

Ninety introduced flora species were recorded within the survey area representing 30% of the total flora species recorded. Of the 90 introduced species eight species are listed as Declared Pest (DP) plants in WA under the BAM Act, with three also listed as WoNS. **Asparagus asparagoides* (DP and WoNS) and **Zantedeschia aethiopica* (DP) were recorded throughout the survey area. **Rubus ulmifolius* was only recorded along the

Canning River however it was dominant and outcompeting native vegetation. The other five significant weeds were recorded in spot locations but were not dominant in the landscape.

5.3 Wetlands

The eastern extent of the survey area intersected several geomorphic wetlands. Most of these wetlands are classified as Multiple Use Wetlands, meaning that they have few remaining important attributes and functions of a wetland. There were several Conservation Category Wetlands along the boundary of the survey area. This includes the Brixton Street Wetland that is one of the most important wetlands remaining on the Swan Coastal Plain with outstanding biodiversity (EPA 2022).

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6. Conclusions

The conclusions drawn from the results of the field survey and report are detailed below

- The survey area contains a mixture of cleared areas, remnant native vegetation and roadside revegetation. Cleared areas which included infrastructure such as roads and houses made up the majority of the survey area and accounted for 141.72 ha (42.92%). Remnant native vegetation occurred as isolated patches either side of Roe Highway making up 53.34 ha (16.15%) of the survey area. Roadside revegetation was grouped into six vegetation types that covered 135.16 ha (40.93%) of the survey area.
- Five native vegetation types were mapped within the survey area. This included three *Banksia* woodlands and two wetland / riparian types. Remnant native vegetation was observed to be more intact at the western end of the survey area, whilst east of South Street native vegetation was observed to be more fragmented and highly modified due to weed invasion.
- The FCTs identified in the survey area included FCT 4, 11, 21c, 23a and 28. Of these FCTs, FCT 21c is listed as a PEC by the DBCA.
- Three TECs / PECs were identified in the survey area including:
  - Seven patches of the Banksia Woodlands TEC and PEC (10.25 ha in the DE and 25.23 ha in offset areas)
  - One patch of Tuart Woodlands and Forests TEC and PEC (0.55 ha in the DE and 4.29 ha in offset areas)
  - Low lying *Banksia attenuata* woodlands or shrublands PEC (FCT 21c) (0.92 ha in the DE and 3.44 ha in offset areas)
- A summary of offset area values include:
  - Offset A: Banksia Woodlands TEC and PEC (Patch 6) and an individual of *Caladenia huegelii*
  - Offset B1: Banksia Woodlands TEC and PEC (Patch 5)
  - Offset B2: Banksia Woodlands TEC and PEC (Patch 5), FCT 21c- Low lying *Banksia attenuata* woodlands or shrublands PEC and two individuals of *Caladenia huegelii*
  - Offset C: Banksia Woodlands TEC and PEC (Patch 5), FCT 21c- Low lying *Banksia attenuata* woodlands or shrublands PEC and an individual *Caladenia huegelii*
  - Offset D: Banksia Woodlands TEC and PEC (Patch 2) and Tuart Woodlands and Forests TEC and PEC (Patch 1)
  - Offset E: Banksia Woodlands TEC and PEC (Patch 1)
- Two hundred and ninety-nine vascular flora taxa were recorded during the field survey. A species accumulation curve to assess sampling effort showed adequate sampling and diversity for the survey area.
- Two EPBC Act and BC Act listed flora species were recorded within the survey area *Caladenia huegelii* and *Grevillea thelemanniana*. *Grevillea olivacea* (P4), as listed by DBCA was also recorded within the survey area. However, this species is considered naturalised.
- The likelihood of occurrence assessment post-field survey concluded two taxa were known and recorded in the survey area during the survey and two taxa were considered possibly to occur.
- Ninety introduced flora species were recorded within the survey area, eight of these species are listed as Declared Pest (DP) plants in WA under the BAM Act, three are also listed as WoNS
- Five wetlands were evaluated, based on both desktop information and the site assessment. Four of the assessed wetlands were assigned to a Conservation category as they met one or more of the preliminary criteria. A secondary evaluation was conducted on one wetland. The results confirmed assignment of a Resource Enhancement management category.

7. References

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Appendices

Appendix A

Figures

Figure 1 *Project location*

Figure 2 *Survey effort*

Figure 3 *Land use constraints*

Figure 4 *Hydrology constraints*

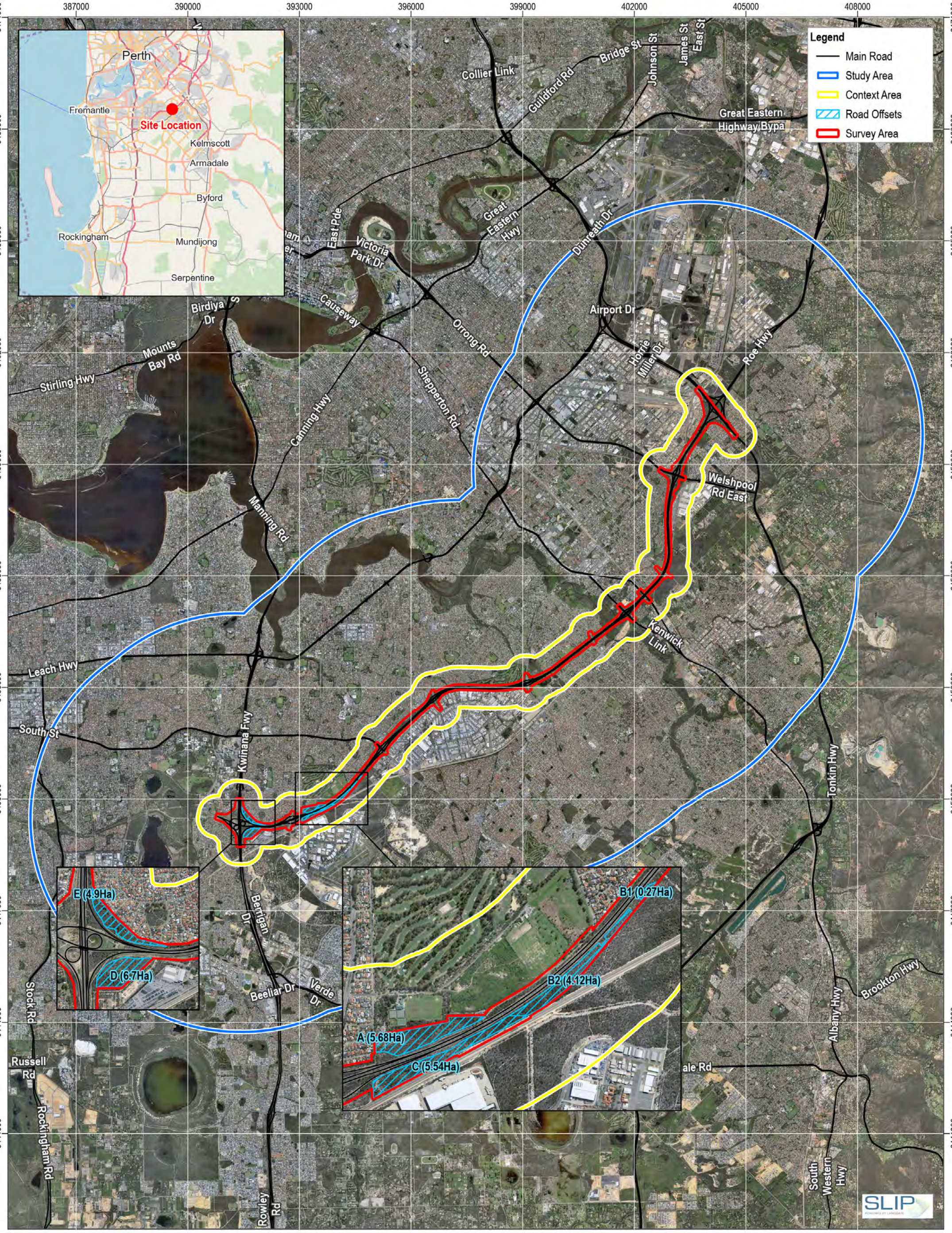
Figure 5 *Biological constraints*

Figure 6 *Vegetation type and sample sites*

Figure 7 *Vegetation condition and significant weeds*

Figure 8 *Significant vegetation and flora*

Figure 9 *Wetland assessment*



Paper Size ISO A3
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0 1 2 3 4
Kilometres

Map Projection: Transverse Mercator
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Grid: GDA 1994 MGA Zone 50

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Main Roads
Roe Hwy Widening Flora and Fauna Assessment

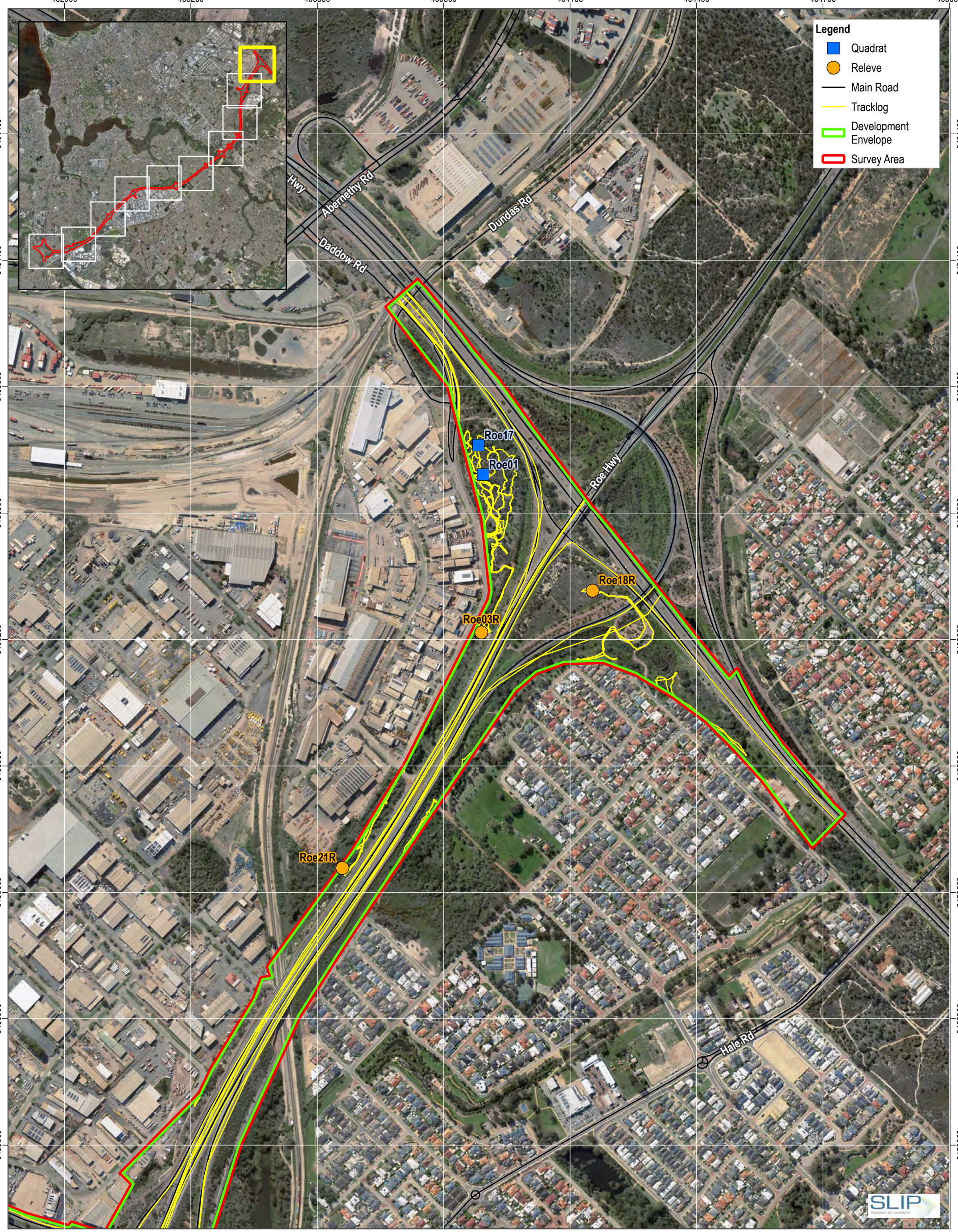
Project No. **12634226**
Revision No. **0**
Date **06/03/2026**

Project Location

FIGURE 1

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Paper Size ISO A3
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0 80 160 240 320

Meters

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 50

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Main Roads
Roe Hwy Widening Flora and Fauna Assessment

Survey Effort

Project No. **12634226**
Revision No. **0**
Date **06/03/2026**

FIGURE 2A

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6459900 6459600 6459300 6459000 6458700 6458400 6458100 6457800 6457500

Legend

- Releve
- Main Road
- Tracklog
- Development Envelope
- Survey Area

Roe21R
Roe20R
Roe05R
Roe07R
Roe06R
Roe08R

McDowell St
Welshpool Rd
Orrong Rd
William St
Roe Hwy
Hale Rd
Welshpool Rd East
Coldwell Rd
Grove Rd

SLIP

Paper Size ISO A3
at Scale: 1:8,000

0 80 160 240 320
Meters

N

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 50

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Main Roads
Roe Hwy Widening Flora and Fauna Assessment

Survey Effort

Project No. **12634226**
Revision No. **0**
Date **06/03/2026**

FIGURE 2A

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402000 402300 402600 402900 403200 403500 403800

6458100 6457800 6457500 6457200 6456900 6456600 6456300 6456000 6455700

Legend

- Releve
- Main Road
- Tracklog
- Development Envelope
- Survey Area

Roe08R

Roe10R

Roe13R

Coldwell Rd

Grove Rd

Roe Hwy

Brook Rd

Bickley Rd

Brixton St

Sevenoaks St

Albany Hwy

Wanaping Rd

Belmont Rd

SLIP

Paper Size ISO A3
at Scale: 1:8,000

0 80 160 240 320

Meters

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 50

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Main Roads
Roe Hwy Widening Flora and Fauna Assessment

Survey Effort

Project No. **12634226**
Revision No. **0**
Date **06/03/2026**

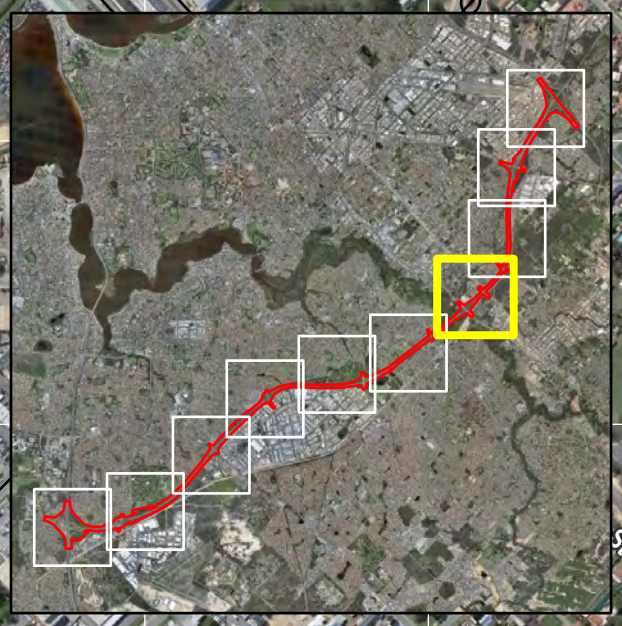
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401100 401400 401700 402000 402300 402600 402900

6456600 6456300 6456000 6455700 6455400 6455100 6454800 6454500 6454200 6453900



Legend

- Releve
- Main Road
- Tracklog
- Development Envelope
- Survey Area

Roe10R
Roe13R
Roe12R
Roe14R
Roe11R

Brixton St
Roe Hwy
Albany Hwy
Wanaping Rd
Kenwick Rd
Kenwick Link
Royal St
Spencer Rd
Yale Rd
Spring Rd
Thornlie Av

SLIP

Paper Size ISO A3
at Scale: 1:8,000

0 80 160 240 320
Meters

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 50

N

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Main Roads
Roe Hwy Widening Flora and Fauna Assessment

Survey Effort

Project No. **12634226**
Revision No. **0**
Date **06/03/2026**

FIGURE 2A

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399300 399600 399900 400200 400500 400800 401100 401400

6455100 6454800 6454500 6454200 6453900 6453600 6453300 6453000 6452700

Legend

- Releve
- Main Road
- Tracklog
- Development Envelope
- Survey Area

Roe11R

Roe09R

Roe16R

Nicholson Rd

Langford Av

Spencer Rd

Roe Hwy

Yale Rd

Bannister Rd

Murdoch Rd

SLIP

Paper Size ISO A3
at Scale: 1:8,000

0 80 160 240 320
Meters

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 50

N

GHD

Main Roads
Roe Hwy Widening Flora and Fauna Assessment

Survey Effort

Project No. **12634226**
Revision No. **0**
Date **06/03/2026**

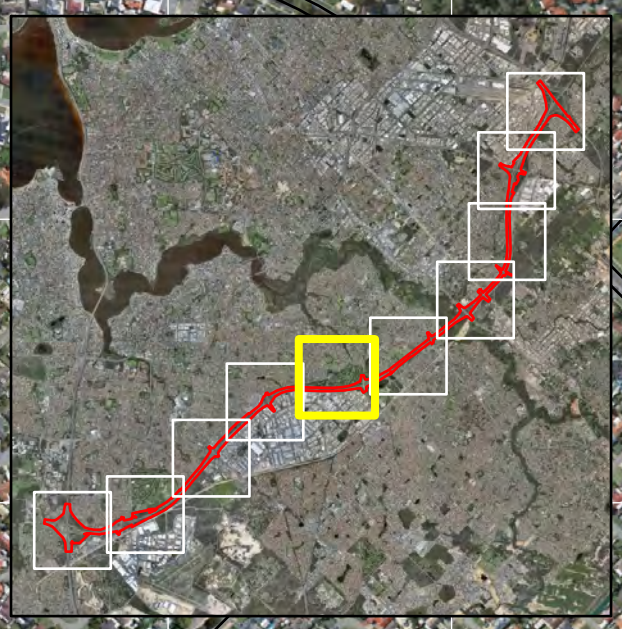
FIGURE 2A

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397500 397800 398100 398400 398700 399000 399300

6454500 6454200 6453900 6453600 6453300 6453000 6452700 6452400 6452100



Legend

- Releve
- Main Road
- Tracklog
- Development Envelope
- Survey Area

Hossack Av

Nicholson Rd

High Rd

Roe16R

Roe Hwy

Bannister Rd

SLIP

Paper Size ISO A3
at Scale: 1:8,000

0 80 160 240 320
Meters

N

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 50

GHD

Main Roads
Roe Hwy Widening Flora and Fauna Assessment

Survey Effort

Project No. **12634226**
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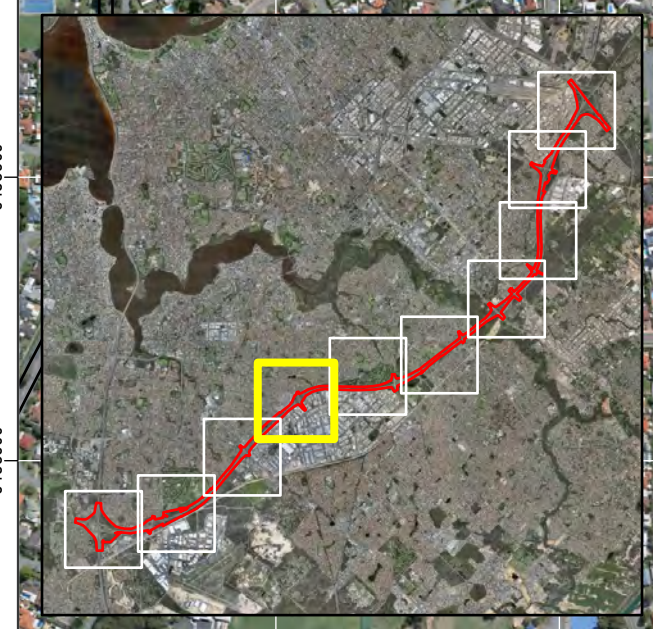
FIGURE 2A

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395700 396000 396300 396600 396900 397200 397500

6453900 6453600 6453300 6453000 6452700 6452400 6452100 6451800 6451500



Legend

- Quadrat
- Releve
- Main Road
- Tracklog
- Development Envelope
- Survey Area

Hossack Av

Willeri Dr

Collins Rd

Roe01R

Roe Hwy

Roe09

Bannister Rd

Roe11

Roe15R

SLIP

Paper Size ISO A3
at Scale: 1:8,000

0 80 160 240 320
Meters

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 50

N

GHD

Main Roads
Roe Hwy Widening Flora and Fauna Assessment

Survey Effort

Project No. **12634226**
Revision No. **0**
Date **06/03/2026**

FIGURE 2A

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394200 394500 394800 395100 395400 395700 396000

6452400 6452100 6451800 6451500 6451200 6450900 6450600 6450300 6450000

Legend

- Quadrat
- Releve
- Main Road
- Tracklog
- Road Offsets
- Development Envelope
- Survey Area

Roe11
Roe15R
Roe17R
Roe04R
Roe07
Roe05

Vahland Av
South St
Roe Hwy
Bannister Rd
Ranford Rd

SLIP

Paper Size ISO A3
at Scale: 1:8,000

0 80 160 240 320
Meters

N

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 50

Main Roads
Roe Hwy Widening Flora and Fauna Assessment

Survey Effort

Project No. **12634226**
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FIGURE 2A

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392400 392700 393000 393300 393600 393900 394200 394500

6450900 6450600 6450300 6450000 6449700 6449400 6449100 6448800 6448500

Legend

- Quadrat
- Releve
- Main Road
- Tracklog
- Road Offsets
- Development Envelope
- Survey Area

Roe07
Roe05
Roe03
Roe19R
Roe04
Roe15
Roe13
Roe16
Roe14

Farrington Rd
Karel Av
Roe Hwy
Berrigan Dr

SLIP

Paper Size ISO A3
at Scale: 1:8,000

0 80 160 240 320
Meters

N

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 50

GHD

Main Roads
Roe Hwy Widening Flora and Fauna Assessment

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Project No. **12634226**
Revision No. **0**
Date **06/03/2026**

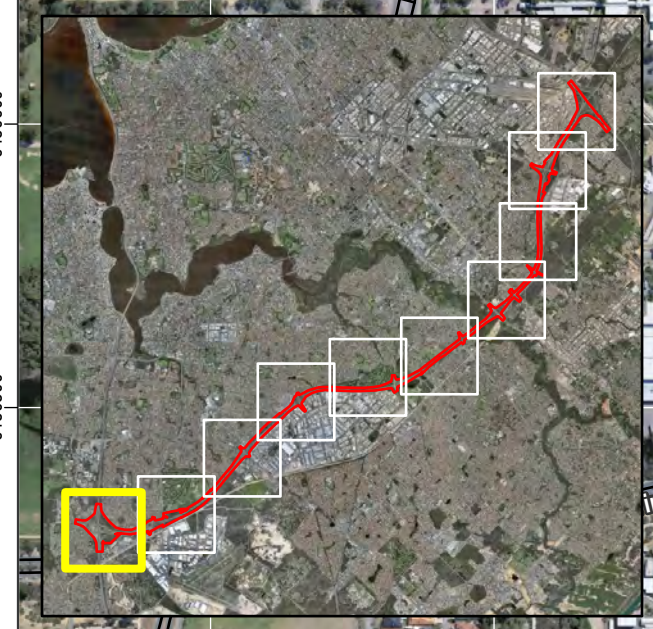
FIGURE 2A

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Print date: 06 Mar 2026 - 15:46

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390600 390900 391200 391500 391800 392100 392400

6450600 6450300 6450000 6449700 6449400 6449100 6448800 6448500 6448200 6447900



Legend

- Quadrat
- Releve
- Main Road
- Tracklog
- Road Offsets
- Development Envelope
- Survey Area

ington Rd

Murdoch Dr

Roe06

Roe02R

Roe08

Roe Hwy

Roe14

Roe02

Roe12

Roe10

Kwinana Fwy

Berrigan Dr

SLIP

Paper Size ISO A3
at Scale: 1:8,000

0 80 160 240 320
Meters

N

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 50

Main Roads
Roe Hwy Widening Flora and Fauna Assessment

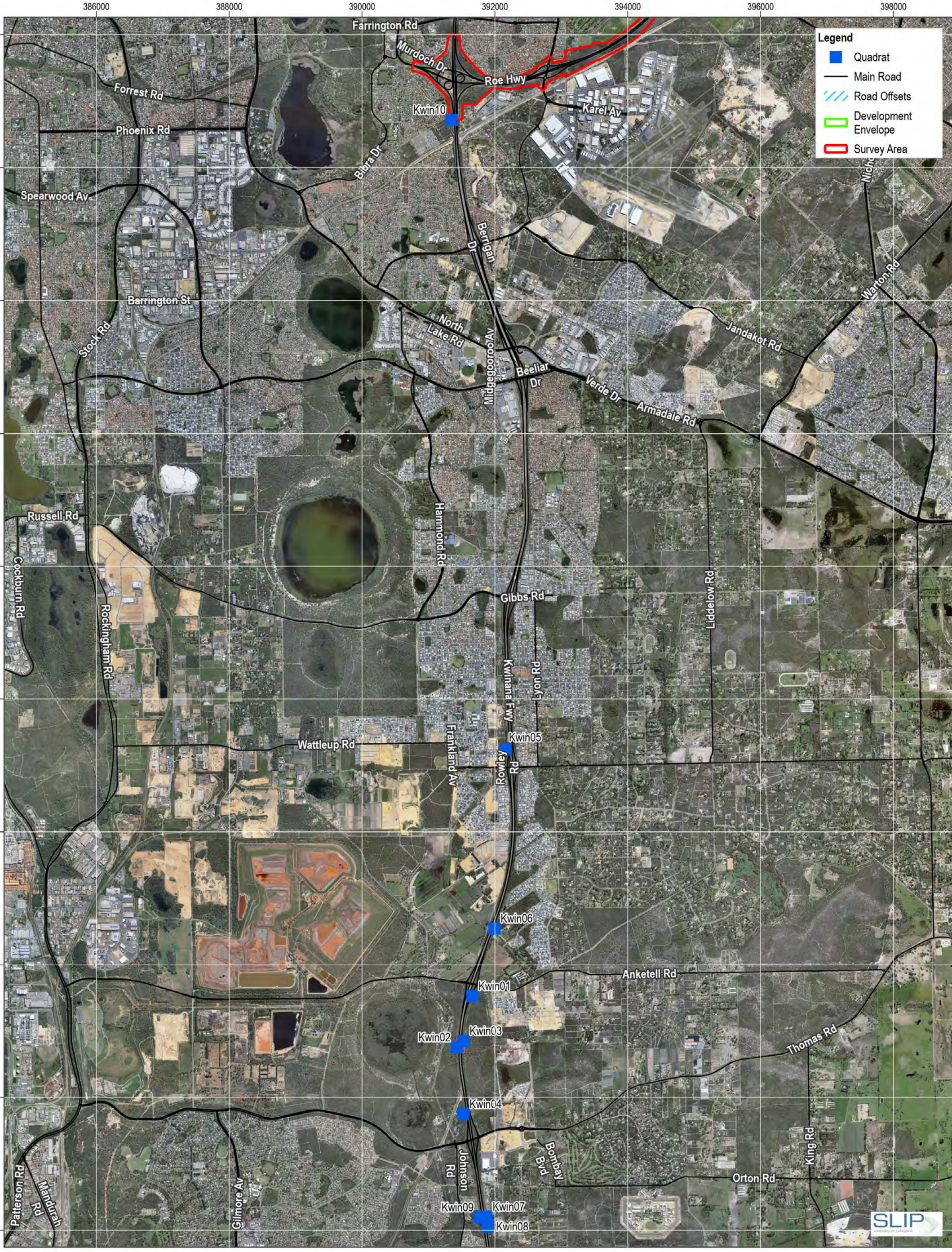
Survey Effort

Project No. **12634226**
Revision No. **0**
Date **06/03/2026**

Page10 of 10
FIGURE 2A

\\ghdnet\ghd\AU\Perth\Projects\61\12634226\GIS\Maps\Working\12634226_RoeHwyFloraVeg\12634226_RoeHwyFloraVeg.aprx\12634226_02A_SurveyEffort_Rev0
Print date: 06 Mar 2026 - 15:47

Data source: Landgate_Subscription_Imagery\WANow: . Created by: shart2



Paper Size ISO A3
at Scale: 1:51,152

0 1,000 2,000 3,000 4,000
Meters

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 50

N

GHD

Main Roads
Roe Hwy Widening Flora and Fauna Assessment

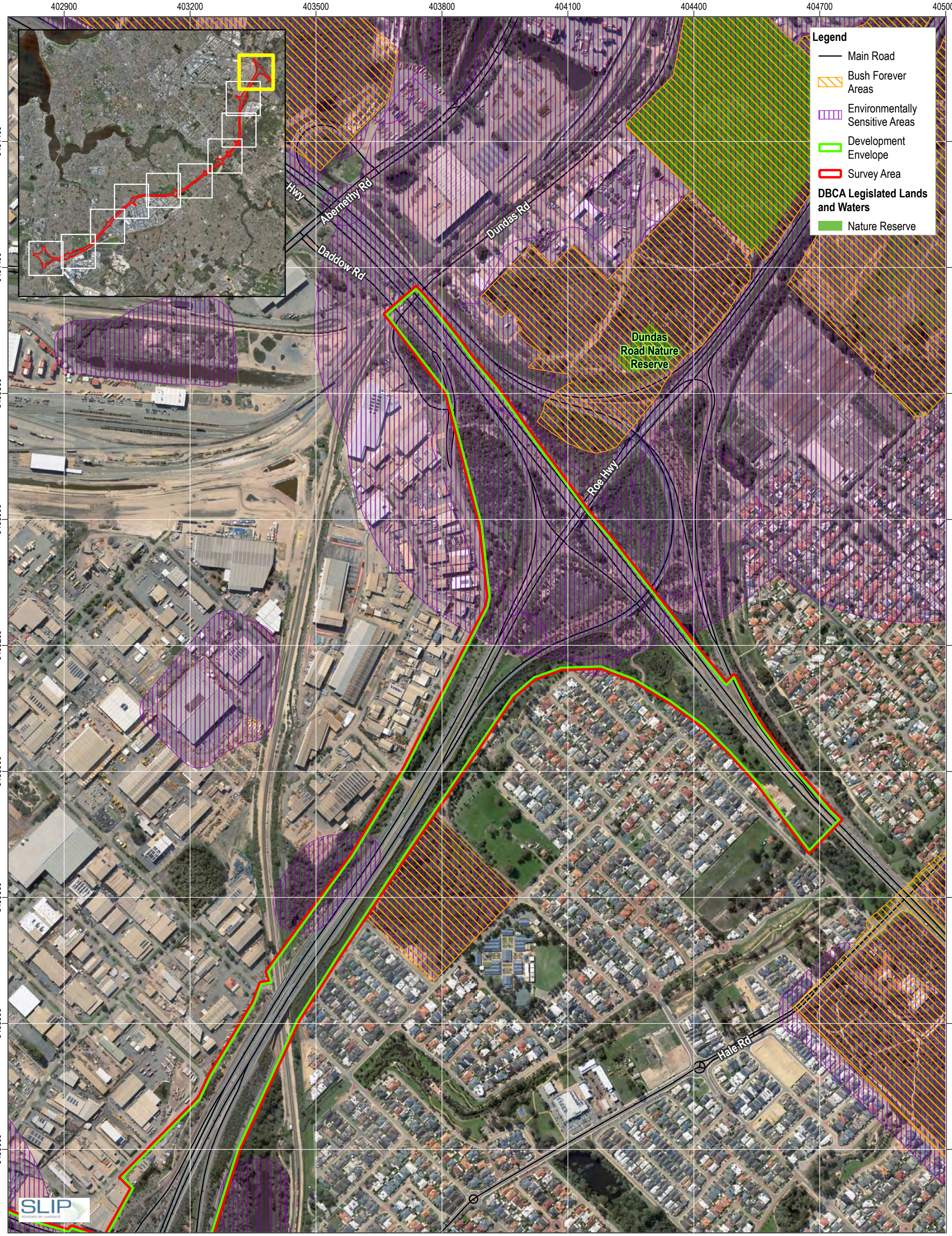
Survey Effort (Kwinana Freeway Widening Project) – Quadrats

Project No. **12634226**
Revision No. **0**
Date **06/03/2026**

FIGURE 2B

\\ghdnet\ghd\AU\Perth\Projects\61\12634226\GIS\Maps\Working\12634226_RoeHwyFloraVeg\12634226_RoeHwyFloraVeg.aprx\12634226_02B_SurveyEffortKwinanaFwyQuadrats_Rev0
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Paper Size ISO A3
at Scale: 1:8,000

0 80 160 240 320
Meters

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 50

N

GHD

Main Roads
Roe Hwy Widening Flora and Fauna Assessment

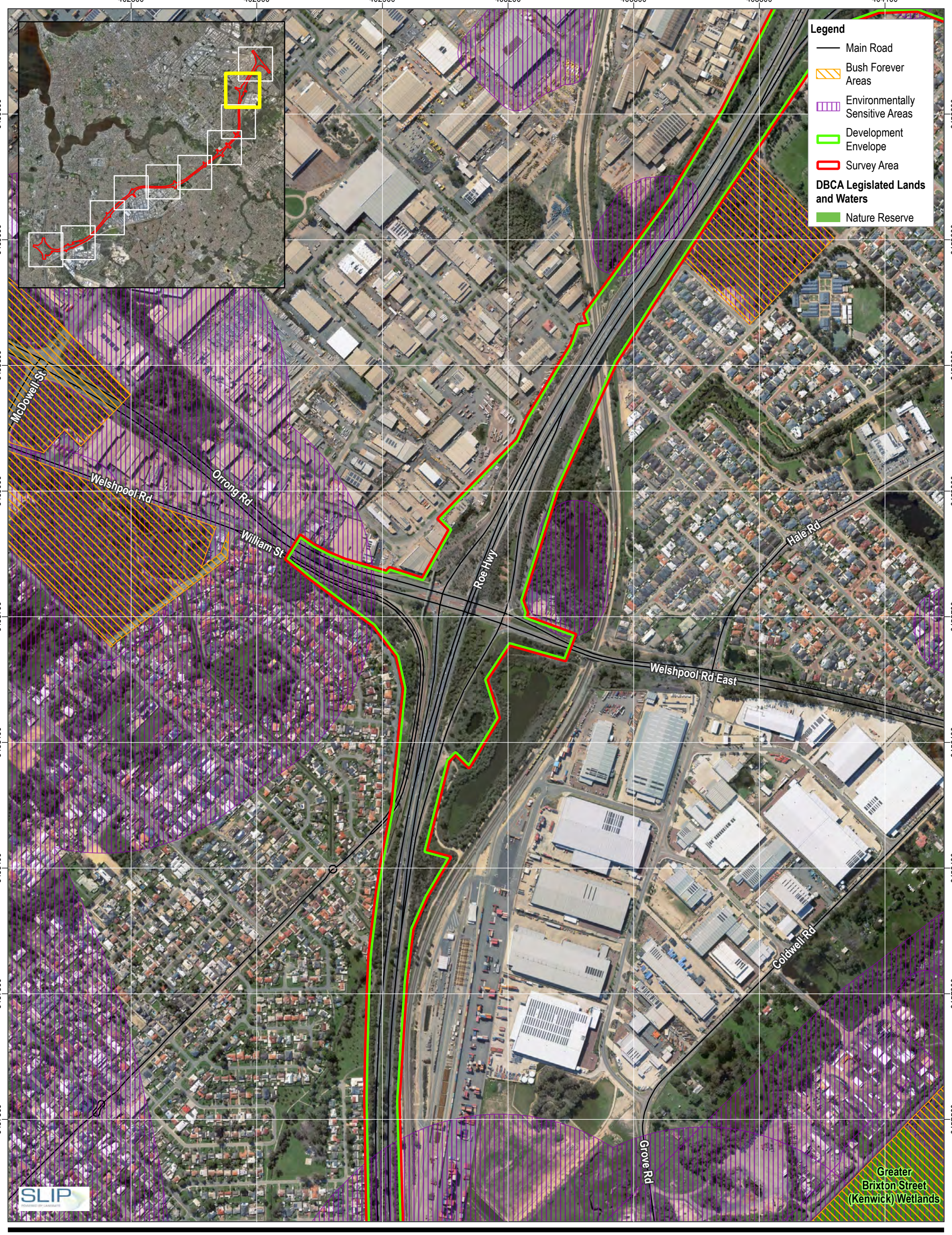
Land Use Constraints

Project No. **12634226**
Revision No. **0**
Date **06/03/2026**

FIGURE 3

\\ghdnet\ghd\AU\Perth\Projects\61\12634226\GIS\Maps\Working\12634226_RoeHwyFloraVeg\12634226_RoeHwyFloraVeg.aprx\12634226_03_LandUseConstraints_Rev0
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Paper Size ISO A3
at Scale: 1:8,000

0 80 160 240 320
Meters

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 50

N

GHD

Main Roads
Roe Hwy Widening Flora and Fauna Assessment

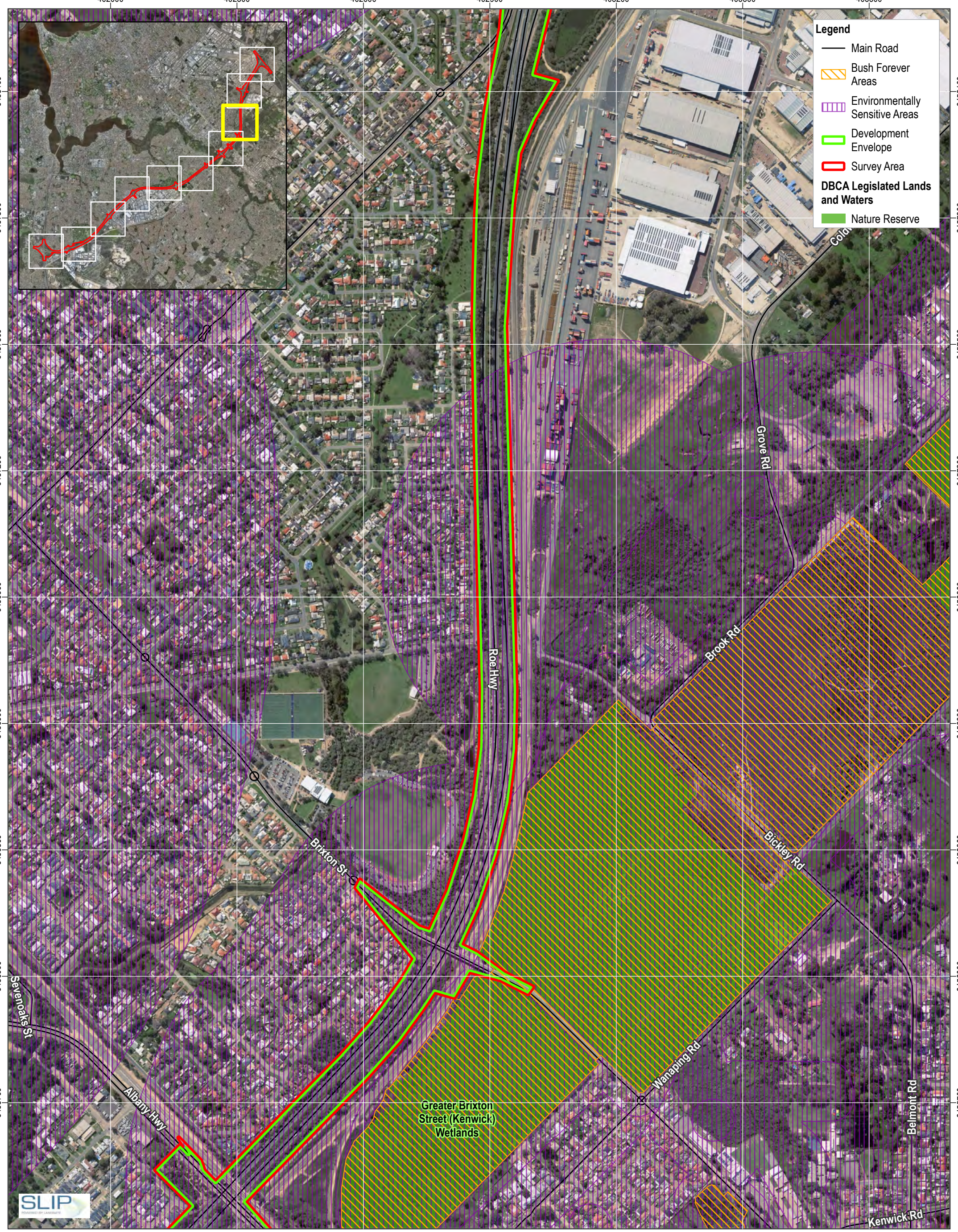
Land Use Constraints

Project No. **12634226**
Revision No. **0**
Date **06/03/2026**

FIGURE 3

\\ghdnet\ghd\AU\Perth\Projects\61\12634226\GIS\Maps\Working\12634226_RoeHwyFloraVeg\12634226_RoeHwyFloraVeg.aprx\12634226_03_LandUseConstraints_Rev0
Print date: 06 Mar 2026 - 15:49

Data source: Landgate_Subscription_Imagery\WANow: . Created by: shart2



Paper Size ISO A3
at Scale: 1:8,000

0 80 160 240 320
Meters

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 50

N

GHD

Main Roads
Roe Hwy Widening Flora and Fauna Assessment

Land Use Constraints

Project No. **12634226**
Revision No. **0**
Date **06/03/2026**

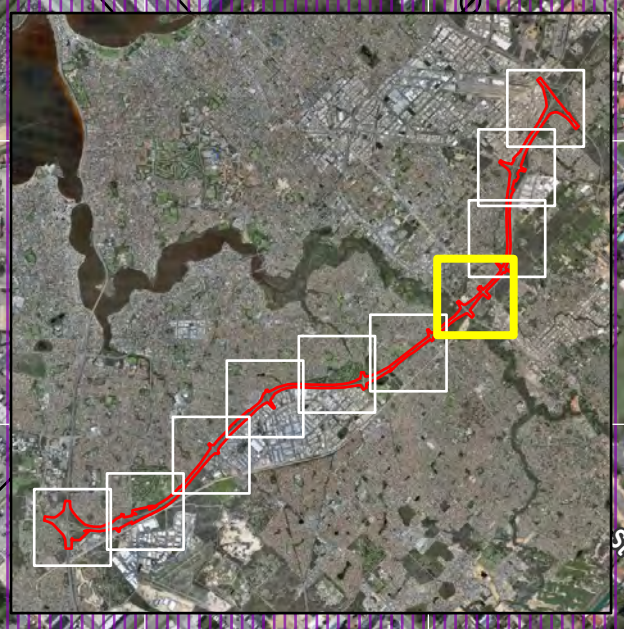
FIGURE 3

\\ghdnet\ghd\AU\Perth\Projects\61\12634226\GIS\Maps\Working\12634226_RoeHwyFloraVeg\12634226_RoeHwyFloraVeg.aprx\12634226_03_LandUseConstraints_Rev0
Print date: 06 Mar 2026 - 15:49

Data source: Landgate_Subscription_Imagery\WANow: . Created by: shart2

401100 401400 401700 402000 402300 402600 402900

6456600 6456300 6456000 6455700 6455400 6455100 6454800 6454500 6454200 6453900



Legend

- Main Road
- Bush Forever Areas
- Environmentally Sensitive Areas
- Development Envelope
- Survey Area

DBCA Legislated Lands and Waters

- Nature Reserve
- SCRM Act - River Reserve

Brixton St

Greater Brixton Street (Kenwick) Wetlands

Roe Hwy

Albany Hwy

Wanaping Rd

Kenwick Rd

Kenwick Link

Royal St

Spencer Rd

Yale Rd

Spring Rd

Thornlie Av

SLIP

Paper Size ISO A3
at Scale: 1:8,000

0 80 160 240 320

Meters

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 50

N

GHD

Main Roads
Roe Hwy Widening Flora and Fauna Assessment

Land Use Constraints

Project No. **12634226**
Revision No. **0**
Date **06/03/2026**

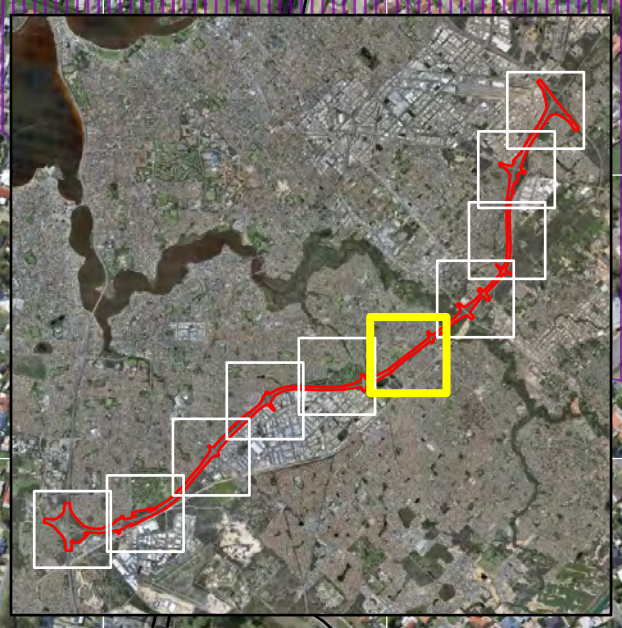
FIGURE 3

\\ghdnet\ghd\AU\Perth\Projects\61\12634226\GIS\Maps\Working\12634226_RoeHwyFloraVeg\12634226_RoeHwyFloraVeg.aprx\12634226_03_LandUseConstraints_Rev0
Print date: 06 Mar 2026 - 15:50

Data source: Landgate_Subscription_Imagery\WANow: . Created by: shart2

399300 399600 399900 400200 400500 400800 401100 401400

6455100 6454800 6454500 6454200 6453900 6453600 6453300 6453000 6452700



Legend

- Main Road
- Bush Forever Areas
- Environmentally Sensitive Areas
- Development Envelope
- Survey Area

DBCA Legislated Lands and Waters

- SCRM Act - River Reserve

Nicholson Rd
Langford Av
Spencer Rd
Roe Hwy
Yale Rd
Bannister Rd
Murdoch Rd

SLIP

Paper Size ISO A3
at Scale: 1:8,000

0 80 160 240 320
Meters

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 50

N

GHD

Main Roads
Roe Hwy Widening Flora and Fauna Assessment

Land Use Constraints

Project No. **12634226**
Revision No. **0**
Date **06/03/2026**

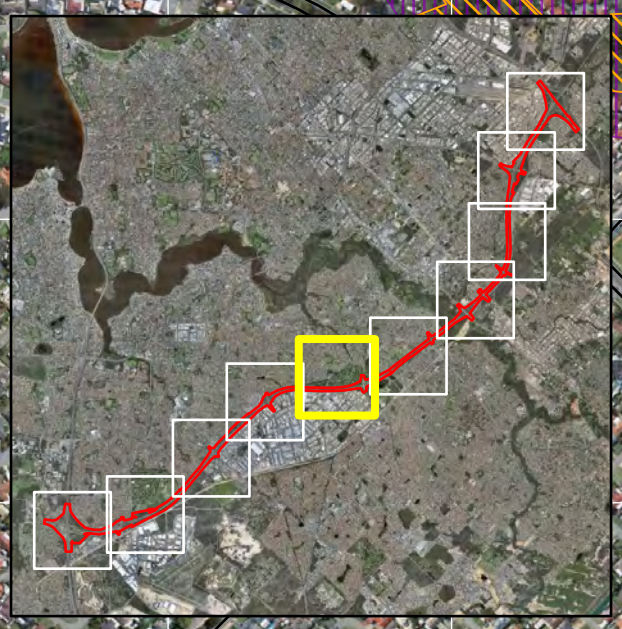
FIGURE 3

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397500 397800 398100 398400 398700 399000 399300

6454500 6454200 6453900 6453600 6453300 6453000 6452700 6452400 6452100



Legend

- Main Road
- Bush Forever Areas
- Environmentally Sensitive Areas
- Development Envelope
- Survey Area

Hossack Av

Nicholson Rd

High Rd

Roe Hwy

Bannister Rd

SLIP

Paper Size ISO A3
at Scale: 1:8,000

0 80 160 240 320
Meters

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 50

N

GHD

Main Roads
Roe Hwy Widening Flora and Fauna Assessment

Land Use Constraints

Project No. **12634226**
Revision No. **0**
Date **06/03/2026**

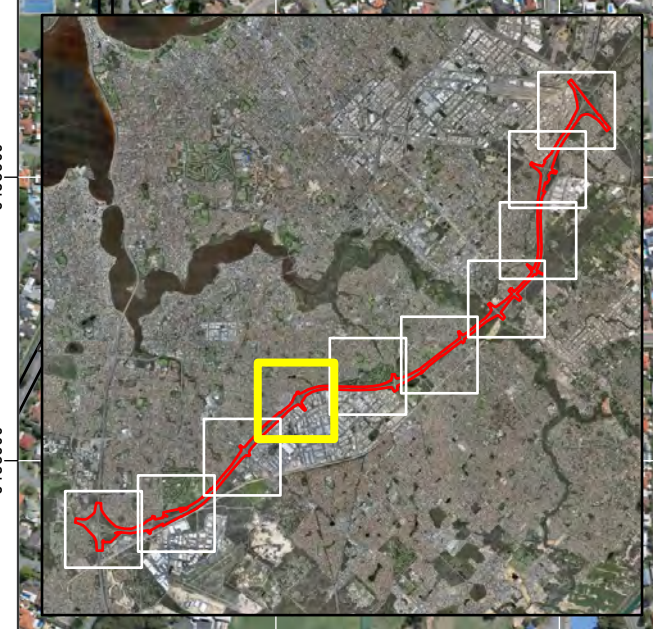
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Print date: 06 Mar 2026 - 15:51

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395700 396000 396300 396600 396900 397200 397500

6453900 6453600 6453300 6453000 6452700 6452400 6452100 6451800 6451500



Legend

- Main Road
- Environmentally Sensitive Areas
- Development Envelope
- Survey Area

Hossack Av

Willeri Dr

Collins Rd

Roe Hwy

Bannister Rd

SLIP

Paper Size ISO A3
at Scale: 1:8,000

0 80 160 240 320
Meters

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 50

N

GHD

Main Roads
Roe Hwy Widening Flora and Fauna Assessment

Land Use Constraints

Project No. **12634226**
Revision No. **0**
Date **06/03/2026**

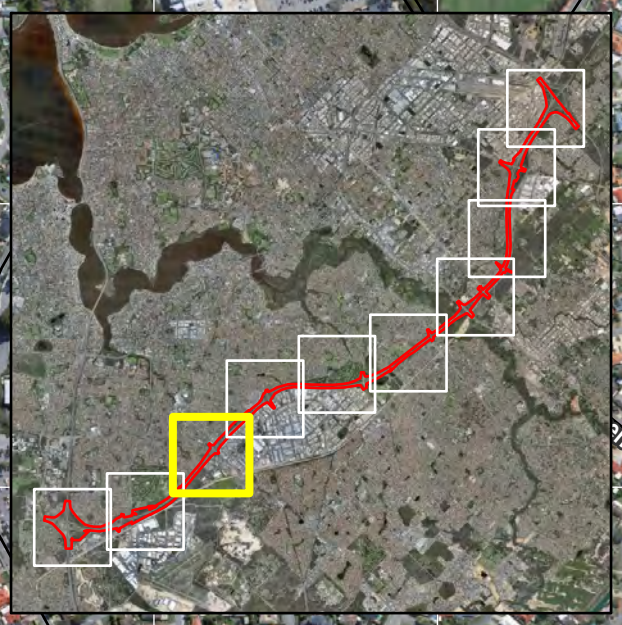
FIGURE 3

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394200 394500 394800 395100 395400 395700 396000

6452400 6452100 6451800 6451500 6451200 6450900 6450600 6450300 6450000



Legend

- Main Road
- Bush Forever Areas
- Environmentally Sensitive Areas
- Road Offsets
- Development Envelope
- Survey Area

Vahland Av

South St

Roe Hwy

Bannister Rd

Ranford Rd

SLIP

Paper Size ISO A3
at Scale: 1:8,000

0 80 160 240 320
Meters

N

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 50

GHD

Main Roads
Roe Hwy Widening Flora and Fauna Assessment

Land Use Constraints

Project No. **12634226**
Revision No. **0**
Date **06/03/2026**

FIGURE 3

\\ghdnet\ghd\AU\Perth\Projects\61\12634226\GIS\Maps\Working\12634226_RoeHwyFloraVeg\12634226_RoeHwyFloraVeg.aprx\12634226_03_LandUseConstraints_Rev0
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392400 392700 393000 393300 393600 393900 394200 394500

6450900 6450600 6450300 6450000 6449700 6449400 6449100 6448800 6448500

Legend

- Main Road
- Bush Forever Areas
- Environmentally Sensitive Areas
- Road Offsets
- Development Envelope
- Survey Area

Farrington Rd

Karel Av

Roe Hwy

Berrigan Dr

SLIP

Paper Size ISO A3
at Scale: 1:8,000

0 80 160 240 320
Meters

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 50

N

GHD

Main Roads
Roe Hwy Widening Flora and Fauna Assessment

Land Use Constraints

Project No. **12634226**
Revision No. **0**
Date **06/03/2026**

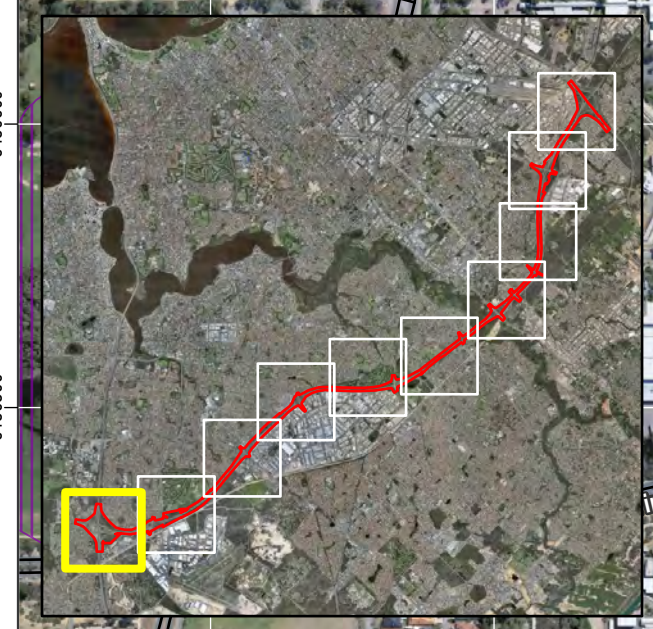
FIGURE 3

\\ghdnet\ghd\AU\Perth\Projects\61\12634226\GIS\Maps\Working\12634226_RoeHwyFloraVeg\12634226_RoeHwyFloraVeg.aprx\12634226_03_LandUseConstraints_Rev0
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390600 390900 391200 391500 391800 392100 392400

6450600 6450300 6450000 6449700 6449400 6449100 6448800 6448500 6448200 6447900



Legend

- Main Road
- Bush Forever Areas
- Environmentally Sensitive Areas
- Road Offsets
- Development Envelope
- Survey Area

DBCA Legislated Lands and Waters

- Conservation Park

ington Rd

Beeliar Conservation Park

Murdoch Dr

Roe Hwy

Kwinana Fwy

Berrigan Dr

SLIP

Paper Size ISO A3
at Scale: 1:8,000

0 80 160 240 320
Meters

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 50

N

GHD

Main Roads
Roe Hwy Widening Flora and Fauna Assessment

Land Use Constraints

Project No. **12634226**
Revision No. **0**
Date **06/03/2026**

FIGURE 3

\\ghdnet\ghd\AU\Perth\Projects\61\12634226\GIS\Maps\Working\12634226_RoeHwyFloraVeg\12634226_RoeHwyFloraVeg.aprx\12634226_03_LandUseConstraints_Rev0
Print date: 06 Mar 2026 - 15:53

Data source: Landgate_Subscription_Imagery\WANow: . Created by: shart2

402900 403200 403500 403800 404100 404400 404700 405000

6461400 6461100 6460800 6460500 6460200 6459900 6459600 6459300 6459000

Hwy
Abernethy Rd
Daddow Rd
Dundas Rd
Roe Hwy
Hale Rd

Legend

- Main Road
- Development Envelope
- Survey Area

Geomorphic Wetlands

- Conservation
- Multiple Use
- Not Applicable
- Resource Enhancement

RIWI Act, Groundwater Areas

- To be developed

SLIP

Paper Size ISO A3
at Scale: 1:8,000

0 80 160 240 320
Meters

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 50

N

GHD

Main Roads
Roe Hwy Widening Flora and Fauna Assessment

Hydrology Constraints

Project No. **12634226**
Revision No. **0**
Date **06/03/2026**

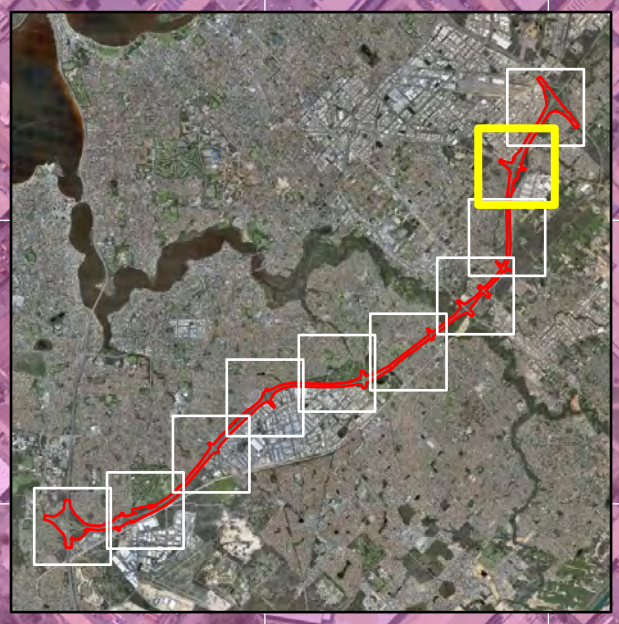
FIGURE 4

\\ghdnet\ghd\AU\Perth\Projects\61\12634226\GIS\Maps\Working\12634226_RoeHwyFloraVeg\12634226_RoeHwyFloraVeg.aprx\12634226_04_HydrologyConstraints_Rev0
Print date: 06 Mar 2026 - 15:54

Data source: Landgate_Subscription_Imagery\WANow: . Created by: shart2

402300 402600 402900 403200 403500 403800 404100

6459900 6459600 6459300 6459000 6458700 6458400 6458100 6457800 6457500



McDowell St
Welshpool Rd
Orrong Rd
William St
Roe Hwy
Hale Rd
Welshpool Rd East
Coldwell Rd

Legend

- Main Road
- Development Envelope
- Survey Area

Geomorphic Wetlands

- Conservation

- Multiple Use
- Not Applicable
- Resource Enhancement

RIWI Act, Groundwater Areas

- To be developed

SLIP

Paper Size ISO A3
at Scale: 1:8,000

0 80 160 240 320
Meters

N

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 50

GHD

Main Roads
Roe Hwy Widening Flora and Fauna Assessment

Hydrology Constraints

Project No. **12634226**
Revision No. **0**
Date **06/03/2026**

FIGURE 4

\\ghdnet\ghd\AU\Perth\Projects\61\12634226\GIS\Maps\Working\12634226_RoeHwyFloraVeg\12634226_RoeHwyFloraVeg.aprx\12634226_04_HydrologyConstraints_Rev0
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Data source: Landgate_Subscription_Imagery\WANow: . Created by: shart2

402000 402300 402600 402900 403200 403500 403800

6458100 6457800 6457500 6457200 6456900 6456600 6456300 6456000 6455700

Coldwell Rd
Grove Rd
Roe Hwy
Brook Rd
Brixton St
Bickley Rd
Sevenoaks St
Albany Hwy
Kenwick Rd

SLIP

Legend

- Main Road
- Development Envelope
- Survey Area

Geomorphic Wetlands

- Conservation
- Multiple Use
- Resource Enhancement

RIWI Act, Groundwater Areas

- To be developed

Paper Size ISO A3
at Scale: 1:8,000

0 80 160 240 320
Meters

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 50

N

GHD

Main Roads
Roe Hwy Widening Flora and Fauna Assessment

Hydrology Constraints

Project No. **12634226**
Revision No. **0**
Date **06/03/2026**

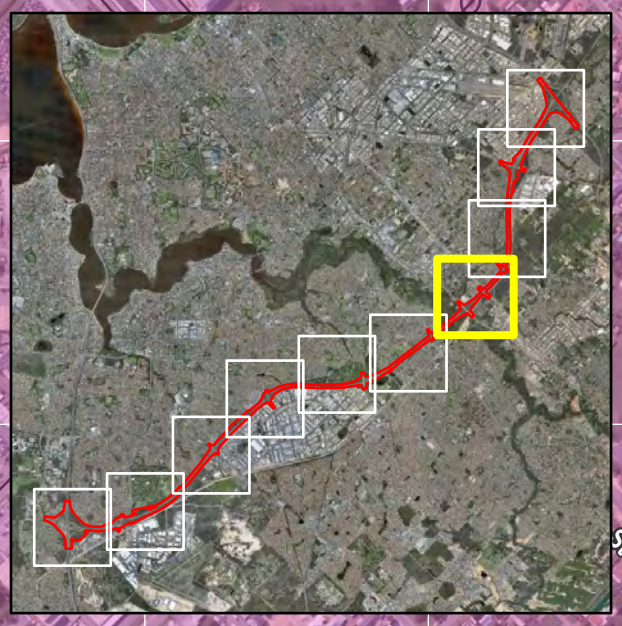
FIGURE 4

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401100 401400 401700 402000 402300 402600 402900

6456600 6456300 6456000 6455700 6455400 6455100 6454800 6454500 6454200 6453900



Brixton St
Roe Hwy
Albany Hwy
Wanaping Rd
Kenwick Rd
Kenwick Link
Royal St
Spencer Rd
Yale Rd
Spring Rd
Thornlie Av
St

SLIP

Legend

- Main Road
- Development Envelope
- Survey Area

Geomorphic Wetlands

- Conservation

- Multiple Use
- Not Applicable
- Resource Enhancement

RIWI Act, Groundwater Areas

- To be developed

Paper Size ISO A3
at Scale: 1:8,000

0 80 160 240 320
Meters

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 50

N

GHD

Main Roads
Roe Hwy Widening Flora and Fauna Assessment

Hydrology Constraints

Project No. **12634226**
Revision No. **0**
Date **06/03/2026**

FIGURE 4

\\ghdnet\ghd\AU\Perth\Projects\61\12634226\GIS\Maps\Working\12634226_RoeHwyFloraVeg\12634226_RoeHwyFloraVeg.aprx\12634226_04_HydrologyConstraints_Rev0
Print date: 06 Mar 2026 - 15:56

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399300 399600 399900 400200 400500 400800 401100 401400

6455100 6454800 6454500 6454200 6453900 6453600 6453300 6453000 6452700

Nicholson Rd
Langford Av
Spencer Rd
Roe Hwy
Yale Rd
Bannister Rd
Murdoch Rd

SLIP

Legend

- Main Road
- Development Envelope
- Survey Area

Geomorphic Wetlands

- Conservation
- Multiple Use
- Resource Enhancement

RIWI Act, Groundwater Areas

- To be developed

Paper Size ISO A3
at Scale: 1:8,000

0 80 160 240 320
Meters

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 50

N

GHD

Main Roads
Roe Hwy Widening Flora and Fauna Assessment

Hydrology Constraints

Project No. **12634226**
Revision No. **0**
Date **06/03/2026**

FIGURE 4

\\ghdnet\ghd\AU\Perth\Projects\61\12634226\GIS\Maps\Working\12634226_RoeHwyFloraVeg\12634226_RoeHwyFloraVeg.aprx\12634226_04_HydrologyConstraints_Rev0
Print date: 06 Mar 2026 - 15:56

Data source: Landgate_Subscription_Imagery\WANow: . Created by: shart2

397500 397800 398100 398400 398700 399000 399300

6454500 6454200 6453900 6453600 6453300 6453000 6452700 6452400 6452100

Hossack Av

Langford Av

Nicholson Rd

High Rd

Roe Hwy

Bannister Rd

SLIP

Legend

- Main Road
- Development Envelope
- Survey Area

Geomorphic Wetlands

- Conservation
- Multiple Use

RIWI Act, Groundwater Areas

- To be developed

Paper Size ISO A3
at Scale: 1:8,000

0 80 160 240 320
Meters

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 50

N

GHD

Main Roads
Roe Hwy Widening Flora and Fauna Assessment

Hydrology Constraints

Project No. **12634226**
Revision No. **0**
Date **06/03/2026**

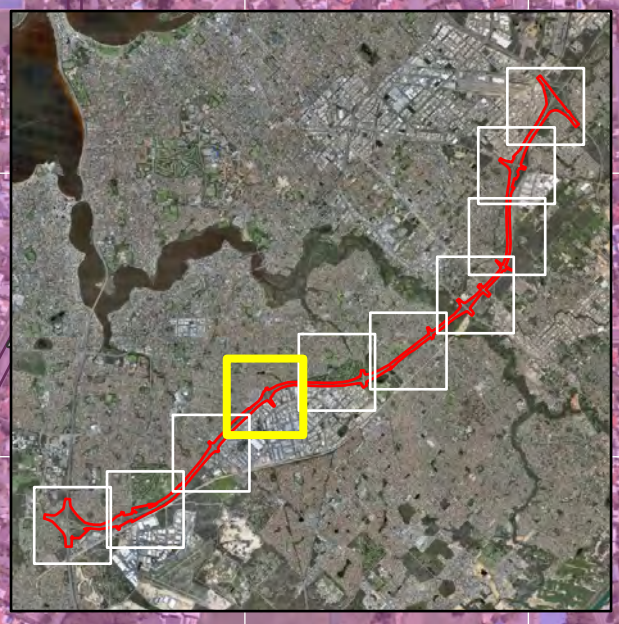
FIGURE 4

\\ghdnet\ghd\AU\Perth\Projects\61\12634226\GIS\Maps\Working\12634226_RoeHwyFloraVeg\12634226_RoeHwyFloraVeg.aprx\12634226_04_HydrologyConstraints_Rev0
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395700 396000 396300 396600 396900 397200 397500

6453900 6453600 6453300 6453000 6452700 6452400 6452100 6451800 6451500



Hossack Av
Metcalfe Rd
Willeri Dr
Collins Rd
Roe Hwy
Bannister Rd

SLIP

Legend

- Main Road
- Development Envelope
- Survey Area

RIWI Act, Groundwater Areas

- To be developed

Paper Size ISO A3
at Scale: 1:8,000

0 80 160 240 320
Meters

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 50

N

GHD

Main Roads
Roe Hwy Widening Flora and Fauna Assessment

Hydrology Constraints

Project No. **12634226**
Revision No. **0**
Date **06/03/2026**

FIGURE 4

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Print date: 06 Mar 2026 - 15:57

Data source: Landgate_Subscription_Imagery\WANow: . Created by: shart2

394200 394500 394800 395100 395400 395700 396000

6452400 6452100 6451800 6451500 6451200 6450900 6450600 6450300 6450000

Vahland Av

South St

Roe Hwy

Bannister Rd

Ranford Rd

Legend

- Main Road
- Road Offsets
- Development Envelope
- Survey Area

Geomorphic Wetlands

- Conservation
- Multiple Use
- Resource Enhancement

RIWI Act, Groundwater Areas

- Draft
- To be developed

SLIP

Paper Size ISO A3
at Scale: 1:8,000

0 80 160 240 320
Meters

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 50

N

GHD

Main Roads
Roe Hwy Widening Flora and Fauna Assessment

Hydrology Constraints

Project No. **12634226**
Revision No. **0**
Date **06/03/2026**

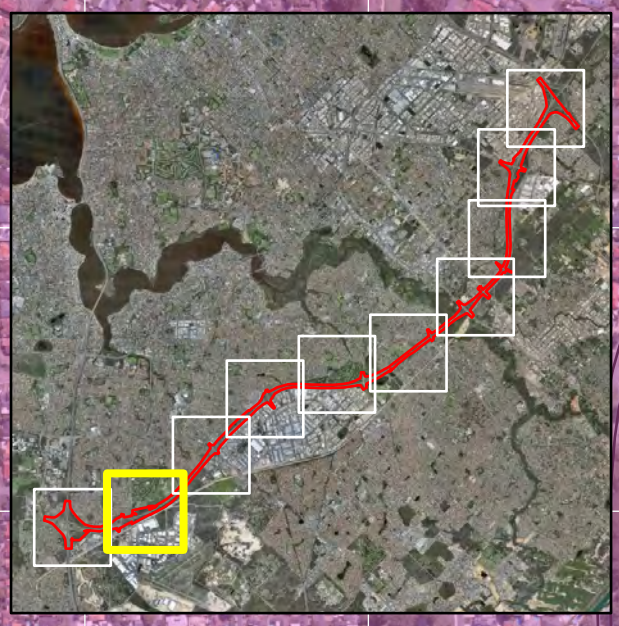
FIGURE 4

\\ghdnet\ghd\AU\Perth\Projects\61\12634226\GIS\Maps\Working\12634226_RoeHwyFloraVeg\12634226_RoeHwyFloraVeg.aprx\12634226_04_HydrologyConstraints_Rev0
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Data source: Landgate_Subscription_Imagery\WANow: . Created by: shart2

392400 392700 393000 393300 393600 393900 394200 394500

6450900 6450600 6450300 6450000 6449700 6449400 6449100 6448800 6448500



Farrington Rd
Karel Av
Roe Hwy
Bertigan Dr
SLIP

Legend

- Main Road
- Road Offsets
- Development Envelope
- Survey Area

Public Drinking Water Source Areas

- Protection Area (P1)
- Protection Area (P2)
- Protection Area (P3)

Geomorphic Wetlands

- Multiple Use

RIWI Act, Groundwater Areas

- Draft
- To be developed

Paper Size ISO A3
at Scale: 1:8,000

0 80 160 240 320
Meters

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 50

N

GHD

Main Roads
Roe Hwy Widening Flora and Fauna Assessment

Hydrology Constraints

Project No. **12634226**
Revision No. **0**
Date **06/03/2026**

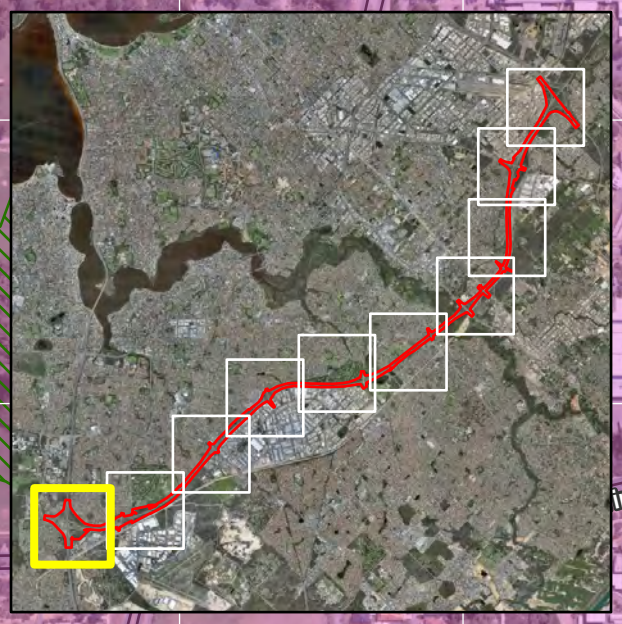
FIGURE 4

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Print date: 06 Mar 2026 - 15:58

Data source: Landgate_Subscription_Imagery\WANow: . Created by: shart2

390600 390900 391200 391500 391800 392100 392400

6450600 6450300 6450000 6449700 6449400 6449100 6448800 6448500 6448200 6447900



ington Rd

Murdoch Dr

Roe Hwy

Kwinana Fwy

Berrigan Dr

SLIP

Legend

- Main Road
- Road Offsets
- Development Envelope
- Survey Area

Public Drinking Water Source Areas

- Protection Area (P1)
- Protection Area (P2)
- Protection Area (P3)

Geomorphic Wetlands

- Conservation
- Multiple Use

RIWI Act, Groundwater Areas

- Draft
- Final
- To be developed

Paper Size ISO A3
at Scale: 1:8,000

0 80 160 240 320
Meters

N

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 50

GHD

Roe Hwy Widening Flora and Fauna Assessment

Revision No. **0**
Date **06/03/2026**

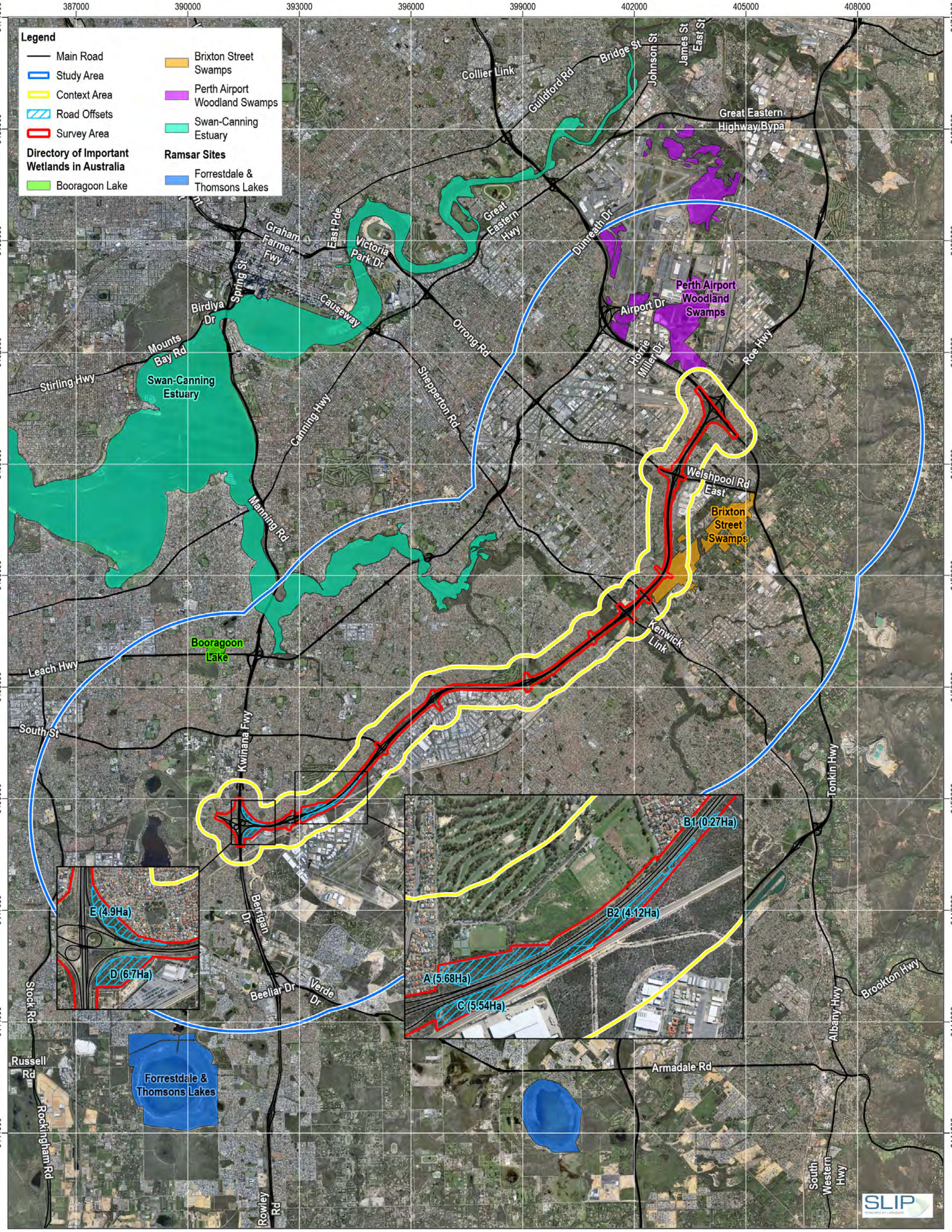
Page10 of 10

Hydrology Constraints

FIGURE 4

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Print date: 06 Mar 2026 - 15:59

Data source: Landgate_Subscription_Imagery\WANow: . Created by: shart2



Paper Size ISO A3
at Scale: 1:90,000

0 1 2 3 4
Kilometres

N

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 50

GHD

Main Roads
Roe Hwy Widening Flora and Fauna Assessment

Hydrology Constraints

Project No. **12634226**
Revision No. **0**
Date **06/03/2026**

Overview
FIGURE 4

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Print date: 06 Mar 2026 - 15:22

Data source: Landgate_Subscription_Imagery\WANow; . Created by: shart2

402900 403200 403500 403800 404100 404400 404700 405000

6461400 6461100 6460800 6460500 6460200 6459900 6459600 6459300 6459000

Hwy
Abernethy Rd
Daddow Rd
Dundas Rd
Roe Hwy

SLIP

Legend

- *Conospermum undulatum* (VU) (GHD 2024)
- Main Road
- Development Envelope
- Survey Area

DBCA Threatened and Priority Flora

- Critically endangered species (CR)
- Endangered species (EN)
- Migratory species (MI)
- Threatened species (T)
- Vulnerable species (VU)
- Priority 1
- Priority 2
- Priority 3
- Priority 4

State Listing

- Priority Ecological Communities
- Threatened Ecological Communites

Federal Listing

- Threatened Ecological Communities

Paper Size ISO A3
at Scale: 1:8,000

0 80 160 240 320
Meters

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 50

N

GHD

Roe Hwy Widening Flora and Fauna Assessment

Revision No. **0**
Date **06/03/2026**

Biological Constraints

Page 1 of 10
FIGURE 5

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Print date: 06 Mar 2026 - 16:01

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402300 402600 402900 403200 403500 403800 404100

6459900 6459600 6459300 6459000 6458700 6458400 6458100 6457800 6457500

McDowell St
Welshpool Rd
Orrong Rd
William St
Roe Hwy
Hale Rd
Welshpool Rd East
Coldwell Rd

SLIP

Legend

- Main Road
- Development Envelope
- Survey Area

DBCA Threatened and Priority Flora

- Critically endangered species (CR)
- Endangered species (EN)
- Migratory species (MI)
- Threatened species (T)
- Vulnerable species (VU)
- Priority 1
- Priority 2
- Priority 3
- Priority 4

State Listing

- Priority Ecological Communities
- Threatened Ecological Communites

Federal Listing

- Threatened Ecological Communities

Paper Size ISO A3
at Scale: 1:8,000

0 80 160 240 320
Meters

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 50

N

GHD

Main Roads
Roe Hwy Widening Flora and Fauna Assessment

Project No. **12634226**
Revision No. **0**
Date **06/03/2026**

Biological Constraints

FIGURE 5

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Print date: 06 Mar 2026 - 16:01

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402000 402300 402600 402900 403200 403500 403800

6458100 6457800 6457500 6457200 6456900 6456600 6456300 6456000 6455700

Coldwell Rd
Grove Rd
Roe Hwy
Brook Rd
Bickley Rd
Brixton St
Sevenoaks St
Albany Hwy

SLIP

Legend

- Main Road
- Development Envelope
- Survey Area

DBCA Threatened and Priority Flora

- Critically endangered species (CR)
- Endangered species (EN)
- Migratory species (MI)
- Threatened species (T)
- Vulnerable species (VU)
- Priority 1
- Priority 2
- Priority 3
- Priority 4

State Listing

- Priority Ecological Communities
- Threatened Ecological Communites

Federal Listing

- Threatened Ecological Communities

Paper Size ISO A3
at Scale: 1:8,000

0 80 160 240 320
Meters

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 50

N

GHD

Main Roads
Roe Hwy Widening Flora and Fauna Assessment

Project No. **12634226**
Revision No. **0**
Date **06/03/2026**

Biological Constraints

FIGURE 5

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401100 401400 401700 402000 402300 402600 402900

6456600 6456300 6456000 6455700 6455400 6455100 6454800 6454500 6454200 6453900

Brixton St
St
Roe Hwy
Albany Hwy
Wanaping Rd
Kenwick Rd
Kenwick Link
Royal St
Spencer Rd
Yale Rd
Spring Rd
Thornlie Av

SLIP

Legend

- Main Road
- Development Envelope
- Survey Area

DBCA Threatened and Priority Flora

- Critically endangered species (CR)
- Endangered species (EN)
- Migratory species (MI)
- Threatened species (T)
- Vulnerable species (VU)
- Priority 1
- Priority 2
- Priority 3
- Priority 4

State Listing

- Priority Ecological Communities
- Threatened Ecological Communites

Federal Listing

- Threatened Ecological Communities

Paper Size ISO A3
at Scale: 1:8,000

0 80 160 240 320
Meters

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 50

N

GHD

Main Roads
Roe Hwy Widening Flora and Fauna Assessment

Project No. **12634226**
Revision No. **0**
Date **06/03/2026**

Biological Constraints

FIGURE 5

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Print date: 06 Mar 2026 - 16:02

Data source: Landgate_Subscription_Imagery\WANow: . Created by: shart2

399300 399600 399900 400200 400500 400800 401100 401400

6455100 6454800 6454500 6454200 6453900 6453600 6453300 6453000 6452700

Nicholson Rd
Langford Av
Spencer Rd
Roe Hwy
Yale Rd
Bannister Rd
Murdoch Rd

SLIP

Legend

- Main Road
- Development Envelope
- Survey Area

DBCA Threatened and Priority Flora

- Critically endangered species (CR)
- Endangered species (EN)
- Migratory species (MI)
- Threatened species (T)
- Vulnerable species (VU)
- Priority 1
- Priority 2
- Priority 3
- Priority 4

State Listing

- Priority Ecological Communities
- Threatened Ecological Communites

Federal Listing

- Threatened Ecological Communities

Paper Size ISO A3
at Scale: 1:8,000

0 80 160 240 320
Meters

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 50

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GHD

Main Roads
Roe Hwy Widening Flora and Fauna Assessment

Project No. **12634226**
Revision No. **0**
Date **06/03/2026**

Biological Constraints

FIGURE 5

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Data source: Landgate_Subscription_Imagery\WANow: . Created by: shart2

397500 397800 398100 398400 398700 399000 399300

6454500 6454200 6453900 6453600 6453300 6453000 6452700 6452400 6452100

Langford Av

Hossack Av

Nicholson Rd

High Rd

Roe Hwy

Bannister Rd

SLIP

Legend

- Main Road
- Development Envelope
- Survey Area

DBCA Threatened and Priority Flora

- Critically endangered species (CR)
- Endangered species (EN)
- Migratory species (MI)
- Threatened species (T)
- Vulnerable species (VU)
- Priority 1
- Priority 2
- Priority 3
- Priority 4

State Listing

- Priority Ecological Communities
- Threatened Ecological Communites

Federal Listing

- Threatened Ecological Communities

Paper Size ISO A3
at Scale: 1:8,000

0 80 160 240 320
Meters

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 50

N

GHD

Main Roads
Roe Hwy Widening Flora and Fauna Assessment

Project No. **12634226**
Revision No. **0**
Date **06/03/2026**

Page 6 of 10

Biological Constraints

FIGURE 5

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Print date: 06 Mar 2026 - 16:03

Data source: Landgate_Subscription_Imagery\WANow: . Created by: shart2

395700 396000 396300 396600 396900 397200 397500

6453900 6453600 6453300 6453000 6452700 6452400 6452100 6451800 6451500

Hossack Av

Metcalfe Rd

Willeri Dr

Collins Rd

Roe Hwy

Bannister Rd

SLIP

Legend

- Main Road
- Development Envelope
- Survey Area

DBCA Threatened and Priority Flora

- Critically endangered species (CR)
- Endangered species (EN)
- Migratory species (MI)
- Threatened species (T)
- Vulnerable species (VU)
- Priority 1
- Priority 2
- Priority 3
- Priority 4

State Listing

- Priority Ecological Communities

Federal Listing

- Threatened Ecological Communities

Paper Size ISO A3
at Scale: 1:8,000

0 80 160 240 320
Meters

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 50

N

GHD

Main Roads
Roe Hwy Widening Flora and Fauna Assessment

Biological Constraints

Project No. **12634226**
Revision No. **0**
Date **06/03/2026**

FIGURE 5

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394200 394500 394800 395100 395400 395700 396000

6452400 6452100 6451800 6451500 6451200 6450900 6450600 6450300 6450000

Vahland Av

South St

Roe Hwy

Bannister Rd

Ranford Rd

SLIP

Legend

- Main Road
- Road Offsets
- Development Envelope
- Survey Area

DBCA Threatened and Priority Flora

- Critically endangered species (CR)
- Endangered species (EN)
- Migratory species (MI)
- Threatened species (T)
- Vulnerable species (VU)
- Priority 1
- Priority 2
- Priority 3
- Priority 4

State Listing

- Priority Ecological Communities

Federal Listing

- Threatened Ecological Communities

Paper Size ISO A3
at Scale: 1:8,000

0 80 160 240 320
Meters

N

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 50

GHD

Main Roads
Roe Hwy Widening Flora and Fauna Assessment

Biological Constraints

Project No. **12634226**
Revision No. **0**
Date **06/03/2026**

FIGURE 5

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6450900 6450600 6450300 6450000 6449700 6449400 6449100 6448800 6448500

Farrington Rd

Karel Av

Roe Hwy

Bertigan Dr

SLIP

Legend

- Main Road
- Road Offsets
- Development Envelope
- Survey Area

DBCA Threatened and Priority Flora

- Critically endangered species (CR)
- Endangered species (EN)
- Migratory species (MI)
- Threatened species (T)
- Vulnerable species (VU)
- Priority 1
- Priority 2
- Priority 3
- Priority 4

State Listing

- Priority Ecological Communities

Federal Listing

- Threatened Ecological Communities

Paper Size ISO A3
at Scale: 1:8,000

0 80 160 240 320
Meters

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 50

N

GHD

Main Roads
Roe Hwy Widening Flora and Fauna Assessment

Biological Constraints

Project No. **12634226**
Revision No. **0**
Date **06/03/2026**

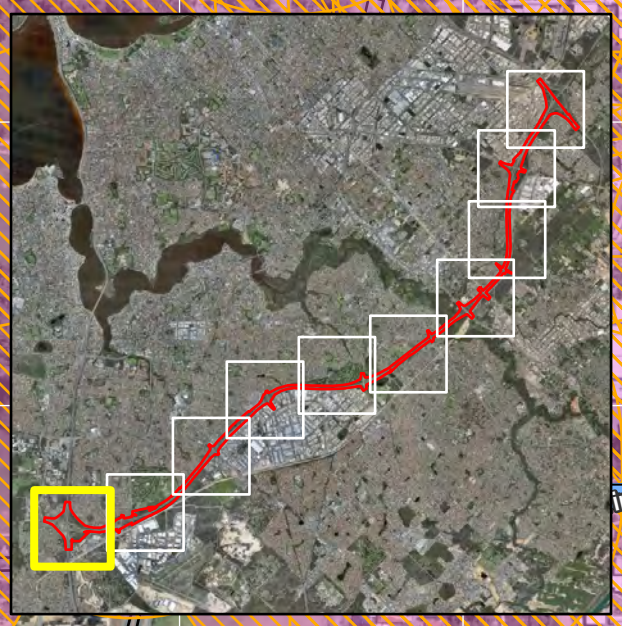
FIGURE 5

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6450600 6450300 6450000 6449700 6449400 6449100 6448800 6448500 6448200 6447900



Murdoch Dr

ington Rd

Roe Hwy

Kwinana Fwy

Berrigan Dr

SLIP

Legend

- Main Road
- Road Offsets
- Development Envelope
- Survey Area

DBCA Threatened and Priority Flora

- Critically endangered species (CR)
- Endangered species (EN)
- Migratory species (MI)
- Threatened species (T)
- Vulnerable species (VU)
- Priority 1
- Priority 2
- Priority 3
- Priority 4

State Listing

- Priority Ecological Communities

Federal Listing

- Threatened Ecological Communities

Paper Size ISO A3
at Scale: 1:8,000

0 80 160 240 320
Meters

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 50

N

GHD

Main Roads
Roe Hwy Widening Flora and Fauna Assessment

Biological Constraints

Project No. **12634226**
Revision No. **0**
Date **06/03/2026**

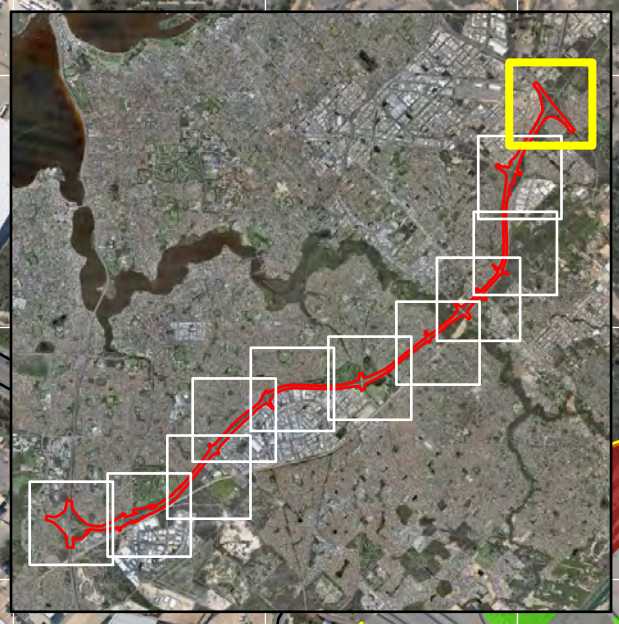
FIGURE 5

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Print date: 06 Mar 2026 - 16:06

Data source: Landgate_Subscription_Imagery\WANow: . Created by: shart2

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6462000 6461700 6461400 6461100 6460800 6460500 6460200 6459900 6459600 6459300 6459000



Legend

- Quadrat
- Releve
- Main Road
- Context Area
- Development Envelope
- Survey Area

Vegetation Type (Roadside Revegetation)

- Isolated *Corymbia calophylla*
- Isolated *Eucalyptus* spp.
- Mixed Shrubland
- Mod. Wetland

Vegetation Type (Remnant Native Vegetation)

- BmBa
- ErMr
- Mp

Vegetation Type (Context Area)

- BmBa
- Damplands and Claypans
- ErMr
- Southern wet shrublands

- *Banksia attenuata* woodlands over species rich dense shrublands
- Isolated *Corymbia calophylla*
- Isolated *Eucalyptus* spp.
- Mixed Shrubland
- Mod. Wetland
- Cleared

Vegetation Type (Cleared)

- Cleared

Abernethy Rd
Dundas Rd
McDowell St
Daddow Rd
Roe Hwy
Roe17
Roe01
Roe18R
Roe03R
Roe21R
Tonkin Hwy
Hale Rd

SLIP

Paper Size ISO A3
at Scale: 1:9,000

0 90 180 270 360
Meters

N

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 50

GHD

Main Roads
Roe Hwy Widening Flora and Fauna Assessment

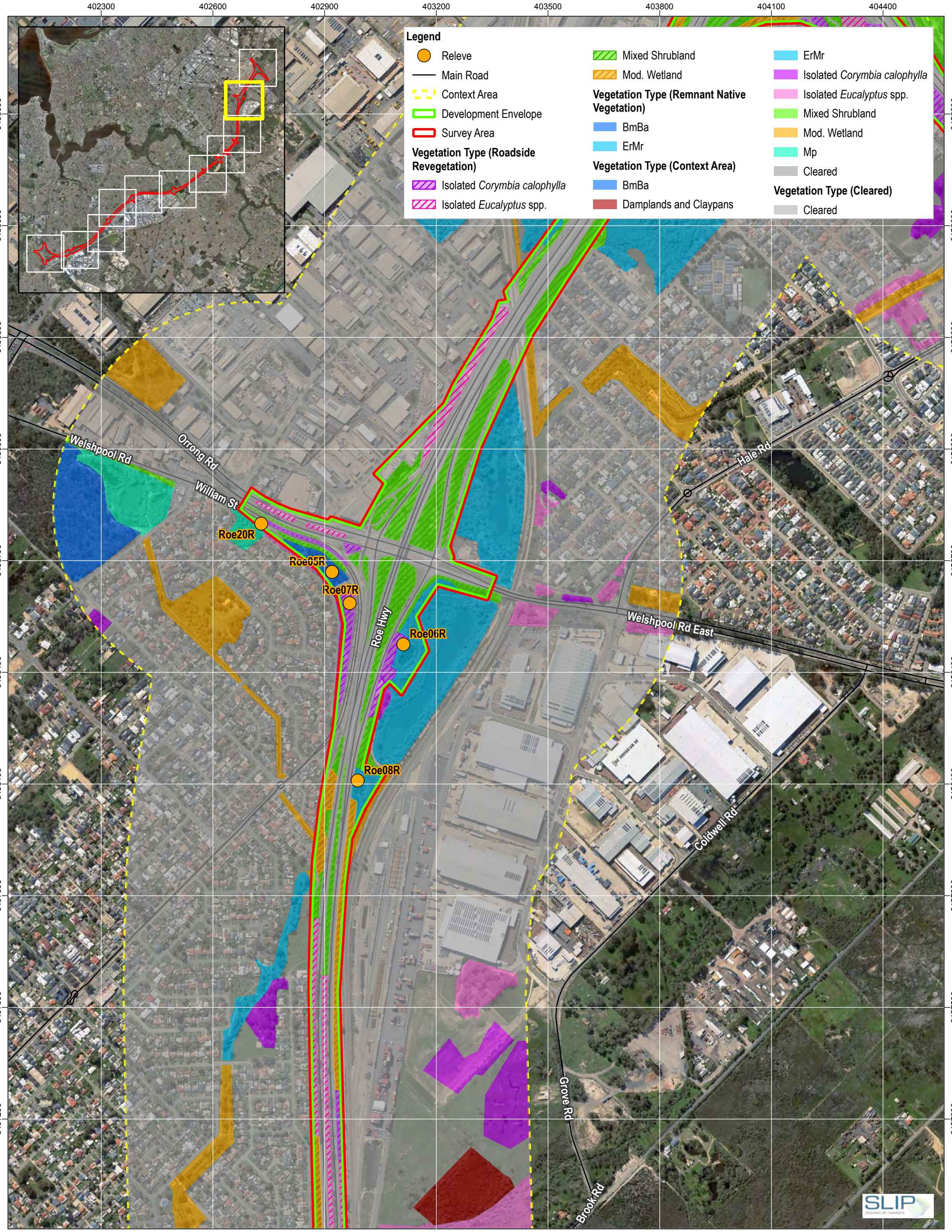
Vegetation Types and Sample Sites

Project No. **12634226**
Revision No. **0**
Date **06/03/2026**

FIGURE 6

\\ghdnet\ghd\AU\Perth\Projects\61\12634226\GIS\Maps\Working\12634226_RoeHwyFloraVeg\12634226_RoeHwyFloraVeg.aprx\12634226_06_VegTypes&SampleSites_Rev0
Print date: 06 Mar 2026 - 15:15

Data source: Landgate_Subscription_Imagery\WANow: . Created by: shart2



Paper Size ISO A3
at Scale: 1:9,000

0 90 180 270 360
Meters

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 50

N

GHD

Main Roads
Roe Hwy Widening Flora and Fauna Assessment

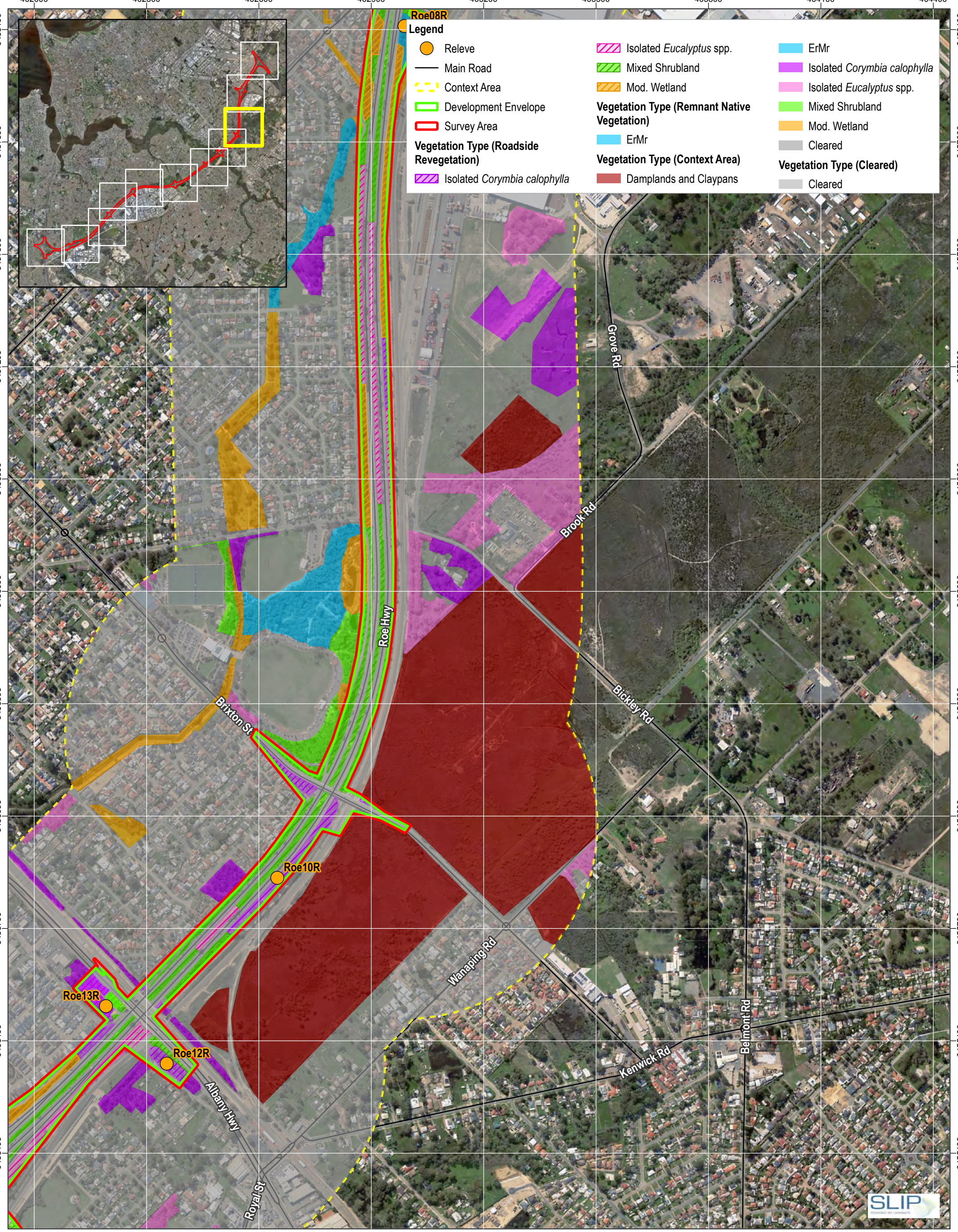
Vegetation Types and Sample Sites

Project No. **12634226**
Revision No. **0**
Date **06/03/2026**

FIGURE 6

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Print date: 06 Mar 2026 - 15:15

Data source: Landgate_Subscription_Imagery\WANow: . Created by: shart2



Paper Size ISO A3
at Scale: 1:9,000

0 90 180 270 360

Meters

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 50

N

GHD

Main Roads
Roe Hwy Widening Flora and Fauna Assessment

Vegetation Types and Sample Sites

Project No. **12634226**
Revision No. **0**
Date **06/03/2026**

FIGURE 6

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6456900 6456600 6456300 6456000 6455700 6455400 6455100 6454800 6454500 6454200 6453900

Legend

- Releve
- Main Road
- Context Area
- Development Envelope
- Survey Area

Vegetation Type (Roadside Revegetation)

- Isolated *Banksia* spp.
- Isolated *Corymbia calophylla*
- Isolated *Eucalyptus* spp.
- Mixed Shrubland
- Mod. Wetland

Vegetation Type (Remnant Native Vegetation)

- ErMr

Vegetation Type (Context Area)

- Damplands and Claypans
- EmBspp.
- ErMr
- Isolated *Corymbia calophylla*
- Isolated *Eucalyptus* spp.
- Mixed Shrubland
- Mod. Wetland
- Cleared

Vegetation Type (Cleared)

- Cleared

Brixton St
Roe10R
Roe13R
Roe Hwy
Roe12R
Albany Hwy
Wanaping Rd
Kenwick Rd
Roe14R
Roe11R
Royal St
Kenwick Link
Spencer Rd
Yale Rd
Spring Rd
Thornlie Av
Austin Av
SLIP

Paper Size ISO A3
at Scale: 1:9,000

0 90 180 270 360
Meters

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 50

N

GHD

Main Roads
Roe Hwy Widening Flora and Fauna Assessment

Vegetation Types and Sample Sites

Project No. **12634226**
Revision No. **0**
Date **06/03/2026**

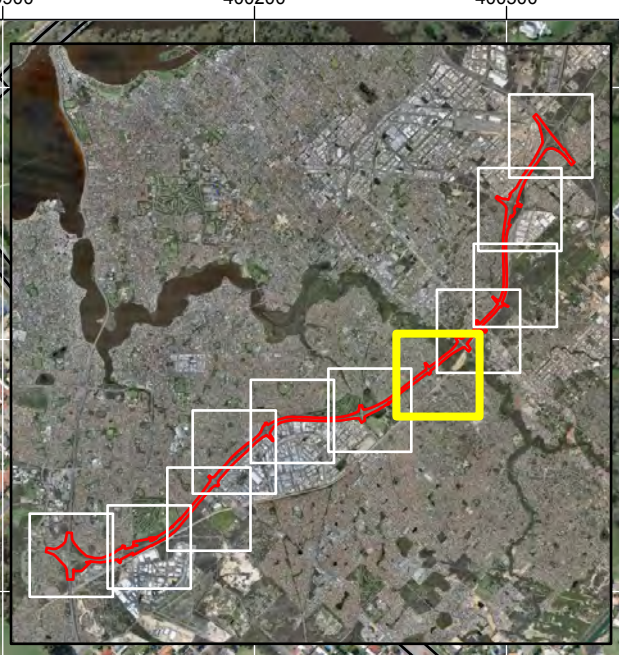
FIGURE 6

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6455700 6455400 6455100 6454800 6454500 6454200 6453900 6453600 6453300 6453000 6452700



Legend

- Releve
- Main Road
- Context Area
- Development Envelope
- Survey Area

Vegetation Type (Roadside Revegetation)

- Isolated *Banksia* spp.
- Isolated *Corymbia calophylla*
- Isolated *Eucalyptus* spp.
- Mixed Shrubland
- Mod. Wetland

Vegetation Type (Remnant Native Vegetation)

- ErMr

Vegetation Type (Context Area)

- Damplands and Claypans
- EmBspp.
- ErMr
- Isolated *Corymbia calophylla*
- Isolated *Eucalyptus* spp.
- Mixed Shrubland
- Mod. Wetland
- Mp
- Cleared

Vegetation Type (Cleared)

- Cleared

Roe14R
Roe11R
Roe09R
Roe Hwy
Langford Av
Spencer Rd
Spring Rd
Royal St
Thornlie Av
Yale Rd
SLIP

Paper Size ISO A3
at Scale: 1:9,000

0 90 180 270 360
Meters

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 50

N

GHD

Main Roads
Roe Hwy Widening Flora and Fauna Assessment

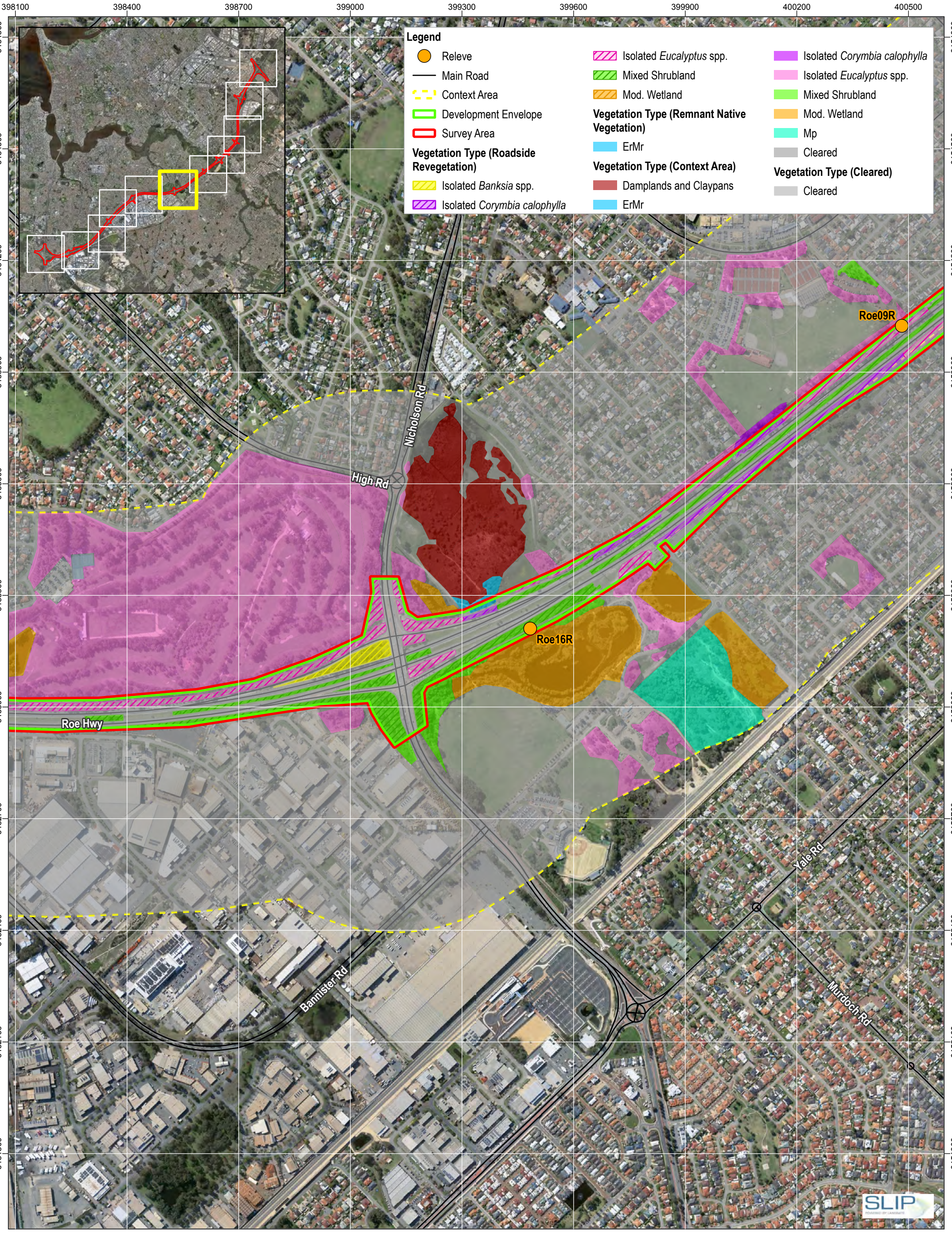
Vegetation Types and Sample Sites

Project No. **12634226**
Revision No. **0**
Date **06/03/2026**

FIGURE 6

\\ghdnet\ghd\AU\Perth\Projects\61\12634226\GIS\Maps\Working\12634226_RoeHwyFloraVeg\12634226_RoeHwyFloraVeg.aprx\12634226_06_VegTypes&SampleSites_Rev0
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Data source: Landgate_Subscription_Imagery\WANow: . Created by: shart2



Paper Size ISO A3
at Scale: 1:9,000

0 90 180 270 360

Meters

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 50

N

GHD

Main Roads
Roe Hwy Widening Flora and Fauna Assessment

Vegetation Types and Sample Sites

Project No. **12634226**
Revision No. **0**
Date **06/03/2026**

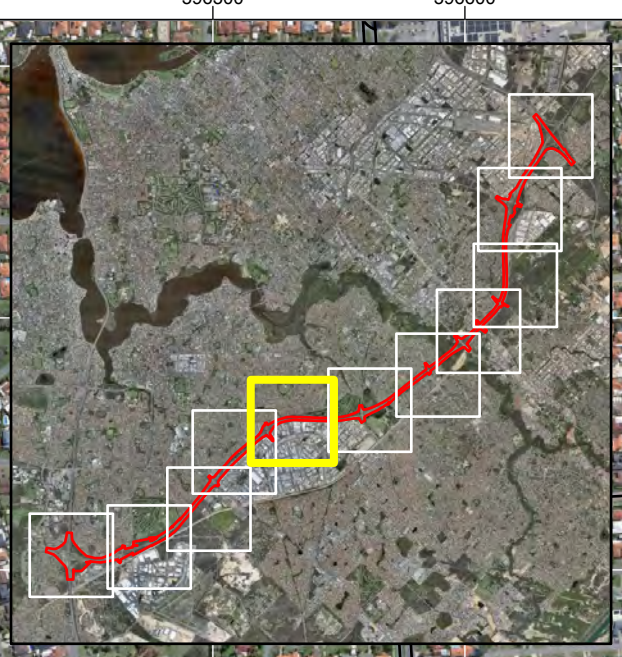
FIGURE 6

\\ghdnet\ghd\AU\Perth\Projects\61\12634226\GIS\Maps\Working\12634226_RoeHwyFloraVeg\12634226_RoeHwyFloraVeg.aprx\12634226_06_VegTypes&SampleSites_Rev0
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Data source: Landgate_Subscription_Imagery\WANow: . Created by: shart2

396300 396600 396900 397200 397500 397800 398100 398400

6454500 6454200 6453900 6453600 6453300 6453000 6452700 6452400 6452100 6451800 6451500



Legend

- Quadrat
- Releve
- Main Road
- Context Area
- Development Envelope
- Survey Area

Vegetation Type (Roadside Revegetation)

- Isolated *Banksia* spp.
- Isolated *Corymbia calophylla*
- Isolated *Eucalyptus* spp.
- Mixed Shrubland

Vegetation Type (Remnant Native Vegetation)

- BmBa

Vegetation Type (Context Area)

- Isolated *Eucalyptus* spp.
- Mixed Shrubland
- Mod. Wetland
- Cleared

Vegetation Type (Cleared)

- Cleared

Hossack Av

Willeri Dr

Collins Rd

Roe01R

Roe Hwy

Bannister Rd

SLIP

Paper Size ISO A3
at Scale: 1:9,000

0 90 180 270 360

Meters

N

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 50

GHD

Main Roads
Roe Hwy Widening Flora and Fauna Assessment

Vegetation Types and Sample Sites

Project No. **12634226**
Revision No. **0**
Date **06/03/2026**

FIGURE 6

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Data source: Landgate_Subscription_Imagery\WANow: . Created by: shart2

394500 394800 395100 395400 395700 396000 396300 396600 396900

6453600 6453300 6453000 6452700 6452400 6452100 6451800 6451500 6451200 6450900 6450600

Legend

- Quadrat
- Releve
- Main Road
- Context Area
- Road Offsets
- Development Envelope
- Survey Area

Vegetation Type (Roadside Revegetation)

- Isolated *Banksia* spp.
- Isolated *Corymbia calophylla*
- Isolated *Eucalyptus* spp.
- Mixed Shrubland

Vegetation Type (Remnant Native Vegetation)

- BaBmBi
- BmBa

Vegetation Type (Context Area)

- BmBa
- BaBmBi
- EmBspp.
- Isolated *Eucalyptus* spp.
- Mixed Shrubland
- Mod. Wetland
- Mp
- Cleared

Vegetation Type (Cleared)

- Cleared

Willeri Dr
Collins Rd
Roe01R
Roe09
Roe11
Roe Hwy
Roe15R
Bannister Rd
Burrendah Blvd
Vahland Av
South St
Ranford Rd
Roe17R
Roe04R
B1 (0.27Ha)
SLIP

Paper Size ISO A3
at Scale: 1:9,000

0 90 180 270 360
Meters

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 50

N

GHD

Main Roads
Roe Hwy Widening Flora and Fauna Assessment

Vegetation Types and Sample Sites

Project No. **12634226**
Revision No. **0**
Date **06/03/2026**

FIGURE 6

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Print date: 06 Mar 2026 - 15:19

Data source: Landgate_Subscription_Imagery\WANow: . Created by: shart2

393900 394200 394500 394800 395100 395400 395700 396000 396300

6452100 6451800 6451500 6451200 6450900 6450600 6450300 6450000 6449700 6449400 6449100

Legend

- Quadrat
- Releve
- Main Road
- Context Area
- Road Offsets
- Development Envelope
- Survey Area

Vegetation Type (Roadside Revegetation)

- Isolated *Banksia* spp.
- Isolated *Eucalyptus* spp.
- Mixed Shrubland

Vegetation Type (Remnant Native Vegetation)

- BaBmBi
- BmBa

Vegetation Type (Context Area)

- BmBa
- BaBmBi
- EmBspp.
- Isolated *Eucalyptus* spp.
- Mixed Shrubland
- Mod. Wetland
- Mp
- Cleared

Vegetation Type (Cleared)

- Cleared

Burrendah Blvd

Bannister Rd

Roe Hwy

Ranford Rd

Roe17R

Roe04R

B1 (0.27Ha)

Roe07

Roe05

B2 (4.12Ha)

Roe03

C (5.54Ha)

SLIP

Paper Size ISO A3
at Scale: 1:9,000

0 90 180 270 360

Meters

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 50

N

GHD

Main Roads
Roe Hwy Widening Flora and Fauna Assessment

Vegetation Types and Sample Sites

Project No. **12634226**
Revision No. **0**
Date **06/03/2026**

FIGURE 6

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Print date: 06 Mar 2026 - 15:20

Data source: Landgate_Subscription_Imagery\WANow: . Created by: shart2

392400 392700 393000 393300 393600 393900 394200 394500

6451200 6450900 6450600 6450300 6450000 6449700 6449400 6449100 6448800 6448500 6448200

Legend

- Quadrat
- Releve
- Main Road
- Context Area
- Road Offsets
- Development Envelope
- Survey Area

Vegetation Type (Roadside Revegetation)

- Isolated *Banksia* spp.
- Isolated *Eucalyptus* spp.
- Mixed Shrubland

Vegetation Type (Remnant Native Vegetation)

- BaBmBi
- BmBa

Vegetation Type (Context Area)

- BmBa
- BaBmBi
- EmBspp.
- Espp.Bspp.
- Isolated *Banksia* spp.
- Isolated *Eucalyptus* spp.
- Mixed Shrubland
- Cleared

Vegetation Type (Cleared)

- Cleared

B1 (0.27Ha)
Roe07
Roe05
B2 (4.12Ha)
Roe03
Roe19R
Roe04
Roe13
Roe15
Roe Hwy
A (5.68Ha)
Roe16
C (5.54Ha)
Roe14
Farrington Rd
Karel Av
Berrigan Dr

SLIP

Paper Size ISO A3
at Scale: 1:9,000

0 90 180 270 360
Meters

N

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 50

GHD

Main Roads
Roe Hwy Widening Flora and Fauna Assessment

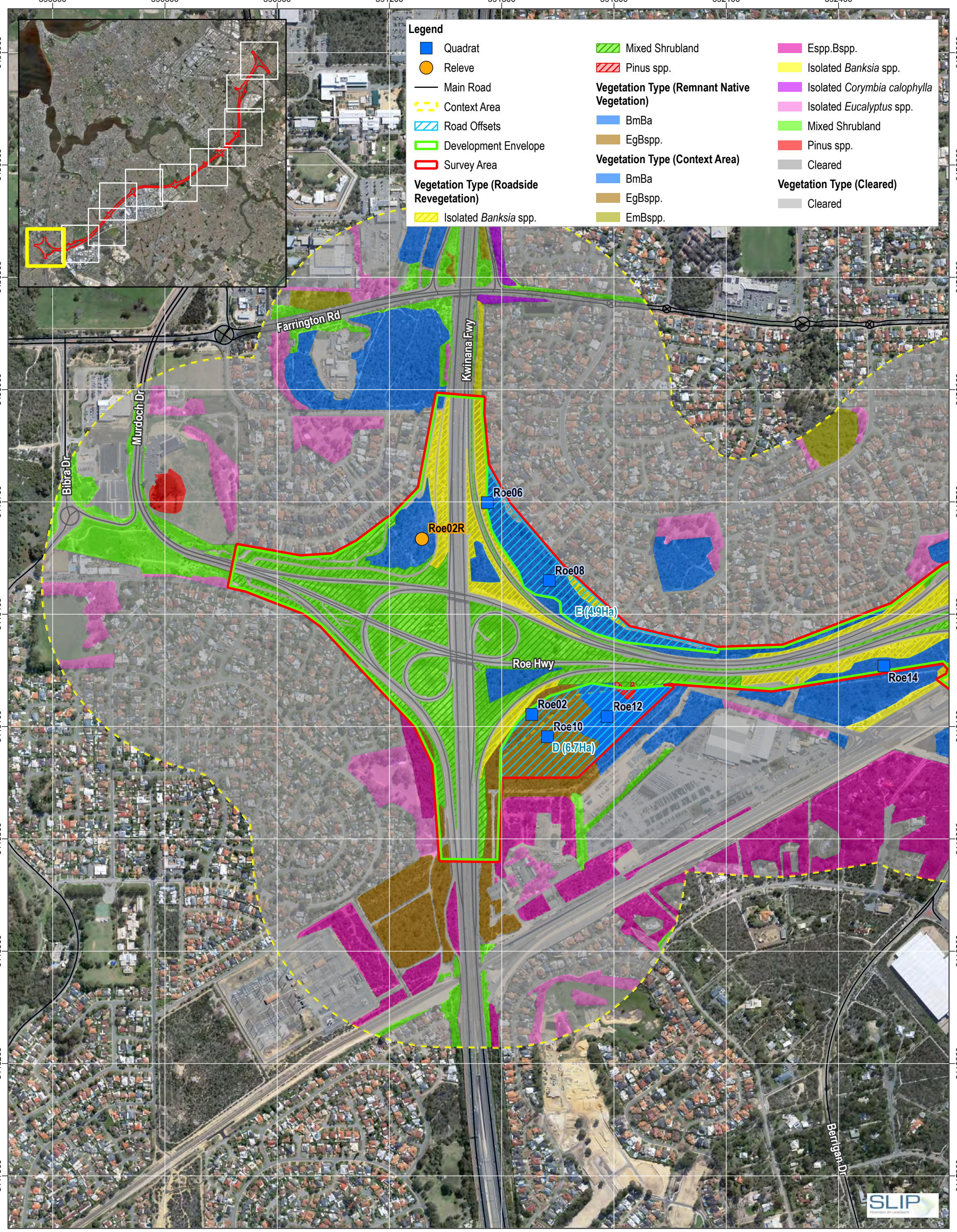
Vegetation Types and Sample Sites

Project No. **12634226**
Revision No. **0**
Date **06/03/2026**

FIGURE 6

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Print date: 06 Mar 2026 - 15:20

Data source: Landgate_Subscription_Imagery\WANow: . Created by: shart2



Paper Size ISO A3
at Scale: 1:9,000

0 90 180 270 360
Meters

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 50

N

GHD

Main Roads
Roe Hwy Widening Flora and Fauna Assessment

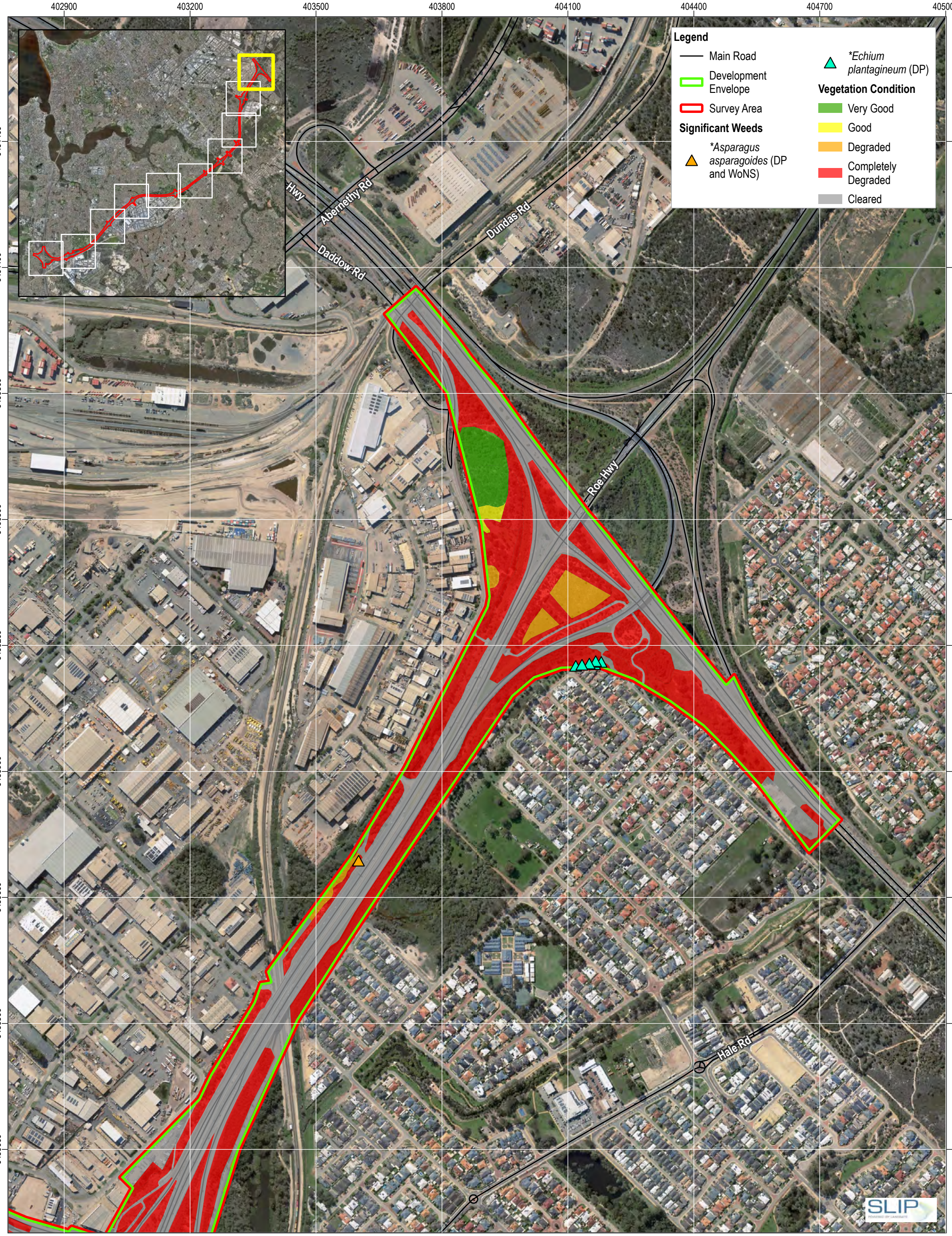
Vegetation Types and Sample Sites

Project No. **12634226**
Revision No. **0**
Date **06/03/2026**

FIGURE 6

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Paper Size ISO A3
at Scale: 1:8,000

0 80 160 240 320

Meters

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 50

N

GHD

Main Roads
Roe Hwy Widening Flora and Fauna Assessment

Vegetation Condition and Significant Weeds

Project No. **12634226**
Revision No. **0**
Date **06/03/2026**

FIGURE 7

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402300 402600 402900 403200 403500 403800 404100

6459900 6459600 6459300 6459000 6458700 6458400 6458100 6457800 6457500

Legend

- Main Road
- Development Envelope
- Survey Area

Significant Weeds

- **Asparagus asparagoides* (DP and WoNS)
- **Echium plantagineum* (DP)
- **Ferraria crispa* (DP)
- **Moraea flaccida* (DP)
- **Zantedeschia aethiopica* (DP)

Vegetation Condition

- Degraded
- Completely Degraded
- Cleared

McDowell St
Welshpool Rd
Orrong Rd
William St
Roe Hwy
Hale Rd
Welshpool Rd East
Coldwell Rd
Grove Rd

SLIP

Paper Size ISO A3
at Scale: 1:8,000

0 80 160 240 320
Meters

N

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 50

GHD

Main Roads
Roe Hwy Widening Flora and Fauna Assessment

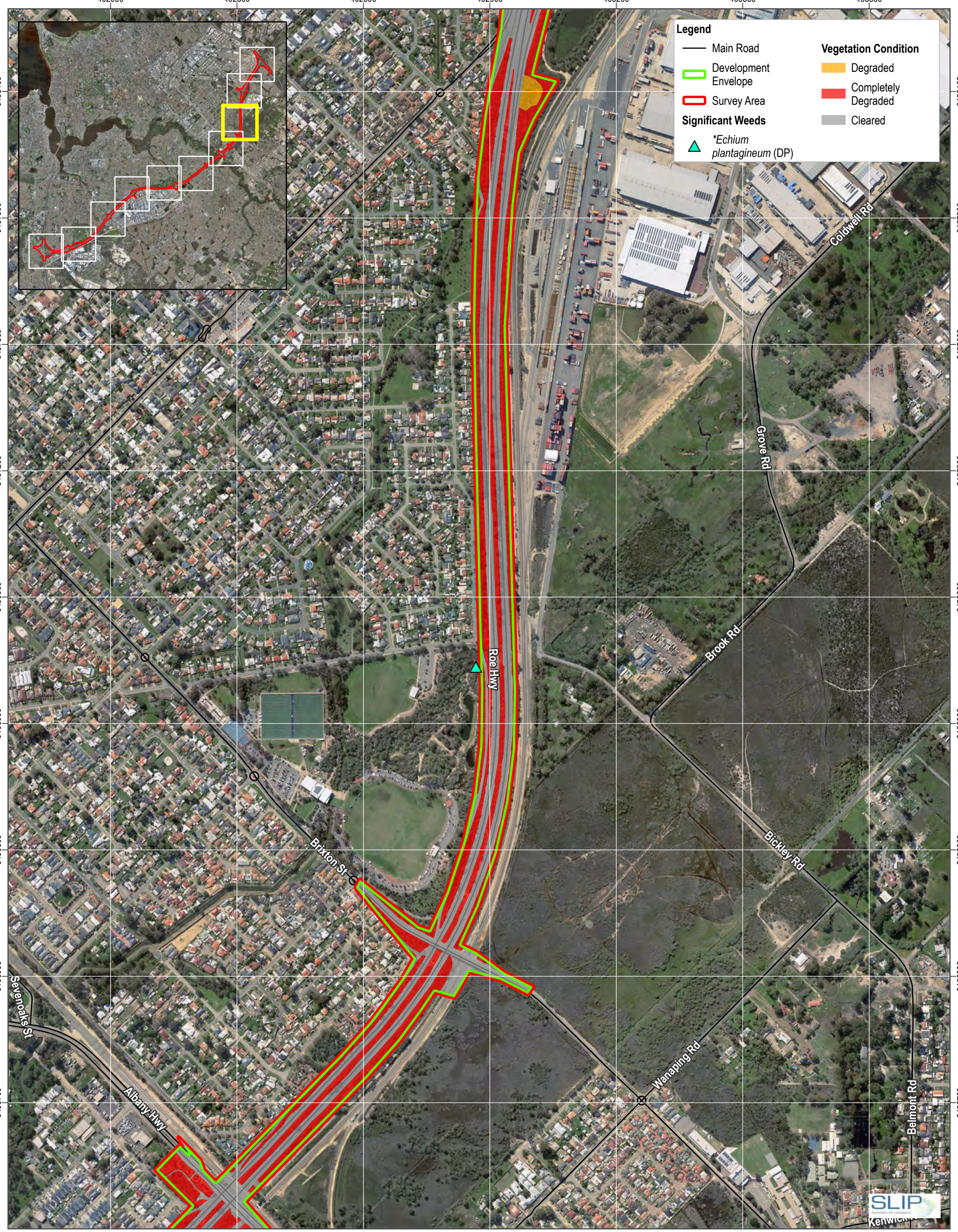
Vegetation Condition and Significant Weeds

Project No. **12634226**
Revision No. **0**
Date **06/03/2026**

FIGURE 7

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Paper Size ISO A3
at Scale: 1:8,000

0 80 160 240 320
Meters

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 50

N

GHD

Main Roads
Roe Hwy Widening Flora and Fauna Assessment

Vegetation Condition and Significant Weeds

Project No. **12634226**
Revision No. **0**
Date **06/03/2026**

FIGURE 7

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Print date: 06 Mar 2026 - 15:25

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401100 401400 401700 402000 402300 402600 402900

6456600 6456300 6456000 6455700 6455400 6455100 6454800 6454500 6454200 6453900

Legend

- Main Road
- Development Envelope
- Survey Area

Significant Weeds

- **Echium plantagineum* (DP)
- **Opuntia stricta* (DP and WoNS)
- **Rubus ulmifolius* (DP and WoNS)

Vegetation Condition

- Degraded
- Completely Degraded
- Cleared

Brixton St
Roe Hwy
Albany Hwy
Wanaping Rd
Kenwick Rd
Kenwick Link
Royal St
Spencer Rd
Yale Rd
Spring Rd
Thornlie Av

SLIP

Paper Size ISO A3
at Scale: 1:8,000

0 80 160 240 320
Meters

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 50

N

GHD

Main Roads
Roe Hwy Widening Flora and Fauna Assessment

Vegetation Condition and Significant Weeds

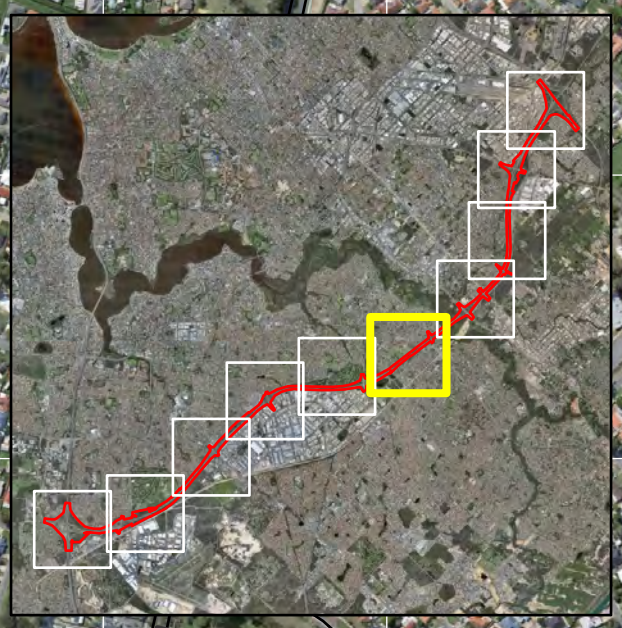
Project No. **12634226**
Revision No. **0**
Date **06/03/2026**

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Print date: 06 Mar 2026 - 15:25

Data source: Landgate_Subscription_Imagery\WANow: . Created by: shart2

399300 399600 399900 400200 400500 400800 401100 401400

6455100 6454800 6454500 6454200 6453900 6453600 6453300 6453000 6452700



Legend

- Main Road
- Development Envelope
- Survey Area

Vegetation Condition

- Completely Degraded
- Cleared

Significant Weeds

- **Rubus ulmifolius* (DP and WoNS)

Nicholson Rd
Langford Av
Spencer Rd
Roe Hwy
Yale Rd
Bannister Rd
Murdoch Rd

SLIP

Paper Size ISO A3
at Scale: 1:8,000

0 80 160 240 320
Meters

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 50

N

GHD

Main Roads
Roe Hwy Widening Flora and Fauna Assessment

Vegetation Condition and Significant Weeds

Project No. **12634226**
Revision No. **0**
Date **06/03/2026**

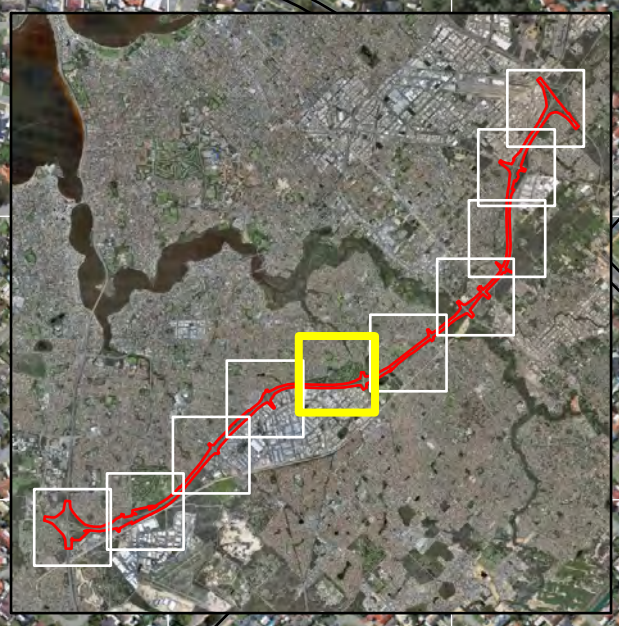
FIGURE 7

\\ghdnet\ghd\AU\Perth\Projects\61\12634226\GIS\Maps\Working\12634226_RoeHwyFloraVeg\12634226_RoeHwyFloraVeg.aprx\12634226_07_VegCondition&SigWeeds_Rev0
Print date: 06 Mar 2026 - 15:26

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397500 397800 398100 398400 398700 399000 399300

6454500 6454200 6453900 6453600 6453300 6453000 6452700 6452400 6452100



Legend

- Main Road
- Development Envelope
- Survey Area

Vegetation Condition

- Completely Degraded
- Cleared

Hossack Av

Nicholson Rd

High Rd

Roe Hwy

Bannister Rd

SLIP

Paper Size ISO A3
at Scale: 1:8,000

0 80 160 240 320
Meters

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 50

N

GHD

Main Roads
Roe Hwy Widening Flora and Fauna Assessment

Vegetation Condition and Significant Weeds

Project No. **12634226**
Revision No. **0**
Date **06/03/2026**

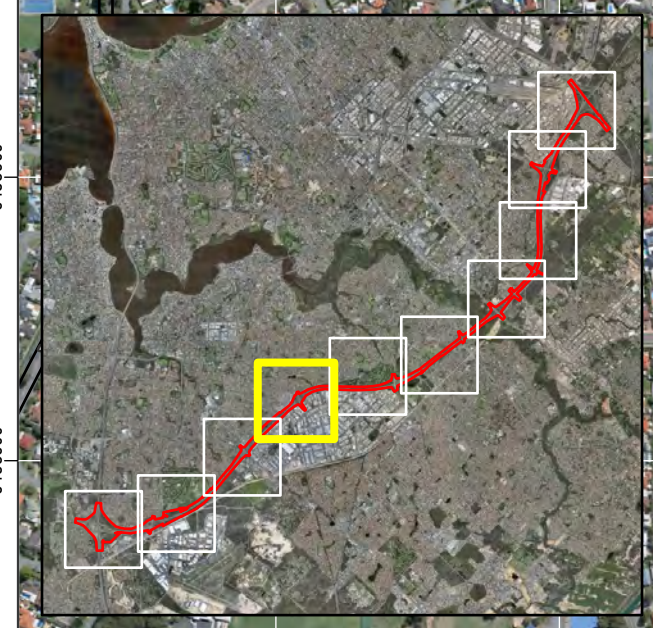
FIGURE 7

\\ghdnet\ghd\AU\Perth\Projects\61\12634226\GIS\Maps\Working\12634226_RoeHwyFloraVeg\12634226_RoeHwyFloraVeg.aprx\12634226_07_VegCondition&SigWeeds_Rev0
Print date: 06 Mar 2026 - 15:26

Data source: Landgate_Subscription_Imagery\WANow: . Created by: shart2

395700 396000 396300 396600 396900 397200 397500

6453900 6453600 6453300 6453000 6452700 6452400 6452100 6451800 6451500



Legend

- Main Road
- Development Envelope
- Survey Area

Significant Weeds

- **Asparagus asparagoides* (DP and WoNS)

Vegetation Condition

- Good
- Degraded
- Completely Degraded
- Cleared

Hossack A

Willeri Dr

Collins Rd

Roe Hwy

Bannister Rd

SLIP

Paper Size ISO A3
at Scale: 1:8,000

0 80 160 240 320
Meters

N

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 50

GHD

Main Roads
Roe Hwy Widening Flora and Fauna Assessment

Vegetation Condition and Significant Weeds

Project No. **12634226**
Revision No. **0**
Date **06/03/2026**

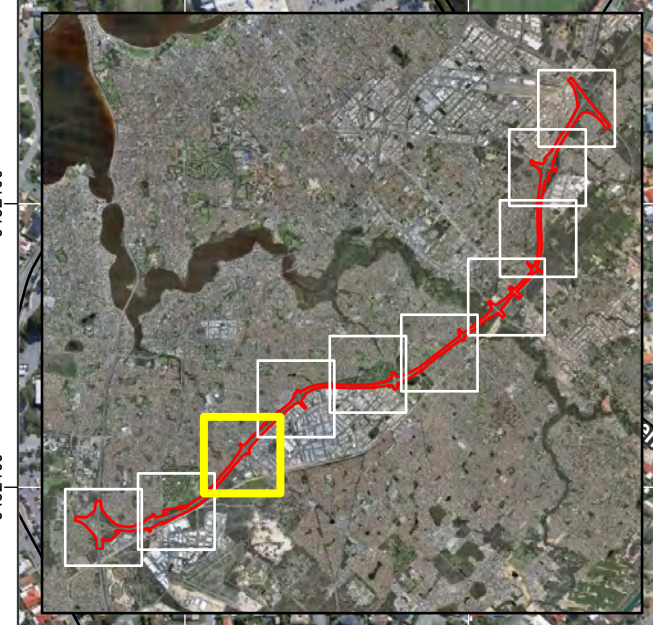
FIGURE 7

\\ghdnet\ghd\AU\Perth\Projects\61\12634226\GIS\Maps\Working\12634226_RoeHwyFloraVeg\12634226_RoeHwyFloraVeg.aprx\12634226_07_VegCondition&SigWeeds_Rev0
Print date: 06 Mar 2026 - 15:27

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394200 394500 394800 395100 395400 395700 396000

6452400 6452100 6451800 6451500 6451200 6450900 6450600 6450300 6450000



Legend

- Main Road
- Road Offsets
- Development Envelope
- Survey Area

Significant Weeds

- **Asparagus asparagoides* (DP and WoNS)
- **Zantedeschia aethiopica* (DP)

Vegetation Condition

- Very Good
- Good
- Degraded
- Completely Degraded
- Cleared

Vahland Av

South St

Roe Hwy

Bannister Rd

Ranford Rd

SLIP

Paper Size ISO A3
at Scale: 1:8,000

0 80 160 240 320
Meters

N

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 50

GHD

Main Roads
Roe Hwy Widening Flora and Fauna Assessment

Vegetation Condition and Significant Weeds

Project No. **12634226**
Revision No. **0**
Date **06/03/2026**

FIGURE 7

\\ghdnet\ghd\AU\Perth\Projects\61\12634226\GIS\Maps\Working\12634226_RoeHwyFloraVeg\12634226_RoeHwyFloraVeg.aprx\12634226_07_VegCondition&SigWeeds_Rev0
Print date: 06 Mar 2026 - 15:27

Data source: Landgate_Subscription_Imagery\WANow: . Created by: shart2

392400 392700 393000 393300 393600 393900 394200 394500

6450900 6450600 6450300 6450000 6449700 6449400 6449100 6448800 6448500

Legend

- Main Road
- Road Offsets
- Development Envelope
- Survey Area

Significant Weeds

- **Asparagus asparagoides* (DP and WoNS)
- **Zantedeschia aethiopica* (DP)

Vegetation Condition

- Very Good
- Good
- Degraded
- Completely Degraded
- Cleared

Farrington Rd
Karel Av
Roe Hwy
Berrigan Dr

SLIP

Paper Size ISO A3
at Scale: 1:8,000

0 80 160 240 320
Meters

N

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 50

GHD

Main Roads
Roe Hwy Widening Flora and Fauna Assessment

Vegetation Condition and Significant Weeds

Project No. **12634226**
Revision No. **0**
Date **06/03/2026**

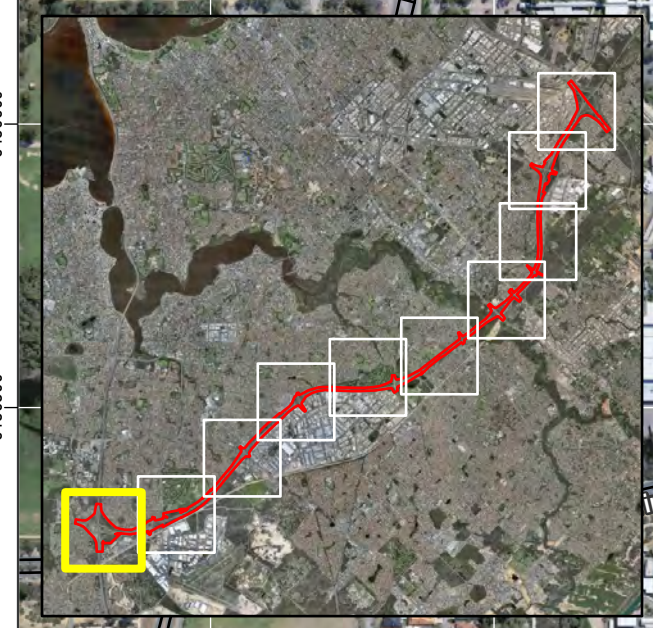
FIGURE 7

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Print date: 06 Mar 2026 - 15:28

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390600 390900 391200 391500 391800 392100 392400

6450600 6450300 6450000 6449700 6449400 6449100 6448800 6448500 6448200 6447900



Legend

- Main Road
- Road Offsets
- Development Envelope
- Survey Area

Significant Weeds

- **Zantedeschia aethiopica* (DP)

Vegetation Condition

- Very Good
- Good
- Degraded
- Completely Degraded
- Cleared

ington Rd

Murdoch Dr

Roe Hwy

Kwinana Fwy

Berrigan Dr

SLIP

Paper Size ISO A3
at Scale: 1:8,000

0 80 160 240 320
Meters

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 50

N

GHD

Main Roads
Roe Hwy Widening Flora and Fauna Assessment

Vegetation Condition and Significant Weeds

Project No. **12634226**
Revision No. **0**
Date **06/03/2026**

Page10 of 10
FIGURE 7

\\ghdnet\ghd\AU\Perth\Projects\61\12634226\GIS\Maps\Working\12634226_RoeHwyFloraVeg\12634226_RoeHwyFloraVeg.aprx\12634226_07_VegCondition&SigWeeds_Rev0
Print date: 06 Mar 2026 - 15:28

Data source: Landgate_Subscription_Imagery\WANow: . Created by: shart2

401100 401400 401700 402000 402300 402600 402900

6456600 6456300 6456000 6455700 6455400 6455100 6454800 6454500 6454200 6453900



Legend

- Main Road
- Development Envelope
- Survey Area

Significant Flora

- *Grevillea thelemanniana* (T)

Brixton St
Roe Hwy
Albany Hwy
Wanaping Rd
Kenwick Rd
Kenwick Link
Royal St
Spencer R
Yale Rd
Spring Rd
Thornlie Av

Note: Numerical labels refer to the significant ecological community patch number

SLIP

Paper Size ISO A3
at Scale: 1:8,000

0 80 160 240 320
Meters

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 50

N

GHD

Main Roads
Roe Hwy Widening Flora and Fauna Assessment

Significant Vegetation and Flora

Project No. **12634226**
Revision No. **0**
Date **06/03/2026**

FIGURE 8A

\\ghdnet\ghd\AU\Perth\Projects\61\12634226\GIS\Maps\Working\12634226_RoeHwyFloraVeg\12634226_RoeHwyFloraVeg.aprx\12634226_08A_SigVegetation&Flora_Rev0
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394200 394500 394800 395100 395400 395700 396000

6452400 6452100 6451800 6451500 6451200 6450900 6450600 6450300 6450000



Legend

- Quadrat
- Releve
- Main Road
- Road Offsets
- Development Envelope
- Survey Area

Significant Flora

- *Caladenia huegelii* (T)

Significant Vegetation

- Tuart Woodlands and Forests of the SCP TEC/PEC patch

Vahland Av
South St
Roe Hwy
Bannister Rd
Ranford Rd

2
3

Roe04R
B1 (0.27Ha)
Roe07
B2 (4.12Ha)
Roe05

Note: Numerical labels refer to the significant ecological community patch number

SLIP

Paper Size ISO A3
at Scale: 1:8,000

0 80 160 240 320
Meters

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 50

N

GHD

Main Roads
Roe Hwy Widening Flora and Fauna Assessment

Significant Vegetation and Flora

Project No. **12634226**
Revision No. **0**
Date **06/03/2026**

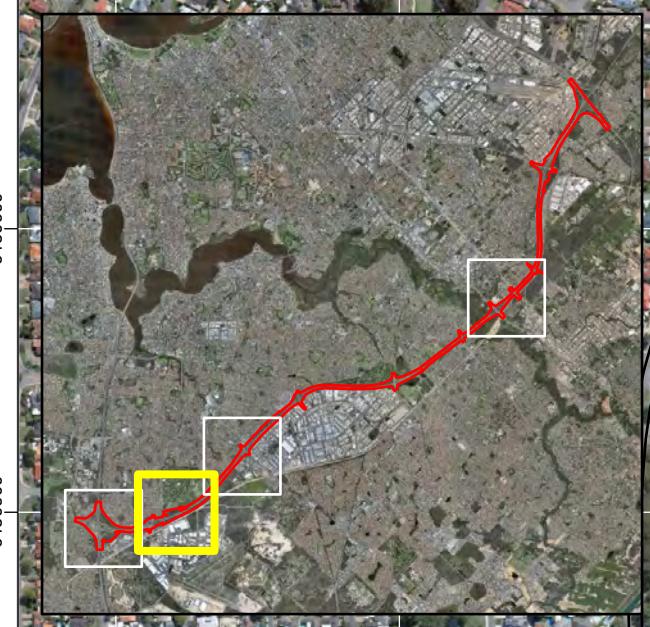
Page 2 of 4
FIGURE 8A

\\ghdnet\ghd\AU\Perth\Projects\61\12634226\GIS\Maps\Working\12634226_RoeHwyFloraVeg\12634226_RoeHwyFloraVeg.aprx\12634226_08A_SigVegetation&Flora_Rev0
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6450900 6450600 6450300 6450000 6449700 6449400 6449100 6448800 6448500



Legend

- Quadrat
- Releve
- Main Road
- Road Offsets
- Development Envelope
- Survey Area

Significant Flora

- *Caladenia huegelii* (T)

Karel Av
Rd
Roe07
B2 (4.12Ha)
Roe05
Roe03
Roe19R
Roe04
Roe13
Roe15
A (5.68Ha)
Roe Hwy
Roe16
C (5.54Ha)
Roe14
Berrigan Dr

Note: Numerical labels refer to the significant ecological community patch number

SLIP

Paper Size ISO A3
at Scale: 1:8,000

0 80 160 240 320
Meters

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 50

N

GHD

Main Roads
Roe Hwy Widening Flora and Fauna Assessment

Significant Vegetation and Flora

Project No. **12634226**
Revision No. **0**
Date **06/03/2026**

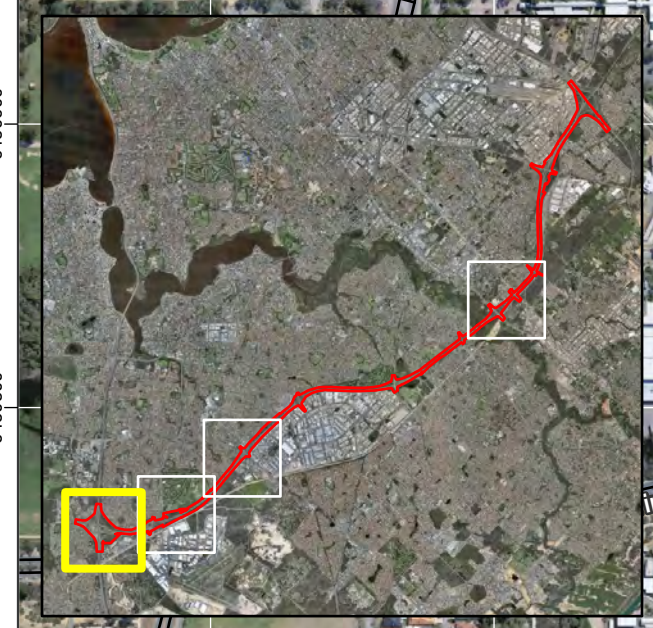
FIGURE 8A

\\ghdnet\ghd\AU\Perth\Projects\61\12634226\GIS\Maps\Working\12634226_RoeHwyFloraVeg\12634226_RoeHwyFloraVeg.aprx\12634226_08A_SigVegetation&Flora_Rev0
Print date: 06 Mar 2026 - 15:30

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390600 390900 391200 391500 391800 392100 392400

6450600 6450300 6450000 6449700 6449400 6449100 6448800 6448500 6448200 6447900



ington Rd

Roe Hwy

Kwinana Fwy

Berrigan Dr

Roe06

E (4.9Ha)

Roe08

Roe14

D (6.7Ha)

1

Roe12

Roe10

Legend

- Quadrat
- Main Road
- Road Offsets
- Development Envelope
- Survey Area

Significant Flora

- *Grevillea olivacea* (P4) Planted

Significant Vegetation

- Tuart Woodlands and Forests of the SCP TEC

Significant Vegetation

- Tuart Woodlands and Forests of the SCP TEC/PEC patch

Note: Numerical labels refer to the significant ecological community patch number

SLIP

Paper Size ISO A3
at Scale: 1:8,000

0 80 160 240 320
Meters

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 50

N

GHD

Main Roads
Roe Hwy Widening Flora and Fauna Assessment

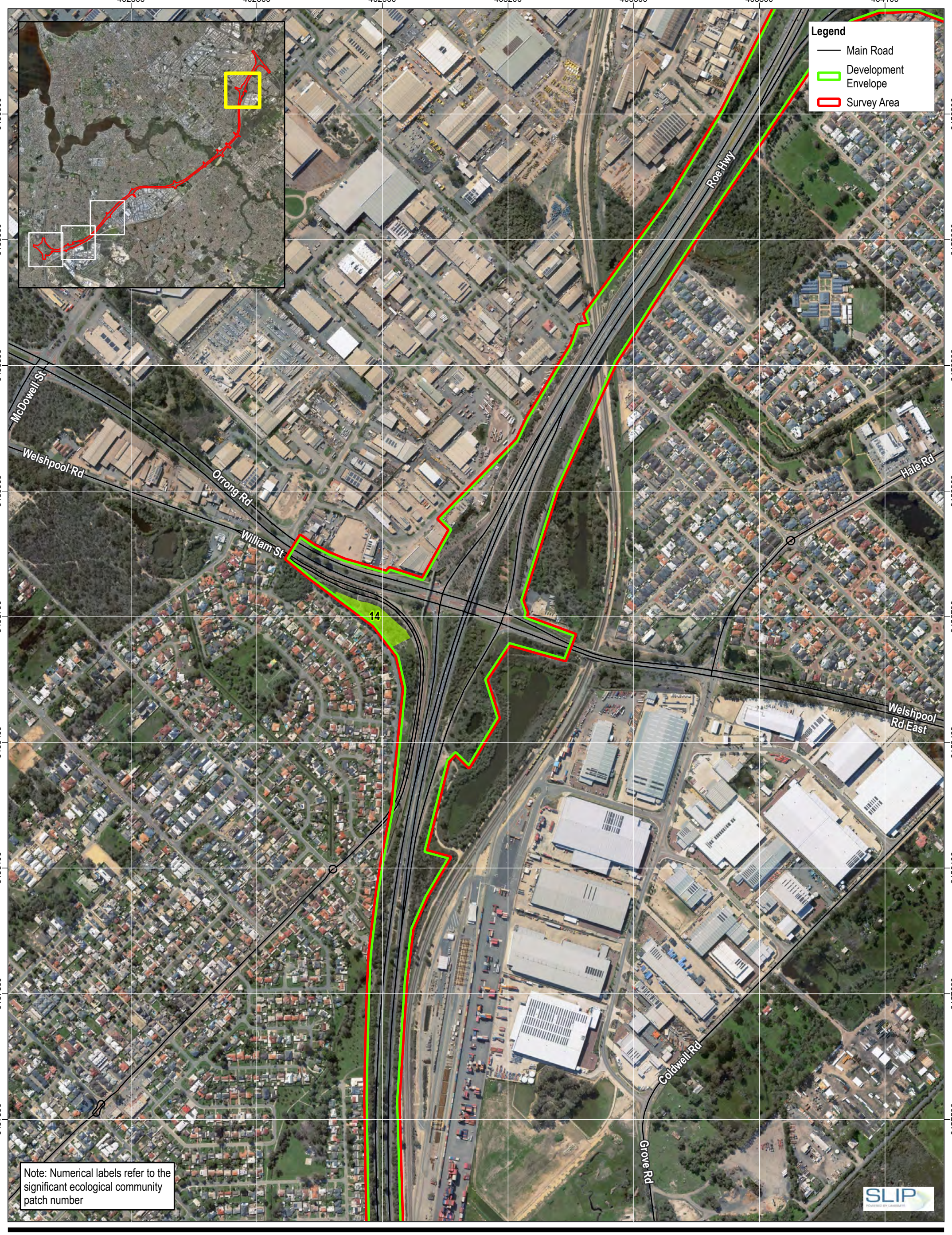
Significant Vegetation and Flora

Project No. **12634226**
Revision No. **0**
Date **06/03/2026**

FIGURE 8A

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Paper Size ISO A3
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0 80 160 240 320
Meters

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 50

N

GHD

Main Roads
Roe Hwy Widening Flora and Fauna Assessment

Project No. **12634226**
Revision No. **0**
Date **06/03/2026**

Significant Vegetation and Flora

FIGURE 8B

\\ghdnet\ghd\AU\Perth\Projects\61\12634226\GIS\Maps\Working\12634226_RoeHwyFloraVeg\12634226_RoeHwyFloraVeg.aprx\12634226_08B_SigVegetation&Flora_Rev0
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394200 394500 394800 395100 395400 395700 396000

6452400 6452100 6451800 6451500 6451200 6450900 6450600 6450300 6450000



Legend

- Quadrat
- Releve
- Main Road
- Road Offsets
- Development Envelope
- Survey Area

Significant Vegetation

- *Banksia* woodlands of the SCP TEC
- FCT 21c - Low lying *Banksia attenuata* woodlands or shrublands P3

Vahland Av

South St

Bannister Rd

Ranford Rd

13

Roe04R

5

B1 (0.27Ha)

12

Roe07

5

B2 (4.12Ha)

6

Roe05

5

Note: Numerical labels refer to the significant ecological community patch number

SLIP

Paper Size ISO A3
at Scale: 1:8,000

0 80 160 240 320
Meters

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 50

N

GHD

Main Roads
Roe Hwy Widening Flora and Fauna Assessment

Significant Vegetation and Flora

Project No. **12634226**
Revision No. **0**
Date **06/03/2026**

Page 2 of 4
FIGURE 8B

\\ghdnet\ghd\AU\Perth\Projects\61\12634226\GIS\Maps\Working\12634226_RoeHwyFloraVeg\12634226_RoeHwyFloraVeg.aprx\12634226_08B_SigVegetation&Flora_Rev0
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392400 392700 393000 393300 393600 393900 394200 394500

6450900 6450600 6450300 6450000 6449700 6449400 6449100 6448800 6448500

Legend

- Quadrat
- Releve
- Main Road
- Road Offsets
- Development Envelope
- Survey Area

Significant Vegetation

- *Banksia* woodlands of the SCP TEC
- FCT 21c - Low lying *Banksia attenuata* woodlands or shrublands P3

Karel Av
Farrington Rd
Roe Hwy
Berrigan Dr

Roe07
Roe05
Roe03
Roe19R
Roe04
Roe15
Roe13
Roe16
Roe14

12
B2 (4.12Ha)
5
6
A (5.68Ha)
C (5.54Ha)
11
4

Note: Numerical labels refer to the significant ecological community patch number

SLIP

Paper Size ISO A3
at Scale: 1:8,000

0 80 160 240 320
Meters

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 50

N

GHD

Main Roads
Roe Hwy Widening Flora and Fauna Assessment

Significant Vegetation and Flora

Project No. **12634226**
Revision No. **0**
Date **06/03/2026**

FIGURE 8B

\\ghdnet\ghd\AU\Perth\Projects\61\12634226\GIS\Maps\Working\12634226_RoeHwyFloraVeg\12634226_RoeHwyFloraVeg.aprx\12634226_08B_SigVegetation&Flora_Rev0
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6450600 6450300 6450000 6449700 6449400 6449100 6448800 6448500 6448200 6447900



Legend

- Quadrat
- Main Road
- Road Offsets
- Development Envelope
- Survey Area

Significant Vegetation

- *Banksia* woodlands of the SCP TEC

Kwinana Fwy

Roe Hwy

Roe06 Roe08 Roe10 Roe12 Roe14

D (6.7Ha) E (4.9Ha)

1 2 3 4 7 8 9 10

Berrigan Dr

Note: Numerical labels refer to the significant ecological community patch number

SLIP

Paper Size ISO A3
at Scale: 1:8,000

0 80 160 240 320
Meters

N

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 50

GHD

Main Roads
Roe Hwy Widening Flora and Fauna Assessment

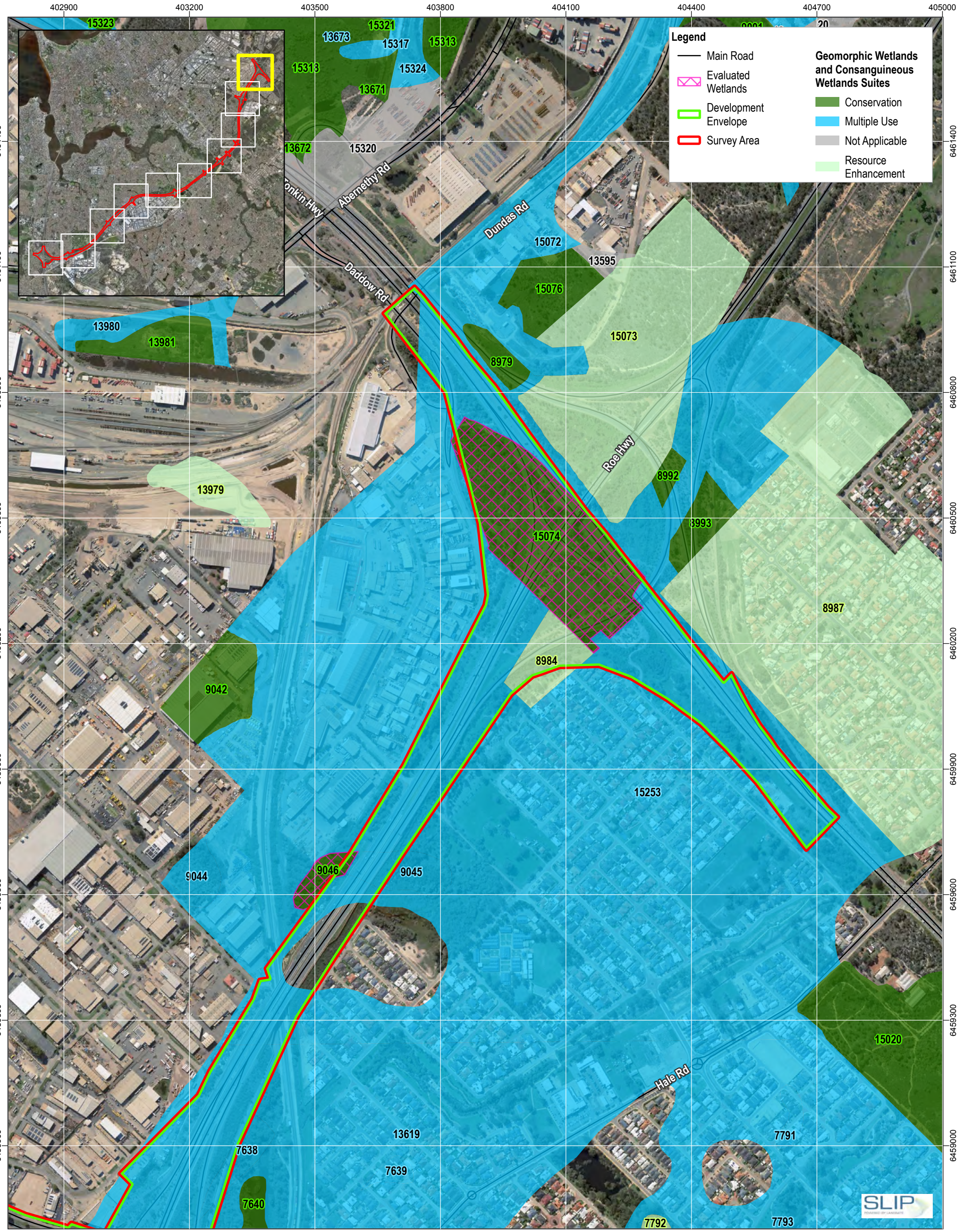
Significant Vegetation and Flora

Project No. **12634226**
Revision No. **0**
Date **06/03/2026**

FIGURE 8B

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0 80 160 240 320
Meters

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 50

N

GHD

Main Roads
Roe Hwy Widening Flora and Fauna Assessment

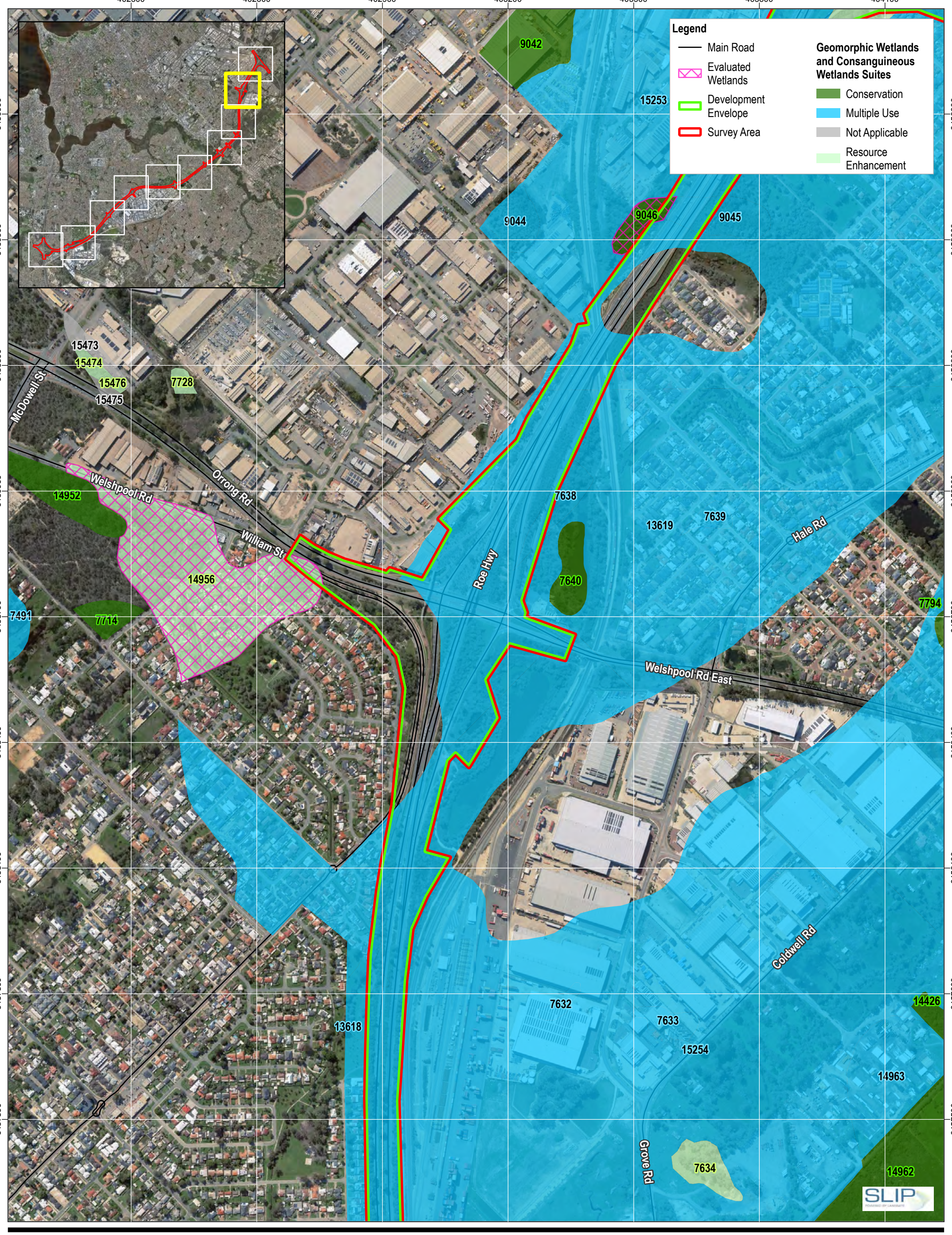
Wetland Assessment

Project No. **12634226**
Revision No. **0**
Date **06/03/2026**

FIGURE 9

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Paper Size ISO A3
at Scale: 1:8,000

0 80 160 240 320
Meters

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 50

N

GHD

Main Roads
Roe Hwy Widening Flora and Fauna Assessment

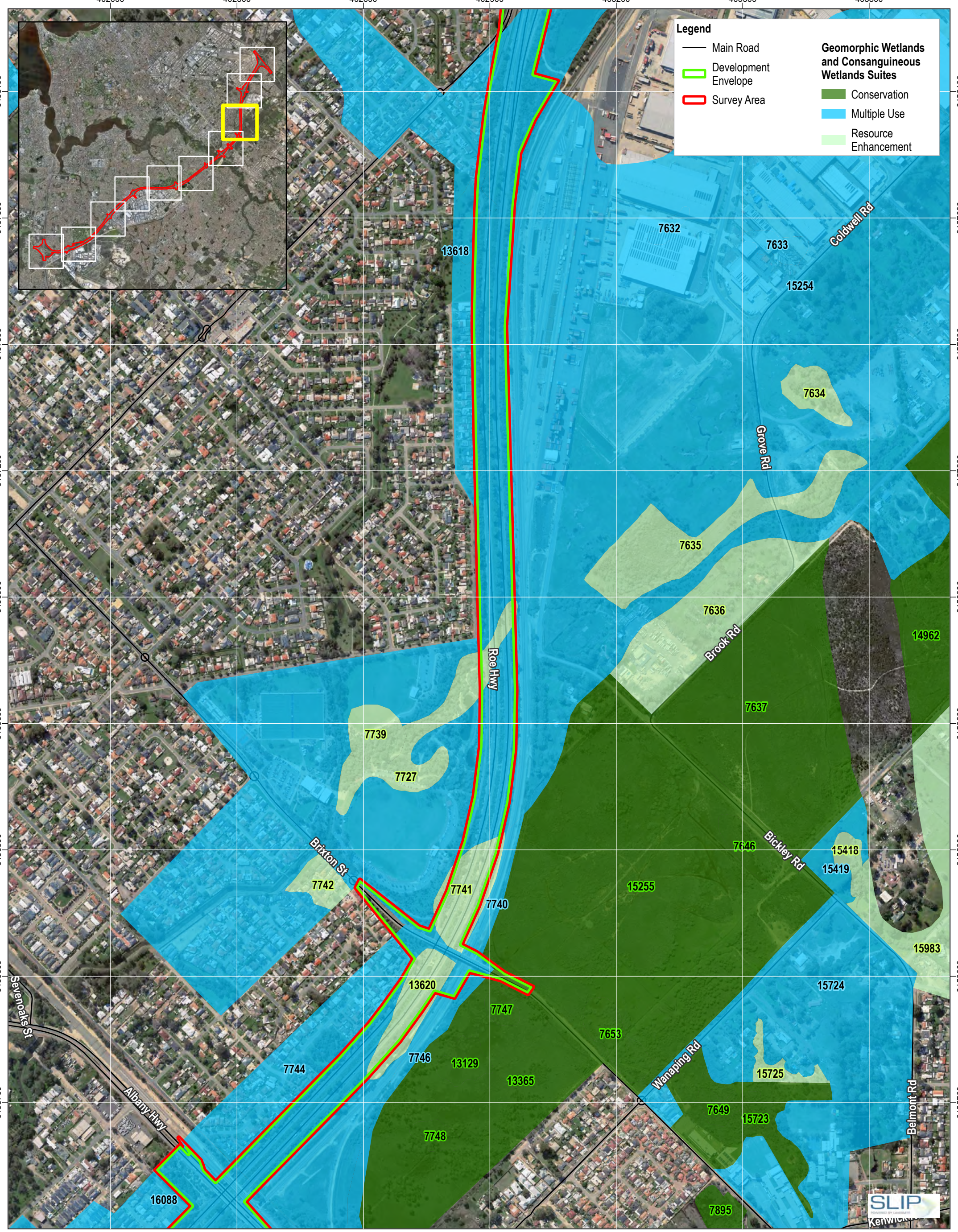
Wetland Assessment

Project No. **12634226**
Revision No. **0**
Date **06/03/2026**

FIGURE 9

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Data source: Landgate_Subscription_Imagery\WANow: . Created by: shart2



Paper Size ISO A3
at Scale: 1:8,000

0 80 160 240 320
Meters

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 50

N

GHD

Main Roads
Roe Hwy Widening Flora and Fauna Assessment

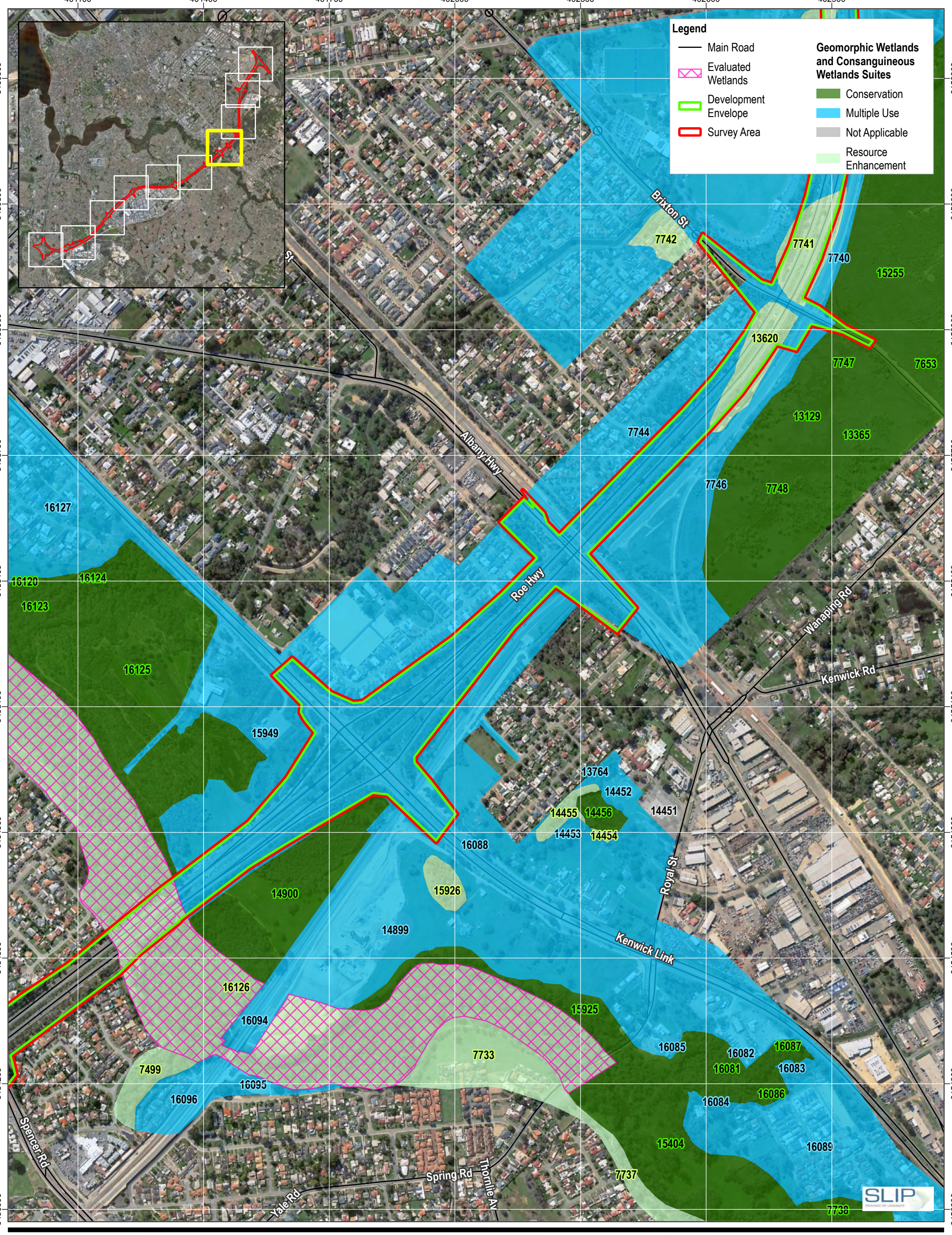
Wetland Assessment

Project No. **12634226**
Revision No. **0**
Date **06/03/2026**

FIGURE 9

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Paper Size ISO A3
at Scale: 1:8,000

0 80 160 240 320
Meters

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 50

N

GHD

Main Roads
Roe Hwy Widening Flora and Fauna Assessment

Wetland Assessment

Project No. **12634226**
Revision No. **0**
Date **06/03/2026**

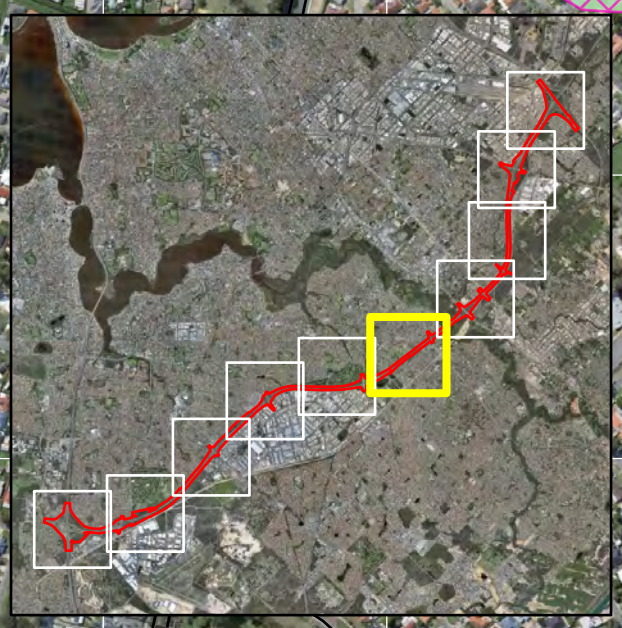
FIGURE 9

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399300 399600 399900 400200 400500 400800 401100 401400

6455100 6454800 6454500 6454200 6453900 6453600 6453300 6453000 6452700



Legend

- Main Road
- Evaluated Wetlands
- Development Envelope
- Survey Area

Geomorphic Wetlands and Consanguineous Wetlands Suites

- Conservation
- Multiple Use
- Resource Enhancement

Nicholson Rd
Langford Av
Spencer Rd
Roe Hwy
Yale Rd
Bannister Rd
Murdoch Rd

15949
16088
14900
16095
7499
16096
7444
13622
13621
16098
16100
16104
16101
16099
16097
16103
16102

SLIP

Paper Size ISO A3
at Scale: 1:8,000

0 80 160 240 320
Meters

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 50

N

GHD

Main Roads
Roe Hwy Widening Flora and Fauna Assessment

Wetland Assessment

Project No. **12634226**
Revision No. **0**
Date **06/03/2026**

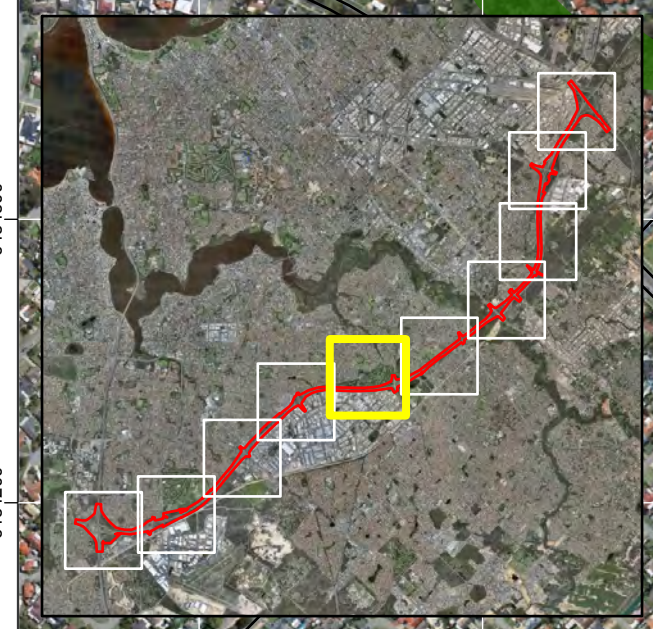
FIGURE 9

\\ghdnet\ghd\AU\Perth\Projects\61\12634226\GIS\Maps\Working\12634226_RoeHwyFloraVeg\12634226_RoeHwyFloraVeg.aprx\12634226_09_WetlandAssessment_Rev0
Print date: 06 Mar 2026 - 15:34

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397500 397800 398100 398400 398700 399000 399300

6454500 6454200 6453900 6453600 6453300 6453000 6452700 6452400 6452100



Legend

- Main Road
- Development Envelope
- Survey Area

Geomorphic Wetlands and Consanguineous Wetlands Suites

- Conservation
- Multiple Use

7054

Hossack Av

Nicholson Rd

High Rd

7444

13622

13621

Roe Hwy

Bannister Rd

SLIP

Paper Size ISO A3
at Scale: 1:8,000

0 80 160 240 320
Meters

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 50

N

GHD

Main Roads
Roe Hwy Widening Flora and Fauna Assessment

Wetland Assessment

Project No. **12634226**
Revision No. **0**
Date **06/03/2026**

FIGURE 9

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Paper Size ISO A3
at Scale: 1:8,000

0 80 160 240 320
Meters

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 50

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GHD

Main Roads
Roe Hwy Widening Flora and Fauna Assessment

Wetland Assessment

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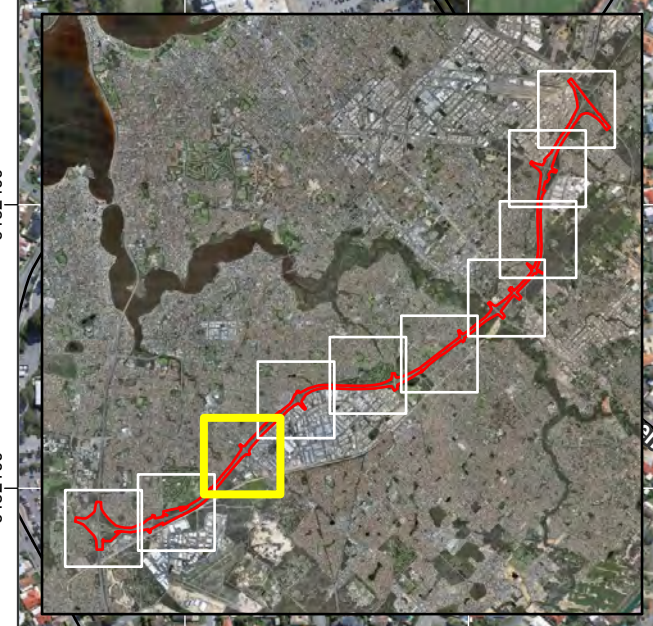
FIGURE 9

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Print date: 06 Mar 2026 - 15:35

Data source: Landgate_Subscription_Imagery\WANow: . Created by: shart2

394200 394500 394800 395100 395400 395700 396000

6452400 6452100 6451800 6451500 6451200 6450900 6450600 6450300 6450000



Legend

- Main Road
- Road Offsets
- Development Envelope
- Survey Area

Geomorphic Wetlands and Consanguineous Wetlands Suites

- Conservation
- Multiple Use
- Resource Enhancement

Vahland Av

South St

Roe Hwy

Bannister Rd

Ranford Rd

16108 16109 16113 16119 16116 6912 16112 16118 16111 16115 16110 16114 16117

SLIP

Paper Size ISO A3
at Scale: 1:8,000

0 80 160 240 320
Meters

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 50

N

GHD

Main Roads
Roe Hwy Widening Flora and Fauna Assessment

Wetland Assessment

Project No. **12634226**
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FIGURE 9

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Print date: 06 Mar 2026 - 15:36

Data source: Landgate_Subscription_Imagery\WANow: . Created by: shart2

392400 392700 393000 393300 393600 393900 394200 394500

6450900 6450600 6450300 6450000 6449700 6449400 6449100 6448800 6448500

Legend

- Main Road
- Road Offsets
- Development Envelope
- Survey Area

Geomorphic Wetlands and Consanguineous Wetlands Suites

- Resource Enhancement

Farrington Rd

Karel Av

Roe Hwy

6650

Berrigan Dr

SLIP

Paper Size ISO A3
at Scale: 1:8,000

0 80 160 240 320
Meters

N

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 50

GHD

Main Roads
Roe Hwy Widening Flora and Fauna Assessment

Wetland Assessment

Project No. **12634226**
Revision No. **0**
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FIGURE 9

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Print date: 06 Mar 2026 - 15:36

Data source: Landgate_Subscription_Imagery\WANow: . Created by: shart2

390600 390900 391200 391500 391800 392100 392400

6450600 6450300 6450000 6449700 6449400 6449100 6448800 6448500 6448200 6447900

Legend

- Main Road
- Road Offsets
- Development Envelope
- Survey Area

Geomorphic Wetlands and Consanguineous Wetlands Suites

- Conservation
- Multiple Use
- Resource Enhancement

ington Rd

6653

Murdoch Dr

Roe Hwy

Kwinana Fwy

6650

13320

Berrigan Dr

SLIP

Paper Size ISO A3
at Scale: 1:8,000

0 80 160 240 320
Meters

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 50

N

GHD

Main Roads
Roe Hwy Widening Flora and Fauna Assessment

Wetland Assessment

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FIGURE 9

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Appendix B

Relevant legislation

Relevant legislation

Federal *Environment Protection and Biodiversity Conservation Act 1999*

The *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) is the Federal Government's central piece of environmental legislation. It provides a legal framework to protect and manage nationally and internationally important flora, fauna, ecological communities and heritage places, which are defined in the EPBC Act as Matters of National Environmental Significance (MNES).

The biological aspects listed as MNES include:

Nationally threatened flora and fauna species and ecological communities

Migratory species

A person must not undertake an action that has, will have, or is likely to have a significant impact (direct or indirect) on MNES, without approval from the Federal Minister for the Environment.

The EPBC Act is administered by the Department of Climate Change, Energy, the Environment and Water (DCCEEW).

State *Environmental Protection Act 1986*

The *Environmental Protection Act 1986* (EP Act) is the primary legislative Act dealing with the protection of the environment in Western Australia. The Act allows the Environmental Protection Authority (EPA), to prevent, control and abate pollution and environmental harm, for the conservation, preservation, protection, enhancement and management of the environment and for matters incidental to or connected with the foregoing. Part IV of the EP Act is administered by the EPA and makes provisions for the EPA to undertake environmental impact assessment of significant proposals, strategic proposals and land use planning schemes.

The Department of Water and Environment Regulation (DWER) is responsible for administering the clearing provisions of the EP Act (Part V). Clearing of native vegetation in Western Australia requires a permit from the DWER, unless exemptions apply. Applications for clearing permits are assessed by the Department and decisions are made to grant or refuse the application in accordance with the Act. When making a decision the assessment considers clearing against the ten clearing principles as specified in Schedule 5 of the EP Act:

1. Native vegetation should not be cleared if it comprises a high level of biodiversity.
2. Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of a significance habitat for fauna indigenous to Western Australia.
3. Native vegetation should not be cleared if it includes, or is necessary, for the continued existence of rare flora.
4. Native vegetation should not be cleared if it comprises the whole or part of native vegetation in an area that has been extensively cleared.
5. Native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been extensively cleared.
6. Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland.
7. Native vegetation should not be cleared if the clearing of the vegetation is likely to have an impact on the environmental values of any adjacent or nearby conservation area.
8. Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation.

9. Native vegetation should not be cleared if the clearing of the vegetation is likely to cause deterioration in the quality of surface or underground water.
10. Native vegetation should not be cleared if clearing the vegetation is likely to cause, or exacerbate, the incidence of flooding.

Exemptions for clearing include clearing that is a requirement of a written law or authorised under certain statutory processes (listed in Schedule 6 of the EP Act) and exemptions for prescribed low impact day-to-day activities (prescribed in the Environmental Protection (Clearing of Native Vegetation) Regulations 2004); these exemptions do not apply in environmentally sensitive areas (ESAs).

State *Biodiversity and Conservation Act 2016*

The *Biodiversity Conservation Act 2016* (BC Act) provides for the conservation and protection of biodiversity and biodiversity components, as well as the promotion of the ecologically sustainable use of biodiversity components in Western Australia. The BC Act replaces both the repealed *Wildlife Conservation Act 1950* (WC Act) and the *Sandalwood Act 1929* (Sandalwood Act), as well as their associated regulations. To attain the objectives of the BC Act, principles of ecological sustainable development have been established:

– Decision-making processes should effectively integrate both long-term and short-term economic, environmental, social and equitable considerations
– If there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation
– The present generation should ensure that the health, diversity and productivity of the environment is maintained or enhanced for the benefit of future generations
– The conservation of biodiversity and ecological integrity should be a fundamental consideration indecision-making
– Improved valuation, pricing and incentive mechanisms should be promoted.

The BC Act is administered by the Department of Biodiversity Conservation and Attractions (DBCA).

State Biosecurity and Agriculture Management Act 2007

The *Biosecurity and Agriculture Management Act 2007* (BAM Act) and associated regulations are administered by the Department of Primary Industries and Regional Development (DPIRD) and replace the repealed *Agriculture and Related Resources Protection Act 1976.* The main purposes of the BAM Act and its regulations are to:

– Prevent new animal and plant pests (vermin and weeds) and diseases from entering WA
– Manage the impact and spread of those pests already present in the state
– Safely manage the use of agricultural and veterinary chemicals
– Increased control over the sale of agricultural products that contain violative chemical residues.

The Western Australian Organism List (WAOL) provides the status of organisms which have been categorised under the BAM Act. A Declared Pest is a prohibited organism or an organism for which a declaration under Section 22(2) of the Act is in force. Declared Pests may be assigned a control category including: C1 (exclusion), C2 (eradication) and C3 (management). The category may apply to the whole of the State, LGAs, districts, individual properties or even paddocks, and all landholders are obliged to comply with the specific category of control. Categories of control are defined below.

DPIRD Categories for Declared Pests under the BAM Act

Control class code	Description
C1 (Exclusion)	Pests will be assigned to this category if they are not established in Western Australia and control measures are to be taken, including border checks, in order to prevent them entering and establishing in the State.
C2 (Eradication)	Pests will be assigned to this category if they are present in Western Australia in low enough numbers or in sufficiently limited areas that their eradication is still a possibility.
C3 (Management)	Pests will be assigned to this category if they are established in Western Australia but it is feasible, or desirable, to manage them in order to limit their damage. Control measures can prevent a C3 pest from increasing in population size or density or moving from an area in which it is established into an area which currently is free of that pest.

Background information

Environmentally Sensitive Areas

Environmentally Sensitive Areas (ESAs) are declared by the Minister for Environment under Section 51B of the EP Act. The Table below outlines the aspects of areas declared as ESA in the Environmental Protection (Environmentally Sensitive Areas) Notice 2005.

Aspects of ESAs

Aspects of Environmentally Sensitive Areas
A declared World Heritage property as defined in Section 13 of the EPBC Act.
An area that is included on the Register of the National Estate (RNE), because of its natural values, under the *Australian Heritage Commission Act 1975* of the Commonwealth (the RNE was closed in 2007 and is no longer a statutory list – all references to the RNE were removed from the EPBC Act on 19 February 2012).
A defined wetland and the area within 50 m of the wetland. Defined wetlands include Ramsar wetlands, conservation category wetlands and nationally important wetlands.
The area covered by vegetation within 50 m of rare flora, to the extent to which the vegetation is continuous with the vegetation in which the rare flora is located.
The area covered by a Threatened Ecological Community.
A Bush Forever Site listed in "Bush Forever" Volumes 1 and 2 (2000), published by the Western Australia Planning Commission, except to the extent to which the site is approved to be developed by the Western Australia Planning Commission.
The areas covered by the *Environmental Protection (Gnangara Mound Crown Land) Policy 1992*.
The areas covered by the *Environmental Protection (Western Swamp Tortoise Habitat) Policy 2002.*
The areas covered by the lakes to which the *Environmental Protection (Swan Coastal Plain Lakes) Policy 1992* (EPP Lakes) applies.
Protected wetlands as defined in the *Environmental Protection (South West Agricultural Zone Wetlands) Policy 1998*.

Reserves and conservation areas

Bush Forever

Bush Forever, which was released in December 2000 and proclaimed in 2010, is a Government initiate aimed to retain and protect regionally significant bushland on the Swan Coastal Plain within the Perth Metropolitan Region. Bush Forever aims to protect more than 51,000 hectares of regionally significant bushland within 287 sites across the metropolitan portion of the Swan Coastal Plain (Government of Western Australia (GoWA) 2000). Bush Forever sites constitute ESAs as declared by a notice under Section 51B of the EP Act.

Department of Biodiversity, Conservation and Attractions managed land and waters

DBCA manages lands and waters throughout Western Australia to conserve ecosystems and species, and to provide for recreation and appreciation of the natural environment. DBCA managed lands and waters include national parks, conservation parks and reserves, marine parks and reserves, regional parks, nature reserves, State forest and timber reserves. Access to, or through, some areas of DBCA managed lands may require a permit or could be restricted due to management activities. Proposed land use changes and development proposals that abut DBCA managed lands will generally be referred to DBCA throughout the assessment process.

Wetlands

Wetlands include not only lakes with open water, but areas of seasonally, intermittently or permanently waterlogged soil.

Ramsar Wetlands (Wetlands of International Importance)

The Convention of Wetlands of International Importance was signed in 1971 at the Iranian town of Ramsar. The Convention has since been referred to as the Ramsar Convention. Ramsar Listed wetlands are “sites containing representative, rare or unique wetlands, or wetlands that are important for conserving biological diversity … because of their ecological, botanical, zoological, limnological or hydrological importance” (DAWE 2020b). Once a Ramsar Listed Wetland is designated, the country agrees to manage its conservation and ensure its wise use. Under the Convention, wise use is broadly defined as “maintaining the ecological character of a wetland” (DAWE 2020b).

Nationally important wetlands

Wetlands of national significance are listed under the Directory of Important Wetlands in Australia. Nationally important wetlands are wetlands which meet at least one of the following criteria (DAWE 2020a):

– It is a good example of a wetland type occurring within a biogeographic region in Australia
– It is a wetland which plays an important ecological or hydrological role in the natural functioning of a major wetland system/complex
– It is a wetland which is important as the habitat for animal taxa at a vulnerable stage in their life cycles, or provides a refuge when adverse conditions such as drought prevail
– The wetland supports one percent or more of the national populations of any native plant or animal taxa
– The wetland supports native plant or animal taxa or communities which are considered endangered or vulnerable at the national level
– The wetland is of outstanding historical or cultural significance.

Geomorphic wetlands

Categorisation of wetlands has been conducted by Hill et al. (1996), delineating Swan Coastal Plain wetlands into levels of protection and management categories. Conservation Category Wetlands are wetlands that support high levels of attributes and functions. Resource Enhancement Wetlands are those that have been partly modified but still support substantial functions and attributes. Multiple Use Wetlands are classified as those wetlands with few attributes that still provide important wetland functions. Multiple Use wetlands have few important ecological attributes and functions remaining.

The Geomorphic Wetlands Swan Coastal Plain dataset displays the location, boundary, geomorphic classification (wetland type) and management category of wetlands on the Swan Coastal Plain.

Wetland management categories

Category	General Description	Objectives
Conservation	*Wetlands which support a high level of attributes and functions.*	*To preserve and protect their existing conservation values through various mechanisms including:* – *reservation in national parks, Crown reserves and state-owned land* – *wetland covenanting by landowners.* *No development or clearing is considered appropriate. These are the most valuable wetlands and any activity that may lead to further loss or degradation is inappropriate.*
Resource Enhancement	*Wetlands which may have been modified or degraded, but still support substantial attributes and functions.*	*To manage, restore and protect towards improving their conservation value and hydrological/hydrogeological regime. These wetlands have the potential to be restored or rehabilitated to Conservation category focusing on wetland functions, structure and biodiversity value.*

Category	General Description	Objectives
Multiple Use	*Wetlands with few remaining important attributes and functions.*	*The use, development and management of these wetlands should be considered in the context of ecologically sustainable development and best management practice catchment planning. Their role in managing the natural hydrological and hydrogeological regime of the general area should be maintained.*

Wetland landform types adapted from DBCA (2017) methodology for evaluation of wetlands

Hydrology	Wetland Landform			
	Basin	**Flat**	**Channel**	**Slope**
Permanent inundation	Lake		River	
Seasonal inundation	Sumpland	Floodplain	Creek	
Seasonal waterlogging	Dampland	Palusplain	Trough	Paluslope

Vegetation extent and status

The National Objectives and Targets for Biodiversity Conservation 2001–2005 (Commonwealth of Australia 2001) recognise that the retention of 30 percent or more of the pre-clearing extent of each ecological community is necessary if Australia's biological diversity is to be protected. This is the threshold level below which species loss appears to accelerate exponentially and loss below this level should not be permitted. This level of recognition is in keeping with the targets recommended in the review of the National Strategy for the Conservation of Australia's Biological Diversity (ANZECC 2000).

The extent of remnant native vegetation in WA has been assessed by Shepherd et al. (2002) and the GoWA (2019), based on broadscale vegetation association mapping by Beard (various publications). The GoWA produces Statewide Vegetation Statistics Reports that are used for a number of purposes including conservation planning, land use planning and when assessing development applications. The reports are updated every 2-3 years.

Vegetation condition

The vegetation condition can be assessed in accordance with the vegetation condition rating scale for the South West and Interzone Botanical Provinces (EPA 2016a). The scale recognises the intactness of vegetation and consists of six rating levels as outlined below.

Vegetation condition rating scale for the South West and Interzone Botanical Provinces

Condition	South West and Interzone Botanical Provinces description
Pristine	Pristine or nearly so, no obvious signs of damage caused by human activities since European settlement.
Excellent	Vegetation structure intact, disturbance affecting individual species and weeds are non-aggressive species. Damage to trees caused by fire, the presence of non-aggressive weeds and occasional vehicle tracks.
Very Good	Vegetation structure altered, obvious signs of disturbance. Disturbance to vegetation structure caused by repeated fires, the presence of some more aggressive weeds, dieback, logging and grazing.
Good	Vegetation structure significantly altered by very obvious signs of multiple disturbances. Retains basic vegetation structure or ability to regenerate it. Disturbance to vegetation structure caused by very frequent fires, the presence of very aggressive weeds, partial clearing, dieback and grazing.
Degraded	Basic vegetation structure severely impacted by disturbance. Scope for regeneration but not to a state approaching good condition without intensive management. Disturbance to vegetation structure caused by very frequent fires, the presence of very aggressive weeds at high density, partial clearing, dieback and grazing.
Completely Degraded	The structure of vegetation is no longer intact and the area is completely or almost completely without native species. These areas are often described as 'parkland cleared' with the flora comprising weed or crop species with isolated native trees or shrubs.

Conservation codes

Species of significant flora, fauna and communities are protected under both Federal and State Acts. The Federal EPBC Act provides a legal framework to protect and manage nationally important flora and communities. The State BC Act is the primary wildlife conservation legislation in Western Australia. Information on the conservation codes is summarised in the following sections.

Ecological communities

Significant communities

Ecological communities are defined as naturally occurring biological assemblages that occur in a particular type of habitat (English and Blyth 1997). Federally listed Threatened Ecological Communities (TECs) are protected under the EPBC Act. The BC Act provides for the Minister to list an ecological community as a TEC (section 27), or as a collapsed ecological community (section 31) statutory listing of State TECs by the Minister. The legislation also describes statutory processes for preparing recovery plans for TECs, the registration of their critical habitat, and penalties for unauthorised modification of TECs.

Possible TECs that do not meet survey criteria are added to the DBCA Priority Ecological Community (PEC) List under Priorities 1, 2 and 3. These are ecological communities that are adequately known; are rare but not threatened, or meet criteria for Near Threatened. PECs that have been recently removed from the threatened list are placed in Priority 4. These ecological communities require regular monitoring. Conservation dependent ecological communities are placed in Priority 5. PECs are not listed under any formal Federal or State legislation, however, may be listed as TECs under the EPBC Act.

Codes and definitions for TECs listed under the EPBC Act and/or BC Act

Categories	Definitions
Federal Government Conservation Categories (EPBC Act)	
Critically Endangered (CR)	An ecological community if, at that time, is facing an extremely high risk of extinction in the wild in the immediate future, as determined in accordance with the prescribed criteria (as outlined in Environment Protection and Biodiversity Conservation Regulations 2000).
Endangered *(EN)	An ecological community if, at that time: – is not critically endangered; and – is facing a very high risk of extinction in the wild in the near future, as determined in accordance with the prescribed criteria (as outlined in Environment Protection and Biodiversity Conservation Regulations 2000).
Vulnerable (VU)	An ecological community if, at that time: – is not critically endangered or endangered; and – is facing a high risk of extinction in the wild in the medium-term future, as determined in accordance with the prescribed criteria (as outlined in Environment Protection and Biodiversity Conservation Regulations 2000).
Western Australia Conservation Categories (BC Act)	
Threatened Ecological Communities	
Critically Endangered (CR)	An ecological community that has been adequately surveyed and found to have been subject to a major contraction in area and/or that was originally of limited distribution and is facing severe modification or destruction throughout its range in the immediate future, or is already severely degraded throughout its range but capable of being substantially restored or rehabilitated.
Endangered (EN)	An ecological community that has been adequately surveyed and found to have been subject to a major contraction in area and/or was originally of limited distribution and is in danger of significant modification throughout its range or severe modification or destruction over most of its range in the near future.

Categories	Definitions
Vulnerable (VU)	An ecological community that has been adequately surveyed and is found to be declining and/or has declined in distribution and/or condition and whose ultimate security has not yet been assured and/or a community that is still widespread but is believed likely to move into a category of higher threat in the near future if threatening processes continue or begin operating throughout its range.
Collapsed ecological communities	
An ecological community is eligible for listing as a collapsed ecological community at a particular time if, at that time – – there is no reasonable doubt that the last occurrence of the ecological community has collapsed); or – the ecological community has been so extensively modified throughout its range that no occurrence of it is likely to recover – • its species composition or structure; or • its species composition and structure. Section 33 of the BC Act provides for a collapsed ecological community to be regarded as a threatened ecological community if it is discovered in a state that no longer makes it eligible for listing as a collapsed ecological community.	

Categories and definitions for PECs as listed by the DBCA

Category	Description
Priority 1	Poorly known ecological communities. Ecological communities that are known from very few occurrences with a very restricted distribution (generally ≤5 occurrences or a total area of ≤100 ha). Occurrences are believed to be under threat either due to limited extent, or being on lands under immediate threat (e.g. within agricultural or pastoral lands, urban areas, active mineral leases) or for which current threats exist. May include communities with occurrences on protected lands. Communities may be included if they are comparatively well-known from one or more localities but do not meet adequacy of survey requirements, and/or are not well defined, and appear to be under immediate threat from known threatening processes across their range.
Priority 2	Poorly known ecological communities. Communities that are known from few occurrences with a restricted distribution (generally ≤10 occurrences or a total area of ≤200 ha). At least some occurrences are not believed to be under immediate threat of destruction or degradation. Communities may be included if they are comparatively well known from one or more localities but do not meet adequacy of survey requirements, and/or are not well defined, and appear to be under threat from known threatening processes.
Priority 3	Poorly known ecological communities. – Communities that are known from several to many occurrences, a significant number or area of which are not under threat of habitat destruction or degradation or: – communities known from a few widespread occurrences, which are either large or with significant remaining areas of habitat in which other occurrences may occur, much of it not under imminent threat, or; – communities made up of large, and/or widespread occurrences, that may or may not be represented in the reserve system, but are under threat of modification across much of their range from processes such as grazing by domestic and/or feral stock, and inappropriate fire regimes. Communities may be included if they are comparatively well known from several localities but do not meet adequacy of survey requirements and/or are not well defined, and known threatening processes exist that could affect them.
Priority 4	Ecological communities that are adequately known, rare but not threatened or meet criteria for Near Threatened, or that have been recently removed from the threatened list. These communities require regular monitoring. – Rare. Ecological communities known from few occurrences that are considered to have been adequately surveyed, or for which sufficient knowledge is available, and that are considered not currently threatened or in need of special protection, but could be if present circumstances change. These communities are usually represented on conservation lands. – Near Threatened. Ecological communities that are considered to have been adequately surveyed and that do not qualify for Conservation Dependent, but that are close to qualifying for Vulnerable.

Category	Description
	– Ecological communities that have been removed from the list of threatened communities during the past five years.
Priority 5	Conservation Dependent ecological communities. Ecological communities that are not threatened but are subject to a specific conservation program, the cessation of which would result in the community becoming threatened within five years.

Other significant vegetation

Vegetation may be significant for a range of reasons other than a statutory listing. The EPA (2016a, b) states that significant vegetation may include vegetation that includes the following:

- Restricted distribution
- Degree of historical impact from threatening processes
- A role as a refuge
- Providing an important function required to maintain ecological integrity of a significant ecosystem
- Local endemism in restricted habitats
- Novel combinations of taxa
- A role as a key habitat for Threatened species or large population representing a significant proportion of the local to regional total population of a species
- Being representative of a vegetation unit in 'pristine' condition in a highly cleared landscape, recently discovered range extensions, or isolated outliers of the main range.

This may apply at a number of levels, so the unit may be significant when considered at the fine-scale (intra-locality), intermediate-scale (locality or inter-locality) or broad-scale (local to region).

Flora and fauna

Significant flora and fauna

Species of significant flora are protected under both Federal and State legislation. Any activities that are deemed to have a significant impact on species that are recognised by the EPBC Act, and/or the BC Act can warrant referral to DAWE and/or the EPA.

The Federal conservation level of flora and fauna species and their significance status is assessed under the EPBC Act. The significance levels for flora and fauna used in the EPBC Act align with the International Union for Conservation of Nature (IUCN) Red List criteria, which are internationally recognised as providing best practice for assigning the conservation status of species. The EPBC Act also protects land and migratory species that are listed under International Agreements. The list of migratory species established under section 209 of the EPBC Act comprises:

- Migratory species which are native to Australia and are included in the appendices to the Bonn Convention (Convention on the Conservation of Migratory Species of Wild Animals Appendices I and II)
- Migratory species included in annexes established under the Japan-Australia Migratory Bird Agreement (JAMBA) and the China–Australia Migratory Bird Agreement (CAMBA)
- Native, migratory species identified in a list established under, or an instrument made under, an international agreement approved by the Minister, such as the republic of Korea–Australia Migratory Bird Agreement (ROKAMBA)

The State conservation level of flora and fauna species and their significance status also follows the IUCN Red List criteria. Under the BC Act flora and fauna can be listed as Threatened, Extinct and as Specially Protected species.

Threatened species are those are species which have been adequately searched for and are deemed to be, in the wild, either rare, under identifiable threat of extinction, or otherwise in need of special protection, and have been gazetted as such. The assessment of the conservation status of Threatened species is based on their national

extent and ranked according to their level of threat using IUCN Red List categories and criteria. Specially protected species meet one or more of the following categories: species of special conservation interest; migratory species; cetaceans; species subject to international agreement; or species otherwise in need of special protection. Species that are listed as Threatened or Extinct species under the BC Act cannot also be listed as Specially Protected species.

Possibly threatened species that do not meet survey criteria, or are otherwise data deficient, are added to the Priority Fauna or Priority Flora Lists under Priorities 1, 2 or 3. These three categories are ranked in order of priority for survey and evaluation of conservation status so that consideration can be given to their declaration as threatened flora or fauna.

Species that are adequately known, are rare but not threatened, or meet criteria for near threatened, or that have been recently removed from the threatened species or other specially protected fauna lists for other than taxonomic reasons, are placed in Priority 4. These species require regular monitoring.

Assessment of Priority codes is based on the Western Australian distribution of the species, unless the distribution in WA is part of a contiguous population extending into adjacent States, as defined by the known spread of locations.

For the purposes of this assessment, all species listed under the EPBC Act, BC Act and DBCA Priority species are considered significant.

Categories and definitions for EPBC Act and BC Act listed flora and fauna species

Conservation category	Definition
Threatened species	
Critically Endangered (CR)	Threatened species considered to be "facing an extremely high risk of extinction in the wild in the immediate future, as determined in accordance with criteria set out in the ministerial guidelines". Listed as critically endangered under section 19(1)(a) of the BC Act in accordance with the criteria set out in section 20 and the ministerial guidelines.
Endangered (EN)	Threatened species considered to be "facing a very high risk of extinction in the wild in the near future, as determined in accordance with criteria set out in the ministerial guidelines". Listed as endangered under section 19(1)(b) of the BC Act in accordance with the criteria set out in section 21 and the ministerial guidelines.
Vulnerable (VU)	Threatened species considered to be "facing a high risk of extinction in the wild in the medium term future, as determined in accordance with criteria set out in the ministerial guidelines". Listed as vulnerable under section 19(1)(c) of the BC Act in accordance with the criteria set out in section 22 and the ministerial guidelines.
Extinct species	
Extinct (EX)	Species where "there is no reasonable doubt that the last member of the species has died", and listing is otherwise in accordance with the ministerial guidelines (section 24 of the BC Act).
Extinct in the Wild (EW)	Species that "is known only to survive in cultivation, in captivity or as a naturalised population well outside its past range; and it has not been recorded in its known habitat or expected habitat, at appropriate seasons, anywhere in its past range, despite surveys over a time frame appropriate to its life cycle and form", and listing is otherwise in accordance with the ministerial guidelines (section 25 of the BC Act).
Specially protected species	
Migratory (MI)	Fauna that periodically or occasionally visit Australia or an external Territory or the exclusive economic zone; or the species is subject of an international agreement that relates to the protection of migratory species and that binds the Commonwealth; and listing is otherwise in accordance with the ministerial guidelines (section 15 of the BC Act). Includes birds that are subject to an agreement between the government of Australia and the governments of Japan (JAMBA), China (CAMBA) and The Republic of Korea (ROKAMBA), and fauna subject to the Convention on the Conservation of Migratory Species of Wild Animals (Bonn Convention), an environmental treaty under the United Nations Environment Program. Migratory species listed under the BC Act are a subset of the migratory animals, that are known to visit Western Australia, protected under the international agreements or treaties, excluding species that are listed as Threatened species.
Species of Special conservation interest (conservation dependent fauna) (CD)	Fauna of special conservation need being species dependent on ongoing conservation intervention to prevent it becoming eligible for listing as threatened.
Other specially protected fauna (OS)	Fauna otherwise in need of special protection to ensure their conservation, and listing is otherwise in accordance with the ministerial guidelines (section 18 of the BC Act).

Codes for DBCA listed Priority flora and fauna

Priority category	Definition
Priority 1	Poorly-known taxa Species that are known from one or a few locations (generally five or less) which are potentially at risk. All occurrences are either: very small; or on lands not managed for conservation, e.g. agricultural or pastoral lands, urban areas, road and rail reserves, gravel reserves and active mineral leases; or otherwise under threat of habitat destruction or degradation. Species may be included if they are comparatively well known from one or more locations but do not meet adequacy of survey requirements and appear to be under immediate threat from known threatening processes. Such species are in urgent need of further survey.

Priority category	Definition
Priority 2	Poorly-known taxa Species that are known from one or a few locations (generally five or less), some of which are on lands managed primarily for nature conservation, e.g. national parks, conservation parks, nature reserves and other lands with secure tenure being managed for conservation. Species may be included if they are comparatively well known from one or more locations but do not meet adequacy of survey requirements and appear to be under threat from known threatening processes. Such species are in urgent need of further survey.
Priority 3	Poorly-known taxa Species that are known from several locations, and the species does not appear to be under imminent threat, or from few but widespread locations with either large population size or significant remaining areas of apparently suitable habitat, much of it not under imminent threat. Species may be included if they are comparatively well known from several locations but do not meet adequacy of survey requirements and known threatening processes exist that could affect them. Such species are in need of further survey.
Priority 4	Rare, Near Threatened and other taxa in need of monitoring – Rare: Taxa that are considered to have been adequately surveyed, or for which sufficient knowledge is available, and that are considered not currently threatened or in need of special protection, but could be if present circumstances change. These taxa are usually represented on conservation lands. – Near Threatened. Taxa that are considered to have been adequately surveyed and that do not qualify for Conservation Dependent, but that are close to qualifying for Vulnerable. – Taxa that have been removed from the list of threatened taxa during the past five years for reasons other than taxonomy.

Other significant flora

Flora species, subspecies, varieties, hybrids and ecotypes may be significant for a range of reasons, other than a statutory listing. The EPA (2016a, b) states that significant flora may include taxa that have/are:

– A keystone role in a particular habitat for Threatened or Priority flora or fauna species, or large populations representing a considerable proportion of the local or regional total population of a species
– Relictual status, being representation of taxonomic or physiognomic groups that no longer occur widely in the broader landscape
– New species or anomalous features that indicate a potential new species
– Being representative of the range of a species (particularly, at the extremes of range, recently discovered range extensions, or isolated outliers of the main range)
– Unusual species, including restricted subspecies, varieties, or naturally occurring hybrids
– Local endemism (a restricted distribution) or association with a restricted habitat type (e.g. surface water or groundwater dependent ecosystems).

Other significant fauna

Fauna species may be significant for a range of reasons other than those protected by international agreement or treaty, Specially Protected or Priority Fauna. Significant fauna may include short-range endemic species, species that have declining populations or declining distributions, species at the extremes of their range, or isolated outlying populations, or species which may be undescribed (EPA 2010).

Introduced plants (weeds)

Declared Pests

Information on species considered to be Declared Pests is provided under *State Biosecurity and Agriculture Management Act 2007.*

Weeds of National Significance

The spread of weeds across a range of land uses or ecosystems is important in the context of socio-economic and environmental values. The assessment of Weeds of National Significance (WoNS) is based on four major criteria:

– Invasiveness
– Impacts
– Potential for spread
– Socio-economic and environmental values.

Australian state and territory governments have identified thirty-two Weeds of National Significance (WoNS); a list of 20 WoNS was endorsed in 1999 and a further 12 were added in 2012.

References

ANZECC 2000, Core Environmental Indicators for Reporting on the State of Environment, ANZECC State of the Environment Reporting Task Force.

Commonwealth of Australia 2001, National Targets and Objectives for Biodiversity Conservation 2001–2005, Canberra, AGPS.

DBCA 2017*, A methodology for the evaluation of wetlands on the Swan Coastal Plain, Western Australia*: draft prepared by the Wetlands Section of the Department of Biodiversity, Conservation and Attractions and the Urban Water Branch of the Department of Water and Environmental Regulation, Perth.

English, V and Blyth, J 1997, Identifying and Conserving Threatened Ecological Communities in the South West Botanical Province, Perth, Department of Conservation and Land Management.

EPA 2020, Technical Guide – Terrestrial Fauna Surveys, EPA, Perth, WA.

EPA 2016a, Technical Guide – Flora and Vegetation Surveys for Environmental Impact Assessment, EPA, Perth, WA.

EPA 2016b, Environmental Factor Guideline - Flora and Vegetation, EPA, Perth, WA.

GoWA 2019, 2018 Statewide Vegetation Statistics incorporating the CAR Reserve Analysis (Full report), Current as of March 2019, Perth Western Australia, Department of Environment and Conservation, from https://catalogue.data.wa.gov.au/dataset/dbca-statewide-vegetation-statistics.

Shepherd, DP, Beeston, GR & Hopkins, AJM 2002, Native Vegetation in Western Australia – Extent, Type and Status, Resource Management Technical Report 249, Perth, Department of Agriculture.

Appendix C

Database searches

EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected. Please see the caveat for interpretation of information provided here.

Report created: 29-Oct-2024

Summary
Details
- Matters of NES
- Other Matters Protected by the EPBC Act
- Extra Information

Caveat
Acknowledgements

Summary

Matters of National Environment Significance

This part of the report summarises the matters of national environmental significance that may occur in, or may relate to, the area you nominated. Further information is available in the detail part of the report, which can be accessed by scrolling or following the links below. If you are proposing to undertake an activity that may have a significant impact on one or more matters of national environmental significance then you should consider the Administrative Guidelines on Significance.

World Heritage Properties:	1
National Heritage Places:	1
Wetlands of International Importance (Ramsar	1
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	8
Listed Threatened Species:	94
Listed Migratory Species:	72

Other Matters Protected by the EPBC Act

This part of the report summarises other matters protected under the Act that may relate to the area you nominated. Approval may be required for a proposed activity that significantly affects the environment on Commonwealth land, when the action is outside the Commonwealth land, or the environment anywhere when the action is taken on Commonwealth land. Approval may also be required for the Commonwealth or Commonwealth agencies proposing to take an action that is likely to have a significant impact on the environment anywhere.

The EPBC Act protects the environment on Commonwealth land, the environment from the actions taken on Commonwealth land, and the environment from actions taken by Commonwealth agencies. As heritage values of a place are part of the 'environment', these aspects of the EPBC Act protect the Commonwealth Heritage values of a Commonwealth Heritage place. Information on the new heritage laws can be found at https://www.dcceew.gov.au/parks-heritage/heritage

A permit may be required for activities in or on a Commonwealth area that may affect a member of a listed threatened species or ecological community, a member of a listed migratory species, whales and other cetaceans, or a member of a listed marine species.

Commonwealth Lands:	459
Commonwealth Heritage Places:	3
Listed Marine Species:	99
Whales and Other Cetaceans:	12
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	None
Habitat Critical to the Survival of Marine Turtles:	None

Extra Information

This part of the report provides information that may also be relevant to the area you have

State and Territory Reserves:	46
Regional Forest Agreements:	1
Nationally Important Wetlands:	7
EPBC Act Referrals:	148
Key Ecological Features (Marine):	None
Biologically Important Areas:	10
Bioregional Assessments:	None
Geological and Bioregional Assessments:	None

Details

Matters of National Environmental Significance

World Heritage Properties [Resource Information]

Name	State	Legal Status	Buffer Status
Australian Convict Sites (Fremantle Prison)	WA	Declared property	In buffer area only

National Heritage Places [Resource Information]

Name	State	Legal Status	Buffer Status
Historic			
Fremantle Prison (former)	WA	Listed place	In buffer area only

Wetlands of International Importance (Ramsar Wetlands) [Resource Information]

Ramsar Site Name	Proximity	Buffer Status
Forrestdale and thomsons lakes	Within Ramsar site	In feature area

Listed Threatened Ecological Communities [Resource Information]

For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.
Status of Vulnerable, Disallowed and Ineligible are not MNES under the EPBC Act.

Community Name	Threatened Category	Presence Text	Buffer Status
Banksia Woodlands of the Swan Coastal Plain ecological community	Endangered	Community likely to occur within area	In feature area
Clay Pans of the Swan Coastal Plain	Critically Endangered	Community likely to occur within area	In feature area
Corymbia calophylla - Kingia australis woodlands on heavy soils of the Swan Coastal Plain	Endangered	Community known to occur within area	In feature area
Empodisma peatlands of southwestern Australia	Endangered	Community may occur within area	In feature area
Honeymyrtle shrubland on limestone ridges of the Swan Coastal Plain Bioregion	Critically Endangered	Community likely to occur within area	In buffer area only
Shrublands and Woodlands of the eastern Swan Coastal Plain	Endangered	Community known to occur within area	In buffer area only
Subtropical and Temperate Coastal Saltmarsh	Vulnerable	Community likely to occur within area	In buffer area only
Tuart (Eucalyptus gomphocephala) Woodlands and Forests of the Swan Coastal Plain ecological community	Critically Endangered	Community likely to occur within area	In feature area

Listed Threatened Species [Resource Information]

Status of Conservation Dependent and Extinct are not MNES under the EPBC Act.
Number is the current name ID.

Scientific Name	Threatened Category	Presence Text	Buffer Status
BIRD			
Anous tenuirostris melanops Australian Lesser Noddy [26000]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Ardenna grisea Sooty Shearwater [82651]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Arenaria interpres Ruddy Turnstone [872]	Vulnerable	Roosting known to occur within area	In buffer area only
Botaurus poiciloptilus Australasian Bittern [1001]	Endangered	Species or species habitat known to occur within area	In feature area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Roosting known to occur within area	In feature area
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat known to occur within area	In feature area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area	In feature area
Calidris tenuirostris Great Knot [862]	Vulnerable	Roosting known to occur within area	In buffer area only
Calyptorhynchus banksii naso Forest Red-tailed Black-Cockatoo, Karrak [67034]	Vulnerable	Species or species habitat known to occur within area	In feature area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat known to occur within area	In feature area
Charadrius mongolus Lesser Sand Plover, Mongolian Plover [879]	Endangered	Roosting known to occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Diomedea amsterdamensis Amsterdam Albatross [64405]	Endangered	Species or species habitat may occur within area	In buffer area only
Diomedea dabbenena Tristan Albatross [66471]	Endangered	Species or species habitat may occur within area	In buffer area only
Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Diomedea sanfordi Northern Royal Albatross [64456]	Endangered	Species or species habitat may occur within area	In buffer area only
Halobaena caerulea Blue Petrel [1059]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Leipoa ocellata Malleefowl [934]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Limosa lapponica menzbieri Northern Siberian Bar-tailed Godwit, Russkoye Bar-tailed Godwit [86432]	Endangered	Species or species habitat known to occur within area	In buffer area only
Limosa limosa Black-tailed Godwit [845]	Endangered	Roosting known to occur within area	In buffer area only
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area	In buffer area only
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area	In feature area
Pachyptila turtur subantarctica Fairy Prion (southern) [64445]	Vulnerable	Species or species habitat known to occur within area	In buffer area only
Phaethon rubricauda westralis Red-tailed Tropicbird (Indian Ocean), Indian Ocean Red-tailed Tropicbird [91824]	Endangered	Species or species habitat known to occur within area	In buffer area only
Pluvialis squatarola Grey Plover [865]	Vulnerable	Roosting known to occur within area	In buffer area only
Pterodroma mollis Soft-plumaged Petrel [1036]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Rostratula australis Australian Painted Snipe [77037]	Endangered	Species or species habitat known to occur within area	In feature area
Sternula nereis nereis Australian Fairy Tern [82950]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In feature area
Thalassarche carteri Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
Thalassarche cauta Shy Albatross [89224]	Endangered	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Thalassarche steadi White-capped Albatross [64462]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Tringa nebularia Common Greenshank, Greenshank [832]	Endangered	Species or species habitat known to occur within area	In feature area
Xenus cinereus Terek Sandpiper [59300]	Vulnerable	Roosting known to occur within area	In buffer area only
Zanda baudinii listed as Calyptorhynchus baudinii Baudin's Cockatoo, Baudin's Black-Cockatoo, Long-billed Black-cockatoo [87736]	Endangered	Roosting known to occur within area	In feature area
Zanda latirostris listed as Calyptorhynchus latirostris Carnaby's Black Cockatoo, Short-billed Black-cockatoo [87737]	Endangered	Breeding known to occur within area	In feature area
INSECT			
Leioproctus douglasiellus a short-tongued bee [66756]	Critically Endangered	Species or species habitat known to occur within area	In feature area
Neopasiphae simplicior A native bee [66821]	Critically Endangered	Species or species habitat known to occur within area	In buffer area only
MAMMAL			
Balaenoptera musculus Blue Whale [36]	Endangered	Species or species habitat likely to occur within area	In buffer area only
Bettongia penicillata ogilbyi Woylie [66844]	Endangered	Species or species habitat likely to occur within area	In buffer area only
Dasyurus geoffroii Chuditch, Western Quoll [330]	Vulnerable	Species or species habitat known to occur within area	In feature area
Eubalaena australis Southern Right Whale [40]	Endangered	Breeding known to occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
[Macroderma gigas](#)			
Ghost Bat [174]	Vulnerable	Species or species habitat may occur within area	In buffer area only
[Neophoca cinerea](#)			
Australian Sea-lion, Australian Sea Lion [22]	Endangered	Species or species habitat likely to occur within area	In buffer area only
[Pseudocheirus occidentalis](#)			
Western Ringtail Possum, Ngwayir, Womp, Woder, Ngoor, Ngoolangit [25911]	Critically Endangered	Species or species habitat likely to occur within area	In feature area
[Setonix brachyurus](#)			
Quokka [229]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
OTHER			
[Westralunio carteri](#)			
Carter's Freshwater Mussel, Freshwater Mussel [86266]	Vulnerable	Species or species habitat known to occur within area	In feature area
PLANT			
[Acacia anomala](#)			
Grass Wattle, Chittering Grass Wattle [8153]	Vulnerable	Species or species habitat known to occur within area	In feature area
[Acacia aphylla](#)			
Leafless Rock Wattle [13553]	Vulnerable	Species or species habitat known to occur within area	In buffer area only
[Andersonia gracilis](#)			
Slender Andersonia [14470]	Endangered	Species or species habitat known to occur within area	In feature area
[Anigozanthos viridis subsp. terraspectans](#)			
Dwarf Green Kangaroo Paw [3435]	Vulnerable	Species or species habitat may occur within area	In buffer area only
[Anthocercis gracilis](#)			
Slender Tailflower [11103]	Vulnerable	Species or species habitat known to occur within area	In buffer area only
[Austrostipa bronweniae listed as Austrostipa bronwenae](#)			
[92773]	Endangered	Species or species habitat known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Austrostipa jacobsiana [87809]	Critically Endangered	Species or species habitat known to occur within area	In buffer area only
Banksia mimica Summer Honeypot [82765]	Endangered	Species or species habitat known to occur within area	In feature area
Caladenia huegelii King Spider-orchid, Grand Spider-orchid, Rusty Spider-orchid [7309]	Endangered	Species or species habitat known to occur within area	In feature area
Calytrix breviseta subsp. breviseta Swamp Starflower [23879]	Endangered	Species or species habitat known to occur within area	In feature area
Chamelaucium lullfitzii listed as Chamelaucium sp. Gingin (N.G.Marchant 6) Gingin Wax [92777]	Endangered (listed as Chamelaucium sp. Gingin	Species or species habitat may occur within area	In feature area
Conospermum undulatum Wavy-leaved Smokebush [24435]	Vulnerable	Species or species habitat known to occur within area	In feature area
Darwinia apiculata Scarp Darwinia [8763]	Endangered	Species or species habitat known to occur within area	In buffer area only
Diplolaena andrewsii [6601]	Endangered	Species or species habitat likely to occur within area	In feature area
Diuris drummondii Tall Donkey Orchid [4365]	Vulnerable	Species or species habitat known to occur within area	In feature area
Diuris micrantha Dwarf Bee-orchid [55082]	Vulnerable	Species or species habitat known to occur within area	In feature area
Diuris purdiei Purdie's Donkey-orchid [12950]	Endangered	Species or species habitat known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Drakaea elastica Glossy-leafed Hammer Orchid, Glossy-leaved Hammer Orchid, Warty Hammer Orchid [16753]	Endangered	Species or species habitat known to occur within area	In feature area
Drakaea micrantha Dwarf Hammer-orchid [56755]	Vulnerable	Species or species habitat known to occur within area	In feature area
Eleocharis keigheryi Keighery's Eleocharis [64893]	Vulnerable	Species or species habitat known to occur within area	In feature area
Eremophila glabra subsp. chlorella [84927]	Endangered	Species or species habitat known to occur within area	In feature area
Eucalyptus x balanites Cadda Road Mallee, Cadda Mallee [87816]	Endangered	Species or species habitat likely to occur within area	In feature area
Goodenia arthrotricha [12448]	Endangered	Species or species habitat known to occur within area	In buffer area only
Grevillea curviloba subsp. incurva Narrow curved-leaf Grevillea [64909]	Endangered	Species or species habitat likely to occur within area	In feature area
Grevillea flexuosa Zig Zag Grevillea [2957]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Grevillea thelemanniana Spider Net Grevillea [32835]	Critically Endangered	Species or species habitat known to occur within area	In feature area
Lepidosperma rostratum Beaked Lepidosperma [14152]	Endangered	Species or species habitat known to occur within area	In feature area
Macarthuria keigheryi Keighery's Macarthuria [64930]	Endangered	Species or species habitat known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Morelotia australiensis listed as Tetraria australiensis			
Southern Tetraria [92784]	Vulnerable	Species or species habitat known to occur within area	In feature area
Ptilotus pyramidatus			
Pyramid Mulla-mulla [18216]	Critically Endangered	Species or species habitat known to occur within area	In feature area
Synaphea sp. Fairbridge Farm (D.Papenfus 696)			
Selena's Synaphea [82881]	Critically Endangered	Species or species habitat known to occur within area	In feature area
Synaphea sp. Pinjarra Plain (A.S.George 17182)			
[86878]	Endangered	Species or species habitat may occur within area	In feature area
Synaphea sp. Serpentine (G.R.Brand 103)			
[86879]	Critically Endangered	Species or species habitat may occur within area	In buffer area only
Thelymitra dedmaniarum			
Cinnamon Sun Orchid [65105]	Endangered	Species or species habitat may occur within area	In feature area
Thelymitra stellata			
Star Sun-orchid [7060]	Endangered	Species or species habitat known to occur within area	In feature area
Trithuria occidentalis			
Swan Hydatella [42224]	Endangered	Species or species habitat likely to occur within area	In buffer area only
REPTILE			
Caretta caretta			
Loggerhead Turtle [1763]	Endangered	Foraging, feeding or related behaviour known to occur within area	In buffer area only
Chelonia mydas			
Green Turtle [1765]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Dermochelys coriacea			
Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Foraging, feeding or related behaviour known to occur within area	In buffer area only
Natator depressus			
Flatback Turtle [59257]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In buffer area only
SHARK			
Carcharias taurus (west coast population)			
Grey Nurse Shark (west coast population) [68752]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
Carcharodon carcharias			
White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat known to occur within area	In buffer area only
Pristis pristis			
Freshwater Sawfish, Largetooth Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Vulnerable	Species or species habitat may occur within area	In feature area
Rhincodon typus			
Whale Shark [66680]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Sphyrna lewini			
Scalloped Hammerhead [85267]	Conservation Dependent	Species or species habitat known to occur within area	In buffer area only

Listed Migratory Species			[Resource Information]
Scientific Name	Threatened Category	Presence Text	Buffer Status
Migratory Marine Birds			
Anous stolidus			
Common Noddy [825]		Species or species habitat likely to occur within area	In buffer area only
Apus pacificus			
Fork-tailed Swift [678]		Species or species habitat likely to occur within area	In feature area
Ardenna carneipes			
Flesh-footed Shearwater, Fleshy-footed Shearwater [82404]		Species or species habitat likely to occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Ardenna grisea Sooty Shearwater [82651]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Diomedea amsterdamensis Amsterdam Albatross [64405]	Endangered	Species or species habitat may occur within area	In buffer area only
Diomedea dabbenena Tristan Albatross [66471]	Endangered	Species or species habitat may occur within area	In buffer area only
Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Diomedea sanfordi Northern Royal Albatross [64456]	Endangered	Species or species habitat may occur within area	In buffer area only
Hydroprogne caspia Caspian Tern [808]		Foraging, feeding or related behaviour known to occur within area	In buffer area only
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area	In buffer area only
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Onychoprion anaethetus Bridled Tern [82845]		Foraging, feeding or related behaviour likely to occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Sterna dougallii Roseate Tern [817]		Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Sternula albifrons Little Tern [82849]		Species or species habitat may occur within area	In buffer area only
Thalassarche carteri Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
Thalassarche cauta Shy Albatross [89224]	Endangered	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Thalassarche steadi White-capped Albatross [64462]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Migratory Marine Species			
Balaenoptera edeni Bryde's Whale [35]		Species or species habitat may occur within area	In buffer area only
Balaenoptera musculus Blue Whale [36]	Endangered	Species or species habitat likely to occur within area	In buffer area only
Caperea marginata Pygmy Right Whale [39]		Species or species habitat may occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Carcharhinus longimanus Oceanic Whitetip Shark [84108]		Species or species habitat may occur within area	In buffer area only
Carcharias taurus Grey Nurse Shark [64469]		Species or species habitat likely to occur within area	In buffer area only
Carcharodon carcharias White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat known to occur within area	In buffer area only
Caretta caretta Loggerhead Turtle [1763]	Endangered	Foraging, feeding or related behaviour known to occur within area	In buffer area only
Chelonia mydas Green Turtle [1765]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In buffer area only
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Foraging, feeding or related behaviour known to occur within area	In buffer area only
Eubalaena australis as Balaena glacialis australis Southern Right Whale [40]	Endangered	Breeding known to occur within area	In buffer area only
Lamna nasus Porbeagle, Mackerel Shark [83288]		Species or species habitat may occur within area	In buffer area only
Megaptera novaeangliae Humpback Whale [38]		Species or species habitat known to occur within area	In buffer area only
Mobula alfredi as Manta alfredi Reef Manta Ray, Coastal Manta Ray [90033]		Species or species habitat may occur within area	In buffer area only
Mobula birostris as Manta birostris Giant Manta Ray [90034]		Species or species habitat may occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Natator depressus			
Flatback Turtle [59257]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In buffer area only
Orcinus orca			
Killer Whale, Orca [46]		Species or species habitat may occur within area	In buffer area only
Pristis pristis			
Freshwater Sawfish, Largetooth Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Vulnerable	Species or species habitat may occur within area	In feature area
Rhincodon typus			
Whale Shark [66680]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Migratory Terrestrial Species			
Motacilla cinerea			
Grey Wagtail [642]		Species or species habitat may occur within area	In feature area
Migratory Wetlands Species			
Actitis hypoleucos			
Common Sandpiper [59309]		Species or species habitat known to occur within area	In feature area
Arenaria interpres			
Ruddy Turnstone [872]	Vulnerable	Roosting known to occur within area	In buffer area only
Calidris acuminata			
Sharp-tailed Sandpiper [874]	Vulnerable	Roosting known to occur within area	In feature area
Calidris alba			
Sanderling [875]		Roosting known to occur within area	In buffer area only
Calidris canutus			
Red Knot, Knot [855]	Vulnerable	Species or species habitat known to occur within area	In feature area
Calidris ferruginea			
Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat known to occur within area	In feature area
Calidris pugnax as Philomachus pugnax Ruff [91256]		Roosting known to occur within area	In buffer area only
Calidris ruficollis Red-necked Stint [860]		Roosting known to occur within area	In buffer area only
Calidris subminuta Long-toed Stint [861]		Roosting known to occur within area	In buffer area only
Calidris tenuirostris Great Knot [862]	Vulnerable	Roosting known to occur within area	In buffer area only
Charadrius bicinctus Double-banded Plover [895]		Roosting known to occur within area	In buffer area only
Charadrius dubius Little Ringed Plover [896]		Roosting known to occur within area	In buffer area only
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat known to occur within area	In feature area
Charadrius mongolus Lesser Sand Plover, Mongolian Plover [879]	Endangered	Roosting known to occur within area	In buffer area only
Gallinago megala Swinhoe's Snipe [864]		Roosting likely to occur within area	In buffer area only
Gallinago stenura Pin-tailed Snipe [841]		Roosting likely to occur within area	In buffer area only
Limicola falcinellus Broad-billed Sandpiper [842]		Species or species habitat known to occur within area	In buffer area only
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat known to occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Limosa limosa Black-tailed Godwit [845]	Endangered	Roosting known to occur within area	In buffer area only
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area	In feature area
Numenius minutus Little Curlew, Little Whimbrel [848]		Roosting likely to occur within area	In buffer area only
Numenius phaeopus Whimbrel [849]		Roosting known to occur within area	In buffer area only
Pandion haliaetus Osprey [952]		Breeding known to occur within area	In feature area
Phalaropus lobatus Red-necked Phalarope [838]		Roosting known to occur within area	In buffer area only
Pluvialis fulva Pacific Golden Plover [25545]		Roosting known to occur within area	In buffer area only
Pluvialis squatarola Grey Plover [865]	Vulnerable	Roosting known to occur within area	In buffer area only
Tringa brevipes Grey-tailed Tattler [851]		Roosting known to occur within area	In buffer area only
Tringa glareola Wood Sandpiper [829]		Roosting known to occur within area	In buffer area only
Tringa nebularia Common Greenshank, Greenshank [832]	Endangered	Species or species habitat known to occur within area	In feature area
Tringa stagnatilis Marsh Sandpiper, Little Greenshank [833]		Roosting known to occur within area	In buffer area only
Tringa totanus Common Redshank, Redshank [835]		Roosting known to occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Xenus cinereus			
Terek Sandpiper [59300]	Vulnerable	Roosting known to occur within area	In buffer area only

Other Matters Protected by the EPBC Act

Commonwealth Lands [Resource Information]

The Commonwealth area listed below may indicate the presence of Commonwealth land in this vicinity. Due to the unreliability of the data source, all proposals should be checked as to whether it impacts on a Commonwealth area, before making a definitive decision. Contact the State or Territory government land department for further information.

Commonwealth Land Name	State	Buffer Status
Defence		
Defence - AIRTC CANNINGTON [50232]	WA	In buffer area only
Defence - AIRTC CANNINGTON [50233]	WA	In buffer area only
Defence - AIRTC CANNINGTON [50230]	WA	In buffer area only
Defence - AIRTC CANNINGTON [50231]	WA	In buffer area only
Defence - AIRTC CANNINGTON [50229]	WA	In buffer area only
Defence - ARTILLERY BARRACKS - FREMANTLE [50155]	WA	In buffer area only
Defence - BUSHMEAD RIFLE RANGE [50143]	WA	In buffer area only
Defence - BUSHMEAD TRAINING AREA [50259]	WA	In buffer area only
Defence - BUSHMEAD TRAINING AREA [50258]	WA	In buffer area only
Defence - BUSHMEAD TRAINING AREA [50260]	WA	In buffer area only
Defence - EAST FREMANTLE SMALL CRAFT BASE [50118]	WA	In buffer area only
Defence - HOLDFAST BARRACKS [50210]	WA	In buffer area only
Defence - HOLDFAST BARRACKS [50217]	WA	In buffer area only
Defence - HOLDFAST BARRACKS [50213]	WA	In buffer area only
Defence - HOLDFAST BARRACKS [50211]	WA	In buffer area only
Defence - HOLDFAST BARRACKS [50212]	WA	In buffer area only
Defence - HOLDFAST BARRACKS [50216]	WA	In buffer area only

Commonwealth Land Name	State	Buffer Status
Defence - HOLDFAST BARRACKS [50218]	WA	In buffer area only
Defence - HOLDFAST BARRACKS [50219]	WA	In buffer area only
Defence - HOLDFAST BARRACKS [50214]	WA	In buffer area only
Defence - HOLDFAST BARRACKS [50215]	WA	In buffer area only
Defence - HOLDFAST BARRACKS [50209]	WA	In buffer area only
Defence - HOLDFAST BARRACKS [50208]	WA	In buffer area only
Defence - HOLDFAST BARRACKS [50207]	WA	In buffer area only
Defence - HOLDFAST BARRACKS [50206]	WA	In buffer area only
Defence - HOLDFAST BARRACKS [50202]	WA	In buffer area only
Defence - HOLDFAST BARRACKS [50228]	WA	In buffer area only
Defence - HOLDFAST BARRACKS [50205]	WA	In buffer area only
Defence - HOLDFAST BARRACKS [50223]	WA	In buffer area only
Defence - HOLDFAST BARRACKS [50222]	WA	In buffer area only
Defence - HOLDFAST BARRACKS [50221]	WA	In buffer area only
Defence - HOLDFAST BARRACKS [50220]	WA	In buffer area only
Defence - HOLDFAST BARRACKS [50225]	WA	In buffer area only
Defence - HOLDFAST BARRACKS [50227]	WA	In buffer area only
Defence - HOLDFAST BARRACKS [50224]	WA	In buffer area only
Defence - HOLDFAST BARRACKS [50226]	WA	In buffer area only
Defence - HOLDFAST BARRACKS [50203]	WA	In buffer area only
Defence - HOLDFAST BARRACKS [50204]	WA	In buffer area only
Defence - HOLDFAST BARRACKS [50201]	WA	In buffer area only
Defence - LEEUWIN BARRACKS - EAST FREMANTLE [50148]	WA	In buffer area only
Defence - LEEUWIN BARRACKS - EAST FREMANTLE [50147]	WA	In buffer area only
Defence - LEEUWIN BARRACKS - EAST FREMANTLE [50146]	WA	In buffer area only
Defence - LEEUWIN BARRACKS - EAST FREMANTLE [50149]	WA	In buffer area only
Defence - LEEUWIN BARRACKS - EAST FREMANTLE [50154]	WA	In buffer area only

Commonwealth Land Name	State	Buffer Status
Defence - LEEUWIN BARRACKS - EAST FREMANTLE [50150]	WA	In buffer area only
Defence - LEEUWIN BARRACKS - EAST FREMANTLE [50152]	WA	In buffer area only
Defence - LEEUWIN BARRACKS - EAST FREMANTLE [50151]	WA	In buffer area only
Defence - LEEUWIN BARRACKS - EAST FREMANTLE [50153]	WA	In buffer area only
Defence - PALMER BARRACKS - SOUTH GUILDFORD [50180]	WA	In buffer area only
Defence - PALMER BARRACKS - SOUTH GUILDFORD [50179]	WA	In buffer area only
Defence - PALMER BARRACKS - SOUTH GUILDFORD [50176]	WA	In buffer area only
Defence - PALMER BARRACKS - SOUTH GUILDFORD [50177]	WA	In buffer area only
Defence - PALMER BARRACKS - SOUTH GUILDFORD [50178]	WA	In buffer area only
Defence - PRESTON POINT TRAINING DEPOT [50174]	WA	In buffer area only
Defence - PRESTON POINT TRAINING DEPOT [50172]	WA	In buffer area only
Defence - PRESTON POINT TRAINING DEPOT [50173]	WA	In buffer area only
Unknown		
Commonwealth Land - [51122]	WA	In buffer area only
Commonwealth Land - [51125]	WA	In buffer area only
Commonwealth Land - [51356]	WA	In feature area
Commonwealth Land - [51357]	WA	In feature area
Commonwealth Land - [51350]	WA	In feature area
Commonwealth Land - [51351]	WA	In buffer area only
Commonwealth Land - [51358]	WA	In buffer area only
Commonwealth Land - [51359]	WA	In buffer area only
Commonwealth Land - [51426]	WA	In buffer area only
Commonwealth Land - [51355]	WA	In buffer area only
Commonwealth Land - [51277]	WA	In buffer area only
Commonwealth Land - [51274]	WA	In buffer area only
Commonwealth Land - [51273]	WA	In buffer area only
Commonwealth Land - [51270]	WA	In buffer area only

Commonwealth Land Name	State	Buffer Status
Commonwealth Land - [51378]	WA	In buffer area only
Commonwealth Land - [51276]	WA	In buffer area only
Commonwealth Land - [51376]	WA	In buffer area only
Commonwealth Land - [51375]	WA	In buffer area only
Commonwealth Land - [50672]	WA	In buffer area only
Commonwealth Land - [51272]	WA	In buffer area only
Commonwealth Land - [51128]	WA	In buffer area only
Commonwealth Land - [51901]	WA	In feature area
Commonwealth Land - [51900]	WA	In feature area
Commonwealth Land - [51907]	WA	In buffer area only
Commonwealth Land - [51906]	WA	In buffer area only
Commonwealth Land - [51909]	WA	In buffer area only
Commonwealth Land - [51908]	WA	In buffer area only
Commonwealth Land - [51364]	WA	In buffer area only
Commonwealth Land - [50671]	WA	In buffer area only
Commonwealth Land - [51371]	WA	In buffer area only
Commonwealth Land - [51370]	WA	In buffer area only
Commonwealth Land - [51373]	WA	In buffer area only
Commonwealth Land - [51372]	WA	In buffer area only
Commonwealth Land - [51126]	WA	In buffer area only
Commonwealth Land - [51298]	WA	In buffer area only
Commonwealth Land - [51299]	WA	In buffer area only
Commonwealth Land - [51292]	WA	In buffer area only
Commonwealth Land - [51293]	WA	In buffer area only
Commonwealth Land - [51291]	WA	In buffer area only
Commonwealth Land - [51227]	WA	In buffer area only
Commonwealth Land - [51224]	WA	In buffer area only

Commonwealth Land Name	State	Buffer Status
Commonwealth Land - [51226]	WA	In buffer area only
Commonwealth Land - [51515]	WA	In buffer area only
Commonwealth Land - [51516]	WA	In buffer area only
Commonwealth Land - [51518]	WA	In buffer area only
Commonwealth Land - [51514]	WA	In buffer area only
Commonwealth Land - [50877]	WA	In buffer area only
Commonwealth Land - [50878]	WA	In buffer area only
Commonwealth Land - [51200]	WA	In buffer area only
Commonwealth Land - [50688]	WA	In buffer area only
Commonwealth Land - [50677]	WA	In buffer area only
Commonwealth Land - [50950]	WA	In buffer area only
Commonwealth Land - [51342]	WA	In buffer area only
Commonwealth Land - [51354]	WA	In feature area
Commonwealth Land - [50690]	WA	In buffer area only
Commonwealth Land - [51353]	WA	In buffer area only
Commonwealth Land - [51220]	WA	In buffer area only
Commonwealth Land - [51221]	WA	In buffer area only
Commonwealth Land - [51228]	WA	In buffer area only
Commonwealth Land - [51229]	WA	In buffer area only
Commonwealth Land - [51225]	WA	In buffer area only
Commonwealth Land - [51222]	WA	In buffer area only
Commonwealth Land - [51223]	WA	In buffer area only
Commonwealth Land - [51203]	WA	In buffer area only
Commonwealth Land - [51202]	WA	In buffer area only
Commonwealth Land - [51205]	WA	In buffer area only
Commonwealth Land - [51204]	WA	In buffer area only
Commonwealth Land - [51201]	WA	In buffer area only

Commonwealth Land Name	State	Buffer Status
Commonwealth Land - [51275]	WA	In buffer area only
Commonwealth Land - [51207]	WA	In buffer area only
Commonwealth Land - [51206]	WA	In buffer area only
Commonwealth Land - [51209]	WA	In buffer area only
Commonwealth Land - [51208]	WA	In buffer area only
Commonwealth Land - [51977]	WA	In buffer area only
Commonwealth Land - [50850]	WA	In buffer area only
Commonwealth Land - [50859]	WA	In buffer area only
Commonwealth Land - [51271]	WA	In buffer area only
Commonwealth Land - [50853]	WA	In buffer area only
Commonwealth Land - [50779]	WA	In buffer area only
Commonwealth Land - [51494]	WA	In buffer area only
Commonwealth Land - [50751]	WA	In buffer area only
Commonwealth Land - [50809]	WA	In buffer area only
Commonwealth Land - [50755]	WA	In buffer area only
Commonwealth Land - [50750]	WA	In buffer area only
Commonwealth Land - [51257]	WA	In buffer area only
Commonwealth Land - [50870]	WA	In buffer area only
Commonwealth Land - [50873]	WA	In buffer area only
Commonwealth Land - [50872]	WA	In buffer area only
Commonwealth Land - [50874]	WA	In buffer area only
Commonwealth Land - [50754]	WA	In buffer area only
Commonwealth Land - [50756]	WA	In buffer area only
Commonwealth Land - [51322]	WA	In buffer area only
Commonwealth Land - [51321]	WA	In buffer area only
Commonwealth Land - [51320]	WA	In buffer area only
Commonwealth Land - [51327]	WA	In buffer area only

Commonwealth Land Name	State	Buffer Status
Commonwealth Land - [51193]	WA	In buffer area only
Commonwealth Land - [51194]	WA	In buffer area only
Commonwealth Land - [51191]	WA	In buffer area only
Commonwealth Land - [51192]	WA	In buffer area only
Commonwealth Land - [51294]	WA	In buffer area only
Commonwealth Land - [51190]	WA	In buffer area only
Commonwealth Land - [51296]	WA	In buffer area only
Commonwealth Land - [51295]	WA	In buffer area only
Commonwealth Land - [51290]	WA	In buffer area only
Commonwealth Land - [51297]	WA	In buffer area only
Commonwealth Land - [51195]	WA	In buffer area only
Commonwealth Land - [51196]	WA	In buffer area only
Commonwealth Land - [51197]	WA	In buffer area only
Commonwealth Land - [51198]	WA	In buffer area only
Commonwealth Land - [51199]	WA	In buffer area only
Commonwealth Land - [50708]	WA	In buffer area only
Commonwealth Land - [50707]	WA	In buffer area only
Commonwealth Land - [50686]	WA	In buffer area only
Commonwealth Land - [50792]	WA	In buffer area only
Commonwealth Land - [51345]	WA	In buffer area only
Commonwealth Land - [50793]	WA	In buffer area only
Commonwealth Land - [51328]	WA	In buffer area only
Commonwealth Land - [51329]	WA	In buffer area only
Commonwealth Land - [51305]	WA	In buffer area only
Commonwealth Land - [51269]	WA	In buffer area only
Commonwealth Land - [51307]	WA	In buffer area only
Commonwealth Land - [51927]	WA	In buffer area only

Commonwealth Land Name	State	Buffer Status
Commonwealth Land - [51304]	WA	In buffer area only
Commonwealth Land - [51972]	WA	In buffer area only
Commonwealth Land - [51306]	WA	In buffer area only
Commonwealth Land - [51115]	WA	In buffer area only
Commonwealth Land - [51116]	WA	In buffer area only
Commonwealth Land - [51288]	WA	In buffer area only
Commonwealth Land - [51289]	WA	In buffer area only
Commonwealth Land - [51326]	WA	In buffer area only
Commonwealth Land - [51325]	WA	In buffer area only
Commonwealth Land - [51324]	WA	In buffer area only
Commonwealth Land - [51498]	WA	In buffer area only
Commonwealth Land - [51266]	WA	In buffer area only
Commonwealth Land - [51267]	WA	In buffer area only
Commonwealth Land - [51260]	WA	In buffer area only
Commonwealth Land - [51261]	WA	In buffer area only
Commonwealth Land - [51308]	WA	In buffer area only
Commonwealth Land - [51268]	WA	In buffer area only
Commonwealth Land - [51300]	WA	In buffer area only
Commonwealth Land - [51301]	WA	In buffer area only
Commonwealth Land - [51265]	WA	In buffer area only
Commonwealth Land - [51264]	WA	In buffer area only
Commonwealth Land - [50731]	WA	In buffer area only
Commonwealth Land - [50730]	WA	In buffer area only
Commonwealth Land - [51928]	WA	In buffer area only
Commonwealth Land - [50949]	WA	In buffer area only
Commonwealth Land - [51309]	WA	In buffer area only
Commonwealth Land - [50785]	WA	In buffer area only

Commonwealth Land Name	State	Buffer Status
Commonwealth Land - [50836]	WA	In buffer area only
Commonwealth Land - [50782]	WA	In buffer area only
Commonwealth Land - [50784]	WA	In buffer area only
Commonwealth Land - [50837]	WA	In buffer area only
Commonwealth Land - [50786]	WA	In buffer area only
Commonwealth Land - [50787]	WA	In buffer area only
Commonwealth Land - [50781]	WA	In buffer area only
Commonwealth Land - [50735]	WA	In buffer area only
Commonwealth Land - [50736]	WA	In buffer area only
Commonwealth Land - [50833]	WA	In buffer area only
Commonwealth Land - [50832]	WA	In buffer area only
Commonwealth Land - [50732]	WA	In buffer area only
Commonwealth Land - [50733]	WA	In buffer area only
Commonwealth Land - [50734]	WA	In buffer area only
Commonwealth Land - [50788]	WA	In buffer area only
Commonwealth Land - [50838]	WA	In buffer area only
Commonwealth Land - [50789]	WA	In buffer area only
Commonwealth Land - [50834]	WA	In buffer area only
Commonwealth Land - [50839]	WA	In buffer area only
Commonwealth Land - [50780]	WA	In buffer area only
Commonwealth Land - [50835]	WA	In buffer area only
Commonwealth Land - [51146]	WA	In feature area
Commonwealth Land - [51147]	WA	In buffer area only
Commonwealth Land - [51922]	WA	In buffer area only
Commonwealth Land - [51923]	WA	In buffer area only
Commonwealth Land - [51920]	WA	In buffer area only
Commonwealth Land - [51921]	WA	In buffer area only

Commonwealth Land Name	State	Buffer Status
Commonwealth Land - [51142]	WA	In buffer area only
Commonwealth Land - [51143]	WA	In buffer area only
Commonwealth Land - [51144]	WA	In buffer area only
Commonwealth Land - [51145]	WA	In buffer area only
Commonwealth Land - [51363]	WA	In buffer area only
Commonwealth Land - [51362]	WA	In buffer area only
Commonwealth Land - [51361]	WA	In buffer area only
Commonwealth Land - [51360]	WA	In buffer area only
Commonwealth Land - [51365]	WA	In buffer area only
Commonwealth Land - [50666]	WA	In buffer area only
Commonwealth Land - [51910]	WA	In buffer area only
Commonwealth Land - [51911]	WA	In buffer area only
Commonwealth Land - [51912]	WA	In buffer area only
Commonwealth Land - [51913]	WA	In buffer area only
Commonwealth Land - [51975]	WA	In buffer area only
Commonwealth Land - [51287]	WA	In buffer area only
Commonwealth Land - [51284]	WA	In buffer area only
Commonwealth Land - [51283]	WA	In buffer area only
Commonwealth Land - [51286]	WA	In buffer area only
Commonwealth Land - [51285]	WA	In buffer area only
Commonwealth Land - [51280]	WA	In buffer area only
Commonwealth Land - [51971]	WA	In buffer area only
Commonwealth Land - [51282]	WA	In buffer area only
Commonwealth Land - [51281]	WA	In buffer area only
Commonwealth Land - [51915]	WA	In buffer area only
Commonwealth Land - [51916]	WA	In buffer area only
Commonwealth Land - [51914]	WA	In buffer area only

Commonwealth Land Name	State	Buffer Status
Commonwealth Land - [51183]	WA	In buffer area only
Commonwealth Land - [51182]	WA	In buffer area only
Commonwealth Land - [51917]	WA	In buffer area only
Commonwealth Land - [51918]	WA	In buffer area only
Commonwealth Land - [51187]	WA	In buffer area only
Commonwealth Land - [51341]	WA	In buffer area only
Commonwealth Land - [51181]	WA	In buffer area only
Commonwealth Land - [51180]	WA	In buffer area only
Commonwealth Land - [51163]	WA	In buffer area only
Commonwealth Land - [51160]	WA	In feature area
Commonwealth Land - [51161]	WA	In buffer area only
Commonwealth Land - [51166]	WA	In buffer area only
Commonwealth Land - [51263]	WA	In buffer area only
Commonwealth Land - [51262]	WA	In buffer area only
Commonwealth Land - [51243]	WA	In buffer area only
Commonwealth Land - [51162]	WA	In buffer area only
Commonwealth Land - [51242]	WA	In buffer area only
Commonwealth Land - [51169]	WA	In buffer area only
Commonwealth Land - [50763]	WA	In buffer area only
Commonwealth Land - [50762]	WA	In buffer area only
Commonwealth Land - [50761]	WA	In buffer area only
Commonwealth Land - [50812]	WA	In buffer area only
Commonwealth Land - [51167]	WA	In buffer area only
Commonwealth Land - [51164]	WA	In buffer area only
Commonwealth Land - [51165]	WA	In buffer area only
Commonwealth Land - [50817]	WA	In buffer area only
Commonwealth Land - [51168]	WA	In buffer area only

Commonwealth Land Name	State	Buffer Status
Commonwealth Land - [50816]	WA	In buffer area only
Commonwealth Land - [51186]	WA	In buffer area only
Commonwealth Land - [51185]	WA	In buffer area only
Commonwealth Land - [51184]	WA	In buffer area only
Commonwealth Land - [51189]	WA	In buffer area only
Commonwealth Land - [51188]	WA	In buffer area only
Commonwealth Land - [51343]	WA	In buffer area only
Commonwealth Land - [51210]	WA	In buffer area only
Commonwealth Land - [51211]	WA	In buffer area only
Commonwealth Land - [51217]	WA	In buffer area only
Commonwealth Land - [50517]	WA	In buffer area only
Commonwealth Land - [50814]	WA	In buffer area only
Commonwealth Land - [50885]	WA	In buffer area only
Commonwealth Land - [50862]	WA	In buffer area only
Commonwealth Land - [51352]	WA	In buffer area only
Commonwealth Land - [50516]	WA	In buffer area only
Commonwealth Land - [51421]	WA	In buffer area only
Commonwealth Land - [51924]	WA	In buffer area only
Commonwealth Land - [51425]	WA	In buffer area only
Commonwealth Land - [51213]	WA	In buffer area only
Commonwealth Land - [51148]	WA	In buffer area only
Commonwealth Land - [51212]	WA	In buffer area only
Commonwealth Land - [51149]	WA	In buffer area only
Commonwealth Land - [51249]	WA	In buffer area only
Commonwealth Land - [51248]	WA	In buffer area only
Commonwealth Land - [50742]	WA	In buffer area only
Commonwealth Land - [51245]	WA	In buffer area only

Commonwealth Land Name	State	Buffer Status
Commonwealth Land - [50745]	WA	In buffer area only
Commonwealth Land - [51244]	WA	In buffer area only
Commonwealth Land - [50740]	WA	In buffer area only
Commonwealth Land - [51247]	WA	In buffer area only
Commonwealth Land - [50743]	WA	In buffer area only
Commonwealth Land - [51246]	WA	In buffer area only
Commonwealth Land - [50749]	WA	In buffer area only
Commonwealth Land - [50741]	WA	In buffer area only
Commonwealth Land - [51241]	WA	In buffer area only
Commonwealth Land - [50864]	WA	In buffer area only
Commonwealth Land - [51501]	WA	In buffer area only
Commonwealth Land - [50866]	WA	In buffer area only
Commonwealth Land - [50865]	WA	In buffer area only
Commonwealth Land - [50860]	WA	In buffer area only
Commonwealth Land - [50867]	WA	In buffer area only
Commonwealth Land - [50861]	WA	In buffer area only
Commonwealth Land - [51333]	WA	In buffer area only
Commonwealth Land - [51330]	WA	In buffer area only
Commonwealth Land - [51332]	WA	In buffer area only
Commonwealth Land - [51338]	WA	In buffer area only
Commonwealth Land - [51339]	WA	In buffer area only
Commonwealth Land - [50683]	WA	In buffer area only
Commonwealth Land - [51344]	WA	In buffer area only
Commonwealth Land - [51334]	WA	In buffer area only
Commonwealth Land - [51335]	WA	In buffer area only
Commonwealth Land - [51336]	WA	In buffer area only
Commonwealth Land - [51337]	WA	In buffer area only

Commonwealth Land Name	State	Buffer Status
Commonwealth Land - [51347]	WA	In feature area
Commonwealth Land - [51346]	WA	In buffer area only
Commonwealth Land - [50687]	WA	In buffer area only
Commonwealth Land - [50684]	WA	In buffer area only
Commonwealth Land - [51438]	WA	In buffer area only
Commonwealth Land - [51340]	WA	In buffer area only
Commonwealth Land - [50685]	WA	In buffer area only
Commonwealth Land - [51155]	WA	In buffer area only
Commonwealth Land - [51156]	WA	In buffer area only
Commonwealth Land - [51349]	WA	In feature area
Commonwealth Land - [51348]	WA	In feature area
Commonwealth Land - [51150]	WA	In feature area
Commonwealth Land - [51152]	WA	In buffer area only
Commonwealth Land - [51151]	WA	In buffer area only
Commonwealth Land - [51153]	WA	In buffer area only
Commonwealth Land - [51158]	WA	In buffer area only
Commonwealth Land - [51159]	WA	In buffer area only
Commonwealth Land - [51238]	WA	In buffer area only
Commonwealth Land - [51231]	WA	In buffer area only
Commonwealth Land - [51230]	WA	In buffer area only
Commonwealth Land - [51233]	WA	In buffer area only
Commonwealth Land - [51232]	WA	In buffer area only
Commonwealth Land - [50669]	WA	In buffer area only
Commonwealth Land - [51427]	WA	In buffer area only
Commonwealth Land - [51368]	WA	In buffer area only
Commonwealth Land - [51369]	WA	In buffer area only
Commonwealth Land - [51215]	WA	In buffer area only

Commonwealth Land Name	State	Buffer Status
Commonwealth Land - [51216]	WA	In buffer area only
Commonwealth Land - [51219]	WA	In buffer area only
Commonwealth Land - [51214]	WA	In buffer area only
Commonwealth Land - [51367]	WA	In buffer area only
Commonwealth Land - [51366]	WA	In buffer area only
Commonwealth Land - [50710]	WA	In buffer area only
Commonwealth Land - [51303]	WA	In buffer area only
Commonwealth Land - [51302]	WA	In buffer area only
Commonwealth Land - [50819]	WA	In buffer area only
Commonwealth Land - [50766]	WA	In buffer area only
Commonwealth Land - [51255]	WA	In buffer area only
Commonwealth Land - [51278]	WA	In buffer area only
Commonwealth Land - [51256]	WA	In buffer area only
Commonwealth Land - [51279]	WA	In buffer area only
Commonwealth Land - [51251]	WA	In buffer area only
Commonwealth Land - [51252]	WA	In buffer area only
Commonwealth Land - [51253]	WA	In buffer area only
Commonwealth Land - [51254]	WA	In buffer area only
Commonwealth Land - [50796]	WA	In buffer area only
Commonwealth Land - [51178]	WA	In buffer area only
Commonwealth Land - [51179]	WA	In buffer area only
Commonwealth Land - [51250]	WA	In buffer area only
Commonwealth Land - [51218]	WA	In buffer area only
Commonwealth Land - [51374]	WA	In buffer area only
Commonwealth Land - [51236]	WA	In buffer area only
Commonwealth Land - [51415]	WA	In buffer area only
Commonwealth Land - [50670]	WA	In buffer area only

Commonwealth Land Name	State	Buffer Status
Commonwealth Land - [51417]	WA	In buffer area only
Commonwealth Land - [51414]	WA	In buffer area only
Commonwealth Land - [51895]	WA	In buffer area only
Commonwealth Land - [51416]	WA	In buffer area only
Commonwealth Land - [51894]	WA	In buffer area only
Commonwealth Land - [51899]	WA	In buffer area only
Commonwealth Land - [51259]	WA	In buffer area only
Commonwealth Land - [51258]	WA	In buffer area only
Commonwealth Land - [50822]	WA	In buffer area only
Commonwealth Land - [51235]	WA	In buffer area only
Commonwealth Land - [51234]	WA	In buffer area only
Commonwealth Land - [51237]	WA	In buffer area only
Commonwealth Land - [51176]	WA	In buffer area only
Commonwealth Land - [51171]	WA	In buffer area only
Commonwealth Land - [50790]	WA	In buffer area only
Commonwealth Land - [51174]	WA	In buffer area only
Commonwealth Land - [51177]	WA	In buffer area only
Commonwealth Land - [51172]	WA	In buffer area only
Commonwealth Land - [50797]	WA	In buffer area only
Commonwealth Land - [50826]	WA	In buffer area only
Commonwealth Land - [51170]	WA	In buffer area only
Commonwealth Land - [50791]	WA	In buffer area only
Commonwealth Land - [51173]	WA	In buffer area only
Commonwealth Land - [50824]	WA	In buffer area only
Commonwealth Land - [50798]	WA	In buffer area only
Commonwealth Land - [50829]	WA	In buffer area only
Commonwealth Land - [50828]	WA	In buffer area only

Commonwealth Land Name	State	Buffer Status
Commonwealth Land - [50795]	WA	In buffer area only
Commonwealth Land - [51175]	WA	In buffer area only
Commonwealth Land - [51323]	WA	In buffer area only
Commonwealth Land - [50774]	WA	In buffer area only
Commonwealth Land - [50799]	WA	In buffer area only
Commonwealth Land - [50845]	WA	In buffer area only
Commonwealth Land - [50844]	WA	In buffer area only
Commonwealth Land - [50827]	WA	In buffer area only
Commonwealth Land - [51523]	WA	In buffer area only
Commonwealth Land - [51525]	WA	In buffer area only
Commonwealth Land - [50847]	WA	In buffer area only
Commonwealth Land - [50721]	WA	In buffer area only
Commonwealth Land - [50725]	WA	In buffer area only
Commonwealth Land - [50794]	WA	In buffer area only
Commonwealth Land - [50729]	WA	In buffer area only
Commonwealth Land - [51981]	WA	In buffer area only
Commonwealth Land - [50842]	WA	In buffer area only
Commonwealth Land - [51986]	WA	In buffer area only
Commonwealth Land - [50848]	WA	In buffer area only
Commonwealth Land - [50849]	WA	In buffer area only
Commonwealth Land - [50843]	WA	In buffer area only
Commonwealth Land - [50841]	WA	In buffer area only
Commonwealth Land - [51318]	WA	In buffer area only
Commonwealth Land - [51412]	WA	In buffer area only
Commonwealth Land - [51413]	WA	In buffer area only
Commonwealth Land - [50820]	WA	In buffer area only
Commonwealth Land - [50821]	WA	In buffer area only

Commonwealth Land Name	State	Buffer Status
Commonwealth Land - [50676]	WA	In buffer area only
Commonwealth Land - [51319]	WA	In buffer area only
Commonwealth Land - [50722]	WA	In buffer area only
Commonwealth Land - [51316]	WA	In buffer area only
Commonwealth Land - [51317]	WA	In buffer area only
Commonwealth Land - [51311]	WA	In buffer area only
Commonwealth Land - [51310]	WA	In buffer area only
Commonwealth Land - [51315]	WA	In buffer area only
Commonwealth Land - [51314]	WA	In buffer area only
Commonwealth Land - [51313]	WA	In buffer area only
Commonwealth Land - [51312]	WA	In buffer area only

Commonwealth Heritage Places [Resource Information]

Name	State	Status	Buffer Status
Historic			
Artillery Barracks	WA	Listed place	In buffer area only
South Perth Post Office	WA	Listed place	In buffer area only
Victoria Park Post Office	WA	Listed place	In buffer area only

Listed Marine Species [Resource Information]

Scientific Name	Threatened Category	Presence Text	Buffer Status
Bird			
Actitis hypoleucos			
Common Sandpiper [59309]		Species or species habitat known to occur within area	In feature area
Anous stolidus			
Common Noddy [825]		Species or species habitat likely to occur within area	In buffer area only
Anous tenuirostris melanops			
Australian Lesser Noddy [26000]	Vulnerable	Species or species habitat may occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area overfly marine area	In feature area
Ardenna carneipes as Puffinus carneipes Flesh-footed Shearwater, Fleshy-footed Shearwater [82404]		Species or species habitat likely to occur within area	In buffer area only
Ardenna grisea as Puffinus griseus Sooty Shearwater [82651]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Arenaria interpres Ruddy Turnstone [872]	Vulnerable	Roosting known to occur within area	In buffer area only
Bubulcus ibis as Ardea ibis Cattle Egret [66521]		Species or species habitat may occur within area overfly marine area	In feature area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Roosting known to occur within area	In feature area
Calidris alba Sanderling [875]		Roosting known to occur within area	In buffer area only
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat known to occur within area overfly marine area	In feature area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area overfly marine area	In feature area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat known to occur within area overfly marine area	In feature area
Calidris pugnax as Philomachus pugnax Ruff [91256]		Roosting known to occur within area overfly marine area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Calidris ruficollis Red-necked Stint [860]		Roosting known to occur within area overfly marine area	In buffer area only
Calidris subminuta Long-toed Stint [861]		Roosting known to occur within area overfly marine area	In buffer area only
Calidris tenuirostris Great Knot [862]	Vulnerable	Roosting known to occur within area overfly marine area	In buffer area only
Charadrius bicinctus Double-banded Plover [895]		Roosting known to occur within area overfly marine area	In buffer area only
Charadrius dubius Little Ringed Plover [896]		Roosting known to occur within area overfly marine area	In buffer area only
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat known to occur within area	In feature area
Charadrius mongolus Lesser Sand Plover, Mongolian Plover [879]	Endangered	Roosting known to occur within area	In buffer area only
Charadrius ruficapillus Red-capped Plover [881]		Roosting known to occur within area overfly marine area	In buffer area only
Diomedea amsterdamensis Amsterdam Albatross [64405]	Endangered	Species or species habitat may occur within area	In buffer area only
Diomedea dabbenena Tristan Albatross [66471]	Endangered	Species or species habitat may occur within area	In buffer area only
Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	Species or species habitat may occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Diomedea sanfordi Northern Royal Albatross [64456]	Endangered	Species or species habitat may occur within area	In buffer area only
Gallinago megala Swinhoe's Snipe [864]		Roosting likely to occur within area overfly marine area	In buffer area only
Gallinago stenura Pin-tailed Snipe [841]		Roosting likely to occur within area overfly marine area	In buffer area only
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat known to occur within area	In feature area
Halobaena caerulea Blue Petrel [1059]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Himantopus himantopus Pied Stilt, Black-winged Stilt [870]		Roosting known to occur within area overfly marine area	In buffer area only
Hydroprogne caspia as Sterna caspia Caspian Tern [808]		Foraging, feeding or related behaviour known to occur within area	In buffer area only
Larus pacificus Pacific Gull [811]		Foraging, feeding or related behaviour may occur within area	In buffer area only
Limicola falcinellus Broad-billed Sandpiper [842]		Species or species habitat known to occur within area overfly marine area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat known to occur within area	In buffer area only
Limosa limosa Black-tailed Godwit [845]	Endangered	Roosting known to occur within area overfly marine area	In buffer area only
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area	In buffer area only
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area overfly marine area	In feature area
Motacilla cinerea Grey Wagtail [642]		Species or species habitat may occur within area overfly marine area	In feature area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area	In feature area
Numenius minutus Little Curlew, Little Whimbrel [848]		Roosting likely to occur within area overfly marine area	In buffer area only
Numenius phaeopus Whimbrel [849]		Roosting known to occur within area	In buffer area only
Onychoprion anaethetus as Sterna anaethetus Bridled Tern [82845]		Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Pachyptila turtur Fairy Prion [1066]		Species or species habitat known to occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Pandion haliaetus Osprey [952]		Breeding known to occur within area	In feature area
Phalaropus lobatus Red-necked Phalarope [838]		Roosting known to occur within area	In buffer area only
Pluvialis fulva Pacific Golden Plover [25545]		Roosting known to occur within area	In buffer area only
Pluvialis squatarola Grey Plover [865]	Vulnerable	Roosting known to occur within area overfly marine area	In buffer area only
Pterodroma mollis Soft-plumaged Petrel [1036]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Puffinus assimilis Little Shearwater [59363]		Foraging, feeding or related behaviour known to occur within area	In buffer area only
Recurvirostra novaehollandiae Red-necked Avocet [871]		Roosting known to occur within area overfly marine area	In buffer area only
Rostratula australis as Rostratula benghalensis (sensu lato) Australian Painted Snipe [77037]	Endangered	Species or species habitat known to occur within area overfly marine area	In feature area
Stercorarius antarcticus as Catharacta skua Brown Skua [85039]		Species or species habitat may occur within area	In buffer area only
Sterna dougallii Roseate Tern [817]		Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Sternula albifrons as Sterna albifrons Little Tern [82849]		Species or species habitat may occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Thalassarche carteri Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
Thalassarche cauta Shy Albatross [89224]	Endangered	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Thalassarche steadi White-capped Albatross [64462]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Thinornis cucullatus as Thinornis rubricollis Hooded Plover, Hooded Dotterel [87735]		Species or species habitat known to occur within area overfly marine area	In feature area
Tringa brevipes as Heteroscelus brevipes Grey-tailed Tattler [851]		Roosting known to occur within area	In buffer area only
Tringa glareola Wood Sandpiper [829]		Roosting known to occur within area overfly marine area	In buffer area only
Tringa nebularia Common Greenshank, Greenshank [832]	Endangered	Species or species habitat known to occur within area overfly marine area	In feature area
Tringa stagnatilis Marsh Sandpiper, Little Greenshank [833]		Roosting known to occur within area overfly marine area	In buffer area only
Tringa totanus Common Redshank, Redshank [835]		Roosting known to occur within area overfly marine area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
[Xenus cinereus](#) Terek Sandpiper [59300]	Vulnerable	Roosting known to occur within area overfly marine area	In buffer area only
Fish			
[Acentronura australe](#) Southern Pygmy Pipehorse [66185]		Species or species habitat may occur within area	In buffer area only
[Campichthys galei](#) Gale's Pipefish [66191]		Species or species habitat may occur within area	In buffer area only
[Heraldia nocturna](#) Upside-down Pipefish, Eastern Upside-down Pipefish, Eastern Upside-down Pipefish [66227]		Species or species habitat may occur within area	In buffer area only
[Hippocampus angustus](#) Western Spiny Seahorse, Narrow-bellied Seahorse [66234]		Species or species habitat may occur within area	In buffer area only
[Hippocampus breviceps](#) Short-head Seahorse, Short-snouted Seahorse [66235]		Species or species habitat may occur within area	In buffer area only
[Hippocampus subelongatus](#) West Australian Seahorse [66722]		Species or species habitat may occur within area	In buffer area only
[Histiogamphelus cristatus](#) Rhino Pipefish, Macleay's Crested Pipefish, Ring-back Pipefish [66243]		Species or species habitat may occur within area	In buffer area only
[Lissocampus caudalis](#) Australian Smooth Pipefish, Smooth Pipefish [66249]		Species or species habitat may occur within area	In buffer area only
[Lissocampus fatiloquus](#) Prophet's Pipefish [66250]		Species or species habitat may occur within area	In buffer area only
[Lissocampus runa](#) Javelin Pipefish [66251]		Species or species habitat may occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Maroubra perserrata Sawtooth Pipefish [66252]		Species or species habitat may occur within area	In buffer area only
Mitotichthys meraculus Western Crested Pipefish [66259]		Species or species habitat may occur within area	In buffer area only
Nannocampus subosseus Bonyhead Pipefish, Bony-headed Pipefish [66264]		Species or species habitat may occur within area	In buffer area only
Phycodurus eques Leafy Seadragon [66267]		Species or species habitat may occur within area	In buffer area only
Phyllopteryx taeniolatus Common Seadragon, Weedy Seadragon [66268]		Species or species habitat may occur within area	In buffer area only
Pugnaso curtirostris Pugnose Pipefish, Pug-nosed Pipefish [66269]		Species or species habitat may occur within area	In buffer area only
Solegnathus lettiensis Gunther's Pipehorse, Indonesian Pipefish [66273]		Species or species habitat may occur within area	In buffer area only
Stigmatopora argus Spotted Pipefish, Gulf Pipefish, Peacock Pipefish [66276]		Species or species habitat may occur within area	In buffer area only
Stigmatopora nigra Widebody Pipefish, Wide-bodied Pipefish, Black Pipefish [66277]		Species or species habitat may occur within area	In buffer area only
Urocampus carinirostris Hairy Pipefish [66282]		Species or species habitat may occur within area	In buffer area only
Vanacampus margaritifer Mother-of-pearl Pipefish [66283]		Species or species habitat may occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Vanacampus phillipi			
Port Phillip Pipefish [66284]		Species or species habitat may occur within area	In buffer area only
Vanacampus poecilolaemus			
Longsnout Pipefish, Australian Long-snout Pipefish, Long-snouted Pipefish [66285]		Species or species habitat may occur within area	In buffer area only
Mammal			
Arctocephalus forsteri			
Long-nosed Fur-seal, New Zealand Fur-seal [20]		Species or species habitat may occur within area	In buffer area only
Neophoca cinerea			
Australian Sea-lion, Australian Sea Lion [22]	Endangered	Species or species habitat likely to occur within area	In buffer area only
Reptile			
Caretta caretta			
Loggerhead Turtle [1763]	Endangered	Foraging, feeding or related behaviour known to occur within area	In buffer area only
Chelonia mydas			
Green Turtle [1765]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In buffer area only
Dermochelys coriacea			
Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Foraging, feeding or related behaviour known to occur within area	In buffer area only
Hydrophis kingii as Disteira kingii			
Spectacled Sea Snake [93511]		Species or species habitat may occur within area	In buffer area only
Natator depressus			
Flatback Turtle [59257]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In buffer area only

Whales and Other Cetaceans			[Resource Information]
Current Scientific Name	Status	Type of Presence	Buffer Status
Mammal			

Current Scientific Name	Status	Type of Presence	Buffer Status
Balaenoptera acutorostrata Minke Whale [33]		Species or species habitat may occur within area	In buffer area only
Balaenoptera edeni Bryde's Whale [35]		Species or species habitat may occur within area	In buffer area only
Balaenoptera musculus Blue Whale [36]	Endangered	Species or species habitat likely to occur within area	In buffer area only
Caperea marginata Pygmy Right Whale [39]		Species or species habitat may occur within area	In buffer area only
Delphinus delphis Common Dolphin, Short-beaked Common Dolphin [60]		Species or species habitat may occur within area	In buffer area only
Eubalaena australis Southern Right Whale [40]	Endangered	Breeding known to occur within area	In buffer area only
Grampus griseus Risso's Dolphin, Grampus [64]		Species or species habitat may occur within area	In buffer area only
Megaptera novaeangliae Humpback Whale [38]		Species or species habitat known to occur within area	In buffer area only
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may occur within area	In buffer area only
Stenella attenuata Spotted Dolphin, Pantropical Spotted Dolphin [51]		Species or species habitat may occur within area	In buffer area only
Tursiops aduncus Indian Ocean Bottlenose Dolphin, Spotted Bottlenose Dolphin [68418]		Species or species habitat likely to occur within area	In buffer area only

Current Scientific Name	Status	Type of Presence	Buffer Status
Tursiops truncatus s. str. Bottlenose Dolphin [68417]		Species or species habitat may occur within area	In buffer area only

Extra Information

State and Territory Reserves			[Resource Information]
Protected Area Name	Reserve Type	State	Buffer Status
Alfred Cove	Nature Reserve	WA	In buffer area only
Balannup Lake	Nature Reserve	WA	In buffer area only
Beelu	National Park	WA	In buffer area only
Canning River	Management Area	WA	In feature area
Dundas Road	Nature Reserve	WA	In feature area
Forrestdale Lake	Nature Reserve	WA	In buffer area only
Gibbs Road	Nature Reserve	WA	In buffer area only
Gooseberry Hill	National Park	WA	In buffer area only
Greenmount	National Park	WA	In buffer area only
Harry Waring Marsupial Reserve	Nature Reserve	WA	In buffer area only
Helena River	Management Area	WA	In buffer area only
Kalamunda	National Park	WA	In buffer area only
Kenwick Wetlands	Nature Reserve	WA	In feature area
Korung	National Park	WA	In buffer area only
Lesmurdie Falls	National Park	WA	In buffer area only
Matilda Bay Reserve	5(1)(g) Reserve	WA	In buffer area only
Milyu	Nature Reserve	WA	In buffer area only
NTWA Bushland covenant (0074)	Conservation Covenant	WA	In buffer area only
Perth Zoo	Other	WA	In buffer area only
Piara	Nature Reserve	WA	In buffer area only

Protected Area Name	Reserve Type	State	Buffer Status
Swan Estuary	Marine Park	WA	In buffer area only
Swan Estuary - Alfred Cove	Marine Park	WA	In buffer area only
Swan Estuary - Milyu	Marine Park	WA	In buffer area only
Swan Estuary - Pelican Point	Marine Park	WA	In buffer area only
Swan River	Management Area	WA	In buffer area only
Thomsons Lake	Nature Reserve	WA	In buffer area only
Unnamed WA23076	Nature Reserve	WA	In buffer area only
Unnamed WA24657	Conservation Park	WA	In buffer area only
Unnamed WA29815	5(1)(h) Reserve	WA	In buffer area only
Unnamed WA36440	Management Area	WA	In buffer area only
Unnamed WA37997	Nature Reserve	WA	In feature area
Unnamed WA39584	Conservation Park	WA	In buffer area only
Unnamed WA39752	Conservation Park	WA	In buffer area only
Unnamed WA42469	Nature Reserve	WA	In buffer area only
Unnamed WA44414	5(1)(g) Reserve	WA	In buffer area only
Unnamed WA45106	5(1)(g) Reserve	WA	In buffer area only
Unnamed WA48291	Conservation Park	WA	In buffer area only
Unnamed WA49079	Nature Reserve	WA	In buffer area only
Unnamed WA49220	Conservation Park	WA	In buffer area only
Unnamed WA49299	Nature Reserve	WA	In buffer area only
Unnamed WA49362	Nature Reserve	WA	In buffer area only
Unnamed WA49363	Conservation Park	WA	In buffer area only
Unnamed WA49561	Conservation Park	WA	In buffer area only
Unnamed WA53313	Conservation Park	WA	In feature area
Unnamed WA53632	Conservation Park	WA	In buffer area only
Unnamed WA53649	Nature Reserve	WA	In buffer area only

Regional Forest Agreements [Resource Information]

Note that all areas with completed RFAs have been included. Please see the associated resource information for specific caveats and use limitations associated with RFA boundary information.

RFA Name	State	Buffer Status
South West WA RFA	Western Australia	In buffer area only

Nationally Important Wetlands [Resource Information]

Wetland Name	State	Buffer Status
Booragoon Swamp	WA	In buffer area only
Brixton Street Swamps	WA	In feature area
Forrestdale Lake	WA	In buffer area only
Gibbs Road Swamp System	WA	In buffer area only
Perth Airport Woodland Swamps	WA	In buffer area only
Swan-Canning Estuary	WA	In buffer area only
Thomsons Lake	WA	In buffer area only

EPBC Act Referrals [Resource Information]

Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
119 Hammond Road Residential Development	2023/09541		Completed	In buffer area only
Beale Park Redevelopment	2022/09297		Assessment	In buffer area only
Cockburn Surf Park	2022/09267		Completed	In buffer area only
Fremantle District Police Complex Project	2022/09345		Completed	In buffer area only
Hammond Park Mixed Use Development	2024/09820		Assessment	In buffer area only
Industrial Development MKSEA Precinct 1	2023/09760		Completed	In buffer area only
Jandakot Airport Expansion, Commercial Development and Clearing of Vegetation	2009/4796		Approval	In feature area
JANDAKOT EASTERN LINK ROAD	2022/09401		Completed	In feature area
Jandakot Horse Agistment	2022/09280		Assessment	In buffer area only

Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Kwinana Alumina Refinery ? Future Residue Storage Area	2023/09454		Completed	In buffer area only
Land Clearing for Light Industrial Development	2022/09419		Completed	In buffer area only
Land clearing for limestone quarry	2023/09558		Completed	In buffer area only
Lot 16 Barfield Road: Residential Development	2023/09450		Approval	In buffer area only
Residential Development, Wattleup Road, Hammond Park, WA	2021/8933		Post-Approval	In buffer area only
Residential subdivision of Lot 126 Lawnbrook Road, Walliston	2021/9105		Completed	In buffer area only
Roe Highway and Great Eastern Highway Bypass Grade Separation Interchange, Hazelmere WA	2020/8784		Post-Approval	In buffer area only
Southern Link Road Stage 3 City of Canning	2020/8809		Assessment	In buffer area only
Talbot Road Asbestos Water Supply Pipe Decommissioning Project	2023/09661		Completed	In buffer area only
Tree removal for road widening - Eighth Road, Armadale, WA	2023/09563		Completed	In buffer area only
Vegetation clearing (Cwlth land), Jandakot Airport, Cockburn, WA	2013/7032		Post-Approval	In buffer area only
Controlled action				
Airport & Freight Access Gateway	2010/5384	Controlled Action	Post-Approval	In feature area
Alcoa Bauxite Residue Storage Area Extension	2011/5878	Controlled Action	Further Information Request	In buffer area only
Bushmead Residential Development, Hazelmere, WA	2015/7414	Controlled Action	Post-Approval	In buffer area only
Clearing for orchard expansion, Lot 400 Canning Road, Carmel, WA	2016/7647	Controlled Action	Completed	In buffer area only
Clearing of Lots 2 and 10 Rowley Road, Mandogalup WA	2018/8182	Controlled Action	Assessment Approach	In buffer area only
Construction of Fiona Stanley Hospital	2008/3970	Controlled Action	Post-Approval	In buffer area only

Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Controlled action				
Construction of Residential Dwelling, Ozone Terrace, Kalamunda	2006/3147	Controlled Action	Post-Approval	In buffer area only
Development of an Integrated Aged Care Facility, Kalumunda, WA	2013/6990	Controlled Action	Completed	In buffer area only
Development of Kwinana Quay port facility	2008/4387	Controlled Action	Completed	In buffer area only
Extension of Beeliar Drive between the junction of Mayor and Fawcett Roads an...	2003/1029	Controlled Action	Completed	In buffer area only
Garden Street road extension, Huntingdale, city of Gosnells, WA	2016/7735	Controlled Action	Post-Approval	In buffer area only
Hammond Park Secondary School development, WA	2016/7741	Controlled Action	Post-Approval	In buffer area only
Honeywood Estate Development	2010/5476	Controlled Action	Post-Approval	In buffer area only
Keane Road Strategic Link, proposed construction central portion of Keane Road	2009/5035	Controlled Action	Completed	In buffer area only
Latitude 32-industrial development of various lots, Ashley and Sayer Roads, Hope Valley, WA	2016/7695	Controlled Action	Post-Approval	In buffer area only
Lots 13, 14 & 18 Barfield Rd & Lots 48-51 Rowley Rd, Hammond Park	2012/6524	Controlled Action	Post-Approval	In buffer area only
Mandogalup Urban Development, Mandogalup, WA	2014/7308	Controlled Action	Post-Approval	In buffer area only
National Lifestyle Village, Lot 97 Adelaide Street	2009/5141	Controlled Action	Post-Approval	In buffer area only
Native vegetation clearing of Lot 21 Webster Road for Industrial Development	2011/6186	Controlled Action	Post-Approval	In feature area
Natural Gas Pipeline Expansion	2006/2813	Controlled Action	Post-Approval	In feature area
Nava-1 Cable System	2001/510	Controlled Action	Completed	In buffer area only
Ranford Road Residential Development	2002/549	Controlled Action	Post-Approval	In feature area
Residential development and bushfire protection within part Lot	2016/7846	Controlled Action	Post-Approval	In buffer area only

Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Controlled action				
9006 Reilly Road, Harrisdale, WA				
Residential Development Lot 131 Jandakot Road, Treeby WA	2018/8205	Controlled Action	Further Information Request	In buffer area only
Residential developmnt, Lots 11 and 74 Beenyup Road, Banjup, WA	2017/7923	Controlled Action	Post-Approval	In buffer area only
Residential Estate at Lot 1580 Warton Road, Southern River	2004/1471	Controlled Action	Post-Approval	In buffer area only
Residential Estate Development, Lot 682 Rowley Road, Mandogalup, Western Australia	2014/7126	Controlled Action	Post-Approval	In buffer area only
Roe Highway and Kalamunda Road Interchange upgrade, WA	2018/8316	Controlled Action	Post-Approval	In buffer area only
Roe Highway extension, Kwinana Freeway to Stock Road, WA	2009/5031	Controlled Action	Post-Approval	In feature area
Roe Hwy Extension	2003/972	Controlled Action	Post-Approval	In feature area
Shenton Park Subdivision	2004/1479	Controlled Action	Completed	In buffer area only
Thornlie-Cockburn Link Project, WA	2018/8188	Controlled Action	Post-Approval	In feature area
To grade separate three intersections on Tonkin Highway, WA	2014/7385	Controlled Action	Post-Approval	In buffer area only
Tonkin Highway Grade Separated Interchanges	2019/8529	Controlled Action	Post-Approval	In feature area
Warders Hotel, Block 1 Warders Cottages, Fremantle, WA	2018/8144	Controlled Action	Post-Approval	In buffer area only
Not controlled action				
'Looping 10' gas transmission pipeline from Kwinana to Hopelands	2005/2212	Not Controlled Action	Completed	In buffer area only
Armadale Road Duplication - Tapper to Anstey Road	2017/7972	Not Controlled Action	Completed	In buffer area only
Armadale Road to North Lake Road Bridge development, Jandakot, WA	2018/8284	Not Controlled Action	Completed	In buffer area only
Berkshire Road and Roe Highway Interchange, Forrestfield, East Perth, WA	2014/7243	Not Controlled Action	Completed	In buffer area only

Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Not controlled action				
Bibra Lake Aboriginal Cultural Centre Development	2020/8642	Not Controlled Action	Completed	In buffer area only
Burslem Drive Bridge Duplication Over Canning River, Maddington, WA	2014/7115	Not Controlled Action	Completed	In buffer area only
Bushfire hazard reduction, Lot 37 Barfield Road, Hammond Park, WA	2018/8204	Not Controlled Action	Completed	In buffer area only
Calleya Residential Development, Banjup, WA	2016/7708	Not Controlled Action	Completed	In buffer area only
Canning Mills Road Improvement Project, Martin, WA	2015/7426	Not Controlled Action	Completed	In buffer area only
Clearing and development of 220 and 234 Wattleup Rd, Wattleup, WA	2016/7738	Not Controlled Action	Completed	In buffer area only
Clearing of Lot 400 Canning Road, Carmel, WA	2017/7979	Not Controlled Action	Completed	In buffer area only
Clearing of Native Vegetation, Hammond Park, WA	2011/6041	Not Controlled Action	Completed	In buffer area only
Commercial development of Lot 106 Wright Road, Forrestdale WA	2003/1255	Not Controlled Action	Completed	In feature area
Community Centre Project, Kalamunda, WA	2019/8473	Not Controlled Action	Completed	In buffer area only
Construction of Hammond Road Primary School, Hammond Park, WA	2012/6619	Not Controlled Action	Completed	In buffer area only
Construction of international rowing course and commercial/residential areas	2003/1034	Not Controlled Action	Completed	In feature area
Construction of Pawsey High Performance Computing Centre	2010/5560	Not Controlled Action	Completed	In buffer area only
Construction of the Perth Stadium and associated infrastructure	2013/6740	Not Controlled Action	Completed	In buffer area only
Curtin Main Street Project - Transformation of Bentley Campus to a major urban centre WA	2013/7044	Not Controlled Action	Completed	In buffer area only
Denny Avenue Level Crossing Removal, Kelmscott WA	2018/8377	Not Controlled Action	Completed	In buffer area only
Development of Crown Towers Five Star Quality Hotel	2012/6695	Not Controlled Action	Completed	In buffer area only
Development of Lots 100-101 Sayer Road, Hope Valley, WA	2019/8399	Not Controlled Action	Completed	In buffer area only

Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Not controlled action				
Disposal of residential properties, Fremantle, WA	2019/8593	Not Controlled Action	Completed	In buffer area only
Eradication of the European House Borer, Perth metropolitan area, WA	2009/5027	Not Controlled Action	Completed	In feature area
extensions to minerals laboratory	2005/2285	Not Controlled Action	Completed	In buffer area only
Forrestfield Airport Link, WA	2015/7399	Not Controlled Action	Completed	In buffer area only
Frankland Parks Oval project, Hammond Park, WA	2018/8369	Not Controlled Action	Completed	In buffer area only
Fremantle Ports Inner Harbour Capital Dredging Proposal	2005/2477	Not Controlled Action	Completed	In buffer area only
Gas-fired Power Station	2005/2213	Not Controlled Action	Completed	In buffer area only
Grazing of stock and associated works on Lot 1790 Passmore Street, Southern River Western Australia	2018/8176	Not Controlled Action	Completed	In buffer area only
Hammond West Urban Development, Hammond Park, WA	2017/7917	Not Controlled Action	Completed	In buffer area only
Hartfield Park Sporting Field Extension	2013/7008	Not Controlled Action	Completed	In feature area
Hazard reduction and site access, Lot 682 Rowley Road, Mandogalup, WA	2018/8186	Not Controlled Action	Completed	In buffer area only
High Street Upgrade, Fremantle, WA	2018/8315	Not Controlled Action	Completed	In buffer area only
Hope Valley-Wattleup Redevelopment Project	2020/8644	Not Controlled Action	Completed	In buffer area only
Improving rabbit biocontrol: releasing another strain of RHDV, sthrn two thirds of Australia	2015/7522	Not Controlled Action	Completed	In feature area
INDIGO Central Submarine Telecommunications Cable	2017/8127	Not Controlled Action	Completed	In feature area
Industrial Development (multiple lots) Edward Street, Kenwick, WA	2018/8231	Not Controlled Action	Completed	In feature area
Industrial development 105 Sayer Road, Hope Valley, WA	2014/7261	Not Controlled Action	Completed	In buffer area only
Industrial Development Lot 64 Ashley Road, Hope Valley, WA	2014/7238	Not Controlled Action	Completed	In buffer area only

Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Not controlled action				
Jandakot Road Widening, Solomon Road to Berrigan Drive, Jandakot, WA	2020/8728	Not Controlled Action	Completed	In buffer area only
Kwinana Fwy southbound widening Roe Hwy to Armadale Rd and construction of farrington Rd off-ramp	2013/7062	Not Controlled Action	Completed	In feature area
Kwinana Gas-Fired Power Station	2005/2101	Not Controlled Action	Completed	In buffer area only
Latitude 32 industrial development 6A, Cockburn, WA	2018/8193	Not Controlled Action	Completed	In buffer area only
Lot 28 157 Barfield Road, Hammond Park - Proposed Residential Development	2021/9063	Not Controlled Action	Completed	In buffer area only
Lot 29 Barfield Road, Hammond Park	2017/7948	Not Controlled Action	Completed	In buffer area only
Lot 2 Nicholson Road, Forrestdale	2012/6561	Not Controlled Action	Completed	In buffer area only
Lots 12, 13 and 18 Hammond Road, Lot 80 Beeliar Drive and Lot 500 Hird Road	2012/6576	Not Controlled Action	Completed	In buffer area only
Murdoch University Sports Precinct, Melville, WA	2016/7823	Not Controlled Action	Completed	In buffer area only
Office & Electronic Assembly Building, Lot 106 Watts Place, Bentley, WA	2012/6440	Not Controlled Action	Completed	In buffer area only
Perth Seawater Desalination Project: Thomsons Lake to Kogolup Pipeline	2005/1971	Not Controlled Action	Completed	In buffer area only
Pipeline Extension, Hazelmere and Helena Valley, WA	2018/8239	Not Controlled Action	Completed	In buffer area only
Redevelopment of Purvis Street school site, Hamilton Hill, WA	2018/8255	Not Controlled Action	Completed	In buffer area only
Residential Development, Lot 12 Lyon Road, Aubin Grove, WA	2013/6852	Not Controlled Action	Completed	In buffer area only
Residential development, Lot 13 Lyon Road, Aubin Grove, WA	2014/7151	Not Controlled Action	Completed	In buffer area only
Residential development, Lot 33 Barfield Road, Hammond Park, WA	2015/7548	Not Controlled Action	Completed	In buffer area only
Residential development, Lot 74 Wattleup Road, Hammond Park, WA	2018/8273	Not Controlled Action	Completed	In buffer area only

Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Not controlled action				
Residential development, Lots 124 and 125, Wattleup Road, Hammond Park, WA	2015/7519	Not Controlled Action	Completed	In buffer area only
Residential Development Lot 4225 North Lake Road, Kardinya, WA	2015/7505	Not Controlled Action	Completed	In buffer area only
Residential Development - Lot 608 Dixon Road, Kalamundah, WA	2014/7389	Not Controlled Action	Completed	In buffer area only
Residential development of Lots 302, 308, 320 and part of Lot 9502, Hawtin Rd, Forrestfield, WA	2016/7770	Not Controlled Action	Completed	In buffer area only
Residential Development of Lots 76 and 107 Wattleup Road, Hamond Park	2020/8865	Not Controlled Action	Completed	In buffer area only
Residential development on part of Lot 2 Fanstone Avenue, Beeliar, WA	2016/7726	Not Controlled Action	Completed	In buffer area only
Ridge Hill Road intersection modification and offsite water main installation, Gooseberry Hill, WA	2020/8842	Not Controlled Action	Completed	In buffer area only
Road widening - Eighth Road Armadale between Gribble Avenue and Armadale Road	2021/8964	Not Controlled Action	Completed	In buffer area only
Roe Highway - Karel Avenue to Hope Road Bridge Project	2005/2061	Not Controlled Action	Completed	In feature area
Roe Highway Noise Wall, High Wycombe, WA	2014/7149	Not Controlled Action	Completed	In buffer area only
Southern River Mixed Business Precinct F, City of Gosnells, WA	2013/6813	Not Controlled Action	Completed	In buffer area only
Southern River Precinct 3E	2017/7900	Not Controlled Action	Completed	In buffer area only
South Metropolitan Crop Research Hub, Murdoch WA	2018/8201	Not Controlled Action	Completed	In buffer area only
Stages 2-5 of primary school and assoc facilities development, Hammond Park, WA	2015/7407	Not Controlled Action	Completed	In buffer area only
To develop a residential development at Glyde Road, Lesmurdie, WA	2013/7096	Not Controlled Action	Completed	In buffer area only
Tonkin Highway Extension	2001/470	Not Controlled Action	Completed	In buffer area only

Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Not controlled action				
Tonkin Highway Upgrade, Guildford Road to Great Eastern Highway, WA	2019/8545	Not Controlled Action	Completed	In buffer area only
Translocation of orchids (Caladenia huegelii) from Roe Hway Reserve	2002/781	Not Controlled Action	Completed	In feature area
Urban development, Lot 109 Wattleup Road, Hammond Park, WA	2015/7425	Not Controlled Action	Completed	In buffer area only
Urban development of Lot 107 Wattleup Road, Hammond Park, WA	2017/7890	Not Controlled Action	Completed	In buffer area only
Urban developmnet & associated infrastructure, Lot 4 Armadale Road, Banjup WA	2013/7049	Not Controlled Action	Completed	In buffer area only
Warders' Cottages Block 2 'W2'	2022/9148	Not Controlled Action	Completed	In buffer area only
Warders' Cottages W2 minor works, Fremantle, WA	2018/8185	Not Controlled Action	Completed	In buffer area only
Wentworth West residential development, Bartram Road, Success, WA	2014/7245	Not Controlled Action	Completed	In buffer area only
Wungong Transfer Mains Project	2007/3532	Not Controlled Action	Completed	In buffer area only
Yule Brook Main Drain Flood Mitigation Works	2019/8572	Not Controlled Action	Completed	In feature area
Not controlled action (particular manner)				
City of Cockburn Sporting Facilties	2005/2139	Not Controlled Action (Particular Manner)	Post-Approval	In feature area
Commercial Estate and Aeronautical Infrastructure Development, Precincts 2A & 2B	2006/3021	Not Controlled Action (Particular Manner)	Post-Approval	In buffer area only
Extension of Spearwood Ave, from Barrington Rd to Miguel Rd	2009/5140	Not Controlled Action (Particular Manner)	Post-Approval	In buffer area only
INDIGO Marine Cable Route Survey (INDIGO)	2017/7996	Not Controlled Action (Particular Manner)	Post-Approval	In feature area

Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Not controlled action (particular manner)				
Sale of ABC Sound Broadcasting and Television Studios	2008/3951	Not Controlled Action (Particular Manner)	Post-Approval	In buffer area only
South West Metropolitan Railway Project	2003/1175	Not Controlled Action (Particular Manner)	Post-Approval	In feature area
State Football Centre	2020/8824	Not Controlled Action (Particular Manner)	Post-Approval	In feature area
Referral decision				
AIC Forrestdale Campus, Educational Establishment	2021/9134	Referral Decision	Referral Publication	In buffer area only
Commercial development of Lot 414 Grove Road, Kenwick	2021/9022	Referral Decision	Referral Publication	In feature area
Rezoning of Crown Reserve 39181 to facilitate future residential development	2005/2096	Referral Decision	Completed	In feature area

Biologically Important Areas			[Resource Information]
Scientific Name	Behaviour	Presence	Buffer Status
Seabirds			
Ardenna pacifica Wedge-tailed Shearwater [84292]	Foraging (in high numbers)	Known to occur	In buffer area only
Eudyptula minor Little Penguin [1085]	Foraging (provisioning young)	Known to occur	In buffer area only
Hydroprogne caspia Caspian Tern [808]	Foraging (provisioning young)	Known to occur	In buffer area only
Larus pacificus Pacific Gull [811]	Foraging (in high numbers)	Former Range	In buffer area only
Onychoprion anaethetus Bridled Tern [82845]	Foraging (in high numbers)	Known to occur	In buffer area only

Scientific Name	Behaviour	Presence	Buffer Status
[Puffinus assimilis tunneyi](#) Little Shearwater [59363]	Foraging (in high numbers)	Known to occur	In buffer area only
[Sterna dougallii](#) Roseate Tern [817]	Foraging	Known to occur	In buffer area only
[Sternula nereis](#) Fairy Tern [82949]	Foraging (in high numbers)	Known to occur	In buffer area only
Seals			
[Neophoca cinerea](#) Australian Sea Lion [22]	Foraging (male)	Likely to occur	In buffer area only
Whales			
[Megaptera novaeangliae](#) Humpback Whale [38]	Migration (north and south)	Known to occur	In buffer area only

Caveat

1 PURPOSE

This report is designed to assist in identifying the location of matters of national environmental significance (MNES) and other matters protected by the Environment Protection and Biodiversity Conservation Act 1999 (Cth) (EPBC Act) which may be relevant in determining obligations and requirements under the EPBC Act.

The report contains the mapped locations of:

- World and National Heritage properties;
- Wetlands of International and National Importance;
- Commonwealth and State/Territory reserves;
- distribution of listed threatened, migratory and marine species;
- listed threatened ecological communities; and
- other information that may be useful as an indicator of potential habitat value.

2 DISCLAIMER

This report is not intended to be exhaustive and should only be relied upon as a general guide as mapped data is not available for all species or ecological communities listed under the EPBC Act (see below). Persons seeking to use the information contained in this report to inform the referral of a proposed action under the EPBC Act should consider the limitations noted below and whether additional information is required to determine the existence and location of MNES and other protected matters.

Where data is available to inform the mapping of protected species, the presence type (e.g. known, likely or may occur) that can be determined from the data is indicated in general terms. It is the responsibility of any person using or relying on the information in this report to ensure that it is suitable for the circumstances of any proposed use. The Commonwealth cannot accept responsibility for the consequences of any use of the report or any part thereof. To the maximum extent allowed under governing law, the Commonwealth will not be liable for any loss or damage that may be occasioned directly or indirectly through the use of, or reliance on the contents of this report.

3 DATA SOURCES

Threatened ecological communities

For threatened ecological communities where the distribution is well known, maps are generated based on information contained in recovery plans, State vegetation maps and remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Threatened, migratory and marine species

Threatened, migratory and marine species distributions have been discerned through a variety of methods. Where distributions are well known and if time permits, distributions are inferred from either thematic spatial data (i.e. vegetation, soils, geology, elevation, aspect, terrain, etc.) together with point locations and described habitat; or modelled (MAXENT or BIOCLIM habitat modelling) using point locations and environmental data layers.

Where little information is available for a species or large number of maps are required in a short time-frame, maps are derived either from 0.04 or 0.02 decimal degree cells; by an automated process using polygon capture techniques (static two kilometre grid cells, alpha-hull and convex hull); or captured manually or by using topographic features (national park boundaries, islands, etc.).

In the early stages of the distribution mapping process (1999-early 2000s) distributions were defined by degree blocks, 100K or 250K map sheets to rapidly create distribution maps. More detailed distribution mapping methods are used to update these distributions when time permits.

4 LIMITATIONS

The following species and ecological communities have not been mapped and do not appear in this report:

- threatened species listed as extinct or considered vagrants;
- some recently listed species and ecological communities;
- some listed migratory and listed marine species, which are not listed as threatened species; and
- migratory species that are very widespread, vagrant, or only occur in Australia in small numbers.

The following groups have been mapped, but may not cover the complete distribution of the species:

- listed migratory and/or listed marine seabirds, which are not listed as threatened, have only been mapped for recorded breeding sites; and
- seals which have only been mapped for breeding sites near the Australian continent

The breeding sites may be important for the protection of the Commonwealth Marine environment.

Refer to the metadata for the feature group (using the Resource Information link) for the currency of the information.

Acknowledgements

This database has been compiled from a range of data sources. The department acknowledges the following custodians who have contributed valuable data and advice:

-Office of Environment and Heritage, New South Wales
-Department of Environment and Primary Industries, Victoria
-Department of Primary Industries, Parks, Water and Environment, Tasmania
-Department of Environment, Water and Natural Resources, South Australia
-Department of Land and Resource Management, Northern Territory
-Department of Environmental and Heritage Protection, Queensland
-Department of Parks and Wildlife, Western Australia
-Environment and Planning Directorate, ACT
-Birdlife Australia
-Australian Bird and Bat Banding Scheme
-Australian National Wildlife Collection
-Natural history museums of Australia
-Museum Victoria
-Australian Museum
-South Australian Museum
-Queensland Museum
-Online Zoological Collections of Australian Museums
-Queensland Herbarium
-National Herbarium of NSW
-Royal Botanic Gardens and National Herbarium of Victoria
-Tasmanian Herbarium
-State Herbarium of South Australia
-Northern Territory Herbarium
-Western Australian Herbarium
-Australian National Herbarium, Canberra
-University of New England
-Ocean Biogeographic Information System
-Australian Government, Department of Defence
Forestry Corporation, NSW
-Geoscience Australia
-CSIRO
-Australian Tropical Herbarium, Cairns
-eBird Australia
-Australian Government – Australian Antarctic Data Centre
-Museum and Art Gallery of the Northern Territory
-Australian Government National Environmental Science Program
-Australian Institute of Marine Science
-Reef Life Survey Australia
-American Museum of Natural History
-Queen Victoria Museum and Art Gallery, Inveresk, Tasmania
-Tasmanian Museum and Art Gallery, Hobart, Tasmania
-Other groups and individuals

The Department is extremely grateful to the many organisations and individuals who provided expert advice and information on numerous draft distributions.

Please feel free to provide feedback via the Contact us page.

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Department of Climate Change, Energy, the Environment and Water
GPO Box 3090
Canberra ACT 2601 Australia
+61 2 6274 1111

NatureMap data – 10 km buffer

Animalia	**165433**
ALGA	**7**
Chaetomorpha sp.	1
Dictyota sp.	1
Gracilaria sp.	2
Halimeda sp.	1
Microcoleus sp.	1
Ulva sp.	1
AMPHI	**2133**
Crinia georgiana	113
Crinia glauerti	407
Crinia insignifera	374
Crinia pseudinsignifera	104
Crinia sp.	1
Geocrinia leai	7
Heleioporus barycragus	30
Heleioporus eyrei	591
Heleioporus inornatus	8
Heleioporus sp.	41
Limnodynastes dorsalis	149
Litoria adelaidensis	109
Litoria adelaidensis (Slender Tree Frog)	1
Litoria moorei	112
Litoria moorei (Motorbike Frog)	1
Litoria sp.	1
Myobatrachus gouldii	57
Neobatrachus pelobatoides	4
Pseudophryne guentheri	23
BIRD	**151705**
Acanthagenys rufogularis	2
Acanthiza apicalis	1139
Acanthiza chrysorrhoa	1748
Acanthiza inornata	437
Acanthiza uropygialis	1
Acanthorhynchus superciliosus	795
Accipiter cirrhocephalus	1
Accipiter cirrocephalus	255
Accipiter cirrocephalus subsp. cirrocephalus	1
Accipiter fasciatus	549
Accipiter fasciatus subsp. didimus	1

Accipiter fasciatus subsp. fasciatus	7
Acridotheres fuscus	1
Acridotheres tristis subsp. tristis	1
Acrocephalus australis	1128
Acrocephalus australis subsp. gouldi	2
Acrocephalus scripaceus	1
Actitis hypoleucos	74
Aegotheles cristatus	8
Anas castanea	46
Anas gracilis	2306
Anas platyrhynchos	125
Anas platyrhynchos subsp. domesticus	24
Anas rhynchotis	982
Anas superciliosa	3669
Anhinga melanogaster	45
Anhinga melanogaster subsp. novaehollandiae	4
Anhinga novaehollandiae	754
Anous tenuirostris subsp. melanops	5
Anser anser	20
Anthochaera carunculata	3860
Anthochaera lunulata	793
Anthus australis	1
Apus pacificus	5
Aquila audax	351
Aquila morphnoides	2
Aquila morphnoides subsp. morphnoides	3
Ardea alba	2
Ardea alba subsp. modesta	68
Ardea garzetta	3
Ardea garzetta subsp. nigripes	6
Ardea ibis	15
Ardea intermedia	6
Ardea modesta	1274
Ardea novaehollandiae	165
Ardea pacifica	372
Ardea sacra	1
Ardenna pacifica	1
Arenaria interpres	68
Artamus cinereus	436
Artamus cinereus subsp. melanops	3
Artamus cyanopterus	151

Artamus personatus	9
Aythya australis	853
Barnardius zonarius	2291
Biziura lobata	1185
Botaurus poiciloptilus	5
Burhinus grallarius	2
Cacatua galerita	5
Cacatua pastinator	21
Cacatua roseicapilla	49
Cacatua sanguinea	404
Cacatua tenuirostris	149
Cacomantis flabelliformis	446
Cacomantis flabelliformis subsp. flabelliformis	1
Cacomantis pallidus	153
Calidris acuminata	196
Calidris alba	5
Calidris canutus	56
Calidris canutus subsp. rogersi	2
Calidris ferruginea	109
Calidris melanotos	29
Calidris minuta	1
Calidris ruficollis	342
Calidris sp.	1
Calidris subminuta	56
Calidris tenuirostris	187
Calyptorhynchus banksii	972
Calyptorhynchus banksii naso	3
Calyptorhynchus banksii subsp. naso	185
Calyptorhynchus sp.	223
Calyptorhynchus sp. 'white-tailed black cockatoo'	41
Carduelis carduelis	3
Carduelis chloris	1
Catharacta skua	1
Charadrius dubius	4
Charadrius leschenaultii	8
Charadrius melanops	57
Charadrius ruficapillus	580
Chenonetta jubata	1207
Cheramoeca leucosterna	7
Cheramoeca leucosternus	1
Chlidonias leucopterus	3

Chroicocephalus novaehollandiae	869
Chrysococcyx basalis	6
Chrysococcyx lucidus	7
Chrysococcyx lucidus subsp. plagosus	8
Cincloramphus cruralis	6
Cincloramphus mathewsi	13
Circus approximans	885
Circus assimilis	3
Cladorhynchus leucocephalus	183
Climacteris rufa	7
Colluricincla harmonica	746
Colluricincla harmonica subsp. rufiventris	1
Columba livia	584
Coracina maxima	2
Coracina novaehollandiae	2251
Coracina novaehollandiae subsp. novaehollandiae	1
Corvus bennetti	4
Corvus coronoides	4399
Corvus coronoides subsp. perplexus	11
Corvus splendens	3
Corvus splendens subsp. protegatus	4
Coturnix pectoralis	8
Coturnix ypsilophora	44
Coturnix ypsilophora subsp. australis	1
Cracticus nigrogularis	24
Cracticus tibicen	3947
Cracticus tibicen subsp. dorsalis	28
Cracticus tibicen subsp. tibicen	1
Cracticus torquatus	2232
Cracticus torquatus subsp. torquatus	1
Cygnus atratus	2188
Cygnus olor	30
Dacelo novaeguinea	1
Dacelo novaeguineae	1903
Dacelo novaeguineae subsp. novaeguineae	2
Daphoenositta chrysoptera	181
Daphoenositta chrysoptera subsp. pileata	3
Daption capense	1
Dendrocygna arcuata	1
Dicaeum hirundinaceum	446
Diomedea chlororhynchos	1

Diomedea chlororhynchos subsp. carteri	1
Diomedea chrysostoma	5
Diomedea exulans subsp. exulans	2
Dromaius novaehollandiae	6
Egretta garzetta	74
Egretta novaehollandiae	1387
Egretta sacra	11
Elanus axillaris	466
Elanus caeruleus	6
Elanus caeruleus subsp. axillaris	4
Elseyornis melanops	599
Eolophus roseicapillus	1661
Eopsaltria australis subsp. griseogularis	1
Eopsaltria georgiana	84
Eopsaltria griseogularis	9
Epthianura albifrons	91
Erythrogonys cinctus	94
Eudyptula minor	1
Eudyptula minor subsp. novaehollandiae	19
Eurostopodus argus	3
Eurystomus orientalis	4
Falco berigora	30
Falco berigora subsp. berigora	1
Falco cenchroides	630
Falco cenchroides subsp. cenchroides	3
Falco longipennis	512
Falco longipennis subsp. longipennis	3
Falco peregrinus	92
Falco peregrinus subsp. macropus	2
Fulica atra	1831
Fulica atra subsp. australis	131
Gallinago hardwickii	1
Gallinago stenura	1
Gallinula tenebrosa	1281
Gallinula tenebrosa subsp. tenebrosa	52
Gallinula ventralis	17
Gallirallus philippensis	316
Gallirallus philippensis subsp. mellori	2
Gallus gallus	2
Gavicalis virescens	18
Gelochelidon nilotica	6

Geopelia cuneata	2
Gerygone fusca	2600
Gerygone fusca subsp. fusca	1
Glossopsitta porphyrocephala	17
Glyciphila melanops	219
Grallina cyanoleuca	3209
Haematopus fuliginosus	2
Haematopus longirostris	413
Haliaeetus leucogaster	70
Haliastur indus	3
Haliastur sphenurus	815
Halobaena caerulea	9
Hamirostra isura	2
Hieraaetus morphnoides	374
Himantopus himantopus	1681
Himantopus himantopus subsp. leucocephalus	5
Hirundo neoxena	2414
Hirundo nigricans	23
Hirundo nigricans subsp. nigricans	1
Hydroprogne caspia	406
Ixobrychus dubius	16
Ixobrychus minutus	1
Ixobrychus minutus subsp. dubius	1
Lalage tricolor	2
Larus novaehollandiae	6
Larus novaehollandiae subsp. novaehollandiae	39
Larus pacificus	2
Lichenostomus leucotis	3
Lichenostomus ornatus	23
Lichenostomus virescens	3658
Lichmera indistincta	3913
Lichmera indistincta subsp. indistincta	4
Limosa lapponica	173
Limosa limosa	44
Limosa limosa subsp. melanuroides	1
Lonchura castaneothorax	14
Lophoictinia isura	23
Macronectes giganteus	10
Malacorhynchus membranaceus	431
Malurus elegans	143
Malurus lamberti	7

Malurus sp.	2
Malurus splendens	2400
Malurus splendens subsp. splendens	3
Manorina flavigula	377
Megalurus gramineus	517
Melanodryas cucullata	7
Melithreptus brevirostris	24
Melithreptus chloropsis	4
Melithreptus lunatus	125
Melopsittacus undulatus	2
Merops ornatus	1072
Microcarbo melanoleucos	1160
Microeca fascinans	9
Milvus migrans	5
Morus serrator	13
Myiagra inquieta	5
Neochmia temporalis	37
Neochmia temporalis subsp. temporalis	2
Neophema elegans	149
Neophema petrophila	3
Neophema pulchella	1
Ninox connivens	7
Ninox novaeseelandiae	188
Ninox novaeseelandiae subsp. boobook	12
Numenius madagascariensis	6
Numenius phaeopus	9
Nycticorax caledonicus	342
Nycticorax caledonicus subsp. hilli	2
Nymphicus hollandicus	9
Oceanites marinus subsp. dulciae	4
Ocyphaps lophotes	696
Oxyura australis	567
Pachycephala pectoralis	359
Pachycephala pectoralis subsp. fuliginosa	3
Pachycephala rufiventris	2222
Pachycephala rufiventris subsp. rufiventris	3
Pachyptila belcheri	9
Pachyptila desolata	5
Pachyptila salvini	4
Pachyptila turtur	1
Pandion cristatus	329

Pandion haliaetus	3
Pandion haliaetus subsp. cristatus	3
Pardalotus punctatus	524
Pardalotus punctatus subsp. punctatus	5
Pardalotus punctatus subsp. xanthopyge	3
Pardalotus striatus	2818
Pardalotus striatus subsp. westraliensis	6
Passer montanus	5
Pelecanus conspicillatus	1708
Petrochelidon ariel	18
Petrochelidon nigricans	2172
Petroica boodang	527
Petroica goodenovii	83
Petroica multicolor	1
Petroica multicolor subsp. campbelli	6
Phaethon rubricauda	5
Phalacrocorax carbo	672
Phalacrocorax fuscescens	1
Phalacrocorax melanoleucos	112
Phalacrocorax melanoleucos subsp. melanoleucos	1
Phalacrocorax sulcirostris	1324
Phalacrocorax varius	388
Phalacrocorax varius subsp. hypoleucos	3
Phaps chalcoptera	1231
Phaps elegans	16
Philomachus pugnax	4
Phylidonyris melanops	1
Phylidonyris niger	795
Phylidonyris nigra	14
Phylidonyris nigra subsp. gouldii	1
Phylidonyris novaehollandiae	3036
Phylidonyris novaehollandidae	1
Platalea flavipes	1105
Platalea regia	3
Platycercus icterotis	139
Platycercus icterotis (Western Rosella)	2
Platycercus icterotis subsp. icterotis	1
Platycercus spurius	28
Platycercus spurius (Red-capped Parrot)	2
Platycercus zonarius	44
Platycercus zonarius subsp. semitorquatus	12

Platycercus zonarius subsp. zonarius	1
Plegadis falcinellus	293
Pluvialis fulva	38
Pluvialis squatarola	436
Podargus strigoides	105
Podargus strigoides subsp. brachypterus	6
Podiceps cristatus	300
Poliocephalus poliocephalus	775
Polytelis anthopeplus	281
Polytelis anthopeplus subsp. westralis	1
Pomatostomus superciliosus	1
Porphyrio porphyrio	2054
Porphyrio porphyrio subsp. bellus	64
Porzana fluminea	131
Porzana pusilla	76
Porzana pusilla subsp. palustris	1
Porzana tabuensis	263
Psittacula krameri	6
Pterodroma brevirostris	11
Pterodroma lessonii	1
Pterodroma macroptera	1
Pterodroma mollis	1
Ptilotula ornatus	2
Puffinus assimilis subsp. assimilis	3
Purnella albifrons	1
Purpureicephalus spurius	1419
Recurvirostra novaehollandiae	349
Rhipidura albiscapa	2605
Rhipidura fuliginosa	28
Rhipidura fuliginosa subsp. alisteri	1
Rhipidura fuliginosa subsp. preissi	1
Rhipidura leucophrys	3547
Rhipidura leucophrys subsp. leucophrys	5
Rostratula australis	6
Sericornis frontalis	1076
Smicrornis brevirostris	1604
Stagonopleura oculata	156
Stercorarius antarcticus	1
Stercorarius longicaudus	1
Stercorarius parasiticus	14
Stercorarius pomarinus	1

Sterna anaethetus subsp. anaethetus	2
Sterna bergii	3
Sterna caspia	3
Sterna dougallii	2
Sterna fuscata subsp. nubilosa	1
Sterna hirundo subsp. hirundo	1
Sterna hybrida	2
Sterna hybrida subsp. javanica	1
Sternula albifrons	1
Sternula nereis	234
Sternula nereis subsp. nereis	1
Stictonetta naevosa	26
Stipiturus malachurus	6
Strepera versicolor	99
Streptopelia chinensis	2269
Streptopelia chinensis subsp. tigrina	3
Streptopelia senegalensis	2483
Streptopelia senegalensis subsp. senegalensis	6
Sugomel niger	3
Sula serrator	2
Tachybaptus novaehollandiae	1355
Tachybaptus novaehollandiae subsp. novaehollandiae	99
Tadorna radjah	7
Tadorna tadornoides	2244
Thalasseus bergii	427
Thinornis rubricollis	18
Threskiornis molucca	3003
Threskiornis moluccus	4
Threskiornis spinicollis	1126
Todiramphus sanctus	545
Todiramphus sanctus subsp. sanctus	7
Tribonyx ventralis	30
Trichoglossus haematodus	2973
Trichoglossus haematodus subsp. moluccanus	1
Trichoglossus haematodus subsp. rubritorquis	1
Trichoglossus moluccanus	11
Tringa brevipes	15
Tringa glareola	105
Tringa guttifer	2
Tringa hypoleucos	5
Tringa nebularia	711

Tringa stagnatalis	1
Tringa stagnatilis	49
Turnix varia	3
Turnix varia subsp. varia	6
Turnix varius	30
Turnix velox	6
Tyto alba	2
Tyto alba subsp. delicatula	4
Tyto novaehollandiae	2
Tyto novaehollandiae subsp. novaehollandiae	4
Vanellus miles	2
Vanellus tricolor	86
Xenus cinereus	5
Zanda baudinii	114
Zanda latirostris	3884
Zosterops lateralis	3634
Zosterops lateralis subsp. gouldi	8
FISH	**407**
? ?	2
Acentrogobius bifrenatus	8
Afurcagobius suppositus	1
Aldrichetta forsteri	2
Ammotretis elongatus	3
Anguilla australis	1
Anoplocapros lenticularis	4
Anoplocapros robustus	2
Aploactisoma milesii	1
Apogon rueppellii	59
Apogon victoriae	1
Aptychotrema vincentiana	2
Aracana aurita	2
Aracana ornata	1
Arenigobius bifrenatus	2
Argyrosomus japonicus	1
Arothron hispidus	1
Arripis georgiana	1
Atherinomorus lacunosus	1
Atherinomorus vaigiensis	3
Atherinosoma wallacei	1
Aulohalaelurus labiosus	1
Callogobius mucosus	2

Cantherhines sp.	1
Carassius auratus	1
Carcharhinus leucas	2
Carcharhinus obscurus	1
Carcharhinus sp.	1
Carcharodon carcharias	1
Chaetodermis penicilligera	1
Cheilodactylus gibbosus	8
Chelidonichthys kumu	5
Cirrhimuraena calamus	2
Cleidopus gloriamaris	2
Cnidoglanis macrocephalus	7
Contusus brevicaudus	2
Coryphaena hippurus	1
Craterocephalus mugiloides	1
Cristiceps australis	1
Cristiceps sp.	1
Cypselurus sp.	1
Dactylopus dactylopus	5
Diodon nicthemerus	2
Dipulus caecus	1
Echeneis naucrates	3
Elops hawaiensis	2
Engraulis australis	1
Enoplosus armatus	1
Epinephelus sp.	1
Favonigobius lateralis	1
Filicampus tigris	5
Galaxias maculatus	1
Galaxias occidentalis	31
Girella zebra	3
Gonorynchus greyi	9
Gymnapistes marmoratus	9
Gymnothorax woodwardi	7
Heterodontus portusjacksoni	1
Hippocampus elongatus	2
Hippocampus sp.	1
Histrio histrio	3
Hyperlophus vittatus	1
Hyporhamphus regularis	1
Idiotropiscis australe?	1

Kyphosus sydneyanus	1
Lagocephalus sceleratus	1
Lepidoblennius marmoratus	1
Maxillicosta scabriceps	1
Megalaspis cordyla	1
Metavelifer multiradiatus	1
Meuschenia hippocrepis	4
Microcanthus strigatus	1
Monacanthus chinensis	1
Mugil cephalus	2
Myliobatis australis	9
Nannoperca vittata	12
Nematalosa erebi	2
Nematalosa vlaminghi	2
Neoodax balteatus	1
Odax cyanomelas	1
Ophisurus serpens	11
Papillogobius punctatus	1
Parablennius postoculomaculatus	3
Parablennius tasmanianus	1
Parequula melbournensis	1
Parma mccullochi	1
Pegasus volitans	21
Pelates sexlineatus	3
Phalloceros caudimaculatus	1
Phalloceros harpagos	1
Phycodurus eques	1
Phyllophryne scortea	2
Priolepis nuchifasciata	1
Pseudogobius olorum	3
Pseudorhombus jenynsii	2
Pterois antennata	1
Pterygotrigla polyommata	6
Rachycentron canadum	2
Rhycherus gloveri	1
Sardinella lemuru?	3
Saurida undosquamis	1
Scomberoides lysan	1
Scorpis georgianus	2
Seriola hippos	1
Sillago bassensis	3

Sillago burrus	4
Siphonognathus argyrophanes	1
Siphonognathus radiatus	1
Solegnathus lettiensis	1
Sphyrna zygaena	1
Spratelloides robustus	18
Stigmatopora argus	14
Strongylura leiura	1
Tandanus bostocki	1
Terapon sp.	1
Torquigener pleurogramma	13
Trygonorrhina fasciata	1
Upeneus tragula	1
Urocampus carinirostris	1
INVERT	**2320**
Acercella falcipes	9
Acroaspis olorina	4
Afraflacilla huntorum	1
Aganippe rhaphiduca	2
Akamptogonus novarae	10
Allothereua maculata	5
Allotrochosina karri	1
Ambicodamus kochi	2
Amblyomma triguttatum	2
Aname mainae	103
Aname tepperi	24
Ancylidae sp.	1
Antichiropus sp. indet.	2
Antichiropus 'ubs2'	1
Antichiropus variabilis	55
Arachnura higginsi	7
Araneus cyphoxis	16
Araneus eburneiventris	1
Araneus eburnus	1
Araneus senicaudatus	18
Argiope protensa	7
Argiope trifasciata	7
Arkys walckenaeri	3
Artema atlanta	1
Artoria flavimana	13
Artoria linnaei	58

Artoria taeniifera	5
Artoriopsis eccentrica	2
Artoriopsis expolita	12
Artoriopsis joergi	15
Asadipus kunderang	3
Aurecocrypta lugubris	1
Austracantha minax	13
Australomimetus ovidi	1
Australotomurus morbidus	1
Austromerope poultoni	1
Backobourkia brounii	6
Backobourkia heroine	12
Badumna insignis	3
Baiami volucripes	1
Ballarra longipalpus	9
beetle sp.	1
Bianor maculatus	3
Caenidae sp.	7
Callevophthalmus lividus	1
Ceinidae sp.	1
Ceratopogonidae sp.	5
Cercophonius granulosus	1
Cercophonius sulcatus	27
Ceryerda cursitans	12
Cheiracanthium nervosum	1
Cherax cainii	8
Cherax destructor	19
Cherax preissii	5
Cherax quinquecarinatus	17
Cherax sp.	4
Chironominae sp.	7
Clynotis albobarbatus	3
Clynotis severus	1
Coenagrionidae sp.	1
Corixidae sp.	2
Cormocephalus aurantiipes	20
Cormocephalus novaehollandiae	6
Cormocephalus rubriceps	4
Cormocephalus strigosus	5
Cormocephalus turneri	2
Crustulina bicruciata	4

Cryptoerithus quobba	10
Culicidae sp.	1
Cyclosa trilobata	6
Cyrtophora parnasia	5
Daphnia carinata	4
Delena cancerides	2
Dingosa murata	2
Dingosa serrata	51
Dinocambala ingens	16
Dytiscidae sp.	6
earthworm sp.	2
Ecnomidae sp.	3
Enoplognatha bidens	1
Eodelena convexa	1
Eodelena lapidicola	2
Eriophora biapicata	25
Eriophora pustulosa	1
Ero aphana	1
Erythracarus decoris	9
Ethmostigmus rubripes	2
Eucyrtops latior	3
Eupograpta kottae	1
fly sp.	8
Gea theridioides	1
Geogarypus taylori	8
Glossurocolletes bilobatus	1
Gomphidae sp.	2
Gripopterygidae sp.	5
Gyrinidae sp.	5
Hasarius adansoni	1
Hebridae sp.	1
Hemicloea insidiosa	1
Hemicloea sp.	1
Hemicorduliidae sp.	2
Henicops dentatus	1
Heurodes turritus	1
Hoggicosa storri	3
Hogna crispipes	7
Holasteron perth	3
Holasteron wamuseum	1
Holconia westralia	11

Holoplatys dejongi	2
Hydrophilidae sp.	3
Hydropsychidae sp.	4
Hydroptilidae sp.	2
Hyriidae sp.	1
Idiommata blackwalli	40
Idiosoma hirsutum	1
Idiosoma sigillatum	48
Isometroides vescus	2
Isopeda leishmanni	60
Isopeda magna	2
Isopedella cana	11
Ixodes australiensis	1
Kangarosa ludwigi	1
Kangarosa properipes	9
Karaops ellenae	6
Kawaniphila pachomai	1
Lampona brevipes	6
Lampona cylindrata	23
Latrodectus hasseltii	41
Leioproctus contrarius	3
Leioproctus douglasiellus	3
Leptoceridae sp.	7
Leptophlebiidae sp.	5
Leucauge dromedaria	1
Libellulidae sp.	3
Longepi woodman	11
Lychas sp.	1
Lycosa ariadnae	7
Lycosa australicola	1
Lycosa gilberta	1
Lycosa godeffroyi	2
Lycosa lacertosa	1
Maratus mungaich	5
Maratus pavonis	29
Masasteron maini	1
Missulena granulosa	83
Missulena hoggi	3
Missulena occatoria	16
Mituliodon tarantulinus	10
Mitzoruga insularis	3

Molycria vokes	1
Myandra bicincta	5
Myandra cambridgei	1
Nanometa gentilis	1
Neopasiphae simplicior	4
Nephila edulis	11
Nicodamus mainae	9
Notiasemus glauerti	2
Notonectidae sp.	2
Novakiella trituberculosa	1
Nunciella aspera	18
Occiperipatoides gilesii	7
Ocrisiona leucocomis	2
Ocrisiona parmeliae	1
Oecobius navus	4
Oligochaeta sp.	5
Ommatoiulus moreleti	20
Ommatoiulus moreletii	75
Oniscidae sp.	1
Orphnaeus brevilabiatus	1
Orthocladiinae sp.	7
Ostearius melanopygius	2
Oxyopes gracilipes	3
Oxyopes punctatus	1
Palaemonidae sp.	5
Paralampona marangaroo	1
Paralamyctes cammooensis	1
Parastacidae sp.	3
Pediana occidentalis	4
Perthiidae sp.	5
Phenasteron longiconductor	2
Pholcus phalangioides	3
Phreatoicidae sp.	1
Phryganoporus candidus	10
Phryganoporus gausapatus subsp. occidentalis	1
Physidae sp.	3
Pinkfloydia harveii	5
Piona cumberlandensis	10
Planorbidae sp.	1
Podykipus collinus	10
Poltys laciniosus	2

Polygonarea repanda	1
Prionosternum nitidiceps	1
Prionosternum scutatum	2
Pseudolampona woodman	14
Raveniella arenacea	9
Raveniella cirrata	14
Raveniella peckorum	22
Raveniella subcirrata	2
Richardsonianidae sp.	1
Sandalodes joannae	1
Sandalodes superbus	2
Scirtidae sp.	1
Scolopendra laeta	11
Servaea melaina	6
Servaea spinibarbis	5
Simaetha tenuior	9
Simuliidae sp.	5
Smeringopus natalensis	6
Solaenodolichopus pruvoti	2
Sphaerotrichopus ramosus	3
Steatoda capensis	1
Steatoda grossa	4
Storena formosa	2
Storena sinuosa	1
Supunna funerea	24
Supunna picta	33
Synemon gratiosa	14
Synothele durokoppin	2
Synothele michaelseni	4
Synothele rastelloides	1
Synsphyronus magnus	1
Tabanidae sp.	1
Tamopsis darlingtoniana	2
Tamopsis distinguenda	1
Tamopsis perthensis	8
Tanypodinae sp.	2
Tasmanicosa leuckartii	22
Tetragnatha demissa	72
Tetragnatha nitens	10
Tetragnatha valida	1
Thereuopoda lesueurii	1

Throscodectes xiphos	4
Tinytrema yarra	1
Tipulidae sp.	2
Trachycosmus sculptilis	1
Trachyspina mundaring	1
Trichocyclus nullarbor	1
Urodacus novaehollandiae	133
Urodacus planimanus	59
Urodacus woodwardii	1
Venator immansueta	113
Venatrix arenaris	1
Venatrix pullastra	91
Westralunio carteri	49
Westrarchaea sinuosa	2
Zachria flavicoma	1
Zebraplatys fractivittata	2
MAMMAL	**4050**
Antechinus flavipes subsp. leucogaster	18
Arctocephalus forsteri	1
Austronomus australis	14
Bettongia penicillata subsp. ogilbyi	1
Canis lupus	1
Canis lupus subsp. familiaris	3
Cercartetus concinnus	4
Chalinolobus gouldii	52
Chalinolobus morio	2
Dasyurus geoffroii	56
Falsistrellus mackenziei	1
Felis cattus	1
Felis catus	34
Funambulus pennanti	11
Hydromys chrysogaster	42
Isoodon fusciventer	982
Isoodon obesulus	640
Isoodon obesulus fusciventer	201
Isoodon obesulus subsp. fusciventer	957
Kogia breviceps	1
Macropus fuliginosus	35
Macropus irma	41
Mormopterus planiceps	1
Mormopterus sp. 4	2

Mus musculus	370
Mustela putorius	3
Myrmecobius fasciatus	10
Neophoca cinerea	1
Notamacropus eugenii subsp. derbianus	2
Notamacropus irma	17
Nyctophilus geoffroyi	23
Nyctophilus gouldi	1
Nyctophilus major	1
Nyctophilus major major	1
Nyctophilus timoriensis	1
Nyctophilus timoriensis subsp. timoriensis	2
Oryctolagus cuniculus	40
Ozimops kitcheneri	2
Perameles bougainville	1
Phascogale tapoatafa	2
Phascogale tapoatafa subsp. tapoatafa	19
Phascogale tapoatafa subsp. wambenger	25
Pteropus scapulatus	1
Rattus fuscipes	3
Rattus norvegicus	4
Rattus rattus	216
Rattus sp.	3
Scotorepens balstoni	1
Setonix brachyurus	3
Sminthopsis gilberti	1
Sus scrofa	2
Tachyglossus aculeatus	10
Tadarida australis	7
Tarsipes rostratus	17
Trichosurus vulpecula	72
Trichosurus vulpecula hypoleucus	6
Trichosurus vulpecula subsp. vulpecula	29
Tursiops truncatus	4
Vespadelus regulus	29
Vulpes vulpes	20
REPTILE	**4811**
Acanthophis antarcticus	11
Acritoscincus trilineata	6
Acritoscincus trilineatum	23
Acritoscincus trilineatus	82

Acritoscincus trilineatus (Western Three-lined Skink)	1
Anilios australis	4
Antaresia stimsoni subsp. stimsoni	11
Aprasia pulchella	5
Aprasia repens	72
Brachyurophis fasciolatus subsp. fasciolatus	1
Brachyurophis semifasciatus	33
Caretta caretta	8
Chelodina colliei	15
Chelodina oblonga	44
Chelonia mydas	1
Christinus marmoratus	57
Crenadactylus ocellatus subsp. ocellatus	9
Cryptoblepharus buchananii	274
Cryptoblepharus plagiocephalus	8
Cryptoblepharus sp.	1
Ctenophorus adelaidensis	31
Ctenophorus ornatus	38
Ctenotus australis	296
Ctenotus delli	11
Ctenotus fallens	187
Ctenotus gemmula	10
Ctenotus impar	20
Ctenotus labillardieri	18
Delma fraseri	70
Delma grayii	26
Delma sp.	1
Demansia psammophis	1
Demansia psammophis subsp. reticulata	13
Dermochelys coriacea	3
Diplodactylus granariensis subsp. granariensis	5
Diplodactylus lateroides	1
Diplodactylus polyophthalmus	25
Diplodactylus pulcher	2
Diplodactylus sp.	2
Egernia kingii	10
Egernia napoleonis	69
Elapognathus coronatus	15
Eremiascincus richardsonii	1
Gehyra variegata	41
Hemiergis initialis subsp. initialis	27

Hemiergis quadrilineata	431
Heteronotia binoei	5
Hydrophis elegans	2
Hydrophis ornatus	1
Hydrophis platurus	17
Lerista christinae	1
Lerista distinguenda	11
Lerista elegans	410
Lerista lineata	338
Lialis burtonis	159
Menetia greyii	279
Menetia maini	1
Menetia sp.	1
Menetia surda subsp. cresswelli	1
Menetia surda subsp. surda	1
Morelia spilota subsp. imbricata	7
Morethia adelaidensis	1
Morethia boulengeri	1
Morethia butleri	1
Morethia lineoocellata	65
Morethia obscura	111
Morethia ruficauda subsp. exquisita	2
Morethia ruficauda subsp. ruficauda	2
Morethia storri	2
Neelaps bimaculatus	11
Neelaps calonotos	24
Notechis scutatus	47
Notoscincus butleri	2
Notoscincus ornatus subsp. ornatus	2
Notoscincus ornatus subsp. wotjulum	2
Parasuta gouldii	46
Parasuta nigriceps	4
Pletholax gracilis	13
Pletholax gracilis subsp. edelensis	1
Pletholax gracilis subsp. gracilis	49
Pogona minima	1
Pogona minor	28
Pogona minor subsp. minima	1
Pogona minor subsp. minor	92
Pogona minor subsp. mitchelli	1
Pogona nullarbor	1

Proablepharus reginae	2
Proablepharus tenuis	2
Pseudechis australis	6
Pseudemoia baudini	2
Pseudemydura umbrina	1
Pseudonaja affinis	67
Pseudonaja affinis affinis	1
Pseudonaja affinis subsp. affinis	228
Pseudonaja affinis subsp. exilis	10
Pseudonaja afinnis afiinis	1
Pseudonaja mengdeni	6
Pseudonaja nuchalis	1
Pygopus lepidopodus	31
Pygopus nigriceps	1
Ramphotyphlops australis	78
Ramphotyphlops bituberculatus	1
Ramphotyphlops braminus	1
Ramphotyphlops pinguis	7
Ramphotyphlops waitii	4
Rankinia adelaidensis	3
Rankinia adelaidensis subsp. adelaidensis	6
Rankinia adelaidensis subsp. chapmani	1
Simoselaps bertholdi	32
Simoselaps littoralis	1
Strophurus spinigerus	3
Strophurus spinigerus subsp. inornatus	18
Strophurus spinigerus subsp. spinigerus	15
Strophurus strophurus	2
Tiliqua multifasciata	2
Tiliqua occipitalis	22
Tiliqua rugosa	125
Tiliqua rugosa rugosa	45
Tiliqua rugosa subsp. aspera	18
Tiliqua rugosa subsp. konowi	2
Tiliqua rugosa subsp. palarra	2
Tiliqua rugosa subsp. rugosa	219
Underwoodisaurus milii	34
Varanus gouldii	31
Varanus rosenbergi	3
Varanus rosenbergii	2
Varanus sp.	1

Varanus tristis	7
Varanus tristis subsp. tristis	3

Appendix D

Flora data

Quadrat and relevé data

Quadrat data (taken from GHD, 2025c)

Tuart Patch Assessment

Banksia Patch Assessment

Flora species list by family

Flora species list by vegetation type

Significant flora and significant weed locations

GHD Dendrogram

Gibson Dendrogram

Keighery Dendrogram

Flora likelihood of occurrence assessment guidelines

Flora likelihood of occurrence assessment

QUADRAT AND RELEVE DATA

Site ID:	Roe01	VT
Type:	Quadrat	10 x 10 m
Date:	29/07/2024	Described by: A. Sleep
Co-ordinates (Easting/Northing):	403892	6460589
Landform:	Sand dune	
Drainage:	Good	
Bare ground:	2-10%	
Litter cover:	<2%	
Soil type:	Grey sand	
Fire age:	Old (6+ yrs)	
Vegetation condition:	Very good	



Species	Status	% cover	Height (m)	Form/stratum	Reprod. status
Adenanthos cygnorum		15	3	Shrub, cycad, grass-tree (M)	Vegetative

Species	Status	% cover	Height (m)	Form/stratum	Reprod. status
Aira caryophyllea	*	1	0.1	Other grass (G)	Dehisced fruit
Alexgeorgea nitens		1	0.25	Rush (G)	Vegetative
Amphipogon turbinatus		1	0.25	Tussock grass (G)	Dehisced fruit
Banksia menziesii		25	5	Tree (U)	Vegetative
Bossiaea eriocarpa		1	0.25	Shrub, cycad, grass-tree (M)	Vegetative
Briza maxima	*	1	0.25	Tussock grass (G)	Dehisced fruit
Burchardia congesta		1	0.25	Forb (G)	Dehisced fruit
Centrolepis ionspicua		1	0.25	Forb (G)	Fruit
Conostylis juncea		1	0.25	Forb (G)	Vegetative
Crassula colorata var. colorata		1	0.1	Forb (G)	Flower
Cyanothamnus ramosus		1	0.25	Shrub, cycad, grass-tree (M)	Flower
Dasypogon bromeliifolius		1	0.5	Shrub, cycad, grass-tree (M)	Dehisced fruit
Ehrharta calycina	*	1	0.5	Tussock grass (G)	Vegetative
Ehrharta longiflora	*	1	1	Tussock grass (G)	Vegetative
Eremaea pauciflora		25	0.5	Shrub, cycad, grass-tree (M)	Dehisced fruit
Ficinia marginata	*	1	0.1	Sedge (G)	Flower
Freesia leichtlinii subsp. alba × leichtlinii subsp. leichtlinii	*	1	0.1	Forb (G)	Vegetative
Gladiolus caryophyllaceus	*	1	0.25	Forb (G)	Vegetative
Hibbertia hypericoides		1	0.25	Shrub, cycad, grass-tree (M)	Vegetative
Hibbertia striata		1	0.25	Shrub, cycad, grass-tree (M)	Vegetative
Hypochaeris glabra	*	1	0.1	Forb (G)	Vegetative
Jacksonia floribunda		1	1.25	Shrub, cycad, grass-tree (M)	Vegetative
Levenhookia pusilla		1	0.1	Forb (G)	Flower
Lomandra caespitosa		1	0.25	Forb (G)	Flower
Lyginia barbata		1	0.25	Sedge (G)	Flower
Lysimachia arvensis	*	1	0.1	Forb (G)	Vegetative
Melaleuca seriata		2	1	Shrub, cycad, grass-tree (M)	Dehisced fruit
Patersonia occidentalis		1	0.25	Forb (G)	Dehisced fruit
Petrophile seminuda		1	0.5	Shrub, cycad, grass-tree (M)	Dehisced fruit
Petrorhagia dubia	*	1	0.25	Forb (G)	Flower
Phyllangium paradoxum		1	0.1	Forb (G)	Flower
Podotheca angustifolia		1	0.25	Forb (G)	Flower
Schoenus clandestinus		2	0.25	Sedge (G)	Flower
Scholtzia involucrata		10	0.5	Shrub, cycad, grass-tree (M)	Dehisced fruit
Sonchus oleraceus	*	1	0.1	Forb (G)	Vegetative
Stirlingia latifolia		1	0.5	Shrub, cycad, grass-tree (M)	Vegetative
Stylidium androsaceum		1	0.25	Forb (G)	Flower
Stylidium repens		1	0.1	Forb (G)	Vegetative
Synaphea spinulosa subsp. spinulosa		1	0.25	Shrub, cycad, grass-tree (M)	Vegetative
Thysanotus patersonii		2	0.1	Vine (G)	Flower

Species	Status	% cover	Height (m)	Form/stratum	Reprod. status
Trachymene pilosa		1	0.1	Forb (G)	Vegetative
Ursinia anthemoides	*	1	0.1	Forb (G)	Vegetative
Wahlenbergia preissii		1		Forb (G)	Flower

Site ID:	Roe01R	VT Isolated Euca spp.
Type:	Relevé	NA
Date:	01/08/2024	Described by: A. Sleep
Co-ordinates (Easting/Northing):	396517.72	6452752.24
Landform:	Flat	
Drainage:	Good	
Bare ground:	<2%	
Litter cover:	2-10%	
Soil type:	Sand	
Fire age:	Old (6+ yrs)	
Vegetation condition:	Degraded	



Species	Status	% cover	Height (m)	Form/stratum	Reprod. status
Acacia saligna		1	3	Shrub, cycad, grass-tree (M)	Vegetative
Arctotheca calendula	*	1	0.1	Forb (G)	Vegetative
Callitris pyramidatus		10	4	Tree (U)	Fruit
Calothamnus quadrifidus	N	20	1.75	Shrub, cycad, grass-tree (M)	Fruit
?Casuarina equisetifolia	*	10	5	Tree (U)	Fruit
Cotula australis		1	0.1	Forb (G)	Flower
Ehrharta calycina	*	10	0.25	Tussock grass (G)	Vegetative
Ehrharta longiflora	*	70	0.25	Tussock grass (G)	Vegetative

Species	Status	% cover	Height (m)	Form/stratum	Reprod. status
Eucalyptus rudis		35	5	Tree (U)	Fruit
Euphorbia terracina	*	1	0.1	Forb (G)	Vegetative
Fumaria capreolata	*	1	0.25	Forb (G)	Vegetative
Galium murale	*	1	0.1	Forb (G)	Vegetative
Hypochaeris glabra	*	1	0.1	Forb (G)	Vegetative
Kunzea glabrescens		1	2.5	Shrub, cycad, grass-tree (M)	Vegetative
Regelia ciliata		1	0.75	Shrub, cycad, grass-tree (M)	Dehisced fruit

Site ID:	Roe02	VT
Type:	Quadrat	10 x 10 m
Date:	29/07/2024	Described by: A. Benkovic
Co-ordinates (Easting/Northing):	391579	6449130
Landform:	Flat	
Drainage:	Good	
Bare ground:	<2%	
Litter cover:	11-30%	
Soil type:	Brown sandy loam	
Fire age:	Old (6+ yrs)	
Vegetation condition:	Very good	



Species	Status	% cover	Height (m)	Form/stratum	Reprod. status
Acacia pulchella var pulchella		1	1	Shrub, cycad, grass-tree (M)	Flower
Banksia attenuata		10	6	Tree (U)	Flower bud
Banksia dallanneyi subsp. dallanneyi var. dallanneyi		1	0.25	Shrub, cycad, grass-tree (M)	Vegetative
Banksia menziesii		10	5	Tree (U)	Flower
Briza maxima	*	1	0.25	Tussock grass (G)	Fruit
Burchardia congesta		1	0.5	Forb (G)	Dehisced fruit
Caladenia flava		2	0.25	Forb (G)	Flower

Species	Status	% cover	Height (m)	Form/stratum	Reprod. status
Calandrinia granulifera		1	0.1	Forb (G)	Fruit
Centrolepis drummondiana		1	0.1	Forb (G)	Fruit
Conostephium pendulum		1	0.5	Shrub, cycad, grass-tree (M)	Flower
Crassula colorata var. colorata		1	0.1	Forb (G)	Flower
Dasypogon bromeliifolius		1	0.25	Shrub, cycad, grass-tree (M)	Dehisced fruit
Davesia divaricata subsp. divaricata		1	1.5	Shrub, cycad, grass-tree (M)	Flower
Daviesia triflora		1	0.5	Shrub, cycad, grass-tree (M)	Flower
Desmocladus flexuosus		1	0.25	Sedge (G)	Vegetative
Diuris corymbosa		1	0.25	Forb (G)	Flower
Drosera drummondii		1	0.25	Forb (G)	Flower
Drosera erythrorhiza		1	0.1	Forb (G)	Vegetative
Ehrharta calycina	*	1	1	Tussock grass (G)	Vegetative
Ehrharta longiflora	*	1	1	Tussock grass (G)	Vegetative
Ficinia marginata	*	1	0.1	Sedge (G)	Flower
Gastrolobium capitatum		1	0.1	Shrub, cycad, grass-tree (M)	Flower
Gladiolus caryophyllaceus	*	1	0.5	Forb (G)	Vegetative
Gompholobium tomentosum		1	0.5	Shrub, cycad, grass-tree (M)	Flower
Hibbertia hypericoides		5	0.5	Shrub, cycad, grass-tree (M)	Flower
Hypocalymma robustum		1	0.5	Shrub, cycad, grass-tree (M)	Flower
Hypochaeris glabra	*	1	0.1	Forb (G)	Flower
Isopogon linearis		1	0.25	Shrub, cycad, grass-tree (M)	Flower
Jacksonia furcellata		2	1.5	Shrub, cycad, grass-tree (M)	Flower
Lepidosperma sp. (sterile)		1	0.25	Sedge (G)	Vegetative
Lomandra caespitosa		1	0.1	Forb (G)	Flower
Lyginia imberbis		1	0.5	Sedge (G)	Flower
Lysimachia arvensis	*	1	0.1	Forb (G)	Flower
Mesomelaena pseudostygia		30	0.5	Sedge (G)	Flower
Podotheca angustifolia		1	0.25	Forb (G)	Flower
Pterostylis sanguinea		1	0.25	Forb (G)	Flower
Pyrorchis nigricans		1	0.1	Forb (G)	Vegetative
Regelia inops		1	1	Shrub, cycad, grass-tree (M)	Fruit
Scaevola canescens		1	0.1	Shrub, cycad, grass-tree (M)	Flower
Schoenus clandestinus		1	0.1	Sedge (G)	Flower
Sowerbaea laxiflora		1	0.25	Forb (G)	Flower
Stylidium repens		1	0.1	Forb (G)	Flower
Trachymene pilosa		1	0.25	Forb (G)	Fruit
Ursinia anthemoides	*	2	0.25	Forb (G)	Dehisced fruit
Thysanotus patersonii		1	0.1	Vine (G)	Flower
Phyllangium ?divergens		1	0.1	Forb (G)	Flower bud

Site ID:	Roe02R	VT
Type:	Relevé	BmBa
Date:	29/07/2024	Described by: A. Benkovic
Co-ordinates (Easting/Northing):	391285.67	6449599.71
Landform:	Flat	
Drainage:	Good	
Bare ground:	31-70%	
Litter cover:	<2%	
Soil type:	Beige sand	
Fire age:	Recent (0-2 yrs)	
Vegetation condition:	Good	



Species	Status	% cover	Height (m)	Form/stratum	Reprod. status
Adenanthos cygnorum		2	2	Shrub, cycad, grass-tree (M)	Vegetative
Allocasuarina humilis		2	1.5	Shrub, cycad, grass-tree (M)	Fruit
Banksia attenuata		10	5	Tree (U)	Flower bud
Banksia menziesii		10	5	Tree (U)	Flower
Eucalyptus marginata		1	10	Tree (U)	Fruit
Gladiolus caryophyllaceus	*	1	0.25	Forb (G)	Vegetative
Hibbertia hypericoides		1	0.25	Shrub, cycad, grass-tree (M)	Flower
Stirlingia latifolia		2	0.5	Shrub, cycad, grass-tree (M)	Vegetative

Species	Status	% cover	Height (m)	Form/stratum	Reprod. status
Xanthorrhoea preissii		2	0.5	Shrub, cycad, grass-tree (M)	Vegetative

Site ID:	Roe03	VT BmBaBi
Type:	Quadrat	10 x 10 m
Date:	08/08/2024	Described by: A. Benkovic
Co-ordinates (Easting/Northing):	394007.74	6449938.59
Landform:	Low lying flat	
Drainage:	good	
Bare ground:	<2%	
Litter cover:	11-30%	
Soil type:	Brown sandy loam	
Fire age:	Old (6+ yrs)	
Vegetation condition:	Very good	



Species	Status	% cover	Height (m)	Form/stratum	Reprod. status
Allocasuarina fraseriana		3	4	Tree (U)	Fruit
Asparagus asparagoides	*DP & WoNS	1	0.1	Forb (G)	Vegetative
Banksia attenuata		20	8	Tree (U)	Flower bud
Banksia ilicifolia		10	5	Tree (U)	Flower
Banksia menziesii		2	8	Tree (U)	Flower
Briza maxima	*	1	0.25	Tussock grass (G)	Fruit
Caladenia flava		2	0.25	Forb (G)	Flower

Species	Status	% cover	Height (m)	Form/stratum	Reprod. status
Chamaescilla corymbosa var. corymbosa		1	0.1	Forb (G)	Vegetative
Conostylis juncea		1	0.25	Forb (G)	Flower
Dasypogon bromeliifolius		20	0.5	Shrub, cycad, grass-tree (M)	Dehisced fruit
Ehrharta longiflora	*	1	1	Tussock grass (G)	Vegetative
Eremaea pauciflora		4	0.5	Shrub, cycad, grass-tree (M)	Fruit
Eucalyptus todtiana		5	12	Tree (U)	Fruit
Gompholobium tomentosum		1	0.5	Shrub, cycad, grass-tree (M)	Flower
Hibbertia cuneiformis		1	1	Shrub, cycad, grass-tree (M)	Vegetative
Hibbertia subvaginata		2	0.25	Shrub, cycad, grass-tree (M)	Flower
Hypocalymma angustifolium		1	1	Shrub, cycad, grass-tree (M)	Flower
Hypocalymma robustum		2	0.25	Shrub, cycad, grass-tree (M)	Flower
Lyginia imberbis		1	1	Sedge (G)	Flower
Macrozamia riedlei		1	0.5	Shrub, cycad, grass-tree (M)	Vegetative
Melaleuca seriata		3	1	Shrub, cycad, grass-tree (M)	
Pelargonium capitatum	*	1	0.1	Shrub, cycad, grass-tree (M)	Vegetative
Phlebocarya ciliata		5	0.25	Shrub, cycad, grass-tree (M)	Flower
Poaceae sp. (sterile)		1	0.1	Other grass (G)	Vegetative
Schoenus caespititius		15	0.25	Sedge (G)	Flower
Scholtzia involucrata		2	0.25	Shrub, cycad, grass-tree (M)	Flower
Sonchus oleraceus	*	1	0.25	Forb (G)	Flower
Trachymene pilosa		1	0.1	Forb (G)	Fruit
Ursinia anthemoides	*	1	0.25	Forb (G)	Dehisced fruit
Xanthorrhoea preissii		10	1.75	Shrub, cycad, grass-tree (M)	Vegetative

Site ID:	Roe03R	VT Mod. Wetland
Type:	Relevé	NA
Date:	29/07/2024	Described by: A. Sleep
Co-ordinates (Easting/Northing):	403888	6460215
Landform:	Drainage	
Drainage:	Good	
Bare ground:	<2%	
Litter cover:	<2%	
Soil type:	Grey sand	
Fire age:	Old (6+ yrs)	
Vegetation condition:	Completely Degraded	



Species	Status	% cover	Height (m)	Form/stratum	Reprod. status
Acacia saligna		2	4	Tree (U)	Vegetative
Calothamnus quadrifidus	N	1	2	Shrub, cycad, grass-tree (M)	Dehisced fruit
Cenchrus clandestinus	*	70	0.5	Other grass (G)	Vegetative
Cortaderia selloana	*	5	2	Tussock grass (G)	Fruit
Corymbia calophylla		5	6	Tree (U)	Fruit
Eucalyptus rudis		1	8	Tree (U)	Dehisced fruit
Euphorbia terracina	*	1	0.25	Forb (G)	Vegetative
Gomphocarpus fruticosus	*DP	1	1	Shrub, cycad, grass-tree (M)	Vegetative

Species	Status	% cover	Height (m)	Form/stratum	Reprod. status
Pelargonium capitatum	*	2	0.25	Forb (G)	Vegetative
Typha ?orientalis		5	1.5	Sedge (G)	Dehisced fruit

Site ID:	Roe04	VT BmBaBi
Type:	Quadrat	10 x 10 m
Date:	08/08/2024	Described by: A. Benkovic
Co-ordinates (Easting/Northing):	393772	6449803
Landform:	Low lying flat	
Drainage:	Good	
Bare ground:	<2%	
Litter cover:	11-30%	
Soil type:	Brown sandy loam	
Fire age:	Old (6+ yrs)	
Vegetation condition:	Very good	



Species	Status	% cover	Height (m)	Form/stratum	Reprod. status
Acacia pulchella var pulchella		1	0.5	Shrub, cycad, grass-tree (M)	Flower
Asparagus asparagoides	*DP & WoNS	1	0.1	Forb (G)	Vegetative
Banksia attenuata		30	10	Tree (U)	Flower bud
Banksia menziesii		10	8	Tree (U)	Flower
Briza maxima	*	1	0.1	Tussock grass (G)	Fruit
Caladenia flava		1	0.1	Forb (G)	Flower
Conostylis setigera subsp. setigera		1	0.25	Forb (G)	Vegetative

Species	Status	% cover	Height (m)	Form/stratum	Reprod. status
Corysanthes ?recurva		2	0.1	Forb (G)	Vegetative
Dasypogon bromeliifolius		30	0.5	Shrub, cycad, grass-tree (M)	Dehisced fruit
Eremaea pauciflora		1	0.25	Shrub, cycad, grass-tree (M)	Fruit
Gaudium laevigatum	*	1	1	Shrub, cycad, grass-tree (M)	Vegetative
Hibbertia subvaginata		1	0.25	Shrub, cycad, grass-tree (M)	Flower
Kunzea glabrescens		15	4	Shrub, cycad, grass-tree (M)	Fruit
Lepidosperma pubisquameum		3	0.5	Sedge (G)	Flower
Lomandra caespitosa		1	0.25	Forb (G)	Flower
Lomandra hermaphrodita		1	0.25	Forb (G)	Flower
Phlebocarya ciliata		5	0.5	Shrub, cycad, grass-tree (M)	Flower
Poaceae sp. (sterile)		1	0.1	Other grass (G)	Vegetative
Schoenus caespititius		10	0.5	Sedge (G)	Flower
Sonchus oleraceus	*	1	0.25	Forb (G)	Flower
Stylidium schoenoides		1	0.25	Forb (G)	Flower
Thelymitra graminea		1	0.25	Forb (G)	Flower
Trachymene pilosa		1	0.1	Forb (G)	Fruit
Xanthorrhoea gracilis		20	0.75	Shrub, cycad, grass-tree (M)	Vegetative
Xanthorrhoea preissii		10	1.5	Shrub, cycad, grass-tree (M)	Vegetative
Zantedeschia aethiopica	*DP	1	1	Forb (G)	Flower

Site ID:	Roe04R	VT BmBa
Type:	Relevé	NA
Date:	08/08/2024	Described by: A. Benkovic
Co-ordinates (Easting/Northing):	394832	6450805.65
Landform:	Flat	
Drainage:	Good	
Bare ground:	2-10%	
Litter cover:	11-30%	
Soil type:	Grey sand	
Fire age:	Old 6+yr	
Vegetation condition:	Very good	



Species	Status	% cover	Height (m)	Form/stratum	Reprod. status
Allocasuarina fraseriana		5	5	Tree (U)	Fruit
Allocasuarina humilis		10	1.5	Shrub, cycad, grass-tree (M)	Fruit
Banksia attenuata		10	5	Tree (U)	Flower bud
Banksia menziesii		10	5	Tree (U)	Flower
Daviesia triflora		2	0.5	Shrub, cycad, grass-tree (M)	Flower
Eremaea pauciflora		5	1	Shrub, cycad, grass-tree (M)	Fruit
Hibbertia hypericoides		5	1	Shrub, cycad, grass-tree (M)	Flower
Hypochaeris glabra	*	2	0.1	Forb (G)	Flower

Species	Status	% cover	Height (m)	Form/stratum	Reprod. status
Nuytsia floribunda		2	5	Tree (U)	Vegetative
Patersonia occidentalis		10	0.5	Forb (G)	Dehisced fruit
Scholtzia involucrata		2	0.25	Shrub, cycad, grass-tree (M)	Flower
Stirlingia latifolia		2	0.5	Shrub, cycad, grass-tree (M)	Vegetative
Ursinia anthemoides	*	2	0.1	Forb (G)	Dehisced fruit

Site ID:	Roe05	VT BaBmBi
Type:	Quadrat	10 x 10 m
Date:	08/08/2024	Described by: A. Benkovic
Co-ordinates (Easting/Northing):	394153	6450041
Landform:	Low lying flat	
Drainage:	Good	
Bare ground:	<2%	
Litter cover:	11-30%	
Soil type:	Grey sandy loam	
Fire age:	Old (6+ yrs)	
Vegetation condition:	Very good	



Species	Status	% cover	Height (m)	Form/stratum	Reprod. status
Acacia pulchella var pulchella		1	1	Shrub, cycad, grass-tree (M)	Flower
Allocasuarina fraseriana		15	5	Tree (U)	Fruit
Banksia attenuata		20	5	Tree (U)	Flowerbud
Banksia ilicifolia		2	2	Tree (U)	Flower
Banksia menziesii		15	5	Tree (U)	Flower
Bossiaea eriocarpa		3	0.25	Shrub, cycad, grass-tree (M)	Flower
Briza maxima	*	1	0.25	Tussock grass (G)	Fruit
Burchardia congesta		1	0.25	Forb (G)	Dehisced fruit

Species	Status	% cover	Height (m)	Form/stratum	Reprod. status
Caladenia flava		2	0.25	Forb (G)	Flower
Chamaescilla corymbosa var. corymbosa		1	0.1	Forb (G)	Vegetative
Dasypogon bromeliifolius		20	0.5	Shrub, cycad, grass-tree (M)	Dehisced fruit
Desmocladus flexuosus		1	0.25	Sedge (G)	Vegetative
Dichopogon capillipes		5	0.1	Forb (G)	Vegetative
Drosera drummondii		1	0.25	Forb (G)	Flower
Ehrharta longiflora	*	1	1	Tussock grass (G)	Vegetative
Gladiolus caryophyllaceus	*	1	0.25	Forb (G)	Vegetative
Hibbertia subvaginata		2	0.25	Shrub, cycad, grass-tree (M)	Flower
Jacksonia furcellata		1	0.25	Shrub, cycad, grass-tree (M)	Flower
Lagenophora huegelii		1	0.1	Forb (G)	Flower
Lysimachia arvensis	*	1	0.1	Forb (G)	Flower
Patersonia occidentalis		2	0.5	Forb (G)	Dehisced fruit
Petrophile linearis		2	0.25	Shrub, cycad, grass-tree (M)	Vegetative
Phlebocarya ciliata		6	0.5	Shrub, cycad, grass-tree (M)	Flower
Romulea rosea	*	1	0.1	Forb (G)	Flower
Schoenus caespititius		5	0.5	Sedge (G)	Flower
Scholtzia involucrata		2	0.25	Shrub, cycad, grass-tree (M)	Flower
Stylidium repens		1	0.1	Forb (G)	Flower
Thysanotus patersonii		2	0.1	Vine (G)	Flower
Trachymene pilosa		1	0.1	Forb (G)	Fruit
Ursinia anthemoides	*	1	0.25	Forb (G)	Dehisced fruit
Xanthorrhoea gracilis		5	0.75	Shrub, cycad, grass-tree (M)	Vegetative
Xanthorrhoea preissii		15	1.5	Shrub, cycad, grass-tree (M)	Vegetative

Site ID:	Roe05R	VT BaBm
Type:	Relevé	NA
Date:	29/07/2024	Described by: A. Sleep
Co-ordinates (Easting/Northing):	402918	6458668
Landform:	Sandplain	
Drainage:	Good	
Bare ground:	2-10%	
Litter cover:	<2%	
Soil type:	Grey sand	
Fire age:	Moderate (3-5 yrs)	
Vegetation condition:	Degraded	



Species	Status	% cover	Height (m)	Form/stratum	Reprod. status
Acacia pulchella var pulchella		1	0.75	Shrub, cycad, grass-tree (M)	Vegetative
Alexgeorgea nitens		1	0.1	Rush (G)	Vegetative
Allocasuarina fraseriana		15	5	Tree (U)	Vegetative
Asparagus asparagoides	*DP & WoNS	1	0.5	Forb (G)	Vegetative
Banksia menziesii		15	5	Tree (U)	Vegetative
Briza maxima	*	1	0.25	Tussock grass (G)	Dehisced fruit
Corynotheca micrantha		3	0.25	Forb (G)	Vegetative

Species	Status	% cover	Height (m)	Form/stratum	Reprod. status
Ehrharta calycina	*	20	0.5	Tussock grass (G)	Vegetative
Ehrharta longiflora	*	25	0.25	Tussock grass (G)	Vegetative
Fumaria capreolata	*	1	0.25	Forb (G)	Vegetative
Gladiolus caryophyllaceus	*	1	0.25	Forb (G)	Vegetative
Jacksonia furcellata		1	3	Tree (U)	Vegetative
Mesomelaena pseudostygia		2	0.25	Sedge (G)	Fruit
Nuytsia floribunda		5	5	Tree (U)	Vegetative
Oxalis pes-caprae	*	1	0.25	Forb (G)	Vegetative
Persoonia saccata		1	1.25	Shrub, cycad, grass-tree (M)	Vegetative
Ursinia anthemoides	*	40	0.1	Forb (G)	Vegetative

Site ID:	Roe06	VT BmBa
Type:	Quadrat	10 x 10 m
Date:	30/07/2024	Described by: A. Benkovic
Co-ordinates (Easting/Northing):	391460	6449696
Landform:	Flat	
Drainage:	Good	
Bare ground:	<2%	
Litter cover:	11-30%	
Soil type:	Beige sand	
Fire age:	Old (6+ yrs)	
Vegetation condition:	Very good	



Species	Status	% cover	Height (m)	Form/stratum	Reprod. status
Acacia pulchella var pulchella		2	1	Shrub, cycad, grass-tree (M)	Flower
Aira caryophyllea	*	1	0.1	Other grass (G)	Dehisced fruit
Allocasuarina humilis		10	1.5	Shrub, cycad, grass-tree (M)	Fruit
Amphipogon turbinatus		1	0.5	Tussock grass (G)	Dehisced fruit
Anigozanthos humilis subsp. humilis		1	0.25	Forb (G)	Flower
Banksia attenuata		5	7	Tree (U)	Flowerbud
Banksia menziesii		15	5	Tree (U)	Flower
Bossiaea eriocarpa		1	0.25	Shrub, cycad, grass-tree (M)	Flower

Species	Status	% cover	Height (m)	Form/stratum	Reprod. status
Briza maxima	*	2		Tussock grass (G)	Fruit
Burchardia congesta		1	0.25	Forb (G)	Dehisced fruit
Caladenia flava		1	0.25	Forb (G)	Flower
Calytrix flavescens		1	0.25	Shrub, cycad, grass-tree (M)	Dehisced fruit
Centrolepis drummondiana		1	0.1	Forb (G)	Fruit
Chamaescilla corymbosa var. corymbosa		1	0.1	Forb (G)	Vegetative
Conostephium pendulum		1	0.5	Shrub, cycad, grass-tree (M)	Flower
Conostylis aculeata subsp. aculeata		1	0.25	Forb (G)	Flower
Conostylis setigera subsp. setigera		1	0.25	Forb (G)	Flower
Dasypogon bromeliifolius		1	0.5	Shrub, cycad, grass-tree (M)	Dehisced fruit
Daviesia triflora		1	0.5	Shrub, cycad, grass-tree (M)	Flower
Desmocladus flexuosus		1	0.25	Sedge (G)	Vegetative
Diuris corymbosa		1	0.5	Forb (G)	Flower
Drosera erythrorhiza		2	0.1	Forb (G)	Vegetative
Drosera macrantha		2	0.1	Forb (G)	Dehisced fruit
Ehrharta calycina	*	10	0.5	Tussock grass (G)	Vegetative
Eremaea pauciflora		1	0.5	Shrub, cycad, grass-tree (M)	Fruit
Fumaria capreolata	*	1	0.25	Forb (G)	Flower
Galium murale	*	1	0.1	Forb (G)	Flower
Gladiolus caryophyllaceus	*	2	0.5	Forb (G)	Vegetative
Gompholobium tomentosum		1	0.5	Shrub, cycad, grass-tree (M)	Flower
Hibbertia hypericoides		1	0.5	Shrub, cycad, grass-tree (M)	Flower
Hibbertia striata		1	0.5	Shrub, cycad, grass-tree (M)	Flower
Hovea trisperma		1	0.25	Shrub, cycad, grass-tree (M)	Flower
Hypochaeris glabra	*	1	0.1	Forb (G)	Flower
Hypocalymma robustum		1	0.5	Shrub, cycad, grass-tree (M)	Flower
Lechenaultia floribunda		1	0.5	Shrub, cycad, grass-tree (M)	Flower
Lomandra caespitosa		1	0.5	Forb (G)	Flower
Lomandra hermaphrodita		1	0.25	Forb (G)	Flower
Lomandra nigricans		1	0.25	Forb (G)	Flower
Lomandra sericea		1	0.5	Forb (G)	Flower
Lyginia barbata		1	0.5	Sedge (G)	Flower
Lyginia imberbis		5	0.5	Sedge (G)	Flower
Mesomelaena pseudostygia		30	0.5	Sedge (G)	Flower
Millotia tenuifolia var. tenuifolia		1	0.1	Forb (G)	Flower
Monoculus monstrosus	*	1	0.25	Forb (G)	Flower
Nuytsia floribunda		2	1	Tree (U)	Vegetative
Patersonia occidentalis		3	0.5	Forb (G)	Dehisced fruit
Philotheca spicata		1	0.5	Shrub, cycad, grass-tree (M)	Flower
Phlebocarya ciliata		1	0.5	Shrub, cycad, grass-tree (M)	Flower

Species	Status	% cover	Height (m)	Form/stratum	Reprod. status
Pithocarpa pulchella var. pulchella		1	0.25	Forb (G)	Flower
Regelia inops		5	1	Shrub, cycad, grass-tree (M)	Fruit
Scholtzia involucrata		1	0.5	Shrub, cycad, grass-tree (M)	Flower
Stirlingia latifolia		1	0.5	Shrub, cycad, grass-tree (M)	Vegetative
Styphelia conostephioides		1	0.25	Shrub, cycad, grass-tree (M)	Flower bud
Thysanotus manglesianus		1	0.1	Vine (G)	Flower
Trachymene pilosa		1	0.1	Forb (G)	Fruit
Ursinia anthemoides	*	3	0.1	Forb (G)	Dehisced fruit
Xanthorrhoea preissii		10	1.75	Shrub, cycad, grass-tree (M)	Vegetative

Site ID:	Roe06R	VT ErMr
Type:	Relevé	NA
Date:	19/09/2024	Described by: A. Benkovic
Co-ordinates (Easting/Northing):	403110.50	6458473.70
Landform:	Wetland	
Drainage:	Permanent wet	
Bare ground:	<2%	
Litter cover:	2-10%	
Soil type:	Loam	
Fire age:	Old (6+ yrs)	
Vegetation condition:	Degraded	



Species	Status	% cover	Height (m)	Form/stratum	Reprod. status
Asparagus asparagoides	*DP & WoNS	5	0.5	Forb (G)	Vegetative
Bacopa monnieri	*	70	0.1	Aquatic (G)	Vegetative
Banksia littoralis		1	4	Tree (U)	Flower
Cenchrus clandestinus	*	90	0.5	Other grass (G)	Vegetative
Chamaecytisus palmensis	*	3	2	Tree (U)	Vegetative
Ehrharta calycina	*	1	1	Tussock grass (G)	Vegetative
Eragrostis curvula	*	1	1	Tussock grass (G)	Vegetative

Species	Status	% cover	Height (m)	Form/stratum	Reprod. status
Eucalyptus rudis		5	10	Tree (U)	Fruit
Machaerina juncea		5	1	Sedge (G)	Fruit
Melaleuca preissiana		1	6	Tree (U)	Dehisced fruit
Melaleuca rhaphiophylla		10	10	Tree (U)	Dehisced fruit
Oxalis pes-caprae	*	1	0.25	Forb (G)	Flower
Ricinus communis	*	1	2	Shrub, cycad, grass-tree (M)	Fruit
Schinus terebinthifolia	*	3	8	Tree (U)	Vegetative
Watsonia meriana var. bulbillifera	*	1	1.5	Forb (G)	Fruit

Site ID:	Roe07	VT BaBm
Type:	Quadrat	10 x 10 m
Date:	08/08/2024	Described by: A. Benkovic
Co-ordinates (Easting/Northing):	394469	6450386
Landform:	Flat	
Drainage:	Good	
Bare ground:	<2%	
Litter cover:	2-10%	
Soil type:	Grey sand	
Fire age:	Old (6+ yrs)	
Vegetation condition:	Good	



Species	Status	% cover	Height (m)	Form/stratum	Reprod. status
Acacia alata		1	0.5	Shrub, cycad, grass-tree (M)	Flower
Acacia pulchella var pulchella		5	1.5	Shrub, cycad, grass-tree (M)	Flower
Aira caryophyllea	*	1	0.1	Other grass (G)	Dehisced fruit
Allocasuarina fraseriana		2	5	Tree (U)	Fruit
Allocasuarina humilis		5	1.5	Shrub, cycad, grass-tree (M)	Fruit
Banksia attenuata		1	1.5	Tree (U)	Flower bud
Banksia menziesii		10	5	Tree (U)	Flower
Bossiaea eriocarpa		3	0.5	Shrub, cycad, grass-tree (M)	Flower

Species	Status	% cover	Height (m)	Form/stratum	Reprod. status
Briza maxima	*	1	0.25	Tussock grass (G)	Fruit
Burchardia congesta		1	0.25	Forb (G)	Dehisced fruit
Caladenia flava		1	0.25	Forb (G)	Flower
Calandrinia corrigioloides		1	0.1	Forb (G)	Fruit
Calytrix flavescens		5	0.25	Shrub, cycad, grass-tree (M)	Dehisced fruit
Chamaescilla corymbosa var. corymbosa		1	0.1	Forb (G)	Vegetative
Conostephium pendulum		5	0.5	Shrub, cycad, grass-tree (M)	Flower
Dasypogon bromeliifolius		2	0.25	Shrub, cycad, grass-tree (M)	Dehisced fruit
Daviesia triflora		2	1	Shrub, cycad, grass-tree (M)	Flower
Desmocladus flexuosus		2	0.25	Sedge (G)	Vegetative
Dichopogon capillipes		1	0.1	Forb (G)	Vegetative
Drosera drummondii		2	0.25	Forb (G)	Flower Dehisced fruit
Drosera erythrorhiza		1	0.1	Forb (G)	Vegetative
Ehrharta longiflora	*	1	1	Tussock grass (G)	Vegetative
Eremaea pauciflora		20	1	Shrub, cycad, grass-tree (M)	Fruit
Ficinia marginata	*	1	0.1	Sedge (G)	Flower
Gastrolobium capitatum		1	0.25	Shrub, cycad, grass-tree (M)	Flower
Gladiolus caryophyllaceus	*	1	0.25	Forb (G)	Vegetative
Gompholobium tomentosum		1	0.5	Shrub, cycad, grass-tree (M)	Flower
Hypochaeris glabra	*	2	0.1	Forb (G)	Flower
Lomandra caespitosa		1	0.25	Forb (G)	Flower
Lyginia imberbis		1	0.5	Sedge (G)	Flower
Melaleuca seriata		5	1	Shrub, cycad, grass-tree (M)	
Millotia tenuifolia var. tenuifolia		1	0.1	Forb (G)	Flower
Patersonia occidentalis		3	0.5	Forb (G)	Dehisced fruit
Philotheca spicata		1	0.5	Shrub, cycad, grass-tree (M)	Flower
Poaceae sp. (sterile)		5	0.1	Other grass (G)	Vegetative
Podotheca angustifolia		1	0.25	Forb (G)	Flower
Rhodanthe citrina		1	0.1	Forb (G)	Flower
Scholtzia involucrata		2	0.25	Shrub, cycad, grass-tree (M)	Flower
Senecio condylus	*	1	0.25	Forb (G)	Flower
Stirlingia latifolia		1	0.25	Shrub, cycad, grass-tree (M)	Vegetative
Thelymitra graminea		1	0.25	Forb (G)	Flower
Thysanotus patersonii		1	0.25	Vine (G)	Flower
Trachymene pilosa		1	0.1	Forb (G)	Fruit
Ursinia anthemoides	*	1	0.25	Forb (G)	Dehisced fruit
Vulpia bromoides	*	1	0.25	Tussock grass (G)	Dehisced fruit

Site ID:	Roe07R	VT Isolated *Corymbia calophylla*
Type:	Relevé	NA
Date:	29/07/2024	Described by: A. Sleep
Co-ordinates (Easting/Northing):	402966	6458584
Landform:	Flat	
Drainage:	Good	
Bare ground:	<2%	
Litter cover:	2-10%	
Soil type:	Sand	
Fire age:	Old (+6yrs)	
Vegetation condition:	Completely Degraded	



Species	Status	% cover	Height (m)	Form/stratum	Reprod. status
Asparagus asparagoides	*DP & WoNS	1	0.5	Forb (G)	Vegetative
Corymbia calophylla		30	10	Tree (U)	Fruit
Fumaria capreolata	*	30	0.25	Forb (G)	Vegetative
Hypocalymma angustifolium		1	1.25	Shrub, cycad, grass-tree (M)	Flower bud
Melaleuca preissiana		1	5	Tree (U)	Vegetative
Oxalis pes-caprae	*	10	0.25	Forb (G)	Vegetative
Sonchus oleraceus	*	1	0.1	Forb (G)	Vegetative

Species	Status	% cover	Height (m)	Form/stratum	Reprod. status
Xanthorrhoea preissii		10	1.25	Shrub, cycad, grass-tree (M)	Vegetative
Zantedeschia aethiopica	*DP	1	0.25	Forb (G)	Vegetative

Site ID:	Roe08	VT BmBa
Type:	Quadrat	10 x 10 m
Date:	30/07/2024	Described by: A. Benkovic
Co-ordinates (Easting/Northing):	391625.86	6449488.52
Landform:	Flat	
Drainage:	Good	
Bare ground:	2-10%	
Litter cover:	2-10%	
Soil type:	White sand	
Fire age:	Old (6+ yrs)	
Vegetation condition:	Very good	



Species	Status	% cover	Height (m)	Form/stratum	Reprod. status
Acacia pulchella var pulchella		1	0.5	Shrub, cycad, grass-tree (M)	Flower
Acacia willdenowiana		1	0.25	Shrub, cycad, grass-tree (M)	Flower
Allocasuarina humilis		15	1.5	Shrub, cycad, grass-tree (M)	Fruit
Amphipogon turbinatus		10	0.5	Tussock grass (G)	Dehisced fruit
Banksia attenuata		30	5	Tree (U)	Flowerbud
Banksia menziesii		3	5	Tree (U)	Flower
Bossiaea eriocarpa		1	0.25	Shrub, cycad, grass-tree (M)	Flower
Briza maxima	*	1	0.25	Tussock grass (G)	Fruit

Species	Status	% cover	Height (m)	Form/stratum	Reprod. status
Burchardia congesta		1	0.5	Forb (G)	Dehisced fruit
Caladenia flava		1	0.25	Forb (G)	Flower
Calectasia narragara		1	0.25	Shrub, cycad, grass-tree (M)	Flower
Calytrix flavescens		1	0.25	Shrub, cycad, grass-tree (M)	Dehisced fruit
Centrolepis drummondiana		1	0.1	Forb (G)	Fruit
Conostephium pendulum		1	0.25	Shrub, cycad, grass-tree (M)	Flower
Conostylis aurea		2	0.25	Forb (G)	Flower
Conostylis setigera subsp. setigera		1	0.25	Forb (G)	Flower
Crassula colorata var. colorata		1	0.1	Forb (G)	Flower
Dasypogon bromeliifolius		1	0.5	Shrub, cycad, grass-tree (M)	Dehisced fruit
Daviesia nudiflora		1	1	Shrub, cycad, grass-tree (M)	Flower
Daviesia triflora		1	0.5	Shrub, cycad, grass-tree (M)	Flower
Desmocladus flexuosus		1	0.25	Sedge (G)	Vegetative
Diuris corymbosa		1	0.25	Forb (G)	Flower
Drosera erythrorhiza		1	0.1	Forb (G)	Vegetative
Drosera macrantha		1	0.1	Forb (G)	Dehisced fruit
Ehrharta calycina	*	5	0.5	Tussock grass (G)	Vegetative
Eremaea pauciflora		1	0.25	Shrub, cycad, grass-tree (M)	Fruit
Ficinia marginata	*	1	0.1	Sedge (G)	Flower
Freesia leichtlinii subsp. alba × leichtlinii subsp. leichtlinii	*	1	0.25	Forb (G)	Flower
Galium murale	*	1	0.1	Forb (G)	Flower
Gastrolobium capitatum		1	0.5	Shrub, cycad, grass-tree (M)	Flower
Gladiolus caryophyllaceus	*	2	0.5	Forb (G)	Vegetative
Gompholobium tomentosum		2	1	Shrub, cycad, grass-tree (M)	Flower
Hibbertia hypericoides		10	0.5	Shrub, cycad, grass-tree (M)	Flower
Hibbertia striata		1	0.25	Shrub, cycad, grass-tree (M)	Flower
Hypocalymma robustum		1	0.25	Shrub, cycad, grass-tree (M)	Flower
Isopogon linearis		1	0.25	Shrub, cycad, grass-tree (M)	Flower
Jacksonia furcellata		2	1.5	Shrub, cycad, grass-tree (M)	Flower
Lechenaultia floribunda		1	0.5	Shrub, cycad, grass-tree (M)	Flower
Lomandra caespitosa		1	0.25	Forb (G)	Flower
Lomandra hermaphrodita		1	0.25	Forb (G)	Flower
Lyginia barbata		5	0.5	Sedge (G)	Flower
Lyginia imberbis		1	0.5	Sedge (G)	Flower
Macrozamia riedlei		1	1.5	Shrub, cycad, grass-tree (M)	Vegetative
Mesomelaena pseudostygia		1	0.5	Sedge (G)	Flower
Patersonia occidentalis		3	0.5	Forb (G)	Dehisced fruit
Prasophyllum parvifolium		1	0.1	Forb (G)	Flower
Schoenus sp.		1	0.5	Sedge (G)	Dehisced fruit
Scholtzia involucrata		1	0.25	Shrub, cycad, grass-tree (M)	Flower

Species	Status	% cover	Height (m)	Form/stratum	Reprod. status
Stirlingia latifolia		5	0.25	Shrub, cycad, grass-tree (M)	Vegetative
Stylidium repens		1	0.1	Forb (G)	Flower
Styphelia conostephioides		1	0.5	Shrub, cycad, grass-tree (M)	Flower bud
Thysanotus patersonii		1	0.1	Vine (G)	Flower
Trachymene pilosa		1	0.1	Forb (G)	Fruit
Ursinia anthemoides	*	2	0.1	Forb (G)	Dehisced fruit

Site ID:	Roe08R	VT ErMr
Type:	Relevé	NA
Date:	19/09/2024	Described by: A. Benkovic
Co-ordinates (Easting/Northing):	402987	6458108
Landform:	Drainage	
Drainage:	Permanent wet	
Bare ground:	<2%	
Litter cover:	2-10%	
Soil type:	Loam	
Fire age:	Old (6+ yrs)	
Vegetation condition:	Completely Degraded	



Species	Status	% cover	Height (m)	Form/stratum	Reprod. status
Calothamnus quadrifidus	N	5	1.5	Shrub, cycad, grass-tree (M)	Flower
Casuarina glauca	*	10	10	Tree (U)	Fruit
Cenchrus clandestinus	*	90	1	Other grass (G)	Vegetative
Ehrharta longiflora	*	10		Tussock grass (G)	Vegetative
Eucalyptus rudis		2	5	Tree (U)	Fruit
Euphorbia terracina	*	10	0.5	Forb (G)	Vegetative
Melaleuca preissiana		2	8	Tree (U)	Dehisced fruit
Melaleuca rhaphiophylla		20	6	Tree (U)	Dehisced fruit

Species	Status	% cover	Height (m)	Form/stratum	Reprod. status
Typha ?orientalis		70	1.5	Sedge (G)	Fruit

Site ID:	Roe09	VT BmBa
Type:	Quadrat	10 x 10 m
Date:	30/07/2024	Described by: A. Sleep
Co-ordinates (Easting/Northing):	396021	6452223
Landform:	Sand dune	
Drainage:	Good	
Bare ground:	<2%	
Litter cover:	<2%	
Soil type:	Grey sand	
Fire age:	Old (6+ yrs)	
Vegetation condition:	Degraded	



Species	Status	% cover	Height (m)	Form/stratum	Reprod. status
Aira caryophyllea	*	1	0.1	Other grass (G)	Dehisced fruit
Banksia attenuata		25	5	Tree (U)	Dehisced fruit
Banksia ilicifolia		1	5	Tree (U)	Vegetative
Banksia menziesii		1	5	Tree (U)	Vegetative
Bossiaea eriocarpa		1	0.5	Shrub, cycad, grass-tree (M)	Vegetative
Briza maxima	*	1	0.25	Tussock grass (G)	Dehisced fruit
Burchardia congesta		1	0.25	Forb (G)	Dehisced fruit
Caladenia flava		1	0.1	Forb (G)	Flower

Species	Status	% cover	Height (m)	Form/stratum	Reprod. status
Calandrinia corrigioloides		1	0.1	Forb (G)	Fruit
Calandrinia granulifera		1	0.1	Forb (G)	Fruit
Centrolepis drummondiana		2	0.1	Forb (G)	Fruit
Conostylis aculeata subsp. aculeata		1	0.25	Forb (G)	Vegetative
Crassula colorata var. colorata		1	0.1	Forb (G)	Flower
Dasypogon bromeliifolius		1	0.5	Shrub, cycad, grass-tree (M)	Dehisced fruit
Desmocladus flexuosus		1	0.25	Sedge (G)	Vegetative
Drosera macrantha		1	0.25	Forb (G)	Flower bud
Ehrharta calycina	*	70	0.25	Tussock grass (G)	Vegetative
Ficinia marginata	*	1	0.1	Sedge (G)	Flower
Gladiolus caryophyllaceus	*	1	0.25	Forb (G)	Vegetative
Hibbertia hypericoides		3	0.5	Shrub, cycad, grass-tree (M)	Flower bud
Hypochaeris glabra	*	3	0.1	Forb (G)	Vegetative
Jacksonia furcellata		1	3	Shrub, cycad, grass-tree (M)	Vegetative
Levenhookia pusilla		1	0.1	Forb (G)	Flower
Lomandra caespitosa		1	0.1	Forb (G)	Flower bud
Lysimachia arvensis	*	1	0.1	Forb (G)	Vegetative
Millotia tenuifolia var. tenuifolia		1	0.1	Forb (G)	Flower
Nuytsia floribunda		5	5	Tree (U)	Vegetative
Podotheca angustifolia		1	0.25	Forb (G)	Flower
Poranthera microphylla		1	0.1	Forb (G)	Flower
Rhodanthe citrina		1	0.25	Forb (G)	Flower
Sonchus oleraceus	*	1	0.1	Forb (G)	Vegetative
Thysanotus manglesianus		1	0.1	Vine (G)	Flower
Thysanotus sp. (sterile)		1	0.25	Vine (G)	Vegetative
Trachymene pilosa		1	0.1	Forb (G)	Vegetative
Ursinia anthemoides	*	5	0.1	Forb (G)	Vegetative
Wahlenbergia capensis	*	1	0.25	Forb (G)	Flower

Site ID:	Roe09R	VT Isolated Euca spp.
Type:	Relevé	NA
Date:	01/08/2024	Described by: A. Sleep
Co-ordinates (Easting/Northing):	400481	6454022
Landform:	Flat	
Drainage:	Poor	
Bare ground:	2-10%	
Litter cover:	31-70%	
Soil type:	Grey sand	
Fire age:	Old (6+ yrs)	
Vegetation condition:	Completely Degraded	

No photo available.

Species	Status	% cover	Height (m)	Form/stratum	Reprod. status
Acacia saligna		1	2	Shrub, cycad, grass-tree (M)	Vegetative
Chamaecytisus palmensis	*	15	3	Tree (U)	Vegetative
Cynodon dactylon	*	10	0.25	Other grass (G)	Vegetative
Eragrostis curvula	*	60	0.5	Tussock grass (G)	Vegetative
Eucalyptus camaldulensis	N	35	10	Tree (U)	Fruit
Ferraria crispa	*	1	0.25	Forb (G)	Vegetative
Lupinus cosentinii	*	1	0.25	Forb (G)	Vegetative
Melaleuca rhaphiophylla		2	2.5	Tree (U)	Fruit
Melaleuca systena		1	0.75	Shrub, cycad, grass-tree (M)	Dehisced fruit
Oxalis pes-caprae	*	1	0.25	Forb (G)	Vegetative
Vicia sativa	*	1	0.25	Forb (G)	Vegetative

Site ID:	Roe10	VT EgBspp
Type:	Quadrat	10 x 10 m
Date:	30/07/2024	Described by: A. Benkovic
Co-ordinates (Easting/Northing):	391621.27	6449071.36
Landform:	Flat	
Drainage:	Good	
Bare ground:	<2%	
Litter cover:	2-10%	
Soil type:	Brown sandy loam	
Fire age:	Old (6+ yrs)	
Vegetation condition:	Good	



Species	Status	% cover	Height (m)	Form/stratum	Reprod. status
Ammothryon grandiflorum		2	0.25	Sedge (G)	Flower
Briza maxima	*	1	0.25	Tussock grass (G)	Fruit
Briza minor	*	1	0.25	Tussock grass (G)	Fruit
Caladenia arenicola		1	0.25	Forb (G)	Flower
Caladenia flava		2	0.25	Forb (G)	Flower
Chamaescilla corymbosa var. corymbosa		1	0.1	Forb (G)	Vegetative
Cerastium glomeratum	*	1	0.1	Forb (G)	Dehisced fruit

Species	Status	% cover	Height (m)	Form/stratum	Reprod. status
Conostephium pendulum		1	0.5	Shrub, cycad, grass-tree (M)	Flower
Conostylis aurea		1	0.25	Forb (G)	Flower
Corynotheca micrantha		1	0.25	Forb (G)	Vegetative
Daviesia divaricata subsp. divaricata		1	1.5	Shrub, cycad, grass-tree (M)	Flower
Desmocladus flexuosus		2	0.25	Sedge (G)	Vegetative
Dianella revoluta var. divaricata		1	1	Shrub, cycad, grass-tree (M)	Dehisced fruit
Dichopogon capillipes		3	0.1	Forb (G)	Vegetative
Diuris corymbosa		1	0.25	Forb (G)	Flower
Drosera drummondii		1	0.25	Forb (G)	Flower
Drosera macrantha		1	0.25	Forb (G)	Dehisced fruit
Ehrharta calycina	*	5	0.5	Tussock grass (G)	Vegetative
Ehrharta longiflora	*	1	1	Tussock grass (G)	Vegetative
Eucalyptus gomphocephala		20	20	Tree (U)	Flowerbud
Eucalyptus marginata		5	10	Tree (U)	Fruit
Ficinia marginata	*	1	0.1	Sedge (G)	Flower
Galium murale	*	1	0.1	Forb (G)	Flower
Hardenbergia comptoniana		1	0.1	Vine (G)	Flower
Hibbertia hypericoides		10	0.5	Shrub, cycad, grass-tree (M)	Flower
Hovea trisperma		1	0.25	Shrub, cycad, grass-tree (M)	Flower
Hypocalymma robustum		2	0.25	Shrub, cycad, grass-tree (M)	Flower
Lagenophora huegelii		1	0.1	Forb (G)	Flower
Lepidosperma sp. (sterile)		1	0.25	Sedge (G)	Vegetative
Lomandra hermaphrodita		2	0.25	Forb (G)	Flower
Lysimachia arvensis	*	5	0.1	Forb (G)	Flower
Macrozamia riedlei		5	2	Shrub, cycad, grass-tree (M)	Vegetative
Mesomelaena pseudostygia		1	0.5	Sedge (G)	Flower
Quinetia urvillei		1	0.1	Forb (G)	Flower
Schoenus sp.		1	0.25	Sedge (G)	Dehisced fruit
Sonchus oleraceus	*	5	0.1	Forb (G)	Flower
Stellaria media	*	1	0.1	Forb (G)	Vegetative
Thysanotus patersonii		1	0.1	Vine (G)	Flower
Trachymene pilosa		1	0.1	Forb (G)	Fruit
Trifolium arvense	*	1	0.1	Forb (G)	Flower
Watsonia marginata	*	1	0.5	Forb (G)	Fruit
Xanthorrhoea gracilis		2	1.5	Shrub, cycad, grass-tree (M)	Vegetative
Xanthorrhoea preissii		10	2	Shrub, cycad, grass-tree (M)	Vegetative

Site ID:	Roe10R	VT Isolated Corymbia calophylla
Type:	Relevé	NA
Date:	19/09/2024	Described by: A. Benkovic
Co-ordinates (Easting/Northing):	402647	6455833
Landform:	Flat	
Drainage:	Good	
Bare ground:	<2%	
Litter cover:	2-10%	
Soil type:	Sand	
Fire age:	Old (6+ yrs)	
Vegetation condition:	Degraded	



Species	Status	% cover	Height (m)	Form/stratum	Reprod. status
Acacia baileyana	*	2	3	Shrub, cycad, grass-tree (M)	Flower
Arctotheca calendula	*	2	0.1	Forb (G)	Vegetative
Bromus diandrus	*	2	0.25	Tussock grass (G)	Dehisced fruit
Calothamnus quadrifidus	N	2	2	Shrub, cycad, grass-tree (M)	Flower
Cenchrus setaceus	*	5	1	Other grass (G)	Vegetative
Corymbia calophylla		10	15	Tree (U)	Fruit
Ehrharta calycina	*	5	0.5	Tussock grass (G)	Vegetative
Hakea lissocarpha		5	0.25	Shrub, cycad, grass-tree (M)	Vegetative

Species	Status	% cover	Height (m)	Form/stratum	Reprod. status
Hyparrhenia hirta	*	5	1	Tussock grass (G)	Flower
Watsonia meriana var. bulbillifera	*	30	1.5	Forb (G)	Fruit
Xanthorrhoea preissii		5	1	Shrub, cycad, grass-tree (M)	Vegetative

Site ID:	Roe11	VT BaBmBi
Type:	Quadrat	10 x 10 m
Date:	30/07/2024	Described by: A. Sleep
Co-ordinates (Easting/Northing):	395647	6451898
Landform:	Sandplain	
Drainage:	Good	
Bare ground:	<2%	
Litter cover:	31-70%	
Soil type:	Grey sand	
Fire age:	Old (6+ yrs)	
Vegetation condition:	Good	



Species	Status	% cover	Height (m)	Form/stratum	Reprod. status
Adenanthos obovatus		1	1	Shrub, cycad, grass-tree (M)	Flower
Banksia attenuata		10	6	Tree (U)	Vegetative
Banksia ilicifolia		1	4	Tree (U)	Flower
Bossiaea eriocarpa		1	0.5	Shrub, cycad, grass-tree (M)	Vegetative
Caladenia flava		1	0.25	Forb (G)	Flower
Caladenia sp. (sterile)		1	0.1	Forb (G)	Vegetative
Dampiera linearis		1	0.1	Forb (G)	Vegetative
Dasypogon bromeliifolius		25	0.5	Shrub, cycad, grass-tree (M)	Dehisced fruit

Species	Status	% cover	Height (m)	Form/stratum	Reprod. status
Ehrharta longiflora	*	1	1	Tussock grass (G)	Vegetative
Eucalyptus marginata		20	6	Tree (U)	Fruit
Gastrolobium capitatum		1	1	Shrub, cycad, grass-tree (M)	Vegetative
Gompholobium tomentosum		1	0.5	Shrub, cycad, grass-tree (M)	Flower bud
Hypocalymma angustifolium		1	0.5	Shrub, cycad, grass-tree (M)	Vegetative
Hypochaeris glabra	*	1	0.1	Forb (G)	Vegetative
Kunzea glabrescens		1	3	Shrub, cycad, grass-tree (M)	Vegetative
Lepidosperma pubisquameum		1	0.25	Sedge (G)	Flower
Lomandra caespitosa		1	0.25	Forb (G)	Flower bud
Lomandra hermaphrodita		1	0.25	Forb (G)	Vegetative
Melaleuca preissiana		1	6	Tree (U)	Vegetative
Melaleuca seriata		1	1	Shrub, cycad, grass-tree (M)	Dehisced fruit
Melaleuca thymoides		1	1	Shrub, cycad, grass-tree (M)	Vegetative
Phlebocarya ciliata		3	0.25	Shrub, cycad, grass-tree (M)	Dehisced fruit
Pterostylis sanguinea		1	0.1	Forb (G)	Flower
Pterostylis sp. (sterile)		1	0.1	Forb (G)	Vegetative
Schoenus caespititius		1	0.1	Sedge (G)	Flower
Sonchus oleraceus	*	1	0.1	Forb (G)	Vegetative
Thysanotus multiflorus		1	0.25	Shrub, cycad, grass-tree (M)	Vegetative
Trachymene pilosa		1	0.1	Forb (G)	Vegetative
Ursinia anthemoides	*	1	0.1	Forb (G)	Vegetative
Xanthorrhoea preissii		30	1.25	Shrub, cycad, grass-tree (M)	Vegetative

Site ID:	Roe11R	VT ErMr
Type:	Relevé	NA
Date:	01/08/2024	Described by: A. Sleep
Co-ordinates (Easting/Northing):	401316	6454658
Landform:	Drainage line	
Drainage:	Permanently wet	
Bare ground:	11-30%	
Litter cover:	<2%	
Soil type:	Sandy loam	
Fire age:	Old (6+yr)	
Vegetation condition:	Completely Degraded	



Species	Status	% cover	Height (m)	Form/stratum	Reprod. status
Cenchrus clandestinus	*	60	0.5	Other grass (G)	Vegetative
Cynodon dactylon	*	10	0.25	Other grass (G)	Vegetative
Cyperus tenuiflorus	*	1	0.5	Sedge (G)	Fruit
Eragrostis curvula	*	5	0.5	Tussock grass (G)	Vegetative
Eucalyptus rudis		40	10	Tree (U)	Fruit
Fumaria capreolata	*	1	0.25	Forb (G)	Vegetative
Melaleuca rhaphiophylla		1	4	Tree (U)	Vegetative
Schinus terebinthifolia	*	60	4	Shrub, cycad, grass-tree (M)	Vegetative

Site ID:	Roe12	VT BaBm
Type:	Quadrat	10 x 10 m
Date:	01/08/2024	Described by: A. Benkovic
Co-ordinates (Easting/Northing):	391780	6449125
Landform:	Flat	
Drainage:	Good	
Bare ground:	2-10%	
Litter cover:	11-30%	
Soil type:	Grey sand	
Fire age:	Old (6+ yrs)	
Vegetation condition:	Very good	



Species	Status	% cover	Height (m)	Form/stratum	Reprod. status
Acacia pulchella var pulchella		1	1	Shrub, cycad, grass-tree (M)	Flower
Banksia attenuata		20	5	Tree (U)	Flower bud
Bossiaea eriocarpa		1	0.25	Shrub, cycad, grass-tree (M)	Flower
Briza maxima	*	2	0.25	Tussock grass (G)	Fruit
Burchardia congesta		1	0.5	Forb (G)	Dehisced fruit
Caladenia flava		2	0.1	Forb (G)	Flower
Calytrix flavescens		2	0.25	Shrub, cycad, grass-tree (M)	Dehisced fruit

Species	Status	% cover	Height (m)	Form/stratum	Reprod. status
Centrolepis drummondiana		1		Forb (G)	Fruit
Chamaescilla corymbosa var. corymbosa		2	0.1	Forb (G)	Vegetative
Conostephium pendulum		2	0.5	Shrub, cycad, grass-tree (M)	Flower
Conostylis aurea		1	0.25	Forb (G)	Flower
Crassula colorata var. colorata		1		Forb (G)	Flower
Dasypogon bromeliifolius		10	0.25	Shrub, cycad, grass-tree (M)	Dehisced fruit
Daviesia triflora		1	0.5	Shrub, cycad, grass-tree (M)	Flower
Desmocladus flexuosus		1	0.25	Sedge (G)	Vegetative
Drosera drummondii		1	0.25	Forb (G)	Flower
Eucalyptus marginata		5	5	Tree (U)	Fruit
Eremaea pauciflora		1	1	Shrub, cycad, grass-tree (M)	Fruit
Ficinia marginata	*	1		Sedge (G)	Flower
Gladiolus caryophyllaceus	*	1	0.25	Forb (G)	Vegetative
Gompholobium tomentosum		1	0.25	Shrub, cycad, grass-tree (M)	Flower
Hardenbergia comptoniana		1	0.1	Vine (G)	Flower
Hibbertia hypericoides		25	1	Shrub, cycad, grass-tree (M)	Flower
Hibbertia striata		1	0.25	Shrub, cycad, grass-tree (M)	Flower
Hypocalymma robustum		2	0.5	Shrub, cycad, grass-tree (M)	Flower
Hypochaeris glabra	*	1		Forb (G)	Flower
Hypolaena exsulca		1	0.25	Sedge (G)	Flower
Isopogon linearis		1	0.25	Shrub, cycad, grass-tree (M)	Flower
Jacksonia furcellata		5	1.75	Shrub, cycad, grass-tree (M)	Flower
Lepidosperma sp. (sterile)		3	0.25	Sedge (G)	Vegetative
Lomandra hermaphrodita		2	0.25	Forb (G)	Flower
Lyginia barbata		5	0.5	Sedge (G)	Flower
Lyginia imberbis		2	0.5	Sedge (G)	Flower
Phlebocarya ciliata		2		Shrub, cycad, grass-tree (M)	Dehisced fruit
Phyllangium ?divergens		1		Forb (G)	Flowerbud
Prasophyllum parvifolium		1	0.1	Forb (G)	Flower
Pyrorchis nigricans		1	0.1	Forb (G)	Vegetative
Regelia inops		3	1.75	Shrub, cycad, grass-tree (M)	Fruit
Schoenus sp.		2	0.25	Sedge (G)	Dehisced fruit
Stylidium piliferum		1		Forb (G)	Flower
Styphelia conostephioides		3	0.5	Shrub, cycad, grass-tree (M)	Flower bud
Thysanotus patersonii		1	0.1	Vine (G)	Flower
Trachymene pilosa		1		Forb (G)	Fruit
Ursinia anthemoides	*	2	0.1	Forb (G)	Dehisced fruit
Wahlenbergia preissii		1		Forb (G)	Flower
Xanthorrhoea preissii		15	1.75	Shrub, cycad, grass-tree (M)	Vegetative

Site ID:	Roe12R	VT Isolated Corymbia calophylla
Type:	Relevé	NA
Date:	19/09/2024	Described by: A. Benkovic
Co-ordinates (Easting/Northing):	402352	6455337
Landform:	Wetland	
Drainage:	Permanent wet	
Bare ground:	<2%	
Litter cover:	11-30%	
Soil type:	Sandy loam	
Fire age:	Old (6+ yrs)	
Vegetation condition:	Degraded	



Species	Status	% cover	Height (m)	Form/stratum	Reprod. status
Callistemon sp.	*	2		Shrub, cycad, grass-tree (M)	Vegetative
Corymbia calophylla		10		Tree (U)	Fruit
Cyperaceae sp.		5		Sedge (G)	Vegetative
Ehrharta calycina	*	1	1	Tussock grass (G)	Vegetative
Eragrostis curvula	*	5		Tussock grass (G)	Flower
Eucalyptus rudis		10		Tree (U)	Fruit
Melaleuca rhaphiophylla		5		Tree (U)	Dehisced fruit
Oxalis pes-caprae	*	10		Forb (G)	Flower

Species	Status	% cover	Height (m)	Form/stratum	Reprod. status
Typha ?orientalis		2		Sedge (G)	Fruit

Site ID:	Roe13	VT BaBm
Type:	Quadrat	10 x 10 m
Date:	30/07/2024	Described by: A. Sleep
Co-ordinates (Easting/Northing):	393319	6449779
Landform:	Sandplain	
Drainage:	Good	
Bare ground:	<2%	
Litter cover:	2-10%	
Soil type:	Grey sand	
Fire age:	Old (6+ yrs)	
Vegetation condition:	Very good to Excellent	



Species	Status	% cover	Height (m)	Form/stratum	Reprod. status
Acacia longifolia	*	1	0.5	Shrub, cycad, grass-tree (M)	Flower
Acacia pulchella var pulchella		1	1	Shrub, cycad, grass-tree (M)	Flower
Asparagus asparagoides	*DP & WoNS	1	0.5	Forb (G)	Vegetative
Banksia attenuata		25	8	Tree (U)	Vegetative
Banksia ilicifolia		25	8	Tree (U)	Flower
Bossiaea eriocarpa		1	0.25	Shrub, cycad, grass-tree (M)	Vegetative
Briza maxima	*	1	0.25	Tussock grass (G)	Dehisced fruit

Species	Status	% cover	Height (m)	Form/stratum	Reprod. status
Burchardia congesta		1	0.25	Forb (G)	Dehisced fruit
Caladenia flava		1	0.25	Forb (G)	Flower
Caladenia sp. (sterile)		1	0.1	Forb (G)	Vegetative
Calytrix flavescens		1	0.5	Shrub, cycad, grass-tree (M)	Dehisced fruit
Chaetospora curvifolia		1	0.1	Sedge (G)	Fruit
Chamaescilla corymbosa var. corymbosa		1	0.1	Forb (G)	Flower bud
Ehrharta calycina	*	1	0.5	Tussock grass (G)	Vegetative
Ehrharta longiflora	*	1	1	Tussock grass (G)	Vegetative
Eucalyptus todtiana		1	5	Tree (U)	Fruit
Dasypogon bromeliifolius		2	0.5	Shrub, cycad, grass-tree (M)	Dehisced fruit
Ficinia marginata	*	1	0.1	Sedge (G)	Flower
Gladiolus caryophyllaceus	*	1	0.1	Forb (G)	Flower
Gompholobium tomentosum		1	0.25	Shrub, cycad, grass-tree (M)	
Hibbertia subvaginata		1	0.25	Shrub, cycad, grass-tree (M)	Flower
Homalosciadium homalocarpum		1	0.1	Forb (G)	Fruit
Hypochaeris glabra	*	1	0.1	Forb (G)	Flower
Lepidosperma pubisquameum		1	0.25	Sedge (G)	Flower
Lomandra caespitosa		1	0.25	Forb (G)	Flower
Lomandra hermaphrodita		1	0.25	Forb (G)	Flower
Lomandra nigricans		2	0.25	Forb (G)	Flower
Lomandra preissii		2	0.25	Forb (G)	Flower
Lyginia barbata		1	0.25	Sedge (G)	Flower
Melaleuca seriata		1	0.75	Shrub, cycad, grass-tree (M)	
Melaleuca thymoides		1	1.5	Shrub, cycad, grass-tree (M)	Vegetative
Oxalis pes-caprae	*	1	0.1	Forb (G)	Vegetative
Patersonia occidentalis		1	0.25	Rush (G)	Dehisced fruit
Philotheca spicata		1	0.25	Shrub, cycad, grass-tree (M)	Flower
Phlebocarya ciliata		25	0.25	Shrub, cycad, grass-tree (M)	Dehisced fruit
Platysace compressa		1	0.25	Shrub, cycad, grass-tree (M)	
Pterostylis sanguinea		1	0.1	Forb (G)	Flower
Quinetia urvillei		1	0.1	Forb (G)	Flower
Schoenus caespititius		2	0.25	Sedge (G)	Flower
Scholtzia involucrata		1	0.75	Shrub, cycad, grass-tree (M)	Flower
Sonchus oleraceus	*	1	0.1	Forb (G)	Vegetative
Stylidium repens		1	0.1	Forb (G)	Vegetative
Styphelia conostephioides		1	0.25	Shrub, cycad, grass-tree (M)	
Trachymene pilosa		1	0.1	Forb (G)	Vegetative
Ursinia anthemoides	*	1	0.1	Forb (G)	Vegetative
Wahlenbergia capensis	*	1	0.25	Forb (G)	Flower
Xanthorrhoea preissii		20	1.25	Shrub, cycad, grass-tree (M)	

Site ID:	Roe13R	VT Isolated Corymbia calophylla
Type:	Relevé	NA
Date:	01/08/2024	Described by: A. Sleep
Co-ordinates (Easting/Northing):	402190.76	6455491.12
Landform:	Flat	
Drainage:	Poor	
Bare ground:	<2%	
Litter cover:	11-30%	
Soil type:	Grey brown sand	
Fire age:	Moderate (3-5 yrs)	
Vegetation condition:	Completely degraded	

No photo available.

Species	Status	% cover	Height (m)	Form/stratum	Reprod. status
Caesia micrantha		1	0.25	Shrub, cycad, grass-tree (M)	Vegetative
Corymbia calophylla		40	10	Tree (U)	Fruit
Fumaria capreolata	*	1	0.25	Forb (G)	Vegetative
Hakea trifurcata		1	2	Shrub, cycad, grass-tree (M)	Vegetative
Hibbertia hypericoides		2	0.5	Shrub, cycad, grass-tree (M)	Vegetative
Hypocalymma angustifolium		1	0.75	Shrub, cycad, grass-tree (M)	Vegetative
Lepidosperma tenue		1	0.25	Sedge (G)	Fruit
Mesomelaena tetragona		1	0.25	Sedge (G)	Flower
Nuytsia floribunda		1	5	Tree (U)	Vegetative
Oxalis glabra	*	1	0.25	Forb (G)	Flower
Oxalis pes-caprae	*	20	0.25	Forb (G)	Vegetative
Senecio vulgaris	*	1	0.1	Forb (G)	Flower bud
Watsonia meriana var. bulbillifera	*	60	0.5	Forb (G)	Vegetative
Xanthorrhoea preissii		1	1	Shrub, cycad, grass-tree (M)	Vegetative

Site ID:	Roe14	VT BaBm
Type:	Quadrat	10 x 10 m
Date:	01/08/2024	Described by: A. Benkovic
Co-ordinates (Easting/Northing):	392520	6449260
Landform:	Hillslope	
Drainage:	Good	
Bare ground:	2-10%	
Litter cover:	2-10%	
Soil type:	Grey/beige sand	
Fire age:	Old (6+ yrs)	
Vegetation condition:	Very good	



Species	Status	% cover	Height (m)	Form/stratum	Reprod. status
Aira caryophyllea	*	1	0.1	Other grass (G)	Dehisced fruit
Allocasuarina humilis		15	1.5	Shrub, cycad, grass-tree (M)	Fruit
Amphipogon turbinatus		1	0.25	Tussock grass (G)	Dehisced fruit
Banksia attenuata		5	5	Tree (U)	Flower bud
Banksia menziesii		5	4.5	Tree (U)	Flower
Brachyscome bellidioides		1	0.25	Forb (G)	Flower
Briza maxima	*	1	0.25	Tussock grass (G)	Fruit
Burchardia congesta		1	0.25	Forb (G)	Dehisced fruit

Species	Status	% cover	Height (m)	Form/stratum	Reprod. status
Caladenia flava		2	0.25	Forb (G)	Flower
Centrolepis drummondiana		1	0.1	Forb (G)	Fruit
Chamaescilla corymbosa var. corymbosa		1	0.1	Forb (G)	Vegetative
Conostylis aculeata subsp. aculeata		1	0.25	Forb (G)	Flower
Crassula colorata var. colorata		1	0.1	Forb (G)	Flower
Daviesia triflora		2	1	Shrub, cycad, grass-tree (M)	Flower
Desmocladus flexuosus		1	0.25	Sedge (G)	Vegetative
Drosera drummondii		1	0.25	Forb (G)	Flower
Drosera erythrorhiza		1	0.1	Forb (G)	Vegetative
Eremaea pauciflora		1	0.5	Shrub, cycad, grass-tree (M)	Fruit
Eucalyptus marginata		1	5	Tree (U)	Fruit
Ficinia marginata	*	1	0.1	Sedge (G)	Flower
Gladiolus caryophyllaceus	*	1	0.25	Forb (G)	Vegetative
Hemiandra pungens		1	0.25	Shrub, cycad, grass-tree (M)	Flower
Hibbertia hypericoides		5	1	Shrub, cycad, grass-tree (M)	Flower
Hibbertia striata		1	0.25	Shrub, cycad, grass-tree (M)	Flower
Hypochaeris glabra	*	1	0.1	Forb (G)	Flower
Isopogon linearis		1	0.25	Shrub, cycad, grass-tree (M)	Flower
Lepidosperma sp. (sterile)		1	0.25	Sedge (G)	Vegetative
Lyginia barbata		2	0.5	Sedge (G)	Flower
Mesomelaena pseudostygia		5	0.5	Sedge (G)	Flower
Millotia tenuifolia var. tenuifolia		1	0.1	Forb (G)	Flower
Nuytsia floribunda		2	3	Tree (U)	Vegetative
Patersonia occidentalis		1	0.25	Forb (G)	Dehisced fruit
Phyllangium ?divergens		1	0.1	Forb (G)	Flower bud
Podotheca angustifolia		1	0.25	Forb (G)	Flower
Regelia inops		10	1	Shrub, cycad, grass-tree (M)	Fruit
Regelia sp.		1	0.25	Shrub, cycad, grass-tree (M)	Vegetative
Scholtzia involucrata		5	0.5	Shrub, cycad, grass-tree (M)	Flower
Senecio condylus	*	1	0.25	Forb (G)	Flower
Stirlingia latifolia		2	0.5	Shrub, cycad, grass-tree (M)	Vegetative
Stylidium repens		1	0.1	Forb (G)	Flower
Styphelia conostephioides		1	0.5	Shrub, cycad, grass-tree (M)	Flower bud
Trachymene pilosa		1	0.1	Forb (G)	Fruit
Ursinia anthemoides	*	1	0.1	Forb (G)	Dehisced fruit
Wahlenbergia preissii		1	0.25	Forb (G)	Flower
Xanthorrhoea preissii		2	1.5	Shrub, cycad, grass-tree (M)	Vegetative

Site ID:	Roe14R	VT ErMr
Type:	Relevé	NA
Date:	19/09/2024	Described by: A. Benkovic
Co-ordinates (Easting/Northing):	401610	6454788
Landform:	Wetland	
Drainage:	Permanent wet	
Bare ground:	<2%	
Litter cover:	<2%	
Soil type:	Loam	
Fire age:	Old (6+ yrs)	
Vegetation condition:	Degraded	



Species	Status	% cover	Height (m)	Form/stratum	Reprod. status
Eucalyptus rudis		5	15	Tree (U)	Fruit
Melaleuca rhaphiophylla		20	5	Tree (U)	Dehisced fruit
Casuarina glauca	*	1	5	Tree (U)	Fruit
Calothamnus quadrifidus	N	2	1.5	Shrub, cycad, grass-tree (M)	Flower
Ehrharta longiflora	*	10	1	Tussock grass (G)	Vegetative
Ehrharta calycina	*	5	1	Tussock grass (G)	Vegetative
Cenchrus clandestinus	*	70	0.5	Other grass (G)	Vegetative
Hesperantha falcata	*	5	0.5	Forb (G)	Flower

Species	Status	% cover	Height (m)	Form/stratum	Reprod. status
Fumaria capreolata	*	5	0.5	Forb (G)	Flower
Oxalis glabra	*	2	0.25	Forb (G)	Flower
Olea europaea	*	2	0.1	Shrub, cycad, grass-tree (M)	Vegetative
Romulea rosea	*	1	0.1	Forb (G)	Flower

Site ID:	Roe15	VT BaBm
Type:	Quadrat	10 x 10 m
Date:	01/08/2024	Described by: A. Sleep
Co-ordinates (Easting/Northing):	393478	6449791
Landform:	Sand dune	
Drainage:	Good	
Bare ground:	2-10%	
Litter cover:	<2%	
Soil type:	Grey sand	
Fire age:	Old (6+ yrs)	
Vegetation condition:	Very good	



Species	Status	% cover	Height (m)	Form/stratum	Reprod. status
Acacia pulchella var pulchella		1	0.75	Shrub, cycad, grass-tree (M)	Vegetative
Allocasuarina humilis		30	1.25	Shrub, cycad, grass-tree (M)	Vegetative
Amphipogon turbinatus		2	0.25	Tussock grass (G)	Dehisced fruit
Anigozanthos humilis subsp. humilis		1	0.25	Forb (G)	Flower
Anigozanthos manglesii		1	0.5	Forb (G)	Flower
Banksia attenuata		1	0.5	Tree (U)	Vegetative
Banksia menziesii		15	5	Tree (U)	Vegetative

Species	Status	% cover	Height (m)	Form/stratum	Reprod. status
Bossiaea eriocarpa		1	0.25	Shrub, cycad, grass-tree (M)	Vegetative
Briza maxima	*	1	0.25	Tussock grass (G)	Dehisced fruit
Burchardia congesta		1	0.25	Forb (G)	Dehisced fruit
Caladenia flava		1	0.25	Forb (G)	Flower
Caladenia sp. (sterile)		1	0.1	Forb (G)	Vegetative
Calytrix flavescens		3	0.5	Shrub, cycad, grass-tree (M)	Vegetative
Centrolepis drummondiana		1	0.1	Forb (G)	Fruit
Centrolepis conspicua		1	0.1	Forb (G)	Fruit
Conostephium pendulum		2	0.5	Shrub, cycad, grass-tree (M)	Flower bud
Conostylis aculeata subsp. aculeata		1	0.25	Forb (G)	Vegetative
Conostylis setigera subsp. setigera		1	0.25	Forb (G)	Flower
Crassula colorata var. colorata		1	0.1	Forb (G)	Flower
Dampiera linearis		1	0.25	Shrub, cycad, grass-tree (M)	Vegetative
Dasypogon bromeliifolius		1	0.5	Shrub, cycad, grass-tree (M)	Dehisced fruit
Desmocladus flexuosus		1	0.25	Sedge (G)	Vegetative
Drosera erythrorhiza		1	0.1	Forb (G)	Vegetative
Drosera macrantha		1	0.1	Forb (G)	Flower bud
Drosera menziesii		1	0.1	Forb (G)	Dehisced fruit
Ehrharta calycina	*	1	0.25	Tussock grass (G)	Vegetative
Ehrharta longiflora	*	1	1	Tussock grass (G)	Vegetative
Ficinia marginata	*	1	0.1	Sedge (G)	Flower
Fumaria capreolata	*	1	0.25	Forb (G)	Vegetative
Gastrolobium capitatum		1	0.5	Shrub, cycad, grass-tree (M)	Vegetative
Gladiolus caryophyllaceus	*	1	0.25	Forb (G)	Vegetative
Gompholobium tomentosum		1	0.25	Shrub, cycad, grass-tree (M)	Vegetative
Hibbertia hypericoides		2	0.5	Shrub, cycad, grass-tree (M)	Flower
Hibbertia striata		1	0.5	Shrub, cycad, grass-tree (M)	Vegetative
Hypochaeris glabra	*	1	0.1	Forb (G)	Vegetative
Lomandra caespitosa		1	0.25	Forb (G)	Flower bud
Lomandra hermaphrodita		1	0.25	Forb (G)	Vegetative
Lyginia barbata		4	0.25	Sedge (G)	Flower
Lysimachia arvensis	*	1	0.1	Forb (G)	Vegetative
Melaleuca seriata		5	1	Shrub, cycad, grass-tree (M)	Dehisced fruit
Millotia tenuifolia var. tenuifolia		2	0.1	Forb (G)	Flower
Patersonia occidentalis		1	0.25	Shrub, cycad, grass-tree (M)	Dehisced fruit
Petrophile linearis		1	0.25	Shrub, cycad, grass-tree (M)	Vegetative
Philotheca spicata		1	0.5	Shrub, cycad, grass-tree (M)	Flower
Phlebocarya ciliata		1	0.25	Shrub, cycad, grass-tree (M)	Dehisced fruit
Phyllangium paradoxum		1	0.1	Forb (G)	Flower
Podotheca angustifolia		1	0.25	Forb (G)	Flower
Poranthera microphylla		2	0.1	Forb (G)	Flower

Species	Status	% cover	Height (m)	Form/stratum	Reprod. status
Pterostylis sanguinea		1	0.1	Forb (G)	Flower
Rhodanthe citrina		1	0.1	Forb (G)	Flower
Scholtzia involucrata		2	0.5	Shrub, cycad, grass-tree (M)	Dehisced fruit
Sonchus oleraceus	*	1	0.1	Forb (G)	Vegetative
Stirlingia latifolia		1	0.5	Shrub, cycad, grass-tree (M)	Vegetative
Stylidium repens		1	0.1	Forb (G)	Vegetative
Stylidium sp. (sterile)		1	0.1	Forb (G)	Vegetative
Styphelia conostephioides		1	0.5	Shrub, cycad, grass-tree (M)	Flower bud
Trachymene pilosa		1	0.1	Forb (G)	Vegetative
Ursinia anthemoides	*	1	0.1	Forb (G)	Vegetative
Wahlenbergia capensis	*	1	0.25	Forb (G)	Flower
Xanthorrhoea preissii		1	1	Shrub, cycad, grass-tree (M)	Vegetative

Site ID:	Roe15R	VT BaBmBi
Type:	Relevé	NA
Date:	18/09/2024	Described by: A. Sleep
Co-ordinates (Easting/Northing):	395498	6451734
Landform:	Dampland	
Drainage:	Good	
Bare ground:	<2%	
Litter cover:	<2%	
Soil type:	Grey sand	
Fire age:	Old (6+ yrs)	
Vegetation condition:	Degraded	



Species	Status	% cover	Height (m)	Form/stratum	Reprod. status
Aira caryophyllea	*	2	0.1	Other grass (G)	Dehisced fruit
Banksia ilicifolia		1	4	Tree (U)	Flower
Briza maxima	*	1	0.25	Tussock grass (G)	Dehisced fruit
Cerastium glomeratum	*	1	0.1	Forb (G)	Dehisced fruit
Chamelaucium uncinatum		1	1.5	Shrub, cycad, grass-tree (M)	Vegetative
Cotula australis		1	0.1	Forb (G)	Dehisced fruit
Crassula colorata var. colorata		1	0.1	Forb (G)	Dehisced fruit
Dasypogon bromeliifolius		2	0.5	Shrub, cycad, grass-tree (M)	Dehisced fruit

Species	Status	% cover	Height (m)	Form/stratum	Reprod. status
Ehrharta calycina	*	3	1	Tussock grass (G)	Dehisced fruit
Ehrharta longiflora	*	40	0.25	Tussock grass (G)	Dehisced fruit
Ficinia marginata	*	1	0.1	Sedge (G)	Fruit
Galium murale	*	1	0.1	Forb (G)	Dehisced fruit
Hypocalymma angustifolium		75	0.75	Shrub, cycad, grass-tree (M)	Vegetative
Hypochaeris glabra	*	1	0.1	Forb (G)	Dehisced fruit
Melaleuca preissiana		1	6	Tree (U)	Vegetative
Quinetia urvillei		1	0.1	Forb (G)	Dehisced fruit
Senecio condylus	*	1	0.1	Forb (G)	Dehisced fruit
Ursinia anthemoides	*	5	0.25	Forb (G)	Vegetative
Xanthorrhoea preissii		2	1.25	Shrub, cycad, grass-tree (M)	Vegetative

Site ID:	Roe16	VT BaBm
Type:	Quadrat	10 x 10 m
Date:	08/08/2024	Described by: A. Benkovic
Co-ordinates (Easting/Northing):	393370	6449605
Landform:	Flat	
Drainage:	Good	
Bare ground:	2-10%	
Litter cover:	2-10%	
Soil type:	Grey sand	
Fire age:	Old (6+ yrs)	
Vegetation condition:	Very good	



Species	Status	% cover	Height (m)	Form/stratum	Reprod. status
Aira caryophyllea	*	1	0.1	Other grass (G)	Dehisced fruit
Allocasuarina humilis		15	1.5	Shrub, cycad, grass-tree (M)	Fruit
Avellinia festucoides	*	1	0.5	Other grass (G)	Dehisced fruit
Banksia attenuata		10	8	Tree (U)	Flower bud
Banksia menziesii		10	8	Tree (U)	Flower
Bossiaea eriocarpa		3	0.5	Shrub, cycad, grass-tree (M)	Flower
Briza maxima	*	1	0.25	Tussock grass (G)	Fruit
Burchardia congesta		1	0.25	Forb (G)	Dehisced fruit

Species	Status	% cover	Height (m)	Form/stratum	Reprod. status
Caladenia arenicola		1	0.25	Forb (G)	Flower
Caladenia flava		2	0.25	Forb (G)	Flower
Calytrix flavescens		3	0.25	Shrub, cycad, grass-tree (M)	Dehisced fruit
Chaetospora curvifolia		1	0.1	Sedge (G)	Fruit
Chamaescilla corymbosa var. corymbosa		1	0.1	Forb (G)	Vegetative
Conostephium pendulum		2	0.25	Shrub, cycad, grass-tree (M)	Flower
Conostylis setigera subsp. setigera		1	0.25	Forb (G)	Flower
Crassula colorata var. colorata		1	0.1	Forb (G)	Flower
Dasypogon bromeliifolius		1	0.25	Shrub, cycad, grass-tree (M)	Dehisced fruit
Daviesia triflora		1	0.5	Shrub, cycad, grass-tree (M)	Flower
Desmocladus flexuosus		2		Sedge (G)	Vegetative
Dichopogon capillipes		1	0.1	Forb (G)	Vegetative
Diuris corymbosa		1	0.5	Forb (G)	Flower
Drosera drummondii		2	0.25	Forb (G)	Flower/fruit
Drosera erythrorhiza		1	0.1	Forb (G)	Vegetative
Elythranthera brunonis		1	0.25	Forb (G)	Flower
Eremaea pauciflora		15	1	Shrub, cycad, grass-tree (M)	Fruit
Ficinia marginata	*	1	0.1	Sedge (G)	Flower
Gladiolus caryophyllaceus	*	1	0.5	Forb (G)	Vegetative
Hibbertia aurea		1	0.25	Shrub, cycad, grass-tree (M)	Flower
Hibbertia subvaginata		1	0.25	Shrub, cycad, grass-tree (M)	Flower
Hypochaeris glabra	*	1	0.1	Forb (G)	Flower
Isopogon linearis		1	0.25	Shrub, cycad, grass-tree (M)	Flower
Lomandra caespitosa		2	0.25	Forb (G)	Flower
Lyginia barbata		3	0.5	Sedge (G)	Flower
Lyginia imberbis		3	0.5	Sedge (G)	Flower
Melaleuca seriata		1	0.5	Shrub, cycad, grass-tree (M)	
Millotia tenuifolia var. tenuifolia		1	0.1	Forb (G)	Flower
Nuytsia floribunda		1	1	Tree (U)	Vegetative
Patersonia occidentalis		2	0.5	Forb (G)	Dehisced fruit
Philotheca spicata		1	0.5	Shrub, cycad, grass-tree (M)	Flower
Phlebocarya ciliata		10	0.5	Shrub, cycad, grass-tree (M)	Flower
Phyllangium ?divergens		1	0.1	Forb (G)	Flower bud
Platysace filiformis		1	0.25	Forb (G)	Flower
Poaceae sp. (sterile)		1	0.1	Other grass (G)	Vegetative
Prasophyllum parvifolium		1	0.1	Forb (G)	Flower
Regelia inops		1	1	Shrub, cycad, grass-tree (M)	Fruit
Rhodanthe citrina		1	0.1	Forb (G)	Flower
Schoenus caespititius		2	0.5	Sedge (G)	Flower
Scholtzia involucrata		7	0.5	Shrub, cycad, grass-tree (M)	Flower

Species	Status	% cover	Height (m)	Form/stratum	Reprod. status
Sonchus oleraceus	*	1	0.25	Forb (G)	Flower
Stirlingia latifolia		1	1	Shrub, cycad, grass-tree (M)	Vegetative
Stylidium piliferum		1	0.25	Forb (G)	Flower
Stylidium repens		1	0.1	Forb (G)	Flower
Styphelia conostephioides		2	0.25	Shrub, cycad, grass-tree (M)	Flower bud
Styphelia erubescens		2	0.25	Shrub, cycad, grass-tree (M)	Flower
Trachymene pilosa		1	0.1	Forb (G)	Fruit
Ursinia anthemoides	*	1	0.25	Forb (G)	Dehisced fruit
Wahlenbergia capensis	*	1	0.25	Forb (G)	Flower

Site ID:	Roe16R	VT Mixed shrubland
Type:	Relevé	NA
Date:	19/09/2024	Described by: A. Benkovic
Co-ordinates (Easting/Northing):	399482	6453209
Landform:	Flat	
Drainage:	Good	
Bare ground:	<2%	
Litter cover:	2-10%	
Soil type:	Sand	
Fire age:	Old (6+ yrs)	
Vegetation condition:	Completely Degraded	



Species	Status	% cover	Height (m)	Form/stratum	Reprod. status
Acacia rostellifera		10	3	Shrub, cycad, grass-tree (M)	Flower
Bromus diandrus	*	10	0.25	Tussock grass (G)	Dehisced fruit
Callistemon phoeniceus	*N	5	2	Shrub, cycad, grass-tree (M)	Flower
Ehrharta calycina	*	30	0.5	Tussock grass (G)	Vegetative
Ehrharta longiflora	*	30	0.5	Tussock grass (G)	Vegetative
Eucalyptus rudis		1	4	Tree (U)	Fruit
Fumaria capreolata	*	10	0.5	Forb (G)	Flower
Rumex crispus	*	1	0.5	Forb (G)	Flower

Species	Status	% cover	Height (m)	Form/stratum	Reprod. status
Vicia sativa	*	1	0.1	Forb (G)	Flower

Site ID:	Roe17	VT Mp
Type:	Quadrat	10 x 10 m
Date:	19/09/2024	Described by: A. Sleep
Co-ordinates (Easting/Northing):	403881	6460659
Landform:	Dampland	
Drainage:	Seasonal wet	
Bare ground:	<2%	
Litter cover:	2-10%	
Soil type:	Grey sand	
Fire age:	Old (6+ yrs)	
Vegetation condition:	Very good	



Species	Status	% cover	Height (m)	Form/stratum	Reprod. status
Acacia willdenowiana		1	0.25	Shrub, cycad, grass-tree (M)	Flower
Aira caryophyllea	*	1	0.1	Other grass (G)	Flower
Avellinia festucoides	*	1	0.25	Other grass (G)	Dehisced fruit
Banksia telmatiaea		5	1.25	Shrub, cycad, grass-tree (M)	Flower
Caladenia paludosa		1	0.1	Forb (G)	Flower
Centrolepis aristata		1	0.1	Forb (G)	Fruit
Conostylis juncea		2	0.25	Forb (G)	Flower
Crassula colorata var. colorata		2	0.1	Forb (G)	Flower

Species	Status	% cover	Height (m)	Form/stratum	Reprod. status
Dampiera linearis		1	0.25	Forb (G)	Flower
Dasypogon bromeliifolius		5	0.5	Shrub, cycad, grass-tree (M)	Flower
Galium murale	*	1	0.1	Forb (G)	Flower
Gastrolobium capitatum		1	0.5	Shrub, cycad, grass-tree (M)	Vegetative
Gaudium laevigatum	*	5	3	Shrub, cycad, grass-tree (M)	Vegetative
Gladiolus caryophyllaceus	*	1	1	Forb (G)	Flower
Hakea varia		1	1.5	Shrub, cycad, grass-tree (M)	Dehisced fruit
Hovea trisperma		1	0.25	Shrub, cycad, grass-tree (M)	Flower
Hypocalymma angustifolium		60	1.25	Shrub, cycad, grass-tree (M)	Flower
Hypochaeris glabra	*	1	0.25	Forb (G)	Flower
Jacksonia furcellata		1	2.5	Shrub, cycad, grass-tree (M)	Flower
Johnsonia pubescens subsp. pubescens		1	0.25	Forb (G)	Flower
Kunzea micrantha subsp. micrantha		2	0.5	Shrub, cycad, grass-tree (M)	Flower
Leptocarpus decipiens		2	0.5	Sedge (G)	Flower
Lomandra caespitosa		1	0.25	Forb (G)	Vegetative
Melaleuca preissiana		25	5	Tree (U)	Flower
Melaleuca seriata		10	1	Shrub, cycad, grass-tree (M)	Flower
Patersonia occidentalis		1	0.25	Forb (G)	Flower
Pericalymma ellipticum ?var. floridum		5	0.5	Shrub, cycad, grass-tree (M)	Flower
Phlebocarya ciliata		4	0.5	Shrub, cycad, grass-tree (M)	Flower
Sonchus oleraceus	*	1	0.25	Forb (G)	Flower
Stylidium androsaceum		1	0.1	Forb (G)	Flower
Thysanotus patersonii		1	0.5	Vine (G)	Flower
Vulpia myuros forma myuros	*	1	0.1	Tussock grass (G)	Flower
Wahlenbergia preissii		2	0.1	Forb (G)	Flower
Xanthorrhoea preissii		35	1.5	Shrub, cycad, grass-tree (M)	Flower bud

Site ID:	Roe17R	VT Isolated Banksia spp.
Type:	Relevé	NA
Date:	01/08/2024	Described by: A. Sleep
Co-ordinates (Easting/Northing):	394732.22	6450819.47
Landform:	Flat	
Drainage:	Good	
Bare ground:	11-30%	
Litter cover:	<2%	
Soil type:	Grey sand	
Fire age:	Old (6+ yrs)	
Vegetation condition:	Degraded	

No photo available.

Species	Status	% cover	Height (m)	Form/stratum	Reprod. status
Adenanthos cygnorum		20	3	Shrub, cycad, grass-tree (M)	Vegetative
Arctotheca calendula	*	1	0.1	Forb (G)	Vegetative
Banksia attenuata		5	3	Tree (U)	Vegetative
Banksia menziesii		5	3	Tree (U)	Flower
Beaufortia elegans		10	1.25	Shrub, cycad, grass-tree (M)	Flower
Daviesia triflora		1	0.25	Shrub, cycad, grass-tree (M)	Flower
Ehrharta calycina	*	10	0.5	Tussock grass (G)	Vegetative
Ehrharta longiflora	*	10	0.25	Tussock grass (G)	Vegetative
Gladiolus caryophyllaceus	*	1	0.25	Forb (G)	Flower
Hypochaeris glabra	*	1	0.1	Forb (G)	Flower
Jacksonia furcellata		1	2.5	Shrub, cycad, grass-tree (M)	Flower
Oxalis pes-caprae	*	1	0.1	Forb (G)	Vegetative
Regelia ciliata		20	1.25	Shrub, cycad, grass-tree (M)	
Styphelia conostephioides		1	0.25	Shrub, cycad, grass-tree (M)	
Ursinia anthemoides	*	1	0.1	Forb (G)	Vegetative

Site ID:	Roe18R	VT Modified wetland
Type:	Relevé	NA
Date:	28/11/2024	Described by: A. Sleep
Co-ordinates (Easting/Northing):	404152.10	6460314.50
Landform:	Dampland	
Drainage:	Poor	
Bare ground:	11-30%	
Litter cover:	<2%	
Soil type:	Brown sandy clay	
Fire age:	Old (6+yr)	
Vegetation condition:	Degraded	



Species	Status	% cover	Height (m)	Form/stratum	Reprod. status
Aira caryophyllea	*	1	0.1	Tussock grass (G)	Dehisced fruit
Arnocrinum preissii		1	0.25	Forb (G)	Flower
Banksia dallanneyi subsp. dallanneyi var. dallanneyi		1	0.25	Shrub, cycad, grass-tree (M)	Vegetative
Briza maxima	*	2	0.25	Tussock grass (G)	Dehisced fruit
Calytrix aurea		1	1.25	Shrub, cycad, grass-tree (M)	Flower bud
Crassula colorata var. colorata		1	0.1	Forb (G)	Dehisced fruit
Conostylis aurea		1	0.25	Forb (G)	Flower

Species	Status	% cover	Height (m)	Form/stratum	Reprod. status
Dampiera linearis		1	0.25	Forb (G)	Vegetative
Dasypogon bromeliifolius		3	0.5	Shrub, cycad, grass-tree (M)	Flower
Desmocladus fasciculatus		1	0.25	Rush (G)	Vegetative
Ehrharta calycina	*	20	1	Tussock grass (G)	Dehisced fruit
Gastrolobium capitatum		1	0.25	Shrub, cycad, grass-tree (M)	Vegetative
Gladiolus caryophyllaceus	*	1	1	Forb (G)	Dehisced fruit
Haemodorum spicatum		1	1	Forb (G)	Flower
Hypolaena exsulca		3	0.25	Rush (G)	Fruit
Lyginia imberbis		10	1	Sedge (G)	Flower
Machaerina juncea		5	0.25	Sedge (G)	Dehisced fruit
Melaleuca seriata		5	1	Shrub, cycad, grass-tree (M)	Vegetative
Nuytsia floribunda		1	4	Tree (U)	Flower
Patersonia occidentalis		1	0.25	Forb (G)	Vegetative
Phlebocarya ciliata		35	0.5	Shrub, cycad, grass-tree (M)	Flower
Schoenus sp.		1	0.1	Sedge (G)	Dehisced fruit
Stirlingia latifolia		1	0.5	Shrub, cycad, grass-tree (M)	Vegetative
Tricoryne elatior		1	0.25	Forb (G)	Flower
Tricostularia neesii		3	0.25	Rush (G)	Fruit
Ursinia anthemoides	*	1	0.1	Forb (G)	Vegetative
Verticordia densiflora var. densiflora		1	1	Shrub, cycad, grass-tree (M)	Flower
Vulpia myuros forma myuros	*	1	0.1	Tussock grass (G)	Dehisced fruit
Watsonia meriana var. meriana	*	5	0.5	Forb (G)	Fruit
Xanthorrhoea preissii		10	0.5	Shrub, cycad, grass-tree (M)	Vegetative

Site ID:	Roe19R	VT BaBm
Type:	Relevé	NA
Date:	19/09/2024	Described by: A. Sleep
Co-ordinates (Easting/Northing):	393765.55	6449882.35
Landform:	Flat	
Drainage:	Good	
Bare ground:	<2%	
Litter cover:	2-10%	
Soil type:	Sand	
Fire age:	Old (6+yr)	
Vegetation condition:	Very Good	



Species	Status	% cover	Height (m)	Form/stratum	Reprod. status
Melaleuca preissiana		5	5	Tree (U)	Vegetative
Banksia menziesii		5	5	Tree (U)	Vegetative
Banksia ilicifolia		1	5	Tree (U)	Vegetative
Xanthorrhoea preissii		1	1.5	Shrub, cycad, grass-tree (M)	Vegetative
Hypocalymma angustifolium		1	1	Shrub, cycad, grass-tree (M)	Flower
Ehrharta longiflora	*	20	0.25	Tussock grass (G)	Dehisced fruit
Fumaria capreolata	*	2	0.5	Forb (G)	Flower
Euphorbia peplus	*	1	0.25	Forb (G)	Vegetative

Species	Status	% cover	Height (m)	Form/stratum	Reprod. status
Euphorbia terracina	*	1	0.5	Forb (G)	Vegetative
Oxalis pes-caprae	*	3	0.25	Forb (G)	Vegetative
Lysimachia arvensis	*	1	0.1	Forb (G)	Vegetative
Sonchus oleraceus	*	1	0.25	Forb (G)	Vegetative
Asparagus asparagoides	*DP & WoNS	1	0.25	Shrub, cycad, grass-tree (M)	Vegetative
Jacksonia furcellata		1	2	Shrub, cycad, grass-tree (M)	Flower
Ehrharta calycina	*	70	0.5	Tussock grass (G)	Flower
Banksia attenuata		5	5	Tree (U)	Vegetative

Site ID:	Roe20R	VT Isolated Corymbia calophylla
Type:	Relevé	NA
Date:	27/11/2024	Described by: A. Sleep
Co-ordinates (Easting/Northing):	402728	6458799
Landform:	Drainage	
Drainage:	Good	
Bare ground:	<2%	
Litter cover:	70%	
Soil type:	Silty loam, grey	
Fire age:	Old (6+yrs)	
Vegetation condition:	Degraded	



Species	Status	% cover	Height (m)	Form/stratum	Reprod. status
Corymbia calophylla		5	11	Tree (U)	Fruit
Pteridium esculentum		10	1.2	Forb (G)	Vegetative
Cenchrus clandestinus	*	4	0.3	Other grass (G)	Fruit
Phoenix dactylifera	*	0.1	1.8	Shrub, cycad, grass-tree (M)	Vegetative
Melaleuca rhaphiophylla		35	5	Tree (U)	Fruit

Species	Status	% cover	Height (m)	Form/stratum	Reprod. status
Lepidosperma longitudinale		10	1	Sedge (G)	Flower
Washingtonia filifera	*	0.1	1.2	Shrub, cycad, grass-tree (M)	Vegetative
Cyperus eragrostis	*	5	0.3	Sedge (G)	Fruit
Cynodon dactylon	*	10	0.3	Other grass (G)	Vegetative
Solanum nigrum	*	0.1	1.4	Forb (G)	Fruit
Rumex crispus	*	0.1	0.3	Forb (G)	Fruit
Paspalum urvillei	*	2	0.3	Other grass (G)	Fruit
Gomphocarpus fruticosus	*DP	0.1	0.1	Shrub, cycad, grass-tree (M)	Fruit
Lactuca serriola	*	0.5	0.1	Forb (G)	Flower
Lactuca saligna	*	1	0.8	Forb (G)	Flower
Typha orientalis		5	2	Sedge (G)	Flower
Sonchus asper	*	0.1	0.1	Forb (G)	Flower

Site ID:	Roe21R	VT ErMr
Type:	Relevé	NA
Date:	27/11/24	Described by: A. Sleep
Co-ordinates (Easting/Northing):	393765.55	6449882.35
Landform:	Drainage	
Drainage:	Good	
Bare ground:	<2%	
Litter cover:	80%	
Soil type:	Grey sandy loam	
Fire age:	Old (6+yrs)	
Vegetation condition:	Degraded	



Species	Status	% cover	Height (m)	Form/stratum	Reprod. status
Melaleuca rhaphiophylla		45	7	Tree (U)	Fruit
Cassytha racemosa forma pilosa		0.5	5	Forb (G)	Fruit
Lepidosperma longitudinale		15	1	Sedge (G)	Flower
Cynodon dactylon	*	1	30	Other grass (G)	Flower
Eucalyptus rudis		2	12	Tree (U)	Flower
Paspalum urvillei	*	0.1	1.5	Other grass (G)	Flower
Cortaderia selloana	*	0.5	3	Other grass (G)	Flower
Opercularia hispidula		0.1	0.8	Forb (G)	Fruit

Species	Status	% cover	Height (m)	Form/stratum	Reprod. status
Taxandria linearis		0.5	2.5	Shrub, cycad, grass-tree (M)	Fruit
Schinus terebinthifolia	*	0.5	3	Tree (U)	Fruit
Erigeron bonariensis	*	0.1	0.1	Forb (G)	Fruit
Pteridium esculentum		0.5	1.2	Forb (G)	Vegetative
Sonchus oleraceus	*	0.1	0.1	Forb (G)	Flower
Centella asiatica		0.1	0.1	Forb (G)	Vegetative
Melaleuca preissiana		0.5	9	Tree (U)	Vegetative
Lactuca serriola	*	0.1	0.5	Forb (G)	Fruit

KWINANA QUADRAT DATA (GHD 2025c)

Site ID:	**Kwin01**	**VT EgBspp.**
Type:	Quadrat	5m x 20m
Date:	02/08/2024 and 19/09/2024	Described by: A. Sleep
Co-ordinates (Easting/Northing):	391642	6435529
Landform:	Sandplain	
Drainage:	Good	
Bare ground:	11-30%	
Litter cover:	2-10%	
Soil type:	Grey sand	
Fire age:	Old (6+ yrs)	
Vegetation condition:	Good	



Species	Status	% cover	Height (m)	Form/stratum	Reprod. status
Acacia stenoptera		1	0.25	Shrub, cycad, grass-tree (M)	Vegetative
Allocasuarina fraseriana		3	5	Tree (U)	Vegetative
Banksia attenuata		20	5	Tree (U)	Vegetative
Banksia menziesii		15	5	Tree (U)	Vegetative
Banksia ilicifolia		1	5	Tree (U)	Flowering
Briza maxima	*	1	0.25	Tussock grass (G)	Dehisced fruit
Burchardia congesta		1	0.25	Forb (G)	Dehisced fruit

Species	Status	% cover	Height (m)	Form/stratum	Reprod. status
Caladenia sp. (sterile)		1	0.1	Forb (G)	Vegetative
Chaetospora curvifolia		1	0.1	Sedge (G)	Fruit
Chamaescilla corymbosa var. corymbosa		1	0.1	Forb (G)	Flower bud
Conostylis aculeata subsp. aculeata		1	0.25	Forb (G)	Vegetative
Daviesia divaricata subsp. divaricata		1	0.5	Shrub, cycad, grass-tree (M)	Vegetative
Daviesia triflora		1	0.5	Shrub, cycad, grass-tree (M)	Flower
Desmocladus flexuosus		1	0.25	Sedge (G)	Vegetative
Drosera erythrorhiza		1	0.1	Forb (G)	Vegetative
Ehrharta calycina	*	10	0.5	Tussock grass (G)	Vegetative
Ehrharta longiflora	*	30	0.25	Tussock grass (G)	Vegetative
Gladiolus caryophyllaceus	*	1	0.25	Forb (G)	Vegetative
Gompholobium tomentosum		1	0.5	Shrub, cycad, grass-tree (M)	Flower bud
Haemodorum sp. (sterile)		1	0.5	Forb (G)	Dehisced fruit
Hibbertia hypericoides		30	0.5	Shrub, cycad, grass-tree (M)	Vegetative
Jacksonia furcellata		1	2	Shrub, cycad, grass-tree (M)	Vegetative
Kunzea glabrescens		15	4	Tree (U)	Vegetative
Laxmannia squarrosa		1	0.1	Shrub, cycad, grass-tree (M)	Dehisced fruit
Lomandra caespitosa		1	0.25	Forb (G)	Flower bud
Lomandra hermaphrodita		1	0.25	Forb (G)	Vegetative
Mesomelaena pseudostygia		1	0.25	Sedge (G)	Fruit
Pterostylis sanguinea		1	0.1	Forb (G)	Flower
Pterostylis sp. (sterile)		1	0.1	Forb (G)	Vegetative
Romulea rosea	*	1	0.1	Forb (G)	Vegetative
Scaevola canescens		1	0.25	Shrub, cycad, grass-tree (M)	Flower
Sowerbaea laxiflora		1	0.1	Forb (G)	Vegetative
Styphelia conostephioides		1	0.5	Shrub, cycad, grass-tree (M)	Flower bud
Thysanotus ?sparteus		1	0.5	Shrub, cycad, grass-tree (M)	Vegetative
Thysanotus sp. (sterile)		1	0.25	Vine (G)	Vegetative
Trachymene pilosa		1	0.1	Forb (G)	Vegetative
Ursinia anthemoides	*	1	0.1	Forb (G)	Vegetative

Site ID:	Kwin02	VT – EgBspp.
Type:	Quadrat	10 x 10 m
Date:	02/08/2024 and 19/09/2024	Described by: A. Benkovic
Co-ordinates (Easting/Northing):	391423	6434756
Landform:	Hillslope	
Drainage:	Good	
Bare ground:	<2%	
Litter cover:	<2%	
Soil type:	Grey sand	
Fire age:	Old (6+ yrs)	
Vegetation condition:	Degraded	



Species	Status	% cover	Height (m)	Form/stratum	Reprod. status
Acacia pulchella var pulchella		5	1.5	Shrub, cycad, grass-tree (M)	Flower
Acacia saligna		3	3	Shrub, cycad, grass-tree (M)	Vegetative
Adenanthos cygnorum		5	1.75	Shrub, cycad, grass-tree (M)	Vegetative
Allocasuarina humilis		3	1.5	Shrub, cycad, grass-tree (M)	Fruit
Banksia menziesii		4	2	Tree (U)	Flower
Bossiaea eriocarpa		1	0.5	Shrub, cycad, grass-tree (M)	Flower
Briza maxima	*	2	0.25	Tussock grass (G)	Fruit

Species	Status	% cover	Height (m)	Form/stratum	Reprod. status
Caladenia latifolia		1	0.025	Forb (G)	Flower
Calothamnus quadrifidus	N	3	1.5	Shrub, cycad, grass-tree (M)	Flower
Ehrharta calycina	*	15	0.5	Tussock grass (G)	Vegetative
Eucalyptus gomphocephala		30	10	Tree (U)	Flower bud
Euphorbia peplus	*	1	0.25	Forb (G)	Vegetative
Euphorbia terracina	*	5	0.25	Forb (G)	Vegetative
Fumaria capreolata	*	10	0.25	Forb (G)	Flower
Geranium molle	*	1	0.1	Forb (G)	Vegetative
Hardenbergia comptoniana		1	0.1	Vine (G)	Flower
Jacksonia furcellata		1	1.5	Shrub, cycad, grass-tree (M)	Flower
Kunzea glabrescens		3	2	Shrub, cycad, grass-tree (M)	Fruit
Lysiandra calycina		1	0.25	Shrub, cycad, grass-tree (M)	Flower
Lysimachia arvensis	*	1	0.1	Forb (G)	Flower
Macrozamia riedlei		5	1.5	Shrub, cycad, grass-tree (M)	Vegetative
Melaleuca nesophila	*	1	2	Tree (U)	Flower
Pelargonium capitatum	*	2	0.25	Shrub, cycad, grass-tree (M)	Vegetative
Sonchus oleraceus	*	1	0.1	Forb (G)	Flower
Trifolium arvense	*	1	0.1	Forb (G)	Flower

Site ID:	Kwin03	VT – EgBspp.
Type:	Quadrat	10 x 10 m
Date:	02/08/2024 and 19/09/2024	Described by: A. Sleep
Co-ordinates (Easting/Northing):	391529	6434852
Landform:	Sandplain	
Drainage:	Good	
Bare ground:	<2%	
Litter cover:	<2%	
Soil type:	Brown/grey sand	
Fire age:	Old (6+ yrs)	
Vegetation condition:	Degraded	



Species	Status	% cover	Height (m)	Form/stratum	Reprod. status
Acacia pulchella var pulchella		1	1	Shrub, cycad, grass-tree (M)	Vegetative
Banksia attenuata		10	5	Tree (U)	Vegetative
Banksia menziesii		2	5	Tree (U)	Vegetative
Caladenia sp. (sterile)		1	0.1	Forb (G)	Vegetative
Ehrharta calycina	*	40	0.5	Tussock grass (G)	Vegetative
Ehrharta longiflora	*	40	0.25	Tussock grass (G)	Vegetative
Eucalyptus gomphocephala		20	15	Tree (U)	Vegetative

Species	Status	% cover	Height (m)	Form/stratum	Reprod. status
Gladiolus caryophyllaceus	*	1	0.25	Forb (G)	Vegetative
Hardenbergia comptoniana		1	0.5	Vine (G)	Flower bud
Hibbertia hypericoides		25	0.5	Shrub, cycad, grass-tree (M)	Flower
Hypochaeris glabra	*	1	0.1	Forb (G)	Vegetative
Lomandra hermaphrodita		1	0.25	Forb (G)	Vegetative
Lupinus cosentinii	*	1	0.25	Forb (G)	Vegetative
Lysimachia arvensis	*	1	0.1	Forb (G)	Vegetative
Lysiandra calycina		1	0.5	Shrub, cycad, grass-tree (M)	Flower
Macrozamia riedlei		2	1.25	Shrub, cycad, grass-tree (M)	Vegetative
Mesomelaena pseudostygia		10	0.25	Sedge (G)	Flower
Romulea rosea	*	1	0.1	Forb (G)	Vegetative
Sowerbaea laxiflora		1	0.25	Forb (G)	Vegetative
Trifolium sp. (sterile)	*	1	0.1	Forb (G)	Vegetative

Site ID:	Kwin04	VT EmBspp.
Type:	Quadrat	10 x 10 m
Date:	02/08/2024 and 19/09/2024	Described by: A. Benkovic
Co-ordinates (Easting/Northing):	391528	6433744
Landform:	sandplain	
Drainage:	Good	
Bare ground:	<2%	
Litter cover:	11-30%	
Soil type:	Grey sand	
Fire age:	Old (6+ yrs)	
Vegetation condition:	Good	



Species	Status	% cover	Height (m)	Form/stratum	Reprod. status
Acacia pulchella var pulchella		2	0.5	Shrub, cycad, grass-tree (M)	Flower
Banksia attenuata		40	5	Tree (U)	Flower bud
Banksia menziesii		5	5	Tree (U)	Flower
Bossiaea eriocarpa		2	0.5	Shrub, cycad, grass-tree (M)	Flower
Briza maxima	*	1	0.25	Tussock grass (G)	Fruit
Burchardia congesta		1	0.25	Forb (G)	Dehisced fruit
Caesia micrantha		10	0.25	Shrub, cycad, grass-tree (M)	Flower

Species	Status	% cover	Height (m)	Form/stratum	Reprod. status
Caladenia flava		1	0.1	Forb (G)	Flower
Chamaescilla corymbosa var. corymbosa		5	0.1	Forb (G)	Vegetative
Conostephium pendulum		1	1	Shrub, cycad, grass-tree (M)	Flower
Conostylis aculeata subsp. aculeata		1	0.25	Forb (G)	Flower
Crassula colorata var. colorata		1	0.1	Forb (G)	Flower
Daviesia triflora		1	0.5	Shrub, cycad, grass-tree (M)	Flower
Desmocladus flexuosus		1	0.25	Sedge (G)	Vegetative
Drosera erythrorhiza		1	0.1	Forb (G)	Vegetative
Drosera porrecta		1	0.1	Forb (G)	Dehisced fruit
Fumaria capreolata	*	2	0.1	Forb (G)	Flower
Ehrharta calycina	*	5	1	Tussock grass (G)	Vegetative
Eucalyptus marginata		2	5	Tree (U)	Fruit
Gladiolus caryophyllaceus	*	1	0.5	Forb (G)	Vegetative
Hardenbergia comptoniana		1	0.1	Vine (G)	Flower
Hibbertia hypericoides		10	0.5	Shrub, cycad, grass-tree (M)	Flower
Hypocalymma robustum		3	1	Shrub, cycad, grass-tree (M)	Flower
Hypochaeris glabra	*	1	0.1	Forb (G)	Flower
Jacksonia furcellata		1	1	Shrub, cycad, grass-tree (M)	Flower
Macrozamia riedlei		5	2	Shrub, cycad, grass-tree (M)	Vegetative
Phlebocarya ciliata		1	0.5	Shrub, cycad, grass-tree (M)	Flower
Pterostylis sanguinea		1	0.1	Forb (G)	Flower
Sowerbaea laxiflora		1	0.5	Forb (G)	Flower
Trachymene pilosa		1	0.1	Forb (G)	Fruit
Ursinia anthemoides	*	1	0.1	Forb (G)	Dehisced fruit
Xanthorrhoea gracilis		2	0.5	Shrub, cycad, grass-tree (M)	Vegetative

Site ID:	Kwin05	VT - BmBa
Type:	Quadrat	10 x 10 m
Date:	08/08/2024 and 18/92024	Described by: A. Benkovic
Co-ordinates (Easting/Northing):	392163	6439242
Landform:	Hillslope	
Drainage:	Good	
Bare ground:	<2%	
Litter cover:	11-30%	
Soil type:	Grey sand	
Fire age:	Old (6+ yrs)	
Vegetation condition:	Good	



Species	Status	% cover	Height (m)	Form/stratum	Reprod. status
Acacia pulchella var pulchella		3	1.5	Shrub, cycad, grass-tree (M)	Flower
Amphipogon turbinatus		4	0.25	Tussock grass (G)	Dehisced fruit
Anigozanthos humilis subsp. humilis		1	0.25	Forb (G)	Flower
Banksia menziesii		10	5	Tree (U)	Flower
Banksia attenuata		10	5	Tree (U)	Flower bud
Bossiaea eriocarpa		2	0.25	Shrub, cycad, grass-tree (M)	Flower

Species	Status	% cover	Height (m)	Form/stratum	Reprod. status
Burchardia congesta		1	0.25	Forb (G)	Dehisced fruit
Caladenia flava		2	0.25	Forb (G)	Flower
Chaetospora curvifolia		1	0.25	Sedge (G)	Fruit
Chamaescilla corymbosa var. corymbosa		1	0.1	Forb (G)	Vegetative
Conostylis setigera subsp. setigera		3	0.25	Forb (G)	Flower
Dasypogon bromeliifolius		5	0.25	Shrub, cycad, grass-tree (M)	Dehisced fruit
Daviesia triflora		2	0.5	Shrub, cycad, grass-tree (M)	Flower
Desmocladus flexuosus		2	0.25	Sedge (G)	Vegetative
Dianella revoluta var. divaricata		1	0.25	Shrub, cycad, grass-tree (M)	Dehisced fruit
Drosera drummondii		2	0.25	Forb (G)	Dehisced fruit
Drosera erythrorhiza		1	0.1	Forb (G)	Vegetative
Eucalyptus marginata		3	5	Tree (U)	Fruit
Gastrolobium capitatum		2	0.5	Shrub, cycad, grass-tree (M)	Flower
Gompholobium tomentosum		1	0.5	Shrub, cycad, grass-tree (M)	Flower
Gladiolus caryophyllaceus	*	1	0.25	Forb (G)	Vegetative
Hibbertia hypericoides		5	0.5	Shrub, cycad, grass-tree (M)	Flower
Hibbertia racemosa		1	0.25	Shrub, cycad, grass-tree (M)	Flower
Hovea trisperma		1	0.25	Shrub, cycad, grass-tree (M)	Flower
Hypocalymma robustum		2	1	Shrub, cycad, grass-tree (M)	Flower
Kunzea glabrescens		5	2	Shrub, cycad, grass-tree (M)	Fruit
Lomandra caespitosa		1	0.25	Forb (G)	Flower
Lomandra nigricans		1	0.25	Forb (G)	Flower
Lomandra preissii		1	0.25	Forb (G)	Flower
Lyginia barbata		3	0.5	Sedge (G)	Flower
Opercularia vaginata		1	0.25	Forb (G)	Flower
Patersonia occidentalis		10	0.5	Forb (G)	Dehisced fruit
Persoonia saccata		1	0.25	Shrub, cycad, grass-tree (M)	Vegetative
Phlebocarya ciliata		1	0.5	Shrub, cycad, grass-tree (M)	Flower
Phyllangium ?divergens		1	0.1	Forb (G)	Flower bud
Senecio condylus	*	1	0.25	Forb (G)	Flower
Stirlingia latifolia		5	0.5	Shrub, cycad, grass-tree (M)	Vegetative
Stylidium brunonianum		1	0.25	Forb (G)	Flower
Thysanotus manglesianus		1	0.1	Vine (G)	Flower
Trachymene pilosa		1	0.1	Forb (G)	Fruit
Ursinia anthemoides	*	1	0.1	Forb (G)	Dehisced fruit
Xanthorrhoea preissii		15	2	Shrub, cycad, grass-tree (M)	Vegetative

Site ID:	Kwin06	VT - ErMr
Type:	Quadrat	10 x 10 m
Date:	20/09/2024	Described by: A. Benkovic
Co-ordinates (Easting/Northing):	391993.06	6436544.62
Landform:	Wetland	
Drainage:	Seasonally inundated	
Bare ground:	<2%	
Litter cover:	2-10%	
Soil type:	Brown sandy loam	
Fire age:	Old (6+ yrs)	
Vegetation condition:	Good to Degraded	



Species	Status	% cover	Height (m)	Form/stratum	Reprod. status
Cenchrus clandestinus	*	2	0.5	Other grass (G)	Vegetative
Eucalyptus rudis		20	20	Tree (U)	Fruit
Euphorbia terracina	*	2	0.25	Forb (G)	Vegetative
Ehrharta longiflora	*	10	0.5	Tussock grass (G)	Vegetative
Fumaria capreolata	*	2	0.25	Forb (G)	Flower
Fumaria densiflora	*	2	0.25	Forb (G)	Flower
Melaleuca rhaphiophylla		5	10	Tree (U)	Dehisced fruit
Oxalis pes-caprae	*	2	0.25	Forb (G)	Flower

Species	Status	% cover	Height (m)	Form/stratum	Reprod. status
Pteridium esculentum		85	1.75	Fern (G)	Vegetative
Rumex crispus	*	2	0.5	Forb (G)	Flower
Zantedeschia aethiopica	*DP	2	1	Forb (G)	Flower

Site ID:	Kwin07	VT - ErMr
Type:	Quadrat	10 x 10 m
Date:	20/09/2024	Described by: A. Benkovic
Co-ordinates (Easting/Northing):	391874	6432203
Landform:	Wetland	
Drainage:	Seasonal wet	
Bare ground:	<2%	
Litter cover:	31-70%	
Soil type:	Black clay	
Fire age:	Old (6+ yrs)	
Vegetation condition:	Very good	



Species	Status	% cover	Height (m)	Form/stratum	Reprod. status
Cyathochaeta avenacea		20	1.5	Sedge (G)	Flower
Eucalyptus rudis		5	15	Tree (U)	Fruit
Leptocarpus decipiens		10	1.5	Sedge (G)	Flower
Lepidosperma longitudinale		30	1.5	Sedge (G)	Flower
Leptocarpus scariosus		10	1.5	Sedge (G)	Flower
Melaleuca preissiana		40	10	Tree (U)	Dehisced fruit
Taxandria linearifolia		20	4	Shrub, cycad, grass-tree (M)	Vegetative

Site ID:	Kwin08	VT - ErMr
Type:	Quadrat	10 x 10 m
Date:	20/09/2024	Described by: A. Benkovic
Co-ordinates (Easting/Northing):	391892	6432059
Landform:	Dampland	
Drainage:	Good	
Bare ground:	<2%	
Litter cover:	11-30%	
Soil type:	Brown loam	
Fire age:	Old (6+ yrs)	
Vegetation condition:	Very good	



Species	Status	% cover	Height (m)	Form/stratum	Reprod. status
Banksia menziesii		5	4	Tree (U)	Flower
Briza maxima	*	5	0.25	Tussock grass (G)	Fruit
Boronia crenulata subsp. viminea		1	0.25	Shrub, cycad, grass-tree (M)	Flower
Bossiaea eriocarpa		1	0.5	Shrub, cycad, grass-tree (M)	Flower
Burchardia congesta		2	0.5	Forb (G)	Dehisced fruit
Conostylis aurea		5	0.25	Forb (G)	Flower
Conostylis juncea		1	0.25	Forb (G)	Flower
Corymbia calophylla		30	20	Tree (U)	Fruit

Species	Status	% cover	Height (m)	Form/stratum	Reprod. status
Dasypogon bromeliifolius		5	0.5	Shrub, cycad, grass-tree (M)	Dehisced fruit
Desmocladus flexuosus		10	0.25	Sedge (G)	Vegetative
Dianella revoluta var. divaricata		1	0.5	Shrub, cycad, grass-tree (M)	Dehisced fruit
Ehrharta longiflora	*	10	0.5	Tussock grass (G)	Vegetative
Hardenbergia comptoniana		2	0.1	Vine (G)	Flower
Kunzea glabrescens		5	0.25	Shrub, cycad, grass-tree (M)	Fruit
Lepidosperma pubisquameum		3	0.25	Sedge (G)	Flower
Leptocarpus ?roycei		5	0.5	Sedge (G)	Flower
Patersonia occidentalis		1	0.5	Forb (G)	Dehisced fruit
Phlebocarya ciliata		10	0.25	Shrub, cycad, grass-tree (M)	Dehisced fruit
Pterostylis sanguinea		1	0.1	Forb (G)	Flower
Thysanotus manglesianus		1	0.1	Vine (G)	Flower
Xanthorrhoea preissii		5	1.5	Shrub, cycad, grass-tree (M)	Vegetative
Xanthorrhoea gracilis		5	1	Shrub, cycad, grass-tree (M)	Vegetative
Zantedeschia aethiopica	*DP	1	0.25	Forb (G)	Flower

Site ID:	Kwin09	VT - ErMr
Type:	Quadrat	10 x 10 m
Date:	26/11/2024	Described by: A. Benkovic
Co-ordinates (Easting/Northing):	391770	6432194
Landform:	Dampland	
Drainage:	Good	
Bare ground:	<2%	
Litter cover:	2-10%	
Soil type:	Brown sandy loam	
Fire age:	Old (6+ yrs)	
Vegetation condition:	Very good	



Species	Status	% cover	Height (m)	Form/stratum	Reprod. status
Aira caryophyllea	*	1	0.1	Other grass (G)	Dehisced fruit
Avena barbata	*	1	0.5	Other grass (G)	Dehisced fruit
Bossiaea eriocarpa		1	0.5	Shrub, cycad, grass-tree (M)	Flower
Briza maxima	*	6	0.25	Tussock grass (G)	Fruit
Burchardia congesta		1	0.5	Forb (G)	Dehisced fruit
Cassytha glabella		1	0.1	Vine (G)	Fruit
Chamaescilla corymbosa var. corymbosa		1	0.1	Forb (G)	Vegetative

Species	Status	% cover	Height (m)	Form/stratum	Reprod. status
Conostylis aurea		1	0.25	Forb (G)	Flower
Conostylis juncea		1	0.25	Forb (G)	Flower
Corymbia calophylla		10	20	Tree (U)	Fruit
Dampiera linearis		1	0.25	Forb (G)	Flower
Dasypogon bromeliifolius		5	0.5	Shrub, cycad, grass-tree (M)	Dehisced fruit
Desmocladus flexuosus		20	0.25	Sedge (G)	Vegetative
Ehrharta calycina	*	1	1	Tussock grass (G)	Vegetative
Ehrharta longiflora	*	1	0.5	Tussock grass (G)	Vegetative
Gladiolus caryophyllaceus	*	1	0.5	Forb (G)	Vegetative
Gompholobium tomentosum		1	0.5	Shrub, cycad, grass-tree (M)	Flower
Hardenbergia comptoniana		1	0.1	Vine (G)	Flower
Hypocalymma angustifolium		10	1.5	Shrub, cycad, grass-tree (M)	Flower bud
Jacksonia furcellata		1	0.25	Shrub, cycad, grass-tree (M)	Flower
Jacksonia gracillima	P3	1	0.5	Shrub, cycad, grass-tree (M)	Flower
Kunzea glabrescens		2	0.5	Shrub, cycad, grass-tree (M)	Fruit
Laxmannia ramosa		1	0.1	Forb (G)	Flower
Lepidosperma calcicola		5	0.25	Sedge (G)	Flower
Lepidosperma longitudinale		1		Sedge (G)	Flower
Lepidosperma pubisquameum		1	0.25	Sedge (G)	Flower
Lepidosperma sp. (sterile)		2	0.25	Sedge (G)	Vegetative
Lobelia tenuior		1	0.25	Forb (G)	Flower
Patersonia occidentalis		2	0.5	Forb (G)	Dehisced fruit
Phlebocarya ciliata		1	0.25	Shrub, cycad, grass-tree (M)	Dehisced fruit
Pimelea rosea subsp. rosea		1	0.5	Shrub, cycad, grass-tree (M)	Flower
Stylidium repens		1	0.1	Forb (G)	Flower
Thysanotus arbuscula		1	0.5	Forb (G)	Flower
Thysanotus multiflorus		1	0.25	Forb (G)	Flower
Trachymene pilosa		1	0.1	Forb (G)	Fruit
Tricoryne elatior		1	0.1	Forb (G)	Flower
Xanthorrhoea preissii		20	1.5	Shrub, cycad, grass-tree (M)	Vegetative
Xanthorrhoea gracilis		5	1	Shrub, cycad, grass-tree (M)	Vegetative

Site ID:	Kwin10	VT – EgBspp.
Type:	Quadrat	10 x 10 m
Date:	29/07/2024	Described by: A. Benkovic
Co-ordinates (Easting/Northing):	391347	6448715
Landform:	Sandplain	
Drainage:	Good	
Bare ground:	<2%	
Litter cover:	11-30%	
Soil type:	Brown sandy loam	
Fire age:	Old (6+ yrs)	
Vegetation condition:	Very good	



Species	Status	% cover	Height (m)	Form/stratum	Reprod. status
Aira caryophyllea	*	1	0.1	Other grass (G)	Dehisced fruit
Allocasuarina humilis		2	1.5	Shrub, cycad, grass-tree (M)	Fruit
Anigozanthos humilis subsp. humilis		1	0.25	Forb (G)	Flower
Banksia attenuata		5	6	Tree (U)	Flower bud
Banksia dallanneyi subsp. dallanneyi var. dallanneyi		1	0.25	Shrub, cycad, grass-tree (M)	Vegetative
Banksia menziesii		15	6	Tree (U)	Flower
Bossiaea eriocarpa		1	0.25	Shrub, cycad, grass-tree (M)	Flower

Species	Status	% cover	Height (m)	Form/stratum	Reprod. status
Brachyloma preissii		5	1	Shrub, cycad, grass-tree (M)	Flower
Briza maxima	*	1	0.25	Tussock grass (G)	Fruit
Burchardia congesta		1	0.5	Forb (G)	Dehisced fruit
Caladenia flava		1	0.25	Forb (G)	Flower
Centrolepis drummondiana		2	0.1	Forb (G)	Fruit
Chamaescilla corymbosa var. corymbosa		1	0.1	Forb (G)	Vegetative
Conostephium pendulum		2	0.25	Shrub, cycad, grass-tree (M)	Flower
Conostylis setigera subsp. setigera		1	0.25	Forb (G)	Flower
Corynotheca micrantha		1	0.25	Forb (G)	Vegetative
Dasypogon bromeliifolius		2	0.5	Shrub, cycad, grass-tree (M)	Dehisced fruit
Daviesia triflora		1	0.5	Shrub, cycad, grass-tree (M)	Flower
Diuris corymbosa		1	0.25	Forb (G)	Flower
Drosera macrantha		1	0.1	Forb (G)	Dehisced fruit
Ehrharta calycina	*	2	0.5	Tussock grass (G)	Vegetative
Eucalyptus marginata		1	5	Tree (U)	Fruit
Freesia leichtlinii subsp. alba × leichtlinii subsp. leichtlinii	*	1	0.25	Forb (G)	Flower
Gastrolobium capitatum		1	0.1	Shrub, cycad, grass-tree (M)	Flower
Gladiolus caryophyllaceus	*	2	0.25	Forb (G)	Vegetative
Hibbertia hypericoides		5	0.5	Shrub, cycad, grass-tree (M)	Flower
Hypochaeris glabra	*	1	0.1	Forb (G)	Flower
Lomandra caespitosa		1	0.25	Forb (G)	Flower
Lomandra preissii		1	0.25	Forb (G)	Flower
Mesomelaena pseudostygia		20	0.5	Sedge (G)	Flower
Millotia tenuifolia var. tenuifolia		1	0.1	Forb (G)	Flower
Phyllangium ?divergens		1	0.1	Forb (G)	Flower bud
Podotheca angustifolia		1	0.25	Forb (G)	Flower
Potamogeton ?drummondii		1	0.25	Aquatic (G)	Vegetative
Prasophyllum parvifolium		1	0.25	Forb (G)	Flower
Rhodanthe citrina		1	0.1	Forb (G)	Flower
Romulea rosea	*	1	0.1	Forb (G)	Flower
Scaevola canescens		1	0.1	Shrub, cycad, grass-tree (M)	Flower
Schoenus clandestinus		1	0.1	Sedge (G)	Flower
Siloxerus ?filifolius		1	0.1	Forb (G)	Vegetative
Sowerbaea laxiflora		1	0.25	Forb (G)	Flower
Styphelia conostephioides		2	0.5	Shrub, cycad, grass-tree (M)	Flower bud
Thysanotus manglesianus		1	0.1	Vine (G)	Flower
Trachymene pilosa		1	0.1	Forb (G)	Fruit
Ursinia anthemoides	*	2	0.25	Forb (G)	Dehisced fruit
Xanthorrhoea preissii		15	1.5	Shrub, cycad, grass-tree (M)	Vegetative

Tuart (*Eucalyptus gomphocephala*) Woodlands and Forests of the Swan Coastal Plain TEC – Patch Assessment

Site Name	Roe02
Patch Number	Patch 01
Date	30/07/2024
Location	391580 m E 6449131 m N
Vegetation Type Description	+/- *Eucalyptus marginata/ Eucalyptus gomphocephala* tall open woodland over *Banksia attenuata* and *B. menziesii* woodland over *Acacia pulchella* var *pulchella Xanthorrhoea preissii Hibbertia hypericoides Mesomelaena pseudostygia*
IBRA Subregion	Perth
Structure	Open Woodland
Upper layer of trees and approximate heights	*Banksia attenuata* (6m), *Banksia menziesii* (5m)
Emergent tree layer (>10 m height) and species	*Eucalyptus gomphocephala*, 20 m
Canopy percent cover and species dominance	*Banksia attenuata* (10%), *Banksia menziesii* (10%) and *Eucalyptus gomphocephala* (outside quadrat) 10% cover
Native understorey present (%) and diversity	Native understorey present 71% cover, 38 species
Weed cover (%) and dominant weed species	Eight weed species present, 9% cover. None of the weed species recorded were considered dominant. Species recorded include: **Briza maxima, *Ehrharta calycina, *Ehrharta longiflora, *Ficinia marginata, * Gladiolus caryophyllaceus *Lysimachia arvensis* and **Ursinia anthemoides*
Soil type and colour	Brown sandy loam
Landform	Flat
Minimum patch size	2 ha
Size of patch within survey area (in hectares) and indication of whether the patch extends outside survey area	Patch size within the survey area is 4.83 ha. The total patch size is 4.94 ha, as the patch does extend outside survey area
Size of patch outside survey area (in hectares)	0.11 ha
Summary of patch and whether it meets DAWE criteria to be TEC	Meets minimum size and structural criteria as outlined in the Approved Conservation Advice (TSSC 2019). Patch is in Very Good condition.
Photograph	

Site Name	Roe10
Patch Number	Patch 01
Date	30/07/2024
Location	391622 m E 6449073 m N
Vegetation Type Description	+/- *Eucalyptus marginata/ Eucalyptus gomphocephala* tall open woodland over *Banksia attenuata* and *B. menziesii* woodland over *Acacia pulchella* var *pulchella Xanthorrhoea preissii Hibbertia hypericoides Mesomelaena pseudostygia*
IBRA Subregion	Perth
Structure	Open Woodland
Upper layer of trees and approximate heights	*Eucalyptus marginata,* 10 m
Emergent tree layer (>10 m height) and species	*Eucalyptus gomphocephala*, 20 m
Canopy percent cover and species dominance	Canopy dominated by *Eucalyptus gomphocephala*, 20% cover
Native understorey present (%) and diversity	Native understorey present 59% cover, 29 species
Weed cover (%) and dominant weed species	12 weed species present, 24% cover. None of the weed species recorded were considered dominant. Species recorded include: **Briza maxima, *Briza minor, *Cerastium glomeratum, *Ehrharta calycina, *Ehrharta longiflora, *Ficinia marginata, *Galium murale, *Lysimachia arvensis, *Sonchus oleraceus, *Stellaria media, *Trifolium arvense* and **Watsonia marginata*
Soil type and colour	Brown sandy loam
Landform	Flat
Minimum patch size	2 ha
Size of patch within survey area (in hectares) and indication of whether the patch extends outside survey area	Patch size within the survey area is 4.83 ha. The total patch size is 4.94 ha, as the patch does extend outside survey area
Size of patch outside survey area (in hectares)	0.11 ha
Summary of patch and whether it meets DAWE criteria to be TEC	Meets minimum size and structural criteria as outlined in the Approved Conservation Advice (TSSC 2019). Patch is in Very Good condition.
Photograph	

Site Name	No site (field notes)
Patch Number	Patch 02
Date	18/09/2024
Location	395776 m E 6452059 m N
Vegetation Type Description	*Eucalyptus gomphocephala* and *Eucalyptus* spp. isolated trees over weedy grasses and herbs
IBRA Subregion	Perth
Structure	Isolated trees
Upper layer of trees and approximate heights	*Eucalyptus gomphocephala,* 20 m
Emergent tree layer (>10 m height) and species	*Eucalyptus gomphocephala*, 20 m
Canopy percent cover and species dominance	Canopy dominated by *Eucalyptus gomphocephala*, 2% cover
Native understorey present (%) and diversity	Native understorey present *Acacia saligna* (2%)
Weed cover (%) and dominant weed species	90% cover: **Briza maxima, *Ehrharta calycina, *Ehrharta longiflora and *Avena barbata*
Soil type and colour	Brown sandy loam
Landform	Flat
Minimum patch size	2 ha
Size of patch within survey area (in hectares) and indication of whether the patch extends outside survey area	Patch size is 0.71 ha and does not extend outside the survey area
Size of patch outside survey area (in hectares)	0 ha
Summary of patch and whether it meets DAWE criteria to be TEC	This patch does NOT meet the minimum size and structural criteria as outlined in the Approved Conservation Advice (TSSC 2019). The patch is in Completely Degraded condition. It consists of three remnant Tuart trees over weedy grasses. One tree has a DBH of >500mm the others are less than 500mm DBH.
Photograph	

Site Name	Roe09
Patch Number	Patch 03
Date	30/07/2024
Location	396022 m E 6452225 m N
Vegetation Type Description	*Banksia menziesii* and *Banksia attenuata* woodland over *Hibbertia hypericoides, Scholtzia involucrata, Styphelia conostephioides* low shrubland over *Patersonia occidentalis, Desmocladus flexuosus* and *Lyginia barbata* open herb/sedgeland
IBRA Subregion	Perth
Structure	Woodland
Upper layer of trees and approximate heights	*Banksia menziesii* and *Banksia attenuata* (8m)
Emergent tree layer (>10 m height) and species	*Eucalyptus gomphocephala*, 20 m, *Eucalyptus marginata,* 10 m
Canopy percent cover and species dominance	Canopy dominated by *Banksia attenuata* 25%
Native understorey present (%) and diversity	Native understorey present 23% cover, 21 species
Weed cover (%) and dominant weed species	10 weed species present, 85% cover. Dominant species included: **Ehrharta calycina* and **Ursinia anthemoides*
Soil type and colour	Brown sandy loam
Landform	Flat
Minimum patch size	2 ha
Size of patch within survey area (in hectares) and indication of whether the patch extends outside survey area	Patch size within the survey area is 0.33 ha.
Size of patch outside survey area (in hectares)	0 ha
Summary of patch and whether it meets DAWE criteria to be TEC	This patch does NOT meet the minimum size and structural criteria as outlined in the Approved Conservation Advice (TSSC 2019). The patch is in Degraded condition. It consists of one remnant Tuart tree that was less than 500mm DBH.
Photograph	

Banksia Woodlands of the Swan Coastal Plain TEC – Patch Assessment

Site Name	Roe06
Patch Number	Patch 01
Date	29/07/2024
Location	391461 m E 6449698 m N
Vegetation Type Description	*Banksia menziesii and Banksia attenuata woodland over Hibbertia hypericoides Scholtzia involucrata Styphelia conostephioides low shrubland over Patersonia occidentalis, Desmocladus flexuosus and Lyginia barbata open herb/sedgeland*
IBRA Subregion	Perth
Structure	Woodland
Upper layer of trees and approximate heights	*Banksia menziesii* (5m) and *Banksia attenuata* (7m)
Emergent tree layer (>10 m height) and species	Not present
Canopy percent cover and species dominance	*Banksia menziesii* (15%) and *Banksia attenuata* (5%)
Native understorey present (%) and diversity	Native understorey present 90% cover, 46 species
Weed cover (%) and dominant weed species	9 weed species present, 22% cover. None of the weed species recorded were considered dominant. Species recorded include: **Aira caryophyllea, *Briza maxima, *Ehrharta calycina, *Fumaria capreolata, *Galium murale, *Gladiolus caryophyllaceus, *Hypochaeris glabra, *Monoculus monstrosus* and **Ursinia anthemoides*
Soil type and colour	Beige sand
Landform	Flat
Minimum patch size	1 ha
Size of patch within survey area (in hectares) and indication of whether the patch extends outside survey area	5.92 ha (DE and Offset E)
Size of patch outside survey area (in hectares)	0
Summary of patch and whether it meets DAWE criteria to be TEC	Meets minimum size, condition and structural criteria as outlined in the Approved Conservation Advice (TSSC 2016). Patch is in Very Good condition, minimum patch size required is 1 ha.
Photograph	

Site Name	Roe08
Patch Number	Patch 01
Date	30/07/2024
Location	391626 m E 6449489 m N
Vegetation Type Description	*Banksia menziesii* and *Banksia attenuata* woodland over *Hibbertia hypericoides Scholtzia involucrata Styphelia conostephioides* low shrubland over *Patersonia occidentalis, Desmocladus flexuosus* and *Lyginia barbata* open herb/sedgeland
IBRA Subregion	Perth
Structure	Woodland
Upper layer of trees and approximate heights	*Banksia attenuata* (5 m) and *Banksia menziesii* (5 m)
Emergent tree layer (>10 m height) and species	Not present
Canopy percent cover and species dominance	*Banksia attenuata* (30%) and *Banksia menziesii* (3%)
Native understorey present (%) and diversity	Native understorey present 93% cover, 45 species
Weed cover (%) and dominant weed species	Seven weed species present, 13% cover. None of the weed species recorded were considered dominant. Species recorded include: **Briza maxima, *Ehrharta calycina*, Ficinia marginata, *Freesia leichtlinii subsp. alba × leichtlinii subsp. leichtlinii, *Galium murale, *Gladiolus caryophyllaceus and *Ursinia anthemoides*
Soil type and colour	Light grey sand
Landform	Gentle slope west
Minimum patch size	1 ha
Size of patch within survey area (in hectares) and indication of whether the patch extends outside survey area	5.92 ha (DE and Offset E)
Size of patch outside survey area (in hectares)	0
Summary of patch and whether it meets DAWE criteria to be TEC	Meets minimum size, condition and structural criteria as outlined in the Approved Conservation Advice (TSSC 2016). Patch is in Very Good condition, minimum patch size required is 1 ha.
Photograph	

Site Name	Roe02
Patch Number	Patch 02
Date	30/07/2024
Location	391579 m E 6449133m N
Vegetation Type Description	+/- *Eucalyptus marginata/ Eucalyptus gomphocephala* tall open woodland over *Banksia attenuata* and *B. menziesii* woodland over *Acacia pulchella* var *pulchella Xanthorrhoea preissii Hibbertia hypericoides Mesomelaena pseudostygia*
IBRA Subregion	Perth
Structure	Open Woodland
Upper layer of trees and approximate heights	*Banksia menziesii* (10m) and *Banksia attenuata* (10m)
Emergent tree layer (>10 m height) and species	None present in the quadrat *Eucalyptus gomphocephala* (15m) present outside
Canopy percent cover and species dominance	*Banksia menziesii* (10%) and *Banksia attenuata* (10%)
Native understorey present (%) and diversity	Native understorey present 54% cover, 36 species
Weed cover (%) and dominant weed species	Eight weed species present, 9% cover. None of the weed species recorded are considered dominant. Species recorded include: **Briza maxima, *Ehrharta calycina, *Ehrharta longiflora, *Ficinia marginata, * Gladiolus caryophyllaceus, * Hypochaeris glabra, * Lysimachia arvensis* and **Ursinia anthemoides*
Soil type and colour	Brown sandy loam
Landform	Sand plain
Minimum patch size	1 ha
Size of patch within survey area (in hectares) and indication of whether the patch extends outside survey area	8.08 ha (DE and Offset D), patch extends outside survey area. Mapped up to 14.35 ha
Size of patch outside survey area (in hectares)	6.27 ha
Summary of patch and whether it meets DAWE criteria to be TEC	Meets minimum size and condition criteria as outlined in the Approved Conservation Advice (Threatened Species Scientific Committee 2016a). Patch is in Very Good condition. although not represented in the quadrat *Banksia* spp. occurred outside the quadrat
Photograph	

Site Name	Roe12
Patch Number	Patch 02
Date	01/08/2024
Location	391782 m E 6449128 m N
Vegetation Type Description	*Banksia menziesii and Banksia attenuata woodland over Hibbertia hypericoides Scholtzia involucrata Styphelia conostephioides low shrubland over Patersonia occidentalis, Desmocladus flexuosus and Lyginia barbata open herb/sedgeland*
IBRA Subregion	Perth
Structure	Woodland
Upper layer of trees and approximate heights	*Banksia attenuata*, 5 m *Eucalyptus marginata*, 5 m
Emergent tree layer (>10 m height) and species	Not present
Canopy percent cover and species dominance	Canopy dominated by *Banksia attenuata*, 20% cover
Native understorey present (%) and diversity	Native understorey present 93% cover, 43 species
Weed cover (%) and dominant weed species	5 weed species present, 7% cover. None of the weed species recorded are considered dominant. Species recorded include: *Briza maxima, *Ficinia marginata, **Gladiolus caryophyllaceus, *Hypochaeris glabra* and **Ursinia anthemoides*
Soil type and colour	Grey sand
Landform	Flat
Minimum patch size	1 ha
Size of patch within survey area (in hectares) and indication of whether the patch extends outside survey area	8.08 ha (DE and Offset D), patch extends outside survey area. Mapped up to 14.35 ha
Size of patch outside survey area (in hectares)	6.27 ha
Summary of patch and whether it meets DAWE criteria to be TEC	Meets minimum size and condition criteria as outlined in the Approved Conservation Advice (Threatened Species Scientific Committee 2016a). Patch is in Very Good condition. although not represented in the quadrat *Banksia* spp. occurred outside the quadrat
Photograph	

Site Name	Roe10
Patch Number	Patch 02
Date	30/07/2024
Location	391621 m E 6449073m N
Vegetation Type Description	+/- *Eucalyptus marginata/ Eucalyptus gomphocephala* tall open woodland over *Banksia attenuata* and *B. menziesii* woodland over *Acacia pulchella* var *pulchella Xanthorrhoea preissii Hibbertia hypericoides Mesomelaena pseudostygia*
IBRA Subregion	Perth
Structure	Open Woodland
Upper layer of trees and approximate heights	*Eucalyptus marginata,* 10 m (*Banksia* spp. present outside quadrat)
Emergent tree layer (>10 m height) and species	*Eucalyptus gomphocephala*, 20 m
Canopy percent cover and species dominance	Canopy dominated by *Eucalyptus gomphocephala*, 20% cover
Native understorey present (%) and diversity	Native understorey present 54% cover, 29 species
Weed cover (%) and dominant weed species	12 weed species present, 24% cover. None of the weed species recorded are considered dominant. Species recorded include: **Briza maxima, *Briza minor, *Cerastium glomeratum, *Ehrharta calycina, *Ehrharta longiflora, *Ficinia marginata, *Galium murale, *Lysimachia arvensis, *Sonchus oleraceus, *Stellaria media, *Trifolium arvense* and **Watsonia marginata*
Soil type and colour	Brown sandy loam
Landform	Sand plain
Minimum patch size	1 ha
Size of patch within survey area (in hectares) and indication of whether the patch extends outside survey area	8.08 ha (DE and Offset D), patch extends outside survey area. Mapped up to 14.35 ha
Size of patch outside survey area (in hectares)	6.27 ha
Summary of patch and whether it meets DAWE criteria to be TEC	Meets minimum size and condition criteria as outlined in the Approved Conservation Advice (TSSC 2016). Patch is in Very Good condition, although not represented in the quadrat *Banksia* spp. occurred outside the quadrat.
Photograph	

Site Name	Kwin10
Patch Number	Patch 03
Date	29/07/2024 and 18/09/2024
Location	391347mE 6448715mN
Vegetation Type Description	EgBspp -+/- *Eucalyptus gomphocephala* tall open woodland over *Banksia attenuata* and *B. menziesii* woodland over *Acacia pulchella* var *pulchella, Xanthorrhoea preissii* and *Hibbertia hypericoides* low open shrubland over *Mesomelaena pseudostygia and *Ehrharta calycina* sedgeland/ grassland
IBRA Subregion	Perth
Structure	Woodland
Upper layer of trees and approximate heights	*Banksia attenuata* 6 m *Banksia menziesii* 6 m
Emergent tree layer (>10 m height) and species	Not present
Canopy percent cover and species dominance	Canopy dominated by *Banksia menziesii* 15% cover and *B. attenuata* 5% cover
Native understorey present (%) and diversity	Native understorey present 78% cover, 34 species
Weed cover (%) and dominant weed species	8 weed species present, 11% cover. None of the weed species recorded were considered dominant.
Soil type and colour	Brown sandy loam
Landform	Sand plain
Minimum patch size	2 ha
Size of patch within survey area (in hectares) and indication of whether the patch extends outside survey area	0.10 ha (DE), patch extends westward outside survey area.
Size of patch outside survey area (in hectares)	~6.78 ha
Summary of patch and whether it meets DAWE criteria to be TEC	The size and condition of the patch meets the criteria to be a TEC. Part of a larger patch that extends outside the survey area and is likely to be in Good or better condition, therefore meets the key criteria as outlined in the Approved Conservation Advice (Threatened Species Scientific Committee 2016).
Photograph	

Site Name	Roe14
Patch Number	Patch 04
Date	01/08/2024
Location	392521 m E 6449262 m N
Vegetation Type Description	*Banksia menziesii and Banksia attenuata woodland over Hibbertia hypericoides Scholtzia involucrata Styphelia conostephioides low shrubland over Patersonia occidentalis, Desmocladus flexuosus and Lyginia barbata open herb/sedgeland*
IBRA Subregion	Perth
Structure	Woodland
Upper layer of trees and approximate heights	*Banksia attenuata* 5 m, *Banksia menziesii* 4.5 m, *Eucalyptus marginata* 5 m and *Nuytsia floribunda* 3 m
Emergent tree layer (>10 m height) and species	Not present
Canopy percent cover and species dominance	*Banksia attenuata* 5% and *Banksia menziesii* 5%
Native understorey present (%) and diversity	Native understorey present 74% cover, 34 species
Weed cover (%) and dominant weed species	7 weed species present, 7% cover. None of the weed species recorded are considered dominant. Species recorded include: **Aira caryophyllea, *Briza maxima, *Ficinia marginata, *Gladiolus caryophyllaceus, *Hypochaeris glabra, * Senecio condylus* and **Ursinia anthemoides.*
Soil type and colour	Grey/beige sand
Landform	Hillslope
Minimum patch size	1 ha
Size of patch within survey area (in hectares) and indication of whether the patch extends outside survey area	1.46 ha (DE), patch extends outside survey area. Mapped up to 5.03 ha
Size of patch outside survey area (in hectares)	3.57 ha
Summary of patch and whether it meets DAWE criteria to be TEC	Meets minimum size, condition and structural criteria as outlined in the Approved Conservation Advice (TSSC 2016). Patch is in Very Good condition, minimum patch size required is 1 ha.
Photograph	

Site Name	Roe03
Patch Number	Patch 05
Date	08/08/2024
Location	394007.7418 m E 6449938.59 m N
Vegetation Type Description	*Banksia attenuata. B. menziesii* and *B ilicifolia* woodland over *Xanthorrhoea preissii* and *Hibbertia subvaginata* low open shrubland over *Dasypogon bromeliifolius, Phlebocarya ciliata* and *Schoenus caespititius* open herb/sedgeland
IBRA Subregion	Perth
Structure	Woodland
Upper layer of trees and approximate heights	*Allocasuarina fraseriana* (4 m), *Banksia attenuata* (8 m), *Banksia ilicifolia* (5 m) and *Banksia menziesii* (8 m)
Emergent tree layer (>10 m height) and species	*Eucalyptus todtiana*, 12 m
Canopy percent cover and species dominance	*Banksia attenuata*, 20% and *Banksia ilicifolia* 10%
Native understorey present (%) and diversity	Native understorey present 74% cover, 19 species
Weed cover (%) and dominant weed species	6 weed species present, 6% cover. None of the weed species recorded are considered dominant. Species recorded include: **Asparagus asparagoides* (DP) & WoNS), **Briza maxima, *Ehrharta longiflora, *Pelargonium capitatum, *Sonchus oleraceus* and **Ursinia anthemoides*
Soil type and colour	Brown sandy loam
Landform	Low lying flats
Minimum patch size	1 ha
Size of patch within survey area (in hectares) and indication of whether the patch extends outside survey area	12.67 ha (DE, Offset B1, B2, C), however the patch extends outside survey area (Total 35.86 ha)
Size of patch outside survey area (in hectares)	23.19 ha
Summary of patch and whether it meets DAWE criteria to be TEC	Meets minimum size, condition and structural criteria as outlined in the Approved Conservation Advice (TSSC 2016) Patch is in Very Good condition, minimum patch size required is 1 ha.
Photograph	

Site Name	Roe04
Patch Number	Patch 05
Date	08/08/2024
Location	393774 m E 6449805 m N
Vegetation Type Description	*Banksia attenuata. B. menziesii* and *B ilicifolia* woodland over *Xanthorrhoea preissii* and *Hibbertia subvaginata* low open shrubland over *Dasypogon bromeliifolius, Phlebocarya ciliata* and *Schoenus caespititius* open herb/sedgeland
IBRA Subregion	Perth
Structure	Woodland
Upper layer of trees and approximate heights	*Banksia attenuata*, 10 m *Banksia menziesii*, 8 m
Emergent tree layer (>10 m height) and species	Not present
Canopy percent cover and species dominance	*Banksia attenuata*, 30% and *Banksia menziesii*, 10%
Native understorey present (%) and diversity	Native understorey present 95% cover, 19 species
Weed cover (%) and dominant weed species	5 weed species present, 5% cover. None of the weed species recorded are considered dominant. Species recorded include: **Asparagus asparagoides* (DP & WoNS)*, *Briza maxima, *Gaudium laevigatum, *Sonchus oleraceus* and **Zantedeschia aethiopica* (DP)
Soil type and colour	Brown sandy loam
Landform	Low lying flats
Minimum patch size	1 ha
Size of patch within survey area (in hectares) and indication of whether the patch extends outside survey area	12.67 ha (DE, Offset B1, B2, C), however the patch extends outside survey area (Total 35.86 ha)
Size of patch outside survey area (in hectares)	23.19 ha
Summary of patch and whether it meets DAWE criteria to be TEC	Meets minimum size, condition and structural criteria as outlined in the Approved Conservation Advice (TSSC 2016) Patch is in Very Good condition, minimum patch size required is 1 ha.
Photograph	

Site Name	Roe05
Patch Number	Patch 05
Date	08/08/2024
Location	394153 m E 6450042 m N
Vegetation Type Description	*Banksia attenuata. B. menziesii* and *B ilicifolia* woodland over *Xanthorrhoea preissii* and *Hibbertia subvaginata* low open shrubland over *Dasypogon bromeliifolius, Phlebocarya ciliata* and *Schoenus caespititius* open herb/sedgeland
IBRA Subregion	Perth
Structure	Woodland
Upper layer of trees and approximate heights	*Allocasuarina fraseriana* 5 m, *Banksia attenuata* 5 m, *Banksia ilicifolia* 2 m and *Banksia menziesii* 5 m
Emergent tree layer (>10 m height) and species	Not present
Canopy percent cover and species dominance	*Banksia attenuata* 20%, *Allocasuarina fraseriana* 15%, and *Banksia menziesii* 15%
Native understorey present (%) and diversity	Native understorey present 80% cover, 22 species
Weed cover (%) and dominant weed species	6 weed species present, 6% cover. None of the weed species recorded were considered dominant. Species recorded include: **Briza maxima, *Ehrharta longiflora, *Gladiolus caryophyllaceus, *Lysimachia arvensis, *Romulea rosea and *Ursinia anthemoides*
Soil type and colour	Grey sandy loam
Landform	Low lying flat
Minimum patch size	1 ha
Size of patch within survey area (in hectares) and indication of whether the patch extends outside survey area	12.67 ha (DE, Offset B1, B2, C), however the patch extends outside survey area (Total 35.86 ha)
Size of patch outside survey area (in hectares)	23.19 ha
Summary of patch and whether it meets DAWE criteria to be TEC	Meets minimum size, condition and structural criteria as outlined in the Approved Conservation Advice (TSSC 2016) Patch is in Very Good condition, minimum patch size required is 1 ha.
Photograph	

Site Name	Roe07
Patch Number	Patch 05
Date	08/08/2024
Location	394470 m E 6450388 m N
Vegetation Type Description	*Banksia menziesii and Banksia attenuata woodland over Hibbertia hypericoides Scholtzia involucrata Styphelia conostephioides low shrubland over Patersonia occidentalis, Desmocladus flexuosus and Lyginia barbata open herb/sedgeland*
IBRA Subregion	Perth
Structure	Woodland
Upper layer of trees and approximate heights	*Allocasuarina fraseriana* 5m, *Banksia attenuata* 1.5m and *Banksia menziesii* 5m
Emergent tree layer(>10 m height) and species	Not present
Canopy percent cover and species dominance	*Banksia menziesii*, 10%
Native understorey present (%) and diversity	Native understorey present 85% cover, 33 species
Weed cover (%) and dominant weed species	9 weed species present, 10% cover. None of the weed species recorded were considered dominant. Species recorded include: **Aira caryophyllea, *Briza maxima, *Ehrharta longiflora, *Ficinia marginata, *Gladiolus caryophyllaceus, * Hypochaeris glabra, *Senecio condylus, *Ursinia anthemoides* and **Vulpia bromoides*
Soil type and colour	Grey sand
Landform	Sand plain
Minimum patch size	1 ha
Size of patch within survey area (in hectares) and indication of whether the patch extends outside survey area	12.67 ha (DE, Offset B1, B2, C), however the patch extends outside survey area (Total 35.86 ha)
Size of patch outside survey area (in hectares)	23.19 ha
Summary of patch and whether it meets DAWE criteria to be TEC	Meets minimum size, condition and structural criteria as outlined in the Approved Conservation Advice (TSSC 2016) Patch (overall) is in Very Good condition, minimum patch size required is 1 ha.
Photograph	

Site Name	Roe16
Patch Number	Patch 05
Date	08/08/2024
Location	393371 m E 6449607 m N
Vegetation Type Description	*Banksia menziesii and Banksia attenuata woodland over Hibbertia hypericoides Scholtzia involucrata Styphelia conostephioides low shrubland over Patersonia occidentalis, Desmocladus flexuosus and Lyginia barbata open herb/sedgeland*
IBRA Subregion	Perth
Structure	Woodland
Upper layer of trees and approximate heights	*Banksia attenuata*, 8 m *Banksia menziesii*, 8 m *Nuytsia floribunda*, 1 m
Emergent tree layer (>10 m height) and species	Not present
Canopy percent cover and species dominance	*Banksia attenuata*, 10% and *Banksia menziesii*, 10%
Native understorey present (%) and diversity	Native understorey present 91% cover, 45 species
Weed cover (%) and dominant weed species	9 weed species present, 9% cover. None of the weed species recorded are considered dominant. Species recorded include: **Aira caryophyllea, *Avellinia festucoides, *Briza maxima, *Ficinia marginata, *Gladiolus caryophyllaceus, *Hypochaeris glabra, *Sonchus oleraceus, *Ursinia anthemoides* and **Wahlenbergia capensis*
Soil type and colour	Grey sand
Landform	Sand plain
Minimum patch size	1 ha
Size of patch within survey area (in hectares) and indication of whether the patch extends outside survey area	12.67 ha (DE, Offset B1, B2, C), however the patch extends outside survey area (Total 35.86 ha)
Size of patch outside survey area (in hectares)	23.19 ha
Summary of patch and whether it meets DAWE criteria to be TEC	Meets minimum size, condition and structural criteria as outlined in the Approved Conservation Advice (TSSC 2016) Patch (overall) is in Very Good condition, minimum patch size required is 1 ha.
Photograph	

Site Name	Roe15
Patch Number	Patch 06
Date	01/08/2024
Location	393478 m E 6449794m N
Vegetation Type Description	*Banksia menziesii and Banksia attenuata woodland over Hibbertia hypericoides Scholtzia involucrata Styphelia conostephioides low shrubland over Patersonia occidentalis, Desmocladus flexuosus and Lyginia barbata open herb/sedgeland*
IBRA Subregion	Perth
Structure	Woodland
Upper layer of trees and approximate heights	*Banksia attenuata* 0.5 m and *Banksia menziesii* 5 m
Emergent tree layer(>10 m height) and species	Not present
Canopy percent cover and species dominance	*Banksia menziesii*, 15% cover
Native understorey present (%) and diversity	Native understorey present 89% cover, 48 species
Weed cover (%) and dominant weed species	11 weed species present, 11% cover. None of the weed species recorded are considered dominant. Species recorded include: **Briza maxima, *Ehrharta calycina, *Ehrharta longiflora, *Ficinia marginata, *Fumaria capreolata, *Gladiolus caryophyllaceus, *Hypochaeris glabra, *Lysimachia arvensis, *Sonchus oleraceus, *Ursinia anthemoides* and **Wahlenbergia capensis*
Soil type and colour	Grey sand
Landform	Sand dune
Minimum patch size	1 ha
Size of patch within survey area (in hectares) and indication of whether the patch extends outside survey area	7.17 ha (DE and Offset A), patch extends outside survey area. Mapped up to 10.49 ha
Size of patch outside survey area (in hectares)	3.33 ha
Summary of patch and whether it meets DAWE criteria to be TEC	Meets minimum size, condition and structural criteria as outlined in the Approved Conservation Advice (TSSC 2016 Patch is in Very Good to Excellent condition, minimum patch size required is 1 ha.
Photograph	

Site Name	Roe13
Patch Number	Patch 06
Date	30/07/2024
Location	393321 m E 6449782 m N
Vegetation Type Description	*Banksia menziesii and Banksia attenuata woodland over Hibbertia hypericoides Scholtzia involucrata Styphelia conostephioides low shrubland over Patersonia occidentalis, Desmocladus flexuosus and Lyginia barbata open herb/sedgeland*
IBRA Subregion	Perth
Structure	Woodland
Upper layer of trees and approximate heights	*Banksia attenuata* 8 m, *Banksia ilicifolia* 8 m and *Eucalyptus todtiana* 5 m
Emergent tree layer (>10 m height) and species	Not present
Canopy percent cover and species dominance	*Banksia attenuata*, 25% and *Banksia ilicifolia*, 25%
Native understorey present (%) and diversity	Native understorey present 79% cover, 32 species
Weed cover (%) and dominant weed species	12 weed species present, 12% cover. None of the weed species recorded are considered dominant. Species recorded include: **Acacia longifolia*, **Asparagus asparagoides, *Briza maxima, *Ehrharta calycina, *Ehrharta longiflora, *Ficinia marginata, * Gladiolus caryophyllaceus, *Hypochaeris glabra, *Oxalis pes-caprae, *Sonchus oleraceus, *Ursinia anthemoides* and **Wahlenbergia capensis*
Soil type and colour	Grey sand
Landform	Sand plain
Minimum patch size	1 ha
Size of patch within survey area (in hectares) and indication of whether the patch extends outside survey area	7.17 ha (DE and Offset A), patch extends outside survey area. Mapped up to 10.49 ha
Size of patch outside survey area (in hectares)	3.33 ha
Summary of patch and whether it meets DAWE criteria to be TEC	Meets minimum size, condition and structural criteria as outlined in the Approved Conservation Advice (TSSC 2016 Patch is in Very Good to Excellent condition, minimum patch size required is 1 ha.
Photograph	

Site Name	No site
Patch Number	Patch 07
Date	29/07/2024
Location	391335 m E 6449959 m N
Vegetation Type Description	*Banksia menziesii and Banksia attenuata woodland over Hibbertia hypericoides Scholtzia involucrata Styphelia conostephioides low shrubland over Patersonia occidentalis, Desmocladus flexuosus and Lyginia barbata open herb/sedgeland*
IBRA Subregion	Perth
Structure	Woodland
Upper layer of trees and approximate heights	*Banksia attenuata*, 5 m *Banksia menziesii*, 5 m *Eucalyptus todtiana* (5m)
Emergent tree layer (>10 m height) and species	Not present
Canopy percent cover and species dominance	*Banksia attenuata*, 10% and *Banksia menziesii*, 10%
Native understorey present (%) and diversity	Native understorey present 50% cover
Weed cover (%) and dominant weed species	9 weed species present, 40% cover. Dominant species include* *Ehrharta calycina* (25%) and **Avena barbata* (10%)
Soil type and colour	Grey sand
Landform	Sand plain
Minimum patch size	2 ha
Size of patch within survey area (in hectares) and indication of whether the patch extends outside survey area	0.08 ha (DE), however the patch extends outside survey area (Total 7.64 ha)
Size of patch outside survey area (in hectares)	7.56 ha
Summary of patch and whether it meets DAWE criteria to be TEC	Yes- The size and condition of the patch within the survey area does not meet the criteria to be a TEC. However, it forms part of a larger patch outside the survey area that is fenced off and likely to be in Good or better condition due to its size. Therefore, this patch meets the key criteria as outlined in the Approved Conservation Advice (Threatened Species Scientific Committee 2016).
Photograph	No photo taken

Site Name	No site
Patch Number	Patch 08
Date	30/07/2024
Location	391445 m E 6449557 m N
Vegetation Type Description	*Banksia menziesii and Banksia attenuata woodland over Hibbertia hypericoides Scholtzia involucrata Styphelia conostephioides low shrubland over Patersonia occidentalis, Desmocladus flexuosus and Lyginia barbata open herb/sedgeland*
IBRA Subregion	Perth
Structure	Woodland
Upper layer of trees and approximate heights	*Banksia attenuata*, 5 m, *Banksia menziesii*, 5 m
Emergent tree layer (>10 m height) and species	Not present
Canopy percent cover and species dominance	*Banksia attenuata*, 10% and *Banksia menziesii*, 10%
Native understorey present (%) and diversity	Native understorey present ~60% cover,
Weed cover (%) and dominant weed species	weed species present: grassy weeds species present, however density not known
Soil type and colour	Grey / yellow sand
Landform	Sand plain
Minimum patch size	2 ha
Size of patch within survey area (in hectares) and indication of whether the patch extends outside survey area	0.55 ha
Size of patch outside survey area (in hectares)	0 ha
Summary of patch and whether it meets DAWE criteria to be TEC	Does NOT meet condition and structural criteria as outlined in the Approved Conservation Advice (TSSC 2016). The patch is 0.55 ha, to be considered Banksia woodland TEC the minimum patch size is 2 ha in Good condition.
Photograph	No photograph was able to be taken and no sample site was done due to safte. This patch occurs between Kwinana freeway south and the Kwinana freeweay off ramp onto Roe highway

Site Name	No site
Patch Number	Patch 09
Date	30/07/2024
Location	391524 m E 6449226 m N
Vegetation Type Description	*Banksia menziesii and Banksia attenuata woodland over Hibbertia hypericoides Scholtzia involucrata Styphelia conostephioides low shrubland over Patersonia occidentalis, Desmocladus flexuosus and Lyginia barbata open herb/sedgeland*
IBRA Subregion	Perth
Structure	Woodland
Upper layer of trees and approximate heights	*Banksia attenuata*, 5 m, *Banksia menziesii*, 5 m
Emergent tree layer (>10 m height) and species	Not present
Canopy percent cover and species dominance	*Banksia attenuata*, 10% and *Banksia menziesii*, 10%
Native understorey present (%) and diversity	Native understorey present ~60% cover,
Weed cover (%) and dominant weed species	weed species present: grassy weeds species present, however density not known
Soil type and colour	Grey / yellow sand
Landform	Sand plain
Minimum patch size	2 ha
Size of patch within survey area (in hectares) and indication of whether the patch extends outside survey area	0.90 ha
Size of patch outside survey area (in hectares)	0 ha
Summary of patch and whether it meets DAWE criteria to be TEC	Does NOT meet condition and structural criteria as outlined in the Approved Conservation Advice (TSSC 2016). The patch is 0.90 ha, to be considered Banksia woodland TEC the minimum patch size is 2 ha in Good condition.
Photograph	No photograph was able to be taken and no sample site was done due to safety. This patch occurs between Kwinana freeway south and the Kwinana freeweay on ramp from Roe highway

Site Name	Roe02R
Patch Number	Patch 10
Date	29/07/2024
Location	391288 m E 6449600 m N
Vegetation Type Description	*Banksia menziesii and Banksia attenuata woodland over Hibbertia hypericoides Scholtzia involucrata Styphelia conostephioides low shrubland over Patersonia occidentalis, Desmocladus flexuosus and Lyginia barbata open herb/sedgeland*
IBRA Subregion	Perth
Structure	Woodland
Upper layer of trees and approximate heights	*Banksia attenuata*, 5 m *Banksia menziesii*, 5 m
Emergent tree layer (>10 m height) and species	*Eucalyptus marginata* (1%)
Canopy percent cover and species dominance	*Banksia attenuata*, 10% and *Banksia menziesii*, 10%
Native understorey present (%) and diversity	Native understorey present 5% cover, 3 species
Weed cover (%) and dominant weed species	1 weed species present*, *Gladiolus caryophyllaceus* (1%)
Soil type and colour	Grey sand
Landform	Sand plain
Minimum patch size	2 ha
Size of patch within survey area (in hectares) and indication of whether the patch extends outside survey area	2.22 ha
Size of patch outside survey area (in hectares)	0 ha
Summary of patch and whether it meets DAWE criteria to be TEC	Does NOT meet condition and structural criteria as outlined in the Approved Conservation Advice (TSSC 2016). The patch is 2.22 ha however is Degraded. To be considered Banksia woodland TEC the minimum patch size is 2 ha in Good condition.
Photograph	

Site Name	No site
Patch Number	Patch 11
Date	30/07/2024
Location	392920 m E 6449429 m N
Vegetation Type Description	*Banksia menziesii and Banksia attenuata woodland over Hibbertia hypericoides Scholtzia involucrata Styphelia conostephioides low shrubland over Patersonia occidentalis, Desmocladus flexuosus and Lyginia barbata open herb/sedgeland*
IBRA Subregion	Perth
Structure	Woodland
Upper layer of trees and approximate heights	*Banksia attenuata*, 5 m, *Banksia menziesii*, 5 m
Emergent tree layer (>10 m height) and species	Not present
Canopy percent cover and species dominance	*Banksia attenuata*, 10% and *Banksia menziesii*, 10%
Native understorey present (%) and diversity	Native understorey present ~60% cover,
Weed cover (%) and dominant weed species	weed species present: grassy weeds species present, however density not known
Soil type and colour	Grey / yellow sand
Landform	Sand plain
Minimum patch size	2 ha
Size of patch within survey area (in hectares) and indication of whether the patch extends outside survey area	0.71 ha
Size of patch outside survey area (in hectares)	0 ha
Summary of patch and whether it meets DAWE criteria to be TEC	Does NOT meet condition and structural criteria as outlined in the Approved Conservation Advice (TSSC 2016). The patch is 0.71 ha, to be considered Banksia woodland TEC the minimum patch size is 2 ha in Good condition.
Photograph	No photograph was able to be taken and no sample site was done due to safety. This patch occurs between Roe highway west bound and the Roe highway off ramp to Karel Avenue

Site Name	No site
Patch Number	Patch 12
Date	01/08/2024
Location	394417 m E 6450426 m N
Vegetation Type Description	*Banksia menziesii and Banksia attenuata woodland over Hibbertia hypericoides Scholtzia involucrata Styphelia conostephioides low shrubland over Patersonia occidentalis, Desmocladus flexuosus and Lyginia barbata open herb/sedgeland*
IBRA Subregion	Perth
Structure	Woodland
Upper layer of trees and approximate heights	*Banksia attenuata*, 5 m, *Banksia menziesii*, 5 m
Emergent tree layer (>10 m height) and species	Not present
Canopy percent cover and species dominance	*Banksia attenuata*, 5% and *Banksia menziesii*, 5%
Native understorey present (%) and diversity	Native understorey present 53% cover, 6 species
Weed cover (%) and dominant weed species	7 weed species present, 35% cover. Dominant weeds included; **Ehrharta calycina* (10%) *and *Ehrharta longifolia* (10%,
Soil type and colour	Grey sand
Landform	Sand plain
Minimum patch size	2 ha
Size of patch within survey area (in hectares) and indication of whether the patch extends outside survey area	1.05 ha
Size of patch outside survey area (in hectares)	0 ha
Summary of patch and whether it meets DAWE criteria to be TEC	Does NOT meet condition and structural criteria as outlined in the Approved Conservation Advice (TSSC 2016). The patch is 1.05 ha, to be considered Banksia woodland TEC the minimum patch size is 2 ha in Good condition
Photograph	

Site Name	Roe11
Patch Number	Patch 13
Date	30/07/2024
Location	395647 m E 6451900 m N
Vegetation Type Description	*Banksia attenuata. B. menziesii* and B ilicifolia woodland over Xanthorrhoea preissii and Hibbertia subvaginata low open shrubland over Dasypogon bromeliifolius, Phlebocarya ciliata and Schoenus caespititius open herb/sedgeland
IBRA Subregion	Perth
Structure	woodland
Upper layer of trees and approximate heights	*Banksia attenuata*, 6 m *Banksia ilicifolia*, 4 m *Eucalyptus marginata*, 6 m *Melaleuca preissiana*, 6 m
Emergent tree layer (>10 m height) and species	Not present
Canopy percent cover and species dominance	*Eucalyptus marginata*, 20% and Banksia attenuata, 10%
Native understorey present (%) and diversity	Native understorey present 76% cover, 23 species
Weed cover (%) and dominant weed species	4 weed species present, 4% cover. None of the weed species recorded are considered dominant. Species recorded include: **Ehrharta calycina, *Hypochaeris glabra, *Sonchus oleraceus* and **Ursinia anthemoides*
Soil type and colour	Grey sand
Landform	Sand plain
Minimum patch size	2 ha in Good condition
Size of patch within survey area (in hectares) and indication of whether the patch extends outside survey area	Patch is 4.59 ha.
Size of patch outside survey area (in hectares)	0 ha
Summary of patch and whether it meets DAWE criteria to be TEC	Does NOT meet condition and structural criteria as outlined in the Approved Conservation Advice (TSSC 2016). The patch is 4.59 ha however only 1.48 ha is in Good condition, the remaining 3.08 ha is Degraded. To be considered Banksia woodland TEC the minimum patch size is 2 ha in Good condition
Photograph	

Site Name	Roe 15R
Patch Number	Patch 13
Date	18/09/2024
Location	395499 m E 6451737 m N
Vegetation Type Description	*Banksia attenuata. B. menziesii and B ilicifolia woodland over Xanthorrhoea preissii and Hibbertia subvaginata low open shrubland over Dasypogon bromeliifolius, Phlebocarya ciliata and Schoenus caespititius open herb/sedgeland*
IBRA Subregion	Perth
Structure	Woodland
Upper layer of trees and approximate heights	*Banksia ilicifolia* 4 m
Emergent tree layer(>10 m height) and species	Not present
Canopy percent cover and species dominance	Canopy dominated by *Banksia ilicifolia* 1% cover
Native understorey present (%) and diversity	Native understorey present 83% cover, 7 species
Weed cover (%) and dominant weed species	10 weed species present, 56% cover. *Ehrharta longifolia* (70%) and **Ursinia anthemoides* (5%) dominant
Soil type and colour	Grey sand
Landform	Sand dune
Minimum patch size	2 ha in Good condition
Size of patch within survey area (in hectares) and indication of whether the patch extends outside survey area	Patch is 4.59 ha.
Size of patch outside survey area (in hectares)	0 ha
Summary of patch and whether it meets DAWE criteria to be TEC	Does NOT meet condition and structural criteria as outlined in the Approved Conservation Advice (TSSC 2016). The patch is 4.59 ha however only 1.48 ha is in Good condition, the remaining 3.08 ha is Degraded. To be considered Banksia woodland TEC the minimum patch size is 2 ha in Good condition
Photograph	

Site Name	Roe09
Patch Number	Patch 13
Date	30/07/2024
Location	396022m E 6452228 m N
Vegetation Type Description	*Banksia menziesii and Banksia attenuata woodland over Hibbertia hypericoides Scholtzia involucrata Styphelia conostephioides low shrubland over Patersonia occidentalis, Desmocladus flexuosus and Lyginia barbata open herb/sedgeland*
IBRA Subregion	Perth
Structure	Woodland
Upper layer of trees and approximate heights	*Banksia attenuata* 5 m, *Banksia ilicifolia* 5 m, *Banksia menziesii* 5 m and *Nuytsia floribunda* 5 m
Emergent tree layer(>10 m height) and species	Not present
Canopy percent cover and species dominance	Canopy dominated by *Banksia attenuata*, 25% cover
Native understorey present (%) and diversity	Native understorey present 25% cover, 27 species
Weed cover (%) and dominant weed species	10 weed species present, 85% cover. *Ehrharta calycina* dominant (70%). Species recorded include: *Aira caryophyllea, *Briza maxima, *Ehrharta calycina, *Ficinia marginata, *Gladiolus caryophyllaceus, *Hypochaeris glabra, *Lysimachia arvensis, *Sonchus oleraceus, *Ursinia anthemoides* and **Wahlenbergia capensis.*
Soil type and colour	Grey sand
Landform	Sand dune
Minimum patch size	2 ha in Good condition
Size of patch within survey area (in hectares) and indication of whether the patch extends outside survey area	Patch is 4.59 ha.
Size of patch outside survey area (in hectares)	0 ha
Summary of patch and whether it meets DAWE criteria to be TEC	Does NOT meet condition and structural criteria as outlined in the Approved Conservation Advice (TSSC 2016). The patch is 4.59 ha however only 1.48 ha is in Good condition, the remaining 3.08 ha is Degraded. To be considered Banksia woodland TEC the minimum patch size is 2 ha in Good condition
Photograph	

Site Name	Roe05R
Patch Number	Patch 14
Date	29/07/2024
Location	402920 m E 6458673 m N
Vegetation Type Description	*Banksia menziesii and Banksia attenuata woodland over Hibbertia hypericoides Scholtzia involucrata Styphelia conostephioides low shrubland over Patersonia occidentalis, Desmocladus flexuosus and Lyginia barbata open herb/sedgeland*
IBRA Subregion	Perth
Structure	Woodland
Upper layer of trees and approximate heights	*Banksia menziesii* 5 m and *Nuytsia floribunda* 5 m
Emergent tree layer(>10 m height) and species	Not present
Canopy percent cover and species dominance	Canopy dominated by *Banksia menziesii 1*5% cover
Native understorey present (%) and diversity	Native understorey present 10% cover, 5 species
Weed cover (%) and dominant weed species	8 weed species present, 90% cover. Dominant species included: **Ehrharta calycina* dominant (20%), **Ehrharta longifolia* (25%) and **Ursinia anthemoides* (40%)
Soil type and colour	Grey sand
Landform	Sand dune
Minimum patch size	NA - patch is Completely Degraded
Size of patch within survey area (in hectares) and indication of whether the patch extends outside survey area	0.73 ha
Size of patch outside survey area (in hectares)	0 ha
Summary of patch and whether it meets DAWE criteria to be TEC	Does NOT meet condition and structural criteria as outlined in the Approved Conservation Advice (TSSC 2016). The patch is 0.72 ha, to be considered Banksia woodland TEC the minimum patch size is 2 ha in Good condition.
Photograph	No photo

Flora Species List

Family	Species	Status
Amaryllidaceae	*Narcissus tazetta*	*
Anacardiaceae	*Schinus terebinthifolia*	*
Anarthriaceae	*Lyginia barbata*	
Anarthriaceae	*Lyginia imberbis*	
Apiaceae	*Centella asiatica*	
Apiaceae	*Homalosciadium homalocarpum*	
Apiaceae	*Platysace compressa*	
Apiaceae	*Platysace filiformis*	
Apocynaceae	*Gomphocarpus fruticosus*	*DP
Araceae	*Zantedeschia aethiopica*	*DP
Araliaceae	*Trachymene pilosa*	
Arecaceae	*Phoenix dactylifera*	*
Arecaceae	*Washingtonia filifera*	*
Asparagaceae	*Acanthocarpus preissii*	
Asparagaceae	*Asparagus asparagoides*	*DP & WoNS
Asparagaceae	*Dichopogon capillipes*	
Asparagaceae	*Lomandra caespitosa*	
Asparagaceae	*Lomandra hermaphrodita*	
Asparagaceae	*Lomandra nigricans*	
Asparagaceae	*Lomandra preissii*	
Asparagaceae	*Lomandra sericea*	
Asparagaceae	*Sowerbaea laxiflora*	
Asparagaceae	*Thysanotus manglesianus*	
Asparagaceae	*Thysanotus multiflorus*	
Asparagaceae	*Thysanotus patersonii*	
Asparagaceae	*Thysanotus* sp. (sterile)	
Asteraceae	*Arctotheca calendula*	*
Asteraceae	*Brachyscome bellidioides*	
Asteraceae	*Cotula australis*	
Asteraceae	*Erigeron bonariensis*	*
Asteraceae	*Hypochaeris glabra*	*
Asteraceae	*Lactuca saligna*	*
Asteraceae	*Lactuca serriola*	*
Asteraceae	*Lagenophora huegelii*	
Asteraceae	*Millotia tenuifolia* var. *tenuifolia*	
Asteraceae	*Monoculus monstrosus*	*

Family	Species	Status
Asteraceae	*Osteospermum ecklonis*	*
Asteraceae	*Pithocarpa pulchella* var. *pulchella*	
Asteraceae	*Podotheca angustifolia*	
Asteraceae	*Quinetia urvillei*	
Asteraceae	*Rhodanthe citrina*	
Asteraceae	*Senecio condylus*	*
Asteraceae	*Senecio vulgaris*	*
Asteraceae	*Sonchus asper*	*
Asteraceae	*Sonchus oleraceus*	*
Asteraceae	*Taraxacum khatoonae*	*
Asteraceae	*Ursinia anthemoides*	*
Bignoniaceae	*Jacaranda mimosifolia*	*
Boraginaceae	*Echium plantagineum*	*DP
Brassicaceae	*Heliophila pusilla*	*
Cactaceae	*Opuntia stricta*	*DP
Campanulaceae	*Wahlenbergia capensis*	*
Campanulaceae	*Wahlenbergia preissii*	
Caryophyllaceae	*Cerastium glomeratum*	*
Caryophyllaceae	*Petrorhagia dubia*	*
Caryophyllaceae	*Stellaria media*	*
Casuarinaceae	*?Casuarina equisetifolia*	*
Casuarinaceae	*Allocasuarina fraseriana*	
Casuarinaceae	*Allocasuarina humilis*	
Casuarinaceae	*Casuarina glauca*	*
Centrolepidaceae	*Centrolepis aristata*	
Centrolepidaceae	*Centrolepis drummondiana*	
Centrolepidaceae	*Centrolepis conspicua*	
Colchicaceae	*Burchardia congesta*	
Crassulaceae	*Crassula colorata* var. *colorata*	
Crassulaceae	*Crassula decumbens* var. *decumbens*	
Cupressaceae	*Callitris pyramidatus*	
Cyperaceae	*Ammothryon grandiflorum*	
Cyperaceae	*Chaetospora curvifolia*	
Cyperaceae	Cyperaceae sp.	
Cyperaceae	*Cyperus eragrostis*	*
Cyperaceae	*Cyperus tenuiflorus*	*
Cyperaceae	*Ficinia marginata*	*
Cyperaceae	*Gaudium laevigatum*	*
Cyperaceae	*Lepidosperma longitudinale*	
Cyperaceae	*Lepidosperma pubisquameum*	
Cyperaceae	*Lepidosperma* sp. (sterile)	

Family	Species	Status
Cyperaceae	*Lepidosperma tenue*	
Cyperaceae	*Machaerina juncea*	
Cyperaceae	*Schoenus caespititius*	
Cyperaceae	*Schoenus clandestinus*	
Cyperaceae	*Schoenus* sp.	
Cyperaceae	*Tricostularia neesii*	
Dasypogonaceae	*Calectasia narragara*	
Dasypogonaceae	*Dasypogon bromeliifolius*	
Dennstaedtiaceae	*Pteridium esculentum*	
Dilleniaceae	*Conostylis juncea*	
Dilleniaceae	*Hibbertia aurea*	
Dilleniaceae	*Hibbertia cuneiformis*	
Dilleniaceae	*Hibbertia hypericoides*	
Dilleniaceae	*Hibbertia striata*	
Dilleniaceae	*Hibbertia subvaginata*	
Droseraceae	*Drosera drummondii*	
Droseraceae	*Drosera erythrorhiza*	
Droseraceae	*Drosera macrantha*	
Droseraceae	*Drosera menziesii*	
Elaeocarpaceae	*Platytheca galioides*	
Ericaceae	*Conostephium pendulum*	
Ericaceae	*Lysinema pentapetalum*	
Ericaceae	*Styphelia conostephioides*	
Ericaceae	*Styphelia erubescens*	
Euphorbiaceae	*Euphorbia peplus*	*
Euphorbiaceae	*Euphorbia terracina*	*
Euphorbiaceae	*Ricinus communis*	*
Fabaceae	*Acacia alata*	
Fabaceae	*Acacia baileyana*	*
Fabaceae	*Acacia longifolia*	*
Fabaceae	*Acacia pulchella* var *pulchella*	
Fabaceae	*Acacia rostellifera*	
Fabaceae	*Acacia saligna*	
Fabaceae	*Acacia willdenowiana*	
Fabaceae	*Bossiaea eriocarpa*	
Fabaceae	*Chamaecytisus palmensis*	*
Fabaceae	*Daviesia divaricata* subsp. *divaricata*	
Fabaceae	*Daviesia incrassata* subsp. *incrassata*	
Fabaceae	*Daviesia nudiflora*	
Fabaceae	*Daviesia triflora*	
Fabaceae	*Euchilopsis linearis*	

Family	Species	Status
Fabaceae	*Gastrolobium capitatum*	
Fabaceae	*Gompholobium tomentosum*	
Fabaceae	*Hardenbergia comptoniana*	
Fabaceae	*Hovea trisperma*	
Fabaceae	*Jacksonia floribunda*	
Fabaceae	*Jacksonia furcellata*	
Fabaceae	*Lupinus cosentinii*	*
Fabaceae	*Oxalis pes-caprae*	*
Fabaceae	*Retama raetam*	*
Fabaceae	*Trifolium arvense*	*
Fabaceae	*Trifolium dubium*	*
Fabaceae	*Vicia sativa*	*
Geraniaceae	*Pelargonium capitatum*	*
Goodeniaceae	*Dampiera linearis*	
Goodeniaceae	*Lechenaultia expansa*	
Goodeniaceae	*Lechenaultia floribunda*	
Goodeniaceae	*Scaevola canescens*	
Haemodoraceae	*Anigozanthos humilis* subsp. *humilis*	
Haemodoraceae	*Anigozanthos manglesii*	
Haemodoraceae	*Conostylis aculeata* subsp. *aculeata*	
Haemodoraceae	*Conostylis aurea*	
Haemodoraceae	*Conostylis juncea*	
Haemodoraceae	*Conostylis setigera* subsp. *setigera*	
Haemodoraceae	*Haemodorum ?paniculatum*	
Haemodoraceae	*Haemodorum spicatum*	
Haemodoraceae	*Phlebocarya ciliata*	
Hemerocallidaceae	*Arnocrinum preissii*	
Hemerocallidaceae	*Caesia micrantha*	
Hemerocallidaceae	*Chamaescilla corymbosa* var. *corymbosa*	
Hemerocallidaceae	*Corynotheca micrantha*	
Hemerocallidaceae	*Dianella revoluta* var. *divaricata*	
Hemerocallidaceae	*Johnsonia pubescens* subsp. *pubescens*	
Hemerocallidaceae	*Tricoryne elatior*	
Iridaceae	*Ferraria crispa*	*
Iridaceae	*Freesia leichtlinii subsp. alba × leichtlinii subsp. leichtlinii*	*
Iridaceae	*Fumaria capreolata*	*
Iridaceae	*Gladiolus caryophyllaceus*	*
Iridaceae	*Hesperantha falcata*	*
Iridaceae	*Moraea flaccida*	*DP
Iridaceae	*Patersonia occidentalis*	
Iridaceae	*Romulea rosea*	*

Family	Species	Status
Iridaceae	*Watsonia marginata*	*
Iridaceae	*Watsonia meriana* var. *bulbillifera*	*
Iridaceae	*Watsonia meriana* var. *meriana*	*
Iridaceae	*Ferraria crispa*	*DP
Lamiaceae	*Hemiandra glabra*	
Lamiaceae	*Hemiandra pungens*	
Lamiaceae	*Lavandula dentata*	*
Lauraceae	*Cassytha racemosa* forma *pilosa*	
Lauraceae	*Nuytsia floribunda*	
Loganiaceae	*Phyllangium ?divergens*	
Loganiaceae	*Phyllangium paradoxum*	
Malvaceae	*Guichenotia macrantha*	N
Meliaceae	*Melia azedarach*	*
Montiaceae	*Calandrinia corrigioloides*	
Montiaceae	*Calandrinia granulifera*	
Moraceae	*Ficus carica*	*
Myrtaceae	*Beaufortia elegans*	
Myrtaceae	*Callistemon phoeniceus*	N
Myrtaceae	*Callistemon* sp.	*
Myrtaceae	*Calothamnus quadrifidus*	N
Myrtaceae	*Calytrix aurea*	
Myrtaceae	*Calytrix flavescens*	
Myrtaceae	*Chamelaucium uncinatum*	
Myrtaceae	*Corymbia calophylla*	
Myrtaceae	*Eremaea asterocarpa* subsp. *asterocarpa*	
Myrtaceae	*Eremaea pauciflora*	
Myrtaceae	*Eucalyptus camaldulensis*	N
Myrtaceae	*Eucalyptus gomphocephala*	
Myrtaceae	*Eucalyptus marginata*	
Myrtaceae	*Eucalyptus rudis*	
Myrtaceae	*Eucalyptus todtiana*	
Myrtaceae	*Gaudium laevigatum*	*
Myrtaceae	*Hypocalymma angustifolium*	
Myrtaceae	*Hypocalymma robustum*	
Myrtaceae	*Kunzea glabrescens*	
Myrtaceae	*Kunzea micrantha* subsp. *micrantha*	
Myrtaceae	*Melaleuca preissiana*	
Myrtaceae	*Melaleuca rhaphiophylla*	
Myrtaceae	*Melaleuca seriata*	
Myrtaceae	*Melaleuca systena*	
Myrtaceae	*Melaleuca thymoides*	

Family	Species	Status
Myrtaceae	*Pericalymma ellipticum ?var. floribundum*	
Myrtaceae	*Regelia ciliata*	
Myrtaceae	*Regelia inops*	
Myrtaceae	*Regelia* sp.	
Myrtaceae	*Scholtzia involucrata*	
Myrtaceae	*Taxandria linearis*	
Myrtaceae	*Verticordia densiflora* var. *densiflora*	
Oleaceae	*Olea europaea*	*
Orchidaceae	*Caladenia arenicola*	
Orchidaceae	*Caladenia flava*	
Orchidaceae	*Caladenia huegelii*	T
Orchidaceae	*Caladenia longicauda* subsp. *calcigena*	
Orchidaceae	*Caladenia paludosa*	
Orchidaceae	*Caladenia* sp. (sterile)	
Orchidaceae	*Corysanthes ?recurva*	
Orchidaceae	*Cyanicula gemmata*	
Orchidaceae	*Diuris corymbosa*	
Orchidaceae	*Elythranthera brunonis*	
Orchidaceae	*Pheladenia deformis*	
Orchidaceae	*Prasophyllum parvifolium*	
Orchidaceae	*Pterostylis ?vittata*	
Orchidaceae	*Pterostylis sanguinea*	
Orchidaceae	*Pterostylis* sp. (sterile)	
Orchidaceae	*Pyrorchis nigricans*	
Orchidaceae	*Thelymitra campanulata*	
Orchidaceae	*Thelymitra graminea*	
Oxalidaceae	*Oxalis glabra*	*
Oxalidaceae	*Oxalis pes-caprae*	*
Papaveraceae	*Fumaria capreolata*	*
Phyllanthaceae	*Poranthera microphylla*	
Plantaginaceae	*Bacopa monnieri*	*
Poaceae	*Aira caryophyllea*	*
Poaceae	*Amphipogon turbinatus*	
Poaceae	*Avellinia festucoides*	*
Poaceae	*Briza maxima*	*
Poaceae	*Briza minor*	*
Poaceae	*Bromus diandrus*	*
Poaceae	*Cenchrus clandestinus*	*
Poaceae	*Cenchrus setaceus*	*
Poaceae	*Cortaderia selloana*	*
Poaceae	*Cynodon dactylon*	*

Family	Species	Status
Poaceae	*Ehrharta calycina*	*
Poaceae	*Ehrharta longiflora*	*
Poaceae	*Eragrostis curvula*	*
Poaceae	*Hyparrhenia hirta*	*
Poaceae	*Paspalum urvillei*	*
Poaceae	Poaceae sp. (sterile)	
Poaceae	*Vulpia bromoides*	*
Poaceae	*Vulpia myuros* forma *myuros*	*
Polygonaceae	*Rumex crispus*	*
Primulaceae	*Lysimachia arvensis*	*
Proteaceae	*Adenanthos cygnorum*	
Proteaceae	*Adenanthos obovatus*	
Proteaceae	*Banksia attenuata*	
Proteaceae	*Banksia dallanneyi* subsp. *dallanneyi* var. *dallanneyi*	
Proteaceae	*Banksia grandis*	
Proteaceae	*Banksia ilicifolia*	
Proteaceae	*Banksia littoralis*	
Proteaceae	*Banksia menziesii*	
Proteaceae	*Banksia telmatiaea*	
Proteaceae	*Grevillea crithmifolia*	
Proteaceae	*Grevillea olivacea*	P4, N
Proteaceae	*Grevillea thelemanniana*	T
Proteaceae	*Hakea lissocarpha*	
Proteaceae	*Hakea trifurcata*	
Proteaceae	*Hakea varia*	
Proteaceae	*Isopogon dubius*	
Proteaceae	*Isopogon linearis*	
Proteaceae	*Persoonia saccata*	
Proteaceae	*Petrophile linearis*	
Proteaceae	*Petrophile seminuda*	
Proteaceae	*Stirlingia latifolia*	
Proteaceae	*Synaphea spinulosa* subsp. *spinulosa*	
Restionaceae	*Alexgeorgea nitens*	
Restionaceae	*Desmocladus fasciculatus*	
Restionaceae	*Desmocladus flexuosus*	
Restionaceae	*Dielsia stenostachya*	
Restionaceae	*Hypolaena exsulca*	
Restionaceae	*Leptocarpus decipiens*	
Restionaceae	*Mesomelaena pseudostygia*	
Restionaceae	*Mesomelaena tetragona*	
Rosaceae	*Rubus ulmifolius*	*DP & WoNS

Family	Species	Status
Rubiaceae	*Galium murale*	*
Rubiaceae	*Opercularia hispidula*	
Rutaceae	*Cyanothamnus ramosus*	
Rutaceae	*Philotheca spicata*	
Santalaceae	*Leptomeria pauciflora*	
Solanaceae	*Solanum nigrum*	*
Stylidiaceae	*Levenhookia pusilla*	
Stylidiaceae	*Stylidium androsaceum*	
Stylidiaceae	*Stylidium piliferum*	
Stylidiaceae	*Stylidium repens*	
Stylidiaceae	*Stylidium schoenoides*	
Stylidiaceae	*Stylidium* sp. (sterile)	
Tropaeolaceae	*Tropaeolum majus*	*
Typhaceae	*Typha orientalis*	
Xanthorrhoeaceae	*Xanthorrhoea gracilis*	
Xanthorrhoeaceae	*Xanthorrhoea preissii*	
Zamiaceae	*Macrozamia riedlei*	

Species by vegetation type

Family	Species	Status	BaBm	BaBmBi	EgBspp.	ErMr	Isolated *Banksia* spp.	Isolated *Corymbia calophylla*	Isolated Euca spp.	Mixed shrubs	Mp	Opp
Amaryllidaceae	*Narcissus tazetta*	*										X
Anacardiaceae	*Schinus terebinthifolia*	*				X						
Anarthriaceae	*Lyginia barbata*		X									
Anarthriaceae	*Lyginia imberbis*		X	X	X					X		
Apiaceae	*Centella asiatica*					X						
Apiaceae	*Homalosciadium homalocarpum*		X									
Apiaceae	*Platysace compressa*		X									
Apiaceae	*Platysace filiformis*		X									
Apocynaceae	*Gomphocarpus fruticosus*	*DP				X			X			
Araceae	*Zantedeschia aethiopica*	*DP		X				X				
Araliaceae	*Trachymene pilosa*		X	X	X							
Arecaceae	*Phoenix dactylifera*	*				X						
Arecaceae	*Washingtonia filifera*	*				X						
Asparagaceae	*Acanthocarpus preissii*											X
Asparagaceae	*Asparagus asparagoides*	*DP & WoNS	X	X		X	X	X				
Asparagaceae	*Dichopogon capillipes*		X	X	X							
Asparagaceae	*Lomandra caespitosa*		X	X	X						X	
Asparagaceae	*Lomandra hermaphrodita*		X	X	X							
Asparagaceae	*Lomandra nigricans*		X									
Asparagaceae	*Lomandra preissii*		X									
Asparagaceae	*Lomandra sericea*		X									
Asparagaceae	*Sowerbaea laxiflora*				X							
Asparagaceae	*Thysanotus manglesianus*		X									
Asparagaceae	*Thysanotus multiflorus*			X								
Asparagaceae	*Thysanotus patersonii*		X	X	X						X	
Asparagaceae	*Thysanotus* sp. (sterile)		X									
Asteraceae	*Arctotheca calendula*	*					X	X	X			
Asteraceae	*Brachyscome bellidioides*		X									
Asteraceae	*Cotula australis*			X					X			
Asteraceae	*Erigeron bonariensis*	*				X						
Asteraceae	*Hypochaeris glabra*	*	X	X	X		X		X		X	
Asteraceae	*Lactuca saligna*	*				X						
Asteraceae	*Lactuca serriola*	*				X						
Asteraceae	*Lagenophora huegelii*			X	X							
Asteraceae	*Millotia tenuifolia* var. *tenuifolia*		X									
Asteraceae	*Monoculus monstrosus*	*	X									

Family	Species	Status	BaBm	BaBmBi	EgBspp.	ErMr	Isolated *Banksia* spp.	Isolated *Corymbia calophylla*	Isolated Euca spp.	Mixed shrubs	Mp	Opp
Asteraceae	*Osteospermum ecklonis*	*										X
Asteraceae	*Pithocarpa pulchella* var. *pulchella*		X									
Asteraceae	*Podotheca angustifolia*		X		X							
Asteraceae	*Quinetia urvillei*		X	X	X							
Asteraceae	*Rhodanthe citrina*		X									
Asteraceae	*Senecio condylus*	*	X	X								
Asteraceae	*Senecio vulgaris*	*						X				
Asteraceae	*Sonchus asper*	*				X						
Asteraceae	*Sonchus oleraceus*	*	X	X	X	X		X			X	
Asteraceae	*Taraxacum khatoonae*	*										X
Asteraceae	*Ursinia anthemoides*	*	X	X	X		X			X		
Bignoniaceae	*Jacaranda mimosifolia*	*										X
Boraginaceae	*Echium plantagineum*	*DP										X
Brassicaceae	*Heliophila pusilla*	*										X
Cactaceae	*Opuntia stricta*	*DP										X
Campanulaceae	*Wahlenbergia capensis*	*	X									
Campanulaceae	*Wahlenbergia preissii*		X								X	
Caryophyllaceae	*Cerastium glomeratum*	*		X	X							
Caryophyllaceae	*Petrorhagia dubia*	*	X									
Caryophyllaceae	*Stellaria media*	*			X							
Casuarinaceae	*?Casuarina equisetifolia*	*							X			
Casuarinaceae	*Allocasuarina fraseriana*		X	X			X					
Casuarinaceae	*Allocasuarina humilis*		X									
Casuarinaceae	*Casuarina glauca*	*				X						
Centrolepidaceae	*Centrolepis aristata*										X	
Centrolepidaceae	*Centrolepis drummondiana*		X		X							
Centrolepidaceae	*Centrolepis conspicua*		X									
Colchicaceae	*Burchardia congesta*		X	X	X							
Crassulaceae	*Crassula colorata* var. *colorata*		X	X	X					X	X	
Crassulaceae	*Crassula decumbens* var. *decumbens*											X
Cupressaceae	*Callitris pyramidatus*								X			
Cyperaceae	*Ammothryon grandiflorum*				X							
Cyperaceae	*Chaetospora curvifolia*		X									
Cyperaceae	Cyperaceae sp.							X				
Cyperaceae	*Cyperus eragrostis*	*				X						
Cyperaceae	*Cyperus tenuiflorus*	*				X						
Cyperaceae	*Ficinia marginata*	*	X	X	X							
Cyperaceae	*Gaudium laevigatum*	*									X	
Cyperaceae	*Lepidosperma longitudinale*					X						
Cyperaceae	*Lepidosperma pubisquameum*		X	X								
Cyperaceae	*Lepidosperma* sp. (sterile)		X		X							

Family	Species	Status	BaBm	BaBmBi	EgBspp.	ErMr	Isolated *Banksia* spp.	Isolated *Corymbia calophylla*	Isolated Euca spp.	Mixed shrubs	Mp	Opp
Cyperaceae	*Lepidosperma tenue*							X				
Cyperaceae	*Machaerina juncea*					X				X		
Cyperaceae	*Schoenus caespititius*		X	X								
Cyperaceae	*Schoenus clandestinus*		X		X							
Cyperaceae	*Schoenus* sp.		X		X					X		
Cyperaceae	*Tricostularia neesii*									X		
Dasypogonaceae	*Calectasia narragara*		X									
Dasypogonaceae	*Dasypogon bromeliifolius*		X	X	X					X	X	
Dennstaedtiaceae	*Pteridium esculentum*					X						
Dilleniaceae	*Conostylis juncea*		X								X	
Dilleniaceae	*Hibbertia aurea*		X									
Dilleniaceae	*Hibbertia cuneiformis*			X								
Dilleniaceae	*Hibbertia hypericoides*		X		X			X				
Dilleniaceae	*Hibbertia striata*		X									
Dilleniaceae	*Hibbertia subvaginata*		X	X								
Droseraceae	*Drosera drummondii*		X	X	X							
Droseraceae	*Drosera erythrorhiza*		X		X							
Droseraceae	*Drosera macrantha*		X		X							
Droseraceae	*Drosera menziesii*		X									
Elaeocarpaceae	*Platytheca galioides*											X
Ericaceae	*Conostephium pendulum*		X		X							
Ericaceae	*Lysinema pentapetalum*											X
Ericaceae	*Styphelia conostephioides*		X				X					
Ericaceae	*Styphelia erubescens*		X									
Euphorbiaceae	*Euphorbia peplus*	*		X								
Euphorbiaceae	*Euphorbia terracina*	*		X		X			X			
Euphorbiaceae	*Ricinus communis*	*				X						
Fabaceae	*Acacia alata*		X									
Fabaceae	*Acacia baileyana*	*						X				
Fabaceae	*Acacia longifolia*	*	X									
Fabaceae	*Acacia pulchella* var *pulchella*		X	X	X		X					
Fabaceae	*Acacia rostellifera*									X		
Fabaceae	*Acacia saligna*								X			
Fabaceae	*Acacia willdenowiana*		X								X	
Fabaceae	*Bossiaea eriocarpa*		X	X								
Fabaceae	*Chamaecytisus palmensis*	*				X			X			
Fabaceae	*Daviesia divaricata* subsp. *divaricata*				X							
Fabaceae	*Daviesia incrassata* subsp. *incrassata*											X
Fabaceae	*Daviesia nudiflora*		X									
Fabaceae	*Daviesia triflora*		X		X		X					
Fabaceae	*Euchilopsis linearis*											X

Family	Species	Status	BaBm	BaBmBi	EgBspp.	ErMr	Isolated *Banksia* spp.	Isolated *Corymbia calophylla*	Isolated Euca spp.	Mixed shrubs	Mp	Opp
Fabaceae	*Gastrolobium capitatum*		X	X	X					X	X	
Fabaceae	*Gompholobium tomentosum*		X	X	X							
Fabaceae	*Hardenbergia comptoniana*		X		X							
Fabaceae	*Hovea trisperma*		X		X						X	
Fabaceae	*Jacksonia floribunda*		X									
Fabaceae	*Jacksonia furcellata*		X	X	X		X				X	
Fabaceae	*Lupinus cosentinii*	*							X			
Fabaceae	*Oxalis pes-caprae*	*		X								
Fabaceae	*Retama raetam*	*										X
Fabaceae	*Trifolium arvense*	*			X							
Fabaceae	*Trifolium dubium*	*										X
Fabaceae	*Vicia sativa*	*							X	X		
Geraniaceae	*Pelargonium capitatum*	*		X					X			
Goodeniaceae	*Dampiera linearis*		X	X						X	X	
Goodeniaceae	*Lechenaultia expansa*											X
Goodeniaceae	*Lechenaultia floribunda*		X									
Goodeniaceae	*Scaevola canescens*				X							
Haemodoraceae	*Anigozanthos humilis* subsp. *humilis*		X									
Haemodoraceae	*Anigozanthos manglesii*		X									
Haemodoraceae	*Conostylis aculeata* subsp. *aculeata*		X									
Haemodoraceae	*Conostylis aurea*		X		X					X		
Haemodoraceae	*Conostylis juncea*			X							X	
Haemodoraceae	*Conostylis setigera* subsp. *setigera*		X	X								
Haemodoraceae	*Haemodorum ?paniculatum*											X
Haemodoraceae	*Haemodorum spicatum*									X		
Haemodoraceae	*Phlebocarya ciliata*		X	X						X	X	
Hemerocallidaceae	*Arnocrinum preissii*									X		
Hemerocallidaceae	*Caesia micrantha*							X				
Hemerocallidaceae	*Chamaescilla corymbosa* var. *corymbosa*		X	X	X							
Hemerocallidaceae	*Corynotheca micrantha*				X		X					
Hemerocallidaceae	*Dianella revoluta* var. *divaricata*				X							
Hemerocallidaceae	*Johnsonia pubescens* subsp. *pubescens*										X	
Hemerocallidaceae	*Tricoryne elatior*									X		
Iridaceae	*Ferraria crispa*	*							X			
Iridaceae	*Freesia leichtlinii* subsp. *alba* × *leichtlinii* subsp. *leichtlinii*	*	X									
Iridaceae	*Fumaria capreolata*	*	X			X	X	X	X	X		
Iridaceae	*Gladiolus caryophyllaceus*	*	X	X	X		X			X	X	
Iridaceae	*Hesperantha falcata*	*				X						
Iridaceae	*Moraea flaccida*	*DP										X
Iridaceae	*Patersonia occidentalis*		X	X						X	X	

Family	Species	Status	BaBm	BaBmBi	EgBspp.	ErMr	Isolated *Banksia* spp.	Isolated *Corymbia calophylla*	Isolated Euca spp.	Mixed shrubs	Mp	Opp
Iridaceae	*Romulea rosea*	*		X		X						
Iridaceae	*Watsonia marginata*	*			X							
Iridaceae	*Watsonia meriana* var. *bulbillifera*	*				X		X				
Iridaceae	*Watsonia meriana* var. *meriana*	*								X		
Iridaceae	*Ferraria crispa*	*DP										
Lamiaceae	*Hemiandra glabra*											X
Lamiaceae	*Hemiandra pungens*		X									
Lamiaceae	*Lavandula dentata*	*										X
Lauraceae	*Cassytha racemosa* forma *pilosa*					X						X
Lauraceae	*Nuytsia floribunda*		X				X	X		X		
Loganiaceae	*Phyllangium ?divergens*		X		X							
Loganiaceae	*Phyllangium paradoxum*		X									
Malvaceae	*Guichenotia macrantha*	N										X
Meliaceae	*Melia azedarach*	*										X
Montiaceae	*Calandrinia corrigioloides*		X									
Montiaceae	*Calandrinia granulifera*		X		X							
Moraceae	*Ficus carica*	*										X
Myrtaceae	*Beaufortia elegans*						X					
Myrtaceae	*Callistemon phoeniceus*	N								X		
Myrtaceae	*Callistemon* sp.	*						X				
Myrtaceae	*Calothamnus quadrifidus*	N				X		X	X			
Myrtaceae	*Calytrix aurea*									X		
Myrtaceae	*Calytrix flavescens*		X									
Myrtaceae	*Chamelaucium uncinatum*			X								
Myrtaceae	*Corymbia calophylla*					X		X	X			
Myrtaceae	*Eremaea asterocarpa* subsp. *asterocarpa*											X
Myrtaceae	*Eremaea pauciflora*		X	X								
Myrtaceae	*Eucalyptus camaldulensis*	N							X			
Myrtaceae	*Eucalyptus gomphocephala*				X							
Myrtaceae	*Eucalyptus marginata*		X	X	X							
Myrtaceae	*Eucalyptus rudis*					X		X	X	X		
Myrtaceae	*Eucalyptus todtiana*		X	X								
Myrtaceae	*Gaudium laevigatum*	*		X								
Myrtaceae	*Hypocalymma angustifolium*			X				X			X	
Myrtaceae	*Hypocalymma robustum*		X	X	X							
Myrtaceae	*Kunzea glabrescens*			X					X			
Myrtaceae	*Kunzea micrantha subsp. micrantha*										X	
Myrtaceae	*Melaleuca preissiana*			X		X		X			X	
Myrtaceae	*Melaleuca rhaphiophylla*					X		X	X			
Myrtaceae	*Melaleuca seriata*		X	X						X	X	
Myrtaceae	*Melaleuca systena*								X			

Family	Species	Status	BaBm	BaBmBi	EgBspp.	ErMr	Isolated *Banksia* spp.	Isolated *Corymbia calophylla*	Isolated Euca spp.	Mixed shrubs	Mp	Opp
Myrtaceae	*Melaleuca thymoides*		X	X								
Myrtaceae	*Pericalymma ellipticum ?var. floribundum*										X	
Myrtaceae	*Regelia ciliata*						X		X			
Myrtaceae	*Regelia inops*		X		X							
Myrtaceae	*Regelia* sp.		X									
Myrtaceae	*Scholtzia involucrata*		X	X								
Myrtaceae	*Taxandria linearis*					X						
Myrtaceae	*Verticordia densiflora* var. *densiflora*									X		
Oleaceae	*Olea europaea*	*				X						
Orchidaceae	*Caladenia arenicola*		X		X							
Orchidaceae	*Caladenia flava*		X	X	X							
Orchidaceae	*Caladenia huegelii*	T										X
Orchidaceae	*Caladenia longicauda* subsp. *calcigena*											X
Orchidaceae	*Caladenia paludosa*										X	
Orchidaceae	*Caladenia* sp. (sterile)		X	X								
Orchidaceae	*Corysanthes ?recurva*			X								
Orchidaceae	*Cyanicula gemmata*											X
Orchidaceae	*Diuris corymbosa*		X		X							
Orchidaceae	*Elythranthera brunonis*		X									
Orchidaceae	*Pheladenia deformis*											X
Orchidaceae	*Prasophyllum parvifolium*		X									
Orchidaceae	*Pterostylis ?vittata*											X
Orchidaceae	*Pterostylis sanguinea*		X	X	X							
Orchidaceae	*Pterostylis* sp. (sterile)			X								
Orchidaceae	*Pyrorchis nigricans*		X		X							
Orchidaceae	*Thelymitra campanulata*											X
Orchidaceae	*Thelymitra graminea*		X	X								
Oxalidaceae	*Oxalis glabra*	*				X		X				
Oxalidaceae	*Oxalis pes-caprae*	*	X			X	X	X	X			
Papaveraceae	*Fumaria capreolata*	*		X								
Phyllanthaceae	*Poranthera microphylla*		X									
Plantaginaceae	*Bacopa monnieri*	*				X						
Poaceae	*Aira caryophyllea*	*	X	X						X	X	
Poaceae	*Amphipogon turbinatus*		X									
Poaceae	*Avellinia festucoides*	*	X								X	
Poaceae	*Briza maxima*	*	X	X	X		X			X		
Poaceae	*Briza minor*	*			X							
Poaceae	*Bromus diandrus*	*						X		X		
Poaceae	*Cenchrus clandestinus*	*				X			X			
Poaceae	*Cenchrus setaceus*	*						X				
Poaceae	*Cortaderia selloana*	*				X			X			

Family	Species	Status	BaBm	BaBmBi	EgBspp.	ErMr	Isolated *Banksia* spp.	Isolated *Corymbia calophylla*	Isolated Euca spp.	Mixed shrubs	Mp	Opp
Poaceae	*Cynodon dactylon*	*				X			X			
Poaceae	*Ehrharta calycina*	*	X	X	X	X	X	X	X	X		
Poaceae	*Ehrharta longiflora*	*	X	X	X	X	X		X	X		
Poaceae	*Eragrostis curvula*	*				X		X	X			
Poaceae	*Hyparrhenia hirta*	*						X				
Poaceae	*Paspalum urvillei*	*				X						
Poaceae	Poaceae sp. (sterile)		X	X								
Poaceae	*Vulpia bromoides*	*	X									
Poaceae	*Vulpia myuros* forma *myuros*	*								X	X	
Polygonaceae	*Rumex crispus*	*				X				X		
Primulaceae	*Lysimachia arvensis*	*	X	X	X							
Proteaceae	*Adenanthos cygnorum*		X				X					
Proteaceae	*Adenanthos obovatus*			X								
Proteaceae	*Banksia attenuata*		X	X	X		X					
Proteaceae	*Banksia dallanneyi* subsp. *dallanneyi* var. *dallanneyi*				X					X		
Proteaceae	*Banksia grandis*											X
Proteaceae	*Banksia ilicifolia*		X	X								
Proteaceae	*Banksia littoralis*					X						
Proteaceae	*Banksia menziesii*		X	X	X		X					
Proteaceae	*Banksia telmatiaea*										X	
Proteaceae	*Grevillea crithmifolia*											X
Proteaceae	*Grevillea olivacea*	P4, N										X
Proteaceae	*Hakea lissocarpha*							X				
Proteaceae	*Hakea trifurcata*							X				
Proteaceae	*Hakea varia*										X	
Proteaceae	*Isopogon dubius*											X
Proteaceae	*Isopogon linearis*		X		X							
Proteaceae	*Persoonia saccata*						X					
Proteaceae	*Petrophile linearis*		X	X								
Proteaceae	*Petrophile seminuda*		X									
Proteaceae	*Stirlingia latifolia*		X							X		
Proteaceae	*Synaphea spinulosa* subsp. *spinulosa*		X									
Restionaceae	*Alexgeorgea nitens*		X				X					
Restionaceae	*Desmocladus fasciculatus*									X		
Restionaceae	*Desmocladus flexuosus*		X	X	X							
Restionaceae	*Dielsia stenostachya*											X
Restionaceae	*Hypolaena exsulca*		X							X		
Restionaceae	*Leptocarpus decipiens*										X	
Restionaceae	*Mesomelaena pseudostygia*		X		X		X					
Restionaceae	*Mesomelaena tetragona*							X				

Family	Species	Status	BaBm	BaBmBi	EgBspp.	ErMr	Isolated *Banksia* spp.	Isolated *Corymbia calophylla*	Isolated Euca spp.	Mixed shrubs	Mp	Opp
Rosaceae	*Rubus ulmifolius*	*DP & WoNS										X
Rubiaceae	*Galium murale*	*	X	X	X				X		X	
Rubiaceae	*Opercularia hispidula*					X						
Rutaceae	*Cyanothamnus ramosus*		X									
Rutaceae	*Philotheca spicata*		X									
Santalaceae	*Leptomeria pauciflora*											X
Solanaceae	*Solanum nigrum*	*				X						X
Stylidiaceae	*Levenhookia pusilla*		X									
Stylidiaceae	*Stylidium androsaceum*		X								X	
Stylidiaceae	*Stylidium piliferum*		X									
Stylidiaceae	*Stylidium repens*		X	X	X							
Stylidiaceae	*Stylidium schoenoides*			X								
Stylidiaceae	*Stylidium* sp. (sterile)		X									
Tropaeolaceae	*Tropaeolum majus*	*										X
Typhaceae	*Typha orientalis*					X		X	X			
Xanthorrhoeaceae	*Xanthorrhoea gracilis*			X	X							
Xanthorrhoeaceae	*Xanthorrhoea preissii*		X	X	X			X		X	X	
Zamiaceae	*Macrozamia riedlei*		X	X	X							
Grand Total			142	81	72	47	25	32	31	38	35	40

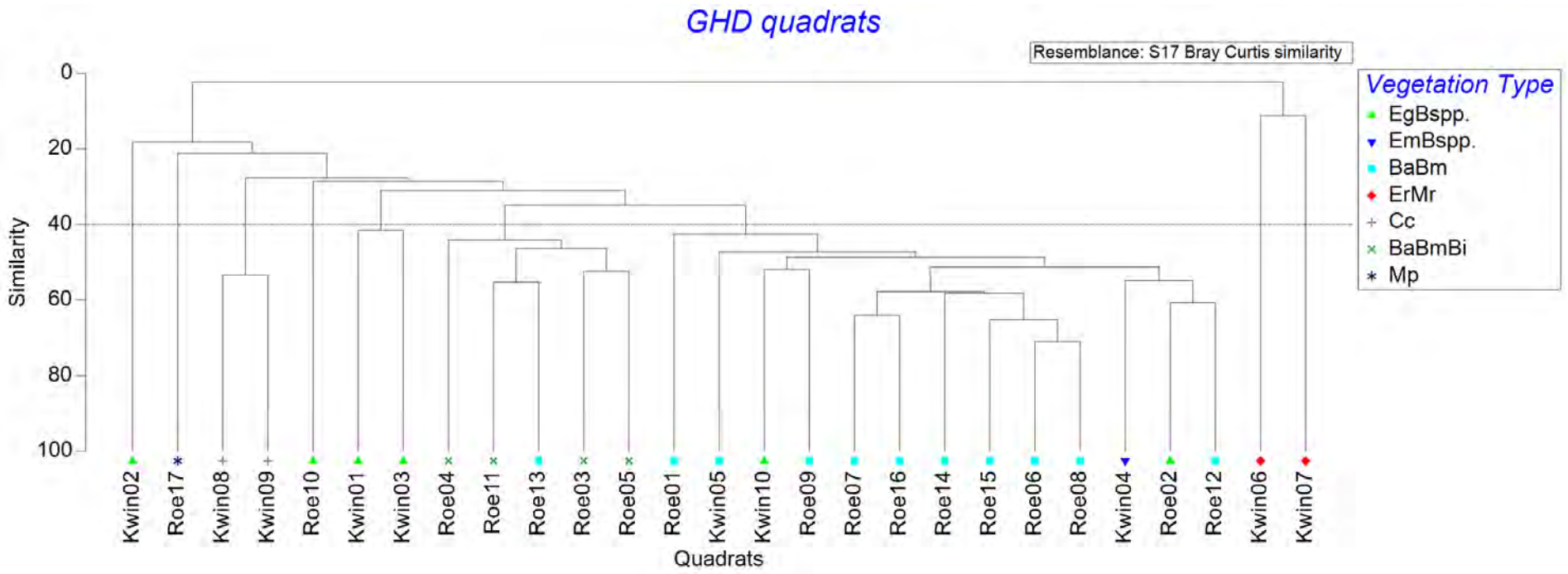
Significant flora locations

Species	Abundance	Status	Latitude	Longitude
Grevillea olivacea	2	P4	-32.0866459	115.8536013
Grevillea olivacea	5	P4	-32.0867677	115.8537617
Caladenia huegelii	1	T	-32.0775905	115.8821112
Caladenia huegelii	1	T	-32.0837334	115.8736857
Caladenia huegelii	1	T	-32.08032303	115.8791901
Caladenia huegelii	2	T	-32.08064363	115.8801738
Caladenia huegelii	1	T	-32.08098767	115.8794634
Caladenia huegelii	1	T	-32.08344988	115.8679738
Grevillea thelemanniana	1	T	-32.02822256	115.972726
Grevillea thelemanniana	1	T	-32.02817912	115.972701
Grevillea thelemanniana	1	T	-32.02810915	115.972625

Significant weed locations

Species	Abundance	Status	Latitude	Longitude
Asparagus asparagoides	10	Dp &WoNS	-31.9948	115.9795
Asparagus asparagoides	1	Dp &WoNS	-32.0039	115.9722
Asparagus asparagoides	1	Dp &WoNS	-32.0048	115.9727
Asparagus asparagoides	1	Dp &WoNS	-32.0832	115.8696
Asparagus asparagoides	1	Dp &WoNS	-32.0639	115.8952
Asparagus asparagoides	4	Dp &WoNS	-32.0832	115.8748
Asparagus asparagoides	2	Dp &WoNS	-32.0831	115.8747
Asparagus asparagoides	1	Dp &WoNS	-32.0831	115.8746
Asparagus asparagoides	1	Dp &WoNS	-32.0833	115.8744
Asparagus asparagoides	2	Dp &WoNS	-32.0819	115.8769
Asparagus asparagoides	1	Dp &WoNS	-32.081	115.8788
Asparagus asparagoides	2	Dp &WoNS	-32.0826	115.8719
Asparagus asparagoides	1	Dp &WoNS	-32.0828	115.8723
Asparagus asparagoides	1	Dp &WoNS	-32.0834	115.8698
Asparagus asparagoides	1	Dp &WoNS	-32.0834	115.8735
Asparagus asparagoides	1	Dp &WoNS	-32.083	115.8746
Asparagus asparagoides	1	Dp &WoNS	-32.0818	115.8771
Asparagus asparagoides	1	Dp &WoNS	-32.0834	115.8744
Asparagus asparagoides	1	Dp &WoNS	-32.0834	115.8742
Asparagus asparagoides	2	Dp &WoNS	-32.0664	115.8923
Asparagus asparagoides	3	Dp &WoNS	-32.0662	115.8925
Asparagus asparagoides	3	Dp &WoNS	-32.0661	115.8926
Asparagus asparagoides	3	Dp &WoNS	-32.066	115.8927
Asparagus asparagoides	1	Dp &WoNS	-32.0649	115.8939
Asparagus asparagoides	1	Dp &WoNS	-32.0648	115.894

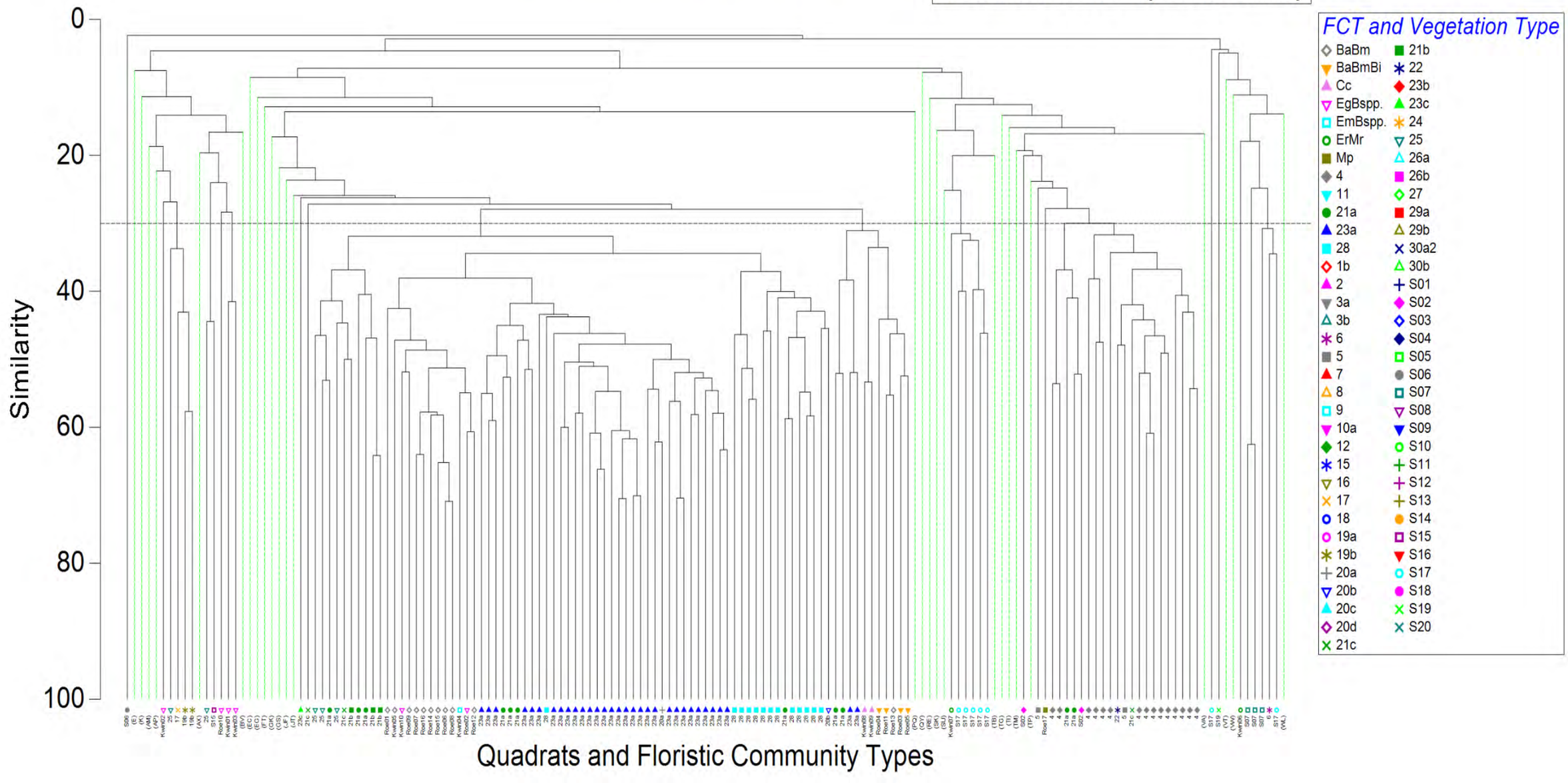
Species	Abundance	Status	Latitude	Longitude
Asparagus asparagoides	3	Dp &WoNS	-32.061	115.8991
Asparagus asparagoides	1	Dp &WoNS	-32.0825	115.874
Asparagus asparagoides	5	Dp &WoNS	-32.0824	115.8742
Asparagus asparagoides	6	Dp &WoNS	-32.0823	115.8744
Asparagus asparagoides	6	Dp &WoNS	-32.0824	115.8741
Echium plantagineum	1	DP	-31.9906	115.985
Echium plantagineum	1	DP	-31.9906	115.9855
Echium plantagineum	1	DP	-31.9906	115.9857
Echium plantagineum	1	DP	-31.9905	115.9855
Echium plantagineum	1	DP	-31.9906	115.9854
Echium plantagineum	10	DP	-31.9906	115.9852
Echium plantagineum	3	DP	-32.0214	115.9714
Ferraria crispa	20	DP	-32.0059	115.9739
Moraea flaccida	2	DP	-32.006	115.9746
Moraea flaccida	2	DP	-32.0056	115.9743
Moraea flaccida	2	DP	-32.0056	115.9742
Moraea flaccida	2	DP	-32.0058	115.974
Opuntia stricta	1	Dp &WoNS	-32.0342	115.9662
Rubus ulmifolius	1	Dp &WoNS	-32.0401	115.955
Rubus ulmifolius	1	Dp &WoNS	-32.04	115.9546
Rubus ulmifolius	1	Dp &WoNS	-32.0412	115.9542
Zantedeschia aethiopica	3	DP	-32.0049	115.9727
Zantedeschia aethiopica	16	DP	-32.0886	115.8514
Zantedeschia aethiopica	1	DP	-32.0831	115.8744
Zantedeschia aethiopica	5	DP	-32.0826	115.8726
Zantedeschia aethiopica	1	DP	-32.0832	115.8751
Zantedeschia aethiopica	1	DP	-32.0787	115.8812
Zantedeschia aethiopica	1	DP	-32.0825	115.8764
Zantedeschia aethiopica	1	DP	-32.0824	115.8763
Zantedeschia aethiopica	1	DP	-32.0834	115.8743
Zantedeschia aethiopica	2	DP	-32.0055	115.9744


GHD quadrats
Resemblance: S17 Bray Curtis similarity
Vegetation Type
EgBspp.
EmBspp.
BaBm
ErMr
Cc
BaBmBi
Mp
Similarity
0
20
40
60
80
100
Kwin02
Roe17
Kwin08
Kwin09
Roe10
Kwin01
Kwin03
Roe04
Roe11
Roe13
Roe03
Roe05
Roe01
Kwin05
Kwin10
Roe09
Roe07
Roe16
Roe14
Roe15
Roe06
Roe08
Kwin04
Roe02
Roe12
Kwin06
Kwin07
Quadrats

Gibson and GHD quadrats

Presence and absence of all species

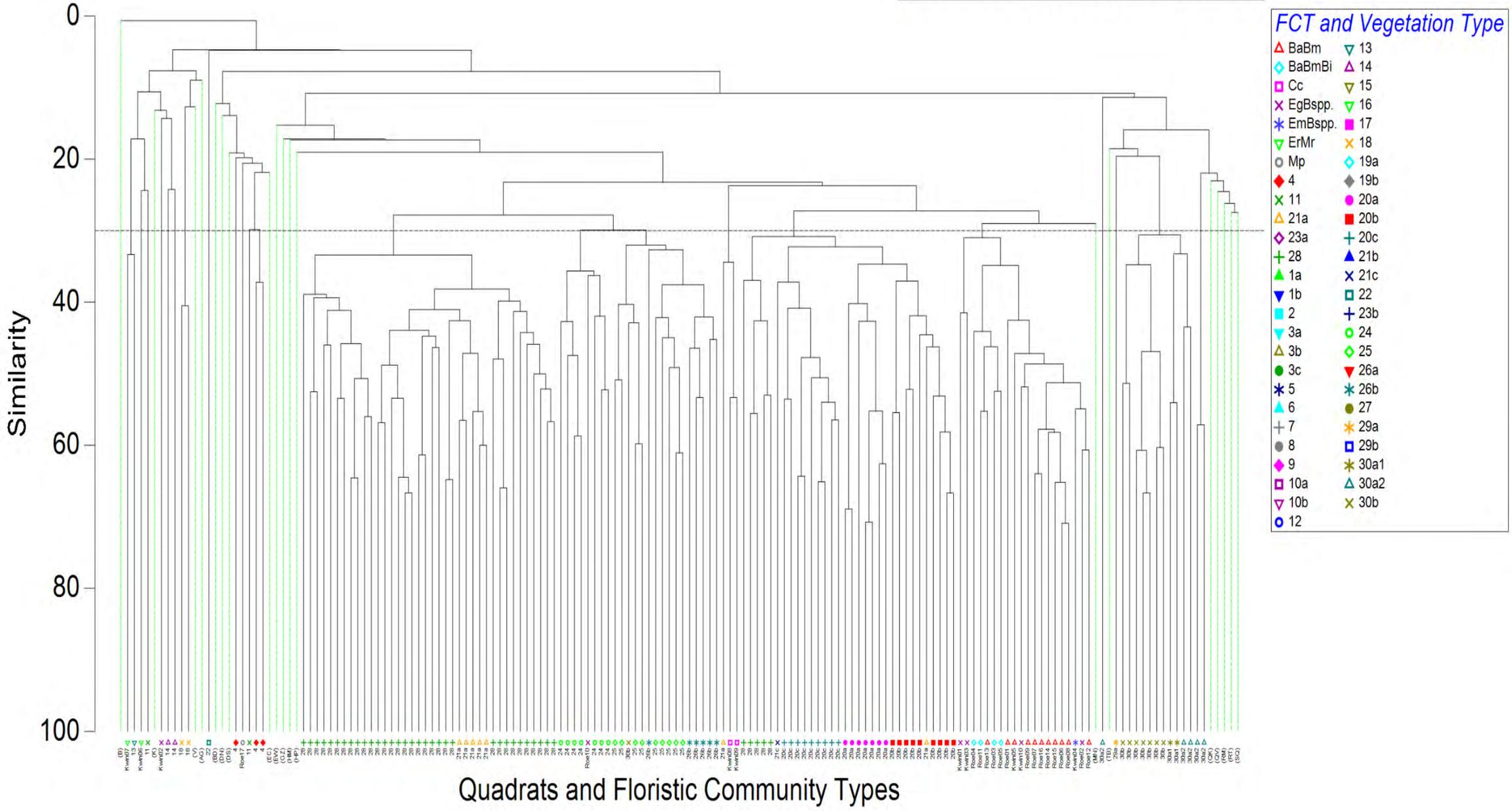
Resemblance: S17 Bray Curtis similarity



Keighery and GHD dataset

Presence and absence all species

Resemblance: S17 Bray Curtis similarity



Flora likelihood of occurrence assessment guidelines

Likelihood of occurrence	Guideline
Known	Species recorded within study area from field survey results.
Likely	Species previously recorded within 5 km and large areas of suitable habitat occur in the survey area.
Possible	Species previously recorded within the study area and areas of suitable habitat occur/may occur in the survey area
Unlikely	Species previously recorded within the study area, but suitable habitat does not occur in the study area.
Highly unlikely	Species not previously recorded within the study area, suitable habitat does not occur in the study area and/or the study area is outside the natural distribution of the species.
Other considerations	Intensity of survey, availability of access, growth form type, recorded flowering times, cryptic nature of species

Source information – desktop searches

PMST – DCCEEW Protected Matters Search Tool (PMST) to identify flora listed under the EPBC Act potentially occurring within the study area

TPFL – DBCA (2022) Threatened and Priority flora database search within the study area.

WA Herb – WA Herbarium

ALA – Atlas of Living Australia database

Flora Likelihood of Assessment

Number	Family	Taxon	Status		Description	Pre-Survey LOO	Post-survey LOO	Source
			EPBC Act	BC Act DBCA				
1	Amaranthaceae	*Ptilotus pyramidatus*	CR	CR	This is a species of perennial rhizomatous/tuberous herb reaching a height of 8 cm, with pink/white flowers occurring from October to December. The species has a preference for sandy white clay soils along floodplains and wetland systems.	Unlikely. Known from two locations, including within the Greater Brixton Street Wetlands (GBSW) (approximately 216 m east of survey area). The GBSW and 400 ha of adjoining lands have been searched in several intensive, multi-season surveys and no other occurrences have been recorded (Davis and Tauss 2011).	Unlikely. Given the previous search effort in the surrounding areas not locating any additional plants (Davis and Tauss 2011) as well as the specific habitat and high condition within GBSW, with adjacent areas within the survey area being completely cleared or having high levels of disturbance, this species is considered unlikely to occur.	TPFL, WA Herb, NM
2	Amaranthaceae	*Ptilotus sericostachyus* subsp. *roseus*		X	Presumed extinct, sprawling shrub species reaching a maximum of 30cm tall with pink flowers. Soil preference appears to be for sandy/loam.	Highly Unlikely. Species is presumed extinct. Previous records from 1902 and 1906.	Highly Unlikely. Species is presumed extinct.	WA Herb, NM
3	Apiaceae	*Eryngium pinnatifidum* subsp. Palustre (G.J. Keighery 13459)		P3	This is a perennial herb species with tubular leaves and growing to 40cm tall. Flowers are pale-blue in colour, occurring from September to January, with soil preference for grey sands and clay soils, and typically found along flat, alluvial plains.	Possible. The nearest record is 250 m east of the survey area within the Brixton Street Wetlands (BSW). A second record displays to the west, however this location is erroneous as physical locations is given as BSW.	Unlikely. Species has a scattered distribution from Mandurah to Muchea, with records occurring mostly on the heavier soils on the eastern side of the SCP. There are disjunct records to the north and east. Given the specific habitat and high condition within BSW, with adjacent areas within the survey area being completely cleared or having high levels of disturbance, this species is considered unlikely to occur.	WA Herb, NM
4	Apiaceae	*Eryngium subdecumbens*		P3	This is a perennial herb species growing to 8cm in height with white and green flowers occurring from September to January. Habitat preference appears to be open claypans and wetlands in grey clay soils.	Possible. The nearest record is 250 m east of the survey area within the Brixton Street Wetlands (BSW). A second record displays to the west, however this location is erroneous as physical locations is given as BSW. There is potential for suitable habitat to occur within the survey area.	Unlikely. Given the specific habitat and high condition of areas within BSW, and with adjacent areas within the survey area being completely cleared or having high levels of disturbance, this species is considered unlikely to occur.	TPFL, WA Herb, NM
5	Apiaceae	*Platysace ramosissima*		P3	A perennially, clumping shrub species reaching 60cm in height, with white flowers occurring from September to January. The species has a preference for grey-white sands and along undulating plains.	Possible. The nearest record is 600 m northwest of the survey area and there is potential for suitable habitat to occur within the survey area.	Unlikely. Areas of potentially suitable habitat in small pockets of vegetation at the Tonkin Highway interchange were searched and this species was not recorded.	TPFL, WA Herb, NM
6	Aponogetonaceae	*Aponogeton hexatepalus*		P4	This is a perennial aquatic herb species with tuberous floating leaves and white and green flowers. Habitat preference is for brown clay soils along claypans.	Possible. The majority of records in the vicinity of the survey area occur within BSW and GBSW (including two records immediately to the west, where the physical location is given as BSW). The nearest record is approximately 50 m from the survey area.	Unlikely. Survey area does not support suitable habitat for this species. Wetland areas within the survey area are generally in poor condition, with high levels of influence from roadside drainage.	TPFL, WA Herb, NM
7	Araliaceae	*Hydrocotyle lemnoides*		P4	This is an aquatic, annual floating herb species with red, brown and purple flowers. Habitat preference is for brown clay soils along established wetlands and swamps.	Possible. The majority of records in the vicinity of the survey area occur within BSW and GBSW (including two records immediately to the west, where the physical location is given as BSW). The nearest record is approximately 50 m from the survey area.	Unlikely. Survey area does not support suitable habitat for this species. Wetland areas within the survey area are generally in poor condition, with high levels of influence from roadside drainage.	TPFL, WA Herb, NM
8	Araliaceae	*Hydrocotyle striata*		P1	This is a species of prostrate, annually occurring herb reaching 30cm in diameter with fleshy, lobed leaves. The species has a habitat and soil preference for black, sandy soils and undulating creek lines or open forests.	Possible. Nearest record is 4 km north of the western end of the survey area. Drainage areas crossing the survey area may provide suitable habitat, although may be too disturbed.	Unlikely. Survey area does not support suitable habitat for this species. Drainage areas within the survey area are generally in poor condition, with high levels of inundation from roadside.	TPFL, WA Herb, Naturemap

Number	Family	Taxon	Status		Description	Pre-Survey LOO	Post-survey LOO	Source
			EPBC Act	BC Act DBCA				
9	Asparagaceae	*Thysanotus anceps*	-	P3	This is a species of leafless, erect perennial monocot plant with purple flowers typically occurring between November to February. The species has a preference for gravel-like sandy soils in low, open heath and woodland.	Highly Unlikely. Spatial location of the record in the vicinity of the survey area is incorrect. Location is Kalamunda. Species occurs mostly in the Jarrah Forest region on the lateritic soils that occur on the scarp and Darling Plateau.	Highly Unlikely. No suitable habitat for species, survey area occurs outside known distribution.	TPFL, WA Herb, Naturemap
10	Asteraceae	*Angianthus micropodioides*		P3	This is an erect, annually occurring herb species with distinctive hairy leaves and yellow flowers occurring from September to November. The species prefers grey sands and clay loams on typically flat or slightly undulating terrain.	Possible. Nearest record is 3.4 km northwest of the survey area. Species occurs on wet flats adjacent to Canning River, associated with *Casuarina obesa*, with records occurring along the Canning and Swan Rivers. There may be suitable habitat for this species where the Canning River crosses the alignment.	Unlikely. Areas of suitable habitat where the Canning River crosses the survey area are highly disturbed. With the adjacent flats landscaped and mown, the area is unlikely to support this species.	TPFL, WA Herb, Naturemap
11	Asteraceae	*Pithocarpa corymbulosa*		P3	This is an erect, annually occurring herb species, growing to 1 m high and with spindly stems and white flowers. The species has a preference for dry and varying clay loam soils on a variety of outcrops, slopes and ridges.	Unlikely. Nearest record is 3.7 km east of the survey area (Lesmurdie Falls). With the majority of records occurring on the Darling Scarp (not on SCP), there is unlikely to be suitable habitat within the survey area.	Highly Unlikely. Suitable habitat not recorded within the survey area. Survey area is outside the known distribution of this species.	TPFL, WA Herb, Naturemap
12	Asteraceae	*Senecio leucoglossus*	-	P4	An erect, annually occurring herb species, typically growing to 40cm high with small white flowers. The species can be found within gravelly soils and brown loam soils along hillsides and slopes.	Unlikely. Nearest record is 3.7 km east of the survey area (Lesmurdie Falls). With the majority of records occurring on the Darling Scarp and plateau (not on SCP), there is unlikely to be suitable habitat within the survey area.	Highly Unlikely. Suitable habitat not recorded within the survey area. Survey area is outside the known distribution of this species.	TPFL, WA Herb, Naturemap
13	Byblidaceae	*Byblis gigantea*	-	P3	This is an erect, multi-branching carnivorous plant with blue and purple flowers. It has a preference for grey, sandy soils and clay loams and can be found on flats and gullies.	Possible. Nearest record is 1.1 km east of the survey area in the GBSW area. Suitable habitat (seasonally damp areas) may occur within the survey area.	Unlikely. Suitable habitat within the survey area likely to be too degraded for this species.	Naturemap, WA Herb, TPFL
14	Celastraceae	*Tripterococcus* sp. Brachylobus (A.S. George 14234)	-	P4	This is an erect, perennially occurring herb species reaching 80 cm in height with yellow flowers. The species has a preference for grey, sandy clay soils and can be found along flats and plains.	Likely. Previously recorded within the survey area (WA Herbarium record, 1990)	Unlikely. The survey area was searched in the vicinity of the record and species was not recorded. The area in which it was previously located (prior to construction of Roe Highway) has significant weed infestation.	TPFL, WA Herb, Naturemap
15	Cyperaceae	*Bolboschoenus fluviatilis*		P1	This is a species of perennial sedge, reaching 2 m tall with brown flowers. It has a strong preference for wet brown and grey sands and is often found along flood plains and the edge of watercourses.	Possible. Previously recorded approximately 50 m southeast of the survey area. Restricted area of suitable habitat likely to occur where the Canning River crosses the survey area.	Unlikely. Potential habitat within the survey area likely to be too degraded, due to significant weed invasion and infrastructure footprint.	TPFL, WA Herb, Naturemap
16	Cyperaceae	*Carex tereticaulis*		P3	This is a species of erect, tufted sedge growing to 1.5 m tall and with green flowers. The species prefers brown, sandy clay soils and is often found along creek banks and along the edge of water courses.	Possible. Previous record approximately 176 m northwest of the survey area. Restricted area of suitable habitat likely to occur where the Canning River crosses the survey area.	Unlikely. Potential habitat within the survey area likely to be too degraded, due to significant weed invasion and infrastructure footprint.	TPFL, WA Herb, Naturemap
17	Cyperaceae	*Cyathochaeta teretifolia*		P3	This is an erect and comparatively robust sedge species growing up to 2 m, and with terete leaves. It has a preference for dark brown loam and peat soils and is more commonly found within flat wetland and swamp systems.	Possible. Nearest record 3.4 km northwest of the western end of the survey area. Suitable habitat may occur within the survey area.	Unlikely. Potential habitat within the survey area likely to be too degraded and modified to support this species, due to the influence of roadside drainage.	TPFL, WA Herb, Naturemap
18	Cyperaceae	*Eleocharis keigheryi*	VU	VU	This is an erect, annual, aquatic sedge species growing up to 45 cm tall, with green to yellow coloured flowers. It	Possible. Nearest record 194 m southeast of the survey area in the BSW. Restricted areas of suitable	Unlikely. Given the specific habitat and high condition within BSW, with adjacent areas within the survey area being	PMST, TPFL, WA Herb, Naturemap

Number	Family	Taxon	Status		Description	Pre-Survey LOO	Post-survey LOO	Source
			EPBC Act	BC Act DBCA				
					favours wet, grey clay soils and is typically found in wet, inundated flats and clay pans.	habitat may occur within the survey area.	completely cleared or having high levels of disturbance, this species is considered unlikely to occur.	
19	Cyperaceae	*Lepidosperma rostratum*	EN	EN	This is a species of tufted perennial sedge growing up to 60 cm tall with brown flowers and with low overall abundance in known distribution. Suitable habitat includes seasonal, grey clay soils and is found mostly in flat wetlands.	Possible. Nearest record 194 m southeast of the survey area in the BSW. Restricted areas of suitable habitat may occur within the survey area.	Unlikely. Given the specific habitat and high condition within BSW, with adjacent areas within the survey area being completely cleared or having high levels of disturbance, this species is considered unlikely to occur.	PMST, TPFL, WA Herb, Naturemap
20	Cyperaceae	*Morelotia australiensis*	VU	VU	This is a species of rhizomatous, tufted perennial herb reaching a maximum height of 30 cm. It prefers grey and brown sandy clay soils and is most often found on flat plains.	Unlikely. Nearest record is 1.7 km west of the survey area (recorded in Cannington, 1898), it has also been recorded 2.8 km east of the survey area in 2019. Restricted areas of suitable habitat may occur within the survey area.	Unlikely. Suitable habitat within the survey area is likely to be too degraded.	TPFL, WA Herb, Naturemap
21	Cyperaceae	*Schoenus benthamii*	-	P3	This is a species of upright, tufted sedge growing to 20 cm tall with brown/green flowers and in typically low abundance. It has a preference for damp, dark-coloured clay soils and is typically found along flat, seasonal wetland environments.	Possible. Previously recorded within the survey area (1982) and within BSW. Restricted areas of suitable habitat may occur within the survey area.	Unlikely. Where previously recorded within the survey area in 1982 has subsequently been cleared. Given the specific habitat and high condition within BSW, with adjacent areas within the survey area being completely cleared or having high levels of disturbance, this species is considered unlikely to occur.	TPFL WA Herb, Naturemap
22	Cyperaceae	*Schoenus capillifolius*	-	P3	This is a low-growing and annually occurring semi-aquatic herb species with brown coloured flowers. The species has a preference for brown clay soils and is typically found along flat, poorly drained and seasonally wet swamps and wetlands.	Possible. Previously recorded within the survey area (1981) and adjacent to the survey area within the BSW and GBSW. Restricted areas of suitable habitat may occur within the survey area.	Unlikely. Where previously recorded within the survey area in 1981 has subsequently been cleared. Given the specific habitat and high condition within BSW, with adjacent areas within the survey area being completely cleared or having high levels of disturbance, this species is considered unlikely to occur.	TPFL, WA Herb, Naturemap
23	Cyperaceae	*Schoenus loliaceus*		P2	This is an annually occurring semi-aquatic herb species with emerging brown flowers. It has a preference for black and brown clay soils and is typically found in seasonally wet and flooded wetlands and swamps.	Possible. Previously recorded approximately 235 m southeast of the survey area within the BSW. Restricted areas of suitable habitat may occur within the survey area.	Unlikely. Given the specific habitat and high condition within BSW, with adjacent areas within the survey area being completely cleared or having high levels of disturbance, this species is considered unlikely to occur.	WA Herb, Naturemap, TPFL.
24	Cyperaceae	*Schoenus natans*	-	P4	This is a species of annually occurring floating herb with filamentous leaves and red-brown flowers. It has a preference for brown and grey clay soils and is typically found in seasonally inundated or flooded clay pans and wetlands.	Possible. Previous recorded approximately 162 m east of the survey area within the BSW. Restricted areas of suitable habitat may occur within the survey area.	Unlikely. Given the specific habitat and high condition within BSW, with adjacent areas within the survey area being completely cleared or having high levels of disturbance, this species is considered unlikely to occur.	TPFL, WA Herb, Naturemap
25	Cyperaceae	*Schoenus pennisetis*	-	P3	This is a species of small, low-growing, annual sedge with a green-brown inflorescence when in fruit. It has a preference for grey-brown sandy loam soils and is typically found on seasonally wet and flat terrain.	Possible. Previously recorded approximately 315 m southeast of the survey area within the GBSW. Record with spatial location northwest of the survey area is incorrect, location is given as BSW. Restricted areas of suitable habitat may occur within the survey area.	Unlikely. Given the specific habitat and high condition within BSW, with adjacent areas within the survey area being completely cleared or having high levels of disturbance, this species is considered unlikely to occur.	TPFL, WA Herb, Naturemap
26	Cyperaceae	*Schoenus* sp. Beaufort (G.J. Keighery 6391)	-	P1	This is an annually occurring, low-growing, semi-aquatic herb species with distinctive green flowers. It prefers grey and brown clay and mud-type soils and is typically found in seasonally inundated or flooded wetlands and clay pans.	Possible. Previous recorded approximately 233 m southeast of the survey area within the BSW. Restricted areas of suitable habitat may occur within the survey area.	Unlikely. Given the specific habitat and high condition within BSW, with adjacent areas within the survey area being completely cleared or having high levels of disturbance, this species is considered unlikely to occur.	WA Herb, Naturemap, TPFL

Number	Family	Taxon	Status		Description	Pre-Survey LOO	Post-survey LOO	Source
			EPBC Act	BC Act DBCA				
27	Cyperaceae	*Schoenus* sp. Waroona (G.J Keighery 12235)	-	P3	This is a species of small, annually occurring herb with green flowers that does not exceed 10cm in height. It has a preference for dark brown and grey clay soils and is typically found in wet clay pans.	Possible. Previously recorded within the GBSW which is located adjacent to the survey area. Actual location is unknown as the spatial location given is incorrect.	Unlikely. Given the specific habitat and high condition within GBSW, with adjacent areas within the survey area being completely cleared or having high levels of disturbance, this species is considered unlikely to occur.	TPFL, WA Herb, Naturemap
28	Dasypogonaceae	*Calectasia grandiflora*	-	P2	This is a species of multiple-stemmed, small perennial herb growing up to 60 cm tall, with purple flowers. It prefers brown and grey clay-based soils on typically flat and seasonally inundated plains, although the species is usually recorded in low abundance within it's known range.	Possible. Previously recorded within the BSW approximately 112 m southeast of the survey area. Restricted areas of suitable habitat may occur within the survey area.	Unlikely. Given the specific habitat and high condition within the BSW and GBSW, with adjacent areas within the survey area being completely cleared or having high levels of disturbance, this species is considered unlikely to occur.	TPFL, WA Herb, Naturemap
29	Droseraceae	*Drosera occidentalis*		P4	This is a species of rosetted, perennial herb with white flowers. It has a preference for grey-brown sandy clay soils and is typically found in seasonally flooded flats and wetlands.	Possible. Scattered records in swampy areas on the eastern swan coastal plain. Previously recorded throughout the GBSW (east of the survey area), nearest record 50 m southeast of the survey area (1990). Also recorded from Yule Brook reserve (1994) 730 m northwest of the survey area. Restricted areas of suitable habitat may occur within the survey area.	Unlikely. Given the specific habitat and high condition within the BSW and GBSW, with adjacent areas within the survey area being completely cleared or having high levels of disturbance, this species is considered unlikely to occur.	TPFL, WA Herb, Naturemap
30	Droseraceae	*Drosera patens*	-	P1	This is a species of rosetted, perennial herb with distinctive orange lamina and deep red stigmas. It has a preference for white, sandy soils and is most often found in seasonally wet and flooded plains or on the edge of swamps and wetlands.	Unlikely. Nearest record is 4.4 km south of the survey area (1965). There may be restricted areas of suitable habitat within the survey area, but given it hasn't been recorded in the extensively surveyed GBSW area, it is more likely that the habit is not suitable.	Unlikely. No records in proximity to the survey area. Not previously recorded adjacent to the survey area in extensively surveyed GBSW. Swampy areas within the survey area unlikely to provide suitable habitat due to previous clearing and high levels of disturbance.	TPFL, WA Herb, Naturemap
31	Ericaceae	*Andersonia gracilis*	EN	EN	This is a rare, small and slender species of shrub, growing to 30cm tall and with blue-green leaves and pink flowers. It has a particular preference for brown clay soils and is only found in winter-flooded or inundated flats and plains.	Possible. Previously recorded from GBSW, Cannington and one record within the survey area. The record within the survey area (if location is correct) has been cleared (recorded in 1982). There may be restricted areas of habitat within the survey area.	Unlikely. Given the specific habitat and high condition within the BSW and GBSW, with adjacent areas within the survey area being completely cleared or having high levels of disturbance, this species is considered unlikely to occur.	PMST, Naturemap, TPFL, WA Herb.
32	Ericaceae	*Styphelia filifolia*	-	P3	This is a species of erect, well-branched shrub with white flowers and distinctive, asymmetric green fruit. It has a preference for deep, yellow sands and is typically found along flat sandplains.	Likely. Previously recorded at a number of locations north and south of survey area at the western end. Recorded in 2002 in Banksia woodland slightly south of the Kwinana Freeway interchange (185 m). Suitable habitat likely to occur within intact areas of Banksia woodland at the western end of the survey area.	Unlikely. Intact Banksia woodland areas were targeted for this species and was not recorded. It flowers from March to May but is identifiable by fruits which have been known to occur between July and October (Hislop and Puente-Lelievre 2017).	TPFL, WA Herb, Naturemap
33	Fabaceae	*Acacia anomala*	VU	VU	This is a species of small, grass-like shrub, growing to 50 cm tall, with multiple stems and yellow flowers. It has preference for gravel-like laterite soils and is typically found on lateritic hills and slopes.	Unlikely. Nearest record is 4.3 km east of the eastern end of the survey area. This is a species that occurs on the lateritic soils of the Darling Scarp and Plateau, it is not expected that any habitat will occur within the survey area.	Highly Unlikely. No suitable habitat recorded within the survey area.	PMST
34	Fabaceae	*Acacia benthamii*	-	P2	This is a species of slender, erect, open shrub growing up to 2 m tall with an especially deep root system. It has a preference for brown and grey loam soils and can be found on a variety of sandy rises, slopes and flats.	Unlikely. Species mostly occurs on the western side of the SCP, associated with limestone breakaways, however there are some records on the eastern side in clay soils (with *Viminaria juncea*), the nearest being 3.1 km south of the survey area.	Highly Unlikely. Potential suitable habitat restricted and disturbed within the survey area. Has not been previously recorded within the extensively surveyed area of the GBSW adjacent to the survey area.	TPFL, WA Herb, Naturemap

Number	Family	Taxon	Status		Description	Pre-Survey LOO	Post-survey LOO	Source
			EPBC Act	BC Act DBCA				
35	Fabaceae	*Acacia horridula*	-	P3	This is an erect-branching, perennial shrub species with more slender roots and slender pods. It occurs in a variety of gravel-type soils as well as grey and brown clay and is often found on hillsides and steep slopes.	Highly Unlikely. Species associated with gravel, granite and hillslopes of the Darling Scarp, therefore suitable habitat is not expected to occur within the survey area. SCP records are historic (1839) or cultivated.	Highly Unlikely. Suitable habitat not recorded within the survey area.	TPFL, WA Herb, Naturemap
36	Fabaceae	*Acacia lasiocarpa var. bracteolata long peduncle* variant (G.J. Keighery 5026)		P1	Shrub, 0.4-1.5 m high. Fl. yellow, May or Aug. Grey or black sand over clay. Swampy areas, winter wet lowlands.	Unlikely. Previously recorded 2.2 km west of the Kwinana Freeway interchange (Bibra Lake). Restricted areas of suitable habitat may occur within the survey area.	Unlikely. Areas of suitable habitat within the survey area likely to be too degraded to support this species.	TPFL, WA Herb, Naturemap
37	Fabaceae	*Acacia oncinophylla subsp. paucifolia*		P4	This is a larger, erect shrub wattle species, growing up to 3m tall with red-brown bark and grey strap leaves. It has a preference for darker, gritty-type soils and is often found on steep slopes and outcrops.	Highly Unlikely. Species associated with granite outcrops and slopes of the Darling Scarp. Suitable habitat not expected to occur within the survey area.	Highly Unlikely. Suitable habitat not recorded within the survey area.	TPFL, WA Herb, Naturemap
38	Fabaceae	*Isotropis cuneifolia subsp. glabra*		P3	This is a species of particularly spindly, perennial herb growing to 30cm tall and with bright yellow-orange flowers. It has a preference for grey-black clay sands and is most often found along seasonally wet flats and sandplains.	Unlikely. The survey area occurs outside the centre of distribution for this species (north of Muchea). There is one disjunct occurrence in the Perth Metropolitan Area within the BSW 340 m southeast of the survey area within *Corymbia calophylla – Kingia australis* woodlands on heavy soils in excellent condition.	Highly Unlikely. Given the specific habitat and high condition within the BSW and GBSW, with adjacent areas within the survey area being completely cleared or having high levels of disturbance, this species is considered unlikely to occur.	TPFL, WA Herb, Naturemap
39	Fabaceae	*Jacksonia gracillima*	-	P3	This is a species of low spreading shrub with distinct grey-green and pungent branchlets with orange flowers. The species has a preference for grey-brown sandy loam soils and has been recorded in both low-lying sandplains and floodplains.	Possible. Species has a scattered distribution on the eastern side of the SCP from Perth Airport to Mundijong (with disjunct occurrences at Mandurah and Bunbury to Busselton). Nearest records are 690 m west of the western end of the survey area (1994) and 1.2 km west, near the eastern end of the survey area. Restricted areas of suitable habitat may occur.	Unlikely. Species was not recorded from restricted areas of potentially suitable habitat within the survey area.	TPFL, WA Herb, Naturemap
40	Fabaceae	*Jacksonia sericea*	-	P3	This is a multi-branched, low spreading shrub species, typically not exceeding 50 cm in height. It has a preference for dry and dark-coloured sandy soils, and is typically found along hillsides and limestone ridges.	Unlikely. Majority of records occur in calcareous soils on the western side of the SCP and around the lower reaches of the Swan and Canning Rivers. Some records that are further to the east on sandy soils occur, however most of these likely not to be native occurrences (roadside revegetation and growing in imported limestone fill). Nearest record is 3.8 km southeast of the survey area, planted in roadside revegetation.	Unlikely. No suitable habitat recorded within the survey area. There may be potential for this species to occur within roadside revegetation within the survey area, however given the suite of roadside species observed and recorded during the survey, it is considered unlikely.	TPFL, WA Herb, Naturemap
41	Goodeniaceae	*Dampiera triloba*	-	P3	This is an erect, spreading shrub species with noticeably clustered leaves and blue flowers. It has a preference for dark and grey sandy soils, and has been recorded in both sandy hillsides as well as outer parts of established wetlands.	Unlikely. Nearest records associated with Roe Swamp 785 m west of the western end of the survey area. It is possible that there are restricted areas of suitable habitat associated with wetlands occurring within the survey area.	Unlikely. Wetland habitats within the survey area considered to be too degraded to support this species.	TPFL, WA Herb, Naturemap
42	Haemodoraceae	*Haemodorum loratum*	-	P3	This is a perennial, bulbous herb species, with stalks no bigger than 40cm and with uniquely black flowers. The species has a preference for grey and grainy, sandy soils and has most often been found along varying slopes and ridges.	Unlikely. Records of this species in the vicinity of the survey area (2.5 km southeast, Welshpool Road bushland, eastern SCP woodland over heath) are at the southern-most extent of the known distribution. Suitable habitat is unlikely to occur within the survey area.	Highly Unlikely. No suitable habitat recorded and survey area is outside the currently known distribution of the species.	TPFL, WA Herb, Naturemap

Number	Family	Taxon	Status		Description	Pre-Survey LOO	Post-survey LOO	Source
			EPBC Act	BC Act DBCA				
43	Haemodoraceae	*Phlebocarya pilosissima subsp. pilosissima*	-	P3	This is a species of rhizomatous herb reaching a maximum height of 30cm, with highly fibrous roots and cream-white flowers. The species has a preference for white sands and limestone and can be found along floodplains and hillsides.	Unlikely. Species distribution is centred around an area from Badgingarra National Park in the south to the South Eneabba Nature Reserve in the north, with disjunct occurrences at Regans Ford, Bullsbrook and Jandakot. Nearest record approximately 1.9 km south of survey area (1978)	Highly Unlikely. Only one record from 1976 in the vicinity of the survey area, which is a disjunct occurrence from main extent of species distribution.	TPFL, WA Herb, Naturemap
44	Haloragaceae	*Haloragis scoparia*	-	P1	This is a species of perennial herb reaching up to 50 cm tall and with noticeably red stems and bright red and green leaves. The species has a strong preference for clay loam soils and has most typically been found along plains and flats, particularly within Yalgorup National Park.	Highly Unlikely. A poorly known species with seven WA Herb records. All records except for two are from the Yalgorup National Park. One is 4.2 km north of the survey area, historic record (1901), location given as Cannington and one historic record, location unknown.	Highly Unlikely. Species is only recorded within the study area by one historic record (1901). All other records occur within Yalgorup National Park, some 100 km south of the survey area.	TPFL, WA Herb, Naturemap
45	Haloragaceae	*Meionectes tenuifolia*	-	P3	This is an erect, semi-aquatic herb species growing to 50 cm tall with prominent red-green, linear leaves and red fruits. The species has a notable preference for dark and moist clay soils and has historically been found along various wetlands and swamps of ephemeral nature.	Unlikely. Species has a scattered distribution across wetland areas of the SCP and Jarrah Forest. There may be restricted areas of suitable habitat within the survey area. Majority of WA Herb records from the Perth metropolitan area are historic. Nearest record is 2.4 km from survey area recorded at Maddington, 1963.	Highly Unlikely. Given the species has not been recorded within the highly surveyed GBSW, it is unlikely to occur within the survey area where suitable habitats are significantly disturbed (clearing, weed invasion, altered hydrological conditions due to road drainage).	TPFL, WA Herb, Naturemap
46	Haloragaceae	*Myriophyllum echinatum*	-	P3	This is a species of small, annually occurring aquatic herb with deep red stems and leaves and pinkish flowers. The species has a preference for a variety of clay-based soils and Is typically found within ephemeral wetlands and inundated flat plains.	Possible. Previously recorded in winter inundated clay pans of the BSW, 246 m southeast of the survey area. Restricted areas of suitable habitat may occur within the survey area.	Unlikely. Given the specific habitat and high condition within the BSW and GBSW, with adjacent areas within the survey area being completely cleared or having high levels of disturbance, this species is considered unlikely to occur.	TPFL,WA Herb, Naturemap
47	Hemerocallidaceae	*Chamaescilla gibsonii*	-	P3	This is a species of tuberous, perennial herb reaching 30 cm in height, with prominent blue flowers. The species prefers particularly dark clay soils and is predominantly found in seasonally wet plains and flats.	Possible. Previously recorded wet flats of the BSW, 200 m southeast of the survey area. Restricted areas of suitable habitat may occur within the survey area.	Unlikely. Given the specific habitat and high condition within the BSW and GBSW, with adjacent areas within the survey area being completely cleared or having high levels of disturbance, this species is considered unlikely to occur. Specimens of *Chamaescilla* sp. were collected within the survey area and these were all identified as the common *C. corymbosa subsp. corymbosa.*	TPFL, WA Herb, Naturemap
48	Hemerocallidaceae	*Johnsonia pubescens subsp. cygnorum*	-	P2	This is a species of perennial, tufted herb with bright green leaves and white bracts. It prefers particularly dry, sandy soils and has historically been found along hillsides and foothills.	Possible. Previously recorded southeast and north of the Tonkin Highway interchange. Nearest record is 795 m southeast of the survey area within remnant vegetation along Tonkin Highway. Suitable habitat likely to occur within the survey area.	Unlikely. Collections of *Johnsonia pubescens* were taken from vegetation at the Tonkin Highway interchange and these were identified as the common subsp. *pubescens.*	TPFL, WA Herb, Naturemap
49	Macarthuriaceae	*Macarthuria keigheryi*	EN	EN	This is a species of small, herbaceous, prostrate shrub with notable hairy stems. It has a strong reliance on deep white and grey sandy soils, and has most often been recorded on slopes and within gullies.	Possible. Previously recorded north of the Tonkin Highway interchange and west of the Orrong/Welshpool Road intersection. Nearest record 470 m west of the survey area.	Unlikely. Areas of suitable habitat at the eastern most section of the survey area are likely to be too degraded to support this species.	PMST, TPFL, WA Herb, Naturemap
50	Malvaceae	*Commersonia* sp. Lesmurdie (A.A. Mitchell 11429)		P2	Poorly known species (2 collections held at WA Herb). Scrambling to erect shrub to 1.5 m tall. Flowers white, Nov to Dec. Recorded in tall Melaleuca woodland with understorey of sedges on sloping	Highly Unlikely. Species currently appears restricted to Lesmurdie Falls area.	Highly Unlikely. Survey area not within the currently known distribution of species. No suitable habitat recorded.	WA Herb

Number	Family	Taxon	Status		Description	Pre-Survey LOO	Post-survey LOO	Source
			EPBC Act	BC Act DBCA				
					seepage with brown clay soil on basalt sill.			
51	M**alvaceae**	*Conospermum undulatum*	VU	VU	Erect, compact shrub, 0.6-2 m high. Fl. white-other, May to Oct. Grey or yellow-orange clayey sand. Species has a restricted distribution in the foothills of the Darling Scarp between the suburbs of High Wycombe and Martin.	Possible. Locations of *C. undulatum* are well known, with a population survey undertaken by GHD (2024). Nearest records are 381 m northeast of the eastern end of the survey area. Suitable habitat likely to occur within the survey area.	Unlikely. Although there are records in close proximity to the survey area, given the level of survey that has occurred for this species in the area (both GHD 2024 and current survey) and the fact that the species is easily identifiable at any time of the year and well known to the survey team, it is considered unlikely to occur within the survey area.	NM, WA Herb, TPFL
52	Malvaceae	*Lasiopetalum bracteatum*		P4	This is a species of erect, single stemmed shrub with visibly bright pink flowers and growing to 1 metre tall. It has been shown to prefer sandy granite soil types and has most commonly been recorded along hilltop and outcrops.	Highly Unlikely. Survey area is outside known distribution of species. Suitable habitat is unlikely to occur. Nearest record is an incorrect spatial location.	Highly Unlikely. Survey area is outside known distribution of species. Suitable habitat not recorded within survey area. Nearest record is an incorrect spatial location.	TPFL, WA Herb, Naturemap
53	Malvaceae	*Lasiopetalum glutinosum subsp. glutinosum*		P3	An erect species of sprawling shrub with multiple stems and with pink and red flowers. It prefers especially sandy and gravel-type soils and is fund along gentle rises and undulating terrain.	Highly Unlikely. Survey area is outside known distribution of species. Suitable habitat is unlikely to occur. Nearest records are incorrect spatial locations.	Highly Unlikely. Survey area is outside known distribution of species. Suitable habitat not recorded. Nearest records are incorrect spatial locations.	TPFL, WA Herb, Naturemap
54	Menyanthaceae	*Ornduffia submersa*	-	P4	An aquatic, perennial floating herb species typically found in shallow water with prominent white flowers. The species prefers seasonally inundated creeks and wetlands.	Possible. Species recorded from BSW and GBSW and Perth Airport Swamps (NW of survey area). There is one record intersecting the survey area, recorded from 1990, however based on locality description, likely to be with BSW area. Restricted occurrence of suitable habitat possible within the survey area.	Unlikely. Given the specific habitat and high condition within the BSW and GBSW, with adjacent areas within the survey area being completely cleared or having high levels of disturbance, and the wetlands having high levels of disturbance (clearing, weed invasion and altered hydrology due to road drainage) this species is considered unlikely to occur.	TPFL, WA Herb, Naturemap
55	Montiaceae	*Calandrinia uncinella*	**-**	P1	A semi-erect succulent herb species with reddish fruits and white flowers. The species prefers silty loam and clay soils and is typically found in wet, seasonal inundated plains and flats.	Possible. Species recorded from GBSW and an historic record from Cannington Siding (1959). Nearest record is 300 m east of the survey area. Restricted occurrence of suitable habitat possible within the survey area.	Unlikely. Given the specific habitat and high condition within the BSW and GBSW, with adjacent areas within the survey area being completely cleared or having high levels of disturbance, this species is considered unlikely to occur.	TPFL, WA Herb
56	Myrtaceae	*Babingtonia urbana*	-	P3	An open, sprawling shrub species reaching a maximum of 1 m tall with numerous slender branches and pink flowers. It prefers dark, brown clay soils and has typically been found in swamps and seasonally wet flats.	Possible. Species recorded from GBSW area. Record occurring within the survey (from 1978) is an incorrect spatial location. Restricted occurrence of suitable habitat possible within the survey area.	Unlikely. Given the specific habitat and high condition within the BSW and GBSW, with adjacent areas within the survey area being completely cleared or having high levels of disturbance, this species is considered unlikely to occur.	TPFL, WA Herb, Naturemap
57	Myrtaceae	*Beaufortia purpurea*	-	P3	A species of dense, 1m tall shrub with bright red stamens and light pink flowers. The species prefers granite and rocky-type sands and is most often found along steep slopes and gullies.	Unlikely. Survey area occurs outside known distribution of species. Suitable habitat unlikely to occur. Nearest record (4.7 km southeast) is an incorrect spatial location.	Highly Unlikely. Survey area is outside known distribution of species. Suitable habitat not recorded within survey area. Nearest record is an incorrect spatial location.	TPFL, WA Herb, Naturemap
58	Myrtaceae	*Calytrix breviseta* subsp. *breviseta*	EN	CR	Shrub, 0.4-1 m high. Fl. purple-blue, Oct to Nov. Sandy clay. Swampy flats.	Unlikely. Known from two populations. Originally recorded from Gosnells and Bellevue, now confined to the Kenwick area (GBSW). An outdated interim recovery plan notes that numerous surveys have been undertaken for this taxon, but have not been successful in recording new populations and very little suitable habitat still exists in the known distribution (Luu Robyn and English 2004).	Highly Unlikely. Species is known from two populations within the GBSW area. Given the specific habitat and high condition within the BSW and GBSW, with adjacent areas within the survey area being completely cleared or having high levels of disturbance, this species is considered unlikely to occur.	NM, TPFL, WA Herb

Number	Family	Taxon	Status		Description	Pre-Survey LOO	Post-survey LOO	Source
			EPBC Act	BC Act DBCA				
59	Myrtaceae	*Darwinia apiculata*	EN	EN	A rare species of low, densely-branched shrub with linear leaves and distinctive orange-red bracts. It has a preference for gravel and laterite soils and has been recorded most commonly on hilltops and ridges among open woodland.	Unlikely. Survey area occurs outside known distribution of species. Suitable habitat unlikely to occur.	Highly Unlikely. Survey area is outside known distribution of species. Suitable habitat not recorded within survey area.	PMST, TPFL, WA Herb, Naturemap
60	Myrtaceae	*Eucalyptus x balanites*	EN	EN	An erect, open mallee species averaging 2-5m tall, with rough grey-brown bark and orange oil glands. The species prefers gravel-type, grey sands and has typically low abundance levels, with most recordings along gentle slopes of open woodland.	Highly Unlikely. Species identified by PMST only. No known records within study area.	Highly Unlikely. Species identified by PMST only. No known records within study area.	PMST
61	Myrtaceae	*Verticordia lindleyi subsp. lindleyi*	-	P4	A species of slender, erect, dwarf shrub with low-spreading twigs reaching 50cm tall and with pink and purple flowers. The species has a preference for deep, grey sandy soils and is most often found along flat sand-plains among Melaleuca and Eucalypt communities.	Possible. Previously recorded within the survey area (1990) at the Tonkin Highway interchange. Also recorded within GBSW and north of the survey area at Nicholson Road (1990).	Unlikely. Location of previous record was searched and species was not recorded. Suitable habitat occurs within this area, however, is becoming disturbed due to small size and large edge to area ratio.	PMST, TPFL, WA Herb, Naturemap
62	Orchidaceae	*Caladenia huegelli*	CR	EN	A unique and rare orchid species growing up to 60 cm tall with distinctive dark-red flowers with cream-coloured margins. The species has a particular preference for grey and white dry sands, and, though recordings are sparse, has most often been recorded in open woodlands along flats and plains.	Likely. Known from intact areas of Banksia woodland around the western end of the survey area, including within the survey area where it intersects Ken Hurst Park, Leeming.	Known. Species was located within the survey area on the southern side of Roe Highway at five locations within Ken Hurst Park. Some known locations were visited, and plants were not visible. One additional plant was recorded at John Connell Reserve, this represents a new location. Despite extensive searches, only one individual was recorded at this location.	PMST, TPFL, WA Herb, Naturemap
63	Orchidaceae	*Diuris brevis*	-	P2	A perennially occurring herb species growing to 40 cm tall and with brown-yellow flowers. The species has comparatively small numbers of recordings, but records have indicated a preference for black, peaty soils and flat coastal plains.	Unlikely. Species previously recorded from disjunct locations, BSW (190 m south of survey area) and 100 km south in Waroona.	Highly Unlikely. A poorly known species with two records held at WA Herb. The nearest record is 190 m south of the survey area, however, given the specific habitat and high condition within the BSW and GBSW, with adjacent areas within the survey area being completely cleared or having high levels of disturbance, this species is considered unlikely to occur.	TPFL, WA Herb, Naturemap
64	Orchidaceae	*Diuris drummondii*	VU	VU	A species of tall, erect, annual herb species reaching 70 cm tall with highly tuberous formation and yellow flowers. The species has a particular preference for brown loam soils and has most commonly been found within seasonally occurring floodplains and wetlands.	Unlikely. Historical records 475 m south of the survey area (Canning Vale, 1980) and 1.5 km south (Jandakot, 1959). Restricted areas of suitable habitat may occur within the survey area.	Unlikely. Lack of recent previous records in the vicinity of the survey area and high levels of disturbance in areas which may have represented suitable habitat for this species indicate that it is unlikely to occur.	PMST
65	Orchidaceae	*Diuris micrantha*	VU	VU	This is a rare species of erect growing orchid species not exceeding 30 cm tall with prominent yellow flowers. The species prefers either brown loamy peat soils or sandy clay and has most often been recorded in swamps and seasonally inundated flats.	Highly Unlikely. Species identified by PMST only, no known records occur within the study area.	Highly Unlikely. Species identified by PMST only, no known records occur within the study area.	PMST
66	Orchidaceae	*Diuris purdiei*	EN	EN	This is a rare species of erect orchid not exceeding 20 cm tall and with brown to yellow flowers. The species has a strong soil preference for peaty sands and where rare recordings have been made,	Unlikely. Previously recorded 830 m east of the survey area within the GBSW and 3.8 km south at (now extinct) Canning Vale. There may be limited area of suitable habitat within the survey area.	Unlikely. Given the specific habitat and high condition within the BSW and GBSW, with adjacent areas within the survey area being completely cleared or having high levels of disturbance, this species is considered unlikely to occur.	PMST

Number	Family	Taxon	Status		Description	Pre-Survey LOO	Post-survey LOO	Source
			EPBC Act	BC Act DBCA				
					has tended to be found in swamps and seasonally inundated flats.			
67	Orchidaceae	*Drakaea elastica*	EN	CR	A very rare species of hammer orchid reaching 70 cm tall with shortened leaves, a single stem and single flower. The species' preferences are for grey and white sandy soils, and habitat types appear to include seasonal swamps and gentle sloping terrain.	Unlikely. Previously recorded 545 m south of the survey area in Jandakot. Potentially limited area of suitable habitat within the survey area.	Unlikely. No suitable habitat recorded within the survey area.	PMST, TPFL, WA Herb, Naturemap
68	Orchidaceae	*Drakaea micrantha*	VU	EN	A tuberous herb with heart shaped silvery grey-green leaf with prominent veins. Habitat includes grey sands in *Eucalyptus marginata, Banksia* and *Allocasuarina fraseriana* woodland often under thickets of *Kunzea ericifolia* with *Paracaleana nigrita* and other *Drakaea* species, often in open sandy patches where competition from other plants has been removed (Department of the Environment, Water, Heritage and the Arts 2008).	Highly Unlikely. One now extinct population recorded 2.3 km south of the survey area (Canning Vale, 1988). Potentially restricted areas of suitable habitat within the survey area, although these are expected to be too degraded to support this species.	Highly Unlikely. No suitable habitat recorded within the survey area. Population known from within the study area is extinct.	PMST, WA Herb, Naturemap
69	Orchidaceae	*Microtis quadrata*	-	P4	An erect growing orchid species reaching 40 cm in height, with flowers completely creamy white. It is typically found in soils with sandy clay texture and nature, and within Melaleuca and Eucalypt forests and occasional seasonal wetlands.	Unlikely. Previously recorded 3.1 km southwest of the western end of the survey area (Jandakot, 1960). Potentially restricted areas of suitable habitat within the survey area, however there are no recent recordings of this species in the vicinity of the survey area..	Highly Unlikely. Only one historic record on the SCP in the Perth metropolitan area. Areas of potentially suitable habitat are likely to be too degraded to support this species.	TPFL, WA Herb, Naturemap
70	Orchidaceae	*Thelymitra magnifica*		P1	A sturdy species of erect orchid, reaching 30 cm in height, with orange labellum and distinctive brown and orange striped flowers.	Highly Unlikely. Species is known from stony ridges of the Darling Scarp and the survey area is outside the known distribution.	Highly Unlikely. Species is known from stony ridges of the Darling Scarp and the survey area is outside the known distribution.	TPFL, WA Herb, Naturemap
71	Orchidaceae	*Thelymitra stellata*	EN	EN	Tuberous, perennial, herb, 0.15-0.25 m high. Fl. yellow & brown, Oct to Nov. Sand, gravel, lateritic loam.	Highly Unlikely. Nearest record in 2.3 km south east of the eastern end of the survey area. Populations occurring within the study area are all recorded within Darling Scarp area. Suitable habitat is unlikely to occur within the survey area.	Highly Unlikely. Within the study area, species is known from the Darling Scarp. Suitable habitat was not recorded within the survey area.	TPFL PMST
72	Orchidaceae	*Thelymitra variegata*	-	P2	This is a unique species of "leopard" orchid, with distinct orange sepals and purple coloured flower petals with reddish spots. It has a notable preference for sandy soils and has often been found along slopes and areas featuring Allocasuarina and Banksia vegetation.	Highly Unlikely. All records from the Perth metropolitan area are historic. Nearest record to the survey area, locality information indicates it was recorded from Russell Road, Jandakot (spatial location is incorrect) in 1959.	Highly Unlikely. No recent records of species within the study area.	TPFL, WA Herb, Naturemap
73	Phyllanthaceae	*Poranthera moorokatta*	-	P2	A very small, annually occurring, glabrous herb species with white-green flower petals. The species prefers white and grey sandy soils, both wet or dry in nature, and is most commonly found along low woodlands and gentle sloping terrain.	Possible. Nearest record is 2.8 km southeast of the survey area. Suitable habitat for this species occurs within the survey area.	Potential. A small short-lived annual species which may not have been visible during the survey. Suitable habitat for this species occurs within Banksia woodlands in good or better condition. *Poranthera* specimens were collected from the survey area, all were identified as the common *P. microphylla.*	TPFL, WA Herb, Naturemap
74	Poaceae	*Austrostipa bronweniae*	EN	EN	A rare, robust species of tufted grass reaching a height of 1.5 metres with a preference for either wetland systems or limestone nodules. While the species is	Unlikely. Species has a scattered distribution on the coastal plain from GBSW to Busselton. Has been previously recorded from the GBSW	Highly Unlikely. No suitable habitat recorded (Shrubland of *Callitris pyramidalis* and *Viminaria juncea* over low heath, on winter wet calcareous	PMST, TPFL, WA Herb, Naturemap

Number	Family	Taxon	Status		Description	Pre-Survey LOO	Post-survey LOO	Source
			EPBC Act	BC Act DBCA				
					considered rare, it has been found in a variety of soil types, varying from wet clay sands to drier grey sandy soils.	approximately 1.2 km east of the survey area. Potential for limited areas of suitable habitat to occur within the survey area.	loam over clay) (Threatened Species Scientific Committee 2018b).	
75	Polygalaceae	*Comesperma griffinii*		P2	A small erect, annually occurring herb species, growing to 7 cm tall, with distinctive blue flowers. The species prefers brown-grey sandy loam soils and is most commonly found among Marri woodlands.	Possible. Species has a scattered distribution from southwest of Mullewa to Lake Grace. One record from the Perth metropolitan area, approximately 100 m east of the survey area on the wet flats of the BSW. Restricted areas of suitable habitat may occur within the survey area.	Unlikely. Given the specific habitat and high condition within the BSW and GBSW, with adjacent areas within the survey area being completely cleared or having high levels of disturbance, this species is considered unlikely to occur.	TPFL, WA Herb, Naturemap
76	Polygalaceae	*Comesperma rhadinocarpum*		P3	This is a species of perennially occurring, soft-wooded shrub, with slender branches, narrow pointed fruits and distinctive pale-blue flowers. It can be found within a variety of soil types ranging from brown sandy loams to gravel-type laterite soils, and has typically been found along undulating plains and gentle gradient slopes.	Possible. Previous recorded from BSW and GBSW. Nearest record is 40 m from the survey area. Restricted areas of suitable habitat may occur within the survey area.	Unlikely. Given the specific habitat and high condition within the BSW and GBSW, with adjacent areas within the survey area being completely cleared or having high levels of disturbance, this species is considered unlikely to occur.	TPFL, WA Herb, Naturemap
77	Proteaceae	*Banksia mimica*	EN	EN	This is a rare species of prostrate shrub with underground rhizomes yellow flowers at soil level. It has a specific preference for dry, grey sandy soils and a habitat preference for open low heathlands	Unlikely. Survey area occurs outside the known distribution of this species with all records within the study area occurring to the east of the survey area, in the foothills.	Highly Unlikely. Survey area outside known distribution of species. Suitable habitat not recorded within the survey area.	PMST, Naturemap, TPFL, WA Herb
78	Proteaceae	*Banksia pteridifolia subsp. vernalis*	-	P3	A prostrate shrub species reaching approximately 30 cm high, with yellow inflorescences and blue-green leaves. It inhabits areas of varying dry sandy soils, and has often been recorded on hillsides and slopes amongst other Banksia species.	Highly Unlikely. Survey area occurs outside the known distribution of this species, with records occurring in the foothills. The nearest record to the survey area is an incorrect spatial location (locality information is listed as Gooseberry Hill).	Highly Unlikely. Survey area outside known distribution of species. Suitable habitat not recorded within the survey area.	Naturemap, TPFL, WA Herb
79	Proteaceae	*Grevillea thelemanniana*	CR	CR	This is a very rare, large, spreading shrub species, growing over 1.5 metres tall, with divided leaves and prominent red flowers. It has a preference for clay-type soils and is typically restricted to wet swamplands and seasonal wetlands.	Possible. Many records within the BSW and GBSW area. One historic record (1936) within the survey area and historic records (1899 and 1902) to the west of the survey area (Cannington). Nearest record is 20 m from survey area.	Recorded. Two individuals were recorded within the survey area and one just outside adjacent to the area of known population.	PMST, TPFL, WA Herb, Naturemap
80	Proteaceae	*Isopogon autumnalis*	-	P3	A multi-stemmed open shrub species growing to 1 m tall with pale yellow flowers. The species can be found typically in dry, yellow to grey sandy soils, and along flats and well drained plains.	Possible. There are numerous records of this species to the north and east of the eastern end of the survey area. Limited suitable habitat may be present within the survey area.	Unlikely. Most areas at the eastern end of the survey area have high levels of disturbance. Areas with remnant vegetation were searched and this species was not recorded.	TPFL, WA Herb
81	Proteaceae	*Synaphea* sp. Fairbridge Farm (D. Papenfus 696)	CR	CR	Densely clumped, low-lying shrub species with lobed leaves and yellow flowers. The species has a particular preference for grey, sandy soils, and is sparsely scattered around open woodland communities along undulating terrain.	Possible. Species recorded 900 m east of survey area within GBSW. Restricted areas of suitable habitat may occur within the survey area.	Unlikely. Given the specific habitat and high condition within the BSW and GBSW, with adjacent areas within the survey area being completely cleared or having high levels of disturbance, this species is considered unlikely to occur.	PMST, NM, TPFL, WA Herb
82	Proteaceae	*Synaphea* sp. Pinjarra Plain (A.S. George 17182)	EN	EN	This is a rare species of small, clumped shrub, growing to 30 cm in height with distinctive green fruits and yellow flowers. The species has been found in soils ranging from brown clay to greying	Highly Unlikely. Species identified by PMST. No actual record of species has been previously recorded within the study area.	Highly Unlikely. Species identified by PMST. No actual record of species has been previously recorded within the study area and survey area is outside the known distribution of this species.	PMST

Number	Family	Taxon	Status		Description	Pre-Survey LOO	Post-survey LOO	Source
			EPBC Act	BC Act DBCA				
					gravel, and typically on flat terrain within open woodland communities.			
83	Proteaceae	*Synaphea* sp. Serpentine (G.R. Brand 103)	CR	CR	Perennial, erect, clumped shrub (sub-shrub), to 0.6 m high x to 0.5 m wide. Flowers are yellow and borne on long spikes, well above the leaves, from late August to November. Reproduces by seed (one seed per fruit). Habitat includes flat terrain on grey-brown sandy loams to clay in seasonally wet areas in heath or woodland over sedgeland.	Highly Unlikely. Species identified by PMST and has not been previously recorded within the study area. Survey area is outside the known distribution of this species which is known from a narrow band of approximately 18 km from Byford to Serpentine (Threatened Species Scientific Committee 2018c).	Highly Unlikely. Species identified by PMST and has not been previously recorded within the study area. Survey area is outside the known distribution of this species.	PMST
84	Restionaceae	*Lepyrodia curvescens*		P2	Dioecious, shortly creeping, tufted rhizomatous, herb, 0.24-0.4 m high, rhizomes on surface or to 1 cm deep. Fl. Sep to Nov. Sand, laterite. Seasonally inundated swampland.	Possible. Previously recorded within 50 m of the survey area (in the BSW). Species has a scattered distribution from Pinjarra to South Eneabba Nature Reserve, however there are limited records within the Perth metropolitan area.	Unlikely. Given the specific habitat and high condition within the BSW and GBSW, with adjacent areas within the survey area being completely cleared or having high levels of disturbance, this species is considered unlikely to occur.	TPFL, WA Herb, Naturemap
85	Rhamnaceae	*Stenanthemum sublineare*	-	P2	An erect species of particularly small shrub with large underground stems and minute white flowers. The species has a preference for dry, grey sands and has typically been found on gentle slopes, ridges and undulating plains.	Unlikely. Species has a scattered and disjunct distribution with records at Bullsbrook, north of Cataby, Capel, Augusta and a cluster of records north east of Manypeaks. There is one record located in the Perth Metropolitan area, approximately 4.3 km east of the survey area in Banksia woodland, grey sand. There is likely to be suitable habitat within the survey area.	Unlikely. The species has been previously recorded in Banksia woodland 4.3 km east of the survey area. However given the lack of additional records in the region and distance from survey area, this species is considered unlikely to occur.	TPFL, WA Herb, Naturemap,
86	Rutaceae	*Cyanothamnus tenuis*		P4	A small, slender erect species of perennial shrub with single stem and prominent blue flowers. It has shown a preference for granite-type soils and has been recorded along slopes, hillsides and steep valleys.	Highly Unlikely. Species is known from the Darling Scarp. Nearest record is 4.9 km east of the survey area.	Highly Unlikely. Distribution of this species is to the east of the survey area, no suitable habitat recorded.	TPFL, WA Herb,
87	Sapindaceae	*Dodonaea hackettiana*	-	P4	This is a large, erect shrub species growing up to 3m tall, with red-green fruits and orange flowers. It is most commonly found on grey, dry sandy soils and on a variety of flats, gentle slopes and hillsides. Outcropping limestone.	Possible. Numerous records of occurrence to the west of the Kwinana Freeway interchange and nearest record is 1.1 km south east of the survey area. Potentially restricted areas of suitable habitat at the western end of the survey area.	Potential. A *Dodonaea* sp. was seen by the survey botanist on the edge of a slip lane for Roe/Kwinana. However, due to safety could not pull over and identify.	PMST
88	Scrophulariaceae	*Eremophila glabra* subsp. *chlorella*	EN	EN	This is a rare, woody, dense shrub species growing to 60 cm tall with green fruits and yellow-green flowers. It can be found in soils that are both sandy grey and clay-based, and have been sparsely recorded within seasonal wetlands and dampened flats and plains.	Possible. Records within the GBSW and Cannington areas. There is an historic record within the survey area (1972, Kenwick). Potential for restricted areas of suitable habitat to occur within the survey area.	Unlikely. Given the specific habitat and high condition within the BSW and GBSW, with adjacent areas within the survey area being completely cleared or having high levels of disturbance, this species is considered unlikely to occur.	PMST, TPFL, WA Herb, Naturemap
89	Stylidiaceae	*Levenhookia preissii*	-	P1	An erect, single-stemmed, annually occurring herb, growing to less than 15 cm in height, and with distinctive pink flowers. The species prefers dry, grey-brown sandy soils, and has been recording along flats and gently undulating slopes.	Possible. Previously recorded approximately 500 m south east of the survey area in wetlands of Ken Hurst Park. Potential for limited areas of suitable habitat to occur within the survey area.	Unlikely. The survey area in the vicinity of Ken Hurst Park contained dry Banksia woodland habitat types, other wetland areas were considered to be too degraded to support this species.	TPFL, WA Herb, Naturemap
90	Stylidiaceae	*Stylidium aceratum*	-	P3	A small, erect, annually occurring herb species reaching up to 8 cm tall with pink flowers. The species has a preference for lightly coloured clay soils	Possible. Previously recorded in the claypans of the BSW (260 m southeast of survey area) and some historic records in Cannington (1949 and 1955).	Unlikely. Given the specific habitat and high condition within the BSW and GBSW, with adjacent areas within the survey area being completely cleared or	TPFL, WA Herb, Naturemap

Number	Family	Taxon	Status		Description	Pre-Survey LOO	Post-survey LOO	Source
			EPBC Act	BC Act DBCA				
					and seasonal wetlands and seasonally inundated flats.	Potential for restricted areas of suitable habitat to occur within the survey area.	having high levels of disturbance, this species is considered unlikely to occur.	
91	Stylidiaceae	*Stylidium longitubum*	-	P4	A species of annually occurring, small erect shrub, not exceeding 10 cm in height, and with white and purple flowers. The species has a preference for lightly coloured clay soils and seasonal wetlands and seasonally inundated flats.	Possible. Previously recorded within the BSW (50 m from the survey area). Potential for restricted areas of suitable habitat to occur within the survey area.	Unlikely. Given the specific habitat and high condition within the BSW and GBSW, with adjacent areas within the survey area being completely cleared or having high levels of disturbance, this species is considered unlikely to occur.	TPFL, WA Herb, Naturemap
92	Stylidiaceae	*Stylidium paludicola*	-	P3	A species of slender, erect, perennial herb, growing to 60 cm tall and with pink flowers. It has been shown to occur within grey and black sandy and clay soils, and most commonly within wetlands, swamps and seasonally flooded flats.	Possible. There are scattered records to the north and south of the western end of the survey area. Has been previously recorded approximately 1.5 km south of the western end of the survey area (Jandakot, 1965). There may be restricted areas of suitable habitat within the survey area.	Unlikely. Suitable habitat was not recorded at the western end of the survey area. Wetland areas within the entire survey area were found to be disturbed with significant weed invasion, altered hydrology and clearing and likely too degraded to support this species.	TPFL, WA Herb, Naturemap
93	Stylidiaceae	*Stylidium striatum*		P4	Rosetted perennial, herb, 0.15-0.55 m high, Leaves erect, oblanceolate to spathulate, 1.5-4 cm long, 1.5-6 mm wide, apex acute to acuminate, margin entire, glabrous, striate. Scape sparingly glandular on inflorescence axis, glabrous below. Inflorescence racemose. Fl. yellow, Oct to Nov. Brown clay loam over laterite. Hillslopes. Jarrah/Marri forest, Wandoo woodland.	Highly Unlikely. Nearest record is over 4 km east of the eastern end of the survey area. Distribution of the species is to the east of the survey area (Darling Scarp and Plateau). Suitable habitat (laterite, hillslopes) unlikely to occur within the survey area.	Highly Unlikely. Suitable habitat was not recorded and survey area is outside the known distribution of this species.	NM, WA Herb, TPFL

Appendix E

Wetland assessment

Wetlands of the survey area

Preliminary wetland assessment

Secondary wetland assessment

Geomorphic wetlands that intersect the survey are

No.	UFI	Assessed	Name	Category
1	7638		unknown	Multiple Use
2	7727		unknown	Resource Enhancement
3	7740		unknown	Multiple Use
4	7741		unknown	Resource Enhancement
5	7744		unknown	Multiple Use
6	7746		Brixton Street Swamp	Multiple Use
7	8984		unknown	Resource Enhancement
8	9045		Tomah Road Swamp	Multiple Use
9	9046	✓	Tomah Road Swamp	Conservation
10	13365		Brixton Street Swamp	Conservation
11	13618		unknown	Multiple Use
12	13619		unknown	Multiple Use
13	13620		unknown	Resource Enhancement
14	13621		unknown	Multiple Use
15	13622		unknown	Multiple Use
16	14900		Canning River Palusplain	Conservation
17	14956	✓	unknown	Resource Enhancement
18	15074	✓	unknown	Conservation
19	15253		unknown	Multiple Use
20	15254		unknown	Multiple Use
21	15255		unknown	Conservation
22	15949		Canning River Palusplain	Multiple Use
23	16088		Canning River Palusplain	Multiple Use
24	16126	✓	Hester Park Canning River	Resource Enhancement

No.	Criteria	Wetland UFI					Comments
		15255	9046	14956	15074	16126	
1	The wetland is currently recognised as internationally or nationally significant for its natural values. Lists/registers include: The Ramsar Convention on Wetlands State Government endorsed candidate sites for the Ramsar Convention on Wetlands Directory of Important Wetlands in Australia National Heritage List or equivalent.	Y	N	N	N	N	The Brixton Street wetland lie adjacent to the survey area, and the DIWA shapefile does intersect it southwest of the Brixton Street bridge over Kwinana Freeway (DBCA 2018). However, the intersection comprises only cleared land and roadside vegetation and does not contain any wetland vegetation. The closest Ramsar-listed wetland is Thomson Lake (4.9 km southwest) (DBCA 2017b). There are no National Heritage List sites (DCCEEW 2024b) located within the study area.

No.	Criteria	Wetland UFI					Comments
		15255	9046	14956	15074	16126	
2	The wetland is spatially dominated by vegetation in a good or better condition using the vegetation condition scale outlined in Appendix B and is identified as significant for its natural values under one or more of the following: – Conservation Reserves for Western Australia Systems 1, 2, 3, 5 – Conservation Reserves for Western Australia, The Darling System – System 6 – A Systematic Overview of Environmental Values of the Wetlands, Rivers and Estuaries of the Busselton – Walpole Region – The Environmental Significance of Wetlands in the Perth to Bunbury Region – Bush Forever, Swan Bioplan (including Peel Regionally Significant Natural Areas) or equivalent.	Y	Y	N	N	Y	UFI 16126 (Hester Park Canning River) is intersected by System 6 Conservation Reserve M75 (DBCA 2017a), as well as an unnamed conservation reserve listed under the Swan and Canning Rivers Management Act 2006 (DBCA 2024b). The Environmental Significance of Wetlands in the Perth to Bunbury Region identifies both UFI 9046 (Tomah Road Swamp) and 'Canning River', which would incorporate UFI 16126 as having significant environmental values (LeProvost, Semeniuk & Chalmer Environmental Consultants 1987). Two Bush Forever sites intersect UFI 16126 either side of the survey area, site 224 to the northwest and site 246 to the southeast (DPLH 2019). The survey area is not located in the Busselton-Walpole region. No sites listed in the Swan Bioplan intersect the survey area (EPA 2013).).

No.	Criteria	Wetland UFI					Comments
		15255	9046	14956	15074	16126	
3	The wetland supports a breeding, roosting, or refuge site or a critical feeding site for populations of fauna listed by the Australian Government (for example, *Environment Protection and Biodiversity Conservation Act 1999*, migratory bird agreements such as JAMBA, CAMBA and RoKAMBA) or the State (for example, threatened and specially protected fauna listed under the *Wildlife Conservation Act 1950*).	Y	N	N	Y	Y	UFI 16126 contains critical breeding and feeding habitat for Carter's Freshwater Mussel (Vulnerable). Although a mostly a sessile species, it depends on movement of fish up and downstream for larvae dispersal (DWER n.d.). The Department of Water and Environmental Regulation emphasizes that a strong ecological system is crucial for the survival of this species. UFI 15074 contains three suitable breeding trees (GHD in prep), as defined by DAWE (2022) for all three listed black cockatoo species, Carnaby's Black Cockatoo (Endangered), Baudin's Black Cockatoo (Endangered) and the Forest Red-tailed Black Cockatoo (Vulnerable), however no signs of breeding were recorded in the area. Foraging evidence was also recorded, however the wetland is not considered a critical feeding site for any of the three species. There are 23 species of Migratory shorebirds known to occur in local RAMSAR sites and other local wetlands, however this habitat is not extensive shallow water or tidal coastal/estuarine shoreline. Therefore, occurrence is occurrence is unlikely may be limited.

No.	Criteria	Wetland UFI					Comments
		15255	9046	14956	15074	16126	
4	The wetland is spatially dominated by vegetation in a good or better condition using the vegetation condition scale outlined in Appendix B and supports one or more of the following: – an occurrence of a threatened ecological community – a confirmed occurrence of a priority 1 or priority 2 ecological community – a confirmed occurrence of a declared rare (threatened) flora species.	Y	N	N	N	N	UFIs 9046, 14956 and 15074 lie with the DBCA database mapped Banksia Woodlands of the Swan Coastal Plain ecological community, however the field survey and statistical analysis of these areas determined that they did not meet the necessary criteria set out by Threatened Species Scientific Committee (TSSC 2016) and Department of Environment and Energy (DotEE, 2019). UFI 15074 lies within the DBCA database mapping of both Banksia Woodlands of the Swan Coastal Plain and Southern wet shrublands Swan Coastal Plain ecological communities. Three TEC/PECs were mapped within the survey area (see Section 4.2.2), however none of these were associated with any of the wetlands assessed. No EPBC Act or BC Act listed flora were recorded within any of the four wetlands assessed. No State or Federally listed flora were recorded within the survey area.
5	Equal to or greater than 90% of the wetland supports vegetation in a good or better condition using the vegetation condition scale outlined in Appendix B.	Y	Y	N	Y	N	As the shape of the survey area is a narrow road corridor, each wetland which intersects the survey area is not completely contained within it, and instead wetland-associated quadrats were installed near the perimeter of a given wetland in roadside vegetation. The vegetation condition at these roadside locations is negatively affected by proximity to the road, and as such is typically not representative of the entire wetland. For UFI 9046, 14956 and 15074, at least 90% of the area supported vegetation in Good or better condition.

No.	Criteria	Wetland UFI					Comments
		15255	9046	14956	15074	16126	
6	The wetland is spatially dominated by vegetation in a good or better condition using the vegetation condition scale outlined in Appendix B and is known to support internationally, nationally or state-wide scientific values including geoheritage and geoconservation.	Y	N	N	N	N	A search of the Department of Energy, Mines, Industry Regulation and Safety (DEMIRS) Geoheritage Sites database did not identify any geoheritage sites within the survey area (DEMIRS 2024). A search of the EPBC Protected Matters Database did not identify any of these features within the survey area (DCCEEW 2024a).
7	The wetland is spatially dominated by vegetation in a good or better condition using the vegetation condition scale outlined in Appendix B and meets one of the following:	Y	Y	Y	Y	N	UFI 9046, 14956 and 15074 were dominated by vegetation in Good or better condition
	– ≤ 10% of wetlands of the same type are assigned Conservation management category within the Swan Coastal Plain (by area)	4.8%	46.8%	32.8%	4.8%	59.4%	– 46.8% of sumplands and 32.8% of damplands are assigned Conservation management category within the Swan Coastal Plain (DBCA, 2024c).
	– ≤ 10% of all wetlands in the same consanguineous suite are assigned Conservation management category (by area)	12.3%	12.3%	12.3%	12.3%	18.2%	– 27.4% of wetlands within the Jandakot consanguineous suite are assigned Conservation management category (DBCA, 2024c).
	– ≤ 10% of wetlands of the same type in its consanguineous suite are assigned Conservation management category (by area)	4.1%	29.3%	11.6%	4.1%	61.3%	– 36.5% of sumplands and 37.0% of damplands within the Jandakot consanguineous suite are assigned Conservation management category (DBCA, 2024c).

No.	Criteria	Wetland UFI					Comments
		15255	9046	14956	15074	16126	
	– Best representative of its type within its consanguineous suite domain.	Y	N	N	Y	N	– For all wetlands assessed, there are many larger wetlands within the associated consanguineous suite which would make better representatives (DBCA, 2024c).
Pre-existing category		CCW	CCW	REW	CCW	REW	UFI 16126 meets the criteria to be upgraded from REW to CCW. 14956 does not meet the criteria and a secondary evaluation is to be completed. All remaining wetlands fit within their pre-existing categories.
Re-evaluated category		CCW	CCW	REW	CCW	CCW	

A methodology for the evaluation of wetlands on the Swan Coastal Plain, Western Australia

Wetland evaluation desktop and site assessment form

The *Wetland evaluation desktop and site assessment form* has been designed to simplify the collection and processing of information required to complete a wetland evaluation on the Swan Coastal Plain. The form includes a general information section and two questionnaires:

1) Preliminary desktop and site assessment questions: complete prior to commencement of the preliminary evaluation.

2) Full site assessment questions: complete if the preliminary evaluation indicates that a secondary evaluation is required. The full site assessment questions should be completed before commencing the secondary evaluation. **It is important** that the information provided justifies the scoring of the selected evaluation criteria.

Information sources to assist in the collection of wetland data are outlined in Appendices B and D.

GENERAL INFORMATION

Assessor details

Name/s: Angela Benkovic

Date/s of site visit: 22/09/2024

Agency/Company: GHD Pty Ltd

Contact number: 86222 8361

Email address: angela.benkovic@ghd.com

Weather during site visit: 22^0C

Land ownership and contact details

Landowner: City of Canning

Land manager (if different to owner):

Consultant (if applicable):

Contact for site visit:N/A

Landowner permission received for site access: N/A

Landowner consent to a mapping review has been provided: N/A

Property details

Location (e.g. lot, street, suburb): near the corner of William and Station Street North, East Cannington

Latitude and longitude/MGA:115.96795E and 32.00266S

Wetland details

Name: Unnamed

Unique feature identifier number/s:14956

Hill *et al.* (1996) map sheet number and wetland identification number/s (WIN):

Consanguineous suite:Mungala

Area (hectares) of the wetland:12.08

Area (hectares) subject to this evaluation: 0.66ha

Is the wetland being assessed as a portion of a wetland with varying areas of value: yes / no.

Mapped management category: Conservation / Resource Enhancement / Multiple Use.

Wetland type:

Hydrology	**Host landform**			
	Basin	Flat	Slope	Channel
Marine / tidal influence	Estuary - waterbody	Estuary - peripheral		Estuary - waterbody
Permanent inundation	Lake			River
Seasonal inundation	Sumpland	Floodplain		Creek
Seasonal waterlogging	Dampland	Palusplain	Paluslope	

PRELIMINARY DESKTOP AND SITE ASSESSMENT QUESTIONS

Land uses

Current ownership of wetland: private / local government / other government

Current land use: parkland/ recreation

Past land use: as above

Surrounding land use: urban

Existing management: unknown

Fire history / regime: unknown

International, national or regional significance

Indicate whether the wetland is identified (permanent or interim) on one of the following international, national or state registers or listings.

Conservation significance	**Y/N**
Ramsar Convention on Wetlands (UNESCO 1971)	N
Directory of Important Wetlands in Australia (Environment Australia 2001)	N
Conservation Reserves for Western Australia Systems 1, 2, 3, 5 (Department of Conservation and Environment, 1976)	N
Conservation Reserves for Western Australia, The Darling System – System 6 (Department of Conservation and Environment, 1983)	N
A Systematic Overview of Environmental Values of the Wetlands, Rivers and Estuaries of the Busselton – Walpole Region (Pen 1997)	N
The Environmental Significance of Wetlands in the Perth to Bunbury Region (Le Provost *et al.* 1987)	N
Bush Forever (Government of Western Australia 2000)	Site 283 (in part)
Swan Bioplan (Environmental Protection Authority 2010a)	N
Environmental Protection (Western Swamp Tortoise Habitat) Policy Approval Order 2002	N
Conservation estate (e.g. national park, nature reserve, A class reserve)	N
Other (list):	N

Does the wetland retain the values for which it was originally registered or listed, describe:

Fauna

Note the presence (recorded or observed) or evidence of fauna within and one kilometre surrounding the wetland that is listed by the Australian Government (e.g. *Environment Protection and Biodiversity Conservation Act 1999, CAMBA, RoKAMBA, JAMBA*) or State (e.g. threatened or specially protected fauna under the *Wildlife Conservation Act 1950*) or priority fauna or, priority or threatened ecological communities related to fauna which are listed by the Department of Biodiversity, Conservation and Attractions (DBCA).

Species / name of ecological community	**Significance** (e.g. *EPBC Act, CAMBA)*	**Observations** (e.g. population size, age, evidence, activities, habitat requirements)	**Source of information** (e.g. observation, literature, DBCA)
Forest Red-tail Black Cockatoo	EPBC	Foraging on marri fruits	Observation

Scientific value

List any scientific values including geoheritage or geoconservation values that the wetland may contain (e.g. important sediments or geological features, fossils, pollen records, stromatolites, thrombolites, evidence of evolutionary processes, evidence of a change in climate, unique flora or fauna adaptations).

Scientific, geoheritage or geoconservation values	**Significance and observations**	**Source of information** (e.g. observation, literature, DBCA, WA Museum)

Flora

Use aerial photography and a site visit to determine the condition of the vegetation within and 50 metres surrounding the wetland. Using the *Bush Forever* vegetation condition scale (Appendix B) provide a map delineating the vegetation condition within the wetland and calculate the percentage area.

Vegetation condition	**Total area (%) within the wetland**	**Area (%) 50 metres surrounding the wetland**
Pristine		
Excellent		
Very good		
Good		
Degraded	5% surveyed	Outside the scope of the study
Completely degraded		

Using this information is the wetland dominated by vegetation in a good or better condition: yes / no

What vegetation complex (Heddle *et al.* 1980) does the wetland belong to: Southern River Complex

Using the information sources outlined in Appendix B, what extent of the vegetation complex is remaining on the Swan Coastal Plain: < 10% / 10-30% / >30%

List any occurrences of priority and threatened ecological communities related to flora and wetland systems which are known to occur within and five kilometres surrounding the wetland. If they are located within or adjacent to the wetland display their boundary in the attached map. N/A

Name of ecological community	**Significance** (e.g. priority, threatened)	**Observations** (e.g. condition, area, habitat type)	**Source of information** (e.g. observation, literature, DBCA)

List any occurrences of declared rare flora or priority flora known to occur within and one kilometre surrounding the wetland and display their location in the attached map.N/A

Species	**Significance** (e.g. declared rare, priority 1)	**Population measure** (number, abundance comment)	**Observations** (e.g. habitat type, flowering season)	**Source of information** (e.g. literature, DBCA, surveyed population, Herbarium record)

Representativeness

Using the data in Appendix D record the corresponding area.

	% area
What is the % area of wetlands with the same classification assigned a Conservation management category on the Swan Coastal Plain (Table 7)	26.6
What is the % area of wetlands in the same consanguineous suite assigned a Conservation management category (Table 8)	12.6
What is the % area of wetlands with the same classification in the same consanguineous suite assigned a conservation management category (Table 9)	11.6

Is the wetland rare? (e.g. only wetland in its consanguineous suite, best wetland example in its consanguineous suite or region, only Conservation management category wetland in the consanguineous suite or region, primary saline wetland within a consanguineous suite predominated by freshwater):

Photographs and maps

The following material should be submitted:

- on-ground colour photographs of the wetland from all directions, including within the wetland core, across the wetland boundary and across lot boundaries showing:
  - all vegetation units throughout the wetland
  - the range of vegetation condition across the wetland
  - any other relevant features of the wetland, including any alterations to geomorphology (e.g. drains, fill)

- a clear, recent (i.e. less than two years old, if available) colour aerial photograph/s of the area (with the date noted), overlaid with the following:
  - the current wetland mapping with the location and direction of photograph points illustrated
  - the current and proposed wetland mapping, including wetland boundaries and management categories

- a description and map of the vegetation units and condition in accordance with a reconnaissance survey (Environmental Protection Authority 2016).

FULL SITE ASSESSMENT QUESTIONS

Geomorphology

What geomorphic unit does the wetland belong to ; Pinjarra Plain and Bassendean Dune

Can all areas of the wetland be visited? yes / no. Comment:

Describe the wetland's surface soil (e.g. peat, quartz sand): dark grey silty loam

What is the slope of the wetland: flat / gentle undulations / steep banks / other

Indicate whether any of the following human induced alterations have occurred to the wetland's geomorphology.

Human induced alterations	Y/N - describe
fill	
excavation	
partition	
alienation along boundaries	
damming	
structural control	
mining	
dredging	
drains	Y, adjacent to William street
other	

What extent (%) of the wetland's geomorphology is altered: < 10 / 10-25 / 25-50 / 50-75 / 75-90 / > 90
Note: clearing of vegetation in itself does not constitute a change in geomorphology.

Compare the wetland's geomorphology to other wetlands of the same type in the same consanguineous suite domain. List any differences, similarities or unusual characteristics observed:

Additional notes:

Wetland processes

The wetland is: fresh (< 1,000 mg/L) / hyposaline (1,000-10,000 mg/L) / saline (10,000-100,000 mg/L) / hypersaline (> 100,000 mg/L) / unknown

The wetland is: groundwater dependant / perched / both / unknown. State whether inferred or based on data:

Did the wetland contain surface water at the time of the survey or evidence of inundation: yes / no.
Explain:

Does the wetland contain artificial attributes and functions that alter the natural hydrological regime (e.g. detention basins, artificial drains or channels (inflow or outflow), water bores or pumps): yes / no.
Describe the features / functions, their impact on the hydrology and show on the map:

Identify the processes occurring in the wetland (e.g. sedimentological, hydrological, hydrogeological, chemical). Describe whether they are inferred or observed: unknown

To what extent have each of these processes been altered : negligible / low / medium / high / unknown.
Describe:

Have alterations to the processes affected the wetland's natural attributes and functions: no / low impacts / high impacts. Describe: urban development has impacted the wetland

Compare the wetland's processes to other wetlands of the same type. List any differences, similarities or unusual characteristics observed:

Linkages

Describe if the wetland is part of a hydrological link in a larger or more complex system (e.g. wetland linked to estuary ecology, wetland linked to river system, part of a wetland chain): No

Is the wetland part of an ecological linkage or wildlife corridor or, is it connected by vegetation or waterways to other nearby bushland or wetlands? If yes, describe: No, in an urban landscape

Is a portion of the wetland vegetated and as a result functions as a fragmented ecological linkage or wildlife corridor? If yes, describe: No

Habitats

List any native fauna (e.g. frogs, oblong turtle) or flora (e.g. macrophytes, algae) observed to be dependent on the wetland's surface water.

Species	**Observations (e.g. form, population size, location in the substrate, habitat type)**

Is the wetland important for maintaining the genetic and ecological diversity in a regional or local context: yes / no. Describe: NO

Describe whether the wetland supports or is likely to support fauna populations at a vulnerable stage of their life cycle (e.g. turtle eggs, tadpoles) or provides a nursery for fauna (e.g. nursery for waterbirds):

Select the various habitats located within and 50 metres surrounding the wetland.

large trees with canopy	trees with hollows	dead wood	low dense shrubland	scattered shrubland
fringing sedges / rushes	scattered sedges / rushes	inundated sedges / rushes	submerged aquatic vegetation	samphire / salt marsh
seasonally inundated grasslands	mud flats	shallow open water	deep open water	islands (natural or artificial)
rocky outcrops	sandy substrate	heavy leaf litter	feral fauna burrows	thickets / scrub
other:	other:	other:	other:	other:

Compare the wetland's habitats to other habitats of wetlands of the same type, consanguineous suite or the surrounding area. Describe any differences, similarities or unusual characteristics observed:

Determine whether habitat diversity is the result of disturbance or natural complexity (i.e. is the diversity evident in the wetland a result of disturbance e.g. fire, sedimentation, excavations or drains). Describe these habitat features:

Additional notes:

Flora

Confirm the occurrence or believed to be occurrence of threatened or priority ecological communities, declared rare flora and priority flora recorded during the desktop assessment. Note any additional observations or occurrences and include advice on search effort in any area of suitable habitat for these communities or species:

List any significant flora confirmed to be present within the wetland or whether it is a known location for significant flora. none

Species	**Observations** (e.g. population's size, percentage cover, flowering/fruiting activity)	**Known or new occurrence?**

List the dominant flora species located within the wetland in each growth form layer and estimate their cover in the wetland. Provide a map delineating the vegetation units within the wetland in accordance with a reconnaissance flora survey (Environmental Protection Authority 2016).

Growth form layer	**Dominant species**	**Percentage cover** (to the nearest 10%)
Trees over 30 m		
Trees 10-30 m	Corymbia calophylla	5
Trees under 10 m	Melaleuca rhaphiophylla	35
Mallee over 8 m		
Mallee under 8 m		
Shrub over 2 m		
Shrubs 1-2 m		
Shrubs under 1 m		
Herbs	Pteridium esculentum	10
Sedges / rushes	Lepidosperma longitudinale Typha orientalis *Cyperus eragrostis	10 5 5
Grasses	*Cenchrus clandestinus *Cynodon dactylon	4 10
Open water		-
Bare ground		2
Other -leaf litter		70

List the most common weed species occurring in the wetland: *Cyperus eragrostis, *Cenchrus clandestinus *Cynodon dactylon and *Paspalum urvillei

Use aerial photography and the site visit to determine the percentage of the wetland boundary which is surrounded by land dominated by native vegetation. Describe any observations: 100-75% / 75-50% / 50-10% / < 10%

Using site observations, compare the diversity of native flora in the wetland to other wetlands of the same type. List reference sites used. Does the wetland have a high diversity of native flora: yes / no / similar Explain:

Has the vegetation been changed by direct disturbance during the last 24 months? For example, grazing, clearing, ploughing, fire: yes / no.

If yes, provide details, including information regarding the type of disturbance, extent and nature of the impact to the vegetation e.g. continuous or periodic, and if periodic, the last known occasion.

Identify whether any form of clearing is legal. If yes, is regeneration evident? If regeneration is not evident, outline the potential for regeneration and rehabilitation of vegetation if disturbance (a) continues and (b) ceases.

Has the flora diversity or composition changed in the last 24 months due to human induced disturbances? If yes, provide information.

Fauna

Document all other observations and evidence (e.g. tracks and scats) of native fauna species utilising the wetland as a feeding, breeding, roosting or refuge site.

Species	**Native / introduced**	**Observations** (e.g. habitat type, populations size, age)	**Source of information** (e.g. observation, literature, DBCA)
Forest Red-tailed Black cockatoo	N	Foraging evidence	observation

Does the wetland function or have the potential to function as an ecological refuge: yes / no.

Comment on whether fauna are residing in the wetland for feeding, breeding and roosting purposes or if they migrate between other natural wetlands or bushlands.

Using site observations compare the fauna occurring in the wetland to other wetlands of the same type.

Does the wetland support a variety of fauna species compared to the other wetlands: yes / no / similar. Explain:

Cultural

Is the wetland identified (either interim or permanently) on a national (e.g. National Heritage List), state (e.g. Heritage Council of Western Australia), regional or local heritage list: yes / no.

Document all heritage values for the wetland and its immediate surrounds. Display their location on the attached map.

Is the wetland identified for its Aboriginal cultural value (interim or permanently) e.g. by the Department of Planning, Lands and Heritage: yes / no

Document the Aboriginal cultural values of the wetland and its immediate surrounds. Display the location on the attached map.

Are there any important social values of the wetland to the national, state, regional or local community (e.g. friends group, iconic picnic area):

Select the passive and active recreational based activities which currently or potentially occur in or directly surrounding the wetland.

bushwalking	dog walking	bird watching
photography	spiritual	picnic
play equipment	bike riding	horse riding
swimming	canoeing	boating
wind sailing	hunting	fishing
4 wheel driving		

Additional notes:

Education and scientific

Is there a primary, secondary or tertiary education institution or scientific organisation which is known or is previously known to use the wetland for educational or scientific purposes: yes / no / unknown. Details:

Is there potential for the wetland to be used in the future for education by one of these institutions: yes / no / unknown.

Secondary evaluation criteria.

Attributes/ functions/ values	General criteria	Criteria	Score
Geomorphology			
1	Representativeness	≤ 20% of wetlands of the same type are assigned Conservation on the Swan Coastal Plain by area.	**H**
2		≤ 20% of wetlands in the same consanguineous suite are assigned Conservation by area.	**H**
3		≤ 20% of wetlands of the same type in the same consanguineous suite are assigned Conservation by area.	**H**
4		The wetland is outstanding in some geomorphic aspect, for example size, origin, height relative to sea level, depth, age.	**H**
5	Naturalness	Alteration to the wetland's geomorphology by % area: < 25% altered 25-75% altered > 75% altered. Note: Alteration of geomorphology refers to a modification of the landform, for example by filling, excavation, drains. Clearing of vegetation in itself does not constitute a change in geomorphology.	 **H** **I** **L**
6	Scarcity	The wetland exhibits unusual geomorphology or unusual internal geomorphic features compared to other wetlands of the same type in the consanguineous suite.	**H**
7		The wetland is the best example of its type in its consanguineous suite.	**H**
Wetland processes			
8	Representativeness	The wetland is an important component of the natural hydrological cycle providing natural functions (e.g. flood protection, recharge/discharge, hydrological storage, support for groundwater dependent ecosystems). The wetland's vegetation, geomorphology, hydrology or sediments are modified; however, the wetland is still a component of the hydrological cycle providing natural and artificial functions (e.g. flood remediation, recharge/discharge, hydrological storage, support for groundwater dependent ecosystems). The wetland's vegetation, geomorphology, hydrology or sediments are modified to the extent that the wetlands hydrological functions are artificial such as storage, or the wetland has been disconnected from the natural hydrological cycle and no longer provides natural attributes and functions.	**H** **I** **L**
9		The wetland supports a representative process (e.g. wetland process typical of the wetland's hydrological setting, sediment accretionary process typical of the wetland's geomorphic setting or hydrochemical process typical of the wetland's geological setting).	**H**
10	Naturalness	The wetland is not subject to altered wetland processes or, is subject to altered wetland processes and the wetland's natural attributes and functions are maintained.	**H**

Attributes/ functions/ values	General criteria	Criteria	Score
		The wetland is subject to altered wetland processes and the wetland's natural attributes and functions have been changed; however, they have the potential to be rehabilitated. The wetland is subject to altered wetland processes to the extent that the wetland no longer supports natural attributes and functions. Note: processes to consider include hydrological, hydrogeological, sedimentological, chemical, biological.	I L
11	Scarcity	The wetland exhibits unusual processes compared to other wetlands of the same type in the consanguineous suite.	H
Linkages			
12	Representativeness	The wetland is a hydrological link in a larger or more complex and intact system.	H
13	Naturalness	The wetland is part of a continuous ecological linkage or wildlife corridor, or a regionally significant ecological linkage or wildlife corridor connecting bushland or wetland areas. The wetland is part of a fragmented ecological linkage or wildlife corridor. The wetland is disturbed and isolated, surrounded by either a built or highly disturbed environment with no nearby native vegetation or waterways to support an intact or fragmented ecological linkage or wildlife corridor.	H I L
14	Scarcity	The wetland has unusual hydrological, hydrogeological, hydrochemical or ecological linkages with adjacent wetlands or bushland.	H
Habitats			
15	Representativeness	The wetland is isolated from other undisturbed wetlands or bushland and as a result, maintains important ecological or genetic fauna or flora diversity within its consanguineous suite domain.	H
16		The wetland contains evidence of surface water or groundwater expression that is vital for maintaining regionally significant populations of native aquatic or terrestrial flora or fauna. The wetland contains evidence of surface water or groundwater expression that is important for maintaining populations of native aquatic or terrestrial flora or fauna.	H I
17		The wetland provides a nursery for native fauna populations, or maintains fauna populations at a vulnerable stage of their life cycle.	H
18	Naturalness	The wetland supports habitats that are unaltered or the wetland has been altered and its natural habitats are maintained. The wetland supports habitats that are altered; however, the habitats are still identifiable and have the potential to naturally regenerate or be rehabilitated after weed control, if required. The wetland is altered and as a result is no longer supporting natural habitats which can be rehabilitated.	H I L

Attributes/ functions/ values	General criteria	Criteria	Score
19	Scarcity	The wetland supports habitats that are unusual compared to other wetlands of the same type on the Swan Coastal Plain.	**H**
Flora			
20	Representativeness	The wetland's current diversity of native flora is similar to what would be expected in an unaltered state. The wetland supports a reduced diversity of native flora due to human induced disturbances. The wetland supports a significantly reduced diversity of native flora species due to human induced disturbances.	**H** **I** **L**
21		The wetland is identified in a vegetation complex (Heddle et al. 1980) which is represented by: ≤ 30% of the pre-European extent 30-50% of the pre-European extent. Note: statistics can be obtained from Local Biodiversity Program (2013) – to allow for vegetation type and extent mapping error due to the mapping scale used, the extent of remnant vegetation is considered an overestimate. The 30% and 10% thresholds are assessed at actual 40% and 15% levels.	**H** **I**
22	Naturalness	Using the vegetation condition scale outlined in Appendix B, the wetland's vegetation condition by area is: ≥ 75% Good, Very Good, Excellent or Pristine 25-75% Good, Very Good, Excellent or Pristine < 25% Good, Very Good, Excellent or Pristine.	**H** **I** **L**
23		The wetland or ≥ 50% of the wetland boundary is surrounded by land dominated by remnant native vegetation. The wetland or 10-50% of the wetland boundary is surrounded by land dominated by remnant native vegetation. The wetland or < 10% of the wetland boundary is surrounded by land dominated by remnant native vegetation.	**H** **I** **L**
24	Scarcity	The wetland supports an occurrence of declared rare, priority 1, priority 2, priority 3 or priority 4 flora, or an occurrence of three or more significant flora taxa.	**H**
25		The wetland is likely to support declared rare, priority 1, priority 2, priority 3 or priority 4 flora; however, the occurrence cannot be located or its habitat has been altered and is no longer in a natural state.	**I**
26		The wetland supports an occurrence of a threatened ecological community, priority 1 or priority 2 ecological community.	**H**
27		The wetland supports an occurrence of a priority 3 or priority 4 ecological community.	**I**
Fauna			
28	Representativeness	The wetland is an ecological refuge for regionally significant fauna species or fauna assemblages.	**H**

Attributes/ functions/ values	General criteria	Criteria	Score
		The wetland has the potential to be an ecological refuge but is disturbed and its attributes and functions require rehabilitation.	I
29		The wetland supports a permanent or seasonal feeding, breeding, roosting or watering site for regionally significant native fauna. The wetland supports a permanent or seasonal feeding, breeding, roosting or watering site for regional or local fauna but only in association with other surrounding natural areas.	H I
30	Naturalness	The wetland's current diversity of native fauna is similar to what would be expected in an unaltered state, or the wetland supports diverse fauna compared to other wetlands of the same type. The wetland supports a reduced diversity of fauna compared to other wetlands of the same type. The wetland supports limited attributes and functions for fauna populations due to human induced disturbances.	H I L
31	Scarcity	The wetland is likely to support a breeding, roosting, refuge or feeding site for populations of fauna listed by the Australian Government (e.g. *EPBC Act 1999*, JAMBA, CAMBA, RoKAMBA Agreements) or the State (e.g. threatened or specially protected fauna listed under the *Wildlife Conservation Act 1950*).	H
32		The wetland supports a breeding, roosting, refuge or feeding site for priority 1, priority 2, priority 3 or priority 4 fauna.	H
33		The wetland supports an occurrence of a threatened ecological community, priority 1 or priority 2 ecological community.	H
34		The wetland supports an occurrence of a priority 3 or priority 4 ecological community or a breeding, roosting, refuge or feeding site for significant fauna.	I
Cultural			
35	Representativeness	The wetland or its immediate surrounds is identified for its natural values on a national or State heritage list or the wetland supports other known regional heritage values.	H
36		The wetland or its immediate surrounds is identified for its natural values on a municipal heritage list or the wetland supports other known local heritage values.	I
37		The wetland or its immediate surrounds is identified on a national, State or local list or register for its Aboriginal cultural value.	H
38		The wetland is important to the local community for its natural values.	H
39		The wetland is or has the potential to be a site for public or private based recreation.	I
40		The wetland is the subject of a recognised ecological restoration / rehabilitation project by a community group, landowner or land manager	H

Attributes/ functions/ values	General criteria	Criteria	Score
		that aims to improve the wetland's natural, heritage, cultural or social values. The wetland is likely to support heritage, cultural or social values; however, the values cannot be confirmed or the values have been disturbed and are no longer as important or significant. The wetland did support heritage, cultural or social values; however, these have been significantly disturbed and are no longer important or the values have been removed.	**I** **L**
Scientific and educational			
41	Representativeness	The wetland supports known important teaching or research characteristics and for this reason is an existing or potential education or research site. Note: the wetland must still support the relevant teaching or research characteristics. The wetland has the potential to be used as a study or research site.	**H** **I**
42		The wetland supports known scientific, geoheritage or geoconservation values.	**H**

Secondary evaluation criteria scores tally.

Attributes/functions/values	Scores		
	High	**Intermediate**	**Low**
Geomorphology	**1**	**1**	
Wetland processes		**1**	**1**
Linkages			**1**
Habitats		**1**	**1**
Flora		**1**	**3**
Fauna	**2**	**2**	**1**
Cultural		**1**	
Scientific and educational			
Total score	**3**	**7**	**7**
Defining attributes/functions/values	Fauna		
Applicable management category	REW		