



Public Transport Authority

Yanchep Rail Extension Part 2 Biological Assessment

December 2018

Executive summary

The Public Transport Authority (PTA) is in the planning stage for the extension of the northern suburbs passenger railway, the Yanchep Rail Extension (YRE) (the project). The proposed alignment will ultimately extend from Butler Railway Station to the proposed Yanchep Railway Station, a distance of approximately 16 kilometres (km).

The YRE project is being assessed in two parts, Part 1: Butler Station to Eglinton Station and Part 2: Eglinton Station to Yanchep Station. Part 2 of the project includes approximately 7.2 km of track (beginning north of proposed Eglinton Station) and a turnback facility to the north of the Yanchep Station, to allow for the turning and stowage of trains.

The PTA commissioned GHD Pty Ltd (GHD) to undertake a biological assessment for the YRE project. The purpose of the assessment was to delineate key flora, vegetation and fauna values within the YRE Part 2 survey area (hereon referred to as the 'survey area').

This report is subject to, and must be read in conjunction with, the limitations and assumptions contained throughout the report.

Key findings

Vegetation

Thirteen vegetation types as well as cleared areas were identified and described for the survey area. Eleven of the vegetation types comprised remnant native vegetation, one vegetation type was dominated by planted taxa and one vegetation type comprised a mix of degraded native remnant vegetation and native regrowth (>10 years). The majority of the survey area was rated Very Good, Good or Degraded in condition. In these areas, the vegetation structure had been altered and disturbances from soil erosion and weed invasion (largely) through track usage was observed. Two areas were rated Excellent and comprised *Banksia* shrubland and *Banksia* woodland, and areas rated as Completely Degraded had been historically cleared or impacted by grazing and were dominated by introduced species.

Assessing the vegetation types described at a broad level, based on dominant species, landform features and field observations, and coupled with the statistical analyses, five conservation significant ecological communities were identified:

- *Banksia* Woodlands of the Swan Coastal Plain Threatened Ecological Community (TEC) – listed as Endangered under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act)
- *Melaleuca huegelii* – *M. acerosa* [*M. systema*] shrublands on limestone ridges (26a) TEC – listed as Endangered by the Department of Biodiversity, Conservation and Attractions (DBCA)
- *Banksia* dominated woodlands of the Swan Coastal Plain IBRA region Priority Ecological Community (PEC) – listed as Priority 3 by DBCA
- Tuart (*Eucalyptus gomphocephala*) woodlands of the Swan Coastal Plain PEC – listed as Priority 3 by DBCA
- Northern Spearwood shrublands and woodlands (24) PEC – listed as Priority 3 by DBCA.

Flora

Two hundred and twelve flora taxa (including subspecies and varieties) were recorded during the field assessments. This comprised of 150 native taxa and 62 introduced flora taxa. Of the

introduced taxa, six are listed as Declared Pests under the *Biosecurity and Management Act* 2007 and/or as a Weeds of National Significance. No EPBC Act or *Wildlife Conservation Act* 1950 (WC Act) listed flora were recorded within the survey area. One DBCA Priority-listed flora taxon was recorded, *Hibbertia spicata* subsp. *leptotheca* (P3). An additional three DBCA Priority-listed flora species were recorded during the 2012 survey, *Conostylis pauciflora* subsp. *euryrhipis* (P4), *Conostylis pauciflora* subsp. *pauciflora* (P4) and *Beyeria cinerea* subsp. *cinerea* (P3).

Fauna

Eight broad fauna habitats were identified within the survey area, including three woodland types, two shrubland types, one herbland/sedgeland type, one ridgeline type and highly disturbed areas. The survey area is a mosaic of intact remnant and previously disturbed areas and parts of the survey area have been affected by varying degrees of disturbance. Across most of the mapped fauna habitat types, the habitat value is largely high with respect to the vertebrate fauna assemblages that potentially utilise them. Low fauna habitat value has been assigned to cleared and highly degraded weedy areas, which have limited foraging and shelter values for a limited number of species.

The fauna surveys recorded 78 vertebrate fauna species, including 59 birds, ten reptiles and nine mammals. Two fauna species of conservation significance was recorded during the field surveys, Carnaby's Black Cockatoo, listed as Endangered under EPBC Act and WC Act, and the Western Brush Wallaby listed as Priority 4 by DBCA. A further four species are considered likely to occur in the survey area: Southern Brown Bandicoot / Quenda (listed as Priority 4 by DBCA), Peregrine Falcon (listed as other specially protected fauna by DBCA), Jewelled South West Ctenotus (listed as Priority 3 by DBCA) and Black Striped Snake (listed as Priority 3 by DBCA).

A Black Cockatoo habitat assessment identified 116.06 ha of suitable foraging habitat, with 38.71 ha rated as high value and 77.35 rated as moderate value. Seventy potential breeding trees of suitable diameter at breast height (DBH) were recorded within the survey area. Of these, none had hollows of suitable size to support breeding. The surveys identified 8.56 ha of potential roosting habitat represented as *Eucalyptus* woodland generally comprising tall mature Tuart trees and is considered to be of moderate value.

Table of contents

| | | |
|-----|--|----|
| 1. | Introduction..... | 1 |
| 1.1 | Project background..... | 1 |
| 1.2 | Purpose of the report..... | 1 |
| 1.3 | Project location..... | 1 |
| 1.4 | Scope of works..... | 1 |
| 1.5 | Relevant legislation, conservation codes and background information..... | 2 |
| 1.6 | Limitation and assumptions..... | 2 |
| 2. | Methodology..... | 4 |
| 2.1 | Desktop assessment..... | 4 |
| 2.2 | Field survey..... | 4 |
| 2.3 | Limitations..... | 11 |
| 3. | Desktop assessment..... | 15 |
| 3.1 | Climate..... | 15 |
| 3.2 | Landform and soils..... | 15 |
| 3.3 | Hydrology..... | 16 |
| 3.4 | Land use..... | 16 |
| 3.5 | Regional biogeography..... | 17 |
| 3.6 | Vegetation and flora..... | 17 |
| 3.7 | Fauna..... | 22 |
| 4. | Field survey results..... | 23 |
| 4.1 | Vegetation and flora..... | 23 |
| 4.2 | Fauna..... | 35 |
| 5. | References..... | 47 |

Table index

| | | |
|----------|---|----|
| Table 1 | Flora and vegetation survey timing and effort | 5 |
| Table 2 | Data collected during the field survey..... | 5 |
| Table 3 | SWA dataset quadrats used in analysis | 6 |
| Table 4 | Fauna survey timing and effort | 9 |
| Table 5 | Field survey limitations..... | 12 |
| Table 6 | Hydrology queries for the survey area..... | 16 |
| Table 7 | Extents of vegetation associations mapped with the survey area (GoWA 2018a)..... | 19 |
| Table 8 | Extents of vegetation complexes on the SCP mapped within the survey area (GoWA 2018b) | 19 |
| Table 9 | Extents of vegetation complexes within in City of Wanneroo mapped within the survey area (GoWA 2018b) | 19 |
| Table 10 | Threatened and Priority Ecological Communities identified in the desktop searches | 20 |
| Table 11 | Vegetation types recorded within Part 2 | 24 |
| Table 12 | Extent of vegetation condition ratings mapped within the survey area | 29 |
| Table 13 | Extent of Banksia Woodlands of the SCP TEC within the survey area..... | 31 |
| Table 14 | Conservation significant flora known or likely to occur within the survey area..... | 34 |
| Table 15 | Fauna habitat types within survey area | 36 |
| Table 16 | Black Cockatoo habitat within survey area..... | 43 |
| Table 17 | Black Cockatoo habitat value | 43 |
| Table 18 | Conservation significant fauna 'likely' to occur in the survey area | 46 |

Appendices

Appendix A – Figures

Appendix B – Relevant legislation, conservation codes and background information

Appendix C – Database searches

Appendix D – Flora data

Appendix E – Fauna data

1. Introduction

1.1 Project background

The Public Transport Authority (PTA) is in the planning stage for the extension of the northern suburbs passenger railway, the Yanchep Rail Extension (YRE) (the project). The proposed alignment will ultimately extend from Butler Railway Station to the proposed Yanchep Railway Station, a distance of approximately 16 kilometres (km).

The YRE project is being assessed in two parts, Part 1: Butler Station to Eglinton Station and Part 2: Eglinton Station to Yanchep Station. Part 2 of the project includes approximately 7.2 km of track (beginning north of proposed Eglinton Station) and a turnback facility to the north of the Yanchep Station, to allow for the turning and stowage of trains.

An initial environmental investigation for the project including desktop and field survey was completed by GHD Pty Ltd (GHD) in spring 2010 (GHD 2011) with an additional survey completed in spring 2012 (GHD 2012). Due to the age of the previous surveys and refinements to the proposed alignment, additional biological surveys have been completed from 2016-2018.

1.2 Purpose of the report

The PTA commissioned GHD to undertake a biological assessment for the YRE project. The purpose of the assessment was to delineate key flora, vegetation and fauna values within the YRE Part 2 survey area (hereon referred to as the 'survey area'). This report summarises the biological survey results for Part 2 of the YRE project. The results will be used to identify and assess the ecological impacts of Part 2, and inform the environmental assessment and approvals process.

1.3 Project location

1.3.1 Survey area

The survey area extends from the northern boundary of YRE Part 1 (north of Pipidiny Road) to north of the proposed Yanchep Railway Station. The survey area is approximately 8.7 km long and varies from 40 to 340 metres (m) in width and covers 147.80 hectares (ha) (Figure 1, Appendix A).

1.3.2 Study area

A study area was defined for the desktop based searches of the assessment and includes a 5 km buffer of the survey area for the purpose of flora and fauna database searches.

1.4 Scope of works

The scope of works for the flora and fauna survey included:

- A desktop review of publically available information and relevant reports commissioned by the PTA to determine the environmental values of the survey area
- A biological survey of the survey area was undertaken to identify:
 - Vegetation community types present, including presence of any Threatened or Priority Ecological Communities (TECs or PECs) or other significant vegetation
 - Vegetation condition, including the location of any Weeds of National Significance (WONS) or Declared Weeds

- Flora species present including introduced species
- The presence or potential presence of any Threatened or Priority Flora
- Fauna habitat types, with a targeted Black Cockatoo habitat survey
- Fauna species present including introduced species
- The presence or potential presence of any Threatened or Priority fauna
- Preparation of a biological survey report (this document) that:
 - Documents the results of the desktop assessment and field survey, including mapping
 - Identifies and discusses potentially occurring significant flora, vegetation and fauna species and their habitat (including identifying potential breeding or feeding habitat for Black Cockatoos)
- Provision of spatial files in GIS format.

1.5 Relevant legislation, conservation codes and background information

In Western Australia (WA) significant communities, and flora and fauna 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.

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

1.6 Limitation and assumptions

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

GHD otherwise disclaims responsibility to any person other than PTA 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 PTA 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.

Investigations undertaken in respect of this report are constrained by the particular site conditions, such as the location of buildings, services and vegetation. As a result, not all relevant site features and conditions may have been identified in this report.

Site conditions 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 the flora and fauna values within the survey area, as shown in Figure 1, Appendix A. Should the survey area change or be refined, further assessment may be required.

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 desktop assessment involved a review of:

- Previous reports relevant to the study area including:
 - Northern Suburbs Railway Alignment from Romeo Rd (Alkimos) to Yanchep; Graceful Sun-moth Survey (GHD 2011)
 - Northern Suburbs Railway Alignment Butler to Yanchep Environmental Investigation (GHD 2012)
 - Yanchep Rail Extension Biological Survey (GHD 2018)
- The Department of the Environment and Energy (DEE) Protected Matters Search Tool (PMST) to identify communities and species listed under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) potentially occurring within the study area (DEE 2018a) (Appendix C)
- The Department of Biodiversity, Conservation and Attractions (DBCA) TEC and PEC database to determine the potential for TECs or PECs to be present within the study area
- The *NatureMap* database for flora and fauna species previously recorded within the study area (DBCA 2007–) (Appendix C)
- The DBCA Threatened (Declared Rare) and Priority Flora database (TPFL), Threatened and Priority Fauna database, and the WA Herbarium database (WAHERB) and for Threatened and Priority flora species listed under the *Wildlife Conservation Act 1950* (WC Act) and listed as priority by DBCA, previously recorded within the study area
- Existing datasets including previous vegetation mapping of the survey area, aerial photography, geology/soils and hydrology information to provide background information on the variability of the environment, likely vegetation units and fauna habitats and to identify areas with potential to contain TECs, PECs, and Threatened and Priority listed flora and fauna species.

2.2 Field survey

2.2.1 Vegetation and flora

GHD botanists completed detailed and targeted flora and vegetation surveys of the survey area from 2016 to 2018. A summary of survey effort relevant to Part 2 is shown in Table 1. The field surveys were undertaken to verify the results of the desktop assessment, identify and describe the dominant vegetation units, assess vegetation condition, and identify and record vascular flora taxa present at the time of survey. Searches for conservation significant or other significant ecological communities and flora taxa were also undertaken during the field surveys.

The survey methodology employed by GHD was undertaken with reference to the Environmental Protection Authority (EPA) *Technical Guidance – Flora and Vegetation Surveys for Environmental Impact Assessment* (EPA 2016a) and previous version of the guidance.

Table 1 Flora and vegetation survey timing and effort

| Date | Survey effort | Area |
|-------------------|--|---|
| 1-3 November 2016 | Detailed flora and vegetation, and targeted survey | Part 1 and Part 2 |
| 3-5 May 2017 | Detailed flora and vegetation, and targeted survey | Part 2 (and some of Part 1) |
| 11-12 July 2017 | Reconnaissance flora and vegetation | Part 2 (Bush Forever, 10 m buffer on survey area) |
| 5-7 December 2017 | Detailed flora and vegetation, and targeted survey | Part 2 (additional tracks) |
| 6-8 November 2018 | Detailed flora and vegetation, and targeted survey | Part 2 (Bush Forever Site, 100 m buffer on survey area) |

Data collection

Field survey methods involved a combination of sampling quadrats and relevés located in identified vegetation units and traversing the survey area by foot. Twenty-nine non-permanent quadrats and five relevés were described throughout the survey area. A further 14 quadrats and five relevés have been described within the YRE Part 1.

Quadrats (measuring 10 m x 10 m – area of 100 m²) were located within each identified vegetation unit. A minimum of three quadrats were located within each identified vegetation unit, with the exception of four vegetation units, two occurred as single, isolated patches (<0.32 ha), one was restricted across the survey area (<1.64 ha) and the remaining unit had one quadrat described within the survey area. However, all of these vegetation units have additional quadrats described in the broader survey area for the project. Field data at each quadrat was recorded on a pro-forma data sheet and included the parameters detailed in Table 2.

Table 2 Data collected during the field survey

| Aspect | Measurement |
|-----------------------|---|
| Collection attributes | Personnel/recorder; date, quadrat dimensions, photograph of the quadrat. |
| Physical features | Aspect, soil attributes, ground surface cover, leaf and wood litter. |
| Location | Coordinates recorded in GDA94 datum using a hand-held Global Positioning System (GPS) tool to accuracy approximately ± 5 m. |
| Vegetation condition | Vegetation condition was assessed using the condition rating scale adapted by EPA (2016a) for the South West Botanical Province. |
| Disturbance | Level and nature of disturbances (e.g. weed presence, fire and time since last fire, impacts from grazing, exploration activities). |
| 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)) |

A flora inventory was compiled from taxa listed in described quadrats, relevés and from opportunistic floristic records throughout the survey area.

Vegetation units

Vegetation units were identified and boundaries delineated using a combination of aerial photography, topographical features and field data/observations.

Vegetation units were described based on structure, dominant taxa and cover characteristics as defined by quadrat and relevé data and field observations. Vegetation unit descriptions follow the NVIS and are consistent with NVIS Level V (Association), and are grouped within NVIS Level III (Broad Floristic Formation). At Level V up to three taxa per stratum are used to describe the association (ESCAVI 2003).

Statistical analyses

PRIMER v6 (Clarke and Gorley 2006) was used to examine the similarity between sites using collected data. A presence/absence matrix was created of all taxa (including perennials and annuals) present in GHD quadrats. The dissimilarity between quadrats was determined using the Bray-Curtis measure and the Resemblance function in PRIMER. A Cluster analysis (using Agglomerative Hierarchical Clustering technique) based on group average was undertaken using the Bray-Curtis similarity matrix and results presented as a dendrogram. The analysis was repeated using removing all weed and singleton taxa. The outputs of the PRIMER analysis were used to inform decisions on vegetation units.

Comparison of vegetation units with regional datasets

The SWA dataset (accessed through *NatureMap*) is derived from a database compiled and maintained over many years, combining the results of a number of floristic studies (conducted between 1990 and 1996) on plant communities of the Swan Coastal Plain (SCP) Bioregion, south of Moore River. The SWA dataset includes sampling site details, the flora collected at these sampling sites and the floristic community type (FCT) assigned to these sampling sites. The taxonomy of the flora in the SWA dataset is current as of 23 June 2005 when the dataset was compiled (DBCA 2007–).

PRIMER v6 was used to compare the GHD quadrats to existing data (where available) for FCTs described on the SCP. Information from the SWA dataset was extracted for each FCT described on Uplands centred on Spearwood and Quindalup Dunes, as well as those identified in the desktop searches (e.g. TEC and PEC searches). Representative quadrats from each FCT were selected for the analysis and are shown in Table 3.

Two FCTs identified in the desktop searches were removed from the analysis, these included the Aquatic Root Mat Community Number 1 of Caves of the SCP (Caves SCP01) TEC and Shrublands on clay flats (10a) TEC. There were no established caves or areas of clay flats present within the survey area.

The GHD and SWA dataset was combined, reconciled to align nomenclature and a presence/absence matrix created of all taxa (including perennials and annuals). Singleton taxa (those occurring in only one quadrat) were removed from the matrix as well as taxa that were only identified to family or genus level. The dissimilarity between quadrats was determined using the Bray-Curtis measure and the Resemblance function in PRIMER. A Cluster analysis (using Agglomerative Hierarchical Clustering technique) based on group average was undertaken using the Bray-Curtis similarity matrix and results presented as a dendrogram. In addition, a nonmetric multi-dimensional scaling analysis (MDS) was undertaken using the Bray-Curtis similarity matrix and results presented as a two dimensional scatter plot. A factor was added to the output to define sample groups by FCT.

It is noted that floristic analyses using presence/absence matrices can be limited in use as they are based on all species recorded in sites, and does not take into account dominance of species.

Table 3 SWA dataset quadrats used in analysis

| Floristic Community Type Name and ID | Status | Quadrats |
|--|--------|---------------------------------|
| Sedgeland in Holocene dune swales (19a) | TEC | PB-1, PB-6, rich01 |
| Woodlands over sedgeland in Holocene dune swales (19b) | TEC | cool 09, cool14, cool15, xyan10 |

| Floristic Community Type Name and ID | Status | Quadrats |
|--|--------|--|
| <i>Banksia ilicifolia</i> woodlands (22) | PEC * | 5F01, BANK-1, BNR27, BNR29, BNR32, DEJONG01, ELE18, ELE23, jand03, MELA-10, MELA-5, MPK02, MR11, pinj12, PLINE-6, raven05, WARB-2, WARB-4, white07, YAN-17, YAN-18, YAN-22, zBEER 01 |
| Northern <i>Banksia attenuata</i> – <i>B. menziesii</i> woodlands (23b) | PEC * | 5A01, 5C02, 5D01, 5E01, BC3, BNR03, BNR19, BNR26, BNR33, ELDO-1, ELE01, ELE03, ELE08, ELE16, MELA-2, MELA-3, MELA-8, MELA-9, MHR01, MILT-3, MILT-7, MILT-8, MIME 01, MNP01, MNP02, MOOR 05, MOOR 06, MOOR 07, MOOR 08, MOOR 09, MR05, MR09, MR10, MR12, MR13, mrnp04, MUCK-1, MUK01, MWR04, MWR08, MWR10, OYR01, PLINE-1, PLINE-2, RAAF-1, RAAF-2, RAAF-3, RGR01, RGR04, SF01, SF02, SINT-1, WN084CHE, WN086CHE, WN089CHE, WN090HED, WN093HED, WN100WNR, YAN-19, YAN-20, zBEER 04 |
| North-eastern <i>Banksia attenuata</i> – <i>B. menziesii</i> woodlands (23c) | * | zYAN2, zYAN6 |
| Northern Spearwood shrublands and woodlands (24) | PEC ** | bold07, bold09, bold12, bold13, bold14, bold23, BOLD-1, BOLD-2, BOLD-3, BOLD-4, buck01, CHIDPT-1, Hepb03, MI23, MTB-1, NEER-1, NEER-7, NEER-9, NEER-10, NEER-11, PTWALT-1, star01, star02, TRIG-5, TRIG-6, xbeer01 |
| Southern <i>Eucalyptus gomphocephala</i> – <i>Agonis flexuosa</i> woodlands (25) | PEC ** | bold16, bunb01, C71-4, colriv01, CORON-2, gelor01, GMaid01, GMaid03, KEME-1, leda01, LYONS-2, MEAL-1, MINN-1, MINN-3, much04, MYALUP-2, NMaid05, PAGA-6, PAGA-8, tokyu01, vines01, yela03 |
| <i>Melaleuca huegelii</i> – <i>M. acerosa</i> [<i>M. systema</i>] shrublands on Limestone ridges (26a) | TEC | CLIFT02, CLIFT03, SHE-4, SHE-5, SVH-1, WABL-1, YAN-2, YAN-12, YAN-13, YAN-15, YAN-24, zYAN4, zYAN5 |
| Woodlands and mallees on Limestone (26b) | | BW03, Guild05, Guild09, Hepb02, MEAL-2, NWIL-2, OYR02, SHE-1, SHE-3, SHE-6, tokyu02, tokyu05, WABL-2, WABL-3, WHILL-5, wilb04, wilb13, YALG-1, YALG-2, YALG-6, YALG-7, YAN-1, YAN-10, YAN-11, YAN-14, YAN-16, YAN-23, YAN-5 |
| Species poor mallees and shrublands on Limestone (27) | | bold18, bold22, BU03, PAR1, SVH-2, WHILL-3, WHILL-4, wilb05, YALG-3, YALG-4, YALG-5, YALG-8 |
| Spearwood <i>Banksia attenuata</i> – <i>Eucalyptus</i> woodlands (28) | * | 4M03, beel01, BULL-1, BULL-10, BULL-11, BULL-4, BULL-9, DEPOT-1, Guild08, HARRY-1, HARRY-2, Hepb01, KING-1, KING-2, leda02, MILT-4, moore01, moore02, moore03, much01, much03, NEER-2, NEER-20, NEER-21, NEER-22, NEER-23, NEER-3, NEER-4, NEER-5, NEER-6, NEER-8, Pinn01, Pinn03, quinn02, sams01, sand01, SEAB-6, SHE-2, SHENT-1, star03, tokyu03, TRIG-3, TRIG-4, WABL-4, WARI-1, WARI-2, WATERRD1, wilb06, wilb07, wire01, wire02, WOODV-1, WOODV-2, YAN-25, YAN-3, YAN-4, YAN-6, YAN-8, YAN-9, yela01, yuri02 |

| Floristic Community Type Name and ID | Status | Quadrats |
|--|--------|--|
| Coastal shrublands on shallow sands [southern SCP] (29a) | PEC | BMaid02, BU01, BU02, BU04, BURN-1, BURN-2, GARD02, MI21, NAVB-2, NMaid01, NMaid03, Pinn02, PRES-1, rich02, rott2, SEAB-4, SEAB-5, SEAB-8, TRIG-2, wilb11 |
| <i>Acacia</i> shrublands on taller dunes [southern SCP] (29b) | PEC | bold08, bold11, Guild01, Guild03, Guild04, Guild06, Guild10, MI01, MI02, MI06, MI07, MI09, MI18, NPRES-1, NWIL-1, NWIL-3, PB-2, PB-3, PB-4, PB-5, SEAB-2, SEAB-7, SW06, SW07, SW11, tokyu04, tokyu07, TRIG-1, WHILL-1, WHILL-2, wilb01, wilb08, wilb09, wilb12 |
| <i>Callitris preissii</i> and/or <i>Melaleuca lanceolata</i> forests and woodlands(30a2) | | bold06, GARD04, MHENRY-1, MHENRY-2, PEPGRV-1, PEPGRV-2, SEAB-1, WOODP-1, WOODP-2, xyan08 |
| Quindalup <i>Eucalyptus gomphocephala</i> and/or <i>Agonis flexuosa</i> woodlands (30b) | PEC | LESCH-1, LESCH-2, LESCH-3, LESCH-4, LESCH-5, NMaid04, PERB-1, pip01, Possum3, Possum4 |
| S11 | | bold05, m4601, m4602, MI04, MI05, MI08, rott01, SW05, SW08, SW09, SW10, TR06, TR07, TR08 |
| S12 | | MI11, MI12, MI17, MI19, MI22, SW02, SW03, SW04, TR03, TR04, TR05, wilb02 |
| S14 | | MI10, MI13, MI14, MI15, MI16, MI20, SW01, TR01, TR02 |

* A component of the Banksia woodlands of the SCP EPBC Act listed TEC

** Can form a component of the Banksia Woodlands of the SCP EPBC Act listed TEC

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 of WA (devised by Keighery (1994) and adapted by EPA (2016a). The scale recognises the intactness of vegetation and consists of six rating levels. The vegetation condition rating scale is outlined in Appendix B.

Flora identification and nomenclature

Species well known to the survey botanist 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.

The conservation status of all recorded flora was compared against the current lists available on *FloraBase* (WA Herbarium 1998–) and the EPBC Act Threatened species database provided by DEE (2018b). Nomenclature used in this report follows that used by the WA Herbarium as reported on *FloraBase*.

Survey for conservation significant flora

Prior to the field survey, information obtained from the desktop assessments (e.g. aerial photography, geology, soils and topography data, EPBC Act PMST, TPFL, *NatureMap* and the WAHERB databases search results) was reviewed to determine conservation significant flora taxa potentially present within the study area and locations. Additionally, ecological information

(e.g. habitat, associated flora taxa and phenology) was sourced from *FloraBase* and other relevant publications where available, to provide further details.

Potential habitats and locations of previous records were searched by opportunistic sampling. Locations within the survey area with differing hydrology, fire or disturbance history to the surrounding areas were also searched where identified. Where individuals were identified, the location and number of plants present were recorded using handheld GPS units.

2.2.2 Fauna

GHD zoologists completed Level 1 (reconnaissance) fauna surveys of the survey area from 2016 to 2018. A summary of survey effort relevant to Part 2 is shown in Table 4. The majority of the survey area was traversed on foot and by vehicle over the course of the surveys to identify and describe the dominant fauna habitat types present, assess habitat (foraging, breeding and roosting) for locally occurring conservation significant fauna, assess habitat connectivity, and identify and record fauna species opportunistically. An assessment of the likelihood of occurrence of conservation significant fauna was also undertaken based on the database searches and previous local studies in consideration of fauna habitats occurring within the survey area.

The survey methodology employed by GHD was undertaken with reference to the EPA *Technical Guidance – Terrestrial Fauna Surveys* (EPA 2016b).

Table 4 Fauna survey timing and effort

| Date | Survey effort | Area |
|-------------------|--|---|
| 1-2 November 2016 | Level 1 fauna survey and Black Cockatoo assessment | Part 1 and Part 2 |
| 3-5 May 2017 | Level 1 fauna survey and Black Cockatoo assessment | Part 2 (and some of Part 1) |
| 11 July 2017 | Level 1 fauna survey and Black Cockatoo assessment | Part 2 (Bush Forever, 10 m buffer on survey area) |
| 5-7 December 2017 | Level 1 fauna survey and Black Cockatoo assessment | Part 2 (additional tracks) |
| 6-8 November 2018 | Level 1 fauna survey and Black Cockatoo assessment | Part 2 (Bush Forever Site, 100 m buffer on survey area) |

Habitat assessment

A fauna habitat assessment was undertaken to document the type, condition and extent of habitats within the survey area. In assessing fauna habitat characteristic and quality, consideration was given to the types of fauna assemblages known to utilise them, with a focus on the habitat value for locally occurring conservation significant species. The following information was recorded:

- Habitat structure (e.g. vegetation type, presence/absence of structural layers such as ground cover and mid storey)
- Presence/absence of refuge including density of ground covers, fallen timber (coarse woody debris), hollow-bearing trees and stags and rocks/boulder piles, and the type and extent of each refuge
- Habitat extent and quality
- Location of the habitat within the survey area in comparison to the habitat within the surrounding landscape including and presence/absence and type of waterways
- Habitat connectivity and identification of wildlife corridors within and immediately adjacent to the survey area

- Current land use and disturbance history
- Evaluation of key habitat features and types identified during the desktop assessment relevant to fauna of conservation significance
- Evaluation of the likelihood of occurrence of conservation significant fauna within the habitat (based on presence of suitable habitat)
- A representative photograph of each habitat type.

Opportunistic fauna searches

Opportunistic fauna searches were also conducted across the survey area. Opportunistic searches involved:

- Searching the survey area for tracks, scats, skeletal remains, diggings and feeding areas for both native and feral species
- Searching through microhabitats including turning over logs or rocks, turning over leaf litter and examining tree hollows and hollow logs
- Visual and aural surveys, which accounted for many bird species potentially utilising the survey area
- Recording GPS locations of any conservation significant fauna species.

Black cockatoos

Targeted surveys for Black Cockatoo species were conducted in accordance with the EPBC Act referral guidelines for three threatened black cockatoo species: Carnaby's Cockatoo (endangered) *Calyptorhynchus latirostris*, Baudin's Cockatoo (vulnerable) *Calyptorhynchus baudinii*, Forest Red-tailed Black Cockatoo (vulnerable) *Calyptorhynchus banksii naso*, (Department of Sustainability, Environment, Water, Populations, and Communities (DSEWPaC) 2012) and with reference to the EPBC Act Revised draft referral guidelines (DEE 2017). The assessment included:

- The identification and recording (via GPS) of the locations of potential and actual breeding habitat within the survey area (relevant tree species with a diameter at breast height (DBH) of >500 mm for Jarrah, Marri and Tuart or DBH of >300 mm for Wandoo or Salmon Gum)
- Identifying, describing and recording the size of existing tree hollows and any evidence of use by Black Cockatoos within the survey area
- Identifying, describing and recording the DBH of trees with existing hollows within the survey area
- Identifying, recording and describing the locations of potential night roosting habitat
- Identifying, recording and describing the locations of potential foraging habitat.

The survey distinguished between actual and potential breeding habitat as per the following:

- Actual nest trees: Evidenced as currently being used or have been used in the past
- Potential breeding habitat: trees with available hollows that do not show evidence of use now or in the past. Trees with hollows that do not show evidence of use now or in the past where the hollow is not available (e.g. hollows are occupied by bees or galahs); and those trees without hollows but which have the potential to develop hollows in the future, and which have DBH >500 mm or 300 mm for different species. This was a ground based assessment using binoculars to identify potential and/or actual breeding hollows.

Fauna species identification

Identification of fauna species was made in the field using available field guides and electronic guides (e.g. Morcombe 2004). Where identification was not possible, photographs of specimens were collected for later identification. Nomenclature used in this report follows that used by the WA Museum and the DBCA *NatureMap* database (DBCA 2007–) with the exception of birds, where by Christidis and Boles (2008) was used.

2.3 Limitations

2.3.1 Desktop limitations

The EPBC Act PMST 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 threatened flora and fauna provide more accurate information for the general area. However, some records of collections, sightings or trappings cannot be dated and often misrepresent the current range of threatened species.

2.3.2 Field survey limitations

The EPA (2016a, b) Technical Guide states 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 5. Based on this assessment, the present survey effort has not been subject to any constraints which affect the thoroughness of the assessment and the conclusions which have been formed.

Table 5 Field survey limitations

| Aspect | Constraint | Comment |
|---|------------|---|
| Sources of information and availability of contextual information. | Nil | Adequate information is available for the survey area, this includes: <ul style="list-style-type: none"> • Broad scale (1:250,000) mapping by Beard (1979) and digitised by Shepherd <i>et al.</i> (2002) • Regional biogeography (Mitchell <i>et al.</i> 2002) |
| Scope (what life forms were sampled etc.) | Nil | Vascular flora and terrestrial vertebrate fauna were sampled during the survey. Non-vascular flora, invertebrate and aquatic fauna were not surveyed. |
| Proportion of flora collected and identified (based on sampling, timing and intensity) Proportion of fauna identified, recorded and/or collected | Minor | <p>The vegetation and flora assessment was undertaken over multiple seasons in spring 2016, autumn and winter 2017, summer 2017 and November 2018, and included detailed and targeted surveys. The flora recorded from the field survey is discussed in section 4.1.4 and a full flora species list is provided in Appendix D. The portion of flora collected and identified was considered moderate to high, based on the survey effort and timing.</p> <p>The fauna assessment was undertaken over multiple seasons in spring 2016, autumn and winter 2017, summer 2017 and November 2018. The fauna assessment was a level 1 (reconnaissance) assessment and did not include fauna trapping. The assessment was based on those species that can be easily seen, heard or have distinctive signs, such as tracks, scats, diggings, etc. Many cryptic species would not have been identified during a reconnaissance survey and seasonal variation within species often requires targeted surveys at a particular time of the year. Of the fauna species recorded during the survey, all species were identified to species level.</p> <p>The fauna assessment was aimed at identifying and mapping habitat types relevant to locally occurring conservation significant fauna. No sampling for invertebrates or aquatic species occurred. The information available on the identification, distribution and conservation status of invertebrates is generally less extensive than that of vertebrate species.</p> |
| Flora determination | Minor | <p>Flora determination was undertaken by GHD ecologists in the field and at the WA Herbarium. Three taxa could only be identified to family level, 23 taxa could be identified to genus level only (seven of these were weeds), and one taxon could be tentatively identified to species level, due to lack of flowering and/or fruiting material required for identification. Some species, particularly grasses, sedges and herbs, may have been overlooked due to lack of material.</p> <p>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 (IUCN) criteria.</p> |

| Aspect | Constraint | Comment |
|---|------------|--|
| Completeness and further work which might be needed (e.g. was the relevant area fully surveyed) | Minor | The majority of the survey area was accessed on foot. Information gained from the survey was extrapolated across those small sections of the survey area not accessed on foot during the field survey to assist with determining the vegetation units and habitat types for the entire survey area. |
| Mapping reliability | Minor | The vegetation communities and fauna habitats were mapped using high-resolution ESRI aerial imagery obtained from Landgate, topographical features, previous broad scale mapping (Beard 1979) and field data. The distribution of quadrats is considered adequate for the definition of vegetation within the survey area. Data was recorded in the field using hand-held GPS tools (e.g. Nomad Juno, Samsung tablet and Garmin GPS). Certain atmospheric factors and other sources of error can affect the accuracy of GPS receivers. The GPS units used for this survey are accurate to within ± 5 metres on average. Therefore the data points consisting of coordinates recorded from the GPS may contain inaccuracies. |
| Timing/weather/season/cycle | Minor | The field surveys were conducted during spring (1-3 November 2016 and 6-8 November 2018), autumn (3-5 May 2017), winter (11-12 July 2017) and summer (5-7 December 2017). An investigation of the weather condition in the three months prior to the surveys and time of the surveys, from the Gingin weather recording station (No. 009178, Bureau of Meteorology (BoM) 2017) (located approximately 19 km north of the survey area) were within the observed long term climatic conditions previously recorded (BoM 2018). The weather conditions recorded during the surveys were considered unlikely to have impacted the vegetation, flora and fauna surveys. The survey timings were considered appropriate for the flora and fauna field survey. |
| Disturbances (e.g. fire, flood, accidental human intervention) | Nil | Much of the survey area has been subjected to historical disturbance events (e.g. clearing, stock grazing, tree planting, dumping); however, these disturbances did not impact the survey. |
| Intensity (in retrospect, was the intensity adequate) | Nil | The vascular flora of the survey area was sampled in accordance with EPA (2016a) and terrestrial fauna sampled in accordance to EPA (2016b). The survey area was sufficiently covered by GHD zoologists and botanists during the survey. |
| Resources | Nil | Adequate resources were employed during the field surveys. Thirty person days using botanists and zoologists were spent surveying the YRE alignment, with the majority of these focused on Part 2. |
| Access restrictions | Nil | No access problems were encountered during the survey. The majority of the survey area was accessed on foot, during the survey. |

| Aspect | Constraint | Comment |
|-------------------|------------|---|
| Experience levels | Nil | <p>The zoologists and botanists who executed the field surveys are practitioners suitably qualified and experienced in their respective fields. The GHD botanists all have over 10 years' experience (with one having over 20 years' experience) in undertaking flora surveys within WA, including the SCP. Two of the GHD zoologists have over 20 years' and one GHD zoologist has over 9 years' experience in undertaking fauna surveys within WA, including the SCP. The zoologists and botanists were also supported by a GHD ecologist who has over 3 years' experience in assisting with ecological surveys on the SCP.</p> |

3. Desktop assessment

3.1 Climate

The survey area is located in the South Western Province of WA and experiences a temperate climate with distinctly hot, dry summers and cool, wet winters. The BoM Gingin Aero station (site number 009178) is the nearest weather station to the survey area with continuous long-term data (19.0 km from the survey area). Climatic data from this site indicates the mean maximum temperature of the area ranges from 18.2 °C in July to 33.3 °C in February and the mean minimum temperature ranges from 6.0 °C in July to 17.1 °C in February. The mean annual rainfall is 666.9 mm with an average of 101 rain days per year (BoM 2018). Climate statistics for the area including the long-term average, and data during 2016, 2017 and 2018 are summarised in Plate 1.

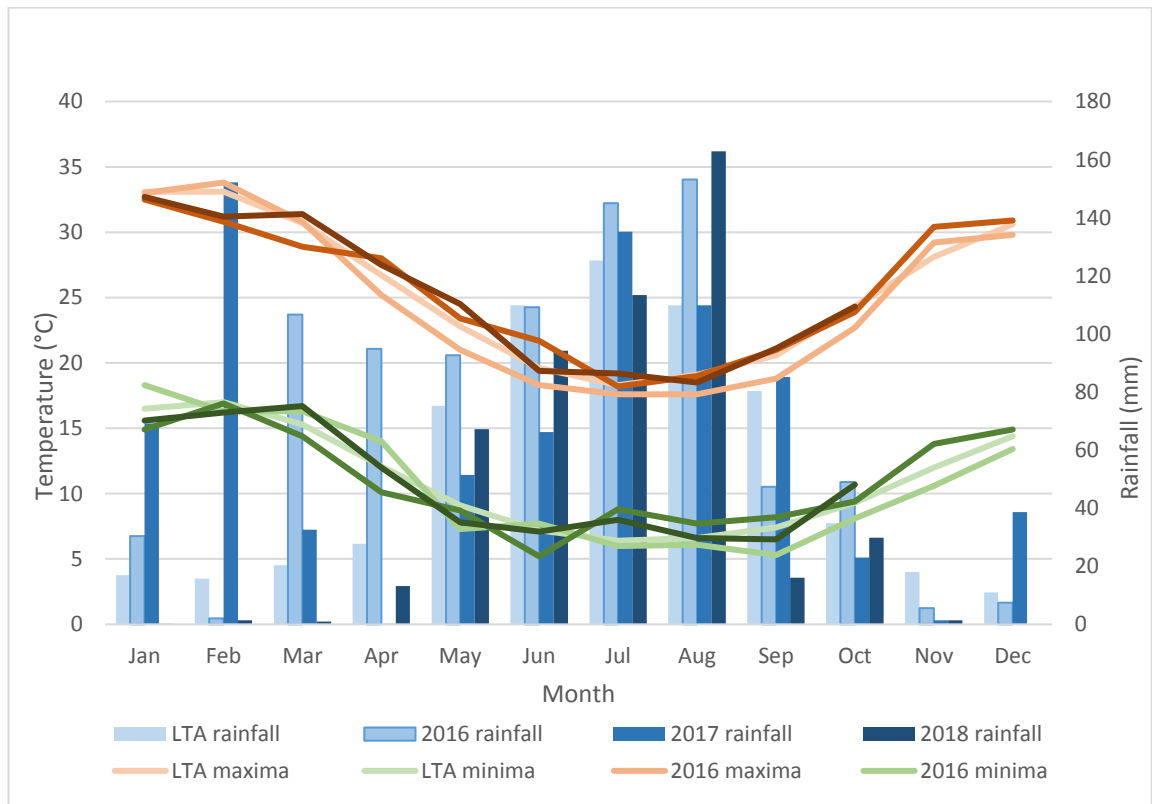


Plate 1 Climate statistics for Gingin Aero

3.2 Landform and soils

Soil-landscape mapping (DAFWA 2007) indicates the survey area is located on the Quindalup Dunes and Spearwood Dunes landforms. The Quindalup Dunes comprises dunes and ridges generally oriented parallel to the present coast, composed of unconsolidated (calcareous) sands and shell fragments. The Spearwood Dunes lie landward of the Quindalup Dunes and consist of mainly brown and yellow sands of varying depths over limestone (Tamala Limestone). The DAFWA (2007) soil mapping indicates there are six different soil types within the survey area:

- Quindalup South Subsystem
 - Shallow calcareous sands over limestone and much rock outcrop (211Qu_Qs)
 - Calcareous sands with organic staining to about 30 cm, overlying pale brown sand with definite cementation below 1 m (211Qu_Q1)

- Calcareous sands have organic staining to about 20 cm, passing into pale brown sand, some cementation below 1 m (211Qu_Q2)
- Calcareous sands showing variable depths of surface darkening (211Qu_Qp)
- Spearwood Subsystem
 - Yellow deep sands (211Sp_Ky)
 - Bare limestone or shallow siliceous or calcareous sand over limestone (211Sp_Kls).

3.3 Hydrology

The hydrology data layers (Government of Western Australia (GoWA) 2018a) indicate the survey area intersects an area proclaimed under the *Rights in Water and Irrigation Act 1914* (RIWI Act) and declared under the *Metropolitan Water Supply, Sewage and Drainage Act 1909* (MWSSD Act). A summary of the review is provided in Table 6 and Figure 2, Appendix A.

Table 6 Hydrology queries for the survey area

| Aspect | Details | Result |
|--|--|--|
| Groundwater area | Groundwater areas proclaimed under the RIWI Act. | Yanchep Groundwater Area |
| Surface water areas | Surface water areas proclaimed under the RIWI Act. | None present |
| Irrigation district | Irrigation Districts proclaimed under the RIWI Act. | None present |
| Rivers | Rivers proclaimed under the RIWI Act. | None present |
| Public Drinking Water Source Areas (PDWSA) | PDWSAs 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 MWSSD Act or the <i>Country Area Water Supply Act 1947</i> . | Perth Coastal Underground Water Pollution Control Area |
| Waterway Management Areas | Areas proclaimed under the <i>Waterway Conservation Act 1976</i> . | None present |

3.3.1 Watercourses

There are no drainage lines within or adjacent to the survey area.

3.3.2 Wetlands

There are no wetlands within the survey area. Eight geomorphic wetlands occur within the study area, these include four Conservation Category Wetlands, two Multiple Use Wetlands and two Resource Enhancement Wetlands. Of the wetlands, one Conservation Category Wetland (Loch McNess Lake) is also listed as a wetland of national significance.

3.4 Land use

3.4.1 DBCA managed lands

No DBCA-managed conservation areas are located within the survey area. The closest DBCA managed area is Yanchep National Park (R 9868, Class A) located directly adjacent to the north east corner of the survey area (Figure 3, Appendix A).

3.4.2 Bush Forever

The survey area intersects two Bush Forever Sites, Site No. 288, Yanchep National Park and Adjacent Bushland and Site No. 289, Ningana Bushland, Yanchep/Eglington. The northern part of the survey area intersects Site No. 288, whilst the central and southern part of the survey

area intersects Site No. 289. Site No. 288 covers 2,706.7 ha and includes Yanchep National Park and other bushland to the north. Site No. 289 covers 640.83 ha and extends from near Site No. 288 (Yanchep National Park) in the east to Site No. 397 (Coastal strip from Wilbinga to Mindarie) in the west. Bush Forever Site No. 289 is characterised by coastal dune, parabolic dune and blowout landscape features (Figure 3, Appendix A).

3.4.3 Environmentally Sensitive Areas

Much of the survey area resides within an Environmentally Sensitive Area (ESA). This ESA likely aligns with the presence of TECs and their buffer zones, and Bush Forever within the local area.

3.4.4 Ecological linkages

Three regional ecological linkages mapped in the Regional Ecological Linkages for the Perth Metropolitan Region (PMR) dataset occur in the vicinity of the survey area; Links No. 1, 6 and 7 (Figure 3, Appendix A).

- Link No. 1 occurs west of the survey area, running parallel and links Bush Forever sites 406 through to 315 (including Bush Forever sites 322 and 397), maintaining connectivity along the Coast for the Quindalup Complex.
- Link No. 6 occurs east of the survey area, running parallel and links Bush Forever sites 284, 288, 129, 130, 383, 299, 202.
- Link No. 7 occurs east of the survey area, running perpendicular and links Bush Forever sites 288, 381, 380.

3.5 Regional biogeography

The survey area is situated in the Southwest Botanical Province of WA (Beard 1990) within the SCP bioregion and the Perth subregion as described by the Interim Biogeographic Regionalisation for Australia (IBRA) in WA.

The SCP bioregion is a low lying coastal plain, mainly covered with woodlands. The Perth subregion is composed of colluvial and aeolian sands, alluvial river flats and coastal limestone. Heath and/or Tuart woodlands occur on limestone, Banksia and Jarrah-Banksia woodlands on Quaternary marine dunes of various ages and Marri on colluvial and alluvial soils. The subregion also includes a complex series of seasonal wetlands (Mitchell et al. 2002).

3.6 Vegetation and flora

3.6.1 Broad vegetation mapping and extent

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 that two vegetation associations intersect the survey area:

- Low woodland; banksia (association 949)
- Mosaic: Shrublands; *Acacia lasiocarpa* & *Melaleuca acerosa* [now *M. systema*] heath / Shrublands; *Acacia rostellifera* & *Acacia cyclops* thicket (association 1007)

The pre-European mapping has been adapted and digitised by Shepherd *et al.* (2002). The extent of the vegetation associations have been determined by the state-wide vegetation remaining extent calculations maintained by the DBCA (latest update December 2017 – GoWA 2018b). As shown in Table 7, the current extents of vegetation associations 949 and 1007 are

greater than 46% of their pre-European extents at all levels (State, IBRA bioregion, IBRA subregion and LGA).

Regional vegetation has also been mapped by Heddle *et al.* (1980) based on major geomorphic units on the SCP. The Heddle *et al.* (1980) mapping indicates that two vegetation complexes on Aeolian deposits of the SCP are present within the survey area:

- Quindalup complex: Coastal dune complex consisting mainly of two alliances- the strand and fore dune alliance and the mobile and stable dune alliance. Local variations include the low closed forest of *Melaleuca lanceolata* – *Callitris preissii* and the closed scrub of *Acacia rostellifera*.
- Cottesloe complex – north: Predominantly low open forest and low woodland of *Banksia attenuata* – *B. menziesii* – *Eucalyptus todtiana*; closed heath on the limestone outcrops.

GoWA (2018c) has assessed the vegetation complexes mapped by Heddle *et al.* (1980) against presumed pre-European extents within the SCP IBRA bioregion (Table 8) and the City of Wanneroo (Table 9) respectively. Both complexes have greater than 57% of their pre-European extents remaining within the SCP IBRA bioregion and in the City of Wanneroo.

3.6.2 Conservation significant ecological communities

A search of the EPBC Act PMST identified three EPBC Act-listed TECs potentially occurring within the study area. These TECs were also identified in a search of the DBCA TEC/PEC database, however, one is listed as a Priority 3 PEC by DBCA. One additional TEC and PEC were identified in the DBCA TEC/PEC database search. Details on all of these communities are provided in Table 10.

There are eight occurrences of TEC buffers that intersect the survey area at various locations (Figure 4, Appendix A). The majority of the survey area overlays seven occurrences of the Aquatic Root Mat Community in Caves of the SCP (Caves SCP01) TEC and the southern section of the survey area intersects one occurrence of Woodlands over sedgeland in Holocene dune swales of the southern SCP (SCP19b) TEC.

Table 7 Extents of vegetation associations mapped within the survey area (GoWA 2018b)

| Vegetation association | Scale | Pre-European extent (ha) | Current extent (ha) | Remaining (%) | Current extent in all DBCA managed lands (ha) (%) |
|------------------------|------------------------|--------------------------|---------------------|---------------|---|
| 949 | State: WA | 218,193.94 | 122,966.39 | 56.36 | 68,743.16 (55.90%) |
| | IBRA bioregion: SCP | 209,983.26 | 120,150.30 | 57.22 | 67,823.83 (56.45%) |
| | IBRA sub-region: Perth | 184,475.82 | 104,016.22 | 56.38 | 61,406.77 (59.04%) |
| | LGA: City of Wanneroo | 37,138.40 | 17,082.72 | 46.00 | 12,053.39 (70.56%) |
| 1007 | State: WA | 30,407.75 | 20,699.78 | 68.07 | 3,051.60 (14.74%) |
| | IBRA bioregion: SCP | 30,109.89 | 20,688.18 | 68.71 | 3,050.88 (14.75%) |
| | IBRA sub-region: Perth | 30,109.89 | 20,688.18 | 68.71 | 3,050.88 (14.75%) |
| | LGA: City of Wanneroo | 8,058.91 | 4,828.86 | 59.92 | 93.66 (1.94%) |

Table 8 Extents of vegetation complexes on the SCP mapped within the survey area (GoWA 2018b)

| Vegetation complex | Pre-European extent (ha) | Current extent (ha) | % Remaining | Current extent remaining within all DBCA managed land (ha) (%) |
|---------------------------|--------------------------|---------------------|-------------|--|
| Quindalup complex | 54,573.87 | 32,982.87 | 60.44 | 5,992.15 (10.98%) |
| Cottesloe complex – north | 43,474.31 | 25,162.34 | 57.88 | 16,431.54 (37.80%) |

Table 9 Extents of vegetation complexes within City of Wanneroo mapped within the survey area (GoWA 2018b)

| Vegetation complex | Pre-European extent (ha) | Current extent (ha) | % of pre-European extent remaining | Proportion of the vegetation complex within the LGA (%) |
|---------------------------|--------------------------|---------------------|------------------------------------|---|
| Quindalup complex | 8,818.26 | 5,332.03 | 60.47 | 16.16 |
| Cottesloe complex – north | 8,715.75 | 5,950.36 | 68.27 | 20.05 |

Table 10 Threatened and Priory Ecological Communities identified in the desktop searches

| Community type | EPBC Act | DBCAs | Description | Location |
|---|------------|-----------------------|---|--|
| Aquatic Root Mat Community in Caves of the SCP (TEC) (Caves SCP01) | Endangered | Critically Endangered | At Yanchep and on the Leeuwin Naturaliste Ridge, permanent streams and pools occur in caves and some support dense growths of root mats (from living Tuart trees). The root mats provide a constant and abundant primary food source for some of the richest aquatic cave communities known. Caves containing the aquatic root mat community at Yanchep occur where sandy soils underlie superficial limestone and where the waters of the Gnangara Mound seep through the sand to form a system of subterranean pools and streams. | Buffer intersects the majority of the survey area |
| Sedgeland in Holocene dune swales of the southern SCP (TEC) (SCP19) | Endangered | Critically Endangered | The community occurs in linear damplands and occasionally sumplands, between Holocene dunes. Typical and common native species are the shrubs <i>Acacia rostelifera</i> , <i>A. saligna</i> , <i>Xanthorrhoea preissii</i> , the sedges <i>Baumea juncea</i> , <i>Ficinia nodosa</i> , <i>Lepidosperma gladiatum</i> , and the grass <i>Poa porphyroclados</i> . Several exotic weeds are found in this community but generally at low cover values. Two sub-groups identified: <ul style="list-style-type: none"> Community type 19a is termed 'sedgelands in Holocene dune swales' and generally occurs in the younger swales. Community type 19b is termed 'woodlands over sedgelands in Holocene dune swales' and tends to occur in older swales. This subgroup has an overstorey of woodlands including <i>Eucalyptus gomphocephala</i>, <i>Melaleuca raphiophylla</i> and <i>Banksia littoralis</i>. | Buffer intersects the southern section of the survey area |
| <i>Melaleuca huegelii</i> – <i>M. acerosa</i> (<i>M. systema</i>) shrublands on limestone ridges (TEC) (SCP26a) | | Endangered | Species rich thickets, heaths or scrubs dominated by <i>Melaleuca huegelii</i> , <i>M. systema</i> (previously <i>M. acerosa</i>), <i>Banksia sessilis</i> over <i>Grevillea preissii</i> , <i>Acacia lasiocarpa</i> and <i>Spyridium globulosum</i> , occurring on skeletal soil on ridge slopes and ridge tops. Broadly occurs on Spearwood Sands (Tamala Limestone) on large limestone ridges. | Buffer occurs approximately 1.6 km east of the survey area |
| Quindalup <i>Eucalyptus gomphocephala</i> and/or <i>Agonis flexuosa</i> woodlands (PEC) (SCP30b) | | Priority 3 | This community is dominated by either <i>Eucalyptus gomphocephala</i> or <i>Agonis flexuosa</i> . The presence of <i>Hibbertia cuneiformis</i> , <i>Geranium retrorsum</i> and <i>Dichondra repens</i> differentiate this group from other Quindalup community types. The type is found from the Leschenault Peninsular south to Busselton. | Buffer occurs approximately 700 m east of the survey area |

| Community type | EPBC Act | DBCA | Description | Location |
|---|------------|------------|--|--|
| <p><i>Banksia</i> woodlands of the SCP (TEC)</p> <p><i>Banksia</i> dominated woodlands of the SCP IBRA region (PEC)</p> | Endangered | Priority 3 | <p>The ecological community is a woodland associated with the SCP of southwest WA. A key diagnostic feature is a prominent tree layer of <i>Banksia</i>, with scattered <i>Eucalyptus</i> and other tree species often present among or emerging above the <i>Banksia</i> 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.</p> | Community considered likely to occur within the study area |

3.6.3 Flora diversity

The *NatureMap* database search identified 705 plant taxa, representing 142 families and 381 genera that have been previously recorded within the study area. This total comprises 581 native flora taxa and 124 introduced flora taxa. Dominant families recorded included Fabaceae (62 taxa), Asteraceae (54 taxa) and Myrtaceae (39 taxa). The *NatureMap* database search is provided in Appendix C.

3.6.4 Conservation significant flora

Desktop searches of the EPBC Act PMST database, *NatureMap* database, DBCA TPFL and WAHERB databases identified the presence/potential presence of 20 conservation significant flora taxa within the study area. The desktop searches recorded:

- Six taxa listed under the EPBC Act and/or as Threatened under the WC Act
- One Priority 1 taxon
- One Priority 2 taxon
- Nine Priority 3 taxa
- Three Priority 4 taxa.

The locations of conservation significant flora registered on the DBCA databases are mapped in Figure 4, Appendix A.

3.7 Fauna

3.7.1 Fauna diversity

The *NatureMap* database search identified 214 vertebrate fauna species previously recorded within the study area. This total includes 147 birds, 39 reptiles, 6 amphibians, 14 native mammals, and 6 introduced mammals. The remainder of species are invertebrates and were not considered as part of this survey (except for conservation-listed invertebrates that were recorded opportunistically).

3.7.2 Conservation significant fauna

The EPBC Act PMST and *NatureMap* database identified the presence, or potential presence of 43 conservation significant fauna species, excluding marine or migratory/marine as no marine habitat was present within the survey. In addition to the species identified by the database searches, several other conservation significant species have been included. These species are not listed within the database searches, but known to occur within the northern SCP and potentially occur based on habitat preference and regional distribution. These species are included within the results section 4.2.5 and Table 15. These include species listed under Schedules 1-4 of the WC Act (revised September 2018) and Priority species not currently listed under a Schedule.

4. Field survey results

4.1 Vegetation and flora

4.1.1 Vegetation types

Thirteen vegetation types as well as cleared areas were identified and described for the survey area (Table 11 and Figure 5, Appendix A). Eleven of the vegetation types comprised remnant native vegetation, one vegetation type (VT12) was dominated by planted taxa and one vegetation type (VT13) comprised a mix of degraded native remnant vegetation and native regrowth (>10 years).

The vegetation types were distributed in a mosaic like pattern along the survey area as the soil landscapes and dune landforms changed. *Acacia saligna* and *Xanthorrhoea preissii* tall shrubland (VT01) and *Lomandra maritima* herbland (VT05) were the most dominant vegetation types occurring in patches along the length of the survey area. *Eucalyptus* sp., *Agonis flexuosa* woodland (VT07) and *Melaleuca huegelii* and *M. systena* shrubland (VT08) were the most restricted vegetation types, both occurring in as a single isolated patch within the survey area.

Four vegetation types (VT02, VT03, VT04 and VT09) described *Banksia* shrubland/woodland, which comprised approximately 26% of the survey area. Previously disturbed areas often comprised Planted (VT12) or Scattered natives (VT13) in completely degraded. Areas identified as cleared were devoid of vegetation and primarily occurred within newly established housing estates and infrastructure corridors.




Statistical analyses




The similarity between sites (based on GHD quadrat data from Parts 1 and 2 to strengthen the analysis) was examined using PRIMER. The cluster analysis and resulting dendrogram showed general groupings of quadrats from VT06, VT08 and VT10. Quadrats representative of *Banksia* shrubland/ woodland types (VT02, VT03, VT04 and VT09) generally showed more similarity to each other than other types and occurred on several clades. Vegetation types that largely occurred in Good or worse condition and are likely to have experience historical disturbance (e.g. VT01 and VT05) occurred on multiple clades and showed limited similarity. A two dimensional MDS scatter plot was also produced and largely reflected the dendrogram (Appendix D).




The GHD quadrats (Part 1 and 2) were compared to existing data (where available) for FCTs described on uplands centred on Spearwood and Quindalup Dunes. The cluster analysis and resulting dendrogram showed a clear separation of quadrats from FCTs 10a, 11, 13, 22, 23b and 30b; other FCTs had quadrats on multiple clades (Appendix D). The GHD quadrats clustered on two separate clades, with one of the clades also comprising sites from FCT 24. Overall the GHD quadrats showed limited similarity to all other FCT quadrats, and the preliminary analysis indicates that, statistically, the vegetation recorded in the GHD quadrats does not have strong affinities to any FCTs known from the area.

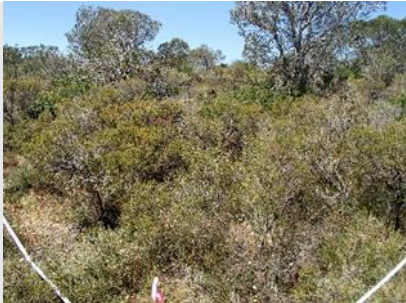


A two dimensional MDS scatter plot was also produced and largely reflected the dendrogram (Appendix D). FCT 10a, 11, 13, 22, 23b and 28 showed the most discrete grouping. The scatter plot illustrates some GHD quadrats having affinities to some FCTs, however there is no strong statistical alignment with any FCTs. It is noted in Table 11 where these affinities occurred.



Table 11 Vegetation types recorded within Part 2

| Vegetation type | Vegetation type description | Landform and Substrate | Extent (ha) | Notes and sample locations | Photograph |
|---|--|---|-------------|--|--|
| <i>Acacia saligna</i> and <i>Xanthorrhoea preissii</i> tall shrubland (VT01) | <i>Acacia saligna</i> , <i>Xanthorrhoea preissii</i> , <i>Melaleuca systema</i> tall shrubland over mixed introduced sparse herbland/grassland | Slopes of dunes with brown sandy soils | 34.33 | Sample locations (Part 2): Q01, Q15, Q26, Q40, Q41, R08, R09. |  |
| <i>Banksia sessilis</i> and <i>Melaleuca systema</i> mid-shrubland (VT02) | <i>Banksia sessilis</i> , <i>Melaleuca systema</i> , <i>Calothamnus quadrifidus</i> , <i>Hakea lissocarpa</i> mid-shrubland over <i>Hibbertia hypericoides</i> low open shrubland over mixed sparse herbland | Slopes of dunes with yellow sandy soils | 5.60 | Sample locations (Part 2): Q02 Likely to represent Northern Spearwood shrublands and woodlands (FCT 24) (PEC) |  |
| <i>Banksia sessilis</i> and <i>Spyridium globulosum</i> tall shrubland (VT03) | <i>Banksia sessilis</i> , <i>Spyridium globulosum</i> tall shrubland over <i>Calothamnus quadrifidus</i> , <i>Melaleuca systema</i> low shrubland over open sedgeland <i>Mesomelaena pseudostygia</i> , <i>Desmocladius flexuosus</i> | Dune swales with brown sandy soils | 13.24 | Sample locations (Part 2): Q03, Q16, Q43 Likely to represent Northern Spearwood shrublands and woodlands (FCT 24) (PEC) |  |

| Vegetation type | Vegetation type description | Landform and Substrate | Extent (ha) | Notes and sample locations | Photograph |
|--|--|--|-------------|---|--|
| <i>Spyridium globulosum</i> tall shrubland (VT03a) | <i>Spyridium globulosum</i> tall shrubland over <i>Calothamnus quadrifidus</i> , <i>Melaleuca systema</i> low shrubland over open sedgeland <i>Mesomelaena pseudostygia</i> , <i>Desmocladius flexuosus</i> . | Dune swales with brown sandy soils | 5.17 | Sample locations (Part 2): Q10 This vegetation type is very similar to VT03, but <i>Banksia sessilis</i> is either not present or occurs as isolated plants. |  |
| <i>Banksia attenuata</i> , <i>B. menziesii</i> low woodland (VT04) | <i>Banksia attenuata</i> , <i>B. menziesii</i> low woodland over shrubland <i>Calothamnus quadrifidus</i> , <i>Hakea trifurcata</i> , <i>Hibbertia hypericoides</i> , <i>Xanthorrhoea preissii</i> over sparse sedgeland <i>Mesomelaena pseudostygia</i> , <i>Desmocladius flexuosus</i> | Undulating plain with brown-yellow sandy soils | 6.88 | Sample locations (Part 2): Q04, Q29, Q30 Association 949 Represents <i>Banksia</i> woodlands (TEC) / <i>Banksia</i> dominated woodlands (PEC) |  |
| <i>Lomandra maritima</i> herbland (VT05) | <i>Melaleuca systema</i> , <i>Hibbertia hypericoides</i> isolated shrubs over <i>Lomandra maritima</i> , <i>Conostylis candicans</i> , <i>Kennedia prostrata</i> herbland | Dunes ridges with white to brown sandy soils | 15.34 | Sample locations (Part 2): Q05, Q09, Q12, Q38, Q39 |  |

| Vegetation type | Vegetation type description | Landform and Substrate | Extent (ha) | Notes and sample locations | Photograph |
|--|---|---|-------------|--|--|
| <i>Eucalyptus gomphocephala</i> woodland (VT06) | <p><i>Eucalyptus gomphocephala</i> tall woodland over <i>Spyridium globulosum</i> tall sparse shrubland.</p> <p>The majority of Tuart trees present within this vegetation type are planted (>25 years ago). There is one patch of original Tuart woodland which contains large mature trees and a more complete native understorey.</p> | Slopes of dunes with brown sandy soils | 8.56 | <p>Sample locations (Part 2): Q06, Q25, Q27, R01</p> <p>Represents Tuart (<i>Eucalyptus gomphocephala</i>) woodlands of the SCP (PEC)</p> |  |
| <i>Eucalyptus</i> sp., <i>Agonis flexuosa</i> woodland (VT07) | <i>Eucalyptus</i> sp., <i>Agonis flexuosa</i> woodland over <i>Spyridium globulosum</i> sparse shrubland. | Slopes of dunes with brown sandy soils | 0.32 | Sample locations (Part 2): Q07 |  |
| <i>Melaleuca huegelii</i> and <i>M. systema</i> shrubland (VT08) | <i>Melaleuca huegelii</i> , <i>M. systema</i> <i>Grevillea preissii</i> shrubland over <i>Hardenbergia comptoniana</i> sparse herbland | Upper slopes and ridge of dunes with brown to yellow sandy soils and numerous limestone outcropping | 0.05 | <p>Sample locations (Part 2): Q08</p> <p>Represents <i>Melaleuca huegelii</i> – <i>M. acerosa</i> [<i>M. systema</i>] shrublands on limestone ridges (FCT 26a) (TEC)</p> |  |

| Vegetation type | Vegetation type description | Landform and Substrate | Extent (ha) | Notes and sample locations | Photograph |
|---|--|---|-------------|---|--|
| <i>Banksia attenuata</i> woodland (VT09) | <i>Banksia attenuata</i> low woodland over <i>Melaleuca systema</i> , <i>Spyridium globulosum</i> , <i>Xanthorrhoea preissii</i> shrubland over sparse mixed sedgeland | Undulating plain and dune swales with brown sandy soils | 12.99 | Sample locations (Part 2): Q11, Q14, Q37, Q42 Represents <i>Banksia</i> woodlands (TEC) / <i>Banksia</i> dominated woodlands (PEC) |  |
| <i>Xanthorrhoea preissii</i> shrubland (VT10) | <i>Xanthorrhoea preissii</i> tall shrubland over <i>Jacksonia calcicola</i> , <i>Hakea prostrata</i> , <i>Banksia dallanneyi</i> low open shrubland over <i>Lomandra maritima</i> , <i>Conostylis</i> spp. open herbland | Slopes of dunes with brown sandy soils | 1.63 | Sample locations (Part 2): Q13, Q28 |  |
| Planted (VT12) | Areas with planted shrubs and trees of both native and introduced species. Understorey is generally comprised of introduced herbs and grasses. | Undulating plain and dunes slopes with sandy soils | 22.08 | Sample locations (Part 2): R07 |  |

| Vegetation type | Vegetation type description | Landform and Substrate | Extent (ha) | Notes and sample locations | Photograph |
|--------------------------|---|--|-------------|----------------------------|--|
| Scattered Natives (VT13) | Areas with isolated native shrubs, normally <i>Acacia</i> spp., over mixed introduced grasses and herbs | Undulating plain and dunes slopes with sandy soils | 9.79 | - |  A photograph showing a field of low-lying, yellowish-green vegetation with scattered taller shrubs under a clear blue sky. |
| Cleared | Areas devoid of native vegetation that have been cleared for housing and infrastructure | - | 11.81 | - |  A photograph showing a cleared, sandy area with sparse, low-lying vegetation and a clear blue sky in the background. |

4.1.2 Vegetation condition

The vegetation within the survey area was rated as Excellent to Completely Degraded in condition. The extents of the vegetation condition ratings mapped within the survey area are detailed in Table 12 and mapped in Figure 6, Appendix A.

The majority of the survey area was rated Very Good, Good or Degraded; in these areas, the vegetation structure had been altered (including significantly to severely). The survey area is intersected by a large number of tracks that are utilised by the local residents resulting in these areas affected by soil erosion and becoming infesting with weeds. Two areas were rated Excellent and comprised *Banksia* shrubland and *Banksia* woodland. These areas contained thick *Banksia* vegetation, the thickness of the vegetation inhibiting the weed growth and motorcycle usage. Areas rated as Completely Degraded had been historically cleared or impacted by grazing and were dominated by introduced species. Cleared areas were devoid of vegetation and are associated with cleared areas for housing and infrastructure.

Table 12 Extent of vegetation condition ratings mapped within the survey area

| Vegetation Condition | Extent in survey area (ha) |
|----------------------|----------------------------|
| Excellent | 5.75 |
| Very Good | 27.13 |
| Very Good – Good | 2.50 |
| Good | 40.63 |
| Good – Degraded | 4.38 |
| Degraded | 45.81 |
| Completely Degraded | 9.79 |
| Not rated – cleared | 11.81 |
| Total | 147.80 ha |

4.1.3 Conservation significant ecological communities

Assessing the vegetation types described at a broad level, based on dominant species, landform features and field observations, and coupled with the statistical analyses, five conservation significant ecological communities were identified to occur within the survey area. The conservation significant ecological communities are:

- Northern Spearwood shrublands and woodlands (FCT 24) Priority 3 PEC.
- *Melaleuca huegelii* – *M. acerosa* [*M. systena*] shrublands on limestone ridges (FCT 26a) Endangered TEC
- *Banksia* Woodlands of the SCP Endangered TEC
- *Banksia* dominated woodlands of the SCP IBRA region Priority 3 PEC
- Tuart (*Eucalyptus gomphocephala*) woodlands of the SCP Priority 3 PEC.

The spatial distribution of these conservation significant ecological communities are presented in Figure 7, Appendix A.

Northern Spearwood shrublands and woodlands PEC

The Northern Spearwood shrublands and woodlands (24) PEC occurs as heaths or heaths with scattered *Eucalyptus gomphocephala* occurring on deeper soils north from Woodman Point. *Banksias* found in this community include *Banksia attenuata* and *B. menziesii*. The heathlands in this group typically include *Banksia sessilis*, *Calothamnus quadrifidus* and *Schoenus*

grandiflorus, with other common species including *Hardenbergia comptoniana*, *Melaleuca systema* and *Xanthorrhoea preissii*.

Statistically some GHD quadrats showed affinities to FCT 24 (Appendix D), with field observations and quadrat data confirming similarities between vegetation types VT02 and VT03 and the Northern Spearwood shrublands and woodlands PEC. The key characteristics of Northern Spearwood shrublands and woodlands PEC met by VT02 and VT03 were:

- Occurs on the western SCP on the Cottesloe units of the Spearwood system
- Vegetation structure of mid to tall shrubland
- Typical and common species including *Banksia menziesii*, *B. sessilis*, *Melaleuca systema*, *Calothamnus quadrifidus*, *Xanthorrhoea preissii*, *Lepidosperma squamatum*, *Hardenbergia comptoniana*, *Phyllanthus calycinus*, *Conostylis aculeata*, *Dianella revoluta*, *Lomandra maritima*, *Schoenus grandiflorus*, *Desmocladius flexuosa* and *Austrostipa flavescens*

There is 18.84 ha of the Northern Spearwood shrublands and woodlands PEC within the survey area, represented by GHD vegetation types VT02 (5.60 ha) and VT03 (13.24 ha).

Melaleuca huegelii-Melaleuca systema shrublands of limestone ridges TEC

The *Melaleuca huegelii-Melaleuca systema* shrublands of limestone ridges TEC occurs on skeletal soils on ridge slopes and ridge tops with limestone outcropping. The community is described as comprising of species rich thickets, heaths or scrubs dominated by *Melaleuca huegelii*, *M. systema* and *Banksia sessilis* over *Grevillea preissii*, *Acacia lasiocarpa* and *Spyridium globulosum* (community 26a as described by Gibson *et al.* 1994). The community is highly restricted and known from massive limestone ridges around Yanchep north of Perth, and south of Perth near Lake Clifton.

Field observations inferred GHD VT08 was likely to align with FCT 26a, but the multivariate analysis was inconclusive (Appendix D). The key characteristics of *Melaleuca huegelii-M. systema* shrublands of limestone ridges TEC met by VT08 were:

- Occurring on hill crests, ridges and upper slopes with outcropping limestone
- Vegetation structure of shrubland dominated by *Melaleuca huegelii*, *M. systema* and *Grevillea preissii*
- Other typical and common species *Hardenbergia comptoniana*, *Gompholobium tomentosa*, *Leucopogon parviflorus*, *Banksia sessilis* and *Crassula colorata*.

There is 0.05 ha of the *Melaleuca huegelii-Melaleuca systema* shrublands of limestone ridges TEC present within the survey area, represented by GHD vegetation type VT08.

Banksia Woodlands of the SCP TEC

The *Banksia* Woodlands of the SCP TEC is 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 (DEE 2016). 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 (DEE 2016).

During the field survey two vegetation types (VT04 and VT09) were assessed as meeting the key diagnostic characteristics for the *Banksia* Woodlands of the SCP TEC, as outlined in DEE (2016). Specifically:

- The survey area occurs in the SCP IBRA bioregion
- The survey area occurs on sandplain landform, notably Spearwood and Quindalup 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 cord rushes, sedges and perennial and ephemeral forbs that sometimes includes grasses.

Further assessment of these vegetation types identified seven patches within the survey area that meet the minimum condition criteria outlined in DEE (2016). Consideration of the surrounding vegetation and its condition (adjacent to and outside of the survey area) was taken into account when determining patch size. A breakdown of the mapped TEC patches (by vegetation type, condition and extent) is detailed in Table 13 and Figure 7, Appendix A.

There is 17.50 ha of vegetation in the survey area representative of the *Banksia* Woodlands of the SWA TEC.

Table 13 Extent of *Banksia* Woodlands of the SCP TEC within the survey area

| Patch ID | Vegetation type | Vegetation condition and extent (ha) | Comments |
|--------------------------------|-----------------|--|--|
| Patch 1 (Figure 7, Sheet 1) | VT04 | Very Good: 1.05 Good: 1.12 <u>Total: 2.18</u> | Areas mapped as the TEC are part of a larger patch that extends east and west of the survey area. Vegetation mapped within the survey area was in Good to Very Good condition, and it is assumed adjacent vegetation is in similar condition. Aerial imagery indicates this patch is approximately 20 ha. It is estimated that approximately 11% of the patch occurs within the survey area. |
| Patch 2 (Figure 7, Sheet 1) | VT04 | Excellent: 0.13 <u>Total: 0.13</u> | Areas mapped as the TEC are part of a larger, isolated patch that occurs directly adjacent to the survey area. The vegetation was mapped as Excellent, and it is assumed the remainder of the patch is in similar condition. Aerial imagery indicates this patch is approximately 1.64 ha, and it is estimated that approximately 8% of the patch occurs within the survey area. |
| Patch 3 (Figure 7, Sheet 1) | VT04 | Excellent: 2.88 Very Good: 0.08 <u>Total: 2.96</u> | Areas mapped as the TEC are part of a larger patch that extends mostly west of the survey area. This patch is separated from Patch 1 (which occurs to the north) by areas of VT03 and VT05. The vegetation was mapped as Excellent to Very Good, and it is assumed the adjacent vegetation is in similar condition. Aerial imagery indicates this patch is approximately 13 ha, and it is estimated that approximately 23% of the patch occurs within the survey area. |

| Patch ID | Vegetation type | Vegetation condition and extent (ha) | Comments |
|---------------------------------|-----------------|--|--|
| Patch 4 (Figure 7, Sheet 2) | VT04 VT09 | Very Good: 1.17 Good: 0.80 <u>Total: 1.97</u> | Areas mapped as the TEC are part of a patch that extends just north of the survey area. Vegetation mapping by Eco Logical Australia (ELA) (2018) indicates the <i>Banksia</i> vegetation adjacent to the survey area is Good to Very Good in condition. Aerial imagery and the ELA mapping indicates this patch is approximately 2.17 ha. It is estimated that approximately 90% of the patch occurs within the survey area. |
| Patch 5 (Figure 7, Sheet 2) | VT09 | Very Good: 5.62 Very Good to Good: 1.52 Good: 0.06 <u>Total: 7.19</u> | Areas mapped as the TEC are part of a larger patch that extends south/south-west of the survey area. Vegetation mapping by ELA (2018) indicates the <i>Banksia</i> vegetation adjacent to the survey area is Good to Very Good in condition. Aerial imagery and the ELA mapping indicates this patch is approximately 28 ha. It is estimated that approximately 25% of the patch occurs within the survey area. |
| Patch 6 (Figure 7, Sheet 3) | VT09 | Very Good: 1.47 Good: 1.46 <u>Total: 2.93</u> | Areas mapped as the TEC are part of a patch contained within the survey area. Vegetation mapped within the survey area was in Good to Very Good condition. |
| Patch 14 (Figure 7, Sheet 1) | VT04 | Very Good: 0.08 <u>Total: 0.08</u> | Areas mapped as the TEC are part of a larger patch that extends east of the survey area. The vegetation was mapped as Excellent, and it is assumed the remainder of the patch is in similar condition. Aerial imagery indicates this patch is approximately 25 ha, and it is estimated that <1% of the patch occurs within the survey area. |

Banksia dominated woodlands of the SCP IBRA region PEC

The field assessment also confirmed the presence of the *Banksia* dominated woodlands of the SCP IBRA region PEC, listed as Priority 3 by DBCA. This PEC differs from the TEC in that it has no minimum condition and patch size thresholds. Vegetation types VT04 and VT09 are representative of the *Banksia* dominated woodlands of the SCP IBRA region PEC.

There is 19.87 ha of the *Banksia* dominated woodlands of the SCP IBRA region PEC present within the survey area, ranging from Excellent to Degraded in condition (this total includes 17.50 ha which also aligns with the *Banksia* Woodlands of the SCP TEC).

Tuart (Eucalyptus gomphocephala) woodlands of the Swan Coastal Plain PEC

Mostly confined to Quindalup Dunes and Spearwood Dunes from Jurien Bay to the Sabina River, with outliers along some rivers. Tuart is the key dominant canopy species however; Tuart communities comprise a variety of flora and fauna assemblages. Flora commonly occurring with

Tuart include Peppermint (*Agonis flexuosa*), *Banksia attenuata*, *B. grandis*, *Allocasuarina fraseriana*, *Xylomelum occidentale*, *Macrozamia riedlei*, *Xanthorrhoea preissii*, *Spyridium globulosum*, *Templetonia retusa* and *Diplolaena dampieri*.

Vegetation type VT06 is representative of the Tuart woodlands of the Swan Coastal Plain PEC. This vegetation type occurs on Spearwood and Quindalup sands and is a woodland with *Eucalyptus gomphocephala* being the dominant canopy species. Whilst the majority of Tuart trees present within VT06 are planted, they are established with DBH >150 mm and aerial imagery indicates they are 25+ years old.

There is 8.56 ha of the Tuart (*Eucalyptus gomphocephala*) woodlands of the SCP PEC present within the survey area, ranging from Good to Degraded in condition.

4.1.4 Flora diversity

Two hundred and twelve flora taxa (including subspecies and varieties) representing 56 families and 141 genera were recorded from the survey area during the field survey. This total comprised of 150 native taxa and 62 introduced flora taxa.

Dominant families recorded from the survey area included:

- Poaceae (21 taxa)
- Fabaceae (21 taxa)
- Proteaceae (21 taxa).

The number of native species typically recorded in 100 m² within the Quindalup and Spearwood Dune systems ranges from 9-35 and 37-55 respectively (GoWA 2000). Based on described quadrats, species diversity ranged from 12 to 50 (average 26) taxa per 100 m². The survey area is considered representative of the floristic diversity in the area. The highest floristic diversity was recorded in VT04.

4.1.5 Conservation significant flora

No EPBC Act or WC Act listed flora were recorded within the survey area, however, one DBCA Priority-listed flora species was recorded within the survey area during the 2016-2018 field surveys, *Hibbertia spicata* subsp. *leptotheca* (P3). The species is described as an erect or spreading shrub, approximately 0.2-0.5 m high with yellow flowers. *Hibbertia spicata* subsp. *leptotheca* is recorded in the SCP IBRA bioregion where it grows near coastal limestone ridges, outcrops and cliffs (WA Herbarium 1998–). *Hibbertia spicata* subsp. *leptotheca* was recorded in Q08, VT08 – *Melaleuca huegelii* and *M. systena* shrubland. Within this quadrat one plant was recorded (Figure 5, Appendix A).

An additional three DBCA Priority-listed flora species were recorded during the 2012 flora and vegetation survey (GHD 2012), *Conostylis pauciflora* subsp. *euryrhipis* (P4), *Conostylis pauciflora* subsp. *pauciflora* (P4) and *Beyeria cinerea* subsp. *cinerea* (P3). These records were not relocated during the 2016-2018 field surveys.

Likelihood of occurrence

A likelihood of occurrence assessment was conducted post-field survey for all conservation significant flora taxa identified in the desktop assessment (Appendix D). This 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 that four taxa are known to occur, six taxa may possibly occur and the remaining ten taxa are unlikely or highly unlikely to

occur within the survey area. The taxa known to occur within the survey area are summarised in Table 14.

Table 14 Conservation significant flora known to occur within the survey area

| Taxon | Status | Likelihood |
|---|--------|---|
| <i>Hibbertia spicata</i> subsp. <i>leptotheca</i> | P3 | Known – this species was recorded during the surveys. There is suitable habitat within the survey area (VT01, VT02, VT03, VT3a, VT04, VT08, VT09, VT10). This species was recorded from VT08, which is restricted within the survey area. It is likely there is suitable habitat adjacent to the survey area. |
| <i>Conostylis pauciflora</i> subsp. <i>euryrhipis</i> | P4 | Known – this species was recorded during the 2012 survey. One record with 20 individuals was recorded from VT03. An additional record with 2 individuals was recorded adjacent to the current survey area during the 2012 survey. There is suitable habitat present within the survey area (VT01, VT02, VT03, VT03a, VT05, VT06, VT07, VT08, VT10). This species is not cryptic, but was not re-located during the 2016-2018 surveys. It is likely there is suitable habitat adjacent to the survey area. |
| <i>Conostylis pauciflora</i> subsp. <i>pauciflora</i> | P4 | Known – this species was recorded during the 2012 survey. One record with 10 individuals was recorded from VT03. An additional 3 records with 41 individuals were recorded adjacent to the current survey area during the 2012 survey. There is suitable habitat present within the survey area (VT01, VT02, VT03, VT03a, VT05, VT06, VT07, VT08, VT10). This species is not cryptic, but was not re-located during the 2016-2018 surveys. It is likely there is suitable habitat adjacent to the survey area. |
| <i>Beyeria cinerea</i> subsp. <i>cinerea</i> | P3 | Known – this species was recorded during the 2012 survey. Two records with 1 individual each were recorded from VT03a and VT05. There is suitable habitat present within the survey area (VT01, VT02, VT03, VT03a, VT05, VT06, VT07, VT08, VT10). This species is not cryptic, but was not re-located during the 2016-2018 surveys. It is likely there is suitable habitat adjacent to the survey area. |

4.1.6 Introduced flora

Sixty two introduced flora taxa were recorded in the survey area. Of the introduced taxa, six are listed as Declared Pests under the *Biosecurity and Management Act 2007* and/or as a WoNS:

- **Gomphocarpus fruticosus* (Narrowleaf Cottonbush) – Declared Pest
- **Moraea flaccida* (One-leaf Cape Tulip) – Declared Pest
- **Solanum linnaeanum* (Apple of Sodom) – Declared Pest
- **Zantedeschia aethiopica* (Arum Lily) – Declared Pest
- **Lantana camara* (Common Lantana) – Declared Pest and WONS

- *Asparagus asparagoides* (Bridal Creeper) – Declared Pest and WONS.


The remaining introduced taxa are considered environmental weeds and all have been previously recorded on the SCP. The locations the Declared Pests and WONS within the survey area are mapped in Figure 6, Appendix A.

4.2 Fauna

4.2.1 Fauna habitats

The field assessment identified eight broad fauna habitat types within the survey area, including three woodland types, two shrubland types, one herbland/sedgeland type, one ridgeline type and highly disturbed areas. These habitat types were closely aligned to the vegetation types described in section 4.1.1. The habitat types present within the survey area are described in Table 15 and mapped in Figure 8, Appendix A.

Table 15 Fauna habitat types within survey area

| Habitat type | Indicative photograph |
|---|---|
| <p><i>Eucalyptus</i> woodland 8.56 ha</p> <p>This habitat includes vegetation types VT06</p> <p>This habitat type is dominated by Tuart (<i>Eucalyptus gomphocephala</i>) with a mixed understory of shrubs and weeds. The vegetation varies slightly in species composition and density throughout the survey area depending on the amount of disturbance, but is dominated by Tuart. This habitat had deep grey sandy soils with litter and woody debris associated to Tuarts and shrub layers. Some of the woody debris areas provide refuge areas for ground dwelling mammals and reptiles. There is a paucity of large fallen logs present in this habitat which is likely a result of historical fires, although recent fire evidence was not recorded during the survey. This woodland provides excellent cover for a range of small woodland birds, with numerous species recorded in mid strata and canopy habitat.</p> <p><u>Conservation significant species:</u></p> <p>Carnaby's Black Cockatoo (<i>Calyptorhynchus latirostris</i>) (potential nesting, roosting and low to moderate foraging value), the Western Brush Wallaby (<i>Macropus irma</i>), and Peregrine Falcon (<i>Falco peregrinus</i>) (foraging, nesting) potentially use this habitat.</p> <p>Habitat Value – High</p> |  |

Habitat type

***Banksia sessilis* over low mixed shrubland 18.84 ha.**

This habitat includes vegetation types VT02, VT03.

This habitat type is dominated by *Banksia sessilis* with sparse to occasional *Acacia*, *Hakea*, *Xanthorrhoea* and *Olearia* species over a low native shrubland and weed understory. The vegetation varies slightly in species composition throughout the survey area but is always dominated by *Banksia sessilis*, supported by sandy substrate. This shrubland provides excellent cover and nectar for small bush birds and mammals with numerous aerial species particularly, honey-eaters, recorded in this habitat type.

Conservation significant species:

One species of conservation significance was recorded in this habitat type, Carnaby's Black Cockatoo. Foraging evidence of this species was recorded in several locations (Plate 2). The Western Brush Wallaby (resident), Southern Brown Bandicoot (resident), and Peregrine Falcon (foraging) may all opportunistically use this habitat.

Habitat Value – High

Mixed *Banksia* woodland 19.87 ha.

This habitat includes vegetation types VT04, VT09


This habitat type is dominated by *Banksia* and predominantly *B. attenuata*, and to a lesser degree *B. menziesii* with some areas of *Banksia sessilis* incursion. Shrub layers of *Acacia*, *Hakea*, *Xanthorrhoea*, *Zamia* and *Olearia* species were also common. This habitat was moderately dense and had moderate litter cover and woody debris. Few large logs were present due to the lack of large tree species, however large skirts from un-burned *Xanthorrhoea* and *Zamia* palms provide excellent cover for small terrestrial fauna species, particularly reptiles. Soils were predominantly deep sands. Numerous small birds were recorded in this habitat type due to the shrub woodland cover and flowering *Banksia attenuata*. No recent fire scars were evident.



Conservation significant species:



One species of conservation significance was recorded in this habitat type. This was Carnaby's Black Cockatoo foraging evidence (chewed *B. attenuata* cones, see Plate 3) at several locations. This habitat type is generally regarded as high quality foraging habitat for this species, this includes areas where weed species are dominant within low vegetation strata.

Indicative photograph



| Habitat type | Indicative photograph |
|---|---|
| <p>Several other species may opportunistically use this habitat including the Western Brush Wallaby, previously recorded by GHD (2018), Southern Brown Bandicoot (Quenda), Peregrine Falcon and Chuditch (resident, foraging). Two reptile species, the Jewelled Skink (<i>Ctenotus gemmula</i>) and Black Striped snake (<i>Neelaps calonotos</i>) are also known to utilise/reside in this habitat, and the ground cricket <i>Pachysaga spp.</i> may also reside in this habitat.</p> <p>Habitat Value – High</p> | |
| <p>Mixed tall shrubland – 46.71 ha</p> <p>This habitat includes vegetation types VT01, VT03a, VT07, VT10, VT13</p> <p>This habitat type is dominated by a range of mixed shrubs including <i>Grevillea</i>, <i>Acacia</i>, <i>Calothamnus</i>, <i>Hakea</i>, <i>Xanthorrhoea</i>, <i>Melaleuca</i>, <i>Spyridium</i>, and <i>Olearia</i> species were most common. This habitat is often very dense and had excellent litter cover and small fine woody debris. Few large logs were present due to the lack of large tree species, however, the density of the vegetation would provide excellent cover for a range of terrestrial fauna species. Soils were predominantly deep pale sands with occasional minor limestone incursion. No recent fire scars were evident. Numerous birds were recorded in this habitat type due to the flowering plants present.</p> <p><u>Conservation significant species:</u></p> <p>Several conservation significant species potentially occur within this habitat type. Western Brush Wallaby was previously recorded within this habitat type (GHD 2018). This species is able to utilise all the habit areas of the survey area as a resident or for foraging. The Southern Brown Bandicoot will forage and shelter within the low dense vegetation. Two reptile species, the Jewelled Skink and Black Striped snake are also known to utilise/reside in this habitat.</p> <p>Habitat Value – High</p> |  |

| Habitat type | Indicative photograph |
|--|--|
| <p><i>Lomandra</i> herbland on secondary dunes 15.34 ha This habitat includes vegetation types VT05</p> <p><i>Lomandra</i> dominated herbland is present on secondary dune systems throughout small areas of the survey area. The habitat consisted of <i>Lomandra maritima</i> and low scattered shrubs and herbs. The habitat was mostly open with sparse littler and woody debris present. The secondary dunes consist of deep mobile sands and appear long unburnt. The habitat condition is generally high. Few fauna species were recorded in this habitat type however a range of reptile, particularly burrowing species use this habitat.</p> <p><u>Conservation significant species:</u></p> <p>No species of conservation significance were recorded in this habitat type. The Western Brush Wallaby may utilise the area for foraging. The Southern Brown Bandicoot (foraging), Peregrine Falcon (foraging) may all opportunistically use this habitat. Two reptile species the Jewelled Skink and Black Striped snake may also utilise/reside in this habitat. This <i>Lomandra</i> is known to be a host species for the Graceful Sun Moth (<i>Synemon gratiosa</i>) and this species is highly likely to occur.</p> <p>Habitat Value – Medium</p> |  |
| <p>Limestone ridgelines 0.05 ha This habitat includes vegetation types VT08</p> <p>Limestone ridgelines are present as a very small but notable component of fauna habitat within the survey area and include <i>Lomandra maritima</i> tussocks and with varying proportions or low myrtaceous and proteaceous shrubs, herbs. Native sedges and grasses as minor components. This habitat had litter and fine woody debris associated to the shrubs which would provide cover to small fossorial species however the limestone ridging would also provide denning and hides. No large logs were present in this habitat type due to the lack of large trees. Few fauna species were recorded in this habitat type however the limestone rock provide shelter for a range of small reptiles and invertebrates. The presence of exposed limestone formations can indicate potential occurrence of subterranean stygofauna and troglifauna.</p> <p><u>Conservation significant species:</u></p> <p>No species of conservation significance were recorded in this habitat type. The Western Brush Wallaby (foraging), Southern Brown Bandicoot (foraging), Peregrine Falcon (foraging) may all</p> |  |

| Habitat type | Indicative photograph |
|--|--|
| <p>opportunistically use this habitat. The Graceful Sun Moth potentially occurs in areas with moderate or higher density of <i>Lomandra</i>.</p> <p>Habitat Value – Medium</p> | |
| <p>Planted <i>Eucalyptus</i> woodland 22.08 ha</p> <p>This habitat includes vegetation types VT12</p> <p>Areas of non-native plantation are present in the survey area. These consist of several Mallee <i>Eucalyptus</i> species including cultivars. These tree species form moderate canopy cover and connectivity for areal species. There is generally little to no understorey present, and ground cover such as leaf litter and logs was scarce.</p> <p><u>Conservation significant species:</u></p> <p>No conservation significant species were recorded in this habitat type. However, Carnaby's Black Cockatoo may forage seasonally when nectar is available. Southern Brown Bandicoot (foraging), Peregrine Falcon (Foraging) may all opportunistically use this habitat.</p> <p>Habitat value – Medium</p> |  |
| <p>Highly disturbed 16.34 ha</p> <p>This habitat includes vegetation types VT13 and 'Cleared'.</p> <p>Highly disturbed areas provide very little to fauna species but can be used by common insectivorous bird species for foraging and by avian and ground dwelling species as corridors. Carnaby's Black Cockatoos will occasionally forage within these areas on weeds such as <i>Erodium</i>, however habitat value is relatively limited. Several locally occurring common reptile and bird species that are habitat generalists will forage within these highly degraded areas.</p> <p>Habitat value – Low</p> |  |

4.2.1 Fauna habitat connectivity and disturbance

The survey area is a mosaic of intact remnant and previously disturbed areas. Much of the region between Pipidinny Road (south of the survey area), and the town site of Lancelin is designated for residential development and some areas show evidence of clearing since the 2012 surveys. Although bisected by many walking and bike trails, connectivity is largely intact currently present north and south via a thin strip of natural vegetation. Parts of the survey area have been affected by varying degrees of disturbance. Dumping of rubbish was adjacent to tracks and roads which are easily accessible to the public. Weeds were also present throughout the majority of the survey area in varying degrees of density. Weed species increased adjacent to tracks and roads due to edge effects. Disturbance included partial clearing, historical farming and tree plantings including plantations of mallee eucalyptus and Tuart trees.

4.2.2 Habitat quality

Across most of the mapped fauna habitat types, the habitat value is largely high with respect to the vertebrate fauna assemblages that potentially utilise them. There are several areas of medium habitat quality, based on the native vegetation assemblages, vegetation strata and level or disturbance from partial clearing, historical farming, and weed presence. Low fauna habitat value has been assigned to cleared and highly degraded weedy areas, which have limited foraging and shelter values for a limited number of species.

4.2.3 Fauna diversity

The fauna surveys recorded 78 vertebrate fauna species, including 59 birds, ten reptiles and nine mammals. The results of the surveys are summarised in Appendix E. In addition to the species recorded in the 2016-2018 surveys, GHD recorded a number of additional species in 2012 that were not recorded in these surveys. With these species included in the assessment, 92 species are known to utilise the survey area which includes 65 birds, 14 reptiles, 13 mammals, in addition to two invertebrates. The fauna observations from the combined surveys represent a moderate to high percentage of the total species expected to occur.

4.2.4 Introduced fauna

Nine introduced species were recorded during the field surveys, including six mammals and three bird species. These were the Red Fox, European Rabbit, Feral Cat, House Mouse, Dog, Pig, Laughing Kookaburra, Laughing Dove and Rainbow Lorikeet. In addition, evidence of horses along walk trails was apparent. All introduced species recorded are well known from the northern Swan Coastal Plain region.

4.2.5 Conservation significant fauna

Two fauna species of conservation significance was recorded during the field surveys, Carnaby's Black Cockatoo (Plate 2) and the Western Brush Wallaby. In addition, the Graceful Sun Moth was recorded by GHD in 2011. The ground cricket (*Pachysaga munggai* or *strobila*) was recorded by GHD in 2012, however, it has subsequently been reviewed by DBCA and is no longer conservation significant within the Swan Coastal Plain bioregion.

The extent and type of Carnaby's Black Cockatoo habitat and foraging evidence is mapped in Figure 9, Appendix A. The fauna context of the survey area in a regional setting is shown in Figure 10, Appendix A.

Carnaby's Black Cockatoo

Carnaby's Black Cockatoo was observed foraging, heard calling and evidence of recent activity (e.g. foraging residue, namely chewed *Banksia sessilis* flowers and *B. attenuata* cones – Plate 3) recorded within the survey area.

Foraging habitat

The survey area is located within the modelled feeding and breeding distribution (Yanchep National Park) for Carnaby's Black Cockatoo (DSEWPaC 2012). There are numerous records of this species occurring within and around the survey area. Foraging and roosting behaviour of this species is well known and documented extensively across the northern Swan Coastal Plain. The mixed *Banksia* woodlands, and *Banksia sessilis* shrubland provide high value foraging habitat in the form of seeds, nectar and invertebrates. These two habitat types support high densities of a variety of proteaceous species that are well known to be primary or important foraging plant species.

The *Eucalyptus* woodland, predominantly Tuart, provides moderate foraging value for Carnaby's Black Cockatoo. These trees provide a seasonal nectar resource used by this species. The mixed tall shrubland habitat also provides opportunistic food resources such as invertebrate larvae within *Acacia* stems (Shah 2006), and this habitat can also be described of moderate foraging value. Table 16 provides a summary of the mapped habitat types deemed suitable foraging habitat for the species within the survey area and Table 17 provides foraging habitat value, including scores calculated based on the Revised Draft Referral Guidelines (DEE 2017). It is noted, all fauna habitat types contained species known to support foraging (noting in some habitat types these are scattered, isolated species). Those habitat types considered to have a low foraging value have been excluded from foraging calculations. Foraging habitat and evidence shown in Figure 9, Appendix A and Plates 2 to 4.

Breeding habitat

The field survey identified 70 potential breeding trees of suitable DBH within the survey area (Figure 9, Appendix A). Trees having a DBH greater than 500 mm are considered to have attained sufficient size to have nesting potential currently, or may develop potentially suitable nest hollows within 100 years. Breeding success is dependent on both the nesting and foraging areas being relatively close together and sufficient to support the population (DSEWPaC 2012). Shrubland and woodland habitats within the survey area are likely to be utilised by Carnaby's Black Cockatoos for foraging and there is potential for the species to breed in the survey area in the future.

Roosting habitat

The survey identified 8.56 ha of potential roosting habitat (Figure 9, Appendix A). This is represented as *Eucalyptus* woodland generally comprising tall mature Tuart trees and is considered to be of moderate value. The planted *Eucalyptus* woodlands generally lack the emergent height above surrounding habitat to be deemed as potential roosts. The field survey did not identify any actual Black Cockatoo roosting sites within the survey area. A review of Black Cockatoo roost count data (Birdlife Australia 2016) did not reveal any known or potential roosts within the survey area. The closest known Carnaby's Black Cockatoo roosts are three sites located in the Yanchep area approximately 1.5 km north to north east of the survey area. A further known roost is listed for Carabooda approximately 6 km southeast of the survey area.

Tables 16 and 17 provide a summary of the quantity and value of habitat types for Carnaby's Black Cockatoo within the survey area.

Table 16 Black Cockatoo habitat within survey area

| Habitat type | Survey area |
|----------------------------|--|
| Foraging habitat | There is 116.06 ha of foraging habitat for Black Cockatoos within the survey area consisting of the following: <ul style="list-style-type: none"> • Mixed tall Shrubland – 46.71 ha • <i>Banksia sessilis</i> over low mixed shrubland – 18.84 ha • Mixed <i>Banksia</i> woodland – 19.87 ha • <i>Eucalyptus</i> woodland – 8.56 ha • Planted <i>Eucalyptus</i> woodland – 22.08 ha |
| Actual breeding habitat | No breeding events of any species of Black Cockatoo were recorded within the survey area during the surveys. |
| Potential breeding habitat | 70 potential breeding habitat trees with a DBH ≥ 500 mm (including 66 Tuarts and four introduced eucalypts). Of the 70 trees none had hollows. |
| Roosting habitat | No roosting sites were recorded as being used by Black Cockatoos within the survey area. There is approximately 8.56 ha of suitable roosting habitat within the survey area, consisting of the <i>Eucalyptus</i> woodland |

Table 17 Black Cockatoo habitat value

| Habitat type | Area (ha) | Foraging value | Breeding value | Roosting value |
|--|-----------|----------------------|----------------|----------------|
| <i>Banksia sessilis</i> over low mixed shrubland | 18.84 | High (score 7) | - | - |
| <i>Eucalyptus</i> woodland | 8.56 | Moderate (score 3-4) | Potential | Moderate |
| Limestone ridgeland | 0.05 | Low (score 1-2) | - | - |
| Lomandra herbland on secondary dunes | 15.34 | Low (score 1-2) | - | - |
| Mixed <i>Banksia</i> woodland | 19.87 | High (score 7) | - | - |
| Mixed tall shrubland | 46.71 | Moderate (score 3-4) | - | - |
| Planted <i>Eucalyptus</i> woodland | 22.08 | Moderate (score 3-4) | Potential | - |
| Highly disturbed | 16.34 | Low (score 1-2) | - | - |



Plate 2 Carnaby's Black Cockatoos observed within the survey area

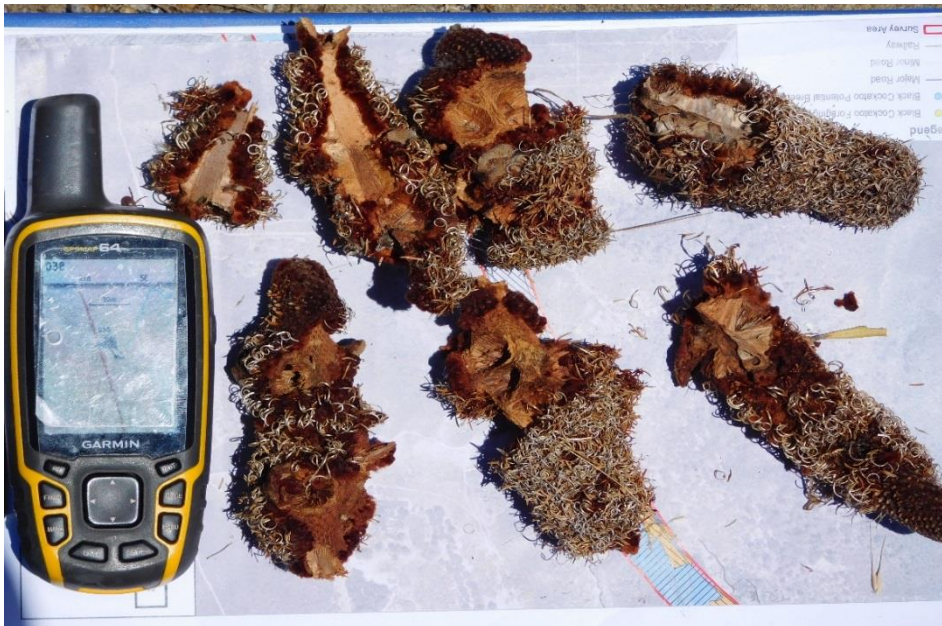


Plate 3 Carnaby's Black Cockatoo foraging evidence (*Banksia attenuata*)



Plate 4 Carnaby's Black Cockatoo foraging evidence (*Banksia sessilis*)

Western Brush Wallaby

The Western Brush Wallaby (listed as Priority 4 by DBCA) occurs only in the South-west of WA and is primarily a grazer with an optimum habitat of open forest or woodland with low grasses and moderate to dense shrub layer vegetation providing refuge habitat from predators. Activity is greatest during the early morning and late afternoon whilst it rests during the hottest part of the day in pairs, or singly, in the shade of a bush or thicket (Van Dyke and Strahan 2008).

This species was recorded during the November 2016 field survey. The Western Brush Wallaby may utilise a range of habitats for foraging within the survey area, however the mixed tall shrubland, and *Banksia sessilis* over low mixed shrubland is potential shelter. Habitat connectivity with substantial bushland around Yanchep and further east allows this species to range widely within the northern Swan Coastal Plain and utilise the survey area on an occasional to frequent basis.

Graceful Sun-Moth

This species was previously recorded during a targeted Graceful Sun-Moth (GSM) survey completed by GHD in March 2011. This species occurs in coastal and near coastal dunes that support *Lomandra maritima*, the primary host plant of the Graceful Sun Moth. The *Lomandra* herblands on secondary dunes are suitable breeding habitat for this species.

Likelihood of occurrence

Searches of the EPBC Act PMST and *NatureMap* databases, and review of the species listed under Schedules 1-4 of the WC Act (revised September 2018), identified the presence/potential presence of 20 species of conservation significance. An assessment of the likelihood of occurrence for conservation significant fauna in the survey area was conducted Appendix E). This assessment was based on species biology, habitat requirements, the quality and connectivity of available habitat, and local and regional occurrence of species records (e.g. DBCA 2007-).

The assessment identified three species as recorded present and four species that are considered likely to occur within the survey area. A summary of the likely to occur species are provided in Table 18.

Table 18 Conservation significant fauna ‘likely’ to occur in the survey area

| Species | Status | | Likelihood of occurrence |
|--|-----------------|----------|---|
| | WC Act/ DBCA | EPBC Act | |
| Peregrine Falcon (<i>Falco peregrinus</i>) | S | | Likely – there are confirmed records within 5 km of the survey area. The species is widespread within the SCP bioregion across a range of habitat types and landscapes. Large Tuart trees within the survey area and potentially suitable nesting habitat, and species is likely to forage within the survey area. |
| Southern Brown Bandicoot (Quenda) (<i>Isoodon obesulus fusciventer</i>) | P4 | | Likely – the survey area has suitable foraging habitat and areas of dense shrubland habitat provide suitable shelter. The species is known to occur locally and there are two records within 4 km of the survey area (northwest and south east of the survey area), as well as records in <i>Banksia sessilis</i> habitat north of Alkimos (GHD unpublished data). |
| Jewelled South West Ctenotus (<i>Ctenotus gemmula</i> (SCP subpop.)) | P3 | | Likely – the habitat within the survey area is suitable for this species. There are no records from the survey area or study area, however this is likely due to a lack of current data for this species. |
| Black-striped Snake (<i>Neelaps calonotos</i>) | P3 | | Likely – the habitat within the survey area is suitable for this species. There are multiple records within 5 km of the survey area including near Pipidinny Road, approximately 1 km to the south (Brad Maryan, pers.comm) |

5. References

- Beard, JS 1979, Vegetation Survey of WA: the Vegetation of the Perth Area WA, map and explanatory memoir 1:250,000 series, Applecross, Vegmap Publications.
- Beard, JS 1990, *Plant Life of WA*, Perth, Kangaroo Press
- Birdlife Australia 2016, Great Cocky Count data, unpublished Birdlife Australia data.
- Bureau of Meteorology (BoM) 2018, Climate Data Online, retrieved December 2018, from <http://www.bom.gov.au/climate/data/>.
- Christidis, L and Boles, WE 2008, *Systematics and Taxonomy of Australian Birds*, Melbourne, CSIRO Publishing.
- Clarke, KR and Gorley, RN 2006, *PRIMER v6: User Manual/Tutorial*, Plymouth, PRIMER-E.
- Department of Agriculture and Food WA (DAFWA) 2007, *Soil-landscape mapping in South-WA*, Perth, Department of Agriculture and Food.
- Department of Biodiversity, Conservation and Attractions (DBCA) 2007–, NatureMap: Mapping WA's Biodiversity, retrieved December 2018, from <http://naturemap.dpaw.wa.gov.au/default.aspx/>.
- Department of Sustainability, Environment, Water, Population and Communities (DSEWPaC) 2012, *EPBC Act referral guidelines for three threatened black cockatoo species: Carnaby's Cockatoo (endangered) *Calyptorhynchus latirostris*, Baudin's Cockatoo (vulnerable) *Calyptorhynchus baudinii*, Forest Red-tailed Black Cockatoo (vulnerable) *Calyptorhynchus banksii naso**, Commonwealth of Australia.
- Department of the Environment and Energy (DEE) 2016, *Environmental Protection and Biodiversity Conservation Act 1999 Approved Conservation Advice (incorporating listing advice) for the Banksia Woodlands of the SCP ecological community*, retrieved December 2018, from <http://www.environment.gov.au/biodiversity/threatened/communities/pubs/131-conservation-advice.pdf>.
- Department of Environment and Energy (DEE) 2017, Revised Draft EPBC Act Referral Guidelines for Three Threatened Black Cockatoo Species, Commonwealth of Australia.
- Department of the Environment and Energy (DEE) 2018a, *Environmental Protection and Biodiversity Conservation Act 1999 Protected Matters Search Tool Results*, retrieved November 2018, from <http://www.environment.gov.au/epbc/pmst/index.html>.
- Department of the Environment and Energy (DEE) 2018b, *Environment Protection and Biodiversity Act 1999 List of Threatened Flora*, retrieved December 2018, from <http://www.environment.gov.au/cgi-bin/sprat/public/publicthreatenedlist.pl?wanted=flora>.
- Eco Logical Australia (ELA) 2018, Ningana Bushland (Bush Forever Site 289) Candidate Offset Site Investigation, Yanchep Railway Extension, unpublished report prepared for the PTA.
- Environmental Protection Authority (EPA) 2016a, *Technical Guidance – Flora and Vegetation Surveys for Environmental Impact Assessment*, Environmental Protection Authority, WA.
- Environmental Protection Authority (EPA) 2016b, *Technical Guidance – Terrestrial Vertebrate Fauna Surveys*, Environmental Protection Authority, WA.
- Executive Steering Committee for Australian Vegetation Information (ESCAVI) 2003, *Australian Vegetation Attribute Manual: National Vegetation Information System, Version 6.0*, Canberra, Department of the Environment and Heritage.

GHD 2011, *Northern Suburbs Railway Alignment from Romeo Rd (Alkimos) to Yanchep; Graceful Sun-moth Survey*, unpublished report for the Public Transport Authority.

GHD 2012, *Northern Suburbs Railway Alignment Butler to Yanchep Environmental Investigation*, unpublished report for the Public Transport Authority.

GHD 2018, *Yanchep Rail Extension Biological Assessment*, unpublished report prepared for Public Transport Authority, November 2018.

Gibson, N, Keighery, BJ, Keighery, GJ, Burbridge, AH and Lyons, MN 1994, *A Floristic Survey of the Southern SCP*, Unpublished Report for the Australian Heritage Commission prepared by Department of Conservation and Land Management and the Conservation Council of WA (Inc).

Government of Western Australia (GoWA) 2018a, Data WA, retrieved April 2018, from <http://www.data.wa.gov.au/>.

Government of Western Australia (GoWA) 2018b, *2017 Statewide Vegetation Statistics incorporating the CAR Reserve Analysis* (Full report), Current as of December 2017, Perth, Australia, Department of Biodiversity, Conservation and Attractions, retrieved December 2018, from <https://catalogue.data.wa.gov.au/dataset/dbca-statewide-vegetation-statistics>.

Government of Western Australia (GoWA) 2018c, *2017 South West Vegetation Complex Statistics*, Current as of October 2017, Perth, Australia, Department of Biodiversity, Conservation and Attractions, retrieved December 2018, from <https://catalogue.data.wa.gov.au/dataset/dbca>.

Hedde, EM, Loneragan. OW and Havel JJ 1980, *Vegetation Complexes of the Darling System, WA*, in Atlas of Natural Resources, Darling System WA, Department of Conservation and Environment.

Keighery, BJ 1994, *Bushland Plant Survey: A Guide to Plant Community Survey for the Community*, Wildflower Society of WA (Inc.), Nedlands, WA.

Mitchell, D, Williams, K & Desmond, A 2002, *SCP 2 (SWA2 — SCP subregion)*, in Department of Conservation and Land Management (ed), A Biodiversity Audit of WA's 53 Biogeographical Subregions in 2002, pp 724.

Morcombe, M 2004, *Field Guide to Australian Birds, Queensland, Australia*, Steve Parish Publishing Archer Field.

Shah, B 2006, *Conservation of Carnaby's Black-Cockatoo on the Swan Coastal Plain, Western Australia* Project Report, Birds Australia Western Australia, Perth.

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

Van Dyke, S and Strahan, R 2008, *The Mammals of Australia*, third edition, Sydney, Australia, New Holland Publishers.

WA Herbarium 1998–, *FloraBase—the Western Australian Flora*, Department of Biodiversity, Conservation and Attractions, retrieved December 2018, from <http://florabase.dpaw.wa.gov.au/>.

Weather Zone 2018, Weather Zone retrieved December 2018 from <http://www.weatherzone.com.au/wa/lower-west/ginginup>.

Appendices

Appendix A – Figures

Figure 1 Project location

Figure 2 Hydrology constraints

Figure 3 Land use constraints

Figure 4 Biological constraints

Figure 5 Vegetation types and sample locations

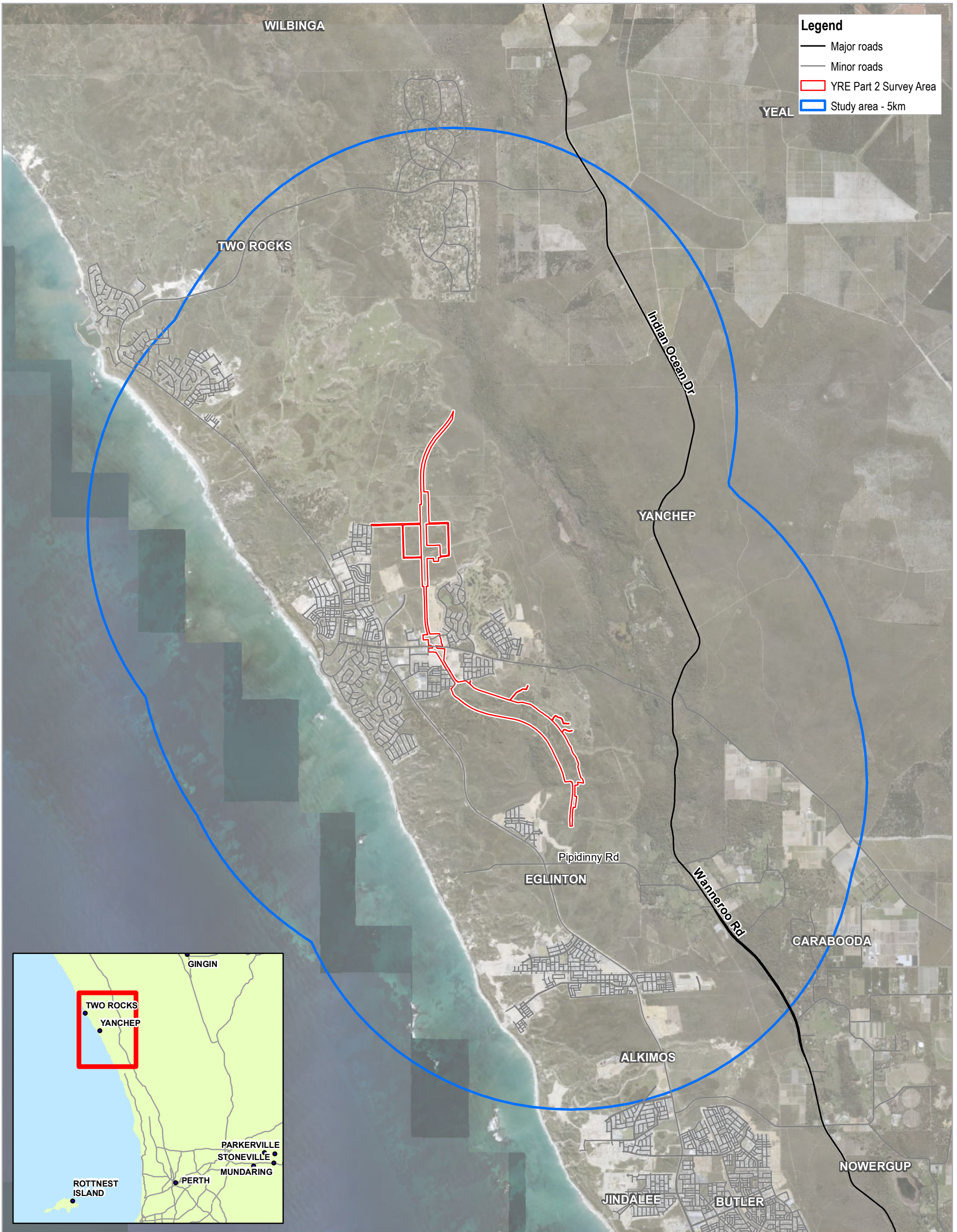
Figure 6 Vegetation condition and significant weed locations

Figure 7 Conservation significant vegetation and flora

Figure 8 Fauna habitats

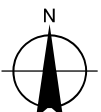
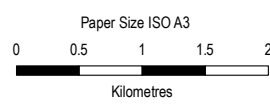
Figure 9 Black Cockatoo habitats

Figure 10 Fauna context



Legend

- Major roads
- Minor roads
- ▭ YRE Part 2 Survey Area
- Study area - 5km



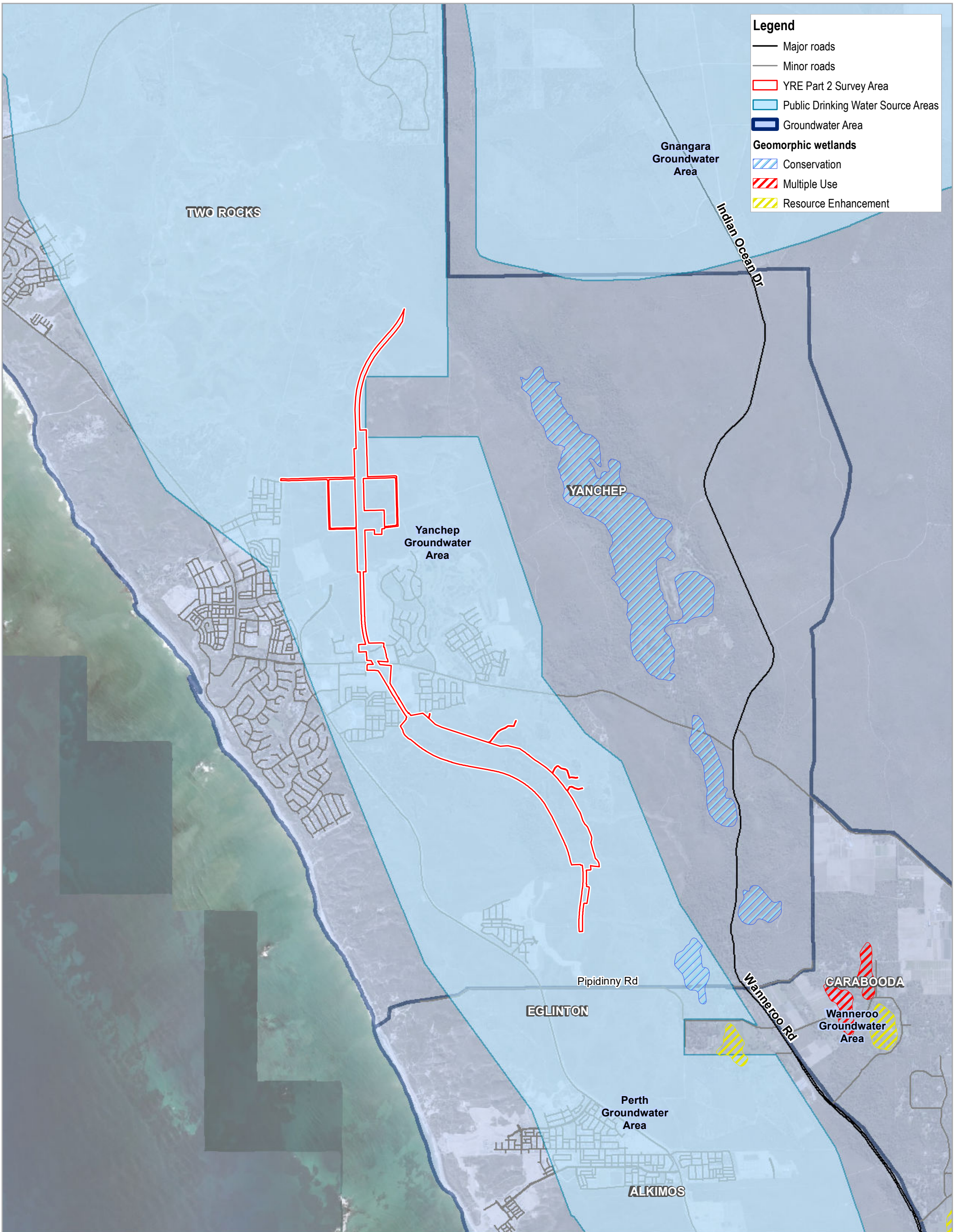
Public Transport Authority
Butler to Yanchep
Extension Flora & Fauna Survey

Project No. 61-37062
Revision No. 0
Date 05/12/2018

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

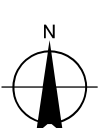
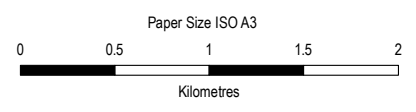
Locality

FIGURE 1



Legend

- Major roads
- Minor roads
- ▭ YRE Part 2 Survey Area
- ▭ Public Drinking Water Source Areas
- ▭ Groundwater Area
- Geomorphic wetlands**
- ▨ Conservation
- ▨ Multiple Use
- ▨ Resource Enhancement



Public Transport Authority
Butler to Yancheep
Extension Flora & Fauna Survey

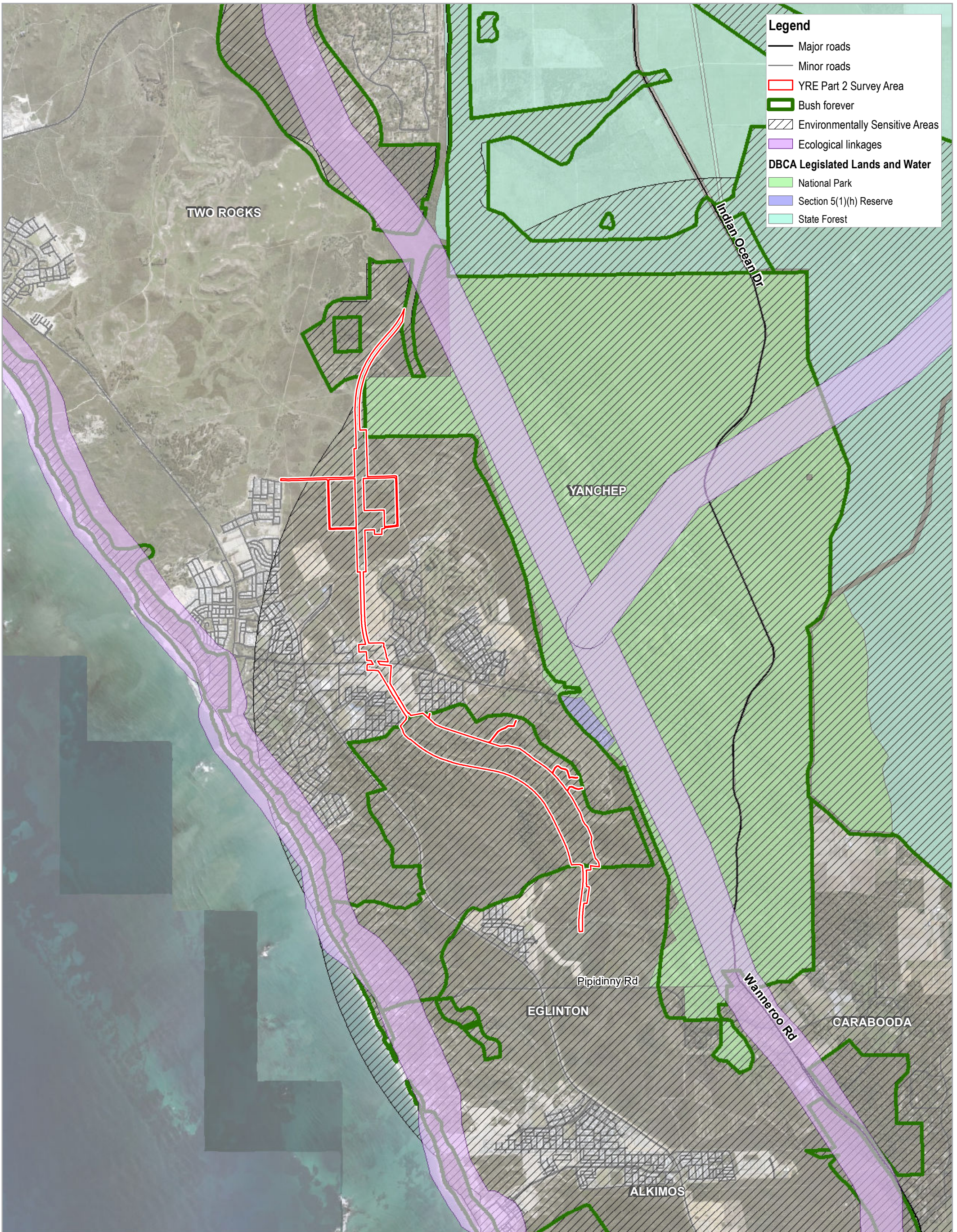
Project No. 61-37062
Revision No. 0
Date 17/12/2018

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

Hydrology constraints

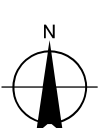
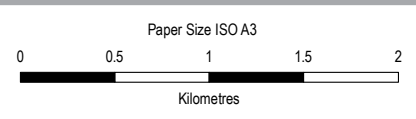
FIGURE 2

G:\613706209\GIS\Map\MXD\6137062_002_HydrologyConstraints_Rev0.mxd
Print date: 19 Dec 2016 - 14:05
Data source: GHD: YRE Study area - 20181205; Study area (SKM) - 20181205; Landgate: Suburbs - 20180319; Imagery - 20181204; MRWA: Road - 20171211; DBCA: Legislated lands and waters - 20180226; DoP: Bush Forever - 20180123; PMR: Ecological Linkages - 20180306; DEC: Environmentally Sensitive Areas - 20180223; RWI: Ground water areas - 20180621. Created by: bjones2



Legend

- Major roads
- Minor roads
- ▭ YRE Part 2 Survey Area
- ▭ Bush forever
- ▨ Environmentally Sensitive Areas
- ▭ Ecological linkages
- DBCA Legislated Lands and Water**
- ▭ National Park
- ▭ Section 5(1)(h) Reserve
- ▭ State Forest



Public Transport Authority
Butler to Yanchep
Extension Flora & Fauna Survey

Project No. 61-37062
Revision No. 0
Date 17/12/2018

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

Land use constraints

FIGURE 3

G:\613706209\GIS\Map\MXD\6137062_003_LanduseConstraints_Rev0.mxd
Print date: 19 Dec 2016 - 14:05

Data source: GHD: YRE Study area - 20181205; Study area (SKM) - 20181205; Landgate: Suburbs - 20180319; Imagery - 20181204; MRWA: Road - 20171211; DBCA: Legislated lands and waters - 20180226; DoP: Bush Forever - 20180123; PMR: Ecological Linkages - 20180306; DEC: Environmentally Sensitive Areas - 20180223. Created by: bjones2

DRAFT

Legend

Conservation Significant Flora

- ▲ Threatened
- ▲ Priority 1
- ▲ Priority 2
- ▲ Priority 3
- ▲ Priority 4

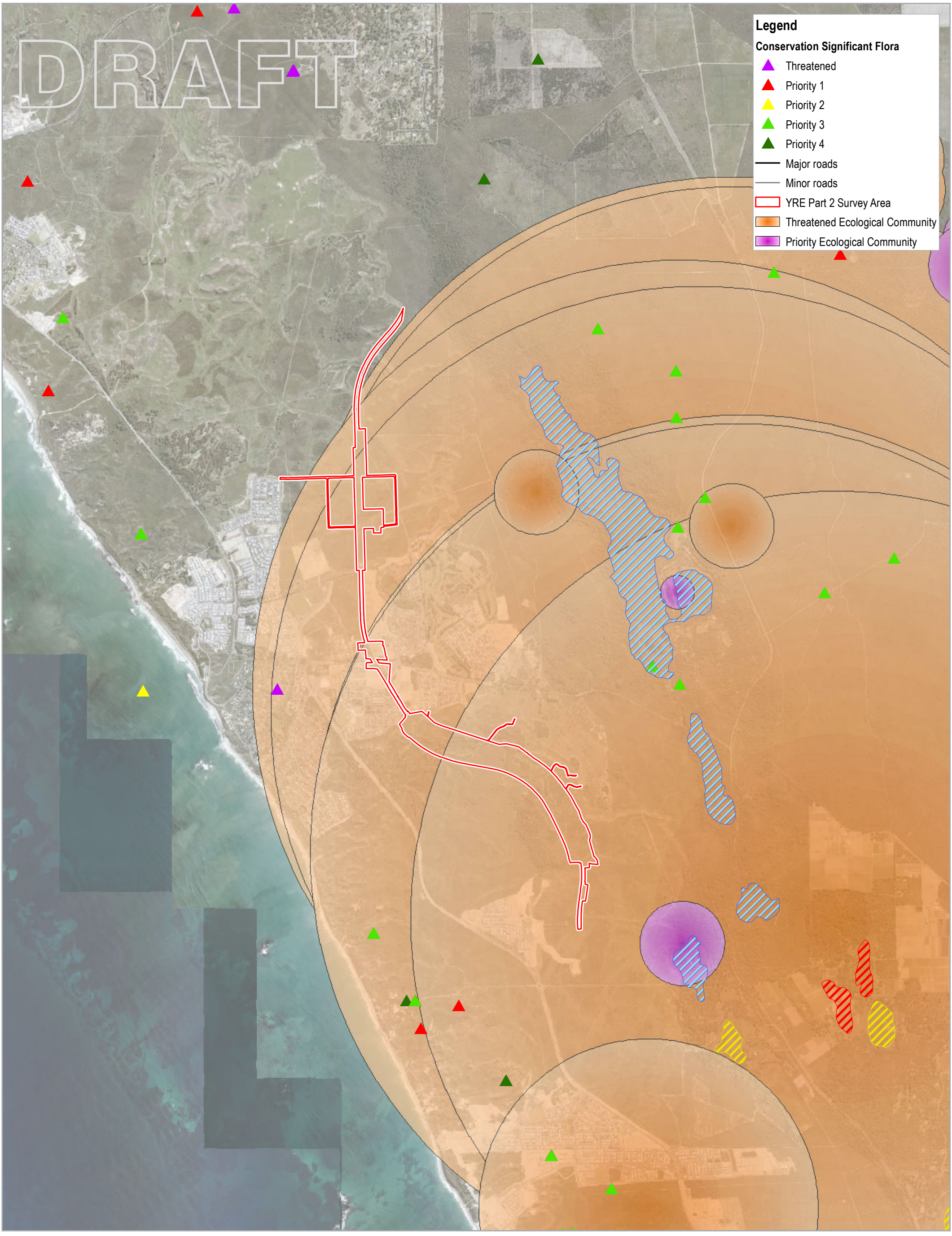
— Major roads

— Minor roads

▭ YRE Part 2 Survey Area

▭ Threatened Ecological Community

▭ Priority Ecological Community

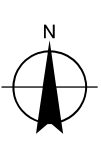


Paper Size ISO A3

0 0.5 1 1.5 2

Kilometres

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



Public Transport Authority
Butler to Yanchep
Extension Flora & Fauna Survey

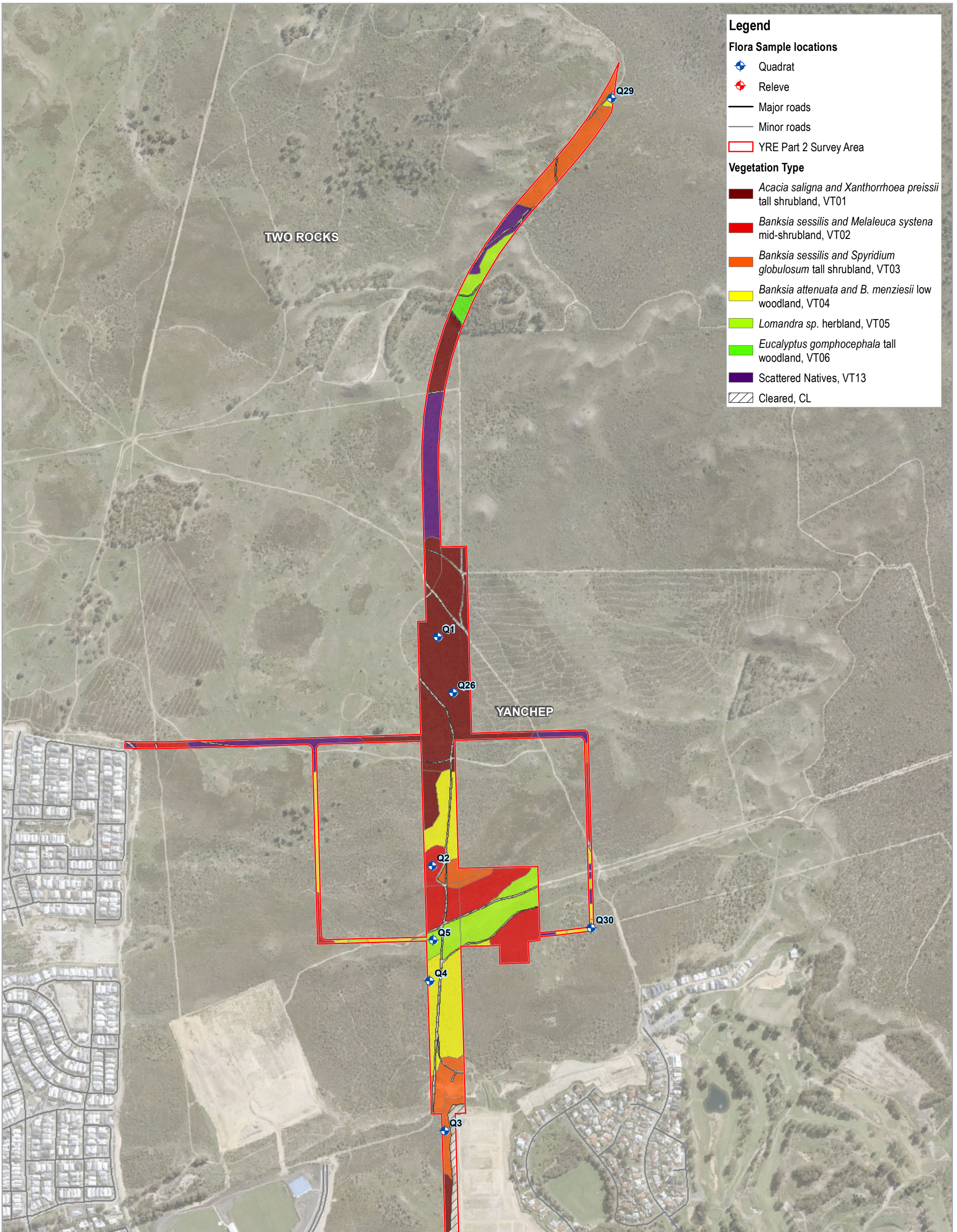
Project No. 61-37062
Revision No. 0
Date 06/12/2018

Biological constraints

FIGURE 4

G:\613706209\GIS\Map\MXD\6137062_04_BiologicalConstraints_Rev0.mxd
Print date: 19 Dec 2016 - 14:05

Data source: GHD: YRE Study area - 20181205, Study area (5KM) - 20181205, Landgate: Suburbs - 20180319, Imagery - 20181204, MRWA: Road - 20171211, DBCA: WA Herb, Threatened Priority Flora - 20181107, Tacs&Pecs - 20181114. Created by: bjones2



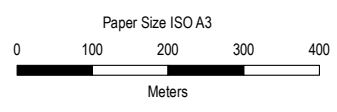
Legend

Flora Sample locations

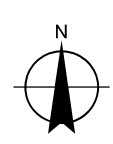
- ◆ Quadrat
- ◆ Releve
- Major roads
- Minor roads
- YRE Part 2 Survey Area

Vegetation Type

- Acacia saligna* and *Xanthorrhoea preissii* tall shrubland, VT01
- Banksia sessilis* and *Melaleuca systena* mid-shrubland, VT02
- Banksia sessilis* and *Spyridium globulosum* tall shrubland, VT03
- Banksia attenuata* and *B. menziesii* low woodland, VT04
- Lomandra* sp. herbland, VT05
- Eucalyptus gomphocephala* tall woodland, VT06
- Scattered Natives, VT13
- Cleared, CL



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

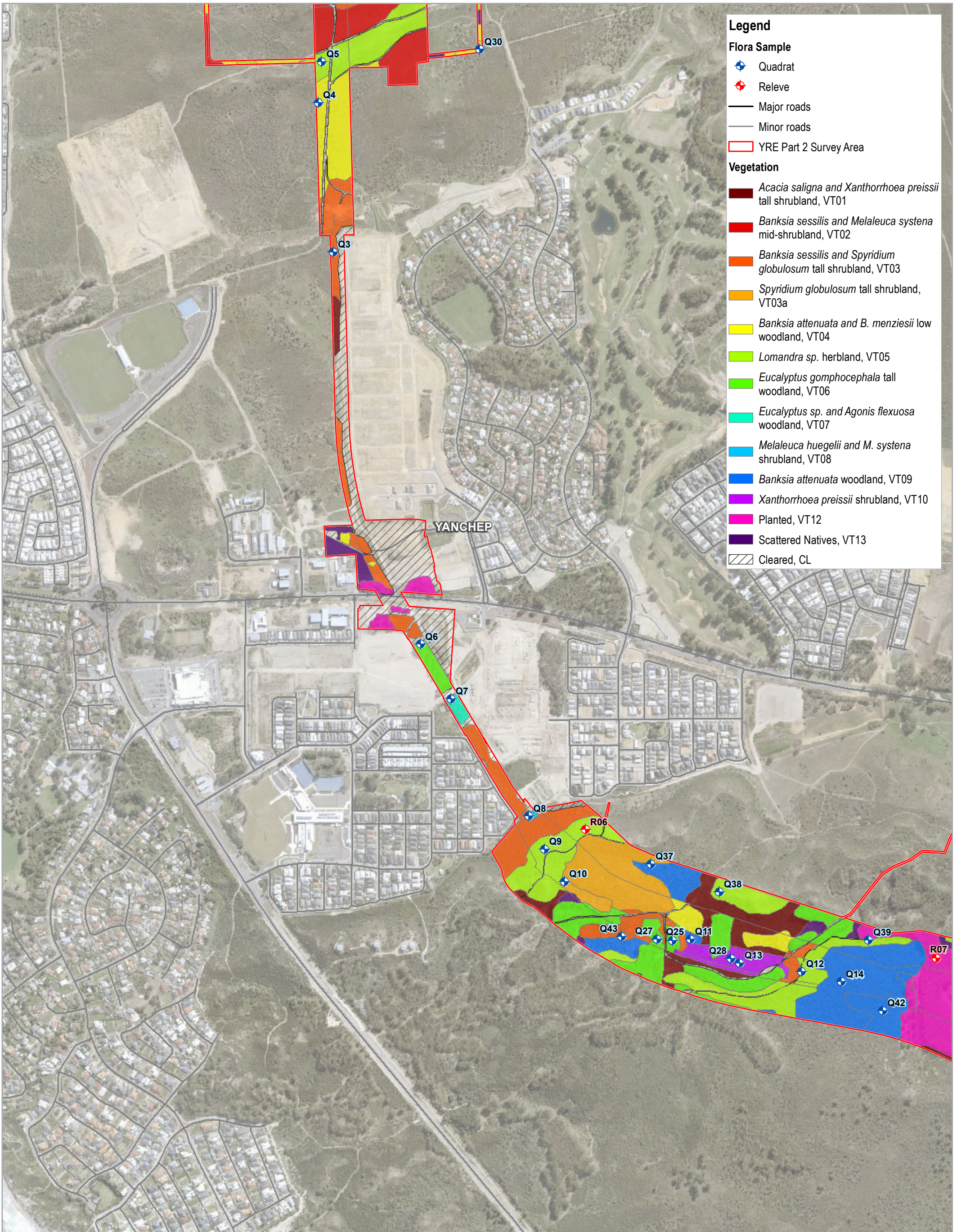


Public Transport Authority
 Butler to Yanchep
 Extension Flora & Fauna Survey

Project No. 61-37062
 Revision No. 0
 Date 18/12/2018

**Vegetation type and
 flora sample locations**

**Page 1 of 3
 FIGURE 5**



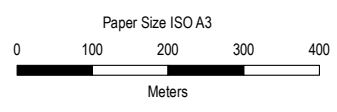
Legend

Flora Sample

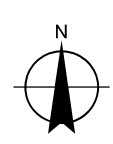
- ◆ Quadrat
- ◆ Relève
- Major roads
- Minor roads
- ▭ YRE Part 2 Survey Area

Vegetation

- ▭ *Acacia saligna* and *Xanthorrhoea preissii* tall shrubland, VT01
- ▭ *Banksia sessilis* and *Melaleuca systena* mid-shrubland, VT02
- ▭ *Banksia sessilis* and *Spyridium globulosum* tall shrubland, VT03
- ▭ *Spyridium globulosum* tall shrubland, VT03a
- ▭ *Banksia attenuata* and *B. menziesii* low woodland, VT04
- ▭ *Lomandra* sp. herbland, VT05
- ▭ *Eucalyptus gomphocephala* tall woodland, VT06
- ▭ *Eucalyptus* sp. and *Agonis flexuosa* woodland, VT07
- ▭ *Melaleuca huegelii* and *M. systena* shrubland, VT08
- ▭ *Banksia attenuata* woodland, VT09
- ▭ *Xanthorrhoea preissii* shrubland, VT10
- ▭ Planted, VT12
- ▭ Scattered Natives, VT13
- ▭ Cleared, CL



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

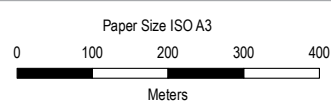
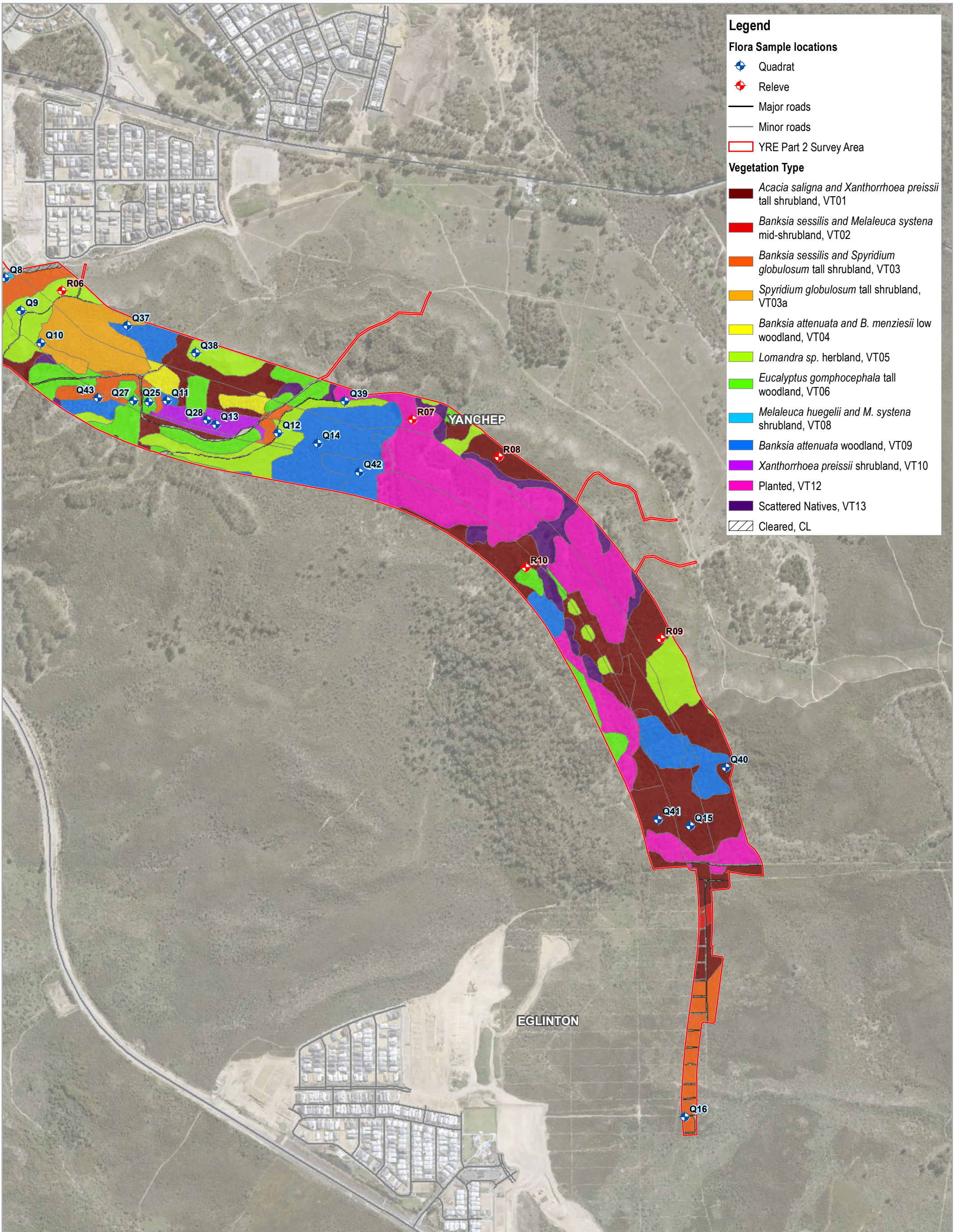


Public Transport Authority
Butler to Yanchep
Extension Flora & Fauna Survey

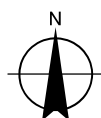
Project No. 61-37062
Revision No. 0
Date 18/12/2018

**Vegetation type and
flora sample locations**

Page 2 of 3
FIGURE 5



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

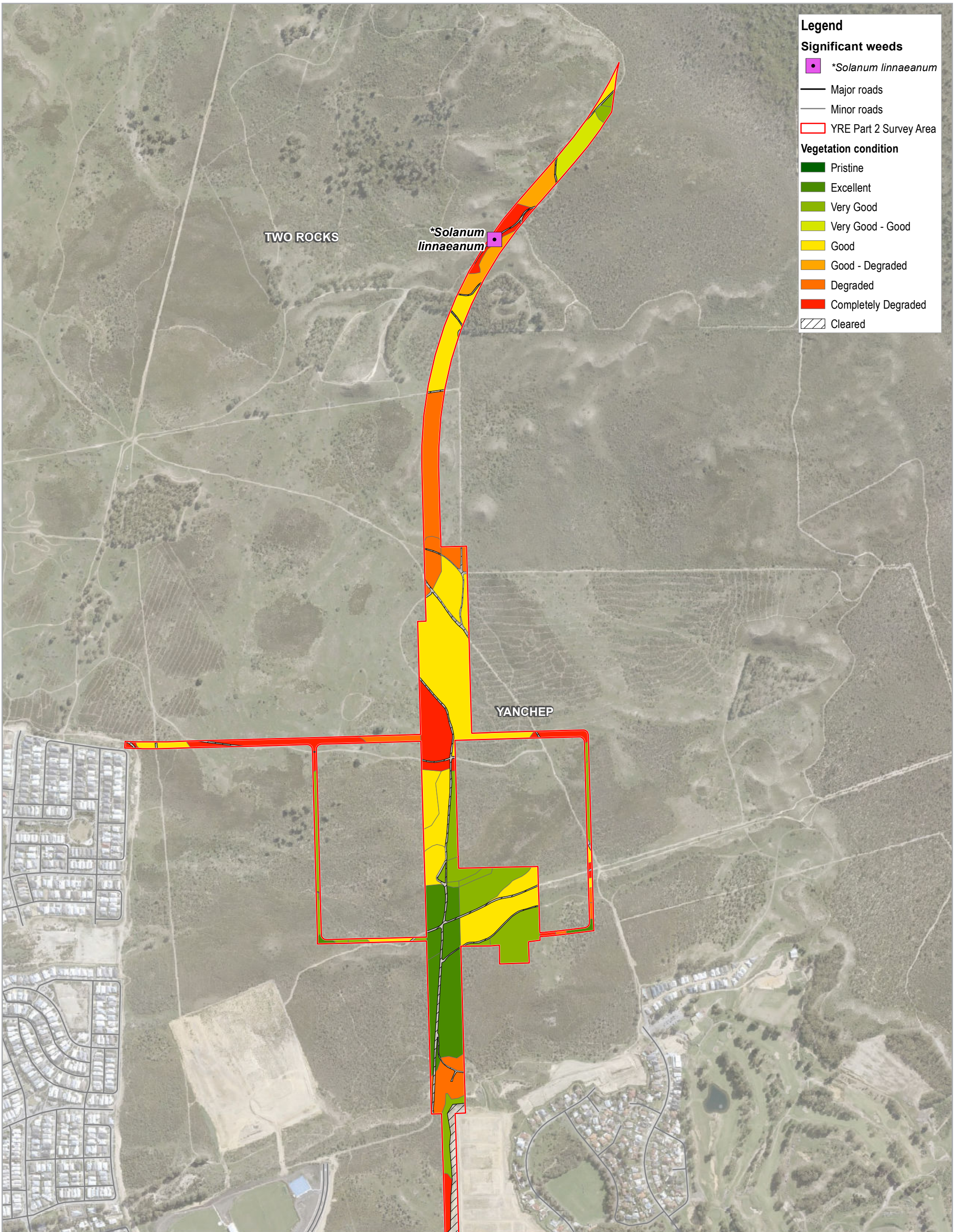


Public Transport Authority
Butler to Yanchep
Extension Flora & Fauna Survey

Project No. 61-37062
Revision No. 0
Date 18/12/2018

Vegetation type and
flora sample locations

Page 3 of 3
FIGURE 5



Legend

Significant weeds

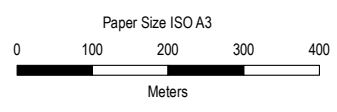
- **Solanum linnaeanum*

— Major roads
 — Minor roads

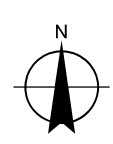
YRE Part 2 Survey Area

Vegetation condition

- Pristine
- Excellent
- Very Good
- Very Good - Good
- Good
- Good - Degraded
- Degraded
- Completely Degraded
- Cleared



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



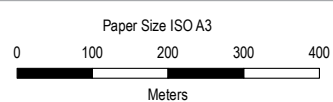
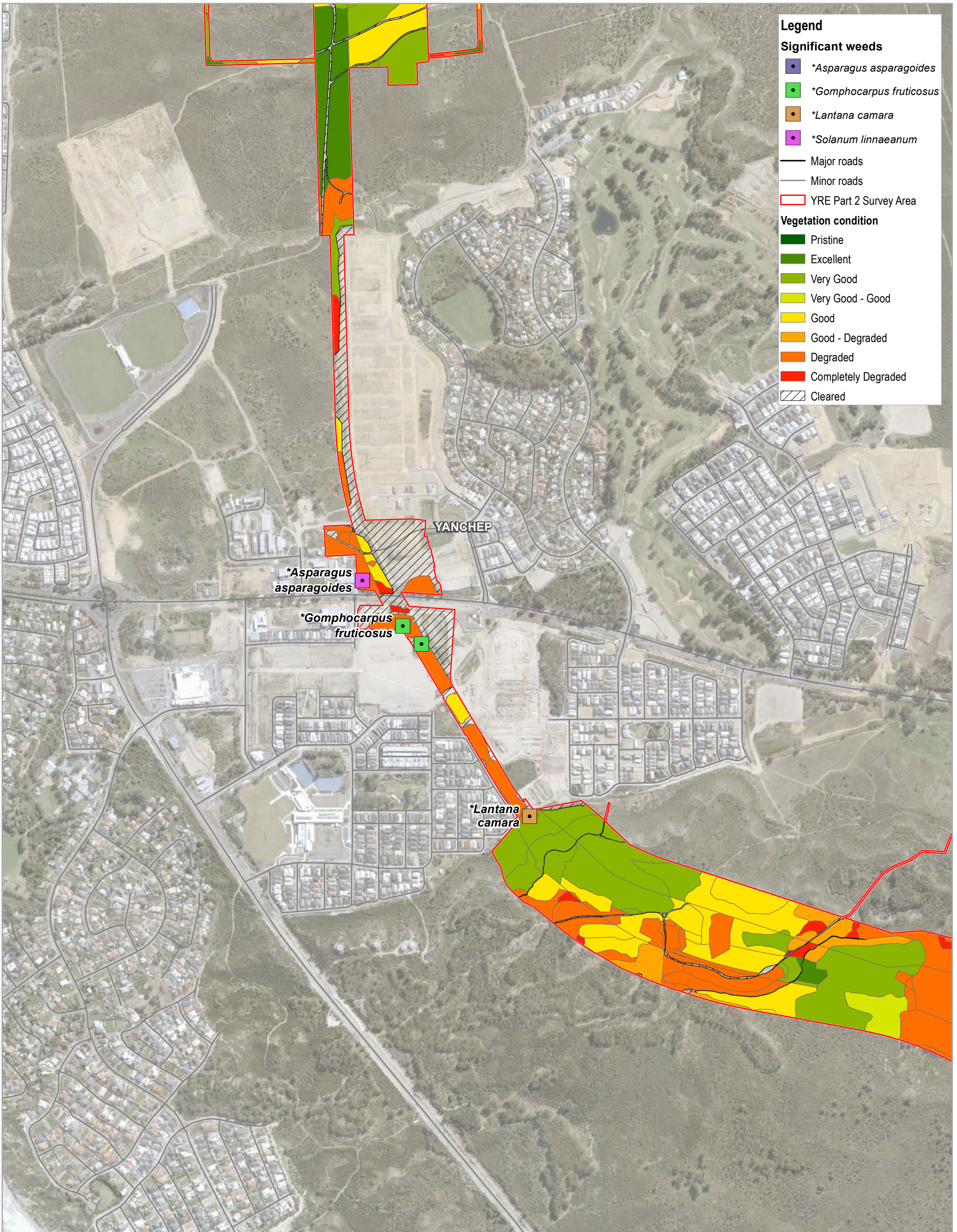
Public Transport Authority
 Butler to Yanchep
 Extension Flora & Fauna Survey

Vegetation condition and Significant weeds

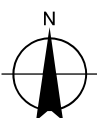
Project No. 61-37062
 Revision No. 0
 Date 18/12/2018

G:\613706209\GIS\Map\MXD\6137062_006_vegetationCon_Rev0.mxd
 Print date: 19 Dec 2016 - 14:04

Data sources: GHD: YRE Study area - 20181205, Vegetation type - 20181206, Flora sample locations - 20181207, Landgate: Suburbs - 20180319, Imagery - 20181204, MRWA: Road - 20171211. Created by: bpones2



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

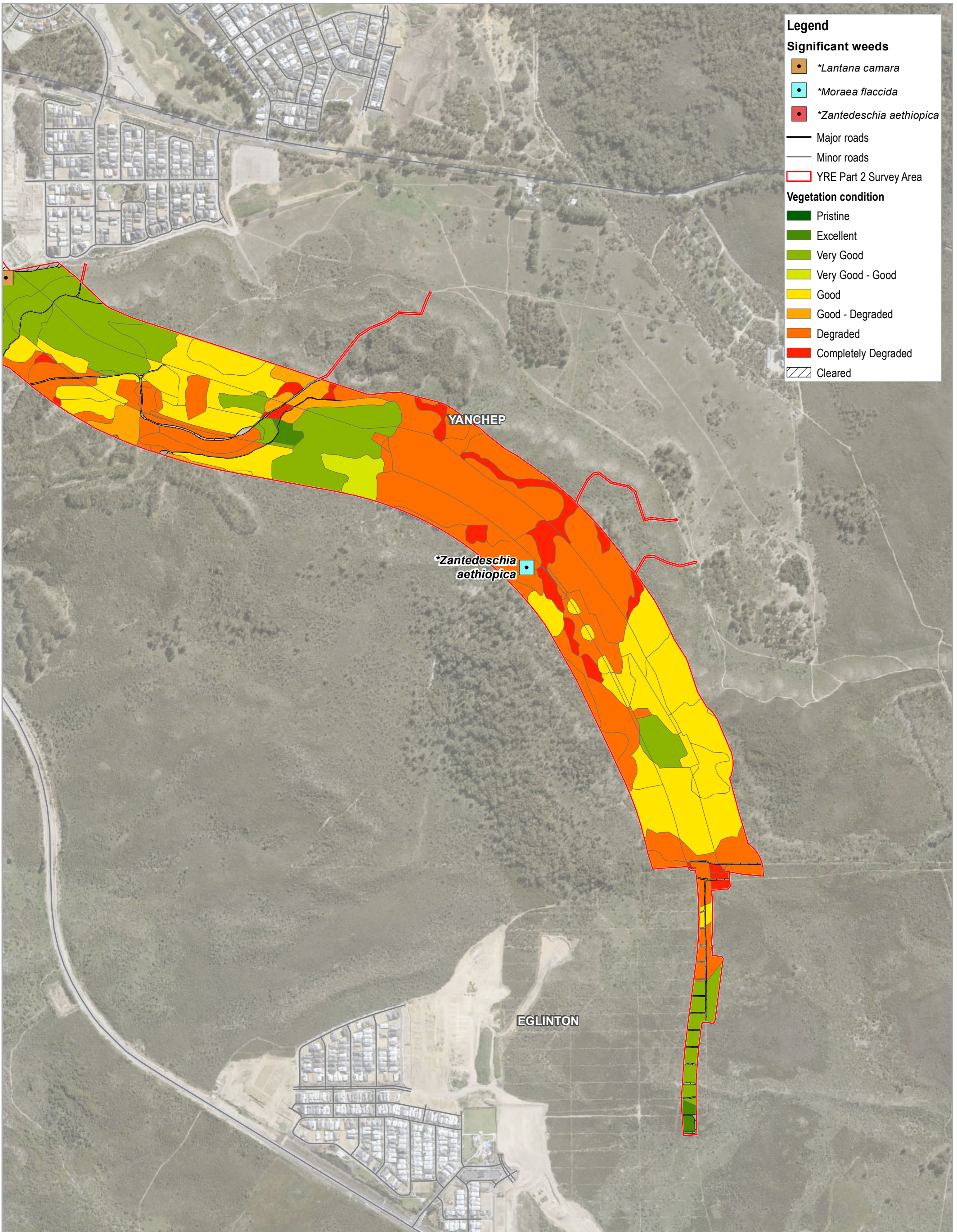


Public Transport Authority
Butler to Yanchep
Extension Flora & Fauna Survey

Project No. 61-37062
Revision No. 0
Date 18/12/2018

Vegetation condition and
Significant weeds

Page 2 of 3
FIGURE 6



Legend

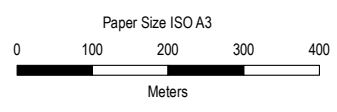
Significant weeds

- **Lantana camara*
- **Moraea flaccida*
- **Zantedeschia aethiopica*

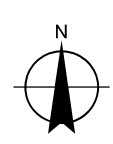
— Major roads
 — Minor roads
 YRE Part 2 Survey Area

Vegetation condition

- Pristine
- Excellent
- Very Good
- Very Good - Good
- Good
- Good - Degraded
- Degraded
- Completely Degraded
- Cleared



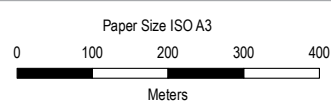
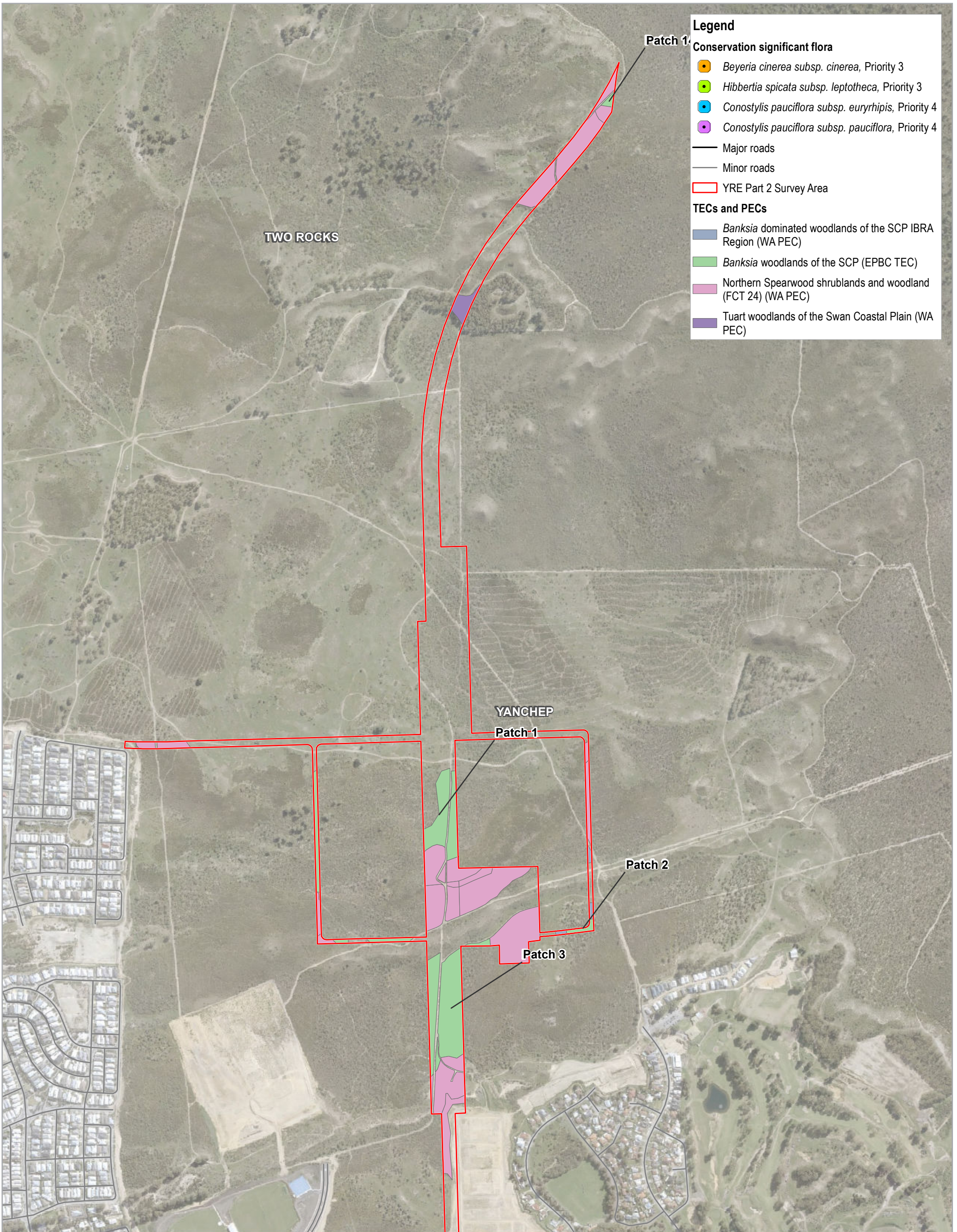
Map Projection: Transverse Mercator
 Horizontal Datum: GDA 1994
 Grid: GDA 1994 MGA Zone 50



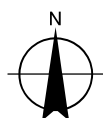
Public Transport Authority
 Butler to Yanchep
 Extension Flora & Fauna Survey

Vegetation condition and Significant weeds

Project No. 61-37062
 Revision No. 0
 Date 18/12/2018



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

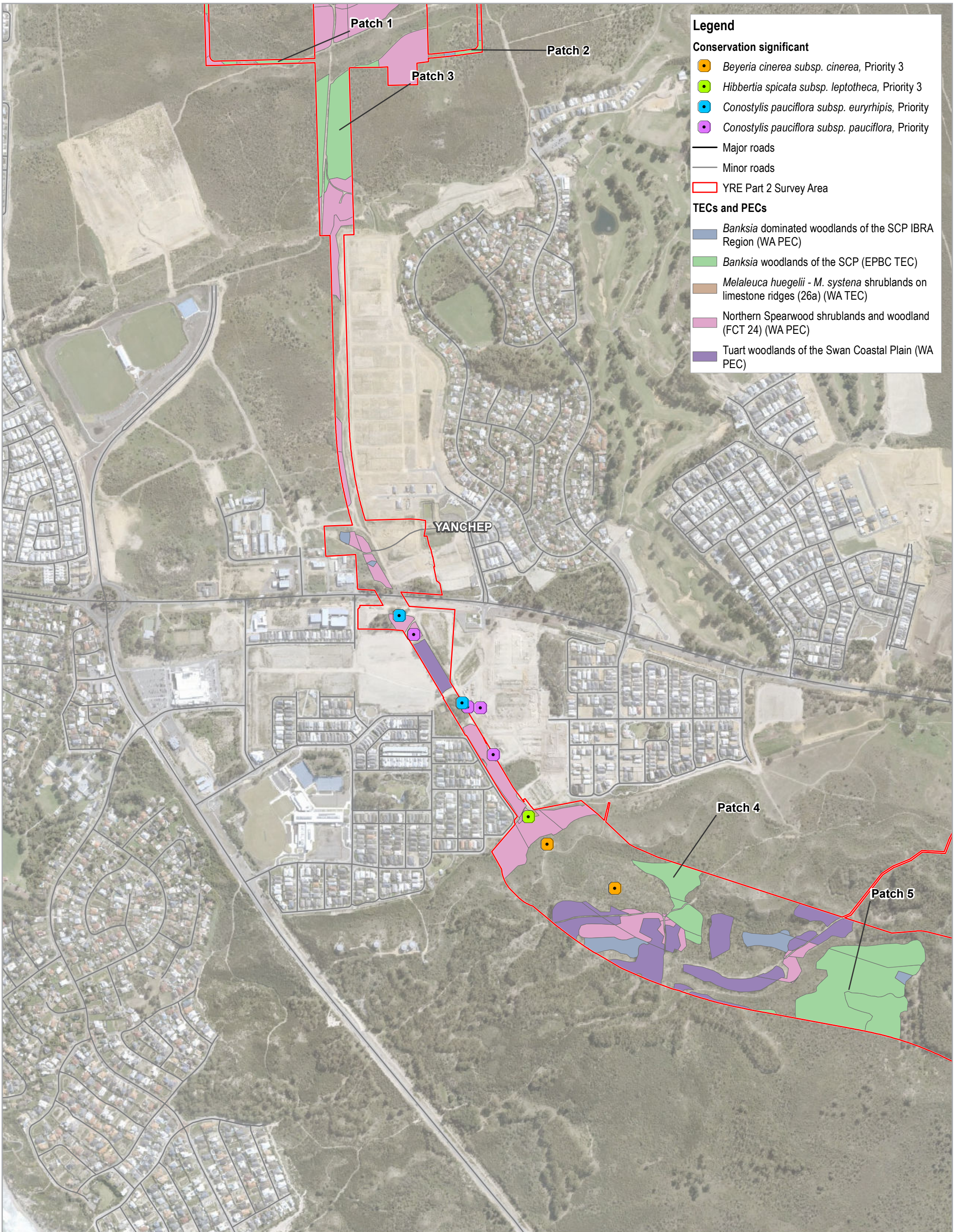


Public Transport Authority
Butler to Yanchep
Extension Flora & Fauna Survey

**Conservation significant vegetation
and flora**

Project No. 61-37062
Revision No. 0
Date 18/12/2018

Page 1 of 3
FIGURE 7



Legend

Conservation significant

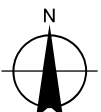
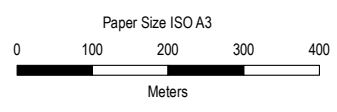
- *Beyeria cinerea* subsp. *cinerea*, Priority 3
- *Hibbertia spicata* subsp. *leptotheca*, Priority 3
- *Conostylis pauciflora* subsp. *euryrhipis*, Priority 3
- *Conostylis pauciflora* subsp. *pauciflora*, Priority 3

— Major roads
— Minor roads

YRE Part 2 Survey Area

TECs and PECs

- Banksia* dominated woodlands of the SCP IBRA Region (WA PEC)
- Banksia* woodlands of the SCP (EPBC TEC)
- Melaleuca huegeli* - *M. systema* shrublands on limestone ridges (26a) (WA TEC)
- Northern Spearwood shrublands and woodland (FCT 24) (WA PEC)
- Tuart woodlands of the Swan Coastal Plain (WA PEC)



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

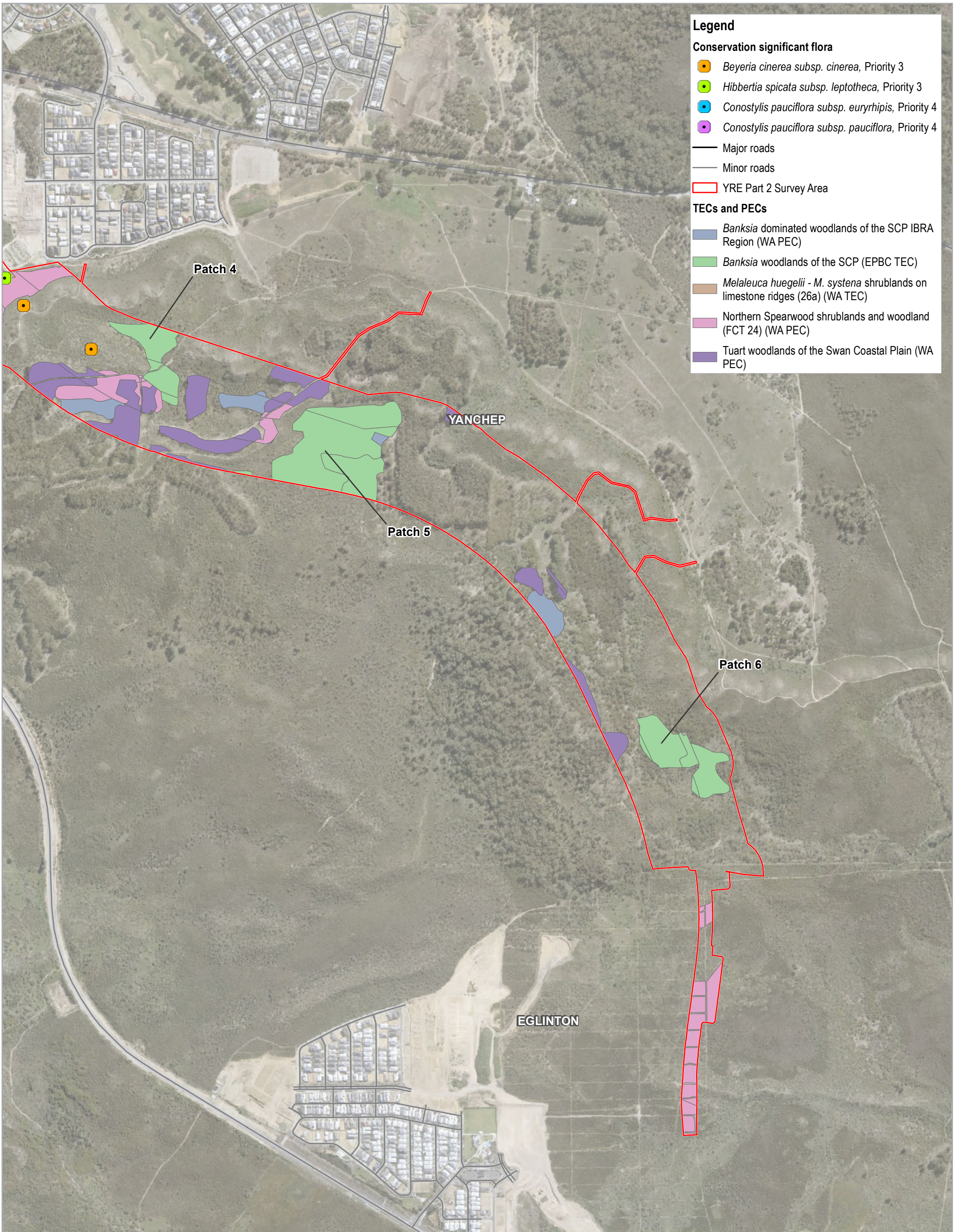


Public Transport Authority
Butler to Yanchep
Extension Flora & Fauna Survey

Project No. 61-37062
Revision No. 0
Date 18/12/2018

Conservation significant vegetation and flora

G:\613706209\GIS\Map\MXD\6137062_007_SignificantVegetationFlora_Rev0.mxd
Print date: 19 Dec 2018 - 14:04
Data source: GHD: YRE Study area - 20181205, pectec - 20181206, Flora sample locations - 20181207, Landgate: Suburbs - 20180319, Imagery - 20181204, MRWA: Road - 20171211. Created by: bjones2



Legend

Conservation significant flora

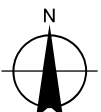
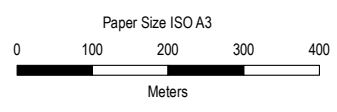
- *Beyeria cinerea subsp. cinerea*, Priority 3
- *Hibbertia spicata subsp. leptotheca*, Priority 3
- *Conostylis pauciflora subsp. euryrhipis*, Priority 4
- *Conostylis pauciflora subsp. pauciflora*, Priority 4

— Major roads
— Minor roads

YRE Part 2 Survey Area

TECs and PECs

- Banksia* dominated woodlands of the SCP IBRA Region (WA PEC)
- Banksia* woodlands of the SCP (EPBC TEC)
- Melaleuca huegelii* - *M. systena* shrublands on limestone ridges (26a) (WA TEC)
- Northern Spearwood shrublands and woodland (FCT 24) (WA PEC)
- Tuart woodlands of the Swan Coastal Plain (WA PEC)



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

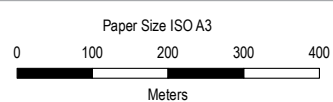
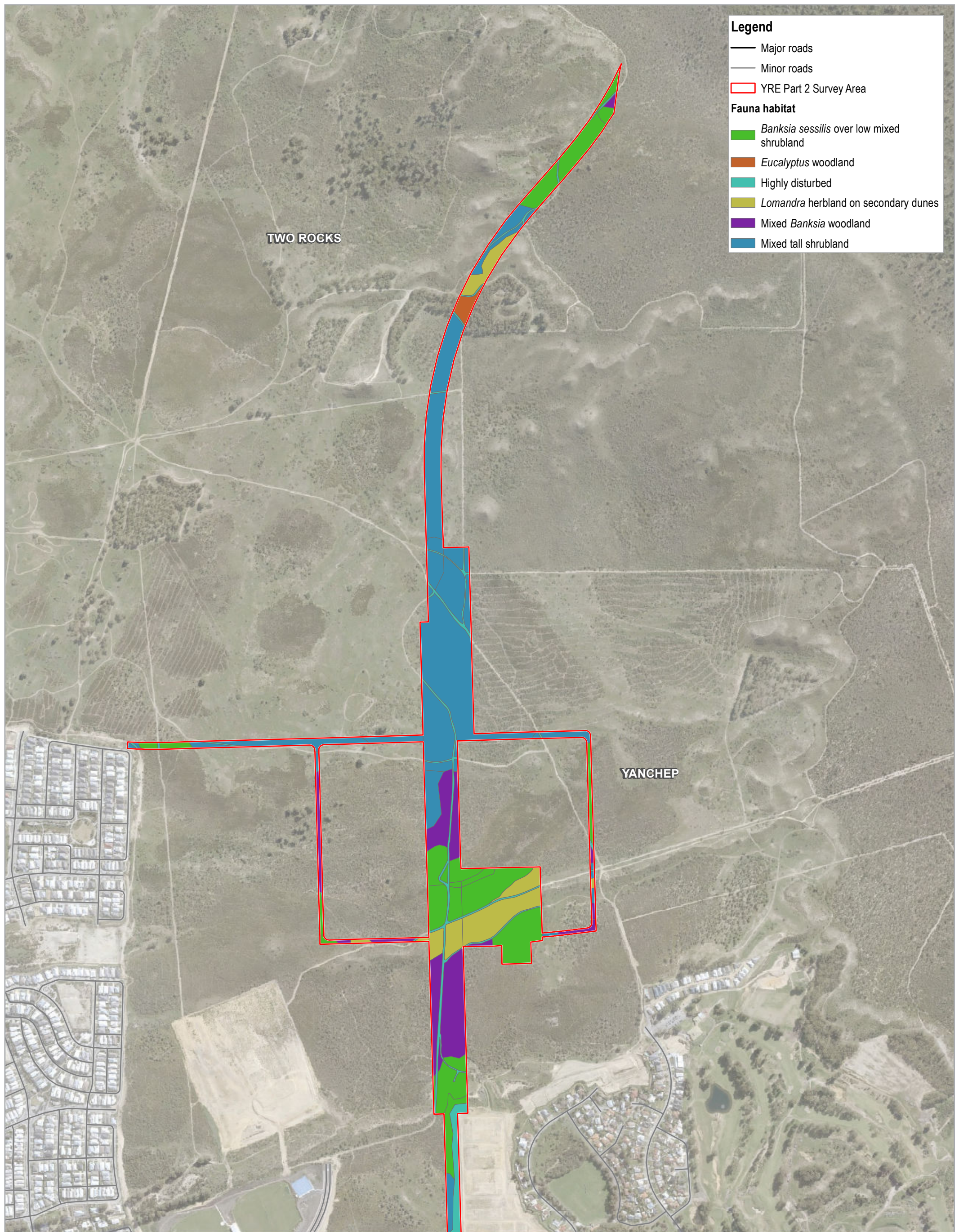


Public Transport Authority
Butler to Yanchep
Extension Flora & Fauna Survey

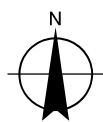
Project No. 61-37062
Revision No. 0
Date 18/12/2018

Conservation significant vegetation and flora

G:\613706209\GIS\Map\MXD\6137062_007_SignificantVegetationFlora_Rev0.mxd
Print date: 19 Dec 2016 - 14:04
Data source: GHD: YRE Study area - 20181205, pectec - 20181206, Flora sample locations - 20181207, Landgate: Suburbs - 20180319, Imagery - 20181204, MRWA: Road - 20171211. . Created by: bjones2



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

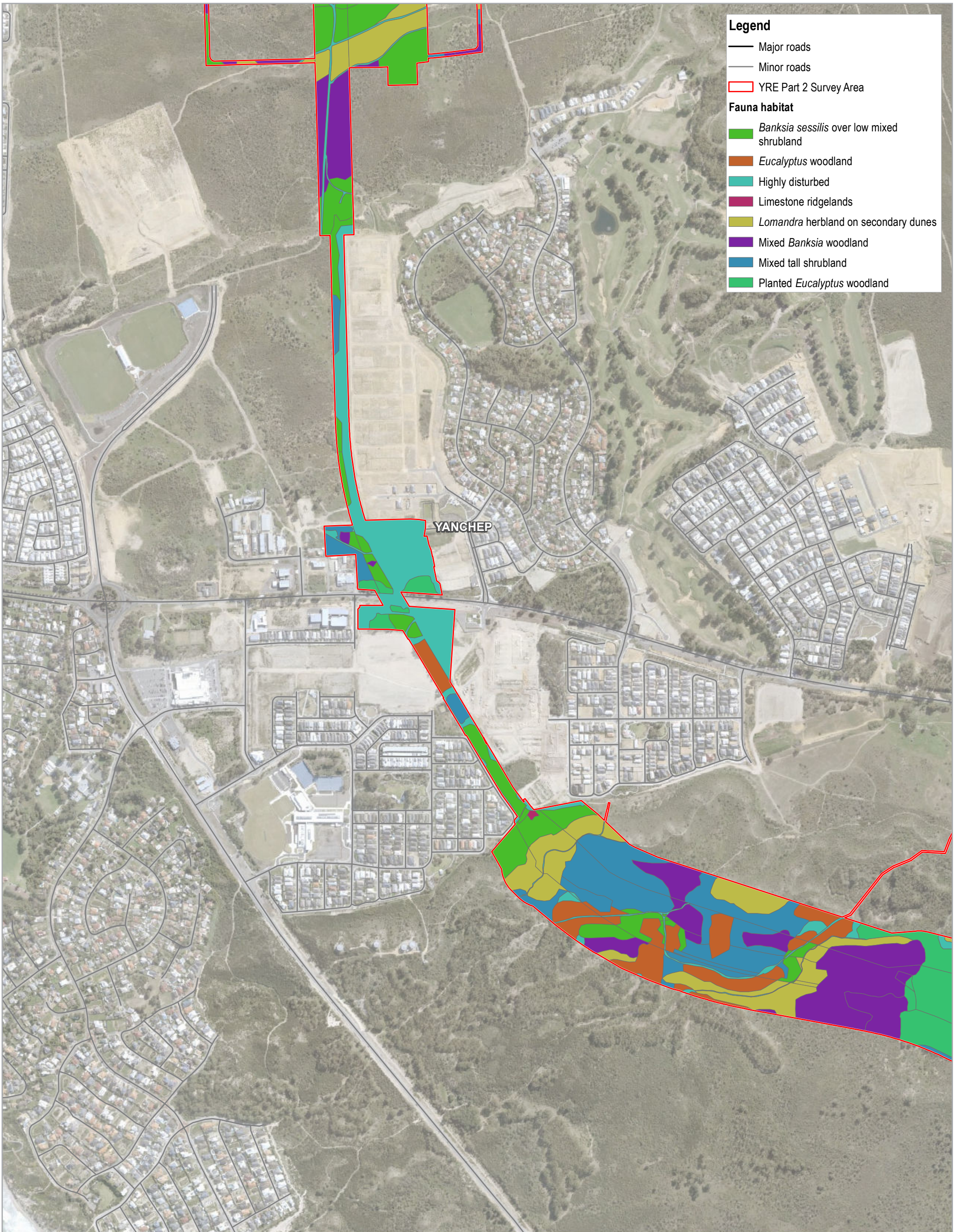


Public Transport Authority
Butler to Yanchep
Extension Flora & Fauna Survey

Project No. 61-37062
Revision No. 0
Date 17/12/2018

Fauna Habitat

Page 1 of 3
FIGURE 8

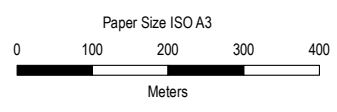


Legend

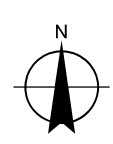
- Major roads
- Minor roads
- ▭ YRE Part 2 Survey Area

Fauna habitat

- ▭ *Banksia sessilis* over low mixed shrubland
- ▭ *Eucalyptus* woodland
- ▭ Highly disturbed
- ▭ Limestone ridgeland
- ▭ *Lomandra* herbland on secondary dunes
- ▭ Mixed *Banksia* woodland
- ▭ Mixed tall shrubland
- ▭ Planted *Eucalyptus* woodland



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

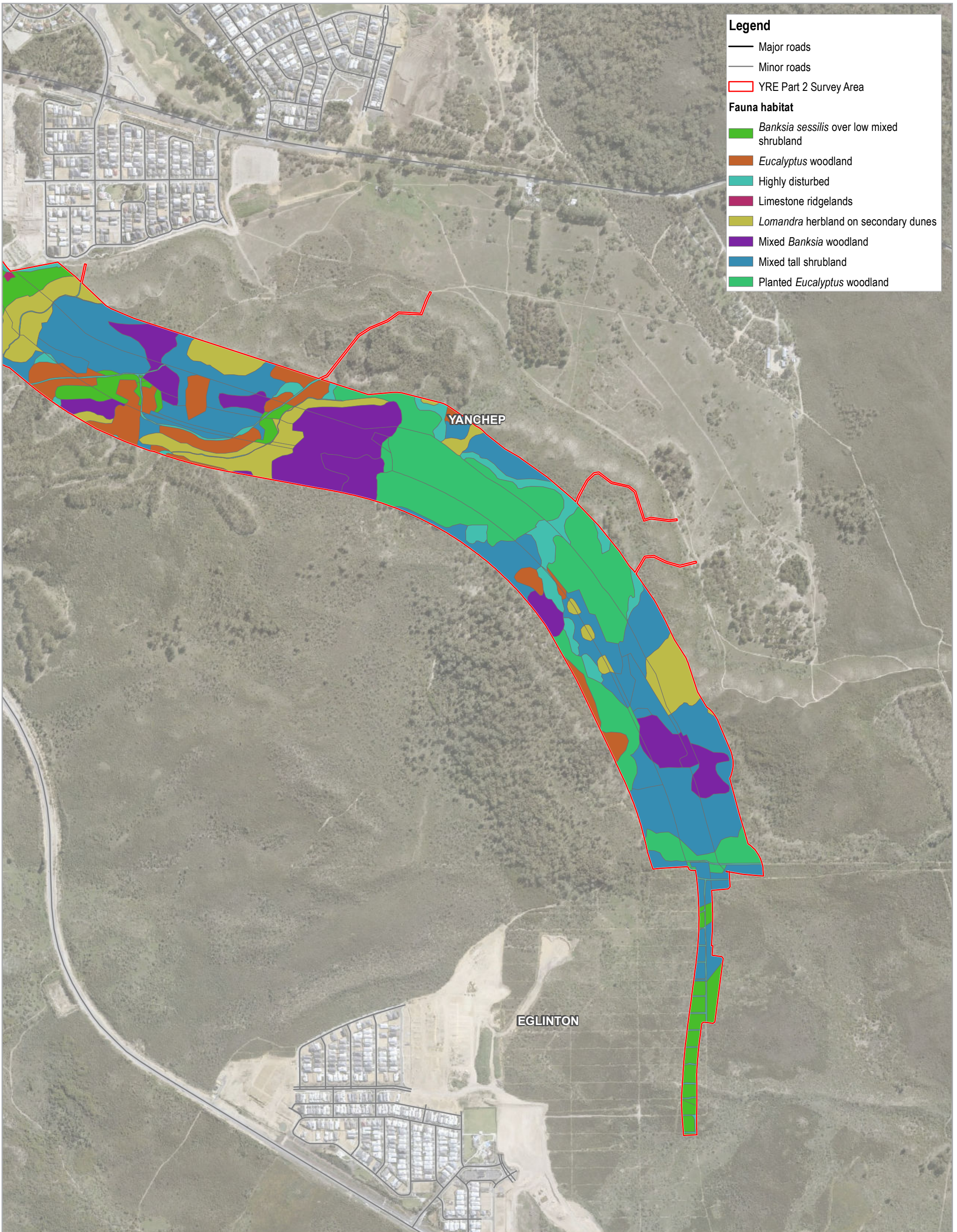


Public Transport Authority
Butler to Yanchep
Extension Flora & Fauna Survey

Project No. 61-37062
Revision No. 0
Date 17/12/2018

Fauna Habitat

Page 2 of 3
FIGURE 8

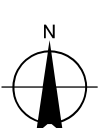
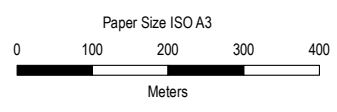


Legend

- Major roads
- Minor roads
- YRE Part 2 Survey Area

Fauna habitat

- *Banksia sessilis* over low mixed shrubland
- *Eucalyptus* woodland
- Highly disturbed
- Limestone ridgeland
- *Lomandra* herbland on secondary dunes
- Mixed *Banksia* woodland
- Mixed tall shrubland
- Planted *Eucalyptus* woodland



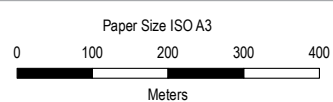
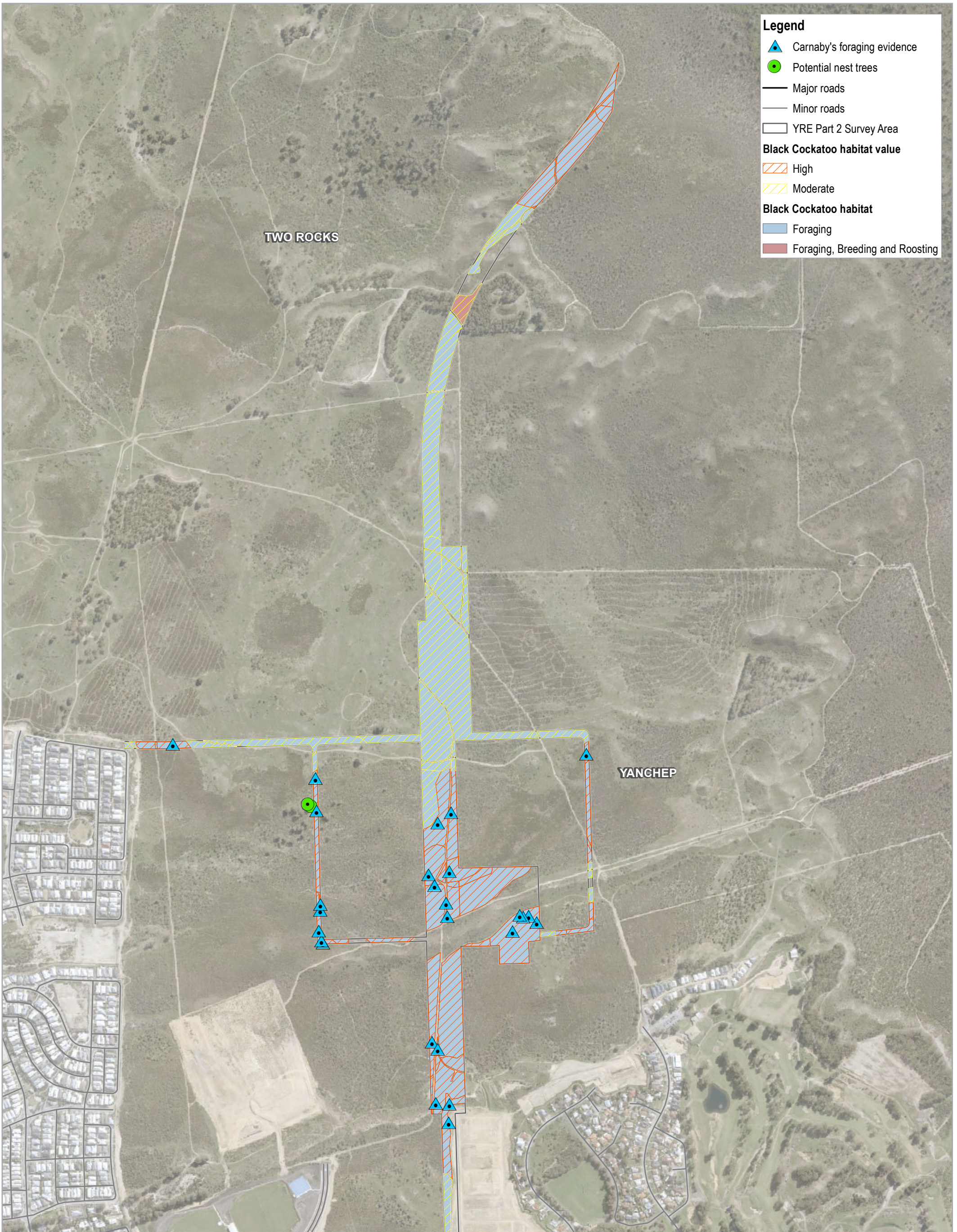
Public Transport Authority
Butler to Yanchep
Extension Flora & Fauna Survey

Project No. 61-37062
Revision No. 0
Date 17/12/2018

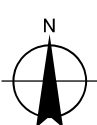
Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 50

Fauna Habitat

Page 3 of 3
FIGURE 8



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

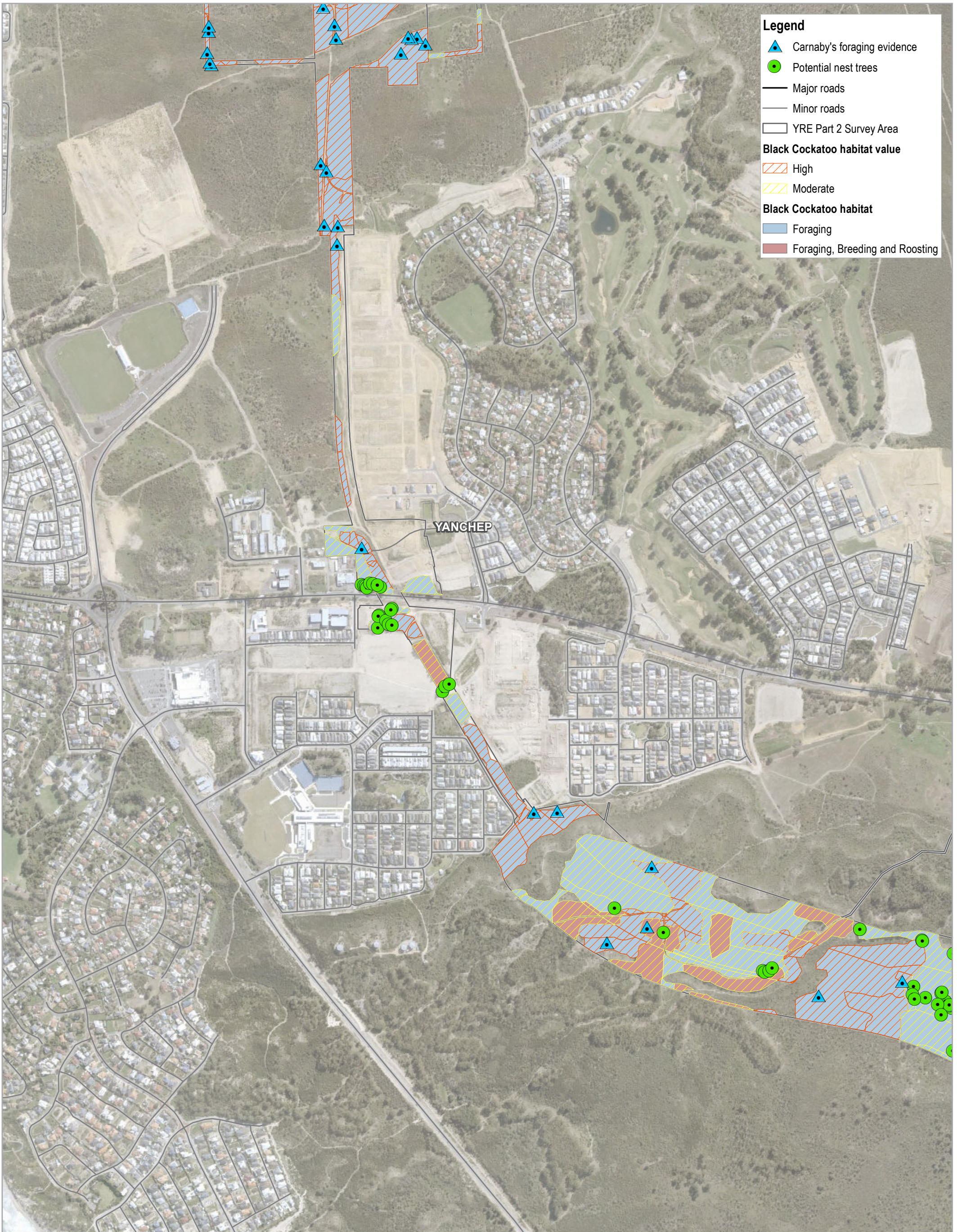


Public Transport Authority
Butler to Yanchep
Extension Flora & Fauna Survey

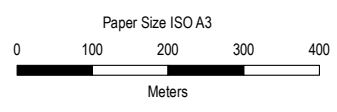
Project No. 61-37062
Revision No. 0
Date 17/12/2018

Black cockatoo habitats

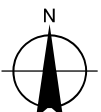
Page 1 of 3
FIGURE 9



- Legend**
- Carnaby's foraging evidence
 - Potential nest trees
 - Major roads
 - Minor roads
 - YRE Part 2 Survey Area
 - Black Cockatoo habitat value**
 - High
 - Moderate
 - Black Cockatoo habitat**
 - Foraging
 - Foraging, Breeding and Roosting



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

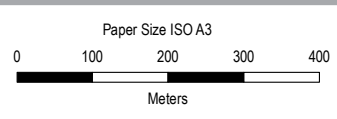
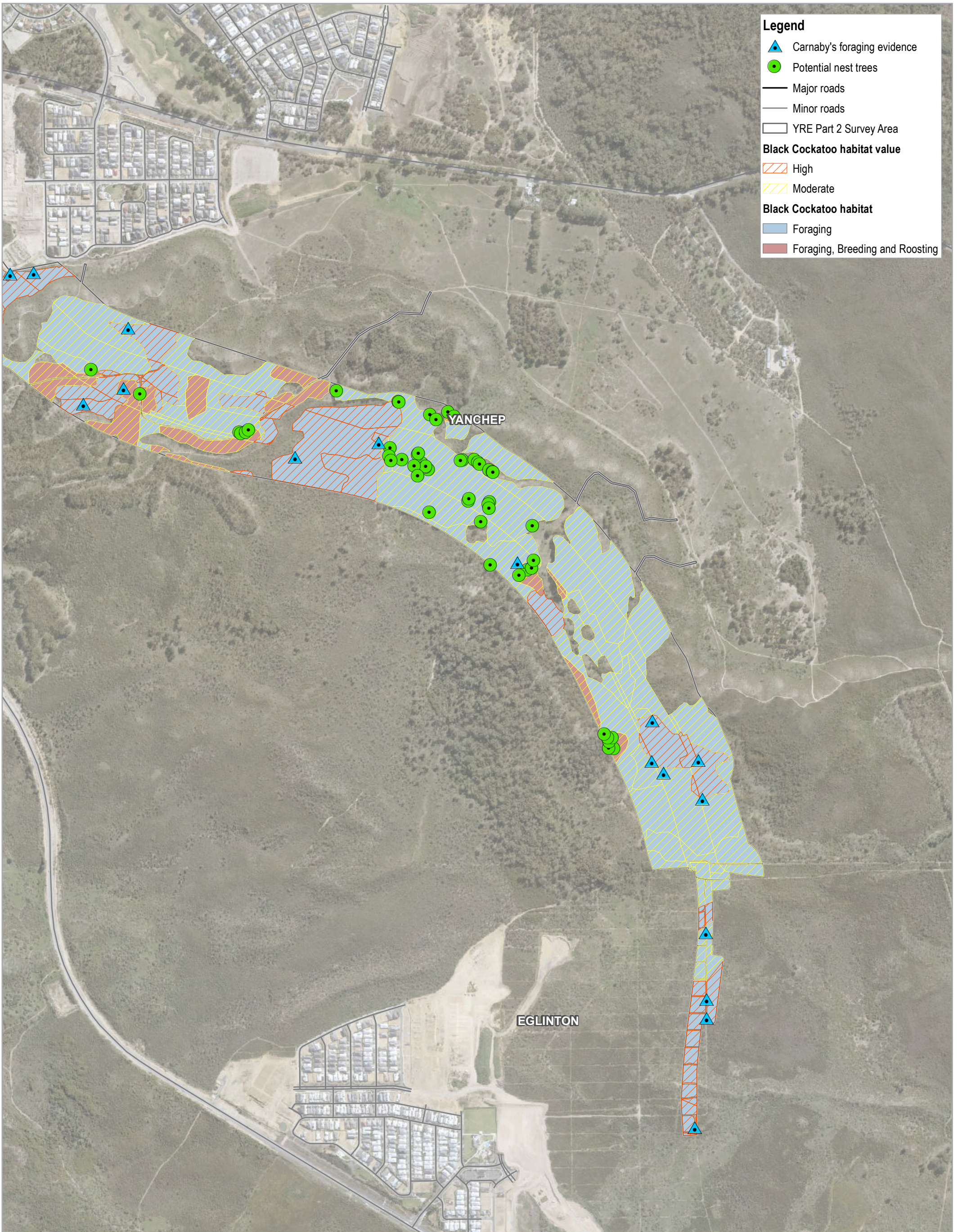


Public Transport Authority
Butler to Yanchep
Extension Flora & Fauna Survey

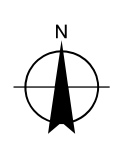
Project No. 61-37062
Revision No. 0
Date 17/12/2018

Black cockatoo habitats

Page 2 of 3
FIGURE 9



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



Public Transport Authority
Butler to Yanchep
Extension Flora & Fauna Survey

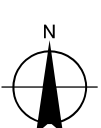
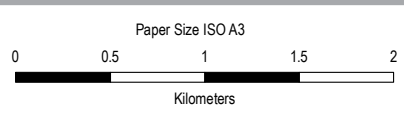
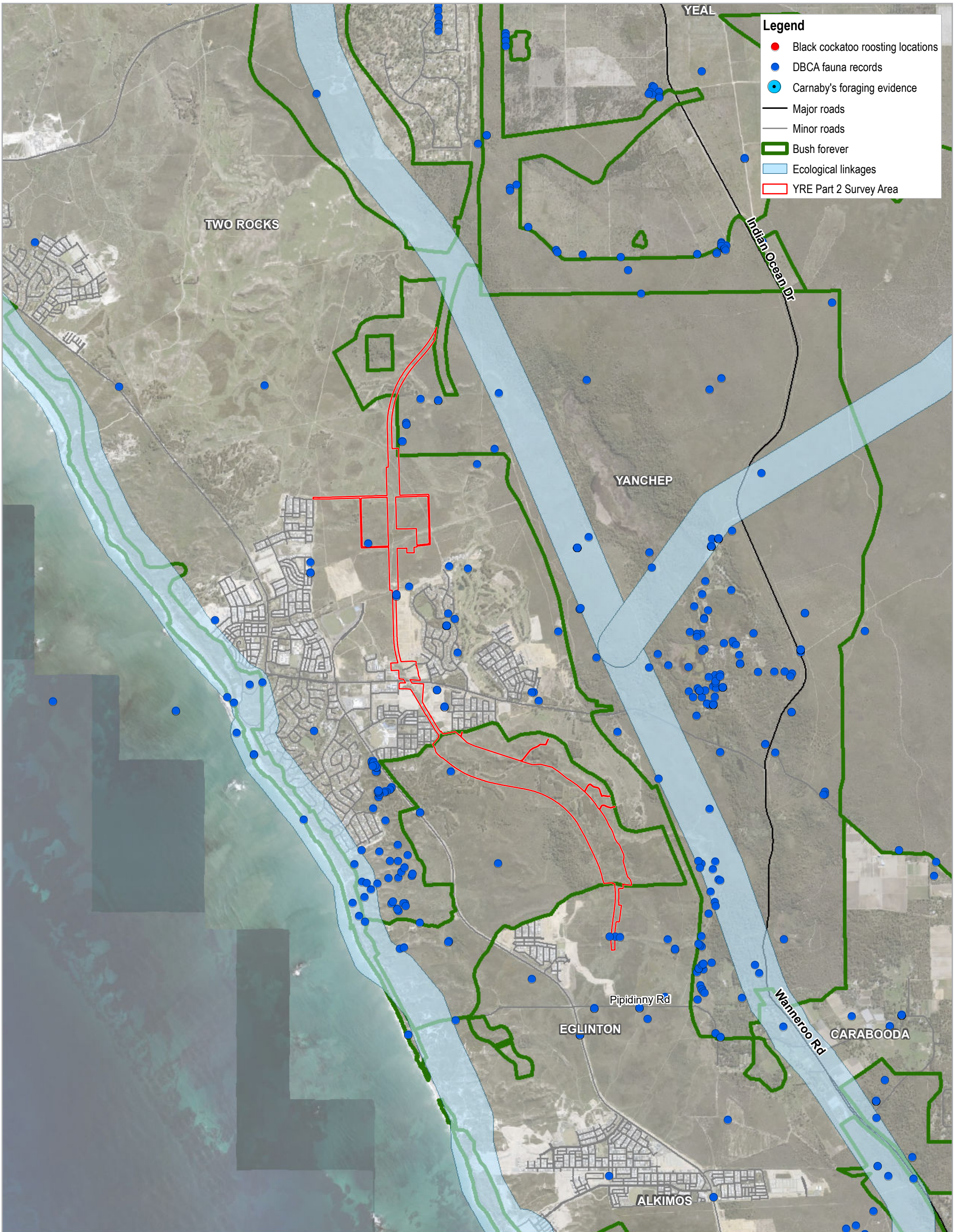
Project No. 61-37062
Revision No. 0
Date 17/12/2018

Black cockatoo habitats

Page 3 of 3
FIGURE 9

G:\613706209\GIS\Map\MXD\6137062_009_BC_Habitats_Rev0.mxd
Print date: 19 Dec 2016 - 14:04

Data sources: GHD: YRE Study area - 20181205, Vegetation type - 20181206, Flora sample locations - 20181207, Landgate: Suburbs - 20180319, Imagery - 20181204, MRWA: Road - 20171211. Created by: bpones2



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



Public Transport Authority
Butler to Yanchep
Extension Flora & Fauna Survey

Project No. 61-37062
Revision No. 0
Date 07/12/2018

Fauna context

FIGURE 10

Appendix B – Relevant legislation, conservation codes and background information

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 the Environment and Energy (DEE).

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:

- a) Native vegetation should not be cleared if it comprises a high level of biodiversity.
- b) 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.
- c) Native vegetation should not be cleared if it includes, or is necessary, for the continued existence of rare flora.
- d) Native vegetation should not be cleared if it comprises the whole or part of native vegetation in an area that has been extensively cleared.
- e) Native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been extensively cleared.
- f) Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland.
- g) 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.
- h) Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation.

- i) 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.
- j) 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 Bill 2015 was introduced to State Parliament in November 2015, and passed in September 2016. The Bill became the *Biodiversity Conservation Act 2016* (BC Act) upon receiving Assent on 21 September 2016. The BC Act will eventually fully replace both the *Wildlife Conservation Act 1950* (WC Act) and the *Sandalwood Act 1929* (Sandalwood Act).

Several parts of the BC Act were proclaimed by the State Governor in the Government Gazette and came into effect on 3 December 2016. However, provisions that replace those existing under the WC Act and Sandalwood Act (including threatened species listings and controls over the taking and keeping of native species) and their associated Regulations cannot be brought into effect until the necessary Biodiversity Conservation Regulations have been made.

State Wildlife Conservation Act 1950

The WC Act provides for the conservation and protection of wildlife. It is administered by the Department of Biodiversity, Conservation and Attractions (DBCA) and applies to both flora and fauna. Any person wanting to capture, collect, disturb or study fauna requires a permit to do so. A permit is required under the WC Act if removal of threatened species is required.

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 <i>Australian Heritage Commission Act 1975</i> 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 <i>Environmental Protection (Gnangara Mound Crown Land) Policy 1992</i> . |
| The areas covered by the <i>Environmental Protection (Western Swamp Tortoise Habitat) Policy 2002</i> . |
| The areas covered by the lakes to which the <i>Environmental Protection (Swan Coastal Plain Lakes) Policy 1992</i> (EPP Lakes) applies. |
| Protected wetlands as defined in the <i>Environmental Protection (South West Agricultural Zone Wetlands) Policy 1998</i> . |

Reserves and conservation areas

Bush Forever

Bush Forever, which was released in December 2000 and proclaimed in 2010, is a Government initiative 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 lands 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. DBCA managed conservation estate, is

vested with the Conservation Commission of Western Australia. 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

Ramsar Listed Wetlands

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” (DEE 2018b). 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” (DEE 2018b).

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 (DEE 2018a):

- 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.

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 (2018), 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 at least every two 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 WC Act is the primary wildlife conservation legislation in Western Australia. Information on the conservation codes is summarised in the following sections.

Ecological communities

Conservation 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 DBCA also maintains a list of TECs for Western Australia; some of which are also protected under the EPBC Act. TECs are ecological communities that have been assessed and assigned to one of four categories related to the status of the threat to the community, i.e. Presumed Totally Destroyed, Critically Endangered, Endangered and Vulnerable.

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.

Conservation codes and definitions for TECs listed under the EPBC Act or endorsed by the WA Minister for the Environment

| Categories | Definition |
|--|---|
| 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: <ul style="list-style-type: none"> A) is not critically endangered; and B) 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: <ul style="list-style-type: none"> A) is not critically endangered or endangered; and B) 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 | |
| Presumed Totally Destroyed (PD) | An ecological community that has been adequately searched for but for which no representative occurrences have been located. The community has been found to be totally destroyed or so extensively modified throughout its range that no occurrence of it is likely to recover its species composition and/or structure in the foreseeable future. |

| Categories | Definition |
|----------------------------|--|
| 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. |
| 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. |

Conservation categories and definitions for PECS as listed by the DBCA

| Category | Description |
|------------|--|
| Priority 1 | <p>Poorly known ecological communities.</p> <p>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.</p> |
| Priority 2 | <p>Poorly known ecological communities.</p> <p>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.</p> |
| Priority 3 | <p>Poorly known ecological communities.</p> <ul style="list-style-type: none"> (i) 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: (ii) 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; (iii) 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. <p>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.</p> |

| Category | Description |
|------------|---|
| Priority 4 | <p>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.</p> <p>(i) 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.</p> <p>(ii) 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.</p> <p>(iii) Ecological communities that have been removed from the list of threatened communities during the past five years.</p> |
| Priority 5 | <p>Conservation Dependent ecological communities.</p> <p>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.</p> |

Other significant vegetation

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

- Restricted distribution
- Degree of historical impact from threatening processes
- Local endemism in restricted habitats
- Novel combinations of taxa
- A role as a refuge
- 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)
- Being poorly reserved

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

Conservation 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 WC Act can warrant referral to the DEE 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 fauna used in the EPBC Act are those recommended by the International Union for Conservation of Nature (IUCN).

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 Threatened flora and fauna has been published as Specially Protected under the WC Act, and listed under Schedules 1 to 7 of the Wildlife Conservation (Specially Protected Fauna) Notice 2015 for Threatened Fauna and under Schedules 1 to 4 of the Wildlife Conservation (Rare Flora) Notice 2015 for Threatened (Declared Rare) Flora. The schedules align with the categories of the EPBC Act Threatened Fauna and Threatened Flora Lists. Threatened species are those 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.

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.

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

Conservation categories and definitions for EPBC Act listed flora and fauna species

| Conservation category | Definition |
|-----------------------|--|
| Extinct | There is no reasonable doubt that the last member of the species has died. |
| Extinct in the Wild | A) A species known only to survive in cultivation, in captivity or as a naturalised population well outside its past range; or B) A species that has not been recorded in its known and/or expected habitat, at appropriate seasons, anywhere in its past range, despite exhaustive surveys over a time frame appropriate to its life cycle and form. |
| Critically Endangered | A species 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 | A) A species not critically endangered; and B) A species facing a very high risk of extinction in the wild in the near future, as determined in accordance with the prescribed criteria. |

| Conservation category | Definition |
|------------------------|---|
| Vulnerable | A) A species not critically endangered or endangered; and B) A species facing a high risk of extinction in the wild in the medium-term, as determined in accordance with the prescribed criteria. |
| Conservation Dependent | A) The species is the focus of a specific conservation program the cessation of which would result in the species becoming vulnerable, endangered or critically endangered; or B) The following subparagraphs are satisfied: (i) the species is a species of fish; (ii) the species is the focus of a plan of management that Section 180 provides for management actions necessary to stop the decline of, and support the recovery of, the species so that its chances of long term survival in nature are maximised; (iii) the plan of management is in force under a law of the Commonwealth or of a State or Territory; (iv) cessation of the plan of management would adversely affect the conservation status of the species. |

Conservation codes and descriptions for WC Act listed flora and fauna species

| Conservation category | Schedule and definition |
|--------------------------------|---|
| Threatened species (T) | Published as Specially Protected under the WC Act, and listed under Schedules 1 to 4 of the Wildlife Conservation (Specially Protected Fauna) Notice for Threatened Fauna and Wildlife Conservation (Rare Flora) Notice for Threatened Flora. Threatened fauna is that subset of ‘Specially Protected Fauna’ declared to be ‘likely to become extinct’ pursuant to section 14(4) of the WC Act. Threatened flora is flora that has been declared to be ‘likely to become extinct or is rare, or otherwise in need of special protection’, pursuant to section 23F(2) of the WC Act. |
| Critically Endangered (CR) | Schedule 1: Threatened species considered to be facing an extremely high risk of extinction in the wild. |
| Endangered (EN) | Schedule 2: Threatened species considered to be facing a very high risk of extinction in the wild. |
| Vulnerable (VU) | Schedule 3: Threatened species considered to be facing a high risk of extinction in the wild. |
| Presumed Extinct (EX) | Schedule 4: Species which have been adequately searched for and there is no reasonable doubt that the last individual has died. |
| International Agreement (IA) | Schedule 5: Migratory birds protected under an international agreement |
| Conservation Dependent (CD) | Schedule 6: Fauna of special conservation need being species dependent on ongoing conservation intervention to prevent it becoming eligible for listing as threatened. |
| Other Specially Protected (OS) | Schedule 7: Fauna otherwise in need of special protection to ensure their conservation. |

Conservation codes for DBCA listed Priority flora and fauna

| Priority category | Definition |
|-------------------|--|
| Priority 1 | <p>Poorly-known taxa</p> <p>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.</p> |
| Priority 2 | <p>Poorly-known taxa</p> <p>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.</p> |
| Priority 3 | <p>Poorly-known taxa</p> <p>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.</p> |
| Priority 4 | <p>Rare, Near Threatened and other taxa in need of monitoring</p> <p>A. 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.</p> <p>B. 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.</p> <p>C. Taxa that have been removed from the list of threatened taxa during the past five years for reasons other than taxonomy.</p> |

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 (2016b) states that significant flora may include taxa that have:

- 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
- Anomalous features that indicate a potential new discovery
- 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)

- The presence of 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)
- Being poorly reserved

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.
- DEE 2018a, *Criteria for determining nationally important wetlands*, retrieved 2018, from <http://www.environment.gov.au/topics/water/water-our-environment/wetlands/australian-wetlands-database/directory-important>.
- DEE 2018b, *The Ramsar Convention on Wetlands*, retrieved 2018, from <http://www.environment.gov.au/topics/water/water-our-environment/wetlands/ramsar-convention-wetlands>.
- 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 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 2000, *Bush Forever – Keeping the Bush in the City. Volumes 1 (Policies, Principals and Processes) & 2 (Directory of Bush Forever Sites)*, Perth, Government of Western Australia.
- Government of Western Australia (GoWA) 2018, 2017 Statewide Vegetation Statistics incorporating the CAR Reserve Analysis (Full report), Current as of December 2017, Perth, Australia, Department of Biodiversity, Conservation and Attractions, retrieved 2018, from <https://catalogue.data.wa.gov.au/dataset/dbca-statewide-vegetation-statistics>.
- Hill, AL, Semeniuk, CA, Semeniuk, V and del Marco, A 1996, *Wetlands of the Swan Coastal Plain. Volume 2: Wetland Mapping, Classification and Evaluation – Wetland Atlas*, Prepared for the Water and Rivers Commission and the Department of Environmental Protection, Perth, Western Australia.
- 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 PMST (5 km buffer)

NatureMap Flora Report (5 km buffer)

NatureMap fauna Report (5 km buffer)



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.

Information on the coverage of this report and qualifications on data supporting this report are contained in the caveat at the end of the report.

Information is available about [Environment Assessments](#) and the EPBC Act including significance guidelines, forms and application process details.

Report created: 05/12/18 19:32:50

[Summary](#)

[Details](#)

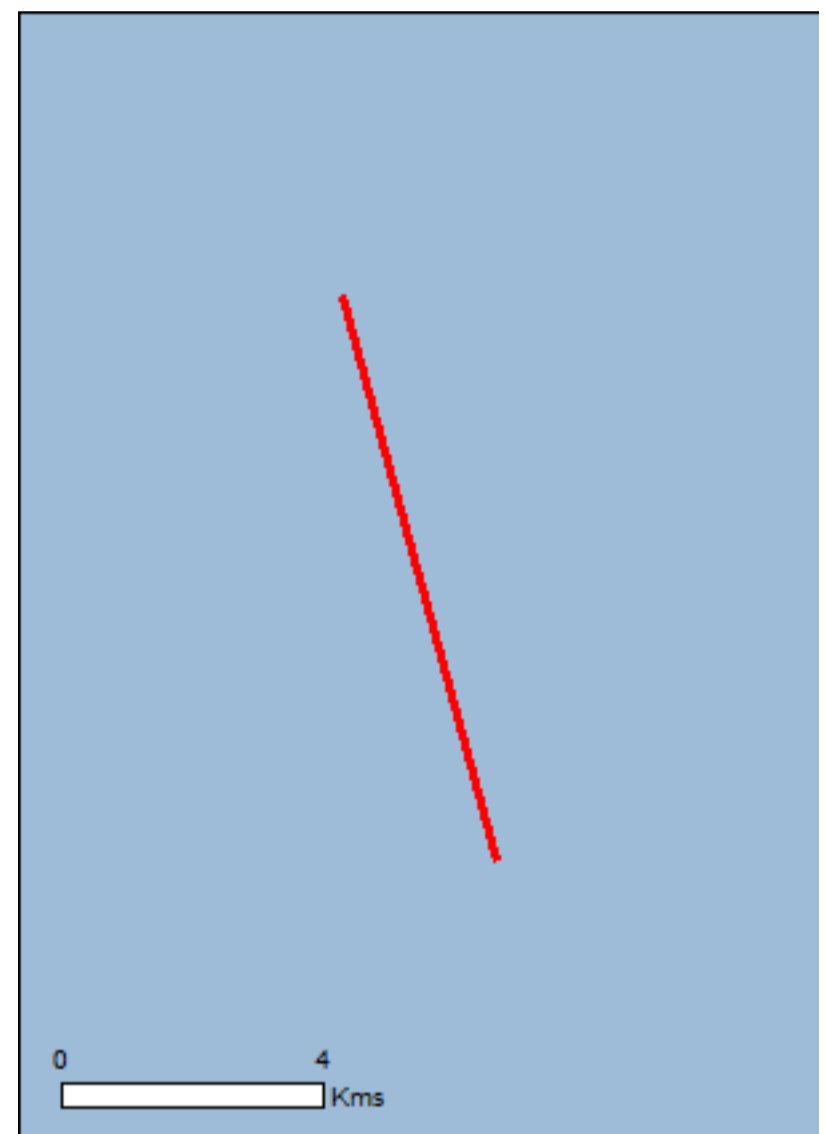
[Matters of NES](#)

[Other Matters Protected by the EPBC Act](#)

[Extra Information](#)

[Caveat](#)

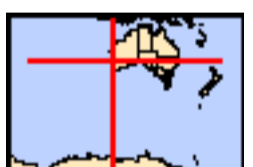
[Acknowledgements](#)



This map may contain data which are ©Commonwealth of Australia (Geoscience Australia), ©PSMA 2010

[Coordinates](#)

Buffer: 5.0Km



Summary

Matters of National Environmental 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: | None |
| National Heritage Places: | None |
| Wetlands of International Importance: | None |
| Great Barrier Reef Marine Park: | None |
| Commonwealth Marine Area: | None |
| Listed Threatened Ecological Communities: | 3 |
| Listed Threatened Species: | 44 |
| Listed Migratory Species: | 43 |

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 <http://www.environment.gov.au/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 Land: | 1 |
| Commonwealth Heritage Places: | None |
| Listed Marine Species: | 71 |
| Whales and Other Cetaceans: | 12 |
| Critical Habitats: | None |
| Commonwealth Reserves Terrestrial: | None |
| Australian Marine Parks: | None |

Extra Information

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

| | |
|--|------|
| State and Territory Reserves: | 1 |
| Regional Forest Agreements: | None |
| Invasive Species: | 34 |
| Nationally Important Wetlands: | 1 |
| Key Ecological Features (Marine) | None |

Details

Matters of National Environmental Significance

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.

| Name | Status | Type of Presence |
|---|------------|---------------------------------------|
| Aquatic Root Mat Community in Caves of the Swan Coastal Plain | Endangered | Community known to occur within area |
| Banksia Woodlands of the Swan Coastal Plain ecological community | Endangered | Community likely to occur within area |
| Sedgelands in Holocene dune swales of the southern Swan Coastal Plain | Endangered | Community known to occur within area |

Listed Threatened Species

[\[Resource Information \]](#)

| Name | Status | Type of Presence |
|--|-----------------------|--|
| Birds | | |
| Anous tenuirostris melanops Australian Lesser Noddy [26000] | Vulnerable | Species or species habitat may occur within area |
| Botaurus poiciloptilus Australasian Bittern [1001] | Endangered | Species or species habitat likely to occur within area |
| Calidris canutus Red Knot, Knot [855] | Endangered | Species or species habitat may occur within area |
| Calidris ferruginea Curlew Sandpiper [856] | Critically Endangered | Species or species habitat likely to occur within area |
| Calyptorhynchus banksii naso Forest Red-tailed Black-Cockatoo, Karrak [67034] | Vulnerable | Species or species habitat likely to occur within area |
| Calyptorhynchus latirostris Carnaby's Cockatoo, Short-billed Black-Cockatoo [59523] | Endangered | Species or species habitat known to occur within area |
| Diomedea amsterdamensis Amsterdam Albatross [64405] | Endangered | Species or species habitat may occur within area |
| Diomedea epomophora Southern Royal Albatross [89221] | Vulnerable | Foraging, feeding or related behaviour likely to occur within area |
| Diomedea exulans Wandering Albatross [89223] | Vulnerable | Foraging, feeding or related behaviour likely to occur within area |
| Diomedea sanfordi Northern Royal Albatross [64456] | Endangered | Foraging, feeding or related behaviour likely |

| Name | Status | Type of Presence |
|--|-----------------------|--|
| Halobaena caerulea Blue Petrel [1059] | Vulnerable | to occur within area Species or species habitat may occur within area |
| Leipoa ocellata Malleefowl [934] | Vulnerable | Species or species habitat likely to occur within area |
| Limosa lapponica baueri Bar-tailed Godwit (baueri), Western Alaskan Bar-tailed Godwit [86380] | Vulnerable | Species or species habitat may occur within area |
| Limosa lapponica menzbieri Northern Siberian Bar-tailed Godwit, Bar-tailed Godwit (menzbieri) [86432] | Critically Endangered | Species or species habitat may occur within area |
| Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060] | Endangered | Species or species habitat may occur within area |
| Macronectes halli Northern Giant Petrel [1061] | Vulnerable | Species or species habitat may occur within area |
| Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847] | Critically Endangered | Species or species habitat may occur within area |
| Pachyptila turtur subantarctica Fairy Prion (southern) [64445] | Vulnerable | Species or species habitat known to occur within area |
| Phoebastria fusca Sooty Albatross [1075] | Vulnerable | Species or species habitat may occur within area |
| Pterodroma mollis Soft-plumaged Petrel [1036] | Vulnerable | Species or species habitat may occur within area |
| Rostratula australis Australian Painted-snipe, Australian Painted Snipe [77037] | Endangered | Species or species habitat may occur within area |
| Sternula nereis nereis Australian Fairy Tern [82950] | Vulnerable | Foraging, feeding or related behaviour known to occur within area |
| Thalassarche carteri Indian Yellow-nosed Albatross [64464] | Vulnerable | Foraging, feeding or related behaviour may occur within area |
| Thalassarche cauta cauta Shy Albatross, Tasmanian Shy Albatross [82345] | Vulnerable | Species or species habitat may occur within area |
| Thalassarche cauta steadi White-capped Albatross [82344] | Vulnerable | Foraging, feeding or related behaviour likely to occur within area |
| Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459] | Vulnerable | Species or species habitat may occur within area |
| Thalassarche melanophris Black-browed Albatross [66472] | Vulnerable | Species or species habitat may occur within area |
| Mammals | | |
| Balaenoptera musculus Blue Whale [36] | Endangered | Species or species habitat likely to occur |

| Name | Status | Type of Presence within area |
|---|------------|---|
| Dasyurus geoffroii Chuditch, Western Quoll [330] | Vulnerable | Species or species habitat likely to occur within area |
| Eubalaena australis Southern Right Whale [40] | Endangered | Breeding known to occur within area |
| Megaptera novaeangliae Humpback Whale [38] | Vulnerable | Species or species habitat known to occur within area |
| Neophoca cinerea Australian Sea-lion, Australian Sea Lion [22] | Vulnerable | Species or species habitat known to occur within area |
| Plants | | |
| Diuris micrantha Dwarf Bee-orchid [55082] | Vulnerable | Species or species habitat likely to occur within area |
| Drakaea elastica Glossy-leaved Hammer Orchid, Glossy-leaved Hammer Orchid, Warty Hammer Orchid [16753] | Endangered | Species or species habitat likely to occur within area |
| Eleocharis keigheryi Keighery's Eleocharis [64893] | Vulnerable | Species or species habitat may occur within area |
| Eucalyptus argutifolia Yanchep Mallee, Wabling Hill Mallee [24263] | Vulnerable | Species or species habitat likely to occur within area |
| Lepidosperma rostratum Beaked Lepidosperma [14152] | Endangered | Species or species habitat likely to occur within area |
| Reptiles | | |
| Caretta caretta Loggerhead Turtle [1763] | Endangered | Foraging, feeding or related behaviour known to occur within area |
| Chelonia mydas Green Turtle [1765] | Vulnerable | Foraging, feeding or related behaviour known to occur within area |
| Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768] | Endangered | Foraging, feeding or related behaviour known to occur within area |
| Natator depressus Flatback Turtle [59257] | Vulnerable | Foraging, feeding or related behaviour known to occur within area |
| Sharks | | |
| Carcharias taurus (west coast population) Grey Nurse Shark (west coast population) [68752] | Vulnerable | Species or species habitat known to occur within area |
| Carcharodon carcharias White Shark, Great White Shark [64470] | Vulnerable | Species or species habitat known to occur within area |
| Rhincodon typus Whale Shark [66680] | Vulnerable | Species or species habitat may occur within area |
| Listed Migratory Species [Resource Information] | | |
| * Species is listed under a different scientific name on the EPBC Act - Threatened Species list. | | |
| Name | Threatened | Type of Presence |
| Migratory Marine Birds | | |

| Name | Threatened | Type of Presence |
|--|-------------|--|
| Anous stolidus Common Noddy [825] | | Species or species habitat may occur within area |
| Apus pacificus Fork-tailed Swift [678] | | Species or species habitat likely to occur within area |
| Ardenna carneipes Flesh-footed Shearwater, Fleshy-footed Shearwater [82404] | | Species or species habitat likely to occur within area |
| Diomedea amsterdamensis Amsterdam Albatross [64405] | Endangered | Species or species habitat may occur within area |
| Diomedea epomophora Southern Royal Albatross [89221] | Vulnerable | Foraging, feeding or related behaviour likely to occur within area |
| Diomedea exulans Wandering Albatross [89223] | Vulnerable | Foraging, feeding or related behaviour likely to occur within area |
| Diomedea sanfordi Northern Royal Albatross [64456] | Endangered | Foraging, feeding or related behaviour likely to occur within area |
| Hydroprogne caspia Caspian Tern [808] | | Foraging, feeding or related behaviour known to occur within area |
| Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060] | Endangered | Species or species habitat may occur within area |
| Macronectes halli Northern Giant Petrel [1061] | Vulnerable | Species or species habitat may occur within area |
| Onychoprion anaethetus Bridled Tern [82845] | | Foraging, feeding or related behaviour likely to occur within area |
| Phoebastria fusca Sooty Albatross [1075] | Vulnerable | Species or species habitat may occur within area |
| Sterna dougallii Roseate Tern [817] | | Foraging, feeding or related behaviour likely to occur within area |
| Thalassarche carteri Indian Yellow-nosed Albatross [64464] | Vulnerable | Foraging, feeding or related behaviour may occur within area |
| Thalassarche cauta Tasmanian Shy Albatross [89224] | Vulnerable* | Species or species habitat may occur within area |
| Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459] | Vulnerable | Species or species habitat may occur within area |
| Thalassarche melanophris Black-browed Albatross [66472] | Vulnerable | Species or species habitat may occur within area |
| Thalassarche steadi White-capped Albatross [64462] | Vulnerable* | Foraging, feeding or related behaviour likely to occur within area |
| Migratory Marine Species | | |

| Name | Threatened | Type of Presence |
|--|-------------|---|
| Balaena glacialis australis Southern Right Whale [75529] | Endangered* | Breeding known to occur within area |
| Balaenoptera edeni Bryde's Whale [35] | | Species or species habitat may occur within area |
| Balaenoptera musculus Blue Whale [36] | Endangered | Species or species habitat likely to occur within area |
| Caperea marginata Pygmy Right Whale [39] | | Species or species habitat may occur within area |
| Carcharodon carcharias White Shark, Great White Shark [64470] | Vulnerable | Species or species habitat known to occur within area |
| Caretta caretta Loggerhead Turtle [1763] | Endangered | Foraging, feeding or related behaviour known to occur within area |
| Chelonia mydas Green Turtle [1765] | Vulnerable | Foraging, feeding or related behaviour known to occur within area |
| Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768] | Endangered | Foraging, feeding or related behaviour known to occur within area |
| Lamna nasus Porbeagle, Mackerel Shark [83288] | | Species or species habitat may occur within area |
| Manta alfredi Reef Manta Ray, Coastal Manta Ray, Inshore Manta Ray, Prince Alfred's Ray, Resident Manta Ray [84994] | | Species or species habitat may occur within area |
| Manta birostris Giant Manta Ray, Chevron Manta Ray, Pacific Manta Ray, Pelagic Manta Ray, Oceanic Manta Ray [84995] | | Species or species habitat may occur within area |
| Megaptera novaeangliae Humpback Whale [38] | Vulnerable | Species or species habitat known to occur within area |
| Natator depressus Flatback Turtle [59257] | Vulnerable | Foraging, feeding or related behaviour known to occur within area |
| Orcinus orca Killer Whale, Orca [46] | | Species or species habitat may occur within area |
| Rhincodon typus Whale Shark [66680] | Vulnerable | Species or species habitat may occur within area |
| Migratory Terrestrial Species | | |
| Motacilla cinerea Grey Wagtail [642] | | Species or species habitat may occur within area |
| Migratory Wetlands Species | | |
| Actitis hypoleucos Common Sandpiper [59309] | | Species or species habitat likely to occur within area |
| Calidris acuminata Sharp-tailed Sandpiper [874] | | Species or species habitat may occur within area |

| Name | Threatened | Type of Presence |
|---|-----------------------|--|
| Calidris canutus Red Knot, Knot [855] | Endangered | Species or species habitat may occur within area |
| Calidris ferruginea Curlew Sandpiper [856] | Critically Endangered | Species or species habitat likely to occur within area |
| Calidris melanotos Pectoral Sandpiper [858] | | Species or species habitat may occur within area |
| Limosa lapponica Bar-tailed Godwit [844] | | Species or species habitat may occur within area |
| Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847] | Critically Endangered | Species or species habitat may occur within area |
| Pandion haliaetus Osprey [952] | | Species or species habitat known to occur within area |
| Tringa nebularia Common Greenshank, Greenshank [832] | | Species or species habitat likely to occur within area |

Other Matters Protected by the EPBC Act

Commonwealth Land [\[Resource Information \]](#)

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.

| Name |
|---------------------|
| Commonwealth Land - |

Listed Marine Species [\[Resource Information \]](#)

* Species is listed under a different scientific name on the EPBC Act - Threatened Species list.

| Name | Threatened | Type of Presence |
|--|------------|--|
| Birds | | |
| Actitis hypoleucos Common Sandpiper [59309] | | Species or species habitat likely to occur within area |
| Anous stolidus Common Noddy [825] | | Species or species habitat may occur within area |
| Anous tenuirostris melanops Australian Lesser Noddy [26000] | Vulnerable | Species or species habitat may occur within area |
| Apus pacificus Fork-tailed Swift [678] | | Species or species habitat likely to occur within area |
| Ardea alba Great Egret, White Egret [59541] | | Species or species habitat known to occur within area |
| Ardea ibis Cattle Egret [59542] | | Species or species habitat may occur within area |
| Calidris acuminata Sharp-tailed Sandpiper [874] | | Species or species |

| Name | Threatened | Type of Presence |
|--|-----------------------|---|
| Calidris canutus Red Knot, Knot [855] | Endangered | habitat may occur within area Species or species habitat may occur within area |
| Calidris ferruginea Curlew Sandpiper [856] | Critically Endangered | Species or species habitat likely to occur within area |
| Calidris melanotos Pectoral Sandpiper [858] | | Species or species habitat may occur within area |
| Catharacta skua Great Skua [59472] | | Species or species habitat may occur within area |
| Diomedea amsterdamensis Amsterdam Albatross [64405] | Endangered | Species or species habitat may occur within area |
| Diomedea epomophora Southern Royal Albatross [89221] | Vulnerable | Foraging, feeding or related behaviour likely to occur within area |
| Diomedea exulans Wandering Albatross [89223] | Vulnerable | Foraging, feeding or related behaviour likely to occur within area |
| Diomedea sanfordi Northern Royal Albatross [64456] | Endangered | Foraging, feeding or related behaviour likely to occur within area |
| Haliaeetus leucogaster White-bellied Sea-Eagle [943] | | Species or species habitat likely to occur within area |
| Halobaena caerulea Blue Petrel [1059] | Vulnerable | Species or species habitat may occur within area |
| Larus novaehollandiae Silver Gull [810] | | Breeding known to occur within area |
| Larus pacificus Pacific Gull [811] | | Foraging, feeding or related behaviour may occur within area |
| Limosa lapponica Bar-tailed Godwit [844] | | Species or species habitat may occur within area |
| Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060] | Endangered | Species or species habitat may occur within area |
| Macronectes halli Northern Giant Petrel [1061] | Vulnerable | Species or species habitat may occur within area |
| Merops ornatus Rainbow Bee-eater [670] | | Species or species habitat may occur within area |
| Motacilla cinerea Grey Wagtail [642] | | Species or species habitat may occur within area |
| Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847] | Critically Endangered | Species or species habitat may occur within area |

| Name | Threatened | Type of Presence |
|--|-------------|--|
| Pachyptila turtur Fairy Prion [1066] | | Species or species habitat known to occur within area |
| Pandion haliaetus Osprey [952] | | Species or species habitat known to occur within area |
| Phoebastria fusca Sooty Albatross [1075] | Vulnerable | Species or species habitat may occur within area |
| Pterodroma mollis Soft-plumaged Petrel [1036] | Vulnerable | Species or species habitat may occur within area |
| Puffinus assimilis Little Shearwater [59363] | | Foraging, feeding or related behaviour known to occur within area |
| Puffinus carneipes Flesh-footed Shearwater, Flesh-footed Shearwater [1043] | | Species or species habitat likely to occur within area |
| Rostratula benghalensis (sensu lato) Painted Snipe [889] | Endangered* | Species or species habitat may occur within area |
| Sterna anaethetus Bridled Tern [814] | | Foraging, feeding or related behaviour likely to occur within area |
| Sterna caspia Caspian Tern [59467] | | Foraging, feeding or related behaviour known to occur within area |
| Sterna dougallii Roseate Tern [817] | | Foraging, feeding or related behaviour likely to occur within area |
| Thalassarche carteri Indian Yellow-nosed Albatross [64464] | Vulnerable | Foraging, feeding or related behaviour may occur within area |
| Thalassarche cauta Tasmanian Shy Albatross [89224] | Vulnerable* | Species or species habitat may occur within area |
| Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459] | Vulnerable | Species or species habitat may occur within area |
| Thalassarche melanophris Black-browed Albatross [66472] | Vulnerable | Species or species habitat may occur within area |
| Thalassarche steadi White-capped Albatross [64462] | Vulnerable* | Foraging, feeding or related behaviour likely to occur within area |
| Thinornis rubricollis Hooded Plover [59510] | | Species or species habitat may occur within area |
| Tringa nebularia Common Greenshank, Greenshank [832] | | Species or species habitat likely to occur within area |
| Fish | | |
| Acentronura australe Southern Pygmy Pipehorse [66185] | | Species or species habitat may occur within area |

| Name | Threatened | Type of Presence |
|---|------------|--|
| Campichthys galei Gale's Pipefish [66191] | | Species or species habitat may occur within area |
| Choeroichthys suillus Pig-snouted Pipefish [66198] | | Species or species habitat may occur within area |
| Halicampus brocki Brock's Pipefish [66219] | | Species or species habitat may occur within area |
| Hippocampus angustus Western Spiny Seahorse, Narrow-bellied Seahorse [66234] | | Species or species habitat may occur within area |
| Hippocampus breviceps Short-head Seahorse, Short-snouted Seahorse [66235] | | Species or species habitat may occur within area |
| Hippocampus subelongatus West Australian Seahorse [66722] | | Species or species habitat may occur within area |
| Lissocampus fatiloquus Prophet's Pipefish [66250] | | Species or species habitat may occur within area |
| Maroubra perserrata Sawtooth Pipefish [66252] | | Species or species habitat may occur within area |
| Mitotichthys meraculus Western Crested Pipefish [66259] | | Species or species habitat may occur within area |
| Nannocampus subosseus Bonyhead Pipefish, Bony-headed Pipefish [66264] | | Species or species habitat may occur within area |
| Phycodurus eques Leafy Seadragon [66267] | | Species or species habitat may occur within area |
| Phyllopteryx taeniolatus Common Seadragon, Weedy Seadragon [66268] | | Species or species habitat may occur within area |
| Pugnaso curtirostris Pugnose Pipefish, Pug-nosed Pipefish [66269] | | Species or species habitat may occur within area |
| Solegnathus lettiensis Gunther's Pipehorse, Indonesian Pipefish [66273] | | Species or species habitat may occur within area |
| Stigmatopora argus Spotted Pipefish, Gulf Pipefish, Peacock Pipefish [66276] | | Species or species habitat may occur within area |
| Stigmatopora nigra Widebody Pipefish, Wide-bodied Pipefish, Black Pipefish [66277] | | Species or species habitat may occur within area |
| Syngnathoides biaculeatus Double-end Pipehorse, Double-ended Pipehorse, Alligator Pipefish [66279] | | Species or species habitat may occur within area |
| Urocampus carinirostris Hairy Pipefish [66282] | | Species or species habitat may occur within area |

| Name | Threatened | Type of Presence |
|--|------------|---|
| Vanacampus margaritifer Mother-of-pearl Pipefish [66283] | | Species or species habitat may occur within area |
| Mammals | | |
| Arctocephalus forsteri Long-nosed Fur-seal, New Zealand Fur-seal [20] | | Species or species habitat may occur within area |
| Neophoca cinerea Australian Sea-lion, Australian Sea Lion [22] | Vulnerable | Species or species habitat known to occur within area |
| Reptiles | | |
| Aipysurus pooleorum Shark Bay Seasnake [66061] | | Species or species habitat may occur within area |
| Caretta caretta Loggerhead Turtle [1763] | Endangered | Foraging, feeding or related behaviour known to occur within area |
| Chelonia mydas Green Turtle [1765] | Vulnerable | Foraging, feeding or related behaviour known to occur within area |
| Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768] | Endangered | Foraging, feeding or related behaviour known to occur within area |
| Disteira kingii Spectacled Seasnake [1123] | | Species or species habitat may occur within area |
| Natator depressus Flatback Turtle [59257] | Vulnerable | Foraging, feeding or related behaviour known to occur within area |
| Pelamis platurus Yellow-bellied Seasnake [1091] | | Species or species habitat may occur within area |
| Whales and other Cetaceans | | |
| | | [Resource Information] |
| Name | Status | Type of Presence |
| Mammals | | |
| Balaenoptera acutorostrata Minke Whale [33] | | Species or species habitat may occur within area |
| Balaenoptera edeni Bryde's Whale [35] | | Species or species habitat may occur within area |
| Balaenoptera musculus Blue Whale [36] | Endangered | Species or species habitat likely to occur within area |
| Caperea marginata Pygmy Right Whale [39] | | Species or species habitat may occur within area |
| Delphinus delphis Common Dolphin, Short-beaked Common Dolphin [60] | | Species or species habitat may occur within area |
| Eubalaena australis Southern Right Whale [40] | Endangered | Breeding known to occur within area |
| Grampus griseus Risso's Dolphin, Grampus [64] | | Species or species habitat may occur within area |

| Name | Status | Type of Presence |
|---|------------|--|
| Megaptera novaeangliae Humpback Whale [38] | Vulnerable | Species or species habitat known to occur within area |
| Orcinus orca Killer Whale, Orca [46] | | Species or species habitat may occur within area |
| Stenella attenuata Spotted Dolphin, Pantropical Spotted Dolphin [51] | | Species or species habitat may occur within area |
| Tursiops aduncus Indian Ocean Bottlenose Dolphin, Spotted Bottlenose Dolphin [68418] | | Species or species habitat likely to occur within area |
| Tursiops truncatus s. str. Bottlenose Dolphin [68417] | | Species or species habitat may occur within area |

Extra Information

State and Territory Reserves [\[Resource Information \]](#)

| Name | State |
|---------|-------|
| Yanchep | WA |

Invasive Species [\[Resource Information \]](#)

Weeds reported here are the 20 species of national significance (WoNS), along with other introduced plants that are considered by the States and Territories to pose a particularly significant threat to biodiversity. The following feral animals are reported: Goat, Red Fox, Cat, Rabbit, Pig, Water Buffalo and Cane Toad. Maps from Landscape Health Project, National Land and Water Resources Audit, 2001.

Birds

| Name | Status | Type of Presence |
|------|--------|------------------|
|------|--------|------------------|

| | | |
|--|--|--|
| Acridotheres tristis Common Myna, Indian Myna [387] | | Species or species habitat likely to occur within area |
| Anas platyrhynchos Mallard [974] | | Species or species habitat likely to occur within area |
| Carduelis carduelis European Goldfinch [403] | | Species or species habitat likely to occur within area |
| Columba livia Rock Pigeon, Rock Dove, Domestic Pigeon [803] | | Species or species habitat likely to occur within area |
| Passer domesticus House Sparrow [405] | | Species or species habitat likely to occur within area |
| Passer montanus Eurasian Tree Sparrow [406] | | Species or species habitat likely to occur within area |
| Streptopelia chinensis Spotted Turtle-Dove [780] | | Species or species habitat likely to occur within area |

| Name | Status | Type of Presence |
|--|--------|--|
| Streptopelia senegalensis Laughing Turtle-dove, Laughing Dove [781] | | Species or species habitat likely to occur within area |
| Sturnus vulgaris Common Starling [389] | | Species or species habitat likely to occur within area |
| Mammals | | |
| Bos taurus Domestic Cattle [16] | | Species or species habitat likely to occur within area |
| Canis lupus familiaris Domestic Dog [82654] | | Species or species habitat likely to occur within area |
| Felis catus Cat, House Cat, Domestic Cat [19] | | Species or species habitat likely to occur within area |
| Funambulus pennantii Northern Palm Squirrel, Five-striped Palm Squirrel [129] | | Species or species habitat likely to occur within area |
| Mus musculus House Mouse [120] | | Species or species habitat likely to occur within area |
| Oryctolagus cuniculus Rabbit, European Rabbit [128] | | Species or species habitat likely to occur within area |
| Rattus norvegicus Brown Rat, Norway Rat [83] | | Species or species habitat likely to occur within area |
| Rattus rattus Black Rat, Ship Rat [84] | | Species or species habitat likely to occur within area |
| Sus scrofa Pig [6] | | Species or species habitat likely to occur within area |
| Vulpes vulpes Red Fox, Fox [18] | | Species or species habitat likely to occur within area |
| Plants | | |
| Asparagus aethiopicus Asparagus Fern, Ground Asparagus, Basket Fern, Sprengi's Fern, Bushy Asparagus, Emerald Asparagus [62425] | | Species or species habitat likely to occur within area |
| Asparagus asparagoides Bridal Creeper, Bridal Veil Creeper, Smilax, Florist's Smilax, Smilax Asparagus [22473] | | Species or species habitat likely to occur within area |
| Brachiaria mutica Para Grass [5879] | | Species or species habitat may occur within area |
| Cenchrus ciliaris Buffel-grass, Black Buffel-grass [20213] | | Species or species habitat may occur within area |
| Chrysanthemoides monilifera Bitou Bush, Boneseed [18983] | | Species or species habitat may occur within area |
| Chrysanthemoides monilifera subsp. monilifera Boneseed [16905] | | Species or species habitat likely to occur |

| Name | Status | Type of Presence within area |
|---|--------|--|
| Genista sp. X Genista monspessulana Broom [67538] | | Species or species habitat may occur within area |
| Lantana camara Lantana, Common Lantana, Kamara Lantana, Large-leaf Lantana, Pink Flowered Lantana, Red Flowered Lantana, Red-Flowered Sage, White Sage, Wild Sage [10892] Olea europaea Olive, Common Olive [9160] | | Species or species habitat likely to occur within area Species or species habitat may occur within area |
| Pinus radiata Radiata Pine Monterey Pine, Insignis Pine, Wilding Pine [20780] | | Species or species habitat may occur within area |
| Rubus fruticosus aggregate Blackberry, European Blackberry [68406] | | Species or species habitat likely to occur within area |
| Salix spp. except S.babylonica, S.x calodendron & S.x reichardtii Willows except Weeping Willow, Pussy Willow and Sterile Pussy Willow [68497] | | Species or species habitat likely to occur within area |
| Salvinia molesta Salvinia, Giant Salvinia, Aquarium Watermoss, Kariba Weed [13665] | | Species or species habitat likely to occur within area |
| Tamarix aphylla Athel Pine, Athel Tree, Tamarisk, Athel Tamarisk, Athel Tamarix, Desert Tamarisk, Flowering Cypress, Salt Cedar [16018] | | Species or species habitat likely to occur within area |
| Reptiles | | |
| Hemidactylus frenatus Asian House Gecko [1708] | | Species or species habitat likely to occur within area |
| Nationally Important Wetlands | | [Resource Information] |
| Name | | State |
| Loch McNess System | | WA |

Caveat

The information presented in this report has been provided by a range of data sources as acknowledged at the end of the report.

This report is designed to assist in identifying the locations of places which may be relevant in determining obligations under the Environment Protection and Biodiversity Conservation Act 1999. It holds mapped locations of World and National Heritage properties, Wetlands of International and National Importance, Commonwealth and State/Territory reserves, listed threatened, migratory and marine species and listed threatened ecological communities. Mapping of Commonwealth land is not complete at this stage. Maps have been collated from a range of sources at various resolutions.

Not all species listed under the EPBC Act have been mapped (see below) and therefore a report is a general guide only. Where available data supports mapping, the type of presence that can be determined from the data is indicated in general terms. People using this information in making a referral may need to consider the qualifications below and may need to seek and consider other information sources.

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.

Threatened, migratory and marine species distributions have been derived through a variety of methods. Where distributions are well known and if time permits, maps are derived using either thematic spatial data (i.e. vegetation, soils, geology, elevation, aspect, terrain, etc) together with point locations and described habitat; or environmental modelling (MAXENT or BIOCLIM habitat modelling) using point locations and environmental data layers.

Where very little information is available for 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 reliable distribution mapping methods are used to update these distributions as time permits.

Only selected species covered by the following provisions of the EPBC Act have been mapped:

- migratory and
- marine

The following species and ecological communities have not been mapped and do not appear in reports produced from this database:

- threatened species listed as extinct or considered as vagrants
- some species and ecological communities that have only recently been listed
- some terrestrial species that overfly the Commonwealth marine area
- migratory species that are very widespread, vagrant, or only occur in small numbers

The following groups have been mapped, but may not cover the complete distribution of the species:

- non-threatened seabirds which have only been mapped for recorded breeding sites
- seals which have only been mapped for breeding sites near the Australian continent

Such breeding sites may be important for the protection of the Commonwealth Marine environment.

Coordinates

-31.50972 115.64944,-31.57583 115.67056

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.

NatureMap Species Report

Created By Guest user on 05/12/2018

Current Names Only Yes

Core Datasets Only Yes

Data Source Priority Flora Survey or Swan Coastal Plain Survey or Threatened and Priority Flora

Method Database or WA Herbarium Specimen Database

Vertices 'By Line'

Group By 31° 34' 33" S, 115° 40' 14" E 31° 30' 35" S, 115° 38' 59" E

Family

| Family | Species | Records |
|-------------------|---------|---------|
| Acrotylaceae | 2 | 3 |
| Aizoaceae | 2 | 4 |
| Amanitaceae | 1 | 1 |
| Amaranthaceae | 4 | 15 |
| Anacardiaceae | 1 | 1 |
| Anarthriaceae | 1 | 1 |
| Apiaceae | 7 | 20 |
| Araceae | 2 | 2 |
| Araliaceae | 7 | 22 |
| Areschougaceae | 1 | 1 |
| Asparagaceae | 20 | 54 |
| Asphodelaceae | 1 | 3 |
| Asteraceae | 54 | 130 |
| Auriscalpiaceae | 1 | 1 |
| Bangiaceae | 1 | 1 |
| Bonnemaisoniaceae | 1 | 1 |
| Brassicaceae | 8 | 18 |
| Bryaceae | 2 | 6 |
| Campanulaceae | 8 | 19 |
| Caprifoliaceae | 1 | 4 |
| Caryophyllaceae | 6 | 12 |
| Casuarinaceae | 3 | 7 |
| Caulerpaceae | 6 | 7 |
| Celastraceae | 4 | 6 |
| Centrolepidaceae | 2 | 7 |
| Ceramiaceae | 6 | 8 |
| Champiaceae | 1 | 1 |
| Chenopodiaceae | 2 | 9 |
| Cladophoraceae | 1 | 1 |
| Cladostephaceae | 1 | 2 |
| Codiaceae | 1 | 1 |
| Colchicaceae | 2 | 6 |
| Convolvulaceae | 1 | 1 |
| Crassulaceae | 5 | 7 |
| Crepidaceae | 1 | 1 |
| Cucurbitaceae | 1 | 2 |
| Cyperaceae | 36 | 95 |
| Cystocloniaceae | 2 | 2 |
| Dacrymycetaceae | 1 | 1 |
| Dasyaceae | 1 | 1 |
| Dasyogonaceae | 1 | 5 |
| Delesseriaceae | 1 | 1 |
| Dicranaceae | 1 | 1 |
| Dicranemataceae | 1 | 1 |
| Dictyotaceae | 4 | 10 |
| Dilleniaceae | 7 | 43 |
| Droseraceae | 2 | 8 |
| Ericaceae | 19 | 104 |
| Euphorbiaceae | 3 | 3 |
| Fabaceae | 62 | 169 |
| Funariaceae | 1 | 2 |
| Gentianaceae | 2 | 3 |
| Geraniaceae | 5 | 10 |
| Gigaspermaceae | 1 | 1 |
| Goodeniaceae | 16 | 37 |
| Gracilariaceae | 1 | 1 |
| Graphidaceae | 1 | 1 |
| Gyrostemonaceae | 2 | 5 |
| Haemodoraceae | 20 | 50 |
| Halimedaceae | 1 | 1 |
| Haloragaceae | 1 | 1 |
| Halymeniaceae | 1 | 1 |
| Hemerocallidaceae | 6 | 15 |
| Hymenochaetaceae | 1 | 1 |
| Hymenocladaceae | 1 | 1 |
| Iridaceae | 7 | 17 |
| Juncaceae | 1 | 1 |
| Juncaginaceae | 3 | 6 |
| Kallymeniaceae | 1 | 1 |
| Lamiaceae | 7 | 14 |
| Lauraceae | 5 | 11 |
| Lecanoraceae | 1 | 1 |
| Lentibulariaceae | 1 | 2 |
| Linaceae | 1 | 1 |
| Loganiaceae | 2 | 6 |

| | | |
|-------------------|------------|-------------|
| Loranthaceae | 1 | 6 |
| Lythraceae | 1 | 1 |
| Macarthuriaceae | 1 | 1 |
| Malvaceae | 5 | 9 |
| Montiaceae | 3 | 3 |
| Moraceae | 1 | 1 |
| Myrtaceae | 39 | 101 |
| Olacaceae | 1 | 2 |
| Onagraceae | 6 | 12 |
| Orchidaceae | 23 | 43 |
| Orobanchaceae | 4 | 8 |
| Oxalidaceae | 2 | 3 |
| Papaveraceae | 4 | 4 |
| Passifloraceae | 1 | 1 |
| Pezizaceae | 4 | 8 |
| Phallaceae | 1 | 2 |
| Phanerochaetaceae | 1 | 2 |
| Phyllanthaceae | 3 | 12 |
| Physaraceae | 2 | 2 |
| Physciaceae | 4 | 4 |
| Pittosporaceae | 1 | 1 |
| Placynthiaceae | 1 | 1 |
| Plantaginaceae | 3 | 5 |
| Pleosporeae | 1 | 1 |
| Plocamiaceae | 2 | 3 |
| Poaceae | 32 | 49 |
| Polygalaceae | 5 | 8 |
| Polygonaceae | 4 | 13 |
| Polyporaceae | 3 | 5 |
| Pottiaceae | 4 | 5 |
| Primulaceae | 1 | 1 |
| Proteaceae | 28 | 123 |
| Psoraceae | 1 | 1 |
| Pteridaceae | 1 | 1 |
| Racopilaceae | 1 | 1 |
| Ramalinaceae | 2 | 2 |
| Ranunculaceae | 3 | 10 |
| Restionaceae | 6 | 22 |
| Rhamnaceae | 7 | 33 |
| Rhodomelaceae | 13 | 20 |
| Rhodymeniaceae | 1 | 1 |
| Ricciaceae | 1 | 1 |
| Rubiaceae | 3 | 7 |
| Rutaceae | 5 | 8 |
| Santalaceae | 4 | 6 |
| Sapindaceae | 1 | 4 |
| Sargassaceae | 5 | 7 |
| Scrophulariaceae | 5 | 12 |
| Scytosiphonaceae | 3 | 9 |
| Solanaceae | 7 | 24 |
| Solieriaceae | 1 | 1 |
| Strophariaceae | 2 | 2 |
| Styliaceae | 19 | 59 |
| Tamaricaceae | 1 | 1 |
| Teloschistaceae | 2 | 2 |
| Thuidiaceae | 1 | 1 |
| Thymelaeaceae | 8 | 14 |
| Tremellaceae | 1 | 1 |
| Typhaceae | 1 | 1 |
| Ulvaceae | 1 | 1 |
| Urticaceae | 1 | 3 |
| Verbenaceae | 2 | 2 |
| Violaceae | 2 | 13 |
| Vitaceae | 1 | 1 |
| Wrangeliaceae | 1 | 1 |
| Xanthorrhoeaceae | 1 | 5 |
| Zamiaceae | 1 | 1 |
| TOTAL | 705 | 1737 |

| Name ID | Species Name | Naturalised | Conservation Code | Endemic To Query Area |
|-----------------------|---|-------------|-------------------|-----------------------|
| Acrotyleaceae | | | | |
| 1. | 26665 <i>Clavicleonium ovatum</i> | | | |
| 2. | 26915 <i>Hennedya crista</i> | | | |
| Aizoaceae | | | | |
| 3. | 2795 <i>Carpobrotus edulis</i> (Hottentot Fig) | Y | | |
| 4. | 2798 <i>Carpobrotus virescens</i> (Coastal Pigface, Kolboko, Bain) | | | |
| Amanitaceae | | | | |
| 5. | 48599 <i>Amanita arenaria</i> | | | |
| Amaranthaceae | | | | |
| 6. | 2718 <i>Ptilotus drummondii</i> (Narrowleaf Mulla Mulla) | | | |
| 7. | 11260 <i>Ptilotus drummondii</i> var. <i>drummondii</i> (Pussytail) | | | |
| 8. | 2751 <i>Ptilotus polystachyus</i> (Prince of Wales Feather) | | | |
| 9. | 40841 <i>Ptilotus stirlingii</i> subsp. <i>stirlingii</i> | | | |
| Anacardiaceae | | | | |
| 10. | 11027 <i>Schinus terebinthifolius</i> | Y | | |
| Anarthriaceae | | | | |
| 11. | 18049 <i>Lyginia imberbis</i> | | | |
| Apiaceae | | | | |
| 12. | 12040 <i>Apium prostratum</i> var. <i>prostratum</i> (Sea Celery) | | | |
| 13. | 6214 <i>Centella asiatica</i> | | | |
| 14. | 6218 <i>Daucus glochidiatus</i> (Australian Carrot) | | | |
| 15. | 6219 <i>Eryngium pinnatifidum</i> (Blue Devils) | | | |
| 16. | 6222 <i>Homalosciadium homalocarpum</i> | | | |
| 17. | 18355 <i>Petroselinum crispum</i> (Parsley) | Y | | |
| 18. | 6289 <i>Xanthosia huegelii</i> | | | |
| Araceae | | | | |
| 19. | 28342 <i>Landoltia punctata</i> (Thin Duckweed) | | | |
| 20. | 1051 <i>Lemna disperma</i> (Duckweed) | | | |
| Araliaceae | | | | |
| 21. | 6224 <i>Hydrocotyle blepharocarpa</i> | | | |
| 22. | 6226 <i>Hydrocotyle callicarpa</i> (Small Pennywort) | | | |
| 23. | 6229 <i>Hydrocotyle diantha</i> | | | |
| 24. | 6232 <i>Hydrocotyle hispidula</i> | | | |
| 25. | 11546 <i>Hydrocotyle pilifera</i> var. <i>glabrata</i> | | | |
| 26. | 19041 <i>Trachymene coerulea</i> subsp. <i>coerulea</i> | | | |
| 27. | 6280 <i>Trachymene pilosa</i> (Native Parsnip) | | | |
| Areschougiceae | | | | |
| 28. | 26534 <i>Callophycus dorsifer</i> | | | |
| Asparagaceae | | | | |
| 29. | 1208 <i>Acanthocarpus preissii</i> | | | |
| 30. | 1201 <i>Asparagus officinalis</i> (Asparagus) | Y | | |
| 31. | 1287 <i>Dichopogon capillipes</i> | | | |
| 32. | 16091 <i>Lachenalia bulbifera</i> | Y | | |
| 33. | 1308 <i>Laxmannia sessiliflora</i> (Nodding Lily) | | | |
| 34. | 11464 <i>Laxmannia sessiliflora</i> subsp. <i>australis</i> | | | |
| 35. | 1223 <i>Lomandra caespitosa</i> (Tufted Mat Rush) | | | |
| 36. | 1228 <i>Lomandra hermaphrodita</i> | | | |
| 37. | 1231 <i>Lomandra maritima</i> | | | |
| 38. | 14542 <i>Lomandra micrantha</i> subsp. <i>micrantha</i> | | | |
| 39. | 1234 <i>Lomandra nigricans</i> | | | |
| 40. | 1239 <i>Lomandra preissii</i> | | | |
| 41. | 1243 <i>Lomandra sericea</i> (Silky Mat Rush) | | | |
| 42. | 1246 <i>Lomandra suaveolens</i> | | | |
| 43. | 1312 <i>Sowerbaea laxiflora</i> (Purple Tassels) | | | |
| 44. | 1319 <i>Thysanotus arenarius</i> | | | |
| 45. | 1343 <i>Thysanotus patersonii</i> | | | |
| 46. | 46055 <i>Thysanotus</i> sp. Coastal plain (N.H. Brittan 66/63) | | | |
| 47. | 1351 <i>Thysanotus sparteus</i> | | | |
| 48. | 1358 <i>Thysanotus triandrus</i> | | | |
| Asphodelaceae | | | | |
| 49. | 1368 <i>Trachyandra divaricata</i> | Y | | |

| Name ID | Species Name | Naturalised | Conservation Code | ¹ Endemic To Query Area |
|--------------------------|---|-------------|-------------------|------------------------------------|
| Asteraceae | | | | |
| 50. | 7838 <i>Arctotheca calendula</i> (Cape Weed, African Marigold) | Y | | |
| 51. | 7840 <i>Arctotis stoechadifolia</i> (White Arctotis, Silver Arctotis) | Y | | |
| 52. | 7851 <i>Asteridea pulverulenta</i> (Common Bristle Daisy) | | | |
| 53. | 7856 <i>Blennospora drummondii</i> | | | |
| 54. | 7867 <i>Brachyscome bellidioides</i> | | | |
| 55. | 7878 <i>Brachyscome iberidifolia</i> | | | |
| 56. | 7909 <i>Carduus pycnocephalus</i> (Slender Thistle) | Y | | |
| 57. | 7916 <i>Centaurea melitensis</i> (Maltese Cockspur, Malta Thistle) | Y | | |
| 58. | 7937 <i>Cirsium vulgare</i> (Spear Thistle, Scotch Thistle) | Y | | |
| 59. | 20074 <i>Conyza sumatrensis</i> | Y | | |
| 60. | 7943 <i>Cotula australis</i> (Common Cotula) | | | |
| 61. | 7947 <i>Cotula turbinata</i> (Funnel Weed) | Y | | |
| 62. | 7961 <i>Dittrichia graveolens</i> (Stinkwort) | Y | | |
| 63. | 15137 <i>Euchiton sphaericus</i> | | | |
| 64. | 7976 <i>Galinsoga parviflora</i> (Potato Weed) | Y | | |
| 65. | 16311 <i>Gazania linearis</i> | Y | | |
| 66. | 12741 <i>Hyalosperma cotula</i> | | | |
| 67. | 8086 <i>Hypochoeris glabra</i> (Smooth Catsear) | Y | | |
| 68. | 9352 <i>Hypochoeris radicata</i> (Flat Weed, Cats-ear) | Y | | |
| 69. | 29046 <i>Lactuca serriola</i> forma <i>serriola</i> | Y | | |
| 70. | 18585 <i>Lagenophora huegelii</i> | | | |
| 71. | 17852 <i>Leptorhynchos scaber</i> (Lanky Buttons) | | | |
| 72. | 16449 <i>Leucophyta brownii</i> | | | |
| 73. | 8105 <i>Millotia myosotidifolia</i> | | | |
| 74. | 8106 <i>Millotia tenuifolia</i> (Soft Millotia) | | | |
| 75. | 8127 <i>Olearia axillaris</i> (Coastal Daisybush) | | | |
| 76. | 8149 <i>Olearia rudis</i> (Rough Daisybush) | | | |
| 77. | 42281 <i>Pithocarpa cordata</i> | | | |
| 78. | 8165 <i>Pithocarpa pulchella</i> (Beautiful Pithocarpa) | | | |
| 79. | 18353 <i>Pithocarpa pulchella</i> var. <i>pulchella</i> | | | |
| 80. | 8175 <i>Podolepis gracilis</i> (Slender Podolepis) | | | |
| 81. | 8177 <i>Podolepis lessonii</i> | | | |
| 82. | 8182 <i>Podotheca angustifolia</i> (Sticky Longheads) | | | |
| 83. | 8183 <i>Podotheca chrysantha</i> (Yellow Podotheca) | | | |
| 84. | 8184 <i>Podotheca gnaphalioides</i> (Golden Long-heads) | | | |
| 85. | 8189 <i>Pseudognaphalium luteoalbum</i> (Jersey Cudweed) | | | |
| 86. | 8195 <i>Quinetia urvillei</i> | | | |
| 87. | 13300 <i>Rhodanthe citrina</i> | | | |
| 88. | 15035 <i>Rhodanthe corymbosa</i> | | | |
| 89. | 20663 <i>Senecio multicaulis</i> subsp. <i>multicaulis</i> | | | |
| 90. | 25884 <i>Senecio pinnatifolius</i> var. <i>latilobus</i> | | | |
| 91. | 8218 <i>Senecio ramosissimus</i> (Auricled Groundsel) | | | |
| 92. | 8220 <i>Senecio vulgaris</i> (Common Groundsel) | Y | | |
| 93. | 8225 <i>Siloxerus humifusus</i> (Procumbent Siloxerus) | | | |
| 94. | 8231 <i>Sonchus oleraceus</i> (Common Sowthistle) | Y | | |
| 95. | 8254 <i>Urospermum picroides</i> (False Hawkbit) | Y | | |
| 96. | 8255 <i>Ursinia anthemoides</i> (Ursinia) | Y | | |
| 97. | 38388 <i>Ursinia anthemoides</i> subsp. <i>anthemoides</i> | Y | | |
| 98. | 13331 <i>Waitzia acuminata</i> var. <i>acuminata</i> | | | |
| 99. | 13328 <i>Waitzia nitida</i> | | | |
| 100. | 8282 <i>Waitzia suaveolens</i> (Fragrant Waitzia) | | | |
| 101. | 13333 <i>Waitzia suaveolens</i> var. <i>suaveolens</i> | | | |
| 102. | 8286 <i>Xanthium occidentale</i> (Noogoora Burr) | Y | | |
| 103. | 44861 <i>Xerochrysum macranthum</i> | | | |
| Auriscalpiaceae | | | | |
| 104. | 38805 <i>Lentinellus pulvinulus</i> | | | |
| Bangiaceae | | | | |
| 105. | 27184 <i>Porphyra lucasii</i> | | | |
| Bonnemaisoniaceae | | | | |
| 106. | 26486 <i>Asparagopsis taxiformis</i> | | | |
| Brassicaceae | | | | |
| 107. | 3000 <i>Brassica tournefortii</i> (Mediterranean Turnip) | Y | | |
| 108. | 3016 <i>Heliophila pusilla</i> | Y | | |
| 109. | 3042 <i>Lepidium pseudotasmanicum</i> | | P4 | |
| 110. | 3044 <i>Lepidium rotundum</i> (Veined Peppergrass) | | | |
| 111. | 3049 <i>Matthiola incana</i> (Common Stock) | Y | | |
| 112. | 3061 <i>Raphanus raphanistrum</i> (Wild Radish) | Y | | |

| Name ID | Species Name | Naturalised | Conservation Code | ¹ Endemic To Query Area |
|-------------------------|--|-------------|-------------------|------------------------------------|
| 113. | 19403 <i>Stenopetalum gracile</i> | | | |
| 114. | 3080 <i>Stenopetalum robustum</i> | | | |
| Bryaceae | | | | |
| 115. | 32331 <i>Bryum lanatum</i> | | | |
| 116. | 32380 <i>Gemmabryum pachythecum</i> | | | |
| Campanulaceae | | | | |
| 117. | 37500 <i>Grammatotheca bergiana</i> var. <i>bergiana</i> | Y | | |
| 118. | 7396 <i>Isotoma hypocrateriformis</i> (Woodbridge Poison) | | | |
| 119. | 9289 <i>Lobelia anceps</i> (Angled Lobelia) | | | |
| 120. | 7402 <i>Lobelia gibbosa</i> (Tall Lobelia) | | | |
| 121. | 7403 <i>Lobelia heterophylla</i> (Wing-seeded Lobelia) | | | |
| 122. | 7408 <i>Lobelia tenuior</i> (Slender Lobelia) | | | |
| 123. | 7384 <i>Wahlenbergia capensis</i> (Cape Bluebell) | Y | | |
| 124. | 7389 <i>Wahlenbergia preissii</i> | | | |
| Caprifoliaceae | | | | |
| 125. | 7368 <i>Scabiosa atropurpurea</i> (Purple Pincushion) | Y | | |
| Caryophyllaceae | | | | |
| 126. | 2889 <i>Cerastium glomeratum</i> (Mouse Ear Chickweed) | Y | | |
| 127. | 19825 <i>Petrohragia dubia</i> | Y | | |
| 128. | 2905 <i>Polycarpon tetraphyllum</i> (Fourleaf Allseed) | Y | | |
| 129. | 2906 <i>Sagina apetala</i> (Annual Pearlwort) | Y | | |
| 130. | 2909 <i>Silene gallica</i> (French Catchfly) | Y | | |
| 131. | 2918 <i>Stellaria media</i> (Chickweed) | Y | | |
| Casuarinaceae | | | | |
| 132. | 1728 <i>Allocasuarina fraseriana</i> (Sheoak, Kondil) | | | |
| 133. | 1732 <i>Allocasuarina humilis</i> (Dwarf Sheoak) | | | |
| 134. | 13908 <i>Allocasuarina lehmanniana</i> subsp. <i>lehmanniana</i> | | | |
| Caulerpaceae | | | | |
| 135. | 44539 <i>Caulerpa cylindracea</i> | | | |
| 136. | 26562 <i>Caulerpa fergusonii</i> | | | |
| 137. | 27382 <i>Caulerpa longifolia</i> forma <i>crispata</i> | | | |
| 138. | 26570 <i>Caulerpa obscura</i> | | | |
| 139. | 26571 <i>Caulerpa papillosa</i> | | | |
| 140. | 46993 <i>Caulerpa taxifolia</i> var. <i>distichophylla</i> | | | |
| Celastraceae | | | | |
| 141. | 9069 <i>Stackhousia huegelii</i> | | | |
| 142. | 4733 <i>Stackhousia monogyna</i> | | | |
| 143. | 9070 <i>Stackhousia pubescens</i> (Downy Stackhousia) | | | |
| 144. | 4737 <i>Tripterococcus brunonis</i> (Winged Stackhousia) | | | |
| Centrolepidaceae | | | | |
| 145. | 1121 <i>Centrolepis aristata</i> (Pointed Centrolepis) | | | |
| 146. | 1125 <i>Centrolepis drummondiana</i> | | | |
| Ceramiaceae | | | | |
| 147. | 26471 <i>Antithamnion armatum</i> | | | |
| 148. | 26475 <i>Antithamnion hanovioides</i> | | | |
| 149. | 26511 <i>Bornetia binderiana</i> | | | |
| 150. | 26599 <i>Ceramium puberulum</i> | | | |
| 151. | 26600 <i>Ceramium pusillum</i> | | | |
| 152. | 26942 <i>Hirsutithallia loricata</i> | | | |
| Champiaceae | | | | |
| 153. | 26621 <i>Champia zostericola</i> | | | |
| Chenopodiaceae | | | | |
| 154. | 2463 <i>Atriplex isatidea</i> (Coast Saltbush) | | | |
| 155. | 11341 <i>Rhagodia baccata</i> subsp. <i>baccata</i> | | | |
| Cladophoraceae | | | | |
| 156. | 26607 <i>Chaetomorpha aerea</i> | | | |
| Cladostephaceae | | | | |
| 157. | 26662 <i>Cladostephus spongiosus</i> | | | |
| Codiaceae | | | | |
| 158. | 26672 <i>Codium galeatum</i> | | | |
| Colchicaceae | | | | |
| 159. | 12770 <i>Burchardia congesta</i> | | | |
| 160. | 1398 <i>Wurmbea monantha</i> | | | |

| Name ID | Species Name | Naturalised | Conservation Code | ¹ Endemic To Query Area |
|------------------------|---|-------------|-------------------|------------------------------------|
| Convolvulaceae | | | | |
| 161. | 11021 <i>Cuscuta planiflora</i> | Y | | |
| Crassulaceae | | | | |
| 162. | 3137 <i>Crassula colorata</i> (Dense Stonecrop) | | | |
| 163. | 11709 <i>Crassula colorata</i> var. <i>acuminata</i> | | | |
| 164. | 11563 <i>Crassula colorata</i> var. <i>colorata</i> | | | |
| 165. | 11349 <i>Crassula decumbens</i> var. <i>decumbens</i> | | | |
| 166. | 3140 <i>Crassula glomerata</i> | Y | | |
| Crepidotaceae | | | | |
| 167. | <i>Crepidotus nephrodes</i> | | | |
| Cucurbitaceae | | | | |
| 168. | 25825 <i>Cucurbita pepo</i> | Y | | |
| Cyperaceae | | | | |
| 169. | 740 <i>Baumea arthropphylla</i> | | | |
| 170. | 741 <i>Baumea articulata</i> (Jointed Rush) | | | |
| 171. | 743 <i>Baumea juncea</i> (Bare Twigrush) | | | |
| 172. | 744 <i>Baumea laxa</i> | | | |
| 173. | 745 <i>Baumea preissii</i> | | | |
| 174. | 753 <i>Carex appressa</i> (Tall Sedge) | | | |
| 175. | 755 <i>Carex fascicularis</i> (Tassel Sedge) | | | |
| 176. | 43241 <i>Carex thecata</i> | | | |
| 177. | 760 <i>Caustis dioica</i> | | | |
| 178. | 783 <i>Cyperus congestus</i> (Dense Flat-sedge) | Y | | |
| 179. | 810 <i>Cyperus rotundus</i> (Nut Grass) | Y | | |
| 180. | 816 <i>Cyperus tenuiflorus</i> (Scaly Sedge) | Y | | |
| 181. | 20216 <i>Ficinia nodosa</i> (Knotted Club Rush) | | | |
| 182. | 907 <i>Gahnia trifida</i> (Coast Saw-sedge) | | | |
| 183. | 20200 <i>Isolepis cernua</i> var. <i>setiformis</i> | | | |
| 184. | 917 <i>Isolepis marginata</i> (Coarse Club-rush) | | | |
| 185. | 925 <i>Lepidosperma angustatum</i> | | | |
| 186. | 42742 <i>Lepidosperma calcicola</i> | | | |
| 187. | 932 <i>Lepidosperma effusum</i> (Spreading Sword-sedge) | | | |
| 188. | 933 <i>Lepidosperma gladiatum</i> (Coast Sword-sedge, Kerbin) | | | |
| 189. | 936 <i>Lepidosperma leptostachyum</i> | | | |
| 190. | 937 <i>Lepidosperma longitudinale</i> (Pithy Sword-sedge) | | | |
| 191. | 940 <i>Lepidosperma pubisquamum</i> | | | |
| 192. | 944 <i>Lepidosperma scabrum</i> | | | |
| 193. | 945 <i>Lepidosperma squamatum</i> | | | |
| 194. | 946 <i>Lepidosperma striatum</i> | | | |
| 195. | 955 <i>Mesomelaena pseudostygia</i> | | | |
| 196. | 48356 <i>Schoenoplectus tabernaemontani</i> | | | |
| 197. | 984 <i>Schoenus curvifolius</i> | | | |
| 198. | 992 <i>Schoenus grandiflorus</i> (Large Flowered Bogrush) | | | |
| 199. | 997 <i>Schoenus lanatus</i> (Woolly Bog-rush) | | | |
| 200. | 998 <i>Schoenus latitans</i> | | | |
| 201. | 1002 <i>Schoenus nanus</i> (Tiny Bog Rush) | | | |
| 202. | 1026 <i>Schoenus unispiculatus</i> | | | |
| 203. | 1036 <i>Tetraria octandra</i> | | | |
| 204. | 1038 <i>Tricostularia neesii</i> | | | |
| Cystocloniaceae | | | | |
| 205. | 35898 <i>Hypnea musciformis</i> | | | |
| 206. | 26971 <i>Hypnea ramentacea</i> | | | |
| Dacrymycetaceae | | | | |
| 207. | <i>Calocera guepinioides</i> | | | |
| Dasyaceae | | | | |
| 208. | 26738 <i>Dasya elongata</i> | | | |
| Dasypogonaceae | | | | |
| 209. | 19309 <i>Calectasia narragara</i> | | | |
| Delesseriaceae | | | | |
| 210. | 27149 <i>Platysiphonia mutabilis</i> | | | |
| Dicranaceae | | | | |
| 211. | 32338 <i>Campylopus introflexus</i> | Y | | |
| Dicranemataceae | | | | |
| 212. | 27347 <i>Tylopus obtusatus</i> | | | |

| Name ID | Species Name | Naturalised | Conservation Code | ¹ Endemic To Query Area |
|----------------------|--|-------------|-------------------|------------------------------------|
| Dictyotaceae | | | | |
| 213. | 26767 <i>Dictyopteris plagiogramma</i> | | | |
| 214. | 27043 <i>Lobophora variegata</i> | | | |
| 215. | 27044 <i>Lobospira bicuspidata</i> | | | |
| 216. | 27373 <i>Zonaria turneriana</i> | | | |
| Dilleniaceae | | | | |
| 217. | 5112 <i>Hibbertia aurea</i> | | | |
| 218. | 5135 <i>Hibbertia hypericoides</i> (Yellow Buttercups) | | | |
| 219. | 45534 <i>Hibbertia hypericoides</i> subsp. <i>hypericoides</i> | | | |
| 220. | 5162 <i>Hibbertia racemosa</i> (Stalked Guinea Flower) | | | |
| 221. | <i>Hibbertia</i> sp. | | | |
| 222. | 11461 <i>Hibbertia spicata</i> subsp. <i>leptothea</i> | | P3 | |
| 223. | 48381 <i>Hibbertia striata</i> | | | |
| Droseraceae | | | | |
| 224. | 3095 <i>Drosera erythrorhiza</i> (Red Ink Sundew) | | | |
| 225. | 3118 <i>Drosera pallida</i> (Pale Rainbow) | | | |
| Ericaceae | | | | |
| 226. | 6295 <i>Acrotriche cordata</i> (Coast Ground Berry) | | | |
| 227. | 6314 <i>Andersonia lehmanniana</i> | | | |
| 228. | 11471 <i>Andersonia lehmanniana</i> subsp. <i>lehmanniana</i> | | | |
| 229. | 6331 <i>Astroloma microcalyx</i> (Native Cranberry) | | | |
| 230. | 6334 <i>Astroloma pallidum</i> (Kick Bush) | | | |
| 231. | 6347 <i>Conostephium minus</i> (Pink-tipped Pearl flower) | | | |
| 232. | 6348 <i>Conostephium pendulum</i> (Pearl Flower) | | | |
| 233. | 6349 <i>Conostephium preissii</i> | | | |
| 234. | 6405 <i>Leucopogon insularis</i> | | | |
| 235. | 40801 <i>Leucopogon maritimus</i> | | P1 | |
| 236. | 6425 <i>Leucopogon oxycedrus</i> | | | |
| 237. | 6427 <i>Leucopogon parviflorus</i> (Coast Beard-heath) | | | |
| 238. | 6434 <i>Leucopogon polymorphus</i> | | | |
| 239. | 6436 <i>Leucopogon propinquus</i> | | | |
| 240. | 6440 <i>Leucopogon racemosus</i> | | | |
| 241. | 19460 <i>Leucopogon</i> sp. <i>Yanchep</i> (M. Hislop 1986) | | P3 | |
| 242. | 40803 <i>Leucopogon squarrosus</i> subsp. <i>squarrosus</i> | | | |
| 243. | 34736 <i>Lysinema pentapetalum</i> | | | |
| 244. | 48297 <i>Styphelia filifolia</i> | | P3 | |
| Euphorbiaceae | | | | |
| 245. | 4636 <i>Euphorbia paralias</i> (Sea Spurge) | Y | | |
| 246. | 4638 <i>Euphorbia peplus</i> (Petty Spurge) | Y | | |
| 247. | 4648 <i>Euphorbia terracina</i> (Geraldton Carnation Weed) | Y | | |
| Fabaceae | | | | |
| 248. | 15430 <i>Acacia alata</i> var. <i>tetrantha</i> | | | |
| 249. | 15466 <i>Acacia applanata</i> | | | |
| 250. | 15470 <i>Acacia barbinervis</i> subsp. <i>borealis</i> | | | |
| 251. | 3237 <i>Acacia benthamii</i> | | P2 | |
| 252. | 3262 <i>Acacia cochlearis</i> (Rigid Wattle) | | | |
| 253. | 3282 <i>Acacia cyclops</i> (Coastal Wattle) | | | |
| 254. | 3374 <i>Acacia huegelii</i> | | | |
| 255. | 3409 <i>Acacia lasiocarpa</i> (Panjang) | | | |
| 256. | 11611 <i>Acacia lasiocarpa</i> var. <i>lasiocarpa</i> | | | |
| 257. | 3502 <i>Acacia pulchella</i> (Prickly Moses) | | | |
| 258. | 15481 <i>Acacia pulchella</i> var. <i>glaberrima</i> | | | |
| 259. | 15482 <i>Acacia pulchella</i> var. <i>goadbyi</i> | | | |
| 260. | 3525 <i>Acacia rostellifera</i> (Summer-scented Wattle) | | | |
| 261. | 30032 <i>Acacia saligna</i> subsp. <i>saligna</i> | | | |
| 262. | 3541 <i>Acacia sessilis</i> | | | |
| 263. | 3557 <i>Acacia stenoptera</i> (Narrow Winged Wattle) | | | |
| 264. | 3584 <i>Acacia truncata</i> | | | |
| 265. | 3602 <i>Acacia willdenowiana</i> (Grass Wattle) | | | |
| 266. | 3604 <i>Acacia xanthina</i> (White-stemmed Wattle) | | | |
| 267. | 3692 <i>Aotus procumbens</i> | | | |
| 268. | 3710 <i>Bossiaea eriocarpa</i> (Common Brown Pea) | | | |
| 269. | 3805 <i>Daviesia decurrens</i> (Prickly Bitter-pea) | | | |
| 270. | 19747 <i>Daviesia decurrens</i> subsp. <i>decurrens</i> | | | |
| 271. | 18560 <i>Daviesia divaricata</i> subsp. <i>divaricata</i> | | | |
| 272. | 16585 <i>Daviesia nudiflora</i> subsp. <i>nudiflora</i> | | | |
| 273. | 3832 <i>Daviesia physodes</i> | | | |

| Name ID | Species Name | Naturalised | Conservation Code | ¹ Endemic To Query Area |
|-----------------------|---|-------------|-------------------|------------------------------------|
| 274. | 3833 <i>Daviesia podophylla</i> | | | |
| 275. | 20483 <i>Gastrolobium linearifolium</i> | | | |
| 276. | 20482 <i>Gastrolobium nervosum</i> | | | |
| 277. | 3945 <i>Gompholobium aristatum</i> | | | |
| 278. | 10909 <i>Gompholobium confertum</i> | | | |
| 279. | 3950 <i>Gompholobium knightianum</i> | | | |
| 280. | 19295 <i>Gompholobium pungens</i> | | | |
| 281. | 11083 <i>Gompholobium scabrum</i> | | | |
| 282. | 3957 <i>Gompholobium tomentosum</i> (Hairy Yellow Pea) | | | |
| 283. | 3961 <i>Hardenbergia comptoniana</i> (Native Wisteria) | | | |
| 284. | 3966 <i>Hovea pungens</i> (Devil's Pins, Puyenak) | | | |
| 285. | 3968 <i>Hovea trisperma</i> (Common Hovea) | | | |
| 286. | 12859 <i>Hovea trisperma</i> var. <i>trisperma</i> | | | |
| 287. | 3992 <i>Isotropis cuneifolia</i> (Granny Bonnets) | | | |
| 288. | 19700 <i>Isotropis cuneifolia</i> subsp. <i>cuneifolia</i> | | | |
| 289. | 14783 <i>Jacksonia calcicola</i> | | | |
| 290. | 4012 <i>Jacksonia furcellata</i> (Grey Stinkwood) | | | |
| 291. | 4029 <i>Jacksonia sternbergiana</i> (Stinkwood, Kapur) | | | |
| 292. | 4042 <i>Kennedia nigricans</i> (Black Kennedia) | | | |
| 293. | 4044 <i>Kennedia prostrata</i> (Scarlet Runner) | | | |
| 294. | 4066 <i>Lupinus cosentinii</i> | Y | | |
| 295. | 4085 <i>Melilotus indicus</i> | Y | | |
| 296. | 4155 <i>Psoralea pinnata</i> (African Scurfpea) | Y | | |
| 297. | 4181 <i>Pultenaea reticulata</i> | | | |
| 298. | 19183 <i>Retama raetam</i> | Y | | |
| 299. | 20348 <i>Sphaerolobium calcicola</i> | | P3 | |
| 300. | 17551 <i>Sphaerolobium drummondii</i> | | | |
| 301. | 4207 <i>Sphaerolobium medium</i> | | | |
| 302. | 4256 <i>Templetonia retusa</i> (Cockies Tongues) | | | |
| 303. | 4291 <i>Trifolium arvense</i> (Hare's Foot Clover) | Y | | |
| 304. | 17542 <i>Trifolium arvense</i> var. <i>arvense</i> | Y | | |
| 305. | 4292 <i>Trifolium campestre</i> (Hop Clover) | Y | | |
| 306. | 4309 <i>Trifolium scabrum</i> (Rough Clover) | Y | | |
| 307. | 4310 <i>Trifolium spumosum</i> (Bladder Clover) | Y | | |
| 308. | 11474 <i>Vicia sativa</i> subsp. <i>nigra</i> | Y | | |
| 309. | 4325 <i>Viminaria juncea</i> (Swishbush, Koweda) | | | |
| Funariaceae | | | | |
| 310. | 32370 <i>Funaria hygrometrica</i> | | | |
| Gentianaceae | | | | |
| 311. | 17800 <i>Centaurium pulchellum</i> | Y | | |
| 312. | 6542 <i>Centaurium tenuiflorum</i> | Y | | |
| Geraniaceae | | | | |
| 313. | 4333 <i>Erodium cicutarium</i> (Common Storksbill) | Y | | |
| 314. | 4336 <i>Erodium moschatum</i> (Musky Crowfoot) | Y | | |
| 315. | 4339 <i>Geranium molle</i> (Dove's Foot Cranesbill) | Y | | |
| 316. | 4343 <i>Pelargonium capitatum</i> (Rose Pelargonium) | Y | | |
| 317. | 4346 <i>Pelargonium littorale</i> | | | |
| Gigaspermaceae | | | | |
| 318. | 32384 <i>Gigaspermum repens</i> | | | |
| Goodeniaceae | | | | |
| 319. | 7451 <i>Dampiera lavandulacea</i> | | | |
| 320. | 7454 <i>Dampiera linearis</i> (Common Dampiera) | | | |
| 321. | 7568 <i>Lechenaultia biloba</i> (Blue Leschenaultia) | | | |
| 322. | 7574 <i>Lechenaultia floribunda</i> (Free-flowering Leschenaultia) | | | |
| 323. | 7577 <i>Lechenaultia hirsuta</i> (Hairy Leschenaultia) | | | |
| 324. | 7580 <i>Lechenaultia linarioides</i> (Yellow Leschenaultia) | | | |
| 325. | 7586 <i>Lechenaultia stenosepala</i> (Narrow-sepaled Leschenaultia) | | | |
| 326. | 7603 <i>Scaevola canescens</i> (Grey Scaevola) | | | |
| 327. | 7606 <i>Scaevola crassifolia</i> (Thick-leaved Fan-flower) | | | |
| 328. | 7614 <i>Scaevola globulifera</i> | | | |
| 329. | 7626 <i>Scaevola nitida</i> (Shining Fanflower) | | | |
| 330. | 13181 <i>Scaevola repens</i> var. <i>angustifolia</i> | | | |
| 331. | 13182 <i>Scaevola repens</i> var. <i>repens</i> | | | |
| 332. | 7647 <i>Scaevola thesioides</i> | | | |
| 333. | 13152 <i>Scaevola thesioides</i> subsp. <i>thesioides</i> | | | |
| 334. | 7666 <i>Verreauxia reinwardtii</i> (Common Verreauxia) | | | |
| Gracilariaceae | | | | |

| Name ID | Species Name | Naturalised | Conservation Code | ¹ Endemic To Query Area |
|--------------------------|--|-------------|-------------------|------------------------------------|
| 335. | 26876 <i>Gracilaria verrucosa</i> | | | |
| Graphidaceae | | | | |
| 336. | 44221 <i>Xalocoa ocellata</i> | | | |
| Gyrostemonaceae | | | | |
| 337. | 2784 <i>Gyrostemon ramulosus</i> (Corkybark) | | | |
| 338. | 2791 <i>Tersonia cyathiflora</i> (Button Creeper) | | | |
| Haemodoraceae | | | | |
| 339. | 1409 <i>Anigozanthos humilis</i> (Catspaw) | | | |
| 340. | 11434 <i>Anigozanthos humilis</i> subsp. <i>humilis</i> | | | |
| 341. | 11261 <i>Anigozanthos manglesii</i> subsp. <i>manglesii</i> | | | |
| 342. | 1418 <i>Conostylis aculeata</i> (Prickly Conostylis) | | | |
| 343. | 11826 <i>Conostylis aculeata</i> subsp. <i>aculeata</i> | | | |
| 344. | 11552 <i>Conostylis aculeata</i> subsp. <i>bromelioides</i> | | | |
| 345. | 11513 <i>Conostylis aculeata</i> subsp. <i>cygnorum</i> | | | |
| 346. | 1425 <i>Conostylis bracteata</i> | | P3 | |
| 347. | 1427 <i>Conostylis candicans</i> (Grey Cottonhead) | | | |
| 348. | 12027 <i>Conostylis candicans</i> subsp. <i>calcicola</i> | | | |
| 349. | 11438 <i>Conostylis candicans</i> subsp. <i>candicans</i> | | | |
| 350. | 11388 <i>Conostylis pauciflora</i> subsp. <i>euryrhipis</i> | | P4 | |
| 351. | 11657 <i>Conostylis pauciflora</i> subsp. <i>pauciflora</i> | | P4 | |
| 352. | 1454 <i>Conostylis setigera</i> (Bristly Cottonhead) | | | |
| 353. | 11597 <i>Conostylis setigera</i> subsp. <i>setigera</i> | | | |
| 354. | 11870 <i>Conostylis teretifolia</i> subsp. <i>teretifolia</i> | | | |
| 355. | 1468 <i>Haemodorum laxum</i> | | | |
| 356. | 1470 <i>Haemodorum paniculatum</i> (Mardja) | | | |
| 357. | 1475 <i>Haemodorum spicatum</i> (Mardja) | | | |
| 358. | 1478 <i>Phlebocarya ciliata</i> | | | |
| Halimedaceae | | | | |
| 359. | 47213 <i>Halimeda versatilis</i> | | | |
| Haloragaceae | | | | |
| 360. | 34676 <i>Meionectes brownii</i> (Swamp Raspwort) | | | |
| Hallymeniaceae | | | | |
| 361. | 26850 <i>Gelinaria ulvoidea</i> | | | |
| Hemerocallidaceae | | | | |
| 362. | 1264 <i>Arnocrinum preissii</i> | | | |
| 363. | 11283 <i>Corynotheca micrantha</i> var. <i>micrantha</i> | | | |
| 364. | 1259 <i>Dianella revoluta</i> (Blueberry Lily) | | | |
| 365. | 11636 <i>Dianella revoluta</i> var. <i>divaricata</i> | | | |
| 366. | 1260 <i>Stypandra glauca</i> (Blind Grass) | | | |
| 367. | 1361 <i>Tricoryne elatior</i> (Yellow Autumn Lily) | | | |
| Hymenochaetaceae | | | | |
| 368. | <i>Coltricia cinnamomea</i> | | | |
| Hymenocladaceae | | | | |
| 369. | 26960 <i>Hymenocladia chondricola</i> | | | |
| Iridaceae | | | | |
| 370. | 1515 <i>Ferraria crispa</i> (Black Flag) | Y | | |
| 371. | 1520 <i>Gladiolus caryophyllaceus</i> (Wild Gladiolus) | Y | | |
| 372. | 19179 <i>Moraea flaccida</i> (One-leaf Cape Tulip) | Y | | |
| 373. | 11749 <i>Orthrosanthus laxus</i> var. <i>laxus</i> (Morning Iris) | | | |
| 374. | 30472 <i>Patersonia occidentalis</i> var. <i>occidentalis</i> | | | |
| 375. | 1552 <i>Patersonia rudis</i> (Hairy Flag) | | | |
| 376. | 11544 <i>Romulea rosea</i> var. <i>australis</i> (Guildford Grass) | Y | | |
| Juncaceae | | | | |
| 377. | 1188 <i>Juncus pallidus</i> (Pale Rush) | | | |
| Juncaginaceae | | | | |
| 378. | 33276 <i>Triglochin isingiana</i> | | | |
| 379. | 18587 <i>Triglochin nana</i> | | | |
| 380. | 152 <i>Triglochin trichophora</i> | | | |
| Kallymeniaceae | | | | |
| 381. | 48423 <i>Stauromenia lacerata</i> | | | |
| Lamiaceae | | | | |
| 382. | 16933 <i>Hemiandra glabra</i> | | | |
| 383. | 6839 <i>Hemiandra pungens</i> (Snakebush) | | | |

| Name ID | Species Name | Naturalised | Conservation Code | ¹ Endemic To Query Area |
|-------------------------|---|-------------|-------------------|------------------------------------|
| 384. | 38320 <i>Hemiandra</i> sp. <i>Jurien</i> (B.J. Conn & M.E. Tozer BJC 3885) | | | |
| 385. | 6871 <i>Hemigenia sericea</i> (<i>Silky Hemigenia</i>) | | | |
| 386. | 41020 <i>Hemiphora bartlingii</i> (<i>Woolly Dragon</i>) | | | |
| 387. | 15994 <i>Mentha x piperita</i> var. <i>citrata</i> | Y | | |
| 388. | 6939 <i>Westringia dampieri</i> | | | |
| Lauraceae | | | | |
| 389. | 2951 <i>Cassytha flava</i> (<i>Dodder Laurel</i>) | | | |
| 390. | 11501 <i>Cassytha glabella</i> forma <i>casuarinae</i> | | | |
| 391. | 2956 <i>Cassytha pomiformis</i> (<i>Dodder Laurel</i>) | | | |
| 392. | 2957 <i>Cassytha racemosa</i> (<i>Dodder Laurel</i>) | | | |
| 393. | 11799 <i>Cassytha racemosa</i> forma <i>racemosa</i> | | | |
| Lecanoraceae | | | | |
| 394. | 27815 <i>Lecanora sphaerospora</i> | | | |
| Lentibulariaceae | | | | |
| 395. | 7125 <i>Utricularia australis</i> | | | |
| Linaceae | | | | |
| 396. | 4362 <i>Linum marginale</i> (<i>Wild Flax</i>) | | | |
| Loganiaceae | | | | |
| 397. | 6515 <i>Logania vaginalis</i> (<i>White Spray</i>) | | | |
| 398. | 16177 <i>Phyllangium paradoxum</i> | | | |
| Loranthaceae | | | | |
| 399. | 2401 <i>Nuytsia floribunda</i> (<i>Christmas Tree, Mudja</i>) | | | |
| Lythraceae | | | | |
| 400. | 5281 <i>Lythrum hyssopifolia</i> (<i>Lesser Loosestrife</i>) | Y | | |
| Macarthuriaceae | | | | |
| 401. | 2838 <i>Macarthuria apetala</i> | | | |
| Malvaceae | | | | |
| 402. | 4906 <i>Alyogyne huegelii</i> (<i>Lilac Hibiscus</i>) | | | |
| 403. | 5011 <i>Guichenotia ledifolia</i> | | | |
| 404. | 5038 <i>Lasiopetalum membranaceum</i> | | P3 | |
| 405. | 5077 <i>Thomasia cognata</i> | | | |
| 406. | 5105 <i>Thomasia triphylla</i> | | | |
| Montiaceae | | | | |
| 407. | 2845 <i>Calandrinia brevipedata</i> (<i>Short-stalked Purslane</i>) | | | |
| 408. | 2856 <i>Calandrinia liniflora</i> (<i>Parakeelya</i>) | | | |
| 409. | 40827 <i>Calandrinia tholiformis</i> | | | |
| Moraceae | | | | |
| 410. | 1747 <i>Ficus carica</i> (<i>Common Fig</i>) | Y | | |
| Myrtaceae | | | | |
| 411. | 20283 <i>Astartea scoparia</i> (<i>Common Astartea</i>) | | | |
| 412. | 5382 <i>Beaufortia elegans</i> (<i>Elegant Beaufortia</i>) | | | |
| 413. | 5426 <i>Calothamnus quadrifidus</i> (<i>One-sided Bottlebrush, Kwowdjard</i>) | | | |
| 414. | 35816 <i>Calothamnus quadrifidus</i> subsp. <i>quadrifidus</i> | | | |
| 415. | 5429 <i>Calothamnus sanguineus</i> (<i>Silky-leaved Blood flower, Pindak</i>) | | | |
| 416. | 5439 <i>Calytrix angulata</i> (<i>Yellow Starflower</i>) | | | |
| 417. | 5458 <i>Calytrix flavescens</i> (<i>Summer Starflower</i>) | | | |
| 418. | 5460 <i>Calytrix fraseri</i> (<i>Pink Summer Calytrix</i>) | | | |
| 419. | 5476 <i>Calytrix sapphirina</i> | | | |
| 420. | 5479 <i>Calytrix strigosa</i> | | | |
| 421. | 5498 <i>Chamelaucium uncinatum</i> (<i>Geraldton Wax</i>) | | | |
| 422. | 17104 <i>Corymbia calophylla</i> (<i>Marri</i>) | | | |
| 423. | 13949 <i>Eremaea asterocarpa</i> | | | |
| 424. | 13950 <i>Eremaea asterocarpa</i> subsp. <i>asterocarpa</i> | | | |
| 425. | 5540 <i>Eremaea fimbriata</i> | | | |
| 426. | 5541 <i>Eremaea pauciflora</i> | | | |
| 427. | 14104 <i>Eremaea pauciflora</i> var. <i>pauciflora</i> | | | |
| 428. | 13091 <i>Eucalyptus argutifolia</i> (<i>Wabling Hill Mallee</i>) | | T | |
| 429. | 5615 <i>Eucalyptus decipiens</i> (<i>Limestone Marlock, Moit</i>) | | | |
| 430. | 5649 <i>Eucalyptus foecunda</i> (<i>Narrow-leaved Red Mallee</i>) | | | |
| 431. | 5659 <i>Eucalyptus gomphocephala</i> (<i>Tuart, Duart</i>) | | | |
| 432. | 5708 <i>Eucalyptus marginata</i> (<i>Jarrah, Djara</i>) | | | |
| 433. | 13547 <i>Eucalyptus marginata</i> subsp. <i>marginata</i> (<i>Jarrah</i>) | | | |
| 434. | 13541 <i>Eucalyptus petrensis</i> | | | |
| 435. | 13511 <i>Eucalyptus rudis</i> subsp. <i>rudis</i> | | | |

| Name ID | Species Name | Naturalised | Conservation Code | ¹ Endemic To Query Area |
|-----------------------|---|-------------|-------------------|------------------------------------|
| 436. | 5790 <i>Eucalyptus todtiana</i> (Coastal Blackbutt) | | | |
| 437. | 15498 <i>Kunzea glabrescens</i> (Spearwood) | | | |
| 438. | 5850 <i>Leptospermum laevigatum</i> (Coast Teatree) | Y | | |
| 439. | 5857 <i>Leptospermum spinescens</i> | | | |
| 440. | 5887 <i>Melaleuca cardiophylla</i> (Tangling Melaleuca) | | | |
| 441. | 13271 <i>Melaleuca huegelii</i> subsp. <i>huegelii</i> | | | |
| 442. | 18394 <i>Melaleuca parviceps</i> | | | |
| 443. | 5959 <i>Melaleuca raphiophylla</i> (Swamp Paperbark) | | | |
| 444. | 18598 <i>Melaleuca systema</i> | | | |
| 445. | 5983 <i>Melaleuca trichophylla</i> | | | |
| 446. | 6012 <i>Regelia ciliata</i> | | | |
| 447. | 6033 <i>Scholtzia involucrata</i> (Spiked Scholtzia) | | | |
| 448. | 12411 <i>Verticordia densiflora</i> var. <i>cespitosa</i> | | | |
| 449. | 6101 <i>Verticordia nitens</i> (Morrison Featherflower, Kodjeningara) | | | |
| Olacaceae | | | | |
| 450. | 2365 <i>Olax benthamiana</i> | | | |
| Onagraceae | | | | |
| 451. | 11570 <i>Epilobium billardioreanum</i> subsp. <i>billardioreanum</i> (Smooth Willow Herb) | | | |
| 452. | 11992 <i>Epilobium billardioreanum</i> subsp. <i>intermedium</i> | | | |
| 453. | 6132 <i>Epilobium ciliatum</i> | Y | | |
| 454. | 6133 <i>Epilobium hirtigerum</i> (Hairy Willow Herb) | | | |
| 455. | 14289 <i>Epilobium tetragonum</i> subsp. <i>tetragonum</i> | Y | | |
| 456. | 6139 <i>Oenothera glazioviana</i> (Evening Primrose) | Y | | |
| Orchidaceae | | | | |
| 457. | 1592 <i>Caladenia flava</i> (Cowslip Orchid) | | | |
| 458. | 15348 <i>Caladenia flava</i> subsp. <i>flava</i> | | | |
| 459. | 15352 <i>Caladenia georgei</i> | | | |
| 460. | 1599 <i>Caladenia latifolia</i> (Pink Fairy Orchid) | | | |
| 461. | 15377 <i>Caladenia reptans</i> subsp. <i>reptans</i> | | | |
| 462. | 15114 <i>Cyanicula gemmata</i> | | | |
| 463. | 1635 <i>Diuris longifolia</i> (Common Donkey Orchid) | | | |
| 464. | 1643 <i>Elythranthera brunonis</i> (Purple Enamel Orchid) | | | |
| 465. | 1644 <i>Elythranthera emarginata</i> (Pink Enamel Orchid) | | | |
| 466. | 1646 <i>Eriochilus dilatatus</i> (White Bunny Orchid) | | | |
| 467. | 15418 <i>Leptoceras menziesii</i> | | | |
| 468. | 34158 <i>Microtis alboboviridis</i> | | | |
| 469. | 20460 <i>Pheladenia deformis</i> | | | |
| 470. | 15425 <i>Prasophyllum calcicola</i> | | | |
| 471. | 1680 <i>Prasophyllum parvifolium</i> (Autumn Leek Orchid) | | | |
| 472. | <i>Pterostylis</i> aff. <i>nana</i> | | | |
| 473. | 15426 <i>Pterostylis aspera</i> | | | |
| 474. | 1693 <i>Pterostylis recurva</i> (Jug Orchid) | | | |
| 475. | <i>Pterostylis</i> sp. | | | |
| 476. | 18658 <i>Pterostylis</i> sp. <i>short sepals</i> (W. Jackson BJ259) | | | |
| 477. | 1698 <i>Pterostylis vittata</i> (Banded Greenhood) | | | |
| 478. | 1708 <i>Thelymitra fuscolutea</i> (Chestnut Sun Orchid) | | | |
| 479. | <i>Urochilus vittatus</i> | | | Y |
| Orobanchaceae | | | | |
| 480. | 15037 <i>Bartsia trixago</i> | Y | | |
| 481. | 7122 <i>Orobanche minor</i> (Lesser Broomrape) | Y | | |
| 482. | 7089 <i>Parentucellia latifolia</i> (Common Bartsia) | Y | | |
| 483. | 7090 <i>Parentucellia viscosa</i> (Sticky Bartsia) | Y | | |
| Oxalidaceae | | | | |
| 484. | 30375 <i>Oxalis exilis</i> | | | |
| 485. | 4356 <i>Oxalis pes-caprae</i> (Soursob) | Y | | |
| Papaveraceae | | | | |
| 486. | 2969 <i>Fumaria capreolata</i> (Whiteflower Fumitory) | Y | | |
| 487. | 2971 <i>Fumaria muralis</i> (Wall Fumitory) | Y | | |
| 488. | 31532 <i>Fumaria muralis</i> subsp. <i>muralis</i> | Y | | |
| 489. | 2967 <i>Romneya coulteri</i> (California Tree Poppy) | Y | | |
| Passifloraceae | | | | |
| 490. | 5225 <i>Passiflora filamentosa</i> | Y | | |
| Pezizaceae | | | | |
| 491. | <i>Peziza austrogeaster</i> | | | |
| 492. | <i>Peziza badia</i> | | | |
| 493. | <i>Peziza</i> sp. | | | |

| Name ID | Species Name | Naturalised | Conservation Code | ¹ Endemic To Query Area |
|--------------------------|--|-------------|-------------------|------------------------------------|
| 494. | 38819 <i>Peziza vesiculosa</i> | | | |
| Phallaceae | | | | |
| 495. | 44926 <i>Ileodictyon gracile</i> | | | |
| Phanerochaetaceae | | | | |
| 496. | 44729 <i>Porostereum crassum</i> | | | |
| Phyllanthaceae | | | | |
| 497. | 4675 <i>Phyllanthus calycinus</i> (False Boronia) | | | |
| 498. | 4688 <i>Poranthera drummondii</i> | | | |
| 499. | 4691 <i>Poranthera microphylla</i> (Small Poranthera) | | | |
| Physaraceae | | | | |
| 500. | 39061 <i>Physarum bitectum</i> | | | |
| 501. | 39063 <i>Physarum cinereum</i> | | | |
| Physciaceae | | | | |
| 502. | 42104 <i>Buellia albula</i> | | | |
| 503. | 27598 <i>Buellia dissa</i> | | | |
| 504. | 27602 <i>Buellia georgei</i> | | | |
| 505. | 28049 <i>Rinodina bischoffii</i> | | P2 | Y |
| Pittosporaceae | | | | |
| 506. | 25788 <i>Billardiera fraseri</i> (Elegant Pronaya) | | | |
| Placynthiaceae | | | | |
| 507. | 27986 <i>Placynthium nigrum</i> | | P3 | |
| Plantaginaceae | | | | |
| 508. | 7303 <i>Plantago lanceolata</i> (Ribwort Plantain) | Y | | |
| 509. | 7109 <i>Veronica calycina</i> (Cup Speedwell) | | | |
| 510. | 7110 <i>Veronica distans</i> | | | |
| Pleosporaceae | | | | |
| 511. | <i>Alternaria alternata</i> | | | Y |
| Plocamiaceae | | | | |
| 512. | 27155 <i>Plocamium cartilagineum</i> | | | |
| 513. | 27156 <i>Plocamium mertensii</i> | | | |
| Poaceae | | | | |
| 514. | 184 <i>Aira caryophyllea</i> (Silvery Hairgrass) | Y | | |
| 515. | 185 <i>Aira cupaniana</i> (Silvery Hairgrass) | Y | | |
| 516. | 226 <i>Arundo donax</i> (Giant Reed) | Y | | |
| 517. | 17234 <i>Austrostipa compressa</i> | | | |
| 518. | 17240 <i>Austrostipa flavescens</i> | | | |
| 519. | 244 <i>Briza maxima</i> (Blowfly Grass) | Y | | |
| 520. | 245 <i>Briza minor</i> (Shivery Grass) | Y | | |
| 521. | 247 <i>Bromus arenarius</i> (Sand Brome) | | | |
| 522. | 249 <i>Bromus diandrus</i> (Great Brome) | Y | | |
| 523. | 250 <i>Bromus hordeaceus</i> (Soft Brome) | Y | | |
| 524. | 253 <i>Bromus rubens</i> (Red Brome) | Y | | |
| 525. | 13685 <i>Catapodium rigidum</i> (Rigid Fescue) | Y | | |
| 526. | 283 <i>Cynodon dactylon</i> (Couch) | Y | | |
| 527. | 347 <i>Ehrharta calycina</i> (Perennial Veldt Grass) | Y | | |
| 528. | 376 <i>Eragrostis curvula</i> (African Lovegrass) | Y | | |
| 529. | 444 <i>Holcus lanatus</i> (Yorkshire Fog) | Y | | |
| 530. | 20019 <i>Lachnagrostis filiformis</i> | | | |
| 531. | 467 <i>Lagurus ovatus</i> (Hare's Tail Grass) | Y | | |
| 532. | 476 <i>Lolium perenne</i> (Perennial Ryegrass) | Y | | |
| 533. | 478 <i>Lolium rigidum</i> (Wimmera Ryegrass) | Y | | |
| 534. | 485 <i>Microlaena stipoides</i> (Weeping Grass) | | | |
| 535. | 532 <i>Paspalum urvillei</i> (Vasey Grass) | Y | | |
| 536. | 573 <i>Poa drummondiana</i> (Knotted Poa) | | | |
| 537. | 578 <i>Poa porphyroclados</i> | | | |
| 538. | 582 <i>Polypogon monspeliensis</i> (Annual Beardgrass) | Y | | |
| 539. | 10970 <i>Rostraria cristata</i> | Y | | |
| 540. | 40426 <i>Rytidosperma occidentale</i> | | | |
| 541. | 625 <i>Spinifex longifolius</i> (Beach Spinifex) | | | |
| 542. | 708 <i>Triticum aestivum</i> (Wheat) | Y | | |
| 543. | 716 <i>Urochloa mutica</i> | Y | | |
| 544. | 724 <i>Vulpia myuros</i> (Rat's Tail Fescue) | Y | | |
| 545. | 33101 <i>Vulpia myuros forma myuros</i> | Y | | |
| Polygalaceae | | | | |

| Name ID | Species Name | Naturalised | Conservation Code | ¹ Endemic To Query Area |
|----------------------|--|-------------|-------------------|------------------------------------|
| 546. | 4550 <i>Comesperma calymega</i> (Blue-spike Milkwort) | | | |
| 547. | 4552 <i>Comesperma confertum</i> | | | |
| 548. | 4554 <i>Comesperma flavum</i> | | | |
| 549. | 4555 <i>Comesperma integerrimum</i> | | | |
| 550. | 4564 <i>Comesperma virgatum</i> (Milkwort) | | | |
| Polygonaceae | | | | |
| 551. | 2415 <i>Muehlenbeckia polybotrya</i> | | | |
| 552. | 13911 <i>Persicaria decipiens</i> | | | |
| 553. | 2433 <i>Rumex crispus</i> (Curled Dock) | Y | | |
| 554. | 2440 <i>Rumex pulcher</i> (Fiddle Dock) | Y | | |
| Polyporaceae | | | | |
| 555. | <i>Hexagonia vesparia</i> | | | |
| 556. | <i>Phaeotrametes decipiens</i> | | | |
| 557. | 38835 <i>Royoporus badius</i> | | | |
| Pottiaceae | | | | |
| 558. | 32315 <i>Barbula calycina</i> | | | |
| 559. | 32345 <i>Didymodon australasiae</i> | | | |
| 560. | 32346 <i>Didymodon torquatus</i> | | | |
| 561. | 32450 <i>Trichostomum eckelianum</i> | | | |
| Primulaceae | | | | |
| 562. | 6483 <i>Samolus junceus</i> | | | |
| Proteaceae | | | | |
| 563. | 1800 <i>Banksia attenuata</i> (Slender Banksia, Piara) | | | |
| 564. | 32580 <i>Banksia dallanneyi</i> var. <i>dallanneyi</i> | | | |
| 565. | 1819 <i>Banksia grandis</i> (Bull Banksia, Pulgarla) | | | |
| 566. | 1834 <i>Banksia menziesii</i> (Firewood Banksia) | | | |
| 567. | 1842 <i>Banksia prionotes</i> (Acorn Banksia) | | | |
| 568. | 32077 <i>Banksia sessilis</i> var. <i>cygnorum</i> | | | |
| 569. | 15607 <i>Conospermum acerosum</i> subsp. <i>acerosum</i> | | | |
| 570. | 15513 <i>Conospermum boreale</i> subsp. <i>boreale</i> | | | |
| 571. | 15041 <i>Conospermum canaliculatum</i> | | | |
| 572. | 15516 <i>Conospermum canaliculatum</i> subsp. <i>canaliculatum</i> | | | |
| 573. | 1885 <i>Conospermum triplinervium</i> (Tree Smokebush) | | | |
| 574. | 15839 <i>Grevillea preissii</i> subsp. <i>preissii</i> | | | |
| 575. | 2119 <i>Grevillea vestita</i> | | | |
| 576. | 12824 <i>Grevillea vestita</i> subsp. <i>vestita</i> | | | |
| 577. | 2146 <i>Hakea costata</i> (Ribbed Hakea) | | | |
| 578. | 2175 <i>Hakea lissocarpha</i> (Honey Bush) | | | |
| 579. | 2197 <i>Hakea prostrata</i> (Harsh Hakea) | | | |
| 580. | 2203 <i>Hakea ruscifolia</i> (Candle Hakea) | | | |
| 581. | 2214 <i>Hakea trifurcata</i> (Two-leaf Hakea) | | | |
| 582. | 2258 <i>Persoonia comata</i> | | | |
| 583. | 20368 <i>Petrophile axillaris</i> | | | |
| 584. | 2286 <i>Petrophile brevifolia</i> | | | |
| 585. | 2299 <i>Petrophile linearis</i> (Pixie Mops) | | | |
| 586. | 2301 <i>Petrophile macrostachya</i> | | | |
| 587. | 2309 <i>Petrophile serruriae</i> | | | |
| 588. | 2316 <i>Stirlingia latifolia</i> (Blueboy) | | | |
| 589. | 2329 <i>Synaphea spinulosa</i> | | | |
| 590. | 15532 <i>Synaphea spinulosa</i> subsp. <i>spinulosa</i> | | | |
| Psoraceae | | | | |
| 591. | 28000 <i>Psora decipiens</i> | | | |
| Pteridaceae | | | | |
| 592. | 45 <i>Pteris vittata</i> (Chinese Brake) | | | |
| Racopilaceae | | | | |
| 593. | 32480 <i>Racopilum cuspidigerum</i> var. <i>convolutaceum</i> | | | |
| Ramalinaceae | | | | |
| 594. | 27793 <i>Lecania sylvestris</i> | | P2 | Y |
| 595. | 31312 <i>Lecania turicensis</i> var. <i>turicensis</i> | | P2 | |
| Ranunculaceae | | | | |
| 596. | 10804 <i>Clematis linearifolia</i> | | | |
| 597. | 2932 <i>Ranunculus colonorum</i> (Common Buttercup) | | | |
| 598. | 2933 <i>Ranunculus muricatus</i> (Sharp Buttercup) | Y | | |
| Restionaceae | | | | |
| 599. | 1056 <i>Alexgeorgea nitens</i> | | | |

| Name ID | Species Name | Naturalised | Conservation Code | ¹ Endemic To Query Area |
|-------------------------|--|-------------|-------------------|------------------------------------|
| 600. | 17663 <i>Desmocladus asper</i> | | | |
| 601. | 16595 <i>Desmocladus flexuosus</i> | | | |
| 602. | 1070 <i>Hypolaena exsulca</i> | | | |
| 603. | 17841 <i>Hypolaena pubescens</i> | | | |
| 604. | 18074 <i>Lepidobolus preissianus</i> subsp. <i>preissianus</i> | | | |
| Rhamnaceae | | | | |
| 605. | 4802 <i>Cryptandra mutila</i> | | | |
| 606. | 4809 <i>Cryptandra pungens</i> | | | |
| 607. | 4810 <i>Cryptandra scoparia</i> | | | |
| 608. | 4828 <i>Spyridium globulosum</i> (Basket Bush) | | | |
| 609. | 15066 <i>Stenanthemum notiale</i> subsp. <i>chamelum</i> | | | |
| 610. | 11665 <i>Trymalium ledifolium</i> var. <i>ledifolium</i> | | | |
| 611. | 33418 <i>Trymalium odoratissimum</i> subsp. <i>odoratissimum</i> | | | |
| Rhodomelaceae | | | | |
| 612. | 26689 <i>Coeloclonium umbellula</i> | | | |
| 613. | 26752 <i>Dasyclonium incisum</i> | | | |
| 614. | 26761 <i>Dictyomenia harveyana</i> | | | |
| 615. | 26762 <i>Dictyomenia sonderi</i> | | | |
| 616. | 26763 <i>Dictyomenia tridens</i> | | | |
| 617. | 26919 <i>Herposiphonia rostrata</i> | | | |
| 618. | 26922 <i>Herposiphonia versicolor</i> | | | |
| 619. | 26998 <i>Laurencia brongniartii</i> | | | |
| 620. | 27011 <i>Lenormandia latifolia</i> | | | |
| 621. | 27013 <i>Lenormandia spectabilis</i> | | | |
| 622. | 27108 <i>Osmundaria spiralis</i> | | | |
| 623. | 27173 <i>Polysiphonia decipiens</i> | | | |
| 624. | 27190 <i>Protokuetzingia australasica</i> | | | |
| Rhodymeniaceae | | | | |
| 625. | 27015 <i>Leptosomia rosea</i> | | | |
| Ricciaceae | | | | |
| 626. | <i>Riccia bifurca</i> | | | |
| Rubiaceae | | | | |
| 627. | 7323 <i>Galium murale</i> (Small Goosegrass) | Y | | |
| 628. | 7348 <i>Opercularia hispidula</i> (Hispid Stinkweed) | | | |
| 629. | 18255 <i>Opercularia vaginata</i> (Dog Weed) | | | |
| Rutaceae | | | | |
| 630. | 11381 <i>Boronia ramosa</i> subsp. <i>anethifolia</i> | | | |
| 631. | 44593 <i>Coleonema pulchellum</i> | Y | | |
| 632. | 4453 <i>Diplolaena angustifolia</i> (Yanchep Rose) | | | |
| 633. | 18529 <i>Philotheca spicata</i> (Pepper and Salt) | | | |
| 634. | 18547 <i>Rhadinothamnus anceps</i> | | | |
| Santalaceae | | | | |
| 635. | 10765 <i>Exocarpos sparteus</i> (Broom Ballart, Djuk) | | | |
| 636. | 2344 <i>Leptomeria empetriformis</i> | | | |
| 637. | 2350 <i>Leptomeria pauciflora</i> (Sparse-flowered Currant Bush) | | | |
| 638. | 2352 <i>Leptomeria preissiana</i> | | | |
| Sapindaceae | | | | |
| 639. | 18541 <i>Diplopeltis huegellii</i> subsp. <i>huegellii</i> | | | |
| Sargassaceae | | | | |
| 640. | 26586 <i>Caulocystis uvifera</i> | | | |
| 641. | 26946 <i>Hormophysa cuneiformis</i> | | | |
| 642. | 27238 <i>Sargassum distichum</i> | | | |
| 643. | 42785 <i>Sirophysalis trinodis</i> | | | |
| 644. | 27345 <i>Turbinaria gracilis</i> | | | |
| Scrophulariaceae | | | | |
| 645. | 7054 <i>Dischisma arenarium</i> | Y | | |
| 646. | 17175 <i>Eremophila glabra</i> subsp. <i>albicans</i> | | | |
| 647. | 7289 <i>Myoporum caprarioides</i> (Slender Myoporum) | | | |
| 648. | 7291 <i>Myoporum insulare</i> (Blueberry Tree, boobialla) | | | |
| 649. | 7107 <i>Verbascum virgatum</i> (Twiggy Mullein) | Y | | |
| Scytosiphonaceae | | | | |
| 650. | 26694 <i>Colpomenia sinuosa</i> | | | |
| 651. | 27126 <i>Petalonia fascia</i> | | | |
| 652. | 35911 <i>Scytosiphon lomentaria</i> | | | |

| Name ID | Species Name | Naturalised | Conservation Code | ¹ Endemic To Query Area |
|------------------------|--|-------------|-------------------|------------------------------------|
| Solanaceae | | | | |
| 653. | 11725 <i>Anthocercis ilicifolia</i> subsp. <i>ilicifolia</i> | | | |
| 654. | 6949 <i>Anthocercis littorea</i> (Yellow Tailflower) | | | |
| 655. | 6983 <i>Physalis peruviana</i> (Cape Gooseberry) | Y | | |
| 656. | 7020 <i>Solanum linnaeanum</i> (Apple of Sodom) | Y | | |
| 657. | 7022 <i>Solanum nigrum</i> (Black Berry Nightshade) | Y | | |
| 658. | 9259 <i>Solanum nodiflorum</i> (Glossy Nightshade) | Y | | |
| 659. | 7037 <i>Solanum symonii</i> | | | |
| Solieriaceae | | | | |
| 660. | 48503 <i>Betaphycus speciosus</i> | | | |
| Strophariaceae | | | | |
| 661. | <i>Gymnopilus allantopus</i> | | | |
| 662. | 38830 <i>Psilocybe coprophila</i> | | | |
| Stylidiaceae | | | | |
| 663. | 7677 <i>Levenhookia stipitata</i> (Common Stylewort) | | | |
| 664. | 7679 <i>Stylidium adpressum</i> (Trigger-on-stilts) | | | |
| 665. | 30278 <i>Stylidium androsaceum</i> | | | |
| 666. | 30276 <i>Stylidium bicolor</i> | | | |
| 667. | 7693 <i>Stylidium brunonianum</i> (Pink Fountain Triggerplant) | | | |
| 668. | 7694 <i>Stylidium bulbiferum</i> (Circus Triggerplant) | | | |
| 669. | 7696 <i>Stylidium calcaratum</i> (Book Triggerplant) | | | |
| 670. | 7709 <i>Stylidium crossocephalum</i> (Posy Triggerplant) | | | |
| 671. | 7710 <i>Stylidium cygnorum</i> | | | |
| 672. | 7713 <i>Stylidium dichotomum</i> (Pins-and-needles) | | | |
| 673. | 25801 <i>Stylidium hesperium</i> | | | |
| 674. | 13127 <i>Stylidium maritimum</i> | | P3 | |
| 675. | 25829 <i>Stylidium neurophyllum</i> (Coastal Plain Triggerplant) | | | |
| 676. | 7774 <i>Stylidium piliferum</i> (Common Butterfly Triggerplant) | | | |
| 677. | 25837 <i>Stylidium purpureum</i> (Purple Fountain Triggerplant) | | | |
| 678. | 7785 <i>Stylidium repens</i> (Matted Triggerplant) | | | |
| 679. | 20521 <i>Stylidium rigidulum</i> | | | |
| 680. | 25806 <i>Stylidium scariosum</i> | | | |
| 681. | 7798 <i>Stylidium schoenoides</i> (Cow Kicks) | | | |
| Tamaricaceae | | | | |
| 682. | 15741 <i>Tamarix aphylla</i> (Athel Tree) | Y | | |
| Teloschistaceae | | | | |
| 683. | 31099 <i>Caloplaca kantvilasii</i> | | | |
| 684. | 27754 <i>Fulgensia subbracteata</i> | | | |
| Thuidiaceae | | | | |
| 685. | 32486 <i>Thuidium sparsum</i> var. <i>hastatum</i> | | | |
| Thymelaeaceae | | | | |
| 686. | 5232 <i>Pimelea argentea</i> (Silvery Leaved Pimelea) | | | |
| 687. | 5237 <i>Pimelea calcicola</i> | | P3 | |
| 688. | 5243 <i>Pimelea ferruginea</i> | | | |
| 689. | 5244 <i>Pimelea floribunda</i> | | | |
| 690. | 5251 <i>Pimelea imbricata</i> | | | |
| 691. | 11402 <i>Pimelea imbricata</i> var. <i>piligera</i> | | | |
| 692. | 5254 <i>Pimelea leucantha</i> | | | |
| 693. | 5268 <i>Pimelea sulphurea</i> (Yellow Banjine) | | | |
| Tremellaceae | | | | |
| 694. | <i>Tremella mesenterica</i> | | | |
| Typhaceae | | | | |
| 695. | 99 <i>Typha orientalis</i> (Bulrush, Cumbungi) | | | |
| Ulvaceae | | | | |
| 696. | 27352 <i>Ulva lactuca</i> | | | |
| Urticaceae | | | | |
| 697. | 1762 <i>Parietaria debilis</i> (Pellitory) | | | |
| Verbenaceae | | | | |
| 698. | 18197 <i>Phyla nodiflora</i> | Y | | |
| 699. | 6734 <i>Phyla nodiflora</i> var. <i>nodiflora</i> | Y | | |
| Violaceae | | | | |
| 700. | 5216 <i>Hybanthus calycinus</i> (Wild Violet) | | | |
| 701. | 12007 <i>Hybanthus floribundus</i> subsp. <i>floribundus</i> | | | |

| Name ID | Species Name | Naturalised | Conservation Code | ¹ Endemic To Query Area |
|-------------------------|---|-------------|-------------------|------------------------------------|
| Vitaceae | | | | |
| 702. | 17042 <i>Vitis vinifera</i> | Y | | |
| Wrangeliaceae | | | | |
| 703. | 26884 <i>Griffithsia ovalis</i> | | | |
| Xanthorrhoeaceae | | | | |
| 704. | 1256 <i>Xanthorrhoea preissii</i> (Grass tree, Palga) | | | |
| Zamiaceae | | | | |
| 705. | 85 <i>Macrozamia riedlei</i> (Zamia, Djiridji) | | | |

Conservation Codes
 T - Rare or likely to become extinct
 X - Presumed extinct
 IA - Protected under international agreement
 S - Other specially protected fauna
 1 - Priority 1
 2 - Priority 2
 3 - Priority 3
 4 - Priority 4
 5 - Priority 5

¹ For NatureMap's purposes, species flagged as endemic are those whose records are wholly contained within the search area. Note that only those records complying with the search criterion are included in the calculation. For example, if you limit records to those from a specific datasource, only records from that datasource are used to determine if a species is restricted to the query area.

NatureMap Species Report

Created By Guest user on 05/12/2018

Current Names Only Yes

Core Datasets Only Yes

Data Source Atlas of Australian Birds or Birdata - Birdlife Australia or Carnaby's Cockatoo Observations

Method or Carnaby's Cockatoo Roost Sites or Fauna Survey Returns Database or Quenda

Vertices Community Survey or WA Threatened Fauna Database or Western Australian Museum Bird Database or Western Australian Museum Mammal Database or Western Australian Museum Reptile Database

'By Line'

31° 30' 35" S, 115° 38' 59" E 31° 34' 33" S, 115° 40' 14" E

| Name ID | Species Name | Naturalised | Conservation Code | ¹ Endemic To Query Area |
|---------|--|-------------|-------------------|------------------------------------|
| 1. | 24260 <i>Acanthiza apicalis</i> (Broad-tailed Thornbill, Inland Thornbill) | | | |
| 2. | 24261 <i>Acanthiza chrysothroa</i> (Yellow-rumped Thornbill) | | | |
| 3. | 24262 <i>Acanthiza inornata</i> (Western Thornbill) | | | |
| 4. | 24560 <i>Acanthorhynchus superciliosus</i> (Western Spinebill) | | | |
| 5. | 25535 <i>Accipiter cirrocephalus</i> (Collared Sparrowhawk) | | | |
| 6. | 25536 <i>Accipiter fasciatus</i> (Brown Goshawk) | | | |
| 7. | <i>Acercella falcipes</i> | | | |
| 8. | 42368 <i>Acritoscincus trilineatus</i> (Western Three-lined Skink) | | | |
| 9. | 25755 <i>Acrocephalus australis</i> (Australian Reed Warbler) | | | |
| 10. | 24831 <i>Acrocephalus australis</i> subsp. <i>gouldi</i> (Australian Reed Warbler) | | | |
| 11. | 25544 <i>Aegotheles cristatus</i> (Australian Owllet-nightjar) | | | |
| 12. | 24310 <i>Anas castanea</i> (Chestnut Teal) | | | |
| 13. | 24312 <i>Anas gracilis</i> (Grey Teal) | | | |
| 14. | 24313 <i>Anas platyrhynchos</i> (Mallard) | | | |
| 15. | 24315 <i>Anas rhynchotis</i> (Australasian Shoveler) | | | |
| 16. | 24316 <i>Anas superciliosa</i> (Pacific Black Duck) | | | |
| 17. | 47414 <i>Anhinga novaehollandiae</i> (Australasian Darter) | | | |
| 18. | 24506 <i>Anous tenuirostris</i> subsp. <i>melanops</i> (Australian Lesser Noddy) | | T | |
| 19. | 24561 <i>Anthochaera carunculata</i> (Red Wattlebird) | | | |
| 20. | 24562 <i>Anthochaera lunulata</i> (Western Little Wattlebird) | | | |
| 21. | 24599 <i>Anthus australis</i> subsp. <i>australis</i> (Australian Pipit) | | | |
| 22. | 24991 <i>Aprasia repens</i> (Sand-plain Worm-lizard) | | | |
| 23. | 25554 <i>Apus pacificus</i> (Fork-tailed Swift, Pacific Swift) | | IA | |
| 24. | 24285 <i>Aquila audax</i> (Wedge-tailed Eagle) | | | |
| 25. | 24208 <i>Arctocephalus forsteri</i> (New Zealand Fur Seal, long-nosed fur-seal) | | S | |
| 26. | 41324 <i>Ardea modesta</i> (great egret, white egret) | | | |
| 27. | 24341 <i>Ardea pacifica</i> (White-necked Heron) | | | |
| 28. | 25566 <i>Artamus cinereus</i> (Black-faced Woodswallow) | | | |
| 29. | 24353 <i>Artamus cyanopterus</i> (Dusky Woodswallow) | | | |
| 30. | 24356 <i>Artamus personatus</i> (Masked Woodswallow) | | | |
| 31. | 33971 <i>Austroconops mcmillani</i> (McMillan's biting midge (Swan Coastal Plain), biting midge (southwest)) | | P2 | |
| 32. | 24318 <i>Aythya australis</i> (Hardhead) | | | |
| 33. | <i>Barnardius zonarius</i> | | | |
| 34. | 24162 <i>Bettongia penicillata</i> subsp. <i>ogilbyi</i> (Woylie, Brush-tailed Bettong) | | T | |
| 35. | 24319 <i>Biziura lobata</i> (Musk Duck) | | | |
| 36. | 42381 <i>Brachyurophis semifasciatus</i> (Southern Shovel-nosed Snake) | | | |
| 37. | 25714 <i>Cacatua pastinator</i> (Western Long-billed Corella) | | | |
| 38. | 25715 <i>Cacatua roseicapilla</i> (Galah) | | | |
| 39. | 25716 <i>Cacatua sanguinea</i> (Little Corella) | | | |
| 40. | 24729 <i>Cacatua tenuirostris</i> (Eastern Long-billed Corella) | Y | | |
| 41. | 25598 <i>Cacomantis flabelliformis</i> (Fan-tailed Cuckoo) | | | |
| 42. | 42307 <i>Cacomantis pallidus</i> (Pallid Cuckoo) | | | |
| 43. | 24788 <i>Calidris ruficollis</i> (Red-necked Stint) | | IA | |
| 44. | 24734 <i>Calyptorhynchus latirostris</i> (Carnaby's Cockatoo, White-tailed Short-billed Black Cockatoo) | | T | |
| 45. | 48400 <i>Calyptorhynchus</i> sp. (white-tailed black cockatoo) | | T | |
| 46. | 24254 <i>Camelus dromedarius</i> (Dromedary, Camel) | Y | | |

| Name ID | Species Name | Naturalised | Conservation Code | ¹ Endemic To Query Area |
|---------|--|-------------|-------------------|------------------------------------|
| 47. | 25335 <i>Caretta caretta</i> (Loggerhead Turtle) | | T | |
| 48. | 24086 <i>Cercartetus concinnus</i> (Western Pygmy-possum, Mundarda) | | | |
| 49. | 24186 <i>Chalinolobus gouldii</i> (Gould's Wattled Bat) | | | |
| 50. | 24187 <i>Chalinolobus morio</i> (Chocolate Wattled Bat) | | | |
| 51. | 24377 <i>Charadrius ruficapillus</i> (Red-capped Plover) | | | |
| 52. | 25336 <i>Chelonia mydas</i> (Green Turtle) | | T | |
| 53. | 24321 <i>Chenonetta jubata</i> (Australian Wood Duck, Wood Duck) | | | |
| 54. | 47909 <i>Cheramoeca leucosterna</i> (White-backed Swallow) | | | |
| 55. | <i>Cherax quinquecarinatus</i> | | | |
| 56. | 24980 <i>Christinus marmoratus</i> (Marbled Gecko) | | | |
| 57. | <i>Chroicocephalus novaehollandiae</i> | | | |
| 58. | 24288 <i>Circus approximans</i> (Swamp Harrier) | | | |
| 59. | 24289 <i>Circus assimilis</i> (Spotted Harrier) | | | |
| 60. | 24774 <i>Cladorhynchus leucocephalus</i> (Banded Stilt) | | | |
| 61. | 25675 <i>Colluricincla harmonica</i> (Grey Shrike-thrush) | | | |
| 62. | 24399 <i>Columba livia</i> (Domestic Pigeon) | Y | | |
| 63. | 25568 <i>Coracina novaehollandiae</i> (Black-faced Cuckoo-shrike) | | | |
| 64. | 25592 <i>Corvus coronoides</i> (Australian Raven) | | | |
| 65. | 24671 <i>Coturnix pectoralis</i> (Stubble Quail) | | | |
| 66. | 24420 <i>Cracticus nigrogularis</i> (Pied Butcherbird) | | | |
| 67. | 25595 <i>Cracticus tibicen</i> (Australian Magpie) | | | |
| 68. | 25596 <i>Cracticus torquatus</i> (Grey Butcherbird) | | | |
| 69. | 24918 <i>Crenadactylus ocellatus</i> subsp. <i>ocellatus</i> (Clawless Gecko) | | | |
| 70. | 30893 <i>Cryptoblepharus buchananii</i> | | | |
| 71. | 25020 <i>Cryptoblepharus plagiocephalus</i> | | | |
| 72. | 30899 <i>Ctenophorus adelaidensis</i> (Southern Heath Dragon, Western Heath Dragon) | | | |
| 73. | 25027 <i>Ctenotus australis</i> | | | |
| 74. | 25039 <i>Ctenotus fallens</i> | | | |
| 75. | 25087 <i>Cyclodomorphus celatus</i> (Western Slender Blue-tongue) | | | |
| 76. | 24322 <i>Cygnus atratus</i> (Black Swan) | | | |
| 77. | 30901 <i>Dacelo novaeguineae</i> (Laughing Kookaburra) | Y | | |
| 78. | <i>Daphnia carinata</i> | | | |
| 79. | 25673 <i>Daphoenositta chrysoptera</i> (Varied Sittella) | | | |
| 80. | 24092 <i>Dasyurus geoffroii</i> (Chuditch, Western Quoll) | | T | |
| 81. | 30906 <i>Delma concinna</i> (Javelin Legless Lizard) | | | |
| 82. | 30905 <i>Delma concinna</i> subsp. <i>concinna</i> (Javelin Legless Lizard) | | | |
| 83. | 25766 <i>Delma fraseri</i> (Fraser's Legless Lizard) | | | |
| 84. | 24999 <i>Delma grayii</i> | | | |
| 85. | 25296 <i>Demansia psammophis</i> subsp. <i>reticulata</i> (Yellow-faced Whipsnake) | | | |
| 86. | 25607 <i>Dicaeum hirundinaceum</i> (Mistletoebird) | | | |
| 87. | 24470 <i>Dromaius novaehollandiae</i> (Emu) | | | |
| 88. | 25251 <i>Echiopsis curta</i> (Bardick) | | | |
| 89. | 25096 <i>Egernia kingii</i> (King's Skink) | | | |
| 90. | 25100 <i>Egernia napoleonis</i> | | | |
| 91. | <i>Egretta garzetta</i> | | | |
| 92. | <i>Egretta novaehollandiae</i> | | | |
| 93. | <i>Elanus axillaris</i> | | | |
| 94. | 24290 <i>Elanus caeruleus</i> subsp. <i>axillaris</i> (Australian Black-shouldered Kite) | | | |
| 95. | 47937 <i>Eileyornis melanops</i> (Black-fronted Dotterel) | | | |
| 96. | <i>Eolophus roseicapillus</i> | | | |
| 97. | 24652 <i>Eopsaltria georgiana</i> (White-breasted Robin) | | | |
| 98. | 24567 <i>Epthianura albifrons</i> (White-fronted Chat) | | | |
| 99. | 24379 <i>Erythronyx cinctus</i> (Red-kneed Dotterel) | | | |
| 100. | 25621 <i>Falco berigora</i> (Brown Falcon) | | | |
| 101. | 24471 <i>Falco berigora</i> subsp. <i>berigora</i> (Brown Falcon) | | | |
| 102. | 25622 <i>Falco cenchroides</i> (Australian Kestrel, Nankeen Kestrel) | | | |
| 103. | 25623 <i>Falco longipennis</i> (Australian Hobby) | | | |
| 104. | 25624 <i>Falco peregrinus</i> (Peregrine Falcon) | | S | |
| 105. | 25727 <i>Fulica atra</i> (Eurasian Coot) | | | |
| 106. | 25729 <i>Gallinula tenebrosa</i> (Dusky Moorhen) | | | |
| 107. | 25530 <i>Gerygone fusca</i> (Western Gerygone) | | | |
| 108. | 24271 <i>Gerygone fusca</i> subsp. <i>fusca</i> (Western Gerygone) | | | |
| 109. | 47962 <i>Glyciphila melanops</i> (Tawny-crowned Honeyeater) | | | |
| 110. | 24443 <i>Grallina cyanoleuca</i> (Magpie-lark) | | | |
| 111. | 24295 <i>Haliastur sphenurus</i> (Whistling Kite) | | | |
| 112. | 24689 <i>Halobaena caerulea</i> (Blue Petrel) | | | |
| 113. | 25410 <i>Heleioporus eyrei</i> (Moaning Frog) | | | |
| 114. | 25412 <i>Heleioporus psammophilus</i> (Sand Frog) | | | |
| 115. | 25119 <i>Hemiergis quadrilineata</i> | | | |
| 116. | 47965 <i>Hieraetus morphnoides</i> (Little Eagle) | | | |

| Name ID | Species Name | Naturalised | Conservation Code | ¹ Endemic To Query Area |
|---------|--|-------------|-------------------|------------------------------------|
| 117. | 25734 <i>Himantopus himantopus</i> (Black-winged Stilt) | | | |
| 118. | 24491 <i>Hirundo neoxena</i> (Welcome Swallow) | | | |
| 119. | 48582 <i>Hurleya</i> sp. (WAM C23193) (Crystal Cave Crangonyctoid, cave shrimp) | | T | Y |
| 120. | 24215 <i>Hydromys chrysogaster</i> (Water-rat, Rakali) | | P4 | |
| 121. | 43384 <i>Hydrophis platurus</i> (Yellow-bellied Seasnake) | | | |
| 122. | 48587 <i>Hydroprogne caspia</i> (Caspian Tern) | | IA | |
| 123. | 48588 <i>Isoodon fusciventer</i> (Quenda, southwestern brown bandicoot) | | P4 | |
| 124. | 24367 <i>Lalage tricolor</i> (White-winged Triller) | | | |
| 125. | 25638 <i>Larus pacificus</i> (Pacific Gull) | | | |
| 126. | 25128 <i>Lerista christinae</i> | | | |
| 127. | 25131 <i>Lerista distinguenda</i> | | | |
| 128. | 25133 <i>Lerista elegans</i> | | | |
| 129. | 25148 <i>Lerista lineopunctulata</i> | | | |
| 130. | 25165 <i>Lerista praepedita</i> | | | |
| 131. | 25005 <i>Lialis burtonis</i> | | | |
| 132. | 25661 <i>Lichmera indistincta</i> (Brown Honeyeater) | | | |
| 133. | 24582 <i>Lichmera indistincta</i> subsp. <i>indistincta</i> (Brown Honeyeater) | | | |
| 134. | 25415 <i>Limnodynastes dorsalis</i> (Western Banjo Frog) | | | |
| 135. | 25378 <i>Litoria adelaidensis</i> (Slender Tree Frog) | | | |
| 136. | 25388 <i>Litoria moorei</i> (Motorbike Frog) | | | |
| 137. | 24690 <i>Macronectes giganteus</i> (Southern Giant Petrel) | | IA | |
| 138. | 24132 <i>Macropus fuliginosus</i> (Western Grey Kangaroo) | | | |
| 139. | 24326 <i>Malacorhynchus membranaceus</i> (Pink-eared Duck) | | | |
| 140. | 25651 <i>Malurus lamberti</i> (Variegated Fairy-wren) | | | |
| 141. | 24544 <i>Malurus lamberti</i> subsp. <i>assimilis</i> (Variegated Fairy-wren) | | | |
| 142. | 25652 <i>Malurus leucopterus</i> (White-winged Fairy-wren) | | | |
| 143. | 24549 <i>Malurus leucopterus</i> subsp. <i>leuconotus</i> (White-winged Fairy-wren) | | | |
| 144. | 25654 <i>Malurus splendens</i> (Splendid Fairy-wren) | | | |
| 145. | 24583 <i>Manorina flavigula</i> (Yellow-throated Miner) | | | |
| 146. | 25758 <i>Megalurus gramineus</i> (Little Grassbird) | | | |
| 147. | 24838 <i>Megalurus gramineus</i> subsp. <i>gramineus</i> (Little Grassbird) | | | |
| 148. | 25184 <i>Menetia greyii</i> | | | |
| 149. | 24598 <i>Merops ornatus</i> (Rainbow Bee-eater) | | | |
| 150. | 24076 <i>Mesoplodon bowdoini</i> (Andrew's Beaked Whale) | | | |
| 151. | <i>Microcarbo melanoleucos</i> | | | |
| 152. | 25494 <i>Morelia spilota</i> (Carpet Python) | | | |
| 153. | 25240 <i>Morelia spilota</i> subsp. <i>imbricata</i> (Carpet Python) | | | |
| 154. | 25191 <i>Morethia lineocellata</i> | | | |
| 155. | 25192 <i>Morethia obscura</i> | | | |
| 156. | 24223 <i>Mus musculus</i> (House Mouse) | Y | | |
| 157. | 24042 <i>Mustela putorius</i> (European Polecat, Ferret) | Y | | |
| 158. | 25420 <i>Myobatrachus gouldii</i> (Turtle Frog) | | | |
| 159. | 25249 <i>Neelaps calonotos</i> (Black-striped Snake, black-striped burrowing snake) | | P3 | |
| 160. | 24738 <i>Neophema elegans</i> (Elegant Parrot) | | | |
| 161. | 24210 <i>Neophoca cinerea</i> (Australian Sea-lion) | | T | |
| 162. | 25252 <i>Notechis scutatus</i> (Tiger Snake) | | | |
| 163. | 25564 <i>Nycticorax caledonicus</i> (Rufous Night Heron) | | | |
| 164. | 24407 <i>Ocyphaps lophotes</i> (Crested Pigeon) | | | |
| 165. | 24085 <i>Oryctolagus cuniculus</i> (Rabbit) | Y | | |
| 166. | 24328 <i>Oxyura australis</i> (Blue-billed Duck) | | P4 | |
| 167. | 25680 <i>Pachycephala rufiventris</i> (Rufous Whistler) | | | |
| 168. | 24692 <i>Pachyptila belcheri</i> (Slender-billed Prion) | | | |
| 169. | 24693 <i>Pachyptila desolata</i> (Antarctic Prion) | | | |
| 170. | 24696 <i>Pachyptila turtur</i> (Fairy Prion) | | | |
| 171. | 48591 <i>Pandion cristatus</i> (Osprey, Eastern Osprey) | | IA | |
| 172. | 25253 <i>Parasuta gouldii</i> | | | |
| 173. | 25681 <i>Pardalotus punctatus</i> (Spotted Pardalote) | | | |
| 174. | 25682 <i>Pardalotus striatus</i> (Striated Pardalote) | | | |
| 175. | 24630 <i>Pardalotus striatus</i> subsp. <i>westraliensis</i> (Striated Pardalote) | | | |
| 176. | 24648 <i>Pelecanus conspicillatus</i> (Australian Pelican) | | | |
| 177. | 48060 <i>Petrochelidon ariel</i> (Fairy Martin) | | | |
| 178. | 48061 <i>Petrochelidon nigricans</i> (Tree Martin) | | | |
| 179. | 48066 <i>Petroica boodang</i> (Scarlet Robin) | | | |
| 180. | 25697 <i>Phalacrocorax carbo</i> (Great Cormorant) | | | |
| 181. | 24666 <i>Phalacrocorax melanoleucos</i> subsp. <i>melanoleucos</i> (Little Pied Cormorant) | | | |
| 182. | 24667 <i>Phalacrocorax sulcirostris</i> (Little Black Cormorant) | | | |
| 183. | 25699 <i>Phalacrocorax varius</i> (Pied Cormorant) | | | |
| 184. | 24409 <i>Phaps chalcoptera</i> (Common Bronzewing) | | | |
| 185. | 25587 <i>Phaps elegans</i> (Brush Bronzewing) | | | |
| 186. | 48071 <i>Phylidonyris niger</i> (White-cheeked Honeyeater) | | | |

| Name ID | Species Name | Naturalised | Conservation Code | ¹ Endemic To Query Area |
|---------|--|-------------|-------------------|------------------------------------|
| 187. | 24596 <i>Phylidonyris novaehollandiae</i> (New Holland Honeyeater) | | | |
| 188. | 24841 <i>Platalea flavipes</i> (Yellow-billed Spoonbill) | | | |
| 189. | 25721 <i>Platycercus zonarius</i> (Australian Ringneck, Ring-necked Parrot) | | | |
| 190. | 25703 <i>Podargus strigoides</i> (Tawny Frogmouth) | | | |
| 191. | 24679 <i>Podargus strigoides</i> subsp. <i>brachypterus</i> (Tawny Frogmouth) | | | |
| 192. | 25704 <i>Podiceps cristatus</i> (Great Crested Grebe) | | | |
| 193. | 25510 <i>Pogona minor</i> (Dwarf Bearded Dragon) | | | |
| 194. | 24907 <i>Pogona minor</i> subsp. <i>minor</i> (Dwarf Bearded Dragon) | | | |
| 195. | 24681 <i>Poliiocephalus poliocephalus</i> (Hoary-headed Grebe) | | | |
| 196. | 25731 <i>Porphyrio porphyrio</i> (Purple Swamphen) | | | |
| 197. | 24771 <i>Porzana tabuensis</i> (Spotless Crane) | | | |
| 198. | 25511 <i>Pseudonaja affinis</i> (Dugite) | | | |
| 199. | 25259 <i>Pseudonaja affinis</i> subsp. <i>affinis</i> (Dugite) | | | |
| 200. | 24702 <i>Pterodroma brevirostris</i> (Kerguelen Petrel) | | | |
| 201. | <i>Purpureicephalus spurius</i> | | | |
| 202. | 24243 <i>Rattus fuscipes</i> (Western Bush Rat) | | | |
| 203. | 24245 <i>Rattus rattus</i> (Black Rat) | Y | | |
| 204. | 24776 <i>Recurvirostra novaehollandiae</i> (Red-necked Avocet) | | | |
| 205. | 48096 <i>Rhipidura albiscapa</i> (Grey Fantail) | | | |
| 206. | 25614 <i>Rhipidura leucophrys</i> (Willie Wagtail) | | | |
| 207. | 24454 <i>Rhipidura leucophrys</i> subsp. <i>leucophrys</i> (Willie Wagtail) | | | |
| 208. | 25534 <i>Sericornis frontalis</i> (White-browed Scrubwren) | | | |
| 209. | 25266 <i>Simoselaps bertholdi</i> (Jan's Banded Snake) | | | |
| 210. | 30948 <i>Smicromis brevirostris</i> (Weebill) | | | |
| 211. | 24108 <i>Sminthopsis crassicaudata</i> (Fat-tailed Dunnart) | | | |
| 212. | 24111 <i>Sminthopsis gilberti</i> (Gilbert's Dunnart) | | | |
| 213. | 24522 <i>Sterna bergii</i> (Crested Tern) | | | |
| 214. | 25589 <i>Streptopelia chinensis</i> (Spotted Turtle-Dove) | Y | | |
| 215. | 25590 <i>Streptopelia senegalensis</i> (Laughing Turtle-Dove) | Y | | |
| 216. | 25518 <i>Strophurus spinigerus</i> | | | |
| 217. | 24942 <i>Strophurus spinigerus</i> subsp. <i>spinigerus</i> | | | |
| 218. | 33992 <i>Synemon gratiosa</i> (Graceful Sunmoth) | | P4 | |
| 219. | 25705 <i>Tachybaptus novaehollandiae</i> (Australasian Grebe, Black-throated Grebe) | | | |
| 220. | 24207 <i>Tachyglossus aculeatus</i> (Short-beaked Echidna) | | | |
| 221. | 24331 <i>Tadorna tadornoides</i> (Australian Shelduck, Mountain Duck) | | | |
| 222. | 24167 <i>Tarsipes rostratus</i> (Honey Possum, Noolbenger) | | | |
| 223. | 48597 <i>Thalasseus bergii</i> (Crested Tern) | | IA | |
| 224. | 24845 <i>Threskiornis spinicollis</i> (Straw-necked Ibis) | | | |
| 225. | 25203 <i>Tiliqua occipitalis</i> (Western Bluetongue) | | | |
| 226. | 25519 <i>Tiliqua rugosa</i> | | | |
| 227. | 25204 <i>Tiliqua rugosa</i> subsp. <i>aspera</i> | | | |
| 228. | 25207 <i>Tiliqua rugosa</i> subsp. <i>rugosa</i> | | | |
| 229. | 25549 <i>Todiramphus sanctus</i> (Sacred Kingfisher) | | | |
| 230. | 48141 <i>Tribonyx ventralis</i> (Black-tailed Native-hen) | | | |
| 231. | 25723 <i>Trichoglossus haematodus</i> (Rainbow Lorikeet) | | | |
| 232. | 24851 <i>Turnix velox</i> (Little Button-quail) | | | |
| 233. | 24069 <i>Tursiops truncatus</i> (Bottlenose Dolphin) | | | |
| 234. | 24855 <i>Tyto novaehollandiae</i> subsp. <i>novaehollandiae</i> (Masked Owl (southwest)) | | P3 | |
| 235. | 25577 <i>Vanellus miles</i> (Masked Lapwing) | | | |
| 236. | 25218 <i>Varanus gouldii</i> (Bungarra or Sand Monitor) | | | |
| 237. | 24206 <i>Vespadelus regulus</i> (Southern Forest Bat) | | | |
| 238. | 24040 <i>Vulpes vulpes</i> (Red Fox) | Y | | |
| 239. | 34113 <i>Westralunio carteri</i> (Carter's Freshwater Mussel) | | T | |
| 240. | 25765 <i>Zosterops lateralis</i> (Grey-breasted White-eye, Silvereye) | | | |

Conservation Codes

- T - Rare or likely to become extinct
- X - Presumed extinct
- IA - Protected under international agreement
- S - Other specially protected fauna
- 1 - Priority 1
- 2 - Priority 2
- 3 - Priority 3
- 4 - Priority 4
- 5 - Priority 5

¹ For NatureMap's purposes, species flagged as endemic are those whose records are wholly contained within the search area. Note that only those records complying with the search criterion are included in the calculation. For example, if you limit records to those from a specific datasource, only records from that datasource are used to determine if a species is restricted to the query area.

Appendix D – Flora data

Floristic analysis results

Flora species list

Species matrices (site vs species, vegetation type vs species)

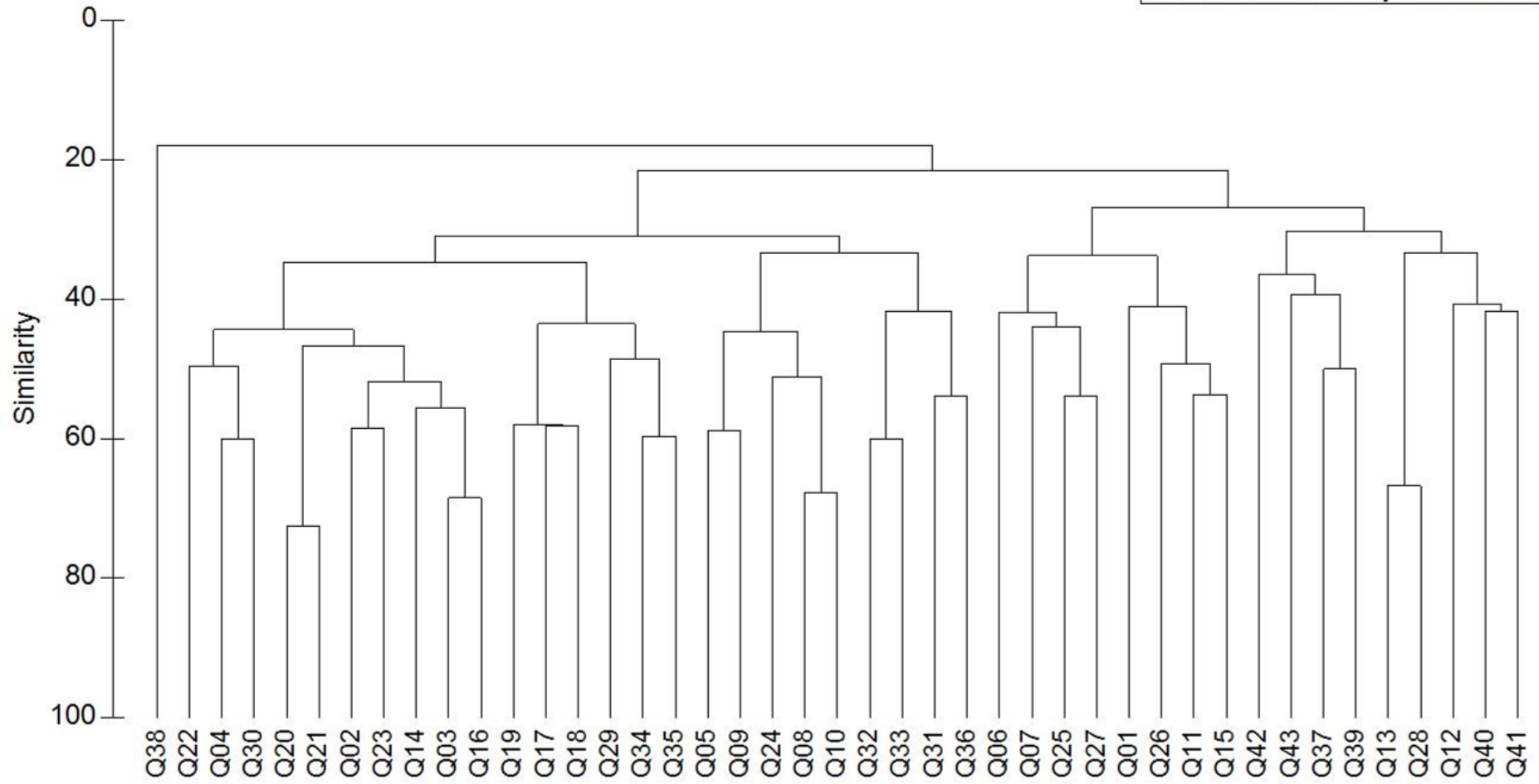
Quadrat data

Flora likelihood of occurrence assessment guidelines

Flora likelihood of occurrence assessment

GHD Quadrats (no singletons)

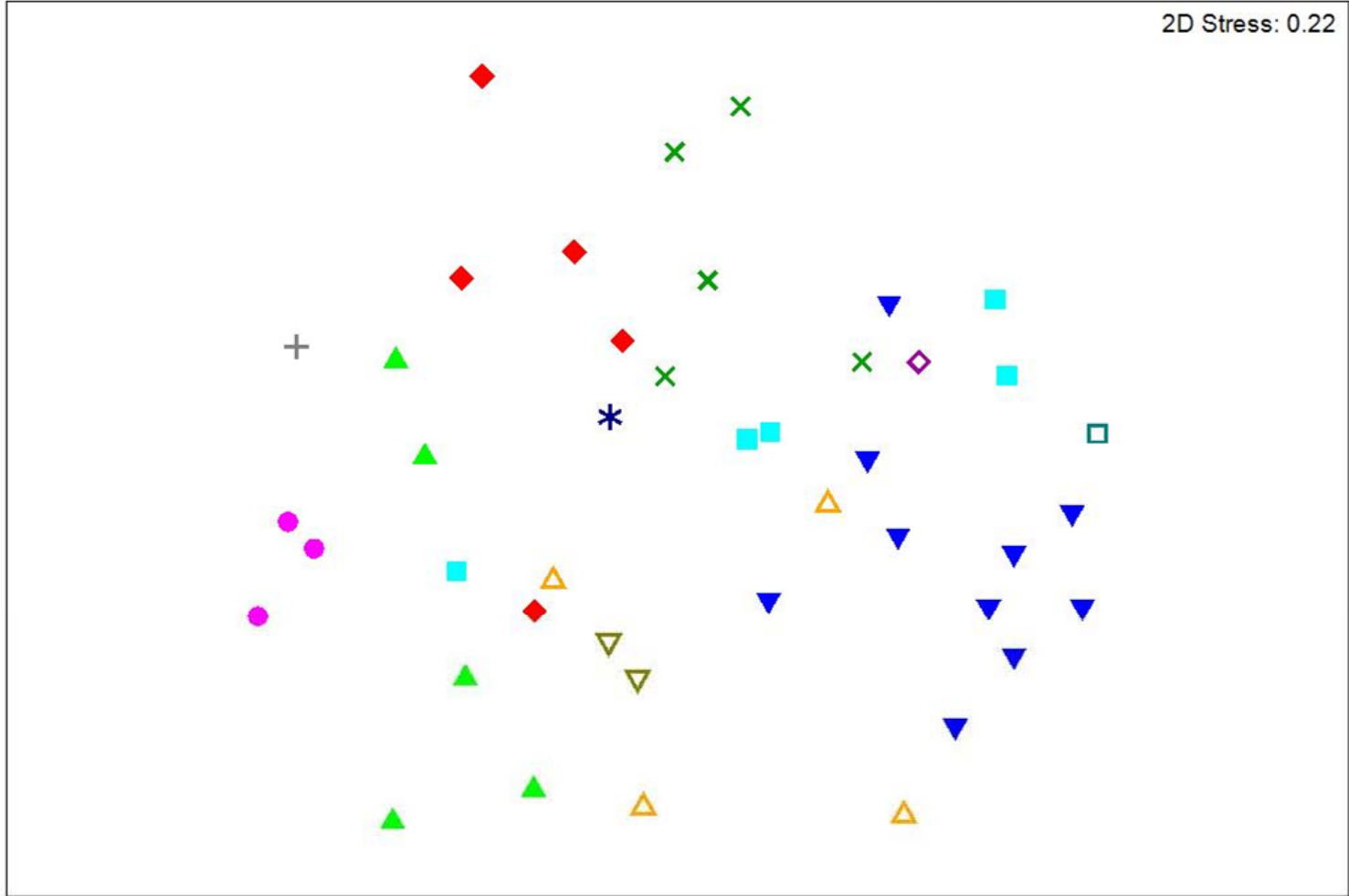
Resemblance: S17 Bray Curtis similarity



Resemblance: S17 Bray Curtis similarity

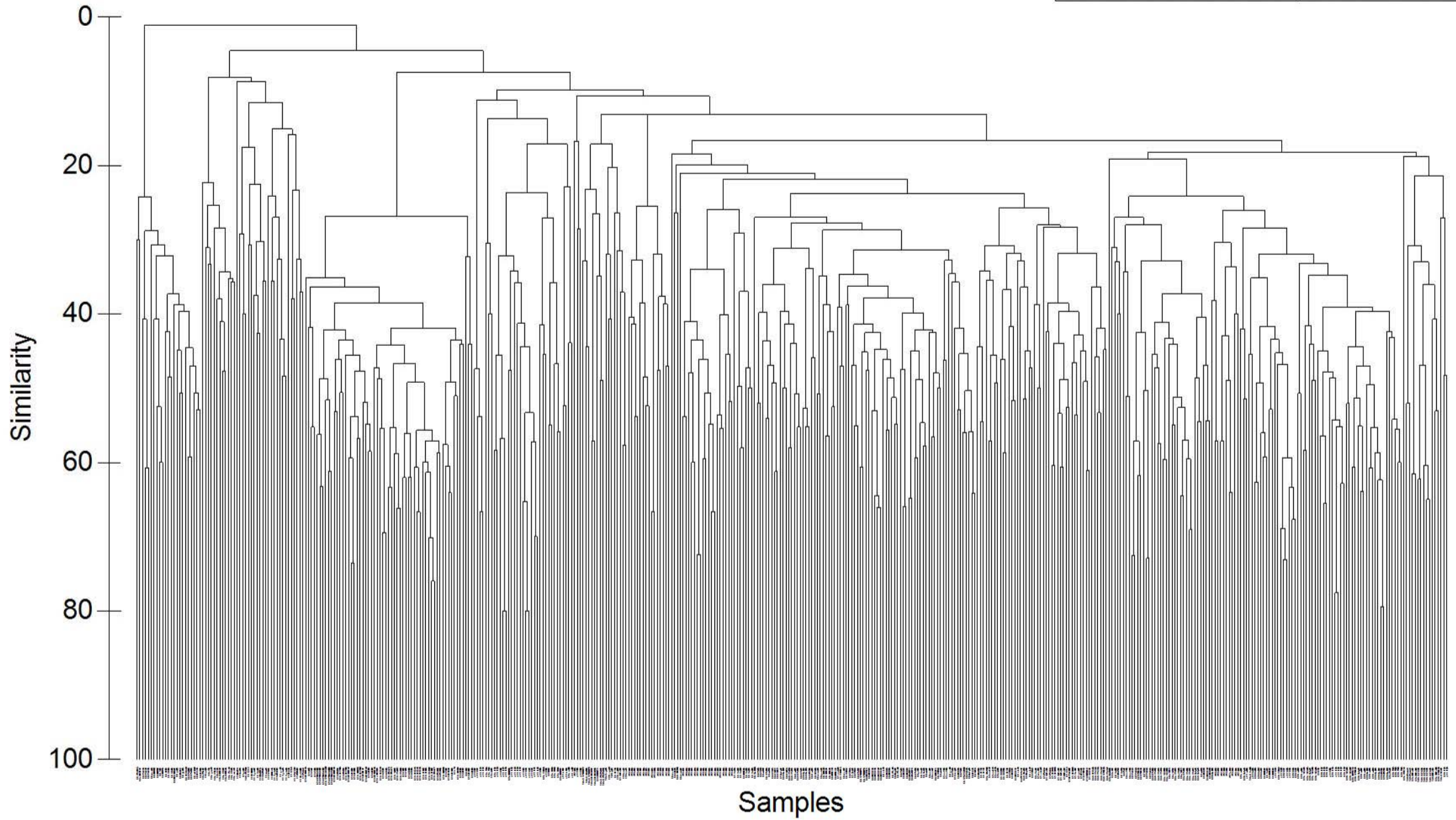
2D Stress: 0.22

- VT
- ▲ 1
 - ▼ 4
 - 3
 - ◆ 5
 - 6
 - + 7
 - × 8
 - * 3a
 - △ 9
 - ▽ 10
 - 11
 - ◇ 2



Group average

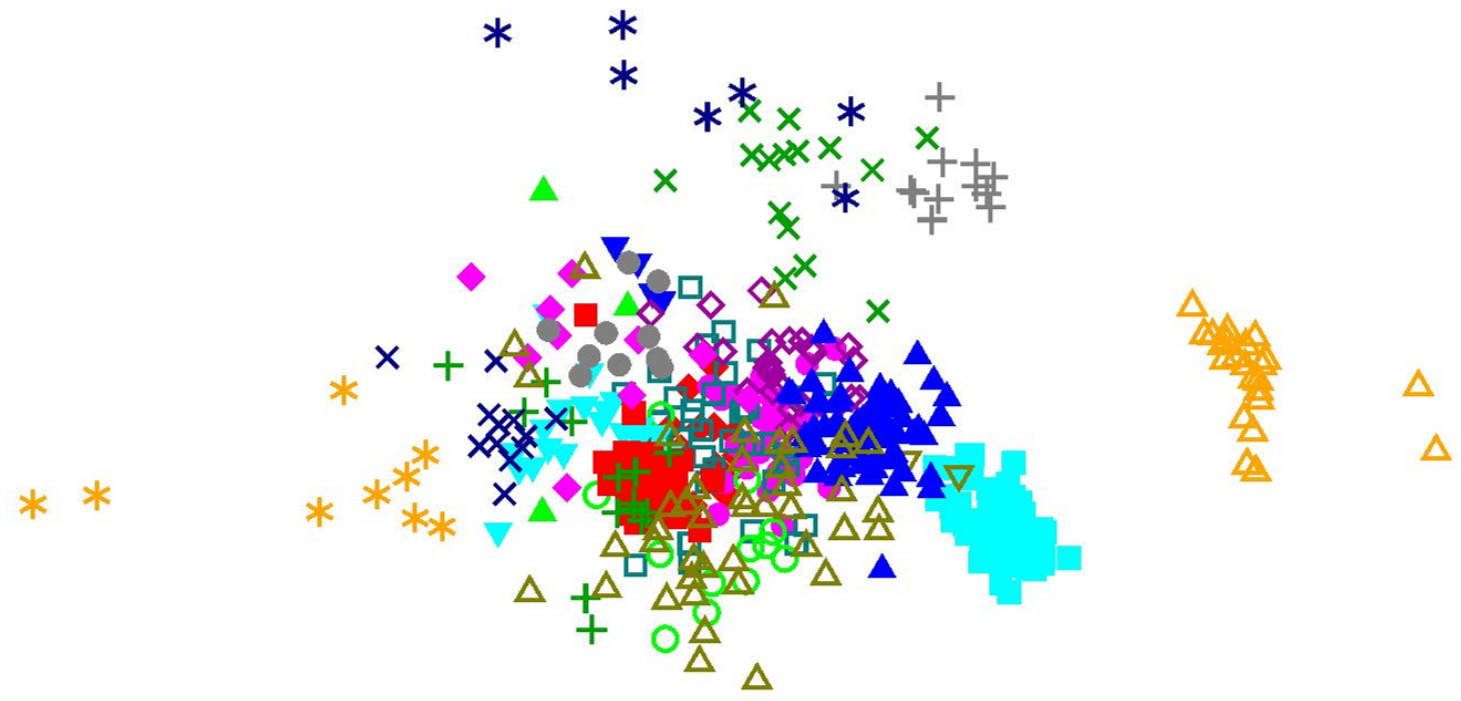
Resemblance: S17 Bray Curtis similarity



Resemblance: S17 Bray Curtis similarity

2D Stress: 0.16

- FCT*
- ▲ 19a
 - ▼ 19b
 - 23b
 - ◆ 26a
 - 26b
 - + 10a
 - × 11
 - * 13
 - △ 22
 - ▽ 23c
 - 24
 - ◇ 25
 - 27
 - ▲ 28
 - ▼ 29a
 - 29b
 - ◇ 30a2
 - 30b
 - + s11
 - × s13
 - * s14
 - △ GHD



Flora species list for YRE Part 2

| Family | Taxon | Status |
|---------------|--|-------------|
| Aizoaceae | <i>Carpobrotus edulis</i> | * |
| Aizoaceae | <i>Carpobrotus virescens</i> | |
| Amaranthaceae | <i>Ptilotus drummondii</i> | |
| Amaranthaceae | <i>Ptilotus manglesii</i> | |
| Amaranthaceae | <i>Ptilotus polystachyus</i> | |
| Amaranthaceae | <i>Ptilotus</i> sp. (insufficient material) | |
| Anacardiaceae | <i>Schinus terebinthifolius</i> | * |
| Anarthriaceae | <i>Lyginia barbata</i> | |
| Apiaceae | <i>Daucus glochidiatus</i> | |
| Apiaceae | <i>Trachymene coerulea</i> | |
| Apiaceae | <i>Trachymene pilosa</i> | |
| Apiaceae | <i>Xanthosia huegelii</i> | |
| Apocynaceae | <i>Gomphocarpus fruticosus</i> | *, DP |
| Araceae | <i>Zantedeschia aethiopica</i> | *, DP |
| Asparagaceae | <i>Acanthocarpus preissii</i> | |
| Asparagaceae | <i>Asparagus asparagoides</i> | *, DP, WONS |
| Asparagaceae | <i>Lomandra maritima</i> | |
| Asparagaceae | <i>Thysanotus arenarius</i> | |
| Asparagaceae | <i>Thysanotus manglesii/ patersonii</i> | |
| Asparagaceae | <i>Thysanotus multiflorus</i> | |
| Asphodelaceae | <i>Asphodelus fistulosus</i> | * |
| Asphodelaceae | <i>Trachyandra divaricata</i> | * |
| Asteraceae | <i>Arctotheca calendula</i> | * |
| Asteraceae | <i>Hyalosperma cotula</i> | |
| Asteraceae | <i>Hypochaeris glabra</i> | * |
| Asteraceae | <i>Millotia myosotidifolia</i> | |
| Asteraceae | <i>Olearia axillaris</i> | |
| Asteraceae | <i>Podolepis lessonii</i> | |
| Asteraceae | <i>Podotrochea gnaphalioides</i> | |
| Asteraceae | <i>Senecio pinnatifolius</i> | |
| Asteraceae | <i>Senecio vulgaris</i> | * |
| Asteraceae | <i>Siloxerus humifusus</i> | |
| Asteraceae | <i>Sonchus oleraceus</i> | * |
| Asteraceae | <i>Ursinia anthemoides</i> | * |
| Asteraceae | <i>Waitzia acuminata</i> var. <i>acuminata</i> | |
| Asteraceae | <i>Waitzia suaveolens</i> var. <i>suaveolens</i> | |
| Brassicaceae | <i>Brassica tournefortii</i> | * |
| Brassicaceae | <i>Euphorbia terracina</i> | * |
| Brassicaceae | <i>Heliophila pusilla</i> | * |
| Campanulaceae | <i>Lobelia heterophylla</i> | |
| Campanulaceae | <i>Lobelia</i> sp. (insufficient material) | |
| Campanulaceae | <i>Lobelia tenuior</i> | |

| Family | Taxon | Status |
|-----------------|---|--------|
| Campanulaceae | <i>Wahlenbergia capensis</i> | * |
| Campanulaceae | <i>Wahlenbergia preissii</i> | |
| Caryophyllaceae | <i>Cerastium glomeratum</i> | * |
| Caryophyllaceae | <i>Petrorhagia dubia</i> | * |
| Caryophyllaceae | <i>Silene gallica</i> | * |
| Casuarinaceae | <i>Allocasuarina fraseriana</i> | |
| Casuarinaceae | <i>Allocasuarina humilis</i> | |
| Casuarinaceae | <i>Allocasuarina</i> sp. (insufficient material) | |
| Chenopodiaceae | <i>Rhagodia baccata</i> subsp. <i>baccata</i> | |
| Colchicaceae | <i>Burchardia congesta</i> | |
| Crassulaceae | <i>Crassula colorata</i> | |
| Crassulaceae | <i>Crassula glomerata</i> | * |
| Crassulaceae | <i>Crassula</i> sp. (insufficient material) | |
| Cucurbitaceae | <i>Citrullus lanatus</i> | * |
| Cyperaceae | <i>Isolepis marginata</i> | |
| Cyperaceae | <i>Lepidosperma leptostachyum</i> | |
| Cyperaceae | <i>Lepidosperma pubisquameum</i> | |
| Cyperaceae | <i>Lepidosperma</i> sp. (insufficient material) | |
| Cyperaceae | <i>Mesomelaena pseudostygia</i> | |
| Cyperaceae | <i>Schoenus lanatus</i> | |
| Cyperaceae | <i>Tetaria octandra</i> | |
| Dilleniaceae | <i>Hibbertia hypericoides</i> | |
| Dilleniaceae | <i>Hibbertia racemosa</i> | |
| Dilleniaceae | <i>Hibbertia spicata</i> subsp. <i>leptotheca</i> | P3 |
| Dilleniaceae | <i>Hibbertia subvaginata</i> | |
| Droseraceae | <i>Drosera</i> sp. (insufficient material) | |
| Ericaceae | <i>Astroloma pallidum</i> | |
| Ericaceae | <i>Leucopogon ?propinquus</i> | |
| Ericaceae | <i>Leucopogon insularis</i> | |
| Ericaceae | <i>Leucopogon parviflorus</i> | |
| Ericaceae | <i>Leucopogon propinquus</i> | |
| Ericaceae | <i>Leucopogon squarrosus</i> subsp. <i>squarrosus</i> | |
| Ericaceae | <i>Lysinema pentapetalum</i> | |
| Euphorbiaceae | <i>Euphorbia peplus</i> | * |
| Euphorbiaceae | <i>Euphorbia terracina</i> | * |
| Euphorbiaceae | <i>Ricinus communis</i> | * |
| Fabaceae | <i>Acacia cochlearis</i> | |
| Fabaceae | <i>Acacia cyclops</i> | |
| Fabaceae | <i>Acacia huegelii</i> | |
| Fabaceae | <i>Acacia pulchella</i> | |
| Fabaceae | <i>Acacia rostellifera</i> | |
| Fabaceae | <i>Acacia saligna</i> | |
| Fabaceae | <i>Daviesia divaricata</i> | |
| Fabaceae | <i>Daviesia physodes</i> | |

| Family | Taxon | Status |
|-------------------|---|--------|
| Fabaceae | <i>Gastrolobium nervosum</i> | |
| Fabaceae | <i>Gompholobium tomentosum</i> | |
| Fabaceae | <i>Hardenbergia comptoniana</i> | |
| Fabaceae | <i>Jacksonia calcicola</i> | |
| Fabaceae | <i>Jacksonia furcellata</i> | |
| Fabaceae | <i>Jacksonia sternbergiana</i> | |
| Fabaceae | <i>Kennedia prostrata</i> | |
| Fabaceae | <i>Lupinus angustifolius</i> | * |
| Fabaceae | <i>Medicago polymorpha</i> | * |
| Fabaceae | <i>Trifolium arvense</i> | * |
| Fabaceae | <i>Trifolium campestre</i> | * |
| Fabaceae | <i>Trifolium</i> sp. (insufficient material) | * |
| Fabaceae | <i>Melilotus indicus</i> | * |
| Gentianaceae | <i>Centaurium</i> sp. (insufficient material) | * |
| Geraniaceae | <i>Erodium</i> sp. (insufficient material) | |
| Geraniaceae | <i>Geranium molle</i> | * |
| Geraniaceae | <i>Pelargonium capitatum</i> | * |
| Goodeniaceae | <i>Dampiera linearis</i> | |
| Goodeniaceae | <i>Lechenaultia linarioides</i> | |
| Goodeniaceae | <i>Scaevola canescens</i> | |
| Goodeniaceae | <i>Scaevola globulifera</i> | |
| Gyrostemonaceae | <i>Gyrostemon ramulosus</i> | |
| Haemodoraceae | <i>Anigozanthos</i> sp. (insufficient material) | |
| Haemodoraceae | <i>Conostylis aculeata</i> | |
| Haemodoraceae | <i>Conostylis candicans</i> | |
| Haemodoraceae | <i>Conostylis candicans</i> subsp. <i>calcicola</i> | |
| Haemodoraceae | <i>Conostylis</i> sp. (insufficient material) | |
| Hemerocallidaceae | <i>Corynotheca micrantha</i> | |
| Hemerocallidaceae | <i>Dianella revoluta</i> | |
| Hemerocallidaceae | <i>Tricoryne elatior</i> | |
| Iridaceae | <i>Gladiolus caryophyllaceus</i> | * |
| Iridaceae | <i>Moraea flaccida</i> | *, DP |
| Iridaceae | <i>Romulea rosea</i> | * |
| Iridaceae | <i>Watsonia</i> sp. (insufficient material) | * |
| Lamiaceae | <i>Hemiandra glabra</i> | |
| Lauraceae | <i>Cassytha pomiformis</i> | |
| Lauraceae | <i>Cassytha</i> sp. | |
| Lobeliaceae | <i>Isotoma hypocrateriformis</i> | |
| Lobeliaceae | <i>Lobelia tenuior</i> | |
| Loranthaceae | <i>Nuytsia floribunda</i> | |
| Montiaceae | <i>Calandrinia liniflora</i> | |
| Montiaceae | <i>Calandrinia</i> sp. (insufficient material) | |
| Montiaceae | <i>Calandrinia tholiformis</i> | |
| Myrtaceae | <i>Agonis flexuosa</i> | |

| Family | Taxon | Status |
|----------------|---|------------|
| Myrtaceae | <i>Calothamnus quadrifidus</i> | |
| Myrtaceae | <i>Calytrix angulata</i> | |
| Myrtaceae | <i>Calytrix flavescens</i> | |
| Myrtaceae | <i>Chamelaucium uncinatum</i> | |
| Myrtaceae | <i>Corymbia citriodora</i> | * |
| Myrtaceae | <i>Eremaea pauciflora</i> var. <i>pauciflora</i> | |
| Myrtaceae | <i>Eucalyptus foecunda</i> | |
| Myrtaceae | <i>Eucalyptus gomphocephala</i> | *, planted |
| Myrtaceae | <i>Eucalyptus gomphocephala</i> | |
| Myrtaceae | <i>Eucalyptus leucoxyloides</i> var. <i>rosea</i> | *, planted |
| Myrtaceae | <i>Eucalyptus petrensis</i> | |
| Myrtaceae | <i>Eucalyptus</i> sp. (insufficient material) | *, planted |
| Myrtaceae | <i>Eucalyptus todtiana</i> | |
| Myrtaceae | <i>Leptospermum laevigatum</i> | * |
| Myrtaceae | <i>Melaleuca huegelii</i> | |
| Myrtaceae | <i>Melaleuca systema</i> | |
| Myrtaceae | <i>Verticordia nitens</i> | |
| Orobanchaceae | <i>Orobanche minor</i> | * |
| Oxalidaceae | <i>Oxalis</i> sp. (insufficient material) | * |
| Phyllanthaceae | <i>Phyllanthus calycinus</i> | |
| Phyllanthaceae | <i>Poranthera drummondii</i> | |
| Plantaginaceae | <i>Plantago lanceolata</i> | * |
| Poaceae | <i>Aristida</i> sp. (insufficient material) | |
| Poaceae | <i>Austrostipa flavescens</i> | |
| Poaceae | <i>Avena barbata</i> | * |
| Poaceae | <i>Briza maxima</i> | * |
| Poaceae | <i>Briza minor</i> | * |
| Poaceae | <i>Bromus diandrus</i> | * |
| Poaceae | <i>Cynodon dactylon</i> | * |
| Poaceae | <i>Ehrharta calycina</i> | * |
| Poaceae | <i>Ehrharta longiflora</i> | * |
| Poaceae | <i>Ehrharta</i> sp. (insufficient material) | * |
| Poaceae | <i>Eragrostis</i> sp. (insufficient material) | * |
| Poaceae | <i>Eriachne</i> sp. (insufficient material) | * |
| Poaceae | <i>Hordeum</i> sp. (insufficient material) | * |
| Poaceae | <i>Lagurus ovatus</i> | * |
| Poaceae | <i>Lolium rigidum</i> | * |
| Poaceae | <i>Poa drummondiana</i> | |
| Poaceae | Poaceae sp. (insufficient material) | |
| Poaceae | <i>Rytidosperma compressa</i> | |
| Poaceae | <i>Rytidosperma macalpinei</i> | |
| Poaceae | <i>Rytidosperma occidentale</i> | |
| Poaceae | <i>Vulpia myuros</i> | * |
| Primulaceae | <i>Lysimachia arvensis</i> | * |

| Family | Taxon | Status |
|------------------|--|-------------|
| Proteaceae | <i>Banksia attenuata</i> | |
| Proteaceae | <i>Banksia dallanneyi</i> | |
| Proteaceae | <i>Banksia menziesii</i> | |
| Proteaceae | <i>Banksia nivea</i> | |
| Proteaceae | <i>Banksia sessilis</i> | |
| Proteaceae | <i>Conospermum incurvum</i> | |
| Proteaceae | <i>Conospermum integerrimum</i> | |
| Proteaceae | <i>Conospermum stoechadis</i> subsp. <i>stoechadis</i> | |
| Proteaceae | <i>Grevillea preissii</i> subsp. <i>preissii</i> | |
| Proteaceae | <i>Grevillea vestita</i> | |
| Proteaceae | <i>Hakea lissocarpha</i> | |
| Proteaceae | <i>Hakea prostrata</i> | |
| Proteaceae | <i>Hakea ruscifolia</i> | |
| Proteaceae | <i>Hakea trifurcata</i> | |
| Proteaceae | <i>Persoonia comata</i> | |
| Proteaceae | <i>Petrophile axillaris</i> | |
| Proteaceae | <i>Petrophile brevifolia</i> | |
| Proteaceae | <i>Petrophile macrostachya</i> | |
| Proteaceae | <i>Petrophile serruriae</i> | |
| Proteaceae | <i>Stirlingia latifolia</i> | |
| Proteaceae | <i>Synaphea spinulosa</i> subsp. <i>spinulosa</i> | |
| Restionaceae | <i>Desmocladius flexuosus</i> | |
| Rhamnaceae | <i>Cryptandra mutila</i> | |
| Rhamnaceae | <i>Spyridium globulosum</i> | |
| Rhamnaceae | <i>Trymalium ledifolium</i> | |
| Rubiaceae | <i>Opercularia vaginata</i> | |
| Santalaceae | <i>Exocarpos sparteus</i> | |
| Santalaceae | <i>Santalum acuminatum</i> | |
| Scrophulariaceae | <i>Eremophila glabra</i> | |
| Scrophulariaceae | <i>Myoporum insulare</i> | |
| Solanaceae | <i>Anthocercis littorea</i> | |
| Solanaceae | <i>Solanum linnaeanum</i> | *, DP |
| Solanaceae | <i>Solanum nigrum</i> | * |
| Stylidiaceae | <i>Stylidium repens</i> | |
| Thymelaeaceae | <i>Pimelea ferruginea</i> | |
| Thymelaeaceae | <i>Pimelea rosea</i> | |
| Verbenaceae | <i>Lantana camara</i> | *, DP, WONS |
| Violaceae | <i>Hybanthus calycinus</i> | |
| Xanthorrhoeaceae | <i>Xanthorrhoea gracilis</i> | |
| Xanthorrhoeaceae | <i>Xanthorrhoea preissii</i> | |
| Zamiaceae | <i>Macrozamia riedlei</i> | |

* = Introduced taxon, DP = Declared Plant

| Taxon | Status | VT1 | VT10 | VT12 | VT13 | VT2 | VT3 | VT3a | VT4 | VT5 | VT6 | VT7 | VT8 | VT9 |
|---|-------------|-----|------|------|------|-----|-----|------|-----|-----|-----|-----|-----|-----|
| Acacia cochlearis | | 1 | | | | | | | | 1 | | | | |
| Acacia cyclops | | | | | | | 1 | 1 | | 1 | 1 | 1 | 1 | 1 |
| Acacia huegelii | | | | | | | | | 1 | | | | | |
| Acacia pulchella | | | | | | 1 | 1 | | 1 | | | | 1 | 1 |
| Acacia rostelifera | | | | | | | | | 1 | | | | 1 | |
| Acacia saligna | | 1 | | 1 | | | | 1 | 1 | 1 | 1 | 1 | | 1 |
| Acanthocarpus preissii | | | | | | | | 1 | 1 | 1 | 1 | 1 | | |
| Agonis flexuosa | | | | | | | | | | | | 1 | | |
| Allocasuarina fraseriana | | | | | | | | 1 | | | | | | |
| Allocasuarina humilis | | | | | | | | | 1 | 1 | | | | 1 |
| Allocasuarina sp. (insufficient material) | | | | | | | | | | | | | 1 | |
| Anigozanthos sp. (insufficient material) | | | | | | | 1 | | | | | | | |
| Anthocercis littorea | | 1 | | | | | | | | | | | | |
| Arctotheca calendula | * | 1 | | | | | | | 1 | | | | | |
| Aristida sp. (insufficient material) | | 1 | | | | | 1 | | | | | | 1 | |
| Asparagus asparagoides | *, DP, WONS | | | 1 | | | | | | | | | | |
| Asphodelus fistulosus | * | 1 | | | | 1 | | | 1 | 1 | 1 | | 1 | |
| Astroloma pallidum | | | | | | | | | 1 | | | | 1 | |
| Austrostipa flavescens | | 1 | | | | | 1 | | | 1 | | | | 1 |
| Avena barbata | * | 1 | 1 | 1 | | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Banksia attenuata | | 1 | | | | | 1 | | 1 | | 1 | | | 1 |
| Banksia dallanneyi | | 1 | 1 | | | | 1 | 1 | 1 | 1 | | | 1 | 1 |
| Banksia menziesii | | | | | | | | | 1 | | | | | |
| Banksia nivea | | | | | | | | | | | | | | 1 |
| Banksia sessilis | | 1 | | | | 1 | 1 | 1 | 1 | | | | 1 | 1 |
| Brassica tournefortii | * | | 1 | | | | 1 | 1 | 1 | 1 | 1 | | | |
| Briza maxima | * | | | | | | 1 | 1 | 1 | | 1 | | 1 | 1 |
| Briza minor | * | | | | | | 1 | | | | | | | |
| Bromus diandrus | * | 1 | 1 | 1 | | | 1 | 1 | 1 | 1 | 1 | | 1 | |
| Burchardia congesta | | | | | | | | | 1 | | | | | |
| Calandrinia liniflora | | | | | | | | | | | | | | 1 |
| Calandrinia sp. (insufficient material) | | | | | | | | | 1 | | | | | |

| Taxon | Status | VT1 | VT10 | VT12 | VT13 | VT2 | VT3 | VT3a | VT4 | VT5 | VT6 | VT7 | VT8 | VT9 |
|--|--------|-----|------|------|------|-----|-----|------|-----|-----|-----|-----|-----|-----|
| Calandrinia tholiformis | | | | | | | | | 1 | | | | | |
| Calothamnus quadrifidus | | | | | | | 1 | | 1 | | | | 1 | |
| Calytrix angulata | | | | | | | | | 1 | | | | | |
| Calytrix flavescens | | | | | | | | | 1 | | | | | |
| Carpobrotus edulis | * | 1 | 1 | | | | 1 | | 1 | | 1 | | | 1 |
| Carpobrotus virescens | | | | | | | | | | 1 | | | | 1 |
| Cassytha pomiformis | | 1 | | | | | 1 | 1 | | 1 | | | 1 | |
| Cassytha sp. | | | | | | | | | | 1 | | | | |
| Centaurium sp. (insufficient material) | * | | 1 | | | | | | | | | | | |
| Cerastium glomeratum | * | | 1 | | | | | | | | | | | |
| Chamelaucium uncinatum | | | | | | | | | | | 1 | | | |
| Citrullus lanatus | * | | | | | | | | | | | | 1 | |
| Conospermum incurvum | | | | | | | | | 1 | | | | | |
| Conospermum integerrimum | | | | | | | | | 1 | | | | | |
| Conospermum stoechadis subsp. stoechadis | | | | | | | | | 1 | | | | | |
| Conostylis aculeata | | | 1 | | | | 1 | | 1 | 1 | | | | 1 |
| Conostylis candicans | | 1 | | | | | 1 | | 1 | 1 | 1 | | | |
| Conostylis candicans subsp. calcicola | | | 1 | | | | | | | 1 | | | | 1 |
| Conostylis sp. (insufficient material) | | 1 | | | | | 1 | | | | | | | |
| Corymbia citriodora | * | | | | | | | | | | 1 | | | |
| Corynotheca micrantha | | 1 | | | | | | | 1 | | | | | 1 |
| Crassula colorata | | 1 | | | | | | 1 | 1 | 1 | | | 1 | 1 |
| Crassula glomerata | * | | | | | | | 1 | | | | | | |
| Crassula sp. (insufficient material) | | 1 | 1 | | | | 1 | 1 | 1 | 1 | | | 1 | 1 |
| Cryptandra mutila | | | | | | | 1 | | | 1 | | | 1 | |
| Cynodon dactylon | * | | | | | | | | | | | | 1 | |
| Dampiera linearis | | | | | | | 1 | | 1 | 1 | | | | 1 |
| Daucus glochidiatus | | 1 | | | | | 1 | | 1 | 1 | | | | |
| Daviesia divaricata | | | 1 | | | | | | | 1 | | | | 1 |
| Daviesia physodes | | | | | | | | | 1 | | | | | |
| Desmocladus flexuosus | | 1 | 1 | | | | 1 | 1 | 1 | 1 | | | 1 | 1 |
| Dianella revoluta | | 1 | | | | | 1 | 1 | 1 | 1 | 1 | | 1 | 1 |

| Taxon | Status | VT1 | VT10 | VT12 | VT13 | VT2 | VT3 | VT3a | VT4 | VT5 | VT6 | VT7 | VT8 | VT9 |
|--|------------|-----|------|------|------|-----|-----|------|-----|-----|-----|-----|-----|-----|
| Drosera sp. (insufficient material) | | 1 | | | | | | | 1 | 1 | | | | |
| Ehrharta calycina | * | | | | | | 1 | 1 | | 1 | 1 | | | 1 |
| Ehrharta longiflora | * | 1 | | | | | 1 | 1 | 1 | | 1 | | | 1 |
| Ehrharta sp. (insufficient material) | * | | | | | | | | | | | | 1 | |
| Eragrostis sp. (insufficient material) | * | | | | | | | | | 1 | | | | |
| Eremaea pauciflora var. pauciflora | | | | | | | | | 1 | | | | | |
| Eremophila glabra | | 1 | | | | | | | | 1 | | | | |
| Eriachne sp. (insufficient material) | * | | | | | | | | | 1 | | | | |
| Erodium sp. (insufficient material) | | 1 | | | | | | | | | | | | |
| Eucalyptus foecunda | | | | | | | | | | | | | 1 | |
| Eucalyptus gomphocephala | *, planted | | | 1 | | | | | | | | | | |
| Eucalyptus gomphocephala | | | | | | | | | | | 1 | 1 | | |
| Eucalyptus leucoxydon var. rosea | *, planted | | | 1 | | | | | | | | | | |
| Eucalyptus petrensis | | | | | | | | | | | | 1 | | |
| Eucalyptus sp. (insufficient material) | *, planted | | | 1 | | | | | | | | | | |
| Eucalyptus todtiana | | | | | | | | | 1 | | | | | |
| Euphorbia peplus | * | 1 | | | | | | | | | | | | |
| Euphorbia terracina | * | 1 | | 1 | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Exocarpos sparteus | | 1 | | | | | | | | | | | | |
| Gastrolobium nervosum | | | 1 | | | | 1 | | | 1 | | | | |
| Geranium molle | * | 1 | | | | | 1 | | | | | | | 1 |
| Gladiolus caryophyllaceus | * | | | | | | 1 | | 1 | | | | 1 | 1 |
| Gomphocarpus fruticosus | *, DP | | | | 1 | | 1 | | | | 1 | | | |
| Gompholobium tomentosum | | | | | | 1 | | 1 | 1 | 1 | | | 1 | |
| Grevillea preissii subsp. preissii | | | | | | 1 | 1 | | | | | | 1 | |
| Grevillea vestita | | | | | | | | | 1 | | | | | |
| Gyrostemon ramulosus | | | | | 1 | | | | | | | | | |
| Hakea lissocarpha | | 1 | | | | | 1 | 1 | 1 | | | | | 1 |
| Hakea prostrata | | 1 | 1 | | | | 1 | | | | | | | 1 |
| Hakea ruscifolia | | | | | | | | | 1 | | | | | |
| Hakea trifurcata | | | | | | | | | 1 | | | | 1 | |
| Hardenbergia comptoniana | | | | | | | 1 | 1 | 1 | 1 | | 1 | 1 | 1 |

| Taxon | Status | VT1 | VT10 | VT12 | VT13 | VT2 | VT3 | VT3a | VT4 | VT5 | VT6 | VT7 | VT8 | VT9 |
|---|-------------|-----|------|------|------|-----|-----|------|-----|-----|-----|-----|-----|-----|
| <i>Heliophila pusilla</i> | * | | | | | | | | | 1 | | | | |
| <i>Hemiandra glabra</i> | | | | | | | | | | 1 | | | | |
| <i>Hibbertia hypericoides</i> | | | | | | | | | 1 | 1 | | | | |
| <i>Hibbertia racemosa</i> | | | | | | | | | 1 | 1 | | | | |
| <i>Hibbertia spicata</i> subsp. <i>leptotheca</i> | P3 | | | | | | | | | | | | 1 | |
| <i>Hibbertia subvaginata</i> | | 1 | | | | | | | | 1 | | | | |
| <i>Hordeum</i> sp. (insufficient material) | * | | | | | | | | | | 1 | | | |
| <i>Hyalosperma cotula</i> | | | | | | | | | 1 | | | | | |
| <i>Hybanthus calycinus</i> | | | | | | | 1 | | | 1 | | | | 1 |
| <i>Hypochaeris glabra</i> | * | 1 | | | | | 1 | 1 | 1 | 1 | | | | 1 |
| <i>Isolepis marginata</i> | | | | | | | 1 | | 1 | 1 | | | | |
| <i>Isotoma hypocrateriformis</i> | | 1 | | | | | | | | | | | | |
| <i>Jacksonia calcicola</i> | | | 1 | | | | 1 | | 1 | 1 | | | | 1 |
| <i>Jacksonia furcellata</i> | | | | | | | 1 | | 1 | | | | | |
| <i>Jacksonia sternbergiana</i> | | 1 | | | | | | | | | | | | 1 |
| <i>Kennedia prostrata</i> | | | 1 | | | | | | | 1 | | 1 | 1 | |
| <i>Lagurus ovatus</i> | * | | 1 | | | 1 | 1 | 1 | | 1 | 1 | 1 | 1 | |
| <i>Lantana camara</i> | *, DP, WONS | | | | | | | | | | | | 1 | |
| <i>Lechenaultia linarioides</i> | | | | | | | | | 1 | 1 | | | | |
| <i>Lepidosperma leptostachyum</i> | | | | | | | | | | 1 | | | | |
| <i>Lepidosperma pubisquameum</i> | | | | | | | | | | 1 | | | | |
| <i>Lepidosperma</i> sp. (insufficient material) | | | 1 | | | | 1 | | 1 | 1 | | | 1 | |
| <i>Leptospermum laevigatum</i> | * | | | | | | | | | | 1 | | | |
| <i>Leucopogon</i> ? <i>propinquus</i> | | | | | | | | | | | | | | 1 |
| <i>Leucopogon insularis</i> | | | 1 | | | | | 1 | | 1 | 1 | 1 | 1 | |
| <i>Leucopogon parviflorus</i> | | 1 | 1 | | | | | 1 | 1 | | 1 | 1 | 1 | |
| <i>Leucopogon propinquus</i> | | | | | | | | | | 1 | | | | |
| <i>Leucopogon squarrosus</i> subsp. <i>squarrosus</i> | | | | | | | | | 1 | | | | | |
| <i>Lobelia heterophylla</i> | | | | | | | | | | 1 | | | | |
| <i>Lobelia</i> sp. (insufficient material) | | | | | | | | | | | | | | 1 |
| <i>Lobelia tenuior</i> | | | | | | | | | 1 | | | | | 1 |
| <i>Lolium rigidum</i> | * | 1 | 1 | | | | 1 | 1 | | 1 | 1 | 1 | 1 | 1 |

| Taxon | Status | VT1 | VT10 | VT12 | VT13 | VT2 | VT3 | VT3a | VT4 | VT5 | VT6 | VT7 | VT8 | VT9 |
|-------------------------------------|--------|-----|------|------|------|-----|-----|------|-----|-----|-----|-----|-----|-----|
| Lomandra maritima | | 1 | 1 | | | | 1 | 1 | 1 | 1 | 1 | 1 | | 1 |
| Lupinus angustifolius | * | 1 | | | | | | | | | | | 1 | |
| Lyginia barbata | | | | | | | | | 1 | | | | | |
| Lysimachia arvensis | * | | | | | | 1 | 1 | | 1 | 1 | | 1 | 1 |
| Lysinema pentapetalum | | | | | | | | | 1 | 1 | | | | |
| Macrozamia riedlei | | 1 | | | | | 1 | | 1 | | | | | 1 |
| Medicago polymorpha | * | 1 | | | | | | | | | | 1 | | |
| Melaleuca huegelii | | | | | | | | 1 | | | | | 1 | |
| Melaleuca systema | | 1 | 1 | 1 | | 1 | 1 | 1 | 1 | 1 | | 1 | 1 | 1 |
| Melilotus indicus | * | | | | | | | | 1 | | | | | |
| Mesomelaena pseudostygia | | | | | | | 1 | | 1 | | | | | 1 |
| Millotia myosotidifolia | | | | | | | | | 1 | | | | | 1 |
| Moraea flaccida | *, DP | | | | | | | | | | 1 | | | |
| Myoporum insulare | | | | | | 1 | | | | | | | | |
| Nuytsia floribunda | | | | | | | | | | | | | | 1 |
| Olearia axillaris | | 1 | | | | | | 1 | 1 | 1 | | | | |
| Opercularia vaginata | | | | | | | 1 | | 1 | 1 | | | 1 | |
| Orobanche minor | * | 1 | | | | | | | 1 | | | | | |
| Oxalis sp. (insufficient material) | * | 1 | | | | | | | | | | | | 1 |
| Pelargonium capitatum | * | 1 | | | | | | 1 | 1 | 1 | 1 | 1 | | 1 |
| Persoonia comata | | | | | | | | | 1 | | | | | |
| Petrophile axillaris | | 1 | | | | | | | 1 | | | | | 1 |
| Petrophile brevifolia | | | | | | | | | 1 | | | | | |
| Petrophile macrostachya | | | | | | | | | 1 | | | | | |
| Petrophile serruriae | | | | | | | | | | | | | | 1 |
| Petrorhagia dubia | * | | 1 | | | | 1 | 1 | 1 | 1 | | | 1 | 1 |
| Phyllanthus calycinus | | 1 | | | | | 1 | 1 | 1 | 1 | | 1 | | |
| Pimelea ferruginea | | | | | | | | | | 1 | | | | |
| Pimelea rosea | | | | | | | 1 | | | | | | | |
| Plantago lanceolata | * | | | | | | | | | | | | 1 | |
| Poa drummondiana | | | | | | | | | 1 | | | | | |
| Poaceae sp. (insufficient material) | | | | | | | | | 1 | | | | | |

| Taxon | Status | VT1 | VT10 | VT12 | VT13 | VT2 | VT3 | VT3a | VT4 | VT5 | VT6 | VT7 | VT8 | VT9 |
|--------------------------------------|--------|-----|------|------|------|-----|-----|------|-----|-----|-----|-----|-----|-----|
| Podolepis lessonii | | | | | | | | | | 1 | | | | |
| Podotheca gnaphalioides | | | | | | | | | 1 | 1 | | | | 1 |
| Poranthera drummondii | | | | | | | | | 1 | | | | | 1 |
| Ptilotus drummondii | | | | | | | | | | 1 | | | | 1 |
| Ptilotus manglesii | | 1 | | | | | | | | | | | | |
| Ptilotus polystachyus | | | 1 | | | | | | | | | | | |
| Ptilotus sp. (insufficient material) | | | | | | | | | | | | | | 1 |
| Rhagodia baccata subsp. baccata | | 1 | | | | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Ricinus communis | * | | | | 1 | | | | | | | | | |
| Romulea rosea | * | 1 | 1 | 1 | | | 1 | 1 | 1 | 1 | 1 | | 1 | 1 |
| Rytidosperma compressa | | 1 | | | | | | | | 1 | 1 | | | |
| Rytidosperma macalpinei | | | | | | | | | 1 | | | | | |
| Rytidosperma occidentale | | 1 | | | | | | | | 1 | | | 1 | |
| Santalum acuminatum | | | | | | | | | | 1 | | | | |
| Scaevola canescens | | | | | | | 1 | | 1 | | | | | |
| Scaevola globulifera | | | | | | | | | 1 | | | | | |
| Schinus terebinthifolius | * | | | | 1 | | | | | | 1 | | 1 | |
| Schoenus lanatus | | | | | | | 1 | | | | | | | |
| Senecio pinnatifolius | | | | | | | | | 1 | 1 | | | | |
| Senecio vulgaris | * | | | | | | | | 1 | | | | | |
| Silene gallica | * | | 1 | | | | | | | | | | | |
| Siloxerus humifusus | | | | | | | 1 | | 1 | | | | | |
| Solanum linnaeanum | *, DP | | | 1 | | | | | | | | | | |
| Solanum nigrum | * | | | | | | | | | | | | 1 | |
| Sonchus oleraceus | * | 1 | | | | | 1 | | 1 | 1 | 1 | 1 | | 1 |
| Spyridium globulosum | | 1 | | 1 | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Stirlingia latifolia | | | | | | | | | 1 | | | | | |
| Stylidium repens | | | | | | | | | 1 | | | | | |
| Synaphea spinulosa subsp. spinulosa | | | | | | | | | 1 | | | | | |
| Tetraria octandra | | 1 | | | | 1 | 1 | | 1 | 1 | | | | 1 |
| Thysanotus arenarius | | 1 | | | | | 1 | | 1 | | | | | |
| Thysanotus manglesii/ patersonii | | | | | | | | | 1 | | | | | |

| Taxon | Status | VT1 | VT10 | VT12 | VT13 | VT2 | VT3 | VT3a | VT4 | VT5 | VT6 | VT7 | VT8 | VT9 |
|---------------------------------------|--------|-----|------|------|------|-----|-----|------|-----|-----|-----|-----|-----|-----|
| Thysanotus multiflorus | | | | | | | | | | 1 | | | | |
| Trachyandra divaricata | * | 1 | | 1 | | | | | 1 | | | | | 1 |
| Trachymene coerulea | | | | | 1 | | | | | | | | | |
| Trachymene pilosa | | 1 | | | | | 1 | | 1 | 1 | | | 1 | 1 |
| Tricoryne elatior | | 1 | | | | | 1 | | 1 | 1 | | 1 | | 1 |
| Trifolium arvense | * | | | | | | | 1 | 1 | | | | | |
| Trifolium campestre | * | | | 1 | | | | | | | | | | 1 |
| Trifolium sp. (insufficient material) | * | 1 | 1 | | | | 1 | 1 | 1 | | 1 | 1 | 1 | 1 |
| Trymalium ledifolium | | | | | | | | | | 1 | | | | |
| Ursinia anthemoides | * | | | | | | 1 | | 1 | | | | | 1 |
| Verticordia nitens | | | | | | | | | 1 | | | | | |
| Vulpia myuros | * | | | | | | 1 | 1 | 1 | 1 | 1 | | | 1 |
| Wahlenbergia capensis | * | | | | | | 1 | | 1 | | | | | 1 |
| Wahlenbergia preissii | | | | | | | | | | 1 | | | | |
| Waitzia acuminata var. acuminata | | | | | | | | | | 1 | | | | |
| Waitzia suaveolens var. suaveolens | | | | | | | | | 1 | | | | | 1 |
| Watsonia sp. (insufficient material) | * | | | | | | | | | | 1 | | | |
| Xanthorrhoea gracilis | | 1 | | | | | | | | 1 | | | | 1 |
| Xanthorrhoea preissii | | 1 | 1 | | | | 1 | | 1 | 1 | 1 | | | 1 |
| Xanthosia huegelii | | | | | | | 1 | | | | | | | |
| Zantedeschia aethiopica | *, DP | | | | | | | | | | 1 | | | |

Quadrat Data

| ID | VT | DATE | OBSERVER | Eastings | Northing | LOCATION | SITETYPE | DIMENSIONS | LANDFORM | SLOPE | SOILTYPE | SOILCOLOUR | DRAINAGE | FIREFREQ | FIREINT | SC1 | SC1COVER | SC2 | SC2COVER | LEAFLIT | WOODLIT |
|-----|------|------------|----------|--------------|---------------|----------|----------|------------|-------------------|------------|----------|--------------|----------|------------|------------------|--------------|----------|-------------------|----------|-----------|------------|
| Q01 | VT1 | 1/11/2016 | GO | 371241.14380 | 6511431.71900 | Part 2 | Quadrat | 10 x 10 | Upper slope | Moderate | Sand | Brown | Good | Old (>5yr) | No damage | Loose soil | 100% | | | Sparse | Moderate |
| Q02 | VT2 | 1/11/2016 | GO | 371222.58590 | 6510757.42760 | Part 2 | Quadrat | 10 x 10 | Upper slope | Gentle | Sand | Yellow | Good | Nil | No damage | Loose soil | 100% | | | Sparse | Moderate |
| Q03 | VT3 | 1/11/2016 | GO | 371260.54840 | 6509979.43700 | Part 2 | Quadrat | 10 x 10 | Swale | Negligible | Sand | Brown | Good | Nil | No damage | Loose soil | 100% | | | Moderate | Moderate |
| Q04 | VT4 | 1/11/2016 | GO | 371218.08340 | 6510418.12350 | Part 2 | Quadrat | 10 x 10 | Swale | Negligible | Sand | Brown/Yellow | Good | Nil | No damage | Loose soil | 100% | | | Sparse | Sparse |
| Q05 | VT5 | 1/11/2016 | GO | 371227.95040 | 6510541.49110 | Part 2 | Quadrat | 10 x 10 | Ridge | Moderate | Sand | Brown | Good | Nil | No damage | Loose soil | 100% | | | Sparse | Negligible |
| Q06 | VT6 | 1/11/2016 | GO | 371515.54930 | 6508822.93800 | Part 2 | Quadrat | 10 x 10 | Lower slope | Gentle | Sand | Brown | Good | Nil | No damage | Loose soil | 100% | | | Plentiful | Moderate |
| Q07 | VT7 | 1/11/2016 | GO | 371606.14780 | 6508662.19390 | Part 2 | Quadrat | 10 x 10 | Mid-slope | Gentle | Sand | Brown | Good | Nil | No damage | Loose soil | 100% | | | Plentiful | Moderate |
| Q08 | VT8 | 1/11/2016 | GO | 371834.56500 | 6508321.70000 | Part 2 | Quadrat | 10 x 10 | Ridge/Upper slope | Moderate | Sand | Brown | Good | Old | No damage | Loose soil | 30-70% | Limestone (>60cm) | 10-30% | Moderate | Moderate |
| Q09 | VT5 | 1/11/2016 | GO | 371878.84050 | 6508221.35840 | Part 2 | Quadrat | 10 x 10 | Ridge | Moderate | Sand | White | Good | Nil | No damage | Loose soil | 70% | Limestone (>60cm) | 10-30% | Sparse | Negligible |
| Q10 | VT3a | 1/11/2016 | GO | 371941.54960 | 6508127.34140 | Part 2 | Quadrat | 10 x 10 | Swale | Moderate | Sand | Brown | Good | Nil | No damage | Loose soil | >70% | Limestone (>60cm) | <2% | Moderate | Moderate |
| Q11 | VT9 | 1/11/2016 | GO | 372310.70700 | 6507958.56530 | Part 2 | Quadrat | 10 x 10 | Swale | Gentle | Sand | Brown | Good | Nil | No damage | Loose soil | 100% | | | Plentiful | Moderate |
| Q12 | VT5 | 1/11/2016 | GO | 372635.89850 | 6507864.62610 | Part 2 | Quadrat | 10 x 10 | Ridge | Gentle | Sand | Brown/White | Good | Nil | No damage | Loose soil | 100% | | | Sparse | Sparse |
| Q13 | VT10 | 2/11/2016 | GO | 372460.12890 | 6507889.26220 | Part 2 | Quadrat | 10 x 10 | Lower slope | Gentle | Sand | Brown | Good | Nil | No damage | Loose soil | 100% | | | Sparse | Sparse |
| Q14 | VT9 | 2/11/2016 | GO | 372753.97740 | 6507835.03080 | Part 2 | Quadrat | 10 x 10 | Mid-slope | Gentle | Sand | Brown | Good | Nil | No damage | Loose soil | 100% | | | Moderate | Moderate |
| Q15 | VT1 | 2/11/2016 | GO | 373848.92230 | 6506709.61860 | Part 2 | Quadrat | 10 x 10 | Plain | Negligible | Sand | Brown | Good | Nil | No damage | Loose soil | 100% | | | Sparse | Moderate |
| Q16 | VT3 | 2/11/2016 | GO | 373832.12350 | 6505852.79800 | Part 2 | Quadrat | 10 x 10 | Ridge | Gentle | Sand | Light brown | Good | Nil | No damage | Loose soil | >70% | Limestone (>60cm) | 2<10% | Moderate | Moderate |
| Q25 | VT6 | 3/11/2016 | GO | 372256.31840 | 6507955.30990 | Part 2 | Quadrat | 10 x 10 | Plain | Gentle | Sand | Brown | Good | Nil | No damage | Loose soil | 100% | | | Plentiful | Moderate |
| Q26 | VT1 | 3/05/2017 | AB | 371283.36317 | 6511268.71517 | Part 2 | Quadrat | 10 x 10 | Plain | Gentle | Sand | Orange | Good | Old | No damage | Loose soil | 2-10% | Humus/Litter | 30-70% | Moderate | Sparse |
| Q27 | VT6 | 3/05/2017 | AB | 372211.63590 | 6507960.48841 | Part 2 | Quadrat | 10 x 10 | Plain | Gentle | Sand | Brown | Good | Nil | No damage | Humus/Litter | >70% | Loose soil | 2-10% | Plentiful | Moderate |
| Q28 | VT10 | 4/05/2017 | AB | 372428.31919 | 6507902.72978 | Part 2 | Quadrat | 10 x 10 | Swale | Gentle | Sand | Brown | Good | Old | Few trees killed | Humus/Litter | 10-30% | | | Moderate | Moderate |
| Q29 | VT4 | 11/07/2017 | AB | 371749.00000 | 6513016.00000 | Part 2 | Quadrat | 10 x 10 | Mid-slope | Gentle | Sand | Yellow | Good | Old | No damage | Loose soil | 30-70% | | | Sparse | Sparse |
| Q30 | VT4 | 5/12/2017 | AB | 371689.64470 | 6510576.57760 | Part 2 | Quadrat | 10 x 10 | Hill crest | Gentle | Sand | Grey/ yellow | Good | Old | No damage | Loose soil | 100% | | | Moderate | Sparse |
| Q37 | VT9 | 6/11/2018 | AN | 372192.95340 | 6508180.14170 | Part 2 | Quadrat | 10 x 10 | Swale | Gentle | Sand | Brown | Good | Old | No damage | Loose soil | 100% | | | Sparse | Sparse |
| Q38 | VT5 | 6/11/2018 | AN | 372394.26750 | 6508098.72800 | Part 2 | Quadrat | 10 x 10 | Ridge | Moderate | Sand | White | Good | Old | No damage | Loose soil | 100% | | | Sparse | Sparse |
| Q39 | VT5 | 7/11/2018 | AN | 372833.01600 | 6507957.21120 | Part 2 | Quadrat | 10 x 10 | Lower slope | Gentle | Sand | Brown | Good | Old | Minor impact | Loose soil | 100% | | | Moderate | Sparse |
| Q40 | VT1 | 7/11/2018 | AN | 373952.84370 | 6506880.50360 | Part 2 | Quadrat | 10 x 10 | Plain | Negligible | Sand | Brown | Good | Old | No damage | Loose soil | 100% | | | Plentiful | Plentiful |
| Q41 | VT1 | 7/11/2018 | AN | 373752.98810 | 6506727.85410 | Part 2 | Quadrat | 10 x 10 | Ridge | Moderate | Sand | Brown | Good | Old | No damage | Loose soil | 100% | | | Sparse | Sparse |
| Q42 | VT9 | 7/11/2018 | AN | 372874.79940 | 6507749.29610 | Part 2 | Quadrat | 10 x 10 | Plain | Negligible | Sand | Brown | Good | Old | No damage | Loose soil | 100% | | | Moderate | Sparse |
| Q43 | VT3 | 7/11/2018 | AN | 372106.81040 | 6507967.14390 | Part 2 | Quadrat | 10 x 10 | Mid slope | Negligible | Sand | Brown | Good | Old | No damage | Loose soil | 100% | | | Plentiful | Moderate |
| R06 | VT5 | 6/11/2018 | AN | 372000.53000 | 6508281.85000 | Part 2 | Releve | | Plain | Negligible | Sand | Brown | Good | Old | No damage | Loose soil | 100% | | | Sparse | Sparse |
| R07 | VT12 | 7/11/2018 | AN | 373031.60650 | 6507903.65320 | Part 2 | Releve | | Lower slope | Negligible | Sand | Brown | Good | Old | No damage | Loose soil | 100% | | | Moderate | Sparse |
| R08 | VT1 | 7/11/2018 | AN | 373284.67800 | 6507793.66080 | Part 2 | Releve | | Mid slope | Moderate | Sand | Brown | Good | Old | No damage | Loose soil | 100% | | | Moderate | Moderate |
| R09 | VT1 | 7/11/2018 | AN | 373762.19640 | 6507258.82390 | Part 2 | Releve | | Ridge | Moderate | Sand | Brown | Good | Old | No damage | Loose soil | 100% | | | Sparse | Sparse |
| R10 | VT6 | 7/11/2018 | AN | 373364.74980 | 6507468.14000 | Part 2 | Releve | | Plain | Negligible | Sand | Grey | Good | Old | No damage | Loose soil | 100% | | | Sparse | Sparse |

| Site ID | Family | Genus | Species | Status | Cover (%) | Height (m) | VT |
|---------|-------------------|--------------|------------------------------|--------|-----------|------------|-----|
| Q01 | Asteraceae | Arctotheca | calendula | * | <2% N | 0.2 | VT1 |
| Q01 | Asphodelaceae | Asphodelus | fistulosus | * | 30-70% | 0.3 | VT1 |
| Q01 | Poaceae | Avena | barbata | * | <2% N | 0.3 | VT1 |
| Q01 | Poaceae | Bromus | diandrus | * | 2-10% | 0.2 | VT1 |
| Q01 | Aizoaceae | Carpobrotus | edulis | * | 2-10% | 0.15 | VT1 |
| Q01 | Poaceae | Ehrharta | longiflora | * | <2% N | 0.2 | VT1 |
| Q01 | Euphorbiaceae | Euphorbia | peplus | * | <2% T | 0.2 | VT1 |
| Q01 | Asteraceae | Hypochaeris | glabra | * | <2% N | 0.2 | VT1 |
| Q01 | Poaceae | Lolium | rigidum | * | <2% N | 0.3 | VT1 |
| Q01 | Fabaceae | Medicago | polymorpha | * | <2% N | 0.1 | VT1 |
| Q01 | Oxalidaceae | Oxalis | sp. (insufficient material) | * | <2% N | 0.03 | VT1 |
| Q01 | Asteraceae | Sonchus | oleraceus | * | <2% N | 0.3 | VT1 |
| Q01 | Fabaceae | Acacia | saligna | | 70-100% | 3.2 | VT1 |
| Q01 | Poaceae | Aristida | sp. (insufficient material) | | <2% T | 0.3 | VT1 |
| Q01 | Proteaceae | Banksia | attenuata | | 2-10% | 1.5 | VT1 |
| Q01 | Proteaceae | Banksia | sessilis | | <2% T | 0.1 | VT1 |
| Q01 | Haemodoraceae | Conostylis | candicans | | <2% T | 0.2 | VT1 |
| Q01 | Crassulaceae | Crassula | sp. (insufficient material) | | <2% N | 0.1 | VT1 |
| Q01 | Crassulaceae | Crassula | sp. (insufficient material) | | <2% N | 0.05 | VT1 |
| Q01 | Proteaceae | Hakea | prostrata | | <2% T | 0.7 | VT1 |
| Q01 | Amaranthaceae | Ptilotus | manglesii | | <2% T | 0.2 | VT1 |
| Q01 | Chenopodiaceae | Rhagodia | baccata subsp. baccata | | <2% T | 0.4 | VT1 |
| Q01 | Cyperaceae | Tetraria | octandra | | <2% T | 0.3 | VT1 |
| Q01 | Asparagaceae | Thysanotus | arenarius | | <2% T | 0.3 | VT1 |
| Q01 | Apiaceae | Trachymene | pilosa | | <2% T | 0.2 | VT1 |
| Q01 | Xanthorrhoeaceae | Xanthorrhoea | preissii | | 2-10% | 2 | VT1 |
| Q02 | Brassicaceae | Brassica | tournefortii | * | <2% N | 0.1 | VT4 |
| Q02 | Poaceae | Briza | maxima | * | <2% N | 0.3 | VT4 |
| Q02 | Poaceae | Bromus | diandrus | * | <2% N | 0.3 | VT4 |
| Q02 | Aizoaceae | Carpobrotus | edulis | * | <2% N | 0.2 | VT4 |
| Q02 | Iridaceae | Gladiolus | caryophyllaceus | * | <2% N | 0.7 | VT4 |
| Q02 | Asteraceae | Hypochaeris | glabra | * | <2% N | 0.1 | VT4 |
| Q02 | Orobanchaceae | Orobanche | minor | * | <2% T | 0.1 | VT4 |
| Q02 | Caryophyllaceae | Petrrohagia | dubia | * | <2% N | 0.2 | VT4 |
| Q02 | Asphodelaceae | Trachyandra | divaricata | * | <2% T | 0.5 | VT4 |
| Q02 | Fabaceae | Trifolium | arvense | * | <2% N | 0.1 | VT4 |
| Q02 | Poaceae | Vulpia | myuros | * | <2% N | 0.3 | VT4 |
| Q02 | Fabaceae | Acacia | pulchella | | <2% T | 1 | VT4 |
| Q02 | Proteaceae | Banksia | dallanneyi | | <2% N | 0.2 | VT4 |
| Q02 | Proteaceae | Banksia | sessilis | | <2% T | 1.5 | VT4 |
| Q02 | Montiaceae | Calandrinia | sp. (insufficient material) | | <2% T | 0.2 | VT4 |
| Q02 | Montiaceae | Calandrinia | tholiformis | | <2% N | 0.05 | VT4 |
| Q02 | Myrtaceae | Calothamnus | quadrifidus | | 2-10% | 1.2 | VT4 |
| Q02 | Proteaceae | Conospermum | integerrimum | | <2% T | 0.3 | VT4 |
| Q02 | Proteaceae | Conospermum | stoechadis subsp. stoechadis | | 2-10% | 1.2 | VT4 |
| Q02 | Haemodoraceae | Conostylis | candicans | | <2% N | 0.2 | VT4 |
| Q02 | Crassulaceae | Crassula | colorata | | <2% N | 0.05 | VT4 |
| Q02 | Crassulaceae | Crassula | sp. (insufficient material) | | <2% N | 0.05 | VT4 |
| Q02 | Goodeniaceae | Dampiera | linearis | | <2% N | 0.1 | VT4 |
| Q02 | Restionaceae | Desmodcladus | flexuosus | | <2% N | 0.1 | VT4 |
| Q02 | Hemerocallidaceae | Dianella | revoluta | | <2% T | 0.5 | VT4 |
| Q02 | Proteaceae | Hakea | lissocarpha | | 2-10% | 1 | VT4 |
| Q02 | Fabaceae | Hardenbergia | comptoniana | | <2% T | 1 | VT4 |
| Q02 | Cyperaceae | Isolepis | marginata | | <2% N | 0.03 | VT4 |
| Q02 | Fabaceae | Jacksonia | calcicola | | <2% N | 0.3 | VT4 |
| Q02 | Fabaceae | Jacksonia | furcellata | | 10-30% | 0.8 | VT4 |
| Q02 | Goodeniaceae | Lechenaultia | linarioides | | <2% N | 0.2 | VT4 |
| Q02 | Campanulaceae | Lobelia | tenuior | | <2% N | 0.4 | VT4 |
| Q02 | Asparagaceae | Lomandra | maritima | | <2% T | 0.2 | VT4 |

| Site ID | Family | Genus | Species | Status | Cover (%) | Height (m) | VT |
|---------|-------------------|--------------|-----------------------------|--------|-----------|------------|-----|
| Q02 | Myrtaceae | Melaleuca | systema | | 10-30% | 1 | VT4 |
| Q02 | Cyperaceae | Mesomelaena | pseudostygia | | <2% T | 0.4 | VT4 |
| Q02 | Asteraceae | Millotia | myosotidifolia | | <2% N | 0.05 | VT4 |
| Q02 | Asteraceae | Olearia | axillaris | | <2% T | 1 | VT4 |
| Q02 | Asteraceae | Olearia | axillaris | | <2% T | 1.5 | VT4 |
| Q02 | Proteaceae | Petrophile | axillaris | | <2% T | 0.5 | VT4 |
| Q02 | Asteraceae | Podotheca | gnaphalioides | | <2% N | 0.2 | VT4 |
| Q02 | Phyllanthaceae | Poranthera | drummondii | | <2% N | 0.03 | VT4 |
| Q02 | Poaceae | Rytidosperma | macalpinei | | <2% N | 0.7 | VT4 |
| Q02 | Poaceae | Rytidosperma | macalpinei | | <2% N | 0.5 | VT4 |
| Q02 | Goodeniaceae | Scaevola | canescens | | <2% T | 0.2 | VT4 |
| Q02 | Goodeniaceae | Scaevola | globulifera | | <2% N | 0.5 | VT4 |
| Q02 | Asteraceae | Senecio | pinnatifolius | | <2% N | 0.3 | VT4 |
| Q02 | Cyperaceae | Tetraria | octandra | | <2% N | 0.4 | VT4 |
| Q02 | Asparagaceae | Thysanotus | arenarius | | <2% T | 0.3 | VT4 |
| Q02 | Apiaceae | Trachymene | pilosa | | <2% N | 0.1 | VT4 |
| Q02 | Hemerocallidaceae | Tricoryne | elatior | | <2% N | 0.4 | VT4 |
| Q03 | Poaceae | Avena | barbata | * | <2% T | 0.8 | VT3 |
| Q03 | Brassicaceae | Brassica | tournefortii | * | <2% T | 0.6 | VT3 |
| Q03 | Poaceae | Briza | maxima | * | <2% N | 0.2 | VT3 |
| Q03 | Poaceae | Briza | minor | * | <2% N | 0.3 | VT3 |
| Q03 | Aizoaceae | Carpobrotus | edulis | * | <2% T | 0.2 | VT3 |
| Q03 | Poaceae | Ehrharta | longiflora | * | <2% N | 0.8 | VT3 |
| Q03 | Euphorbiaceae | Euphorbia | terraccina | * | 2-10% | 0.4 | VT3 |
| Q03 | Iridaceae | Gladiolus | caryophyllaceus | * | <2% T | 0.8 | VT3 |
| Q03 | Asteraceae | Hypochaeris | glabra | * | <2% N | 0.2 | VT3 |
| Q03 | Poaceae | Lagurus | ovatus | * | <2% T | 0.4 | VT3 |
| Q03 | Primulaceae | Lysimachia | arvensis | * | <2% N | 0.3 | VT3 |
| Q03 | Caryophyllaceae | Petrorhagia | dubia | * | <2% N | 0.3 | VT3 |
| Q03 | Asteraceae | Sonchus | oleraceus | * | <2% N | 0.2 | VT3 |
| Q03 | Fabaceae | Trifolium | sp. (insufficient material) | * | <2% N | 0.2 | VT3 |
| Q03 | Asteraceae | Ursinia | anthemoides | * | <2% N | 0.2 | VT3 |
| Q03 | Poaceae | Vulpia | myuros | * | <2% N | 0.3 | VT3 |
| Q03 | Fabaceae | Acacia | cyclops | | 2-10% | 2.5 | VT3 |
| Q03 | Fabaceae | Acacia | pulchella | | <2% T | 1.5 | VT3 |
| Q03 | Proteaceae | Banksia | dallanneyi | | <2% T | 0.3 | VT3 |
| Q03 | Proteaceae | Banksia | sessilis | | 30-70% | 3 | VT3 |
| Q03 | Myrtaceae | Calothamnus | quadrifidus | | 30-70% | 1.2 | VT3 |
| Q03 | Lauraceae | Cassytha | pomiformis | | <2% T | creeper | VT3 |
| Q03 | Crassulaceae | Crassula | sp. (insufficient material) | | <2% N | 0.1 | VT3 |
| Q03 | Goodeniaceae | Dampiera | linearis | | <2% T | 0.3 | VT3 |
| Q03 | Restionaceae | Desmodcladus | flexuosus | | <2% N | 0.2 | VT3 |
| Q03 | Hemerocallidaceae | Dianella | revoluta | | <2% T | 0.3 | VT3 |
| Q03 | Proteaceae | Hakea | lissocarpa | | <2% T | 0.4 | VT3 |
| Q03 | Cyperaceae | Isolepis | marginata | | <2% N | 0.03 | VT3 |
| Q03 | Fabaceae | Jacksonia | calcicola | | <2% T | 1 | VT3 |
| Q03 | Fabaceae | Jacksonia | furcellata | | <2% T | 1 | VT3 |
| Q03 | Asparagaceae | Lomandra | maritima | | <2% T | 0.4 | VT3 |
| Q03 | Zamiaceae | Macrozamia | riedlei | | <2% T | 1 | VT3 |
| Q03 | Myrtaceae | Melaleuca | systema | | 10-30% | 1 | VT3 |
| Q03 | Cyperaceae | Mesomelaena | pseudostygia | | 10-30% | 0.4 | VT3 |
| Q03 | Phyllanthaceae | Phyllanthus | calycinus | | <2% T | 0.5 | VT3 |
| Q03 | Goodeniaceae | Scaevola | canescens | | <2% T | 0.3 | VT3 |
| Q03 | Rhamnaceae | Spyridium | globulosum | | 10-30% | 2.2 | VT3 |
| Q03 | Cyperaceae | Tetraria | octandra | | <2% N | 0.2 | VT3 |
| Q03 | Asparagaceae | Thysanotus | arenarius | | <2% T | 0.3 | VT3 |
| Q03 | Apiaceae | Trachymene | pilosa | | <2% N | 0.2 | VT3 |
| Q04 | Asteraceae | Arctotheca | calendula | * | <2% T | 0.2 | VT4 |
| Q04 | Poaceae | Avena | barbata | * | <2% N | 1 | VT4 |

| Site ID | Family | Genus | Species | Status | Cover (%) | Height (m) | VT |
|---------|-------------------|---------------|-----------------------------|--------|-----------|------------|-----|
| Q04 | Poaceae | Briza | maxima | * | <2% N | 0.3 | VT4 |
| Q04 | Aizoaceae | Carpobrotus | edulis | * | <2% T | 0.2 | VT4 |
| Q04 | Poaceae | Ehrharta | longiflora | * | <2% N | 0.4 | VT4 |
| Q04 | Iridaceae | Gladiolus | caryophyllaceus | * | <2% T | 0.8 | VT4 |
| Q04 | Caryophyllaceae | Petrorhagia | dubia | * | <2% N | 0.2 | VT4 |
| Q04 | Asteraceae | Senecio | vulgaris | * | <2% N | 0.02 | VT4 |
| Q04 | Asteraceae | Sonchus | oleraceus | * | <2% N | 0.2 | VT4 |
| Q04 | Fabaceae | Trifolium | arvense | * | <2% N | 0.2 | VT4 |
| Q04 | Fabaceae | Trifolium | sp. (insufficient material) | * | <2% N | 0.1 | VT4 |
| Q04 | Asteraceae | Ursinia | anthemoides | * | <2% N | 0.2 | VT4 |
| Q04 | Poaceae | Vulpia | myuros | * | <2% N | 0.2 | VT4 |
| Q04 | Campanulaceae | Wahlenbergia | capensis | * | <2% T | 0.3 | VT4 |
| Q04 | Asparagaceae | Acanthocarpus | preissii | | <2% T | 0.2 | VT4 |
| Q04 | Casuarinaceae | Allocasuarina | humilis | | <2% T | 1.2 | VT4 |
| Q04 | Proteaceae | Banksia | attenuata | | 2-10% | 3.5 | VT4 |
| Q04 | Proteaceae | Banksia | menziesii | | 10-30% | 3 | VT4 |
| Q04 | Colchicaceae | Burchardia | congesta | | <2% T | 0.3 | VT4 |
| Q04 | Myrtaceae | Calothamnus | quadrifidus | | 10-30% | 1.2 | VT4 |
| Q04 | Goodeniaceae | Dampiera | linearis | | <2% N | 0.2 | VT4 |
| Q04 | Restionaceae | Desmocladius | flexuosus | | 2-10% | 0.2 | VT4 |
| Q04 | Proteaceae | Hakea | lissocarpa | | <2% T | 1.5 | VT4 |
| Q04 | Proteaceae | Hakea | trifurcata | | 2-10% | 2.1 | VT4 |
| Q04 | Dilleniaceae | Hibbertia | hypericoides | | 10-30% | 0.8 | VT4 |
| Q04 | Fabaceae | Jacksonia | calicola | | <2% T | 0.4 | VT4 |
| Q04 | Fabaceae | Jacksonia | furcellata | | <2% T | 0.5 | VT4 |
| Q04 | Cyperaceae | Lepidosperma | sp. (insufficient material) | | <2% T | 0.5 | VT4 |
| Q04 | Zamiaceae | Macrozamia | riedlei | | <2% T | 0.5 | VT4 |
| Q04 | Cyperaceae | Mesomelaena | pseudostygia | | 2-10% | 0.3 | VT4 |
| Q04 | Asteraceae | Millotia | myosotidifolia | | <2% N | 0.1 | VT4 |
| Q04 | Rubiaceae | Opercularia | vaginata | | <2% N | 0.2 | VT4 |
| Q04 | Proteaceae | Petrophile | macrostachya | | <2% T | 0.5 | VT4 |
| Q04 | Asteraceae | Podotheca | gnaphalioides | | 2-10% | 0.2 | VT4 |
| Q04 | Goodeniaceae | Scaevola | canescens | | 2-10% | 0.3 | VT4 |
| Q04 | Asteraceae | Siloxerus | humifusus | | <2% N | 0.02 | VT4 |
| Q04 | Asparagaceae | Thysanotus | arenarius | | <2% T | 0.8 | VT4 |
| Q04 | Asparagaceae | Thysanotus | manglesii/ patersonii | | <2% T | creeper | VT4 |
| Q04 | Apiaceae | Trachymene | pilosa | | <2% N | 0.1 | VT4 |
| Q04 | Asteraceae | Waitzia | suaveolens var. suaveolens | | <2% N | 0.2 | VT4 |
| Q04 | Xanthorrhoeaceae | Xanthorrhoea | preissii | | 2-10% | 2.2 | VT4 |
| Q05 | Asphodelaceae | Asphodelus | fistulosus | * | 2-10% | 0.3 | VT5 |
| Q05 | Brassicaceae | Brassica | tournefortii | * | <2% T | 0.4 | VT5 |
| Q05 | Poaceae | Bromus | diandrus | * | <2% N | 0.2 | VT5 |
| Q05 | Poaceae | Eragrostis | sp. (insufficient material) | * | <2% N | 0.02 | VT5 |
| Q05 | Euphorbiaceae | Euphorbia | terraccina | * | <2% T | 0.5 | VT5 |
| Q05 | Poaceae | Lagurus | ovatus | * | <2% N | 0.2 | VT5 |
| Q05 | Geraniaceae | Pelargonium | capitatum | * | 2-10% | 0.5 | VT5 |
| Q05 | Iridaceae | Romulea | rosea | * | <2% N | 0.2 | VT5 |
| Q05 | Poaceae | Vulpia | myuros | * | <2% N | 0.2 | VT5 |
| Q05 | Fabaceae | Acacia | cochlearis | | <2% T | 0.2 | VT5 |
| Q05 | Fabaceae | Acacia | saligna | | <2% T | 1.8 | VT5 |
| Q05 | Asparagaceae | Acanthocarpus | preissii | | <2% T | 0.3 | VT5 |
| Q05 | Poaceae | Austrostipa | flavescens | | <2% N | 1 | VT5 |
| Q05 | Lauraceae | Cassytha | pomiformis | | 2-10% | creeper | VT5 |
| Q05 | Haemodoraceae | Conostylis | candicans | | 2-10% | 0.2 | VT5 |
| Q05 | Crassulaceae | Crassula | sp. (insufficient material) | | <2% N | 0.02 | VT5 |
| Q05 | Crassulaceae | Crassula | sp. (insufficient material) | | <2% N | 0.1 | VT5 |
| Q05 | Restionaceae | Desmocladius | flexuosus | | 2-10% | 0.15 | VT5 |
| Q05 | Hemerocallidaceae | Dianella | revoluta | | <2% T | 0.1 | VT5 |
| Q05 | Droseraceae | Drosera | sp. (insufficient material) | | <2% T | 0.2 | VT5 |

| Site ID | Family | Genus | Species | Status | Cover (%) | Height (m) | VT |
|---------|-------------------|--------------|-----------------------------|--------|-----------|------------|-----|
| Q05 | Fabaceae | Gastrolobium | nervosum | | <2% T | 0.3 | VT5 |
| Q05 | Fabaceae | Gompholobium | tomentosum | | <2% T | 0.1 | VT5 |
| Q05 | Fabaceae | Hardenbergia | comptoniana | | <2% N | 0.2 | VT5 |
| Q05 | Lamiaceae | Hemiandra | glabra | | <2% N | 0.1 | VT5 |
| Q05 | Dilleniaceae | Hibbertia | hypericoides | | <2% T | 0.3 | VT5 |
| Q05 | Dilleniaceae | Hibbertia | racemosa | | <2% T | 0.3 | VT5 |
| Q05 | Violaceae | Hybanthus | calycinus | | <2% N | 0.3 | VT5 |
| Q05 | Fabaceae | Kennedia | prostrata | | <2% N | creeper | VT5 |
| Q05 | Cyperaceae | Lepidosperma | pubisquameum | | <2% T | 0.3 | VT5 |
| Q05 | Asparagaceae | Lomandra | maritima | | 30-70% | 0.3 | VT5 |
| Q05 | Myrtaceae | Melaleuca | systema | | 10-30% | 0.4 | VT5 |
| Q05 | Asteraceae | Olearia | axillaris | | <2% T | 1.1 | VT5 |
| Q05 | Phyllanthaceae | Phyllanthus | calycinus | | <2% T | 0.2 | VT5 |
| Q05 | Asteraceae | Podotheca | gnaphalioides | | <2% N | 0.2 | VT5 |
| Q05 | Poaceae | Rytidosperma | compressa | | <2% N | 0.8 | VT5 |
| Q05 | Poaceae | Rytidosperma | occidentale | | <2% T | 0.2 | VT5 |
| Q05 | Asteraceae | Senecio | pinnatifolius | | <2% N | 0.3 | VT5 |
| Q05 | Rhamnaceae | Spyridium | globulosum | | <2% T | 0.2 | VT5 |
| Q05 | Apiaceae | Trachymene | pilosa | | <2% N | 0.1 | VT5 |
| Q05 | Asteraceae | Waitzia | acuminata var. acuminata | | <2% N | 0.1 | VT5 |
| Q06 | Asphodelaceae | Asphodelus | fistulosus | * | <2% T | 0.3 | VT6 |
| Q06 | Poaceae | Avena | barbata | * | 30-70% | 1 | VT6 |
| Q06 | Brassicaceae | Brassica | tournefortii | * | <2% T | 0.7 | VT6 |
| Q06 | Poaceae | Bromus | diandrus | * | <2% N | 0.2 | VT6 |
| Q06 | Poaceae | Ehrharta | calycina | * | <2% N | 1 | VT6 |
| Q06 | Euphorbiaceae | Euphorbia | terraccina | * | <2% N | 0.4 | VT6 |
| Q06 | Poaceae | Lagurus | ovatus | * | <2% T | 0.2 | VT6 |
| Q06 | Poaceae | Lolium | rigidum | * | 2-10% | 0.8 | VT6 |
| Q06 | Geraniaceae | Pelargonium | capitatum | * | <2% T | 0.3 | VT6 |
| Q06 | Asteraceae | Sonchus | oleraceus | * | <2% N | 0.2 | VT6 |
| Q06 | Fabaceae | Trifolium | sp. (insufficient material) | * | <2% N | 0.1 | VT6 |
| Q06 | Iridaceae | Watsonia | sp. (insufficient material) | * | <2% T | 0.5 | VT6 |
| Q06 | Hemerocallidaceae | Dianella | revoluta | | <2% T | 0.5 | VT6 |
| Q06 | Myrtaceae | Eucalyptus | gomphocephala | | 30-70% | 13 | VT6 |
| Q06 | Chenopodiaceae | Rhagodia | baccata subsp. baccata | | <2% T | 0.6 | VT6 |
| Q06 | Chenopodiaceae | Rhagodia | baccata subsp. baccata | | <2% T | 0.8 | VT6 |
| Q06 | Poaceae | Rytidosperma | compressa | | <2% T | | VT6 |
| Q06 | Rhamnaceae | Spyridium | globulosum | | 30-70% | 3.5 | VT6 |
| Q07 | Poaceae | Avena | barbata | * | 30-70% | 1 | VT7 |
| Q07 | Euphorbiaceae | Euphorbia | terraccina | * | 2-10% | 0.2 | VT7 |
| Q07 | Poaceae | Lagurus | ovatus | * | 10-30% | 0.2 | VT7 |
| Q07 | Poaceae | Lolium | rigidum | * | <2% N | 0.3 | VT7 |
| Q07 | Fabaceae | Medicago | polymorpha | * | <2% N | 0.2 | VT7 |
| Q07 | Asteraceae | Sonchus | oleraceus | * | <2% N | 0.2 | VT7 |
| Q07 | Fabaceae | Trifolium | sp. (insufficient material) | * | 10-30% | 0.3 | VT7 |
| Q07 | Fabaceae | Acacia | cyclops | | <2% T | 0.4 | VT7 |
| Q07 | Myrtaceae | Agonis | flexuosa | | 10-30% | 5 | VT7 |
| Q07 | Myrtaceae | Eucalyptus | petrensis | | 30-70% | 8 | VT7 |
| Q07 | Fabaceae | Hardenbergia | comptoniana | | 2-10% | creeper | VT7 |
| Q07 | Asparagaceae | Lomandra | maritima | | 2-10% | 0.3 | VT7 |
| Q07 | Phyllanthaceae | Phyllanthus | calycinus | | <2% T | 0.3 | VT7 |
| Q07 | Rhamnaceae | Spyridium | globulosum | | 30-70% | 2 | VT7 |
| Q07 | Hemerocallidaceae | Tricoryne | elatior | | <2% N | 0.3 | VT7 |
| Q08 | Asphodelaceae | Asphodelus | fistulosus | * | <2% T | 0.4 | VT8 |
| Q08 | Poaceae | Avena | barbata | * | <2% N | 1 | VT8 |
| Q08 | Poaceae | Briza | maxima | * | <2% T | 0.2 | VT8 |
| Q08 | Poaceae | Bromus | diandrus | * | <2% N | 0.2 | VT8 |
| Q08 | Poaceae | Ehrharta | sp. (insufficient material) | * | <2% N | 0.2 | VT8 |
| Q08 | Euphorbiaceae | Euphorbia | terraccina | * | 10-30% | 0.8 | VT8 |

| Site ID | Family | Genus | Species | Status | Cover (%) | Height (m) | VT |
|---------|-------------------|---------------|-----------------------------|--------|-----------|------------|-----|
| Q08 | Iridaceae | Gladiolus | caryophyllaceus | * | <2% T | 0.8 | VT8 |
| Q08 | Poaceae | Lagurus | ovatus | * | <2% N | 0.4 | VT8 |
| Q08 | Poaceae | Lolium | rigidum | * | <2% N | 0.2 | VT8 |
| Q08 | Fabaceae | Lupinus | angustifolius | * | 2-10% | 0.6 | VT8 |
| Q08 | Primulaceae | Lysimachia | arvensis | * | <2% N | 0.1 | VT8 |
| Q08 | Caryophyllaceae | Petrorhagia | dubia | * | <2% N | 0.3 | VT8 |
| Q08 | Iridaceae | Romulea | rosea | * | <2% N | 0.2 | VT8 |
| Q08 | Fabaceae | Trifolium | sp. (insufficient material) | * | <2% N | 0.2 | VT8 |
| Q08 | Dilleniaceae | Hibbertia | spicata subsp. leptotheca | P3 | <2% T | 0.3 | VT8 |
| Q08 | Fabaceae | Acacia | cyclops | | <2% T | 1.4 | VT8 |
| Q08 | Fabaceae | Acacia | pulchella | | <2% T | 1 | VT8 |
| Q08 | Fabaceae | Acacia | rostellifera | | <2% T | 1.6 | VT8 |
| Q08 | Casuarinaceae | Allocasuarina | sp. (insufficient material) | | <2% T | 0.2 | VT8 |
| Q08 | Poaceae | Aristida | sp. (insufficient material) | | <2% N | 1 | VT8 |
| Q08 | Proteaceae | Banksia | dallanneyi | | <2% T | 0.2 | VT8 |
| Q08 | Proteaceae | Banksia | sessilis | | 2-10% | 1 | VT8 |
| Q08 | Myrtaceae | Calothamnus | quadrifidus | | 2-10% | 1 | VT8 |
| Q08 | Lauraceae | Cassytha | pomiformis | | <2% T | creeper | VT8 |
| Q08 | Crassulaceae | Crassula | colorata | | <2% N | 0.02 | VT8 |
| Q08 | Crassulaceae | Crassula | sp. (insufficient material) | | <2% N | 0.03 | VT8 |
| Q08 | Crassulaceae | Crassula | sp. (insufficient material) | | <2% T | 0.05 | VT8 |
| Q08 | Rhamnaceae | Cryptandra | mutila | | 2-10% | 0.4 | VT8 |
| Q08 | Restionaceae | Desmocladius | flexuosus | | 10-30% | 0.15 | VT8 |
| Q08 | Restionaceae | Desmocladius | flexuosus | | 10-30% | 0.2 | VT8 |
| Q08 | Hemerocallidaceae | Dianella | revoluta | | <2% T | 0.3 | VT8 |
| Q08 | Fabaceae | Gompholobium | tomentosum | | <2% T | 0.3 | VT8 |
| Q08 | Proteaceae | Grevillea | preissii subsp. preissii | | 2-10% | 0.8 | VT8 |
| Q08 | Proteaceae | Hakea | trifurcata | | <2% T | 1.8 | VT8 |
| Q08 | Fabaceae | Hardenbergia | comptoniana | | <2% T | creeper | VT8 |
| Q08 | Cyperaceae | Lepidosperma | sp. (insufficient material) | | <2% N | 0.2 | VT8 |
| Q08 | Ericaceae | Leucopogon | insularis | | <2% T | 0.2 | VT8 |
| Q08 | Ericaceae | Leucopogon | parviflorus | | <2% T | 0.5 | VT8 |
| Q08 | Myrtaceae | Melaleuca | huegelii | | 10-30% | 1.2 | VT8 |
| Q08 | Myrtaceae | Melaleuca | systema | | 30-70% | 1 | VT8 |
| Q08 | Rubiaceae | Opercularia | vaginata | | <2% T | 0.2 | VT8 |
| Q08 | Chenopodiaceae | Rhagodia | baccata subsp. baccata | | <2% T | 0.4 | VT8 |
| Q08 | Poaceae | Rytidosperma | occidentale | | <2% T | 1 | VT8 |
| Q08 | Rhamnaceae | Spyridium | globulosum | | 30-70% | 2 | VT8 |
| Q08 | Apiaceae | Trachymene | pilosa | | <2% N | 0.15 | VT8 |
| Q09 | Poaceae | Avena | barbata | * | <2% T | 0.8 | VT5 |
| Q09 | Brassicaceae | Brassica | tournefortii | * | <2% T | 0.2 | VT5 |
| Q09 | Poaceae | Ehrharta | calycina | * | <2% N | 0.4 | VT5 |
| Q09 | Euphorbiaceae | Euphorbia | terraccina | * | <2% N | 0.15 | VT5 |
| Q09 | Poaceae | Lagurus | ovatus | * | <2% N | 0.2 | VT5 |
| Q09 | Poaceae | Lolium | rigidum | * | <2% N | 0.3 | VT5 |
| Q09 | Primulaceae | Lysimachia | arvensis | * | <2% N | 0.03 | VT5 |
| Q09 | Geraniaceae | Pelargonium | capitatum | * | <2% N | 0.2 | VT5 |
| Q09 | Caryophyllaceae | Petrorhagia | dubia | * | <2% T | 0.2 | VT5 |
| Q09 | Iridaceae | Romulea | rosea | * | <2% N | 0.15 | VT5 |
| Q09 | Asteraceae | Sonchus | oleraceus | * | <2% T | 0.1 | VT5 |
| Q09 | Poaceae | Vulpia | myuros | * | <2% T | 0.15 | VT5 |
| Q09 | Fabaceae | Acacia | cochlearis | | | | VT5 |
| Q09 | Lauraceae | Cassytha | pomiformis | | <2% T | creeper | VT5 |
| Q09 | Haemodoraceae | Conostylis | candicans | | <2% T | 0.2 | VT5 |
| Q09 | Haemodoraceae | Conostylis | candicans subsp. calcicola | | <2% T | 0.2 | VT5 |
| Q09 | Crassulaceae | Crassula | sp. (insufficient material) | | <2% N | 0.08 | VT5 |
| Q09 | Rhamnaceae | Cryptandra | mutila | | <2% N | 0.3 | VT5 |
| Q09 | Restionaceae | Desmocladius | flexuosus | | 2-10% | 0.1 | VT5 |
| Q09 | Scrophulariaceae | Eremophila | glabra | | <2% T | 0.3 | VT5 |

| Site ID | Family | Genus | Species | Status | Cover (%) | Height (m) | VT |
|---------|-------------------|---------------|-----------------------------|--------|-----------|------------|------|
| Q09 | Fabaceae | Gastrolobium | nervosum | | <2% T | creeper | VT5 |
| Q09 | Fabaceae | Gompholobium | tomentosum | | <2% T | 0.3 | VT5 |
| Q09 | Fabaceae | Hardenbergia | comptoniana | | <2% T | creeper | VT5 |
| Q09 | Dilleniaceae | Hibbertia | hypericoides | | 2-10% | 0.2 | VT5 |
| Q09 | Fabaceae | Jacksonia | calicicola | | | | VT5 |
| Q09 | Fabaceae | Kennedia | prostrata | | <2% N | creeper | VT5 |
| Q09 | Goodeniaceae | Lechenaultia | linarioides | | <2% T | 0.2 | VT5 |
| Q09 | Cyperaceae | Lepidosperma | sp. (insufficient material) | | <2% T | 0.15 | VT5 |
| Q09 | Ericaceae | Leucopogon | insularis | | <2% T | 0.2 | VT5 |
| Q09 | Asparagaceae | Lomandra | maritima | | 30-70% | 0.3 | VT5 |
| Q09 | Myrtaceae | Melaleuca | systema | | 2-10% | 0.3 | VT5 |
| Q09 | Rubiaceae | Opercularia | vaginata | | <2% T | 0.2 | VT5 |
| Q09 | Asteraceae | Podolepis | lessonii | | <2% N | 0.1 | VT5 |
| Q09 | Asteraceae | Podotheca | gnaphalioides | | <2% N | 0.2 | VT5 |
| Q09 | Poaceae | Rytidosperma | occidentale | | <2% N | 0.3 | VT5 |
| Q09 | Asteraceae | Waitzia | acuminata var. acuminata | | <2% N | 0.2 | VT5 |
| Q10 | Poaceae | Avena | barbata | * | <2% N | 0.3 | VT3a |
| Q10 | Brassicaceae | Brassica | tournefortii | * | <2% T | 0.2 | VT3a |
| Q10 | Poaceae | Briza | maxima | * | 2-10% | 0.2 | VT3a |
| Q10 | Poaceae | Bromus | diandrus | * | <2% T | 0.2 | VT3a |
| Q10 | Poaceae | Ehrharta | calycina | * | <2% N | 0.2 | VT3a |
| Q10 | Poaceae | Ehrharta | longiflora | * | <2% T | 0.2 | VT3a |
| Q10 | Euphorbiaceae | Euphorbia | terraccina | * | <2% N | 0.2 | VT3a |
| Q10 | Asteraceae | Hypochaeris | glabra | * | <2% N | 0.15 | VT3a |
| Q10 | Poaceae | Lagurus | ovatus | * | 2-10% | 0.3 | VT3a |
| Q10 | Poaceae | Lolium | rigidum | * | <2% N | 0.3 | VT3a |
| Q10 | Primulaceae | Lysimachia | arvensis | * | 2-10% | 0.2 | VT3a |
| Q10 | Caryophyllaceae | Petrorhagia | dubia | * | <2% T | 0.2 | VT3a |
| Q10 | Iridaceae | Romulea | rosea | * | <2% N | 1.2 | VT3a |
| Q10 | Fabaceae | Trifolium | arvense | * | <2% N | 0.2 | VT3a |
| Q10 | Fabaceae | Trifolium | sp. (insufficient material) | * | <2% T | 0.2 | VT3a |
| Q10 | Poaceae | Vulpia | myuros | * | 2-10% | 0.2 | VT3a |
| Q10 | Fabaceae | Acacia | cyclops | | <2% T | 1.5 | VT3a |
| Q10 | Fabaceae | Acacia | saligna | | <2% T | 1 | VT3a |
| Q10 | Asparagaceae | Acanthocarpus | preissii | | <2% T | 0.3 | VT3a |
| Q10 | Casuarinaceae | Allocasuarina | fraseriana | | <2% T | 5 | VT3a |
| Q10 | Proteaceae | Banksia | dallanneyi | | <2% T | 0.2 | VT3a |
| Q10 | Proteaceae | Banksia | sessilis | | 2-10% | 2.5 | VT3a |
| Q10 | Lauraceae | Cassytha | pomiformis | | <2% T | creeper | VT3a |
| Q10 | Crassulaceae | Crassula | colorata | | <2% N | 0.05 | VT3a |
| Q10 | Crassulaceae | Crassula | sp. (insufficient material) | | <2% N | 0.05 | VT3a |
| Q10 | Crassulaceae | Crassula | sp. (insufficient material) | | <2% N | 0.02 | VT3a |
| Q10 | Restionaceae | Desmocladus | flexuosus | | <2% N | 0.2 | VT3a |
| Q10 | Hemerocallidaceae | Dianella | revoluta | | <2% T | 0.3 | VT3a |
| Q10 | Fabaceae | Gompholobium | tomentosum | | <2% T | 0.2 | VT3a |
| Q10 | Proteaceae | Hakea | lissocarpha | | 2-10% | 0.6 | VT3a |
| Q10 | Fabaceae | Hardenbergia | comptoniana | | <2% T | creeper | VT3a |
| Q10 | Ericaceae | Leucopogon | insularis | | <2% T | 1 | VT3a |
| Q10 | Ericaceae | Leucopogon | parviflorus | | <2% T | 0.3 | VT3a |
| Q10 | Asparagaceae | Lomandra | maritima | | 2-10% | 0.3 | VT3a |
| Q10 | Myrtaceae | Melaleuca | huegelii | | <2% T | 0.8 | VT3a |
| Q10 | Myrtaceae | Melaleuca | systema | | 2-10% | 0.7 | VT3a |
| Q10 | Asteraceae | Olearia | axillaris | | <2% T | 0.9 | VT3a |
| Q10 | Phyllanthaceae | Phyllanthus | calycinus | | <2% T | 0.7 | VT3a |
| Q10 | Chenopodiaceae | Rhagodia | baccata subsp. baccata | | <2% T | 1 | VT3a |
| Q10 | Rhamnaceae | Spyridium | globulosum | | 30-70% | 3 | VT3a |
| Q11 | Poaceae | Avena | barbata | * | <2% N | 1 | VT9 |
| Q11 | Poaceae | Briza | maxima | * | 10-30% | 0.2 | VT9 |
| Q11 | Aizoaceae | Carpobrotus | edulis | * | 2-10% | 0.2 | VT9 |

| Site ID | Family | Genus | Species | Status | Cover (%) | Height (m) | VT |
|---------|------------------|--------------|-----------------------------|--------|-----------|------------|------|
| Q11 | Poaceae | Ehrharta | calycina | * | 10-30% | 1 | VT9 |
| Q11 | Euphorbiaceae | Euphorbia | terraccina | * | 2-10% | 0.3 | VT9 |
| Q11 | Iridaceae | Gladiolus | caryophyllaceus | * | <2% T | 0.7 | VT9 |
| Q11 | Poaceae | Lolium | rigidum | * | <2% N | 0.3 | VT9 |
| Q11 | Primulaceae | Lysimachia | arvensis | * | 2-10% | 0.2 | VT9 |
| Q11 | Geraniaceae | Pelargonium | capitatum | * | <2% N | 0.4 | VT9 |
| Q11 | Iridaceae | Romulea | rosea | * | <2% N | 0.15 | VT9 |
| Q11 | Fabaceae | Trifolium | sp. (insufficient material) | * | <2% N | 0.2 | VT9 |
| Q11 | Fabaceae | Acacia | cyclops | | <2% T | 1.5 | VT9 |
| Q11 | Proteaceae | Banksia | attenuata | | 30-70% | 8 | VT9 |
| Q11 | Proteaceae | Banksia | dallanneyi | | <2% N | 0.2 | VT9 |
| Q11 | Crassulaceae | Crassula | sp. (insufficient material) | | <2% N | 0.03 | VT9 |
| Q11 | Fabaceae | Hardenbergia | comptoniana | | <2% N | creeper | VT9 |
| Q11 | Ericaceae | Leucopogon | ?propinquus | | <2% T | 0.3 | VT9 |
| Q11 | Asparagaceae | Lomandra | maritima | | 2-10% | 0.3 | VT9 |
| Q11 | Zamiaceae | Macrozamia | riedlei | | <2% T | 1.2 | VT9 |
| Q11 | Myrtaceae | Melaleuca | systema | | <2% T | 0.2 | VT9 |
| Q11 | Chenopodiaceae | Rhagodia | baccata subsp. baccata | | 2-10% | 0.5 | VT9 |
| Q11 | Rhamnaceae | Spyridium | globulosum | | 30-70% | 2 | VT9 |
| Q11 | Cyperaceae | Tetraria | octandra | | <2% T | 0.3 | VT9 |
| Q11 | Xanthorrhoeaceae | Xanthorrhoea | preissii | | 10-30% | 1.8 | VT9 |
| Q12 | Poaceae | Bromus | diandrus | * | <2% N | 0.2 | VT5 |
| Q12 | Poaceae | Ehrharta | calycina | * | <2% N | 0.5 | VT5 |
| Q12 | Poaceae | Eriachne | sp. (insufficient material) | * | <2% N | 0.1 | VT5 |
| Q12 | Poaceae | Lolium | rigidum | * | <2% N | 0.2 | VT5 |
| Q12 | Primulaceae | Lysimachia | arvensis | * | <2% N | 0.1 | VT5 |
| Q12 | Iridaceae | Romulea | rosea | * | <2% N | 0.1 | VT5 |
| Q12 | Fabaceae | Acacia | cochlearis | | <2% T | 1.1 | VT5 |
| Q12 | Haemodoraceae | Conostylis | candicans | | <2% N | 0.1 | VT5 |
| Q12 | Haemodoraceae | Conostylis | candicans subsp. calcicola | | 2-10% | 0.4 | VT5 |
| Q12 | Crassulaceae | Crassula | sp. (insufficient material) | | <2% N | 0.05 | VT5 |
| Q12 | Goodeniaceae | Dampiera | linearis | | <2% T | 0.15 | VT5 |
| Q12 | Restionaceae | Desmocladus | flexuosus | | 10-30% | 0.2 | VT5 |
| Q12 | Lamiaceae | Hemiandra | glabra | | <2% T | 0.2 | VT5 |
| Q12 | Cyperaceae | Isolepis | marginata | | <2% N | 0.05 | VT5 |
| Q12 | Cyperaceae | Lepidosperma | leptostachyum | | 2-10% | 0.15 | VT5 |
| Q12 | Asparagaceae | Lomandra | maritima | | 30-70% | 0.3 | VT5 |
| Q12 | Myrtaceae | Melaleuca | systema | | 10-30% | 1 | VT5 |
| Q12 | Asteraceae | Olearia | axillaris | | <2% T | 1.5 | VT5 |
| Q12 | Phyllanthaceae | Phyllanthus | calycinus | | <2% T | 0.3 | VT5 |
| Q12 | Chenopodiaceae | Rhagodia | baccata subsp. baccata | | <2% T | 0.3 | VT5 |
| Q12 | Poaceae | Rytidosperma | occidentale | | <2% N | 0.2 | VT5 |
| Q12 | Rhamnaceae | Spyridium | globulosum | | 2-10% | 1.5 | VT5 |
| Q13 | Poaceae | Avena | barbata | * | <2% N | 1 | VT10 |
| Q13 | Brassicaceae | Brassica | tournefortii | * | <2% T | 0.7 | VT10 |
| Q13 | Poaceae | Bromus | diandrus | * | 2-10% | 0.2 | VT10 |
| Q13 | Aizoaceae | Carpobrotus | edulis | * | <2% T | 0.2 | VT10 |
| Q13 | Caryophyllaceae | Cerastium | glomeratum | * | <2% N | 0.15 | VT10 |
| Q13 | Poaceae | Lagurus | ovatus | * | <2% N | 0.2 | VT10 |
| Q13 | Poaceae | Lolium | rigidum | * | <2% N | 0.3 | VT10 |
| Q13 | Caryophyllaceae | Petrorhagia | dubia | * | <2% N | 0.3 | VT10 |
| Q13 | Iridaceae | Romulea | rosea | * | <2% N | 0.2 | VT10 |
| Q13 | Caryophyllaceae | Silene | gallica | * | <2% N | 0.2 | VT10 |
| Q13 | Fabaceae | Trifolium | sp. (insufficient material) | * | <2% N | 0.1 | VT10 |
| Q13 | Proteaceae | Banksia | dallanneyi | | 2-10% | 1.5 | VT10 |
| Q13 | Haemodoraceae | Conostylis | aculeata | | <2% N | 0.3 | VT10 |
| Q13 | Haemodoraceae | Conostylis | candicans subsp. calcicola | | <2% T | 0.2 | VT10 |
| Q13 | Crassulaceae | Crassula | sp. (insufficient material) | | <2% N | 0.05 | VT10 |
| Q13 | Crassulaceae | Crassula | sp. (insufficient material) | | <2% N | 0.08 | VT10 |

| Site ID | Family | Genus | Species | Status | Cover (%) | Height (m) | VT |
|---------|-------------------|---------------|-----------------------------|--------|-----------|------------|------|
| Q13 | Restionaceae | Desmocladus | flexuosus | | 2-10% | 0.15 | VT10 |
| Q13 | Proteaceae | Hakea | prostrata | | <2% T | 1 | VT10 |
| Q13 | Fabaceae | Jacksonia | calcolica | | 2-10% | 0.5 | VT10 |
| Q13 | Fabaceae | Kennedia | prostrata | | <2% N | creeper | VT10 |
| Q13 | Cyperaceae | Lepidosperma | sp. (insufficient material) | | <2% T | 0.3 | VT10 |
| Q13 | Ericaceae | Leucopogon | insularis | | <2% T | 0.9 | VT10 |
| Q13 | Ericaceae | Leucopogon | parviflorus | | <2% T | 0.8 | VT10 |
| Q13 | Asparagaceae | Lomandra | maritima | | 30-70% | 0.3 | VT10 |
| Q13 | Xanthorrhoeaceae | Xanthorrhoea | preissii | | 30-70% | 1.2 | VT10 |
| Q14 | Poaceae | Avena | barbata | * | <2% T | 1 | VT9 |
| Q14 | Poaceae | Briza | maxima | * | <2% N | 0.2 | VT9 |
| Q14 | Aizoaceae | Carpobrotus | edulis | * | <2% T | 0.1 | VT9 |
| Q14 | Poaceae | Ehrharta | longiflora | * | 10-30% | 0.8 | VT9 |
| Q14 | Iridaceae | Gladiolus | caryophyllaceus | * | <2% T | 0.6 | VT9 |
| Q14 | Asteraceae | Hypochaeris | glabra | * | <2% N | 0.2 | VT9 |
| Q14 | Primulaceae | Lysimachia | arvensis | * | <2% N | 0.15 | VT9 |
| Q14 | Oxalidaceae | Oxalis | sp. (insufficient material) | * | <2% T | 0.03 | VT9 |
| Q14 | Caryophyllaceae | Petrorhagia | dubia | * | <2% N | 0.2 | VT9 |
| Q14 | Asteraceae | Sonchus | oleraceus | * | <2% N | 0.2 | VT9 |
| Q14 | Fabaceae | Trifolium | sp. (insufficient material) | * | <2% N | 0.1 | VT9 |
| Q14 | Asteraceae | Ursinia | antheroides | * | <2% N | 0.2 | VT9 |
| Q14 | Fabaceae | Acacia | pulchella | | <2% T | 1 | VT9 |
| Q14 | Casuarinaceae | Allocasuarina | humilis | | 2-10% | 1.8 | VT9 |
| Q14 | Proteaceae | Banksia | attenuata | | 2-10% | 5 | VT9 |
| Q14 | Proteaceae | Banksia | dallanneyi | | <2% T | 0.1 | VT9 |
| Q14 | Montiaceae | Calandrinia | liniflora | | <2% N | 0.1 | VT9 |
| Q14 | Haemodoraceae | Conostylis | aculeata | | <2% N | 0.2 | VT9 |
| Q14 | Haemodoraceae | Conostylis | candicans subsp. calcolica | | <2% N | 0.2 | VT9 |
| Q14 | Crassulaceae | Crassula | colorata | | <2% T | 0.05 | VT9 |
| Q14 | Goodeniaceae | Dampiera | linearis | | <2% T | 0.2 | VT9 |
| Q14 | Restionaceae | Desmocladus | flexuosus | | 10-30% | 0.15 | VT9 |
| Q14 | Restionaceae | Desmocladus | flexuosus | | <2% N | 0.2 | VT9 |
| Q14 | Hemerocallidaceae | Dianella | revoluta | | <2% T | 0.3 | VT9 |
| Q14 | Violaceae | Hybanthus | calycinus | | <2% N | 0.2 | VT9 |
| Q14 | Fabaceae | Jacksonia | calcolica | | 10-30% | 0.4 | VT9 |
| Q14 | Campanulaceae | Lobelia | sp. (insufficient material) | | <2% T | 0.3 | VT9 |
| Q14 | Asparagaceae | Lomandra | maritima | | <2% N | 0.3 | VT9 |
| Q14 | Myrtaceae | Melaleuca | systema | | 30-70% | 1.5 | VT9 |
| Q14 | Asteraceae | Millotia | myosotidifolia | | <2% N | 0.05 | VT9 |
| Q14 | Asteraceae | Podotheca | gnaphalioides | | <2% N | 0.2 | VT9 |
| Q14 | Phyllanthaceae | Poranthera | drummondii | | <2% T | 0.04 | VT9 |
| Q14 | Amaranthaceae | Ptilotus | sp. (insufficient material) | | <2% N | 0.3 | VT9 |
| Q14 | Rhamnaceae | Spyridium | globulosum | | 10-30% | 1.7 | VT9 |
| Q14 | Cyperaceae | Tetraria | octandra | | <2% N | 0.3 | VT9 |
| Q14 | Apiaceae | Trachymene | pilosa | | <2% N | 0.1 | VT9 |
| Q14 | Hemerocallidaceae | Tricoryne | elatior | | <2% N | 0.3 | VT9 |
| Q14 | Asteraceae | Waitzia | suaveolens var. suaveolens | | <2% N | 0.1 | VT9 |
| Q15 | Poaceae | Avena | barbata | * | <2% N | 0.7 | VT1 |
| Q15 | Poaceae | Bromus | diandrus | * | 2-10% | 0.3 | VT1 |
| Q15 | Aizoaceae | Carpobrotus | edulis | * | 10-30% | 0.2 | VT1 |
| Q15 | Poaceae | Ehrharta | longiflora | * | <2% N | 0.4 | VT1 |
| Q15 | Orobanchaceae | Orobanche | minor | * | <2% T | 0.15 | VT1 |
| Q15 | Geraniaceae | Pelargonium | capitatum | * | <2% N | 0.5 | VT1 |
| Q15 | Iridaceae | Romulea | rosea | * | <2% N | 0.2 | VT1 |
| Q15 | Asphodelaceae | Trachyandra | divaricata | * | <2% T | 0.4 | VT1 |
| Q15 | Fabaceae | Trifolium | sp. (insufficient material) | * | <2% N | 0.1 | VT1 |
| Q15 | Fabaceae | Acacia | saligna | | 10-30% | 2.7 | VT1 |
| Q15 | Proteaceae | Banksia | attenuata | | 10-30% | 0.5 | VT1 |
| Q15 | Crassulaceae | Crassula | colorata | | <2% N | 0.05 | VT1 |

| Site ID | Family | Genus | Species | Status | Cover (%) | Height (m) | VT |
|---------|-------------------|--------------|-----------------------------|--------|-----------|------------|-----|
| Q15 | Crassulaceae | Crassula | sp. (insufficient material) | | <2% N | 0.08 | VT1 |
| Q15 | Crassulaceae | Crassula | sp. (insufficient material) | | <2% N | 0.03 | VT1 |
| Q15 | Apiaceae | Daucus | glochidiatus | | <2% N | 0.1 | VT1 |
| Q15 | Santalaceae | Exocarpos | sparteus | | <2% T | 3 | VT1 |
| Q15 | Asparagaceae | Lomandra | maritima | | <2% T | 0.3 | VT1 |
| Q15 | Myrtaceae | Melaleuca | systema | | 10-30% | 1.1 | VT1 |
| Q15 | Chenopodiaceae | Rhagodia | baccata subsp. baccata | | 2-10% | 1 | VT1 |
| Q15 | Chenopodiaceae | Rhagodia | baccata subsp. baccata | | <2% T | 0.5 | VT1 |
| Q15 | Poaceae | Rytidosperma | compressa | | <2% N | 1 | VT1 |
| Q15 | Rhamnaceae | Spyridium | globulosum | | 2-10% | 1.1 | VT1 |
| Q15 | Cyperaceae | Tetraria | octandra | | <2% T | 0.2 | VT1 |
| Q15 | Xanthorrhoeaceae | Xanthorrhoea | preissii | | 2-10% | 2.3 | VT1 |
| Q16 | Poaceae | Avena | barbata | * | <2% N | 0.4 | VT3 |
| Q16 | Brassicaceae | Brassica | tournefortii | * | <2% T | 0.6 | VT3 |
| Q16 | Poaceae | Briza | maxima | * | 2-10% | 0.3 | VT3 |
| Q16 | Aizoaceae | Carpobrotus | edulis | * | <2% T | 0.1 | VT3 |
| Q16 | Poaceae | Ehrharta | longiflora | * | <2% N | 0.3 | VT3 |
| Q16 | Euphorbiaceae | Euphorbia | terraccina | * | <2% N | 0.3 | VT3 |
| Q16 | Iridaceae | Gladiolus | caryophyllaceus | * | <2% T | 1.1 | VT3 |
| Q16 | Asteraceae | Hypochaeris | glabra | * | <2% N | 0.2 | VT3 |
| Q16 | Asteraceae | Hypochaeris | glabra | * | <2% T | 0.2 | VT3 |
| Q16 | Poaceae | Lagurus | ovatus | * | 2-10% | 0.3 | VT3 |
| Q16 | Primulaceae | Lysimachia | arvensis | * | <2% N | 0.1 | VT3 |
| Q16 | Caryophyllaceae | Petrorhagia | dubia | * | <2% N | 0.2 | VT3 |
| Q16 | Iridaceae | Romulea | rosea | * | <2% T | 0.05 | VT3 |
| Q16 | Asteraceae | Sonchus | oleraceus | * | <2% N | 0.2 | VT3 |
| Q16 | Fabaceae | Trifolium | sp. (insufficient material) | * | <2% N | 0.1 | VT3 |
| Q16 | Fabaceae | Trifolium | sp. (insufficient material) | * | <2% T | 0.2 | VT3 |
| Q16 | Asteraceae | Ursinia | anthemoides | * | <2% N | 0.1 | VT3 |
| Q16 | Poaceae | Vulpia | myuros | * | <2% N | 0.2 | VT3 |
| Q16 | Fabaceae | Acacia | pulchella | | 2-10% | 6.1 | VT3 |
| Q16 | Haemodoraceae | Anigozanthos | sp. (insufficient material) | | <2% T | 0.3 | VT3 |
| Q16 | Poaceae | Aristida | sp. (insufficient material) | | <2% N | 0.8 | VT3 |
| Q16 | Proteaceae | Banksia | sessilis | | 30-70% | 1.6 | VT3 |
| Q16 | Myrtaceae | Calothamnus | quadrifidus | | <2% T | 0.3 | VT3 |
| Q16 | Haemodoraceae | Conostylis | candicans | | <2% T | 0.2 | VT3 |
| Q16 | Goodeniaceae | Dampiera | linearis | | <2% N | 0.2 | VT3 |
| Q16 | Apiaceae | Daucus | glochidiatus | | <2% N | 0.15 | VT3 |
| Q16 | Restionaceae | Desmocladus | flexuosus | | 2-10% | 0.2 | VT3 |
| Q16 | Hemerocallidaceae | Dianella | revoluta | | <2% T | 0.4 | VT3 |
| Q16 | Fabaceae | Gastrolobium | nervosum | | <2% T | 0.2 | VT3 |
| Q16 | Proteaceae | Grevillea | preissii subsp. preissii | | <2% T | 0.5 | VT3 |
| Q16 | Proteaceae | Hakea | lissocarpha | | 2-10% | 1.1 | VT3 |
| Q16 | Fabaceae | Hardenbergia | comptoniana | | <2% T | creeper | VT3 |
| Q16 | Violaceae | Hybanthus | calycinus | | <2% N | 0.3 | VT3 |
| Q16 | Fabaceae | Jacksonia | calcolica | | <2% T | 0.2 | VT3 |
| Q16 | Asparagaceae | Lomandra | maritima | | 10-30% | 0.3 | VT3 |
| Q16 | Myrtaceae | Melaleuca | systema | | 2-10% | 0.6 | VT3 |
| Q16 | Cyperaceae | Mesomelaena | pseudostygia | | 2-10% | 0.4 | VT3 |
| Q16 | Rubiaceae | Opercularia | vaginata | | 2-10% | 0.2 | VT3 |
| Q16 | Phyllanthaceae | Phyllanthus | calycinus | | <2% T | 0.4 | VT3 |
| Q16 | Chenopodiaceae | Rhagodia | baccata subsp. baccata | | <2% T | 0.6 | VT3 |
| Q16 | Cyperaceae | Schoenus | lanatus | | <2% T | 0.1 | VT3 |
| Q16 | Hemerocallidaceae | Tricoryne | elatior | | <2% N | 0.2 | VT3 |
| Q16 | Xanthorrhoeaceae | Xanthorrhoea | preissii | | 2-10% | 1 | VT3 |
| Q16 | Apiaceae | Xanthosia | huegelii | | <2% N | 0.2 | VT3 |
| Q25 | Poaceae | Avena | barbata | * | 30-70% | 1.2 | VT6 |
| Q25 | Poaceae | Briza | maxima | * | <2% N | 0.2 | VT6 |
| Q25 | Poaceae | Bromus | diandrus | * | <2% T | 0.1 | VT6 |

| Site ID | Family | Genus | Species | Status | Cover (%) | Height (m) | VT |
|---------|-------------------|--------------|-----------------------------|--------|-----------|------------|------|
| Q25 | Poaceae | Ehrharta | longiflora | * | 2-10% | 0.2 | VT6 |
| Q25 | Euphorbiaceae | Euphorbia | terraccina | * | 2-10% | 0.5 | VT6 |
| Q25 | Poaceae | Hordeum | sp. (insufficient material) | * | 30-70% | 0.2 | VT6 |
| Q25 | Poaceae | Lagurus | ovatus | * | <2% N | 0.2 | VT6 |
| Q25 | Poaceae | Lolium | rigidum | * | <2% N | 0.3 | VT6 |
| Q25 | Primulaceae | Lysimachia | arvensis | * | <2% N | 0.1 | VT6 |
| Q25 | Iridaceae | Romulea | rosea | * | <2% N | 0.2 | VT6 |
| Q25 | Fabaceae | Acacia | cyclops | | 2-10% | 2.5 | VT6 |
| Q25 | Fabaceae | Acacia | saligna | | <2% T | 1 | VT6 |
| Q25 | Myrtaceae | Eucalyptus | gomphocephala | | 30-70% | 18 | VT6 |
| Q25 | Rhamnaceae | Spyridium | globulosum | | 30-70% | 3 | VT6 |
| Q26 | Asphodelaceae | Asphodelus | fistulosus | * | 30-70% | 0.3 | VT1 |
| Q26 | Poaceae | Avena | barbata | * | <2% N | 0.5 | VT1 |
| Q26 | Aizoaceae | Carpobrotus | edulis | * | 10-30% | 0.1 | VT1 |
| Q26 | Euphorbiaceae | Euphorbia | terraccina | * | <2% T | 0.3 | VT1 |
| Q26 | Geraniaceae | Pelargonium | capitatum | * | <2% N | 0.1 | VT1 |
| Q26 | Fabaceae | Acacia | saligna | | 10-30% | 3.5 | VT1 |
| Q26 | Proteaceae | Banksia | attenuata | | <2% T | 2 | VT1 |
| Q26 | Hemerocallidaceae | Corynotheca | micrantha | | <2% T | 0.2 | VT1 |
| Q26 | Proteaceae | Hakea | lissocarpa | | 2-10% | 1.5 | VT1 |
| Q26 | Myrtaceae | Melaleuca | systema | | <2% T | 1.5 | VT1 |
| Q26 | Chenopodiaceae | Rhagodia | baccata subsp. baccata | | <2% T | 1 | VT1 |
| Q26 | Cyperaceae | Tetraria | octandra | | <2% T | 0.5 | VT1 |
| Q27 | Poaceae | Avena | barbata | * | <2% N | 0.2 | VT6 |
| Q27 | Aizoaceae | Carpobrotus | edulis | * | <2% T | 0.2 | VT6 |
| Q27 | Euphorbiaceae | Euphorbia | terraccina | * | <2% N | 0.2 | VT6 |
| Q27 | Iridaceae | Romulea | rosea | * | <2% T | 0.2 | VT6 |
| Q27 | Poaceae | Vulpia | myuros | * | <2% N | 0.2 | VT6 |
| Q27 | Fabaceae | Acacia | cyclops | | <2% T | 2 | VT6 |
| Q27 | Fabaceae | Acacia | saligna | | <2% T | 2 | VT6 |
| Q27 | Myrtaceae | Eucalyptus | gomphocephala | | 30-70% | 25 | VT6 |
| Q27 | Ericaceae | Leucopogon | insularis | | <2% T | 0.5 | VT6 |
| Q27 | Ericaceae | Leucopogon | parviflorus | | <2% T | 0.5 | VT6 |
| Q27 | Asparagaceae | Lomandra | maritima | | <2% T | 0.2 | VT6 |
| Q27 | Chenopodiaceae | Rhagodia | baccata subsp. baccata | | <2% T | 0.5 | VT6 |
| Q27 | Rhamnaceae | Spyridium | globulosum | | 30-70% | 3 | VT6 |
| Q28 | Poaceae | Avena | barbata | * | <2% T | 1.5 | VT10 |
| Q28 | Aizoaceae | Carpobrotus | edulis | * | 2-10% | pros | VT10 |
| Q28 | Caryophyllaceae | Petrorhagia | dubia | * | <2% T | 0.2 | VT10 |
| Q28 | Iridaceae | Romulea | rosea | * | <2% T | 0.2 | VT10 |
| Q28 | Proteaceae | Banksia | dallanneyi | | <2% T | 0.1 | VT10 |
| Q28 | Restionaceae | Desmocladus | flexuosus | | 2-10% | 0.2 | VT10 |
| Q28 | Proteaceae | Hakea | prostrata | | 30-70% | 1 | VT10 |
| Q28 | Fabaceae | Jacksonia | calcicola | | 10-30% | 1 | VT10 |
| Q28 | Ericaceae | Leucopogon | parviflorus | | <2% T | 0.4 | VT10 |
| Q28 | Asparagaceae | Lomandra | maritima | | 2-10% | 0.3 | VT10 |
| Q28 | Myrtaceae | Melaleuca | systema | | <2% T | 0.4 | VT10 |
| Q28 | Xanthorrhoeaceae | Xanthorrhoea | preissii | | 30-70% | 0.5 | VT10 |
| Q29 | Asphodelaceae | Asphodelus | fistulosus | * | <2% T | 0.2 | VT4 |
| Q29 | Aizoaceae | Carpobrotus | edulis | * | <2% T | 0.1 | VT4 |
| Q29 | Euphorbiaceae | Euphorbia | terraccina | * | <2% T | 0.3 | VT4 |
| Q29 | Geraniaceae | Pelargonium | capitatum | * | <2% T | 0.3 | VT4 |
| Q29 | Iridaceae | Romulea | rosea | * | <2% T | 0.2 | VT4 |
| Q29 | Fabaceae | Acacia | pulchella | | <2% T | 1.5 | VT4 |
| Q29 | Fabaceae | Acacia | saligna | | <2% T | 3 | VT4 |
| Q29 | Proteaceae | Banksia | attenuata | | 2-10% | 2 | VT4 |
| Q29 | Proteaceae | Banksia | menziesii | | 10-30% | 2 | VT4 |
| Q29 | Proteaceae | Banksia | sessilis | | 2-10% | 1.5 | VT4 |
| Q29 | Myrtaceae | Calothamnus | quadrifidus | | 10-30% | 1.5 | VT4 |

| Site ID | Family | Genus | Species | Status | Cover (%) | Height (m) | VT |
|---------|-------------------|---------------|-----------------------------|--------|-----------|------------|-----|
| Q29 | Haemodoraceae | Conostylis | aculeata | | <2% T | 0.3 | VT4 |
| Q29 | Hemerocallidaceae | Corynotheca | micrantha | | <2% T | 0.2 | VT4 |
| Q29 | Restionaceae | Desmocladus | flexuosus | | <2% T | 0.2 | VT4 |
| Q29 | Droseraceae | Drosera | sp. (insufficient material) | | <2% T | creeper | VT4 |
| Q29 | Fabaceae | Gompholobium | tomentosum | | <2% T | 0.3 | VT4 |
| Q29 | Proteaceae | Hakea | trifurcata | | <2% T | 2 | VT4 |
| Q29 | Dilleniaceae | Hibbertia | hypericoides | | 10-30% | 1 | VT4 |
| Q29 | Goodeniaceae | Lechenaultia | linarioides | | <2% T | 0.4 | VT4 |
| Q29 | Asparagaceae | Lomandra | maritima | | <2% T | 0.3 | VT4 |
| Q29 | Zamiaceae | Macrozamia | riedlei | | <2% T | 1.5 | VT4 |
| Q29 | Myrtaceae | Melaleuca | systema | | <2% T | 1.5 | VT4 |
| Q29 | Cyperaceae | Mesomelaena | pseudostygia | | 2-10% | 1 | VT4 |
| Q29 | Proteaceae | Petrophile | macrostachya | | <2% T | 0.5 | VT4 |
| Q29 | Phyllanthaceae | Phyllanthus | calycinus | | <2% T | 1 | VT4 |
| Q29 | Poaceae | Poaceae | sp. (insufficient material) | | <2% T | 0.3 | VT4 |
| Q29 | Chenopodiaceae | Rhagodia | baccata subsp. baccata | | <2% T | 0.3 | VT4 |
| Q29 | Xanthorrhoeaceae | Xanthorrhoea | preissii | | 10-30% | 2 | VT4 |
| Q30 | Poaceae | Avena | barbata | * | <2% | 0.3 | VT4 |
| Q30 | Poaceae | Briza | maxima | * | <2% | 0.3 | VT4 |
| Q30 | Aizoaceae | Carpobrotus | edulis | * | <2% | 0.2 | VT4 |
| Q30 | Poaceae | Ehrharta | longiflora | * | <2% | 0.5 | VT4 |
| Q30 | Caryophyllaceae | Petrophragma | dubia | * | <2% | 0.3 | VT4 |
| Q30 | Asteraceae | Sonchus | oleraceus | * | <2% | 0.3 | VT4 |
| Q30 | Asteraceae | Ursinia | anthemoides | * | <2% | 0.3 | VT4 |
| Q30 | Fabaceae | Acacia | pulchella | | <2% | 1.5 | VT4 |
| Q30 | Casuarinaceae | Allocasuarina | humilis | | 2-10% | 1.5 | VT4 |
| Q30 | Proteaceae | Banksia | attenuata | | 10-30% | 8 | VT4 |
| Q30 | Proteaceae | Banksia | menziesii | | 10-30% | 5 | VT4 |
| Q30 | Myrtaceae | Calothamnus | quadrifidus | | 2-10% | 1.5 | VT4 |
| Q30 | Apiaceae | Daucus | glochidiatus | | <2% | 0.2 | VT4 |
| Q30 | Restionaceae | Desmocladus | flexuosus | | 2-10% | 0.3 | VT4 |
| Q30 | Dilleniaceae | Hibbertia | hypericoides | | 10-30% | 1 | VT4 |
| Q30 | Asteraceae | Hyalosperma | cotula | | <2% | 0.2 | VT4 |
| Q30 | Fabaceae | Jacksonia | calicicola | | <2% | 0.5 | VT4 |
| Q30 | Zamiaceae | Macrozamia | riedlei | | 10-30% | 1.5 | VT4 |
| Q30 | Cyperaceae | Mesomelaena | pseudostygia | | 2-10% | 0.5 | VT4 |
| Q30 | Proteaceae | Petrophile | macrostachya | | 2-10% | 1 | VT4 |
| Q30 | Poaceae | Poa | drummondiana | | <2% | 0.5 | VT4 |
| Q30 | Asteraceae | Podotheca | gnaphalioides | | <2% | 0.2 | VT4 |
| Q37 | Poaceae | Avena | barbata | * | <2% N | 0.3 | VT9 |
| Q37 | Poaceae | Ehrharta | calycina | * | <2% N | 1.2 | VT9 |
| Q37 | Brassicaceae | Euphorbia | terraccina | * | <2% N | 0.4 | VT9 |
| Q37 | Asphodelaceae | Trachyandra | divaricata | * | 10-30% | 0.3 | VT9 |
| Q37 | Fabaceae | Trifolium | campestre | * | <2% T | 0.2 | VT9 |
| Q37 | Poaceae | Vulpia | myuros | * | <2% T | 0.3 | VT9 |
| Q37 | Campanulaceae | Wahlenbergia | capensis | * | <2% N | 0.6 | VT9 |
| Q37 | Poaceae | Austrostipa | flavescens | | <2% T | 0.8 | VT9 |
| Q37 | Proteaceae | Banksia | attenuata | | 10-30% | 4 | VT9 |
| Q37 | Proteaceae | Banksia | sessilis | | 2-10% | 6 | VT9 |
| Q37 | Aizoaceae | Carpobrotus | virescens | | 10-30% | 0.15 | VT9 |
| Q37 | Haemodoraceae | Conostylis | aculeata | | <2% T | 0.3 | VT9 |
| Q37 | Crassulaceae | Crassula | colorata | | <2% N | 0.06 | VT9 |
| Q37 | Restionaceae | Desmocladus | flexuosus | | 2-10% | 0.2 | VT9 |
| Q37 | Proteaceae | Hakea | lissocarpa | | 2-10% | 1 | VT9 |
| Q37 | Proteaceae | Hakea | prostrata | | 2-10% | 1 | VT9 |
| Q37 | Asparagaceae | Lomandra | maritima | | <2% T | 0.4 | VT9 |
| Q37 | Myrtaceae | Melaleuca | systema | | 2-10% | 0.8 | VT9 |
| Q37 | Loranthaceae | Nuytsia | floribunda | | 2-10% | 2.5 | VT9 |
| Q37 | Hemerocallidaceae | Tricoryne | elatior | | <2% N | 0.3 | VT9 |

| Site ID | Family | Genus | Species | Status | Cover (%) | Height (m) | VT |
|---------|-------------------|---------------|-----------------------------|--------|-----------|------------|-----|
| Q38 | Fabaceae | Acacia | cyclops | | <2% T | 1.5 | VT5 |
| Q38 | Casuarinaceae | Allocasuarina | humilis | | <2% T | 1.5 | VT5 |
| Q38 | Poaceae | Austrostipa | flavescens | | <2% T | 1 | VT5 |
| Q38 | Lauraceae | Cassytha | sp. | | <2% T | | VT5 |
| Q38 | Haemodoraceae | Conostylis | candicans | | 2-10% | 0.3 | VT5 |
| Q38 | Fabaceae | Gompholobium | tomentosum | | <2% T | 0.3 | VT5 |
| Q38 | Dilleniaceae | Hibbertia | subvaginata | | <2% T | 0.3 | VT5 |
| Q38 | Fabaceae | Kennedia | prostrata | | <2% T | 0.05 | VT5 |
| Q38 | Ericaceae | Leucopogon | insularis | | <2% T | 0.3 | VT5 |
| Q38 | Ericaceae | Leucopogon | propinquus | | <2% N | 1 | VT5 |
| Q38 | Asparagaceae | Lomandra | maritima | | 30-70% | 0.6 | VT5 |
| Q38 | Ericaceae | Lysinema | pentapetalum | | 2-10% | 0.25 | VT5 |
| Q38 | Myrtaceae | Melaleuca | systema | | 10-30% | 0.4 | VT5 |
| Q38 | Phyllanthaceae | Phyllanthus | calycinus | | <2% T | 0.3 | VT5 |
| Q38 | Thymelaeaceae | Pimelea | ferruginea | | 2-10% | 0.5 | VT5 |
| Q38 | Asparagaceae | Thysanotus | multiflorus | | <2% T | 0.2 | VT5 |
| Q38 | Rhamnaceae | Trymalium | ledifolium | | <2% T | 0.3 | VT5 |
| Q39 | Poaceae | Avena | barbata | * | 0.1 | 0.6 | VT5 |
| Q39 | Poaceae | Ehrharta | calycina | * | <2% N | 0.4 | VT5 |
| Q39 | Euphorbiaceae | Euphorbia | terraccina | * | <2% N | 0.4 | VT5 |
| Q39 | Brassicaceae | Heliophila | pusilla | * | <2% N | 0.2 | VT5 |
| Q39 | Asteraceae | Hypochaeris | glabra | * | <2% T | 0.1 | VT5 |
| Q39 | Iridaceae | Romulea | rosea | * | <2% N | 0.1 | VT5 |
| Q39 | Fabaceae | Acacia | saligna | | 2-10% | 2.5 | VT5 |
| Q39 | Poaceae | Austrostipa | flavescens | | <2% N | 1 | VT5 |
| Q39 | Proteaceae | Banksia | dallanneyi | | <2% T | 0.2 | VT5 |
| Q39 | Aizoaceae | Carpobrotus | virescens | | 10-30% | 0.1 | VT5 |
| Q39 | Haemodoraceae | Conostylis | aculeata | | <2% T | 0.3 | VT5 |
| Q39 | Crassulaceae | Crassula | colorata | | <2% N | 0.05 | VT5 |
| Q39 | Apiaceae | Daucus | glochidiatus | | <2% T | 0.3 | VT5 |
| Q39 | Fabaceae | Daviesia | divaricata | | 2-10% | 1.5 | VT5 |
| Q39 | Restionaceae | Desmocladus | flexuosus | | <2% N | 0.2 | VT5 |
| Q39 | Hemerocallidaceae | Dianella | revoluta | | <2% T | 1 | VT5 |
| Q39 | Fabaceae | Jacksonia | calcolica | | <2% T | 0.5 | VT5 |
| Q39 | Campanulaceae | Lobelia | heterophylla | | <2% N | 0.4 | VT5 |
| Q39 | Asparagaceae | Lomandra | maritima | | 30-70% | 0.3 | VT5 |
| Q39 | Myrtaceae | Melaleuca | systema | | 2-10% | 0.7 | VT5 |
| Q39 | Chenopodiaceae | Rhagodia | baccata subsp. baccata | | <2% T | 0.6 | VT5 |
| Q39 | Rhamnaceae | Spyridium | globulosum | | 2-10% | 1.5 | VT5 |
| Q39 | Cyperaceae | Tetragia | octandra | | <2% T | 0.6 | VT5 |
| Q39 | Hemerocallidaceae | Tricoryne | elatior | | <2% N | 0.3 | VT5 |
| Q39 | Campanulaceae | Wahlenbergia | preissii | | <2% N | 0.5 | VT5 |
| Q39 | Xanthorrhoeaceae | Xanthorrhoea | gracilis | | <2% T | 1.2 | VT5 |
| Q39 | Xanthorrhoeaceae | Xanthorrhoea | preissii | | 30-70% | 2.5 | VT5 |
| Q40 | Geraniaceae | Geranium | molle | * | 30-70% | 0.3 | VT1 |
| Q40 | Poaceae | Lolium | rigidum | * | <2% N | 0.4 | VT1 |
| Q40 | Oxalidaceae | Oxalis | sp. (insufficient material) | * | 10-30% | 0.05 | VT1 |
| Q40 | Asteraceae | Sonchus | oleraceus | * | <2% T | 0.1 | VT1 |
| Q40 | Fabaceae | Acacia | saligna | | 30-70% | 7 | VT1 |
| Q40 | Poaceae | Austrostipa | flavescens | | <2% N | 0.8 | VT1 |
| Q40 | Apiaceae | Daucus | glochidiatus | | 2-10% | 0.2 | VT1 |
| Q40 | Restionaceae | Desmocladus | flexuosus | | <2% N | 0.2 | VT1 |
| Q40 | Proteaceae | Hakea | prostrata | | 2-10% | 0.5 | VT1 |
| Q40 | Asparagaceae | Lomandra | maritima | | 10-30% | 0.5 | VT1 |
| Q40 | Myrtaceae | Melaleuca | systema | | <2% T | 0.8 | VT1 |
| Q40 | Chenopodiaceae | Rhagodia | baccata subsp. baccata | | 2-10% | 1.2 | VT1 |
| Q40 | Poaceae | Rytidosperma | occidentale | | <2% N | 0.3 | VT1 |
| Q40 | Rhamnaceae | Spyridium | globulosum | | 2-10% | 1.3 | VT1 |
| Q40 | Hemerocallidaceae | Tricoryne | elatior | | <2% N | 0.4 | VT1 |

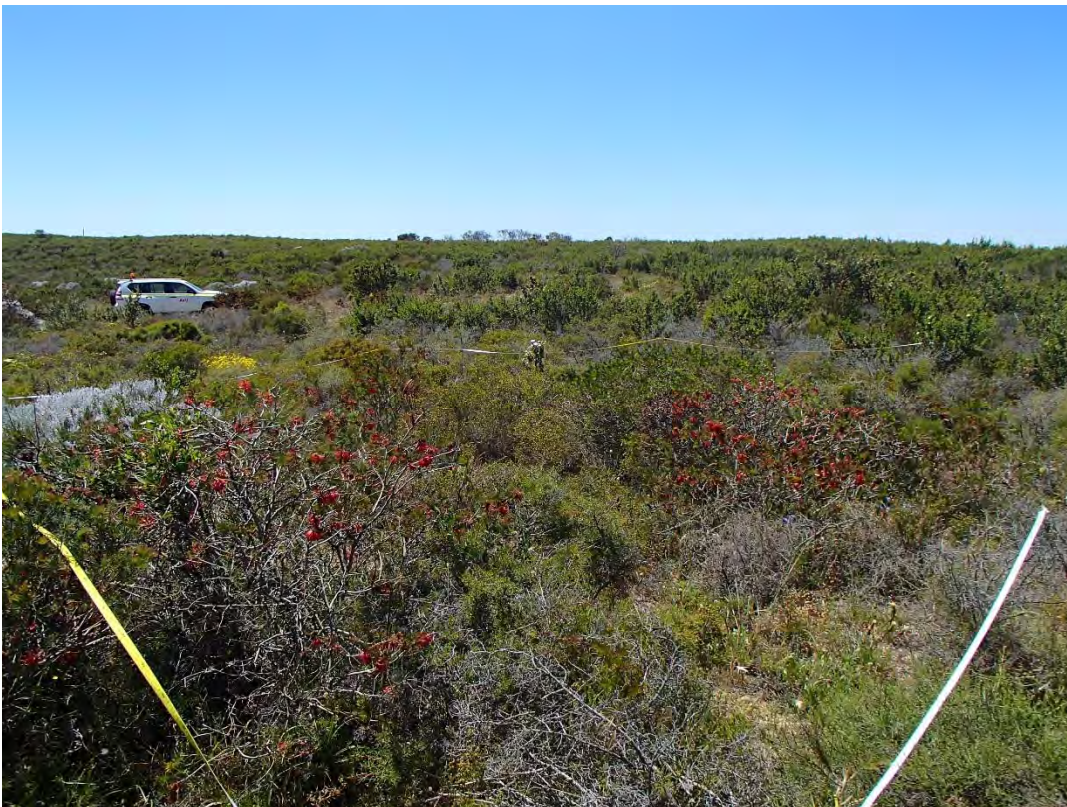
| Site ID | Family | Genus | Species | Status | Cover (%) | Height (m) | VT |
|---------|-------------------|---------------|-------------------|--------|-----------|------------|-----|
| Q40 | Xanthorrhoeaceae | Xanthorrhoea | preissii | | 10-30% | 2.5 | VT1 |
| Q41 | Poaceae | Avena | barbata | * | <2% T | 0.5 | VT1 |
| Q41 | Poaceae | Bromus | diandrus | * | <2% N | 0.2 | VT1 |
| Q41 | Fabaceae | Acacia | saligna | | 10-30% | 4 | VT1 |
| Q41 | Restionaceae | Desmocladius | flexuosus | | 2-10% | 0.15 | VT1 |
| Q41 | Lobeliaceae | Isotoma | hypocrateriformis | | <2% N | 0.25 | VT1 |
| Q41 | Ericaceae | Leucopogon | parviflorus | | <2% T | 0.8 | VT1 |
| Q41 | Asparagaceae | Lomandra | maritima | | 30-70% | 0.4 | VT1 |
| Q41 | Myrtaceae | Melaleuca | systema | | 30-70% | 1 | VT1 |
| Q41 | Phyllanthaceae | Phyllanthus | calycinus | | <2% T | 0.3 | VT1 |
| Q41 | Rhamnaceae | Spyridium | globulosum | | 2-10% | 1.5 | VT1 |
| Q42 | Poaceae | Briza | maxima | * | <2% N | 0.2 | VT9 |
| Q42 | Poaceae | Ehrharta | calycina | * | <2% N | 0.4 | VT9 |
| Q42 | Asteraceae | Ursinia | anthemoides | * | <2% N | 0.25 | VT9 |
| Q42 | Campanulaceae | Wahlenbergia | capensis | * | <2% N | 0.3 | VT9 |
| Q42 | Casuarinaceae | Allocasuarina | humilis | | 2-10% | 1.5 | VT9 |
| Q42 | Poaceae | Austrostipa | flavescens | | <2% N | 1 | VT9 |
| Q42 | Proteaceae | Banksia | attenuata | | 2-10% | 3 | VT9 |
| Q42 | Proteaceae | Banksia | nivea | | <2% T | 0.2 | VT9 |
| Q42 | Hemerocallidaceae | Corynotheca | micrantha | | <2% T | 0.4 | VT9 |
| Q42 | Fabaceae | Daviesia | divaricata | | <2% T | 1 | VT9 |
| Q42 | Restionaceae | Desmocladius | flexuosus | | 2-10% | 0,25 | VT9 |
| Q42 | Proteaceae | Hakea | prostrata | | 2-10% | 0.5 | VT9 |
| Q42 | Fabaceae | Jacksonia | calcolica | | 2-10% | 0.4 | VT9 |
| Q42 | Fabaceae | Jacksonia | sternbergiana | | 30-70% | 3.5 | VT9 |
| Q42 | Lobeliaceae | Lobelia | tenuior | | <2% N | 0.2 | VT9 |
| Q42 | Myrtaceae | Melaleuca | systema | | 30-70% | 1.6 | VT9 |
| Q42 | Cyperaceae | Mesomelaena | pseudostygia | | 2-10% | 0.8 | VT9 |
| Q42 | Hemerocallidaceae | Tricoryne | elatior | | <2% N | 0.3 | VT9 |
| Q42 | Xanthorrhoeaceae | Xanthorrhoea | gracilis | | <2% T | 1 | VT9 |
| Q42 | Xanthorrhoeaceae | Xanthorrhoea | preissii | | 10-30% | 3 | VT9 |
| Q43 | Poaceae | Bromus | diandrus | * | 10-30% | 0.3 | VT3 |
| Q43 | Aizoaceae | Carpobrotus | edulis | * | <2% T | 0.1 | VT3 |
| Q43 | Poaceae | Ehrharta | calycina | * | 2-10% | 0.4 | VT3 |
| Q43 | Euphorbiaceae | Euphorbia | terraccina | * | <2% N | 0.4 | VT3 |
| Q43 | Poaceae | Lolium | rigidum | * | <2% T | 0.3 | VT3 |
| Q43 | Campanulaceae | Wahlenbergia | capensis | * | 2-10% | 0.4 | VT3 |
| Q43 | Fabaceae | Acacia | pulchella | | <2% T | 1 | VT3 |
| Q43 | Poaceae | Austrostipa | flavescens | | <2% N | 1 | VT3 |
| Q43 | Proteaceae | Banksia | sessilis | | 10-30% | 2.5 | VT3 |
| Q43 | Proteaceae | Hakea | prostrata | | 10-30% | 2.5 | VT3 |
| Q43 | Fabaceae | Hardenbergia | comptoniana | | <2% T | 2 | VT3 |
| Q43 | Asparagaceae | Lomandra | maritima | | <2% T | 0.4 | VT3 |
| Q43 | Myrtaceae | Melaleuca | systema | | 30-70% | 1 | VT3 |
| Q43 | Xanthorrhoeaceae | Xanthorrhoea | preissii | | <2% T | 2.5 | VT3 |
| R06 | Poaceae | Bromus | diandrus | * | | 0.3 | VT5 |
| R06 | Euphorbiaceae | Euphorbia | terraccina | * | | 0.4 | VT5 |
| R06 | Poaceae | Lagurus | ovatus | * | | 0.25 | VT5 |
| R06 | Poaceae | Austrostipa | flavescens | | | 1 | VT5 |
| R06 | Haemodoraceae | Conostylis | candicans | | | 0.3 | VT5 |
| R06 | Restionaceae | Desmocladius | flexuosus | | | 0.2 | VT5 |
| R06 | Dilleniaceae | Hibbertia | subvaginata | | | 0.3 | VT5 |
| R06 | Goodeniaceae | Lechenaultia | linarioides | | | 0.8 | VT5 |
| R06 | Ericaceae | Leucopogon | insularis | | | 0.4 | VT5 |
| R06 | Asparagaceae | Lomandra | maritima | | | 0.3 | VT5 |
| R06 | Myrtaceae | Melaleuca | systema | | | 0.8 | VT5 |
| R06 | Rubiaceae | Opercularia | vaginata | | | 0.4 | VT5 |
| R06 | Phyllanthaceae | Phyllanthus | calycinus | | | 0.5 | VT5 |
| R06 | Hemerocallidaceae | Tricoryne | elatior | | | 0.3 | VT5 |

| Site ID | Family | Genus | Species | Status | Cover (%) | Height (m) | VT |
|---------|-------------------|---------------|-----------------------------|------------|-----------|------------|------|
| R07 | Poaceae | Avena | barbata | * | 2-10% | 0.5 | VT12 |
| R07 | Poaceae | Bromus | diandrus | * | 10-30% | 0.3 | VT12 |
| R07 | Euphorbiaceae | Euphorbia | terraccina | * | <2% N | 0.5 | VT12 |
| R07 | Iridaceae | Romulea | rosea | * | <2% N | 0.1 | VT12 |
| R07 | Fabaceae | Trifolium | campestre | * | 30-70% | 0.15 | VT12 |
| R07 | Myrtaceae | Eucalyptus | gomphocephala | *, planted | 30-70% | 12 | VT12 |
| R07 | Rhamnaceae | Spyridium | globulosum | | 10-30% | 3 | VT12 |
| R08 | Poaceae | Bromus | diandrus | * | <2% N | 0.3 | VT1 |
| R08 | Poaceae | Lolium | rigidum | * | <2% N | 0.4 | VT1 |
| R08 | Fabaceae | Acacia | saligna | | 10-30% | 4 | VT1 |
| R08 | Poaceae | Austrostipa | flavescens | | <2% T | 1 | VT1 |
| R08 | Lauraceae | Cassytha | pomiformis | | <2% T | 1 | VT1 |
| R08 | Restionaceae | Desmocladus | flexuosus | | <2% N | 0.2 | VT1 |
| R08 | Droseraceae | Drosera | sp. (insufficient material) | | <2% T | 0.2 | VT1 |
| R08 | Scrophulariaceae | Eremophila | glabra | | 2-10% | 0.8 | VT1 |
| R08 | Dilleniaceae | Hibbertia | subvaginata | | 2-10% | 0.6 | VT1 |
| R08 | Ericaceae | Leucopogon | parviflorus | | 2-10% | 0.5 | VT1 |
| R08 | Asparagaceae | Lomandra | maritima | | 10-30% | 0.4 | VT1 |
| R08 | Myrtaceae | Melaleuca | systema | | 30-70% | 1 | VT1 |
| R08 | Phyllanthaceae | Phyllanthus | calycinus | | <2% T | 0.4 | VT1 |
| R08 | Rhamnaceae | Spyridium | globulosum | | <2% T | 0.5 | VT1 |
| R08 | Hemerocallidaceae | Tricoryne | elatior | | <2% N | 0.4 | VT1 |
| R08 | Xanthorrhoeaceae | Xanthorrhoea | gracilis | | <2% T | 0.8 | VT1 |
| R08 | Xanthorrhoeaceae | Xanthorrhoea | preissii | | 10-30% | 3 | VT1 |
| R09 | Poaceae | Bromus | diandrus | * | <2% N | 0.3 | VT1 |
| R09 | Fabaceae | Acacia | cochlearis | | 2-10% | 1 | VT1 |
| R09 | Restionaceae | Desmocladus | flexuosus | | 2-10% | 0.2 | VT1 |
| R09 | Dilleniaceae | Hibbertia | subvaginata | | <2% T | 0.4 | VT1 |
| R09 | Ericaceae | Leucopogon | parviflorus | | 2-10% | 0.8 | VT1 |
| R09 | Asparagaceae | Lomandra | maritima | | 10-30% | 0.4 | VT1 |
| R09 | Myrtaceae | Melaleuca | systema | | 30-70% | 0.9 | VT1 |
| R09 | Phyllanthaceae | Phyllanthus | calycinus | | <2% T | 0.4 | VT1 |
| R10 | Poaceae | Avena | barbata | * | 30-70% | 0.3 | VT6 |
| R10 | Aizoaceae | Carpobrotus | edulis | * | 10-30% | 0.3 | VT6 |
| R10 | Poaceae | Lolium | rigidum | * | 30-70% | 0.3 | VT6 |
| R10 | Iridaceae | Moraea | flaccida | *, DP | 10-30% | 0.3 | VT6 |
| R10 | Araceae | Zantedeschia | aethiopica | *, DP | <2% T | | VT6 |
| R10 | Asparagaceae | Acanthocarpus | preissii | | 2-10% | 1.2 | VT6 |
| R10 | Proteaceae | Banksia | attenuata | | 10-30% | 6 | VT6 |
| R10 | Myrtaceae | Eucalyptus | gomphocephala | | 30-70% | 25 | VT6 |
| R10 | Chenopodiaceae | Rhagodia | baccata subsp. baccata | | 2-10% | 1.2 | VT6 |
| R10 | Xanthorrhoeaceae | Xanthorrhoea | preissii | | 10-30% | 2.5 | VT6 |

Quadrat Photos



Quadrat 1 (Photo ref: 2033)



Quadrat 2 (Photo ref: 2035)



Quadrat 3 (Photo ref: 2036)



Quadrat 4 (Photo ref: 2037)



Quadrat 5 (Photo ref: 2038)



Quadrat 6 (Photo ref: 2039)



Quadrat 7 (Photo ref: 2040)



Quadrat 8 (Photo ref: 2043)



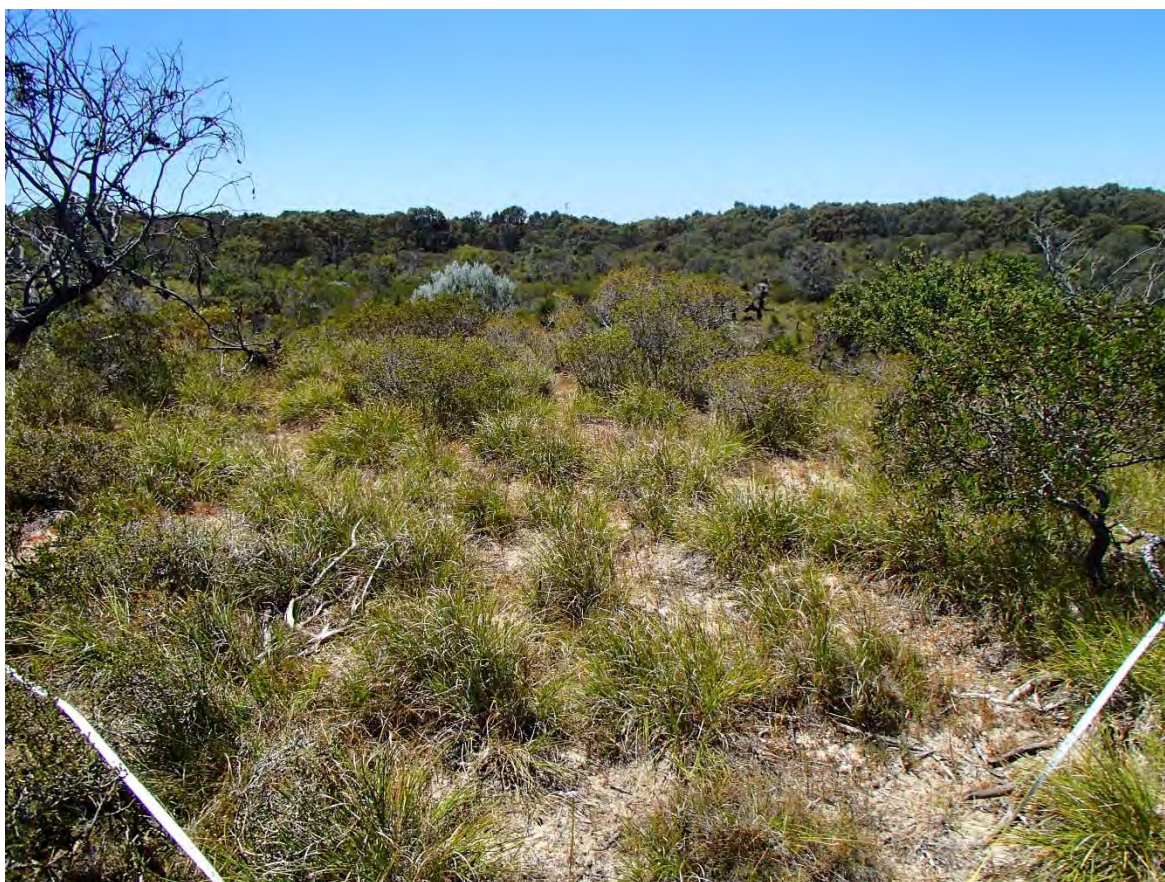
Quadrat 9 (Photo ref: 2044)



Quadrat 10 (Photo ref: 2045)



Quadrat 11 (Photo ref: 2047)



Quadrat 12 (Photo ref: 2048)



Quadrat 13 (Photo ref: 2049)



Quadrat 14 (Photo ref: 2052)



Quadrat 15 (Photo ref: 2053)



Quadrat 16 (Photo ref: 2055)



Quadrat 25 (Photo ref: 2074)



Quadrat 26 (Photo ref: 26)



Quadrat 27 (Photo ref: 28)



Quadrat 28 (Photo ref: 27)



Quadrat 29 (Photo ref: 198)
Quadrat 30 (no photo)



Quadrat 37 (Photo ref: 114031)



Quadrat 38 (Photo ref: 130730)



Quadrat 40 (Photo ref: 120638)



Quadrat 41 (Photo ref: 130324)



Quadrat 42 (Photo ref: 150929)



Quadrat 43 (Photo ref: 153600)



R06 (Photo ref: 103719)



R07 (Photo ref: 144926)



R08 (Photo ref: 145227)



R09 (Photo ref: 113956)



R10 (Photo ref: 144147)

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 study area. |
| Possible | Species previously recorded within 5 km and areas of suitable habitat occur/may occur in the study area. |
| Unlikely | Species previously recorded within 5 km, but suitable habitat does not occur in the study area. |
| Highly unlikely | Species not previously recorded within 5 km, 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 – DEE Protected Matters Search Tool (PMST) to identify flora listed under the EPBC Act potentially occurring within the study area

NM – DBCA *NatureMap* (accessed November 2018)

Flora likelihood of occurrence assessment for conservation significant flora

| Family | Taxon | Status | | Description and closest record information (if available) (WA Herbarium 1998–) | Likelihood of Occurrence | Source |
|--------------|----------------------------------|-----------------|----------|---|---|------------|
| | | WC Act/ DBCA | EPBC Act | | | |
| Brassicaceae | <i>Lepidium pseudotasmanicum</i> | P4 | - | Erect annual or biennial, herb, 0.2-0.4(-1) m high. Fl. white-green, Feb, July or Dec. Loam, sand. Herbarium records indicates the species often grows in association with granite or damp locations (e.g. near creeks). There are two records within 5 km of the survey area, one dated 1953 (location Yanchep) and the other from Pipdiny Swamp, c. 3.4 km east of the survey area. | Unlikely – there is limited to no suitable habitat within the survey area. This species can be cryptic, however the survey were undertaken across multiple seasons and years. It is unlikely there is suitable habitat adjacent to the survey area. | NM, WAHERB |
| Cyperaceae | <i>Eleocharis keigheryi</i> | T | V | Rhizomatous, clumped perennial, grass-like or herb (sedge), to 0.4 m high. Fl. green, Aug to Nov. Keighery's <i>Eleocharis</i> grows in small clumps in a substrate of clay or sandy loam. This species is emergent in freshwater creeks, and transient waterbodies such as drainage lines and claypans in water to approximately 15 cm deep (DEE 2018). | Unlikely – no suitable habitat is present within the survey area. This species can be cryptic however the survey was undertaken during the reported flowering period. It is unlikely there is suitable habitat adjacent to the survey area. | PMST |

| Family | Taxon | Status | | Description and closest record information (if available) (WA Herbarium 1998–) | Likelihood of Occurrence | Source |
|--------------|---|-----------------|----------|---|--|------------------|
| | | WC Act/ DBCA | EPBC Act | | | |
| | | | | The closest record is c. 22 km east of the survey area. | | |
| Cyperaceae | <i>Lepidosperma rostratum</i> | T | E | Rhizomatous, tufted perennial, grass-like or herb (sedge), 0.5 m high. Flowers brown. The species grows in peaty sand and clay amongst low heath, in winter-wet swamps (DEE 2018). Flowering May to June and the distinctive fruits are beaked toward the base of the style, and generally appear between late June and August. The closest record is c. 16 km northeast of the survey area. | Unlikely – no suitable habitat is present within the survey area. It is unlikely there is suitable habitat adjacent to the survey area. | PMST |
| Dilleniaceae | <i>Hibbertia spicata</i> subsp. <i>leptotheca</i> | P3 | - | Erect or spreading shrub, 0.2-0.5 m high. Fl. yellow, Jul to Oct. Sand. Near-coastal limestone ridges, outcrops & cliffs. Herbarium records indicates the species often grows in sands over limestone and in association with <i>Melaleuca</i> , <i>Acacia</i> and <i>Banksia</i> spp. There are two records within 5 km of the survey area, one dated 1953 (location Yanchep) and the other from Pipdiddy Swamp, c. 3.4 km east of the survey area. | Known – this species was recorded during the surveys. There is suitable habitat within the survey area (VT01, VT02, VT03, VT3a, VT04, VT08, VT09, VT10). This species was recorded from VT08, which is restricted within the survey area. It is likely there is suitable habitat adjacent to the survey area. | NM, TPFL, WAHERB |
| Ericaceae | <i>Leucopogon maritimus</i> | P1 | - | Low, spreading shrub to 0.4 m high, to 0.6 m wide. Fl. Pink. Mar-May. Deep, calcareous sands on the mid to upper slopes of dunes or in shallows and over limestone. Often grows in association with <i>Melaleuca</i> , <i>Acacia</i> , <i>Spyridium</i> , <i>Leucopogon</i> , <i>Acanthocarpus</i> , <i>Lomandra</i> and <i>Olearia</i> spp. There are a number of records within 5 km of the survey area, the closest, c. 1.5 km southwest of the survey area. | Possible – there is suitable habitat present within the survey area (VT01, VT02, VT03, VT03a, VT04, VT05, VT08, VT09, VT10). Survey effort was undertaken during the reported flowering period and this species is not cryptic. It is likely there is suitable habitat adjacent to the survey area. | NM, WAHERB |
| Ericaceae | <i>Leucopogon</i> sp. Yanchep (M. Hislop 1986) | P3 | - | Erect shrub, 0.15-1 m high, to 0.6 m wide. Fl. white/pink, Apr to Jun or Sep. Light grey-yellow sand, brown loam, limestone, | Possible – there is suitable habitat present within the survey area (VT01, VT02, VT03, VT03a, VT04, VT05, VT08, | NM, WAHERB |

| Family | Taxon | Status | | Description and closest record information (if available) (WA Herbarium 1998–) | Likelihood of Occurrence | Source |
|---------------|--|-----------------|----------|--|--|------------|
| | | WC Act/ DBCA | EPBC Act | | | |
| | | | | laterite, granite. Coastal plain, breakaways, valley slopes, low hills. There are a number of records within 5 km of the survey area, the closest, c. 1.5 km west of the survey area. | VT09, VT10). Survey effort was undertaken during the reported flowering period and this species is not cryptic. It is likely there is suitable habitat adjacent to the survey area. | |
| Ericaceae | <i>Styphelia filifolia</i> | P3 | | Erect shrub to 0.9 m high. Fl. white, Mar to May. Mature fruit, Jul to Oct. Distinguished from all other <i>Styphelia</i> by the combination of pendulous inflorescences, linear or very narrowly ovate leaves with a mucronate, but innocuous apex, and a strongly zygomorphic fruit. Grows on sandy soils of the coastal plain, usually in <i>Banksia</i> or Jarrah woodland and in low-lying situations (Hislop and Puente-Lelievre 2017). | Unlikely – there is suitable habitat present within the survey area (VT09). Survey effort was undertaken during the reported flowering period and this species is not cryptic. It is likely there is suitable habitat adjacent to the survey area. | NM |
| Euphorbiaceae | <i>Beyeria cinerea</i> subsp. <i>cinerea</i> | P3 | | Woody perennial shrub to 1 m. Fl. yellow, dioecious and without petals. Grows on sand over limestone, on slopes, hill crests and ridges. | Known – this species was recorded during the 201 survey from VT03a and VT05. There is suitable habitat present within the survey area (VT01, VT02, VT03, VT03a, VT05, VT06, VT07, VT08, VT10). This species is not cryptic, but was not re-located during the 2016-2018 surveys. It is likely there is suitable habitat adjacent to the survey area. | |
| Fabaceae | <i>Acacia benthamii</i> | P2 | - | Shrub, ca 1 m high. Fl. yellow, Aug to Sep. Sand. Typically on limestone breakaways. There are a number of records c. 6.5 km north of the survey area. There is one record within 5 km of the survey area, dated 1953 (location Yanchep). | Unlikely – there is suitable habitat present within the survey area (VT08). This species is not cryptic, but the survey was outside of the reported flowering period. | NM, WAHERB |

| Family | Taxon | Status | | Description and closest record information (if available) (WA Herbarium 1998–) | Likelihood of Occurrence | Source |
|---------------|---|------------------|----------|--|--|------------------|
| | | WC Act/ DBCAs | EPBC Act | | | |
| | | | | | It is likely there is some suitable habitat adjacent to the survey area. | |
| Fabaceae | <i>Sphaerolobium calcicola</i> | P3 | - | Slender, multi-stemmed, scandent or erect shrub, to 1.5 m high. Fl. -orange-red, Jun or Sep to Nov. White-grey-brown sand, sandy clay over limestone, black peaty sandy clay. Tall dunes, winter-wet flats, interdunal swamps, low-lying areas. There are two records within 5 km of the survey area, one dated 1953 (location Yanchep) and the other c. 3.5 km east of the survey area. | Unlikely – there is limited to no suitable habitat within the survey area. This species is not cryptic and there was survey effort during the reported flowering period. It is unlikely there is suitable habitat adjacent to the survey area. | NM, WAHERB |
| Haemodoraceae | <i>Conostylis bracteata</i> | P3 | - | Rhizomatous, tufted or shortly proliferous perennial, grass-like or herb, 0.2-0.45 m high. Fl. yellow, Aug to Sep. Sand, limestone. Consolidated sand dunes. There is one record within 5 km of the survey area, c. 3.5 km east. | Possible – there is suitable habitat present within the survey area (VT01, VT02, VT03, VT03a, VT05, VT06, VT07, VT08, VT10). Survey effort was not undertaken during the reported flowering period, but this species is not cryptic. It is likely there is suitable habitat adjacent to the survey area. | NM, WAHERB |
| Haemodoraceae | <i>Conostylis pauciflora</i> subsp. <i>euryrhipis</i> | P4 | - | Rhizomatous, stoloniferous perennial herb, 0.06-0.18 m high. Flowers yellow from August to October. White, grey or yellow sand. Consolidated dunes. There are a number of records within 5 km of the survey area. There is a GHD record within the survey area. | Known – this species was recorded during the 2012 survey from VT03. There is suitable habitat present within the survey area (VT01, VT02, VT03, VT03a, VT05, VT06, VT07, VT08, VT10). This species is not cryptic, but was not re-located during the 2016-2018 surveys. It is likely there is suitable habitat adjacent to the survey area. | NM, TPFL, WAHERB |
| Haemodoraceae | <i>Conostylis pauciflora</i> subsp. <i>pauciflora</i> | P4 | - | Rhizomatous, stoloniferous perennial, grass-like or herb, 0.1-0.35 m high. Fl. | Known – this species was recorded during the 2012 survey from VT03, as well as adjacent | NM, TPFL, WAHERB |

| Family | Taxon | Status | | Description and closest record information (if available) (WA Herbarium 1998–) | Likelihood of Occurrence | Source |
|-------------|----------------------------------|-----------------|----------|--|--|------------------------|
| | | WC Act/ DBCA | EPBC Act | | | |
| | | | | yellow, Aug to Oct. Grey sand, limestone. Hillslopes, consolidated dunes. There are several records within 5 km of the survey area. There is a GHD record adjacent to the survey area. | to the current survey area during the 2012 survey. There is suitable habitat present within the survey area (VT01, VT02, VT03, VT03a, VT05, VT06, VT07, VT08, VT10). This species is not cryptic, but was not re-located during the 2016-2018 surveys. It is likely there is suitable habitat adjacent to the survey area. | |
| Malvaceae | <i>Lasiopetalum membranaceum</i> | P3 | - | Multi-stemmed shrub, 0.2-1 m high. Fl. pink-blue-purple, Sep to Dec. Sand over limestone. There are two records within 5 km of the survey area, the closest is c. 3.5 km east of the survey area. | Possible – there is suitable habitat present within the survey area (VT01, VT02, VT03, VT03a, VT05, VT06, VT07, VT08, VT10). Survey effort was undertaken during the reported flowering period and this species is not cryptic. It is likely there is suitable habitat adjacent to the survey. | NM, TPFL, WAHERB |
| Myrtaceae | <i>Eucalyptus argutifolia</i> | T | Vu | Mallee, 1.5-4 m high, bark smooth. Fl. white, Mar to Apr. The Yanchep Mallee occurs on slopes or gullies near the coast and, to a lesser extent, close to the summits of limestone ridges. Soils at these sites are shallow, well drained and grey with outcrops of limestone. It is commonly associated with heath and thicket species including <i>Banksia sessilis</i> , <i>Melaleuca huegelii</i> , <i>Grevillea thelemanniana</i> , <i>Hardenbergia comptoniana</i> and <i>Acacia</i> spp. (DEE 2018). The closest record is c. 1 km west of the survey area. | Unlikely – There is suitable habitat within the survey area (VT02, VT03, VT04, VT08). However, this species is distinctive and it is unlikely to have been overlooked during the surveys. There is suitable habitat immediately adjacent to the survey area. | NM, PMST, TPFL, WAHERB |
| Orchidaceae | <i>Diuris drummondii</i> | T | Vu | Tuberous, perennial, herb, 0.5-1.05 m high. Fl. yellow, Nov to Dec or Jan. Low-lying depressions, swamps. | Highly unlikely – there is no suitable habitat within the survey area and the closest record of | PMST |

| Family | Taxon | Status | | Description and closest record information (if available) (WA Herbarium 1998–) | Likelihood of Occurrence | Source |
|--------------|----------------------------|-----------------|----------|---|---|------------------|
| | | WC Act/ DBCA | EPBC Act | | | |
| | | | | | this species is >40 km from the survey area. | |
| Orchidaceae | <i>Diuris micrantha</i> | T | V | Tuberous, perennial, herb, 0.3- 0.6 m high. Fl. yellow & brown, Sep to Oct. Brown loamy clay. Winter-wet swamps, in shallow water. This species is known from seven populations, from east of Kwinana and south towards the Frankland area, WA. It is found in small populations, on dark, grey to blackish, sandy clay-loam substrates in winter wet depressions or swamps. The bases of the flowering plants are often covered with shallow water (DEE 2018). | Highly unlikely – there is no suitable habitat within the survey area and the closest record of this species is >40 km from the survey area. | PMST |
| Orchidaceae | <i>Drakaea elastica</i> | T | E | Tuberous, perennial, herb, 0.12- 0.3 m high. Flowers red and green and yellow. Flowers are first seen in late September and continue flowering until late October or more rarely early November. Individual plants may not flower every year. The plant dies back to a dormant underground tuber over summer. The best time to look for the plant is in July and August when the leaves are relatively conspicuous (DEE 2018). Occurs on bare patches of white or grey sand in low-lying situations adjoining winter-wet swamps. This hammer-orchid species occurs in south-west WA and grows at only 42 locations with a total population size of around 230 plants. To survive, the orchid relies on a specific fungus which assists germination and provides nutrients. It is also dependent on a single species of wasp that pollinates its flowers (DEE 2018). | Highly unlikely – there is no suitable habitat within the survey area and the closest record of this species is >40 km from the survey area. | PMST |
| Stylidiaceae | <i>Stylidium maritimum</i> | P3 | - | Caespitose perennial, herb, 0.3-0.7 m high, Leaves tufted, linear to narrowly oblanceolate, 10-40 cm long, 1-5.5 mm wide, apex acute to mucronate, margin involute, glabrous. Membraneous scale | Possible – there is suitable habitat present within the survey area (VT01, VT02, VT03, VT03a, VT04, VT05, VT06, VT07, VT08, VT09, VT10). | NM, TPFL, WAHERB |

| Family | Taxon | Status | | Description and closest record information (if available) (WA Herbarium 1998–) | Likelihood of Occurrence | Source |
|---------------|--------------------------|-----------------|----------|--|---|------------|
| | | WC Act/ DBCA | EPBC Act | | | |
| | | | | leaves present at base of mature leaves. Scape glandular throughout. Inflorescence paniculate. Fl. white/purple, Sep to Nov. Sand over limestone. Dune slopes and flats. Coastal heath and shrubland, open Banksia woodland. There are a number of records within 5 km of the survey area. The closest record is c. 2.2 km south west of the survey area. | Survey effort was undertaken during the reported flowering period, but this species can be cryptic. It is likely there is suitable habitat adjacent to the survey area. | |
| Thymelaeaceae | <i>Pimelea calcicola</i> | P3 | - | Erect to spreading shrub, 0.2-1 m high. Fl. pink, Sep to Nov. Sand. Coastal limestone ridges. There are several records within 5 km of the survey area, the closest is c. 3.5 km east of the survey area. | Possible – there is suitable habitat present within the survey area (VT0). Survey effort was undertaken during the reported flowering period and this species is not cryptic. It is likely there is suitable habitat adjacent to the survey area. | NM, WAHERB |

References

Hislop, M and Puente-Lelièvre, C 2017, Five new species of *Styphelia* (Ericaceae: Epacridoideae: Styphelieae) from the Geraldton Sandplains, including notes on a new, expanded circumscription for the genus, *Nuytsia*, vol. 28, pp 95-114.

Appendix E – Fauna data

Fauna species list

Fauna likelihood of occurrence guidelines

Fauna likelihood of occurrence assessment

Species recorded in the survey area in 2012, 2016-17, and during the current survey

| Family | Scientific Name | Common Name | Status | 2011-12 Surveys | 2016/2017 survey | 2018 survey |
|---------------|------------------------------------|---------------------------|--------|-----------------|------------------|-------------|
| Birds | | | | | | |
| Acanthizidae | <i>Acanthiza apicalis</i> | Inland Thornbill | | X | 6 | |
| Acanthizidae | <i>Acanthiza chrysorrhoa</i> | Yellow-rumped Thornbill | | X | 8 | |
| Acanthizidae | <i>Acanthiza inmornata</i> | Western Thornbill | | | | heard |
| Acanthizidae | <i>Gerygone fusca</i> | Western Gerygone | | X | 5 | heard |
| Acanthizidae | <i>Smicromnis brevirostris</i> | Weebill | | X | 4 | heard |
| Acanthizidae | <i>Smicromnis frontalis</i> | White-browed Scrubwren | | | | observed |
| Accipitridae | <i>Accipiter fasciatus</i> | Brown Goshawk | | X | 1 | |
| Accipitridae | <i>Aquila audax</i> | Wedge-tailed Eagle | | X | 1 | observed |
| Accipitridae | <i>Elanus caeruleus</i> | Black-shouldered Kite | | X | | |
| Accipitridae | <i>Haliastur sphenurus</i> | Whistling Kite | | X | 1 | |
| Accipitridae | <i>Lophoictinia isura</i> | Square-tailed Kite | | | 2 | |
| Artamidae | <i>Cracticus tibicen</i> | Australian Magpie | | X | 3 | observed |
| Artamidae | <i>Cracticus torquatus</i> | Grey Butcherbird | | X | 1 | observed |
| Cacatuidae | <i>Cacatua sanguinea</i> | Little Corella | | | 11 | |
| Cacatuidae | <i>Calyptorhynchus latirostris</i> | Carnaby's Black Cockatoo | En, En | X | 16 | heard |
| Cacatuidae | <i>Eolophus roseicapillus</i> | Galah | | X | 10 | observed |
| Campephagidae | <i>Coracina novaehollandiae</i> | Black-faced Cuckoo-shrike | | X | 3 | observed |
| Campephagidae | <i>Lalage sueurii</i> | White-winged Triller | | X | 1 | observed |
| Casuariidae | <i>Dromaius novaehollandiae</i> | Emu | | X | 1 + scats | scats |
| Columbidae | <i>Columba livia</i> | Feral Pigeon | | | 4 | |
| Columbidae | <i>Ocyphaps lophotes</i> | Crested Pigeon | | X | 2 | observed |
| Columbidae | <i>Phaps chalcoptera</i> | Common Bronzewing | | X | 1 | observed |
| Corvidae | <i>Corvus coronoides</i> | Australian Raven | | X | 4 | heard |
| Cuculidae | <i>Cacomantis flabelliformis</i> | Fantail Cuckoo | | | 2 | |

| Family | Scientific Name | Common Name | Status | 2011-12 Surveys | 2016/2017 survey | 2018 survey |
|-----------------|-------------------------------------|--------------------------|--------|-----------------|------------------|-------------|
| Birds | | | | | | |
| Cuculidae | <i>Chalcites lucidus</i> | Shining Bronze Cuckoo | | X | | heard |
| Falconidae | <i>Falco berigora</i> | Brown Falcon | | | 1 | |
| Falconidae | <i>Falco cenchroides</i> | Nankeen Kestrel | | X | 3 | observed |
| Halcyonidae | <i>Dacelo novaeguineae</i> | Laughing Kookaburra | int | X | 4 | observed |
| Hirundinidae | <i>Hirundo neoxena</i> | Welcome Swallow | | X | 6 | observed |
| Hirundinidae | <i>Petrochelidon ariel</i> | Fairy Martin | | | 2 | |
| Hirundinidae | <i>Petrochelidon nigricans</i> | Tree Martin | | | | observed |
| Maluridae | <i>Malurus leucopterus</i> | White-winged Fairy-wren | | X | 8 | |
| Maluridae | <i>Malurus splendens</i> | Splendid Fairy-wren | | X | 9 | observed |
| Megaluridae | <i>Cincloramphus mathewsi</i> | Rufous Songlark | | X | 1 | |
| Meliphagidae | <i>Anthochaera carunculata</i> | Red Wattlebird | | X | 3 | observed |
| Meliphagidae | <i>Anthochaera lunulata</i> | Western Wattlebird | | | 1 | heard |
| Meliphagidae | <i>Lichenostomus ornatus</i> | Yellow-plumed Honeyeater | | X | | |
| Meliphagidae | <i>Lichenostomus leucotis</i> | White-eared Honeyeater | | X | | |
| Meliphagidae | <i>Lichenostomus virescens</i> | Singing Honeyeater | | X | 2 | observed |
| Meliphagidae | <i>Lichmera indistincta</i> | Brown Honeyeater | | X | 10 | observed |
| Meliphagidae | <i>Phylidonyris niger</i> | White-cheeked Honeyeater | | X | 4 | observed |
| Meliphagidae | <i>Phylidonyris novaehollandiae</i> | New Holland Honeyeater | | | | observed |
| Meropidae | <i>Merops ornatus</i> | Rainbow Bee-eater | | X | 8 | observed |
| Monarchidae | <i>Grallina cyanoleuca</i> | Mudlark | | X | 4 | observed |
| Motacillidae | <i>Anthus novaeseelandiae</i> | Australasian Pipit | | | 1 | |
| Pachycephalidae | <i>Colluricincla harmonica</i> | Grey Shrike-thrush | | | 1 | observed |
| Pachycephalidae | <i>Pachycephala pectoralis</i> | Golden Whistler | | X | | |
| Pachycephalidae | <i>Pachycephala rufiventris</i> | Rufous Whistler | | X | 1 | observed |
| Pardalotidae | <i>Pardalotus striatus</i> | Striated Pardalote | | X | 3 | heard |

| Family | Scientific Name | Common Name | Status | 2011-12 Surveys | 2016/2017 survey | 2018 survey |
|-----------------|----------------------------------|------------------------------|--------|-----------------|------------------|---------------------|
| Birds | | | | | | |
| Petroicidae | <i>Microeca fascinans</i> | Jacky Winter | | X | | |
| Petroicidae | <i>Petroica boodang</i> | Scarlet Robin | | | | observed |
| Petroicidae | <i>Petroica goodenovii</i> | Red-capped Robin | | X | 1 | |
| Podargidae | <i>Podargus strigoides</i> | Tawny Frogmouth | | | | feather/ remains |
| Psittacidae | <i>Barnardius zonarius</i> | Australian Ringneck | | X | 6 | observed |
| Psittacidae | <i>Trichoglossus haematodus</i> | Rainbow Lorikeet | | | | heard |
| Rhipiduridae | <i>Rhipidura albiscapa</i> | Grey Fantail | | X | 1 | observed |
| Rhipiduridae | <i>Rhipidura leucophrys</i> | Willie Wagtail | | X | 1 | |
| Timaliidae | <i>Zosterops lateralis</i> | Silvereeye | | X | 15 | observed |
| Columbidae | <i>Streptopelia senegalensis</i> | Laughing Dove | int | | 1 | observed |
| Maluridae | <i>Malurus lamberti</i> | Variegated Fairy-wren | | | 4 | |
| Artamidae | <i>Cracticus nigrogularis</i> | Pied Butcherbird | | | 1 | |
| Artamidae | <i>Artamus cyanopterus</i> | Dusky Woodswallow | | | 6 | |
| Hirundinidae | <i>Cheramoeca leucosterna</i> | White-backed Swallow | | | 3 | |
| Falconidae | <i>Falco longipennis</i> | Australian Hobby | | | 3 | |
| Reptiles | | | | | | |
| Agamidae | <i>Pogona minor</i> | Western Bearded Dragon | | | 4 | observed |
| Elapidae | <i>Pseudonaja affinis</i> | Dugite | | X | tracks | observed |
| Gekkonidae | <i>Strophurus s. spinigerus</i> | Spiny-tailed Gecko | | X | | |
| Pygopodidae | <i>Lialis burtonis</i> | Burton's Legless Lizard | | X | | |
| Scincidae | <i>Cryptoblepharus buchanani</i> | Common Fence Skink | | X | | observed |
| Scincidae | <i>Ctenotus fallens</i> | West-coast Laterite Ctenotus | | X | 1 | observed |
| Scincidae | <i>Cyclodomorphus celatus</i> | Western Slender Blue-tongue | | | 2 | |
| Scincidae | <i>Hemiergis quadrilineata</i> | Two-toed Mulch Skink | | X | | |

| Family | Scientific Name | Common Name | Status | 2011-12 Surveys | 2016/2017 survey | 2018 survey |
|---------------------|-------------------------------------|----------------------------|---------|-----------------|---------------------|-----------------|
| Birds | | | | | | |
| Scincidae | <i>Menetia greyii</i> | Common Dwarf Skink | | X | | |
| Scincidae | <i>Morethia obscura</i> | Shrubland Morethia Skink | | | 1 | |
| Scincidae | <i>Tiliqua occipitalis</i> | Western Blue-tongued Skink | | | prints | observed |
| Scincidae | <i>Tiliqua rugosa</i> | Shingleback | | X | 11 | observed |
| Varanidae | <i>Varanus gouldii</i> | Gould's Monitor | | X | digs | |
| Varanidae | <i>Varanus tristis</i> | Black-tailed Monitor | | | | observed |
| Mammals | | | | | | |
| Canidae | <i>Vulpes vulpes</i> | Red Fox | int | X | prints, scats | prints, burrows |
| Canidae | <i>Canis domesticus</i> | Dog | int | | prints | |
| Felidae | <i>Felis catus</i> | Cat | int | X | prints | scats |
| Leporidae | <i>Oryctolagus cuniculus</i> | European Rabbit | int | X | digs, scats, warren | scats |
| Macropodidae | <i>Macropus fuliginosus</i> | Western Grey Kangaroo | | X | 26 | observed |
| Macropodidae | <i>Macropus irma</i> | Western Brush Wallaby | P4 | | 1 | |
| Muridae | <i>Mus musculus</i> | House Mouse | int | X | nest | |
| Peramelidae | <i>Isoodon fusciventer</i> | Quenda | P4 | | | |
| Tachyglossidae | <i>Tachyglossus aculeatus</i> | Echidna | | X | digs | |
| Suidae | <i>Sus scrofa</i> | Pig | int | | scats | |
| Invertebrate | | | | | | |
| Tettigoniidae | <i>Pachysaga munggai / strobila</i> | Pachysaga | P3 / P1 | X | | |
| Castniidae | <i>Synemon gratiosa</i> | Graceful Sun-moth | P4 | X | | |

En – Endangered listing under EPBC Act

En – Endangered Listing under BC Act

P1, P3, P4 – Priority listed Species under DBCA

int – Introduced species to WA.

Parameters of fauna likelihood of occurrence assessment

| Assessment outcome | Description |
|--------------------|---|
| Present | Species recorded during the field survey or from recent, reliable records from within or close proximity to the survey area. |
| Likely | Species are likely to occur in the survey area where there is suitable habitat within the survey area and there are recent records of occurrence of the species in close proximity to the survey area. OR Species known distribution overlaps with the survey area and there is suitable habitat within the survey area. |
| Unlikely | Species assessed as unlikely include those species previously recorded within 10 km of the survey area however: <ul style="list-style-type: none"> • There is limited (i.e. the type, quality and quantity of the habitat is generally poor or restricted) habitat in the survey area. • The suitable habitat within the survey area is isolated from other areas of suitable habitat and the species has no capacity to migrate into the survey area. OR Those species that have a known distribution overlapping with the survey area however: <ul style="list-style-type: none"> • There is limited habitat in the survey area (i.e. the type, quality and quantity of the habitat is generally poor or restricted). • The suitable habitat within the survey area is isolated from other areas of suitable habitat and the species has no capacity to migrate into the survey area. |
| Highly unlikely | Species that are considered highly unlikely to occur in the survey area include: <ul style="list-style-type: none"> • Those species that have no suitable habitat within the survey area. • Those species that have become locally extinct, or are not known to have ever been present in the region of the survey area. |

Definitions

| Term | Description |
|-------------|--|
| study area | a 5 km buffer around the length of the survey area |
| survey area | the area subject to the current survey |
| locality | the area within an approximate 20 km radius of the survey area |

Fauna likelihood of occurrence assessment

| Species Name | Status | | Desktop Search | | Description and habitat requirements | Likelihood |
|---|-----------------|-----------|----------------|------|--|--|
| | EPBC Act Status | WA Status | NM | PMST | | |
| <i>Apus pacificus</i> (Fork-tailed Swift) | IA | IA | X | X | The fork-tailed Swift is a migratory species that follows large storm fronts and are almost exclusively areal species. In WA, there are sparsely scattered records of the Fork-tailed Swift along the south coast, ranging from near the Eyre Bird Observatory and west to Denmark. They are widespread in coastal and subcoastal areas between Augusta and Carnarvon, including some on nearshore and offshore islands. Scattered records are present in the Perth region. Records are scattered throughout WA including the Pilbara, Kimberley, Wheatbelt, Gascoyne and Isolated records occur at Neale Junction in the Great Victoria Desert and on the Nullarbor Plain (Higgins 1999). | Unlikely. Although this species may periodically occur in the region the species is exclusively areal in nature and not utilise terrestrial habitats. |
| <i>Botaurus poiciloptilus</i> (Australasian Bittern) | En | En | | X | The Australasian Bittern prefers densely vegetated freshwater wetlands and, rarely, in estuaries or tidal wetlands. In the southwest of WA, the Bittern is found in beds of tall rush mixed with or near short fine sedge or open pools. It also occurs around swamps, lakes, pools, rivers and channels fringed with <i>Lignum Muehlenbeckia</i> , Canegrass (<i>Eragrostis spp.</i>) or other dense vegetation. It occasionally ventures into areas of open water or onto banks (DEE 2018). | Highly unlikely, there is no suitable wetland habitat within the survey area. |

| Species Name | Status | | Desktop Search | | Description and habitat requirements | Likelihood |
|---|-----------------|-----------|----------------|------|---|--|
| | EPBC Act Status | WA Status | NM | PMST | | |
| <i>Calidris ferruginea</i> (Curlew Sandpiper) | MiWCr | Vu, IA | | X | Curlew Sandpipers mainly occur on intertidal mudflats in sheltered coastal areas, such as estuaries, bays, inlets and lagoons, and also around non-tidal swamps, lakes and lagoons near the coast, and ponds in saltworks and sewage farms. They are also recorded inland, though less often, including around ephemeral and permanent lakes, dams, waterholes and bore drains, usually with bare edges of mud or sand. They occur in both fresh and brackish waters. Occasionally they are recorded around floodwaters (DEE 2018). | Highly unlikely , there is no suitable habitat within the survey area. |
| <i>Calyptorhynchus banksii subsp. naso</i> (Forest Red-tailed Black Cockatoo) | Vu | Vu | X | X | Forest Red-tailed Black Cockatoo typically occurs in dense Jarrah (<i>Eucalyptus marginata</i>), Karri (<i>E. diversicolor</i>) and Marri (<i>Corymbia calophylla</i>) forests, however the species also occurs in a range of other forest and woodland types, including Blackbutt (<i>E. patens</i>), Wandoo (<i>E. wandoo</i>), Tuart (<i>E. gomphocephala</i>), Albany Blackbutt, Yate (<i>E. cornuta</i>), and Flooded Gum (<i>E. rudis</i>) (DSEWPaC 2012). Habitats also tend to have an understorey of <i>Banksia spp.</i> , <i>Persoonia spp.</i> , <i>Allocasuarina spp.</i> The Forest red-tailed Black Cockatoo generally nests in hollows in live or dead trees of Marri, Karri, Wandoo, Bullich, Blackbutt, Tuart and Jarrah (DSEWPaC 2012). | Unlikely , the habitat within the survey area is not the preferred habitat for this species i.e. there is a lack of Jarrah and Marri based on the habitat assessment, however they may occasionally enter the survey area to forage on planted <i>Eucalyptus</i> . The nearest record is located approximately 20 km to the south. Frequently occurs further south within inner metropolitan Perth. |

| Species Name | Status | | Desktop Search | | | |
|---|-----------------|-----------|----------------|------|--|--|
| | EPBC Act Status | WA Status | NM | PMST | Description and habitat requirements | Likelihood |
| <i>Calyptorhynchus baudinii</i> (Baudin's Cockatoo) | En | En | | | <p>Baudin's Black Cockatoo occurs in high-rainfall areas, usually at sites that are heavily forested and dominated by Marri (<i>Corymbia calophylla</i>) and Eucalyptus species, especially Karri (<i>E. diversicolor</i>) and Jarrah (<i>E. marginata</i>). The species also occurs in woodlands of Wandoo (<i>E. wandoo</i>), Blackbutt (<i>E. patens</i>), Flooded Gum (<i>E. rudis</i>), and Yate (<i>E. cornuta</i>). Baudin's Black Cockatoo breeds in the Jarrah, Marri and Karri forests of the deep south-west in areas averaging more than 750 mm of rainfall annually. The range of the species extends from Albany to Gidgegannup and Mundaring (east of Perth), and inland to the Stirling Ranges and near Boyup Brook. Preferred roosts are in areas with a dense canopy close to permanent water sources that provide the birds with protection from weather conditions (DSEWPaC 2012).</p> | <p>Unlikely, This species generally occurs in forest and woodland east and south of Perth. Occasionally recorded eastern edge of Perth such as Muchea and Perth Air. It rarely recorded on the Northern Swan Coastal Plain. The study area is marginal as it is beyond the northern limit of the species current geographic range. The study area lacks preferred foraging plants species such as Marri and Jarrah. Some potential foraging plants within occur such as <i>Banksia</i> species, however given the study area location, and the lack of local occurrence, Baudin's Cockatoo is unlikely to occur. The nearest record is located approximately 10 km to the south of the survey area.</p> |

| Species Name | Status | | Desktop Search | | Description and habitat requirements | Likelihood |
|---|-----------------|-----------|----------------|------|---|---|
| | EPBC Act Status | WA Status | NM | PMST | | |
| <i>Calyptorhynchus latirostris</i> (Carnaby's Black Cockatoo) | En | En | X | X | This species mainly occurs in uncleared or remnant native Eucalyptus woodlands and in shrubland or kwongan heathland dominated by <i>Hakea</i> , <i>Banksia</i> and <i>Grevillea</i> species. The species also occurs in forests containing Marri (<i>Corymbia calophylla</i>), Jarrah (<i>Eucalyptus marginata</i>) or Karri (<i>E. diversicolor</i>). Breeding usually occurs in the western Wheatbelt region of WA, with flocks moving to the higher rainfall coastal area to forage after the breeding season. Feeds on the seeds of a variety of native plants, including <i>Allocasuarina</i> , <i>Banksia</i> , <i>Eucalyptus</i> , <i>Grevillea</i> and <i>Hakea</i> , and some introduced plants (DSEWPaC 2012). | Present , species recorded within survey area. |
| <i>Falco peregrinus</i> (Peregrine Falcon) | | S | | | The Peregrine Falcon is seen occasionally anywhere in the south-west of WA. It is found everywhere from woodlands to open grasslands and coastal cliffs - though less frequently in desert regions. The species nests primarily on ledges of cliffs, shallow tree hollows, and ledges of building in cities (Morcombe 2004). | Likely , the nearest record is within 10 km of the survey area. |
| <i>Leipoa ocellata</i> (Malleefowl) | Vu | Vu | | X | The Malleefowl generally occurs in semi-arid areas of WA, from Carnarvon to south east of the Eyre Bird Observatory (south-east WA). It occupies shrublands and low woodlands that are dominated by mallee vegetation, as well as native pine (<i>Callitris</i> spp.) woodlands, <i>Acacia</i> shrublands, Broombush (<i>Melaleuca uncinata</i>) vegetation or coastal heathlands. The nest is a large mound of sand or soil and organic matter (Jones and Goth 2008; Morcombe 2004). Few records are present on the SCP and are historical observations. | Highly unlikely , the nearest record is located over 40 km away and was recorded in 1972. This species no longer occurs within the Swan Coastal Plain bioregion. |
| <i>Motacilla cinerea</i> (Grey Wagtail) | IA, T | IA | | X | The non-breeding habitat for the Grey Wagtail is strongly associated with water, particularly rocky substrates along water courses but also lakes and marshes (DEE 2018) | Unlikely , some habitat is present for this species however they are migratory and rarely found on the SCP. Use maybe periodic and opportunistic. |

| Species Name | Status | | Desktop Search | | Description and habitat requirements | Likelihood |
|--|-----------------|-----------|----------------|------|--|---|
| | EPBC Act Status | WA Status | NM | PMST | | |
| <i>Numenius madagascariensis</i> (Eastern Curlew) | IA, Cr | IA, Cr | | X | The Eastern Curlew is most commonly associated with sheltered coasts, especially estuaries, bays, harbours, inlets and coastal lagoons, with large intertidal mudflats or sandflats, often with beds of seagrass (Marchant & Higgins 1993). | Highly unlikely , there is no suitable habitat within the survey area. |
| <i>Pandion haliaetus</i> (Osprey) | MiW | IA | x | X | Ospreys occur in littoral and coastal habitats and terrestrial wetlands of tropical and temperate Australia and offshore islands. They are mostly found in coastal areas but occasionally travel inland along major rivers, particularly in northern Australia. They require extensive areas of open fresh, brackish or saline water for foraging. They frequent a variety of wetland habitats including inshore waters, reefs, bays, coastal cliffs, beaches, estuaries, mangrove swamps, broad rivers, reservoirs and large lakes and waterholes. They exhibit a preference for coastal cliffs and elevated islands in some parts of their range but may also occur on low sandy, muddy or rocky shores and over coral cays. They may occur over atypical habitats such as heath, woodland or forest when travelling to and from foraging (DEE 2018) | Highly unlikely , there is no suitable habitat within the survey area. The nearest record is located approximately 20 km away on the coast. |
| <i>Tringa nebularia</i> (Common Greenshank) | IA | IA | | X | The Common Greenshank does not breed in Australia; however, the species occurs in all types of wetland and has the widest distribution of any shorebird in Australia. The Common Greenshank is generally absent from the Western Deserts although there are a few records from the Great Sandy Desert and the Nullarbor Plain. It occurs around most of the coast from Cape Arid in the south to Carnarvon in the north-west. In the Kimberley's it is recorded in the south-west and the north-east, with isolated records from the Bonaparte Archipelago (DEE 2018). | Highly unlikely , there is no suitable habitat within the survey area. The nearest records are from Carabooda Lake and Lake Nowergup to the east of the survey area. |
| <i>Tyto novaehollandiae subsp. novaehollandiae</i> | | P3 | X | | The Masked Owl is found across a range of habitats from wet sclerophyll forest, dry sclerophyll forest, non-eucalypt dominated forest, scrub and cleared land with remnant old growth trees. There are however several aspects of habitat preference which appear to be common: the Masked Owl requires large hollows in old growth | Unlikely , the habitat within the survey area is not the preferred habitat for this species. The nearest record is just north |

| Species Name | Status | | Desktop Search | | Description and habitat requirements | Likelihood |
|---|-----------------|-----------|----------------|------|---|--|
| | EPBC Act Status | WA Status | NM | PMST | | |
| (Masked Owl southern subsp.) | | | | | eucalypts for nesting; it often favours areas with dense understorey or ecotones comprising dense and sparse ground cover, they are often recorded foraging within 100-300 m of the boundary of two vegetation types (Bell & Mooney 2002). | of Yanchep Beach Road in the Yanchep National Park. |
| <i>Bettongia penicillata</i> subsp. <i>ogilbyi</i> (Woylie, Brush-tailed Bettong) | En | Cr | X | | Preferred habitat for the Woylie includes dense undergrowth, logs and rock-cavities and occasionally in burrows (Burbidge 2004). Scattered Woylie populations may be found throughout the Jarrah forest in the south-west corner of WA. Extant naturally occurring populations of the species are restricted to three small wheatbelt reserves in WA – Dryandra Woodland, Tutanning Nature Reserve and Perup Forest. All are characterised by the presence of thickets of the plant <i>Gastrolobium</i> (Van Dyke and Strahan 2008). The species historically occurred in a wide variety of habits, however is now restricted to areas where predation has been controlled (or excluded). | Highly unlikely , the species is no longer known from the area. There are records within 10 km of the survey area however the specimens collected were bones and likely represent historic occurrence in the area. The species is likely extinct in the region. |
| <i>Dasyurus geoffroii</i> (Western Quoll, Chuditch) | Vu | Vu | X | X | The Chuditch inhabits eucalypt forest (especially Jarrah), dry woodland and mallee shrublands. In Jarrah forest, Chuditch populations occur in both moist, densely vegetated, steeply sloping forest and drier, open, gently sloping forest. Most diurnal resting sites in sclerophyll forest consist of hollow logs or earth burrows (Van Dyke and Strahan 2008). The species can travel large distances, has a large home range and is sparsely populated through a large portion of its range. | Unlikely , there are historical records present within 5 km of the study area including Yanchep National Park and Eglinton. This species persists in forests and extensive woodlands within the Darling Range and further east, but is considered locally extinct within the Northern Swan Coastal Plain. |

| Species Name | Status | | Desktop Search | | Description and habitat requirements | Likelihood |
|---|-----------------|-----------|----------------|------|---|---|
| | EPBC Act Status | WA Status | NM | PMST | | |
| <i>Hydromys chrysogaster</i> (Water Rat) | | P4 | X | | Water-rats live primarily in a wide variety of freshwater habitats, from sub-alpine streams and other inland waterways to lakes, swamps, farm dams and irrigation channels and are thought to be one of the few native species to have at least partially benefited from human encroachment (Gardner and Serena 1995). | Highly unlikely , there is no suitable habitat (creeks or rivers) within the survey area. The nearest record is located approximately 2 km away. |
| <i>Isoodon obesulus subsp. fusciventer</i> (Quenda, Southern Brown Bandicoot) | | P4 | X | | The Quenda prefers dense scrubby, often swampy, vegetation with dense cover up to one metre high. However, it also occurs in woodlands, and may use less ideal habitat where this habitat occurs adjacent to the thicker, more desirable vegetation. The species often feeds in adjacent forest and woodland that is burnt on a regular basis and in areas of pasture and cropland lying close to dense cover (Van Dyke and Strahan 2008). | Likely , the study area has suitable foraging habitat and areas of dense shrubland habitat provide suitable shelter. The species is known to occur locally with are two records within 4 km to the northwest and south east of the study area. |
| <i>Macropus irma</i> (Western Brush Wallaby) | | P4 | X | | The Western Brush Wallaby is a grazer found primarily in open forest or woodland, particularly favouring open, seasonally wet flats with low grasses and open scrubby thickets. It is also found in some areas of mallee and heathland, and is uncommon in karri forest. This species was once very common in the south-west of WA but has undergone a reduction in range and a significant decline in abundance in its current habitat. (Van Dyke and Strahan 2008). | Present , recorded within survey area and the species was recorded during field survey |
| <i>Phascogale tapoatafa subsp.</i> (WAM M434) (South western Brush-tailed Phascogale) | | CD | X | | The South western Brush-tailed Phascogale prefers dry sclerophyll forests and open woodlands with a generally sparse ground-storey, which contain suitable nesting resources such as tree hollows, rotted stumps and tree cavities (Van Dyke and Strahan 2008). The species range extends from just north of Perth and into the south west (Van Dyke and Strahan 2008). | Unlikely , local records are very limited and tend to be historical. The northern Swan Coastal Plain represents the northern limit if distribution. |

| Species Name | Status | | Desktop Search | | Description and habitat requirements | Likelihood |
|---|-----------------|-----------|----------------|------|--|--|
| | EPBC Act Status | WA Status | NM | PMST | | |
| <i>Ctenotus gemmula</i> (SCP subpop.) (Jewelled south-west Ctenotus) | | P3 | X | | The Jewelled South-West Ctenotus occurs on pale sandplains supporting heaths in association with <i>Banksia</i> or mallee woodlands (Wilson and Swan, 2013, Kay and Keogh 2012). The species is known from the Ellenbrook area to Peirce airbase and Melaleuca Park to the east of the survey area. | Likely , the habitat within the survey area (Banksia woodlands, and shrubland are suitable for this species. There are no records from the survey area however this species tends to be cryptic and difficult to confirm presence /absence, although it is known to occur on the northern Swan Coastal Plain. |
| <i>Neelaps calonotos</i> (Black-striped Snake) | | P3 | X | | This Black-striped Snake is restricted to the sandy coastal strip near Perth, between Mandurah and Lancelin. It occurs on dunes and sand-plains vegetated with heaths and <i>Eucalyptus/Banksia</i> woodlands. This species is seriously threatened by increasing development within its restricted distribution (Wilson and Swan 2013). | Likely , the habitat within the survey area is suitable for this species. There are multiple records within 5 km of the survey area. |
| <i>Synemon gratiosa</i> (Graceful Sunmoth) | | P4 | X | | This moth occurs from the coastal peel area north to the Murchison in coastal and near coastal sandplains where there is an abundance of host plant. The primary host plant species is <i>Lomandra maritima</i> in which moth larvae feed. Moths metamorphose and emerge in Autumn, usually early March for a few weeks at which time they are active and readily detectably during warm weather. Other species of <i>Lomandra</i> may also be important breeding habitat. | Present , recorded during a target survey within the study area (GHD 2012), moderately extensive breeding habitat (<i>Lomandra maritima</i>) herblands on dunes occur within the study area. |

References

- Bell, P.J and Mooney, N 2002, Distribution, Habitat and Abundance of Masked Owls (*Tyto novaehollandiae*) in Tasmania, In; Ecology and Conservation of Owls, Eds. Newton I, Kavanagh R, Olsen J, and Taylor I, CSIRO Publishing, Australia.
- Bush, B, Maryan, B, Browne-Cooper, R and Robinson, D 2010, Field guide to the reptiles and frogs of the Perth region, WA Museum, WA.
- Burbidge, AA 2004, Threatened animals of WA. Department of Conservation and Land Management, Perth, WA.
- Churchill, S 2008, Australian Bats, Second Edition. Allen and Unwin, NSW
- Department of Environment and Conservation (DEC) (2008). Muir's Corella (*Cacatua pastinator pastinator*) Recovery Plan. Department of Environment and Conservation, WA.
- Department of Sustainability, Environment, Water, Population and Communities (DSEWPaC) 2012, *EPBC Act referral guidelines for three threatened black cockatoo species*, Department of Sustainability, Environment, Water, Population and Communities, Canberra, Australian Government.
- Department of the Environment and Energy (DEE) 2018, Species Profile and Threats Database (SPRAT), Department of the Environment, Australian Government Canberra.
- Department of the Environment 2015, Referral Guideline for 14 birds listed as migratory species under the EPBC Act
- Friend, J.A. (2008). Numbat. In: Van Dyke. S & Strahan. R., ed. The Mammals of Australia. Page(s) 163-165. Reed Books: Sydney.
- Garnett, ST and Crowley, GM 2000, *The Action Plan for Australian Birds 2000*, Canberra, Environment Australia.
- Gardner, J L and Serena, M 1995, Observations on activity patterns, population and den characteristics of the water rat *Hydromys chrysogaster* (Muridae: Hydromyinae) along Badger Creek, Victoria, Australian Mammalogy vol. 18 pp 71-75.
- Higgins, PJ (ed.) 1999, Handbook of Australian, New Zealand and Antarctic Birds. Volume Four - Parrots to Dollarbird, Melbourne, Oxford University Press.
- Jones, D and Goth, A 2008, Mound-builders, CSIRO Publishing. Victoria Australia.
- Kay, GM and Keogh, JS 2012, Molecular phylogeny and morphological revision of the *Ctenotus labillardieri* (Reptilia: Squamata: Scincidae) species group and a new species of immediate conservation concern in the southern WA biodiversity hotspot, *Zootaxa* Vol 3390, pp 1-18
- Marchant, S and Higgins, PJ (eds) 1993, *Handbook of Australian, New Zealand and Antarctic Birds*, Volume 2: Raptors to Lapwings, Melbourne, Oxford University Press.
- Morcombe, M 2004, Field Guide to Australian Birds, Steve Parish Publishing Archer Field, Queensland Australia
- Nevill, S 2008, Birds of the Greater South West WA. Simon Nevill Publications, Perth Australia

Pizzey, G and Knight, F 2012, The Field Guide to the Birds of Australia. Harper Collins Publishers, Sydney, Australia.

Van Dyke, S and Strahan, R 2008, The Mammals of Australia, Third Edition, New Holland Publishing, Sydney Australia.

Wilson, S and Swan, G 2013, A Complete Guide to Reptiles of Australia. 4th Edition New Holland Press Sydney Australia.

GHD

Level 10

999 Hay Street

T: 61 8 6222 8222 F: 61 8 6222 8555 E: permail@ghd.com


© GHD 2018

This document is and shall remain the property of GHD. The document may only be used for the purpose for which it was commissioned and in accordance with the Terms of Engagement for the commission. Unauthorised use of this document in any form whatsoever is prohibited.

6137062-

46419/[https://projects.ghd.com/oc/WesternAustralia1/ptametronetenvironme/Delivery/Documents/6137062-REP_YRE Part 2 Biological Assessment.docx](https://projects.ghd.com/oc/WesternAustralia1/ptametronetenvironme/Delivery/Documents/6137062-REP_YRE%20Part%20Biological%20Assessment.docx)

Document Status

| Revision | Author | Reviewer | | Approved for Issue | | |
|----------|--|-------------------------|-----------|--------------------|---|------------|
| | | Name | Signature | Name | Signature | Date |
| 0 | R Browne-Cooper A Benkovic J Tindiglia | J Tindiglia D Farrar | | D Farrar |  | 19/12/2018 |
| | | | | | | |
| | | | | | | |

www.ghd.com

