



# **CLEARING PERMIT SUPPORTING DOCUMENTATION**

**LOT 500 (879) CORONATION ROAD, WAROONA**

**December 2021**

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# CONTENTS

<b>1</b>	<b>INTRODUCTION</b>	<b>1</b>
1.1	APPLICANT	1
1.2	BACKGROUND	1
1.3	SCOPE AND PURPOSE	1
1.4	RELEVANT LEGISLATION AND POLICY	1
<b>2</b>	<b>BIOPHYSICAL ENVIRONMENT</b>	<b>2</b>
2.1	TOPOGRAPHY, LANDFORM AND SOILS	2
2.2	ACID SULFATE SOILS	2
2.3	HYDROLOGY	2
2.3.1	Groundwater	2
2.3.2	Surface Water	3
2.4	VEGETATION AND FLORA	4
2.4.1	Vegetation Types	4
2.4.2	Ecological Communities	7
2.4.3	Ecological Linkages	9
2.4.4	Environmentally Sensitive Areas	9
2.4.5	Flora	9
2.5	FAUNA	10
2.6	ABORIGINAL HERITAGE	12
<b>3</b>	<b>CLEARING ASSESSMENT</b>	<b>13</b>
3.1	AVOIDANCE AND MITIGATION MEASURES	13
3.2	ASSESSMENT AGAINST THE TEN CLEARING PRINCIPLES	13
<b>4</b>	<b>ENVIRONMENTAL MANAGEMENT MEASURES</b>	<b>17</b>
4.1	VEGETATION AND FLORA MANAGEMENT	17
4.1.1	Background	17
4.1.2	Management Plan	17
4.2	FAUNA MANAGEMENT	18
4.2.1	Background	18
4.2.2	Management Plan	18
4.3	WEED AND PATHOGEN MANAGEMENT	20
4.3.1	Background	20

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4.3.2 Management Plan.....	20
<b>REFERENCES.....</b>	<b>22</b>

## Tables

Table 1	Wetland classifications (Semeniuk 1995)	3
Table 2	DBCA Wetland management categories (Semeniuk 1995)	3
Table 3	Regional assessment of vegetation extent	5
Table 4	Database search results for significant flora known to occur within a 5 km radius of the subject site	9
Table 5	Significant fauna potentially occurring within the subject site as identified by State and Commonwealth database searches.	10
Table 6	Vegetation clearing management plan	17
Table 7	Fauna management plan	18
Table 8	Weed and pathogen management plan	20

## Figures

Figure 1	Regional Location of the subject site
Figure 2	Site extent
Figure 3	Soil landscape mapping
Figure 4	Wetland mapping

## List of Appendices

Appendix A. Database search results for flora and fauna of conservation significance.

# 1 INTRODUCTION

## 1.1 Applicant

The applicant for this Clearing Permit is [REDACTED]. Contact details for the applicant are provided below.

[REDACTED]

The representative for the applicant is:

[REDACTED]

## 1.2 Background

[REDACTED] (the proponent) is seeking to clear approximately 6 hectares (ha) of native vegetation within 879 Coronation Road, Waroona (herein referred to as the subject site). The subject site will be utilised for pasture after clearing. The subject site is located within the municipality of the Shire of Waroona, approximately 16 kilometres (km) east of Preston Beach and 100 km south of Perth (refer to **Figure 1** and **Figure 2**).

## 1.3 Scope and Purpose

This document has been prepared to support an application for a Clearing Permit (Area Permit) pursuant to Section 51E of the *Environmental Protection Act 1986* (EP Act). This document provides information regarding the current environmental condition of the subject site, including the predicted impacts of clearing and proposed management actions to mitigate predicted impacts. It also provides an assessment against the ten clearing principles and other relevant legislation and policy.

## 1.4 Relevant Legislation and Policy

Western Australian legislation relevant to this Clearing Permit application includes:

- *Bush Fires Act 1954*;
- *Biodiversity Conservation Act 2016*;
- *Environmental Protection Act 1986*;
- *Environmental Protection (Clearing of Native Vegetation) Regulations 2004*; and
- *Rights in Water and Irrigation Act 1914*.

## 2 BIOPHYSICAL ENVIRONMENT

During the compilation of this clearing permit application, a range of specific environmental and heritage issues were explored in relation to the subject site. This involved a detailed desktop assessment supported by a site visit conducted by Accendo Australia on the 28<sup>th</sup> October 2021.

### 2.1 Topography, Landform and Soils

The current topography of the subject site can be described as gently sloping from south to north with minimal variation within the subject site. Online mapping from the Department of Primary Industries and Regional Development's (DPIRD's) *Natural Resource Information* (NRInfo) database indicated an elevation ranging between approximately 16 metres (m) Australian Height Datum (AHD) to 18 m AHD within the subject site.

The DPIRD's *Natural Resource Information* (NRInfo) maps the subject site as being located within the Bassendean landscape system, part of the Swan Coastal Plain which extends from Perth to Capel and consists of a poorly drained coastal plain with variable alluvial and aeolian soils. The Bassendean zone originates from the mid Pleistocene era, consisting of fixed dunes inland from coastal dune zone, non-calcareous, Bassendean sands, podsolised soils with low-lying wet areas.

Specifically, the subject site has been mapped as containing soils of the Bassendean B1 Phase and the Bassendean B4 Phase (refer to **Figure 3**). These Phases are described as:

- Bassendean B1 Phase: extremely low to very low relief dunes, undulating sandplain and discrete sand rises with deep bleached grey sands sometimes with a pale yellow B horizon or a weak iron-organic hardpan at depths generally greater than 2 m; and
- Bassendean B4 Phase: Broad poorly drained sandplain with deep grey siliceous sands or bleached sands, underlain at depths generally greater than 1.5 m by clay or less frequently a strong iron – organic hardpan.

### 2.2 Acid Sulfate Soils

Acid Sulfate Soils (ASS) is the common name given to naturally occurring soil and sediment containing iron sulfides. They have become a potential issue in land development projects on the Swan Coastal Plain when the naturally anaerobic conditions in which they are situated are disturbed and they are exposed to aerobic conditions and subsequently oxidise. When oxidised, ASS produce sulfuric acid, which can result in a range of impacts to the surrounding environment. ASS that has oxidised and resulted in the creation of acidic conditions are termed "Actual ASS" (AASS), and those that have acid generating potential but remain in their naturally anaerobic conditions are termed "Potential ASS" (PASS).

Mapping prepared by the Department of Water and Environmental Regulation (DWER) indicates that the subject site is classified as having "*moderate to low risk of ASS, occurring within 3 m of the natural soil surface*".

### 2.3 Hydrology

#### 2.3.1 Groundwater

The subject site is located within the Waroona subarea of the *Rights in Irrigation and Water Act* (1914) (RiWI Act) proclaimed Murray Groundwater Management Area. The principal groundwater aquifers for the subject site include the superficial aquifer, the Upper and Lower Leederville aquifer and the Cattamarra aquifer. The superficial aquifer comprises the Quaternary Superficial formations including the Gngangara

Sand, Bassendean Sand and Ascot Formation. The Lower Leederville aquifer is present throughout the Waroona subarea and the top of this aquifer is expected to occur at around 0 m AHD. The Upper Leederville aquifer only occurs in the western half of the subarea. The Cattamarra aquifer consists of the Cattamarra Coal measures and occurs throughout the subarea underlying the superficial and Leederville aquifers (DoW 2012).

To protect the State’s drinking water resources the Department of Water and Environmental regulation (DWER) has defined certain Priority Classification Areas within Public Drinking Water Source Areas (PDWSA) providing three levels of groundwater quality protection. These are based on the principles of risk avoidance (Priority 1), risk minimisation (Priority 2) and pollution limiting (Priority 3). The subject site does not lie within any existing or potential PDWSAs.

### 2.3.2 Surface Water

The subject site is within the Harvey Main Drain and Waroona Drain sub catchment areas of the Harvey River catchment area. No surface water features were identified directly within the subject site, however there are small dams present on adjacent properties. The Waroona drain is also approximately 1 km to the north of the subject site.

Wetlands within Western Australia are classified on the basis of landform and water permanence pursuant to the Semeniuk (1995) classification system (refer to **Table 1**).

**Table 1. Wetland classifications (Semeniuk 1995).**

Water Longevity	Landform				
	Basin	Channel	Flat	Slope	Highland
Permanent Inundation	Lake	River	-	-	-
Seasonal Inundation	Sumpland	Creek	Floodplain	-	-
Intermittent Inundation	Playa	Wadi	Barlkarra	-	-
Seasonal Waterlogging	Dampland	Trough	Palusplain	Paluslope	Palusmont

Areas of wetlands have been mapped previously by Semeniuk (1995) across the entire Swan Coastal Plain. This mapping has been converted into a digital dataset that is maintained by the Department of Biodiversity, Conservation and Attractions (DBCA) and is referred to as the ‘*Geomorphic Wetlands of the Swan Coastal Plain*’ dataset. This dataset contains information on geomorphic wetland types and assigns management categories that guide the recommended management approach for each wetland area. The wetland management categories and management objectives are listed in **Table 2**.

**Table 2. DBCA Wetland Management Categories (Semeniuk 1995).**

Category	Description	Management Objectives
Conservation	Wetlands support a high level of ecological attributes and functions.	<p>Highest priority wetlands. Objective is to preserve and protect the existing conservation values of the wetlands through various mechanisms including:</p> <ul style="list-style-type: none"> <li>• Reservation in national parks, crown reserves and State owned land,</li> <li>• Protection under Environmental Protection Policies; and</li> <li>• Wetland covenanting by landowners.</li> </ul> <p>No development or clearing is considered appropriate. These are the most valuable wetlands and any activity</p>

		that may lead to further loss or degradation is inappropriate.
Resource Enhancement	Wetlands which may have been partially modified by still support substantial ecological attributes and functions.	Priority wetlands. Ultimate objective is to manage, restore and protect towards improving their conservation value. These wetlands have the potential to be restored to Conservation category. This can be achieved by restoring wetland functions, structure and biodiversity.
Multiple Use	Wetlands with few remaining attributes and functions.	Use, development and management should be considered in the context of ecologically sustainable development and best management practice catchment planning through landcare.

A portion of the subject site is classified as a sumpland Multiple Use (MU) wetland (UFI 15231) in accordance with the *Swan Coastal Plain Geomorphic Wetlands* dataset (refer to **Figure 4**). There are another 21 mapped wetlands within a 1 km radius of the subject site, all but three are classified as sumpland with the remaining classified as dampland. Of these 21 mapped wetlands, three are classified as RE, with the remainder classified as MU wetlands. The closest RE wetland (UFI 4806) is located approximately 60 m to the north of the subject site.

MU wetlands are assessed as possessing few remaining ecological attributes and functions, which is characteristic of these mapped areas within the property. While such wetlands can still contribute to regional or landscape ecosystem management, including hydrological function, they are considered to have low intrinsic ecological value. Typically, they have minimal or no native vegetation remaining (less than 10%). Accordingly, there is no legislative requirement to protect or retain them and as such MU wetlands do not preclude development.

The management objective for MU wetlands is to preserve the hydrological functions in the context of the proposed development (EPA 2008). The current water cycle within the subject site consists of inputs from rainwater being infiltrated on site or flowing through drainage lines into the wider drainage system. The clearing is not proposing to alter this process.

## 2.4 Vegetation and Flora

### 2.4.1 Vegetation Types

The subject site is within the Swan Coastal Plain Biogeographic Region of the South-west Botanical Province (Thackway and Cresswell 1995, and Paczkowska and Chapman 2000), an area that extends from Jurien Bay to the north to Dunsborough to the south, and west of the Darling Scarp. Historically this biogeographic region has been extensively cleared for both urban and agricultural purposes.

Regional vegetation has been mapped by Heddle *et al.* (1980) at a scale of 1:250,000 based on major geomorphic units on the Swan Coastal Plain and the site consists of vegetation of the Southern River complex; An open woodland of *Corymbia calophylla* (Marri) - *Eucalyptus marginata* (Jarrah) - *Banksia* species with fringing woodland of *Eucalyptus rudis* (Flooded Gum) - *Melaleuca raphiophylla* (Swamp Paperbark) along creek beds.

Beard (1979) vegetation mapping indicates the subject site would have contained vegetation of the Bassendean complex, consisting of a mosaic, medium forest of Jarrah-Marri, low woodland containing *Banksia* and low forest of teatree (*Melaleuca* spp.).



The mapped Heddle *et al.* (1980) and Beard (1979) complexes can be used to determine vegetation extent and status on the Swan Coastal Plain (refer to **Table 3**). The EPA has a target to retain all remaining areas of each complex where less than 30% remains on the Swan Coastal Plain (EPA 2003).

**Table 3. Regional assessment of vegetation extent.**

System	Pre-European (ha)	Current Extent (ha)	Remaining Extent (%)	Extent in Managed Lands (%)
<b>IBRA Bioregion</b> Swan Coastal Plain	1,501,222	579,813	39	38
<b>Local Government</b> Shire of Waroona	83,233	44,807	54	80
<b>Beard Vegetation Association</b> Bassendean (1000)	99,836	27,769	28	19
<b>Heddle Vegetation Complex</b> Southern River	58,781	10,832	18	2

In consideration of **Table 3**, the Bassendean (1000) vegetation association and Southern River vegetation complex present within the subject site have less than 30% of the pre-European extent remaining.

Based on observations during a site visit undertaken by Accendo on the 28<sup>th</sup> October 2021, vegetation within the subject site is classified as being in a ‘Degraded’ to ‘Completely Degraded’ condition. This can be attributed to historical and ongoing disturbances such as livestock grazing and firewood collecting/logging, which has resulted in very few mature trees and limited understorey vegetation.

The area mapped as a MU wetland is comprised of a monoculture of spearwood (*Kunzea glabrescens*) (refer to **Plate 1 - 2**). The remaining portion of the subject site predominately contains *Casuarina equisetifolia* with very occasional *Banksia* spp. and *Corymbia calophylla* (Marri) (refer to **Plate 3 – 5**). A complete absence of under and mid storey species was observed in both areas which can be attributed to historical and recent grazing of the subject site.



**Plate 1: Spearwood (*Kunzea glabrescens*) with understorey absent.**



**Plate 2: Spearwood (*Kunzea glabrescens*) with understorey absent.**



**Plate 3: *Casuarina equisetifolia* with very occasional *Banksia* spp.**



Plate 4: *Casuarina equisetifolia* with very occasional *Banksia* spp. and *Corymbia calophylla*



Plate 5: *Casuarina equisetifolia* with very occasional *Banksia* spp. and *Corymbia calophylla*

#### 2.4.2 Ecological Communities

Threatened Ecological Communities (TECs) are defined by the Department of Biodiversity, Conservation and Attractions (DBCA) and are assigned to a category of Priority 1 to Priority 5.

Selected TECs are also afforded statutory protection at a Federal level pursuant to the *Environment Protection and Biodiversity Conservation Act 1998* (EPBC Act). The EPBC Act provides for the protection of TECs that are listed under section 181 of the Act, and are defined as “Critically Endangered”, “Endangered” or “Vulnerable”.

In addition to listing as a TEC, a community may be listed as a Priority Ecological Community (PEC). An ecological community that is under consideration for listing as a TEC, but does not yet meet the survey criteria or has not been adequately defined, is placed on the list of PECs in either Category 1, 2 or 3.

A search was undertaken of the DBCA's TEC database and the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) Protected Matters database indicated that two TECs are mapped as being likely to occur within 5 km of the subject site. This includes the Banksia Woodlands of the Swan Coastal Plain ecological community (Endangered) and the Tuart (*Eucalyptus gomphocephala*) Woodlands and Forests of the Swan Coastal Plain ecological community (Critically Endangered).

To be considered as part of the Banksia Woodlands TEC, a patch of Banksia woodlands needs to meet a number of criteria as follows:

- Occurrence on the Swan Coastal Plain and immediately adjacent areas of the Whicher Scarp, Ridge Hill Shelf and Dandaragan Plateau in well-drained, low nutrient soils on sandplain landforms;
- The structure is that of a low woodland to forest;
- The canopy is commonly dominated by or co-dominated by *Banksia attenuata* and/or *Banksia menziesii*;
- The patch must include at least one of *Banksia attenuata*, *Banksia menziesii*, *Banksia ilicifolia* or *Banksia prionotes*; and
- The canopy may include emergent trees of *Eucalyptus marginata* or *Corymbia calophylla*.

The condition of the patch is also important in determining the presence of the Banksia Woodlands TEC. A patch must meet the criteria for 'Good' condition or better according to the Keighery (1994) Condition Scale. If a patch is rated as being in 'Good' condition, then it must be at least 2 ha in size.

Given the 'Degraded' to 'Completely Degraded' nature of the vegetation within the subject site and the very occasional occurrence of Banksia, it is very unlikely that the Banksia Woodlands TEC is present within the subject site.

To be considered as part of the Tuart Woodlands and Forest TEC, a patch of Tuart woodland needs to meet the following criteria:

- Occurrence on the Swan Coastal Plain;
- Primarily occurs on the Spearwood and Quindalup dune systems, but can also occur on the Bassendean Dunes and Pinjarra Plain. It can occur on the banks of rivers and wetlands. It occurs below the Darling and Whicher escarpments where they define a plateau to the east of the Swan Coastal Plain;
- Most often occurs as a woodland but can occur in a variety of structural forms, including closed forest, open forest, woodland, open woodland, closed mallee forest, open mallee forest, mallee woodland and open mallee woodland; and
- The dominant tree canopy species is Tuart (*Eucalyptus gomphocephala*). While other tree species may be present in the canopy, they are less abundant than Tuart.

The condition of the patch is also important in determining the present of the Tuart Woodlands and Forest TEC. A patch must meet the criteria for 'Good' condition or better according to the Keighery (1994) Condition Scale. If a patch is rated as being in 'Good' condition it must also be at least 2 ha in size.

Given the 'Degraded' to 'Completely Degraded' nature of vegetation within the subject site, lack of Tuarts and dominance of *Kunzea glabrescens* and *Casuarina equisetifolia*, it is very unlikely that the Tuart Woodlands and Forest TEC is present within the subject site.

### 2.4.3 Ecological Linkages

The DBCA recognises several Regional Ecological Linkages that have been identified from studies of regionally significant natural areas (Molloy *et al.* 1999). While there is no statutory basis for regional ecological linkages, they have been recognised as an environmental policy consideration in EPA and planning policy over the last decade (EPA, 2009 and references therein).

The *South West Regional Ecological Linkages (SWREL) Technical Report* (Molloy *et al.* 2009) identifies an ecological linkage located approximately 430 m to the east of the subject site. This linkage runs in a north south direction and the vegetation within the subject site is not directly connected to vegetation within the linkage.

### 2.4.4 Environmentally Sensitive Areas

Section 51B of the EP Act allows the Minister to declare an Environmentally Sensitive Area (ESA). Once declared, the exemptions to clear native vegetation under the regulations do not apply in these areas. Current declared ESAs are listed in the Environmental Protection (Environmentally Sensitive Areas) Notice 2005.

There are no ESAs located within or in proximity to the subject site.

### 2.4.5 Flora

A search for known rare and Priority flora within or in proximity to the subject site was undertaken through review of the following databases:

- DBCA’s NatureMap database; and
- EPBC Act Protected Matters database.

A total of three Priority flora and one Declared Rare Flora species have been recorded within 5 km of the subject site. The EPBC Act Protected Matters database search returned two results for listed “Critically Endangered” species, six results for “Endangered” species and four results for “Vulnerable” flora species of which five have potential to occur within the subject site (refer to **Appendix A**). A summary of these species and their likelihood of occurring within the subject site based on preferred soil types is provided within **Table 4**.

**Table 4. Database search results for significant flora known to occur within a 5km radius of the subject site.**

Species	DBCA Status <sup>1</sup>	EPBC Act Status	Likelihood of Occurrence
<i>Andersonia gracilis</i>		Endangered	Unlikely
<i>Boronia capitata subsp. gracilis</i>	P3		Unlikely
<i>Caladenia huegelii</i> (King Spider -orchid)	T	Endangered	Possible
<i>Caladenia speciosa</i>	P4		Possible
<i>Diuris drummondii</i> (Tall Donkey Orchid)	-	Vulnerable	Unlikely
<i>Diuris micrantha</i> (Dwarf Bee-orchid)	-	Vulnerable	Unlikely
<i>Diuris purdiei</i> (Purdie’s Donkey-orchid)	-	Endangered	Unlikely
<i>Drakaea elastica</i> (Glossy-leafed Hammer Orchid)	-	Endangered	Possible
<i>Drakaea micrantha</i> (Dwarf Hammer-orchid)	-	Vulnerable	Possible
<i>Eleocharis keigheryi</i> (Keighery’s Eleocharis)	-	Vulnerable	Unlikely
<i>Synaphea sp. Fairbridge Farm</i> (Selena’s Synaphea)	-	Critically Endangered	Unlikely

Species	DBCA Status <sup>1</sup>	EPBC Act Status	Likelihood of Occurrence
<i>Synaphea odocoileops</i>	P1	-	Unlikely
<i>Synaphea sp. Pinjarra Plain</i>	-	Endangered	Unlikely
<i>Synaphea sp. Serpentine</i>	-	Critically Endangered	Unlikely
<i>Synaphea stenoloba (Dwellingup Synaphea)</i>		Endangered	Unlikely

Four species of conservation significance have the possibility of occurring within the subject site. These species are all herbs. While the soil profile may be suitable for these species to occur, the subject site has been previously cleared and has been subjected to grazing historically and recently, as evidenced by the lack of understorey and midstorey species. Accordingly, it is very unlikely that any herb species of conservation significance will occur within the subject site.

## 2.5 Fauna

A search of the DBCA NatureMap database was undertaken to establish whether species declared as 'Rare or likely to become extinct' (Schedule 1), 'Birds protected under an international agreement' (Schedule 3) and 'Other specially protected fauna' (Schedule 4) as listed under the *Biodiversity Conservation Act 2016* (BC Act) have been recorded in proximity to the subject site. Five fauna species listed as Schedule 1 species and five Schedule 3 species have been recorded within a 5km radius of the subject site. Additionally, the DBCA Priority fauna database identified three Priority 3, three Priority 4 and two other specially protected fauna within this zone (refer to **Table 5**).

The EPBC Act Protected Matters Search Tool also identified several threatened and migratory species that could potentially occur within or in proximity to the subject site. This included five species classified as Vulnerable, four Endangered species and two Critically Endangered species. Of the listed species one is a migratory bird species (refer to **Table 5**). Marine species identified within the search were not assessed given that the subject site is not in proximity to a marine environment.

**Table 5. Significant fauna potentially occurring within the subject site as identified by State and Commonwealth database searches.**

Species	DBCA Status <sup>1</sup>	EPBC Act Status	Likelihood of Occurrence
<i>Botaurus poiciloptilus</i> (Australasian Bittern)	-	Endangered	Unlikely, absence of suitable habitat
<i>Calidris canutus</i> (Red Knot)	-	Endangered	Unlikely, absence of suitable habitat
<i>Calidris ferruginea</i> (Curlew Sandpiper)	-	Critically Endangered	Unlikely, absence of suitable habitat
<i>Calyptorhynchus banksia naso</i> (Forest Red – tailed Black Cockatoo)	T	Vulnerable	Possible
<i>Calyptorhynchus baudinii</i> (Baudin's Cockatoo)	T	Endangered	Possible
<i>Calyptorhynchus latirostris</i> (Carnaby's Cockatoo)	T	Endangered	Possible
<i>Dasyurus geoffroii</i> (Chuditch)	S1	Vulnerable	Possible
<i>Falco hypoleucos</i> (Grey Falcon)	-	Vulnerable	Unlikely, outside of known range
<i>Falsistrellus mackenziei</i> (Western False Pipistrelle)	P4	-	Possible

Species	DBCA Status <sup>1</sup>	EPBC Act Status	Likelihood of Occurrence
<i>Leipoa ocellata</i> (Malleefowl)	-	Vulnerable	Unlikely, absence of suitable habitat.
<i>Numenius madagascariensis</i> (Eastern Curlew)	-	Critically Endangered	Unlikely, absence of suitable habitat.
<i>Notamacropus irma</i> (Western Brush Wallaby)	P4	-	Unlikely, absence of suitable habitat.
<i>Oxyura australis</i> (Blue-billed Duck)	P4	-	Unlikely, absence of suitable habitat.
<i>Pseudocheirus occidentalis</i> (Western Ringtail Possum)	S1	Critically Endangered	Unlikely, absence of suitable habitat.
<i>Tringa nebularia</i> (Common Greenshank)	IA	-	Unlikely, absence of suitable habitat.
<i>Westralunio carteri</i> (Carter's Freshwater Mussel)	-	Vulnerable	Unlikely, absence of waterbody.

There are five significant fauna species that could possibly be encountered within the subject site. Forest Red-tailed Black Cockatoo, Baudin's Black Cockatoo and Carnaby's Black Cockatoo (collectively referred to as 'Black Cockatoos'), *Dasyurus geoffroii* (Chuditch) and *Falsistrellus mackenziei* (Western False Pipistrelle). Based on available data, an assessment to determine the likelihood of the abovementioned species occurring within the subject site is provided below.

### Black Cockatoos

While a targeted fauna survey has not been undertaken within the subject site it can reasonably be expected that the subject site contains habitat utilised by the following species of Black Cockatoos:

- Baudin's Black Cockatoo (*Calyptorhynchus baudinii*);
- Carnaby's Black Cockatoo (*Calyptorhynchus latirostris*); and
- Forest Red-tailed Black Cockatoo (*Calyptorhynchus banksii naso*).

### Breeding Habitat

'Breeding habitat' is defined in the *EPBC Act referral guidelines for three threatened black cockatoo species* as 'trees of species known to support breeding...within the range of the species which either have a suitable nest hollow OR are of a suitable diameter at breast height (DBH) to develop a nest hollow. For most tree species, suitable DBH is 500 mm'.

Due to historical logging activities, the subject contains very few mature Marri (*Corymbia calophylla*) and Jarrah (*Eucalyptus marginata*) species that may constitute potential habitat trees for Black Cockatoos.

### Foraging Habitat

Plant species likely to be present within the subject site known to be used by one or more of the Black Cockatoo species as a food source (i.e. foraging habitat) include the Banksia spp. and Eucalyptus spp. However, the presence of these species within the subject site is very limited and therefore the subject site is anticipated to provide marginal (if any) quality foraging habitat.

Available mapping shows that there is about 7,400 ha of remnant native vegetation within 12 km of the subject site. Of this, about 47% (3,476 ha) is contained within land subject to DBCA management (i.e. national parks, reserves or state forests). The remnant native vegetation within the subject site (of which a very limited amount is suitable foraging habitat), constitutes approximately 0.08% of the area of native vegetation within a 12 km radius. While the isolated trees within the subject site may be suitable for Black

Cockatoo foraging, the incidence of these species within the subject site is rare and therefore Black Cockatoos are unlikely to rely on this habitat for their survival.

### Roosting

There are no records of Black Cockatoo species utilising the area for night roosting, with the closest confirmed night roosting area located approximately 10 km from the subject site.

### *Dasyurus geoffroii* (Chuditch)

Chuditch mostly inhabit Jarrah (*Eucalyptus marginata*) forests and woodlands, mallee shrublands and heathlands. They are solitary animals with home range extending up to 15 km<sup>2</sup> for males and 3-4 km<sup>2</sup> for females. Their relatively large home ranges can overlap except in their core areas which contain numerous den sites. Dens are located in hollow logs, tree limbs and rock outcrops and burrows (DBCA 2017).

Given the 'Degraded' to 'Completely Degraded' nature of the vegetation within the subject site and the presence of *Kunzea glabrescens* and *Casuarina equisetifolia* as the dominant species, it is very unlikely that Chuditch rely on the vegetation within the subject site for their persistence. They may infrequent the subject site as vagrants.

### *Falsistrellus mackenziei* (Western False Pipistrelle)

Western False Pipistrelle live mainly in wet sclerophyll forests of Karri, Jarrah and Tuart eucalypts. They roost in hollows in old trees, branches and stumps. The subject site represents potential foraging and breeding habitat for the species (albeit marginal in quality). Given the condition of the vegetation, it is considered unlikely that the subject site provides habitat critical to the survival of this species.

## 2.6 Aboriginal Heritage

All Aboriginal sites in Western Australia are provided protection under the *Aboriginal Heritage Act 1972* in which it is an offence for anyone to excavate, damage, destroy, conceal or in any way alter an Aboriginal site without the Minister's permission.

An online search for relevant Aboriginal heritage information was undertaken using the Department of Planning, Lands and Heritage (DPLH) *Aboriginal Heritage Inquiry System* (AHIS) that incorporates both the heritage site register and the heritage survey database (DPLH 2021). The Aboriginal Heritage Site Register is maintained pursuant to Section 38 of the *Aboriginal Heritage Act 1972* and contains information on over 22,000 listed Aboriginal sites throughout Western Australia.

Results of the AHIS database search revealed no Aboriginal heritage sites were recorded within 5 km of the subject site.



## 3 CLEARING ASSESSMENT

### 3.1 Avoidance and Mitigation Measures

The applicant undertook an assessment of the area prior to determining the suitability of sand and gravel extraction from the subject site. This included a visual assessment of vegetation within the proposed location. Upon completion of this assessment, it was determined that the trees within the clearing area are unlikely to constitute significant habitat for fauna species of conservation significance. Given that the clearing footprint has been specifically selected to target areas of the most degraded vegetation within the property, it is considered that no other reasonable or practicable avoidance measures can be implemented.

To avoid any direct or indirect environmental impacts, the applicant has also committed to various management measures as discussed in **Section 4**.

### 3.2 Assessment Against the Ten Clearing Principles

Any clearing of native vegetation requires a permit in accordance with Part V of the EP Act, except where an exception applies under Schedule 6 of the Act or is prescribed by regulation in the *Environmental Protection (Clearing Native Vegetation) Regulations 2004*.

The clearing of native vegetation will require an approved clearing permit. Clearing applications are assessed against the Ten Clearing Principles outlined in Schedule 5 of the EP Act. These principles aim to ensure that all potential impacts resulting from the removal of native vegetation can be assessed in an integrated manner.

An examination of the Ten Clearing Principles applied against a desktop investigation, review of previous assessments and results from a recent site visit is provided below.

#### a) Native vegetation should not be cleared if it comprises a high level of biological diversity.

Based on observations during a site visit undertaken by Accendo on the 28<sup>th</sup> October 2021, vegetation within the subject site is classified as being in a 'Degraded' to 'Completely Degraded' condition. The area mapped as a MU wetland is comprised of a monoculture of spearwood (*Kunzea glabrescens*). The remaining portion of the subject site predominately contains *Casuarina equisetifolia* with very occasional *Banksia* spp. and *Corymbia calophylla* (Marri). A lack or absence of native understorey and midstorey species was observed in the subject site which can be attributed to historical and recent grazing.

Regional vegetation mapping by Heddle *et al.* (1980) indicates that the subject site consists of vegetation of the Southern River complex; An open woodland of *Corymbia calophylla* (Marri) - *Eucalyptus marginata* (Jarrah) - *Banksia* species with fringing woodland of *Eucalyptus rudis* (Flooded Gum) - *Melaleuca raphiophylla* (Swamp Paperbark) along creek beds. Beard (1979) vegetation mapping indicates that the subject site would have contained vegetation of the Bassendean complex, consisting of a mosaic, medium forest of Jarrah-Marri, low woodland containing banksia and low forest of teatree (*Melaleuca* spp.). In consideration of the vegetation condition and the absence of key characteristic species, the vegetation within the subject site is not considered representative of the Southern River complex or the Bassendean complex.

As discussed in **Section 2.4**, due to the history of disturbance in the subject site resulting in vegetation in a 'Degraded' to 'Completely Degraded' condition, it is unlikely that any flora species of conservation significance are present.

As discussed within **Section 2.5**, while the subject site potentially hosts a range of fauna species, the habitat is considered marginal in quality due to the vegetation condition and limited flora species diversity. Although fauna species may move through the subject site, they are unlikely to rely on it for their survival.

While it is noted that a SWREL axis line is located to the east of the subject site, the removal of the isolated vegetation from the subject site will not impact faunal movement in the general area or isolate existing remnant vegetation within this linkage. The proposed clearing is therefore unlikely to compromise any existing values of the nearby ecological linkage.

In consideration of the above information, while the subject site may provide habitat for some Priority fauna species, the vegetation subject to clearing is not likely to provide habitat critical to the survival of these species. The clearing required is considered to have minimal regional or local significance in the context of the existing remnants of vegetation in the area. Therefore, the proposal is not considered to be at variance to this Principle.

**b) 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.**

While a targeted fauna survey has not been undertaken within the subject site, searches of the relevant databases revealed the possible presence of the following conservation significant species; Black Cockatoos, Chuditch and Western False Pipistrelle. As discussed in **Section 2.5**, the possible presence of these species is based on the occasional occurrence of Eucalyptus spp. and Banksia spp. within the subject site. Accordingly, the subject site is likely to provide marginal quality fauna habitat for these species.

Available mapping shows that there is about 7,400 ha of remnant native vegetation within 12 km of the subject site. Of this, about 47% (3,476 ha) is contained within land subject to DBCA management (i.e. national parks, reserves or state forests). The remnant native vegetation within the subject site constitutes approximately 0.08% of the area of native vegetation within a 12 km radius. Furthermore, approximately 11 ha of native vegetation in better condition will be retained onsite.

On this basis, the proposal is unlikely to impact habitat critical for the survival of conservation significant species. Therefore, the proposal is not considered to be at variance to this Principle.

**c) Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, rare flora.**

As discussed in **Section 2.4**, due to the history of disturbance in the subject site resulting in vegetation in a 'Degraded' to 'Completely Degraded' condition, it is unlikely that any flora species of conservation significance are present.

Therefore, the proposal is not considered to be at variance to this Principle.

**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.**

A search was undertaken of the DBCA's TEC database and the EPBC Act Protected Matters database indicated that two TECs are mapped as being likely to occur within 5 km of the subject site. This includes the Banksia Woodlands of the Swan Coastal Plain ecological community (Endangered) and the Tuart (*Eucalyptus gomphocephala*) Woodlands and Forests of the Swan Coastal Plain ecological community (Critically Endangered).

Given the 'Degraded' to 'Completely Degraded' nature of the vegetation within the subject site and the very occasional occurrence of key indicator species, it is very unlikely that the Banksia Woodlands TEC or the Tuart Woodlands and Forest TEC is present within the subject site.

On this basis, the proposal is not considered to be at variance to this Principle.

**e) Native vegetation should not be cleared if it is a remnant of native vegetation in an area that has been extensively cleared.**

The EPA has a target to retain all remaining areas of each complex where less than 30% remains on the Swan Coastal Plain (EPA 2003). The Southern River and Bassendean complexes have approximately 28% and 18% of the complex remaining of the Swan Coastal Plain, respectively.

In consideration of the vegetation condition and the absence of key characteristic species, the vegetation within the subject site is not considered representative of the Southern River complex or the Bassendean complex.

Therefore, this proposal is not considered to be at variance to this Principle.

**f) Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland.**

The subject site does not contain any defined natural surface watercourses or channels with the closest RE wetland being located approximately 60 m to the north and the closest watercourse being the Waroona drain located approximately 1 km to the north.

While a portion of the subject is classified as a 'Multiple Use' wetland, vegetation within this area is restricted to *Kunzea glabrescens*. This species does inhabit riparian/ wetland zones, however it also acts as colonizer of previously disturbed areas. No other riparian vegetation will be impacted by the proposed development.

MU wetlands are assessed as possessing few remaining ecological attributes and functions, which is characteristic of these mapped areas within the property. While such wetlands can still contribute to regional or landscape ecosystem management, including hydrological function, they are considered to have low intrinsic ecological value. Typically, they have minimal or no native vegetation remaining (less than 10%). Accordingly, there is no legislative requirement to protect or retain them and as such MU wetlands do not preclude development.

The management objective for MU wetlands is to preserve the hydrological functions in the context of the proposed development (EPA 2008). The current water cycle within the subject site consists of inputs from rainwater being infiltrated on site or flowing through drainage lines into the wider drainage system. The clearing is not proposing to alter this process.

Based on the above, the proposal is at variance to this Principle given that *Kunzea glabrescens* will be cleared, however this species is widely abundant in the locality and is also a common colonizer species. Removal of this vegetation will not impact the existing hydrological values of the MU wetland.

**g) Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation.**

The subject site has been mapped as containing soils of the Bassendean B1 Phase and the Bassendean B4 Phase. These Phases are described as:

- Bassendean B1 Phase: extremely low to very low relief dunes, undulating sandplain and discrete sand rises with deep bleached grey sands sometimes with a pale yellow B horizon or a weak iron-organic hardpan at depths generally greater than 2m; and
- Bassendean B4 Phase: Broad poorly drained sandplain with deep grey siliceous sands or bleached sands, underlain at depths generally greater than 1.5 m by clay or less frequently a strong iron – organic hardpan.

These Phases have been mapped within the following land degradation risk categories (NRInfo, 2021):

- Less than 3% of the map unit has a moderate to high flood risk;
- Less than 3% of the map unit has a moderate salinity risk;
- Less than 3% of the map unit has a very high to extreme water erosion risk; and
- 15 % (B4 Phase) -52 % (B1 Phase) of the map unit has a high to extreme wind erosion risk.

The subject site is mapped within an area having low risk of water erosion, flooding and salinity, and low to moderate risk of wind erosion.

Mapping prepared by the DWER indicates that the subject site is classified as having “*moderate to low risk of ASS, occurring within 3 m of the natural soil surface*”.

Clearing will be limited to the area required for pasture with seeding commencing immediately following the clearing event. Accordingly, potential impacts associated with wind erosion are considered insignificant.

The proposal is not likely to be at variance to this Principle.

**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.**

The subject site does not provide a continuous link to any nearby or adjacent conservation areas, with the closest conservation area located approximately 2.3 km to the south of the subject site. Based on this, the proposed clearing is not at variance to this Principle.

**i) Native vegetation should not be cleared if the clearing of the vegetation is likely to cause deterioration in the quality of surface of underground water.**

The subject site is located within the Waroona subarea of the *Rights in Irrigation and Water Act* (1914) (RiWI Act) proclaimed Murray Groundwater Management Area. The subject site does not contain any defined natural surface water channels and is not located within a ‘Public Drinking Water Source’ area. The current water cycle within the subject site consists of inputs from rainwater being largely infiltrated on site. The clearing of the vegetation within the subject site is unlikely to alter this.

Furthermore, no interactions with groundwater are expected. It is therefore unlikely that the proposed clearing will reduce the quality of surface or groundwater and therefore the proposal is not at variance to this Principle.

**j) Native vegetation should not be cleared if clearing the vegetation is likely to cause, or exacerbate, the incidence of flooding.**

Given the topography, soil type and low flood risk documented within the subject site, it is considered unlikely that the proposed clearing will increase the incidence of flooding and therefore the proposal is not at variance to this Principle.

## 4 ENVIRONMENTAL MANAGEMENT MEASURES

In order to mitigate potential impacts associated with the proposed clearing activities, the following site specific management activities will be implemented.

### 4.1 Vegetation and Flora Management

#### 4.1.1 Background

Vegetation clearing will be cleared with mechanical equipment such as an excavator. Seeding and establishment of pasture will commence immediately following the clearing events.

#### 4.1.2 Management Plan

In order to ensure that the potential impacts associated with vegetation clearing is minimised as far as practicable, the following management measures are proposed.

**Table 6. Vegetation clearing management plan.**

Vegetation Clearing	
<b>Responsibility</b>	
<ul style="list-style-type: none"> <li>Project Manager.</li> <li>Contractors.</li> </ul>	
<b>Objectives</b>	
<ul style="list-style-type: none"> <li>Prevent clearing outside of the designated clearing boundaries.</li> <li>Minimise soil erosion and sedimentation.</li> </ul>	
<b>Potential Impacts</b>	
<ul style="list-style-type: none"> <li>Clearing native vegetation.</li> <li>Inadvertent additional clearing of vegetation.</li> <li>Impacts on fauna species.</li> <li>Weed and disease invasion.</li> </ul>	
<b>Management Strategies</b>	<b>Timing</b>
<ul style="list-style-type: none"> <li>All site personnel will be inducted on the clearing controls for this project.</li> <li>Vegetation required to be removed will be marked with white flagging tape to avoid any unnecessary disturbance to adjacent vegetation.</li> <li>The flagging tape which demarcates subject site will be checked on a daily basis to ensure that the clearing requirements remain clearly visible.</li> <li>No movement of vehicles or personnel within the vegetation retention areas will be allowed.</li> <li>No stockpiling of topsoil or other material is to occur outside of the clearing boundary.</li> <li>The location and area of vegetation cleared will be checked on a daily basis.</li> </ul>	<ul style="list-style-type: none"> <li>Prior to clearing.</li> <li>Prior to clearing.</li> <li>During clearing.</li> <li>During clearing.</li> <li>During clearing.</li> <li>During clearing.</li> </ul>
<b>Performance Indicators</b>	
<ul style="list-style-type: none"> <li>No unauthorised clearing is undertaken.</li> <li>No fauna is directly impacted during clearing.</li> </ul>	
<b>Monitoring</b>	

- Daily checks to ensure that clearing is consistent with the approved clearing boundaries.
- Daily checks to ensure that no fauna have been impacted.

#### Reporting

- The DWER will be notified immediately if clearing beyond the approved clearing boundaries occurs, or if any fauna is directly impacted. Work may be stopped and the site inspected by DWER or LGA and a remedy determined before work restarts.
- A review of the performance indicators will be undertaken upon completion of clearing to determine the success of the vegetation clearing management measures. Where non-compliances are identified the DWER will be notified accordingly.

## 4.2 Fauna Management

### 4.2.1 Background

As discussed in **Section 2.5**, there is potential for species of conservation significance including Black Cockatoos, Chuditch and Western False Pipistrelle to occur within the subject site. On this basis, the implementation of appropriate management measures is required during clearing works.

### 4.2.2 Management Plan

A series of management and mitigation measures have been developed as documented below which will further support the protection of the above species of conservation significance within the subject site.

**Table 7. Fauna management plan.**

Species of conservation significance	
<b>Responsibility</b>	
<ul style="list-style-type: none"> <li>• Project Manager.</li> <li>• Contractors.</li> </ul>	
<b>Objectives</b>	
<ul style="list-style-type: none"> <li>• Minimise direct and indirect impacts to species of conservation significance during clearing.</li> <li>• Long term preservation of species of conservation significance within the subject site.</li> </ul>	
<b>Potential Impacts</b>	
<ul style="list-style-type: none"> <li>• Direct impacts to species of conservation significance during clearing activities.</li> </ul>	
<b>Management Strategies</b>	<b>Timing</b>
<ul style="list-style-type: none"> <li>• Clearing will be undertaken as per <b>Section 4.1.2</b>.</li> <li>• The following clearing protocols will be implemented to avoid impacts to species of conservation significance: <ul style="list-style-type: none"> <li>○ Immediately prior to any clearing commencing a qualified expert will undertake a pre-clearing inspection of the clearing zone and nearby areas to confirm the location of tree hollows currently or likely to be occupied by Black Cockatoos, Chuditch and Western False Pipistrelles and mark these trees as necessary.</li> <li>○ The suitably qualified expert will be onsite when clearing is being undertaken. The qualified expert should also have a current authorisation to take or disturb threatened species from the Minister for Environment or delegate under section 40 of the BC Act.</li> <li>○ Prior to clearing commencing, the clearing operators will be briefed by the same qualified expert who will explain to</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• During clearing.</li> <li>• Prior to and during clearing.</li> </ul>

operators which areas of the subject site are more sensitive in relation to the presence of species of conservation significance and the techniques and approaches that will need to be employed during the clearing operations. An agreed means of communication between the operators and the qualified expert will be established prior to clearing commencing to ensure the safety of the species of conservation significance. Operators will be required to abide by this agreed means of communication at all times.

- The qualified expert will be present on the subject site to direct clearing operators, particularly when clearing trees are occupied by species of conservation significance to ensure that these are cleared in a way that allows the animals to safely mobilise to adjacent areas. In addition, they will supervise any animal handling and the rescue of injured animals should this be required.
- In the event that a species of conservation significance is observed in a tree that is about to be cleared and there is a tree/area marked for retention near the tree which is to be cleared then the tree will be gently lowered to the ground to enable the animal to safely evacuate. The animal/s will be encouraged to move towards and occupy the trees to be retained.
- If operators encounter injured species of conservation significance during clearing then the qualified expert will make arrangements for the care and welfare of the injured animals.
- In relation to the qualified expert, the following requirements need to be met:
  - They need to have appropriate equipment to administer emergency care to any injured or displaced animals.
  - They need to have a suitable care facility of their own or have made prior arrangements with an appropriate carer who can rehabilitate any injured animals.
  - They need to be able to recognise suitable habitat for species of conservation significance adjacent to the clearing.
  - They need to have demonstrated capture and animal handling experience.
  - They need to be authorised under section 40 of the BC Act.
- Prior to clearing.

#### **Performance Indicators**

- Environmental induction and species of conservation significance clearing protocols implemented.
- No species of conservation significance deaths occur during clearing activities.
- Disturbance on site is limited to the approved trees.

#### **Reporting**

- The DWER will be notified immediately if clearing beyond the approved clearing boundaries occurs, or if any individuals are directly impacted.
- A report prepared by the qualified expert will be provided to DWER to advise on implementation of this plan and report on species of conservation significance observed and or handled.

## 4.3 Weed and Pathogen Management

### 4.3.1 Background

*Phytophthora* dieback is a soil-borne pathogen recognised as a major threat to Australian vegetation, and in particular, the vegetation and dependent biota within the southwest botanical province. *Phytophthora* dieback is known to reduce the health and species diversity of native vegetation and the disease is listed as a key threatening process under the EPBC Act.

While there has been no formal mapping of the extent of weed incursion or dieback disease caused by the pathogen *Phytophthora cinnamomi* within the subject site, weed and pathogen management measures are recommended to minimise the spread and potential infestation. The key objective associated with weed and pathogen management is to prevent the introduction and/or spread of weeds or the disease throughout the subject site.

### 4.3.2 Management Plan

The following controls will be implemented within the subject site to assist in the control of weed and pathogen movement.

**Table 8. Weed and pathogen management plan.**

<b>Phytophthora dieback and weed management</b>	
<b>Responsibility</b>	
<ul style="list-style-type: none"> <li>Project Manager.</li> <li>Contractors.</li> </ul>	
<b>Objectives</b>	
<ul style="list-style-type: none"> <li>To prevent the introduction and spread of <i>Phytophthora</i> dieback and weeds within the subject site.</li> </ul>	
<b>Potential Impacts</b>	
<ul style="list-style-type: none"> <li>Introduction and spread of disease (<i>Phytophthora</i> spp.) and weeds.</li> </ul>	
<b>Management Strategies</b>	<b>Timing</b>
<ul style="list-style-type: none"> <li>Training will be provided to all personnel during the safety and environment induction course. This will include an explanation of the specific requirements relating to <i>Phytophthora</i> dieback management.</li> <li>All earthmoving and ground engaging equipment will be inspected and cleaned of vegetation and soil prior to entry and exit of the subject site.</li> <li>Access to the subject site during clearing will be restricted to the proposed roads and driveways. No other access points should be established. The access location and vehicle inspection point should be clearly sign posted.</li> <li>As far as practicable, onsite drainage shall be designed to contain runoff from building envelopes and roads within disturbed areas.</li> <li>Reduce vehicle and plant movement into and within the site as much as possible, particularly during wet conditions.</li> </ul>	<ul style="list-style-type: none"> <li>Prior to clearing.</li> <li>Prior to clearing.</li> <li>Prior to and during clearing.</li> <li>Prior to and during clearing.</li> <li>During clearing.</li> </ul>
<b>Performance Indicators</b>	
<ul style="list-style-type: none"> <li>Hygiene procedures are adopted during clearing activities.</li> </ul>	
<b>Monitoring</b>	



- Project Manager will ensure disease hygiene and control measures are implemented during clearing activities.

**Reporting**

- Contractors to confirm that *Phytophthora* dieback and weed management measures have been implemented.

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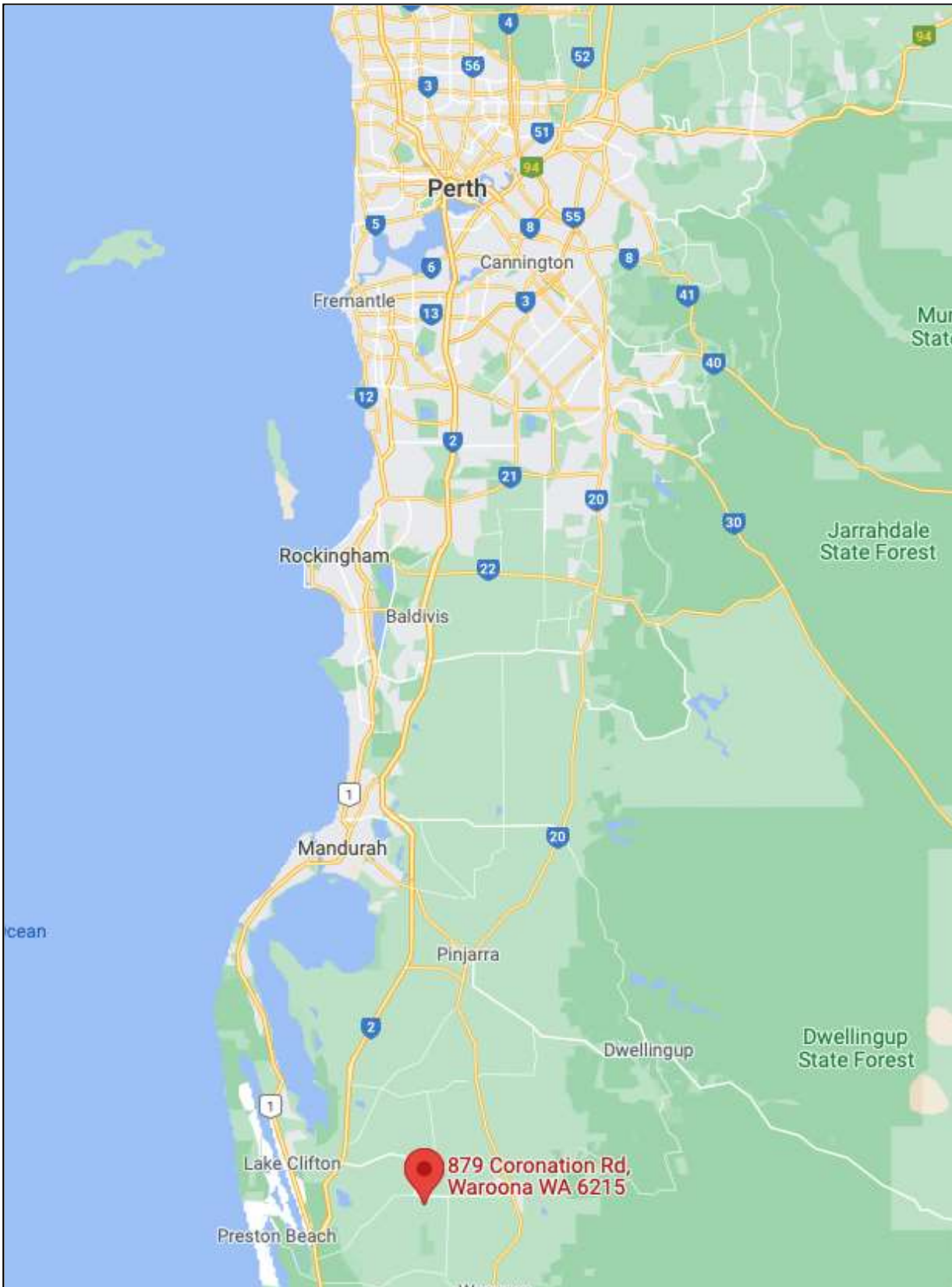
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## FIGURES



PROJECT 879 Coronation Road, Waroona

Project Number 2177 Drawing Number Figure 1 Revision A

DRAWING TITLE Figure 1 – Site Locality 

Designed PN Checked Approved  
 Drawn PN

CLIENT Lovegrove Turf Services Pty Ltd

Date 29/11/2021  
 Local Authority Shire of Waroona  
 Sheet 1 of 1

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**Legend**

- Subject site
- Lot boundary

**PROJECT** 879 Coronation Road, Waroona

**DRAWING TITLE** Figure 2 - Site Extent

**CLIENT** Lovegrove Turf Services Pty Ltd

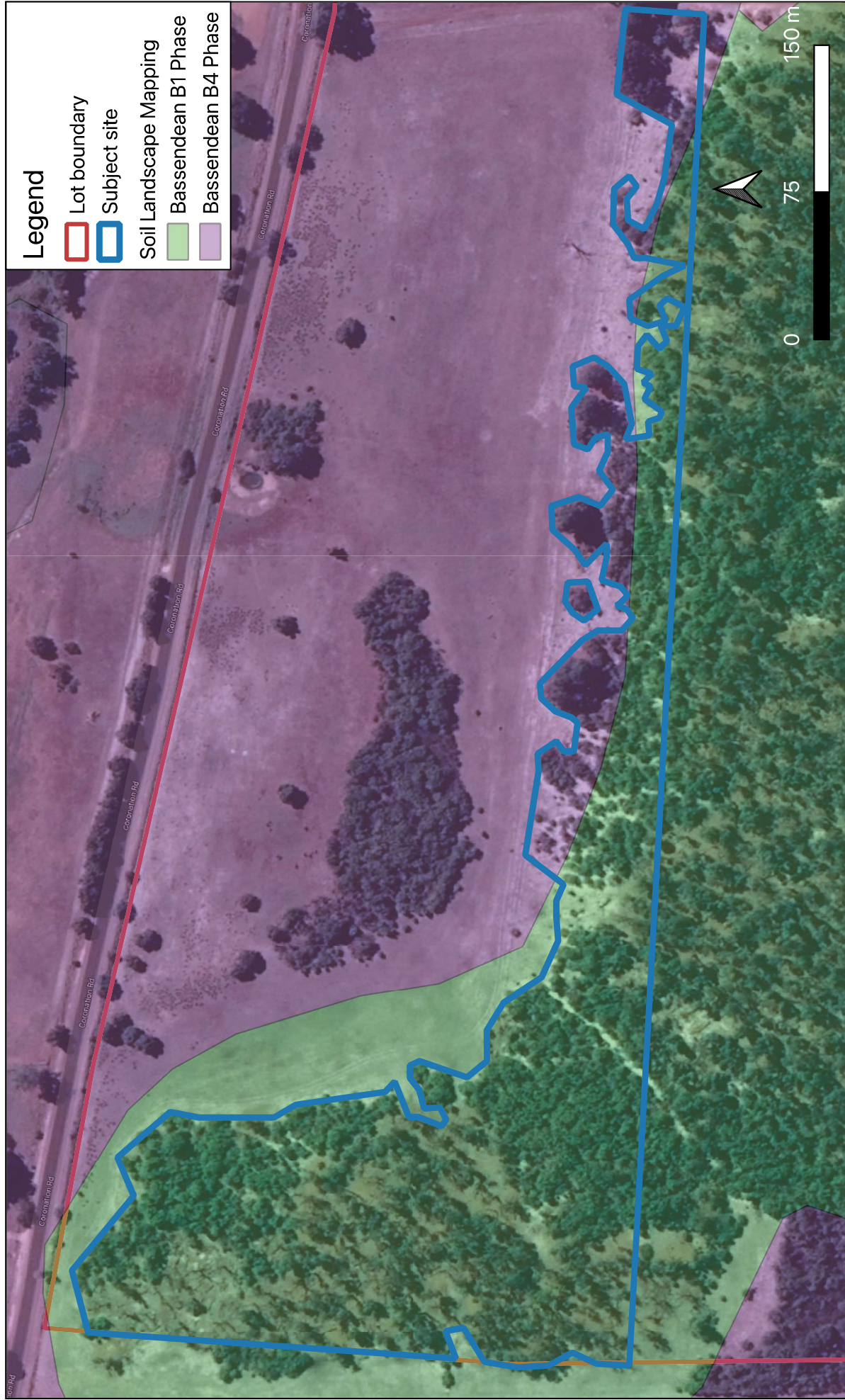
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Sheet 1 of 1			Shire of Waroona





**Legend**

- Lot boundary
  - Subject site
- Soil Landscape Mapping**
- Bassendean B1 Phase
  - Bassendean B4 Phase

**PROJECT** 879 Coronation Road, Waroona

**DRAWING TITLE** Figure 3 - Soil landscape mapping

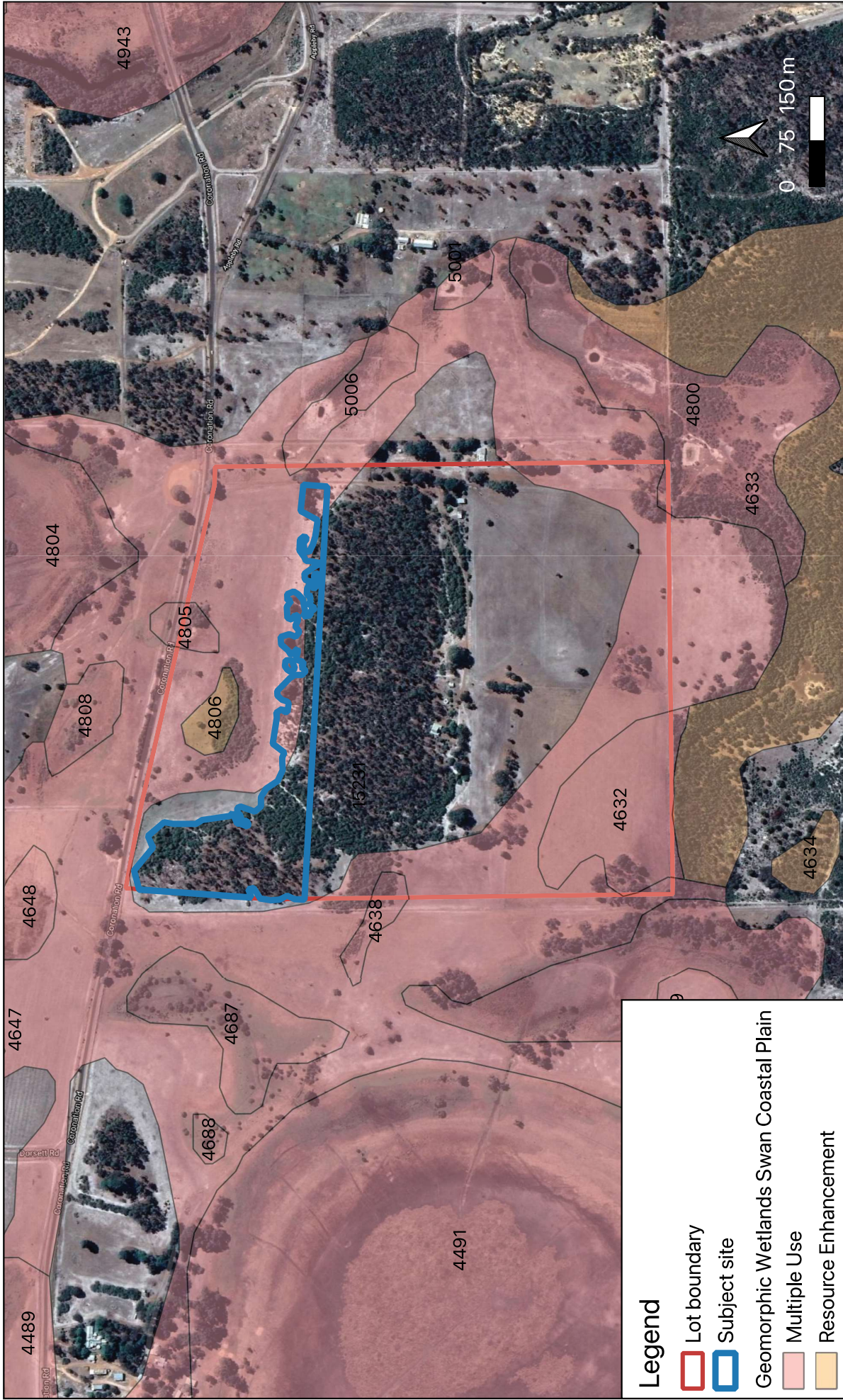
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**Legend**

- Lot boundary
- Subject site
- Geomorphic Wetlands Swan Coastal Plain
- Multiple Use
- Resource Enhancement

**PROJECT** 879 Coronation Road, Waroona

**DRAWING TITLE** Figure 4 - Wetland mapping

**CLIENT** Lovegrove Turf Services Pty Ltd

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Project Number	2177	Designed	PN
Drawing Number	Figure 4	Drawn	PN
Revision	A	Checked	
Date	29/11/2021	Approved	Local Authority
Sheet 1 of 1			Shire of Waroona



## APPENDIX A. Database search results for flora and fauna of conservation significance



## EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected.

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

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

Report created: 16/11/21 19:04:15

[Summary](#)

[Details](#)

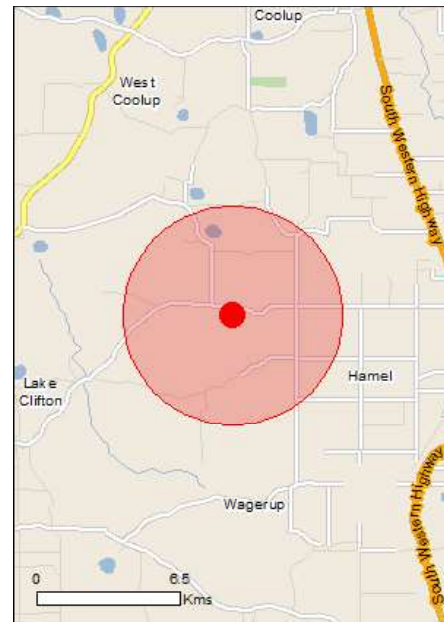
[Matters of NES](#)

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

[Extra Information](#)

[Caveat](#)

[Acknowledgements](#)



This map may contain data which are  
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[Coordinates](#)

Buffer: 5.0Km



# Summary

## Matters of National Environmental Significance

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

<a href="#">World Heritage Properties:</a>	None
<a href="#">National Heritage Places:</a>	None
<a href="#">Wetlands of International Importance:</a>	1
<a href="#">Great Barrier Reef Marine Park:</a>	None
<a href="#">Commonwealth Marine Area:</a>	None
<a href="#">Listed Threatened Ecological Communities:</a>	2
<a href="#">Listed Threatened Species:</a>	25
<a href="#">Listed Migratory Species:</a>	10

## Other Matters Protected by the EPBC Act

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

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

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

<a href="#">Commonwealth Land:</a>	None
<a href="#">Commonwealth Heritage Places:</a>	None
<a href="#">Listed Marine Species:</a>	15
<a href="#">Whales and Other Cetaceans:</a>	None
<a href="#">Critical Habitats:</a>	None
<a href="#">Commonwealth Reserves Terrestrial:</a>	None
<a href="#">Australian Marine Parks:</a>	None

## Extra Information

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

<a href="#">State and Territory Reserves:</a>	1
<a href="#">Regional Forest Agreements:</a>	None
<a href="#">Invasive Species:</a>	24
<a href="#">Nationally Important Wetlands:</a>	None
<a href="#">Key Ecological Features (Marine)</a>	None

# Details

## Matters of National Environmental Significance

Wetlands of International Importance (Ramsar)	[ Resource Information ]
Name	Proximity
<a href="#">Peel-yalgorup system</a>	Within 10km of Ramsar

## Listed Threatened Ecological Communities [ Resource Information ]

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

Name	Status	Type of Presence
<a href="#">Banksia Woodlands of the Swan Coastal Plain ecological community</a>	Endangered	Community likely to occur within area
<a href="#">Tuart (Eucalyptus gomphocephala) Woodlands and Forests of the Swan Coastal Plain ecological community</a>	Critically Endangered	Community likely to occur within area

## Listed Threatened Species [ Resource Information ]

Name	Status	Type of Presence
<b>Birds</b>		
<a href="#">Botaurus poiciloptilus</a>		
Australasian Bittern [1001]	Endangered	Species or species habitat may occur within area
<a href="#">Calidris canutus</a>		
Red Knot, Knot [855]	Endangered	Species or species habitat may occur within area
<a href="#">Calidris ferruginea</a>		
Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area
<a href="#">Calyptorhynchus banksii naso</a>		
Forest Red-tailed Black-Cockatoo, Karrak [67034]	Vulnerable	Species or species habitat known to occur within area
<a href="#">Calyptorhynchus baudinii</a>		
Baudin's Cockatoo, Long-billed Black-Cockatoo [769]	Endangered	Species or species habitat likely to occur within area
<a href="#">Calyptorhynchus latirostris</a>		
Carnaby's Cockatoo, Short-billed Black-Cockatoo [59523]	Endangered	Species or species habitat known to occur within area
<a href="#">Falco hypoleucos</a>		
Grey Falcon [929]	Vulnerable	Species or species habitat may occur within area
<a href="#">Leipoa ocellata</a>		
Malleefowl [934]	Vulnerable	Species or species habitat may occur within area
<a href="#">Numenius madagascariensis</a>		
Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area

Name	Status	Type of Presence
<a href="#">Rostratula australis</a> Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area
<b>Mammals</b>		
<a href="#">Dasyurus geoffroi</a> Chuditch, Western Quoll [330]	Vulnerable	Species or species habitat likely to occur within area
<a href="#">Pseudocheirus occidentalis</a> Western Ringtail Possum, Ngwayir, Womp, Woder, Ngoor, Ngoolangit [25911]	Critically Endangered	Species or species habitat likely to occur within area
<b>Other</b>		
<a href="#">Westralunio carteri</a> Carter's Freshwater Mussel, Freshwater Mussel [86266]	Vulnerable	Species or species habitat known to occur within area
<b>Plants</b>		
<a href="#">Andersonia gracilis</a> Slender Andersonia [14470]	Endangered	Species or species habitat may occur within area
<a href="#">Caladenia huegelii</a> King Spider-orchid, Grand Spider-orchid, Rusty Spider-orchid [7309]	Endangered	Species or species habitat known to occur within area
<a href="#">Diuris drummondii</a> Tall Donkey Orchid [4365]	Vulnerable	Species or species habitat may occur within area
<a href="#">Diuris micrantha</a> Dwarf Bee-orchid [55082]	Vulnerable	Species or species habitat likely to occur within area
<a href="#">Diuris purdiei</a> Purdie's Donkey-orchid [12950]	Endangered	Species or species habitat likely to occur within area
<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
<a href="#">Drakaea micrantha</a> Dwarf Hammer-orchid [56755]	Vulnerable	Species or species habitat likely to occur within area
<a href="#">Eleocharis keigheryi</a> Keighery's Eleocharis [64893]	Vulnerable	Species or species habitat may occur within area
<a href="#">Synaphea sp. Fairbridge Farm (D. Papenfus 696)</a> Selena's Synaphea [82881]	Critically Endangered	Species or species habitat likely to occur within area
<a href="#">Synaphea sp. Pinjarra Plain (A.S. George 17182)</a> [86878]	Endangered	Species or species habitat may occur within area
<a href="#">Synaphea sp. Serpentine (G.R. Brand 103)</a> [86879]	Critically Endangered	Species or species habitat may occur within area
<a href="#">Synaphea stenoloba</a> Dwellingup Synaphea [66311]	Endangered	Species or species habitat likely to occur within area

Listed Migratory Species		[ Resource Information ]
* Species is listed under a different scientific name on the EPBC Act - Threatened Species list.		
Name	Threatened	Type of Presence
<b>Migratory Marine Birds</b>		

Name	Threatened	Type of Presence
<a href="#">Apus pacificus</a> Fork-tailed Swift [678]		Species or species habitat likely to occur within area
<b>Migratory Terrestrial Species</b>		
<a href="#">Motacilla cinerea</a> Grey Wagtail [642]		Species or species habitat may occur within area
<b>Migratory Wetlands Species</b>		
<a href="#">Actitis hypoleucos</a> Common Sandpiper [59309]		Species or species habitat may occur within area
<a href="#">Calidris acuminata</a> Sharp-tailed Sandpiper [874]		Species or species habitat may occur within area
<a href="#">Calidris canutus</a> Red Knot, Knot [855]	Endangered	Species or species habitat may occur within area
<a href="#">Calidris ferruginea</a> Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area
<a href="#">Calidris melanotos</a> Pectoral Sandpiper [858]		Species or species habitat may occur within area
<a href="#">Numenius madagascariensis</a> Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area
<a href="#">Pandion haliaetus</a> Osprey [952]		Species or species habitat may occur within area
<a href="#">Tringa nebularia</a> Common Greenshank, Greenshank [832]		Species or species habitat likely to occur within area

#### Other Matters Protected by the EPBC Act

Listed Marine Species		[ <a href="#">Resource Information</a> ]
* Species is listed under a different scientific name on the EPBC Act - Threatened Species list.		
Name	Threatened	Type of Presence
<b>Birds</b>		
<a href="#">Actitis hypoleucos</a> Common Sandpiper [59309]		Species or species habitat may occur within area
<a href="#">Apus pacificus</a> Fork-tailed Swift [678]		Species or species habitat likely to occur within area
<a href="#">Ardea ibis</a> Cattle Egret [59542]		Species or species habitat may occur within area
<a href="#">Calidris acuminata</a> Sharp-tailed Sandpiper [874]		Species or species habitat may occur within area
<a href="#">Calidris canutus</a> Red Knot, Knot [855]	Endangered	Species or species habitat may occur within

Name	Threatened	Type of Presence area
<a href="#">Calidris ferruginea</a> Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area
<a href="#">Calidris melanotos</a> Pectoral Sandpiper [858]		Species or species habitat may occur within area
<a href="#">Haliaeetus leucogaster</a> White-bellied Sea-Eagle [943]		Species or species habitat likely to occur within area
<a href="#">Merops ornatus</a> Rainbow Bee-eater [670]		Species or species habitat may occur within area
<a href="#">Motacilla cinerea</a> Grey Wagtail [642]		Species or species habitat may occur within area
<a href="#">Numenius madagascariensis</a> Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area
<a href="#">Pandion haliaetus</a> Osprey [952]		Species or species habitat may occur within area
<a href="#">Rostratula benghalensis (sensu lato)</a> Painted Snipe [889]	Endangered*	Species or species habitat likely to occur within area
<a href="#">Thinornis rubricollis</a> Hooded Plover [59510]		Species or species habitat may occur within area
<a href="#">Tringa nebularia</a> Common Greenshank, Greenshank [832]		Species or species habitat likely to occur within area

## Extra Information

State and Territory Reserves	[ Resource Information ]
Name	State
Buller	WA

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

Name	Status	Type of Presence
<b>Birds</b>		
Anas platyrhynchos Mallard [974]		Species or species habitat likely to occur within area

Name	Status	Type of Presence
Columba livia Rock Pigeon, Rock Dove, Domestic Pigeon [803]		Species or species habitat likely to occur within area
Passer domesticus House Sparrow [405]		Species or species habitat likely to occur within area
Passer montanus Eurasian Tree Sparrow [406]		Species or species habitat likely to occur within area
Streptopelia chinensis Spotted Turtle-Dove [780]		Species or species habitat likely to occur within area
Streptopelia senegalensis Laughing Turtle-dove, Laughing Dove [781]		Species or species habitat likely to occur within area

### Mammals

Canis lupus familiaris Domestic Dog [82654]		Species or species habitat likely to occur within area
Felis catus Cat, House Cat, Domestic Cat [19]		Species or species habitat likely to occur within area
Feral deer Feral deer species in Australia [85733]		Species or species habitat likely to occur within area
Mus musculus House Mouse [120]		Species or species habitat likely to occur within area
Oryctolagus cuniculus Rabbit, European Rabbit [128]		Species or species habitat likely to occur within area
Rattus rattus Black Rat, Ship Rat [84]		Species or species habitat likely to occur within area
Sus scrofa Pig [6]		Species or species habitat likely to occur within area
Vulpes vulpes Red Fox, Fox [18]		Species or species habitat likely to occur within area

### Plants

Asparagus asparagoides Bridal Creeper, Bridal Veil Creeper, Smilax, Florist's Smilax, Smilax Asparagus [22473]		Species or species habitat likely to occur within area
Brachiaria mutica Para Grass [5879]		Species or species habitat may occur within area
Cenchrus ciliaris Buffel-grass, Black Buffel-grass [20213]		Species or species habitat may occur within area
Chrysanthemoides monilifera Bitou Bush, Boneseed [18983]		Species or species habitat may occur within area
Eichhornia crassipes Water Hyacinth, Water Orchid, Nile Lily [13466]		Species or species habitat likely to occur



Name	Status	Type of Presence
Genista sp. X Genista monspessulana Broom [67538]		within area
Lantana camara Lantana, Common Lantana, Kamara Lantana, Large- leaf Lantana, Pink Flowered Lantana, Red Flowered Lantana, Red-Flowered Sage, White Sage, Wild Sage [10892]		Species or species habitat likely to occur within area
Olea europaea Olive, Common Olive [9160]		Species or species habitat may occur within area
Pinus radiata Radiata Pine Monterey Pine, Insignis Pine, Wilding Pine [20780]		Species or species habitat may occur within area
Rubus fruticosus aggregate Blackberry, European Blackberry [68406]		Species or species habitat likely to occur within area

# Caveat

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

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

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

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

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

Where very little information is available for species or large number of maps are required in a short time-frame, maps are derived either from 0.04 or 0.02 decimal degree cells; by an automated process using polygon capture techniques (static two kilometre grid cells, alpha-hull and convex hull); or captured manually or by using topographic features (national park boundaries, islands, etc). In the early stages of the distribution mapping process (1999-early 2000s) distributions were defined by degree blocks, 100K or 250K map sheets to rapidly create distribution maps. More reliable distribution mapping methods are used to update these distributions as time permits.

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

- migratory and
- marine

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

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

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

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

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

# Coordinates

-32.84611 115.82565

# NatureMap Species Report

Created By Guest user on 16/11/2021

Current Names Only Yes  
 Core Datasets Only Yes  
 Method 'By Circle'  
 Centre 115° 49' 36" E, 32° 50' 46" S  
 Buffer 5km  
 Group By Conservation Status

Conservation Status	Species	Records
Non-conservation taxon	256	1167
Priority 1	1	2
Priority 3	1	4
Priority 4	5	18
Protected under international agreement	1	2
Rare or likely to become extinct	3	10
<b>TOTAL</b>	<b>267</b>	<b>1203</b>

Name ID	Species Name	Naturalised	Conservation Code	<sup>1</sup> Endemic To Query Area
<b>Rare or likely to become extinct</b>				
1.	1596 <i>Caladenia huegellii</i> (Grand Spider Orchid)		T	
2.	24731 <i>Calyptorhynchus banksii</i> subsp. <i>naso</i> (Forest Red-tailed Black Cockatoo)		T	
3.	24734 <i>Calyptorhynchus latirostris</i> (Carnaby's Cockatoo, White-tailed Short-billed Black Cockatoo)		T	
<b>Protected under international agreement</b>				
4.	24808 <i>Tringa nebularia</i> (Common Greenshank, greenshank)		IA	
<b>Priority 1</b>				
5.	16865 <i>Synaphea odocoileops</i>		P1	
<b>Priority 3</b>				
6.	11612 <i>Boronia capitata</i> subsp. <i>gracilis</i>		P3	
<b>Priority 4</b>				
7.	13862 <i>Caladenia speciosa</i>		P4	
8.	24189 <i>Falsistrellus mackenziei</i> (Western False Pipistrelle, Western Falsistrelle)		P4	
9.	48588 <i>Isodon fusciventer</i> (Quenda, southwestern brown bandicoot)		P4	
10.	48022 <i>Notamacropus irma</i> (Western Brush Wallaby)		P4	
11.	24328 <i>Oxyura australis</i> (Blue-billed Duck)		P4	
<b>Non-conservation taxon</b>				
12.	3502 <i>Acacia pulchella</i> (Prickly Moses)			
13.	3557 <i>Acacia stenoptera</i> (Narrow Winged Wattle)			
14.	3602 <i>Acacia willdenowiana</i> (Grass Wattle)			
15.	24260 <i>Acanthiza apicalis</i> (Broad-tailed Thornbill, Inland Thornbill)			
16.	24261 <i>Acanthiza chrysorrhoa</i> (Yellow-rumped Thornbill)			
17.	25755 <i>Acrocephalus australis</i> (Australian Reed Warbler)			
18.	<i>Aeshnidae</i> sp.			
19.	1261 <i>Agrostocrinum scabrum</i> (Blue Grass Lily)			
20.	184 <i>Aira caryophyllea</i> (Silvery Hairgrass)	Y		
21.	1728 <i>Allocasuarina fraseriana</i> (Sheoak, Kondil)			
22.	24312 <i>Anas gracilis</i> (Grey Teal)			
23.	24315 <i>Anas rhynchotis</i> (Australasian Shoveler)			
24.	24316 <i>Anas superciliosa</i> (Pacific Black Duck)			
25.	6306 <i>Andersonia caerulea</i> (Foxtails)			
26.	1411 <i>Anigozanthos manglesii</i> (Mangles Kangaroo Paw, Kurulbrang)			
27.	24561 <i>Anthochaera carunculata</i> (Red Wattlebird)			
28.	24991 <i>Aprasia repens</i> (Sand-plain Worm-lizard)			
29.	7838 <i>Arctotheca calendula</i> (Cape Weed, African Marigold)	Y		
30.	24337 <i>Ardea garzetta</i> subsp. <i>nigripes</i> (Little Egret)			
31.	24340 <i>Ardea novaehollandiae</i> (White-faced Heron)			
32.	24341 <i>Ardea pacifica</i> (White-necked Heron)			
33.	6334 <i>Astroloma pallidum</i> (Kick Bush)			

Name ID	Species Name	Naturalised	Conservation Code	<sup>1</sup> Endemic To Query Area
34.	17254 <i>Austrostipa tenuifolia</i>			
35.	24318 <i>Aythya australis</i> (Hardhead)			
36.	1800 <i>Banksia attenuata</i> (Slender Banksia, Piara)			
37.	1822 <i>Banksia ilicifolia</i> (Holly-leaved Banksia)			
38.	3159 <i>Billardiera laxiflora</i>			
39.	3165 <i>Billardiera variifolia</i>			
40.	24319 <i>Biziura lobata</i> (Musk Duck)			
41.	3710 <i>Bossiaea eriocarpa</i> (Common Brown Pea)			
42.	244 <i>Briza maxima</i> (Blowfly Grass)	Y		
43.	245 <i>Briza minor</i> (Shivery Grass)	Y		
44.	42307 <i>Cacomantis pallidus</i> (Pallid Cuckoo)			
45.	<i>Caenidae</i> sp.			
46.	1276 <i>Caesia micrantha</i> (Pale Grass Lily)			
47.	1592 <i>Caladenia flava</i> (Cowslip Orchid)			
48.	1162 <i>Cartonema phylloides</i>			
49.	2952 <i>Cassytha glabella</i> (Tangled Dodder Laurel)			
50.	1125 <i>Centrolepis drummondiana</i>			
51.	24186 <i>Chalinolobus gouldii</i> (Gould's Wattled Bat)			
52.	24187 <i>Chalinolobus morio</i> (Chocolate Wattled Bat)			
53.	1280 <i>Chamaescilla corymbosa</i> (Blue Squill)			
54.	24321 <i>Chenonetta jubata</i> (Australian Wood Duck, Wood Duck)			
55.	<i>Chironominae</i> sp.			
56.	24288 <i>Circus approximans</i> (Swamp Harrier)			
57.	24774 <i>Cladorhynchus leucocephalus</i> (Banded Stilt)			
58.	25675 <i>Colluricincla harmonica</i> (Grey Shrike-thrush)			
59.	4550 <i>Comesperma calymega</i> (Blue-spike Milkwort)			
60.	4564 <i>Comesperma virgatum</i> (Milkwort)			
61.	6348 <i>Conostephium pendulum</i> (Pearl Flower)			
62.	6349 <i>Conostephium preissii</i>			
63.	1436 <i>Conostylis juncea</i>			
64.	25568 <i>Coracina novaehollandiae</i> (Black-faced Cuckoo-shrike)			
65.	<i>Cordulidae</i> sp.			
66.	25592 <i>Corvus coronoides</i> (Australian Raven)			
67.	25595 <i>Cracticus tibicen</i> (Australian Magpie)			
68.	25596 <i>Cracticus torquatus</i> (Grey Butcherbird)			
69.	17701 <i>Crassula closiana</i>			
70.	3137 <i>Crassula colorata</i> (Dense Stonecrop)			
71.	25456 <i>Crenadactylus ocellatus</i> (Clawless Gecko)			
72.	25400 <i>Crinia insignifera</i> (Squelching Froglet)			
73.	30893 <i>Cryptoblepharus buchananii</i>			
74.	25020 <i>Cryptoblepharus plagioccephalus</i>			
75.	30899 <i>Ctenophorus adelaidensis</i> (Southern Heath Dragon, Western Heath Dragon)			
76.	25027 <i>Ctenotus australis</i>			
77.	25039 <i>Ctenotus fallens</i>			
78.	25074 <i>Ctenotus schomburgkii</i>			
79.	24322 <i>Cygnus atratus</i> (Black Swan)			
80.	7454 <i>Dampiera linearis</i> (Common Dampiera)			
81.	25673 <i>Daphoenositta chrysoptera</i> (Varied Sittella)			
82.	1218 <i>Dasypogon bromeliifolius</i> (Pineapple Bush)			
83.	15656 <i>Daviesia brachyphylla</i>			
84.	3807 <i>Daviesia divaricata</i> (Marno)			
85.	18560 <i>Daviesia divaricata</i> subsp. <i>divaricata</i>			
86.	25766 <i>Delma fraseri</i> (Fraser's Legless Lizard)			
87.	24939 <i>Diplodactylus polyophthalmus</i>			
88.	11049 <i>Diuris corymbosa</i>			
89.	3095 <i>Drosera erythrorhiza</i> (Red Ink Sundew)			
90.	3118 <i>Drosera pallida</i> (Pale Rainbow)			
91.	3131 <i>Drosera stolonifera</i> (Leafy Sundew)			
92.	<i>Dytiscidae</i> sp.			
93.	<i>Ecnomidae</i> sp.			
94.	25100 <i>Egernia napoleonis</i>			
95.	25540 <i>Elanus caeruleus</i> (Black-shouldered Kite)			
96.	24379 <i>Erythronyctes cinctus</i> (Red-kneed Dotterel)			
97.	5708 <i>Eucalyptus marginata</i> (Jarrah, Djara)			
98.	25622 <i>Falco cenchroides</i> (Australian Kestrel, Nankeen Kestrel)			
99.	24761 <i>Fulica atra</i> subsp. <i>australis</i> (Eurasian Coot)			
100.	34028 <i>Galaxias occidentalis</i> (Western Minnow)			
101.	24763 <i>Gallinula tenebrosa</i> subsp. <i>tenebrosa</i> (Dusky Moorhen)			
102.	25730 <i>Gallirallus philippensis</i> (Buff-banded Rail)			
103.	434 <i>Gastridium phleoides</i> (Nitgrass)	Y		

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104.	20475 <i>Gastrobium capitatum</i>			
105.	25530 <i>Gerygone fusca</i> (Western Gerygone)			
106.	24443 <i>Grallina cyanoleuca</i> (Magpie-lark)			
107.	15839 <i>Grevillea preissii</i> subsp. <i>preissii</i>			
108.	25410 <i>Heleioporus eyrei</i> (Moaning Frog)			
109.	5108 <i>Hibbertia acerosa</i> (Needle Leaved Guinea Flower)			
110.	5135 <i>Hibbertia hypericoides</i> (Yellow Buttercups)			
111.	5173 <i>Hibbertia subvaginata</i>			
112.	5176 <i>Hibbertia vaginata</i>			
113.	25734 <i>Himantopus himantopus</i> (Black-winged Stilt)			
114.	24491 <i>Hirundo neoxena</i> (Welcome Swallow)			
115.	6222 <i>Homalosciadium homalocarpum</i>			
116.	12859 <i>Hovea trisperma</i> var. <i>trisperma</i>			
117.	12741 <i>Hyalosperma cotula</i>			
118.	6226 <i>Hydrocotyle callicarpa</i> (Small Pennywort)			
119.	<i>Hydrophilidae</i> sp.			
120.	<i>Hydropsychidae</i> sp.			
121.	5817 <i>Hypocalymma angustifolium</i> (White Myrtle, Kutjid)			
122.	5825 <i>Hypocalymma robustum</i> (Swan River Myrtle)			
123.	8086 <i>Hypochoeris glabra</i> (Smooth Catsear)	Y		
124.	1070 <i>Hypolaena exsulca</i>			
125.	917 <i>Isolepis marginata</i> (Coarse Club-rush)			
126.	4017 <i>Jacksonia horrida</i>			
127.	24511 <i>Larus novaehollandiae</i> subsp. <i>novaehollandiae</i> (Silver Gull)			
128.	1309 <i>Laxmannia squarrosa</i>			
129.	925 <i>Lepidosperma angustatum</i>			
130.	19833 <i>Leptocarpus laxus</i>			
131.	46382 <i>Leptocarpus roycei</i>			
132.	<i>Leptoceridae</i> sp.			
133.	25128 <i>Lerista christinae</i>			
134.	25131 <i>Lerista distinguenda</i>			
135.	25133 <i>Lerista elegans</i>			
136.	25165 <i>Lerista praepedita</i>			
137.	6374 <i>Leucopogon conostephioides</i>			
138.	6434 <i>Leucopogon polymorphus</i>			
139.	6436 <i>Leucopogon propinquus</i>			
140.	6440 <i>Leucopogon racemosus</i>			
141.	6444 <i>Leucopogon sprengeioides</i>			
142.	25005 <i>Lialis burtonis</i>			
143.	25661 <i>Lichmera indistincta</i> (Brown Honeyeater)			
144.	25415 <i>Limnodynastes dorsalis</i> (Western Banjo Frog)			
145.	476 <i>Lolium perenne</i> (Perennial Ryegrass)	Y		
146.	1223 <i>Lomandra caespitosa</i> (Tufted Mat Rush)			
147.	1228 <i>Lomandra hermaphrodita</i>			
148.	1234 <i>Lomandra nigricans</i>			
149.	1240 <i>Lomandra purpurea</i> (Purple Mat Rush)			
150.	1243 <i>Lomandra sericea</i> (Silky Mat Rush)			
151.	1246 <i>Lomandra suaveolens</i>			
152.	1097 <i>Lyginia barbata</i>			
153.	85 <i>Macrozamia riedlei</i> ( <i>Zamia</i> , Djiridji)			
154.	24326 <i>Malacorhynchus membranaceus</i> (Pink-eared Duck)			
155.	25654 <i>Malurus splendens</i> (Splendid Fairy-wren)			
156.	25758 <i>Megalurus gramineus</i> (Little Grassbird)			
157.	5952 <i>Melaleuca preissiana</i> (Moonah)			
158.	5980 <i>Melaleuca thymoides</i>			
159.	25663 <i>Melithreptus brevirostris</i> (Brown-headed Honeyeater)			
160.	25184 <i>Menetia greyii</i>			
161.	953 <i>Mesomelaena graciliceps</i>			
162.	25693 <i>Microeca fascinans</i> (Jacky Winter)			
163.	8106 <i>Millotia tenuifolia</i> (Soft Millotia)			
164.	<i>Missulena occatoria</i>			
165.	25190 <i>Morethia butleri</i>			
166.	25191 <i>Morethia lineoocellata</i>			
167.	25192 <i>Morethia obscura</i>			
168.	24223 <i>Mus musculus</i> (House Mouse)	Y		
169.	25248 <i>Neelaps bimaculatus</i> (Black-naped Snake)			
170.	24194 <i>Nyctophilus geoffroyi</i> (Lesser Long-eared Bat)			
171.	24195 <i>Nyctophilus gouldi</i> (Gould's Long-eared Bat)			
172.	24407 <i>Ocyphaps lophotes</i> (Crested Pigeon)			
173.	<i>Oligochaeta</i> sp.			

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174.	<i>Orthoclaadiinae sp.</i>			
175.	25680 <i>Pachycephala rufiventris</i> (Rufous Whistler)			
176.	<i>Palaemonidae sp.</i>			
177.	<i>Parastacidae sp.</i>			
178.	25682 <i>Pardalotus striatus</i> (Striated Pardalote)			
179.	1550 <i>Paterosia occidentalis</i> (Purple Flag, Koma)			
180.	24648 <i>Pelecanus conspicillatus</i> (Australian Pelican)			
181.	6006 <i>Pericalymma ellipticum</i> (Swamp Teatree)			
182.	2273 <i>Persoonia saccata</i> (Snottygobble)			
183.	<i>Perthiidae sp.</i>			
184.	2299 <i>Petrophile linearis</i> (Pixie Mops)			
185.	25697 <i>Phalacrocorax carbo</i> (Great Cormorant)			
186.	25698 <i>Phalacrocorax melanoleucos</i> (Little Pied Cormorant)			
187.	24667 <i>Phalacrocorax sulcirostris</i> (Little Black Cormorant)			
188.	25699 <i>Phalacrocorax varius</i> (Pied Cormorant)			
189.	24409 <i>Phaps chalcoptera</i> (Common Bronzewing)			
190.	1478 <i>Phlebocarya ciliata</i>			
191.	<i>Phytophthora cinnamomi</i>			
192.	<i>Pinkfloydia harveii</i>			
193.	24841 <i>Platalea flavipes</i> (Yellow-billed Spoonbill)			
194.	24747 <i>Platycercus spurius</i> (Red-capped Parrot)			
195.	6249 <i>Platysace compressa</i> (Tapeworm Plant)			
196.	6253 <i>Platysace filiformis</i>			
197.	25704 <i>Podiceps cristatus</i> (Great Crested Grebe)			
198.	25510 <i>Pogona minor</i> (Dwarf Bearded Dragon)			
199.	24681 <i>Poliocephalus poliocephalus</i> (Hoary-headed Grebe)			
200.	4691 <i>Poranthera microphylla</i> (Small Poranthera)			
201.	24767 <i>Porphyrio porphyrio</i> subsp. <i>bellus</i> (Purple Swamphen)			
202.	24771 <i>Porzana tabuensis</i> (Spotless Crake)			
203.	24230 <i>Pseudomys albocinereus</i> (Ash-grey Mouse)			
204.	25259 <i>Pseudonaja affinis</i> subsp. <i>affinis</i> (Dugite)			
205.	25433 <i>Pseudophryne guentheri</i> (Crawling Toadlet)			
206.	<i>Pterostylis aff. nana</i>			
207.	18655 <i>Pterostylis sp. crinkled leaf</i> (G.J. Keighery 13426)			
208.	25008 <i>Pygopus lepidopodus</i> (Common Scaly Foot)			
209.	8195 <i>Quinetia urvillei</i>			
210.	24245 <i>Rattus rattus</i> (Black Rat)	Y		
211.	<i>Raveniella peckorum</i>			
212.	24776 <i>Recurvirostra novaehollandiae</i> (Red-necked Avocet)			
213.	48096 <i>Rhipidura albiscapa</i> (Grey Fantail)			
214.	25614 <i>Rhipidura leucophrys</i> (Willie Wagtail)			
215.	43840 <i>Salix matsudana</i>	Y		
216.	978 <i>Schoenus brevisetis</i>			
217.	979 <i>Schoenus caespitius</i>			
218.	984 <i>Schoenus curvifolius</i>			
219.	1020 <i>Schoenus sublateralis</i>			
220.	6033 <i>Scholtzia involucrata</i> (Spiked Scholtzia)			
221.	25534 <i>Sericornis frontalis</i> (White-browed Scrubwren)			
222.	25266 <i>Simoselaps bertholdi</i> (Jan's Banded Snake)			
223.	<i>Simuliidae sp.</i>			
224.	30948 <i>Smicrornis brevirostris</i> (Weebill)			
225.	25515 <i>Sminthopsis griseoventer</i> (Grey-bellied Dunnart)			
226.	24522 <i>Sterna bergii</i> (Crested Tern)			
227.	2316 <i>Stirlingia latifolia</i> (Blueboy)			
228.	25518 <i>Strophurus spinigerus</i>			
229.	25831 <i>Stylidium araeophyllum</i> (Stilt Walker)			
230.	7693 <i>Stylidium brunonianum</i> (Pink Fountain Triggerplant)			
231.	7696 <i>Stylidium calcaratum</i> (Book Triggerplant)			
232.	7699 <i>Stylidium carnosum</i> (Fleshy-leaved Triggerplant)			
233.	7717 <i>Stylidium divaricatum</i> (Daddy-long-legs)			
234.	7774 <i>Stylidium piliferum</i> (Common Butterfly Triggerplant)			
235.	7798 <i>Stylidium schoenoides</i> (Cow Kicks)			
236.	24682 <i>Tachybaptus novaehollandiae</i> subsp. <i>novaehollandiae</i> (Australasian Grebe, Black-throated Grebe)			
237.	24331 <i>Tadorna tadornoides</i> (Australian Shelduck, Mountain Duck)			
238.	24167 <i>Tarsipes rostratus</i> (Honey Possum, Noolbenger)			
239.	20135 <i>Taxandria linearifolia</i>			
240.	4535 <i>Tetratheca hirsuta</i> (Black Eyed Susan)			
241.	10856 <i>Thelymitra benthamiana</i> (Leopard Orchid)			
242.	1705 <i>Thelymitra crinita</i> (Blue Lady Orchid)			

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243.	11143 <i>Thelymitra graminea</i>			
244.	24845 <i>Threskiornis spinicollis</i> (Straw-necked Ibis)			
245.	1318 <i>Thysanotus arbuscula</i>			
246.	1338 <i>Thysanotus manglesianus</i> (Fringed Lily)			
247.	1343 <i>Thysanotus patersonii</i>			
248.	1351 <i>Thysanotus sparteus</i>			
249.	1357 <i>Thysanotus thyrsoides</i>			
250.	25519 <i>Tiliqua rugosa</i>			
251.	6280 <i>Trachymene pilosa</i> (Native Parsnip)			
252.	25521 <i>Trichosurus vulpecula</i> (Common Brushtail Possum)			
253.	1363 <i>Tricoryne tenella</i>			
254.	<i>Urodacus novaehollandiae</i>			
255.	8255 <i>Ursinia anthemoides</i> (Ursinia)	Y		
256.	25218 <i>Varanus gouldii</i> (Bungarra or Sand Monitor)			
257.	25227 <i>Varanus tristis</i> subsp. <i>tristis</i> (Racehorse Monitor)			
258.	<i>Velliidae</i> sp.			
259.	6101 <i>Verticordia nitens</i> (Morrison Featherflower, Kodjeningara)			
260.	24206 <i>Vespadelus regulus</i> (Southern Forest Bat)			
261.	24040 <i>Vulpes vulpes</i> (Red Fox)	Y		
262.	8282 <i>Waitzia suaveolens</i> (Fragrant Waitzia)			
263.	1256 <i>Xanthorrhoea preissii</i> (Grass tree, Palga)			
264.	6285 <i>Xanthosia ciliata</i>			
265.	6289 <i>Xanthosia huegellii</i>			
266.	2331 <i>Xylomelum occidentale</i> (Woody Pear, Djandin)			
267.	25765 <i>Zosterops lateralis</i> (Grey-breasted White-eye, Silvereye)			

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

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

# Acknowledgements

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- [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](#)
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- [Australian Bird and Bat Banding Scheme](#)
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- Natural history museums of Australia
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- Other groups and individuals

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