DETAILED FLORA AND VEGETATION REPORT

Dalyellup Stage 14F



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Contents

1 EXECUTIVE SUMMARY 1

2 INTRODUCTION 2
2.1 Background 2
2.2 Scope of work 2
2.3 Study area 2

3 LEGISLATIVE CONTEXT 3
3.1 Commonwealth legislation 3
3.2 State legislation 3
3.2.1 Threatened and Priority species 3
3.2.2 Critical habitat 3
3.2.3 Threatened and Priority Ecological Communities 4
3.2.4 Other significant flora and vegetation 4
3.2.5 Environmentally Sensitive Areas 5
3.2.6 Introduced flora 5

4 METHODS 6
4.1 Desktop review 6
4.1.1 Dandjoo 6
4.1.2 Protected Matters Search Tool 6
4.1.3 DBCA database searches 6
4.1.4 Relevant publications 6
4.2 Field survey 6
4.2.1 Survey timing 6
4.2.2 Flora and vegetation 7
4.2.3 Data analysis 7
4.2.4 Survey personnel 8

5 EXISTING ENVIRONMENT 9
5.1 Interim Biogeographical Regionalisation of Australia 9
5.2 Land systems and surface geology 9
5.3 Climate and weather 9
5.4 Land use 10
5.5 Pre-European vegetation 10
5.6 Environmentally sensitive areas 11

6 RESULTS 12
6.1 Desktop assessment 12
6.1.1 Flora 12
6.1.2 Likelihood of occurrence assessment 12
6.1.3 Vegetation 15
6.1.4 Relevant publications 15
6.2 Field survey 16
6.2.1 Flora 16
6.2.2 Vegetation 17
6.2.3 Survey limitations and effort 18

7 DISCUSSION 20
7.1 Flora 20
7.1.1 Significant flora 20
7.2 Vegetation 20
7.2.1 Vegetation types 20
7.2.2 Significant vegetation 20
7.2.3 Vegetation condition 20

8 REFERENCES 21

Tables

Table 1 Conservation status of vegetation 5
Table 2 Database search details 6
Table 3 Keighery (1994) vegetation condition scale 7
Table 4 Botanical survey personnel details 8
Table 5 Soil systems within the site 9
Table 6 Pre-European vegetation associations, remnant extent and reservation status 10
Table 7 Likelihood of occurrence of state significant flora 13
Table 8 PMST Threatened Ecological Communities search results 15

Graphs

Graph 1 Climate averages and records over and prior to survey periods, BoM Station 009965 (BoM, 2024) 10

Figures

(contained within report text)

Figure 1 Survey area 2
Figure 2 Dendrogram produced from Primer7 analysis 17

(compiled at rear of report)

Figure A: Soil landscape mapping
Figure B: Pre-European vegetation mapping
Figure C: Environmentally Sensitive Areas
Figure D: DBCA Priority flora and vegetation searches
Figure E: Survey sites
Figure F: Vegetation mapping
Figure G: Vegetation condition
Figure H: Survey effort

Appendices

Appendix A :Protected Matters Search Tool results 23
Appendix B :Site data 24
Appendix C :Species list 25

1 EXECUTIVE SUMMARY

RPS AAP Consulting Pty Ltd (RPS) was commissioned by Satterley Property Group (Satterley) to conduct a detailed flora and vegetation survey for a land parcel within the Dalyellup Beach Estate, Dalyellup, Stage 14F.

Satterley required baseline ecological information regarding the land parcel (the site) and required a detailed flora and vegetation survey to be conducted within the clearing footprint (the survey area).

The use of quadrats to sample the flora and vegetation is the generally accepted method during a detailed survey, as per EPA's technical guidance for flora and vegetation surveys (EPA 2016a). Due to the small size of the site, seven 10 x 10 m quadrats were installed and described. Two visits were made, in different seasons. The first survey visit was conducted in August of 2024 (winter), the second in November 2024 (spring).

Fifty-four taxa were recorded during the survey. These represent twenty-one families and forty-eight genera. The Fabaceae (Peas) were the family with the highest representation (8 species), followed by the Poaceae (Grasses – 7 species) and Myrtaceae (Myrtles, includes *Eucalyptus* – 4 species).

No conservation significant flora protected under either the federal EPBC or state Biodiversity Conservation Acts was recorded. One record of an orchid was made, the common Cowslip Orchid (*Caladenia flava*).

Twenty-one introduced species (39%) were recorded during the survey, including all members of the Poaceae family recorded.

Two species are listed as Declared Pests. Both species are exempt from keeping controls. Neither of these species are Weeds of National Significance

Declared taxa (refer Table 9 in text)

Species	Common name	WAOL status
**Zantedeschia aethiopica*	Arum Lily	Declared Pest – s22(2) (Exempt)
**Morea flaccida*	Cape Tulip	Declared Pest – s22(2) (Exempt)

Source: Western Australian Organism List

Vegetation was described as the EPBC listed **Tuart (*Eucalyptus gomphocephala*) woodlands and forests of the Swan Coastal Plain** Threatened Ecological Community. This community is also included in the DBCA list of Priority Ecological Communities.

The vegetation condition was described as Degraded to Completely Degraded by the scale of Keighery (1994). The native understorey is much reduced in diversity and has, in parts of the site, been completely replaced by introduced species. Due to the condition of the vegetation and the extent of weed invasion replacing the native understorey it is considered unlikely that any other orchids are present.

2 INTRODUCTION

2.1 Background

RPS AAP Consulting Pty Ltd (RPS) was commissioned by Satterley Property Group (Satterley) to conduct a detailed flora and vegetation survey for a land parcel within the Dalyellup Beach estate, Dalyellup.

Dalyellup Beach estate (the project) is a residential subdivision located 10 kilometres (km) south of Bunbury, Western Australia. The next stage of the project, Stage 14F, requires the clearing of approximately 0.85 hectares (ha) of native vegetation.

2.2 Scope of work

Satterley requires baseline ecological information regarding the land parcel (the site) and required a detailed flora and vegetation survey to be conducted within the clearing footprint (the survey area).

The purpose of a detailed flora and vegetation survey is to provide adequate local and regional context relative to the values of the flora and vegetation in the survey area. A detailed survey requires desktop assessment of available knowledge regarding the survey area and its environs, followed by field work to sample the vegetation and flora across the survey area (Environmental Protection Authority [EPA] 2016a).

The use of quadrats to sample the flora and vegetation is the generally accepted method during a detailed survey, as per EPA's technical guidance for flora and vegetation surveys (EPA 2016a).

In the event of conservation significant taxa being recorded during the detailed survey, a targeted survey may need to be conducted to map population size and population numbers of the taxa.

2.3 Study area

The area of the site is 4.77 ha and 2.39 ha of the site has already been cleared. Figure 1 shows the site boundary with the clearing area (survey area) (0.85 ha) indicated in yellow hashing.



Figure 1 Survey area

3 LEGISLATIVE CONTEXT

The protection of flora in WA is principally governed by three Acts:

- Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act)
- State *Biodiversity Conservation Act 2016* (BC Act)
- State *Environmental Protection Act 1986* (EP Act).

3.1 Commonwealth legislation

The EPBC Act is administered by the Federal Department of Climate Change, Energy, the Environment and Water (DCCEEW). The EPBC Act provides for the listing of Threatened flora and Threatened Ecological Communities (TECs) as matters of National Environmental Significance (NES). Under the EPBC Act, actions that have, or are likely to have, a significant impact on a matter of NES, require approval from the Australian Government Minister for the Environment through a formal referral process.

Conservation categories applicable to Threatened flora species under the EPBC Act are as follows:

- Extinct (EX) – there is no reasonable doubt that the last individual has died
- Extinct in the Wild (EW) – taxa known to survive only in captivity
- Critically Endangered (CR) – taxa facing an extremely high risk of extinction in the wild in the immediate future
- Endangered (EN) – taxa facing a very high risk of extinction in the wild in the near future
- Vulnerable (VU) – taxa facing a high risk of extinction in the wild in the medium-term
- Conservation Dependent (CD) – taxa whose survival depends upon ongoing conservation measures; without these measures, a conservation dependent taxon would be classified as Vulnerable, Endangered or Critically Endangered.

Ecological communities are defined as ‘naturally occurring biological assemblages that occur in a particular type of habitat’ (English and Blyth 1997). There are three categories under which ecological communities can be listed as TECs under the EPBC Act: Critically Endangered, Endangered and Vulnerable.

3.2 State legislation

3.2.1 Threatened and Priority species

In WA, the BC Act provides for the listing of Threatened flora and species in the following categories:

- Critically Endangered (CR) – species facing an extremely high risk of extinction in the wild in the immediate future
- Endangered (EN) – species facing a very high risk of extinction in the wild in the near future
- Vulnerable (VU) – species facing a high risk of extinction in the wild in the medium-term future.

The Department of Biodiversity, Conservation and Attractions (DBCA) administers the BC Act and also maintains a non-statutory list of Priority flora. Priority species are still considered to be of conservation significance – that is they may be Threatened – but cannot be considered for listing under the BC Act until there is adequate understanding of threat levels imposed on them. Species on the Priority flora list are assigned to one of four Priority (P) categories, P1 (highest) – P4 (lowest), based on level of knowledge / concern.

3.2.2 Critical habitat

Under the BC Act, habitat is eligible for listing as critical habitat if it is critical to the survival of a Threatened species or a TEC and its listing is otherwise in accordance with the ministerial guidelines.

3.2.3 Threatened and Priority Ecological Communities

The BC Act provides for the listing of TECs in the following categories:

- Critically Endangered – facing an extremely high risk of becoming eligible for listing as a collapsed ecological community in the immediate future
- Endangered – facing a very high risk of becoming eligible for listing as a collapsed ecological community in the near future
- Vulnerable – facing a high risk of becoming eligible for listing as a collapsed ecological community in the medium-term future.

An ecological community may be listed as a collapsed ecological community under the BC Act if there is no reasonable doubt that the last occurrence of the ecological community has collapsed or the ecological community has been so extensively modified throughout its range that no occurrence of it is likely to recover its species composition and / or structure.

The DBCA also maintains a non-statutory list of Priority Ecological Communities (PECs), which may become TECs in the future; however, do not currently meet survey criteria or that are not adequately defined. PECs are assigned to one of five categories depending on their priority for survey or definition, with Priority 1 of highest concern and Priority 5 of lowest concern.

3.2.4 Other significant flora and vegetation

Under the EPA's environmental factor guidelines, flora and vegetation may be considered significant for a range of reasons other than listing as a Threatened or Priority species or ecological community.

In addition to listing as Threatened or Priority, EPA (2016b) identifies the following:

- flora may be significant for:
  - local endemism or association with a restricted habitat type (e.g. surface water or groundwater dependent ecosystems)
  - new species or anomalous features that indicate a potential new species
  - representing the range of a species (particularly at the extremes of range, recently discovered range extensions, or isolated outliers of the main range)
  - being unusual species, including restricted subspecies, varieties or naturally occurring hybrids
  - having relictual status, being representative of taxonomic groups that no longer occur widely in the broader landscape.
- vegetation may be significant for:
  - having restricted distribution
  - subject to a degree of historical impact from threatening processes
  - having a role as a refuge
  - providing an important function required to maintain ecological integrity of a significant ecosystem.

Provided in the guide for assessment of applications to clear native vegetation (Department of Environmental Regulation[1] 2014) is a scale for assessing the bioregional conservation status of ecological vegetation classes (Table 1).

[1] Known as the Department of Water and Environmental Regulation (DWER) from 1 July 2017

Table 1 Conservation status of vegetation

Conservation status	Description
Presumed extinct	Probably no longer present in the bioregion
Endangered	Less than 10% of pre-European extent remains
Vulnerable	10-30% of pre-European extent exists
Depleted	More than 30% and up to 50% pre-European extent exists
Least Concern	More than 50% of pre-European extent exists and subject to little or no degradation over a majority of this area

3.2.5 Environmentally Sensitive Areas

Under section 51B of the EP Act the Minister for Environment may declare by notice either a specified area of the State or a class of areas of the State to be Environmentally Sensitive Areas (ESAs). ESAs are declared in the *Environmental Protection (Environmentally Sensitive Areas) Notice 2005*, which was gazetted on 8 April 2005 (Government of Western Australia 2005).

ESAs are areas where the vegetation has high conservation value. Several types of areas are declared ESAs including:

- Declared World Heritage property as defined in section 13 of the EPBC Act
- Area that is included on the Register of the National Estate, because of its natural heritage value, under the *Australian Heritage Council Act 2003*
- Defined wetland and the area within 50 m of the wetland. Defined wetlands include Ramsar wetlands, Conservation Category Wetlands and nationally important wetlands
- 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
- Area covered by a TEC
- Bush Forever site listed in Bush Forever: Volumes 1 and 2 (Government of Western Australia 2021), except to the extent to which the site is approved to be developed by the Western Australian Planning Commission.

3.2.6 Introduced flora

Introduced flora (weeds) pose threats to biodiversity and natural values by successfully out-competing native species for available nutrients, water, space and sunlight; reducing the natural structural and biological diversity by smothering native plants or preventing them from growing back after clearing, fire or other disturbance; replacing the native plants that animals use for shelter, food and nesting; and altering fire regimes, often making fires hotter and more destructive (Australian Weeds Committee 2007).

Management of some weed species is required under Commonwealth or state frameworks. Key classifications for significant introduced flora that are relevant to this report are:

- Declared Pest – the *Biosecurity and Agriculture Management Act 2007* (BAM Act), Section 22 makes provision for a plant taxon to be listed as a Declared Pest organism in parts of, or the entire state. Under the Biosecurity and Agriculture Management Regulations 2013, Declared Pests are assigned to one of three control categories that dictate the level of management required
- Weed of National Significance (WoNS) – high impact, established introduced flora causing major economic, environmental, social and/or cultural impacts in a number of states/territories, and which have strong potential for further spread (Weeds Australia 2024). Management is required in accordance with Department of Primary Industries and Regional Development (DPIRD) guidelines for particular WoNS.

Throughout this report, introduced flora species are indicated with an asterisk (*).

4 METHODS

4.1 Desktop review

4.1.1 Dandjoo

The DBCA Dandjoo website (biodiversity data platform) was searched for a polygon surrounding the site to retrieve data on flora assemblage. The website does not allow export of parameters such as polygon vertices, so the GIS locations of the polygon corners are unavailable.

4.1.2 Protected Matters Search Tool

The DCCEEW Protected Matters Search Tool database was interrogated for matters of NES that may occur within a 5 km buffer radius of the site's boundary to determine a list of EPBC protected flora and ecological communities that may occur within the survey area.

4.1.3 DBCA database searches

Searches of databases held by the DBCA for information covering the survey area were requested (Table 2).

Table 2 Database search details

Database	Reference	Search area defined
Threatened and Priority Ecological Communities Database	12-1121EC	Circle search within a 10 km radius of point (-33.405, 115.610)
Threatened and Priority Flora Database	20-1121FL	
WA Herbarium Database	20-1121FL	

4.1.4 Relevant publications

Seven references were used to provide background information regarding the ecological characteristics of the site:

- Flora and Vegetation Survey: Stages 13E and 13G, Dalyellup Beach estate – November 2021. (RPS 2022)
- A flora and vegetation survey along part of Dalyellup Boulevard (Ekologica 2012a)
- Vegetation Survey of the Proposed Tourist Precinct at Dalyellup (Ekologica 2012b)
- Report of a Level 1 Flora and Vegetation Survey at Dalyellup Beach (Ecoedge 2017)
- Kalgulup Regional Park management plan 96 2021 (DBCA, 2021).

The *Vegetation complexes of the Swan Coastal Plain* (DBCA 2018) dataset was consulted to provide context on current knowledge of the vegetation types in the study area.

The state-wide vegetation statistics (Government of Western Australia, 2019) were consulted to provide background to historical and current vegetation extents.

4.2 Field survey

4.2.1 Survey timing

The detailed survey was conducted over 2 days:

- Primary survey was conducted on 31 July 2024
- Supplementary survey was conducted 9 November 2024

4.2.2 Flora and vegetation

In accordance with EPA's technical guidance (2016a), 10 m × 10 m quadrats were established within representative vegetation types during the primary survey in July-August 2024 (winter).

The following information was recorded for each quadrat:

- A unique identifier
- Digital photograph(s) of the site
- Edaphic data–inc. soil type, slope, aspect
- A complete species list
- Vegetation description
- Estimate of height and projected foliar cover of species present
- Vegetation condition assessment according to the scale of Keighery (1994)

A supplementary survey was conducted in November 2024 (spring). The supplementary survey rescored each quadrat to assess if any new taxa had appeared following rain, and ground-truthed preliminary vegetation mapping produced from the primary survey data collection. Opportunistic collections were made of taxa not observed within quadrats during both the primary and supplementary surveys

4.2.2.1 Vegetation condition

Vegetation condition was assessed using the scale of Keighery (1994). This scale is recommended for use by the EPA (2016a) on the Swan Coastal Plain and covers six levels from Pristine to Completely Degraded, with emphasis placed on disturbance levels as an indicator of vegetation condition (Table 3).

Table 3 Keighery (1994) vegetation condition scale

Vegetation condition	Details
Pristine	Pristine or nearly so, no obvious signs of disturbance or 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 the 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 and shrubs.

4.2.3 Data analysis

Data collected from the quadrats was entered into RPS' MSAccess database, which was used to provide a species list and site records.

No statistical analysis is planned as the number of sample sites is too small to provide a meaningful result.

4.2.4 Survey personnel

The survey was conducted by RPS' lead botanist Martin Henson, assisted by graduate consultant Richard Storey. Martin has over 20 years' experience in botanical surveys, including many years on the Swan Coastal Plain. Survey personnel details are provided in Table 4.

[redacted]

survey)

5 EXISTING ENVIRONMENT

5.1 Interim Biogeographical Regionalisation of Australia

The Interim Biogeographic Regionalisation of Australia (IBRA) currently recognises 89 bioregions based on common climate, geology, landform native vegetation and species information. These bioregions are further split into 419 subregions – units that are more localised and geomorphologically homogenous within the bioregions.

The site is located in the IBRA bioregion of the Swan Coastal Plain and the Perth (SWA02) subregion. This subregion comprises a low-lying coastal plain covered with woodlands dominated by Banksia and tuart on sandy soils, *Casuarina obesa* on outwash plains and paperbark in swampy areas (Mitchell et al. 2002).

Annual rainfall ranges between 600 and 1000 mm and the climate is Mediterranean (Mitchell et al. 2002).

5.2 Land systems and surface geology

The site is encompassed by the Spearwood soil system (211Sp) which has been described in Table 5 and mapped in Figure A.

Table 5 Soil systems within the site

Soil code	Name	Description
211Sp	Spearwood system	Sand dunes and plains. Yellow deep sands, pale deep sands and yellow / brown shallow sands.

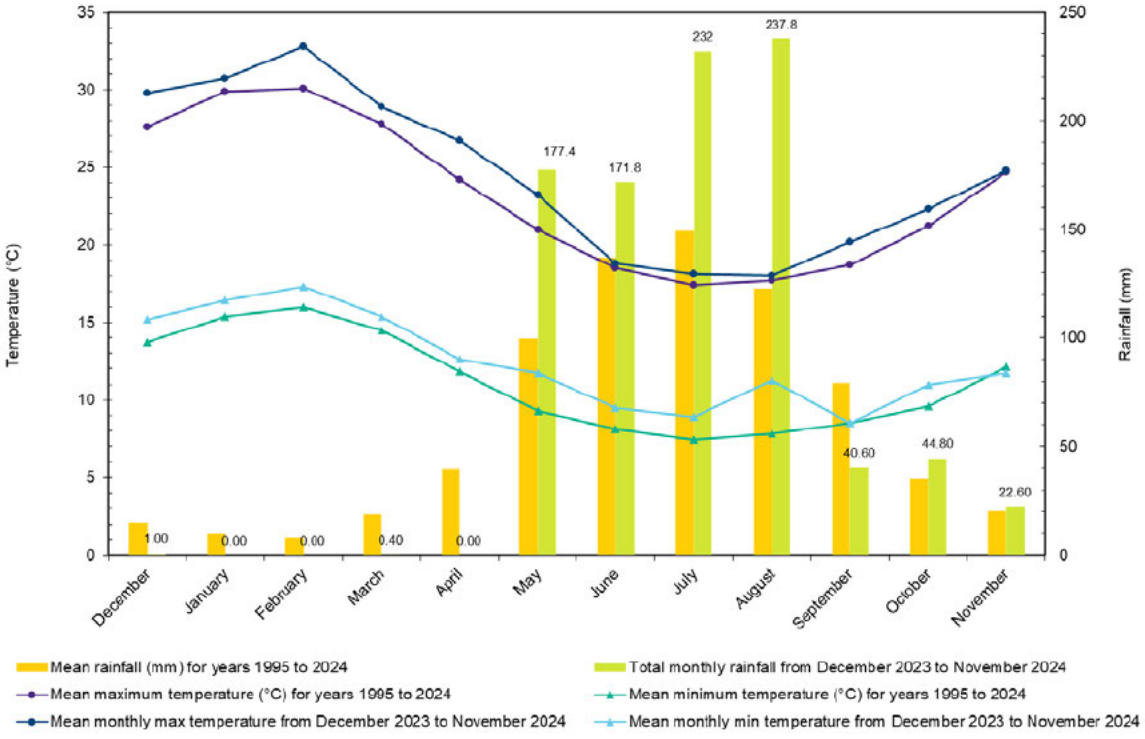
(Source: DPIRD 2024)

5.3 Climate and weather

The closest weather station collecting all the required data is at Bunbury (009965), located approximately 5.3 km north of the Dalyellup city centre. Graph 1 shows the mean temperatures and rainfall for the weather station since it opened in 1995 and, for comparison, mean temperatures and total rainfall prior to and during the survey timing.

The graph shows that the total monthly rainfall in the winter and autumn months was higher than average. Monthly rainfall exceeded the average in months May to August, preceding the time of the primary survey, but was lower than average for the following three months and over the time of the supplementary survey.. Monthly rainfall was also slightly below average during the summer and autumn months (December 2023 – April 2024). The total rainfall was over the annual mean of 740.2 mm.

Mean maximum and minimum monthly temperatures were slightly above average year-round, with monthly maximum temperature peaking at slightly above average in February.



Graph 1 **Climate averages and records over and prior to survey periods, BoM Station 009965 (BoM, 2024)**

5.4 Land use

The land use of the Perth subregion is predominantly dry land agriculture, conservation, and urban and rural residential incorporating roads and other infrastructure/easements. A small portion is used for mining or defence lands (Mitchell et al. 2002). Almost 39% of the current vegetation extent is within DBCA managed lands for conservation purposes (Government of Western Australia 2019).

5.5 Pre-European vegetation

Regional scale pre-European vegetation mapping for Western Australia (Beard et al. 2013) identified two mapped vegetation associations within the site (Figure B):

- Spearwood 37 – Thicket: wattle, Acacia-*Allocasuarina-Melaleuca* alliance
- Spearwood 6 – Woodland southwest: Jarrah, marri and wandoo; *Eucalyptus marginata*, *Corymbia calophylla*, E. wandoo.

Pre-European vegetation associations, remnant extent and reservation status are provided in Table 6.

Table 6 **Pre-European vegetation associations, remnant extent and reservation status**

IBRA Sub-region code	Vegetation association	Pre-European extent (ha)	2018 extent (ha)	% remaining	% of present extent in secure tender
SWA02	37	14,018.45	4,784.19	34.13	14.18
SWA02	6	56,343.01	13,362.25	23.72	3.30

(Source: Government of Western Australia 2019)

5.6 Environmentally sensitive areas

A review of the Department of Water and Environmental Regulation's (DWER) Clearing Regulations - Environmentally Sensitive Areas dataset was undertaken for the site. No ESAs or their buffer are mapped within the site (Figure C).

6 RESULTS

6.1 Desktop assessment

6.1.1 Flora

6.1.1.1 Flora assemblage

Dandjoo reported no records of flora species within the clearing area or the site.

6.1.1.2 Commonwealth significant flora

Searches of DCCEEW's PMST reported 19 EPBC Act-listed conservation significant flora within 5 km of the site:

- Four critically endangered flora
- Nine endangered flora
- Six vulnerable flora.

Results of the PMST search are listed in Table 7 with flora descriptions and habitat details sourced from FloraBase (Western Australian Herbarium [WA Herbarium] 1998-).

6.1.1.3 State significant flora

A search of the DBCA's Threatened and Priority Flora database (Ref: 20-1121FL) found a total of 30 flora species within a 10 km radius of the site; five flora species protected under the BC Act and 25 listed as Priority by the DBCA.

Results of the DBCA database search are listed in Table 7 with flora descriptions and habitat details sourced from FloraBase (WA Herbarium 1998-).

6.1.2 Likelihood of occurrence assessment

A likelihood of occurrence assessment was undertaken for the taxa reported in the PMST and DBCA database searches using the following criteria and categories:

- Recorded – species recorded within the study area by previous or current survey
- Possible – study area within known range of species; potential habitat within the study area, records within 5 km of study area and may not have been detectible during survey (e.g. survey conducted outside flowering period, annual plant survey conducted outside likely period of occurrence, small herbaceous plant in dense vegetation), or entire area of habitat not thoroughly searched
- Unlikely – study area outside known range of species and / or no suitable habitat present in study area and / or suitable / potential habitat present but study area considered adequately searched for the species
- Very unlikely - study area outside known range of species and no suitable habitat present in study area. The study area is considered adequately searched for the species.

The likelihood of occurrence assessment for conservation significant flora has been presented in Table 7.

There were two species identified as potentially occurring within the clearing area:

- *Lasiopetalum membranaceum* (P3)
- *Platysace ramosissima* (P3).

Table 7 Likelihood of occurrence of state significant flora

Species	Conservation significance			Description	Habitat	Likelihood of occurrence
	EPBC	BC	DBCA			
Acacia flagelliformis			Priority 4	Rush-like, erect or sprawling shrub, 0.3-0.75(-1.6) m high. Fl. yellow, May to Sep.	Sandy soils. Winter-wet areas.	Unlikely - no suitable habitat present in study area
Acacia semitrullata			Priority 4	Slender, erect, pungent shrub, (0.1-)0.2-0.7(-1.5) m high. Fl. cream-white, May to Oct.	White / grey sand, sometimes over laterite, clay. Sandplains, swampy areas.	Unlikely - no suitable habitat present in study area
Adelphacme minima			Priority 3	Small fleshy herb to 5 cm, white flowers.	Swamp. Grey sand / loam. Flat. Dry grey sand	Unlikely - no suitable habitat present in study area
Angianthus drummondii			Priority 3	Erect annual, herb, to 0.1 m high. Fl. yellow, Oct to Dec.	Grey or brown clay soils, ironstone. Seasonally wet flats.	Unlikely - no suitable habitat present in study area
Andersonia gracilis	Endangered	Threatened		Slender erect or open straggly shrub, 0.1-0.5(-1) m high. Fl. white-pink-purple, Sep to Nov.	White/grey sand, sandy clay, gravelly loam. Winter-wet areas, near swamps.	Unlikely - no suitable habitat present in study area
Aponogeton hexatepalus			Priority 4	Rhizomatous or cormous, aquatic perennial, herb, leaves floating. Fl. green-white, Jul to Oct.	Mud. Freshwater: ponds, rivers, claypans.	Unlikely - no suitable habitat present in study area
Austrostipa bronweniae	Endangered	Threatened		Clumped perennial grass to 0.8 m. Flowers green.	Swamp. Brown loam. Light yellow brown sandy loam over grey sandy clay. Seasonally inundated dampland	Unlikely - no suitable habitat present in study area
Austrostipa jacobsiana	Critically Endangered	Threatened		Clumping, perennial grass. 0.6 m (in spike to 1.1.m)	Plain. Grey sand / loam / clay. Low Open Plain to Dampland.	Unlikely - no suitable habitat present in study area
Banksia mimica	Endangered	Threatened		Prostrate, lignotuberous shrub, 0.15-0.4 m high. Fl. yellow-brown, Dec or Jan to Feb.	White or grey sand over laterite, sandy loam.	Unlikely - no suitable habitat present in study area
Banksia nivea subsp. *uliginosa*	Endangered	Threatened		Dense, erect, non-lignotuberous shrub, 0.2-1.5 m high. Fl. yellow-brown, Aug to Sep.	Sandy clay, gravel.	Unlikely - no suitable habitat present in study area
Banksia squarrosa subsp. *argillacea*	Vulnerable	Threatened		Erect, open, non-lignotuberous shrub, 1.2-4 m high. Fl. yellow, Jun to Nov. White/grey sand, gravelly clay or loam.	Winter-wet flats, clay flats.	Unlikely - no suitable habitat present in study area
Bolboschoenus medianus			Priority 1	Rhizomatous, perennial, grass-like or herb (sedge). Fl. red-brown.	Mud. In water and on river banks.	Unlikely - no suitable habitat present in study area
Boronia tetragona			Priority 3	Perennial, herb, 0.3-0.7 m high, leaves sessile, entire, with papillate margins, branches quadrangular, sepals ciliate. Fl. pink & red, Oct to Dec.	Black / white sand, laterite, brown sandy loam. Winter-wet flats, swamps, open woodland.	Unlikely - no suitable habitat present in study area
Brachyscias verecundus	Critically Endangered	Threatened		Annual (or ephemeral), herb, 0.012-0.022 m high, entirely glabrous. Fl. white/cream.	In a moss sward. On a granite outcrop.	Unlikely - no suitable habitat present in study area
Caladenia huegelii	Endangered	Threatened		Tuberous, perennial, herb, 0.25-0.6 m high. Fl. green & cream & red, Sep to Oct.	Grey or brown sand, clay loam.	Unlikely - no suitable habitat present in study area
Caladenia speciosa			Priority 4	Tuberous, perennial, herb, 0.35-0.6 m high. Fl. white-pink, Sep to Oct.	White, grey or black sand.	Unlikely - no suitable habitat present in study area
Carex tereticaulis			Priority 3	Monoecious, rhizomatous, tufted perennial, grass-like or herb (sedge), 0.7 m high. Fl. brown, Sep to Oct.	Black peaty sand.	Unlikely - no suitable habitat present in study area
Chamaescilla gibsonii			Priority 3	Clumped tuberous, herb. Fl. blue, Sep.	Clay to sandy clay. Winter-wet flats, shallow water-filled claypans.	Unlikely - no suitable habitat present in study area
Chamelaucium roycei N.G.Marchant	Vulnerable	Threatened		Shrub to 1 m. White flowers which turn pink after pollination.	Flat. Well drained, grey sandy loam. Soil moist. Flat, dry grey sand over ironstone at some depth	Unlikely - no suitable habitat present in study area
Diuris drummondii	Vulnerable	Threatened		Tuberous, perennial, herb, 0.5-1.05 m high. Fl. yellow, Nov to Dec or Jan.	Low-lying depressions, swamps	Unlikely - no suitable habitat present in study area
Diuris micrantha	Vulnerable	Threatened		Tuberous, perennial, herb, 0.3-0.6 m high. Fl. yellow & brown, Sep to Oct.	Brown loamy clay. Winter-wet swamps, in shallow water.	Unlikely - no suitable habitat present in study area
Diuris purdiei	Endangered	Threatened		Tuberous, perennial, herb, 0.15-0.35 m high. Fl. yellow, Sep to Oct.	Grey-black sand, moist. Winter-wet swamps.	Unlikely - no suitable habitat present in study area
Drakaea elastica	Endangered	Threatened		Tuberous, perennial, herb, 0.12-0.3 m high. Fl. red & green & yellow, Oct to Nov.	White or grey sand. Low-lying situations adjoining winter-wet swamps	Unlikely - no suitable habitat present in study area
Drakaea micrantha	Vulnerable	Threatened		Tuberous, perennial, herb, 0.15-0.3 m high. Fl. red & yellow, Sep to Oct.	White-grey sand.	Unlikely - no suitable habitat present in study area
Eleocharis keigheryi		Threatened		Rhizomatous, clumped perennial, grass-like or herb (sedge), to 0.4 m high. Fl. green, Aug to Nov.	Clay, sandy loam. Emergent in freshwater: creeks, claypans.	Unlikely - no suitable habitat present in study area
Eucalyptus rudis subsp. *cratyantha*			Priority 4	Tree, 5-20 m high, bark rough, box-type. Fl. white, Jul to Sep.	Loam. Flats, hillsides.	Unlikely - no suitable habitat present in study area

Species	Conservation significance			Description	Habitat	Likelihood of occurrence
	EPBC	BC	DBCA			
Franklandia triaristata			Priority 4	Erect, lignotuberous shrub, 0.2-1 m high. Fl. white-cream-yellow/brown-purple, Aug to Oct.	White or grey sand.	Unlikely - no suitable habitat present in study area
Lasiopetalum membranaceum			Priority 3	Multi-stemmed shrub, 0.2-1 m high. Fl. pink-blue-purple, Sep to Dec.	Sand over limestone.	**Possible** • Study area within known range of species • Records within 5 km of study area • Potential habitat within the study area (yellow sand)
Lambertia echinata subsp. *occidentalis*	Endangered	Threatened		Prickly, much-branched, non-lignotuberous shrub, to 3 m high. Fl. yellow, Feb or Apr or Dec.	White sandy soils over laterite, orange / brown-red clay over ironstone. Flats to foothills, winter-wet sites.	Unlikely - no suitable habitat present in study area
Leptomeria furtiva			Priority 2	Lax, sprawling shrub, 0.2-0.45 m high. Fl. orange-brown, Aug to Oct.	Grey or black peaty sand. Winter-wet flats.	Unlikely - no suitable habitat present in study area
Leucopogon sp. Busselton (D. Cooper 243)			Priority 2	Spreading shrub 0.7 m high. Flowers white.	Low flat. Seasonally wet. Brown sandy loam.	Unlikely - no suitable habitat present in study area
Microtis quadrata			Priority 4	Erect herb with tuber, 40 cm high. Greenish flowers	Winter wet swamp / brown clay	Unlikely - no suitable habitat present in study area
Morelotia australiensis listed as *Tetraria australiensis*	Vulnerable	Threatened		Rhizomatous, tufted perennial herb (sedge) or grass-like plant to 0.3 m.	Flat. Grey, brown clay loam.	Unlikely - no suitable habitat present in study area
Ornduffia submersa			Priority 4	Aquatic annual, floating herb. Flowers white / cream / yellow.	Winter wetland. Wet grey clay.	Unlikely - no suitable habitat present in study area
Platysace ramosissima			Priority 3	Perennial, herb, to 0.3 m high. Fl. white-cream, Oct to Nov.	Sandy soils.	**Possible** • Study area within known range of species • Potential habitat within the study area (yellow / brown sands)
Puccinellia vassica			Priority 1	Caespitose annual or perennial, grass-like or herb, 0.41-0.55 m high.	Saline soils. On the outer margins of coastal saltmarshes.	Unlikely - no suitable habitat present in study area
Pultenaea skinneri			Priority 4	Slender shrub, 1-2 m high. Fl. yellow/orange & red, Jul to Sep.	Sandy or clayey soils. Winter-wet depressions.	Unlikely - no suitable habitat present in study area
Petrophile latericola	Endangered			Multi-stemmed shrub, 0.4-1.5 m high. Fl. yellow, Nov.	Red lateritic clay. Winter-wet flats.	Unlikely - no suitable habitat present in study area
Schoenus benthamii			Priority 3	Tufted perennial, grass-like or herb (sedge), 0.15-0.45 m high. Fl. brown, Oct to Nov.	White, grey sand, sandy clay. Winter-wet flats, swamps.	Unlikely - no suitable habitat present in study area
Schoenus loliaceus			Priority 2	Annual, grass-like or herb (sedge), 0.03-0.06 m high. Fl. Aug to Nov.	Sandy soils. Winter-wet depressions.	Unlikely - no suitable habitat present in study area
Stylidium longitubum			Priority 4	Erect annual (ephemeral), herb, 0.05-0.12 m high. Fl. pink, Oct to Dec.	Sandy clay, clay. Seasonal wetlands.	Unlikely - no suitable habitat present in study area
Synaphea sp. Fairbridge Farm (D.Papenfus 696)	Critically Endangered	Threatened		Dense, clumped shrub, to 0.3 m high, to 0.4 m wide. Fl. yellow, Oct.	Sandy with lateritic pebbles. Near winter-wet flats, in low woodland with weedy grasses.	Unlikely - no suitable habitat present in study area
Synaphea sp. Serpentine (G.R.Brand 103)	Critically Endangered	Threatened		Clumping, many branched sub-shrub, 0.3 m x 0.2 m. Yellow flowers	Coastal plain, edge of winter wet site. Seasonally damp. Grey loamy sand.	Unlikely - no suitable habitat present in study area
Trithuria australis			Priority 4	Small aquatic herb.	Edge of wetland, grey clay. Orange clay / mud	Unlikely - no suitable habitat present in study area
Verticordia attenuata			Priority 3	Shrub, 0.4-1 m high. Fl. pink, Dec or Jan to May.	White or grey sand. Winter-wet depressions.	Unlikely - no suitable habitat present in study area

6.1.3 Vegetation

6.1.3.1 Commonwealth significant vegetation

A PMST search of the site, including a 5 km radius, identified four TECs within 5 km of the site (Table 8).

Table 8 PMST Threatened Ecological Communities search results

Community name	Threatened Category	Presence
Banksia Woodlands of the Swan Coastal Plain ecological community	Endangered	Community likely to occur within area
Clay Pans of the Swan Coastal Plain	Critically Endangered	Community likely to occur within area
Empodisma peatlands of southwestern Australia	Endangered	Community may occur within area
Tuart (*Eucalyptus gomphocephala*) Woodlands and Forests of the Swan Coastal Plain ecological community	Critically Endangered	Community likely to occur within area

6.1.3.2 State significant vegetation

A search of the DBCA threatened and priority ecological communities database (Ref: 12-1121EC) recorded that the site is within the **Tuart (*Eucalyptus gomphocephala)* woodlands of the Swan Coastal Plain** PEC (P3) (Figure D). The site is also recorded as within the community or buffer of the ***Banksia* dominated woodlands of the Swan Coastal Plain IBRA Region** PEC.

6.1.4 Relevant publications

Previous flora and vegetation surveys undertaken in the local area were reviewed and the results summarised below.

***Flora and vegetation survey - Stages 13E and 13G, Dalyellup Beach estate.* (RPS 2022)**

RPS conducted a detailed flora and vegetation survey in 2021 on a 14.5 ha land parcel (the survey area) to support stages 13E and 13G of the Dalyellup Beach estate, located less than 1 km west of the site.

No conservation significant flora were recorded within the survey area.

The vegetation was scored as in Good to Excellent condition, with the majority of it at the upper end of the Keighery (1994) condition scale. The sites that were recorded as "Good" under the Keighery scale (1994) were primarily assessed that way due to weed invasion. There was some vegetation structure the lower vegetation stratum because of weed cover.

The DBCA listed PEC and EPBC Listed TEC *'Tuart* (Eucalyptus gomphocephala) *woodlands and forests of the Swan Coastal Plain*' was present in (possibly) previously unreported areas. As part of the Quindalup Complex, Tuart vegetation is protected in the adjacent Kalgalup Regional Park, with approximately 60% of the pre-European extent of the Complex remaining.

A flora and vegetation survey along part of Dalyellup Boulevard (Ekologica, 2012a):

Ekologica identified 47 taxa in an undefined area. Six vegetation types were described. No conservation significant taxa were recorded. The Gibson vegetation type describing the *Eucalyptus gomphocephala/Agonis flexuosa* was recorded but at this stage it was not considered conservation significant.

Vegetation Survey of the Proposed Tourist Precinct at Dalyellup (Ekologica 2012b): Ekologica recorded 38 taxa on approximately 5.3 ha. No conservation significant flora were recorded, and seven vegetation types were described.

Report of a Level 1 Flora and Vegetation Survey at Dalyellup (Ecoedge 2017):

Ecoedge recorded 30 taxa over an approximately 23.15 ha study area, surveying in summer. No WoNS of Declared pest species were recorded. No conservation significant species were recorded, but one specimen of *Eremophila glabra* subsp. *albicans* was recorded. While not having a conservation ranking, this species at

Dalyellup is at the south-western limit of its known range and may have conservation significance for this reason. Seven vegetation types were described.

The ***Vegetation Complexes of the Swan Coastal Plain*** dataset (DBCA 2018) describes the vegetation in the study area as the 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* (Rottnest Teatree) - *Callitris preissii* (Rottnest Island pine), the closed scrub of *Acacia rostellifera* (summer-scented wattle) and the low closed *Agonis flexuosa* (peppermint) forest of Geographe Bay.

The ***State-wide Vegetation Statistics incorporating the CAR Reserve Analysis*** (Government of Western Australia, 2019) define the vegetation of the study area as 'Medium forest: jarrah-marri'. This description is inaccurate in the context of the vegetation at Dalyellup but is a function of a broader vegetation mapping exercise. The statistics indicate that there is 67.8% of the original extent of this vegetation left on the Swan Coastal Plain. Although this does not specifically refer to the vegetation types at Dalyellup it does give an indication of the overall status of that mapping unit. Over 26% of the remaining extent is held in conservation reserves.

The ***Kalgalup Regional Park management plan*** (DBCA 2021) gives figures for the Quindalup Complex, citing a pre-European extent of 54,574 ha, with 32,293 ha (or 60.44%) remaining. A proportion of 8.37% of the pre-European extent is in conservation reserves, or 4,566 ha of the current extent, of which 1,295 ha is held in the Kalgurup Regional Park.

6.2 Field survey

6.2.1 Flora

Fifty-four taxa were recorded during the survey. These represent twenty-one families and forty-eight genera. The Fabaceae (Peas) were the family with the highest representation (8 species), followed by the Poaceae (Grasses – 7 species) and Myrtaceae (Myrtles, includes *Eucalyptus* – 4 species).

No conservation significant flora protected under either the EPBC or Biodiversity Conservation Acts was recorded.

One record of an orchid was made, the common Cowslip Orchid (*Caladenia flava*). Due to the condition of the vegetation and the extent of weed invasion replacing the native understorey it is considered unlikely that any others are present.

6.2.1.1 Introduced flora

Twenty-one introduced species (39%) were recorded during the survey, including all members of the Poaceae family. Two species are listed as Declared Pests (Table 9). Both species are exempt from keeping controls. Neither of these species are Weeds of National Significance.

Table 9 Declared taxa (introduced flora)

Species	Common name	WAOL status
**Zantedeschia aethiopica*	Arum Lily	Declared Pest – s22(2) (Exempt)
**Morea flaccida*	Cap Tulip	Declared Pest – s22(2) (Exempt)

Source: Western Australian Organism List

6.2.1.2 Unidentified flora

No flora recorded remained unidentified

6.2.2 Vegetation

6.2.2.1 Vegetation types

As previously stated, no analysis was intended to be conducted on the results of the survey because the sample size was too small to be statistically significant. However, analysis was conducted out of curiosity, and the following dendrogram was produced.

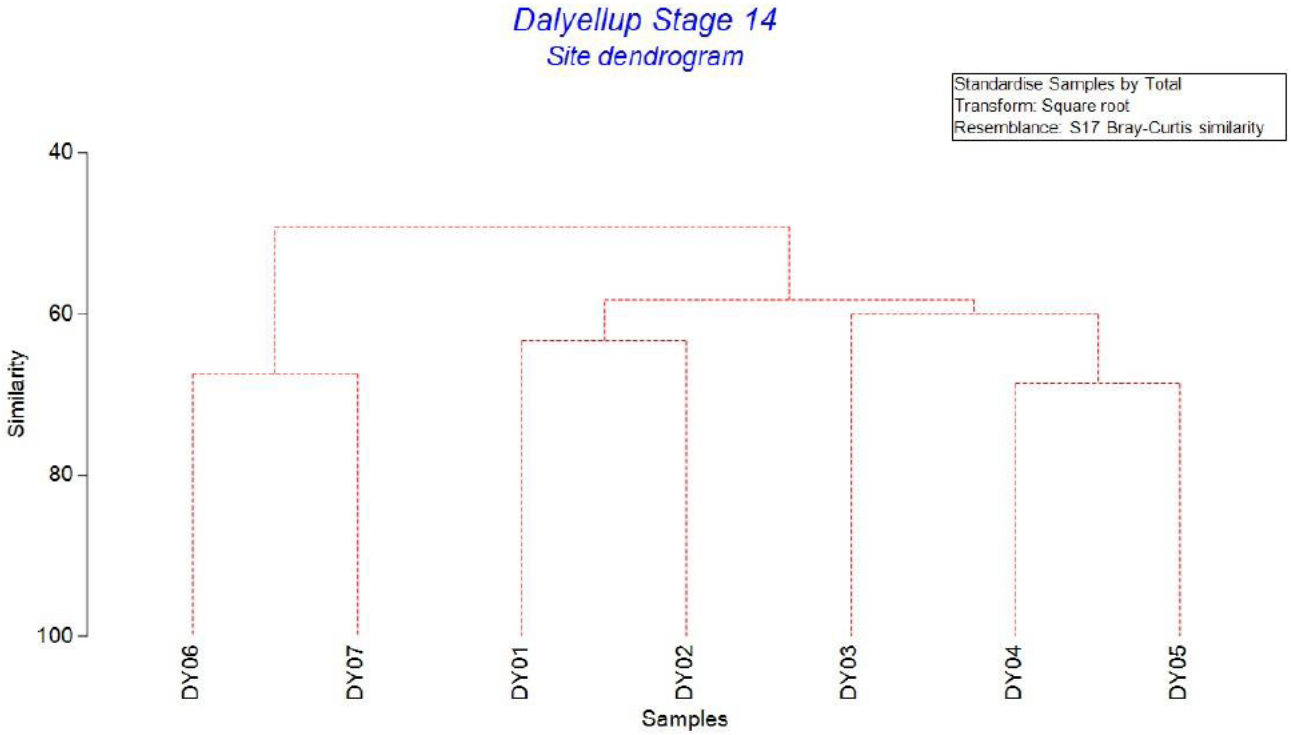


Figure 2 Dendrogram produced from Primer7 analysis

At first glance there appear to be three separate vegetation types present in the survey area. However, examination of the dendrogram within the context of the species list shows that the differentiations in the analysis were made on the presence or absence of the few native understorey species present. As the upper storey changed minimally over the length of the survey area it was decided that the vegetation type description should be dictated by the upper storey, and the description constructed from the individual quadrat descriptions is:

EgAfAs*EI

Eucalyptus gomphocephala mid woodland over *Agonis flexuosa, Banksia attenuata* low woodland over *Acacia saligna* tall open shrubland **Ehrharta longiflora* closed grassland, **Euphorbia peplus, *Trachyandra divaricata* open forbland.

The vegetation is mapped in Figure F.

6.2.2.2 Vegetation condition

Vegetation condition across the entire survey area was assessed as Degraded to Completely Degraded by the scale of Keighery (1994). The range of condition categories is used because, while examples of both were present in the survey area, mapping of each is unable to be conducted without traversing boundaries of each patch – an exercise that is extremely time consuming. The vegetation condition is mapped in Figure G

6.2.2.3 Significant vegetation

The mapped vegetation type correlates to the DBCA listed PEC **Tuart (*Eucalyptus gomphocephala*) woodlands and forests of the Swan Coastal Plain**. The PEC is described as "Mostly confined to

Quindalup Dunes and Spearwood Dunes but can also occur on the Bassendean dunes and Pinjarra Plain. It can occur on the banks of rivers and wetlands. Tuart is the key upper canopy species although it may co-occur with trees of other species. Trees commonly co-occurring with Tuart include *Agonis flexuosa* (peppermint), *Banksia grandis, Banksia attenuata, Eucalyptus marginata*; and less commonly, *Corymbia calophylla*, *Banksia menziesii* and *Banksia prionotes.* An understorey of native plants is typically present, which may include grasses, herbs and shrubs.

The description, area and condition thresholds that apply to the EPBC-listed TEC of the same name, also apply to this Priority ecological community. Identified threats include land clearing, weed invasion, grazing, disease, altered fire regimes, hydrological change.

This PEC is also EPBC listed as a Threatened Ecological Community, **Tuart (*Eucalyptus gomphocephala*) woodlands and forests of the Swan Coastal Plain** (see Figure C). While the conservation advice for the TEC agrees that the species composition and relative abundance varies, the definition as "The ecological community occurs as woodlands or forests or other structural forms where the primary defining feature is the presence of *Eucalyptus gomphocephala* (Tuart) trees in the uppermost canopy layer" fits the PEC description and the vegetation type in the survey area.

Figure C also shows, from the DBCA database searches, that the survey area is within, or within the buffer zone of, a second DBCA listed PEC; The database search results name this PEC as **Banksia dominated woodlands of the Swan Coastal Plain IBRA Region**. This PEC is a component of the larger PEC **Banksia woodlands of the Swan Coastal Plain** which is described as:

"Canopy is most commonly dominated or co-dominated by *Banksia attenuata* and/or *B. menziesii*. Other Banksia species that can dominate in the community are *B. prionotes* or *B.ilicifolia*. It typically occurs on well drained, low nutrient soils on sandplain landforms, particularly deep Bassendean and Spearwood sands and occasionally on Quindalup sands; it is also common on sandy colluvium and aeolian sands of the Ridge Hill Shelf, Whicher Scarp and Dandaragan Plateau and, in other less common scenarios.

The description, area and condition thresholds that apply to the EPBC-listed TEC of the same name, also apply to this Priority ecological community. The EPBC listed TEC is the **Banksia Woodlands of the Swan Coastal Plain ecological community**. The description includes "A key diagnostic feature is a prominent tree layer of *Banksia*, with scattered eucalypts and other tree species often present among or emerging above the Banksia canopy.

The descriptions of each community indicate that while the Tuart Ecological Community commonly includes *Banksia* species, it is defined by the "presence of *Eucalyptus gomphocephala* (Tuart) trees in the uppermost canopy layer". The *Banksia* community is defined by a "prominent tree layer of *Banksia*, with scattered eucalypts and other tree species often present among or emerging above the Banksia canopy". As the description of the vegetation in the survey area records the presence of the Tuart it is safe to assume that the *Banksia* community is not present.

6.2.3 Survey limitations and effort

Botanists who conduct flora and vegetation surveys for environmental impact assessment in Western Australia are obliged to report on the limitations and constraints in such studies. Some potential limitations / constraints on surveys may adversely impact on the scientific rigour, completeness or validity of the survey results. EPA (2016a) identifies standard limitations that can limit and constrain the validity of flora and vegetation surveys. These limitations / constraints and their relevance to this assessment are presented in Table 10.

Table 10 Survey constraints and limitations

Constraint	Limitation
Availability of contextual information at a regional and local scale	No limitations. Reports of previous survey work in the local area were readily available, and regional data was publicly available.
Competence and experience of the field team	No limitations.

Constraint	Limitation
	The senior botanist undertaking this work has over 20 years' experience in Western Australia.
Proportion of flora recorded and/or collected, and problems with taxonomic determinations	No limitation. All flora encountered were recorded with no taxa completely unidentifiable.
The effort and extent of the survey	No limitations. All parts of the survey areas were visited and quadrats were established in accordance with EPA guidelines.
Survey timing, rainfall, season of survey	No limitation. The survey was conducted in two seasons as required for a detailed survey, including spring.
Disturbances that may have affected the results of survey such as fire, flood or clearing	No limitations. The entire site had been historically impacted by a variety of disturbances but nothing recent.
Access restrictions within the study area	No limitations. All parts of the study area were accessible to survey.

7 DISCUSSION

7.1 Flora

The flora assemblage was heavily influenced by the invasion of introduced species, with the lower strata almost entirely replaced by weeds. The Poaceae family, with 7 records, was represented entirely by introduced species. Two species recorded are Declared Pests but are exempt from conditions under the WAOL.

Native flora was dominated by the Fabaceae family, with most families and genera represented by a single species. The depauperate species list is indicative of the degradation of the survey area.

7.1.1 Significant flora

No conservation significant flora were recorded during the survey. One individual of a single orchid species was recorded, the common Cowslip. Given the level of weed invasion it appears unlikely that many others, or other species, are present.

7.2 Vegetation

7.2.1 Vegetation types

A single vegetation type was recorded and described throughout the survey area. This type represents a Tuart woodland

EgAfAs*El

Eucalyptus gomphocephala mid woodland over *Agonis flexuosa, Banksia attenuata* low woodland over *Acacia saligna* tall open shrubland **Ehrharta longiflora* closed grassland, **Euphorbia peplus, *Trachyandra divaricata* open forbland.

7.2.2 Significant vegetation

The vegetation type is representative of the EPBC listed **Tuart (*Eucalyptus gomphocephala*) woodlands and forests of the Swan Coastal Plain** Threatened Ecological Community as well as the DBCA listed Priority Ecological Community of the same name. It is also noted that the survey area is mapped within the buffer (Figure C) of the DBCA listed PEC ***Banksia* dominated woodlands of the Swan Coastal Plain IBRA Region,** and the corresponding EPBC listed ***Banksia* woodlands of the Swan Coastal Plain** Threatened Ecological Community.

The descriptions of each community given is **s**6.2.2.3 indicate that while the Tuart community commonly includes *Banksia* species, it is defined by the “presence of *Eucalyptus gomphocephala* (Tuart) trees in the uppermost canopy layer”. The *Banksia* community is defined by a “prominent tree layer of *Banksia*, with scattered eucalypts and other tree species often present among or emerging above the Banksia canopy”. As the description of the vegetation in the survey area records the presence of the Tuart it is safe to assume that the *Banksia* community is not present.

7.2.3 Vegetation condition

The vegetation condition of the survey area and surrounds reflects the multiple impacts that have occurred in the area. While the upper storey tree layer is still intact, the understorey of native vegetation has virtually disappeared and has been replaced by a suite of introduced species. Most of the survey area is considered to be Completely Degraded, while the rest is assessed as Degraded by the scale of Keighery (1994).

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Figures:

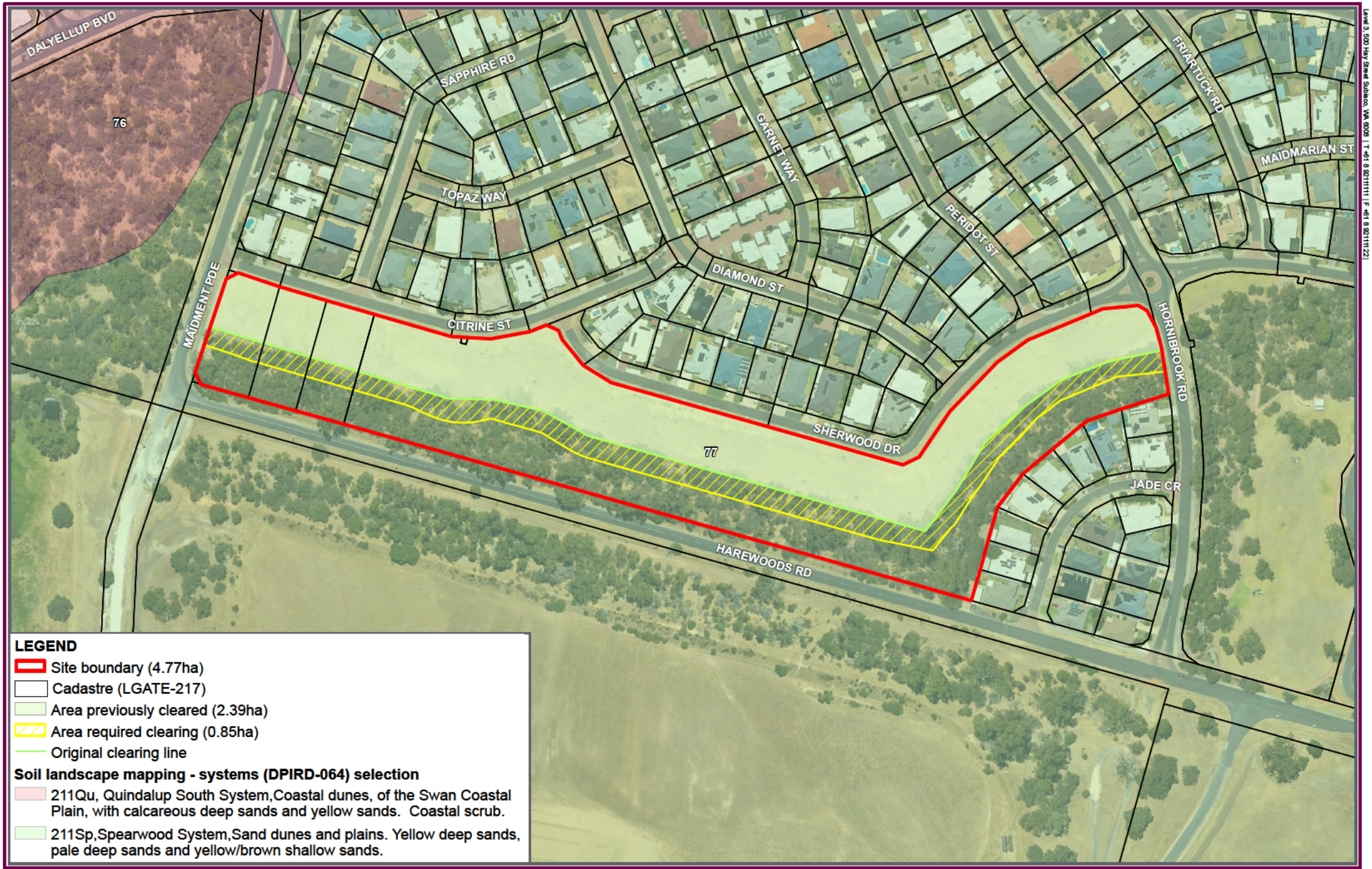


Figure A

Soil landscape units

GDA2020 MGA Zone 50

0 50 100 200 m

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Doc Number: 001
Date: 17/09/2024
Scale: Map 1:3,000 @ A4
Created by: CLARE.THATCHER
Source: Imagery - Landgate 2024

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Figure B

Pre-european vegetation

GDA2020 MGA Zone 50

0 50 100 200 m

Job Number: AU213015991.001
Doc Number: 001
Date: 17/09/2024
Scale: Map 1:3,000 @ A4
Created by: CLARE.THATCHER
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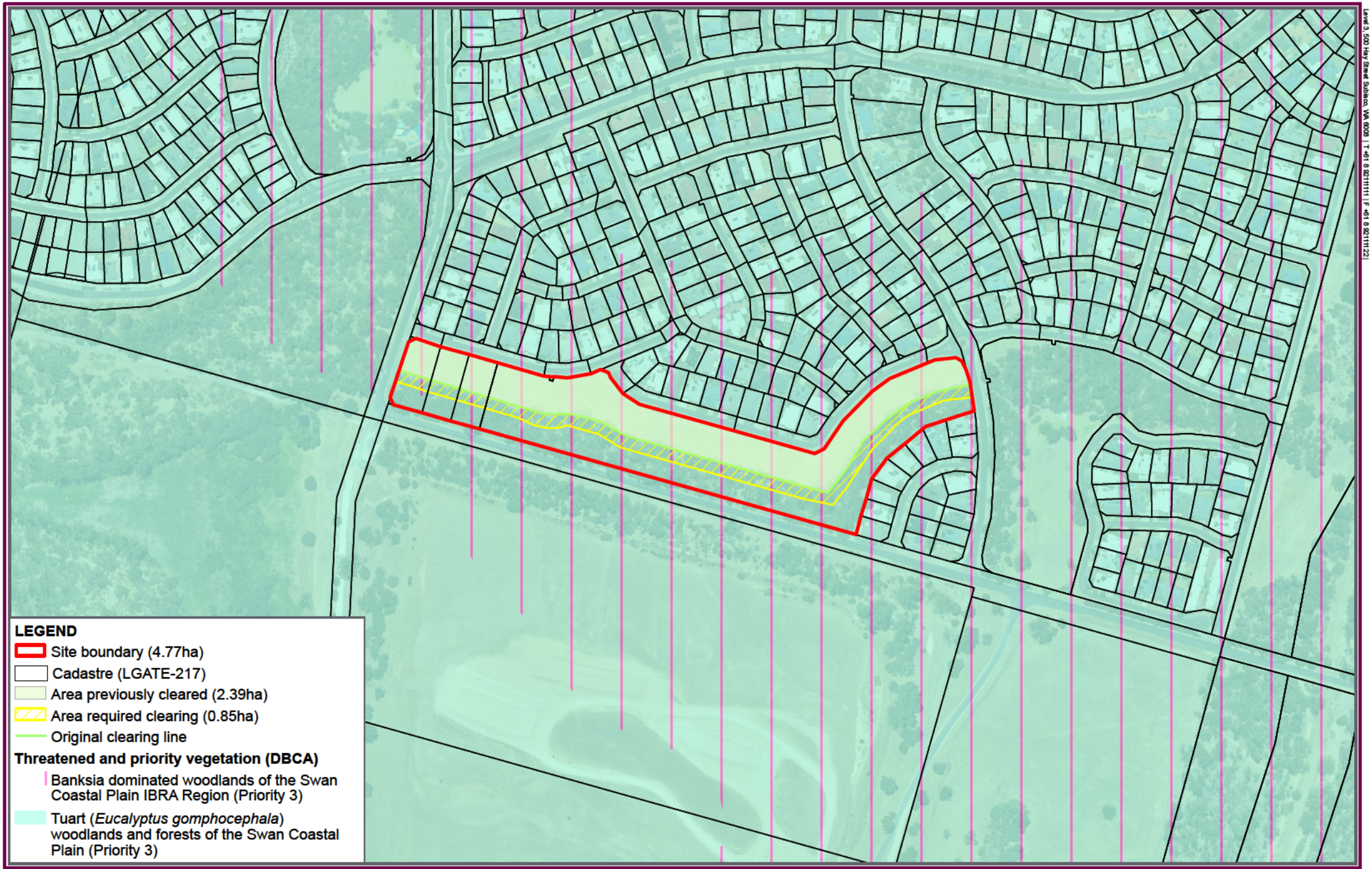


Figure C

Environmentally sensitive areas

GDA2020 MGA Zone 50

0 50 100 200 m

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Doc Number: 001
Date: 17/12/2024
Scale: Map 1:5,000 @ A4
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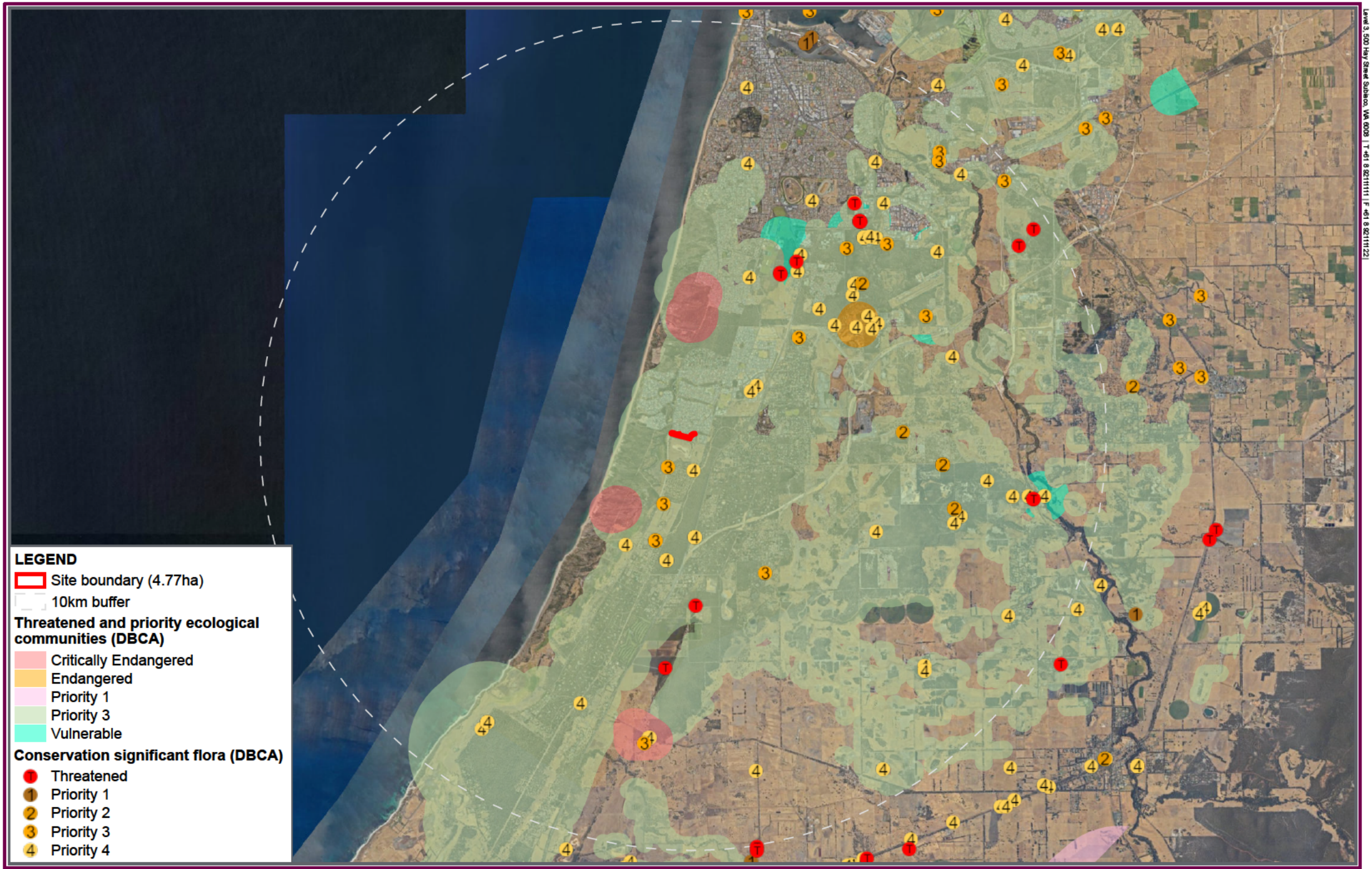


Figure D

Priority flora and vegetation

GDA2020 MGA Zone 50

0 1.25 2.5 5 km

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Doc Number: 001
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Figure E

Survey sites

GDA2020 MGA Zone 50

0 50 100 200 m

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Doc Number: 001
Date: 17/12/2024
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Figure F

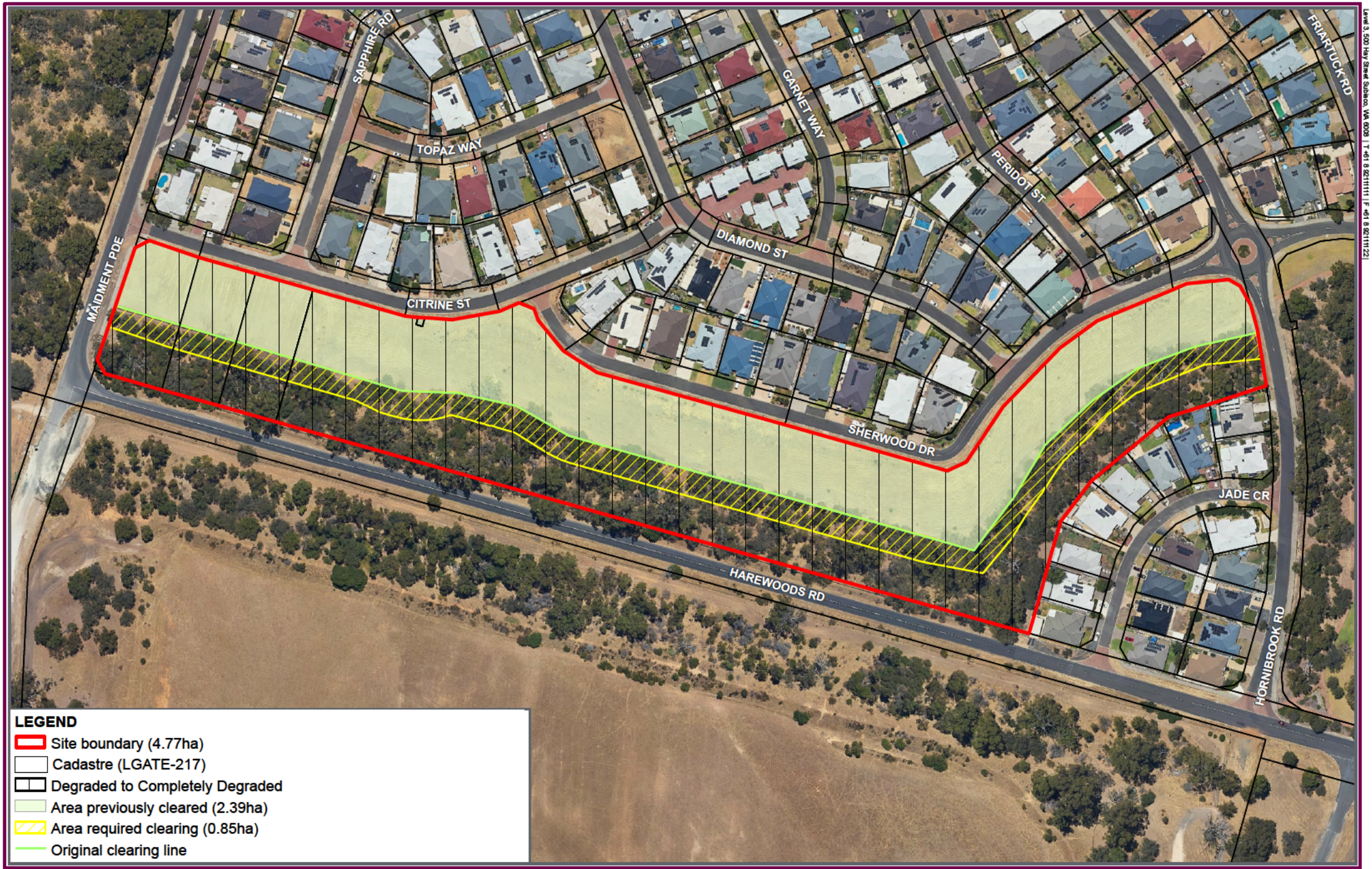
Vegetation types

GDA2020 MGA Zone 50

0 50 100 200 m

Job Number: AU213015991.001
Doc Number: 001
Date: 17/12/2024
Scale: Map 1:2,500 @ A4
Created by: Clare.Thatcher
Source: Imagery - Landgate 2024

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Figure G

Vegetation condition

GDA2020 MGA Zone 50

0 50 100 200 m

Job Number: AU213015991.001
Doc Number: 001
Date: 17/12/2024
Scale: Map 1:2,500 @ A4
Created by: Clare.Thatcher
Source: Imagery - Landgate 2024

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Figure H

Survey effort (tracks)

GDA2020 MGA Zone 50

0 50 100 200 m

Job Number: AU213015991.001
Doc Number: 001
Date: 17/12/2024
Scale: Map 1:2,500 @ A4
Created by: Clare.Thatcher
Source: Imagery - Landgate 2024

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Document Path: C:\Users\Clare.Thatcher\OneDrive - Tetra Tech, Inc\Daiyellup\Projects\AU213015991_001_EPBC_Stage14_FloraVeg\AU213015991_001_EPBC_Stage14_FloraVeg.aprx

Appendix A:
Protected Matters Search Tool results

EPBC Act Protected Matters Report

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

Report created: 06-Sep-2024

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

Caveat
Acknowledgements

Summary

Matters of National Environment Significance

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

World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International Importance (Ramsar	None
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	4
Listed Threatened Species:	67
Listed Migratory Species:	46

Other Matters Protected by the EPBC Act

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

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

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

Commonwealth Lands:	None
Commonwealth Heritage Places:	None
Listed Marine Species:	68
Whales and Other Cetaceans:	13
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	None
Habitat Critical to the Survival of Marine Turtles:	None

Extra Information

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

State and Territory Reserves:	None
Regional Forest Agreements:	None
Nationally Important Wetlands:	None
EPBC Act Referrals:	27
Key Ecological Features (Marine):	None
Biologically Important Areas:	7
Bioregional Assessments:	None
Geological and Bioregional Assessments:	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.
Status of Vulnerable, Disallowed and Ineligible are not MNES under the EPBC Act.

Community Name	Threatened Category	Presence Text	Buffer Status
Banksia Woodlands of the Swan Coastal Plain ecological community	Endangered	Community likely to occur within area	In feature area
Clay Pans of the Swan Coastal Plain	Critically Endangered	Community likely to occur within area	In buffer area only
Empodisma peatlands of southwestern Australia	Endangered	Community may occur within area	In buffer area only
Tuart (Eucalyptus gomphocephala) Woodlands and Forests of the Swan Coastal Plain ecological community	Critically Endangered	Community likely to occur within area	In feature area

Listed Threatened Species [Resource Information]

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

Scientific Name	Threatened Category	Presence Text	Buffer Status
BIRD			
Anous tenuirostris melanops Australian Lesser Noddy [26000]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Ardenna grisea Sooty Shearwater [82651]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Botaurus poiciloptilus Australasian Bittern [1001]	Endangered	Species or species habitat likely to occur within area	In feature area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat known to occur within area	In feature area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat likely to occur within area	In feature area
Calyptorhynchus banksii naso Forest Red-tailed Black-Cockatoo, Karrak [67034]	Vulnerable	Species or species habitat known to occur within area	In feature area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Diomedea amsterdamensis Amsterdam Albatross [64405]	Endangered	Species or species habitat may occur within area	In buffer area only
Diomedea dabbenena Tristan Albatross [66471]	Endangered	Species or species habitat may occur within area	In buffer area only
Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Diomedea sanfordi Northern Royal Albatross [64456]	Endangered	Species or species habitat may occur within area	In buffer area only
Falco hypoleucos Grey Falcon [929]	Vulnerable	Species or species habitat may occur within area	In feature area
Halobaena caerulea Blue Petrel [1059]	Vulnerable	Species or species habitat may occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Limosa lapponica menzbieri Northern Siberian Bar-tailed Godwit, Russkoye Bar-tailed Godwit [86432]	Endangered	Species or species habitat known to occur within area	In feature area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area	In buffer area only
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat likely to occur within area	In feature area
Pachyptila turtur subantarctica Fairy Prion (southern) [64445]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Phaethon rubricauda westralis Red-tailed Tropicbird (Indian Ocean), Indian Ocean Red-tailed Tropicbird [91824]	Endangered	Species or species habitat may occur within area	In buffer area only
Phoebetria fusca Sooty Albatross [1075]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Pterodroma mollis Soft-plumaged Petrel [1036]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Sternula nereis nereis Australian Fairy Tern [82950]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In feature area
Thalassarche carteri Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
Thalassarche cauta Shy Albatross [89224]	Endangered	Foraging, feeding or related behaviour likely to occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Thalassarche impavida			
Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Thalassarche melanophris			
Black-browed Albatross [66472]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Thalassarche steadi			
White-capped Albatross [64462]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Tringa nebularia			
Common Greenshank, Greenshank [832]	Endangered	Species or species habitat likely to occur within area	In feature area
Zanda baudinii listed as Calyptorhynchus baudinii			
Baudin's Cockatoo, Baudin's Black-Cockatoo, Long-billed Black-cockatoo [87736]	Endangered	Breeding known to occur within area	In feature area
Zanda latirostris listed as Calyptorhynchus latirostris			
Carnaby's Black Cockatoo, Short-billed Black-cockatoo [87737]	Endangered	Species or species habitat known to occur within area	In feature area
MAMMAL			
Balaenoptera musculus			
Blue Whale [36]	Endangered	Species or species habitat likely to occur within area	In buffer area only
Dasyurus geoffroii			
Chuditch, Western Quoll [330]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Eubalaena australis			
Southern Right Whale [40]	Endangered	Breeding known to occur within area	In buffer area only
Neophoca cinerea			
Australian Sea-lion, Australian Sea Lion [22]	Endangered	Species or species habitat may occur within area	In buffer area only
Pseudocheirus occidentalis			
Western Ringtail Possum, Ngwayir, Womp, Woder, Ngoor, Ngoolangit [25911]	Critically Endangered	Breeding known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Setonix brachyurus Quokka [229]	Vulnerable	Species or species habitat known to occur within area	In feature area
PLANT			
Andersonia gracilis Slender Andersonia [14470]	Endangered	Species or species habitat may occur within area	In buffer area only
Austrostipa bronweniae listed as Austrostipa bronwenae [92773]	Endangered	Species or species habitat may occur within area	In buffer area only
Austrostipa jacobsiana [87809]	Critically Endangered	Species or species habitat known to occur within area	In buffer area only
Banksia mimica Summer Honeypot [82765]	Endangered	Species or species habitat may occur within area	In buffer area only
Banksia nivea subsp. uliginosa Swamp Honeypot [82766]	Endangered	Species or species habitat may occur within area	In buffer area only
Banksia squarrosa subsp. argillacea Whicher Range Dryandra [82769]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Brachyscias verecundus Ironstone Brachyscias [81321]	Critically Endangered	Species or species habitat may occur within area	In buffer area only
Caladenia huegelii King Spider-orchid, Grand Spider-orchid, Rusty Spider-orchid [7309]	Endangered	Species or species habitat known to occur within area	In feature area
Chamelaucium sp. S coastal plain (R.D.Royce 4872) Royce's Waxflower [87814]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Diuris drummondii Tall Donkey Orchid [4365]	Vulnerable	Species or species habitat known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Diuris micrantha Dwarf Bee-orchid [55082]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Diuris purdiei Purdie's Donkey-orchid [12950]	Endangered	Species or species habitat may occur within area	In feature area
Drakaea elastica Glossy-leafed Hammer Orchid, Glossy-leaved Hammer Orchid, Warty Hammer Orchid [16753]	Endangered	Species or species habitat likely to occur within area	In feature area
Drakaea micrantha Dwarf Hammer-orchid [56755]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Lambertia echinata subsp. occidentalis Western Prickly Honeysuckle [64528]	Endangered	Species or species habitat may occur within area	In buffer area only
Morelotia australiensis listed as Tetraria australiensis Southern Tetraria [92784]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Petrophile latericola Laterite Petrophile [64532]	Endangered	Species or species habitat may occur within area	In buffer area only
Synaphea sp. Fairbridge Farm (D.Papenfus 696) Selena's Synaphea [82881]	Critically Endangered	Species or species habitat likely to occur within area	In buffer area only
Synaphea sp. Serpentine (G.R.Brand 103) [86879]	Critically Endangered	Species or species habitat may occur within area	In buffer area only
REPTILE			
Caretta caretta Loggerhead Turtle [1763]	Endangered	Foraging, feeding or related behaviour known to occur within area	In buffer area only
Chelonia mydas Green Turtle [1765]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
[Dermochelys coriacea](#) Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Breeding likely to occur within area	In buffer area only
[Natator depressus](#) Flatback Turtle [59257]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In buffer area only
SHARK			
[Carcharias taurus (west coast population)](#) Grey Nurse Shark (west coast population) [68752]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
[Carcharodon carcharias](#) White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat known to occur within area	In buffer area only
[Galeorhinus galeus](#) School Shark, Eastern School Shark, Snapper Shark, Tope, Soupfin Shark [68453]	Conservation Dependent	Species or species habitat may occur within area	In buffer area only
[Pristis pristis](#) Freshwater Sawfish, Largetooth Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Vulnerable	Species or species habitat may occur within area	In feature area
[Rhincodon typus](#) Whale Shark [66680]	Vulnerable	Species or species habitat may occur within area	In buffer area only
[Sphyrna lewini](#) Scalloped Hammerhead [85267]	Conservation Dependent	Species or species habitat likely to occur within area	In buffer area only

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

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

Scientific Name	Threatened Category	Presence Text	Buffer Status
Phoebetria fusca			
Sooty Albatross [1075]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Thalassarche carteri			
Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
Thalassarche cauta			
Shy Albatross [89224]	Endangered	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Thalassarche impavida			
Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Thalassarche melanophris			
Black-browed Albatross [66472]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Thalassarche steadi			
White-capped Albatross [64462]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Migratory Marine Species			
Balaenoptera edeni			
Bryde's Whale [35]		Species or species habitat may occur within area	In buffer area only
Balaenoptera musculus			
Blue Whale [36]	Endangered	Species or species habitat likely to occur within area	In buffer area only
Caperea marginata			
Pygmy Right Whale [39]		Species or species habitat may occur within area	In buffer area only
Carcharhinus longimanus			
Oceanic Whitetip Shark [84108]		Species or species habitat may occur within area	In buffer area only
Carcharodon carcharias			
White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat known to occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Caretta caretta Loggerhead Turtle [1763]	Endangered	Foraging, feeding or related behaviour known to occur within area	In buffer area only
Chelonia mydas Green Turtle [1765]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In buffer area only
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Breeding likely to occur within area	In buffer area only
Eubalaena australis as Balaena glacialis australis Southern Right Whale [40]	Endangered	Breeding known to occur within area	In buffer area only
Lagenorhynchus obscurus Dusky Dolphin [43]		Species or species habitat may occur within area	In buffer area only
Megaptera novaeangliae Humpback Whale [38]		Congregation or aggregation known to occur within area	In buffer area only
Mobula alfredi as Manta alfredi Reef Manta Ray, Coastal Manta Ray [90033]		Species or species habitat may occur within area	In buffer area only
Mobula birostris as Manta birostris Giant Manta Ray [90034]		Species or species habitat may occur within area	In buffer area only
Natator depressus Flatback Turtle [59257]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In buffer area only
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may occur within area	In buffer area only
Pristis pristis Freshwater Sawfish, Largetooth Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Vulnerable	Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
[Rhincodon typus](#) Whale Shark [66680]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Migratory Terrestrial Species			
[Motacilla cinerea](#) Grey Wagtail [642]		Species or species habitat may occur within area	In feature area
Migratory Wetlands Species			
[Actitis hypoleucos](#) Common Sandpiper [59309]		Species or species habitat likely to occur within area	In feature area
[Calidris acuminata](#) Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat likely to occur within area	In feature area
[Calidris canutus](#) Red Knot, Knot [855]	Vulnerable	Species or species habitat known to occur within area	In feature area
[Calidris ferruginea](#) Curlew Sandpiper [856]	Critically Endangered	Species or species habitat likely to occur within area	In feature area
[Calidris melanotos](#) Pectoral Sandpiper [858]		Species or species habitat may occur within area	In feature area
[Charadrius leschenaultii](#) Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat likely to occur within area	In feature area
[Limosa lapponica](#) Bar-tailed Godwit [844]		Species or species habitat known to occur within area	In feature area
[Numenius madagascariensis](#) Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat likely to occur within area	In feature area
[Pandion haliaetus](#) Osprey [952]		Species or species habitat known to occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
[Tringa nebularia](#) Common Greenshank, Greenshank [832]	Endangered	Species or species habitat likely to occur within area	In feature area

Other Matters Protected by the EPBC Act

Listed Marine Species			[Resource Information]
Scientific Name	Threatened Category	Presence Text	Buffer Status
Bird			
[Actitis hypoleucos](#) Common Sandpiper [59309]		Species or species habitat likely to occur within area	In feature area
[Anous tenuirostris melanops](#) Australian Lesser Noddy [26000]	Vulnerable	Species or species habitat may occur within area	In buffer area only
[Apus pacificus](#) Fork-tailed Swift [678]		Species or species habitat likely to occur within area overfly marine area	In feature area
[Ardenna carneipes as Puffinus carneipes](#) Flesh-footed Shearwater, Fleshy-footed Shearwater [82404]		Species or species habitat likely to occur within area	In feature area
[Ardenna grisea as Puffinus griseus](#) Sooty Shearwater [82651]	Vulnerable	Species or species habitat may occur within area	In buffer area only
[Bubulcus ibis as Ardea ibis](#) Cattle Egret [66521]		Species or species habitat may occur within area overfly marine area	In feature area
[Calidris acuminata](#) Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat known to occur within area overfly marine area	In feature area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat likely to occur within area overfly marine area	In feature area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area overfly marine area	In feature area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Diomedea amsterdamensis Amsterdam Albatross [64405]	Endangered	Species or species habitat may occur within area	In buffer area only
Diomedea dabbenena Tristan Albatross [66471]	Endangered	Species or species habitat may occur within area	In buffer area only
Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Diomedea sanfordi Northern Royal Albatross [64456]	Endangered	Species or species habitat may occur within area	In buffer area only
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Halobaena caerulea Blue Petrel [1059]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Hydroprogne caspia as Sterna caspia Caspian Tern [808]		Foraging, feeding or related behaviour known to occur within area	In buffer area only
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat known to occur within area	In feature area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area	In buffer area only
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area overfly marine area	In feature area
Motacilla cinerea Grey Wagtail [642]		Species or species habitat may occur within area overfly marine area	In feature area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat likely to occur within area	In feature area
Onychoprion anaethetus as Sterna anaethetus Bridled Tern [82845]		Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Pachyptila turtur Fairy Prion [1066]		Species or species habitat likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Pandion haliaetus Osprey [952]		Species or species habitat known to occur within area	In buffer area only
Phoebetria fusca Sooty Albatross [1075]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Pterodroma mollis Soft-plumaged Petrel [1036]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Puffinus assimilis Little Shearwater [59363]		Foraging, feeding or related behaviour known to occur within area	In buffer area only
Stercorarius antarcticus as Catharacta skua Brown Skua [85039]		Species or species habitat may occur within area	In buffer area only
Thalassarche carteri Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
Thalassarche cauta Shy Albatross [89224]	Endangered	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Thalassarche steadi White-capped Albatross [64462]	Vulnerable	Species or species habitat may occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
[Thinornis cucullatus as Thinornis rubricollis](#) Hooded Plover, Hooded Dotterel [87735]		Species or species habitat may occur within area overfly marine area	In feature area
[Tringa nebularia](#) Common Greenshank, Greenshank [832]	Endangered	Species or species habitat likely to occur within area overfly marine area	In feature area
Fish			
[Acentronura australe](#) Southern Pygmy Pipehorse [66185]		Species or species habitat may occur within area	In buffer area only
[Campichthys galei](#) Gale's Pipefish [66191]		Species or species habitat may occur within area	In buffer area only
[Heraldia nocturna](#) Upside-down Pipefish, Eastern Upside-down Pipefish, Eastern Upside-down Pipefish [66227]		Species or species habitat may occur within area	In buffer area only
[Hippocampus angustus](#) Western Spiny Seahorse, Narrow-bellied Seahorse [66234]		Species or species habitat may occur within area	In buffer area only
[Hippocampus breviceps](#) Short-head Seahorse, Short-snouted Seahorse [66235]		Species or species habitat may occur within area	In buffer area only
[Hippocampus subelongatus](#) West Australian Seahorse [66722]		Species or species habitat may occur within area	In buffer area only
[Histiogamphelus cristatus](#) Rhino Pipefish, Macleay's Crested Pipefish, Ring-back Pipefish [66243]		Species or species habitat may occur within area	In buffer area only
[Lissocampus caudalis](#) Australian Smooth Pipefish, Smooth Pipefish [66249]		Species or species habitat may occur within area	In buffer area only
[Lissocampus fatiloquus](#) Prophet's Pipefish [66250]		Species or species habitat may occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Lissocampus runa Javelin Pipefish [66251]		Species or species habitat may occur within area	In buffer area only
Maroubra perserrata Sawtooth Pipefish [66252]		Species or species habitat may occur within area	In buffer area only
Mitotichthys meraculus Western Crested Pipefish [66259]		Species or species habitat may occur within area	In buffer area only
Nannocampus subosseus Bonyhead Pipefish, Bony-headed Pipefish [66264]		Species or species habitat may occur within area	In buffer area only
Phycodurus eques Leafy Seadragon [66267]		Species or species habitat may occur within area	In buffer area only
Phyllopteryx taeniolatus Common Seadragon, Weedy Seadragon [66268]		Species or species habitat may occur within area	In buffer area only
Pugnaso curtirostris Pugnose Pipefish, Pug-nosed Pipefish [66269]		Species or species habitat may occur within area	In buffer area only
Solegnathus lettiensis Gunther's Pipehorse, Indonesian Pipefish [66273]		Species or species habitat may occur within area	In buffer area only
Stigmatopora argus Spotted Pipefish, Gulf Pipefish, Peacock Pipefish [66276]		Species or species habitat may occur within area	In buffer area only
Stigmatopora nigra Widebody Pipefish, Wide-bodied Pipefish, Black Pipefish [66277]		Species or species habitat may occur within area	In buffer area only
Urocampus carinirostris Hairy Pipefish [66282]		Species or species habitat may occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Vanacampus margaritifer			
Mother-of-pearl Pipefish [66283]		Species or species habitat may occur within area	In buffer area only
Vanacampus phillipi			
Port Phillip Pipefish [66284]		Species or species habitat may occur within area	In buffer area only
Vanacampus poecilolaemus			
Longsnout Pipefish, Australian Long-snout Pipefish, Long-snouted Pipefish [66285]		Species or species habitat may occur within area	In buffer area only
Mammal			
Arctocephalus forsteri			
Long-nosed Fur-seal, New Zealand Fur-seal [20]		Species or species habitat may occur within area	In buffer area only
Neophoca cinerea			
Australian Sea-lion, Australian Sea Lion [22]	Endangered	Species or species habitat may occur within area	In buffer area only
Reptile			
Caretta caretta			
Loggerhead Turtle [1763]	Endangered	Foraging, feeding or related behaviour known to occur within area	In buffer area only
Chelonia mydas			
Green Turtle [1765]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In buffer area only
Dermochelys coriacea			
Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Breeding likely to occur within area	In buffer area only
Natator depressus			
Flatback Turtle [59257]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In buffer area only

Whales and Other Cetaceans		[Resource Information]	
Current Scientific Name	Status	Type of Presence	Buffer Status
Mammal			
Balaenoptera acutorostrata			
Minke Whale [33]		Species or species habitat may occur within area	In buffer area only

Current Scientific Name	Status	Type of Presence	Buffer Status
Balaenoptera edeni Bryde's Whale [35]		Species or species habitat may occur within area	In buffer area only
Balaenoptera musculus Blue Whale [36]	Endangered	Species or species habitat likely to occur within area	In buffer area only
Caperea marginata Pygmy Right Whale [39]		Species or species habitat may occur within area	In buffer area only
Delphinus delphis Common Dolphin, Short-beaked Common Dolphin [60]		Species or species habitat may occur within area	In buffer area only
Eubalaena australis Southern Right Whale [40]	Endangered	Breeding known to occur within area	In buffer area only
Grampus griseus Risso's Dolphin, Grampus [64]		Species or species habitat may occur within area	In buffer area only
Lagenorhynchus obscurus Dusky Dolphin [43]		Species or species habitat may occur within area	In buffer area only
Megaptera novaeangliae Humpback Whale [38]		Congregation or aggregation known to occur within area	In buffer area only
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may occur within area	In buffer area only
Stenella attenuata Spotted Dolphin, Pantropical Spotted Dolphin [51]		Species or species habitat may occur within area	In buffer area only
Tursiops aduncus Indian Ocean Bottlenose Dolphin, Spotted Bottlenose Dolphin [68418]		Species or species habitat likely to occur within area	In buffer area only

Current Scientific Name	Status	Type of Presence	Buffer Status
Tursiops truncatus s. str. Bottlenose Dolphin [68417]		Species or species habitat may occur within area	In buffer area only

Extra Information

EPBC Act Referrals				[Resource Information]
Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Lillydale Road Widening	2023/09476		Completed	In buffer area only
Residential development, Dalyellup, WA	2023/09550		Assessment	In buffer area only
Controlled action				
313-316 Mimminup Road, Dalyellup	2012/6274	Controlled Action	Post-Approval	In feature area
Bunbury Outer Ring Road Southern Section	2012/6652	Controlled Action	Completed	In buffer area only
Bunbury Outer Ring Road Southern Section project, WA	2019/8543	Controlled Action	Final PD	In buffer area only
Construction of new sporting field	2007/3333	Controlled Action	Post-Approval	In buffer area only
Dalyellup Beach Estate - Residential Development	2007/3361	Controlled Action	Post-Approval	In buffer area only
Residential development, College Grove, WA	2015/7579	Controlled Action	Completed	In buffer area only
Sand and limestone extraction	2003/1284	Controlled Action	Completed	In feature area
Sand and Limestone Extraction on Lots 313 and 314, Harewoods Road	2005/2291	Controlled Action	Completed	In feature area
Sand mine	2008/4114	Controlled Action	Completed	In buffer area only
Somerville Drive Extension	2011/6153	Controlled Action	Post-Approval	In buffer area only

Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Controlled action				
Yarragadee Water Supply Development	2005/2073	Controlled Action	Completed	In buffer area only
Not controlled action				
Bunbury Water Resources Recovery Scheme-Recycled Water Treatment Plant	2021/8986	Not Controlled Action	Completed	In buffer area only
Clearing 5.4ha of native vegetation for sand extraction	2012/6592	Not Controlled Action	Completed	In buffer area only
Extension of commercial sand extraction operation, Shire of Capel WA	2003/1250	Not Controlled Action	Completed	In buffer area only
Improving rabbit biocontrol: releasing another strain of RHDV, sthrn two thirds of Australia	2015/7522	Not Controlled Action	Completed	In feature area
INDIGO Central Submarine Telecommunications Cable	2017/8127	Not Controlled Action	Completed	In feature area
Residential development, Lots 120-121 Minninup Road, Dalyellup WA	2018/8254	Not Controlled Action	Completed	In feature area
Residential Development - Assorted Lots Parade Rd, Washington Av & Bussell Hwy, Usher WA	2013/6935	Not Controlled Action	Completed	In buffer area only
Woodcrest Rise Estate Residential Development	2007/3794	Not Controlled Action	Completed	In buffer area only
Not controlled action (particular manner)				
Dalyellup Beach Estate Stages 12 and 14, near Bunbury	2004/1726	Not Controlled Action (Particular Manner)	Post-Approval	In feature area
Dalyellup Beach Estate - Stages 13 and 16	2006/3075	Not Controlled Action (Particular Manner)	Post-Approval	In feature area
INDIGO Marine Cable Route Survey (INDIGO)	2017/7996	Not Controlled Action (Particular Manner)	Post-Approval	In feature area
Sand and Limestone Extraction on Lots 313 and 314, Harewoods Road	2005/2346	Not Controlled Action (Particular Manner)	Post-Approval	In feature area
Referral decision				
Bunbury Water Resource Recovery Scheme - Stage 2 Pipeline	2022/9145	Referral Decision	Referral Publication	In buffer area only

Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Referral decision				
Bunbury WRRS - Stage 2 Pipeline	2021/9092	Referral Decision	Completed	In buffer area only

Biologically Important Areas			[Resource Information]
Scientific Name	Behaviour	Presence	Buffer Status
Seabirds			
Ardenna pacifica Wedge-tailed Shearwater [84292]	Foraging (in high numbers)	Known to occur	In buffer area only
Eudyptula minor Little Penguin [1085]	Foraging (provisioning young)	Known to occur	In buffer area only
Onychoprion anaethetus Bridled Tern [82845]	Foraging (in high numbers)	Known to occur	In buffer area only
Puffinus assimilis tunneyi Little Shearwater [59363]	Foraging (in high numbers)	Known to occur	In buffer area only
Sternula nereis Fairy Tern [82949]	Foraging (in high numbers)	Known to occur	In buffer area only
Whales			
Balaenoptera musculus brevicauda Pygmy Blue Whale [81317]	Migration	Known to occur	In buffer area only
Megaptera novaeangliae Humpback Whale [38]	Migration (south)	Known to occur	In buffer area only

Caveat

1 PURPOSE

This report is designed to assist in identifying the location of matters of national environmental significance (MNES) and other matters protected by the Environment Protection and Biodiversity Conservation Act 1999 (Cth) (EPBC Act) which may be relevant in determining obligations and requirements under the EPBC Act.

The report contains the mapped locations of:

- World and National Heritage properties;
- Wetlands of International and National Importance;
- Commonwealth and State/Territory reserves;
- distribution of listed threatened, migratory and marine species;
- listed threatened ecological communities; and
- other information that may be useful as an indicator of potential habitat value.

2 DISCLAIMER

This report is not intended to be exhaustive and should only be relied upon as a general guide as mapped data is not available for all species or ecological communities listed under the EPBC Act (see below). Persons seeking to use the information contained in this report to inform the referral of a proposed action under the EPBC Act should consider the limitations noted below and whether additional information is required to determine the existence and location of MNES and other protected matters.

Where data are available to inform the mapping of protected species, the presence type (e.g. known, likely or may occur) that can be determined from the data is indicated in general terms. It is the responsibility of any person using or relying on the information in this report to ensure that it is suitable for the circumstances of any proposed use. The Commonwealth cannot accept responsibility for the consequences of any use of the report or any part thereof. To the maximum extent allowed under governing law, the Commonwealth will not be liable for any loss or damage that may be occasioned directly or indirectly through the use of, or reliance

3 DATA SOURCES

Threatened ecological communities

For threatened ecological communities where the distribution is well known, maps are generated based on information contained in recovery plans, State vegetation maps and remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Threatened, migratory and marine species

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

Where little information is available for a species or large number of maps are required in a short time-frame, maps are derived either from 0.04 or 0.02 decimal degree cells; by an automated process using polygon capture techniques (static two kilometre grid cells, alpha-hull and convex hull); or captured manually or by using topographic features (national park boundaries, islands, etc.).

In the early stages of the distribution mapping process (1999-early 2000s) distributions were defined by degree blocks, 100K or 250K map sheets to rapidly create distribution maps. More detailed distribution mapping methods are used to update these distributions

4 LIMITATIONS

The following species and ecological communities have not been mapped and do not appear in this report:

- threatened species listed as extinct or considered vagrants;
- some recently listed species and ecological communities;
- some listed migratory and listed marine species, which are not listed as threatened species; and
- migratory species that are very widespread, vagrant, or only occur in Australia in small numbers.

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

- listed migratory and/or listed marine seabirds, which are not listed as threatened, have only been mapped for recorded
- seals which have only been mapped for breeding sites near the Australian continent

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

Refer to the metadata for the feature group (using the Resource Information link) for the currency of the information.

Acknowledgements

This database has been compiled from a range of data sources. The department acknowledges the following custodians who have contributed valuable data and advice:

-Office of Environment and Heritage, New South Wales
-Department of Environment and Primary Industries, Victoria
-Department of Primary Industries, Parks, Water and Environment, Tasmania
-Department of Environment, Water and Natural Resources, South Australia
-Department of Land and Resource Management, Northern Territory
-Department of Environmental and Heritage Protection, Queensland
-Department of Parks and Wildlife, Western Australia
-Environment and Planning Directorate, ACT
-Birdlife Australia
-Australian Bird and Bat Banding Scheme
-Australian National Wildlife Collection
-Natural history museums of Australia
-Museum Victoria
-Australian Museum
-South Australian Museum
-Queensland Museum
-Online Zoological Collections of Australian Museums
-Queensland Herbarium
-National Herbarium of NSW
-Royal Botanic Gardens and National Herbarium of Victoria
-Tasmanian Herbarium
-State Herbarium of South Australia
-Northern Territory Herbarium
-Western Australian Herbarium
-Australian National Herbarium, Canberra
-University of New England
-Ocean Biogeographic Information System
-Australian Government, Department of Defence
Forestry Corporation, NSW
-Geoscience Australia
-CSIRO
-Australian Tropical Herbarium, Cairns
-eBird Australia
-Australian Government – Australian Antarctic Data Centre
-Museum and Art Gallery of the Northern Territory
-Australian Government National Environmental Science Program
-Australian Institute of Marine Science
-Reef Life Survey Australia
-American Museum of Natural History
-Queen Victoria Museum and Art Gallery, Inveresk, Tasmania
-Tasmanian Museum and Art Gallery, Hobart, Tasmania
-Other groups and individuals

The Department is extremely grateful to the many organisations and individuals who provided expert advice and information on numerous draft distributions.

Please feel free to provide feedback via the Contact us page.

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Appendix B:
Site data

Stage 14 Dalyellup **Site** DY01

Described by MJH **Date** 31/07/2024 **Type** Q 10x19

Season E **Uniformity**

Location

MGA Zone 50 371034 **mE** 6302489 **mN** 115.613060 **E** -33.409076 **S**

Habitat Woodlnd on dune slope

Soil Orange/yellow sand with thick layer of hunus

Rock Type

Vegetation Tuart iver Banksia

Veg Condition CD

Fire Age 10+

Notes

SPECIES LIST:

Name	Cover	C Class	Height	Specimen	Notes
Acacia saligna	30		2.5		
Agonis flexuosa	20		15		
Alyxia buxifolia	+		0.3		
Banksia attenuata	30		10		
Briza maxima	+		0.4		
Dianella revoluta var. divaricata	+		0.25		
Ehrharta calycina	+		1		
Ehrharta longiflora	80		0.3		
Erodium sp.	+		0.2		
Euphorbia peplus	20		0.2		
Hardenbergia comptoniana	+				
Hibbertia cuneiformis	+		1.2		
Hypochaeris glabra	+		0.6		
Lachenalia sp.	+		0.5		
Lolium rigidum	+		0.3		
Lomandra maritima	+		0.5		
Lupinus angustifolius	+		0.8		
Macrozamia riedlei	=		1		
Moraea flaccida	1		0.5		
Oxalis pes-caprae	+		0.25		
Solanum nigrum	+		0.5		
Sonchus oleraceus	+		0.5		
Trachyandra divaricata	10		0.5		
Trifolium arvense	2		0.2		
Zantedeschia aethiopica	1		0.6		

Stage 14 Dalyellup **Site** DY02

Described by MJH **Date** 31/07/2024 **Type** Q 10x10

Season E **Uniformity**

Location

MGA Zone 50 371120 **mE** 6302471 **mN** 115.613982 **E** -33.409248 **S**

Habitat Woodland on dune slope

Soil yellow/orange sand with humus/litter

Rock Type

Vegetation Tuart over Peppy/Banksia

Veg Condition CD

Fire Age 10+

Notes weeds, clearing

Bankisa attenuata cover - 5% dead

SPECIES LIST:

Name	Cover	C Class	Height	Specimen	Notes
Acanthocarpus preissii	+		1		
Agonis flexuosa	50		8		
Banksia attenuata	6		6		
Briza maxima	1		0.3		
Bromus hordeaceus	+		0.5		
Ehrharta calycina	1		1		
Ehrharta longiflora	80		0.2		
Erodium sp.	+		0.2		
Eucalyptus gomphocephala	10		12		
Euphorbia peplus	20		0.1		
Hardenbergia comptoniana	1				
Hibbertia cuneiformis	+		0.3		
Lachenalia sp.	+		0.4		
Lagurus ovatus	+		0.3		
Lolium rigidum	+		0.25		
Lupinus angustifolius	1		1		
Macrozamia riedlei	+		1		
Rhagodia baccata	+		1		
Trachyandra divaricata	+		0.3		
Trifolium arvense	+		0.15		

Stage 14 Dalyellup **Site** DY03

Described by MJH **Date** 31/07/2024 **Type** Q 10x10

Season E **Uniformity**

Location

MGA Zone 50 371217 **mE** 6302446 **mN** 115.615021 **E** -33.409485 **S**

Habitat Woodland on dune slope

Soil Yellow/orange sand, humua

Rock Type

Vegetation Tuart over Peppy woodland

Veg Condition CD

Fire Age 10+

Notes

SPECIES LIST:

Name	Cover	C Class	Height	Specimen	Notes
Acacia saligna	4		2.5		
Acanthocarpus preissii	5		1		
Agonis flexuosa	20		8		
Alyxia buxifolia	2		1		
Avena barbata	+		1		
Bromus hordeaceus	1		0.3		
Caladenia flava	+		0.3		
Calothamnus quadrifidus	+		1.5		
Daucus glochidiatus	+		0.1		
Dianella revoluta var. divaricata	1		1		
Ehrharta longiflora	60		0.4		
Eucalyptus gomphocephala	70		20		
Euphorbia peplus	20		0.2		
Hakea prostrata	adj		4		
Hardenbergia comptoniana	+				
Hibbertia cuneiformis	1		1		
Lolium rigidum	+		0.5		
Macrozamia riedlei	2		1		
Moraea flaccida	1		0.6		
Olearia axillaris	1		1.2		
Oxalis pes-caprae	1		0.2		
Rhagodia baccata	1		0.5		
Sonchus oleraceus	+		1		
Spyridium globulosum	2		1.8		
Trachyandra divaricata	15		0.6		
Trifolium arvense	+		0.3		
Zantedeschia aethiopica	+		0.8		

Stage 14 Dalyellup **Site** DY04

Described by MJH **Date** 31/07/2024 **Type** Q 10x10E

Season E **Uniformity**

Location

MGA Zone 50 371291 **mE** 6302426 **mN** 115.615814 **E** -33.409675 **S**

Habitat woodland on dub=ne slope

Soil yellow sand with humus

Rock Type

Vegetation Tuart over Peppy

Veg Condition CD

Fire Age +10

Notes

SPECIES LIST:

Name	Cover	C Class	Height	Specimen	Notes
Acacia cyclops	5		4		
Acacia iteaphylla	adj				
Acanthocarpus preissii	1		0.6		
Agonis flexuosa	20		4		
Alyxia buxifolia	+		0.3		
Avena barbata	+		1.5		
Briza maxima	+		0.25		
Daucus glochidiatus	+		0.3		
Dianella revoluta var. divaricata	+		1		
Diplolaena dampieri	1		1.5		
Ehrharta calycina	+		1		
Ehrharta longiflora	40		0.7		
Erodium sp.	+		0.01		
Eucalyptus gomphocephala	60		20		
Euphorbia peplus	5		0.3		
Hardenbergia comptoniana	1				
Hibbertia cuneiformis	+		0.5		
Lachenalia sp.	+		0.3		
Lagurus ovatus	1		0.2		
Lolium rigidum	+		0.3		
Lomandra maritima	+		1		
Macrozamia riedlei	+		0.5		
Oxalis pes-caprae	+		0.05		
Rhagodia baccata	2		0.5		
Sonchus oleraceus	+		0.8		
Spyridium globulosum	20		2.5		
Trachyandra divaricata	5		1		

Stage 14 Dalyellup **Site** DY05

Described by MJH **Date** 31/07/2024 **Type** Q 10x10

Season E **Uniformity**

Location

MGA Zone 50 371422 **mE** 6302397 **mN** 115.617218 **E** -33.409952 **S**

Habitat Woodland on dune slope

Soil yellow/orange sand, humus layer

Rock Type

Vegetation Tuart over Jarrah/ Peppy

Veg Condition CD

Fire Age 10+

Notes Weeds, clearing

SPECIES LIST:

Name	Cover	C Class	Height	Specimen	Notes
Acacia cyclops			adj		
Agonis flexuosa	+		12		
Alyxia buxifolia	+		1.5		
Avena barbata	+		1		
Briza maxima	+		0.3		
Bromus hordeaceus	+		0.3		
Chamaescilla corymbosa	+		1		
Diplolaena dampieri	2		1		
Ehrharta longiflora	60		0.3		
Eucalyptus gomphocephala	adj		20		
Eucalyptus marginata	4		20		
Euphorbia peplus	20		0.02		
Hardenbergia comptoniana	+				
Lachenalia sp.	+		0.3		
Lagurus ovatus	+		0.5		
Leucopogon parviflorus	+		1		
Lolium rigidum	+		0.3		
Lupinus angustifolius	+		0.1		
Macrozamia riedlei	1		1		
Oxalis pes-caprae	+		0.2		
Rhagodia baccata	4		2		
Spyridium globulosum	2		2.5		
Templetonia retusa	2		1.8		
Trachyandra divaricata	+		0.3		

Stage 14 Dalyellup **Site** DY06

Described by MJH **Date** 31/07/2024 **Type** Q 10x10

Season E **Uniformity**

Location

MGA Zone 50 371474 **mE** 6302463 **mN** 115.617787 **E** -33.409363 **S**

Habitat Woodland on dune slope

Soil yellow/orange sand

Rock Type

Vegetation Tuart (adj) over Agonis

Veg Condition D

Fire Age 10+

Notes

SPECIES LIST:

Name	Cover	C Class	Height	Specimen	Notes
Agonis flexuosa	5		10		
Conostylis aculeata	+		0.2		
Cyathochaeta avenacea	1		1.2		
Dianella revoluta var. divaricata	+		1		
Ehrharta calycina	1		1		
Ehrharta longiflora	50		0.3		
Erodium sp.	1		0.2		
Eucalyptus gomphocephala	+		1.5		
Eucalyptus marginata	1		6		
Euphorbia peplus	10		0.02		
Hakea sp.	+		1.2		
Hardenbergia comptoniana	+				
Hibbertia cuneiformis	1		1.5		
Hibbertia hypericoides	+		0.3		
Hovea chorizemifolia	+		0.4		
Lachenalia sp.	+		0.3		
Lagurus ovatus	+		0.3		
Lepidosperma squamatum	+		1		
Leucopogon parviflorus	+		0.6		
Macrozamia riedlei	+		1		
Oxalis pes-caprae	+		0.2		
Phlebocarya ciliata	+		0.6		
Rhagodia baccata	1		0.5		

Stage 14 Dalyellup **Site** DY07

Described by MJH **Date** 31/07/2024 **Type** Q 10x10

Season E **Uniformity**

Location

MGA Zone 50 371548 **mE** 6302503 **mN** 115.618588 **E** -33.409011 **S**

Habitat Woodland on dune slope

Soil yellow/orange sand

Rock Type

Vegetation Tuart over Jarrah, Peppy

Veg Condition CD

Fire Age 10+

Notes Weeds, clearing

SPECIES LIST:

Name	Cover	C Class	Height	Specimen	Notes
Acacia saligna	20		6		
Agonis flexuosa	25		12		
Banksia grandis	2		4		
Briza maxima	+		0.3		
Clematis pubescens	+				
Conostylis aculeata	+		0.3		
Ehrharta calycina	+		1.2		
Ehrharta longiflora	70		0.3		
Eucalyptus gomphocephala	1		8		
Eucalyptus marginata	10		10		
Euphorbia peplus	10		0.02		
Hardenbergia comptoniana	2				
Hibbertia cuneiformis	+		1		
Hibbertia hypericoides	+		0.6		
Lachenalia sp.	+		0.3		
Lepidosperma squamatum	1		0.4		
Leucopogon parviflorus	+		1		
Lysimachia arvensis	+		0.15		
Macrozamia riedlei	1		1.5		
Oxalis pes-caprae	+		0.1		
Phyllanthus calycinus	+		0.3		
Rhagodia baccata	1		1		
Sonchus oleraceus	+		0.6		
Spyridium globulosum	1		1		

Appendix C:
Species list

Family	Name
Apiaceae	*Daucus glochidiatus*
Apocynaceae	*Alyxia buxifolia*
Araceae	**Zantedeschia aethiopica*
Asparagaceae	*Acanthocarpus preissii*
	Chamaescilla corymbosa
	**Lachenalia reflexa*
	Lomandra maritima
Asphodelaceae	**Trachyandra divaricata*
Asteraceae	*Olearia axillaris*
	**Hypochaeris glabra*
	**Sonchus oleraceus*
Chenopodiaceae	*Rhagodia baccata*
Cyperaceae	*Cyathochaeta avenacea*
	Lepidosperma squamatum
Dilleniaceae	*Hibbertia cuneiformis*
	Hibbertia hypericoides
Ericaceae	*Leucopogon parviflorus*
Euphorbiaceae	**Euphorbia peplus*
Fabaceae	*Acacia cyclops*
	**Acacia iteaphylla*
	Acacia saligna
	Hardenbergia comptoniana
	Hovea chorizemifolia
	**Lupinus angustifolius*
	Templetonia retusa
	**Trifolium arvense*
Geraniaceae	**Erodium botrys*
Haemodoraceae	*Conostylis aculeata*
	Phlebocarya ciliata
Hemerocallidaceae	*Dianella revoluta* var. *divaricata*
Iridaceae	**Moraea flaccida*
Myrtaceae	*Agonis flexuosa*
	Calothamnus quadrifidus
	Eucalyptus gomphocephala
	Eucalyptus marginata
Orchidaceae	*Caladenia flava*
Oxalidaceae	**Oxalis pes-caprae*
Phyllanthaceae	*Lysiandra calycinus*
Poaceae	**Avena barbata*
	**Briza maxima*
	**Bromus hordeaceus*
	**Ehrharta calycina*
	**Ehrharta longiflora*
	**Lagurus ovatus*
	**Lolium rigidum*
Primulaceae	**Lysimachia arvensis*
Proteaceae	*Banksia attenuata*

	Banksia grandis
	Hakea prostrata
Ranunculaceae	*Clematis pubescens*
Rhamnaceae	*Spyridium globulosum*
Rutaceae	*Diplolaena dampieri*
Solanaceae	**Solanum nigrum*
Zamiaceae	*Macrozamia riedlei*