



Natural Area  
CONSULTING MANAGEMENT SERVICES

## Mindarie Regional Council

## Flora and Fauna Survey - Areas 1 and 2

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## Executive Summary

Natural Area Consulting Management Services (Natural Area) was commissioned by Mindarie Regional Council (MRC) to conduct a basic flora and fauna survey within two areas of Tamala Park (Area 1 and 2). Information gathered during the surveys will be used to inform stakeholders of the environmental values of the sites and provide supporting information for any environmental approvals.

The field survey identified within Area 1:

- one vegetation type, Mixed Coastal Open Shrubland
- vegetation condition ranged from good to completely degraded
- a total of 81 flora species, comprised of 30 introduced, one dubious and 50 native species
- the presence of two Declared Pests: Bridal Creeper (*\*Asparagus asparagoides*) and One-leaf Cape Tulip (*\*Moraea flaccida*)
- no Threatened Ecological Communities (TEC's)
- no conservation significant flora or fauna species observed during the 2023 survey
- a total of seven vertebrate fauna species, all native species
- no black cockatoo breeding habitat, or preferred roosting and foraging habitat.

An assessment of the proposed clearing of the site against the ten native vegetation clearing principles suggests that this action is not likely to be at variance with seven of the ten principles. However, may be at variance with principles A, E and H.

The field survey identified within Area 2:

- one vegetation type, *Banksia* spp. Low Open Woodland
- vegetation condition ranged from degraded to completely degraded
- a total of 59 flora species, comprised of 30 introduced and 29 native species
- the presence of one Declared Pest species: Bridal Creeper (*\*Asparagus asparagoides*)
- no conservation significant flora or fauna species observed during the 2023/2024 survey
- a total of three vertebrate fauna species, including one introduced species; Laughing Turtle Dove (*\*Spilopelia senegalensis*)
- no black cockatoo breeding habitat, or preferred roosting and foraging habitat.

An assessment of the proposed clearing of the site against the ten native vegetation clearing principles suggests that this action is not likely to be at variance with seven of the ten principles. However, may be at variance with principles A, D and E.

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## 1.0 Introduction

Natural Area Consulting Management Services (Natural Area) was commissioned by Mindarie Regional Council (MRC) to conduct a basic flora and fauna survey within Tamala Park (Areas 1 and 2). Information gathered during the surveys will be used to inform stakeholders of the environmental values of the sites and provide supporting information for any environmental approvals.

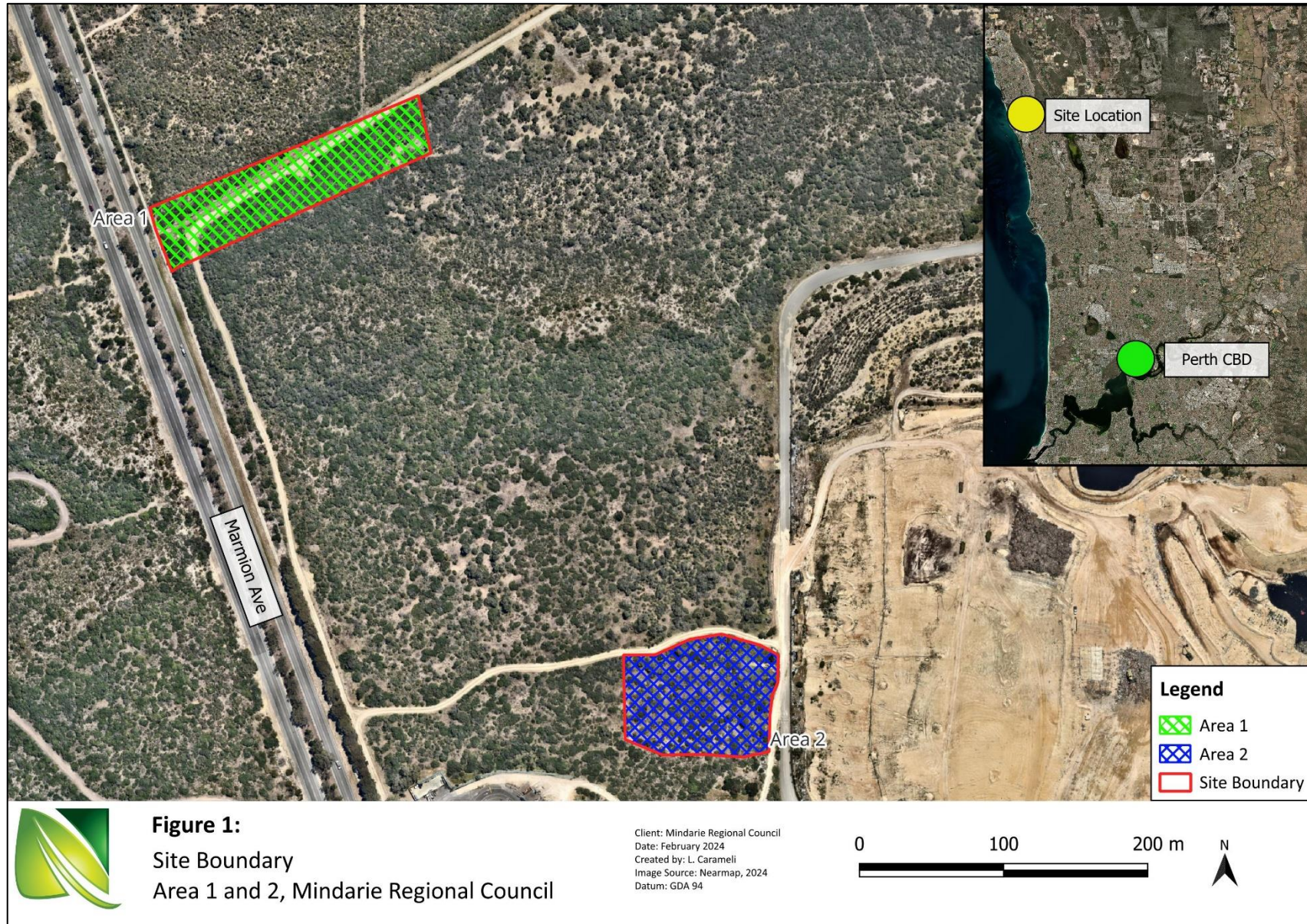
### 1.1 Location

The two survey areas are located within the MRC facility. Survey Area 1 covers approximately 0.859 ha and Area 2 covers approximately 0.777 ha (Figure 1). The site is located within the City of Wanneroo and is approximately 31 km north of the Perth CBD (Central Business District). The survey areas occur within an Environmentally Sensitive Area (ESA) known as Bush Forever Site 323 (Australian Government, 2023).

### 1.2 Scope

Activities undertaken by Natural Area included:

- desktop assessment activities to determine potential flora and fauna species, declared rare and priority listed species (DRF) and ecological communities, with the potential to be present within the survey area, including requests for Department of Biodiversity, Conservation and Attractions (DBCA) database searches for flora, fauna and ecological communities
- basic flora survey conducted in November and December 2023, and January 2024, with methodology conducted with reference to *EPA Technical Guidance- Flora and Vegetation Surveys for Environmental Impact Assessment 2016*:
  - vegetation type and condition extent
  - flora species present (native and non-native)
  - priority or threatened flora species and ecological communities present.
- basic fauna survey conducted in November and December 2023, and January 2024 opportunistically noting evidence of fauna including scats, tracks, and diggings in accordance with *EPA (2020) Technical Guidance – Terrestrial Vertebrate Fauna Surveys for Environmental Impact Assessment*
- presentation of findings in a formal report, and provision of maps representing assessment outcomes
- preparation of GIS shapefiles in IBSA format.



## 2.0 Site Characteristics

The characteristics of a site have a strong bearing on the flora, vegetation, fauna, and ecological communities present. The key characteristics of the survey area are outlined in this section.

### 2.1 Regional Context

The Interim Biogeographic Regionalisation of Australia (IBRA) classifies bioregions within Western Australia based on environmental factors such as climate, geology, vegetation, and fauna assemblies. The survey area is within the Swan Coastal Plain 2 (SWA02) IBRA subregion (Department of Primary Industries and Regional Development (DPIRD), 2024a). This region is a low-lying coastal plain characterised by soils comprised of sands of colluvial and aeolian origin, as well as alluvial river flats and coastal limestone. It is dominated by Banksia or Tuart vegetation types, as well as some areas of *Casuarina obesa*, *Melaleuca* sp. or Jarrah Woodlands (Mitchell, Williams and Desmond, 2002).

### 2.2 Climate

The climate experienced in the area is Mediterranean, with dry, hot summers and cool, wet winters. According to the Bureau of Meteorology (2024); Gingin Aero WA, site number 009178, the region has an average:

- rainfall of 632.0 mm pa, with rain falling predominantly between June and July
- maximum temperature ranging from 18.4 °C in winter to 33.3 °C in summer, with a maximum recorded temperature of 46.3 °C
- minimum temperatures ranging from 6.5 °C in winter to 17.0 °C in summer, with a minimum recorded temperature of -3.7 °C
- predominant wind directions include morning easterlies and westerly sea breezes during the summer months, with an average wind speed of 13.4 km/h and gusts of more than 100 km/h.

### 2.3 Topography and Soils

Using the NRInfo Portal, four soil types were identified across the two survey areas, being Karrakatta Sand Yellow Phase, Karrakatta shallow soils Phase, Quindalup South deep sand flat Phase, and Quindalup South oldest Dune Phase (DPIRD, 2024a). Area 1 primarily consists of Karrakatta shallow soils Phase with Karrakatta Sand Yellow Phase to the east and a small amount of Quindalup South oldest Dune Phase in the south-west corner. Area 2 consists of Karrakatta Sand Yellow Phase in the north and Quindalup South deep sand flat Phase in the south. Both survey areas have a flat topography. Area 1 measures 42 Australian Height Datum (AHD) across its survey boundary, while Area 2 is consistently 36 m AHD (DPRID, 2024a) (Table 1 and Figure 2).

**Table 1:** Soil types within survey areas

Name	Symbol	Description	Survey Area
Karrakatta Sand Yellow Phase	211Sp_Ky	Low hilly to gently undulating terrain. Yellow sand over limestone at 1-2 m. Banksia spp. woodland with scattered emergent <i>E</i> .	Area 1 and Area 2



Name	Symbol	Description	Survey Area
		<i>gomphocephala</i> , and <i>E. marginata</i> and a dense shrub layer.	
Karrakatta shallow soils Phase	211Sp_Kls	Low hills and ridges. Bare limestone or shallow siliceous or calcareous sand over limestone. Dense low shrub dominated by <i>Banksia sessilis</i> , <i>Melaleuca huegellii</i> and species of <i>Grevillea</i> .	Area 1
Quindalup South deep sand flat Phase	211Qu_Qp	Undulating landscapes with deep calcareous sands overlying limestone. Soils have dark grey-brown sand to about 50 cm and then pale brown sand. Remnants of hummocks are often present.	Area 2
Quindalup South oldest dune Phase	211Qu_Q1	The oldest phase. Dunes or remnants with low relief. Calcareous sands have organic staining to about 30 cm, overlying pale brown sand with definite cementation below 1 m.	Area 1

## 2.4 Vegetation Complex

Two vegetation complexes exist across Tamala Park with each survey area designated separate vegetation complexes. Area 1 occurs within Cottesloe Complex-Central and South. It is described by Heddle, Loneragan, and Havel (1980) as supporting heaths on limestone outcrops with deeper sands supporting *Eucalyptus gomphocephala* woodland and an open-forest of *E. gomphocephala*, *E. marginata* and *Corymbia calophylla* (Heddle *et al.*, 1980).

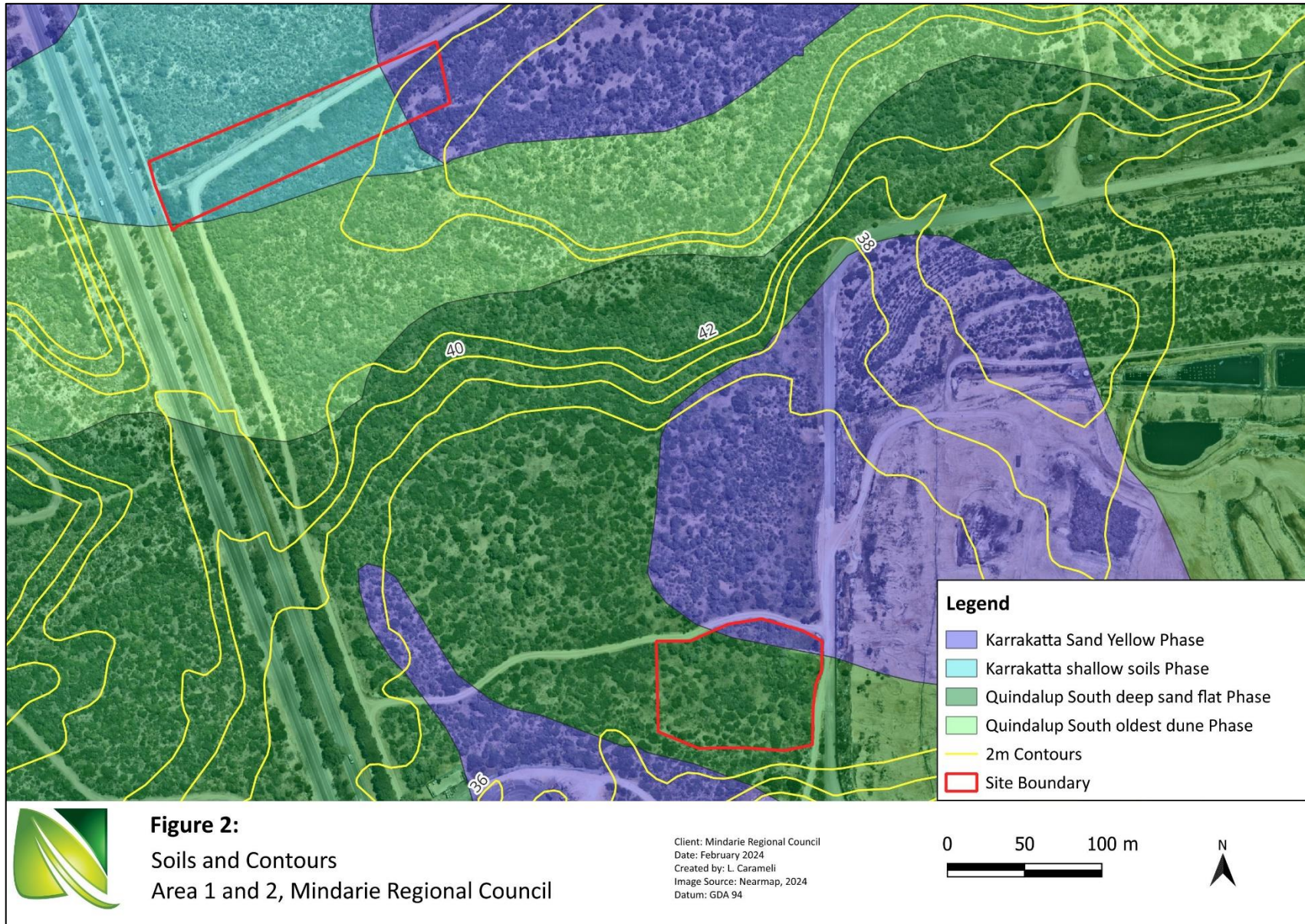
The pre-European extent of this vegetation complex remaining is:

- 32.16 % within the Swan Coastal Plain
- 41.65% within the City of Wanneroo (Government of Western Australia, 2019).

Area 2 occurs within the Quindalup Complex. It is described by Heddle, Loneragan, and Havel (1980) as being restricted to the coastal dunes and can be divided into separate sections. The Quindalup Complex foredune contains species such as *Atriplex isatidea*, *\*Cakile maritima*, *Leucophyta brownii*, *Carpobrotus virescens*, *\*Pelargonium capitatum*, and *Spinifex longifolius*. The Quindalup Complex mobile and stable dune contains *Acacia cyclops*, *Lepidosperma gladiatum*, *Myoporum insulare*, *Olearia axillaris*, *Scaevola crassifolia* and *Spyridium globulosum* (Heddle *et al.*, 1980).

The pre-European extent of this vegetation complex remaining is:

- 60.49 % within the Swan Coastal Plain
- 60.70% within the City of Wanneroo (Government of Western Australia, 2019).



## 3.0 Methodology

### 3.1 Desktop and Literature Review

The desktop survey included reviewing online databases to gather contextual knowledge and determine preliminary site characteristics including:

- likely native and non-native flora and fauna species present
- current extent of native vegetation
- general floristic community types
- likely presence of threatened or priority flora and fauna species
- likely presence of any threatened or priority ecological communities.

The following databases were accessed to obtain relevant information:

- NatureMap (DBCA, 2023a)
- Protected Matters Search Tool (Department of Climate Change, Energy, the Environment and Water (DCCEEW)), 2023) (Appendix 1)
- FloraBase (WA Herbarium, 1998-)
- Threatened and priority flora/fauna/ecological community database searches (DBCA, 2023b; 2023c; 2023d).

Conservation code definitions for the State and Commonwealth are provided in Appendix 2. Information relating to conservation significant species from database searches were summarised into field reference guides to aid with on-ground flora which is provided in Appendix 3.

### 3.2 On-ground Flora Survey

The flora and vegetation surveys were conducted in accordance with the methodology described in *Technical Guidance-Flora and Vegetation Surveys for Environmental Impact Assessment* (Environmental Protection Authority (EPA), 2016). Samples were collected, or photographs taken of unfamiliar species to enable later identification.

Natural Area environmental scientists undertook the surveys on 30 November 2023, 1 December 2023, and 15 January 2024. Key data was recorded using Mappt software on a handheld tablet. Survey activities included:

- traversing the entirety of the site and recording all species present, including native and invasive species
- setting out relevés
- marking locations of any conservation significant flora, Declared Pests (DP) and/or Weeds of National Significance (WoNS) identified
- recording vegetation type including dominant over, middle and understorey species (Table 2) and condition using the scale attributed to Keighery (Table 3) (Government of Western Australia, 2000)
- the use of GPS to map significant species and boundaries of differing vegetation type and condition
- recording evidence of disturbance, such as fire.

### 3.2.1 Vegetation Type

The vegetation type was determined using the structural classes described in *Bush Forever Volume 2* (Government of Western Australia, 2000), and records dominant over, middle and understorey species. A description of the various structural classes is provided in Table 2.

**Table 2:** Vegetation structural classes

Life Form/Height Class	Canopy Percentage Cover			
	100 – 70%	70 – 30%	30 – 10%	10 – 2 %
Trees over 30 m	Tall closed forest	Tall open forest	Tall woodland	Tall open woodland
Trees 10 – 30 m	Closed forest	Open forest	Woodland	Open woodland
Trees under 10 m	Low closed forest	Low open forest	Low woodland	Low open woodland
Tree Mallee	Closed tree mallee	Tree mallee	Open tree mallee	Very open tree mallee
Shrub Mallee	Closed shrub mallee	Shrub mallee	Open shrub mallee	Very open shrub mallee
Shrubs over 2 m	Closed tall scrub	Tall open scrub	Tall shrubland	Tall open shrubland
Shrubs 1 – 2 m	Closed heath	Open heath	Shrubland	Open shrubland
Shrubs under 1 m	Closed low heath	Open low heath	Low shrubland	Low open shrubland
Grasses	Closed grassland	Grassland	Open grassland	Very open grassland
Herbs	Closed herbland	Herbland	Open herbland	Very open herbland
Sedges	Closed sedgeland	Sedgeland	Open sedgeland	Very open sedgeland

Source: Government of Western Australia, 2000

### 3.2.2 Vegetation Condition

Vegetation condition was assessed using the rating scale attributed to Keighery in *Technical Guidance-Flora and Vegetation Surveys for Environmental Impact Assessment* (EPA, 2016). Table 3 provides a description of the rating scale.

**Table 3:** Vegetation condition ratings

Category	Description
1 Pristine	Pristine or nearly so, no obvious signs of disturbance or damage caused by human activities since European settlement.
2 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.
3 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.

Category	Description
4 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 some very aggressive weeds, partial clearing, dieback and grazing.
5 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.
6 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 or shrubs.

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Source: EPA, 2016

### 3.3 On-ground Fauna Survey

The fauna survey was completed in accordance with a basic fauna survey as outlined in the *Technical Guidance, Terrestrial vertebrate fauna surveys for environmental impact assessment* (EPA, 2020). Natural Area environmental scientists traversed the site on 30 November 2023, 1 December 2023 and 15 January 2024. This survey was undertaken in conjunction with other survey activities. A basic survey is defined as a low-intensity survey, which gathers broad fauna and habitat information including opportunistic fauna observations (EPA, 2020). The fauna survey included recording opportunistic sightings of fauna species while traversing the survey area, along with recording evidence of their presence in the form of:

- scats
- tracks
- diggings
- burrows, dens and warrens
- runnels (vegetative tunnels)
- calls.

### 3.4 Limitations

Potential limitations encountered while conducting survey activities are detailed in Table 4.

**Table 4:** Survey limitations

Potential Limitation	Degree of Limitation	Comments
Availability of contextual information	None	Government data on regional and local contextual information are readily available for the survey area.
Competency/experience of team	None	Survey activities were undertaken by experienced environmental scientists who have extensive experience undertaking flora and fauna surveys within the Swan Coastal Plain bioregion.
Proportion of flora recorded/collected, any identification issues	Minor	A total of 106 flora species (taxa) were recorded from 41 families during the field survey of both survey areas, comprising of 45 introduced (weeds), one dubious and 60 native species. Only one introduced genus was unable to be identified to a species level ( <i>Vulpia</i> sp.).
Survey effort and extent	Minor	A basic flora survey of the area was undertaken over a period of three days due to additional areas being requested. The entire survey area of both areas was traversed and all flora species and vegetation types/conditions within the survey area were adequately surveyed.
Access restrictions	None	The fauna survey scope requested was a basic survey undertaken by environmental scientists during daylight hours. As a result, some faunal groups, such as those which are nocturnal, cryptic or elusive, are very unlikely to be detected even if present within the survey area. To observe these species, a detailed fauna survey utilising techniques such as trapping and motion-sensor cameras, as well as nocturnal surveys, would be required.
Survey timing	Moderate	Environmental scientists were able to traverse throughout the survey area with no access restrictions present.
		The initial survey was undertaken during late spring and additional surveys conducted in early summer. Spring is the optimal season for flora surveys within the Swan Coastal Plain subregion. Whilst one day of the survey was undertaken during flowering season, this was very late in the season and some species may flower earlier or later in the season and therefore may not be able to be identified. The other two days of the survey were conducted in summer which is not the optimal Swan Coastal Plain season

Potential Limitation	Degree of Limitation	Comments
		<p>for flora surveys. Many annual species are not likely to have been present during these survey events. Of the 12 conservation significant flora species identified in the desktop survey as being likely to occur within the survey area, five have known flowering periods outside of the initial survey period (Appendix 3). A further nine have known flowering periods outside of the December survey periods. A total 11 of the 12 conservation significant flora species identified are shrubs/trees which would have been present at the time of survey and able to be identified. The remaining species <i>Stylidium maritimum</i> (Coastal Triggerplant), flowers within the initial survey period, however, if it has already flowered earlier in the season, it may not be detected as no above-ground features may be present. The survey event for Area 2 was also outside of this species' flowering period and therefore its presence is not likely to be detected.</p>
Disturbances	None	<p>No recent disturbances which may have had an impact on survey results (e.g. fire, recent clearing or floods) were identified during the survey.</p>

## 4.0 Flora Survey Results

### 4.1 Desktop Survey

A desktop survey of online databases indicated the potential for a total of 39 conservation significant species to occur within 10 km of the survey area (Table 5). NatureMap indicated 27 conservation significant flora species listed under the *Biodiversity Conservation Act 2016 (WA) (BC Act 2016)* or by the Western Australian Herbarium (1998-), as potentially occurring within 10 km radius of the site (DBCA, 2023a). A review of the Protected Matters Search Tool (PMST) (DCCEEW, 2023) indicated 14 significant flora species listed under the *Environment Protection and Biodiversity Conservation Act 1999 (Cwlth) (EPBC Act 1999)* as potentially occurring within a 10 km radius of the site (Appendix 2).

A review of the DBCA (2023b) threatened and priority flora database indicated 28 threatened or priority species have been recorded within 10 km of the site. Of the conservation significant species potentially found in the area, it was determined that the site conditions (soil type, drainage, location) may be suitable for 12 (highlighted green) of these species (Table 5). Conservation code descriptions are provided in Appendix 2.

**Table 5:** Threatened and Priority flora species listed by NatureMap, PMST and DBCA

Species Name	Cons Code	NatureMap	PMST	DBCA
<i>Acacia benthamii</i>	P2	X		X
<i>Andersonia gracilis</i>	EN		X	
<i>Anigozanthos viridis</i> subsp. <i>terraspectans</i>	VU		X	
<i>Austrostipa mundula</i>	P3	X		X
<i>Baeckea</i> sp. Limestone	P1	X		X
<i>Banksia mimica</i>	EN		X	
<i>Caladenia huegelii</i>	EN		X	
<i>Calectasia elegans</i>	P2			X
<i>Conostylis bracteata</i>	P3	X		X
<i>Cyathochaeta teretifolia</i>	P3	X		X
<i>Diuris micrantha</i>	VU		X	
<i>Diuris purdiei</i>	EN		X	
<i>Drakaea elastica</i>	EN		X	
<i>Drakaea micrantha</i>	VU		X	
<i>Drosera x sidjamesii</i>	P1	X		X
<i>Eleocharis keigheryi</i>	VU		X	
<i>Eucalyptus argutifolia</i>	VU	X	X	X
<i>Eucalyptus foecunda</i> subsp. <i>foecunda</i>	P4	X		X



Species Name	Cons Code	NatureMap	PMST	DBCA
<i>Fabronia hampeana</i>	P2	X		X
<i>Grevillea</i> sp. Ocean Reef	P1	X		X
<i>Hibbertia leptotheca</i>	P3	X		X
<i>Jacksonia gracillima</i>	P3	X		X
<i>Jacksonia sericea</i>	P4	X		X
<i>Lecania turicensis</i> var. <i>turicensis</i>	P2	X		X
<i>Leucopogon maritimus</i>	P1	X		X
<i>Leucopogon</i> sp. Yanchep	P3	X		X
<i>Macarthuria keigheryi</i>	EN		X	
<i>Marianthus paralius</i>	EN	X	X	X
<i>Melaleuca</i> sp. Wanneroo	EN	X	X	X
<i>Netrostylis</i> sp. Chandala	P2	X		X
<i>Paracaleana dixonii</i>	EN		X	
<i>Pimelea calcicola</i>	P3	X		X
<i>Poranthera moorokatta</i>	P2	X		X
<i>Sarcozona bicarinata</i>	P3	X		X
<i>Stylidium maritimum</i>	P3	X		X
<i>Stylidium paludicola</i>	P3	X		X
<i>Styphelia filifolia</i>	P3	X		X
<i>Thelymitra variegata</i>	P2	X		X
<i>Utricularia oppositiflora</i>	P3	X		X

#### 4.1.1 Threatened and Priority Ecological Communities

A review of the PMST report identified three listed Threatened Ecological Communities that could potentially occur within 10 km of the site (Table 6).

**Table 6:** Potential Threatened Ecological Communities within the survey area



Name	Status	Presence
Banksia Woodlands of the Swan Coastal Plain ecological community	Endangered	Community likely to occur within the area
Empodisma peatlands of southwestern Australia	Endangered	Community may occur within area
Tuart ( <i>Eucalyptus gomphocephala</i> ) Woodlands and Forests of the Swan Coastal Plain ecological community	Critically Endangered	Community likely to occur within the area

## 4.2 Flora Survey Results

### 4.2.1 Vegetation Types

Two vegetation types were recorded within the survey areas and are described in Table 7 and shown in Figure 4.

**Table 7:** Vegetation type within Areas 1 (top) and 2 (bottom)

Vegetation Type	Description	Photograph
Mixed Coastal Open Shrubland	A shrubland of <i>Acacia rostelifera</i> , <i>Banksia sessilis</i> , <i>Melaleuca systema</i> , <i>Xanthorrhoea preissii</i> over <i>Lomandra maritima</i> , <i>Hibbertia hypericoides</i> , <i>Lepidosperma</i> spp. and <i>Desmocladius fasciculatus</i> .	
<i>Banksia</i> spp. Low Open Woodland	A low open woodland of <i>Banksia</i> spp. over a middle storey of <i>Acacia saligna</i> , <i>Spyridium globulosum</i> and <i>Melaleuca systema</i> . Along with an understorey of mixed introduced grasses and <i>Lomandra maritima</i> .	

### 4.2.2 Vegetation Condition

Vegetation condition ranged from good to completely degraded for Area 1 and degraded to completely degraded in Area 2 (Table 8 and 9, Figure 5 and 6).

**Table 8:** Vegetation condition within Area 1

Vegetation Condition	Pristine	Excellent	Very Good	Good	Degraded	Completely Degraded	Total
Area (ha)	0	0	0	0.592	0.143	0.124	0.859
Area (%)	0	0	0	68.92	16.65	14.43	100

**Table 9:** Vegetation condition within Area 2

<b>Vegetation Condition</b>	<b>Pristine</b>	<b>Excellent</b>	<b>Very Good</b>	<b>Good</b>	<b>Degraded</b>	<b>Completely Degraded</b>	<b>Total</b>
<b>Area (ha)</b>	0	0	0	0	0.053	0.724	0.777
<b>Area (%)</b>	0	0	0	0	6.82	93.18	100

### 4.2.3 Flora

#### Area 1

A total of 81 flora species (taxa) were recorded from 37 families during the field survey, comprising of 30 introduced (weeds), one dubious and 50 native species. Examples of native flora species and weed species are shown in Figure 3. A complete flora species list is provided in Appendix 5. Two declared pests; Bridal Creeper (*\*Asparagus asparagoides*), and One-leaf Cape Tulip (*\*Moraea flaccida*), and one Weed of National Significance (WoNS); Bridal Creeper (*\*Asparagus asparagoides*) were recorded on site. The location of each recorded specimen is shown in Appendix 6. Declared pests are listed on the Western Australian Organism List (WAOL) under the *Biosecurity and Agriculture Management Act 2007* (WA). This classification requires the landowner/land manager to control the population to limit damage resulting from the presence of these species (DPIRD, 2024b).

#### Area 2

A total of 59 flora species (taxa) were recorded from 30 families during the field survey, comprising of 30 introduced (weeds), and 29 native species. Examples of native flora species and weed species are shown in Figure 3. A complete flora species list is provided in Appendix 5. One declared pest/WoNS was identified within the survey site: Bridal Creeper (*\*Asparagus asparagoides*), with its location shown in Appendix 6.



*Tricoryne elatior* (Yellow Autumn Lily)



*Pimelea argentea* (Silvery Leaved Pimelea)



Bridal Creeper (*\*Asparagus asparagoides*)



Bellardia (*\*Bellardia trixago*)

**Figure 3:** Examples of native and introduced flora species recorded across survey areas

#### 4.2.4 Threatened and Priority Communities

Of the three threatened and priority ecological communities that were identified as occurring within a 10 km radius of the survey area during the desktop assessment, following the field survey it was identified that one of these communities could be potentially represented in Area 2: Banksia Woodlands of the Swan Coastal Plain (Endangered/P3) within the *Banksia* spp. Low Open Woodland vegetation type identified in Area 2. The remaining TECs/PECs (threatened or priority ecological communities) identified in the desktop survey were not identified in the survey area.

While Area 2 does meet majority of the key diagnostic characteristics (Table 10) for the Banksia Woodlands TEC, Area 2 is in degraded to completely degraded condition. Therefore, Area 2 alone does not meet the minimum patch size requirement of 2 ha at good condition (EPA, 2016 and DAWE, 2016). While Area 2 does not meet the minimum condition and size thresholds for it to be classified as a Banksia TEC, it has the potential to be continuous with adjacent remnant bushland and may form part of a larger patch, further detailed analysis of the surrounding areas would be required.

**Table 10:** Key Diagnostic Characteristics for Determining a Banksia Woodlands of the Swan Coastal Plain TEC

Key Diagnostic Characteristics		Area 2 Tamala Park
<b>Local and physical environment</b>	Swan Coastal Plain IBRA Bioregion	Yes, Area 2 is located within the Swan Coastal Plain IBRA Region (SWA02).
<b>Soils and Landforms</b>	Well drained, low nutrient soils on sandplain landforms, particularly on Bassendean and Spearwood Sands	Yes, Area 2 occurs on well drained, low nutrient soils on sandplain landforms, however, not on Bassendean or Spearwood Sands (Department of Primary Industries and Regional Development (DPIRD), 2024a).
<b>Structure</b>	Distinctive upper sclerophyllous layer of low trees dominated by <i>Banksias</i>	Yes, the vegetation type <i>Banksia</i> spp. Low Open Woodland recorded within Area 2 contained dominant <i>Banksia</i> species ( <i>Banksia attenuata</i> , <i>B. menziesii</i> and <i>B. prionotes</i> ).
	Emergent tall <i>Eucalyptus</i> or <i>Allocasuarina</i> may be present	No, both species were absent within <i>Banksia</i> spp. Low Open Woodland vegetation type.
<b>Composition</b>	Canopy dominated by <i>B. attenuata</i> and/or <i>B. menziesii</i> (although other Banksias can be dominant)	Yes, <i>B. attenuata</i> was a dominant canopy species.
<b>Composition</b>	Patch must include one of the following diagnostic species: <ul style="list-style-type: none"> <li>▪ <i>Banksia attenuata</i></li> <li>▪ <i>B. menziesii</i></li> <li>▪ <i>B. prionotes</i></li> <li>▪ <i>B. ilicifolia</i></li> </ul>	Yes, <i>B. attenuata</i> , <i>B. menziesii</i> , and <i>B. prionotes</i> are all present within Area 2.
	If present emergent tree layer often includes <i>Corymbia calophylla</i> , <i>Eucalyptus</i>	No, Area 2 does not contain any <i>Eucalyptus</i> species.

Key Diagnostic Characteristics	Area 2 Tamala Park
<p><i>marginata</i>, or less commonly <i>E. gomphocephala</i></p>	
<p>Other trees of a medium height that may be present, and may be codominant with the <i>Banksia</i> species include:</p>	<p>No, none of the listed medium height trees were present in Area 2.</p>
<ul style="list-style-type: none"> <li>▪ <i>Eucalyptus todtiana</i></li> <li>▪ <i>Nuytsia floribunda</i></li> <li>▪ <i>Allocasuarina fraseriana</i></li> <li>▪ <i>Callitris arenaria</i></li> <li>▪ <i>Callitris pyramidalis</i></li> <li>▪ <i>Xylomelum occidentale</i></li> </ul>	
<p>Very high diversity of understory species that vary from patch to patch. See the description above and vegetation types that relate to <i>Banksia</i> Woodlands (Gibson <i>et al.</i>, 1994)</p>	<p>Only one of the listed understory key species within <i>Banksia</i> Woodlands was present within Area 2: <i>Xanthorrhoea preissii</i>.</p>

**Source:** DAWE, 2016, Gibson *et al.*, 1994



**Legend**

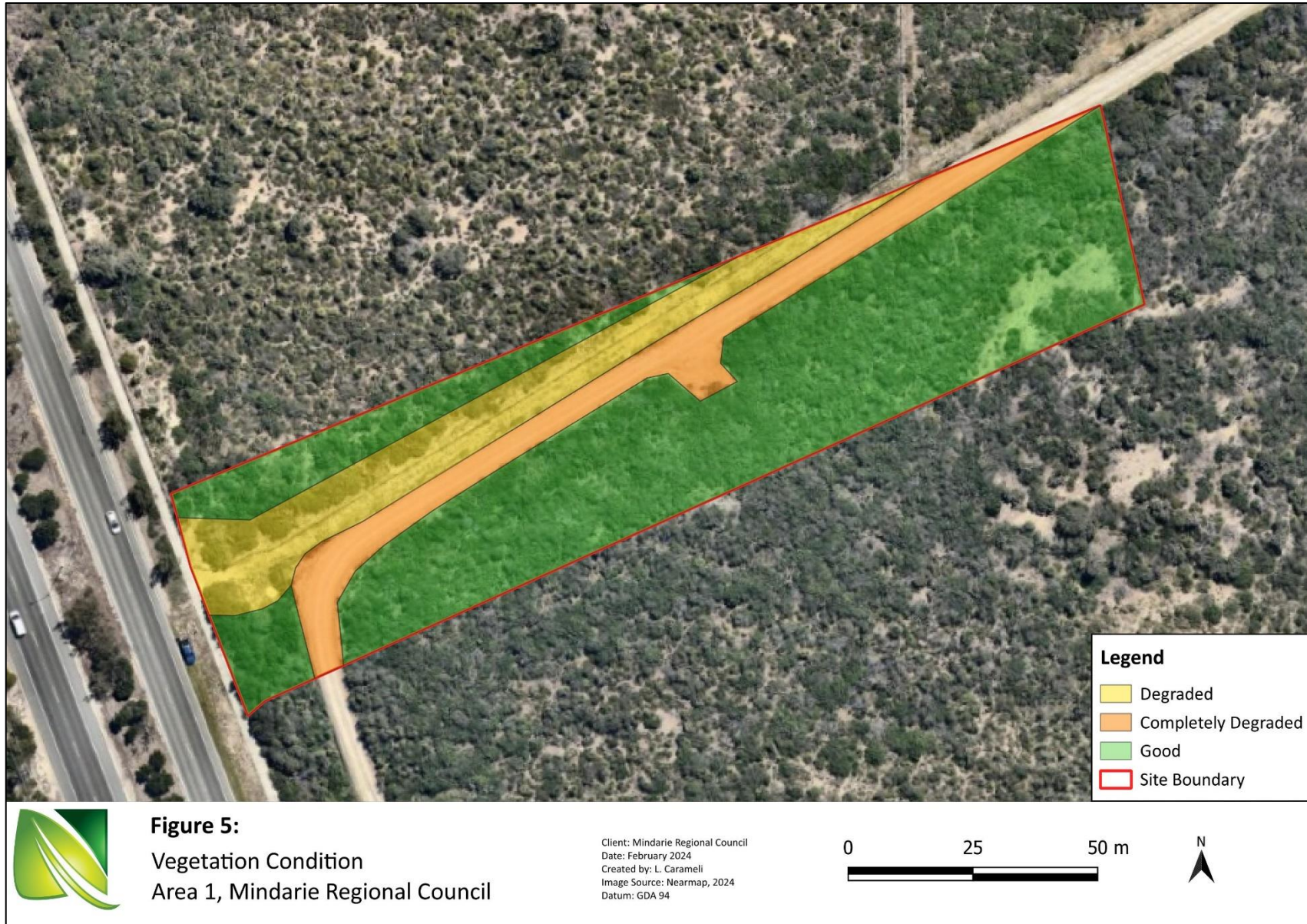
- Banksia spp. Low Open Woodland
- Mixed Coastal Open Shrubland
- Site Boundary



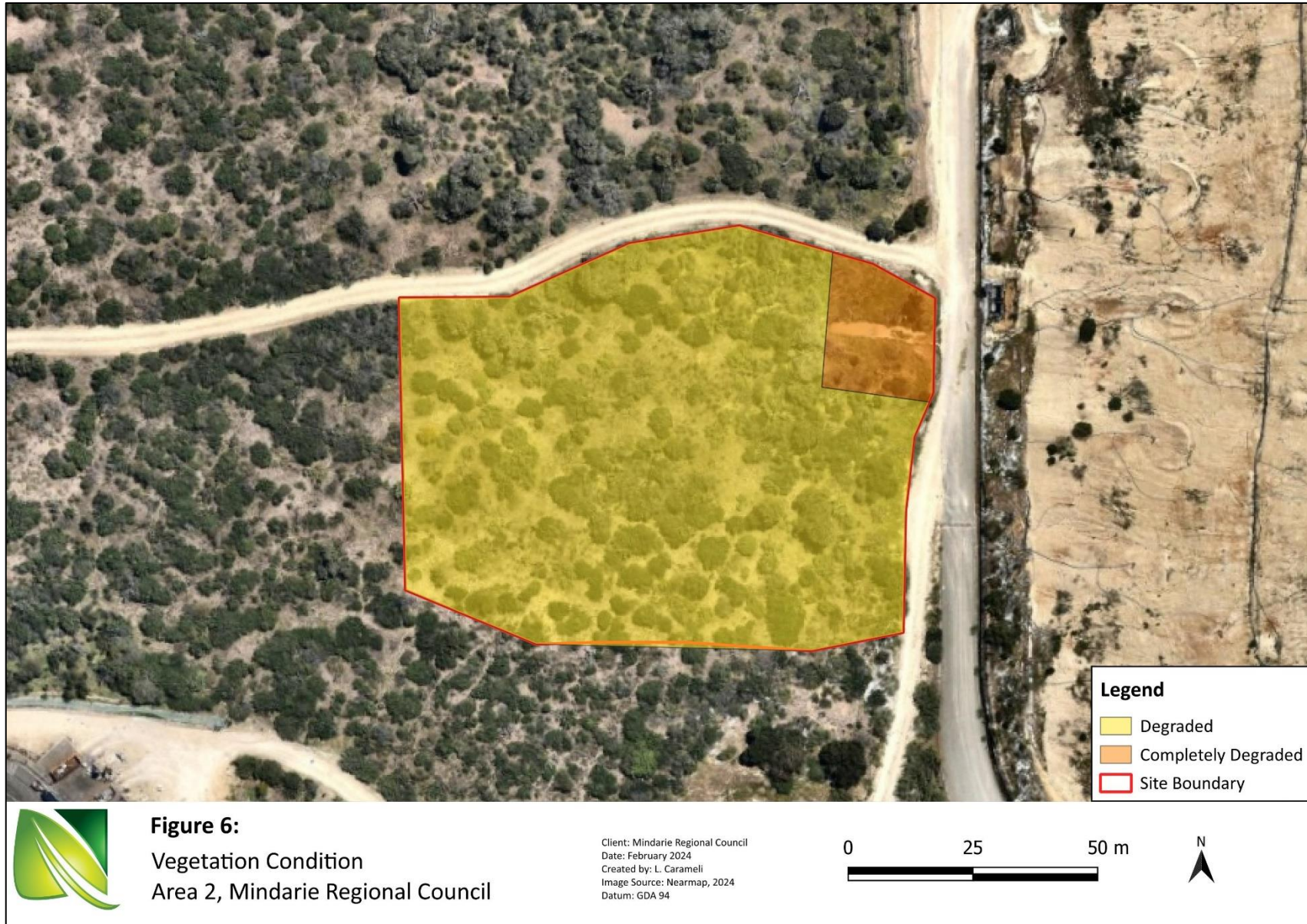
**Figure 4:**  
Vegetation Type  
Area 1 and 2, Mindarie Regional Council

Client: City of Canning  
Date: 15/07/2023  
Created by: J. McKercher  
Image Source: Nearmap, 2023  
Datum: GDA 94









## 5.0 Fauna Survey Results

### 5.1 Desktop Survey

A desktop survey of online databases indicated the potential for a total of 37 conservation significant species to occur within 10 km of the survey area (Table 11). NatureMap indicated 14 conservation significant flora species listed under the *BC Act 2016*, as potentially occurring within a 10 km radius of the site (DBCA, 2023a). A review of the Protected Matters Search Tool (PMST) (DCCEEW, 2023) indicated 28 significant flora species listed under the *EPBC Act 1999* as potentially occurring within a 10 km radius of the site (Appendix 1).

According to National Map, the survey site occurs within less than 5 km of areas classified as:

- Carnaby’s Cockatoo Areas requiring investigation as feeding habitat in the Swan Coastal Plain (SCP) IBRA Region (DBCA, 2018a)
- Carnaby’s Cockatoo Confirmed Roost Sites Buffered 6km (DBCA, 2018b)
- Black Cockatoo Roosting Sites – Buffered (DBCA, 2019).

A review of the DBCA (2023d) threatened and priority fauna database indicated 14 threatened or priority species have been recorded within 10 km of the site. Of the conservation significant species potentially found in the area, it was determined that the site conditions (soil type, drainage, location) are likely not suitable for any of these species. However, it is likely that the Carnaby’s Black Cockatoo (*Zanda latirostris*) is a transient species within the area as it has been recorded in previous surveys (Natural Area, 2019). Conservation code descriptions are provided in Appendix 2.

**Table 11:** Threatened and Priority fauna species listed by NatureMap, PMST and DBCA

Species Name	Cons Code	PMST	DBCA	NatureMap
<b>Birds</b>				
<i>Anous tenuirostris melanops</i>	VU	X		
<i>Botaurus poiciloptilus</i>	EN	X	X	X
<i>Calidris canutus</i>	EB	X		
<i>Calidris ferruginea</i>	CR	X	X	X
<i>Calyptorhynchus banksii naso</i>	VU	X	X	X
<i>Charadrius leschenaultii</i>	VU	X	X	X
<i>Diomedea amsterdamensis</i>	EN	X		
<i>Diomedea epomophora</i>	VU	X		
<i>Diomedea exulans</i>	VU	X		
<i>Halobaena caerulea</i>	VU	X		
<i>Ixobrychus flavicollis australis</i> (southwest subpop.)	P2		X	X
<i>Leipoa ocellata</i>	VU	X		
<i>Limosa lapponica menzbieri</i>	CR	X		

Species Name	Cons Code	PMST	DBCA	NatureMap
<i>Macronectes giganteus</i>	EN	X		
<i>Macronectes halli</i>	VU	X		
<i>Numenius madagascariensis</i>	CR	X		
<i>Oxyura australis</i>	P4		X	X
<i>Pachyptila turtur subantarctica</i>	VU	X		
<i>Phoebetria fusca</i>	VU	X		
<i>Procellaria aequinoctialis</i>	VU		X	X
<i>Pterodroma mollis</i>	VU	X		
<i>Rostratula australis</i>	EN	X		
<i>Sternula nereis nereis</i>	VU	X		
<i>Thalassarche carteri</i>	VU	X		
<i>Thalassarche cauta</i>	EN	X		
<i>Thalassarche impavida</i>	VU	X		
<i>Thalassarche melanophris</i>	VU	X		
<i>Thalassarche steadi</i>	VU	X		
<i>Zanda latirostris</i>	EN	X	X	X
<i>Zanda baudinii</i>	EN		X	X
<b>Mammals</b>				
<i>Dasyurus geoffroii</i>	VU	X		
<i>Hydromys chrysogaster</i>	P4		X	X
<i>Isoodon fusciventer</i>	P4		X	X
<i>Macroderma gigas</i>	VU	X		
<i>Notamacropus irma</i>	P4		X	X
<i>Pseudomys shortridgei</i>	VU		X	X
<b>Reptiles</b>				
<i>Neelaps calonotos</i>	P3		X	X

## 5.2 Basic Fauna Survey Results

A total of nine vertebrate fauna species were identified during the field survey, including eight bird species and one mammal species (Table 12; Figure 7). One introduced bird, the Laughing Turtle Dove (*\*Spilopelia senegalensis*), was observed. No conservation significant species were recorded. Additional fauna evidence included Western Grey Kangaroo scat observed in both survey areas (Figure 7), shed snakeskin found within Area 1, and rabbit diggings recorded in Area 2.

**Table 12:** Fauna observations within Area 1 and 2

\* Denotes introduced species

Family	Species Name	Common Name	Area 1	Area 2
<b>Bird</b>				
Columbidae	<i>*Spilopelia senegalensis</i>	Laughing Turtle Dove		X
Corvidae	<i>Corvus coronoides</i>	Australian Raven		X
Hirundinidae	<i>Hirundo neoxena</i>	Welcome Swallow	X	
Meliphagidae	<i>Phylidonyris niger</i>	White-cheeked Honeyeater	X	
Meliphagidae	<i>Gavicalis virescens</i>		X	
Petroicidae	<i>Quoyornis georgianus</i>	White-breasted Robin	X	X
Rhipiduridae	<i>Rhipidura leucophrys</i>	Willie Wagtail	X	
Threskiornithidae	<i>Threskiris molucca</i>	Australian White Ibis	X	
<b>Mammal</b>				
Macropodidae	<i>Macropus fuliginosus melanops</i>	Western Grey Kangaroo	X	



White-cheeked Honeyeater  
*(Phylidonyris niger)*



Western Grey Kangaroo scat  
*(Macropus fuliginosus melanops)*

**Figure 7:** Examples of fauna species observed, including direct and indirect indication of presence.

## 6.0 Implications of Results

### 6.1 Area 1

Area 1 consists of approximately 68.92% good condition vegetation and has a high level of flora diversity: 50 native species (61.73% of species recorded). Additional detailed or targeted surveys may be required to identify further environmental values within the area.

### 6.2 Area 2

Area 2 consists of degraded to completely degraded vegetation. The recorded vegetation type of Banksia spp. Low Open Woodland indicates the potential for the presence of the TEC Banksia Woodlands of the Swan Coastal Plain. Area 2 meets majority of the key diagnostic criteria for this TEC (Table 10), but does not meet the minimum size and vegetation condition thresholds for a Banksia TEC classification (EPA, 2016 and DAWE, 2016). Area 2 therefore has the potential to be continuous with adjacent remnant bushland and may form part of a larger TEC patch, however, further detailed analysis of the surrounding areas would be required to determine this.

### 6.3 Assessment Against Clearing Principles

#### Area 1

An assessment of the proposed clearing of the site against the ten native vegetation clearing principles suggests that this action is not likely to be at variance with seven of the ten principles. However, may be at variance with principle A, E and H. Assessment of all clearing principles is provided in Table 13 below.

**Table 13:** Native vegetation clearing principles and assessment Area 1

Clearing Principle	Comment
A Native vegetation should not be cleared if it comprises a high level of biological diversity.	<p>The proposed area may be at variance with this principle:</p> <ul style="list-style-type: none"> <li>▪ A total of 81 flora species were identified, comprised of 30 (37.04%) introduced species, one (1.23%) dubious and 50 (61.73%) native species.</li> <li>▪ No threatened or priority flora species were recorded within the site during the 2023 survey</li> <li>▪ One vegetation type was identified within the site: Mixed Coastal Open Shrubland.</li> <li>▪ The vegetation condition ranged from good to completely degraded.</li> <li>▪ The proposed clearing area is within an ESA, this means that no exemptions apply, and the proposed clearing will require a native vegetation clearing permit.</li> </ul>

Clearing Principle	Comment
<p data-bbox="145 568 177 600">B</p> <p data-bbox="205 405 496 763">Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of, a significant habitat for fauna indigenous to Western Australia.</p>	<p data-bbox="525 277 1378 353">The proposed area to be cleared is not likely to be at variance with this principle:</p> <ul data-bbox="572 360 1431 891" style="list-style-type: none"> <li data-bbox="572 360 1431 436">▪ A total of seven vertebrate fauna species, all native, were recorded within the site. This included one marsupial and six bird species.</li> <li data-bbox="572 443 1431 519">▪ No conservation significant species were identified within the survey area.</li> <li data-bbox="572 526 1431 602">▪ No potential habitat trees for threatened black cockatoos (DBH ≥ 500 mm) were present within the site.</li> <li data-bbox="572 609 1431 640">▪ No evidence of foraging or roosting was recorded.</li> <li data-bbox="572 647 1431 763">▪ The site is within 5 km of a DBCA listed Carnaby’s Cockatoo Confirmed Roost Sites (DBCA, 2018b) and Black Cockatoo Roosting Sites (DBCA, 2019).</li> <li data-bbox="572 770 1431 891">▪ Larger areas of higher quality habitat are located in close proximity to the site which are considered to be more suitable for native fauna.</li> </ul>
<p data-bbox="145 1249 177 1281">C</p> <p data-bbox="205 1144 496 1377">Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, rare flora.</p>	<p data-bbox="525 891 1378 967">The proposed area to be cleared is not likely to be at variance with this principle:</p> <ul data-bbox="572 974 1439 1630" style="list-style-type: none"> <li data-bbox="572 974 1439 1050">▪ No threatened or priority flora species were recorded within the site during the 2023 basic flora survey.</li> <li data-bbox="572 1057 1439 1630">▪ Of the 12 conservation significant flora species identified in the desktop survey as being likely to occur within the site, five have flowering periods within the survey period, five have flowering periods outside of the survey period, and two have unknown flowering periods (Appendix 3). Whilst the survey was undertaken during the end of spring, some species may flower earlier in the season and therefore may not be able to be identified. A total 11 of the 12 conservation significant flora species identified are shrubs/trees which would have been present at the time of survey and able to be identified. The remaining species <i>Styloidium maritimum</i> (Coastal Triggerplant) is a perennial herb species and flowers within the survey period, however, if it has already flowered earlier in the season, it may not be detected as no above-ground features may be present.</li> </ul>

Clearing Principle	Comment
<p>D Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of a threatened ecological community.</p>	<p>The proposed area to be cleared is not likely to be at variance with this principle:</p> <ul style="list-style-type: none"> <li>▪ No Threatened or Priority Ecological Communities were identified within the site.</li> <li>▪ The site was observed to be in a good to completely degraded condition, with portions in a highly disturbed state because of historical land-uses. The current species assemblage and site condition are not consistent with that required for classification as any of the three TEC/PEC's that were identified in the desktop survey.</li> </ul>
<p>E Native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been extensively cleared.</p>	<p>The proposed area to be cleared may be at variance with this principle:</p> <ul style="list-style-type: none"> <li>▪ The site is located within the Cottesloe Complex-Central and South. Within the Swan Coastal Plain, there is 32.16% of the Cottesloe Complex-Central and South remaining and 41.65% remaining within the City of Wanneroo.</li> <li>▪ The vegetation within the site has been subject to significant past disturbance, with a firebreak running through the middle. The firebreak and previously disturbed vegetation range from completely disturbed to disturbed, however, it also contains areas of good vegetation (68.92%). The remaining good vegetation is dominated by native species (61.73%).</li> <li>▪ The proposed clearing area is within an ESA.</li> </ul>
<p>F Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland.</p>	<p>The proposed area to be cleared is not likely to be at variance with this principle:</p> <ul style="list-style-type: none"> <li>▪ There are no RAMSAR or important wetlands.</li> <li>▪ No watercourses or wetlands were identified within the site.</li> </ul>
<p>G Native Vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation.</p>	<p>The proposed area to be cleared is not likely to be at variance with this principle:</p> <ul style="list-style-type: none"> <li>▪ The proposed clearing area is not expected to cause further land degradation as the site occurs in close proximity to an existing major roadway and is surrounded by Tamala Park Waste Management Centre.</li> </ul>

Clearing Principle	Comment
<p>H Native vegetation should not be cleared if the clearing of the vegetation is likely to have an impact on the environmental values of any adjacent or nearby conservation area.</p>	<p>The proposed area to be cleared may be at variance with this principle:</p> <ul style="list-style-type: none"> <li>▪ Clearing of the proposed area may result in increased edge effects, such as increased invasive species populating the disturbed land and spreading into the areas immediately adjacent clearing. This can be mitigated with weed management strategies.</li> </ul>
<p>I Native vegetation should not be cleared if the clearing of the vegetation is likely to cause deterioration in the quality of surface or underground water.</p>	<p>The proposed area to be cleared is not likely to be at variance with this principle:</p> <ul style="list-style-type: none"> <li>▪ The proposed clearing is not expected to cause deterioration in the quality of surface or underground water as the site is within close proximity to a road reserve and within the Tamala Park Waste Management Centre.</li> <li>▪ There is the potential for clearing of the site to impact water quality through road run-off and machinery spills/contamination.</li> <li>▪ These impacts are considered to be unlikely and are able to be mitigated during the clearing process such as to not have a significant impact on surface or ground water quality. The development of a management plan and strategy is recommended to aid with the mitigation of any water quality impacts.</li> </ul>
<p>J Native vegetation should not be cleared if clearing the vegetation is likely to cause, or exacerbate, the incidence of flooding.</p>	<p>The area to be cleared is not likely to be at variance with this principle:</p> <ul style="list-style-type: none"> <li>▪ The proposed clearing is not expected to cause, or exacerbate, the incidence of flooding as the site is occurring within close proximity to a road reserve and within the Tamala Park Waste Management Centre.</li> </ul>



**Area 2**

An assessment of the proposed clearing of the site against the ten native vegetation clearing principles suggests that this action is not likely to be at variance with seven of the ten principles. However, may be at variance with principle A, D and E. Assessment of all clearing principles is provided in Table 14 below.

**Table 14:** Native vegetation clearing principles and assessment Area 2

Clearing Principle	Comment
<p>A</p> <p>Native vegetation should not be cleared if it comprises a high level of biological diversity.</p>	<p>The proposed area may be at variance with this principle:</p> <ul style="list-style-type: none"> <li>▪ A total of 59 flora species were identified, comprised of 30 (50.85%) introduced species, and 29 (49.15%) native species.</li> <li>▪ No threatened or priority flora species were recorded within the site during the 2023/2024 survey</li> <li>▪ One vegetation type was identified within the site, Banksia spp. Low Open Woodland.</li> <li>▪ The vegetation condition ranged from degraded to completely degraded.</li> <li>▪ The proposed clearing area is within an ESA, this means that no exemptions apply, and the proposed clearing will require a native vegetation clearing permit.</li> </ul>
<p>B</p> <p>Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of, a significant habitat for fauna indigenous to Western Australia.</p>	<p>The proposed area to be cleared is not likely to be at variance with this principle:</p> <ul style="list-style-type: none"> <li>▪ A total of three vertebrate fauna species, comprised of two native and one introduced bird species were recorded within the site.</li> <li>▪ No conservation significant species were identified within the survey area.</li> <li>▪ No potential habitat trees for threatened black cockatoos (DBH ≥ 500 mm) were present within the site.</li> <li>▪ No evidence of foraging or roosting was recorded.</li> <li>▪ The site is within 5 km of a DBCA listed Carnaby’s Cockatoo Confirmed Roost Sites (DBCA, 2018b) and Black Cockatoo Roosting Sites (DBCA, 2019).</li> <li>▪ Larger areas of higher quality habitat are located in close proximity to the site which are considered to be more suitable for native fauna.</li> </ul>

Clearing Principle	Comment
<p>C</p> <p>Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, rare flora.</p>	<p>The proposed area to be cleared is not likely to at variance with this principle:</p> <ul style="list-style-type: none"> <li>▪ No threatened or priority flora species were recorded within the site.</li> <li>▪ The survey for Area 2 was undertaken at the start of summer, which is outside of the optimum flowering season for many species. Of the 12 conservation significant flora species identified in the desktop survey as being likely to occur within the site, nine have flowering periods outside of the survey period and two have unknown flowering periods (Appendix 3). A total 11 of the 12 conservation significant flora species identified are shrubs/trees which would have been present at the time of survey and able to be identified. The remaining species <i>Stylidium maritimum</i> (Coastal Triggerplant) is a perennial herb species but does not flower within the survey period. This species may not be detected as no above-ground features are likely to be present out of its flowering period.</li> </ul>
<p>D</p> <p>Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of a threatened ecological community.</p>	<p>The proposed area to be cleared may be at variance with this principle:</p> <ul style="list-style-type: none"> <li>▪ No Threatened or Priority Ecological Communities were identified within the site; however, the current <i>Banksia</i> spp. Low Open Woodland could indicate the potential for the site to represent the Banksia Woodlands of the Swan Coastal Plain TEC. While Area 2 does meet majority of the key diagnostic characteristics (Table 10) for the Banksia Woodlands TEC, Area 2 is in degraded to completely degraded condition. Therefore, Area 2 alone does not meet the minimum patch size requirement of 2 ha at good condition (EPA, 2016 and DAWE, 2016). While Area 2 does not meet the minimum condition and size thresholds for it to be classified as a Banksia TEC, it has the potential to be continuous with adjacent remnant bushland and may form part of a larger patch, further detailed analysis of the surrounding areas would be required.</li> </ul>
<p>E</p> <p>Native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been extensively cleared.</p>	<p>The proposed area to be cleared may be at variance with this principle:</p> <ul style="list-style-type: none"> <li>▪ The site is located within the Quindalup Complex. Within the Swan Coastal Plain, there is 60.49% of the Quindalup Complex remaining and 60.70% remaining within the City of Wanneroo.</li> <li>▪ The vegetation within the site has been subject to significant past disturbance. The site is in a degraded and completely degraded condition and contains vegetation dominated by introduced, planted and dubious species.</li> <li>▪ The proposed clearing area is within an ESA known as Bush Forever Site 323.</li> </ul>

Clearing Principle	Comment
<p>F Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland.</p>	<p>The proposed area to be cleared is not likely to be at variance with this principle:</p> <ul style="list-style-type: none"> <li>▪ There are no RAMSAR or important wetlands.</li> <li>▪ No watercourses or wetlands were identified within the site.</li> </ul>
<p>G Native Vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation.</p>	<p>The proposed area to be cleared is not likely to be at variance with this principle:</p> <ul style="list-style-type: none"> <li>▪ The proposed clearing area is not expected to cause further land degradation as the site occurs in close proximity to an existing major roadway and is surrounded by Tamala Park Waste Management Centre.</li> </ul>
<p>H Native vegetation should not be cleared if the clearing of the vegetation is likely to have an impact on the environmental values of any adjacent or nearby conservation area.</p>	<p>The proposed area to be cleared is not likely to be at variance with this principle:</p> <ul style="list-style-type: none"> <li>▪ It is not expected the clearing would have a significant impact on the environmental values of this adjacent conservation area as the majority of the proposed clearing area, consists of disturbed and completely disturbed land.</li> </ul>
<p>I Native vegetation should not be cleared if the clearing of the vegetation is likely to cause deterioration in the quality of surface or underground water.</p>	<p>The proposed area to be cleared is not likely to be at variance with this principle:</p> <ul style="list-style-type: none"> <li>▪ The proposed clearing is not expected to cause deterioration in the quality of surface or underground water as the site is within close proximity to a road reserve and within the Tamala Park Waste Management Centre.</li> <li>▪ There is the potential for clearing of the site to impact water quality through road run-off and machinery spills/contamination.</li> <li>▪ These impacts are considered to be unlikely and are able to be mitigated during the clearing process such as to not have a significant impact on surface or ground water quality. The development of a management plan and strategy is recommended to aid with the mitigation of any water quality impacts.</li> </ul>

Clearing Principle	Comment
Native vegetation should not be cleared if clearing the vegetation is likely to cause, or exacerbate, the incidence of flooding. J	<p>The area to be cleared is not likely to be at variance with this principle:</p> <ul style="list-style-type: none"><li>▪ The proposed clearing is not expected to cause, or exacerbate, the incidence of flooding as the site is occurring within close proximity to a road reserve and within the Tamala Park Waste Management Centre.</li><li>▪ There is the potential for water run-off to increase as a result of the loss of a few established banksias during clearing, however, this is not expected to have a significant impact which would result in an increased risk of flooding.</li></ul>

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## 7.0 References

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## **Appendix 1: PMST Report 10 km**





Australian Government

Department of Climate Change, Energy,  
the Environment and Water

# 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: 15-Nov-2023

[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](#).

<a href="#">World Heritage Properties:</a>	None
<a href="#">National Heritage Places:</a>	None
<a href="#">Wetlands of International Importance (Ramsar)</a>	None
<a href="#">Great Barrier Reef Marine Park:</a>	None
<a href="#">Commonwealth Marine Area:</a>	1
<a href="#">Listed Threatened Ecological Communities:</a>	3
<a href="#">Listed Threatened Species:</a>	56
<a href="#">Listed Migratory Species:</a>	48

## 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.

<a href="#">Commonwealth Lands:</a>	46
<a href="#">Commonwealth Heritage Places:</a>	None
<a href="#">Listed Marine Species:</a>	74
<a href="#">Whales and Other Cetaceans:</a>	12
<a href="#">Critical Habitats:</a>	None
<a href="#">Commonwealth Reserves Terrestrial:</a>	None
<a href="#">Australian Marine Parks:</a>	2
<a href="#">Habitat Critical to the Survival of Marine Turtles:</a>	None

## Extra Information

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

<a href="#">State and Territory Reserves:</a>	7
<a href="#">Regional Forest Agreements:</a>	None
<a href="#">Nationally Important Wetlands:</a>	1
<a href="#">EPBC Act Referrals:</a>	60
<a href="#">Key Ecological Features (Marine):</a>	2
<a href="#">Biologically Important Areas:</a>	10
<a href="#">Bioregional Assessments:</a>	None
<a href="#">Geological and Bioregional Assessments:</a>	None

# Details

## Matters of National Environmental Significance

### Commonwealth Marine Area

[\[ Resource Information \]](#)

Approval is required for a proposed activity that is located within the Commonwealth Marine Area which has, will have, or is likely to have a significant impact on the environment. Approval may be required for a proposed action taken outside a Commonwealth Marine Area but which has, may have or is likely to have a significant impact on the environment in the Commonwealth Marine Area.

Feature Name	Buffer Status
Commonwealth Marine Areas (EPBC Act)	In buffer area only

### 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
<a href="#">Banksia Woodlands of the Swan Coastal Plain ecological community</a>	Endangered	Community likely to occur within area	In feature area
<a href="#">Empodisma peatlands of southwestern Australia</a>	Endangered	Community may occur within area	In buffer area only
<a href="#">Tuart (Eucalyptus gomphocephala) Woodlands and Forests of the Swan Coastal Plain ecological community</a>	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
<b>BIRD</b>			
<a href="#">Anous tenuirostris melanops</a>	Vulnerable	Species or species habitat may occur within area	In buffer area only
<a href="#">Botaurus poiciloptilus</a>	Endangered	Species or species habitat may occur within area	In buffer area only
<a href="#">Calidris canutus</a>	Endangered	Species or species habitat likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
<a href="#">Calidris ferruginea</a> Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area	In feature area
<a href="#">Calyptorhynchus banksii naso</a> Forest Red-tailed Black-Cockatoo, Karrak [67034]	Vulnerable	Species or species habitat likely to occur within area	In feature area
<a href="#">Charadrius leschenaultii</a> Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat likely to occur within area	In feature area
<a href="#">Diomedea amsterdamensis</a> Amsterdam Albatross [64405]	Endangered	Species or species habitat may occur within area	In buffer area only
<a href="#">Diomedea epomophora</a> Southern Royal Albatross [89221]	Vulnerable	Species or species habitat may occur within area	In buffer area only
<a href="#">Diomedea exulans</a> Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
<a href="#">Halobaena caerulea</a> Blue Petrel [1059]	Vulnerable	Species or species habitat may occur within area	In buffer area only
<a href="#">Leipoa ocellata</a> Malleefowl [934]	Vulnerable	Species or species habitat likely to occur within area	In feature area
<a href="#">Limosa lapponica menzbieri</a> Northern Siberian Bar-tailed Godwit, Russkoye Bar-tailed Godwit [86432]	Critically Endangered	Species or species habitat likely to occur within area	In feature area
<a href="#">Macronectes giganteus</a> Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area	In buffer area only
<a href="#">Macronectes halli</a> Northern Giant Petrel [1061]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
<a href="#">Numenius madagascariensis</a> Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area	In feature area
<a href="#">Pachyptila turtur subantarctica</a> Fairy Prion (southern) [64445]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
<a href="#">Phoebastria fusca</a> Sooty Albatross [1075]	Vulnerable	Species or species habitat may occur within area	In buffer area only
<a href="#">Pterodroma mollis</a> Soft-plumaged Petrel [1036]	Vulnerable	Species or species habitat may occur within area	In buffer area only
<a href="#">Rostratula australis</a> Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area	In feature area
<a href="#">Sternula nereis nereis</a> Australian Fairy Tern [82950]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In feature area
<a href="#">Thalassarche carteri</a> Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
<a href="#">Thalassarche cauta</a> Shy Albatross [89224]	Endangered	Species or species habitat may occur within area	In buffer area only
<a href="#">Thalassarche impavida</a> Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area	In buffer area only
<a href="#">Thalassarche melanophris</a> Black-browed Albatross [66472]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
<a href="#">Thalassarche steadi</a> 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
<a href="#">Zanda latirostris listed as Calyptorhynchus latirostris</a>			
Carnaby's Black Cockatoo, Short-billed Black-cockatoo [87737]	Endangered	Breeding known to occur within area	In feature area
<b>FISH</b>			
<a href="#">Thunnus maccoyii</a>			
Southern Bluefin Tuna [69402]	Conservation Dependent	Species or species habitat likely to occur within area	In buffer area only
<b>INSECT</b>			
<a href="#">Hesperocolletes douglasi</a>			
Douglas' Broad-headed Bee, Rottnest Bee [66734]	Critically Endangered	Species or species habitat may occur within area	In feature area
<b>MAMMAL</b>			
<a href="#">Balaenoptera musculus</a>			
Blue Whale [36]	Endangered	Species or species habitat likely to occur within area	In buffer area only
<a href="#">Dasyurus geoffroii</a>			
Chuditch, Western Quoll [330]	Vulnerable	Species or species habitat likely to occur within area	In feature area
<a href="#">Eubalaena australis</a>			
Southern Right Whale [40]	Endangered	Breeding known to occur within area	In buffer area only
<a href="#">Macroderma gigas</a>			
Ghost Bat [174]	Vulnerable	Species or species habitat may occur within area	In feature area
<a href="#">Neophoca cinerea</a>			
Australian Sea-lion, Australian Sea Lion [22]	Endangered	Species or species habitat likely to occur within area	In buffer area only
<b>PLANT</b>			
<a href="#">Andersonia gracilis</a>			
Slender Andersonia [14470]	Endangered	Species or species habitat likely to occur within area	In feature area
<a href="#">Anigozanthos viridis subsp. terraspectans</a>			
Dwarf Green Kangaroo Paw [3435]	Vulnerable	Species or species habitat may occur within area	In buffer area only
<a href="#">Banksia mimica</a>			
Summer Honeypot [82765]	Endangered	Species or species habitat may occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
<a href="#">Caladenia huegelii</a> King Spider-orchid, Grand Spider-orchid, Rusty Spider-orchid [7309]	Endangered	Species or species habitat may occur within area	In buffer area only
<a href="#">Caleana dixonii listed as Paracaleana dixonii</a> Sandplain Duck Orchid [87944]	Endangered	Species or species habitat may occur within area	In buffer area only
<a href="#">Diuris micrantha</a> Dwarf Bee-orchid [55082]	Vulnerable	Species or species habitat likely to occur within area	In feature area
<a href="#">Diuris purdiei</a> Purdie's Donkey-orchid [12950]	Endangered	Species or species habitat may occur within area	In buffer area only
<a href="#">Drakaea elastica</a> Glossy-leaved Hammer Orchid, Glossy- leaved Hammer Orchid, Warty Hammer Orchid [16753]	Endangered	Species or species habitat likely to occur within area	In feature area
<a href="#">Drakaea micrantha</a> Dwarf Hammer-orchid [56755]	Vulnerable	Species or species habitat may occur within area	In buffer area only
<a href="#">Eleocharis keigheryi</a> Keighery's Eleocharis [64893]	Vulnerable	Species or species habitat may occur within area	In buffer area only
<a href="#">Eucalyptus argutifolia</a> Yanchep Mallee, Wabling Hill Mallee [24263]	Vulnerable	Species or species habitat known to occur within area	In feature area
<a href="#">Macarthuria keigheryi</a> Keighery's Macarthuria [64930]	Endangered	Species or species habitat may occur within area	In buffer area only
<a href="#">Marianthus paralius</a> [83925]	Endangered	Species or species habitat known to occur within area	In feature area
<a href="#">Melaleuca sp. Wanneroo (G.J. Keighery 16705)</a> [89456]	Endangered	Species or species habitat known to occur within area	In buffer area only

## REPTILE

Scientific Name	Threatened Category	Presence Text	Buffer Status
<a href="#">Caretta caretta</a> Loggerhead Turtle [1763]	Endangered	Foraging, feeding or related behaviour known to occur within area	In buffer area only
<a href="#">Chelonia mydas</a> Green Turtle [1765]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In buffer area only
<a href="#">Dermochelys coriacea</a> Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Foraging, feeding or related behaviour known to occur within area	In buffer area only
<a href="#">Natator depressus</a> Flatback Turtle [59257]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In buffer area only
<b>SHARK</b>			
<a href="#">Carcharias taurus (west coast population)</a> Grey Nurse Shark (west coast population) [68752]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
<a href="#">Carcharodon carcharias</a> White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat known to occur within area	In buffer area only
<a href="#">Pristis pristis</a> Freshwater Sawfish, Largetooth Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Vulnerable	Species or species habitat may occur within area	In feature area
<a href="#">Rhincodon typus</a> Whale Shark [66680]	Vulnerable	Species or species habitat may occur within area	In buffer area only
<a href="#">Sphyrna lewini</a> 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			



Scientific Name	Threatened Category	Presence Text	Buffer Status
<a href="#">Anous stolidus</a> Common Noddy [825]		Species or species habitat likely to occur within area	In buffer area only
<a href="#">Apus pacificus</a> Fork-tailed Swift [678]		Species or species habitat likely to occur within area	In feature area
<a href="#">Ardena carneipes</a> Flesh-footed Shearwater, Fleshy-footed Shearwater [82404]		Species or species habitat likely to occur within area	In feature area
<a href="#">Ardena grisea</a> Sooty Shearwater [82651]		Species or species habitat may occur within area	In buffer area only
<a href="#">Diomedea amsterdamensis</a> Amsterdam Albatross [64405]	Endangered	Species or species habitat may occur within area	In buffer area only
<a href="#">Diomedea epomophora</a> Southern Royal Albatross [89221]	Vulnerable	Species or species habitat may occur within area	In buffer area only
<a href="#">Diomedea exulans</a> Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
<a href="#">Hydroprogne caspia</a> Caspian Tern [808]		Foraging, feeding or related behaviour known to occur within area	In buffer area only
<a href="#">Macronectes giganteus</a> Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area	In buffer area only
<a href="#">Macronectes halli</a> Northern Giant Petrel [1061]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
<a href="#">Onychoprion anaethetus</a> Bridled Tern [82845]		Breeding known to occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
<a href="#">Phoebetria fusca</a> Sooty Albatross [1075]	Vulnerable	Species or species habitat may occur within area	In buffer area only
<a href="#">Sterna dougallii</a> Roseate Tern [817]		Foraging, feeding or related behaviour likely to occur within area	In feature area
<a href="#">Sternula albifrons</a> Little Tern [82849]		Species or species habitat may occur within area	In buffer area only
<a href="#">Thalassarche carteri</a> Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
<a href="#">Thalassarche cauta</a> Shy Albatross [89224]	Endangered	Species or species habitat may occur within area	In buffer area only
<a href="#">Thalassarche impavida</a> Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area	In buffer area only
<a href="#">Thalassarche melanophris</a> Black-browed Albatross [66472]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
<a href="#">Thalassarche steadi</a> White-capped Albatross [64462]	Vulnerable	Species or species habitat may occur within area	In buffer area only
<b>Migratory Marine Species</b>			
<a href="#">Balaenoptera edeni</a> Bryde's Whale [35]		Species or species habitat may occur within area	In buffer area only
<a href="#">Balaenoptera musculus</a> Blue Whale [36]	Endangered	Species or species habitat likely to occur within area	In buffer area only
<a href="#">Caperea marginata</a> Pygmy Right Whale [39]		Species or species habitat may occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
<a href="#">Carcharhinus longimanus</a> Oceanic Whitetip Shark [84108]		Species or species habitat may occur within area	In buffer area only
<a href="#">Carcharodon carcharias</a> White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat known to occur within area	In buffer area only
<a href="#">Caretta caretta</a> Loggerhead Turtle [1763]	Endangered	Foraging, feeding or related behaviour known to occur within area	In buffer area only
<a href="#">Chelonia mydas</a> Green Turtle [1765]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In buffer area only
<a href="#">Dermochelys coriacea</a> Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Foraging, feeding or related behaviour known to occur within area	In buffer area only
<a href="#">Eubalaena australis as Balaena glacialis australis</a> Southern Right Whale [40]	Endangered	Breeding known to occur within area	In buffer area only
<a href="#">Lamna nasus</a> Porbeagle, Mackerel Shark [83288]		Species or species habitat may occur within area	In buffer area only
<a href="#">Megaptera novaeangliae</a> Humpback Whale [38]		Species or species habitat known to occur within area	In buffer area only
<a href="#">Mobula alfredi as Manta alfredi</a> Reef Manta Ray, Coastal Manta Ray [90033]		Species or species habitat may occur within area	In buffer area only
<a href="#">Mobula birostris as Manta birostris</a> Giant Manta Ray [90034]		Species or species habitat may occur within area	In buffer area only
<a href="#">Natator depressus</a> Flatback Turtle [59257]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
<a href="#">Orcinus orca</a> Killer Whale, Orca [46]		Species or species habitat may occur within area	In buffer area only
<a href="#">Pristis pristis</a> Freshwater Sawfish, Largetooth Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Vulnerable	Species or species habitat may occur within area	In feature area
<a href="#">Rhincodon typus</a> Whale Shark [66680]	Vulnerable	Species or species habitat may occur within area	In buffer area only
<b>Migratory Terrestrial Species</b>			
<a href="#">Motacilla cinerea</a> Grey Wagtail [642]		Species or species habitat may occur within area	In feature area
<b>Migratory Wetlands Species</b>			
<a href="#">Actitis hypoleucos</a> Common Sandpiper [59309]		Species or species habitat known to occur within area	In feature area
<a href="#">Calidris acuminata</a> Sharp-tailed Sandpiper [874]		Species or species habitat known to occur within area	In feature area
<a href="#">Calidris canutus</a> Red Knot, Knot [855]	Endangered	Species or species habitat likely to occur within area	In feature area
<a href="#">Calidris ferruginea</a> Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area	In feature area
<a href="#">Calidris melanotos</a> Pectoral Sandpiper [858]		Species or species habitat may occur within area	In feature area
<a href="#">Calidris ruficollis</a> Red-necked Stint [860]		Species or species habitat known to occur within area	In buffer area only
<a href="#">Charadrius leschenaultii</a> Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
<a href="#">Limosa lapponica</a> Bar-tailed Godwit [844]		Species or species habitat likely to occur within area	In feature area
<a href="#">Numenius madagascariensis</a> Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area	In feature area
<a href="#">Pandion haliaetus</a> Osprey [952]		Species or species habitat known to occur within area	In buffer area only
<a href="#">Tringa nebularia</a> Common Greenshank, Greenshank [832]		Species or species habitat known to occur within area	In buffer area only

## Other Matters Protected by the EPBC Act

### Commonwealth Lands

[\[ Resource Information \]](#)

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

Commonwealth Land Name	State	Buffer Status
Unknown		
Commonwealth Land - [50574]	WA	In buffer area only
Commonwealth Land - [50575]	WA	In buffer area only
Commonwealth Land - [50587]	WA	In buffer area only
Commonwealth Land - [50586]	WA	In buffer area only
Commonwealth Land - [50585]	WA	In buffer area only
Commonwealth Land - [50584]	WA	In buffer area only
Commonwealth Land - [50582]	WA	In buffer area only
Commonwealth Land - [50583]	WA	In buffer area only
Commonwealth Land - [50588]	WA	In buffer area only
Commonwealth Land - [50489]	WA	In buffer area only
Commonwealth Land - [50553]	WA	In buffer area only
Commonwealth Land - [50711]	WA	In buffer area only

Commonwealth Land Name	State	Buffer Status
Commonwealth Land - [50668]	WA	In buffer area only
Commonwealth Land - [50559]	WA	In buffer area only
Commonwealth Land - [50667]	WA	In buffer area only
Commonwealth Land - [50576]	WA	In buffer area only
Commonwealth Land - [50626]	WA	In buffer area only
Commonwealth Land - [50439]	WA	In buffer area only
Commonwealth Land - [50606]	WA	In buffer area only
Commonwealth Land - [50598]	WA	In buffer area only
Commonwealth Land - [50430]	WA	In buffer area only
Commonwealth Land - [50625]	WA	In buffer area only
Commonwealth Land - [50413]	WA	In buffer area only
Commonwealth Land - [50436]	WA	In buffer area only
Commonwealth Land - [50593]	WA	In buffer area only
Commonwealth Land - [51118]	WA	In buffer area only
Commonwealth Land - [50410]	WA	In buffer area only
Commonwealth Land - [50682]	WA	In buffer area only
Commonwealth Land - [50594]	WA	In buffer area only
Commonwealth Land - [50355]	WA	In buffer area only
Commonwealth Land - [50562]	WA	In buffer area only
Commonwealth Land - [50563]	WA	In buffer area only
Commonwealth Land - [50315]	WA	In buffer area only
Commonwealth Land - [50316]	WA	In buffer area only
Commonwealth Land - [50494]	WA	In buffer area only
Commonwealth Land - [50592]	WA	In buffer area only
Commonwealth Land - [50440]	WA	In buffer area only
Commonwealth Land - [50271]	WA	In buffer area only
Commonwealth Land - [50448]	WA	In buffer area only

Commonwealth Land Name	State	Buffer Status
Commonwealth Land - [51120]	WA	In buffer area only
Commonwealth Land - [50502]	WA	In buffer area only
Commonwealth Land - [50508]	WA	In buffer area only
Commonwealth Land - [50630]	WA	In buffer area only
Commonwealth Land - [50560]	WA	In buffer area only
Commonwealth Land - [51111]	WA	In buffer area only
Commonwealth Land - [50561]	WA	In buffer area only

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

Scientific Name	Threatened Category	Presence Text	Buffer Status
<b>Bird</b>			
<a href="#">Actitis hypoleucos</a>			
Common Sandpiper [59309]		Species or species habitat known to occur within area	In feature area
<a href="#">Anous stolidus</a>			
Common Noddy [825]		Species or species habitat likely to occur within area	In buffer area only
<a href="#">Anous tenuirostris melanops</a>			
Australian Lesser Noddy [26000]	Vulnerable	Species or species habitat may occur within area	In buffer area only
<a href="#">Apus pacificus</a>			
Fork-tailed Swift [678]		Species or species habitat likely to occur within area overfly marine area	In feature area
<a href="#">Ardena carneipes as Puffinus carneipes</a>			
Flesh-footed Shearwater, Fleshy-footed Shearwater [82404]		Species or species habitat likely to occur within area	In feature area
<a href="#">Ardena grisea as Puffinus griseus</a>			
Sooty Shearwater [82651]		Species or species habitat may occur within area	In buffer area only
<a href="#">Bubulcus ibis as Ardea ibis</a>			
Cattle Egret [66521]		Species or species habitat may occur within area overfly marine area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
<a href="#">Calidris acuminata</a> Sharp-tailed Sandpiper [874]		Species or species habitat known to occur within area	In feature area
<a href="#">Calidris canutus</a> Red Knot, Knot [855]	Endangered	Species or species habitat likely to occur within area overfly marine area	In feature area
<a href="#">Calidris ferruginea</a> Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area overfly marine area	In feature area
<a href="#">Calidris melanotos</a> Pectoral Sandpiper [858]		Species or species habitat may occur within area overfly marine area	In feature area
<a href="#">Calidris ruficollis</a> Red-necked Stint [860]		Species or species habitat known to occur within area overfly marine area	In buffer area only
<a href="#">Charadrius leschenaultii</a> Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat likely to occur within area	In feature area
<a href="#">Diomedea amsterdamensis</a> Amsterdam Albatross [64405]	Endangered	Species or species habitat may occur within area	In buffer area only
<a href="#">Diomedea epomophora</a> Southern Royal Albatross [89221]	Vulnerable	Species or species habitat may occur within area	In buffer area only
<a href="#">Diomedea exulans</a> Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
<a href="#">Haliaeetus leucogaster</a> 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
<a href="#">Halobaena caerulea</a> Blue Petrel [1059]	Vulnerable	Species or species habitat may occur within area	In buffer area only
<a href="#">Himantopus himantopus</a> Pied Stilt, Black-winged Stilt [870]		Species or species habitat known to occur within area overfly marine area	In buffer area only
<a href="#">Hydroprogne caspia as Sterna caspia</a> Caspian Tern [808]		Foraging, feeding or related behaviour known to occur within area	In buffer area only
<a href="#">Larus pacificus</a> Pacific Gull [811]		Foraging, feeding or related behaviour may occur within area	In buffer area only
<a href="#">Limosa lapponica</a> Bar-tailed Godwit [844]		Species or species habitat likely to occur within area	In feature area
<a href="#">Macronectes giganteus</a> Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area	In buffer area only
<a href="#">Macronectes halli</a> Northern Giant Petrel [1061]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
<a href="#">Merops ornatus</a> Rainbow Bee-eater [670]		Species or species habitat may occur within area overfly marine area	In feature area
<a href="#">Motacilla cinerea</a> Grey Wagtail [642]		Species or species habitat may occur within area overfly marine area	In feature area
<a href="#">Numenius madagascariensis</a> Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
<a href="#">Onychoprion anaethetus</a> as <a href="#">Sterna anaethetus</a> Bridled Tern [82845]		Breeding known to occur within area	In buffer area only
<a href="#">Pachyptila turtur</a> Fairy Prion [1066]		Species or species habitat likely to occur within area	In buffer area only
<a href="#">Pandion haliaetus</a> Osprey [952]		Species or species habitat known to occur within area	In buffer area only
<a href="#">Phoebastria fusca</a> Sooty Albatross [1075]	Vulnerable	Species or species habitat may occur within area	In buffer area only
<a href="#">Pterodroma mollis</a> Soft-plumaged Petrel [1036]	Vulnerable	Species or species habitat may occur within area	In buffer area only
<a href="#">Puffinus assimilis</a> Little Shearwater [59363]		Foraging, feeding or related behaviour known to occur within area	In buffer area only
<a href="#">Recurvirostra novaehollandiae</a> Red-necked Avocet [871]		Species or species habitat known to occur within area overfly marine area	In buffer area only
<a href="#">Rostratula australis</a> as <a href="#">Rostratula benghalensis (sensu lato)</a> Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area overfly marine area	In feature area
<a href="#">Stercorarius antarcticus</a> as <a href="#">Catharacta skua</a> Brown Skua [85039]		Species or species habitat may occur within area	In buffer area only
<a href="#">Sterna dougallii</a> Roseate Tern [817]		Foraging, feeding or related behaviour likely to occur within area	In feature area
<a href="#">Sternula albifrons</a> as <a href="#">Sterna albifrons</a> Little Tern [82849]		Species or species habitat may occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
<a href="#">Thalassarche carteri</a> Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
<a href="#">Thalassarche cauta</a> Shy Albatross [89224]	Endangered	Species or species habitat may occur within area	In buffer area only
<a href="#">Thalassarche impavida</a> Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area	In buffer area only
<a href="#">Thalassarche melanophris</a> Black-browed Albatross [66472]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
<a href="#">Thalassarche steadi</a> White-capped Albatross [64462]	Vulnerable	Species or species habitat may occur within area	In buffer area only
<a href="#">Thinornis cucullatus as Thinornis rubricollis</a> Hooded Plover, Hooded Dotterel [87735]		Species or species habitat may occur within area overfly marine area	In buffer area only
<a href="#">Tringa nebularia</a> Common Greenshank, Greenshank [832]		Species or species habitat known to occur within area overfly marine area	In buffer area only
<b>Fish</b>			
<a href="#">Acentronura australe</a> Southern Pygmy Pipehorse [66185]		Species or species habitat may occur within area	In buffer area only
<a href="#">Campichthys galei</a> Gale's Pipefish [66191]		Species or species habitat may occur within area	In buffer area only
<a href="#">Choeroichthys suillus</a> Pig-snouted Pipefish [66198]		Species or species habitat may occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
<a href="#">Halicampus brocki</a> Brock's Pipefish [66219]		Species or species habitat may occur within area	In buffer area only
<a href="#">Hippocampus angustus</a> Western Spiny Seahorse, Narrow-bellied Seahorse [66234]		Species or species habitat may occur within area	In buffer area only
<a href="#">Hippocampus breviceps</a> Short-head Seahorse, Short-snouted Seahorse [66235]		Species or species habitat may occur within area	In buffer area only
<a href="#">Hippocampus subelongatus</a> West Australian Seahorse [66722]		Species or species habitat may occur within area	In buffer area only
<a href="#">Lissocampus fatiloquus</a> Prophet's Pipefish [66250]		Species or species habitat may occur within area	In buffer area only
<a href="#">Maroubra perserrata</a> Sawtooth Pipefish [66252]		Species or species habitat may occur within area	In buffer area only
<a href="#">Mitotichthys meraculus</a> Western Crested Pipefish [66259]		Species or species habitat may occur within area	In buffer area only
<a href="#">Nannocampus subosseus</a> Bonyhead Pipefish, Bony-headed Pipefish [66264]		Species or species habitat may occur within area	In buffer area only
<a href="#">Phycodurus eques</a> Leafy Seadragon [66267]		Species or species habitat may occur within area	In buffer area only
<a href="#">Phyllopteryx taeniolatus</a> Common Seadragon, Weedy Seadragon [66268]		Species or species habitat may occur within area	In buffer area only
<a href="#">Pugnaso curtirostris</a> Pugnose Pipefish, Pug-nosed Pipefish [66269]		Species or species habitat may occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
<a href="#">Solegnathus lettiensis</a> Gunther's Pipehorse, Indonesian Pipefish [66273]		Species or species habitat may occur within area	In buffer area only
<a href="#">Stigmatopora argus</a> Spotted Pipefish, Gulf Pipefish, Peacock Pipefish [66276]		Species or species habitat may occur within area	In buffer area only
<a href="#">Stigmatopora nigra</a> Widebody Pipefish, Wide-bodied Pipefish, Black Pipefish [66277]		Species or species habitat may occur within area	In buffer area only
<a href="#">Syngnathoides biaculeatus</a> Double-end Pipehorse, Double-ended Pipehorse, Alligator Pipefish [66279]		Species or species habitat may occur within area	In buffer area only
<a href="#">Urocampus carinirostris</a> Hairy Pipefish [66282]		Species or species habitat may occur within area	In buffer area only
<a href="#">Vanacampus margaritifer</a> Mother-of-pearl Pipefish [66283]		Species or species habitat may occur within area	In buffer area only
<b>Mammal</b>			
<a href="#">Arctocephalus forsteri</a> Long-nosed Fur-seal, New Zealand Fur-seal [20]		Species or species habitat may occur within area	In buffer area only
<a href="#">Neophoca cinerea</a> Australian Sea-lion, Australian Sea Lion [22]	Endangered	Species or species habitat likely to occur within area	In buffer area only
<b>Reptile</b>			
<a href="#">Aipysurus pooleorum</a> Shark Bay Seasnake [66061]		Species or species habitat may occur within area	In buffer area only
<a href="#">Caretta caretta</a> Loggerhead Turtle [1763]	Endangered	Foraging, feeding or related behaviour known to occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
<a href="#">Chelonia mydas</a> Green Turtle [1765]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In buffer area only
<a href="#">Dermochelys coriacea</a> Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Foraging, feeding or related behaviour known to occur within area	In buffer area only
<a href="#">Disteira kingii</a> Spectacled Seasnake [1123]		Species or species habitat may occur within area	In buffer area only
<a href="#">Natator depressus</a> Flatback Turtle [59257]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In buffer area only
<a href="#">Pelamis platurus</a> Yellow-bellied Seasnake [1091]		Species or species habitat may occur within area	In buffer area only

## Whales and Other Cetaceans [ [Resource Information](#) ]

Current Scientific Name	Status	Type of Presence	Buffer Status
<b>Mammal</b>			
<a href="#">Balaenoptera acutorostrata</a> Minke Whale [33]		Species or species habitat may occur within area	In buffer area only
<a href="#">Balaenoptera edeni</a> Bryde's Whale [35]		Species or species habitat may occur within area	In buffer area only
<a href="#">Balaenoptera musculus</a> Blue Whale [36]	Endangered	Species or species habitat likely to occur within area	In buffer area only
<a href="#">Caperea marginata</a> Pygmy Right Whale [39]		Species or species habitat may occur within area	In buffer area only
<a href="#">Delphinus delphis</a> Common Dolphin, Short-beaked Common Dolphin [60]		Species or species habitat may occur within area	In buffer area only

Current Scientific Name	Status	Type of Presence	Buffer Status
<a href="#">Eubalaena australis</a> Southern Right Whale [40]	Endangered	Breeding known to occur within area	In buffer area only
<a href="#">Grampus griseus</a> Risso's Dolphin, Grampus [64]		Species or species habitat may occur within area	In buffer area only
<a href="#">Megaptera novaeangliae</a> Humpback Whale [38]		Species or species habitat known to occur within area	In buffer area only
<a href="#">Orcinus orca</a> Killer Whale, Orca [46]		Species or species habitat may occur within area	In buffer area only
<a href="#">Stenella attenuata</a> Spotted Dolphin, Pantropical Spotted Dolphin [51]		Species or species habitat may occur within area	In buffer area only
<a href="#">Tursiops aduncus</a> Indian Ocean Bottlenose Dolphin, Spotted Bottlenose Dolphin [68418]		Species or species habitat likely to occur within area	In buffer area only
<a href="#">Tursiops truncatus s. str.</a> Bottlenose Dolphin [68417]		Species or species habitat may occur within area	In buffer area only

Australian Marine Parks		[ Resource Information ]	
Park Name		Zone & IUCN Categories	Buffer Status
Two Rocks		Multiple Use Zone (IUCN VI)	In buffer area only
Two Rocks		National Park Zone (IUCN II)	In buffer area only

## Extra Information

State and Territory Reserves			[ Resource Information ]
Protected Area Name	Reserve Type	State	Buffer Status
Lake Joondalup	Nature Reserve	WA	In buffer area only
Marmion	Marine Park	WA	In buffer area only
Neerabup	National Park	WA	In buffer area only
Neerabup	Nature Reserve	WA	In buffer area only
Unnamed WA21176	5(1)(h) Reserve	WA	In buffer area only

Protected Area Name	Reserve Type	State	Buffer Status
Unnamed WA43290	Conservation Park	WA	In buffer area only
Woodvale	5(1)(h) Reserve	WA	In buffer area only

### Nationally Important Wetlands [\[ Resource Information \]](#)

Wetland Name	State	Buffer Status
<a href="#">Joondalup Lake</a>	WA	In buffer area only

### EPBC Act Referrals [\[ Resource Information \]](#)

Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
<a href="#">Alkimos Seawater Desalination</a>	2019/8453		Assessment	In buffer area only
<a href="#">Carabooda Quarry</a>	2023/09554		Referral Decision	In buffer area only
<a href="#">Expansion of Limestone Extraction</a>	2022/09324		Assessment	In buffer area only
<a href="#">Land clearing for timber storage</a>	2022/09367		Assessment	In buffer area only
<a href="#">Land Development, James Street and Well Street, East Wanneroo, Elberton Property</a>	2021/9106		Assessment	In buffer area only
<a href="#">Wattle Avenue East Quarry</a>	2022/09326		Referral Decision	In buffer area only

### Controlled action

<a href="#">Alkimos city centre and central development, WA</a>	2015/7561	Controlled Action	Post-Approval	In buffer area only
<a href="#">Alkimos Coastal Node</a>	2020/8861	Controlled Action	Further Information Request	In buffer area only
<a href="#">Butler North District Open Space playing fields development, Wanneroo, WA</a>	2017/8053	Controlled Action	Post-Approval	In buffer area only
<a href="#">Catalina Residential Development</a>	2010/5785	Controlled Action	Post-Approval	In feature area
<a href="#">Excavate sand and limestone resources</a>	2010/5621	Controlled Action	Completed	In buffer area only
<a href="#">Jindee Residential Development</a>	2012/6631	Controlled Action	Post-Approval	In buffer area only
<a href="#">Limestone extraction on Lot 8 Wattle Avenue, Nowergup</a>	2013/6767	Controlled Action	Post-Approval	In buffer area only



Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
<b>Controlled action</b>				
<a href="#">Lot 1665 Wanneroo Road, Sinagra.</a>	2017/7921	Controlled Action	Post-Approval	In buffer area only
<a href="#">Lot 9000 Wanneroo Road Sinagra Mixed Use Development, Western Australia</a>	2020/8798	Controlled Action	Proposed Decision	In buffer area only
<a href="#">Meridian Business Park Industrial Development</a>	2007/3479	Controlled Action	Post-Approval	In buffer area only
<a href="#">Mitchell Freeway Extension and Wanneroo Road Upgrade, WA</a>	2018/8367	Controlled Action	Post-Approval	In buffer area only
<a href="#">Mitchell Freeway Extension between Burns Beach Rd and Hester Av, Neerabup, WA</a>	2013/7091	Controlled Action	Post-Approval	In buffer area only
<a href="#">Mitchell Freeway Principal Shared Path Gaps Project Ocean Reef Road to Hepburn Avenue</a>	2020/8833	Controlled Action	Post-Approval	In buffer area only
<a href="#">National Lifestyle Villages Development</a>	2011/6020	Controlled Action	Post-Approval	In buffer area only
<a href="#">Nava-1 Cable System</a>	2001/510	Controlled Action	Completed	In buffer area only
<a href="#">Neerabup Industrial Area, WA</a>	2021/8917	Controlled Action	Assessment Approach	In buffer area only
<a href="#">Neerabup Industrial Estate, Lot 701 Flynn Drive Neerabup WA</a>	2012/6424	Controlled Action	Post-Approval	In buffer area only
<a href="#">Ocean Reef Marina Development</a>	2009/4937	Controlled Action	Completed	In buffer area only
<a href="#">Proposed Urban Development of Lots 1005 &amp; 1006</a>	2008/4638	Controlled Action	Post-Approval	In buffer area only
<a href="#">Residential development Lot 1004 Alkimos WA</a>	2011/5902	Controlled Action	Post-Approval	In buffer area only
<a href="#">Shark Hazard Mitigation Drum Line Program, WA</a>	2014/7174	Controlled Action	Completed	In buffer area only
<a href="#">Subdivision of Lot 902 Flynn Drive Neerabup for Industrial Development</a>	2021/8977	Controlled Action	Assessment Approach	In buffer area only
<a href="#">Urban and Residential Development at Lot 9 Brighton</a>	2011/6137	Controlled Action	Post-Approval	In buffer area only
<a href="#">Urban development in accordance with the Local Structure Plan</a>	2008/4601	Controlled Action	Post-Approval	In buffer area only
<a href="#">Urban Residential Development at Lot 9049 Marmoin Avenue</a>	2009/5155	Controlled Action	Post-Approval	In buffer area only

Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
<b>Controlled action</b>				
<a href="#">Vegetation Clearing, Wannaroo Rd and Nowergup Rd</a>	2011/5955	Controlled Action	Completed	In buffer area only
<b>Not controlled action</b>				
<a href="#">Alkimos seawater desalination plant, offshore investigations, WA</a>	2018/8224	Not Controlled Action	Completed	In buffer area only
<a href="#">APX-West Fibre-optic telecommunications cable system, WA to Singapore</a>	2013/7102	Not Controlled Action	Completed	In buffer area only
<a href="#">Butler Railway Extension Project - Nowergup Depot Eastern Alignment</a>	2011/5989	Not Controlled Action	Completed	In buffer area only
<a href="#">Commercial development of Lot 9004 Hodges Drive, Joondalup, WA</a>	2016/7844	Not Controlled Action	Completed	In buffer area only
<a href="#">Connect Joondalup - Lot 9000 McLarty Ave and Lot 999 Piccadilly Circus, Joondalup, WA</a>	2016/7758	Not Controlled Action	Completed	In buffer area only
<a href="#">Container Deposit Scheme Project</a>	2019/8517	Not Controlled Action	Completed	In feature area
<a href="#">Development of ECU Engineering Annex, Joondalup Campus, WA</a>	2017/7995	Not Controlled Action	Completed	In buffer area only
<a href="#">Development of new Alkimos Wastewater Treatment Plant</a>	2007/3259	Not Controlled Action	Completed	In buffer area only
<a href="#">Eradication of the European House Borer, Perth metropolitan area, WA</a>	2009/5027	Not Controlled Action	Completed	In buffer area only
<a href="#">Extension of 7.5km of the Joondalup Line electrified passenger railway from Cla</a>	2010/5632	Not Controlled Action	Completed	In buffer area only
<a href="#">Flynn Drive / Pinjar Road Intersection Works, Lot 9000 Flynn Drive, Neerabup, WA</a>	2017/7983	Not Controlled Action	Completed	In buffer area only
<a href="#">Groundwater Replenishment Scheme (GWRS) Stage 2</a>	2016/7786	Not Controlled Action	Completed	In buffer area only
<a href="#">Improving rabbit biocontrol: releasing another strain of RHDV, sthrn two thirds of Australia</a>	2015/7522	Not Controlled Action	Completed	In feature area
<a href="#">INDIGO West Submarine Telecommunications Cable, WA</a>	2017/8126	Not Controlled Action	Completed	In buffer area only
<a href="#">Nowergup Strawberry Farm McLennan Drive, Nowergup, WA</a>	2017/8042	Not Controlled Action	Completed	In buffer area only
<a href="#">Ocean Reef Marina Development, City of Joondalup, WA</a>	2014/7237	Not Controlled Action	Completed	In buffer area only

Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
<b>Not controlled action</b>				
<a href="#">Pinjar Motorcycle Park Raceway Development</a>	2012/6419	Not Controlled Action	Completed	In buffer area only
<a href="#">Quinns Main sewer extension, Clarkson - Neerabup, WA</a>	2018/8215	Not Controlled Action	Completed	In buffer area only
<a href="#">Realignment of Flynn Drive</a>	2011/6170	Not Controlled Action	Completed	In buffer area only
<a href="#">Residential Development, Lot 4 Coogee Road, Mariginiup, WA</a>	2019/8452	Not Controlled Action	Completed	In buffer area only
<a href="#">Residential Development, Lots 10 Dundeebar Road and 28 and 29 Belgrade Road, East Wanneroo, WA</a>	2019/8521	Not Controlled Action	Completed	In buffer area only
<a href="#">Residential development of 118 Coogee Road, Mariginiup, WA</a>	2017/8011	Not Controlled Action	Completed	In buffer area only
<a href="#">Residential Subdivision - Lots 12, 36 &amp; 38 Capron St, Wanneroo</a>	2012/6409	Not Controlled Action	Completed	In buffer area only
<a href="#">Seismic Survey, Bremer Basin, Mentelle Basin and Zeewyck Sub-basin</a>	2004/1700	Not Controlled Action	Completed	In buffer area only
<a href="#">Wanneroo Road Duplication, WA</a>	2015/7632	Not Controlled Action	Completed	In buffer area only
<b>Not controlled action (particular manner)</b>				
<a href="#">Laying a submarine optical fibre telecommunications cable, Perth to Singapore and Jakarta</a>	2014/7332	Not Controlled Action (Particular Manner)	Post-Approval	In buffer area only
<a href="#">Road realignment and widening</a>	2009/4926	Not Controlled Action (Particular Manner)	Post-Approval	In buffer area only
<a href="#">Subdivision Lot 4 Flynn Drive and earthworks for industrial development, 240 Fl</a>	2009/5028	Not Controlled Action (Particular Manner)	Post-Approval	In buffer area only

## Key Ecological Features

[ [Resource Information](#) ]

Key Ecological Features are the parts of the marine ecosystem that are considered to be important for the biodiversity or ecosystem functioning and integrity of the Commonwealth Marine Area.

Name	Region	Buffer Status
<a href="#">Commonwealth marine environment within and adjacent to the west coast inshore lagoons</a>	South-west	In buffer area only

Name	Region	Buffer Status
<a href="#">Western rock lobster</a>	South-west	In buffer area only

## Biologically Important Areas

Scientific Name	Behaviour	Presence	Buffer Status
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### Seabirds

<a href="#">Ardena pacifica</a> Wedge-tailed Shearwater [84292]	Foraging (in high numbers)	Known to occur	In buffer area only
<a href="#">Hydroprogne caspia</a> Caspian Tern [808]	Foraging (provisioning young)	Known to occur	In buffer area only
<a href="#">Larus pacificus</a> Pacific Gull [811]	Foraging (in high numbers)	Former Range	In buffer area only
<a href="#">Onychoprion anaethetus</a> Bridled Tern [82845]	Foraging (in high numbers)	Known to occur	In buffer area only
<a href="#">Puffinus assimilis tunneyi</a> Little Shearwater [59363]	Foraging (in high numbers)	Known to occur	In buffer area only
<a href="#">Sterna dougallii</a> Roseate Tern [817]	Foraging	Known to occur	In feature area
<a href="#">Sternula nereis</a> Fairy Tern [82949]	Foraging (in high numbers)	Known to occur	In buffer area only

### Seals

<a href="#">Neophoca cinerea</a> Australian Sea Lion [22]	Foraging (male)	Likely to occur	In buffer area only
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### Whales

<a href="#">Balaenoptera musculus brevicauda</a> Pygmy Blue Whale [81317]	Distribution	Known to occur	In buffer area only
<a href="#">Megaptera novaeangliae</a> Humpback Whale [38]	Migration (north and south)	Known to occur	In buffer area only

# Caveat

## 1 PURPOSE

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

The report contains the mapped locations of:

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

## 2 DISCLAIMER

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

Where data 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 2: Conservation Codes

### Western Australia

Conservation Code	Name	Description
T	Threatened	Flora or fauna that is rare or likely to become extinct, ranked according to their level of threat using IUCN Red List criteria (Schedules 1-3 of the Wildlife Conservation (Specially Protected Fauna) Notice or the Wildlife Conservation (Rare Flora) Notice)
CR	Critically endangered	Species considered to be facing an extremely high risk of extinction within the wild in the immediate future
EN	Endangered	Species considered to be facing a very high risk of extinction in the wild in the near future
VU	Vulnerable	Species considered to be facing a high risk of extinction in the wild in the medium-term future
EX	Extinct Species	Species where 'there is no reasonable doubt that the last member of the species has died (Schedule 4 of the Wildlife Conservation (Specially Protected Fauna) Notice or the Wildlife Conservation (Rare Flora) Notice)
EW	Extinct in the Wild	Species that are known to only survive in cultivation, in captivity, or as a naturalised population well outside its past range; and it has not been recorded in its known or expected habitat at appropriate seasons anywhere in its past range, despite surveys over a timeframe appropriate to its life cycle and form
MI	Migratory Species	Fauna that periodically or occasionally visit Australia or an external Territory or the exclusive economic zone; or the species is subject of an international agreement that relates to the protection of migratory species and that binds the Commonwealth (Schedule 5 of the Wildlife Conservation (Specially Protected Fauna) Notice)
CD	Conservation Dependent	Species of special conservation interest (conservation dependent fauna), being species dependent on ongoing conservation intervention to prevent it becoming eligible for listing as threatened (Schedule 6 of the Wildlife Conservation (Specially Protected Fauna) Notice)
OS	Specially Protected	Fauna otherwise in need of special protection to ensure their conservation (Schedule 7 of the Wildlife Conservation (Specially Protected Fauna) Notice)
P	Priority Species	Possibly threatened species that do not meet survey criteria, or are otherwise data deficient, are added to the Priority Fauna or Priority Flora Lists under Priorities 1, 2 or 3. These three categories are ranked in order of priority for survey and evaluation of conservation status so that consideration can be given to their declaration as threatened fauna or



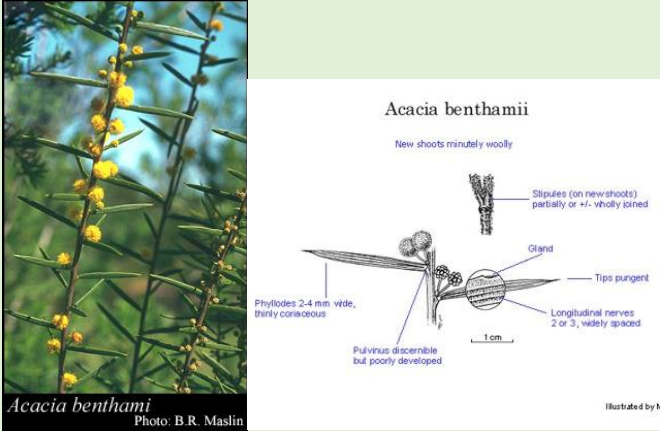

Conservation Code	Name	Description
		flora. Species that are adequately known, are rare but not threatened, or meet criteria for near threatened, or that have been recently removed from the threatened species or other specially protected fauna lists for other than taxonomic reasons, are placed in Priority 4. These species require regular monitoring.
P1	Priority One	Poorly known species – Species that are known from one or a few locations (generally five or less) which are potentially at risk. All occurrences are either very small or on lands not managed for conservation, such as road verges, urban areas, farmland, active mineral lease and under threat of habitat destruction or degradation.
2	Priority Two	Poorly known species – Species that are known from one or a few locations (generally five or less), some of which are on lands managed primarily for nature conservation, such as national parks, conservation parks, nature reserves, State forest, vacant Crown land, water reserves and similar.
3	Priority Three	Poorly known species – Species that are known from several locations, and the species does not appear to be under imminent threat, or from few but widespread locations with either large population size or significant remaining areas of apparently suitable habitat, much of it not under imminent threat
4	Priority Four	Rare or near threatened and other species in need of monitoring.


(Source: DBCA, 2023e)

#### Commonwealth

Category	Description
<b>Critically Endangered</b>	Species facing an extremely high risk of extinction in the wild in the immediate future
<b>Endangered</b>	Species facing a very high risk of extinction in the wild in the near future
<b>Vulnerable</b>	Species facing a high risk of extinction in the wild in the medium term

### Appendix 3: Significant Species


Picture	Common Name	Description	Flowering Period	Habitat Type	Cons Code	Likelihood (Y/N)	Comment
 <p><i>Acacia benthamii</i> Photo: B.R. Maslin</p>		<p>Shrub, 1 m high. Fl. Yellow.</p>	<p>Aug to Sep.</p>	<p>Typically on limestone breakaways.</p>	<p>P2</p>	<p>Y</p>	<p>Habitat and soil suitable</p>
 <p><i>Andersonia gracilis</i> Photos: K. Atkins &amp; M. Hislop</p>		<p>Slender erect or open straggly shrub, 0.1-0.5(-1) m high. Fl. white-pink-purple.</p>	<p>Sep to Nov.</p>	<p>White/grey sand, sandy clay, gravelly loam. Winter-wet areas, near swamps.</p>	<p>T</p>	<p>N</p>	<p>Habitat not suitable</p>


Picture	Common Name	Description	Flowering Period	Habitat Type	Cons Code	Likelihood (Y/N)	Comment
 <p><i>Anigozanthos viridis</i> subsp. <i>terraspectans</i> Photo: B. &amp; B. Wells</p>	Dwarf Green Kangaroo Paw	Rhizomatous, perennial, herb, 0.05-0.2 m high. Fl. green/yellow-green	Aug to Sep.	Grey sand, clay loam. Winter-wet depressions.	T	N	Habitat not suitable

***Austrostipa mundula***

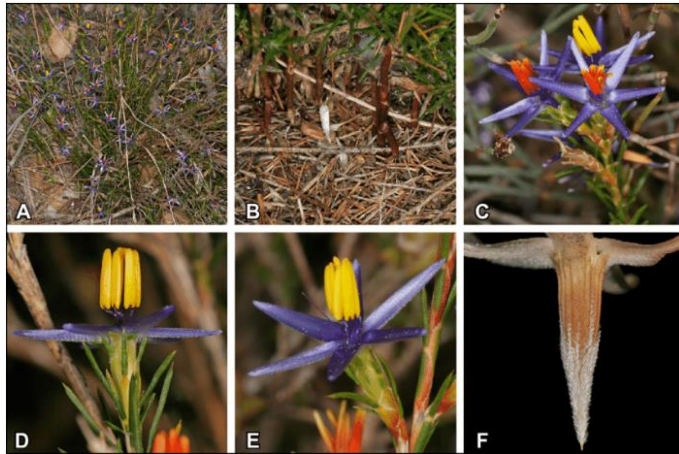


No information.	No information.	No information.	P3	N	Habitat not suitable
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Picture	Common Name	Description	Flowering Period	Habitat Type	Cons Code	Likelihood (Y/N)	Comment
	<i>Baeckea sp. Limestone</i>	No information.	No information.	No information.	P1	N	Habitat not suitable
 <p><i>Banksia mimica</i>          Photos: A.P. Brown &amp; S. Patrick</p>	Summer Honeypot	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.	T	N	Habitat not suitable


Picture	Common Name	Description	Flowering Period	Habitat Type	Cons Code	Likelihood (Y/N)	Comment
 <p><i>Caladenia huegelii</i>  <small>Photos: I. &amp; M. Greeve &amp; J.L. Robson</small></p>	Grand Spider Orchid	Tuberous, perennial, herb, 0.25-0.6 m high. Fl. green & cream & red.	Sep to Oct.	Grey or brown sand, clay loam.	T	N	Habitat not suitable


***Calectasia elegans***



Elegant Tinsel Lily	No information.	No information.	No information.	P2	N	Habitat not suitable
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Picture	Common Name	Description	Flowering Period	Habitat Type	Cons Code	Likelihood (Y/N)	Comment
	<i>Conostylis bracteata</i>	Rhizomatous, tufted or shortly proliferous perennial, grass-like or herb, 0.2-0.45 m high. Fl. Yellow.	Aug to Sep.	Sand, limestone. Consolidated sand dunes.	P3	Y	Habitat and soil suitable
	<i>Cyathochaeta teretifolia</i>	Rhizomatous, clumped, robust perennial, grass-like or herb (sedge), to 2 m high, to 1.0 m wide. Fl. Brown.	No information.	Grey sand, sandy clay. Swamps, creek edges.	P3	N	Habitat not suitable
 <p><i>Diuris micrantha</i>          Photos: A.P. Brown, I. &amp; M. Greeve &amp; B. Jackson</p>		Tuberous, perennial, herb, 0.3-0.6 m high. Fl. yellow & brown.	Sep to Oct.	Brown loamy clay. Winter-wet swamps, in shallow water.	T	N	Habitat not suitable

Picture	Common Name	Description	Flowering Period	Habitat Type	Cons Code	Likelihood (Y/N)	Comment
 <p><i>Diuris purdiei</i>        Photos: I. &amp; M. Greeve &amp; S.D. Hopper</p>	<p>Purdie's Donkey Orchid</p>	<p>Tuberous, perennial, herb, 0.15-0.35 m high.</p>	<p>Fl. yellow, Sep to Oct.</p>	<p>Grey-black sand, moist. Winter-wet swamps.</p>	<p>T</p>	<p>N</p>	<p>Habitat not suitable</p>
 <p><i>Drakaea elastica</i>        Photos: A. Brown &amp; S.D. Hopper</p>	<p>Glossy-leaved Hammer Orchid</p>	<p>Tuberous, perennial, herb, 0.12-0.3 m high. Fl. red &amp; green &amp; yellow.</p>	<p>Oct to Nov.</p>	<p>White or grey sand. Low-lying situations adjoining winter-wet swamps.</p>	<p>T</p>	<p>N</p>	<p>Habitat not suitable</p>


Picture	Common Name	Description	Flowering Period	Habitat Type	Cons Code	Likelihood (Y/N)	Comment
 <p><i>Drakaea micrantha</i> Photos: S.D. Hopper, A.P.Brown &amp; I. &amp; M. Greeve</p>		Tuberous, perennial, herb, 0.15-0.3 m high. Fl. red & yellow.	Sep to Oct.	White-grey sand.	T	N	Habitat not suitable



***Drosera x sidjamesii***





Fibrous-rooted perennial, herb, to 0.06 m high. Fl. green-pink.	Nov to Dec or Jan to Mar.	Peaty sand. Along lake margins, close to winter high-water line.	P1	N	Habitat not suitable
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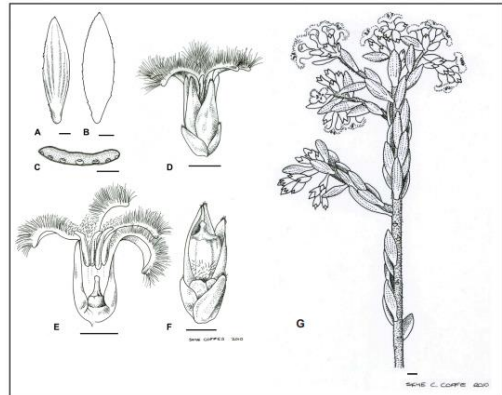



Picture	Common Name	Description	Flowering Period	Habitat Type	Cons Code	Likelihood (Y/N)	Comment
 <p><i>Eleocharis keigheryi</i>        Photo: G.J. Keighery</p>		<p>Rhizomatous, clumped perennial, grass-like or herb (sedge), to 0.4 m high. Fl. Green.</p>	<p>Aug to Nov.</p>	<p>Clay, sandy loam. Emergent in freshwater: creeks, claypans.</p>	<p>T</p>	<p>N</p>	<p>Habitat not suitable</p>

Picture	Common Name	Description	Flowering Period	Habitat Type	Cons Code	Likelihood (Y/N)	Comment
 <p><i>Eucalyptus argutifolia</i>  <small>Photos: A.D. Crawford, S.D. Hopper &amp; J.L. Robson</small></p>	<p>Wabbling          Hill Mallee</p>	<p>(Mallee), 1.5-4 m high,          bark smooth. Fl. White.</p>	<p>Mar to Apr.</p>	<p>Shallow soils          over limestone.          Slopes or gullies          of limestone          ridges, outcrops.</p>	<p>T</p>	<p>Y</p>	<p>Habitat and          soil suitable</p>
<p><b><i>Eucalyptus foecunda</i> subsp. <i>foecunda</i></b></p>  <p><i>Eucalyptus foecunda</i>  <small>Photos: K.C. Richardson</small></p>		<p>Sand dunes and plains,          limestone ridges, cliffs &amp;          hills, road verges.</p>			<p>P4</p>	<p>Y</p>	<p>Habitat and          soil suitable</p>

Picture	Common Name	Description	Flowering Period	Habitat Type	Cons Code	Likelihood (Y/N)	Comment
	<i>Fabronia hampeana</i>	No Information			P2	N	Habitat not suitable
	<i>Grevillea sp. Ocean Reef (D. Pike Joon 4)</i>	No Information			P1	N	Habitat not suitable
	<i>Hibbertia leptotheca</i>	No information.	No information.	No information.	P3	N	Habitat not suitable
 <p><i>Jacksonia gracillima</i> Photos: R. Davis</p>		No information.	No information.	No information.	P3	N	Habitat not suitable

Picture	Common Name	Description	Flowering Period	Habitat Type	Cons Code	Likelihood (Y/N)	Comment
 <p><i>Jacksonia sericea</i>  <small>Photo: I.R. Dixon</small></p>	Waldjumi	Low spreading shrub, to 0.6 m high. Fl. Orange.	usually Dec or Jan to Feb.	Calcareous & sandy soils.	P4	N	Habitat not suitable
<i>Lecania turicensis var. turicensis</i>		No Information	P2	N	Habitat not suitable		

Picture	Common Name	Description	Flowering Period	Habitat Type	Cons Code	Likelihood (Y/N)	Comment
<p style="text-align: center;"><b><i>Leucopogon maritimus</i></b></p>  <p><small>Figure 1. <i>Leucopogon maritimus</i>. A – leaf, abaxial surface; B – leaf, adaxial surface; C – leaf, section; D – flower; E – flower, longitudinal section; F – fruit; G – flowering branchlet. Scale bars: all – 1 mm. Drawn by Skye Coffey from M. Hislop 3769 (A–F), M. Hislop 3792 (G).</small></p>		<p>Low, spreading shrubs to c. 40 cm high and 60 cm wide, often multi-stemmed close to the base but single-stemmed at ground level with a fire-sensitive rootstock.</p>	<p>November and August</p>	<p>Restricted to near-coastal Quindalup dunes, from a small area of coastline about 40–70 km north of Perth</p>	<p>P1</p>	<p>Y</p>	<p>Habitat and soil suitable</p>
 <p><i>Leucopogon</i> sp. Yanchep (M. Hislop 1986) <span style="float: right;">Photos: M. Hislop</span></p>		<p>Erect shrub, 0.15-1 m high, to 0.6 m wide. Fl. white/pink.</p>	<p>Apr to Jun or Sep.</p>	<p>Light grey-yellow sand, brown loam, limestone, laterite, granite. Coastal plain, breakaways, valley slopes, low hills.</p>	<p>P3</p>	<p>Y</p>	<p>Habitat and soil suitable</p>

Picture	Common Name	Description	Flowering Period	Habitat Type	Cons Code	Likelihood (Y/N)	Comment
 <p data-bbox="212 758 414 782"><i>Macarthuria keigheryi</i></p> <p data-bbox="660 758 810 782">Photos: G.J. Keighery</p>		<p data-bbox="1030 486 1299 630">Erect or spreading perennial, herb or shrub, 0.2-0.4 m high, 0.3-0.6 m wide.</p>	<p data-bbox="1332 502 1456 606">Sep to Dec or Feb to Mar.</p>	<p data-bbox="1489 518 1668 590">White or grey sand.</p>	<p data-bbox="1736 542 1758 566">T</p>	<p data-bbox="1870 542 1892 566">Y</p>	<p data-bbox="1948 518 2083 590">Habitat and soil suitable</p>
 <p data-bbox="156 1332 380 1364"><i>Marianthus paralius</i></p>		<p data-bbox="1030 1037 1276 1141">Almost prostrate, eventually scandent, woody shrub. Fl. Red.</p>	<p data-bbox="1332 1077 1467 1109">Sep to Nov.</p>	<p data-bbox="1489 1037 1668 1141">White sand over limestone. Low coastal cliffs.</p>	<p data-bbox="1736 1077 1758 1101">T</p>	<p data-bbox="1870 1077 1892 1101">Y</p>	<p data-bbox="1948 1053 2083 1125">Habitat and soil suitable</p>

Picture	Common Name	Description	Flowering Period	Habitat Type	Cons Code	Likelihood (Y/N)	Comment
<i>Melaleuca sp. Wanneroo</i>							
		No information.	No information.	No information.	T	Y	Habitat and soil suitable
							

Picture	Common Name	Description	Flowering Period	Habitat Type	Cons Code	Likelihood (Y/N)	Comment
	<b><i>Netrostylis</i> sp. Chandala (G.J. Keighery 17055)</b>	No information.			P2	N	Habitat not suitable



*Paracaleana dixonii*

Photos: G. Brockman, A.P. Brown & I. & M. Greeve

tuberous, perennial, herb,  
 0.09-0.2 m high. Fl.  
 yellow-brown.

Oct to Dec  
 or Jan.

Grey sand over  
 granite.

T

N

Habitat not  
 suitable



*Pimelea calcicola*

Photos: I.R. Dixon

Erect to spreading shrub,  
 0.2-1 m high. Fl. Pink.

Sep to Nov.


Sand. Coastal  
 limestone ridges.


P3


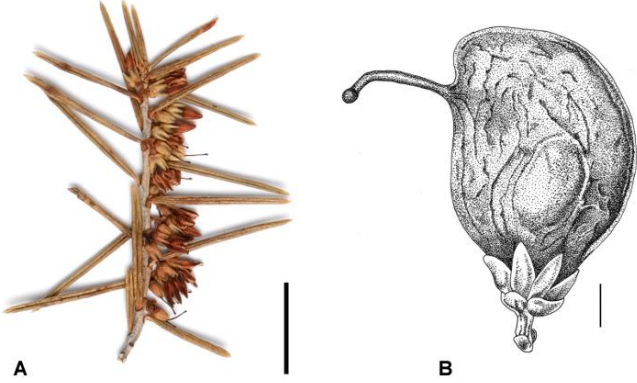
Y


Habitat and  
 soil suitable



Picture	Common Name	Description	Flowering Period	Habitat Type	Cons Code	Likelihood (Y/N)	Comment
<p style="text-align: center;"><i>Poranthera moorokatta</i></p> 		No information.	No information.	No information.	P2	N	Habitat not suitable
<p style="text-align: center;"><i>Sarcozona bicarinata</i></p>		Shrub, ca 0.1 m high. Fl. White.	Aug.	White sand.	P3	Y	Habitat and soil suitable

Picture	Common Name	Description	Flowering Period	Habitat Type	Cons Code	Likelihood (Y/N)	Comment
 <p><i>Stylidium maritimum</i>  <small>Photos: K.C. Richardson</small></p>		<p>Caespitose perennial, herb, 0.3-0.7 m high, Leaves tufted, linear to narrowly oblanceolate, 10-40 cm long, 1-5.5 mm wide, apex acute to mucronate, margin involute, glabrous. Membraneous scale leaves present at base of mature leaves. Scape glandular throughout. Inflorescence paniculate. Fl. white/purple.</p>	<p>Sep to Nov.</p>	<p>Sand over limestone. Dune slopes and flats. Coastal heath and shrubland, open Banksia woodland.</p>	<p>P3</p>	<p>Y</p>	<p>Habitat and soil suitable</p>
<p><i>Stylidium paludicola</i></p>		<p>Reed-like perennial, herb, 0.35-1 m high, Leaves tufted, linear or subulate or narrowly oblanceolate, 0.5-4 cm long, 0.5-1.5 mm wide, apex acute, margin entire, glabrous. Scape mostly glabrous, inflorescence axis glandular. Inflorescence racemose. Fl. Pink.</p>	<p>Oct to Dec.</p>	<p>Peaty sand over clay. Winter wet habitats. Marri and Melaleuca woodland, Melaleuca shrubland.</p>	<p>P3</p>	<p>N</p>	<p>Habitat not suitable</p>

Picture	Common Name	Description	Flowering Period	Habitat Type	Cons Code	Likelihood (Y/N)	Comment
							
<p data-bbox="414 863 607 890"><i>Styphelia filifolia</i></p> 		<p data-bbox="1028 868 1317 1305">Usually erect shrubs to c. 150 cm high and 150 cm wide, but occasionally low and spreading, from a fire-sensitive rootstock. Leaves helically arranged, variably orientated, usually rather steeply antrorse but occasionally with some leaves shallowly antrorse to retrorse</p>	<p data-bbox="1337 1034 1460 1134">September and November.</p>	<p data-bbox="1489 879 1675 1318">Has a scattered distribution in the Geraldton Sandplains and Swan Coastal Plain bioregions, Almost all records are from sandy soils on the coastal plain and in association with</p>	<p data-bbox="1731 1074 1765 1098">P3</p>	<p data-bbox="1865 1074 1888 1098">N</p>	<p data-bbox="1955 1054 2083 1118">Habitat not suitable</p>

Picture	Common Name	Description	Flowering Period	Habitat Type	Cons Code	Likelihood (Y/N)	Comment
				Banksia woodland			
 <p><i>Thelymitra variegata</i>  <small>Photos: S.D. Hopper &amp; G. Brunnbauer</small></p>	Queen of Sheba	Tuberous, perennial, herb, 0.1-0.35 m high. Fl. orange & red & purple & pink	Jun to Sep.	Sandy clay, sand, laterite.	P2	N	Habitat not suitable
<b><i>Utricularia oppositiflora</i></b>		No information			P3	N	Habitat not suitable

## Appendix 4: Relevé Data

Relevé No.:	R1
Survey Date:	30/11/2023
Personnel:	TC, JG
Easting:	378774.64
Northing:	6491853.41
Topography:	Slope
Aspect:	South
Slope:	5%
Soil:	Dark grey with limestone outcrop
Gravel:	0%
Rock:	2%
Leaf Litter:	20%
Bare Ground:	5%
Drainage:	Well
Condition:	good



Notes: Mixed Coastal Open Shrubland (1% Weeds, 99% Natives)

Species	
<i>Acacia pulchella</i>	<i>Melaleuca systema</i>
<i>Acacia rostellifera</i>	<i>Spyridium globulosum</i>
<i>Banksia dallanneyi</i>	<i>Thysanotus manglesianus</i>
<i>Banksia sessilis</i>	<i>Trachymene pilosa</i>
* <i>Briza maxima</i>	* <i>Trifolium campestre</i>
<i>Desmocladus asper</i>	* <i>Urospermum picroides</i>
<i>Grevillea preissii</i>	<i>Xanthorrhoea preissii</i>
* <i>Lagurus ovatus</i>	
<i>Lepidosperma pubisquameum</i>	
<i>Leptomeria preissiana</i>	
<i>Leucopogon parviflorus</i>	
<i>Lomandra maritima</i>	

Note: \*denotes introduced species.

<b>Relevé No.:</b>	<b>R2</b>
Survey Date:	1/12/2023 – 15/01/2024
Personnel:	TC, JG, KG, LC
Easting:	379114.97
Northing:	6491523.70
Topography:	Slope
Aspect:	North-east
Slope:	1%
Soil:	Light brown loamy sand
Gravel:	0%
Rock:	0%
Leaf Litter:	2%
Bare Ground:	1%
Drainage:	Well
Condition:	Degraded



Notes: Banksia spp. Low Open Woodland (90% Weeds, 70% Natives of middle story)

Species	
<i>Acacia pulchella</i>	<i>Thysanotus manglesianus</i>
<i>Acacia rostellifera</i>	<i>Trachymene pilosa</i>
<i>Banksia dallanneyi</i>	* <i>Trifolium campestre</i>
<i>Banksia sessilis</i>	* <i>Urospermum picroides</i>
* <i>Briza maxima</i>	<i>Xanthorrhoea preissii</i>
<i>Desmocladius asper</i>	
<i>Grevillea preissii</i>	
* <i>Lagurus ovatus</i>	
<i>Lepidosperma pubisquameum</i>	
<i>Leptomeria preissiana</i>	
<i>Leucopogon parviflorus</i>	
<i>Lomandra maritima</i>	
<i>Melaleuca systema</i>	
<i>Spyridium globulosum</i>	

Note: \*denotes introduced species.

## Appendix 5: Species List

The complete flora list for both sites is provided in the table below with flora listed by species, and the survey area they occurred within indicated. \*Denotes introduced species and # denotes species that are native to Western Australia but not to this local region.

Family	Species Name	Common Name	Area 1	Area 2
Cupressaceae	# <i>Callitris preissii</i>	Rottneest Island Pine	X	
Poaceae	* <i>Aira cupaniana</i>	Silvery Hairgrass	X	
Asparagaceae	* <i>Asparagus asparagoides</i>	Bridal Creeper	X	X
Asphodelaceae	* <i>Asphodelus fistulosus</i>	Onion Weed	X	X
Poaceae	* <i>Avena barbata</i>	Bearded Oat	X	X
Orobanchaceae	* <i>Bellardia trixago</i>	Bellardia		X
Brassicaceae	* <i>Brassica tournefortii</i>	Mediterranean Turnip	X	X
Poaceae	* <i>Briza maxima</i>	Blowfly Grass	X	X
Poaceae	* <i>Bromus diandrus</i>	Great Brome	X	X
Aizoaceae	* <i>Carpobrotus edulis</i>	Hottentot Fig	X	X
Asteraceae	* <i>Centaurea melitensis</i>	Maltese Cockspur		X
Brassicaceae	* <i>Diplotaxis tenuifolia</i>	Sand Rocket		X
Poaceae	* <i>Ehrharta longiflora</i>	Annual Veldt Grass	X	X
Poaceae	* <i>Ehrharta calycina</i>	Perennial Veldt Grass	X	
Asteraceae	* <i>Erigeron sumatrensis</i>			X
Euphorbiaceae	* <i>Euphorbia terracina</i>	Geraldton Carnation Weed	X	X
Apiaceae	* <i>Foeniculum vulgare</i>	Fennel		X
Myrtaceae	* <i>Gaudium laevigatum</i>	Coast Teatree	X	X
Iridaceae	* <i>Gladiolus caryophyllaceus</i>	Wild Gladiolus	X	
Asteraceae	* <i>Lactuca serriola</i>	Prickly Lettuce		X
Poaceae	* <i>Lagurus ovatus</i>	Hare's Tail Grass	X	X
Asteraceae	* <i>Leontodon rhagadioloides</i>	Cretan Weed		X
Poaceae	* <i>Lolium rigidum</i>	Wimmera Ryegrass		X
Primulaceae	* <i>Lysimachia arvensis</i>	Pimpernel	X	X
Malvaceae	* <i>Malva parviflora</i>	Marshmallow		X
Iridaceae	* <i>Moraea flaccida</i>	One-leaf Cape Tulip	X	
Oleaceae	* <i>Olea europaea</i>	Olive	X	

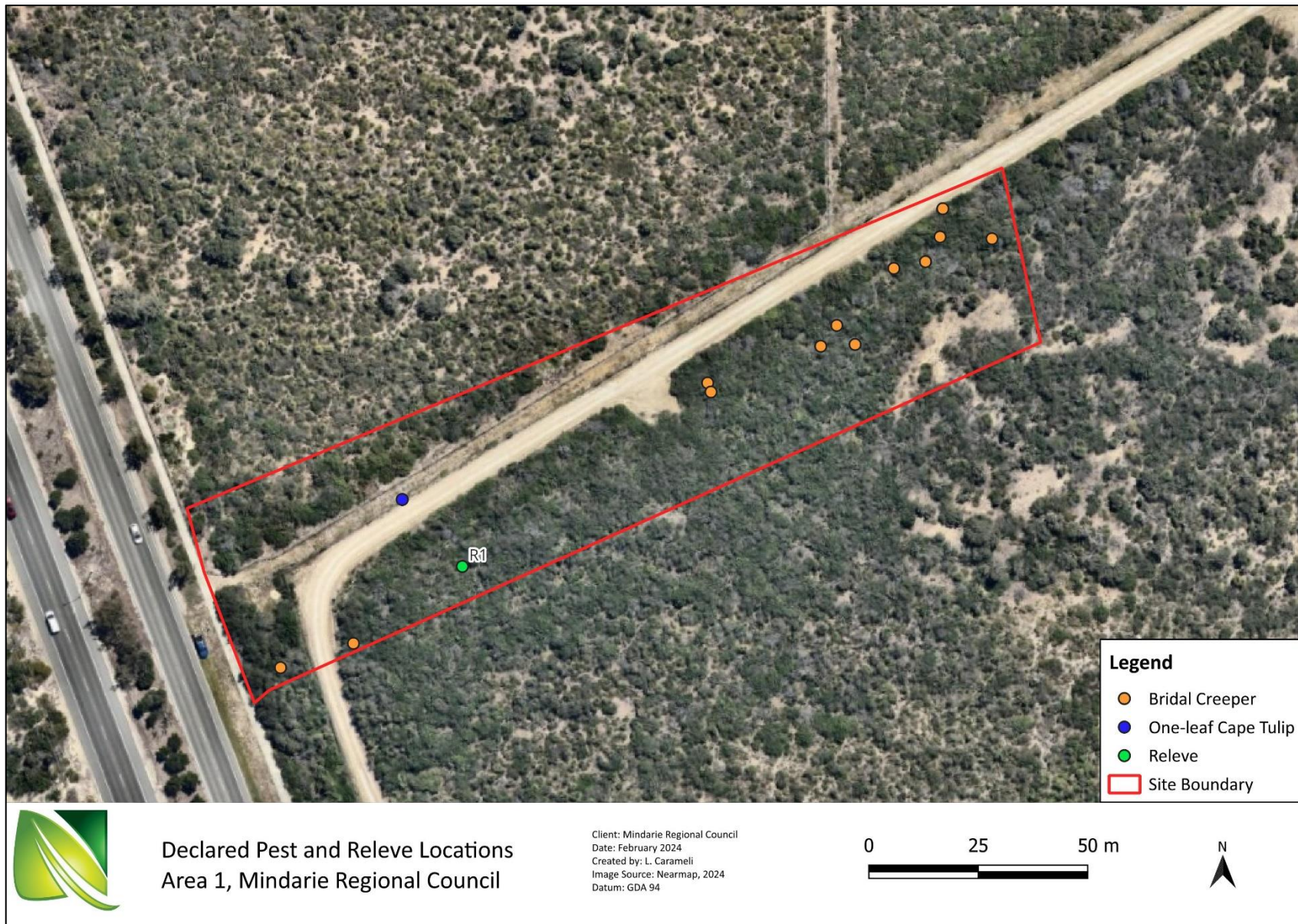
Family	Species Name	Common Name	Area 1	Area 2
Orobanchaceae	* <i>Orobanche minor</i>	Lesser Broomrape	X	
Geraniaceae	* <i>Pelargonium capitatum</i>	Rose Pelargonium	X	
Caryophyllaceae	* <i>Petrorhagia dubia</i>		X	
Brassicaceae	* <i>Raphanus raphanistrum</i>	Wild Radish	X	X
Asteraceae	* <i>Reichardia tingitana</i>	False Sowthistle	X	
Fabaceae	* <i>Retama raetam</i>			X
Iridaceae	* <i>Romulea rosea</i>	Guildford Grass		X
Anacardiaceae	* <i>Schinus terebinthifolia</i>		X	
Caryophyllaceae	* <i>Silene gallica</i>	French Catchfly		X
Caryophyllaceae	* <i>Silene gallica var. quinquevulnera</i>		X	
Solanaceae	* <i>Solanum nigrum</i>	Black Berry Nightshade	X	X
Asteraceae	* <i>Sonchus oleraceus</i>	Common Sowthistle		X
Asphodelaceae	* <i>Trachyandra divaricata</i>			X
Fabaceae	* <i>Trifolium angustifolium</i>	Narrowleaf Clover	X	
Fabaceae	* <i>Trifolium arvense</i>	Hare's Foot Clover	X	
Fabaceae	* <i>Trifolium campestre</i>	Hop Clover	X	X
Asteraceae	* <i>Urospermum picroides</i>	False Hawkbit	X	
Asteraceae	* <i>Ursinia anthemoides</i>	Ursinia	X	
Asteraceae	* <i>Verbesina encelioides</i>	Crownbeard		X
Fabaceae	<i>Acacia cyclops</i>	Coastal Wattle	X	X
Fabaceae	<i>Acacia pulchella</i>	Prickly Moses	X	
Fabaceae	<i>Acacia rostellifera</i>	Summer-scented Wattle	X	X
Fabaceae	<i>Acacia saligna</i>	Orange Wattle		X
Asparagaceae	<i>Acanthocarpus preissii</i>		X	
Poaceae	<i>Austrostipa compressa</i>			X
Poaceae	<i>Austrostipa flavescens</i>			X
Proteaceae	<i>Banksia attenuata</i>	Slender Banksia		X
Proteaceae	<i>Banksia dallaneyi</i>	Couch Honeypot	X	
Proteaceae	<i>Banksia menziesii</i>	Firewood Banksia		X
Proteaceae	<i>Banksia prionotes</i>	Acorn Banksia		X
Proteaceae	<i>Banksia sessilis</i>	Parot bush	X	
Fabaceae	<i>Bossiaea eriocarpa</i>	Common Brown Pea	X	

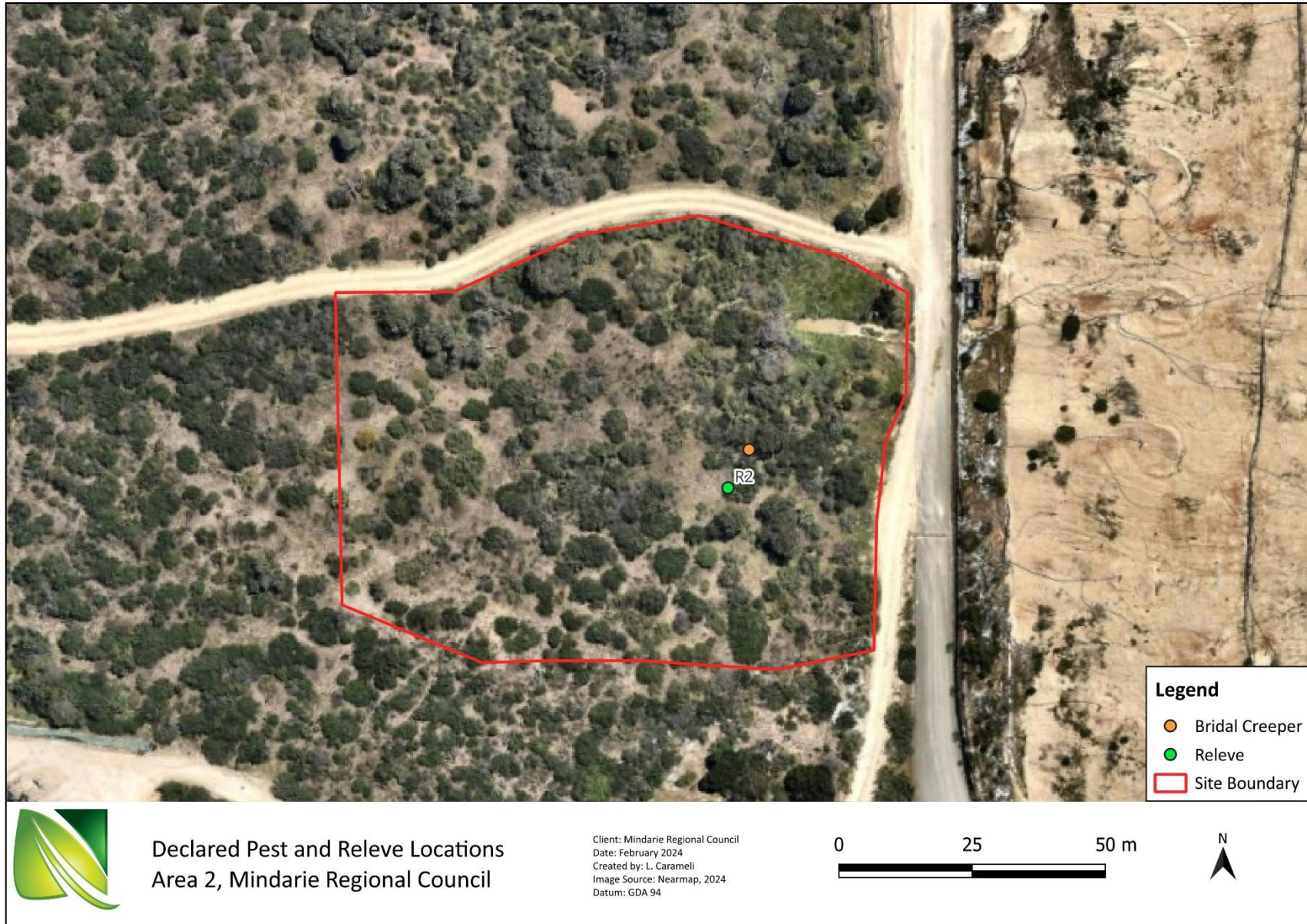


Family	Species Name	Common Name	Area 1	Area 2
Myrtaceae	<i>Calothamnus quadrifidus</i>	One-sided Bottlebrush	X	
Ranunculaceae	<i>Clematis linearifolia</i>	Slender Clematis	X	X
Polygalaceae	<i>Comesperma integerrimum</i>		X	X
Haemodoraceae	<i>Conostylis aculeata</i>	Prickly Conostylis	X	X
Restionaceae	<i>Desmocladius asper</i>		X	X
Restionaceae	<i>Desmocladius flexuosus</i>			X
Hemerocallidaceae	<i>Dianella revoluta</i>	Blueberry Lily	X	
Droseraceae	<i>Drosera macrantha</i>	Bridal Rainbow	X	
Chenopodiaceae	<i>Enchylaena tomentosa</i>	Barrier Saltbush		X
Scrophulariaceae	<i>Eremophila glabra</i>	Tar Bush		X
Fabaceae	<i>Gastrolobium capitatum</i>	Bacon and Eggs	X	
Fabaceae	<i>Gompholobium tomentosum</i>	Hairy Yellow Pea	X	
Proteaceae	<i>Grevillea preissii</i>		X	
Haemodoraceae	<i>Haemodorum laxum</i>	Bloodroot	X	
Proteaceae	<i>Hakea prostrata</i>	Harsh Hakea	X	X
Proteaceae	<i>Hakea lissocarpha</i>	Honey Bush	X	
Fabaceae	<i>Hardenbergia comptoniana</i>	Native Wisteria	X	X
Dilleniaceae	<i>Hibbertia hypericoides</i>	Yellow Buttercups	X	
Fabaceae	<i>Kennedia prostrata</i>	Scarlet Runner	X	
Cyperaceae	<i>Lepidosperma calcicola</i>		X	X
Cyperaceae	<i>Lepidosperma pubisquameum</i>		X	
Cyperaceae	<i>Lepidosperma scabrum</i>	Scabrid Sword-sedge	X	
Santalaceae	<i>Leptomeria preissiana</i>		X	
Ericaceae	<i>Leucopogon parviflorus</i>	Coast Beard-heath	X	X
Asparagaceae	<i>Lomandra caespitosa</i>	Tufted Mat Rush	X	
Asparagaceae	<i>Lomandra maritima</i>	Maritime Mat Rush	X	X
Phyllanthaceae	<i>Lysiandra calycina</i>	False Boronia	X	X
Zamiaceae	<i>Macrozamia fraseri</i>	Sandplain Zamia		X
Myrtaceae	<i>Melaleuca systema</i>	Coastal Honeymyrtle	X	X
Cyperaceae	<i>Mesomelaena pseudostygia</i>	Semaphore Sedge	X	
Asteraceae	<i>Olearia axillaris</i>	Coastal Daisybush	X	X
Rubiaceae	<i>Opercularia vaginata</i>	Dog Weed	X	

Family	Species Name	Common Name	Area 1	Area 2
Proteaceae	<i>Petrophile axillaris</i>		X	
Thymelaeaceae	<i>Pimelea argentea</i>	Silvery Leaved Pimelea	X	X
Asteraceae	<i>Podotheca gnaphalioides</i>	Golden Long-heads	X	
Amaranthaceae	<i>Ptilotus polystachyus</i>	Prince of Wales Feather	X	
Chenopodiaceae	<i>Rhagodia baccata</i>	Berry Saltbush	X	X
Rhamnaceae	<i>Spyridium globulosum</i>	Basket Bush	X	X
Ericaceae	<i>Styphelia propinqua</i>		X	
Fabaceae	<i>Templetonia retusa</i>	Cockies Tongues	X	
Asparagaceae	<i>Thysanotus manglesianus</i>	Mangles' Fringed Lily	X	
Asparagaceae	<i>Thysanotus sparteus</i>	Leafless Fringed Lily	X	
Araliaceae	<i>Trachymene pilosa</i>	Native Parsnip	X	
Hemerocallidaceae	<i>Tricoryne elatior</i>	Yellow Autumn Lily	X	
Poaceae	<i>Vulpia</i> sp.		X	
Xanthorrhoeaceae	<i>Xanthorrhoea preissii</i>	Grass Tree	X	X
Xanthorrhoeaceae	<i>Xanthorrhoea brunonis</i>		X	

## **Appendix 6: Declared Pest and Relevé Locations**





Declared Pest and Releve Locations  
Area 2, Mindarie Regional Council