

LOT 1488 PATTERSON ROAD, EAST ROCKINGHAM

ENVIRONMENTAL ASSESSMENT REPORT

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CONTENTS

Contents	i
List of Attachments	iii
1 INTRODUCTION	1
1.1 Background.....	1
1.2 Scope of Works.....	1
2 EXISTING ENVIRONMENT	3
2.1 Land Use	3
2.1.1 Historical Land Use	3
2.1.2 Current Land Use.....	4
2.2 Zoning.....	4
2.3 Topography	4
2.4 Geology and Soils	4
2.4.1 Geology.....	4
2.4.2 Soils.....	5
2.4.3 Acid Sulphate Soils.....	5
2.5 Hydrology	5
2.6 Heritage	5
2.6.1 Aboriginal Heritage.....	5
2.6.2 European Heritage.....	5
3 FLORA AND VEGETATION	7
3.1 Methodology.....	7
3.2 Desktop Studies.....	7
3.2.1 Flora Database Searches	7
3.2.2 TEC/PEC Database Searches.....	8
3.3 Site Reconnaissance	9
3.3.1 Vegetation	9
3.3.2 Vegetation Condition	10
3.3.3 Flora.....	11
3.4 Conservation Significance of Flora and Vegetation	12
3.4.1 Vegetation	12
3.4.2 Flora.....	12
4 FAUNA	16

4.1	Methodology	16
4.2	Desktop Studies	16
4.3	Fauna Habitat	19
4.4	Conservation Significant Species	20
4.5	Pest Fauna	31
4.6	Biodiversity Value	31
5	ENVIRONMENTAL ASSESSMENT.....	32
5.1	Land Use	32
5.2	Geology and Soils	32
5.2.1	Geology.....	32
5.2.2	Soils.....	32
5.3	Hydrology	32
5.4	Flora and Vegetation	32
5.5	Fauna	33
5.6	Heritage	33
5.7	Conclusion	33
6	REFERENCES	34

LIST OF ATTACHMENTS

Tables

- Table 1: Conservation Significant Flora known to occur near the Site
- Table 2: Likelihood of Identified Significant Flora Species occurring on the Site
- Table 3: TEC and PECs identified in database searches within 5km of the site
- Table 4: Vegetation Condition Rating Scale
- Table 5: List of Fauna Species Identified from Fauna Database Searches
- Table 6: Likelihood of Conservation Significant Species being Present on the Site

Plates

- Plate 1: Aerial Photography from 1953 (Landgate, 2018)
- Plate 2: Aerial Photography from 2005 (Landgate, 2018)
- Plate 3: Rubbish dumped on the site
- Plate 4: *Acacia rostellifera* and *Xanthorrhoea preissii* dominated vegetation
- Plate 5: Completely Degraded area (foreground) next to Good vegetation in the background
- Plate 6: Shrubland Habitat

Figures

- Figure 1: Site Location
- Figure 2: Site Boundary and Topography

Appendices

- Appendix 1: DBCA Flora Database Search
- Appendix 2: Naturemap Report
- Appendix 3: Protected Matters Search Tool Report
- Appendix 4: Conservation Codes
- Appendix 5: TEC/PEC Database Search
- Appendix 6: DBCA Fauna Database Search

1 INTRODUCTION

1.1 Background

Lot 1488 Patterson Road, East Rockingham (the site) is located approximately 37.5km south-south-west of the Perth Central Business District (Figure 1). The site is roughly triangular in shape and is bounded by Patterson Road to the north-west, existing commercial development to the east and undeveloped vegetated areas to the south-west (Figure 2).

The site is approximately 4.05ha in size and contains native regrowth vegetation.

PGV Environmental was commissioned by DevelopmentWA to prepare an Environmental Assessment Report to determine the environmental values on the site to inform a clearing permit application.

1.2 Scope of Works

The Environmental Assessment was undertaken as a desktop assessment of the key environmental attributes of the site as well as a preliminary site inspection. The Environmental Assessment included the following:

- Physical characteristics including a description of:
 - Landform;
 - Drainage and water bodies; and
 - Geological, hydrogeological and hydrological characteristics;
- Recent and present land use including:
 - Assessment of current and historical activities on the subject site and surrounding areas which have the potential to result in contamination issues at the site; and
 - Surrounding land uses;
- A Reconnaissance Flora and Vegetation Survey including:
 - Desktop search and review of the Department of Biodiversity, Conservation and Attractions (DBCA) Declared Rare and Priority Flora database and Threatened Ecological Communities database;
 - Examination of recent aerial photography and contour maps to provisionally identify vegetation types and condition; and
 - Advice on the potential for significant species identified in the desktop searched to be present on the site.
- A Level 1 Fauna Survey including:
 - A search of the DBCA Databases and NatureMap for the general area for Threatened and Priority Species;
 - A search of the Commonwealth Government's Protected Matters Search Tool to identify species potentially occurring within the area that are protected under the *Environment Protection and Biodiversity Conservation (EPBC) Act 1999* or international migratory bird agreements (JAMBA/CAMBA);
 - A description of the fauna habitats present on the site; and

- An assessment of the significance of the site for conservation significant species in a local and regional context.
- Database searches including:
 - Department of Water and Environmental Regulation Contaminated Sites and Water Information databases; and
 - Department of Planning, Lands and Heritage and National Heritage database.
- Implications, if any, under Western Australian policies and legislation such as the *Environmental Protection Act 1986* and the Commonwealth EPBC Act; and
- Other publicly available information.

2 EXISTING ENVIRONMENT

2.1 Land Use

2.1.1 Historical Land Use

The site was almost completely cleared in 1995 as shown in historical aerial photography (Plate 1).

Plate 1: Aerial Photography from 1995 (Landgate, 2018)



The photograph from 2005 shows the site is regenerate and has a number of tracks through it, however the south-western corner has been cleared (Plate 2).

Plate 2: Aerial Photography from 2005 (Landgate, 2018)



The site is not listed on the Contaminated Sites database (DWER, 2018a) and there has been no development on the site.

2.1.2 Current Land Use

Native regrowth vegetation covers almost the entire site. There has been some dumping of rubbish including household items such as furniture, clothing as well as car parts such as bumpers and tyres, generally concentrated on the perimeter of the site (Plate 3).

Plate 3: Rubbish dumped on the site



2.2 Zoning

Currently the site is zoned 'Industrial' under the Metropolitan Region Scheme (MRS) (National Map, 2018) and 'General Industry' under the City of Rockingham Town Planning Scheme No. 2 (WAPC, 2004).

2.3 Topography

The site is relatively flat at 6m Australian Height Datum (AHD) (Figure 2).

2.4 Geology and Soils

2.4.1 Geology

The site is mapped as part of the Quindalup System, the youngest of the three dune systems on the Swan Coastal Plain (Bolland, 1998). The Quindalup Dune System extends along the modern shoreline of the Swan Coastal Plain, from Geographe Bay in the south to Dongara in the north. This dune system is the geomorphologic expression of the Safety Bay Sand geological unit. The Quindalup Dunes extend inland in a series of large-scale, elongated and coalescent parabolic dunes, whose arms and faces measure several kilometres in length (Gozzard, 1982).

2.4.2 Soils

The soil on the site has been mapped and described as:

- Quindalup South Qf2 Phase (211Qu_Qf2) which consists of relict foredunes and gently undulating beach ridge plains on quaternary deposits in the coast between Rockingham and Dunsborough with deep uniform calcareous sands (DPIRD, 2018).

The Land Degradation Risk Category of the Quindalup South Qf2 Phase is as follows:

Water Erosion <3% of map unit has a high to extreme water erosion risk
Wind Erosion 30-50% of map unit has a high to extreme wind erosion risk
Waterlogging <3% of map unit has a moderate to very high waterlogging risk
Flooding <3% of the map unit has a moderate to high flood risk
Salinity risk <3% of map unit has a moderate to high salinity risk or is presently saline

2.4.3 Acid Sulphate Soils

Acid sulphate soils (ASS) are wetland soils and unconsolidated sediments that contain iron sulphides which, when exposed to atmospheric oxygen in the presence of water, form sulphuric acid. ASS form in protected low energy environments such as barrier estuaries and coastal lakes and commonly occurs in low-lying coastal lands such as Holocene marine muds and sands. When disturbed, these soils are prone to produce sulphuric acid and mobilise iron, aluminium, manganese and other heavy metals. The release of these reaction products can be detrimental to biota, human health and built infrastructure (WAPC, 2009).

The ASS Risk on the site has been mapped as Low (<3m from the surface) (National Map, 2018).

2.5 Hydrology

Groundwater is at approximately 1m AHD, which is 5m below the surface level, and generally flows to the north-west (DWER, 2018b).

There are no surface water features present on the site including no rivers, creek lines or wetlands. The nearest wetland is greater than 700m to the north-east of the site (National Map, 2018).

2.6 Heritage

2.6.1 Aboriginal Heritage

There are no listed Aboriginal Heritage Sites or Aboriginal Places mapped on the site (DPLH, 2018).

2.6.2 European Heritage

Heritage sites can be listed under the following lists/registers:

- World Heritage Sites;
- National Heritage Sites;
- Commonwealth Heritage Sites;
- Sites on the register of the National Estate;
- Sites on the Western Australian Heritage Council Register; and
- Sites listed in the City of Kwinana Municipal Heritage Inventory List.

There are no listed Heritage Sites or Interim Heritage Sites on the site (National Map, 2018; Heritage Council of Western Australia, 2018; DoEE, 2018).

3 FLORA AND VEGETATION

3.1 Methodology

A Reconnaissance Flora and Vegetation Survey was undertaken in accordance with EPA Technical Guidance *Flora and Vegetation Surveys for Environmental Impact Assessment* (EPA, 2016a). Desktop studies were undertaken to identify potential threatened species and communities that may occur on the site. A site reconnaissance was conducted by Jackie Cabot on 14 November 2018. The inspection included traversing the site on foot.

3.2 Desktop Studies

3.2.1 Flora Database Searches

A search of the DBCA Threatened Flora Databases: Threatened and Priority Flora List (TPList), the WA Herbarium database (WAHerb), the Threatened (Declared Rare) and Priority Flora Species List (TFPL) (Appendix 1), Naturemap (Appendix 2) and the EPBC Act Protected Matters Search Tool (Appendix 3) indicates that a number of species that are listed as Endangered, Threatened or Priority are identified as potentially being located within a 5km radius of the site. The results from these database searches are shown in Table 1.

Table 1: Conservation Significant Flora known to occur near the Site

Species	Common Name	Status Under Wildlife Conservation Act 1950	Status Under EPBC Act 1999
<i>Caladenia huegelii</i>	King Spider-orchid, Grand Spider-orchid, Rusty Spider-orchid	Schedule 1	Endangered
<i>Drakaea elastica</i>	Glossy-leafed Hammer Orchid	Schedule 1	Endangered
<i>Synaphea</i> sp. Serpentine (G.R Brand 103)		Schedule 1	Critically Endangered
<i>Diuris micrantha</i>	Dwarf Bee-orchid	Schedule 2	Vulnerable
<i>Diuris purdiei</i>	Purdie's Donkey-orchid	Schedule 2	Endangered
<i>Thelymitra stellata</i>	Star Sun-orchid	Schedule 2	Endangered
<i>Drakaea micrantha</i>	Dwarf Hammer-orchid	Schedule 3	Vulnerable
<i>Tribonanthes purpurea</i>	Granite Pink	Schedule 3	Vulnerable
<i>Boronia juncea</i> subsp. <i>juncea</i>		Priority 1	
<i>Hemigenia</i> sp. Tallering (H. Pringle 3323)		Priority 1	
<i>Lachnagrostis nesomytica</i> subsp. <i>paralia</i>		Priority 1	
<i>Pityrodia canaliculata</i>		Priority 1	
<i>Scholtzia</i> sp. Binnu (M.E. Trudgen 2218)		Priority 1	
<i>Acacia benthamii</i>		Priority 2	
<i>Drosera bulbosa</i> subsp. <i>coronata</i>		Priority 2	
<i>Olearia occidentissima</i>		Priority 2	
<i>Sondottia glabrata</i>		Priority 2	
<i>Thelymitra variegata</i>	Queen of Sheba	Priority 2	
<i>Acacia drepanophylla</i>		Priority 3	

Species	Common Name	Status Under Wildlife Conservation Act 1950	Status Under EPBC Act 1999
<i>Amanita preissii</i>	Cinnamon-ring Lepidella	Priority 3	
<i>Austrostipa mundula</i>		Priority 3	
<i>Beyeria cinerea subsp. cinerea</i>		Priority 3	
<i>Calandrinia oraria</i>		Priority 3	
<i>Carpobrotus</i> sp. Thevenard Island (M. White 050)		Priority 3	
<i>Cyathochaeta teretifolia</i>		Priority 3	
<i>Dillwynia dillwynioides</i>		Priority 3	
<i>Gompholobium gairdnerianum</i>		Priority 3	
<i>Jacksonia gracillima</i>		Priority 3	
<i>Pimelea calcicola</i>		Priority 3	
<i>Schoenus capillifolius</i>		Priority 3	
<i>Sphaerolobium calcicola</i>		Priority 3	
<i>Stylidium paludicola</i>		Priority 3	
<i>Aponogeton hexatepalus</i>	Stalked Water Ribbons	Priority 4	
<i>Dodonaea hackettiana</i>	Hackett's Hopbush	Priority 4	
<i>Eucalyptus zopherophloia</i>	Blackbutt Mallee	Priority 4	
<i>Jacksonia sericea</i>	Waldjumi	Priority 4	
<i>Lepidium puberulum</i>		Priority 4	
<i>Myosotis australis</i>	Southern Forget-me-not	Priority 4	
<i>Stylidium ireneae</i>		Priority 4	
<i>Stylidium longitubum</i>	Jumping Jacks	Priority 4	

Definitions of the Conservation Codes are in Appendix 4.

3.2.2 TEC/PEC Database Searches

A search of DBCA's Threatened (TEC) and Priority Ecological Communities (PEC) database was conducted within a radius of 5km around the site (29-01118EC) (Appendix 5). Four TECs and four Priority 3 Ecological Communities were identified. An additional TEC was identified in the protected Matters Search Tool Report (Appendix 3). The communities identified in the database searches are outlined in Table 3.

Table 3: TEC and PECs identified in database searches within 5km of the site

Number	Description	Status under the Wildlife Conservation Act	Status under the EPBC Act
SCP19b	Woodlands over sedgeland in Holocene dune swales of the southern Swan Coastal Plain	Critically Endangered	Endangered
SCP19a	Sedgeland in Holocene dune swales of the southern Swan Coastal Plain	Critically Endangered	Endangered
Richmond-microbial	Stromatolite like microbialite community of coastal freshwater lakes	Critically Endangered	Endangered
Banksia Woodlands	Banksia Woodlands of the Swan Coastal Plain	Priority 3	Endangered

Number	Description	Status under the Wildlife Conservation Act	Status under the EPBC Act
SCP30a	Callitris preissii (or Melaleuca lanceolata) forests and woodlands, Swan Coastal Plain	Vulnerable	SCP30a
Coastal Saltmarsh	Subtropical and Temperate Coastal Saltmarsh	Priority 3	Vulnerable
SCP24	Northern Spearwood shrublands and woodlands	Priority 3	SCP24
SCP25	Southern Eucalyptus gomphocephala-Agonis flexuosa woodlands	Priority 3	SCP25
SCP29a	Coastal shrublands on shallow sands	Priority 3	SCP29a

3.3 Site Reconnaissance

3.3.1 Vegetation

The vegetation is mapped as being part of the Quindalup vegetation complex which is generally described as “Coastal dune complex consisting mainly of two alliances – the strand and foredune alliance and the mobile and stable dune alliance (Heddlé *et al.*, 1980).

The site reconnaissance observed the native vegetation on the site consisted predominantly of *Acacia rostelifera* – *Xanthorrhoea preissii* Shrubland over weeds (Plate 4). .

Plate 4: *Acacia rostelifera* and *Xanthorrhoea preissii* dominated vegetation



The vegetation is most likely representative of Floristic Community Type 29a ‘Coastal shrublands on shallow sands’.

3.3.2 Vegetation Condition

The condition of the vegetation was assessed according to the system devised by Keighery and described in Bush Forever (Government of Western Australia, 2000) (Table 4).

Table 4: Vegetation Condition Rating Scale.

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

Source: Government of Western Australia, 2000.

The site has been mostly cleared in the past and has regenerated. However, the vegetation was assessed as being in Degraded to Good condition due to the abundance of weeds. There are areas around the margins on the site and scattered small areas within the site that are Completely Degraded (Plate 5) due to the absence of native vegetation.

Plate 5: Completely Degraded area (foreground) next to Good vegetation in the background



3.3.3 Flora

The dominant species on the site were *Acacia rostellifera* and *Xanthorrhoea preissii* .

Other common native species recorded were:

- *Acacia saligna*; and
- *Clematis linearifolia*.

Several common exotic species were recorded such as:

- *Rhamnus alaternus* (Buckthorn) which was most prevalent on the western part of the site and scattered throughout the remainder of the site;
- *Leptospermum laevigatum* (Victorian Tea tree) which predominately occurred in the western part of the site;
- *Agonis flexuosa* (Peppermint) in the south-western corner of the site;
- Herbaceous species such as:
 - *Avena fatua* (Wild Oats);
 - *Lagurus ovata* (Hares Tail Grass);
 - *Euphorbia terracina* (Geraldton Carnation Weed);
 - *Bromus* sp. (Brome Grass); and
 - *Scabiosa purpurea* (Pincushion Flower).

3.4 Conservation Significance of Flora and Vegetation

3.4.1 Vegetation

The Quindalup Vegetation Complex has 48% of its pre-clearing extent remaining on the Swan Coastal Plain (WALGA, 2011), with 20% proposed for protection through Bush Forever. The percentage protection is above the 10% minimum criteria for vegetation complexes in the Perth Metropolitan Region Constrained Area.

The vegetation is likely representative of FCT 29a 'Coastal shrublands on shallow sands' which is a PEC at State level. FCT 29a is well represented in the City of Rockingham in Bush Forever Sites such as Site 377 Port Kennedy Scientific Park, Site 358 Lake Richmond and Site 341 Woodman Point.

The vegetation on the site was not recognised as regionally significant as a Bush Forever site (Government of Western Australia 2000).

3.4.2 Flora

Table 2 examines the preferred habitat of each species and the likelihood of the species listed in Table 1 to occur on the site. Many of the species identified occur in wetland areas so have been determined as not being present on the site.

Table 2: Likelihood of Identified Significant Flora Species occurring on the Site

Scientific Name	Common Name	Preferred Habitat*	Likelihood of Presence on site
<i>Caladenia huegelii</i>	King Spider-orchid, Grand Spider-orchid, Rusty Spider-orchid	The Grand Spider-orchid prefers sand or clay loam. This species generally does not survive in disturbed areas.	Highly Unlikely due to previous clearing
<i>Drakaea elastica</i>	Glossy-leafed Hammer Orchid	The Glossy-leafed Hammer Orchid prefers low-lying situations adjoining winter-wet swamps. This species does not survive in disturbed areas	No – no appropriate habitat
<i>Synaphea</i> sp. Serpentine (G.R Brand 103)		<i>Synaphea</i> sp. Serpentine occurs in brown sandy clay	No – no appropriate habitat
<i>Diuris micrantha</i>	Dwarf Bee-orchid	The Dwarf Bee-orchid is usually found on cleared firebreaks or open sandy patches that have been disturbed with in Jarrah Banksia woodland or thickets of Spearwood (<i>Kunzea ericifolia/ glabrescens</i>) (Williams <i>et al.</i> , 2001)	Highly unlikely – not preferred habitat on the site
<i>Diuris purdiei</i>	Purdie's Donkey-orchid	Purdie's Donkey Orchid occurs in grey-black sand in moist winter-wet swamps	No – no appropriate habitat
<i>Thelymitra stellata</i>	Star Sun-orchid	The Star Sun-orchid prefers sand, gravel or lateritic loam.	Highly unlikely – no appropriate habitat

Scientific Name	Common Name	Preferred Habitat*	Likelihood of Presence on site
<i>Drakaea micrantha</i>	Dwarf Hammer-orchid	Dwarf Hammer-orchid occurs in grey sands over dark, grey to blackish, sandy clay-loam substrates in winter wet depressions or swamps	No – no appropriate habitat
<i>Tribonanthes purpurea</i>	Granite Pink	Granite Pink occurs in seasonally wet soils in moss swards and herbfields among granite rocks.	No – no appropriate habitat
<i>Boronia juncea</i> subsp. <i>juncea</i>		<i>Boronia juncea</i> subsp. <i>juncea</i> occurs in sand in low scrub.	Unlikely due to previous clearing
<i>Hemigenia</i> sp. Tallering (H. Pringle 3323)		<i>Hemigenia</i> sp. Tallering (H. Pringle 3323) occurs in scrub	No – occurs in the mid-west
<i>Lachnagrostis nesomytica</i> subsp. <i>paralia</i>		<i>Lachnagrostis nesomytica</i> subsp. <i>paralia</i> occurs in calcareous sands on coastal dunes and swales.	Highly Unlikely – recorded from Garden Island
<i>Pityrodia canaliculata</i>		<i>Pityrodia canaliculata</i> prefers red sand.	No – occurs in the Goldfields and mid-west
<i>Scholtzia</i> sp. Binnu (M.E. Trudgen 2218)		<i>Scholtzia</i> sp. Binnu (M.E. Trudgen 2218) occurs in yellow sand on sand dunes.	No – occurs in the mid-west
<i>Acacia benthamii</i>		<i>Acacia benthamii</i> grows on sand, typically on limestone breakaways	Highly unlikely – no appropriate habitat
<i>Drosera bulbosa</i> subsp. <i>coronata</i>		<i>Drosera bulbosa</i> subsp. <i>coronata</i> occurs in red clay-loam in Acacia woodland and footslopes (Gibson, 2013)	No – occurs in the mid-west
<i>Olearia occidentissima</i>		<i>Olearia occidentissima</i> occurs in shallow soils on coastal limestone cliffs.	No – occurs in the mid-west
<i>Sondottia glabrata</i>		<i>Sondottia glabrata</i> grows on saline flats.	No – occurs in the mid-west
<i>Thelymitra variegata</i>	Queen of Sheba	The Queen of Sheba orchid grows on sandy clay, sand and laterite.	Highly unlikely – previous clearing
<i>Acacia drepanophylla</i>		<i>Acacia drepanophylla</i> occurs on red clay or loam over limestone on flat to undulating plains, low rises.	No – occurs in the mid-west
<i>Amanita preissii</i>	Cinnamon-ring Lepidella	Cinnamon-ring Lepidella is found under Banksia and Eucalyptus in West Australia	No – no appropriate habitat
<i>Austrostipa mundula</i>		<i>Austrostipa mundula</i> occurs on plains in grey sand (Western Australian Herbarium, 2001)	Highly unlikely – previous clearing
<i>Beyeria cinerea</i> subsp. <i>cinerea</i>		<i>Beyeria cinerea</i> subsp. <i>cinerea</i> grows in sand over tamala limestone on road verges, gullies	Highly Unlikely – not preferred habitat

Scientific Name	Common Name	Preferred Habitat*	Likelihood of Presence on site
<i>Calandrinia oraria</i>		<i>Calandrinia oraria</i> grows in sand with <i>Melaleuca systema</i> , <i>Lomandra maritima</i> .	Highly Unlikely – not preferred habitat
<i>Carpobrotus</i> sp. Thevenard Island (M. White 050)		<i>Carpobrotus</i> sp. Thevenard Island (M. White 050) occurs in coarse white sand on dune tops in disturbed areas.	No – occurs in the mid-west and Pilbara
<i>Cyathochaeta teretifolia</i>		<i>Cyathochaeta teretifolia</i> occurs in grey sand, sandy clay on swamps, creek edges.	No – no appropriate habitat
<i>Dillwynia dillwynioides</i>		<i>Dillwynia dillwynioides</i> occurs in sandy soils in winter-wet depressions.	No – no appropriate habitat
<i>Gompholobium gairdnerianum</i>		<i>Gompholobium gairdnerianum</i> occurs in white, cream or brown sandy clay, white sand over sandstone, brown or grey sand over laterite, grave on hill summits and slopes, ridges.	No – occurs in the mid-west
<i>Jacksonia gracillima</i>		<i>Jacksonia gracillima</i> occurs in grey and brown well-drained sand.	Unlikely – previous clearing
<i>Pimelea calcicola</i>		<i>Pimelea calcicola</i> occurs in sand on coastal limestone ridges.	Unlikely – previous clearing
<i>Schoenus capillifolius</i>		<i>Schoenus capillifolius</i> grows in brown mud on claypans.	No – no appropriate habitat
<i>Sphaerolobium calcicola</i>		<i>Sphaerolobium calcicola</i> grows in white-grey-brown sand, sandy clay over limestone, black peaty sandy clay on tall dunes, winter-wet flats, interdunal swamps, low-lying areas.	Unlikely – previous clearing. No low-lying areas on the site
<i>Stylidium paludicola</i>		<i>Stylidium paludicola</i> prefers peaty sand over clay in winter wet habitats in Marri and Melaleuca woodland, Melaleuca shrubland.	No – no appropriate habitat
<i>Aponogeton hexatepalus</i>	Stalked Water Ribbons	Stalked Water Ribbons grow in freshwater: ponds, rivers, claypans	No – no appropriate habitat
<i>Dodonaea hackettiana</i>	Hackett's Hopbush	Hackett's Hopbush occurs in sand with outcropping limestone.	Unlikely – previous clearing and no outcropping limestone
<i>Eucalyptus zopherophloia</i>	Blackbutt Mallee	Blackbutt Mallee grows in grey/white sand with limestone rubble on coastal areas.	No – occurs in the mid-west
<i>Jacksonia sericea</i>	Waldjumi	Waldjumi grows in calcareous and sandy soils.	Unlikely – previous clearing

Scientific Name	Common Name	Preferred Habitat*	Likelihood of Presence on site
<i>Lepidium puberulum</i>		<i>Lepidium puberulum</i> grows in sandy soils	Unlikely – recorded from Garden Island
<i>Myosotis australis</i>	Southern Forget-me-not	Southern Forget-me-nots grow in grey sand over limestone	Unlikely – recorded from Garden Island
<i>Stylidium ireneae</i>		<i>Stylidium ireneae</i> occurs in sandy loam in valleys near creek lines, woodland, often with <i>Agonis</i> .	No – no appropriate habitat
<i>Stylidium longitubum</i>	Jumping Jacks	Jumping Jacks prefer sandy clay, clay in seasonal wetlands.	No – no appropriate habitat

* sourced from Florabase (DPaW, 2014), DoEE SPRAT Database (DoEE, 2018), DBCA database searches unless otherwise stated

No Declared Rare or Priority species were noted during the site visit and the potential for any of the species identified in the database searches being present on the site is considered highly unlikely due to the overall poor condition of the vegetation on the site.

4 FAUNA

4.1 Methodology

The Level 1 Fauna Survey was undertaken in accordance with EPA Technical Guidance *Fauna Surveys for Environmental Impact Assessment* (EPA, 2016b). Desktop studies were undertaken to identify habitats and potential threatened species that may occur on the site. A site reconnaissance was conducted by Jackie Cabot on 14 November 2018. The inspection included traversing the site on foot.

4.2 Desktop Studies

Desktop studies were undertaken to identify conservation significant species potentially present on the site. A search of the DBCA Database (Appendix 6), Naturemap database (Appendix 2) and the EPBC Act Protected Matters Search Tool (Appendix 3) identified threatened species of fauna listed as potentially occurring within a 5km radius of the site (Table 5).

Table 5: List of Fauna Species Identified from Fauna Database Searches

Scientific Name	Common Name	Conservation Status, WA	Status under EPBC Act
<i>Bettongia penicillata ogilbyi</i>	Woylie, Brush-tailed Bettong	Schedule 1 - CR	Endangered
<i>Diomedea dabbenena</i> (<i>Diomedea exulans dabbenena</i>)	Tristan Albatross	Schedule 1 - CR	Endangered
<i>Pseudocheirus occidentalis</i>	Western Ringtail Possum, Ngwayir	Schedule 1 - CR	Critically Endangered
<i>Diomedea amsterdamensis</i> (<i>Diomedea exulans amsterdamensis</i>)	Amsterdam Albatross	Schedule 1 - CR Schedule 5 - IA	Endangered
<i>Anous tenuirostris melanops</i>	Australian Lesser Noddy	Schedule 2 - EN	Vulnerable/ Marine
<i>Calyptorhynchus baudinii</i>	Baudin's Black Cockatoo	Schedule 2 - EN	Endangered
<i>Calyptorhynchus latirostris</i>	Carnaby's Black Cockatoo	Schedule 2 - EN	Endangered
<i>Rostratula australis</i> (<i>Rostratula benghalensis australis</i>)	Australian Painted Snipe	Schedule 2 - EN	Endangered Marine/ Migratory
<i>Thalassarche carteri</i> (<i>Thalassarche chlororhynchos carteri</i>)	Indian yellow-nosed Albatross	Schedule 2 - EN Schedule 5 - IA	Marine/Migratory
<i>Thalassarche melanophris</i>	Black-browed Albatross	Schedule 2 - EN Schedule 5 - IA	Vulnerable/ Migratory/ Marine
<i>Calyptorhynchus banksii naso</i>	Forest Red-tailed Black-Cockatoo	Schedule 3 - VU	Vulnerable
<i>Dasyurus geoffroii</i>	Chuditch, Western Quoll	Schedule 3 - VU	Vulnerable
<i>Leipoa ocellata</i>	Mallee Fowl	Schedule 3 - VU	Vulnerable
<i>Sternula nereis nereis</i> (<i>Sterna nereis nereis</i>)	Australian Fairy Tern	Schedule 3 - VU	Vulnerable

Scientific Name	Common Name	Conservation Status, WA	Status under EPBC Act
<i>Ardenna carneipes</i> (<i>Puffinus carneipes</i>)	Flesh-footed Shearwater, Fleshy-footed Shearwater	Schedule 3 - VU Schedule 5 - IA	Marine/ Migratory
<i>Calidris canutus piersmai</i>	Red Knot (New Siberian Islands)	Schedule 3 - VU Schedule 5 - IA	Marine/ Migratory
<i>Calidris ferruginea</i>	Curlew Sandpiper	Schedule 3 - VU Schedule 5 - IA	Critically Endangered
<i>Calidris tenuirostris</i>	Great Knot	Schedule 3 - VU Schedule 5 - IA	Marine/ Migratory
<i>Diomedea epomophora</i>	Southern Royal Albatross	Schedule 3 - VU Schedule 5 - IA	Vulnerable
<i>Diomedea exulans</i>	Wandering Albatross	Schedule 3 - VU Schedule 5 - IA	Vulnerable
<i>Numenius madagascariensis</i>	Eastern Curlew	Schedule 3 - VU Schedule 5 - IA	Critically Endangered
<i>Thalassarche cauta steadi</i>	White-capped Albatross	Schedule 3 - VU Schedule 5 - IA	Vulnerable/ Migratory/M arine
<i>Thalassarche chrysostoma</i>	Grey-headed Albatross	Schedule 3 - VU Schedule 5 - IA	Endangered/ Marine/ Migratory
<i>Thalassarche impavida</i> (<i>Thalassarche melanophris impavida</i>)	Campbell Albatross	Schedule 3 - VU Schedule 5 - IA	Vulnerable/ Migratory/M arine
<i>Actitis hypoleucos</i> (<i>Tringa hypoleucos</i>)	Common Sandpiper	Schedule 5 - IA	Marine/ Migratory
<i>Anous stolidus</i>	Common Noddy	Schedule 5 - IA	
<i>Arenaria interpres</i>	Ruddy Turnstone	Schedule 5 - IA	Marine/ Migratory
<i>Calidris acuminata</i>	Sharp-tailed Sandpiper	Schedule 5 - IA	Marine/ Migratory
<i>Calidris melanotos</i>	Pectoral Sandpiper	Schedule 5 - IA	Marine/ Migratory
<i>Calidris ruficollis</i>	Red-necked Stint	Schedule 5 - IA	Marine/ Migratory
<i>Calidris subminuta</i>	Long-toed Stint	Schedule 5 - IA	Marine/ Migratory
<i>Charadrius dubius</i>	Little Ringed Plover	Schedule 5 - IA	Marine/ Migratory
<i>Chlidonias leucopterus</i> (<i>Sterna leucoptera</i>)	White-winged Black tern, White-winged Tern	Schedule 5 - IA	Marine/ Migratory
<i>Diomedea sanfordi</i>	Northern Royal Albatross	Schedule 5 - IA	Endangered/ Migratory/M arine

Scientific Name	Common Name	Conservation Status, WA	Status under EPBC Act
<i>Hydroprogne caspia</i> (<i>Sterna caspia</i>)	Caspian Tern	Schedule 5 - IA	Marine/ Migratory
<i>Limosa lapponica</i>	Bar-tailed Godwit	Schedule 5 - IA	Marine/ Migratory
<i>Limosa limosa</i>	Black-tailed Godwit	Schedule 5 - IA	Migratory/ Marine
<i>Macronectes giganteus</i>	Southern Giant Petrel	Schedule 5 - IA	Endangered/ Migratory/ Marine
<i>Macronectes halli</i>	Northern Giant-Petrel	Schedule 5 - IA	Vulnerable/ Migratory/M arine
<i>Motacilla cinerea</i>	Grey Wagtail	Schedule 5 - IA	Migratory/ Marine
<i>Onychoprion anaethetus</i> (<i>Sterna anaethetus</i>)	Bridled Tern	Schedule 5 - IA	Marine/ Migratory
<i>Pandion cristatus</i> (<i>Pandion haliaetus</i>)	Osprey	Schedule 5 - IA	Marine/ Migratory
<i>Philomachus pugnax</i>	Ruff	Schedule 5 - IA	Marine/ Migratory
<i>Stercorarius maccormicki</i>	South Polar Skua	Schedule 5 - IA	Marine/ Migratory
<i>Sterna dougallii</i>	Roseate Tern	Schedule 5 - IA	Marine/ Migratory
<i>Thalasseus bergii</i> (<i>Sterna bergii</i>)	Crested Tern	Schedule 5 - IA	Marine/ Migratory
<i>Tringa glareola</i>	Wood Sandpiper	Schedule 5 - IA	Marine/ Migratory
<i>Tringa nebularia</i>	Common Greenshank	Schedule 5 - IA	Marine/ Migratory
<i>Tringa stagnatilis</i>	Marsh Sandpiper, Little Greenshank	Schedule 5 - IA	Marine/ Migratory
<i>Falco peregrinus</i>	Peregrine Falcon	Schedule 7 - OS	Marine/ Migratory
<i>Ardea alba</i> (<i>Ardea modesta</i>)	Great Egret, White Egret		Marine
<i>Ardea ibis</i>	Cattle Egret		Marine
<i>Haliaeetus leucogaster</i>	White-bellied Sea-eagle		Marine
<i>Halobaena caerulea</i>	Blue Petrel		Vulnerable/ Marine
<i>Himantopus himantopus</i>	Black-winged Stilt		Marine
<i>Larus pacificus</i>	Pacific Gull		Marine
<i>Merops ornatus</i>	Rainbow Bee-eater		Marine
<i>Pachyptila turtur</i>	Fairy Prion		Marine

Scientific Name	Common Name	Conservation Status, WA	Status under EPBC Act
<i>Pachyptila turtur subsp. subantarctica</i>	Fairy Prion (southern)		Vulnerable
<i>Pterodroma mollis</i>	Soft-plumaged Petrel		Vulnerable /Marine
<i>Puffinus assimilis</i>	Little Shearwater		Marine
<i>Recurvirostra novaehollandiae</i>	Red-necked Avocet		Marine/ Migratory
<i>Lerista lineata</i>	Perth Slider, Lined Skink	Priority 3	
<i>Neelaps calonotos</i>	Black-striped Snake	Priority 3	
<i>Pletholax gracilis edelensis</i>	Keeled legless Lizard	Priority 3	
<i>Isoodon fusciventer</i>	Southern Brown Bandicoot, Quenda	Priority 4	
<i>Notoscincus butleri</i>	Lined Soil-crevice Skink	Priority 4	
<i>Oxyura australis</i>	Blue-billed Duck	Priority 4	
<i>Thinornis rubricollis (Charadrius rubricollis)</i>	Hooded Plover	Priority 4	Marine

Fauna are classified under five different Priority codes and rare and endangered fauna are classified under the *Wildlife Conservation (Specially Protected Fauna) Notice 2014* into five schedules of taxa. These are outlined in Appendix 4.

4.3 Fauna Habitat

One fauna habitat was described on the site reconnaissance - Shrubland Habitat (Plate 6).

Plate 6: Shrubland Habitat



Fauna habitat can be assessed using a number of factors including, the size of the habitat, the level of habitat connectivity, availability of specific resources (e.g. tree hollows) and overall vegetation quality. The habitat was assessed according to the following categories:

High quality fauna habitat – These areas closely approximate the vegetation mix and quality that would have been in the area prior to any disturbance. The habitat has connectivity with other habitats and is likely to contain the most natural vertebrate fauna assemblage.

Very good fauna habitat - These areas show minimal signs of disturbance (e.g. grazing, clearing, fragmentation, weeds) and generally retain many of the characteristics of the habitat if it had not been disturbed. The habitat has connectivity with other habitats and fauna assemblages in these areas are likely to be minimally affected by disturbance.

Good fauna habitat – These areas showed signs of disturbance (e.g. grazing, clearing, fragmentation, weeds) but generally retain many of the characteristics of the habitat if it had not been disturbed. The habitat has connectivity with other habitats and fauna assemblages in these areas are likely to be affected by disturbance.

Disturbed fauna habitat – These areas showed signs of significant disturbance. Many of the trees, shrubs and undergrowth are cleared. These areas may be in the early succession and regeneration stages. Areas may show signs of significant grazing, contain weeds or have been damaged by vehicle or machinery. Habitats are fragmented or have limited connectivity with other fauna habitats. Fauna assemblages in these areas are likely to differ significantly from what might be expected in the area had the disturbance not occurred.

Highly degraded fauna habitat – These areas often have a significant loss of vegetation, an abundance of weeds, and a large number of vehicle tracks or are completely cleared. Limited or no fauna habitat connectivity. Faunal assemblages in these areas are likely to be significantly different to what might have been in the area pre-disturbance. (Coffey Environments, 2009).

The site contains vegetation that has been significantly impacted by clearing and contains a large number of weed species. The site has connectivity to surrounding vegetation to the south. The site is considered to be Disturbed Fauna Habitat.

4.4 Conservation Significant Species

Table 6 identifies the likelihood of species listed in Table 5 to occur on the site based on their habitat preferences and the fauna habitat on the site.

Table 6: Likelihood of Conservation Significant Species being Present on the Site

Scientific Name	Common Name	Habitat*	Likelihood to occur on the site
<i>Bettongia penicillata ogilbyi</i>	Woylie, Brush-tailed Bettong	The Woylie habitat types ranged from forest to grassland, coastal and inland. During the day the Woylie shelters under patches of dense undergrowth, logs and rock-cavities and occasionally in burrows.	Highly Unlikely – the site is too disturbed
<i>Diomedea dabbenena</i> (<i>Diomedea exulans dabbenena</i>)	Tristan Albatross	The Tristan Albatross is a marine, pelagic seabird and forages in open water.	No – Marine and pelagic
<i>Pseudocheirus occidentalis</i>	Western Ringtail Possum, Ngwayir	The Western Ringtail Possum is a medium sized nocturnal marsupial. This species occurs in and near coastal Peppermint Tree (<i>Agonis flexuosa</i>) forest and Tuart (<i>Eucalyptus gomphocephala</i>) dominated forest with a Peppermint Tree understorey.	Highly Unlikely – the site is too disturbed
<i>Diomedea amsterdamensis</i> (<i>Diomedea exulans amsterdamensis</i>)	Amsterdam Albatross	The Amsterdam Albatross is a marine, pelagic seabird. It nests in open patchy vegetation on Amsterdam Island.	No – Marine and pelagic
<i>Anous tenuirostris melanops</i>	Australian Lesser Noddy	The Australian Lesser Noddy usually occupies coral-limestone islands that are densely fringed with White Mangrove (<i>Avicennia marina</i>).	Highly Unlikely – no preferred habitat
<i>Calyptorhynchus baudinii</i>	Baudin's Black Cockatoo	Baudin's Black-Cockatoo mainly occurs in eucalypt forests, especially Jarrah (<i>E. marginata</i>), Marri (<i>Corymbia calophylla</i>), also Karri (<i>E. diversicolor</i>) forest, often feeding in the understorey on proteaceous trees and shrubs, especially banksias (SEWPaC, 2012).	Unlikely – very limited habitat on the site
<i>Calyptorhynchus latirostris</i>	Carnaby's Black Cockatoo	Carnaby's Cockatoo is found in the south-west of Australia from Kalbarri through to Ravensthorpe. It has a preference for feeding on the seeds of <i>Banksia</i> , <i>Dryandra</i> , <i>Hakea</i> , <i>Eucalyptus</i> , <i>Grevillea</i> , <i>Pinus</i> and <i>Allocasuarina</i> spp. It is nomadic often moving toward the coast after breeding. It breeds in tree hollows that are 2.5 - 12m above the ground and have an entrance 23-30cm with a depth of 1-2.5m. Nesting mostly occurs in smooth-barked trees (e.g. Salmon Gum, Wandoo, Red Morrell) (SEWPaC, 2012)	Unlikely – very limited habitat on the site

Scientific Name	Common Name	Habitat*	Likelihood to occur on the site
<i>Rostratula australis</i> (<i>Rostratula benghalensis australis</i>)	Australian Painted Snipe	The Australian Painted Snipe has been recorded at wetlands in all states of Australia but is most common in eastern Australia. It generally inhabits shallow terrestrial freshwater (occasionally brackish) wetlands, including temporary and permanent lakes, swamps and claypans. It also uses inundated or waterlogged grassland or saltmarsh, dams, rice crops, sewage farms and bore drains. Typical sites include a cover of vegetation, including grasses.	Highly Unlikely – no wetland habitat
<i>Thalassarche carteri</i> (<i>Thalassarche chlororhynchos carteri</i>)	Indian yellow-nosed Albatross	The Indian Yellow-nosed Albatross is a marine bird that breeds on islands of the southern Indian Ocean on tussock-covered coastal cliffs and slopes, often in rocky situations.	No – Marine and pelagic
<i>Thalassarche melanophris</i>	Black-browed Albatross	The Black-browed Albatross is a marine species that inhabits terraces of coastal cliffs, slopes of nearby hills, summits of rocky islets or on flat or gently-sloping ground.	No – Marine and pelagic
<i>Calyptorhynchus banksii naso</i>	Forest Red-tailed Black-Cockatoo	Forest Red-tailed Black Cockatoos frequent the humid to sub-humid south-west of Western Australia from Gingin in the north, to Albany in the south and west to Cape Leeuwin and Bunbury (SEWPaC, 2012). It nests in tree hollows with a depth of 1-5m, that are predominately Marri (<i>Corymbia calophylla</i>), Jarrah (<i>Eucalyptus marginata</i>) and Karri (<i>E. diversicolor</i>) and it feeds primarily on the seeds of Marri.	Unlikely – very limited habitat on the site
<i>Dasyurus geoffroii</i>	Chuditch, Western Quoll	The Chuditch have been known to occupy a wide range of habitats including woodlands, dry sclerophyll forests, riparian vegetation, beaches and deserts. They are opportunistic feeders, and forage on the ground at night, feeding on invertebrates, small mammals, birds and reptiles.	Highly Unlikely – due to disturbance and predation
<i>Leipoa ocellata</i>	Mallee Fowl	Mallee fowl have been found in mallee regions of southern Australia from approximately the 26th parallel of latitude southwards in mallee bushland.	Highly Unlikely – no mallee habitat
<i>Sternula nereis nereis</i> (<i>Sterna nereis nereis</i>)	Australian Fairy Tern	The Fairy Tern (Australian) nests on sheltered sandy beaches, spits and banks above the high tide line and below vegetation.	Highly Unlikely – not beach habitat
<i>Ardenna carneipes</i> (<i>Puffinus carneipes</i>)	Flesh-footed Shearwater, Fleshy-footed Shearwater	The Flesh-footed Shearwater mainly occurs in the subtropics over continental shelves and slopes and occasionally inshore waters. Burrows are situated in areas that provide a clear flight-path for birds to enter and exit their colonies.	Highly Unlikely – not coastal habitat

Scientific Name	Common Name	Habitat*	Likelihood to occur on the site
<i>Calidris canutus piersmai</i>	Red Knot (New Siberian Islands)	In Australasia the Red Knot mainly inhabit intertidal mudflats, sandflats and sandy beaches of sheltered coasts, in estuaries, bays, inlets, lagoons and harbours; sometimes on sandy ocean beaches or shallow pools on exposed wave-cut rock platforms or coral reefs.	Highly Unlikely – no wetland habitat
<i>Calidris ferruginea</i>	Curlew Sandpiper	Curlew Sandpipers mainly occur on intertidal mudflats in sheltered coastal areas, such as estuaries, bays, inlets and lagoons, and also around non-tidal swamps, lakes and lagoons near the coast, and ponds in saltworks and sewage farms.	Highly Unlikely – no wetland habitat
<i>Calidris tenuirostris</i>	Great Knot	The Great Knot winters in Australia, occurring in sheltered coastal habitats such as inlets, bays, harbours, estuaries and lagoons with large intertidal mud and sandflats, oceanic sandy beaches with nearby mudflats, sandy spits and islets, muddy shorelines with mangroves and occasionally exposed reefs or rock platforms. It roosts in refuges such as shallow water in sheltered sites, on coastal dunes or on saltflats amongst mangroves during high tides (BirdLife International, 2015a).	Highly Unlikely – not coastal habitat
<i>Diomedea epomophora</i>	Southern Royal Albatross	The Southern Royal Albatross is marine and pelagic and does not nest on the mainland.	No – Marine and pelagic
<i>Diomedea exulans</i>	Wandering Albatross	The Wandering Albatross is marine, pelagic and aerial. In the Australasian region, it occurs inshore, offshore and in pelagic waters. It flies within 15 m of the sea surface, using the updraft from wave fronts for lift. It circles over breeding islands to heights of at least 1500 m. On breeding islands, it nests on coastal or inland ridges, slopes, plateaux and plains, often on marshy ground. Nests are sited on moss terraces, in dense tussocks, and often in loose aggregations on the west (windward) side of islands. It prefers open or patchy vegetation (tussocks, ferns or shrubs), and it requires nesting areas that are near exposed ridges or hillocks so that it can take off.	No – Marine and pelagic
<i>Numenius madagascariensis</i>	Eastern Curlew	The Eastern Curlew is most commonly associated with sheltered coasts, especially estuaries, bays, harbours, inlets and coastal lagoons, with large intertidal mudflats or sandflats, often with beds of seagrass. Occasionally, the species occurs on ocean beaches (often near estuaries), and coral reefs, rock platforms, or rocky islets.	Highly Unlikely – preferred habitat does not occur on the site

Scientific Name	Common Name	Habitat*	Likelihood to occur on the site
<i>Thalassarche cauta stadi</i>	White-capped Albatross	The White-capped Albatross is a marine species and occurs in subantarctic and subtropical waters. It reaches tropical areas associated with the cool Humboldt Current off South America. In the southern Indian Ocean it has been observed in waters of 6.4–13.5 °C. It has been noted in shelf-waters around breeding islands and over adjacent rises. During the non-breeding season, birds have been observed over continental shelves around continents. The species occurs both inshore and offshore and enters harbours and bays. The species is scarce in pelagic waters. Birds gather to scavenge at commercial fishing grounds. It nests on slopes vegetated with tussock and succulents on Auckland Island.	No – Marine and pelagic
<i>Thalassarche chrysostoma</i>	Grey-headed Albatross	The Grey-headed Albatross is marine, pelagic and migratory. Its habitat includes sub Antarctic, subtropical, and occasionally Antarctic waters in the Pacific, Indian, Atlantic and Southern Oceans. They remain at sea outside of the breeding season and generally only come onto land to find a nest site, find a mate and to breed (on sub Antarctic and Antarctic islands of the Indian and Atlantic Oceans and seas south of New Zealand). Grey-headed Albatross have rarely been recorded in Western Australia.	No – Marine and pelagic
<i>Thalassarche impavida</i> (<i>Thalassarche melanophris impavida</i>)	Campbell Albatross	The Campbell Albatross is a marine sea bird inhabiting sub-Antarctic and subtropical waters from pelagic to shelf-break water habitats. It tolerates sea surface-temperatures from 0–24 °C, but are mainly found in the sub-Antarctic. In December, the subspecies southern limit in the Ross Sea is at the 1.0 °C isotherm and in January at the 0.0 °C isotherm. In breeding and non-breeding seasons, they are specialised shelf feeders, concentrating around breeding islands or over adjacent submarine banks. In winter, they are commonly found in the coastal waters of continents, over up-wellings or boundaries of currents. It breeds on Campbell Island. They make their nests on tussock-covered ledges and terraces of cliffs, slopes and hills, overlooking the sea or valleys, and on the summits of rocky islets.	No – Marine and pelagic
<i>Actitis hypoleucos</i> (<i>Tringa hypoleucos</i>)	Common Sandpiper	The Common Sandpiper is mostly found around muddy margins or rocky shores. Generally the species forages in shallow water and on bare soft mud at the edges of wetlands.	Highly Unlikely – no wetland habitat

Scientific Name	Common Name	Habitat*	Likelihood to occur on the site
<i>Anous stolidus</i>	Common Noddy	The Common Noddy feeds on small fish, squid, pelagic molluscs, insects and even Pandanus fruit. Most items are skimmed from the surface of the ocean by dipping and breeds on islands (Birdlife Australia, 2014a).	Highly Unlikely – not marine
<i>Arenaria interpres</i>	Ruddy Turnstone	The Ruddy Turnstone is mainly found on coastal regions with exposed rock coast lines or coral reefs. It also lives near platforms and shelves, often with shallow tidal pools and rocky, shingle or gravel beaches.	Highly Unlikely – not coastal habitat
<i>Calidris acuminata</i>	Sharp-tailed Sandpiper	The Sharp-tailed Sandpiper prefers muddy edges of shallow fresh or brackish wetlands, with inundated or emergent sedges, grass, saltmarsh or other low vegetation.	Highly Unlikely – no wetland habitat
<i>Calidris melanotos</i>	Pectoral Sandpiper	The Pectoral Sandpiper prefers shallow fresh to saline wetlands and is found at coastal lagoons, estuaries, bays, swamps, lakes, inundated grasslands, saltmarshes, river pools, creeks, floodplains and artificial wetlands.	Highly Unlikely – no wetland habitat
<i>Calidris ruficollis</i>	Red-necked Stint	The Red-necked Stint is mostly found in coastal areas, including in sheltered inlets, bays, lagoons and estuaries with intertidal mudflats, often near spits, islets and banks and, sometimes, on protected sandy or coralline shores.	Highly Unlikely – not coastal habitat
<i>Calidris subminuta</i>	Long-toed Stint	The Long-toed Stint prefers shallow freshwater or brackish wetlands including lakes, swamps, river floodplains, streams, lagoons and sewage ponds. The species is also fond of areas of muddy shoreline, growths of short grass, weeds, sedges, low or floating aquatic vegetation, reeds, rushes and occasionally stunted samphire.	Highly Unlikely – no wetland habitat
<i>Charadrius dubius</i>	Little Ringed Plover	The Little-ringed Plover prefers bare or sparsely vegetated sandy and pebbly shores of shallow standing freshwater pools, lakes or slow-flowing rivers (Birdlife Australia, 2014b).	Highly Unlikely – no wetland habitat
<i>Chlidonias leucopterus (Sterna leucoptera)</i>	White-winged Black tern, White-winged Tern	In Australia, the species mostly inhabits fresh, brackish or saline, and coastal or subcoastal wetlands.	Highly Unlikely – no wetland habitat
<i>Diomedea sanfordi</i>	Northern Royal Albatross	The Northern Royal Albatross is marine, pelagic and aerial and does not nest on the mainland	No – Marine and pelagic
<i>Hydroprogne caspia (Sterna caspia)</i>	Caspian Tern	The Caspian Tern is mostly found in sheltered coastal embayments (harbours, lagoons, inlets, bays, estuaries and river deltas) and those with sandy or muddy margins are preferred.	Highly Unlikely – not coastal habitat

Scientific Name	Common Name	Habitat*	Likelihood to occur on the site
<i>Limosa lapponica</i>	Bar-tailed Godwit	The Bar-tailed Godwit is found mainly in coastal habitats such as large intertidal sandflats, banks, mudflats, estuaries, inlets, harbours, coastal lagoons and bays.	Highly Unlikely – not coastal habitat
<i>Limosa limosa</i>	Black-tailed Godwit	The Black-tailed Godwit is found mainly in coastal habitats such as large intertidal sandflats, banks, mudflats, estuaries, inlets, harbours, coastal lagoons and bays. It is found often around beds of seagrass and, sometimes, in nearby saltmarsh.	Highly Unlikely – not coastal habitat
<i>Macronectes giganteus</i>	Southern Giant Petrel	The Southern Giant-Petrel is a marine bird that occurs in Antarctic to subtropical waters. In summer it mainly occurs over Antarctic waters.	No – not marine
<i>Macronectes halli</i>	Northern Giant-Petrel	The Northern Giant-Petrel is marine and oceanic. It mainly occurs in sub-Antarctic waters, but regularly occurs in Antarctic waters of the southwestern Indian Ocean, the Drake Passage and west of the Antarctic Peninsula. The range of the Northern Giant-Petrel extends into subtropical waters mainly between winter and spring. It frequents both oceanic and inshore waters near breeding islands and in the non-breeding range. It is attracted to land at sewage outfalls, and scavenges at colonies of penguins and seals. It breeds on sub-Antarctic islands. Its breeding range extends into the Antarctic zone at South Georgia. It nests in coastal areas where vegetation or broken terrain offers shelter, on sea-facing slopes, headlands, in the lee of banks, under or against vegetation clumps, below cliffs or overhanging rocks, or in hollows. Tussock-grass (<i>Poa</i>) is widespread at many breeding sites. Its nests are built in secluded, coastal sites, sheltered by heavy vegetation.	No – not marine
<i>Motacilla cinerea</i>	Grey Wagtail	The Grey Wagtail is mostly recorded in coastal areas in Western Australia (ALA, 2015) however is widespread. There is non-breeding habitat only in Australia and the species has a strong association with water, particularly rocky substrates along water courses but also lakes and marshes.	Highly Unlikely – no permanent water on the site
<i>Onychoprion anaethetus</i> (<i>Sterna anaethetus</i>)	Bridled Tern	Bridled Terns are only rarely found in inshore continental waters and along mainland coastlines.	Highly Unlikely – not coastal habitat

Scientific Name	Common Name	Habitat*	Likelihood to occur on the site
<i>Pandion cristatus</i> (<i>Pandion haliaetus</i>)	Osprey	Ospreys occur in littoral and coastal habitats and terrestrial wetlands of tropical and temperate Australia and offshore islands. They feed on fish, especially mullet where available, and rarely take molluscs, crustaceans, insects, reptiles, birds and mammals.	Highly Unlikely – preferred habitat does not occur on the site
<i>Philomachus pugnax</i>	Ruff	The Ruff is found on generally fresh, brackish or saline wetlands with exposed mudflats at the edges and is found in terrestrial wetlands including lakes, swamps, pools, lagoons, tidal rivers, swampy fields and floodlands.	Highly Unlikely – no wetland habitat on the site
<i>Stercorarius maccormicki</i>	South Polar Skua	The South Polar Skua occurs on subantarctic islands	No – not marine
<i>Sterna dougallii</i>	Roseate Tern	The Roseate Tern is a migratory coastal seabird that feeds by plunge diving. This species breeds in sites surrounded by walls and rocks or in the shelter of vegetation (in temperate regions) (Birdlife International, 2014a).	Highly Unlikely – not coastal habitat
<i>Thalasseus bergii</i> (<i>Sterna bergii</i>)	Crested Tern	The Crested Tern occurs in coastal areas (Birdlife Australia, 2018).	Highly Unlikely – not coastal habitat
<i>Tringa glareola</i>	Wood Sandpiper	The Wood Sandpiper uses well-vegetated, shallow, freshwater wetlands, such as swamps, billabongs, lakes, pools and waterholes. They are typically associated with emergent, aquatic plants or grass, and dominated by taller fringing vegetation, such as dense stands of rushes or reeds, shrubs, or dead or live trees, especially Melaleuca and River Red Gums Eucalyptus camaldulensis and often with fallen timber.	Highly Unlikely – preferred habitat does not occur on the site
<i>Tringa nebularia</i>	Common Greenshank	The Common Greenshank is a wader and does not breed in Australia. This species can be found in many types of wetlands and has the widest distribution of any shorebird in Australia. This species typically feeds on molluscs, crustaceans, insects, and occasionally fish and frogs.	No – no permanent water on the site
<i>Tringa stagnatilis</i>	Marsh Sandpiper, Little Greenshank	The Marsh Sandpiper lives in permanent or ephemeral wetlands of varying salinity, including swamps, lagoons, billabongs, salt pans, saltmarshes, estuaries, pools on inundated floodplains, and intertidal mudflats and also regularly at sewage farms and saltworks.	No – no permanent water on the site
<i>Falco peregrinus</i>	Peregrine Falcon	The Peregrine Falcon is found in a variety of habitats but nests on high cliff ledges or artificial structures. It feeds primarily on small-medium sized birds, but occasionally taking insects, such as moths, cicadas and locusts (Birdlife Australia, 2012).	Highly Unlikely – preferred habitat does not occur on the site

Scientific Name	Common Name	Habitat*	Likelihood to occur on the site
<i>Ardea alba (Ardea modesta)</i>	Great Egret, White Egret	The Eastern Great Egret has been reported in a wide range of wetland habitats and usually frequents shallow waters. This species feeds on fish, insects, crustaceans, molluscs, frogs, lizards, snakes and small birds and mammals.	Highly Unlikely – no wetland habitat on the site
<i>Ardea ibis</i>	Cattle Egret	The Cattle Egret occurs in tropical and temperate grasslands, wooded lands and terrestrial wetlands with breeding in Western Australia recorded in the far north in Wyndham in colonies in wooded swamps such as mangrove forest. This species forages away from water on low lying grasslands, improved pastures and croplands generally in areas that have livestock eating insects, frog, lizards and small mammals.	Unlikely – preferred habitat does not occur on the site
<i>Haliaeetus leucogaster</i>	White-bellied Sea-eagle	The White-bellied Sea-Eagle is found in coastal habitats with large areas of open water, especially those close to the sea-shore. This species feeds opportunistically on a variety of fish, birds, reptiles, mammals and crustaceans, and on carrion and offal.	Highly Unlikely – preferred habitat does not occur on the site
<i>Halobaena caerulea</i>	Blue Petrel	The Blue Petrel breeds around MacQuarie Island and forages in Antarctic and subantarctic waters for pelagic crustaceans, fish, cephalopods and insects	No – Marine species
<i>Himantopus himantopus</i>	Black-winged Stilt	The Black-winged Stilt is found near coastal lagoons and shallow freshwater or brackish pools with extensive areas of mudflats, salt meadows, saltpans, coastal marshes and swamps (Birdlife International, 2014b).	Highly Unlikely – preferred habitat does not occur on the site
<i>Larus pacificus</i>	Pacific Gull	Australia's largest gull, the Pacific Gull occurs only along the coasts of southern Australia. Despite its name, the species is seldom seen on the Pacific coastline, and is far more common on the beaches bordering the Southern and Indian Oceans. They breed in colonies on islands, extending from the Furneaux Group in eastern Bass Strait, west to Shark Bay. Their nests may consist of either a scrape in the ground, sometimes lined with gravel, or a neat nest made from grass, sticks or seaweed (Birdlife Australia, 2015).	No –not coastal habitat

Scientific Name	Common Name	Habitat*	Likelihood to occur on the site
<i>Merops ornatus</i>	Rainbow Bee-eater	Populations of the Rainbow Bee-eater that breed in northern Australia are considered to be resident, and in many northern localities the Rainbow Bee-eater is present throughout the year. The Rainbow Bee-eater nests in a burrow dug in the ground. It is found across the better-watered parts of WA including islands preferring lightly wooded, sandy country near water.	Possible intermittent visitor
<i>Pachyptila turtur</i>	Fairy Prion	The Fairy Prion occurs over oceans and coastal breeding islands (ALA, 2015a).	No – Marine species
<i>Pachyptila turtur subsp. subantarctica</i>	Fairy Prion (southern)	The southern subspecies of the Fairy Prion is a marine bird, found mostly in temperate and subantarctic seas. The species' oceanic distribution is poorly known. The Fairy Prion sometimes forages over continental shelves and the continental slope, but it can come close inshore in rough weather. It breeds on islands and rock stacks. It burrows in soil, or uses crevices and caves in cliffs or rock falls. The subspecies can also nest in scrub, herbland, tussock or pasture.	No – Marine species
<i>Pterodroma mollis</i>	Soft-plumaged Petrel	The Soft-plumaged Petrel is a marine, oceanic species that breed on islands off Tasmania, in the New Zealand region, and in the Indian and South Atlantic Oceans	No – Marine species
<i>Puffinus assimilis</i>	Little Shearwater	The Little Shearwater is a marine species with a widespread distribution in the subtropical Atlantic, Pacific and Indian Oceans. Lord Howe Island has one of the larger breeding colonies in the Australian region. Breeding sites at Lord Howe Island include Roach Island, Muttonbird Island, Blackburn Island and on the main Island at Muttonbird Point and Transit Hill (OEH, 2014).	Highly Unlikely – preferred habitat does not occur on the site
<i>Recurvirostra novaehollandiae</i>	Red-necked Avocet	The Red-necked Avocet occurs in wetland areas including bogs, marshes, swamps and Permanent Saline, Brackish or Alkaline Lakes (Birdlife International, 2014c).	Highly Unlikely – preferred habitat does not occur on the site
<i>Lerista lineata</i>	Perth Slider, Lined Skink	The Lined Skink is a burrowing species that occurs in pale sandy soils with coastal heath and shrubland areas in isolated populations in the south-west and mid-west coast of Western Australia. It feeds on termites and other small insects (AROD, 2014).	Possible

Scientific Name	Common Name	Habitat*	Likelihood to occur on the site
<i>Neelaps calonotos</i>	Black-striped Snake	The Black-striped snake has a limited distribution, inhabiting areas with sandy soils that support heathlands and Banksia/Eucalypt Woodlands (Nevill, 2005) on the Swan Coastal Plain generally in the lower west coast from Lancelin to Mandurah (Storr et al, 1999).	Possible
<i>Pletholax gracilis edelensis</i>	Keeled legless Lizard	The Keeled legless Lizard has been located in yellow-brown undulating sandplain with Acacia Shrubland near Shark Bay (Western Australian Museum, 1994)	Possible
<i>Isoodon fusciventer</i>	Southern Brown Bandicoot, Quenda	Southern Brown Bandicoots are small grey marsupials that prefer dense scrub (up to one metre high). Their diet includes invertebrates (including earthworms, adult beetles and their larvae), underground fungi, subterranean plant material, and very occasionally, small vertebrates (DEC, 2012).	Possible
<i>Notoscincus butleri</i>	Lined Soil-crevice Skink	The Lined soil-crevice skink is found mainly in stony spinifex areas (Cogger, 2000).	No – this species is known from the Dampier region
<i>Oxyura australis</i>	Blue-billed Duck	The Blue-billed Duck is found on terrestrial wetlands in temperate regions, that are freshwater to saline, and may be natural or artificial. It nests in rushes, sedges, Lignum Muehlenbeckia cunninghamii and paperbark Melaleuca (Birdlife International, 2015b). The species is almost completely aquatic, and is seldom seen on land. Non-breeding flocks, often with several hundred individuals, congregate on large, deep open freshwater dams and lakes in autumn. The daylight hours are spent alone in small concealed bays within vegetation or communally in large exposed rafts far from the shore (Birds in Backyards, 2015).	No – no permanent water on the site
<i>Thinornis rubricollis (Charadrius rubricollis)</i>	Hooded Plover	The Hooded Plover primarily inhabits sandy, ocean beaches, with the highest densities on beaches with large amounts of beach-washed seaweed that are backed by extensive open dunes. In Western Australia the species also inhabits inland and coastal salt lakes (Birdlife International, 2014d)	Highly Unlikely – preferred habitat does not occur on the site

* Habitat descriptions from DoEE (2016) SPRAT Database unless otherwise denoted

Species identified in the database searches as possibly present on the site were Priority 4 species:

- *Lerista lineata* (Perth Slider, Lined Skink);
- *Neelaps calonotos* (Black-striped Snake);

- *Pletholax gracilis edelensis* (Keeled legless Lizard); and
- *Isodon fusciventer* (Southern Brown Bandicoot, Quenda).

The Rainbow Bee-eater (*Merops ornatus*), listed Marine under the EPBC Act, may intermittently visit the site.

The site contains *Xanthorrhoea preissii* and *Acacia saligna* shrubs which are listed as low quality foraging habitat for Black Cockatoos (Valentine and Stock, 2008; Groom 2011) and therefore is not considered to be significant habitat for these species.

4.5 Pest Fauna

The site shows signs of use by rabbits and foxes are also likely to be present. Feral cats, rats and mice are also likely to be present.

4.6 Biodiversity Value

The EPA's (2002) *Terrestrial Biological Surveys as an Element of Biodiversity Protection Position Statement No. 3* indicated an ecological assessment of a site must consider its biodiversity value at the genetic, species and ecosystem levels; and its ecological functional value at the ecosystem level.

From a fauna perspective, the vegetated area in the eastern part of the site is considered to be Disturbed Fauna Habitat. There is likely to be a significant decrease in native mammals and reptiles present as a result of disturbances on the site, introduced feral species such as foxes and rabbits and increased domestic predators such as cats.

5 ENVIRONMENTAL ASSESSMENT

5.1 Land Use

The site has historically been cleared and is not listed as a Contaminated Site.

5.2 Geology and Soils

5.2.1 Geology

The Quindalup Dune geological unit is not constrained for development.

5.2.2 Soils

The soils are likely to have a risk of dust generation which will need to be managed during clearing and after clearing with stabilisation to ensure that nuisance dust is not generated. There is a low risk of an of the other land degradation risk factors impacting on the proposed clearing and development of the site. The soils on the site do not provide an impediment to the development of the lot.

5.3 Hydrology

Groundwater is generally 5m from the surface and is not an impediment to development. Stormwater management will be required to be addressed in accordance with *Better Urban Water Management* (WAPC, 2008). A Local Water Management Strategy (LWMS) is required at Local Structure Plan stage and an Urban Water Management Plan (UWMP) will be required at the subdivision stage. Stormwater should be managed by on-site infiltration.

There are no surface water features on the site or within 50m.

5.4 Flora and Vegetation

The Flora and Vegetation survey found the following:

- No Threatened (Declared Rare) or Priority Flora species were recorded or are likely to occur on the site;
- The vegetation is mapped as being part of the Quindalup Vegetation complex, which is well protected in the Perth Metropolitan Region with greater than 10% reservation;
- The vegetation on the site is predominantly an *Acacia rostellifera/Xanthorrhoea preissii* Shrubland over weeds;
- The vegetation is likely representative of Floristic Community Type 29a which is a Priority Ecological Community; and
- The vegetation was rated as Good to Degraded with small areas that are Completely Degraded.

Proposed development of the site will not impact on any Declared rare or Priority flora species. FCT (PEC) 29a is well represented in conservation reserves in the City of Rockingham, including in Bush Forever Sites such as Site 377 Port Kennedy Scientific Park, Site 358 Lake Richmond and Site 341 Woodman Point.

5.5 Fauna

The Level 1 Fauna Survey found the following:

- One fauna habitat - Shrubland - occurs on the site;
- The habitat is considered to be Disturbed Fauna Habitat due to previous clearing and the weedy nature of the site impacting on the fauna assemblage;
- The site contains limited, low quality foraging habitat for Black Cockatoos (*Xanthorrhoea preissii* and *Acacia saligna*);
- Listed species that have the potential to utilise the site are Priority 4 species:
 - *Lerista lineata* (Perth Slider, Lined Skink);
 - *Neelaps calonotos* (Black-striped Snake);
 - *Pletholax gracilis edelensis* (Keeled legless Lizard); and
 - *Isodon fusciventer* (Southern Brown Bandicoot, Quenda).
- The Listed Marine species under the EPBC Act that may intermittently visit the site is:
 - Rainbow Bee-eater (*Merops ornatus*); and
- Pest fauna likely to occur on the site are rabbits, feral cats, rats, mice and Foxes.

The proposed clearing of Lot 1488 Patterson Road may impact on habitat for four Priority fauna species. The Rainbow Bee-eater is likely to be an intermittent visitor and not rely on the site for survival.

A fauna relocation program should be undertaken prior to clearing targeting common and potential conservation significant species.

5.6 Heritage

There are no listed Heritage Sites on the site. The proposed clearing of the site is not constrained by heritage.

5.7 Conclusion

The Environmental Assessment of Lot 1488 Patterson Road, Rockingham concludes that the site has limited flora, vegetation and fauna values that would be impacted by clearing. In addition, no other environmental characteristics of the site, such as soil type and hydrology are a constraint to clearing and development of the site.

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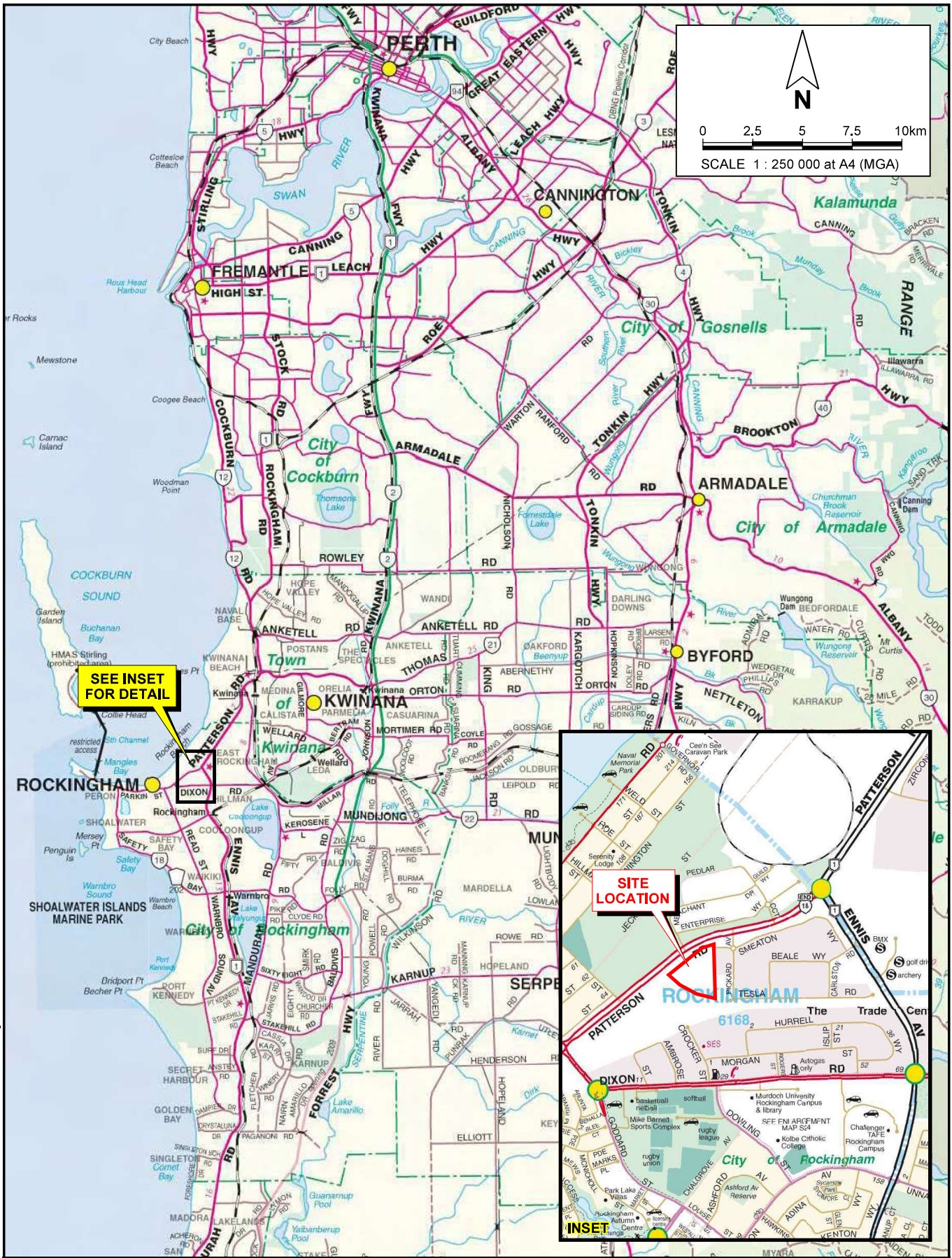
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FIGURES



SEE INSET FOR DETAIL

SITE LOCATION

INSET

2018-4-14-01.dgn

PINPOINT CARTOGRAPHICS (08) 9562 7136



Development WA
 ENVIRONMENTAL ASSESSMENT REPORT
 LOT 1488 PATTERSON ROAD, EAST ROCKINGHAM

Drawn: J. Cabot	Date: 5 Nov 2019
Job: 10340 Rpt: 2018-414	Revision: A

SITE LOCATION

Figure 1

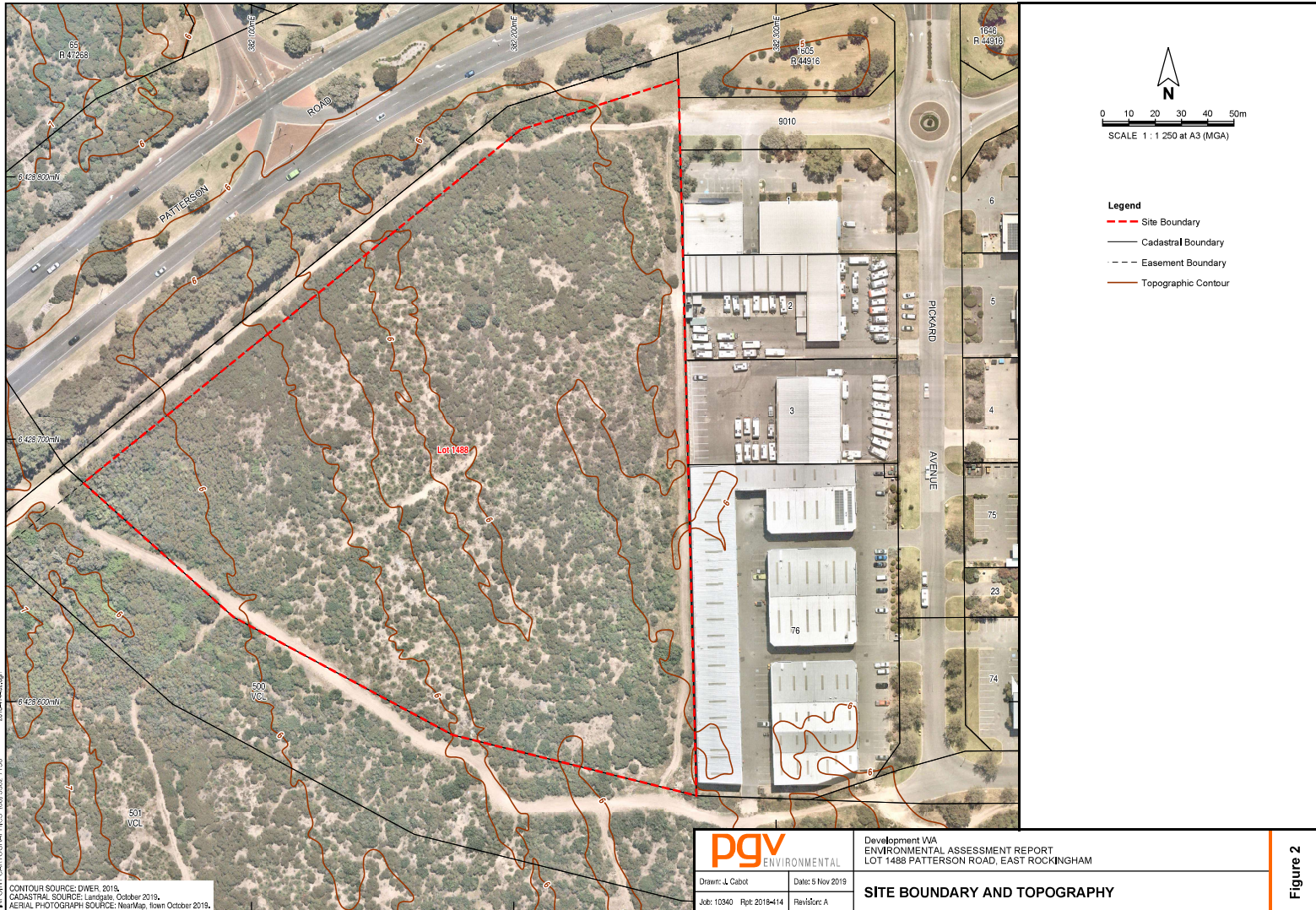


Figure 2

Taxon	Status	Rank	IUCN Criteria	EPBC	DPaWRegion	DPaWDistrict	Distribution	Flowering Period	RecoveryPlan
Stylidium longitubum	4				MWST,SWAN,SWST,WHTB	BLACKWOOD,MOORA,PERTH HILLS,SWAN COASTAL,WELLINGTON,GREAT SOUTHERN	Upper Swan, Bullsbrook, Bunbury, Midland, Busselton, Arthur River, Jandakot, Mundijong, Karnup, Julimar S.F.	Nov	
Thelymitra stellata	T	EN	D; C2a	EN	MWST,SWAN,WHTB	MOORA,PERTH HILLS,GREAT SOUTHERN	Perth-Three Springs, Pinjarra, Dumbleyung, Corrigin, Bungendore Park, Unnamed Shire Reserve 34155, Hartfield Rd, Mt Peron, Jurien Bay, Mt Lesueur NP, Arthur River, Coomallo NR, Julimar, Chittering, Armadale	Oct-Nov	
Thelymitra variegata	2				SCST,SWAN,SWST,WARR,WHTB	BLACKWOOD,ALBANY,FRA NKLAND,SWAN COASTAL,GREAT SOUTHERN	Baldivis, Capel, Albany, Hyden, Mt Lindesay	Aug-Sep	
Tribonanthes purpurea	T	VU	C2a(i)	VU	SCST,SWAN,WHTB	ALBANY,PERTH HILLS,GREAT SOUTHERN	Pingaring, Hillman T/S, Mt Dale, Albany	Aug	

APPENDIX 2
Naturemap Report

NatureMap Species Report

Created By Guest user on 29/11/2018

Current Names Only Yes
Core Datasets Only Yes
Method 'By Circle'
Centre 115° 44' 56" E, 32° 16' 21" S
Buffer 5km
Group By Conservation Status

Conservation Status	Species	Records
Non-conservation taxon	649	2972
Other specially protected fauna	1	1
Priority 3	4	8
Priority 4	6	19
Protected under international agreement	18	112
Rare or likely to become extinct	12	59
TOTAL	690	3171

Name ID	Species Name	Naturalised	Conservation Code	¹ Endemic To Query Area
Rare or likely to become extinct				
1.	24784 <i>Calidris ferruginea</i> (Curllew Sandpiper)		T	
2.	24790 <i>Calidris tenuirostris</i> (Great Knot)		T	
3.	24731 <i>Calyptrorhynchus banksii subsp. naso</i> (Forest Red-tailed Black Cockatoo)		T	
4.	24733 <i>Calyptrorhynchus baudinii</i> (Baudin's Cockatoo, White-tailed Long-billed Black Cockatoo)		T	
5.	24734 <i>Calyptrorhynchus latirostris</i> (Carnaby's Cockatoo, White-tailed Short-billed Black Cockatoo)		T	
6.	48400 <i>Calyptrorhynchus sp.</i> (white-tailed black cockatoo)		T	
7.	25335 <i>Caretta caretta</i> (Loggerhead Turtle)		T	
8.	25336 <i>Chelonia mydas</i> (Green Turtle)		T	
9.	25346 <i>Dermochelys coriacea</i> (Leatherback Turtle)		T	
10.	24210 <i>Neophoca cinerea</i> (Australian Sea-lion)		T	
11.	24798 <i>Numenius madagascariensis</i> (Eastern Curlew)		T	
12.	48237 <i>Rostratula australis</i> (Australian Painted Snipe)		T	
Protected under international agreement				
13.	41323 <i>Actitis hypoleucos</i> (Common Sandpiper)		IA	
14.	25736 <i>Arenaria interpres</i> (Ruddy Turnstone)		IA	
15.	24779 <i>Calidris acuminata</i> (Sharp-tailed Sandpiper)		IA	
16.	24786 <i>Calidris melanotos</i> (Pectoral Sandpiper)		IA	
17.	24788 <i>Calidris ruficollis</i> (Red-necked Stint)		IA	
18.	24789 <i>Calidris subminuta</i> (Long-toed Stint)		IA	
19.	41332 <i>Chlidonias leucopterus</i> (White-winged Black Tern, white-winged tern)		IA	
20.	48587 <i>Hydroprogne caspia</i> (Caspian Tern)		IA	
21.	25741 <i>Limosa limosa</i> (Black-tailed Godwit)		IA	
22.	24690 <i>Macronectes giganteus</i> (Southern Giant Petrel)		IA	
23.	41347 <i>Onychoprion anaethetus</i> (Bridled Tern)		IA	
24.	48591 <i>Pandion cristatus</i> (Osprey, Eastern Osprey)		IA	
25.	24517 <i>Stercorarius parasiticus</i> (Arctic jaeger, Arctic Skua)		IA	
26.	25640 <i>Sterna dougallii</i> (Roseate Tern)		IA	
27.	48597 <i>Thalasseus bergii</i> (Crested Tern)		IA	
28.	24806 <i>Tringa glareola</i> (Wood Sandpiper)		IA	
29.	24808 <i>Tringa nebularia</i> (Common Greenshank, greenshank)		IA	
30.	24809 <i>Tringa stagnatilis</i> (Marsh Sandpiper, little greenshank)		IA	
Other specially protected fauna				
31.	25624 <i>Falco peregrinus</i> (Peregrine Falcon)		S	
Priority 3				
32.	25147 <i>Lerista lineata</i> (Perth Slider, Lined Skink)		P3	
33.	25249 <i>Neelaps calonotos</i> (Black-striped Snake, black-striped burrowing snake)		P3	
34.	25006 <i>Pletholax gracilis subsp. edelensis</i> (Keeled Legless Lizard (Shark Bay))		P3	
35.	20348 <i>Sphaerolobium calcicola</i>		P3	

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Priority 4				
36.	4763 <i>Dodonaea hackettiana</i> (Hackett's Hopbush)		P4	
37.	48588 <i>Isodon fusciventer</i> (Quenda, southwestern brown bandicoot)		P4	
38.	4027 <i>Jacksonia sericea</i> (Waldjumi)		P4	
39.	25196 <i>Notoscincus butleri</i> (lined soil-crevice skink (Dampier))		P4	
40.	24328 <i>Oxyura australis</i> (Blue-billed Duck)		P4	
41.	48135 <i>Thinornis rubricollis</i> (Hooded Plover, Hooded Dotterel)		P4	
Non-conservation taxon				
42.	? ?			
43.	<i>Ablennes hians</i>			
44.	3282 <i>Acacia cyclops</i> (Coastal Wattle)			
45.	11611 <i>Acacia lasiocarpa</i> var. <i>lasiocarpa</i>			
46.	15482 <i>Acacia pulchella</i> var. <i>goadbyi</i>			
47.	3525 <i>Acacia rostellifera</i> (Summer-scented Wattle)			
48.	3527 <i>Acacia saligna</i> (Orange Wattle, Kudjong)			
49.	30032 <i>Acacia saligna</i> subsp. <i>saligna</i>			
50.	<i>Acanthaluteres brownii</i>			
51.	<i>Acanthaluteres spilomelanurus</i>			
52.	24260 <i>Acanthiza apicalis</i> (Broad-tailed Thornbill, Inland Thornbill)			
53.	24261 <i>Acanthiza chrysorrhoa</i> (Yellow-rumped Thornbill)			
54.	24262 <i>Acanthiza inornata</i> (Western Thornbill)			
55.	1208 <i>Acanthocarpus preissii</i>			
56.	25535 <i>Accipiter cirrocephalus</i> (Collared Sparrowhawk)			
57.	25536 <i>Accipiter fasciatus</i> (Brown Goshawk)			
58.	24282 <i>Accipiter fasciatus</i> subsp. <i>fasciatus</i> (Brown Goshawk)			
59.	48409 <i>Acetabularia caliculus</i>			
60.	25755 <i>Acrocephalus australis</i> (Australian Reed Warbler)			
61.	11837 <i>Adenanthos cygnorum</i> subsp. <i>cygnorum</i> (Common Woollybush)			
62.	4582 <i>Adriana quadripartita</i> (Bitter Bush)			
63.	<i>Aetapcus maculatus</i>			
64.	<i>Afurcagobius suppositus</i>			
65.	1505 <i>Agave americana</i> (Century Plant)	Y		
66.	<i>Allenichthys glauerti</i>			
67.	<i>Allotrochosina karri</i>			
68.	46276 <i>Ambrosia tenuifolia</i> (Lacy Ragweed)	Y		
69.	126 <i>Amphibolis antarctica</i> (Sea Nymph)			
70.	<i>Aname mainae</i>			
71.	24312 <i>Anas gracilis</i> (Grey Teal)			
72.	<i>Anas platyrhynchos</i> subsp. <i>domesticus</i>			
73.	24315 <i>Anas rhynchotis</i> (Australasian Shoveler)			
74.	24316 <i>Anas superciliosa</i> (Pacific Black Duck)			
75.	47414 <i>Anhinga novaehollandiae</i> (Australasian Darter)			
76.	<i>Anoplocapros amygdaloides?</i>			
77.	<i>Anoplocapros robustus</i>			
78.	<i>Anoplocapros</i> sp.			
79.	<i>Anotrichium crinitum</i>			
80.	<i>Anser anser</i>			
81.	6949 <i>Anthocercis littorea</i> (Yellow Tailflower)			
82.	24561 <i>Anthochaera carunculata</i> (Red Wattlebird)			
83.	26475 <i>Antithamnion hanovioides</i>			
84.	6211 <i>Apium prostratum</i> (Sea Celery)			
85.	12040 <i>Apium prostratum</i> var. <i>prostratum</i> (Sea Celery)			
86.	<i>Aploactisoma milesii</i> subsp. <i>milesii</i>			Y
87.	<i>Aplodactylus westralis</i>			
88.	<i>Apogon rueppellii</i>			
89.	<i>Apogon victoriae</i>			
90.	24991 <i>Aprasia repens</i> (Sand-plain Worm-lizard)			
91.	<i>Aptychotrema</i> sp.			
92.	<i>Aptychotrema vincentiana</i>			
93.	24285 <i>Aquila audax</i> (Wedge-tailed Eagle)			
94.	<i>Aracana aunita</i>			
95.	<i>Araneus senicaudatus</i>			
96.	41324 <i>Ardea modesta</i> (great egret, white egret)			
97.	24340 <i>Ardea novaehollandiae</i> (White-faced Heron)			
98.	26484 <i>Areschougia ligulata</i>			
99.	<i>Argiope protensa</i>			
100.	<i>Argiope trifasciata</i>			
101.	25566 <i>Artamus cinereus</i> (Black-faced Woodswallow)			
102.	24353 <i>Artamus cyanopterus</i> (Dusky Woodswallow)			

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103.	<i>Artoria flavimana</i>			
104.	<i>Artoria linnaei</i>			
105.	<i>Artoriopsis expolita</i>			
106.	226 <i>Arundo donax</i> (Giant Reed)	Y		
107.	1364 <i>Asphodelus fistulosus</i> (Onion Weed)	Y		
108.	<i>Asymbolus</i> sp.			Y
109.	<i>Atherina</i> sp.			
110.	<i>Atherinosoma presbyteroides</i>			
111.	<i>Atherinosoma wallacei</i>			
112.	2462 <i>Atriplex hypoleuca</i>			
113.	2471 <i>Atriplex prostrata</i> (Hastate Orache)	Y		
114.	<i>Austracantha minax</i>			
115.	17240 <i>Austrostipa flavescens</i>			
116.	231 <i>Avellinia michelii</i>	Y		
117.	233 <i>Avena barbata</i> (Bearded Oat)	Y		
118.	235 <i>Avena sativa</i> (Common Oat)	Y		
119.	24318 <i>Aythya australis</i> (Hardhead)			
120.	<i>Backobourkia brounii</i>			
121.	24044 <i>Balaenoptera acutorostrata</i> (Dwarf Minke Whale)			
122.	<i>Barnardius zonarius</i>			
123.	15037 <i>Bartsia trixago</i>	Y		
124.	<i>Batrachomoeus rubricephalus</i>			
125.	743 <i>Baumea juncea</i> (Bare Twigrush)			
126.	24319 <i>Biziura lobata</i> (Musk Duck)			
127.	749 <i>Bolboschoenus caldwellii</i> (Marsh Club-rush)			
128.	16636 <i>Boronia crenulata</i> subsp. <i>viminea</i>			
129.	<i>Brachaluteres jacksonianus</i>			
130.	6341 <i>Brachyloma preissii</i> (Globe Heath)			
131.	2999 <i>Brassica rapa</i>	Y		
132.	3000 <i>Brassica tournefortii</i> (Mediterranean Turnip)	Y		
133.	2995 <i>Brassica x napus</i>	Y		
134.	244 <i>Briza maxima</i> (Blowfly Grass)	Y		
135.	245 <i>Briza minor</i> (Shivery Grass)	Y		
136.	249 <i>Bromus diandrus</i> (Great Brome)	Y		
137.	250 <i>Bromus hordeaceus</i> (Soft Brome)	Y		
138.	26522 <i>Bryopsis foliosa</i>			
139.	<i>Bryopsis gemellipara</i>			
140.	25714 <i>Cacatua pastinator</i> (Western Long-billed Corella)			
141.	25715 <i>Cacatua roseicapilla</i> (Galah)			
142.	25716 <i>Cacatua sanguinea</i> (Little Corella)			
143.	24729 <i>Cacatua tenuirostris</i> (Eastern Long-billed Corella)	Y		
144.	25598 <i>Cacomantis flabelliformis</i> (Fan-tailed Cuckoo)			
145.	1276 <i>Caesia micrantha</i> (Pale Grass Lily)			
146.	3002 <i>Cakile maritima</i> (Sea Rocket)	Y		
147.	15348 <i>Caladenia flava</i> subsp. <i>flava</i>			
148.	2846 <i>Calandrinia calyptata</i> (Pink Purslane)			
149.	96 <i>Callitris preissii</i> (Rottneest Island Pine, Maro)			
150.	26533 <i>Callophycus costatus</i>			
151.	26535 <i>Callophycus harveyanus</i>			
152.	26536 <i>Callophycus oppositifolius</i>			
153.	5415 <i>Calothamnus lateralis</i>			
154.	35816 <i>Calothamnus quadrifidus</i> subsp. <i>quadrifidus</i>			
155.	25717 <i>Calyptorhynchus banksii</i> (Red-tailed Black-Cockatoo)			
156.	5460 <i>Calytrix fraseri</i> (Pink Summer Calytrix)			
157.	<i>Carassius auratus</i>			
158.	3005 <i>Cardamine hirsuta</i> (Common Bittercress)	Y		
159.	7909 <i>Carduus pycnocephalus</i> (Slender Thistle)	Y		
160.	1162 <i>Cartonema philydroides</i>			
161.	2957 <i>Cassytha racemosa</i> (Dodder Laurel)			
162.	11799 <i>Cassytha racemosa</i> forma <i>racemosa</i>			
163.	18321 <i>Casuarina glauca</i>	Y		
164.	1742 <i>Casuarina obesa</i> (Swamp Sheoak, Kuli)			
165.	44539 <i>Caulerpa cylindracea</i>			
166.	26580 <i>Caulerpa trifaria</i>			
167.	26586 <i>Caulocystis uvifera</i>			
168.	41568 <i>Cenchrus setaceus</i> (Fountain Grass)	Y		
169.	6539 <i>Centaureum erythraea</i> (Common Centaury)	Y		
170.	6214 <i>Centella asiatica</i>			
171.	2889 <i>Cerastium glomeratum</i> (Mouse Ear Chickweed)	Y		
172.	17685 <i>Chaetanthus aristatus</i>			

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173.	<i>Chaetodermis penicilligera</i>			
174.	24186 <i>Chalinobius gouldii</i> (Gould's Wattled Bat)			
175.	26616 <i>Champia affinis</i>			
176.	24377 <i>Charadrius ruficapillus</i> (Red-capped Plover)			
177.	<i>Cheilodactylus rubrolabiatus</i>			
178.	<i>Chelidonichthys kumu</i>			
179.	43380 <i>Chelodina colliciei</i> (South-western Snake-necked Turtle)			
180.	24321 <i>Chenonetta jubata</i> (Australian Wood Duck, Wood Duck)			
181.	2490 <i>Chenopodium glaucum</i> (Glaucous Goosefoot)	Y		
182.	26638 <i>Chondria lanceolata</i>			
183.	24980 <i>Christinus marmoratus</i> (Marbled Gecko)			
184.	<i>Chroicocephalus novaehollandiae</i>			
185.	24432 <i>Chrysococcyx lucidus</i> subsp. <i>plagosus</i> (Shining Bronze Cuckoo)			
186.	24288 <i>Circus approximans</i> (Swamp Harrier)			
187.	<i>Cirrhimuraena calamus</i>			
188.	7937 <i>Cirsium vulgare</i> (Spear Thistle, Scotch Thistle)	Y		
189.	36316 <i>Cladophora herpestica</i>			
190.	24774 <i>Cladorhynchus leucocephalus</i> (Banded Stilt)			
191.	26662 <i>Cladostephus spongiosus</i>			
192.	26665 <i>Clavicornium ovatum</i>			
193.	<i>Cleidopus gloriamaris</i>			
194.	2929 <i>Clematis pubescens</i> (Common Clematis)			
195.	26666 <i>Cliftonaea pectinata</i>			
196.	<i>Clynotis albobarbatatus</i>			
197.	<i>Clynotis severus</i>			
198.	26672 <i>Codium galeatum</i>			
199.	26690 <i>Coeloclonium verticillatum</i>			
200.	25675 <i>Colluricincla harmonica</i> (Grey Shrike-thrush)			
201.	24399 <i>Columba livia</i> (Domestic Pigeon)	Y		
202.	4552 <i>Comesperma confertum</i>			
203.	4555 <i>Comesperma integerrimum</i>			
204.	6217 <i>Conium maculatum</i> (Hemlock)	Y		
205.	1885 <i>Conospermum triplinervium</i> (Tree Smokebush)			
206.	1418 <i>Conostylis aculeata</i> (Prickly Conostylis)			
207.	12109 <i>Conostylis aculeata</i> subsp. <i>preissii</i>			
208.	1427 <i>Conostylis candicans</i> (Grey Cottonhead)			
209.	11438 <i>Conostylis candicans</i> subsp. <i>candicans</i>			
210.	20074 <i>Conyza sumatrensis</i>	Y		
211.	25568 <i>Coracina novaehollandiae</i> (Black-faced Cuckoo-shrike)			
212.	<i>Cormocephalus aurantiipes</i>			
213.	48259 <i>Cortaderia selloana</i> subsp. <i>selloana</i>	Y		
214.	25592 <i>Corvus coronoides</i> (Australian Raven)			
215.	24419 <i>Corvus splendens</i> (House Crow)			
216.	11283 <i>Corynotheca micrantha</i> var. <i>micrantha</i>			
217.	<i>Coryphaena hippurus</i>			
218.	24420 <i>Cracticus nigrogularis</i> (Pied Butcherbird)			
219.	25595 <i>Cracticus tibicen</i> (Australian Magpie)			
220.	25596 <i>Cracticus torquatus</i> (Grey Butcherbird)			
221.	26704 <i>Craspedocarpus venosus</i>			
222.	3137 <i>Crassula colorata</i> (Dense Stonecrop)			
223.	3140 <i>Crassula glomerata</i>	Y		
224.	25399 <i>Crinia glauerti</i> (Clicking Frog)			
225.	25400 <i>Crinia insignifera</i> (Squelching Froglet)			
226.	<i>Cristiceps aurantiacus</i>			
227.	<i>Cristiceps australis</i>			
228.	4802 <i>Cryptandra mutila</i>			
229.	30893 <i>Cryptoblepharus buchananii</i>			
230.	1627 <i>Cryptostylis ovata</i> (Slipper Orchid)			
231.	30899 <i>Ctenophorus adelaidensis</i> (Southern Heath Dragon, Western Heath Dragon)			
232.	25027 <i>Ctenotus australis</i>			
233.	25039 <i>Ctenotus fallens</i>			
234.	6663 <i>Cuscuta epithymum</i> (Lesser Dodder, Greater Dodder)	Y		
235.	26714 <i>Cutleria multifida</i>			
236.	24322 <i>Cygnus atratus</i> (Black Swan)			
237.	24323 <i>Cygnus olor</i> (Mute Swan)	Y		
238.	283 <i>Cynodon dactylon</i> (Couch)	Y		
239.	816 <i>Cyperus tenuiflorus</i> (Scaly Sedge)	Y		
240.	30901 <i>Dacelo novaeguineae</i> (Laughing Kookaburra)	Y		
241.	30902 <i>Dacelo novaeguineae</i> subsp. <i>novaeguineae</i> (Laughing Kookaburra)	Y		
242.	<i>Dactylophora nigricans</i>			

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243.	<i>Dactylopus dactylopus</i>			
244.	25673 <i>Daphoenositta chrysoptera</i> (Varied Sittella)			
245.	24687 <i>Daption capense</i> (Cape Petrel)			
246.	26739 <i>Dasya extensa</i>			
247.	26751 <i>Dasyclonium flaccidum</i>			
248.	26752 <i>Dasyclonium incisum</i>			
249.	18560 <i>Daviesia divaricata</i> subsp. <i>divaricata</i>			
250.	<i>Decapterus muroadsi</i>			
251.	26757 <i>Delisea pulchra</i>			
252.	25766 <i>Delma fraseri</i> (Fraser's Legless Lizard)			
253.	24999 <i>Delma grayii</i>			
254.	17663 <i>Desmocladius asper</i>			
255.	11636 <i>Dianella revoluta</i> var. <i>divaricata</i>			
256.	26762 <i>Dictyomenia sonderi</i>			
257.	26766 <i>Dictyopteris muelleri</i>			
258.	29537 <i>Dictyota fastigiata</i>			
259.	17838 <i>Dielsia stenostachya</i>			
260.	<i>Dingosa serrata</i>			
261.	<i>Diodon nictemerus</i>			
262.	4454 <i>Diplolaena dampieri</i> (Southern Diplolaena)			
263.	3011 <i>Diplotaxis muralis</i> (Wall Rocket)	Y		
264.	7054 <i>Dischisma arenarium</i>	Y		
265.	1634 <i>Diuris laxiflora</i> (Bee Orchid)			
266.	3106 <i>Drosera macrantha</i> (Bridal Rainbow)			
267.	3118 <i>Drosera pallida</i> (Pale Rainbow)			
268.	<i>Echeneis naucrates</i>			
269.	<i>Egretta novaehollandiae</i>			
270.	<i>Elanus axillaris</i>			
271.	25540 <i>Elanus caeruleus</i> (Black-shouldered Kite)			
272.	25250 <i>Elapognathus coronatus</i> (Crowned Snake)			
273.	47937 <i>Eiseyornis melanops</i> (Black-fronted Dotterel)			
274.	<i>Enoplosus armatus</i>			
275.	<i>Eolophus roseicapillus</i>			
276.	11570 <i>Epilobium billardioreanum</i> subsp. <i>billardioreanum</i> (Smooth Willow Herb)			
277.	6133 <i>Epilobium hirtigerum</i> (Hairy Willow Herb)			
278.	24567 <i>Epthianura albifrons</i> (White-fronted Chat)			
279.	17175 <i>Eremophila glabra</i> subsp. <i>albicans</i>			
280.	4333 <i>Erodium cicutarium</i> (Common Storksbill)	Y		
281.	24379 <i>Erythronyctes cinctus</i> (Red-kneed Dotterel)			
282.	<i>Eubalichthys caeruleoguttatus</i>			
283.	<i>Eubalichthys cyanoura</i>			
284.	5649 <i>Eucalyptus foecunda</i> (Narrow-leaved Red Mallee)			
285.	5659 <i>Eucalyptus gomphocephala</i> (Tuart, Duart)			
286.	25746 <i>Eudyptula minor</i> (Little Penguin)			
287.	<i>Euleptorhamphus viridis</i>			
288.	17342 <i>Euphorbia cyathophora</i>	Y		
289.	4627 <i>Euphorbia helioscopia</i> (Sun Spurge)	Y		
290.	4648 <i>Euphorbia terracina</i> (Geraldton Carnation Weed)	Y		
291.	26830 <i>Euptilota articulata</i>			
292.	25621 <i>Falco berigora</i> (Brown Falcon)			
293.	25622 <i>Falco cenchroides</i> (Australian Kestrel, Nankeen Kestrel)			
294.	25623 <i>Falco longipennis</i> (Australian Hobby)			
295.	<i>Favonigobius lateralis</i>			
296.	24041 <i>Felis catus</i> (Cat)	Y		
297.	20216 <i>Ficinia nodosa</i> (Knotted Club Rush)			
298.	<i>Filicampus tigris</i>			
299.	6221 <i>Foeniculum vulgare</i> (Fennel)	Y		
300.	<i>Fomitopsis lilacinogilva</i>			
301.	25727 <i>Fulca atra</i> (Eurasian Coot)			
302.	24761 <i>Fulca atra</i> subsp. <i>australis</i> (Eurasian Coot)			
303.	2969 <i>Fumaria capreolata</i> (Whiteflower Fumitory)	Y		
304.	<i>Furgaleus macki</i>			
305.	907 <i>Gahnia trifida</i> (Coast Saw-sedge)			
306.	7323 <i>Galium murale</i> (Small Goosegrass)	Y		
307.	25729 <i>Gallinula tenebrosa</i> (Dusky Moorhen)			
308.	24763 <i>Gallinula tenebrosa</i> subsp. <i>tenebrosa</i> (Dusky Moorhen)			
309.	25730 <i>Gallirallus philippensis</i> (Buff-banded Rail)			
310.	20346 <i>Gamochoaeta coarctata</i>	Y		
311.	16311 <i>Gazania linearis</i>	Y		
312.	26850 <i>Gelinaria ulvoidea</i>			

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313.	4339 <i>Geranium molle</i> (Dove's Foot Cranesbill)	Y		
314.	25530 <i>Gerygone fusca</i> (Western Gerygone)			
315.	26854 <i>Gigartina disticha</i>			
316.	<i>Girella zebra</i>			
317.	26864 <i>Gloiosaccion brownii</i>			
318.	<i>Gnathanacanthus goetzeei</i>			
319.	<i>Gnathophis longicaudatus</i>			
320.	3957 <i>Gompholobium tomentosum</i> (Hairy Yellow Pea)			
321.	<i>Gonorynchus greyi</i>			
322.	26868 <i>Graciliana cliftonii</i>			
323.	24443 <i>Grallina cyanoleuca</i> (Magpie-lark)			
324.	1982 <i>Grevillea crithmifolia</i>			
325.	<i>Gymnapistes marmoratus</i>			
326.	<i>Gymnothorax</i> sp.			
327.	<i>Gymnothorax woodwardi</i>			
328.	24487 <i>Haematopus longirostris</i> (Pied Oystercatcher)			
329.	2214 <i>Hakea trifurcata</i> (Two-leaf Hakea)			
330.	2216 <i>Hakea varia</i> (Variable-leaved Hakea)			
331.	<i>Halletta semifasciata</i>			
332.	24293 <i>Haliaeetus leucogaster</i> (White-bellied Sea-Eagle)			
333.	24295 <i>Haliastur sphenurus</i> (Whistling Kite)			
334.	<i>Halichoeres brownfieldi</i>			
335.	47213 <i>Halimeda versatilis</i>			
336.	24689 <i>Halobaena caerulea</i> (Blue Petrel)			
337.	26900 <i>Haloplegma preissii</i>			
338.	3961 <i>Hardenbergia comptoniana</i> (Native Wisteria)			
339.	25410 <i>Heleioporus eyrei</i> (Moaning Frog)			
340.	3016 <i>Heliophila pusilla</i>	Y		
341.	11451 <i>Hemarthria uncinata</i> var. <i>uncinata</i>			
342.	25119 <i>Hemiergis quadrilineata</i>			
343.	26915 <i>Hennedyia crispa</i>			
344.	<i>Heteroclinus</i> sp.			
345.	<i>Heterodontus portusjacksoni</i>			
346.	<i>Hexanchus nakamurai</i>			Y
347.	5117 <i>Hibbertia cuneiformis</i> (Cutleaf Hibbertia)			
348.	5162 <i>Hibbertia racemosa</i> (Stalked Guinea Flower)			
349.	47965 <i>Hieraetaea morphnoides</i> (Little Eagle)			
350.	25734 <i>Himantopus himantopus</i> (Black-winged Stilt)			
351.	<i>Hippocampus elongatus</i>			
352.	<i>Hippocampus tuberculatus</i>			
353.	24491 <i>Hirundo neoxena</i> (Welcome Swallow)			
354.	<i>Histrio histrio</i>			
355.	<i>Hogna crispipes</i>			
356.	448 <i>Hordeum glaucum</i> (Northern Barley Grass)	Y		
357.	5216 <i>Hybanthus calycinus</i> (Wild Violet)			
358.	5218 <i>Hybanthus debilissimus</i>			
359.	26949 <i>Hydroclathrus clathratus</i>			
360.	6224 <i>Hydrocotyle blepharocarpa</i>			
361.	6241 <i>Hydrocotyle tetragonocarpa</i>			
362.	43384 <i>Hydrophis platurus</i> (Yellow-bellied Seasnake)			
363.	452 <i>Hyparrhenia hirta</i> (Tambookie Grass)	Y		
364.	26971 <i>Hypnea ramentacea</i>			
365.	<i>Hypnos monopterygium</i>			
366.	35070 <i>Hypocalymma angustifolium</i> subsp. <i>Swan Coastal Plain</i> (G.J. Keighery 16777)			
367.	8086 <i>Hypochaeris glabra</i> (Smooth Catsear)	Y		
368.	9352 <i>Hypochaeris radicata</i> (Flat Weed, Cats-ear)	Y		
369.	17841 <i>Hypolaena pubescens</i>			
370.	910 <i>Isolepis cernua</i> (Nodding Club-rush)			
371.	20199 <i>Isolepis cernua</i> var. <i>cernua</i>			
372.	20200 <i>Isolepis cernua</i> var. <i>setiformis</i>			
373.	917 <i>Isolepis marginata</i> (Coarse Club-rush)			
374.	<i>Isopeda leishmanni</i>			
375.	4012 <i>Jacksonia furcellata</i> (Grey Stinkwood)			
376.	1178 <i>Juncus bufonius</i> (Toad Rush)	Y		
377.	1185 <i>Juncus kraussii</i> (Sea Rush)			
378.	11922 <i>Juncus kraussii</i> subsp. <i>australiensis</i>			
379.	1188 <i>Juncus pallidus</i> (Pale Rush)			
380.	4037 <i>Kennedia coccinea</i> (Coral Vine)			
381.	4044 <i>Kennedia prostrata</i> (Scarlet Runner)			
382.	24070 <i>Kogia breviceps</i> (Pygmy Sperm Whale)			

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383.	20019 <i>Lachnagrostis filiformis</i>			
384.	<i>Lagocephalus scleratus</i>			
385.	467 <i>Lagurus ovatus</i> (Hare's Tail Grass)	Y		
386.	<i>Lampona cylindrata</i>			
387.	30920 <i>Larus crassirostris</i> (Black-tailed Gull)			Y
388.	24511 <i>Larus novaehollandiae</i> subsp. <i>novaehollandiae</i> (Silver Gull)			
389.	<i>Latrodectus hasseltii</i>			
390.	48408 <i>Laurencia dendroidea</i>			
391.	27000 <i>Laurencia elata</i>			
392.	27001 <i>Laurencia filiformis</i>			
393.	44490 <i>Leontodon rhagadioloides</i>	Y		
394.	925 <i>Lepidosperma angustatum</i>			
395.	42742 <i>Lepidosperma calcicola</i>			
396.	933 <i>Lepidosperma gladiatum</i> (Coast Sword-sedge, Kerbin)			
397.	937 <i>Lepidosperma longitudinale</i> (Pithy Sword-sedge)			
398.	940 <i>Lepidosperma pubisquamum</i>			
399.	<i>Lepidosperma</i> sp.			
400.	945 <i>Lepidosperma squamatum</i>			
401.	2352 <i>Leptomeria preissiana</i>			
402.	27015 <i>Leptosomia rosea</i>			
403.	5850 <i>Leptospermum laevigatum</i> (Coast Teatree)	Y		
404.	25133 <i>Lerista elegans</i>			
405.	25148 <i>Lerista lineopunctulata</i>			
406.	25165 <i>Lerista praepedita</i>			
407.	6427 <i>Leucopogon parviflorus</i> (Coast Beard-heath)			
408.	<i>Leviprora inops</i>			
409.	25005 <i>Lialis burtonis</i>			
410.	25661 <i>Lichmera indistincta</i> (Brown Honeyeater)			
411.	24582 <i>Lichmera indistincta</i> subsp. <i>indistincta</i> (Brown Honeyeater)			
412.	25415 <i>Limnodynastes dorsalis</i> (Western Banjo Frog)			
413.	25378 <i>Litoria adelaidensis</i> (Slender Tree Frog)			
414.	25388 <i>Litoria moorei</i> (Motorbike Frog)			
415.	9289 <i>Lobelia anceps</i> (Angled Lobelia)			
416.	7408 <i>Lobelia tenuior</i> (Slender Lobelia)			
417.	27044 <i>Lobospira bicuspidata</i>			
418.	10957 <i>Lolium perenne</i> x <i>rigidum</i>	Y		
419.	478 <i>Lolium rigidum</i> (Wimmera Ryegrass)	Y		
420.	11073 <i>Lolium</i> x <i>hybridum</i>	Y		
421.	1231 <i>Lomandra maritima</i>			
422.	<i>Lotella rhacinus</i>			
423.	<i>Lycosa godeffroyi</i>			
424.	24326 <i>Malacorhynchus membranaceus</i> (Pink-eared Duck)			
425.	25654 <i>Malurus splendens</i> (Splendid Fairy-wren)			
426.	<i>Maxillicosta scabriceps</i>			
427.	4080 <i>Medicago sativa</i> (Alfalfa)	Y		
428.	25758 <i>Megalurus gramineus</i> (Little Grassbird)			
429.	34676 <i>Meionectes brownii</i> (Swamp Raspwort)			
430.	5900 <i>Melaleuca cuticularis</i> (Saltwater Paperbark)			
431.	13271 <i>Melaleuca huegelii</i> subsp. <i>huegelii</i>			
432.	13273 <i>Melaleuca incana</i> subsp. <i>incana</i>			
433.	5959 <i>Melaleuca rhapsiophylla</i> (Swamp Paperbark)			
434.	5978 <i>Melaleuca teretifolia</i> (Banbar)			
435.	13280 <i>Melaleuca viminea</i> subsp. <i>viminea</i>			
436.	4516 <i>Melia azedarach</i> (White Cedar)			
437.	4085 <i>Melilotus indicus</i>	Y		
438.	25184 <i>Menetia greyii</i>			
439.	25185 <i>Menetia maini</i>			
440.	25186 <i>Menetia surda</i> subsp. <i>cresswelli</i>			
441.	25187 <i>Menetia surda</i> subsp. <i>surda</i>			
442.	24598 <i>Merops ornatus</i> (Rainbow Bee-eater)			
443.	<i>Meuschenia freycineti</i>			
444.	<i>Microcarbo melanoleucos</i>			
445.	485 <i>Microlaena stipoides</i> (Weeping Grass)			
446.	16693 <i>Minuartia mediterranea</i>	Y		
447.	<i>Missulena granulosa</i>			
448.	<i>Missulena hoggi</i>			
449.	<i>Missulena occatoria</i>			
450.	<i>Monacanthus chinensis</i>			
451.	25188 <i>Morethia adelaidensis</i>			
452.	25189 <i>Morethia boulengeri</i>			

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453.	25191 <i>Morethia lineocellata</i>			
454.	25192 <i>Morethia obscura</i>			
455.	25193 <i>Morethia ruficauda</i> subsp. <i>exquisita</i>			
456.	25194 <i>Morethia ruficauda</i> subsp. <i>ruficauda</i>			
457.	25195 <i>Morethia storri</i>			
458.	48008 <i>Morus serrator</i> (Australasian Gannet)			
459.	2412 <i>Muehlenbeckia adpressa</i> (Climbing Lignum)			
460.	24223 <i>Mus musculus</i> (House Mouse)	Y		
461.	<i>Mustelus antarcticus</i>			
462.	<i>Myandra bicincta</i>			
463.	<i>Myliobatis</i> sp.			
464.	7289 <i>Myoporum capranoides</i> (Slender Myoporum)			
465.	27089 <i>Myriodesma peronii</i>			
466.	44496 <i>Narcissus tazetta</i> subsp. <i>italicus</i>	Y		
467.	<i>Neoodax balteatus</i>			
468.	<i>Neosebastes pandus</i>			
469.	18356 <i>Nerium oleander</i>	Y		
470.	25252 <i>Notechis scutatus</i> (Tiger Snake)			
471.	<i>Notolabrus parilus</i>			
472.	25197 <i>Notoscincus ornatus</i> subsp. <i>ornatus</i>			
473.	25564 <i>Nycticorax caledonicus</i> (Rufous Night Heron)			
474.	24407 <i>Ocyphaps lophotes</i> (Crested Pigeon)			
475.	6138 <i>Oenothera drummondii</i> (Beach Evening Primrose)	Y		
476.	8127 <i>Oleania axillaris</i> (Coastal Daisybush)			
477.	8149 <i>Oleania rudis</i> (Rough Daisybush)			
478.	<i>Omegophora armilla</i>			
479.	7348 <i>Opercularia hispidula</i> (Hispid Stinkweed)			
480.	18255 <i>Opercularia vaginata</i> (Dog Weed)			
481.	<i>Ophichthus melanochir</i>			
482.	<i>Ophisurus serpens</i>			
483.	17756 <i>Osteospermum ecklonis</i>	Y		
484.	25680 <i>Pachycephala rufiventris</i> (Rufous Whistler)			
485.	24692 <i>Pachyptila belcheri</i> (Slender-billed Prion)			
486.	24693 <i>Pachyptila desolata</i> (Antarctic Prion)			
487.	2965 <i>Papaver rhoeas</i> (Field Poppy)	Y		
488.	27119 <i>Papenfussiella extensa</i>			
489.	<i>Parablennius postoculomaculatus</i>			
490.	516 <i>Parapholis incurva</i> (Coast Barbgrass)	Y		
491.	<i>Paraplotosus albilabris</i>			
492.	25253 <i>Parasuta gouldii</i>			
493.	25681 <i>Pardalotus punctatus</i> (Spotted Pardalote)			
494.	25682 <i>Pardalotus striatus</i> (Striated Pardalote)			
495.	24630 <i>Pardalotus striatus</i> subsp. <i>westraliensis</i> (Striated Pardalote)			
496.	7090 <i>Parentucellia viscosa</i> (Sticky Bartsia)	Y		
497.	<i>Paristopterus gallipavo</i>			
498.	533 <i>Paspalum vaginatum</i> (Salt Water Couch)			
499.	24642 <i>Passer montanus</i> (Eurasian Tree Sparrow)	Y		
500.	24674 <i>Pavo cristatus</i> (Common Peafowl, Indian Peafowl)	Y		
501.	<i>Pegasus</i> sp.			Y
502.	<i>Pegasus volitans</i>			
503.	4343 <i>Pelargonium capitatum</i> (Rose Pelargonium)	Y		
504.	4346 <i>Pelargonium littorale</i>			
505.	<i>Pelates sexlineatus</i>			
506.	24648 <i>Pelecanus conspicillatus</i> (Australian Pelican)			
507.	27121 <i>Penicillium nodulosus</i>			
508.	<i>Pentaceropsis recurvirostris</i>			
509.	16984 <i>Persicaria lapathifolia</i>	Y		
510.	27126 <i>Petalonia fascia</i>			
511.	48061 <i>Petrochelidon nigricans</i> (Tree Martin)			
512.	48066 <i>Petroica boodang</i> (Scarlet Robin)			
513.	25697 <i>Phalacrocorax carbo</i> (Great Cormorant)			
514.	25698 <i>Phalacrocorax melanoleucos</i> (Little Pied Cormorant)			
515.	24667 <i>Phalacrocorax sulcirostris</i> (Little Black Cormorant)			
516.	25699 <i>Phalacrocorax varius</i> (Pied Cormorant)			
517.	24668 <i>Phalacrocorax varius</i> subsp. <i>hypoleucos</i> (Pied Cormorant)			
518.	24409 <i>Phaps chalcoptera</i> (Common Bronzewing)			
519.	<i>Phlebia subceracea</i>			
520.	<i>Phryganoporus candidus</i>			
521.	6734 <i>Phylla nodiflora</i> var. <i>nodiflora</i>	Y		
522.	48071 <i>Phylidonyris niger</i> (White-cheeked Honeyeater)			

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523.	24596 <i>Phylidonyris novaehollandiae</i> (New Holland Honeyeater)			
524.	4675 <i>Phyllanthus calycinus</i> (False Boronia)			
525.	<i>Phyllophryne scortea</i>			
526.	<i>Phyllopteryx taeniolatus</i>			
527.	20652 <i>Physalis angulata</i>	Y		
528.	6983 <i>Physalis peruviana</i> (Cape Gooseberry)	Y		
529.	7303 <i>Plantago lanceolata</i> (Ribwort Plantain)	Y		
530.	24841 <i>Platalea flavipes</i> (Yellow-billed Spoonbill)			
531.	25720 <i>Platycercus icterotis</i> (Western Rosella)			
532.	25721 <i>Platycercus zonarius</i> (Australian Ringneck, Ring-necked Parrot)			
533.	24750 <i>Platycercus zonarius</i> subsp. <i>semitorquatus</i> (Twenty-eight Parrot)			
534.	27149 <i>Platysiphonia mutabilis</i>			
535.	25007 <i>Pletholax gracilis</i> subsp. <i>gracilis</i> (Keeled Legless Lizard)			
536.	577 <i>Poa poiformis</i> (Coastal Poa)			
537.	578 <i>Poa porphyroclados</i>			
538.	24679 <i>Podargus stringoides</i> subsp. <i>brachypterus</i> (Tawny Frogmouth)			
539.	25704 <i>Podiceps cristatus</i> (Great Crested Grebe)			
540.	8175 <i>Podolepis gracilis</i> (Slender Podolepis)			
541.	8182 <i>Podotheca angustifolia</i> (Sticky Longheads)			
542.	25510 <i>Pogona minor</i> (Dwarf Bearded Dragon)			
543.	24907 <i>Pogona minor</i> subsp. <i>minor</i> (Dwarf Bearded Dragon)			
544.	24908 <i>Pogona minor</i> subsp. <i>mitchelli</i> (Dwarf Bearded Dragon)			
545.	24909 <i>Pogona nullarbor</i> (Nullarbor Bearded Dragon)			
546.	24681 <i>Poliocephalus poliocephalus</i> (Hoary-headed Grebe)			
547.	582 <i>Polygogon monspeliensis</i> (Annual Beardgrass)	Y		
548.	<i>Pomatopus saltatrix</i>			
549.	25731 <i>Porphyrio porphyrio</i> (Purple Swamphen)			
550.	24767 <i>Porphyrio porphyrio</i> subsp. <i>bellus</i> (Purple Swamphen)			
551.	24769 <i>Porzana fluminea</i> (Australian Spotted Crane)			
552.	24771 <i>Porzana tabuensis</i> (Spotless Crane)			
553.	<i>Prionostemum nitidiceps</i>			
554.	<i>Prionostemum scutatum</i>			
555.	25199 <i>Proablepharus reginae</i>			
556.	25200 <i>Proablepharus tenuis</i>			
557.	25201 <i>Pseudemoia baudini</i>			
558.	8189 <i>Pseudognaphalium luteoalbum</i> (Jersey Cudweed)			
559.	25259 <i>Pseudonaja affinis</i> subsp. <i>affinis</i> (Dugite)			
560.	27196 <i>Pterocladia rectangularis</i>			
561.	24702 <i>Pterodroma brevirostris</i> (Kerguelen Petrel)			
562.	24703 <i>Pterodroma lessonii</i> (White-headed Petrel)			
563.	<i>Pterygotrigla polyommata</i>			
564.	2751 <i>Ptilotus polystachyus</i> (Prince of Wales Feather)			
565.	4181 <i>Pultenaea reticulata</i>			
566.	<i>Purpureicephalus spurius</i>			
567.	30867 <i>Pycnonotus jocosus</i> subsp. <i>jocosus</i> (Red-whiskered Bulbul)	Y		Y
568.	25008 <i>Pygopus lepidopodus</i> (Common Scaly Foot)			
569.	25009 <i>Pygopus nigriceps</i>			
570.	<i>Rachycentron canadum</i>			
571.	24245 <i>Rattus rattus</i> (Black Rat)	Y		
572.	24776 <i>Recurvirostra novaehollandiae</i> (Red-necked Avocet)			
573.	8197 <i>Reichardia tingitana</i> (False Sowthistle)	Y		
574.	11341 <i>Rhagodia baccata</i> subsp. <i>baccata</i>			
575.	11930 <i>Rhagodia baccata</i> subsp. <i>dioica</i> (Sea Berry Saltbush)			
576.	4822 <i>Rhamnus alaternus</i> (Buckthorn)	Y		
577.	48096 <i>Rhipidura albiscapa</i> (Grey Fantail)			
578.	25614 <i>Rhipidura leucophrys</i> (Willie Wagtail)			
579.	<i>Rhynchobatus djiddensis</i>			
580.	<i>Rickenella fibula</i>			
581.	3066 <i>Rorippa nasturtium-aquaticum</i> (Watercress)	Y		
582.	10970 <i>Rostraria cristata</i>	Y		
583.	2433 <i>Rumex crispus</i> (Curled Dock)	Y		
584.	116 <i>Ruppia polycarpa</i>			
585.	6483 <i>Samolus junceus</i>			
586.	6484 <i>Samolus repens</i> (Creeping Brookweed)			
587.	14107 <i>Samolus repens</i> var. <i>paucifolius</i>			
588.	27230 <i>Sarconema filiforme</i>			
589.	27239 <i>Sargassum fallax</i>			
590.	27253 <i>Sargassum peronii</i>			
591.	<i>Saurida tumbil</i>			
592.	<i>Saurida undosquamis</i>			

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593.	7368 <i>Scabiosa atropurpurea</i> (Purple Pincushion)	Y		
594.	7595 <i>Scaevola anchusifolia</i>			
595.	7606 <i>Scaevola crassifolia</i> (Thick-leaved Fan-flower)			
596.	11027 <i>Schinus terebinthifolius</i>	Y		
597.	48356 <i>Schoenoplectus tabernaemontani</i>			
598.	982 <i>Schoenus clandestinus</i>			
599.	1004 <i>Schoenus nitens</i> (Shiny Bog-rush)			
600.	<i>Scobinichthys granulatus</i>			
601.	<i>Scorpaena sumptuosa</i>			
602.	<i>Scorpis georgianus</i>			
603.	35911 <i>Scytosiphon lomentaria</i>			
604.	25878 <i>Senecio condylus</i>			
605.	8220 <i>Senecio vulgaris</i> (Common Groundsel)	Y		
606.	25534 <i>Sericornis frontalis</i> (White-browed Scrubwren)			
607.	<i>Seriola hippos</i>			
608.	<i>Servaea spinibarbis</i>			
609.	27279 <i>Shepleya claviformis</i>			Y
610.	2909 <i>Silene gallica</i> (French Catchfly)	Y		
611.	<i>Sillago</i> sp.			
612.	<i>Simaetha tenuior</i>			
613.	25266 <i>Simoselaps bertholdi</i> (Jan's Banded Snake)			
614.	<i>Siphonognathus argyrophanes</i>			
615.	<i>Siphonognathus radiatus</i>			
616.	42785 <i>Sirophysalis trinodis</i>			
617.	3072 <i>Sisymbrium orientale</i> (Indian Hedge Mustard)	Y		
618.	30948 <i>Smicromis brevirostris</i> (Weebill)			
619.	7020 <i>Solanum linnaeanum</i> (Apple of Sodom)	Y		
620.	7022 <i>Solanum nigrum</i> (Black Berry Nightshade)	Y		
621.	7037 <i>Solanum symonii</i>			
622.	45036 <i>Solidago chilensis</i>	Y		
623.	9367 <i>Sonchus hydrophilus</i> (Native Sowthistle)			
624.	8231 <i>Sonchus oleraceus</i> (Common Sowthistle)	Y		
625.	635 <i>Sporobolus virginicus</i> (Marine Couch)			
626.	4828 <i>Spyridium globulosum</i> (Basket Bush)			
627.	2918 <i>Stellaria media</i> (Chickweed)	Y		
628.	19403 <i>Stenopetalum gracile</i>			
629.	636 <i>Stenotaphrum secundatum</i> (Buffalo Grass)	Y		
630.	24522 <i>Sterna bergii</i> (Crested Tern)			
631.	48594 <i>Sternula nereis</i> (Fairy Tern)			
632.	<i>Stigmatopora argus</i>			
633.	<i>Stigmatopora nigra</i>			
634.	25589 <i>Streptopelia chinensis</i> (Spotted Turtle-Dove)	Y		
635.	25590 <i>Streptopelia senegalensis</i> (Laughing Turtle-Dove)	Y		
636.	<i>Strongylura leiura</i>			
637.	24942 <i>Strophurus spinigerus</i> subsp. <i>spinigerus</i>			
638.	44492 <i>Stuckenia pectinata</i>			
639.	7774 <i>Stylidium piliferum</i> (Common Butterfly Triggerplant)			
640.	<i>Sutorectus tentaculatus</i>			
641.	25705 <i>Tachybaptus novaehollandiae</i> (Australasian Grebe, Black-throated Grebe)			
642.	24682 <i>Tachybaptus novaehollandiae</i> subsp. <i>novaehollandiae</i> (Australasian Grebe, Black-throated Grebe)			
643.	24331 <i>Tadorna tadomoides</i> (Australian Shelduck, Mountain Duck)			
644.	<i>Tasmanicosa leuckartii</i>			
645.	4256 <i>Templetonia retusa</i> (Cockies Tongues)			
646.	<i>Tetragnatha demissa</i>			
647.	<i>Tetragnatha nitens</i>			
648.	2820 <i>Tetragonia decumbens</i> (Sea Spinach)	Y		
649.	<i>Tetralycosa oraria</i>			
650.	<i>Tetrapturus angustirostris</i>			
651.	5077 <i>Thomasia cognata</i>			
652.	24845 <i>Threskiornis spinicollis</i> (Straw-necked Ibis)			
653.	<i>Thyrsites atun</i>			
654.	<i>Thysanophrys cirronasus</i>			
655.	1319 <i>Thysanotus arenarius</i>			
656.	25202 <i>Tiliqua multifasciata</i> (Central Blue-tongue)			
657.	25203 <i>Tiliqua occipitalis</i> (Western Bluetongue)			
658.	25204 <i>Tiliqua rugosa</i> subsp. <i>aspera</i>			
659.	25207 <i>Tiliqua rugosa</i> subsp. <i>rugosa</i>			
660.	<i>Torquigener pleurogramma</i>			
661.	<i>Trachinocephalus myops</i>			

Name ID	Species Name	Naturalised	Conservation Code	¹ Endemic To Query Area
662.	1368 <i>Trachyandra divaricata</i>	Y		
663.	19041 <i>Trachymene coerulea subsp. coerulea</i>			
664.	25723 <i>Trichoglossus haematodus (Rainbow Lorikeet)</i>			
665.	1361 <i>Tricoryne elatior (Yellow Autumn Lily)</i>			
666.	1363 <i>Tricoryne tenella</i>			
667.	17145 <i>Trifolium angustifolium var. angustifolium</i>	Y		
668.	4309 <i>Trifolium scabrum (Rough Clover)</i>	Y		
669.	151 <i>Triglochin striata</i>			
670.	708 <i>Triticum aestivum (Wheat)</i>	Y		
671.	<i>Trygonorrhina fasciata</i>			
672.	<i>Tuoba pallida</i>			
673.	27345 <i>Turbinaria gracilis</i>			
674.	24069 <i>Tursiops truncatus (Bottlenose Dolphin)</i>			
675.	99 <i>Typha orientalis (Bulrush, Cumbungi)</i>			
676.	38388 <i>Ursinia anthemoides subsp. anthemoides</i>	Y		
677.	24386 <i>Vanellus tricolor (Banded Lapwing)</i>			
678.	25227 <i>Varanus tristis subsp. tristis (Racehorse Monitor)</i>			
679.	<i>Venator immansueta</i>			
680.	<i>Venatrix pullastra</i>			
681.	7107 <i>Verbascum virgatum (Twiggy Mullein)</i>	Y		
682.	24040 <i>Vulpes vulpes (Red Fox)</i>	Y		
683.	724 <i>Vulpia myuros (Rat's Tail Fescue)</i>	Y		
684.	12052 <i>Vulpia myuros forma megalura</i>	Y		
685.	33101 <i>Vulpia myuros forma myuros</i>	Y		
686.	6658 <i>Wilsonia backhousei (Narrow-leaf Wilsonia)</i>			
687.	12072 <i>Wumbea dioica subsp. alba</i>			
688.	1256 <i>Xanthorrhoea preissii (Grass tree, Palga)</i>			
689.	<i>Zanclistius elevatus</i>			
690.	25765 <i>Zosterops lateralis (Grey-breasted White-eye, Silvereeye)</i>			

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

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

APPENDIX 3

Protected Matters Search Tool Report



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: 29/11/18 14:25:31

[Summary](#)

[Details](#)

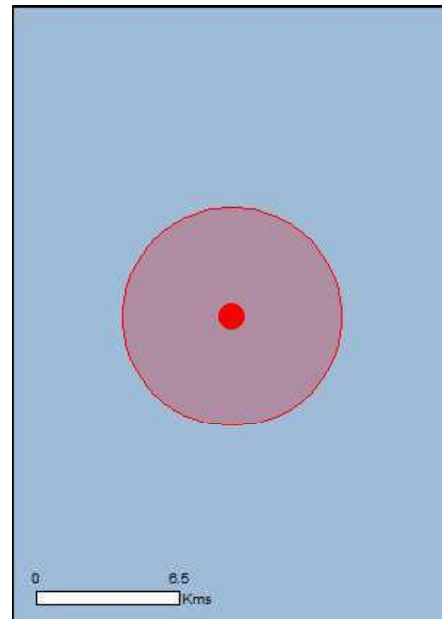
[Matters of NES](#)

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

[Extra Information](#)

[Caveat](#)

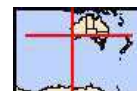
[Acknowledgements](#)



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](#).

World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International Importance:	2
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	3
Listed Threatened Species:	45
Listed Migratory Species:	50

Other Matters Protected by the EPBC Act

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

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

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

Commonwealth Land:	2
Commonwealth Heritage Places:	None
Listed Marine Species:	81
Whales and Other Cetaceans:	12
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	None

Extra Information

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

State and Territory Reserves:	3
Regional Forest Agreements:	None
Invasive Species:	36
Nationally Important Wetlands:	None
Key Ecological Features (Marine):	None

Details

Matters of National Environmental Significance

Wetlands of International Importance (Ramsar)	[Resource Information]
Name	Proximity
Becher point wetlands	Within 10km of Ramsar
Forrestdale and thomsons lakes	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
Banksia Woodlands of the Swan Coastal Plain ecological community	Endangered	Community may occur within area
Sedgeland in Holocene dune swales of the southern Swan Coastal Plain	Endangered	Community known to occur within area
Thrombolite (microbial) community of coastal freshwater lakes of the Swan Coastal Plain (Lake Richmond)	Endangered	Community known to occur within area

Listed Threatened Species	[Resource Information]	
Name	Status	Type of Presence
Birds		
Anous tenuirostris melanops Australian Lesser Noddy [26000]	Vulnerable	Species or species habitat may occur within area
Calidris canutus Red Knot, Knot [855]	Endangered	Species or species habitat known to occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area
Calyptorhynchus banksii naso Forest Red-tailed Black-Cockatoo, Karrak [67034]	Vulnerable	Species or species habitat likely to occur within area
Calyptorhynchus latirostris Carnaby's Cockatoo, Short-billed Black-Cockatoo [59523]	Endangered	Species or species habitat known to occur within area
Diomedea amsterdamensis Amsterdam Albatross [64405]	Endangered	Species or species habitat may occur within area
Diomedea dabbenena Tristan Albatross [66471]	Endangered	Species or species habitat may occur within area
Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Foraging, feeding or

Name	Status	Type of Presence
Diomedea sanfordi Northern Royal Albatross [64456]	Endangered	related behaviour likely to occur within area
Halobaena caerulea Blue Petrel [1059]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Leipoa ocellata Malleefowl [934]	Vulnerable	Species or species habitat may occur within area
Limosa lapponica baueri Bar-tailed Godwit (baueri), Western Alaskan Bar-tailed Godwit [86380]	Vulnerable	Species or species habitat likely to occur within area
Limosa lapponica menzbieri Northern Siberian Bar-tailed Godwit, Bar-tailed Godwit (menzbieri) [86432]	Critically Endangered	Species or species habitat known to occur within area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Species or species habitat may occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area
Pachyptila turtur subantarctica Fairy Prion (southern) [64445]	Vulnerable	Species or species habitat likely to occur within area
Pterodroma mollis Soft-plumaged Petrel [1036]	Vulnerable	Species or species habitat likely to occur within area
Rostratula australis Australian Painted-snipe, Australian Painted Snipe [77037]	Endangered	Species or species habitat may occur within area
Sternula nereis nereis Australian Fairy Tern [82950]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Thalassarche carteri Indian Yellow-nosed Albatross [64464]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Thalassarche cauta cauta Shy Albatross, Tasmanian Shy Albatross [82345]	Vulnerable	Foraging, feeding or related behaviour may occur within area
Thalassarche cauta stadi White-capped Albatross [82344]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Species or species habitat may occur within area

Mammals

Balaenoptera musculus Blue Whale [36]	Endangered	Species or species
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Name	Status	Type of Presence
Bettongia penicillata ogilbyi Woylie [66844]	Endangered	habitat likely to occur within area Species or species habitat may occur within area
Dasyurus geoffroi Chuditch, Western Quoll [330]	Vulnerable	Species or species habitat likely to occur within area
Eubalaena australis Southern Right Whale [40]	Endangered	Breeding known to occur within area
Megaptera novaeangliae Humpback Whale [38]	Vulnerable	Species or species habitat known to occur within area
Neophoca cinerea Australian Sea-lion, Australian Sea Lion [22]	Vulnerable	Species or species habitat known to occur within area
Pseudocheirus occidentalis Western Ringtail Possum, Ngwayir, Womp, Woder, Ngoor, Ngoolangit [25911]	Critically Endangered	Species or species habitat likely to occur within area
Plants		
Caladenia huegelii King Spider-orchid, Grand Spider-orchid, Rusty Spider-orchid [7309]	Endangered	Species or species habitat may occur within area
Diuris micrantha Dwarf Bee-orchid [55082]	Vulnerable	Species or species habitat known to occur within area
Diuris purdiei Purdie's Donkey-orchid [12950]	Endangered	Species or species habitat may occur within area
Drakaea elastica Glossy-leaved Hammer Orchid, Glossy-leaved Hammer Orchid, Warty Hammer Orchid [16753]	Endangered	Species or species habitat likely to occur within area
Drakaea micrantha Dwarf Hammer-orchid [56755]	Vulnerable	Species or species habitat may occur within area
Reptiles		
Caretta caretta Loggerhead Turtle [1763]	Endangered	Foraging, feeding or related behaviour known to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Foraging, feeding or related behaviour known to occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Sharks		
Carcharias taurus (west coast population) Grey Nurse Shark (west coast population) [68752]	Vulnerable	Species or species habitat known to occur within area
Carcharodon carcharias White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat known to occur within area

Name	Status	Type of Presence
Rhincodon typus Whale Shark [66680]	Vulnerable	Species or species habitat may occur within area

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

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

Name	Threatened	Type of Presence
Migratory Marine Birds		
Anous stolidus Common Noddy [825]		Species or species habitat may occur within area
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Ardenna carneipes Flesh-footed Shearwater, Fleshy-footed Shearwater [82404]		Foraging, feeding or related behaviour likely to occur within area
Diomedea amsterdamensis Amsterdam Albatross [64405]	Endangered	Species or species habitat may occur within area
Diomedea dabbenena Tristan Albatross [66471]	Endangered	Species or species habitat may occur within area
Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea sanfordi Northern Royal Albatross [64456]	Endangered	Foraging, feeding or related behaviour likely to occur within area
Hydroprogne caspia Caspian Tern [808]		Foraging, feeding or related behaviour known to occur within area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Species or species habitat may occur within area
Onychoprion anaethetus Bridled Tern [82845]		Foraging, feeding or related behaviour likely to occur within area
Sterna dougallii Roseate Tern [817]		Foraging, feeding or related behaviour likely to occur within area
Thalassarche carteri Indian Yellow-nosed Albatross [64464]	Vulnerable	Foraging, feeding or related behaviour may occur within area
Thalassarche cauta Tasmanian Shy Albatross [89224]	Vulnerable*	Foraging, feeding or related behaviour likely to occur within area
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area

Name	Threatened	Type of Presence
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Species or species habitat may occur within area
Thalassarche steadi White-capped Albatross [64462]	Vulnerable*	Foraging, feeding or related behaviour likely to occur within area
Migratory Marine Species		
Balaena glacialis australis Southern Right Whale [75529]	Endangered*	Breeding known to occur within area
Balaenoptera edeni Bryde's Whale [35]		Species or species habitat may occur within area
Balaenoptera musculus Blue Whale [36]	Endangered	Species or species habitat likely to occur within area
Caperea marginata Pygmy Right Whale [39]		Species or species habitat may occur within area
Carcharodon carcharias White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat known to occur within area
Caretta caretta Loggerhead Turtle [1763]	Endangered	Foraging, feeding or related behaviour known to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Foraging, feeding or related behaviour known to occur within area
Lamna nasus Porbeagle, Mackerel Shark [83288]		Species or species habitat may occur within area
Manta alfredi Reef Manta Ray, Coastal Manta Ray, Inshore Manta Ray, Prince Alfred's Ray, Resident Manta Ray [84994]		Species or species habitat may occur within area
Manta birostris Giant Manta Ray, Chevron Manta Ray, Pacific Manta Ray, Pelagic Manta Ray, Oceanic Manta Ray [84995]		Species or species habitat may occur within area
Megaptera novaeangliae Humpback Whale [38]	Vulnerable	Species or species habitat known to occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may occur within area
Rhincodon typus Whale Shark [66680]	Vulnerable	Species or species habitat may occur within area
Migratory Terrestrial Species		
Motacilla cinerea Grey Wagtail [642]		Species or species habitat may occur within area

Name	Threatened	Type of Presence
Migratory Wetlands Species		
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat likely to occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat known to occur within area
Calidris canutus Red Knot, Knot [855]	Endangered	Species or species habitat known to occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat known to occur within area
Calidris ruficollis Red-necked Stint [860]		Species or species habitat known to occur within area
Calidris subminuta Long-toed Stint [861]		Species or species habitat known to occur within area
Charadrius dubius Little Ringed Plover [896]		Species or species habitat known to occur within area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat known to occur within area
Limosa limosa Black-tailed Godwit [845]		Species or species habitat known to occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat likely to occur within area
Pandion haliaetus Osprey [952]		Species or species habitat known to occur within area
Philomachus pugnax Ruff (Reeve) [850]		Species or species habitat known to occur within area
Tringa glareola Wood Sandpiper [829]		Species or species habitat known to occur within area
Tringa nebularia Common Greenshank, Greenshank [832]		Species or species habitat known to occur within area
Tringa stagnatilis Marsh Sandpiper, Little Greenshank [833]		Species or species habitat known to occur within area

Other Matters Protected by the EPBC Act

Commonwealth Land

[\[Resource Information \]](#)

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

Name

Commonwealth Land -
Defence - ROCKINGHAM - NAVY CPSO

Listed Marine Species

[\[Resource Information \]](#)

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

Name	Threatened	Type of Presence
Birds		
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat likely to occur within area
Anous stolidus Common Noddy [825]		Species or species habitat may occur within area
Anous tenuirostris melanops Australian Lesser Noddy [26000]	Vulnerable	Species or species habitat may occur within area
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Ardea alba Great Egret, White Egret [59541]		Species or species habitat known to occur within area
Ardea ibis Cattle Egret [59542]		Species or species habitat may occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat known to occur within area
Calidris canutus Red Knot, Knot [855]	Endangered	Species or species habitat known to occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat known to occur within area
Calidris ruficollis Red-necked Stint [860]		Species or species habitat known to occur within area
Calidris subminuta Long-toed Stint [861]		Species or species habitat known to occur within area
Catharacta skua Great Skua [59472]		Species or species habitat may occur within area
Charadrius dubius Little Ringed Plover [896]		Species or species habitat known to occur

Name	Threatened	Type of Presence
Charadrius ruficapillus Red-capped Plover [881]		within area Species or species habitat known to occur within area
Diomedea amsterdamensis Amsterdam Albatross [64405]	Endangered	Species or species habitat may occur within area
Diomedea dabbenena Tristan Albatross [66471]	Endangered	Species or species habitat may occur within area
Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea sanfordi Northern Royal Albatross [64456]	Endangered	Foraging, feeding or related behaviour likely to occur within area
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat known to occur within area
Halobaena caerulea Blue Petrel [1059]	Vulnerable	Species or species habitat may occur within area
Himantopus himantopus Pied Stilt, Black-winged Stilt [870]		Species or species habitat known to occur within area
Larus pacificus Pacific Gull [811]		Foraging, feeding or related behaviour may occur within area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat known to occur within area
Limosa limosa Black-tailed Godwit [845]		Species or species habitat known to occur within area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Species or species habitat may occur within area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area
Motacilla cinerea Grey Wagtail [642]		Species or species habitat may occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat likely to occur within area
Pachyptila turtur Fairy Prion [1066]		Species or species habitat likely to occur within area

Name	Threatened	Type of Presence
Pandion haliaetus Osprey [952]		Species or species habitat known to occur within area
Philomachus pugnax Ruff (Reeve) [850]		Species or species habitat known to occur within area
Pterodroma mollis Soft-plumaged Petrel [1036]	Vulnerable	Species or species habitat may occur within area
Puffinus assimilis Little Shearwater [59363]		Foraging, feeding or related behaviour known to occur within area
Puffinus carneipes Flesh-footed Shearwater, Fleshy-footed Shearwater [1043]		Foraging, feeding or related behaviour likely to occur within area
Recurvirostra novaehollandiae Red-necked Avocet [871]		Species or species habitat known to occur within area
Rostratula benghalensis (sensu lato) Painted Snipe [889]	Endangered*	Species or species habitat may occur within area
Sterna anaethetus Bridled Tern [814]		Foraging, feeding or related behaviour likely to occur within area
Sterna caspia Caspian Tern [59467]		Foraging, feeding or related behaviour known to occur within area
Sterna dougallii Roseate Tern [817]		Foraging, feeding or related behaviour likely to occur within area
Thalassarche carteri Indian Yellow-nosed Albatross [64464]	Vulnerable	Foraging, feeding or related behaviour may occur within area
Thalassarche cauta Tasmanian Shy Albatross [89224]	Vulnerable*	Foraging, feeding or related behaviour likely to occur within area
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Species or species habitat may occur within area
Thalassarche steadi White-capped Albatross [64462]	Vulnerable*	Foraging, feeding or related behaviour likely to occur within area
Thinornis rubricollis Hooded Plover [59510]		Species or species habitat known to occur within area
Tringa glareola Wood Sandpiper [829]		Species or species habitat known to occur within area
Tringa nebularia Common Greenshank, Greenshank [832]		Species or species habitat known to occur within area

Name	Threatened	Type of Presence
Tringa stagnatilis Marsh Sandpiper, Little Greenshank [833]		Species or species habitat known to occur within area
Fish		
Acentronura australe Southern Pygmy Pipehorse [66185]		Species or species habitat may occur within area
Campichthys galei Gale's Pipefish [66191]		Species or species habitat may occur within area
Heraldia nocturna Upside-down Pipefish, Eastern Upside-down Pipefish, Eastern Upside-down Pipefish [66227]		Species or species habitat may occur within area
Hippocampus angustus Western Spiny Seahorse, Narrow-bellied Seahorse [66234]		Species or species habitat may occur within area
Hippocampus breviceps Short-head Seahorse, Short-snouted Seahorse [66235]		Species or species habitat may occur within area
Hippocampus subelongatus West Australian Seahorse [66722]		Species or species habitat may occur within area
Histiogamphelus cristatus Rhino Pipefish, Macleay's Crested Pipefish, Ring-back Pipefish [66243]		Species or species habitat may occur within area
Lissocampus caudalis Australian Smooth Pipefish, Smooth Pipefish [66249]		Species or species habitat may occur within area
Lissocampus fatiloquus Prophet's Pipefish [66250]		Species or species habitat may occur within area
Lissocampus runa Javelin Pipefish [66251]		Species or species habitat may occur within area
Maroubra perserrata Sawtooth Pipefish [66252]		Species or species habitat may occur within area
Mitotichthys meraculus Western Crested Pipefish [66259]		Species or species habitat may occur within area
Nannocampus subosseus Bonyhead Pipefish, Bony-headed Pipefish [66264]		Species or species habitat may occur within area
Phycodurus eques Leafy Seadragon [66267]		Species or species habitat may occur within area
Phyllopteryx taeniolatus Common Seadragon, Weedy Seadragon [66268]		Species or species habitat may occur within area
Pugnaso curtirostris Pugnose Pipefish, Pug-nosed Pipefish [66269]		Species or species habitat may occur within area
Solegnathus lettiensis Gunther's Pipehorse, Indonesian Pipefish [66273]		Species or species habitat may occur within area

Name	Threatened	Type of Presence
Stigmatopora argus Spotted Pipefish, Gulf Pipefish, Peacock Pipefish [66276]		Species or species habitat may occur within area
Stigmatopora nigra Widebody Pipefish, Wide-bodied Pipefish, Black Pipefish [66277]		Species or species habitat may occur within area
Urocampus carinirostris Hairy Pipefish [66282]		Species or species habitat may occur within area
Vanacampus margaritifer Mother-of-pearl Pipefish [66283]		Species or species habitat may occur within area
Vanacampus phillipi Port Phillip Pipefish [66284]		Species or species habitat may occur within area
Vanacampus poecilolaemus Longsnout Pipefish, Australian Long-snout Pipefish, Long-snouted Pipefish [66285]		Species or species habitat may occur within area

Mammals

Arctocephalus forsteri Long-nosed Fur-seal, New Zealand Fur-seal [20]		Species or species habitat may occur within area
Neophoca cinerea Australian Sea-lion, Australian Sea Lion [22]	Vulnerable	Species or species habitat known to occur within area

Reptiles

Caretta caretta Loggerhead Turtle [1763]	Endangered	Foraging, feeding or related behaviour known to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Foraging, feeding or related behaviour known to occur within area
Disteira kingii Spectacled Seasnake [1123]		Species or species habitat may occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Foraging, feeding or related behaviour known to occur within area

Whales and other Cetaceans

Name	Status	Type of Presence
[Resource Information]		
Mammals		
Balaenoptera acutorostrata Minke Whale [33]		Species or species habitat may occur within area
Balaenoptera edeni Bryde's Whale [35]		Species or species habitat may occur within area
Balaenoptera musculus Blue Whale [36]	Endangered	Species or species habitat likely to occur within area
Caperea marginata Pygmy Right Whale [39]		Species or species habitat may occur within

Name	Status	Type of Presence
Delphinus delphis Common Dolphin, Short-beaked Common Dolphin [60]		area Species or species habitat may occur within area
Eubalaena australis Southern Right Whale [40]	Endangered	Breeding known to occur within area
Grampus griseus Risso's Dolphin, Grampus [64]		Species or species habitat may occur within area
Megaptera novaeangliae Humpback Whale [38]	Vulnerable	Species or species habitat known to occur within area
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may occur within area
Stenella attenuata Spotted Dolphin, Pantropical Spotted Dolphin [51]		Species or species habitat may occur within area
Tursiops aduncus Indian Ocean Bottlenose Dolphin, Spotted Bottlenose Dolphin [68418]		Species or species habitat likely to occur within area
Tursiops truncatus s. str. Bottlenose Dolphin [68417]		Species or species habitat may occur within area

Extra Information

State and Territory Reserves	[Resource Information]
Name	State
Leda	WA
Unnamed WA48968	WA
Unnamed WA51658	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
Birds		
<i>Acridotheres tristis</i> Common Myna, Indian Myna [387]		Species or species habitat likely to occur within area
<i>Anas platyrhynchos</i> Mallard [974]		Species or species habitat likely to occur within area
<i>Carduelis carduelis</i> European Goldfinch [403]		Species or species habitat likely to occur within area
<i>Columba livia</i> Rock Pigeon, Rock Dove, Domestic Pigeon [803]		Species or species

Name	Status	Type of Presence
Passer domesticus House Sparrow [405]		habitat likely to occur within area 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
Sturnus vulgaris Common Starling [389]		Species or species habitat likely to occur within area
Turdus merula Common Blackbird, Eurasian Blackbird [596]		Species or species habitat likely to occur within area
Mammals		
Bos taurus Domestic Cattle [16]		Species or species habitat likely to occur within area
Canis lupus familiaris Domestic Dog [82654]		Species or species habitat likely to occur within area
Felis catus Cat, House Cat, Domestic Cat [19]		Species or species habitat likely to occur within area
Funambulus pennantii Northern Palm Squirrel, Five-striped Palm Squirrel [129]		Species or species habitat likely to occur within area
Mus musculus House Mouse [120]		Species or species habitat likely to occur within area
Oryctolagus cuniculus Rabbit, European Rabbit [128]		Species or species habitat likely to occur within area
Rattus norvegicus Brown Rat, Norway Rat [83]		Species or species habitat likely to occur within area
Rattus rattus Black Rat, Ship Rat [84]		Species or species habitat likely to occur within area
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

Name	Status	Type of Presence
Cenchrus ciliaris Buffel-grass, Black Buffel-grass [20213]		Species or species habitat may occur within area
Chrysanthemoides monilifera Bitou Bush, Boneseed [18983]		Species or species habitat may occur within area
Chrysanthemoides monilifera subsp. monilifera Boneseed [16905]		Species or species habitat likely to occur within area
Genista linifolia Flax-leaved Broom, Mediterranean Broom, Flax Broom [2800]		Species or species habitat likely to occur within area
Genista sp. X Genista monspessulana Broom [67538]		Species or species habitat may occur within area
Lantana camara Lantana, Common Lantana, Kamara Lantana, Large- leaf Lantana, Pink Flowered Lantana, Red Flowered Lantana, Red-Flowered Sage, White Sage, Wild Sage [10892]		Species or species habitat likely to occur within area
Lycium ferocissimum African Boxthorn, Boxthorn [19235]		Species or species habitat likely to occur within area
Olea europaea Olive, Common Olive [9160]		Species or species habitat may occur within area
Opuntia spp. Prickly Pears [82753]		Species or species habitat likely to occur within area
Pinus radiata Radiata Pine Monterey Pine, Insignis Pine, Wilding Pine [20780]		Species or species habitat may occur within area
Rubus fruticosus aggregate Blackberry, European Blackberry [68406]		Species or species habitat likely to occur within area
Salix spp. except S.babylonica, S.x calodendron & S.x reichardtii Willows except Weeping Willow, Pussy Willow and Sterile Pussy Willow [68497]		Species or species habitat likely to occur within area
Salvinia molesta Salvinia, Giant Salvinia, Aquarium Watermoss, Kariba Weed [13665]		Species or species habitat likely to occur within area
Tamarix aphylla Athel Pine, Athel Tree, Tamarisk, Athel Tamarisk, Athel Tamarix, Desert Tamarisk, Flowering Cypress, Salt Cedar [16018]		Species or species habitat likely to occur within area
Reptiles		
Hemidactylus frenatus Asian House Gecko [1708]		Species or species habitat likely to occur within area

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

-32.27232 115.74899

Acknowledgements

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

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

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

Please feel free to provide feedback via the [Contact Us](#) page.

APPENDIX 4
Conservation Codes

Conservation Codes for Western Australian Flora and Fauna

Specially protected fauna or flora are species* which have been adequately searched for and are deemed to be, in the wild, either rare, at risk of extinction, or otherwise in need of special protection, and have been gazetted as such.

Categories of specially protected fauna and flora are:

T Threatened species – Schedules 1-4

Published as Specially Protected under the *Wildlife Conservation Act 1950*, and listed under Schedules 1 to 4 of the Wildlife Conservation (Specially Protected Fauna) Notice for Threatened Fauna and Wildlife Conservation (Rare Flora) Notice for Threatened Flora (which may also be referred to as Declared Rare Flora).

- **Threatened fauna** is that subset of ‘Specially Protected Fauna’ declared to be ‘likely to become extinct’ pursuant to section 14(4) of the Wildlife Conservation Act.
- **Threatened flora** is flora that has been declared to be ‘likely to become extinct or is rare, or otherwise in need of special protection’, pursuant to section 23F(2) of the Wildlife Conservation Act.

The assessment of the conservation status of these species is based on their national extent and ranked according to their level of threat using IUCN Red List categories and criteria as detailed below.

CR Critically endangered species – Schedule 1

Threatened species considered to be facing an extremely high risk of extinction in the wild. Published as Specially Protected under the *Wildlife Conservation Act 1950*, in Schedule 1 of the Wildlife Conservation (Specially Protected Fauna) Notice for Threatened Fauna and Wildlife Conservation (Rare Flora) Notice for Threatened Flora.

EN Endangered species – Schedule 2

Threatened species considered to be facing a very high risk of extinction in the wild. Published as Specially Protected under the *Wildlife Conservation Act 1950*, in Schedule 2 of the Wildlife Conservation (Specially Protected Fauna) Notice for Threatened Fauna and Wildlife Conservation (Rare Flora) Notice for Threatened Flora.

VU Vulnerable species - Schedule 3

Threatened species considered to be facing a high risk of extinction in the wild. Published as Specially Protected under the *Wildlife Conservation Act 1950*, in Schedule 3 of the Wildlife Conservation (Specially Protected Fauna) Notice for Threatened Fauna and Wildlife Conservation (Rare Flora) Notice for Threatened Flora.

EX Presumed extinct species - Schedule 4

Species which have been adequately searched for and there is no reasonable doubt that the last individual has died. Published as Specially Protected under the *Wildlife Conservation Act 1950*, in Schedule 4 of the Wildlife Conservation (Specially Protected Fauna) Notice for Presumed Extinct Fauna and Wildlife Conservation (Rare Flora) Notice for Presumed Extinct Flora.

IA Migratory birds protected under an international agreement - Schedule 5

Birds that are subject to an agreement between the government of Australia and the governments of Japan (JAMBA), China (CAMBA) and The Republic of Korea (ROKAMBA), and the Bonn Convention, relating to the protection of migratory birds. Published as Specially Protected under the *Wildlife Conservation Act 1950*, in Schedule 5 of the Wildlife Conservation (Specially Protected Fauna) Notice.

CD Conservation dependent fauna - Schedule 6

Fauna of special conservation need being species dependent on ongoing conservation intervention to prevent it becoming eligible for listing as threatened. Published as Specially Protected under the *Wildlife Conservation Act 1950*, in Schedule 6 of the Wildlife Conservation (Specially Protected Fauna) Notice.

OS Other specially protected fauna - Schedule 7

Fauna otherwise in need of special protection to ensure their conservation. Published as Specially Protected under the *Wildlife Conservation Act 1950*, in Schedule 7 of the Wildlife Conservation (Specially Protected Fauna) Notice.

P Priority species

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

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

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

1 Priority 1: Poorly-known species

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

2 Priority 2: Poorly-known species

Species that are known from one or a few locations (generally five or less), some of which are on lands managed primarily for nature conservation, e.g. national parks, conservation parks, nature reserves and other lands with secure tenure being managed for conservation. Species may be included if they are comparatively well known from one or more locations but do not meet adequacy of survey requirements and appear to be under threat from known threatening processes. Such species are in urgent need of further survey.

3 Priority 3: Poorly-known species

Species that are known from several locations, and the species does not appear to be under imminent threat, or from few but widespread locations with either large population size or significant remaining areas of apparently suitable habitat, much of it not under imminent threat. Species may be included if they are comparatively well known from several locations but do not meet adequacy of survey requirements and known threatening processes exist that could affect them. Such species are in need of further survey.

4 Priority 4: Rare, Near Threatened and other species in need of monitoring

(a) Rare: Species that are considered to have been adequately surveyed, or for which sufficient knowledge is available, and that are considered not currently threatened or in need of special protection, but could be if present circumstances change. These species are usually represented on conservation lands.

(b) Near Threatened: Species that are considered to have been adequately surveyed and that are close to qualifying for Vulnerable, but are not listed as Conservation Dependent.

(c) Species that have been removed from the list of threatened species during the past five years for reasons other than taxonomy.

*Species includes all taxa (plural of taxon - a classificatory group of any taxonomic rank, e.g. a family, genus, species or any infraspecific category i.e. subspecies or variety, or a distinct population).

A list of the current rankings can be downloaded from the Parks and Wildlife Threatened Species and Communities webpage at <http://www.dpaw.wa.gov.au/plants-and-animals/threatened-species-and-communities>

Commonwealth of Australia Conservation Codes

Threatened fauna and flora may be listed under Section 178 of the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) in any one of the following six categories:

Extinct

A native species is eligible to be included in the extinct category at a particular time if, at that time, there is no reasonable doubt that the last member of the species has died.

Extinct in the wild

A native species is eligible to be included in the extinct in the wild category at a particular time if, at that time:

- a) it is known only to survive in cultivation, in captivity or as a naturalised population well outside its past range; or
- b) it has not been recorded in its known and/or expected habitat, at appropriate seasons, anywhere in its past range, despite exhaustive surveys over a time frame appropriate to its life cycle and form.

Critically endangered

A taxon is Critically Endangered when the best available evidence indicates that it meets any of the five criteria for the category identified in Part 7.01 of the EPBC Regulations, and it is therefore considered to be facing an extremely high risk of extinction in the wild.

Endangered

A taxon is Endangered when the best available evidence indicates that it meets any of the five criteria for the category identified in Part 7.01 of the EPBC Regulations, and it is therefore considered to be facing a very high risk of extinction in the wild.

Vulnerable

A taxon is Vulnerable when the best available evidence indicates that it meets any of the five criteria for the category identified in Part 7.01 of the EPBC Regulations, and it is therefore considered to be facing a high risk of extinction in the wild.

Conservation dependent

A native species is eligible to be included in the conservation dependent category at a particular time if, at that time:

- a) the species is the focus of a specific conservation program the cessation of which would result in the species becoming vulnerable, endangered or critically endangered; or
- b) the following subparagraphs are satisfied:
 - i. the species is a species of fish;

- ii. the species is the focus of a plan of management that provides for management actions necessary to stop the decline of, and support the recovery of, the species so that its chances of long term survival in nature are maximised;
- iii. the plan of management is in force under a law of the Commonwealth or of a State or Territory;
- iv. cessation of the plan of management would adversely affect the conservation status of the species.

The EPBC Act does not provide for listing in a data deficient category. Where sufficient data (evidence) is unavailable to allow assessment by the Threatened Species Scientific Committee against the criteria for listing, the species are found to be ineligible. A recommendation is made to the Minister to not include the species in any category under the EPBC Act. For reasons of transparency and to inform future research, the Threatened Species Scientific Committee publishes the names of those species found to be data deficient. As data deficient is not a listing category under the EPBC Act, this has no statutory implications and the species is not considered to be listed under the EPBC Act.