360 environmental | Part of SLR

Parker Point Road Rottnest

Native Vegetation Clearing Permit: Supporting Documentation

Prepared for

Rottnest Island Authority

September 2022

people planet professional

Document Reference	Revision	Prepared by	Reviewed by	Admin Review	Submitted to Client	
					Copies	Date
5159AB_Rev0	Internal Draft	JM/SB	SB	-	-	29/07/2022
5159AB_Rev1	Client Draft	JM/SB	SB	LI	1 x electronic	29/07/2022
5159AB_Rev2	Client Draft	JM/SB	SB	LI	1 x electronic	12/08/2022
5159AB_Rev4	Client Draft	JM/SB	SB	LI	1 x electronic	01/09/2022
5159AB_Rev5	Client Draft	JM	SB	LI	1 x electronic	13/09/2022
5159AB_Rev6	Client Final	JM	SB	RH	1 x electronic	15/09/2022

Disclaimer

Table of Contents

List of Plates

List of Tables

List of Figures (out of text)

List of Appendices

1 Introduction

1.1 Background

360 Environmental Pty Ltd, part of SLR Consulting (360 Environmental) was commissioned by Rottnest Island Authority (RIA) to prepare a Native Vegetation Clearing Permit (NVCP) application for clearing associated with the construction of Stage 2 staff housing on Windy Hill / Parker Point Road, Rottnest Island.

The NVCP application is to clear up to 4 ha within a 5.74 ha area of native vegetation as shown in Figure 1 ('the Clearing Area'). Vegetation clearing will be carefully considered during detailed design, individual trees will be kept where possible. A perspective view of the Clearing Area and surrounding land is shown in Plate 1 to demonstrate the character of the landscape.

Plate 1: Aerial photograph of the site with indicative clearing area outlined in red

1.2 Purpose of Clearing Permit Application

This NVCP supporting document presents the results of an assessment of the clearing aspects of the proposal against the ten clearing principles as outlined in the (then) Department of Environment Regulation (DER)'s *A guide to the assessment of applications to clear native vegetation* (2014) under Part V Division 2 of the EP Act. It identifies the potential environmental impacts associated with the proposal based on the best available data. This document and the accompanying NVCP Purpose Permit application will be submitted to the Department of Water and Environmental Regulation (DWER) for assessment.

1.3 Responsible Applicant

The Rottnest Island Authority is responsible for the implementation of the clearing described within this report. Correspondence relating to this NVCP application should be addressed to:

Kathryn Doyle

Project Manager - Development

Rottnest Island Authority

PO Box 6959

FREMANTLE WA 6959

P: 9432 9192

E: kathryn.doyle@dbca.wa.gov.au

2 Site Overview

2.1 Location

The application areas are located within the Settlement Zone of Thomson's Bay. Rottnest Island is situated within the Indian Ocean, 19km west of Fremantle in Western Australia (RIA 2014a).

Rottnest Island is located outside of the Perth Metropolitan Region as defined in Schedule 3 of the Planning and Development Act 2005 (RIA 2014a).

2.2 Climate

The closest Bureau of Meteorology (BoM) weather station with a complete dataset is Rottnest Island (009193), located approximately 3.6 km west of the Site (BoM 2022). The region has a Mediterranean climate with wet winters and dry summers. The minimum temperature for Rottnest Island ranges from 12.4˚C (July and August) to 19.5˚C (February) and the mean maximum temperature ranges from 17.8˚C (July) to 27.3˚C (February) (1983-2022) (Plate 2) (BoM 2022). The annual average rainfall is 567.7 mm (1983-2022) (BoM 2022).

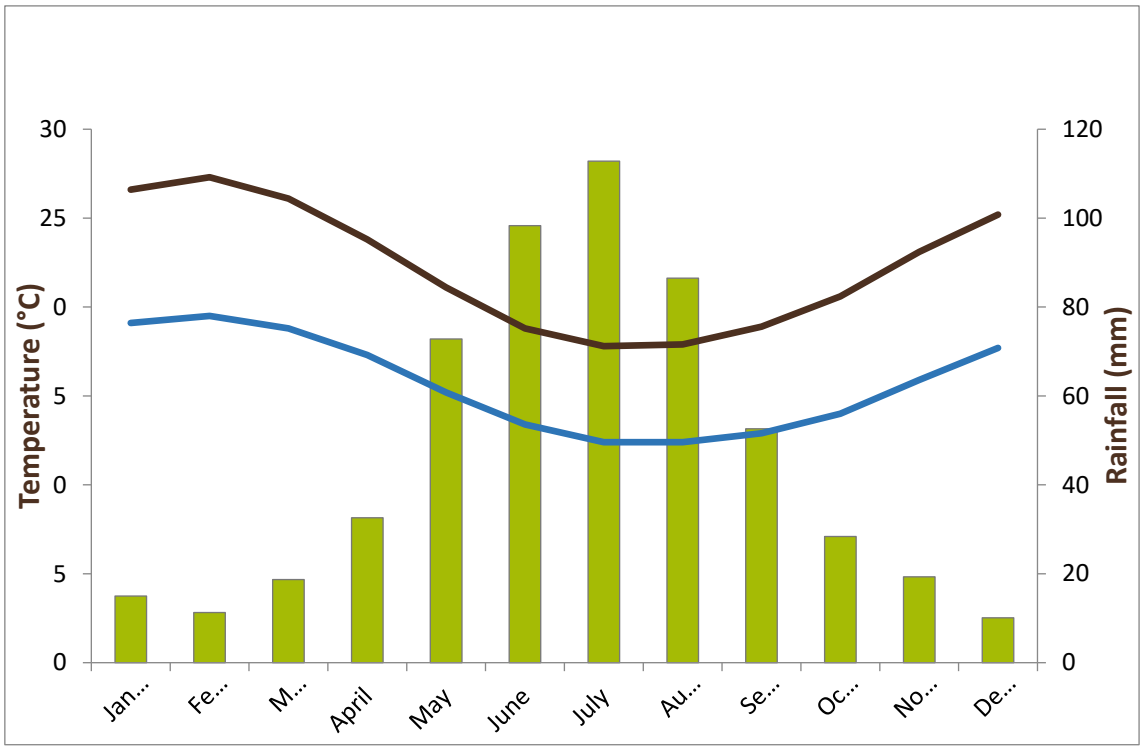


Plate 2: Rottnest Island Monthly Climate Data 1993-2022 (009193) (Bureau of Meteorology, 2022).

2.3 Topography

The topography of the site is relatively flat, and ranges from 7 m Australian Height Datum (AHD) in the southwest part of the site to 5 mAHD in the northeast (Google Earth, 2022).

2.4 Interim Biogeographic Regionalisation of Australia

The site is technically within the Swan Coastal Plain Bioregion and Perth subregion under the Interim Bioregionalisation of Australia (IBRA). The Swan Coastal Plain bioregion is a low lying coastal plain, mainly covered with woodlands (Mitchell, Williams, and Desmond, 2002). It is dominated by Banksia or Tuart on sandy soils, *Casuarina obesa* on outwash plains, and paperbark in swampy areas. In the east, the plain rises to duricrusted Mesozoic sediments dominated by Jarrah woodland. The outwash plains, once dominated by *Casuarina obesa-Marri* woodlands and Melaleuca shrublands, are extensive only in the south.

The Perth subregion is composed of colluvial and aeolian sands, alluvial river flats, coastal limestone (Mitchell, Williams, and Desmond, 2002). The subregion is represented by heath and/or Tuart woodlands on limestone, Banksia, and Jarrah-Banksia woodlands on quaternary marine dunes of various ages, Marri on colluvial and alluvial.

2.5 Soil Landscape Systems

Soil landscapes and land system mapping of Western Australia describes broad soil and landscape characteristics from regional to local scales, and has been captured at scales ranging from 1:20,000 to 1:250,000. Soil landscape mapping describes broad soil and landscape characteristics from regional to local scales. The site contains the following soil system:

- Quindalup South System: Coastal dunes, of the Swan Coastal Plain, with calcareous deep sands and yellow sands. Coastal scrub.

2.6 Hydrology and Wetlands

2.6.1 Surface Water

The site does not contain any surface water features. It is located approximately 100 m (at its closest point) northeast of the Government House Lake, which has an ESA associated with it (further discussed in Section 2.8) and is part of the Rottnest Island Lakes which are listed under the Directory of Nationally Important Wetlands (Figure 2).

2.6.2 Groundwater

Groundwater occurs in the Tamala Limestone forming a shallow, unconfined aquifer at Rottnest Island. The aquifer is recharged by rainfall to form a thin freshwater lens over saline groundwater with a mixing zone (RIA 2014). Salinity levels for the site are unknown; however, data from freshwater bores at the Wadjemup borefield approximately 3.5 km west of the site has recorded salinity levels ranging between 434 mg/L and 917 mg/L that fluctuate in response to groundwater abstraction and rainfall recharge (RIA 2014). The site is not within a Public Drinking Water Source Area (PDWSA). The nearest PDWSA is located approximately 3.1 km west of the site and refers to the Priority 3 Rottnest Island Water Reserve (DWER 2018a).

It is expected that a shallow unconfined aquifer will occur beneath the site and that groundwater flow will be in part toward Thomson's Bay and in part toward Government House Lake, to the southwest. Groundwater investigations would need to be conducted to determine localised groundwater flows; however, this information is not considered to be required for the NVCP.

2.7 Broad Vegetation Types

Vegetation mapping of the Swan Coastal Plain subregion of WA was completed on a broad scale (1: 250 000) by Beard (1972-80). These vegetation units were re-assessed by Shepherd et al. (2001) to account for clearing in the intensive land use zone, dividing some larger vegetation units into smaller units.

The site is wholly within one vegetation unit described below and the state, regional and local representation is presented in Table 1 (Shepherd et al. 2001):

- Rockingham 15: Low Forest. Acacia, Rottnest pine, coastal moort or mixed forest *Acacia rostellifera*, *Callistris preisii*, *Eucalyptus lehmannii*, *E. cornuta.*

Table 1: Broad Vegetation Types within the State, Regional and Local Representation (Government of Western Australia, 2019)

Vegetation Type	Pre-European Extent (ha)	Current Extent (ha)	Remaining (%)	Current Extent Managed in DBCA Lands (%)
Representation across Western Australia				
Rockingham_15	2,374.16	1,576.52	66.40	56.23
Representation across the Swan Coastal Plain Bioregion				
Rockingham_15	1,977.93	1,564.26	79.09	56.47
Representation across the Perth Subregion				
Rockingham_15	1,977.93	1,564.26	79.09	56.47
Representation across the City of Cockburn				
Rockingham_15	1,353.14	886.49	65.51	100.00

The EPA recommends that on the Swan Coastal Plain (SCP) vegetation complexes are maintained above the threshold level of 30% of the original pre-clearing extent of each community and 10% of the original pre-clearing extent of each community representation within the Perth Metropolitan Region. Rockingham_15 is above both thresholds (Table 1) (Government of Western Australia 2019).

2.8 Conservation Features

Environmentally Sensitive Areas (ESAs) are identified and protected under the Environmental Protection (Environmentally Sensitive Areas) Notice 2005. Under the Notice it is an offense to kill or destroy vegetation within an ESA without a NVCP. Under section 51B of the EP Act, exemptions for clearing native vegetation do not apply in ESAs.

A search of the Department of Water and Environment Regulation's (DWER) Clearing Permit System confirmed that the entire site is within an ESA (DWER 2018b). The ESA is associated with a Threatened Ecological Community (TEC) – *Callitris preissii* forests and woodlands, Swan Coastal Plain. Another ESA is identified which impacts the area is linked to Government House Lake located west of the site for its unique microbialites and utilisation by protected migratory birds (Figure 3).

2.9 Heritage

2.9.1 Aboriginal Heritage

Desktop review of the Aboriginal Heritage Inquiry System has identified that the site does not contain nor is it in proximity to a Registered Aboriginal Heritage Site. Investigation into the Indigenous Land Use Agreement identifies the site as within the Whadjuk people's traditional lands (DPLH 2018). The RIA will undertake an activity notice with South West Aboriginal Land and Sea Council (SWALSC), the outcome of which will advise if a site survey with Traditional Owners is required.

2.9.2 European Heritage

Desktop review of the State Heritage Office database did not identify any Registered Place within the site. However, there are two Registered Places in proximity of the site as described below.

The Settlement Zone of Thomson's Bay is listed as a Registered Place on the State Heritage Register (#00516) and is located approximately 205 m north of the site. The Thomson's Bay Settlement incorporates several cottages, the 'Quod', the sea wall fronting the Bay and the former Governor's Residence (now Hotel Rottnest) (SHO 2022). The site was constructed from 1840 to 1860. It is also understood that land to the southeast of the site has been used as a quarry for stone to construct buildings.

Kingstown Barracks is listed as a Registered Place on the State Heritage Register (#00525) and is located approximately 85 m east of the site. Kingstown Barracks contains army institutional buildings with a tower as the focal feature, hospital and the cottages, a jetty, a battalion camp site and gun battery with supporting communication and observation structures (SHO, 2022). The site was constructed in 1938.

3 Flora and Vegetation Assessment

RIA commissioned three flora and vegetation surveys over 2021 and 2022. Two by 360 Environmental and one by Focused Vision. The following summary and the assessment against the clearing principles is based on the more intensive work completed by 360 Environmental in 2022 (eight data collection points within the clearing area) augmented by the work completed by Focused Vision (two data collection points within the clearing area) to cover the full area (360 Environmental 2022; Focused Vision 2022) (Appendix A; Appendix B).

3.1 Desktop Assessment

The desktop study provided background information on the flora and vegetation of the site. Databases searches of the Commonwealth's Protected Matters Search Tool (PMST) with a buffer of 1 km and the State's NatureMap Search Tool with a buffer of 10 km were undertaken to compile a list of Threatened or Priority species or threatened or priority ecological communities (TECs or PECs) that may occur within the area (Appendix C and D).

3.1.1 Flora Assessment

Four (4) flora species of conservation significance were identified from the database searches (Table 2). Of the four listed flora species, two are listed as Priority 1 and one listed as Priority 4. One of the conservation significant flora species is listed as Vulnerable under the EPBC Act.

Table 2: Conservation Significant Flora Species

Scientific Name	Conservation Status
Diuris micrantha	VU
Lachnagrostis nesomytica subsp. *nesomytica*	P1
Lachnagrostis nesomytica subsp. *pseudofiliformis*	P1
Lepidium puberulum	P4

3.1.2 Vegetation Assessment

One threatened ecological community, *Banksia Woodlands of the Swan Coastal Plain*, was identified in the desktop search from the State's NatureMap Database as potentially occurring within or near to the site. However, 360 Environmental determined it was not present within the site as *Banksia* spp. was not recorded. It is understood that *Banksia* spp. does not occur anywhere on the island (Appendix A).

3.2 Flora and Vegetation Assessment

360 Environmental conducted a reconnaissance flora and vegetation survey of 3.85 ha in February 2022 (the Survey Area) which includes an extension beyond the area surveyed during the 2021 survey (Appendix A). The clearing area in relation to the mapped flora values as determined through Focus Vision (2022) are outlined in Figures 4 and 5. Results of 360 Environmental (2022), augmented by the work completed by Focused Vision to cover the full extent of the clearing area, are detailed below

3.2.1 Vegetation

3.2.1.1 Vegetation Condition

The vegetation of the Survey Area comprised remnant vegetation, native regrowth, planted natives and weed species. Vegetation condition within the Survey Area was identified by 360 Environmental as ranging from Good to Completely Degraded. The percentage of the vegetation within the Survey Area rated on the Keighery Vegetation Condition Scale are presented in Table 3. Focused Vision (2022) rated the vegetation condition slightly higher (Figure 4), however 360 Environmental's survey was a more intensive survey as more data collection points were completed, therefore its findings have been shown in in Table 3.

Table 3: Vegetation Condition (Keighery 1994)

Condition	Condition Description	Vegetation (%)
Pristine	Pristine or nearly so, no obvious signs of disturbance.	0
Excellent	Vegetation structure intact; disturbance affecting individual species; weeds are non-aggressive species.	0
Very Good	Vegetation structure altered, obvious signs of disturbance. For example, disturbance to vegetation structure caused by very frequent fires; the presence of some more aggressive weeds; dieback; logging; grazing.	0
Good	Vegetation structure significantly altered by very obvious signs of multiple disturbances. 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; grazing.	49.75

Condition	Condition Description	Vegetation (%)
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 some very aggressive weeds; partial clearing; dieback; grazing.	41.18
Completely Degraded	The structure of the vegetation is no longer intact, and the area is completely or almost completely without native species. These areas are often described as 'parkland cleared' with flora comprising weed or crop species with isolated native trees or shrubs.	9.06

Disturbances within the Survey Area comprised weeds and historical clearing to facilitate access tracks and infrastructure. The understorey was heavily affected by weeds across the entire Survey Area.

3.2.1.2 Vegetation Types

Nine vegetation types were identified within the Focused Vision Survey Area.

The remaining portions of the Survey Area included planted vegetation and cleared areas.

The nine vegetation types are (Appendix A; Figure 5):

1. **MlAp**: *Melaleuca/Acanthocarpus* Woodland – *Melaleuca lanceolata* Tall Shrubland over *Acanthocarpos preissii* Low Open Shrubland
2. **ArAp**: *Acacia/Acanthocarpus* Shrubland – *Acacia rosteliffera* Tall Open Shrubland over *Acathocarpus preissii* Shrubland over *Trachyandara 9ivaricate* Low Sparse Forbland
3. **CpMl**: *Callitris/Melaleuca* Shrubland – *Callitris priessi* and *Melaleuca lanceolata* Tall Shrubland
4. **MlGl**: *Melaleuca/Guichenotia* Shrubland – *Melaeluca lanceolata* and *Callitris preissii* Tall Sparse Shrubland over *Guichenotia ledifolia*, *Acanthocarpus preissii* and *Rhagodia baccata* Shrubland over *Trachyandara divaricata* Low Sparse Forbland
5. **OaAp**: *Olearia/Acanthocarpus* Shrubland – *Olearia axillaris* Tall Sparse Shrubland over *Acanthocarpos preissii* Low Open Shrubland
6. **TiSS**: *Tecticornia* Samphire Shrubland – *Tecticornia indica* subsp. *bidens* Low Samphire Shrubland
7. **GtS**: *Gahnia* Sedgeland *Gahnia trifida* Tall Sedgeland

8. **LpAp**: *Lepidosperma/Acanthoca rpus* Sedgeland – *Acanthocarpos preissii*, *Rhagodia baccata* and *Conostylis candicans* Low Open Shrubland over *Lepidosperma gladiatum* Open Sedgeland over *Trachyandara 10ivaricate* Low Sparse Forbland
9. **SlG**: Spinifex Grassland – *Scaevola crassifolia* Low Open Shrubland over *Spinfex longifolius* Grassland.

3.2.1.3 Vegetation of Conservation Significance

The Banksia Woodlands of the Swan Coastal Plain ecological community identified by the database searches was not present within the Survey Area, as *Banksia* spp. was not recorded. It is understood that *Banksia* spp. does not occur anywhere on the island.

The State TEC SCP30a '*Callitris preissii* (or *Melaleuca lanceolata*) forests and woodlands, Swan Coastal Plain', is listed as Vulnerable and is restricted to the Quindalup Dune system, on which the Survey Area is located, and represented by forests and woodlands (Gibson et al., 1994). As of 2013, 627 ha of the TEC occurs between Trigg and Point Peron and around the Swan River in the Peppermint Grove Area as well as on Garden Island and Rottnest Island (DPAW 2014).

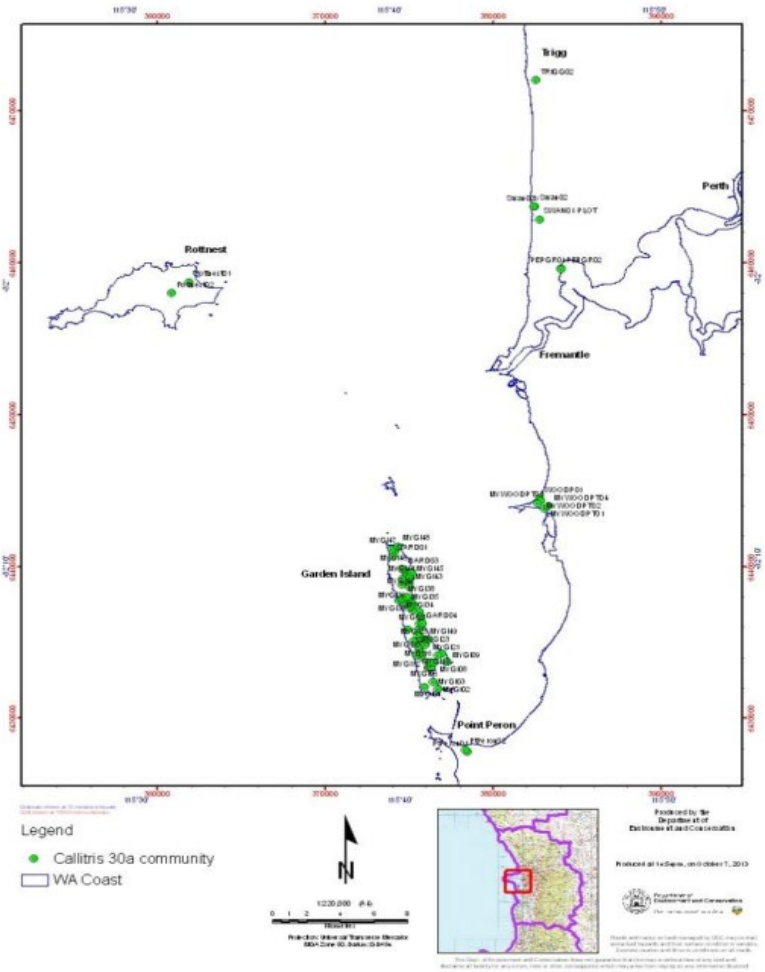


Plate 3: Occurrences of State TEC SCP30a (DPAW 2014)

Vegetation types described by 360 Environmental (2022), MlCpAp and MlAp, were represented by *C. preissii* (MlCpAp only) and *M. lanceolata*, which are the key taxa describing the SCP30a TEC, as well as the common community species *Acanthocarpus preissii*, and **Trachyandra divaricata*. For this reason, these vegetation types were considered analogous to the SCP30a TEC. Combined, these two vegetation types cover 2.38 ha (61.69%) of the Survey Area. It was noted that areas of these vegetation types continued outside of the Survey Area to the south and east which was confirmed by Focused Vision (2022) (Figure 5). The remaining vegetation types were not considered analogous to the TEC.

The separate surveys undertaken by 360 Environmental (June 2021) and Focused Vision (May 2022) identified the presence of the key taxon *C. preissii* within the survey area. Identifying the MlAp and CpMl mapped vegetation units as representative of the TEC (Figure 5).

The site was assessed as being mostly native vegetation, the remaining area being cleared. Historical records show that the native vegetation is natural regrowth (Plate 4). The RIA has no records of planting within the site.

3.2.1.4 Native Vegetation on Rottnest Island

Vegetation on Rottnest Island has been heavily modified since European settlement in the 1830s (RIA 2022). Large-scale clearing and the harvesting of timber occurred for the construction of buildings, railways, and roads, and for firewood. Frequency and intensity of fires increased, significantly impacting the fire sensitive *C. preissii* and *M. lanceolata*. The protection of the Quokka in 1917 led to rapid expansion of the population, resulting in impacts to vegetation through extensive grazing of seedlings. Currently, 4% of Rottnest Island is covered by naturally regenerated stands of TEC SCP30a. The RIA has undertaken revegetation since 2019 which has predominantly involved planting trees within fenced areas to exclude quokkas. Planned woodland management is further addressed in Section 5.2.

Plate 4: Clearing Area 1941 (left) and 2022 (right)

3.2.2 Flora

360 Environmental (2022) recorded a total of 24 taxa from 18 genera across 12 families. The dominant families were Poaceae and Myrtaceae (seven taxa each).

3.2.2.1 Threatened and Priority Flora

No Threatened flora taxa pursuant to the EPBC Act 1999 and/or gazetted as Threatened pursuant to the BC Act 2016 were recorded during the survey. No Priority flora taxa as listed by DBCA were recorded within the Survey Area.

It is noted that the timing of the survey was not suited to detecting the orchid *Diuris micrantha* but the likelihood of the species occurring in the project area is considered very low given that it is typically found in brown loamy clays within winter-wet swamps, neither of which occur on the site.

3.2.2.2 Weeds

Six introduced flora taxa were recorded within the Survey Area. None are listed as Declared Pests under the BAM Act (Department of Primary Industries and Regional Development 2022) or WoNS (Department of Agriculture Water and the Environment 2022b).

4 Fauna Assessment

A desktop review of NatureMap and Protected Matters Search Tool (PMST) results were used to identify the significant fauna values that may occur within the study area.

A total of 172 conservation significant fauna species were identified as potentially occurring within the study area in the desktop review (Table 4). These comprised:

- 59 birds
- Two (2) fish
- Two (2) invertebrates
- Ten (10) mammals
- Seven (7) reptiles
- Eight (8) sharks.

Most of the conservation significant fauna species identified in the database are migratory, marine or wetland dependent species that require specific habitats (open water or wetlands) for wading. The site does not contain these specific habitats but is within the vicinity of the shoreline part of the Rottnest Island Lakes. These species are therefore excluded from Table 4. A full list of species can be found in Appendix C and D. Fauna species that may utilise the site are listed in Table 3 below and a likelihood of occurrence assessment is described below.

Table 4: Conservation Significant Fauna Species

Species	Common Name	Conservation Status*	
		BC Act	EPBC Act
Birds			
Calyptorhynchus latirostris	Carnaby's Cockatoo	EN	EN
Falco peregrinus	Peregrine Falcon	OS	-
Invertebrates			
Hesperocolletes douglasi	Douglas' Broad-headed Bee, Rottnest Bee	CR	CR
Idiosoma sigillatum	Swan Coastal Plain shield-backed trapdoor spider	P3	-
Mammals			
Setonix brachyurus	Quokka	VU	VU
Reptiles			
Lerista lineata	Perth slider, lined skink	P3	-
Pseudonaja affinis exilis	Rottnest Island dugite	P4	-
Tiliqua rugosa konowi	Rottnest Island bobtail	VU	-

4.1 Birds

4.1.1 Waterbirds

Rottnest Island has been classified as an 'Important Bird Area' by BirdLife International, providing critical breeding habitat for many shorebirds. Waterbirds and waders have been identified as potentially occurring near the site, which are protected under International Agreements or under State and Federal legislation (Appendix C and D). Although these species may be present along the nearby shoreline, it is highly **unlikely** that they would utilise the site as it does not contain suitable breeding or foraging habitat for these species.

4.1.2 Carnaby's Black Cockatoo

Carnaby's Black Cockatoo is listed as Endangered under State and Federal legislation. The species has been identified on occasion at Rottnest Island; however, the Island does not provide primary foraging or feeding habitat. The species is usually found in southwest Australia along the Swan Coastal Plain some areas of the northern wheatbelt, generally in forest or woodlands (Cale 2003). In addition, Rottnest Island has not been identified as a primary habitat for the black cockatoo species and is located outside the species' habitat distribution area mapped by the Commonwealth (DAWE, 2016). The species may be a rare visitor however as the Clearing Area does not provide significant habitat trees or suitable foraging it is **unlikely** the species would occur.

4.1.3 Peregrine Falcon

The Peregrine Falcon is listed as 'Other Specially Protected Species' under State legislation. The species is an uncommon but wide-ranging bird across Australia (Barrett et al., 2003). It occurs mainly along rivers and ranges as well as wooded watercourses and lakes. It nests primarily on cliffs, granite outcrops and quarries, although is also known to occupy existing raptor and corvid stick nests (Menkhorst et al., 2017). The diet of the Peregrine Falcon has been well studied and primarily includes flocking species such as parrots and pigeons (Olsen and Fuentes, 2008). The Peregrine Falcon typically nests on cliff ledges or in refurbished nests built by other raptors or corvids (Pizzey and Knight, 2013). No appropriate nesting habitat is present within the site; however, the habitat **may** be used for hunting.

4.2 Invertebrates

4.2.1 Douglas' Broad-headed Bee

Douglas' Broad Headed Bee is listed as Critically Endangered under State and Federal legislation. The species was previously listed as 'presumed extinct' based on a specimen found in 1938 on Rottnest Island, the dramatic changes to the island vegetation since European settlement and despite extensive searched in the Perth Region (including Rottnest and Garden Islands) (DBCA 2018). In 2015, a single specimen was collected within the Banksia woodland in Muchea and on that basis has been reassessed and listed as Critically Endangered. Very little is known about the species including its floral preferences. However not all native flora has been eliminated on the island and it is **unlikely** that the bee is still extant on the island.

4.2.2 Swan Coastal Plain shield-backed trapdoor spider

The Swan Coastal Plain shield-backed trapdoor spider (*Idiosoma sigillatum*) is listed as Priority 3 under State legislation. *Idiosoma sigillatum* is the dominant idiopid trapdoor spider on the Swan Coastal Plan, where it occurs from Dalyellup north to at least Ledge Point (including Rottnest Island and Garden Island) with the eastern limit of its range along the sandy foothills of the Darling Escarpment, from Boyanup north to at least Gingin (WAM 2018b, Rix et al. 2018). Many of these records are historical in nature and occur within the Perth metropolitan area. It is highly likely that much of the habitat for this species within the Perth metropolitan area has been cleared for urban development and the species is unlikely to occur through much of its historical distribution in urban areas except in remnant habitats (e.g., Kings Park, Bold Park, and Shenton Park bushland) (Rix et al. 2018).

Burrows of this species usually occur in Banksia woodland and heathland on sandy soils and are adorned with a typical 'moustache-like' arrangement of twig-lines (Rix et al. 2018). Given that the Clearing Area contains heathland on sandy soils, the species **may** occur on the site.

4.3 Mammals

4.3.1 Quokka

The Quokka is listed as Vulnerable under both State and Federal legislation. Rottnest Island currently supports the largest population of the species. The species' population on Rottnest Island is noted as stable as they have been identified as resilient to current levels of disturbance (DEE 2022).

Rottnest Island Quokkas maintain group territories which fluctuate in area and location depending on time of year associated with changes in use related to shelter and availability of food. Diet primarily consists of succulents such a *Arthrocnemum halocnemoides*, *Carpobrotus aequilaterus* and *Rhagodia baccata* grasses and, to a much lesser extent, shrubs such as *Acacia rostellifera* and *Scaevola crassifolia*, and the sedge *Gahnia trifida* (DEE 2016). RIA staff have sighted Quokka scats at the site therefore Quokkas utilise the site.

4.4 Reptiles

4.4.1 Rottnest Island Dugite

The Rottnest Dugite is listed as Priority 4 under State legislation. The Rottnest Island Dugite is genetically different from the mainland population and is generally smaller than the mainland version. Dugites live in abandoned burrows or hollow logs and prefer coastal habitat, limestone heath, woodland, and the Settlement areas of the island (RIA undated). Dugites are **likely** to utilise the intact better-quality areas of native vegetation.

4.4.2 Perth Slider, lined skink

The Perth Slider is listed as Priority 3 under State legislation. The Perth Slider is a small burrowing skink, predominantly found on the Swan Coastal Plain. The species has rarely been observed on Rottnest Island and at one point was documented as 'possibly extinct' (Maryan et.al., 2015). However, in 2016 a targeted search was conducted and resulted in the species being recorded for the first time since 1986 (RIA 2022). The species was found in summer-scented wattle (*Acacia rostellifera*) scrub. The Perth Slider has a very fragmented distribution and has suffered significant habitat loss. *Acacia rostellifera* was not identified within the survey area during the 2022 Flora and Vegetation Survey and it is considered **may t**hat the species occurs within the clearing area.

4.4.3 Rottnest Island Bobtail

The Rottnest Island Bobtail is listed as Vulnerable under State legislation. Rottnest Island Bobtails, also known as Shinglebacks, are common around limestone rocks and prefer limestone heath, woodland, and coastal habitats, but also be found around the Settlement Area (RIA undated). Diet includes plant material (especially fruit), insects, slugs, snails, eggs, faeces, and dead animal carcasses including maggots. Bobtails are **likely** to use the vegetation within the clearing area as habitat.

5 Environmental Management Measures

5.1 General

Environmental management measures in place to minimise the risk of impact from the activities associated with the proposed clearing will include:

- Areas subject to erosion and sedimentation as a result of clearing shall be stabilised (i.e. combination of binding sprays, site mulch, bunding, scouring, catchment reduction as required).
- Adjacent areas of intact vegetation will be fenced to ensure no accidental impacts or clearing.
- Vegetation clearing will be scheduled to occur immediately before planned earthworks to minimise the potential for dust, where practicable.
- To ensure dieback is not introduced or spread on Rottnest Island, the movement of soils and plant material will follow RIA biosecurity policies and procedures.
- A pre-clearing fauna inspection will be performed immediately prior to clearing and identified fauna such as reptiles will be relocated to minimize impacts to fauna that may reside in the clearing area.
- The RIA will lodge an Activity Notice with South West Aboriginal Land and Sea Council (SWALSC). The Activity Notice determination will advise if a site survey with Traditional Owners is required.

5.2 Planned Woodland Management

Management of the *Callitris preissii* forests and woodlands threatened ecological community (TEC) is a key focus of the Rottnest Island Management Plan 2020-2024. The key strategy for this is the Woodland Experience Plan which is currently being drafted. Delivery of the plan will result in the enhancement and expansion of Woodland habitat on Rottnest Island and increasing opportunities for visitors and volunteers to engage and contribute to the conservation of the TEC. The key aims of the plan are to:

- Expand, enhance, and maintain the Woodland community on Rottnest Island to contribute to the conservation of the TEC, and the provision of fauna habitat
- Improve the natural recreation amenity of Rottnest Island, while providing unique woodland recreation opportunities for visitors.

The Woodland Experience will involve revegetation to expand Woodland on Rottnest Island. The RIA aims to revegetate 53 ha of altered heath by planting about 70,000 seedlings, installing 15,000 tree guards and building 14km of quokka-exclusion fencing. Existing and planned Woodland vegetation can be seen in Plate 5. Planting for conservation will be staged, with about 5,000 seedlings planted each year to ensure a variety of age groups are established. *C. preissii* and *M. lanceolata* will be planted together along with various other species depending on location across Rottnest Island with the aim to recreate and maintain connectivity of the woodland across the island.

Plate 5: Existing and planned Woodland vegetation on Rottnest Island (RIA 2022)

The Department of Biodiversity, Conservation and Attractions (DBCA) has prepared an interim recovery plan for the TEC. The aim of the recovery plan is to improve the overall condition of the community and to reduce the level of threat. The Woodland Experience will contribute to this recovery plan by maintaining and improving the extent and condition of the TEC on Rottnest Island.

6 Assessment Against the Ten Clearing Principles

The proposed clearing activities have been assessed against the ten clearing principles as defined in DER's Guide to Assessment: Clearing of Native Vegetation under the EP Act, considering the current extent and condition of the native vegetation on the site. This assessment is presented in Table 5.

Table 5: Assessment against the Ten Clearing Principles

Principle	Assessment
Principle (a) – Native vegetation should not be cleared if it comprises a high level of biological diversity	A desktop assessment of the PMST and NatureMap database identified one threatened flora taxon occurring within 10 km of the Clearing Area, *Diuris micrantha* (Vulnerable), however the clearing area does not have characteristics suitable for this species. 360 Environmental (2022) did not identify any Threatened flora species pursuant to the EPBC Act 1999 and/or gazetted as Threatened Flora pursuant to the BC Act 2016 within the Survey Area. Five introduced flora taxa were recorded during the survey. None of these are listed as Declared Pests under the BAM Act or WoNS Five vegetation types were mapped within the Survey Area. Two vegetation types were considered analogous to the State TEC SCP30a '*Callitris preissii* (or *Melaleuca lanceolata*) forests and woodlands, Swan Coastal Plain' ecological community. Vegetation condition ranged from good to completely degraded with disturbance comprising of weeds and historical clearing. Over half of the mapped area is considered to be in degraded or in completely degraded condition. **Assessed Outcome:** Based on this, the proposed clearing area does not comprise an area of vegetation with a high level of biological diversity and thus clearing is **not** at variance with this Principle.
Principle (b) – Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of a significant habitat for fauna indigenous to Western Australia	A desktop review of NatureMap and Protected Matters Search Tool (PMST) results were used to identify the significant fauna values that may occur within the study area. A total of 172 conservation significant fauna species were identified as potentially occurring within the study area in the desktop review (Table 3). A likelihood assessment identified that the Quokka (*Setonix brachyurus*) – Vulnerable, Rottnest Island dugite (*Pseudonaja affinis exilis*) – Priority 4 and Rottnest Island bobtail (*Tiliqua rugosa konowi*) – Vulnerable, were likely to occur and 167 species that may or are unlikely to occur. • Quokka: The species maintains group territories that fluctuate with changes in shelter and availability of food, data suggests quokka home ranges are <1ha. Sighted by Rottnest Island Authority staff, quokka are known to utilise the clearing. • Rottnest Island bobtail: The species are commonly found around limestone rocks and prefer limestone heath, woodland, and coastal habitats. Bobtails are likely to use the vegetation within the clearing area as habitat. • Rottnest Island dugite: The species prefer coastal habitat, limestone heath, woodland, and the Settlement areas of the island. Dugites are likely to utilise the clearing area as habitat.

Principle	Assessment
	The majority of species identified in the database searches are associated with the nearby coastline and inland lakes. Areas surrounding the site include intact vegetation and previously developed areas of the Settlement Zone which have been extensively cleared and urbanised, such as roads and dwellings for tourism, recreation, and accommodation. 360 Environmental (2022) rated vegetation within the Clearing Area as 'Good' or to 'Completely Degraded'. 'Good' vegetation is described by Keighery (1994) as 'vegetation structure significantly altered by very obvious signs of multiple disturbances. Retains basic vegetation structure or ability to regenerate it.' For the above mentioned fauna species, the disturbed nature of the vegetation, means that it is unlikely that the site would provide significant habitat for the above species. **Assessed Outcome**: Removal of up to 4 ha of vegetation is unlikely to have an impact on significant habitat for fauna, including conservation significant species. As such the proposed clearing is **unlikely** to be at variance with this Principle.
Principle (c) – Native vegetation should not be cleared if it includes or is necessary for the continued existence of rare flora.	360 Environmental conducted a reconnaissance flora and vegetation survey of the site in February 2022 (Appendix A). One Threatened flora taxon pursuant to the EPBC Act 1999 and/or gazetted as Threatened Flora pursuant to the BC Act 2016 was identified as occurring within 10 km of the Survey Area by database searches, *Diuris micrantha* (Vulnerable). *Diuris micrantha* grows on brown loamy clays, in swamps and shallow water (WA Herbarium 1998). The Clearing Area has a sandy soil type and does not occur within a swamp or shallow water therefore it is unlikely that the species occurs within the area. Furthermore, no Threatened flora taxa were recorded during the field survey. The database searches identified four Priority flora taxa as occurring within 10 km of the Survey Area. None were recorded within the Survey Area. **Assessed Outcome:** No Threatened flora species were found to occur or are considered likely to occur within the Clearing Area. Therefore, the proposed clearing is **not** at variance with.
Principle (d) – Native vegetation should not be cleared if it comprises the whole or a part of or is necessary for the maintenance of a Threatened Ecological Community (TEC).	A desktop assessment of the PMST and NatureMap database identified one TEC potentially occurring within 10km of the clearing area, Banksia Woodlands of the Swan Coastal Plain. *Banksia* spp. was not recorded during the survey, and it is understood that *Banksia* spp. does not occur anywhere on the island. Three vegetation types were identified by Focused Vision (2022) within the clearing area, two vegetation types CpMl and MlAp were represented by *C. preissii* (CpMl only) and *M. lanceolata*, which are the key taxa describing the SCP30a TEC, as well as the common community species *Acanthocarpus preissii*. For this reason, these vegetation types were considered analogous to the SCP30a TEC. A percentage of the clearing area contains both *C. preissii* and *M. lanceolata,* most of the clearing area contained only *M. lanceolata* as the key taxa for the TEC (Figure 5). The remaining vegetation within the clearing area was not analogous with the TEC. MlAp vegetation types continues outside of the clearing area.

Principle	Assessment
	The TEC will be directly impacted by the proposed clearing however management measures will include final development design that maximises tree and vegetation retention and manage the TEC outside the boundary of the clearing area. **Assessed Outcome**: The proposal will require up to 4 ha of TEC to be cleared therefore the proposed clearing **is** at variance with this Principle.
Principle (e) – Native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been extensively cleared	The National Objectives and Targets for Biodiversity Conservation 2001 – 2005 include a target to have clearing controls in place that prevent the clearance of ecological communities with a pre-European extent below 30% (Commonwealth of Australia 2001). Further the EPA recommends that on the Swan Coastal Plain (SCP) vegetation complexes are maintained above the threshold level of 30% of the original pre-clearing extent of each community and 10% of the original pre-clearing extent of each community representation within the Perth Metropolitan Region. The site contains one mapped vegetation complexes, Rockingham_15. Rockingham_15 is above both thresholds (Table 1) (Government of Western Australia 2018). Review of historical photographs has identified a large portion of the site and Rottnest Island has been extensively cleared and non-endemic vegetation planted by 1955. The site is within the Settlement zone which is the only area that has had extensive urbanisation. Revegetation has been occurring at Rottnest Island since 1963 however due to changes in fire regimes and intense grazing from Quokkas, natural regeneration of vegetation is low resulting in 4% of Rottnest being covered by naturally regenerated SCP30a TEC. Locally, the clearing of up to 4 ha of previously impacted vegetation within the Settlement zone may be significant as, despite it being a small amount of important native vegetation (4 ha out of approximately 76 ha of SCP30a TEC), on the island it exists within a highly fragmented, isolated landscape. **Assessed Outcome**: The vegetation is likely to be significant to Rottnest Island, however the remaining vegetation is above the threshold level of 30% of the original pre-clearing extent therefore the proposed clearing **may** to be at variance with this Principle.
Principle (f) – Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland.	The vegetation on the site is not growing in or in association with an environment associated with a watercourse or wetland. No surface water features are identified at the site. The site is located approximately 100 m north-east of Government Lake, which is part of the Rottnest Island Lakes listed under the Directory of Nationally Important Wetlands (DoE 2008). The site and Government Lake are separated by a road, an old railway, and some vegetation. The clearing at the site is not expected to impact this lake as there are no associated surface water features within the site. **Assessed Outcome:** The proposed clearing is **not** to be at variance with this Principle.

Principle	Assessment
Principle (g) – Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation	The DER (2014) defined land degradation as including the following: • The clearing of vegetation • Decline in vegetation condition (including spread of weeds) • Soil erosion and soil acidity (caused by wind and water erosion due to vegetation clearing) • Salinity • Waterlogging/flooding. The proposal includes the clearing of up to 4 ha. The vegetation condition within the Survey Area ranged from Good to Completely Degraded. A large portion of the Survey Area was assessed as being in Good (49.75%) condition with the remaining vegetation assessed as being in Degraded (41.18%) and Completely Degraded (9.06%) condition. The vegetation is near the urbanised Settlement zone. To reduce the risk of spread or introduction of Dieback (*Phytophthora cinnamomi*) at the site and Rottnest Island, procedures will be implemented to ensure that vehicles, equipment, and machinery will be clean and free of soil prior to being mobilised at the site. According to mapping of acid sulfate soils (DER 2014), the site is not within an area of recorded risk of ASS. Sandy soils are prone to wind erosion. The application area is characterised as having sandy soils, however, due to proposed urbanisation of the site, it is not likely that the removal of vegetation would cause significant soil erosion as the Project will involve increased sealed surface areas or landscaping that will minimise erosion risk. Groundwater salinity at the site is unknown, however, groundwater bores located approximately 3.5 km west of the site have salinity levels ranging between fresh and brackish. A typically thin freshwater aquifer exists over the saline aquifer. The topography of the site is relatively flat and slopes gently to the south. It is not expected that clearing would have cause significant water erosion. **Assessed Outcome**: The Proposal is **not** at variance with this Principle.

Principle	Assessment
Principle (h) – Native vegetation should not be cleared if the clearing of the vegetation is likely to have an impact on the environmental values of any adjacent or nearby conservation area	The entire site is mapped within an Environmentally Sensitive Area ESA (DWER 2018b). The ESA is associated with a Threatened Ecological Community (TEC) – *Callitris preissii* forests and woodlands, Swan Coastal Plain (SCP30a) and Government House Lake located southwest of the site. State TEC SCP30a has been identified with the clearing area and extending outside the clearing area to the south and east. The patch of TEC is part of a fragmented mosaic of TEC. Management measures will include final development design that maximises tree and vegetation retention and manage the TEC outside the boundary of the clearing area. The ESA associated with the Conservation Category Wetland (CCW), Government House Lake, incorporates the wetland itself, the littoral vegetation and a 50m buffer. The site is separated by approximately 90m of mostly vegetated land and the road to the airport, at its closest point. This land acts as a buffer between the clearing footprint and the ESA; therefore, it is unlikely there will be impacts to the values of the CCW or the 50m buffer No other known conservation areas have been found within proximity of the site. The activities associated with the proposal is likely to only impact the vegetation within the clearing footprint. It is not likely that the clearing would have an impact on the conservation value of nearby conservation areas through the spread of weeds or dieback. However, Best Practice Management will be implemented to ensure the risk of spread of weeds or dieback is reduced during clearing works and operations. **Assessed Outcome**: The Proposal is **unlikely** to be at variance with this Principle.
Principle (i) – Native vegetation should not be cleared if the clearing of the vegetation is likely to cause deterioration in the quality of surface or underground water	The site is not mapped within a PDWSA. The nearest drinking water supply borefields are located at Wadjemup and Longreach Bay approximately 3.5 km west and 1.5 km northwest of the site. The nearest PDWSA is located approximately 1 km northwest of the Site and refers to the Priority 3 Rottnest Island Water Reserve (DoW 2016). No surface water features are present within the site, with the nearest water feature, Government House Lake, located approximately 100m south of the site. Government House Lake is part of the Rottnest Island Lakes listed under the Directory of Important Wetlands (DoE 2008). Although no groundwater investigations have been conducted it is assumed that a shallow unconfined aquifer lies beneath the site and that groundwater will flow in part toward Thomson's Bay and in part toward Government House Lake, to the southwest.

Principle	Assessment
	The site's groundwater quality is unknown; however, nearby groundwater bores located approximately 3.5 km west of the site have reported salinity levels ranging between 434 mg/L and 917 mg/L (RIA 2018c). The site is expected to have some groundwater salinity, however, the clearing of up to 4 ha of previously cleared vegetation is not considered to have a high risk of groundwater quality deterioration. It is not expected that the clearing up to 4 ha of vegetation would have a significant impact on groundwater or surface water quality. The site is within the urbanised 'Settlement Zone' of Rottnest Island that has been historically cleared as early as the 1930s and most of the clearing within the site was undertaken prior to 1995. **Assessed Outcome**: The Proposal is **unlikely** at variance with this Principle.
Principle (j) – Native vegetation should not be cleared if clearing the vegetation is likely to cause, or exacerbate, the incidence of flooding	The local climate consists of wet winters and dry summers (BoM 2018) with a mean maximum rainfall of 113.1 mm in June. Given the small application area, the removal of up to 4 ha of vegetation is not likely to cause or exacerbate the incidence or intensity of flooding. Removal of this vegetation is not likely to significantly change the characteristics of existing water flow. **Assessed Outcome:** The Proposal is **not** at variance with this Principle.

7 Summary of Assessment

The NVCP application is to clear up to 4 hectares (ha) with a 5.74 ha area of native vegetation. Vegetation clearing will be carefully considered during detailed design, individual trees will be kept where possible.

After desktop and field assessment of the environmental values of the clearing area it is concluded that the proposal to clear up to 4 ha of native vegetation is not significant. Conclusions were that the proposal is **not** at variance with Principles a, c, f, g and j, is **unlikely** to be at variance with Principles b, h, and I, **may** be at variance with Principle e, and **is** at variance with Principle d. Key conclusions are summarised below.

Principle (a) states that native vegetation should not be cleared if it compromises a high level of biological diversity. No threatened flora was identified as likely to occur within the clearing area nor did vegetation surveys identify any threatened flora species. Five vegetation types were mapped within the survey area, two were considered analogous to the State TEC SCP30a '*Callitris preissii* (or Melaleuca lanceolata) forests and woodlands, Swan Coastal Plain' ecological community. Much of the proposed clearing area is highly disturbed. It contains vegetation that ranges from Good (49.75%) to degraded/ completely degraded (50.25%). Consequently, the removal of up to 4 ha of native vegetation is not considered to represent a significant loss of biodiversity.

Principle (d) states that native vegetation should not be cleared if it comprises the whole, a part of, or is necessary for the maintenance of a TEC. The proposal will include the clearing of 4 ha of vegetation analogous with the TEC that varies in condition from good to completely degraded. Although the proposal may be at variance with this principle, it is not considered that the clearing of up to 4 ha of TEC would have a significant impact on the maintenance of a TEC in a regional context. It is concluded that the Proposal is at variance with Principle (d).

Principle (e) describes that native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been extensively cleared. It is considered that the vegetation is likely to be significant to Rottnest Island, however the remaining vegetation is above the threshold level of 30% of the original pre-clearing extent for the community. We conclude that the proposed clearing may be at variance with this Principle.

8 Limitations

This report is produced strictly in accordance with the scope of services set out in the contract or otherwise agreed in accordance with the contract. 360 Environmental makes no representations or warranties in relation to the nature and quality of soil and water other than the visual observation and analytical data in this report.

In the preparation of this report, 360 Environmental has relied upon documents, information, data, and analyses ('client's information') provided by the client and other individuals and entities. In most cases where client's information has been relied upon, such reliance has been indicated in this report. Unless expressly set out in this report, 360 Environmental has not verified that the client's information is accurate, exhaustive, or current and the validity and accuracy of any aspect of the report including, or based upon, any part of the client's information is contingent upon the accuracy, exhaustiveness, and currency of the client's information. 360 Environmental shall not be liable to the client or any other person in connection with any invalid or inaccurate aspect of this report where that invalidity or inaccuracy arose because the client's information was not accurate, exhaustive, and current or arose because of any information or condition that was concealed, withheld, misrepresented, or otherwise not fully disclosed or available to 360 Environmental.

Aspects of this report, including the opinions, conclusions, and recommendations it contains, are based on the results of the investigation, sampling and testing set out in the contract and otherwise in accordance with normal practices and standards. The investigation, sampling and testing are designed to produce results that represent a reasonable interpretation of the general conditions of the site that is the subject of this report. However, due to the characteristics of the site, including natural variations in site conditions, the results of the investigation, sampling and testing may not accurately represent the actual state of the whole site at all points.

It is important to recognise that site conditions, including the extent and concentration of contaminants, can change with time. This is particularly relevant if this report, including the data, opinions, conclusions, and recommendations it contains, are to be used a considerable time after it was prepared. In these circumstances, further investigation of the site may be necessary.

9 References

360 Environmental. 2022. Windy Hill TEC Assessment. Unpublished report prepared for Rottnest Island Authority

360 Environmental. 2021. Windy Hill Staff Accommodation Project – Assessment Report. Unpublished report prepared for Rottnest Island Authority

Beard, J. S. (1976). Vegetation survey of Western Australia. Western Australia 1: 1 000 000 vegetation series. Design and cartography by Dept. of Geography, University of W.A.

Bureau of Meteorology.). Monthly Climate Data Statistics. Retrieved from www.bom.gov.au/climate/data

Cale, B. 2003. Carnaby's Black-Cockatoo (Calyptorhynchus latirostis) Recover Plan. Department of Conservation and Land Management, WA

Department of Agriculture, Water, and the Environment (DAWE). 2016. Species Profile and Threats Database – Calyptorhynchus latirostris – Carnaby's Cockatoo. Accessed 24 March 2022 from http://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=59523. Commonwealth of Australia.

Department of Biodiversity, Conservation and Attractions (DBCA). 2018. Threatened species nomination: Hesperocolletes douglasi (Douglas's broad-headed bee). Accessed 24 March 2022 from https://www.awe.gov.au/sites/default/files/env/consultations/883cbcf2-d52a-4df9-9b58-9d9a8f0d0031/files/nomination-form-hesperocolletes-douglasi.pdf

Department of Biodiversity, Conservation and Attractions. (2017). Fauna Profile - Quokka Setonix brachyurus. Retrieved from http://www.dbca.wa.gov.au/

Department of the Environment (DoE), 2008. Directory of Nationally Important Wetlands. GIS Dataset. Commonwealth of Australia.

Department of the Environment and Energy (DEE), 2022. Species Profile and Threats Database – Setonix brachyurus – Quokka. Accessed 24/03/2022 from http://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=229. Commonwealth of Australia.

Department of Environment Regulation. (2014). A guide to the assessment of applications to clear native vegetation. Retrieved from https://www.der.wa.gov.au/images/documents/your-environment/native-vegetation/Guidelines/Guide2_assessment_native_veg.pdf

Department of Primary Industries and Regional Development. (2018). Pre-European Vegetation (DPIRD-006) GIS Dataset.

Department of Planning, Lands and Heritage (DPLH), 2018. Aboriginal Heritage Inquiry System. Available from https://maps.daa.wa.gov.au/AHIS/ accessed March 2022. Government of Western Australia.

Department of Primary Industries and Regional Development. (2022). Declared plants. https://www.agric.wa.gov.au/organisms

Department of Water and Environmental Regulation. (2018). Clearing Regulations - Environmentally Sensitive Areas GIS Dataset.

Focused Vision Consulting. 2022. Vegetation and Floristic Mapping. Unpublished report prepared for Rottnest Island Authority

Government of Western Australia. (2019). 2018 Statewide Vegetation Statistics - Full Report.

Gibson, N., Keighery, N., Keighery, B. J., Burbidge, B., Lyons, M. N., Keighery, G. J., Burbidge, A. H., & Lyons, M. N. (1994). A floristic survey of the southern Swan Coastal Plain. Department of Conservation and Land Management and the Conservation Council of Western Australia, Perth.

Maryan, Brad & Gaikhorst, Glen & O'Connell, Morgan & Callan, Shae. (2015). Notes on the distribution and conservation status of the Perth Lined Skink, Lerista lineata: A small lizard in a big City. The Western Australian Naturalist. 30. 12-29.

Poole, H., Mukaromah, L., Kobryn, H., & Fleming, P. 2015. Spatial analysis of limiting resources on an island: Diet and shelter use reveal sites of conservation importance for the Rottnest Island quokka. CSIRO Wildlife Research. 41. 510-521. 10.1071/WR14083.

Rottnest Island Authority (RIA). 2022. Rottnest Island: The Woodland Experience. Unpublished Report.

Rottnest Island Authority (RIA). 2014. Rottnest Island Water Reserve – Drinking water source protection plan. Rottnest Island Water Supply. Government of Western Australia.

Rottnest Island Authority (RIA). n.d. Rottnest Island Wildlife. Government of Western Australia

Rix MG, Huey JA, Cooper SJB, Austin AD, Harvey MS (2018) Conservation systematics of the shield-backed trapdoor spiders of the nigrum-group (Mygalomorphae, Idiopidae, Idiosoma): integrative taxonomy reveals a diverse and threatened fauna from south-western Australia.

Shepherd, D. P., Beeston, G. R., and Hopkins, A. J. M. 2001. Native Vegetation in Western Australia (Technical Report 249). Perth: Department of Agriculture

State Heritage Office (SHO), 2022. InHerit Database Search. Available from http://inherit.stateheritage.wa.gov.au/Public/?advanced=True accessed March 2022 Government of Western Australia.

Figures

Legend

Clearing area

- NOTE THAT POSITION ERRORS CAN BE >5M IN SOME AREAS
- LOCALITY MAP SOURCED LANDGATE 2020
- OTHER DATA SOURCED LANDGATE 2020
- AERIAL PHOTOGRAPHY SOURCED LANDGATE 2020
(© Western Australian Land Information Authority 2020)

Powered by SLIP ENABLER

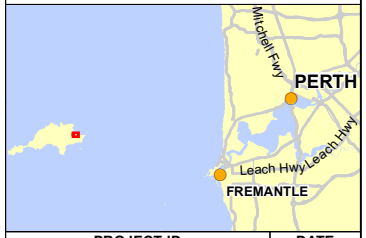
360 environmental
a 10 Bermondsey St, West Leederville, 6007 WA
t (08) 9388 8360
f (08) 9381 2360
w www.360environmental.com.au

0 25 50 75 Metres

1:3,000 @ A4

N

LOCALITY MAP



PROJECT ID	DATE
4012	26-Jul-2022

HORIZONTAL DATUM AND PROJECTION
GDA 1994 MGA Zone 50

CREATED	CHECKED	APPROVED	REVISION
AN	AN	JM	0

Rottnest Island Authority
Windy Hill, Rottnest Island

Windy Hill NVCP Stage 2

Figure 1
Clearing Footprint

K:\Projects\9.0 APP\5149 Windy Hill Rottnest Island NVCP\5149 F01 Clearing Footprint.mxd

Legend

- Clearing area
- Lake
- Swamp
- Coastal Waterline

- NOTE THAT POSITION ERRORS CAN BE >5M IN SOME AREAS
- LOCALITY MAP SOURCED LANDGATE 2020
- OTHER DATA SOURCED LANDGATE 2020
- AERIAL PHOTOGRAPHY SOURCED LANDGATE 2020
(© Western Australian Land Information Authority 2020)

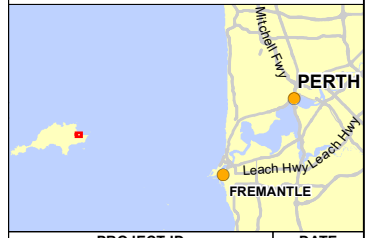
Powered by SLIP ENABLER

360 environmental
a 10 Bermondsey St, West Leederville, 6007 WA
t (08) 9388 8360
f (08) 9381 2360
w www.360environmental.com.au

0 25 50 75
Metres
1:3,000 @ A4

N

LOCALITY MAP



PROJECT ID	DATE
4012	26-Jul-2022

HORIZONTAL DATUM AND PROJECTION
GDA 1994 MGA Zone 50

CREATED	CHECKED	APPROVED	REVISION
AN	AN	JM	0

Rottnest Island Authority
Windy Hill, Rottnest Island

Windy Hill NVCP Stage 2

Figure 2
Surface Water Features

K:\Projects\9.0 APP\5149 Windy Hill Rottnest Island NVCP\5149 F02 Surface Water Features.mxd

115°32'20" 115°32'25" 115°32'30" 115°32'35" 115°32'40" 115°32'45" 115°32'50" 115°32'55" 115°33'

361900 362000 362100 362200 362300 362400 362500 362600 362700 362800 362900 363000

-32° -32°0'5" -32°0'10"

6458700 6458600 6458500 6458400 6458300 6458200

Grid shown at 100 metre intervals Graticule shown at 5 seconds intervals Aerial Photo: September 2021 (Landgate)

Document Path: M:\GIS\Projects\Heritage\Activity Notice\Map Documents\Parker Point Staff Housing\Parker Point Road (Windy Hill South) Staff Housing - TEC.aprx

Figure 3: Environmentally Sensitive Areas and Threatened Ecological Communities

- Clearing Area
- Threatened Ecological Communities (Gazetted Vulnerable Category Only) - Unbuffered
- Clearing Regulations - Environmentally Sensitive Areas (DWER-046)

N

1:3,000 (A3)

0 100 200 300

Metres

Projection: Universal Transverse Mercator.
MGA Zone 50. Datum: GDA94

Produced by: david.robertson, Rottnest Island Authority

Date Saved: 9/1/2022 11:17 AM

ROTTNEST IS

Legend

- Clearing area

Vegetation Condition

- Very Good
- Good-Very Good
- Good
- Degraded-Good
- Degraded
- Degraded-Completely
- Degraded-Completly Degraded
- Cleared

- NOTE THAT POSITION ERRORS CAN BE >5M IN SOME AREAS
- LOCALITY MAP SOURCED LANDGATE 2020
- OTHER DATA SOURCED LANDGATE 2020
- AERIAL PHOTOGRAPHY SOURCED LANDGATE 2020 (© Western Australian Land Information Authority 2020)

Powered by SLIP ENABLER

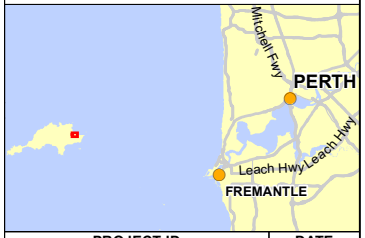
360 environmental
a 10 Bermondsey St, West Leederville, 6007 WA
t (08) 9388 8360
f (08) 9381 2360
w www.360environmental.com.au

0 25 50 75 Metres

1:3,000 @ A4

N

LOCALITY MAP



PROJECT ID	DATE
4012	26-Jul-2022

HORIZONTAL DATUM AND PROJECTION
GDA 1994 MGA Zone 50

CREATED	CHECKED	APPROVED	REVISION
AN	AN	JM	0

Rottnest Island Authority
Windy Hill, Rottnest Island

Windy Hill NVCP Stage 2

Figure 4
Vegetation Condition

K:\Projects\9.0 APP\5149 Windy Hill Rottnest Island NVCP\5149 F04 Vegetation Condition.mxd

Legend

- Clearing area
- Vegetation Analogous to TEC

Vegetation Types

- Beach
- Cleared
- CpMl
- MlAp
- MlGl
- OaAp
- Planted
- SIG
- TiSS

- NOTE THAT POSITION ERRORS CAN BE >5M IN SOME AREAS
- LOCALITY MAP SOURCED LANDGATE 2020
- OTHER DATA SOURCED LANDGATE 2020
- AERIAL PHOTOGRAPHY SOURCED LANDGATE 2020
(© Western Australian Land Information Authority 2020)

Powered by SLIP ENABLER

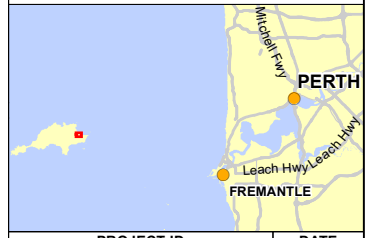
360 environmental
a 10 Bermondsey St, West Leederville, 6007 WA
t (08) 9388 8360
f (08) 9381 2360
w www.360environmental.com.au

0 25 50 75 Metres

1:3,000 @ A4

N

LOCALITY MAP



PROJECT ID	DATE
4012	26-Jul-2022

HORIZONTAL DATUM AND PROJECTION
GDA 1994 MGA Zone 50

CREATED	CHECKED	APPROVED	REVISION
AN	AN	JM	0

Rottnest Island Authority
Windy Hill, Rottnest Island

Windy Hill NVCP Stage 2

Figure 5
Vegetation Types and TEC

K:\Projects\9.0 APP\5149 Windy Hill Rottnest Island NVCP\5149 F05 Vegetation Types and TEC.mxd

Appendices

Appendix A
360 Environmental – Reconnaissance Flora and Vegetation Survey (April 2022)

Our Ref: 5185AA_Rev1

05 April 2022

Mark Jones
Development Planning Coordinator
Rottnest Island Authority
ROTTNEST ISLAND WA 6161
Via Email: mark.jones@dbca.wa.gov.au

Dear Mark

Windy Hill TEC Assessment

1 Introduction

Rottnest Island Authority (RIA) commissioned 360 Environmental Pty Ltd part of SLR Consulting (360 Environmental) to undertake a flora and vegetation assessment with a focus on conservation significant communities in Windy Hill within the main Rottnest Island settlement (the Survey Area) on 17 February 2022 (Figure 1). In June 2021, 360 Environmental surveyed an area overlapping the Survey Area (the June 2021 Survey Area), and the results from the survey have helped to inform the current survey.

The reconnaissance survey was undertaken in accordance with EPA technical guidelines (Environmental Protection Authority, 2016), to understand key flora and vegetation values within the Survey Area. The focus of the survey was to delineate any identified instances of the State Threatened Ecological Community (TEC) SCP30a '*Callitris preissii* (or *Melaleuca lanceolata*) forests and woodlands, Swan Coastal Plain', which is listed as Vulnerable.

This brief letter report outlines the key findings from the survey with management mitigation measures, if required.

2 Scope of Works

The scope of works included provision of:

- A desktop assessment using relevant database searches and a literature review of the previous survey results to compile and summarise existing records of flora, vegetation, and fauna (including conservation significant species and communities) in the vicinity of the Survey Area
- A reconnaissance flora and vegetation survey using detailed mapping notes to identify and describe the vegetation and flora occurring within the Survey Area
- A brief letter report outlining key findings and proposed management actions
- A geospatial data package prepared in accordance with IBSA requirements.

3 Methodology

3.1 Desktop Assessment

3.1.1 Literature Review

Background information on the Survey Area and surrounds was compiled prior to the field survey referencing previous surveys completed in the vicinity of the Survey Area (see Section 4.2.2):

- Rottnest Island Survey (360 Environmental Pty Ltd, 2020), located less than 1.0 km northwest of the Survey Area
- Windy Hill Staff Accommodation Project - Assessment Report (360 Environmental Pty Ltd, 2021), which overlaps the current Survey Area.

3.1.2 Database Searches

Database searches were conducted in the vicinity of the Survey Area:

- A NatureMap (Department of Biodiversity Conservation and Attractions, 2020a) database search (10 km buffer) was undertaken in November 2020 to obtain a list of potential flora species occurring within the Survey Area, including conservation significant flora taxa (Appendix A)
- An EPBC Protected Matters Search (PMST) was undertaken in March 2022 to identify the potential for Matters of National Environmental Significance (MNES) to occur within or surrounding the Survey Area (Department of Agriculture Water and the Environment,2022a) (Appendix B).

3.2 Flora and Vegetation

3.2.1 Field Survey

The reconnaissance flora and vegetation survey was undertaken on 17th February 2022 by Senior Botanist Simon Colwill who has over 10 years of experience conducting surveys of similar scope throughout Western Australia. The Survey Area was predominantly restricted to existing cleared and heavily impacted areas, or highly restricted sections of native vegetation. Any vegetation outside the Survey Area was only assessed in reference to targeting undescribed or conservation significant flora. All data was collected using a Fulcrum mobile data collection device.

3.2.2 Establishment of Flora Sites

The Survey Area was assessed via detailed mapping notes and meandering traverses to gather information to characterise and delineate vegetation and compile an inventory of vascular flora. At each site, detailed mapping notes were undertaken with the following information collected:

- Site photograph
- Location – GPS Coordinates
- Landform and soil description
- Species list – including heights and foliar cover
- Vegetation Description – in accordance with the National Vegetation Information System (NVIS) Level 5
- Vegetation Condition.

A total of eight detailed mapping notes were completed during the survey. Where an instance of the conservation significant community was encountered, a mapping note was taken and a small search to delineate community boundaries was undertaken.

3.2.3 Taxonomy and Nomenclature

Where field identification of plant taxa was not possible, specimens were collected for identification using resources of the WAH. Identification of flora collections was completed by Principal Botanist Narelle Whittington.

The finalised species list was checked against FloraBase (Western Australian Herbarium, 2022) to determine the conservation status and known distribution of each taxon. Introduced species were compared against the current Biosecurity and Agriculture Management (BAM) Act Declared Plants list and the Weeds of National Significance (WoNS) list to determine their control status (Department of Agriculture Water and the Environment, 2022b; Department of Primary Industries and Regional Development, 2022).

4 Results

4.1 Limitations

Limitations and constraints of the flora, vegetation and fauna survey are detailed below in Table 1.

Table 1: Limitations and Constraints Associated with the Survey Area

Variable	Degree of Limitation (Yes/Partial/No)	Potential Constraints on Survey Outcomes
Survey Scope	No	The reconnaissance flora and vegetation survey was undertaken in accordance with EPA guidelines (Environmental Protection Authority, 2016) and was considered appropriate to support approvals applications. The Survey Area was assessed via detailed mapping notes and meandering traverses to gather information to characterise and delineate vegetation and compile an inventory of vascular flora The entire Survey Area was not systematically searched, and therefore additional flora taxa, and records of significant flora and weed species may be recorded with additional survey effort. However, this was not considered a limitation due to the dry condition of the Survey Area and the below-average rainfall recorded for the three months prior to commencing the survey.
Availability of Data	No	All data required to complete the scope of works including regional and local contextual information was available.
Site Access	No	The Survey Area was able to be accessed on foot.
Survey Intensity and Resources	No	Eight mapping notes were undertaken to aid vegetation mapping and delineation, as well as preparing an inventory of vascular flora for the Survey Area. The entire Survey Area was not systematically searched, and therefore additional flora taxa, and records of significant flora and weed species may be recorded with additional survey effort. The survey effort was considered adequate to assess the flora and vegetation values of the Survey Area and provide information required to support approvals applications.
Experience	No	Senior Botanist Simon Colwill undertook the detailed flora and vegetation survey. Simon has over 10 years' experience conducting surveys of similar scope throughout Western Australia. Principal Botanist Narelle Whittington identified collected flora specimens.

Variable	Degree of Limitation (Yes/Partial/No)	Potential Constraints on Survey Outcomes
Timing, weather, season	Partial	The recommended primary flora survey period for the region as per the EPA Technical Guidance, is Spring (September – November). The survey was not undertaken during the recommended primary survey period. Additionally, the rainfall recorded for the three months prior to commencing the survey was below average, and this resulted in dry conditions and sterile flora. It is expected that additional flora taxa would be recorded during the primary survey period or following a significant rain event. This was considered a partial limitation as, although additional flora taxa would have been recorded, it did not represent a constraint to assess the presence of the TEC.
Life Forms Sampled	No	The Survey Area was traversed on foot and detailed mapping notes of all remnant vegetation were undertaken. All flora species encountered within the Survey Area were recorded. A total of 24 vascular flora taxa were recorded from the Survey Area, of which five were introduced flora taxa. Of the 24 flora taxa recorded, three taxa (12.5%), could not be identified to species level because they were sterile at the time of the survey. None of the unknown flora taxa collected were analogous to Threatened or Priority flora taxa identified by the database searches as possible to occur within the Survey Area.
Mapping Reliability	No	Vegetation types were described and mapped based on mapping notes taken during the field survey.
Disturbances (fire, flood etc.)	No	Areas of disturbance associated with weeds, historical clearing, and rehabilitation areas were recorded but were not a constraint on the results of the survey.
Completeness	No	The survey was considered complete for a reconnaissance flora and vegetation survey, and all vegetation types were surveyed and delineated within the Survey Area.

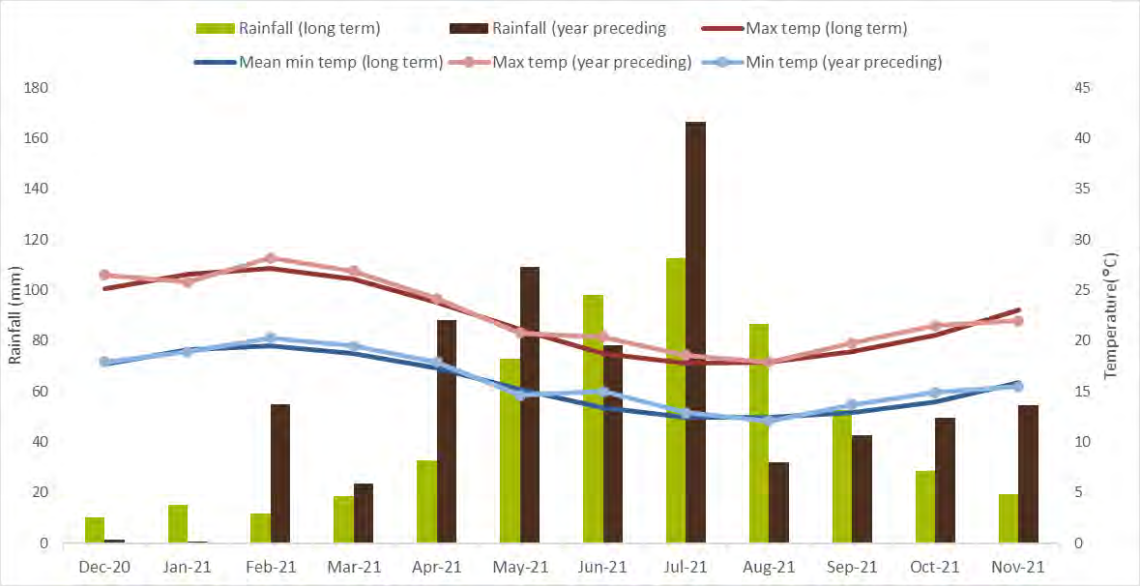
4.2 Desktop Assessment

4.2.1 Climate

The closest long-term Bureau of Meteorology weather station with a complete dataset is Rottnest Island (Station 009193), located approximately 3.6 km east of the Survey Area. Climate statistics were calculated utilising data from the most current climate normal, which is defined as a 30 year interval (Bureau of Meteorology, 2007), where possible. A climate normal is a period long enough to include year-to-year variations while avoiding the influence of longer-term changes in climate (Bureau of Meteorology, 2007).

The long-term mean minimum temperature for Rottnest Island from 12.4˚C (July and August) to 17.8˚C (July) (1983 to 2022) and the long-term mean maximum temperature ranges from 19.5˚C (February) to 27.2˚C (February) (Graph 1) (Bureau of Meteorology, 2022).

The Rottnest Island weather station recorded 232.2 mm of rainfall in the 12 months prior to the survey (November 2020 to October 2021), which is 213.7 mm above the long-term average of 567.7 mm (Bureau of Meteorology, 2021). In the three months prior to the survey (August 2021 to October 2021), 167.5 mm of rainfall was recorded, which is 79.9 mm below the long-term average of 247.4 mm for the same time period (Bureau of Meteorology, 2022).



Graph 1: Long term and Monthly Total Rainfall, Maximum and Minimum temperatures for Rottnest Island (009193) (Bureau of Meteorology, 2022)

4.2.2 Literature Review

4.2.2.1 Rottnest Island Survey

RIA engaged 360 Environmental to conduct a survey to determine the local significance of vegetation, flora and fauna habitat on a portion of land in the north-east of Rottnest Island, between the golf course and 'The Basin', which is located less than 1.0 km northwest of the current Survey Area (360 Environmental Pty Ltd, 2020). The survey was completed on the 24 of November 2020 by Senior Botanist Simon Colwill.

Three vegetation types were identified:

- *Melaleuca lanceolata* tall sparse shrubland over *Acanthocarpus preissii* low heathland over **Trachyandra divaricata* open herbland, which was the dominant vegetation covering 90.1% of the site. This vegetation type had the potential to be considered analogous to the *Callitris preissii* (or *Melaleuca lanceolata*) forests and woodlands, Swan Coastal Plain TEC.

- *Acacia rostellifera* mid closed shrubland over *Acanthocarpus preissii* low sparse heathland over **Trachyandra divaricata* sparse herbland covering 4.2% of the site.
- *Eucalyptus gomphocephala* mid open forest over **Trachyandra divaricata* (mixed weed spp.) sparse herbland, which covered 5.7% of the site. Two patches of this vegetation type were identified, and only one was considered analogous to the Tuart (*Eucalyptus gomphocephala*) woodlands and forests of the Swan Coastal Plain TEC, which is listed as Critically Endangered.

A total of 30 vascular flora species were recorded, comprising 20 native flora species and 10 weed species. No Threatened or Priority flora were recorded within the site. Weeds were present across the site, with **Trachyandra divaricata* being the most dominant and aggressive weed recorded.

4.2.2.2 Windy Hill Staff Accommodation Project - Assessment Report

360 Environmental was commissioned by the RIA to perform an initial botanical assessment of the site of the proposed Staff Accommodation Project at Windy Hill, which was completed in June 2021 (360 Environmental Pty Ltd, 2021). The focus of the work was to examine vegetation on the site and its surrounds that may have the potential to be part of the '*Callitris preissii* (or *Melaleuca lanceolata*) forests and woodlands, Swan Coastal Plain' Threatened Ecological Community.

Three vegetation types were identified and mapped during the survey, of which one was identified as having a high chance of being analogous to the TEC.

The February 2022 Survey Area represents an extension of the area previously surveyed by 360 Environmental (2021).

4.2.3 Soil Systems

Soil system mapping of Western Australia describes broad soil and landscape characteristics from regional to local scales, ranging from 1:20,000 to 1:250,000 (Department of Primary Industries and Regional Development, 2018). The Survey Area occurs within the Quindalup South System (211Qu), which is characterised by coastal dunes of the Swan Coastal Plain, with calcareous deep sands and yellow sands, and is represented by coastal scrub (Department of Primary Industries and Regional Development, 2018).

4.2.4 Conservation and Environmentally Sensitive Areas

The Survey Area is identified within a Conservation Area (Department of Biodiversity Conservation and Attractions, 2021), which is vested under the RIA (R 16713).

Environmentally Sensitive Areas (ESAs) are declared by the Department of Water and Environmental Regulation (DWER) to prevent the degradation of important environmental values such as Threatened flora, TECs or significant wetlands.

The entire Survey Area is mapped over an ESA, which is associated with the SCP30a TEC (Department of Water and Environmental Regulation, 2021). Another ESA is identified within 5 km of the Survey Area, which is linked to Government House Lake located west of the Survey Area.

4.2.5 Database Searches

Database searches identified five conservation significant flora taxa occurring within 10 km of the Survey Area, comprising:

- One Threatened taxon, *Diuris micrantha* (Vulnerable)
- Two Priority 1 taxa, *Lachnagrostis nesomytica* subsp. *nesomytica* and *Lachnagrostis nesomytica* subsp. *pseudofiliformis*
- Two Priority 4 taxa, *Myosotis australis* and *Lepidium puberulum*.

A PMST search also identified the TEC Banksia Woodlands of the Swan Coastal Plain ecological community, which is listed as Endangered, within a 5 km buffer of the Survey Area.

4.3 Flora and Vegetation Survey

4.3.1 Flora Composition

The survey recorded a total of 24 taxa from 18 genera across 12 families (Table 2). The dominant families were Poaceae and Myrtaceae (seven taxa each).

No Threatened flora taxa pursuant to the EPBC Act 1999 and/or gazetted as Threatened pursuant to the BC Act 2016 were recorded during the survey. No Priority flora taxa as listed by DBCA were recorded within the Survey Area.

Six introduced flora taxa were recorded within the Survey Area. None are listed as Declared Pests under the BAM Act (Department of Primary Industries and Regional Development, 2022) or WoNS (Department of Agriculture Water and the Environment, 2022b).

Three specimens could not be identified to species level because the taxa were sterile at the time of the survey, *Eucalyptus* sp., *Poa* sp. and Poaceae sp. One of these was not able to be assigned a confirmed genus. None of the unconfirmed flora taxa were analogous to Priority flora taxa identified by the database searches.

Table 2: Inventory of Vascular Flora

Family	Taxa	Status under the BAM Act	WoNS
Asparagaceae	*Acanthocarpus preissii*	-	-
Asphodelaceae	**Trachyandra divaricata*	Permitted – s11	No
Asteraceae	**Dittrichia graveolens*	Permitted – s11	No
Casuarinaceae	**Casuarina glauca*	Permitted – s11	No
Cupressaceae	*Callitris preissii*	-	-
Cyperaceae	*Lepidosperma gladiatum*	-	-
Fabaceae	*Acacia rostellifera*	-	-
Haemodoraceae	*Conostylis candicans* subsp. *calcicola*	-	-
Lamiaceae	*Westringia dampieri*	-	-
Malvaceae	*Guichenotia ledifolia*	-	-
Myrtaceae	*Agonis flexuosa*	-	-
	Eucalyptus gomphocephala	-	-
	Eucalyptus sp.	-	-
	Eucalyptus utilis	-	-
	Melaleuca huegelii	-	-
	Melaleuca lanceolata	-	-
	Melaleuca nesophila	-	-
Pittosporaceae	*Pittosporum ligustrifolium*	-	-
Poaceae	**Cynodon dactylon*	Permitted – s11	No
	Poa poiformis	-	-
	Poa sp.	-	-
	Poaceae sp.	-	-
	**Rostraria cristata*	Permitted – s11	No
	Sporobolus virginicus		-
	**Stenotaphrum secundatum*	Permitted – s11	No

*denotes weed status

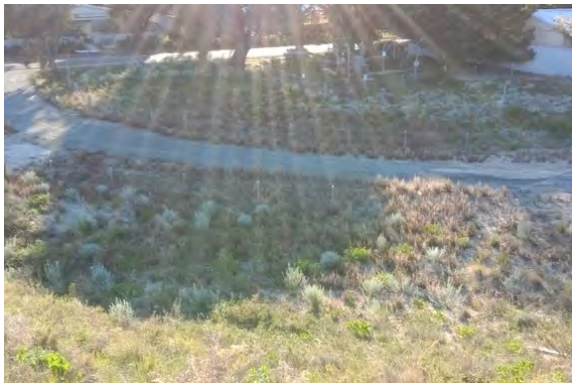
4.3.2 Vegetation Types

Five vegetation types were identified and mapped within the Survey Area (Figure 2).

The remaining of the Survey Area included vegetation rehabilitation areas (0.22 ha, 5.68%) and cleared areas (0.13 ha, 3.40%).

Table 3: Vegetation Types

Vegetation Type Code and Description	Extent and Proportion within the Survey Area	Representative Photo
MlCpAp: *Melaleuca lanceolata* and *Callitris preissii* tall shrubland over *Acanthocarpus preissii*, *Guichenotia ledifolia*, *Conostylis candicans* subsp. *calcicola* low open shrubland over *Poaceae spp.* and *Poa* sp. isolated tussock grasses over **Trachyandra divaricata* and mixed weed spp.	0.29 ha 7.53%	
MlAp: *Melaleuca lanceolata*, **Casuarina glauca*, *Eucalyptus utilis* and *Melaleuca* spp. tall open shrubland over *Acanthocarpus preissii*, *Guichenotia ledifolia*, *Conostylis candicans subsp. calcicola* low open shrubland over *Poaceae* spp. and *Poa* sp. isolated tussock grasses over **Trachyandra divaricata* and mixed weed spp.	2.09 ha 54.17%	
Cg: **Casuarina glauca* tall shrubland over *Acanthocarpus preissii*, *Guichenotia ledifolia*, *Conostylis candicans* subsp. *calcicola* low open shrubland over *Poaceae* spp. and *Poa* sp. isolated tussock grasses over **Trachyandra divaricata* and mixed weed spp.	0.19 ha 4.83%	

Vegetation Type Code and Description	Extent and Proportion within the Survey Area	Representative Photo
Ap: *Acanthocarpus preissii*, *Guichenotia ledifolia*, *Conostylis candicans* subsp. *calcicola* low open shrubland over *Poaceae* spp. and *Poa* sp. isolated tussock grasses over **Trachyandra divaricata* and mixed weed spp.	0.94 ha 24.32%	
Lg: *Pittosporum ligustrifolium* tall isolated shrubs over *Lepidosperma gladiatum* closed sedgeland over *Acanthocarpus preissii, Guichenotia ledifolia* and *Poa* sp.	<0.01 ha 0.10%	
Rehabilitation	0.22 ha 5.69%	
Cleared	0.13 ha 3.37%	N/A
Total	**3.85 ha**	N/A

4.3.3 Vegetation Condition

Vegetation condition within the Survey Area ranged from Good to Completely Degraded (Figure 3), including:

- Good (1.92 ha, 49.75%)
- Degraded (1.59 ha, 41.18%)
- Completely Degraded (0.35 ha, 9.06%).

Disturbances within the Survey Area comprised weeds, historical clearing to facilitate access tracks and infrastructure, and rehabilitation areas. Small portions of the Survey Area may have been considered in Very Good condition, however weed numbers were considered to be higher than they appeared due to the dry conditions. The understorey was heavily affected by weeds across the entire Survey Area.

4.3.4 Vegetation of Conservation Significance

The Banksia Woodlands of the Swan Coastal Plain ecological community identified by the database searches was not present within the Survey Area, as *Banksia* spp. were not recorded.

The State TEC SCP30a '*Callitris preissii* (or *Melaleuca lanceolata*) forests and woodlands, Swan Coastal Plain', which is listed as Vulnerable is described as follows:

"*The community is located on calcareous sandy soils of the Quindalup Dunes generally occurring between Craigie and Point Peron and on the Swan River in Peppermint Grove. The community also occurs on Garden Island and Penguin Islands. Species richness is naturally quite low in the community. Typical and common native taxa include: Callitris preissii (Rottnest Island pine), Melaleuca lanceolata (Rottnest Island Teatree), Spyridium globulosum (Basket Bush), Acanthocarpus preissii (Prickle Lily), Rhagodia baccata (Berry Saltbush), Austrostipa flavescens (Spear-grass), and Trachymene pilosa (Native Parsnip)*" (Department of Biodiversity Conservation and Attractions, 2020b).

Community type 30a is restricted to the Quindalup system, on which the Survey Area is located, and represented by forests and woodlands (Gibson et al., 1994). This community lists a further three taxa as being common, **Galium murale*, **Asparagus asparagoides*, and **Trachyandra divaricata*.

Vegetation types MlCpAp and MlAp were represented by *C. preissii* (MlCpAp only) and *M. lanceolata*, which are the key taxa describing the SCP30a TEC, as well as the common community species *Acanthocarpus preissii*, and **Trachyandra divaricata*. For this reason, these vegetation types were considered analogous to the SCP30a TEC. Combined, these two vegetation types cover 2.38 ha (61.69%) of the Survey Area.

The remaining vegetation types did not support the key taxa *C. preissii* and *M. lanceolata* and therefore were not considered analogous to the TEC.

5 Discussion

5.1 Flora

Floristic diversity within the Survey Area was considered low. This was expected due to disturbances such as weeds, tracks and historic clearing, which have resulted in degraded vegetation condition within the Survey Area. The condition of the site was dry, which could be attributed to the below average rainfall recorded within the Survey Area in the three months prior to the field survey. Furthermore, the SCP30a TEC identified within the Survey Area is described as having low floristic diversity due to the dense overstorey with few understorey taxa (Department of Biodiversity Conservation and Attractions, 2020b; Gibson et al., 1994).

No conservation significant flora taxa were recorded within the Survey Area.

Six weed species were recorded in the Survey Area; however, none are listed as WoNS or DPs. The weed species recorded (**Casuarina glauca, *Cynodon dactylon*, *Dittrichia graveolens*, *Rostraria cristata, *Stenotaphrum secundatum* and *Trachyandra divaricata*) have a legal status of Permitted – s11, and do not have an assigned control category.

Weed species were ubiquitous throughout the Survey Area, which was expected due to vegetation condition and disturbances. The Survey Areas were not systematically grid searched, therefore additional weed species and abundance could be recorded with greater survey effort. **Trachyandra divaricata* in particular was considered to be present in large numbers across the entirety of the Survey Area.

5.2 Vegetation

The vegetation of the Survey Area comprised remnant vegetation, native regrowth, planted natives and weed species.

The previous survey undertaken in June 2021 was inconclusive as to whether the vegetation in the south-eastern portion of the Survey Area was analogous to the TEC, the June 2021 Survey Area did not include any individuals of *C. preissii*. The current Survey Area included an expansion to the southeast which aided to confirm the presence of the TEC due to the key taxon *C. preissii*.

Two vegetation types within the Survey Area were considered analogous to the State TEC SCP30a '*Callitris preissii* (or *Melaleuca lanceolata*) forests and woodlands, Swan Coastal Plain' ecological community. It was noted that areas of these vegetation types continued outside of the Survey Area to the south and east. Further advice can be sought from the Communities branch of the DBCA to confirm the presence and extent of this TEC within the Survey Area. Condition varied in these areas from Good to Degraded, as multiple other dominant (*Melaleuca* spp. and *Eucalyptus* spp.) individuals were present. However, across the general area the two descriptive tall shrubs (*C. preissii* and *M. lanceolata*) are considered to be generally dominant and should be treated holistically as a larger patch, analogous to the TEC.

Rehabilitation areas are considered to be Completely Degraded as the clearing laws only apply to native vegetation, whose definition in the EP Act does not include native species in a plantation. Under Section 51A of the EP Act, native vegetation does not include vegetation that is intentionally sown, planted or propagated unless:

- The vegetation was sown, planted or propagated as required under the EP Act or another written law; or
- It is declared to be native vegetation under the regulations.

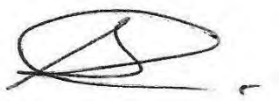
Most of the Survey Area comprises native vegetation (3.50 ha, 90.94%). Additionally, the Survey Area is entirely mapped over an ESA and Conservation Area, and therefore may be subject to Native Vegetation regulations if clearing was proposed for the area.

6 Conclusion

- One Threatened flora taxon pursuant to the EPBC Act 1999 and/or gazetted as Threatened Flora pursuant to the BC Act 2016 was identified as occurring within 10 km of the Survey Area by database searches, *Diuris micrantha* (Vulnerable). No Threatened flora taxa were recorded during the field survey.
- The database searches identified four Priority flora taxa as occurring within 10 km of the Survey Area. None were recorded within the Survey Area.
- Five introduced flora taxa were recorded during the survey. None of these are listed as Declared Pests under the BAM Act or WoNS.
- Five vegetation types were mapped within the Survey Area. Two vegetation types were considered analogous to the State TEC SCP30a '*Callitris preissii* (or *Melaleuca lanceolata*) forests and woodlands, Swan Coastal Plain' ecological community.

We trust this meets your requirements. Should you have any questions or require further action please do not hesitate to contact Simon Colwill or the undersigned on (08) 9388 8360. We look forward to hearing from you.

For and on behalf of 360 Environmental Pty Ltd



Scott Walker – Principal Ecologist/Group Leader

Enc:
Figure 1: Survey Area
Figure 2: Vegetation Types and TEC Extent
Figure 3: Vegetation Condition

7 References

360 Environmental Pty Ltd. (2020). *Rottnest Island Survey* (Issue December).

360 Environmental Pty Ltd. (2021). *Windy Hill Staff Accomodation Project - Assessment Report* (Issue July).

Bureau of Meteorology. (2007). *About Climate Statistics*. http://www.bom.gov.au/climate/cdo/about/about-stats.shtml

Bureau of Meteorology. (2021). *Monthly climate data statistics*. www.bom.gov.au/climate/data

Bureau of Meteorology. (2022). *Monthly climate data statistics*.

Department of Agriculture Water and the Environment. (2022a). *Protected Matters Search Tool*. http://www.environment.gov.au/webgis-framework/apps/pmst/pmst.jsf

Department of Agriculture Water and the Environment. (2022b). *Weeds of National Significance*. https://weeds.org.au/

Department of Biodiversity Conservation and Attractions. (2020a). *NatureMap*. https://naturemap.dpaw.wa.gov.au/

Department of Biodiversity Conservation and Attractions. (2020b). *Recovery plans and interim recovery plans - Callitris preissii (or Melaleuca lanceolata) forests and woodlands, Swan Coastal Plain (floristic community type 30a as originally described in Gibson et al. (1994))*. https://doi.org/10.1515/9783034608978.187

Department of Biodiversity Conservation and Attractions. (2021). *DBCA - Legislated Lands and Waters (DBCA-011) GIS Dataset*. https://catalogue.data.wa.gov.au/dataset/dbca-legislated-lands-and-waters

Department of Primary Industries and Regional Development. (2018). *Soil Landscape Mapping - Systems (DPIRD-064) - GIS Dataset*. https://catalogue.data.wa.gov.au/dataset/soil-landscape-mapping-systems

Department of Primary Industries and Regional Development. (2022). *Declared plants*. https://www.agric.wa.gov.au/organisms

Department of Water and Environmental Regulation. (2021). *Clearing Regulations - Environmentally Sensitive Areas (DWER-046) - GIS Dataset*.

Environmental Protection Authority. (2016). *Technical Guidance - Flora and Vegetation surveys for Environmental Impact Assessment*. http://www.epa.wa.gov.au/sites/default/files/Policies_and_Guidance/EPA Technical Guidance - Flora and Vegetation survey_Dec13.pdf

Environmental Protection Authority. (2020). *Technical Guidance - Terrestrial vertebrate fauna surveys for environmental impact assessment*. https://www.epa.wa.gov.au/policies-guidance/technical-guidance-terrestrial-vertebrate-fauna-surveys-environmental-impact

Gibson, N., Keighery, N., Keighery, B. J., Burbidge, B., Lyons, M. N., Keighery, G. J., Burbidge, A. H., & Lyons, M. N. (1994). A floristic survey of the southern Swan Coastal Plain. *Department of Conservation and Land Management and the Conservation Council of Western Australia, Perth*.

Western Australian Herbarium. (2022). *FloraBase - The Western Australian Flora*. https://florabase.dpaw.wa.gov.au/

Figures

Legend

- Survey Area
- June 2021 Survey Area

- NOTE THAT POSITION ERRORS CAN BE >5M IN SOME AREAS
- LOCALITY MAP SOURCED LANDGATE 2022
- OTHER DATA SOURCED LANDGATE 2022
- AERIAL PHOTOGRAPHY SOURCED LANDGATE 2022
(© Western Australian Land Information Authority 2022)

SLIP ENABLER

360 environmental
a 10 Bermondsey St, West Leederville, 6007 WA
t (08) 9388 8360
f (08) 9381 2360
w www.360environmental.com.au

0 60 120 180 Meters

N

1:6,000 @ A4

LOCALITY MAP

PROJECT ID	DATE
5185	30/03/2022

HORIZONTAL DATUM AND PROJECTION
GDA2020 MGA Zone 50

CREATED	CHECKED	APPROVED	REVISION
CL	BD	SB	0

Rottnest Island Authority

Windy Hill

Windy Hill TEC Assessment

Figure 1
Survey Area

K:\Projects\1.0 EBS\5185 Windy Hill TEC Assessment\5185 F01 Survey Area.mxd

Legend

- Survey Area

Vegetation Types

- Ap
- Cg
- Lg
- MlAp
- MlCpAp
- Rehabilitation
- Cleared
- Threatened Ecological Communities

- NOTE THAT POSITION ERRORS CAN BE >5M IN SOME AREAS
- LOCALITY MAP SOURCED LANDGATE 2022
- OTHER DATA SOURCED LANDGATE 2022
- AERIAL PHOTOGRAPHY SOURCED LANDGATE 2022
(© Western Australian Land Information Authority 2022)

SLIP ENABLER

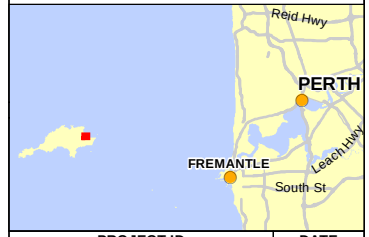
360 environmental
a 10 Bermondsey St, West Leederville, 6007 WA
t (08) 9388 8360
f (08) 9381 2360
w www.360environmental.com.au

0 30 60 90 Meters

1:3,000 @ A4

N

LOCALITY MAP



PROJECT ID	DATE
5185	31/03/2022

HORIZONTAL DATUM AND PROJECTION
GDA2020 MGA Zone 50

CREATED	CHECKED	APPROVED	REVISION
CL	BD	SB	0

Rottnest Island Authority

Windy Hill

Windy Hill TEC Assessment

Figure 2

Vegetation Types and TEC Extent

K:\Projects\1.0 EBS\5185 Windy Hill TEC Assessment\5185 F02 Vegetation Types and TEC Extent.mxd

Legend

Survey Area

Vegetation Condition

Good

Degraded

Completely Degraded

- NOTE THAT POSITION ERRORS CAN BE >5M IN SOME AREAS
- LOCALITY MAP SOURCED LANDGATE 2022
- OTHER DATA SOURCED LANDGATE 2022
- AERIAL PHOTOGRAPHY SOURCED LANDGATE 2022
(© Western Australian Land Information Authority 2022)

SLIP ENABLER

360 environmental
a 10 Bermondsey St, West Leederville, 6007 WA
t (08) 9388 8360
f (08) 9381 2360
w www.360environmental.com.au

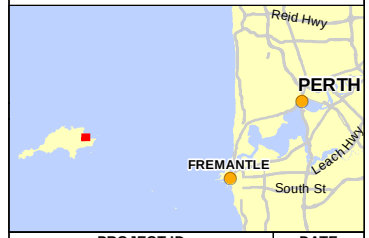
0 30 60 90

Meters

1:3,000 @ A4

N

LOCALITY MAP



PROJECT ID	DATE
5185	31/03/2022

HORIZONTAL DATUM AND PROJECTION
GDA2020 MGA Zone 50

CREATED	CHECKED	APPROVED	REVISION
CL	BD	SB	0

Rottnest Island Authority

Windy Hill

Windy Hill TEC Assessment

Figure 3

Vegetation Condition

K:\Projects\1.0 EBS\5185 Windy Hill TEC Assessment\5185 F03 Vegetation Condition.mxd

Appendices

Appendix A
NatureMap

NatureMap
Mapping Western Australia's biodiversity

NatureMap Species Report

Created By Guest user on 23/11/2020

Kingdom Plantae
Current Names Only Yes
Core Datasets Only Yes
Method 'By Circle'
Centre 115° 32' 05" E,31° 59' 26" S
Buffer 10km
Group By Family

Family	Species	Records
Acrotylaceae	3	10
Aizoaceae	4	18
Alliaceae	1	1
Amaranthaceae	1	4
Amaryllidaceae	4	8
Anadyomenaceae	2	8
Apiaceae	2	7
Apocynaceae	3	15
Araceae	1	9
Araliaceae	6	11
Arecaceae	4	4
Areschougiaceae	10	26
Asparagaceae	6	23
Asphodelaceae	2	12
Asteraceae	27	80
Bignoniaceae	1	1
Bonnemaisoniaceae	2	13
Boodleaceae	2	13
Boraginaceae	2	4
Brassicaceae	10	35
Bryopsidaceae	5	5
Campanulaceae	1	3
Caryophyllaceae	10	40
Casuarinaceae	3	5
Caulerpaceae	21	103
Celastraceae	1	4
Centrolepidaceae	1	2
Ceramiaceae	18	33
Champiaceae	3	8
Chenopodiaceae	13	41
Cladophoraceae	10	25
Codiaceae	7	28
Colchicaceae	1	2
Convolvulaceae	2	9
Corallinaceae	11	68
Crassulaceae	7	16
Cupressaceae	1	4
Cymodoceaceae	4	8
Cyperaceae	12	25
Cystocloniaceae	5	12
Dasyaceae	5	5
Delesseriaceae	9	19
Derbesiaceae	1	1
Dichotomosiphonaceae	1	1
Dicranemataceae	2	8
Dilleniaceae	1	1
Droseraceae	1	2
Ericaceae	3	14
Euphorbiaceae	4	38
Fabaceae	12	48
Faucheaceae	2	2
Francoaceae	1	3
Frankeniaceae	1	1
Galaxauraceae	5	38
Gelidiaceae	4	27
Gentianaceae	4	11
Geraniaceae	4	11
Goodeniaceae	1	5
Gracilariaceae	5	13
Haemodoraceae	2	10
Halimedaceae	1	14
Haloragaceae	1	1
Halymeniaceae	10	37
Hemerocallidaceae	2	2
Hydrocharitaceae	2	3
Hymenocladiaceae	2	4
Hypoxidaceae	1	1
Iridaceae	6	19
Juncaceae	2	2
Juncaginaceae	4	11
Kallymeniaceae	5	8
Lamiaceae	1	7
Liagoraceae	10	33
Loganiaceae	1	1
Lomentariaceae	2	3

Loranthaceae	1	1
Malvaceae	6	38
Meliaceae	1	3
Montiaceae	2	5
Moraceae	5	9
Mychodeaceae	2	3
Myrtaceae	12	20
Nitrariaceae	1	4
Nizymeniaceae	2	5
Oleaceae	1	3
Orchidaceae	3	8
Orobanchaceae	2	2
Oxalidaceae	3	7
Peyssonneliaceae	3	12
Phacelocarpaceae	2	2
Phyllanthaceae	2	7
Pinaceae	2	2
Pittosporaceae	1	11
Plantaginaceae	4	9
Plocamiaceae	4	7
Poaceae	46	200
Polygalaceae	2	3
Polyidaceae	2	19
Polyphysaceae	1	2
Portulacaceae	1	1
Posidoniaceae	2	3
Potamogetonaceae	1	4
Pottiaceae	3	3
Primulaceae	2	17
Ranunculaceae	3	12
Resedaceae	2	8
Rhamnaceae	2	12
Rhodomelaceae	23	55
Rhodymeniaceae	7	31
Rubiaceae	1	13
Ruppiaceae	2	6
Rutaceae	2	9
Sapindaceae	1	1
Sarcomeniaceae	1	1
Schizymeniaceae	1	8
Scinaiaceae	2	5
Scrophulariaceae	5	24
Sebdeniaceae	1	3
Siphonocladaceae	4	8
Solanaceae	5	20
Solieriaceae	2	4
Spongitaceae	1	1
Stylidiaceae	1	1
Tamaricaceae	1	3
Typhaceae	1	1
Udoteaceae	4	13
Ulvaceae	3	7
Urticaceae	3	22
Valoniaceae	1	2
Wrangeliaceae	5	6
Zygophyllaceae	2	3
TOTAL	**552**	**1836**

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
Acrotylaceae					
1.	26456	*Amphiplexia hymenocladioides*			
2.	26665	*Claviclonium ovatum*			
3.	26915	*Hennedya crispa*			
Aizoaceae					
4.	2798	*Carpobrotus virescens (Coastal Pigface, Kolboko, Bain)*			
5.	2813	*Mesembryanthemum crystallinum (Iceplant)*	Y		
6.	2820	*Tetragonia decumbens (Sea Spinach)*	Y		
7.	2823	*Tetragonia implexicoma (Bower Spinach)*			
Alliaceae					
8.	1374	*Allium ampeloprasum*	Y		
Amaranthaceae					
9.	2689	*Hemichroa pentandra (Trailing Jointweed)*			
Amaryllidaceae					
10.	1493	*Leucojum aestivum (Snowflake)*	Y		
11.	11019	*Narcissus papyraceus*	Y		
12.	1495	*Narcissus tazetta (Jonquil)*	Y		
13.	44496	*Narcissus tazetta subsp. italicus*	Y		
Anadyomenaceae					
14.	35123	*Microdictyon okamurae*			
15.	27074	*Microdictyon umbilicatum*			
Apiaceae					
16.	6210	*Apium annuum*			
17.	6218	*Daucus glochidiatus (Australian Carrot)*			
Apocynaceae					
18.	6565	*Alyxia buxifolia (Dysentery Bush)*			
19.	6587	*Gomphocarpus fruticosus (Narrowleaf Cottonbush)*	Y		
20.	18356	*Nerium oleander*	Y		
Araceae					
21.	1049	*Zantedeschia aethiopica (Arum Lily)*	Y		
Araliaceae					
22.	6224	*Hydrocotyle blepharocarpa*			
23.	6229	*Hydrocotyle diantha*			
24.	6232	*Hydrocotyle hispidula*			
25.	6241	*Hydrocotyle tetragonocarpa*			
26.	6266	*Trachymene coerulea (Blue Lace Flower)*			
27.	19041	*Trachymene coerulea subsp. coerulea*			
Arecaceae					
28.	44540	*Phoenix canariensis (Canary Islands Date Palm)*	Y		
29.	1042	*Phoenix dactylifera (Date Palm)*	Y		
30.	17910	*Washingtonia filifera*	Y		
31.		*Washingtonia robusta*			Y
Areschougiaceae					
32.	26484	*Areschougia ligulata*			
33.	26533	*Callophycus costatus*			
34.	26534	*Callophycus dorsifer*			
35.	26535	*Callophycus harveyanus*			
36.	26536	*Callophycus oppositifolius*			
37.	26823	*Erythroclonium sonderi*			
38.	26854	*Gigartina disticha*			
39.	27062	*Meristotheca papulosa*			
40.	27210	*Rhabdonia clavigera*			
41.	27230	*Sarconema filiforme*			
Asparagaceae					
42.	1208	*Acanthocarpus preissii*			
43.	1505	*Agave americana (Century Plant)*	Y		
44.	47094	*Agave attenuata*	Y		
45.	18379	*Agave sisalana*	Y		Y
46.	1372	*Ornithogalum arabicum (Lesser Cape Lily)*	Y		
47.	1343	*Thysanotus patersonii*			
Asphodelaceae					

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
48.	1364	*Asphodelus fistulosus (Onion Weed)*	Y		
49.	1368	*Trachyandra divaricata*	Y		
Asteraceae					
50.	7833	*Angianthus preissianus*			
51.	7838	*Arctotheca calendula (Cape Weed, African Marigold)*	Y		
52.	7839	*Arctotheca populifolia (Dune Arctotheca, Beach Pumpkin, Coast Capeweed, Beach Daisy)*	Y		
53.	7841	*Argyranthemum frutescens (Marguerite)*	Y		
54.	7909	*Carduus pycnocephalus (Slender Thistle)*	Y		
55.	7916	*Centaurea melitensis (Maltese Cockspur, Malta Thistle)*	Y		
56.	7937	*Cirsium vulgare (Spear Thistle, Scotch Thistle)*	Y		
57.	7939	*Conyza bonariensis (Flaxleaf Fleabane)*	Y		
58.	7941	*Conyza parva*	Y		
59.	20074	*Conyza sumatrensis*	Y		
60.	7943	*Cotula australis (Common Cotula)*			
61.	7944	*Cotula bipinnata (Ferny Cotula)*	Y		
62.	7945	*Cotula coronopifolia (Waterbuttons)*	Y		
63.	7961	*Dittrichia graveolens (Stinkwort)*	Y		
64.	20247	*Gamochaeta calviceps*	Y		
65.	7983	*Gnaphalium indutum (Tiny Cudweed)*			
66.	8086	*Hypochaeris glabra (Smooth Catsear)*	Y		
67.	44490	*Leontodon rhagadioloides*	Y		
68.	16449	*Leucophyta brownii*			
69.	8105	*Millotia myosotidifolia*			
70.	8127	*Olearia axillaris (Coastal Daisybush)*			
71.	8182	*Podotheca angustifolia (Sticky Longheads)*			
72.	25884	*Senecio pinnatifolius var. latilobus*			
73.	25882	*Senecio pinnatifolius var. maritimus (Coastal Groundsel)*			
74.	8230	*Sonchus asper (Rough Sowthistle)*	Y		
75.	8231	*Sonchus oleraceus (Common Sowthistle)*	Y		
76.	13328	*Waitzia nitida*			
Bignoniaceae					
77.	17923	*Tecoma stans*	Y		
Bonnemaisoniaceae					
78.	26486	*Asparagopsis taxiformis*			
79.	26757	*Delisea pulchra*			
Boodleaceae					
80.	27141	*Phyllodictyon anastomosans*			
81.	27318	*Struvea plumosa*			
Boraginaceae					
82.	6707	*Heliotropium curassavicum (Smooth Heliotrope)*			
83.	6722	*Myosotis australis (Southern Forget-me-not)*		P4	
Brassicaceae					
84.	3002	*Cakile maritima (Sea Rocket)*	Y		
85.	3005	*Cardamine hirsuta (Common Bittercress)*	Y		
86.	3011	*Diplotaxis muralis (Wall Rocket)*	Y		
87.	3016	*Heliophila pusilla*	Y		
88.	18137	*Hornungia procumbens*	Y		
89.	19989	*Lepidium didymum*	Y		
90.	3027	*Lepidium foliosum (Leafy Peppercress)*			
91.	3043	*Lepidium puberulum*		P4	
92.	3061	*Raphanus raphanistrum (Wild Radish)*	Y		
93.	3072	*Sisymbrium orientale (Indian Hedge Mustard)*	Y		
Bryopsidaceae					
94.	26521	*Bryopsis australis*			
95.		*Bryopsis gemellipara*			
96.	26523	*Bryopsis macraildii*			
97.	26525	*Bryopsis plumosa*			
98.	27191	*Pseudobryopsis hainanensis*			
Campanulaceae					
99.	9289	*Lobelia anceps (Angled Lobelia)*			
Caryophyllaceae					
100.	19883	*Arenaria leptoclados*	Y		
101.	13119	*Cerastium balearicum*	Y		
102.	2889	*Cerastium glomeratum (Mouse Ear Chickweed)*	Y		
103.	16693	*Minuartia mediterranea*			

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
			Y		
104.	2905	*Polycarpon tetraphyllum (Fourleaf Allseed)*	Y		
105.	2906	*Sagina apetala (Annual Pearlwort)*	Y		
106.	2908	*Sagina maritima*	Y		
107.	2910	*Silene nocturna (Mediterranean Catchfly)*	Y		
108.	2918	*Stellaria media (Chickweed)*	Y		
109.	20397	*Stellaria pallida*	Y		
Casuarinaceae					
110.	19842	*Casuarina equisetifolia*	Y		
111.	18321	*Casuarina glauca*	Y		
112.	1742	*Casuarina obesa (Swamp Sheoak, Kuli)*			
Caulerpaceae					
113.	26553	*Caulerpa articulata*			
114.	26556	*Caulerpa cactoides*			
115.	26559	*Caulerpa cupressoides*			
116.	47053	*Caulerpa cupressoides var. cupressoides*			
117.	44539	*Caulerpa cylindracea*			
118.	26561	*Caulerpa ellistoniae*			
119.	26562	*Caulerpa fergusonii*			
120.	26563	*Caulerpa flexilis*			
121.	27380	*Caulerpa flexilis var. muelleri*			
122.	48455	*Caulerpa geminata*			
123.	26564	*Caulerpa hedleyi*			
124.	26565	*Caulerpa heterophylla*			
125.	26568	*Caulerpa lentillifera*			
126.	27382	*Caulerpa longifolia forma crispata*			
127.	26570	*Caulerpa obscura*			
128.	26571	*Caulerpa papillosa*			
129.	37643	*Caulerpa parvifolia*			
130.	26574	*Caulerpa scalpelliformis*			
131.	26575	*Caulerpa sedoides*			
132.	26578	*Caulerpa simpliciuscula*			
133.	46993	*Caulerpa taxifolia var. distichophylla*			
Celastraceae					
134.	9070	*Stackhousia pubescens (Downy Stackhousia)*			
Centrolepidaceae					
135.	1134	*Centrolepis polygyna (Wiry Centrolepis)*			
Ceramiaceae					
136.	26447	*Acrothamnion preissii*			
137.	26465	*Anisoschizus propaguli*			Y
138.	27374	*Anotrichium tenue var. thyrsigerum*			Y
139.	26475	*Antithamnion hanovioides*			
140.	26500	*Balliella hirsuta*			Y
141.	26511	*Bornetia binderiana*			
142.	26587	*Centroceras clavulatum*			
143.	26593	*Ceramium filicula*			
144.	26599	*Ceramium puberulum*			
145.	26600	*Ceramium pusillum*			
146.	26797	*Drewiana nitella*			
147.	26829	*Euptilocladia spongiosa*			
148.	26830	*Euptilota articulata*			
149.	26887	*Guiryella repens*			
150.	27194	*Psilothallia striata*			
151.	27286	*Spermothamnion miniatum*			Y
152.	27309	*Spyridia dasyoides*			
153.	27310	*Spyridia filamentosa*			
Champiaceae					
154.	26616	*Champia affinis*			
155.	26617	*Champia compressa*			
156.	26619	*Champia stipitata*			
Chenopodiaceae					
157.	2452	*Atriplex cinerea (Grey Saltbush)*			
158.	2463	*Atriplex isatidea (Coast Saltbush)*			
159.	2494	*Chenopodium murale (Nettle-leaf Goosefoot)*	Y		
160.	12064	*Enchylaena tomentosa var. tomentosa (Barrier Saltbush)*			
161.	2578	*Rhagodia baccata (Berry Saltbush)*			
162.	11341	*Rhagodia baccata subsp. baccata*			

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
163.	11930	*Rhagodia baccata subsp. dioica (Sea Berry Saltbush)*			
164.	48433	*Salicornia blackiana*			
165.	48430	*Salicornia quinqueflora*			
166.	2639	*Suaeda australis (Seablite)*			
167.	33236	*Tecticornia halocnemoides (Shrubby Samphire)*			
168.	33319	*Tecticornia indica subsp. bidens*			
169.	2644	*Threlkeldia diffusa (Coast Bonefruit)*			
Cladophoraceae					
170.	26481	*Apjohnia laetevirens*			
171.	26607	*Chaetomorpha aerea*			
172.	26649	*Cladophora albida*			
173.	48391	*Cladophora dalmatica*			
174.	26653	*Cladophora laetevirens*			
175.	26654	*Cladophora lehmanniana*			
176.	26656	*Cladophora prolifera*			
177.	48667	*Cladophora rhizoclonioidea*			
178.	48668	*Cladophora subsimplex*			
179.	26659	*Cladophora valonioides*			
Codiaceae					
180.	26671	*Codium duthieae*			
181.	26672	*Codium galeatum*			
182.	26675	*Codium laminarioides*			
183.	26676	*Codium lucasii*			
184.	26678	*Codium muelleri*			
185.	26679	*Codium perriniae*			
186.	26683	*Codium spongiosum*			
Colchicaceae					
187.	1398	*Wurmbea monantha*			
Convolvulaceae					
188.	6616	*Dichondra repens (Kidney Weed)*			
189.	6659	*Wilsonia humilis (Silky Wilsonia)*			
Corallinaceae					
190.	26458	*Amphiroa anceps*			
191.	26463	*Amphiroa gracilis*			
192.	26984	*Jania affinis*			
193.	26985	*Jania micrarthrodia*			
194.	36141	*Jania pulchella*			
195.	48292	*Jania rosea*			
196.	26988	*Jania verrucosa*			
197.	27067	*Metagoniolithon chara*			
198.	27068	*Metagoniolithon radiatum*			
199.	27069	*Metagoniolithon stelliferum*			
200.	27070	*Metamastophora flabellata*			
Crassulaceae					
201.	3137	*Crassula colorata (Dense Stonecrop)*			
202.	11563	*Crassula colorata var. colorata*			
203.	3138	*Crassula decumbens (Rufous Stonecrop)*			
204.	11349	*Crassula decumbens var. decumbens*			
205.	3140	*Crassula glomerata*	Y		
206.	15706	*Crassula natans var. minus*	Y		
207.	11345	*Crassula thunbergiana subsp. thunbergiana*	Y		
Cupressaceae					
208.	96	*Callitris preissii (Rottnest Island Pine, Maro)*			
Cymodoceaceae					
209.	126	*Amphibolis antarctica (Sea Nymph)*			
210.	127	*Amphibolis griffithii*			
211.	132	*Syringodium isoetifolium*			
212.	134	*Thalassodendron pachyrhizum*			
Cyperaceae					
213.	743	*Baumea juncea (Bare Twigrush)*			
214.	43241	*Carex thecata*			
215.	20216	*Ficinia nodosa (Knotted Club Rush)*			
216.	907	*Gahnia trifida (Coast Saw-sedge)*			
217.	20200	*Isolepis cernua var. setiformis*			
218.	917	*Isolepis marginata (Coarse Club-rush)*			
219.	42742	*Lepidosperma calcicola*			

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
220.	933	*Lepidosperma gladiatum (Coast Sword-sedge, Kerbin)*			
221.	940	*Lepidosperma pubisquameum*			
222.	945	*Lepidosperma squamatum*			
223.	994	*Schoenus humilis*			
224.	1004	*Schoenus nitens (Shiny Bog-rush)*			
Cystocloniaceae					
225.	26966	*Hypnea charoides*			
226.	35922	*Hypnea cornuta*			
227.	35898	*Hypnea musciformis*			
228.	26971	*Hypnea ramentacea*			
229.	26973	*Hypnea valentiae*			
Dasyaceae					
230.	26738	*Dasya elongata*			
231.	26749	*Dasya villosa*			
232.	26929	*Heterosiphonia callithamnium*			
233.	26930	*Heterosiphonia crassipes*			
234.	26938	*Heterosiphonia wrangelioides*			
Delesseriaceae					
235.	26622	*Chauviniella coriifolia*			
236.	26911	*Haraldiophyllum erosum*			
237.	26914	*Hemineura frondosa*			
238.	26927	*Heterodoxia denticulata*			
239.	26981	*Hypoglossum revolutum*			
240.	27055	*Martensia australis*			
241.	48414	*Martensia denticulata*			
242.	36360	*Platyclinia ramosa*			Y
243.	27146	*Platysiphonia hypneoides*			
Derbesiaceae					
244.	27120	*Pedobesia clavaeformis*			
Dichotomosiphonaceae					
245.	26497	*Avrainvillea clavatiramea*			
Dicranemataceae					
246.	26758	*Dicranema revolutum*			
247.	27347	*Tylotus obtusatus*			
Dilleniaceae					
248.	5162	*Hibbertia racemosa (Stalked Guinea Flower)*			
Droseraceae					
249.	3128	*Drosera ramellosa (Branched Sundew)*			
Ericaceae					
250.	6295	*Acrotriche cordata (Coast Ground Berry)*			
251.	6405	*Leucopogon insularis*			
252.	6427	*Leucopogon parviflorus (Coast Beard-heath)*			
Euphorbiaceae					
253.	4601	*Beyeria viscosa (Pinkwood)*			
254.	4636	*Euphorbia paralias (Sea Spurge)*	Y		
255.	4638	*Euphorbia peplus (Petty Spurge)*	Y		
256.	4705	*Ricinus communis (Castor Oil Plant)*	Y		
Fabaceae					
257.	3282	*Acacia cyclops (Coastal Wattle)*			
258.	3424	*Acacia littorea*			
259.	3525	*Acacia rostellifera (Summer-scented Wattle)*			
260.	3584	*Acacia truncata*			
261.	48860	*Erythrostemon gilliesii*	Y		
262.	4079	*Medicago polymorpha (Burr Medic)*	Y		
263.	4080	*Medicago sativa (Alfalfa)*	Y		
264.	4085	*Melilotus indicus*	Y		
265.	4256	*Templetonia retusa (Cockies Tongues)*			
266.	4314	*Trifolium suffocatum (Suffocated Clover)*	Y		
267.	4315	*Trifolium tomentosum (Woolly Clover)*	Y		
268.	15509	*Trifolium tomentosum var. tomentosum*	Y		
Faucheaceae					
269.	26860	*Gloiocladia halymenioides*			
270.	27361	*Webervanbossea kaliformis*			

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
Francoaceae					
271.	4785	*Melianthus major*	Y		
Frankeniaceae					
272.	5209	*Frankenia pauciflora (Seaheath)*			
Galaxauraceae					
273.	29616	*Dichotomaria marginata*			
274.	29615	*Dichotomaria obtusata*			
275.	34959	*Dichotomaria spathulata*			
276.	26835	*Galaxaura rugosa*			
277.	27340	*Tricleocarpa cylindrica*			
Gelidiaceae					
278.	26847	*Gelidium australe*			Y
279.	26849	*Gelidium pusillum*			
280.	27195	*Pterocladia lucida*			
281.	27206	*Ptilophora prolifera*			
Gentianaceae					
282.	6539	*Centaurium erythraea (Common Centaury)*	Y		
283.	17800	*Centaurium pulchellum*	Y		
284.	6542	*Centaurium tenuiflorum*	Y		
285.	41660	*Schenkia australis*			
Geraniaceae					
286.	4333	*Erodium cicutarium (Common Storksbill)*	Y		
287.	4339	*Geranium molle (Dove's Foot Cranesbill)*	Y		
288.	4343	*Pelargonium capitatum (Rose Pelargonium)*	Y		
289.	4346	*Pelargonium littorale*			
Goodeniaceae					
290.	7606	*Scaevola crassifolia (Thick-leaved Fan-flower)*			
Gracilariaceae					
291.	48979	*Crassa secundata*			
292.	26712	*Curdiea obesa*			
293.	26867	*Gracilaria blodgettii*			
294.	26872	*Gracilaria preissiana*			
295.	26873	*Gracilaria salicornia*			
Haemodoraceae					
296.	1427	*Conostylis candicans (Grey Cottonhead)*			
297.	12027	*Conostylis candicans subsp. calcicola*			
Halimedaceae					
298.	47213	*Halimeda versatilis*			
Haloragaceae					
299.	6161	*Gonocarpus pithyoides*			
Halymeniaceae					
300.	26546	*Carpopeltis elata*			
301.	26547	*Carpopeltis phyllophora*			
302.	26548	*Carpopeltis spongeaplexus*			
303.	26667	*Codiophyllum flabelliforme*			
304.	26708	*Cryptonemia kallymenioides*			
305.	26818	*Epiphloea bullosa*			
306.	26850	*Gelinaria ulvoidea*			
307.	36701	*Grateloupia subpectinata*			
308.	37640	*Halymenia floresii*			
309.	48666	*Halymenia harveyana*			
Hemerocallidaceae					
310.	19632	*Johnsonia pubescens subsp. pubescens*			
311.	43506	*Phormium tenax*	Y		
Hydrocharitaceae					
312.	164	*Halophila ovalis (Sea Wrack)*			
313.	166	*Hydrilla verticillata (Water Thyme)*			
Hymenocladiaceae					
314.	26826	*Erythrymenia minuta*			
315.	26961	*Hymenocladia conspersa*			
Hypoxidaceae					
316.	43763	*Pauridia glabella*			

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
Iridaceae					
317.	1515	*Ferraria crispa (Black Flag)*	Y		
318.	11445	*Ferraria crispa subsp. crispa*	Y		
319.	1531	*Iris germanica (Flag Iris)*	Y		
320.	19179	*Moraea flaccida (One-leaf Cape Tulip)*	Y		
321.	19180	*Moraea miniata (Two-leaf Cape Tulip)*	Y		
322.	11544	*Romulea rosea var. australis (Guildford Grass)*	Y		
Juncaceae					
323.	1178	*Juncus bufonius (Toad Rush)*	Y		
324.	11922	*Juncus kraussii subsp. australiensis*			
Juncaginaceae					
325.	146	*Triglochin minutissima*			
326.	147	*Triglochin mucronata*			
327.	151	*Triglochin striata*			
328.	152	*Triglochin trichophora*			
Kallymeniaceae					
329.	48417	*Austrokallymenia roensis*			Y
330.	26858	*Glaphyrymenia pustulosa*			
331.	26991	*Kallymenia spinosa*			Y
332.	48419	*Leiomenia cribrosa*			
333.	48423	*Stauromenia lacerata*			
Lamiaceae					
334.	6939	*Westringia dampieri*			
Liagoraceae					
335.	26794	*Dotyophycus abbottiae*			
336.	26837	*Ganonema farinosum*			
337.	26912	*Helminthocladia australis*			
338.	26913	*Helminthora australis*			
339.	27020	*Liagora australasica*			
340.	27024	*Liagora izziae*			Y
341.	27030	*Liagora wilsoniana*			
342.	44525	*Neoizziella divaricata*			
343.	29601	*Titanophycus validus*			
344.	27370	*Yamadaella caenomyce*			
Loganiaceae					
345.	16825	*Phyllangium divergens*			
Lomentariaceae					
346.	35913	*Gelidiopsis scoparia*			
347.	27277	*Semnocarpa minuta*			
Loranthaceae					
348.	2396	*Lysiana casuarinae*			
Malvaceae					
349.	5011	*Guichenotia ledifolia*			
350.	14646	*Lagunaria patersonia*	Y		
351.	36480	*Malva arborea (Tree Mallow)*	Y		
352.	4961	*Malva parviflora (Marshmallow)*	Y		
353.	31351	*Malva preissiana*			
354.	5077	*Thomasia cognata*			
Meliaceae					
355.	4516	*Melia azedarach (White Cedar)*			
Montiaceae					
356.	2845	*Calandrinia brevipedata (Short-stalked Purslane)*			
357.	40827	*Calandrinia tholiformis*			
Moraceae					
358.	1747	*Ficus carica (Common Fig)*	Y		
359.		*Ficus elastica*			
360.		*Ficus macrophylla*			
361.		*Ficus microcarpa subsp. hillii*			Y
362.	47095	*Ficus rubiginosa*	Y		Y
Mychodeaceae					
363.	27079	*Mychodea carnosa*			
364.	27083	*Mychodea pusilla*			
Myrtaceae					

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
365.	17202	*Agonis flexuosa var. flexuosa*			
366.	5580	*Eucalyptus camaldulensis (River Gum, Yabalinyba)*			
367.	35345	*Eucalyptus camaldulensis subsp. obtusa (Blunt-budded River Red Gum)*			
368.	5615	*Eucalyptus decipiens (Limestone Marlock, Moit)*			
369.	5638	*Eucalyptus erythrocorys (Illyarrie)*			
370.	5659	*Eucalyptus gomphocephala (Tuart, Duart)*			
371.	5775	*Eucalyptus spathulata (Swamp Mallet)*			
372.	18085	*Eucalyptus utilis*			
373.	19721	*Melaleuca armillaris*	Y		
374.	5920	*Melaleuca huegelii (Chenille Honeymyrtle)*			
375.	5922	*Melaleuca lanceolata (Rottnest Teatree, Moonah)*			
376.	5943	*Melaleuca nesophila (Mindiyed)*			
Nitrariaceae					
377.	4366	*Nitraria billardierei (Nitre Bush)*			
Nizymeniaceae					
378.	27103	*Nizymenia conferta*			
379.	27104	*Nizymenia furcata*			
Oleaceae					
380.	6503	*Olea europaea (Olive)*	Y		
Orchidaceae					
381.	1599	*Caladenia latifolia (Pink Fairy Orchid)*			
382.	10916	*Cyrtostylis huegelii*			
383.	1674	*Prasophyllum giganteum (Bronze Leek Orchid)*			
Orobanchaceae					
384.	7122	*Orobanche minor (Lesser Broomrape)*	Y		
385.	7089	*Parentucellia latifolia (Common Bartsia)*	Y		
Oxalidaceae					
386.	4349	*Oxalis corniculata (Yellow Wood Sorrel)*	Y		
387.	30375	*Oxalis exilis*			
388.	4356	*Oxalis pes-caprae (Soursob)*	Y		
Peyssonneliaceae					
389.	27128	*Peyssonnelia inamoena*			
390.	27129	*Peyssonnelia novae-hollandiae*			
391.	44731	*Sonderophycus capensis*			
Phacelocarpaceae					
392.	27133	*Phacelocarpus labillardieri*			
393.	27134	*Phacelocarpus peperocarpos*			
Phyllanthaceae					
394.	4675	*Phyllanthus calycinus (False Boronia)*			
395.	4688	*Poranthera drummondii*			
Pinaceae					
396.	17671	*Pinus halepensis*	Y		
397.	88	*Pinus radiata (Radiata Pine)*	Y		
Pittosporaceae					
398.	19745	*Pittosporum ligustrifolium*			
Plantaginaceae					
399.	4717	*Callitriche stagnalis (Common Starwort)*	Y		
400.	7053	*Cymbalaria muralis (Ivyleaf Toadflax)*	Y		
401.	7299	*Plantago debilis*			
402.	7303	*Plantago lanceolata (Ribwort Plantain)*	Y		
Plocamiaceae					
403.	27154	*Plocamium angustum*			
404.	27155	*Plocamium cartilagineum*			
405.	27156	*Plocamium mertensii*			
406.	27157	*Plocamium preissianum*			
Poaceae					
407.	185	*Aira cupaniana (Silvery Hairgrass)*	Y		
408.	17237	*Austrostipa elegantissima*			
409.	17240	*Austrostipa flavescens*			
410.		*Austrostipa sp.*			
411.	231	*Avellinia michelii*	Y		
412.	233	*Avena barbata (Bearded Oat)*	Y		
413.	8661	*Brachypodium distachyon (False Brome)*	Y		

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
414.	245	*Briza minor (Shivery Grass)*	Y		
415.	247	*Bromus arenarius (Sand Brome)*			
416.	249	*Bromus diandrus (Great Brome)*	Y		
417.	250	*Bromus hordeaceus (Soft Brome)*	Y		
418.	252	*Bromus madritensis (Madrid Brome)*	Y		
419.	253	*Bromus rubens (Red Brome)*	Y		
420.	13685	*Catapodium rigidum (Rigid Fescue)*	Y		
421.	41564	*Cenchrus clandestinus (Kikuyu Grass)*	Y		
422.	277	*Cortaderia selloana (Pampas Grass)*	Y		
423.	283	*Cynodon dactylon (Couch)*	Y		
424.	346	*Ehrharta brevifolia (Annual Veldt Grass)*	Y		
425.	11485	*Ehrharta brevifolia var. cuspidata*	Y		
426.	349	*Ehrharta longiflora (Annual Veldt Grass)*	Y		
427.	376	*Eragrostis curvula (African Lovegrass)*	Y		
428.	449	*Hordeum leporinum (Barley Grass)*	Y		
429.	30331	*Lachnagrostis nesomytica*			Y
430.	30332	*Lachnagrostis nesomytica subsp. nesomytica*		P1	Y
431.	30333	*Lachnagrostis nesomytica subsp. pseudofiliformis*		P1	Y
432.	467	*Lagurus ovatus (Hare's Tail Grass)*	Y		
433.	478	*Lolium rigidum (Wimmera Ryegrass)*	Y		
434.	485	*Microlaena stipoides (Weeping Grass)*			
435.	516	*Parapholis incurva (Coast Barbgrass)*	Y		
436.	571	*Poa annua (Winter Grass)*	Y		
437.	577	*Poa poiformis (Coastal Poa)*			
438.	581	*Polypogon maritimus (Coast Beardgrass)*	Y		
439.	35157	*Polypogon maritimus var. subspatheaceus*	Y		
440.	582	*Polypogon monspeliensis (Annual Beardgrass)*	Y		
441.	583	*Polypogon tenellus*			
442.	10970	*Rostraria cristata*	Y		
443.	40426	*Rytidosperma occidentale*			
444.	616	*Sorghum bicolor (Grain Sorghum)*	Y		
445.	624	*Spinifex hirsutus (Hairy Spinifex)*			
446.	625	*Spinifex longifolius (Beach Spinifex)*			
447.	635	*Sporobolus virginicus (Marine Couch)*			
448.	636	*Stenotaphrum secundatum (Buffalo Grass)*	Y		
449.	11137	*Vulpia fasciculata*	Y		
450.	11018	*Vulpia muralis*	Y		
451.	724	*Vulpia myuros (Rat's Tail Fescue)*	Y		
452.	12052	*Vulpia myuros forma megalura*	Y		
Polygalaceae					
453.	4552	*Comesperma confertum*			
454.	4555	*Comesperma integerrimum*			
Polyidaceae					
455.	27220	*Rhodopeltis australis*			
456.	27221	*Rhodopeltis borealis*			
Polyphysaceae					
457.	48409	*Acetabularia caliculus*			
Portulacaceae					
458.	2884	*Portulaca oleracea (Purslane, Wakati)*			
Posidoniaceae					
459.	123	*Posidonia australis (Fibreball Weed)*			
460.	105	*Posidonia coriacea*			
Potamogetonaceae					
461.	48620	*Althenia preissii*			
Pottiaceae					
462.	36219	*Pseudocrossidium hornschuchianum*			
463.	32438	*Syntrichia pagorum*			
464.	32455	*Weissia controversa*			
Primulaceae					
465.	36375	*Lysimachia arvensis (Pimpernel)*	Y		
466.	6484	*Samolus repens (Creeping Brookweed)*			
Ranunculaceae					
467.	10804	*Clematis linearifolia*			
468.	2935	*Ranunculus pumilio (Smallflower Buttercup)*			
469.	11831	*Ranunculus pumilio var. politus*			

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
Resedaceae					
470.	3083	*Reseda alba (White Mingnonette)*	Y		
471.	3085	*Reseda luteola (Wild Mingnonette)*	Y		
Rhamnaceae					
472.	4822	*Rhamnus alaternus (Buckthorn)*	Y		
473.	4828	*Spyridium globulosum (Basket Bush)*			
Rhodomelaceae					
474.	26440	*Acanthophora dendroides*			
475.	26454	*Amansia serrata*			
476.	26762	*Dictyomenia sonderi*			
477.	26793	*Ditria expleta*			
478.	26811	*Endosiphonia spinulosa*			
479.	26922	*Herposiphonia versicolor*			
480.	26945	*Holotrichia comosa*			
481.	26995	*Kuetzingia canaliculata*			
482.	26998	*Laurencia brongniartii*			
483.	48408	*Laurencia dendroidea*			
484.	27000	*Laurencia elata*			
485.	27001	*Laurencia filiformis*			
486.	27002	*Laurencia forsteri*			
487.	27018	*Leveillea jungermannioides*			
488.	27100	*Neurymenia fraxinifolia*			
489.	27162	*Pollexfenia pedicellata*			
490.	27170	*Polysiphonia australiensis*			
491.	29621	*Polysiphonia forfex*			
492.	27179	*Polysiphonia sertularioides*			
493.	27190	*Protokuetzingia australasica*			
494.	27335	*Tolypiocladia calodictyon*			
495.	27336	*Tolypiocladia glomerulata*			
496.	27360	*Vidalia spiralis*			
Rhodymeniaceae					
497.	26516	*Botryocladia leptopoda*			
498.	26518	*Botryocladia sonderi*			
499.	26614	*Chamaebotrys boergesenii*			Y
500.	26685	*Coelarthrum cliftonii*			
501.	26686	*Coelarthrum opuntia*			
502.	26864	*Gloiosaccion brownii*			
503.	48568	*Halopeltis australis*			
Rubiaceae					
504.	7323	*Galium murale (Small Goosegrass)*	Y		
Ruppiaceae					
505.	116	*Ruppia polycarpa*			
506.	117	*Ruppia tuberosa*			
Rutaceae					
507.	4403	*Boronia alata (Winged Boronia)*			
508.	4454	*Diplolaena dampieri (Southern Diplolaena)*			
Sapindaceae					
509.	4754	*Dodonaea aptera (Coast Hop-bush)*			
Sarcomeniaceae					
510.	27229	*Sarcomenia delesserioides*			
Schizymeniaceae					
511.	27144	*Platoma cyclocolpum*			
Scinaiaceae					
512.	27269	*Scinaia aborealis*			
513.	27270	*Scinaia tsinglanensis*			
Scrophulariaceae					
514.	7054	*Dischisma arenarium*	Y		
515.	7215	*Eremophila glabra (Tar Bush)*			
516.	17175	*Eremophila glabra subsp. albicans*			
517.	7289	*Myoporum caprarioides (Slender Myoporum)*			
518.	7291	*Myoporum insulare (Blueberry Tree, boobialla)*			
Sebdeniaceae					
519.	27274	*Sebdenia flabellata*			

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
Siphonocladaceae					
520.	26769	*Dictyosphaeria cavernosa*			
521.	26770	*Dictyosphaeria sericea*			
522.	26771	*Dictyosphaeria versluysii*			
523.	27280	*Siphonocladus tropicus*			
Solanaceae					
524.	6968	*Lycium ferocissimum (African Boxthorn)*	Y		
525.	6974	*Nicotiana glauca (Tree Tobacco)*	Y		
526.	47173	*Solanum lycopersicum (Tomato)*	Y		
527.	7022	*Solanum nigrum (Black Berry Nightshade)*	Y		
528.	7037	*Solanum symonii*			
Solieriaceae					
529.	48503	*Betaphycus speciosus*			
530.	27281	*Solieria robusta*			
Spongitaceae					
531.	27098	*Neogoniolithon brassica-florida*			
Stylidiaceae					
532.	30278	*Stylidium androsaceum*			
Tamaricaceae					
533.	15741	*Tamarix aphylla (Athel Tree)*	Y		
Typhaceae					
534.	99	*Typha orientalis (Bulrush, Cumbungi)*			
Udoteaceae					
535.	26528	*Callipsygma wilsonis*			Y
536.	26626	*Chlorodesmis baculifera*			Y
537.	27214	*Rhipiliopsis multiplex*			Y
538.	27215	*Rhipiliopsis peltata*			
Ulvaceae					
539.	35260	*Ulva compressa*			
540.	27352	*Ulva lactuca*			
541.	27354	*Ulva rigida*			
Urticaceae					
542.	12670	*Parietaria cardiostegia*			
543.	1762	*Parietaria debilis (Pellitory)*			
544.	1767	*Urtica urens (Small Nettle)*	Y		
Valoniaceae					
545.	27356	*Valonia macrophysa*			
Wrangeliaceae					
546.	26886	*Griffithsia teges*			
547.	35863	*Haloplegma duperreyi*			
548.	26900	*Haloplegma preissii*			
549.	27326	*Tanakaella itonoi*			
550.	27368	*Wrangelia plumosa*			
Zygophyllaceae					
551.	48887	*Roepera billardierei*			
552.	48901	*Roepera similis*			

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 wholely 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 B
PMST

Australian Government
Department of Agriculture, Water and the Environment

EPBC Act Protected Matters Report

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

Report created: 29-Mar-2022

Summary

Matters of National Environment Significance

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

World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International Importance (Ramsar	None
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	1
Listed Threatened Species:	43
Listed Migratory Species:	67

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

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 Lands:	None
Commonwealth Heritage Places:	None
Listed Marine Species:	101
Whales and Other Cetaceans:	12
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	None
Habitat Critical to the Survival of Marine Turtles:	None

Extra Information

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

State and Territory Reserves:	1
Regional Forest Agreements:	None
Nationally Important Wetlands:	1
EPBC Act Referrals:	4
Key Ecological Features (Marine):	None
Biologically Important Areas:	14
Bioregional Assessments:	None
Geological and Bioregional Assessments:	None

Details

Matters of National Environmental Significance

Listed Threatened Ecological Communities [Resource Information]

For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.
Status of Vulnerable, Disallowed and Ineligible are not MNES under the EPBC Act.

Community Name	Threatened Category	Presence Text	Buffer Status
Banksia Woodlands of the Swan Coastal Plain ecological community	Endangered	Community may occur within area	In feature area

Listed Threatened Species [Resource Information]

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

Scientific Name	Threatened Category	Presence Text	Buffer Status
BIRD			
Anous tenuirostris melanops Australian Lesser Noddy [26000]	Vulnerable	Species or species habitat may occur within area	In feature area
Calidris canutus Red Knot, Knot [855]	Endangered	Species or species habitat known to occur within area	In feature area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area	In feature area
Calidris tenuirostris Great Knot [862]	Critically Endangered	Roosting known to occur within area	In feature area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat known to occur within area	In feature area
Charadrius mongolus Lesser Sand Plover, Mongolian Plover [879]	Endangered	Roosting known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Diomedea amsterdamensis Amsterdam Albatross [64405]	Endangered	Species or species habitat may occur within area	In feature area
Diomedea dabbenena Tristan Albatross [66471]	Endangered	Species or species habitat may occur within area	In buffer area only
Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Diomedea sanfordi Northern Royal Albatross [64456]	Endangered	Foraging, feeding or related behaviour likely to occur within area	In feature area
Halobaena caerulea Blue Petrel [1059]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Limosa lapponica menzbieri Northern Siberian Bar-tailed Godwit, Russkoye Bar-tailed Godwit [86432]	Critically Endangered	Species or species habitat known to occur within area	In feature area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area	In feature area
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Species or species habitat may occur within area	In feature area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat likely to occur within area	In feature area
Pachyptila turtur subantarctica Fairy Prion (southern) [64445]	Vulnerable	Species or species habitat known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Phoebetria fusca Sooty Albatross [1075]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Pterodroma mollis Soft-plumaged Petrel [1036]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Rostratula australis Australian Painted Snipe [77037]	Endangered	Species or species habitat may occur within area	In feature area
Sternula nereis nereis Australian Fairy Tern [82950]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In feature area
Thalassarche carteri Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Thalassarche cauta Shy Albatross [89224]	Endangered	Foraging, feeding or related behaviour likely to occur within area	In feature area
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area	In feature area
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Species or species habitat may occur within area	In feature area
Thalassarche steadi White-capped Albatross [64462]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
FISH			
Thunnus maccoyii Southern Bluefin Tuna [69402]	Conservation Dependent	Species or species habitat likely to occur within area	In feature area
INSECT			

Scientific Name	Threatened Category	Presence Text	Buffer Status
[Hesperocolletes douglasi](#) Douglas' Broad-headed Bee, Rottnest Bee [66734]	Critically Endangered	Species or species habitat may occur within area	In feature area
MAMMAL			
[Balaenoptera musculus](#) Blue Whale [36]	Endangered	Migration route known to occur within area	In feature area
[Eubalaena australis](#) Southern Right Whale [40]	Endangered	Breeding known to occur within area	In feature area
[Neophoca cinerea](#) Australian Sea-lion, Australian Sea Lion [22]	Endangered	Species or species habitat likely to occur within area	In feature area
[Setonix brachyurus](#) Quokka [229]	Vulnerable	Species or species habitat known to occur within area	In feature area
PLANT			
[Diuris micrantha](#) Dwarf Bee-orchid [55082]	Vulnerable	Species or species habitat may occur within area	In feature area
REPTILE			
[Caretta caretta](#) Loggerhead Turtle [1763]	Endangered	Foraging, feeding or related behaviour known to occur within area	In feature area
[Chelonia mydas](#) Green Turtle [1765]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In feature area
[Dermochelys coriacea](#) Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Species or species habitat known to occur within area	In feature area
[Natator depressus](#) Flatback Turtle [59257]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In feature area
SHARK			

Scientific Name	Threatened Category	Presence Text	Buffer Status
Carcharias taurus (west coast population)			
Grey Nurse Shark (west coast population) [68752]	Vulnerable	Species or species habitat known to occur within area	In feature area
Carcharodon carcharias			
White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat known to occur within area	In feature area
Galeorhinus galeus			
School Shark, Eastern School Shark, Snapper Shark, Tope, Soupfin Shark [68453]	Conservation Dependent	Species or species habitat may occur within area	In buffer area only
Pristis pristis			
Freshwater Sawfish, Largetooth Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Vulnerable	Species or species habitat may occur within area	In feature area
Rhincodon typus			
Whale Shark [66680]	Vulnerable	Species or species habitat may occur within area	In feature area
Sphyrna lewini			
Scalloped Hammerhead [85267]	Conservation Dependent	Species or species habitat likely to occur within area	In feature area

Listed Migratory Species			[Resource Information]
Scientific Name	Threatened Category	Presence Text	Buffer Status
Migratory Marine Birds			
Anous stolidus			
Common Noddy [825]		Species or species habitat likely to occur within area	In feature area
Ardenna carneipes			
Flesh-footed Shearwater, Fleshy-footed Shearwater [82404]		Species or species habitat likely to occur within area	In feature area
Ardenna pacifica			
Wedge-tailed Shearwater [84292]		Breeding known to occur within area	In feature area
Diomedea amsterdamensis			
Amsterdam Albatross [64405]	Endangered	Species or species habitat may occur within area	In feature area
Diomedea dabbenena			
Tristan Albatross [66471]	Endangered	Species or species habitat may occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Diomedea sanfordi Northern Royal Albatross [64456]	Endangered	Foraging, feeding or related behaviour likely to occur within area	In feature area
Hydroprogne caspia Caspian Tern [808]		Breeding known to occur within area	In feature area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area	In feature area
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Species or species habitat may occur within area	In feature area
Onychoprion anaethetus Bridled Tern [82845]		Breeding known to occur within area	In feature area
Phaethon rubricauda Red-tailed Tropicbird [994]		Breeding known to occur within area	In feature area
Phoebetria fusca Sooty Albatross [1075]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Sterna dougallii Roseate Tern [817]		Breeding known to occur within area	In feature area
Thalassarche carteri Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Thalassarche cauta			
Shy Albatross [89224]	Endangered	Foraging, feeding or related behaviour likely to occur within area	In feature area
Thalassarche impavida			
Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area	In feature area
Thalassarche melanophris			
Black-browed Albatross [66472]	Vulnerable	Species or species habitat may occur within area	In feature area
Thalassarche steadi			
White-capped Albatross [64462]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Migratory Marine Species			
Balaenoptera edeni			
Bryde's Whale [35]		Species or species habitat may occur within area	In feature area
Balaenoptera musculus			
Blue Whale [36]	Endangered	Migration route known to occur within area	In feature area
Caperea marginata			
Pygmy Right Whale [39]		Foraging, feeding or related behaviour may occur within area	In feature area
Carcharhinus longimanus			
Oceanic Whitetip Shark [84108]		Species or species habitat may occur within area	In feature area
Carcharodon carcharias			
White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat known to occur within area	In feature area
Caretta caretta			
Loggerhead Turtle [1763]	Endangered	Foraging, feeding or related behaviour known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Chelonia mydas Green Turtle [1765]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In feature area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Species or species habitat known to occur within area	In feature area
Eubalaena australis as Balaena glacialis australis Southern Right Whale [40]	Endangered	Breeding known to occur within area	In feature area
Lamna nasus Porbeagle, Mackerel Shark [83288]		Species or species habitat may occur within area	In feature area
Megaptera novaeangliae Humpback Whale [38]		Species or species habitat known to occur within area	In feature area
Mobula alfredi as Manta alfredi Reef Manta Ray, Coastal Manta Ray [90033]		Species or species habitat known to occur within area	In feature area
Mobula birostris as Manta birostris Giant Manta Ray [90034]		Species or species habitat likely to occur within area	In feature area
Natator depressus Flatback Turtle [59257]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In feature area
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may occur within area	In feature area
Pristis pristis Freshwater Sawfish, Largetooth Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Vulnerable	Species or species habitat may occur within area	In feature area
Rhincodon typus Whale Shark [66680]	Vulnerable	Species or species habitat may occur within area	In feature area
Migratory Terrestrial Species			

Scientific Name	Threatened Category	Presence Text	Buffer Status
[Motacilla cinerea](#) Grey Wagtail [642]		Species or species habitat may occur within area	In feature area
Migratory Wetlands Species			
[Actitis hypoleucos](#) Common Sandpiper [59309]		Species or species habitat known to occur within area	In feature area
[Arenaria interpres](#) Ruddy Turnstone [872]		Roosting known to occur within area	In feature area
[Calidris acuminata](#) Sharp-tailed Sandpiper [874]		Roosting known to occur within area	In feature area
[Calidris alba](#) Sanderling [875]		Roosting known to occur within area	In feature area
[Calidris canutus](#) Red Knot, Knot [855]	Endangered	Species or species habitat known to occur within area	In feature area
[Calidris ferruginea](#) Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area	In feature area
[Calidris melanotos](#) Pectoral Sandpiper [858]		Species or species habitat known to occur within area	In feature area
[Calidris ruficollis](#) Red-necked Stint [860]		Roosting known to occur within area	In feature area
[Calidris tenuirostris](#) Great Knot [862]	Critically Endangered	Roosting known to occur within area	In feature area
[Charadrius bicinctus](#) Double-banded Plover [895]		Roosting known to occur within area	In feature area
[Charadrius leschenaultii](#) Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Charadrius mongolus Lesser Sand Plover, Mongolian Plover [879]	Endangered	Roosting known to occur within area	In feature area
Gallinago megala Swinhoe's Snipe [864]		Roosting likely to occur within area	In feature area
Gallinago stenura Pin-tailed Snipe [841]		Roosting likely to occur within area	In feature area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat known to occur within area	In feature area
Limosa limosa Black-tailed Godwit [845]		Roosting known to occur within area	In feature area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat likely to occur within area	In feature area
Numenius minutus Little Curlew, Little Whimbrel [848]		Roosting likely to occur within area	In feature area
Numenius phaeopus Whimbrel [849]		Roosting known to occur within area	In feature area
Pandion haliaetus Osprey [952]		Breeding known to occur within area	In feature area
Phalaropus lobatus Red-necked Phalarope [838]		Roosting known to occur within area	In feature area
Pluvialis fulva Pacific Golden Plover [25545]		Roosting known to occur within area	In feature area
Pluvialis squatarola Grey Plover [865]		Roosting known to occur within area	In feature area
Thalasseus bergii Greater Crested Tern [83000]		Breeding known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Tringa brevipes Grey-tailed Tattler [851]		Roosting known to occur within area	In feature area
Tringa nebularia Common Greenshank, Greenshank [832]		Species or species habitat known to occur within area	In feature area
Tringa stagnatilis Marsh Sandpiper, Little Greenshank [833]		Roosting known to occur within area	In feature area
Tringa totanus Common Redshank, Redshank [835]		Roosting known to occur within area	In feature area
Xenus cinereus Terek Sandpiper [59300]		Roosting known to occur within area	In feature area

Other Matters Protected by the EPBC Act

Listed Marine Species			[Resource Information]
Scientific Name	Threatened Category	Presence Text	Buffer Status
Bird			
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat known to occur within area	In feature area
Anous stolidus Common Noddy [825]		Species or species habitat likely to occur within area	In feature area
Anous tenuirostris melanops Australian Lesser Noddy [26000]	Vulnerable	Species or species habitat may occur within area	In feature area
Ardenna carneipes as Puffinus carneipes Flesh-footed Shearwater, Fleshy-footed Shearwater [82404]		Species or species habitat likely to occur within area	In feature area
Ardenna pacifica as Puffinus pacificus Wedge-tailed Shearwater [84292]		Breeding known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Arenaria interpres Ruddy Turnstone [872]		Roosting known to occur within area	In feature area
Calidris acuminata Sharp-tailed Sandpiper [874]		Roosting known to occur within area	In feature area
Calidris alba Sanderling [875]		Roosting known to occur within area	In feature area
Calidris canutus Red Knot, Knot [855]	Endangered	Species or species habitat known to occur within area overfly marine area	In feature area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area overfly marine area	In feature area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat known to occur within area overfly marine area	In feature area
Calidris ruficollis Red-necked Stint [860]		Roosting known to occur within area overfly marine area	In feature area
Calidris tenuirostris Great Knot [862]	Critically Endangered	Roosting known to occur within area overfly marine area	In feature area
Charadrius bicinctus Double-banded Plover [895]		Roosting known to occur within area overfly marine area	In feature area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat known to occur within area	In feature area
Charadrius mongolus Lesser Sand Plover, Mongolian Plover [879]	Endangered	Roosting known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Charadrius ruficapillus Red-capped Plover [881]		Roosting known to occur within area overfly marine area	In feature area
Chroicocephalus novaehollandiae as Larus novaehollandiae Silver Gull [82326]		Breeding known to occur within area	In feature area
Diomedea amsterdamensis Amsterdam Albatross [64405]	Endangered	Species or species habitat may occur within area	In feature area
Diomedea dabbenena Tristan Albatross [66471]	Endangered	Species or species habitat may occur within area	In buffer area only
Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Diomedea sanfordi Northern Royal Albatross [64456]	Endangered	Foraging, feeding or related behaviour likely to occur within area	In feature area
Gallinago megala Swinhoe's Snipe [864]		Roosting likely to occur within area overfly marine area	In feature area
Gallinago stenura Pin-tailed Snipe [841]		Roosting likely to occur within area overfly marine area	In feature area
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat may occur within area	In feature area
Halobaena caerulea Blue Petrel [1059]	Vulnerable	Species or species habitat may occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Himantopus himantopus Pied Stilt, Black-winged Stilt [870]		Roosting known to occur within area overfly marine area	In feature area
Hydroprogne caspia as Sterna caspia Caspian Tern [808]		Breeding known to occur within area	In feature area
Larus pacificus Pacific Gull [811]		Breeding known to occur within area	In feature area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat known to occur within area	In feature area
Limosa limosa Black-tailed Godwit [845]		Roosting known to occur within area overfly marine area	In feature area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area	In feature area
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Species or species habitat may occur within area	In feature area
Motacilla cinerea Grey Wagtail [642]		Species or species habitat may occur within area overfly marine area	In feature area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat likely to occur within area	In feature area
Numenius minutus Little Curlew, Little Whimbrel [848]		Roosting likely to occur within area overfly marine area	In feature area
Numenius phaeopus Whimbrel [849]		Roosting known to occur within area	In feature area
Onychoprion anaethetus as Sterna anaethetus Bridled Tern [82845]		Breeding known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
[Onychoprion fuscatus as Sterna fuscata](#) Sooty Tern [90682]		Breeding known to occur within area	In feature area
[Pachyptila turtur](#) Fairy Prion [1066]		Species or species habitat known to occur within area	In feature area
[Pandion haliaetus](#) Osprey [952]		Breeding known to occur within area	In feature area
[Phaethon rubricauda](#) Red-tailed Tropicbird [994]		Breeding known to occur within area	In feature area
[Phalaropus lobatus](#) Red-necked Phalarope [838]		Roosting known to occur within area	In feature area
[Phoebetria fusca](#) Sooty Albatross [1075]	Vulnerable	Species or species habitat may occur within area	In buffer area only
[Pluvialis fulva](#) Pacific Golden Plover [25545]		Roosting known to occur within area	In feature area
[Pluvialis squatarola](#) Grey Plover [865]		Roosting known to occur within area overfly marine area	In feature area
[Pterodroma mollis](#) Soft-plumaged Petrel [1036]	Vulnerable	Species or species habitat may occur within area	In buffer area only
[Puffinus assimilis](#) Little Shearwater [59363]		Breeding known to occur within area	In feature area
[Recurvirostra novaehollandiae](#) Red-necked Avocet [871]		Roosting known to occur within area overfly marine area	In feature area
[Rostratula australis as Rostratula benghalensis (sensu lato)](#) Australian Painted Snipe [77037]	Endangered	Species or species habitat may occur within area overfly marine area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Stercorarius skua as Catharacta skua Great Skua [823]		Species or species habitat may occur within area	In buffer area only
Sterna dougallii Roseate Tern [817]		Breeding known to occur within area	In feature area
Sternula nereis as Sterna nereis Fairy Tern [82949]		Breeding known to occur within area	In feature area
Thalassarche carteri Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Thalassarche cauta Shy Albatross [89224]	Endangered	Foraging, feeding or related behaviour likely to occur within area	In feature area
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area	In feature area
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Species or species habitat may occur within area	In feature area
Thalassarche steadi White-capped Albatross [64462]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Thalasseus bergii as Sterna bergii Greater Crested Tern [83000]		Breeding known to occur within area	In feature area
Thinornis cucullatus as Thinornis rubricollis Hooded Dotterel, Hooded Plover [87735]		Species or species habitat known to occur within area overfly marine area	In feature area
Tringa brevipes as Heteroscelus brevipes Grey-tailed Tattler [851]		Roosting known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Tringa nebularia			
Common Greenshank, Greenshank [832]		Species or species habitat known to occur within area overfly marine area	In feature area
Tringa stagnatilis			
Marsh Sandpiper, Little Greenshank [833]		Roosting known to occur within area overfly marine area	In feature area
Tringa totanus			
Common Redshank, Redshank [835]		Roosting known to occur within area overfly marine area	In feature area
Xenus cinereus			
Terek Sandpiper [59300]		Roosting known to occur within area overfly marine area	In feature area
Fish			
Acentronura australe			
Southern Pygmy Pipehorse [66185]		Species or species habitat may occur within area	In feature area
Campichthys galei			
Gale's Pipefish [66191]		Species or species habitat may occur within area	In feature area
Choeroichthys suillus			
Pig-snouted Pipefish [66198]		Species or species habitat may occur within area	In buffer area only
Halicampus brocki			
Brock's Pipefish [66219]		Species or species habitat may occur within area	In buffer area only
Heraldia nocturna			
Upside-down Pipefish, Eastern Upside-down Pipefish, Eastern Upside-down Pipefish [66227]		Species or species habitat may occur within area	In feature area
Hippocampus angustus			
Western Spiny Seahorse, Narrow-bellied Seahorse [66234]		Species or species habitat may occur within area	In feature area
Hippocampus breviceps			
Short-head Seahorse, Short-snouted Seahorse [66235]		Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Hippocampus subelongatus West Australian Seahorse [66722]		Species or species habitat may occur within area	In feature area
Histiogamphelus cristatus Rhino Pipefish, Macleay's Crested Pipefish, Ring-back Pipefish [66243]		Species or species habitat may occur within area	In feature area
Lissocampus caudalis Australian Smooth Pipefish, Smooth Pipefish [66249]		Species or species habitat may occur within area	In feature area
Lissocampus fatiloquus Prophet's Pipefish [66250]		Species or species habitat may occur within area	In feature area
Lissocampus runa Javelin Pipefish [66251]		Species or species habitat may occur within area	In feature area
Maroubra perserrata Sawtooth Pipefish [66252]		Species or species habitat may occur within area	In feature area
Mitotichthys meraculus Western Crested Pipefish [66259]		Species or species habitat may occur within area	In feature area
Nannocampus subosseus Bonyhead Pipefish, Bony-headed Pipefish [66264]		Species or species habitat may occur within area	In feature area
Phycodurus eques Leafy Seadragon [66267]		Species or species habitat may occur within area	In feature area
Phyllopteryx taeniolatus Common Seadragon, Weedy Seadragon [66268]		Species or species habitat may occur within area	In feature area
Pugnaso curtirostris Pugnose Pipefish, Pug-nosed Pipefish [66269]		Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Solegnathus lettiensis Gunther's Pipehorse, Indonesian Pipefish [66273]		Species or species habitat may occur within area	In feature area
Stigmatopora argus Spotted Pipefish, Gulf Pipefish, Peacock Pipefish [66276]		Species or species habitat may occur within area	In feature area
Stigmatopora nigra Widebody Pipefish, Wide-bodied Pipefish, Black Pipefish [66277]		Species or species habitat may occur within area	In feature area
Syngnathoides biaculeatus Double-end Pipehorse, Double-ended Pipehorse, Alligator Pipefish [66279]		Species or species habitat may occur within area	In buffer area only
Urocampus carinirostris Hairy Pipefish [66282]		Species or species habitat may occur within area	In feature area
Vanacampus margaritifer Mother-of-pearl Pipefish [66283]		Species or species habitat may occur within area	In feature area
Vanacampus phillipi Port Phillip Pipefish [66284]		Species or species habitat may occur within area	In feature area
Vanacampus poecilolaemus Longsnout Pipefish, Australian Long-snout Pipefish, Long-snouted Pipefish [66285]		Species or species habitat may occur within area	In feature area
Mammal			
Arctocephalus forsteri Long-nosed Fur-seal, New Zealand Fur-seal [20]		Species or species habitat may occur within area	In feature area
Neophoca cinerea Australian Sea-lion, Australian Sea Lion [22]	Endangered	Species or species habitat likely to occur within area	In feature area
Reptile			
Aipysurus pooleorum Shark Bay Seasnake [66061]		Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Caretta caretta Loggerhead Turtle [1763]	Endangered	Foraging, feeding or related behaviour known to occur within area	In feature area
Chelonia mydas Green Turtle [1765]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In feature area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Species or species habitat known to occur within area	In feature area
Disteira kingii Spectacled Seasnake [1123]		Species or species habitat may occur within area	In feature area
Natator depressus Flatback Turtle [59257]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In feature area
Pelamis platurus Yellow-bellied Seasnake [1091]		Species or species habitat may occur within area	In feature area

Whales and Other Cetaceans			[Resource Information]
Current Scientific Name	Status	Type of Presence	Buffer Status
Mammal			
Balaenoptera acutorostrata Minke Whale [33]		Species or species habitat may occur within area	In feature area
Balaenoptera edeni Bryde's Whale [35]		Species or species habitat may occur within area	In feature area
Balaenoptera musculus Blue Whale [36]	Endangered	Migration route known to occur within area	In feature area
Caperea marginata Pygmy Right Whale [39]		Foraging, feeding or related behaviour may occur within area	In feature area

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

Extra Information

State and Territory Reserves			[Resource Information]
Protected Area Name	Reserve Type	State	Buffer Status
Rottnest Island	State Reserve	WA	In feature area

Nationally Important Wetlands		[Resource Information]
Wetland Name	State	Buffer Status
Rottnest Island Lakes	WA	In feature area

EPBC Act Referrals				[Resource Information]
Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Not controlled action				

Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Not controlled action				
INDIGO Central Submarine Telecommunications Cable	2017/8127	Not Controlled Action	Completed	In feature area
Rottnest Lodge Redevelopment	2019/8565	Not Controlled Action	Completed	In buffer area only
Seismic Survey, Bremer Basin, Mentelle Basin and Zeewyck Sub-basin	2004/1700	Not Controlled Action	Completed	In feature area
Not controlled action (particular manner)				
INDIGO Marine Cable Route Survey (INDIGO)	2017/7996	Not Controlled Action (Particular Manner)	Post-Approval	In buffer area only

Biologically Important Areas

Scientific Name	Behaviour	Presence	Buffer Status
Seabirds			
Ardenna carneipes Flesh-footed Shearwater [82404]	Aggregation	Known to occur	In feature area
Ardenna pacifica Wedge-tailed Shearwater [84292]	Foraging (in high numbers)	Known to occur	In feature area
Eudyptula minor Little Penguin [1085]	Foraging (provisioning young)	Known to occur	In feature area
Hydroprogne caspia Caspian Tern [808]	Foraging (provisioning young)	Known to occur	In feature area
Larus pacificus Pacific Gull [811]	Foraging (in high numbers)	Former Range	In feature area
Onychoprion anaethetus Bridled Tern [82845]	Foraging (in high numbers)	Known to occur	In feature area
Puffinus assimilis tunneyi Little Shearwater [59363]	Foraging (in high numbers)	Known to occur	In feature area

Scientific Name	Behaviour	Presence	Buffer Status
Sterna dougallii Roseate Tern [817]	Foraging	Known to occur	In feature area
Sternula nereis Fairy Tern [82949]	Foraging (in high numbers)	Known to occur	In feature area
Seals			
Neophoca cinerea Australian Sea Lion [22]	Foraging (male)	Likely to occur	In feature area
Whales			
Balaenoptera musculus brevicauda Pygmy Blue Whale [81317]	Distribution	Known to occur	In feature area
Balaenoptera musculus brevicauda Pygmy Blue Whale [81317]	Migration	Known to occur	In buffer area only
Eubalaena australis Southern Right Whale [40]	Calving buffer	Known to occur	In feature area
Megaptera novaeangliae Humpback Whale [38]	Migration (north and south)	Known to occur	In feature area

Caveat

1 PURPOSE

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

The report contains the mapped locations of:

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

2 DISCLAIMER

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

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

3 DATA SOURCES

Threatened ecological communities

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

Threatened, migratory and marine species

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

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

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

4 LIMITATIONS

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

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

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

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

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

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

Acknowledgements

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

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

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

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

Department of Agriculture Water and the Environment
GPO Box 858
Canberra City ACT 2601 Australia
+61 2 6274 1111

360 environmental | Part of SLR

10 Bermondsey Street West Leederville WA 6007 **t** (+618) 9388 8360 **f** (+618) 9381 2360
PO BOX 14, West Perth WA 6872
w 360environmental.com.au **e** admin@360environmental.com.au

people • planet • professional

Appendix B
Focused Vision – Vegetation Survey (2022)

FLORA AND VEGETATION SURVEY

SOUTH THOMSON AND KINGSTOWN, ROTTNEST ISLAND (WADJEMUP)

THE ROTTNEST ISLAND AUTHORITY

SEPTEMBER 2022

Focused Vision Consulting Pty Ltd
ABN 25 605 804 500

Please direct all enquiries to:
Focused Vision Consulting Pty Ltd
8/83 Mell Road, SPEARWOOD WA 6163
P: 08 6179 4111
E: admin@focusedvision.com.au

Document History

Rev.	Author	Reviewed	Approved	Date
A	Megan Gray Ecologist Biologist Olga Nazarova Botanist	Kellie Bauer-Simpson Principal Ecologist		18/07/2022
B	Megan Gray Ecologist Biologist Olga Nazarova Botanist	Kellie Bauer-Simpson Principal Ecologist	Kellie Bauer-Simpson Principal Ecologist	22/07/2022
C	Megan Gray Ecologist Biologist Olga Nazarova Botanist	Kellie Bauer-Simpson Principal Ecologist	Kellie Bauer-Simpson Principal Ecologist	25/07/2022
0	Megan Gray Ecologist Biologist Olga Nazarova Botanist	Rebecca Gabbitus Rottnest Island Authority Jessica McNamara Rottnest Island Authority	Kellie Bauer-Simpson Principal Ecologist	09/09/2022

TABLE OF CONTENTS

FIGURES

TABLES

EXECUTIVE SUMMARY

Focused Vision Consulting Pty Ltd (FVC) was commissioned by the Rottnest Island Authority (RIA) to undertake a flora and vegetation survey with particular emphasis on potential Threatened Ecological Communities and Threatened or Priority flora of Rottnest Island (Wadjemup) within the South Thompson and Kingstown areas.

The scope of work included a single-phase, detailed flora and vegetation survey during autumn, assessing three areas, with associated reporting and data delivery.

A single phase, detailed flora and vegetation field assessment was carried out in the study area by experienced botanists on 2 May 2022.

The key findings and conclusions arising from the flora and vegetation assessment within the study area were as follows:

- No Threatened flora listed under the *Biodiversity Conservation Act 2016* (BC Act) or the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) were recorded.
- No Priority species listed by the Department of Biodiversity, Conservation and Attractions (DBCA) were recorded.
- No weeds listed as Weeds of National Significance (WoNS) or Declared Pest (DP) plants under the *Biosecurity and Agriculture Management Act 2007* (BAM Act) were recorded.
- The condition of the vegetation was found to range from 'Excellent' to 'Completely Degraded - Degraded' with the greatest proportion in 'Good' condition.
- Nine vegetation units and three other classifications (Beach, Planted and Cleared areas) were defined and mapped within the study area.
- Two of the recorded vegetation units were determined to be characteristic of the State-listed *Callitris preissii* (or *Melaleuca lanceolata*) forests and woodlands, Swan Coastal Plain Threatened Ecological Community (TEC) (*Callitris preissii - Melaleuca lanceolata* forests and woodlands TEC).
- The remaining extent of the one vegetation association supported by the study area falls below the 10% retention target in the context of the Swan Coastal Plain, and two vegetation associations relevant to the study area represented by less than 30% of pre-European extent across the Swan Coastal Plain and Perth IBRA sub-region.
- Vegetation units MlAp and CpMl are considered to be representative of the State-listed *Callitris preissii* (or *Melaleuca lanceolata*) forests and woodlands TEC (FCT 30a), and therefore, these units are considered to be of State significance.
- Rottnest Island (Wadjemup) is an A Class Reserve and an ESA, therefore all vegetation it supports is considered to be of State and regional significance.
- Vegetation units MlAp, CpMl, TiSS, LpAl and SlG are representative of pre-European vegetation associations and/or complexes that have less than 30% of their original extent remaining and are therefore considered regionally significant.
- Vegetation units GtS, LpAp and SlG occur as small, isolated communities, and are therefore considered locally significant.
- Vegetation units CpMl and GtS are limited in their local extent and/or distribution, and are therefore, considered locally significant.
- Since *Lepidium puberulum* (Priority 4) has previously been recorded within the study area, and since this species would only be observable during late winter and spring, where clearing impacts may be proposed within areas of suitable habitat (sandy soils associated with limestone), further targeted surveys would be appropriate.

1 INTRODUCTION

The Rottnest Island Authority respects the Whadjuk people as the traditional custodians of Wadjemup (Rottnest Island).

1.1 BACKGROUND

Rottnest Island (Wadjemup) is governed by the *Rottnest Island Authority Act 1987* (RIA Act), which establishes the Rottnest Island Authority (RIA) as a statutory body to control and manage the island.

Focused Vision Consulting Pty Ltd (FVC) was commissioned by RIA for a targeted and reconnaissance flora and vegetation assessment, with particular emphasis on potential Threatened Ecological Communities (TECs) and Threatened or Priority flora within the South Thomson and Kingstown areas. The survey results may be utilised for future Environmental Impact Assessments (EIA) and were required to be conducted as per the *Technical Guidance - Flora and Vegetation Surveys for Environmental Impact Assessment* (EPA 2016a).

1.2 LOCATION

The study area is located within the South Thomson and Kingstown areas of Rottnest Island, which is located on an offshore island, approximately 18 kilometres (km) west of Fremantle. Rottnest Island (Wadjemup) is part of the City of Cockburn. The survey areas were separated into three, as shown in **Figure 1**, which are collectively referred to as the study area in this report.

1.3 SCOPE OF WORK

The scope of work required to be fulfilled for the study area was as follows:

- Flora and vegetation desktop assessment, in accordance with the *Technical Guidance - Flora and Vegetation Surveys for Environmental Impact Assessment* (Western Australian Environmental Protection Authority (EPA) 2016a)
- Undertake a survey, incorporating:
    - an autumn reconnaissance assessment in accordance EPA (2016a) across the full area extent/s to identify, describe and map general flora species, vegetation communities and vegetation condition
    - opportunistic targeted survey for Threatened and Priority flora
    - determination of the presence of potential Threatened Ecological Communities (TECs) and Priority Ecological Communities (PECs) and mapping of their extent, with a particular focus on Floristic Community Type (FCT) 30a
- Prepare a report that presents the desktop and field assessment findings, prepared in accordance with EPA (2016a)
- Preparation of an Index of Biodiversity Surveys for Assessment (IBSA)-compliant package of spatial data.

Figure 1 - Survey Areas

RIA22001 30 June 2022

2 LEGISLATIVE CONTEXT

The flora and vegetation assessment was conducted in accordance with the following legislation:

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

The assessment complied with the requirements for environmental survey and reporting in Western Australia, as outlined in:

- EPA (2008) *Guidance Statement No. 33: Environmental Guidance for Planning and Development*
- EPA (2016a) *Technical Guidance – Flora and Vegetation Surveys for Environmental Impact Assessment*
- EPA (2016b) *Environmental Factor Guideline – Flora and Vegetation*.

Survey methodology guidance for targeted flora searches was also taken from:

- Commonwealth of Australia (2013) *Survey Guidelines for Australia's Threatened Orchids*.

2.1 THREATENED AND PRIORITY FLORA

The Department of Biodiversity, Conservation and Attractions (DBCA) assigns conservation status to endemic plant species that are geographically restricted to few known populations or threatened by local processes. Allocating conservation status to plant species assists in protecting populations and conserving species from potential threats (DBCA 2019).

The BC Act provides a statutory basis for the listing of threatened ecological communities (TECs), threatened and specially protected species, critical habitat and key threatening processes. Whilst not awarded any statutory protection, the DBCA maintains the Priority flora list, for species of conservation concern. Therefore, both Threatened and Priority flora are important focuses of flora and vegetation surveys and their definitions are presented in **Table 1**.

Table 1 - Definitions of Threatened and Priority Flora Species (DBCA 2019)

Conservation Code	Category
T	**Threatened Species** Listed by order of the Minister as Threatened in the category of critically endangered, endangered or vulnerable under section 19(1), or is a rediscovered species to be regarded as threatened species under section 26(2) of the BC Act. Threatened flora is that subset of 'Rare Flora' listed under schedules 1 to 3 of the Wildlife Conservation (Rare Flora) Notice for Threatened Flora.
P1	**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.
P2	**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.
P3	**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.
P4	**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.

Under the EPBC Act, actions that have, or are likely to have, a significant impact on a matter of national environmental significance (MNES) require approval from the Federal Minister for the Environment. Species at risk of extinction are recognised as Threatened at a Commonwealth level and are categorised according to the EPBC Act as summarised in **Table 2**.

Table 2 - Categories of EPBC Act Threatened Flora Species

Conservation Code	Category
EX	**Extinct** Species where "there is no reasonable doubt that the last member of the species has died", and listing is otherwise in accordance with the ministerial guidelines (section 24 of the BC Act).
EW	**Extinct in the Wild** Species that "is known only to survive in cultivation, in captivity or as a naturalised population well outside its past range; and it has not been recorded in its known habitat or expected habitat, at appropriate seasons, anywhere in its past range, despite surveys over a time frame appropriate to its life cycle and form", and listing is otherwise in accordance with the ministerial guidelines (section 25 of the BC Act). Currently there are no threatened fauna or threatened flora species listed as extinct in the wild. If listing of a species as extinct in the wild occurs, then a schedule will be added to the applicable notice.
CR	**Critically Endangered** Threatened species considered to be "facing an extremely high risk of extinction in the wild in the immediate future, as determined in accordance with criteria set out in the ministerial guidelines". Listed as critically endangered under section 19(1)(a) of the BC Act in accordance with the criteria set out in section 20 and the ministerial guidelines. Published under schedule 1 of the Wildlife Conservation (Specially Protected Fauna) Notice 2018 for critically endangered fauna or the Wildlife Conservation (Rare Flora) Notice 2018 for critically endangered flora.
EN	**Endangered** Threatened species considered to be "facing a very high risk of extinction in the wild in the near future, as determined in accordance with criteria set out in the ministerial guidelines". Listed as endangered under section 19(1)(b) of the BC Act in accordance with the criteria set out in section 21 and the ministerial guidelines. Published under schedule 2 of the Wildlife Conservation (Specially Protected Fauna) Notice 2018 for endangered fauna or the Wildlife Conservation (Rare Flora) Notice 2018 for endangered flora.
VU	**Vulnerable** Threatened species considered to be "facing a high risk of extinction in the wild in the medium-term future, as determined in accordance with criteria set out in the ministerial guidelines". Listed as vulnerable under section 19(1)(c) of the BC Act in accordance with the criteria set out in section 22 and the ministerial guidelines. Published under schedule 3 of the Wildlife Conservation (Specially Protected Fauna) Notice 2018 for vulnerable fauna or the Wildlife Conservation (Rare Flora) Notice 2018 for vulnerable flora.

Any species listed in State and Commonwealth legislation as being of conservation significance is broadly considered to be a significant species. This incorporates species that are endangered, vulnerable and rare or covered by international conventions. Significance is not limited to species covered by State and Commonwealth legislation that also includes species of local significance and species showing significant range extensions or at the edge of their known range.

2.2 THREATENED AND PRIORITY ECOLOGICAL COMMUNITIES

TECs are naturally occurring biological assemblages that occur in a particular type of habitat, which are subject to processes that threaten to destroy or significantly modify the assemblage across its range (DEC 2007).

The Minister may list an ecological community as a TEC in one of the following categories: Presumed Totally Destroyed (PD), Critically Endangered (CR), Endangered (EN) or Vulnerable (VU). A publicly available database, listing TECs within Western Australia (WA) is maintained by DBCA.

TECs in WA are protected under the State BC Act and some are also protected under the Commonwealth EPBC Act. The TECs on the Commonwealth register are also listed on the Department of Climate Change, Energy, the Environment and Water (DCCEEW) website, and in the Protected Matters Database (DCCEEW 2022a, 2022b).

Additional to TECs, ecological communities that are considered to be potentially of conservation significance (and potentially TECs) that do not currently meet survey criteria or that are not adequately defined, are rare but not threatened, have been recently removed from the TEC list or require regular monitoring, are considered to be Priority Ecological Communities (PECs) (DEC 2013) and are also required to be taken into consideration during environmental impact assessments (EPA 2016b).

2.3 VEGETATION OF SIGNIFICANCE

Alongside and in addition to significance according to statutory listings, vegetation may be considered significant at a National, State, regional or local level. Whilst not applicable to statutory protection, vegetation significance is an important consideration in the environmental impact assessment process.

2.3.1 Nationally Significant Vegetation

Vegetation communities may be considered to be of National significance where they support the following Commonwealth listed Matters of National Environmental Significance (MNES):

- Populations of Threatened (EPBC listed) species
- TECs listed as nationally (EPBC) significant
- RAMSAR Wetlands of International Importance (DCCEEW 2022a).

2.3.2 State Significant Vegetation

Vegetation communities may be considered to be of State significance where they:

- Support State listed Threatened flora, fauna and TECs afforded protection under the BC Act (EPA 2008, WALGA 2004)
- Occur within the State-managed conservation estate (areas protected under the *Conservation and Land Management Act 1984* (CLM Act)) or areas that have been formally recommended by DBCA for inclusion in the State conservation estate (EPA 2008).

2.3.3 Regionally Significant Vegetation

Vegetation communities may be considered to be of regional significance where they:

- Support populations of Priority Flora or ecological communities (EPA 2016b, Government of Western Australia 2000a)
- Are formally protected or recognised as Environmentally Sensitive Areas (ESAs), or under planning schemes for conservation, such as Bush Forever (EPA 2008, WALGA 2004)
- Support conservation category wetlands including associated vegetation (Government of Western Australia 2000a)
- Maintain important ecological processes (EPA 2016b)
- Contain flora species exhibiting range extensions and undescribed species (EPA 2016b)
- Have a restricted regional distribution (EPA 2016b)
- Are represented by less than 30% of their pre-European extent (Commonwealth of Australia 2001).

2.3.4 Locally Significant Vegetation

Vegetation communities may be considered to be locally significant where they:

- Occur as small, isolated communities (Government of Western Australia 2000b, WALGA 2004)
- Have a restricted local extent (proportion) (EPA 2016b) and/or are locally restricted to only one or a few locations (WALGA 2004).

2.4 VEGETATION CLEARING, EXTENT AND STATUS

Clearing of native vegetation is regulated in WA under the EP Act and the *Environmental Protection (Clearing of Native Vegetation) Regulations 2004*. Any clearing of native vegetation is an offence, unless carried out under a clearing permit or if the clearing is for an exempt purpose (Department of Water and Environmental Regulation (DWER 2022). A clearing permit may be required under Part V of the EP Act, whereby permit applications to clear native vegetation must be assessed against the '10 Clearing Principles' as outlined in the regulations (DER 2019).

Where clearing of native vegetation is proposed to occur, there are several key criteria applied to the assessment of clearing permit applications, in the interests of biodiversity conservation (DER 2019).

The objective of the EPA in relation to flora and vegetation is 'to protect flora and vegetation so that biological diversity and ecological integrity are maintained' (EPA 2016a). This objective is documented in the EPA Factor Guideline - Flora and Vegetation (EPA 2016a). The EPA considers it is important that ecological communities are maintained above the threshold level of 30% of the original pre-clearing extent of the community in unconstrained areas and 10% within 'constrained' areas (EPA 2008).

2.5 ENVIRONMENTALLY SENSITIVE AREAS

Environmentally Sensitive Areas (ESAs) are areas that require special protection due to aspects such as landscape, fauna or historical value and are generally considered to be areas of high conservation value. ESAs are declared in the *Environmental Protection (Environmentally Sensitive Areas) Notice 2005*, which was gazetted on 8 April 2005 (Minister for the Environment 2005).

There are several types of ESAs relating to flora and vegetation, declared under Part V of the EP Act, which include:

- a defined wetland and the area within 50 m of that wetland
- the area covered by vegetation within 50 m of rare (Threatened) flora, to the extent where the vegetation is continuous with the vegetation in which the rare (Threatened) flora is located
- the area covered by a TEC
- Bush Forever sites.

2.6 INTRODUCED FLORA

Over 1,200 introduced (weed) species have been recognised to occur within Western Australia (EPA 2007). Weeds are plants that are not indigenous to an area and have been introduced either directly or indirectly through human activity. They establish in natural ecosystems and adversely modify natural processes, have the potential to dominate and simplify the ecosystems and thus decrease habitat value provided for native fauna. Weeds pose a threat to many native flora species due to their ability to rapidly grow and out-compete for available water, space, sunlight, and nutrients (EPA 2007).

2.6.1 Weeds of National Significance

Under the Australian Weed Strategy 2017-2027, there are currently 32 weed species listed as Weeds of National Significance (WoNS) (Commonwealth of Australia 2017). Each weed listed was considered for inclusion based on the following criteria:

- invasive tendencies
- impacts
- potential for spread
- socioeconomic and environmental values.

2.6.2 Declared Pest Plants

The Western Australian Organism List (WAOL) details organisms listed as Declared Pests, including pest plants, under the *Biosecurity and Agriculture Management Act 2007* (BAM Act) (Department of Primary Industries and Regional Development (DPIRD 2022)). Under the BAM Act, Declared Pests are listed under one of the following categories:

- **C1 (exclusion)**, that applies to pests not established in Western Australia; control measures are to be taken to prevent their entry and establishment
- **C2 (eradication)**, that applies to pests that are present in Western Australia but in low numbers or in limited areas where eradication is still a possibility
- **C3 (management)**, that applies to plants that should have some form of management applied that will alleviate the harmful impacts of the plant, reduce the numbers or distribution of the plant, or prevent or contain the spread of the plant (DPIRD 2017).

2.6.3 Environmental Weeds

Introduced species have also been ranked by a number of attributes, including invasiveness, distribution and environmental impacts in the various regions in the *Environmental Weed Strategy* (Department of Conservation and Land Management (CALM) 1999). To advance the above categorisation, the Invasive Plant Prioritisation Process for DBCA was developed in 2008 (DPAW 2013).

3 EXISTING ENVIRONMENT

3.1 CLIMATE

Rottnest Island (Wadjemup) has a temperate Mediterranean climate which is characterised by mild dry, warm summers and moderate seasonality. Rottnest Island (Site Number 009193) is one of the Bureau of Meteorology (BoM) meteorological recording stations, located approximately 4.5 km from the study area and which has been recording since 1983. The site has recorded an average annual rainfall of 567.7 mm and annual mean maximum temperatures ranging from 17.8°C in winter to 27.3°C in summer (BoM 2022) (**Figure 2**). The summer months preceding the field survey (January to March 2022), were recorded to be hotter and drier than the long-term average; however, the month prior to field survey (April) experienced average temperatures and 23.6 mm more rain than the monthly average (**Figure 2**).

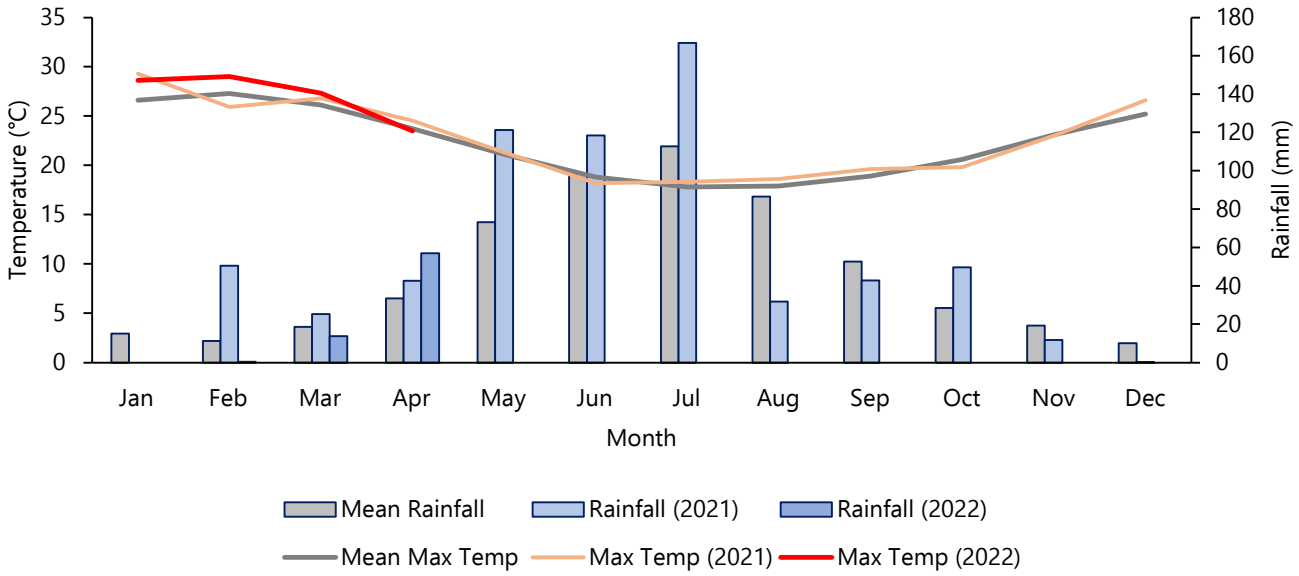


Figure 2 - Climate Data for Perth Metro Weather Station (009193) (BoM 2022)

3.2 IBRA REGION

There are 89 recognised Interim Biogeographic Regionalisation for Australia (IBRA) regions across Australia that have been defined based on climate, geology, landforms and characteristic vegetation and fauna (DCCEEW 2022c). The study area lies within the Swan Coastal Plain (SWA) IBRA region and, at a finer scale, within the Perth subregion (SWA2) (Mitchell *et al.* 2002).

The Swan Coastal Plain bioregion is a low lying coastal plain, mainly covered with Banksia and Tuart (*Eucalyptus gomphocephala*) woodlands on sandy soils. The Perth subregion is composed of colluvial and aeolian sands, alluvial river flats, coastal limestone, as well as heath and/or Tuart woodlands on limestone, Banksia and Jarrah (*Eucalyptus marginata*) - Banksia woodlands on Quaternary marine dunes of various ages, Marri (*Corymbia calophylla*) on colluvial and alluvials (Mitchell *et al.* 2002).

3.3 SOILS

The Swan Coastal Plain supports five major geomorphological systems (landforms) that lie parallel to the coast. From west to east these five systems include; the Quindalup Dunes, Spearwood Dunes, Bassendean Dunes, Pinjarra Plain and Ridge Hill Shelf (Churchward and McArthur 1980; Gibson *et al.* 1994). The study area is situated on the Quindalup South System (211Qu) and developed from Tamala Limestone (Playford 1988) (**Table 3**). The spatial extent of this system is presented in **Figure 3**.

Table 3 - Summary of Soil Systems within the Study Area (Schoknecht *et al.* 2004)

System	Soil Unit	Description
Quindalup South System	211Qu	Coastal dunes, of the Swan Coastal Plain, with calcareous deep sands and yellow sands. Vegetation consists of coastal scrub.

Figure 3 - Soils

FOCUSED VISION consulting

RIA22001 12 July 2022

3.4 VEGETATION

The study area is located on the Swan Coastal Plain and has been broadly characterised by Beard (1990). The Beard vegetation associations supported by the study area and the remaining extent across a range of contexts are presented in **Table 4** and spatially in **Figure 4**.

Table 4 - Pre-European Vegetation of the Study Area (Beard 1990, DBCA 2018)

Extent Context	Vegetation System Association	Broad Vegetation Description	Pre-European Extent (Ha)	Current Extent (ha)	Pre-European Extent Remaining (%)	Current Extent in DBCA Managed Lands (%)
Western Australia	15	Low forest; cypress pine	2,374.16	1,576.52	66.40	37.34
	125	Bare areas; salt lakes	3,485,785.49	3,146,487.22	90.27	7.62
	1007	Mosaic Shrublands: *Acacia lasiocarpa* and *Melaleuca acerosa* Heath / *Acacia rostellifera* and *Acacia cyclops* thicket	30,407.75	20,691.11	68.05	10.04
Swan Coastal Plain IBRA Region	15	Low forest; cypress pine	17,364.58	3,150.77	18.14	2.11
	125	Bare areas; salt lakes	136,188.20	9,017.32	6.62	1.43
	1007	Mosaic Shrublands: *Acacia lasiocarpa* and *Melaleuca acerosa* Heath / *Acacia rostellifera* and *Acacia cyclops* thicket	30,109.89	20,679.62	68.68	10.13
Perth IBRA Subregion	15	Low forest; cypress pine	1,977.93	1,564.26	79.09	44.66
	125	Bare areas; salt lakes	9,401.12	1,948.17	20.72	11.70
	1007	Mosaic Shrublands: *Acacia lasiocarpa* and *Melaleuca acerosa* Heath / *Acacia rostellifera* and *Acacia cyclops* thicket	30,109.89	20,679.62	68.68	10.13
City of Cockburn	15	Low forest; cypress pine	1,353.14	886.49	65.51	65.51
	125	Bare areas; salt lakes	166.17	53.27	32.06	29.66
	1007	Mosaic Shrublands: *Acacia lasiocarpa* and *Melaleuca acerosa* Heath / *Acacia rostellifera* and *Acacia cyclops* thicket	337.86	271.35	80.32	80.32

Cells highlighted grey indicate vegetation associations with less than 30% extent remaining
Cell highlighted yellow indicates vegetation association with less than 10% extent remaining

Vegetation complexes within the study area have also been defined by Heddle *et al.* (1980) and are based on vegetation in association with landforms and underlying geology. Only the Quindalup Complex occurs within the study area and this complex is described as coastal dune consisting of two alliances; the strand and fore-dune alliance and the mobile and stable dune alliance. Local variations include the low, closed forest of *Melaleuca lanceolata* (Rottnest Teatree) - *Callitris preissii* (Rottnest Island Pine), the closed scrub of *Acacia rostellifera* (Summer-scented Wattle) and the low, closed *Agonis flexuosa* (Peppermint) forest of Geographe Bay. The pre-European extent and current known extent of this complex is listed in **Table 5**.

Table 5 –Vegetation Complexes Within the Study Area (Heddle *et al.* 1980)

Extent Context	Vegetation Complex	Pre-European Extent (Ha)	Current Extent (ha)	Pre-European Extent Remaining (%)	Current Extent in DBCA Managed Lands (%)
Swan Coastal Plain	Quindalup Complex	54,573.87	33,011.64	60.49	10.98
City of Cockburn	Quindalup Complex	1,021.62	728.23	71.28	1.87

The objective of the EPA in relation to flora and vegetation is: *To protect flora and vegetation so that biological diversity and ecological integrity are maintained* (EPA 2016a). The EPA considers it is important that vegetation associations are maintained above a threshold level of 30% for unconstrained areas and 10% for constrained areas (which includes the Perth metropolitan area), of the original pre-clearing extent of each association (EPA 2008). A level of 30% pre-clearing extent is considered to be the level below which species loss appears to accelerate exponentially at the ecosystem level (EPA 2008).

The following key criteria are applied to vegetation clearing from a biodiversity perspective, which justifies the retention targets (EPA 2000):

- The 'threshold level' below which species loss appears to accelerate exponentially within an ecosystem level, is regarded as being at a level of 30% (of the pre-European, i.e. pre-1750 extent of the vegetation type).
- A level of 10% of the original extent of a vegetation community is regarded as being a level representing Endangered.
- Clearing which would increase the threat level to a vegetation community should be avoided.

The remaining extent of all three Beard (1990) vegetation associations exceed the 30% threshold within Western Australia (**Table 4**). Within the Swan Coastal Plain IBRA region; vegetation associations 15 (Low forest; cypress pine) and 125 (Bare area; salt lakes) have remaining extents of 18.14% and 6.62%, respectively. This indicating that both associations fall below the 30% threshold and vegetation association 125 also falling below the 10% threshold. Within the Perth IBRA subregion, vegetation association 125 exhibits a remaining extent of 20.72%, not meeting the 30% threshold.

The remaining extent for the Heddle *et al.* (1980) Quindalup complex exceeds 30% threshold for the Swan Coastal Plain IBRA region and City of Cockburn extents (**Table 5**).

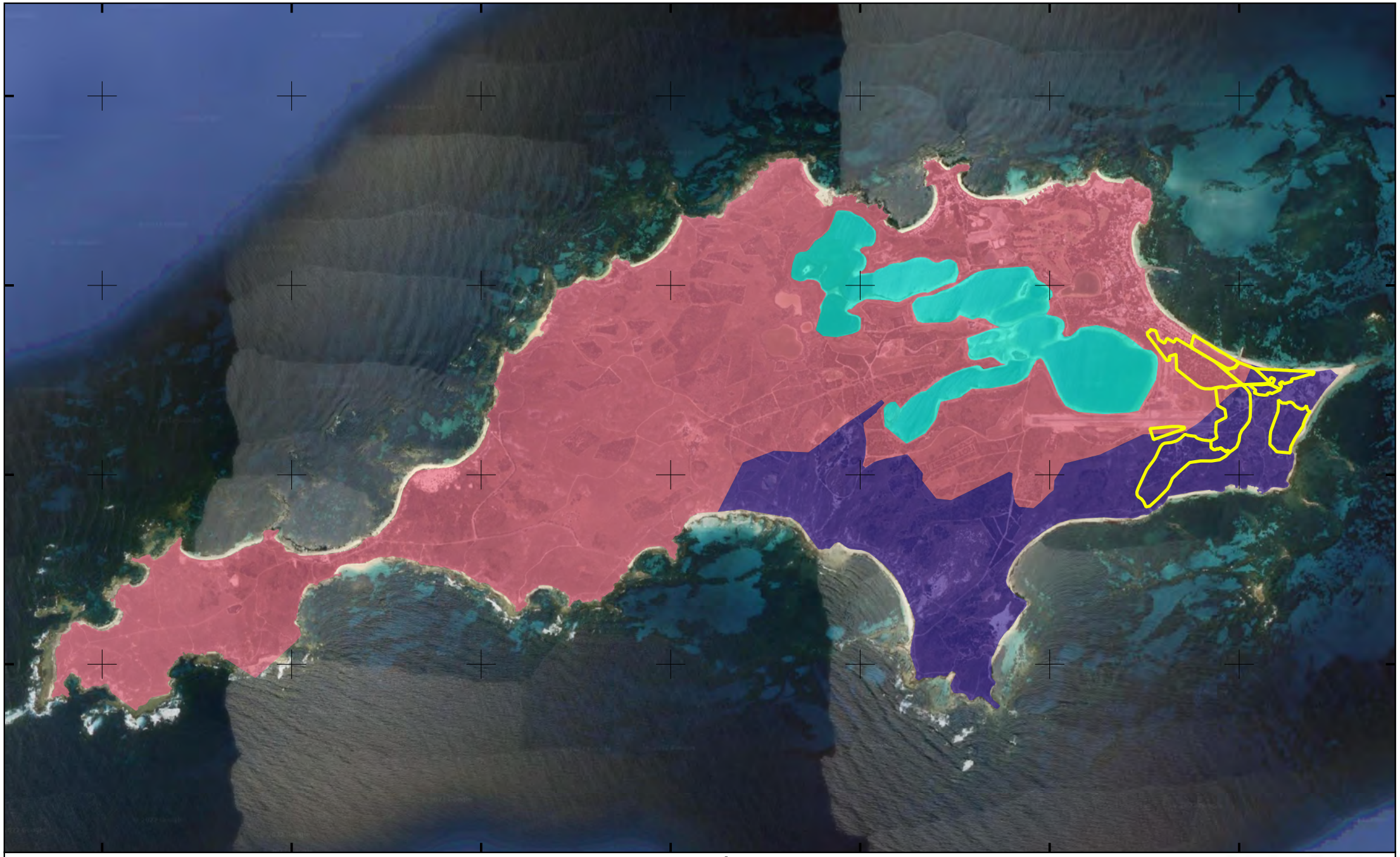


Figure 4 - Pre-European Vegetation

FOCUSED VISION consulting

4 METHODOLOGY

4.1 DESKTOP REVIEW

The desktop assessment consisted of database searches for significant flora and ecological communities based on a central point within the study area (115°32'49.9" E, 32°00'18.9" S) with a 5 km buffer, hereafter referred to as the desktop assessment area. Database searches included the DBCA Threatened and Priority flora records (DBCA 2022a), NatureMap (DBCA 2022b) (**Appendix A**), the Commonwealth DCCEEW Protected Matters Search Tool (PMST) (DCCEEW 2022b) for Matters of National Environmental Significance (MNES) (**Appendix B**) and the DBCA Threatened and Priority Ecological Communities records (DBCA 2021c).

The database search results were compiled into a table that concluded the likelihood of occurrence of each of the significant species and communities based on habitat preferences of known recorded locations for each species. The likelihood of all significant flora occurring within the study area was assessed based on known records and their age (currency) and proximity to the study area, and the presence of suitable habitat within the study area. Based on this assessment, each species was given a likelihood of occurrence category of 'likely' to occur, 'may occur' or 'unlikely' to occur. Where recent records and suitable species habitat occurs within or near the study area, these species were given a category of 'likely to occur', whilst species occurring a greater distance from the study area with limited suitable habitat, or for very old records, a category of 'unlikely to occur' or 'may occur' was applied, depending on record relevance.

4.2 FIELD ASSESSMENT

A reconnaissance flora and vegetation field assessment was carried out within the study area on 2 May 2022, by Principal Ecologist, Kellie Bauer-Simpson and Senior Botanist, Lisa Chappell, in accordance with EPA (2016a).

Within areas that were considered to potentially be representative of TECs or PECs, a targeted survey was carried out via the sampling of quadrats. During sampling, a temporary peg was installed to mark the north-west corner while marking out quadrats within measuring tapes, and when sampling was complete, the peg was removed. Quadrat dimensions were 10 m x 10 m in accordance with the Technical Guidance (EPA 2016a). Detailed data collection points (relevés) were recorded where vegetation was not considered to be a TEC or PEC and to inform vegetation mapping. During the survey vegetation, data from five quadrats and seven relevés were recorded, with their location visually represented in **Figure 5**.

The following information was collected at each quadrat and relevé:

- observer
- date
- GPS location (MGA94)
- representative photograph
- soil type and colour
- topography
- vegetation condition/degradation/disturbances (e.g. grazing, weed invasion, fire)
- flora species observed, including average height and projected foliage cover of dominant species within each stratum
- vegetation community, described in accordance with Level 5 of the National Vegetation Information System (NVIS) (DEH 2003)
- vegetation condition, assessed against the currently accepted scale; an adaptation of the Keighery (1994) condition scale.

Selective targeted searching for Threatened and Priority flora was carried out while traversing the study area and track logs of all personnel were captured using GPS-enabled devices to demonstrate survey effort. These combined track logs for the study area are presented in **Figure 6**.

The flora and vegetation data collected during assessment, from the combination of quadrats, relevés and continuous opportunistic observations, contributed to the flora inventory for the study area. The vegetation units of the study area have been defined by data collected within quadrats and relevés and opportunistically between, and how they relate to other environmental features such as soil type and landform. A map of the vegetation units was then developed using GIS and is presented in **Section 5.2.2**.

Vegetation condition was assessed using the current bushland condition scale, which is an adaptation of Keighery (1994) scale, as described in EPA (2016a).

All field data was recorded using electronic tablets equipped with the mobile mapping software, Mappt™ and customised data collection forms, tailored to the electronic collection of quadrat data and targeted flora surveys. Draft vegetation unit and condition mapping were also prepared in shapefiles directly into Mappt™ whilst in the field, and this formed the basis of the mapping presented in this report and provided in spatial data.

Quadrat data was then subject to floristic analysis to detect similar vegetation within the study area and also in comparison to relevant reference data (Gibson *et al.* 1994 and Keighery *et al.* 2012), in order to infer FCTs. The floristic analysis was first carried out for all quadrats sampled (batch analysis) and then for each quadrat individually (single site insertion (SSI)).

Figure 5 - Quadrat and Relevé Locations

RIA22001 12 July 2022

Figure 6 - Targeted Flora Search Traverses

FOCUSED VISION consulting

4.3 SURVEY LIMITATIONS

The current assessment was assessed against limitations imposed by many variables as outlined in the *Technical Guidance – Flora and Vegetation Surveys for Environmental Impact Assessment* (EPA 2016a) (**Table 6)**.

Table 6 – Potential Survey Limitations and Constraints

Aspect	Constraint?	Commentary
Availability of regional data, previously available information	No	A wealth of data, literature and other information is available for sites within the Perth metropolitan area, such as the study area. DBCA database search results are evidence of the high volume of records that exist for the study area and surrounds.
Scope (detail)	No	A single-phase, detailed flora and vegetation assessment was carried out in accordance with EPA (2016a). The EPA Guidelines state that a minimum of three quadrats should be sampled in each vegetation unit considered to be of 'Good' or better condition. Three quadrats were sampled within vegetation in 'Good' or better condition and five relevé were sampled in an area of 'Degraded' or lower vegetation. This level of survey detail was more than adequate for the assessment of floristic values.
Competency/Experience of personnel	No	All of the personnel undertaking the field assessment, flora identifications, data analysis, vegetation mapping and reporting are experienced botanists, with specialist skills in their respective fields. All botanists have a minimum of 14 years' experience with a significant proportion of which have been on the Swan Coastal Plain.
Survey effort/detail/intensity	No	The single-phase, detailed flora and vegetation assessment was considered adequate to determine the floristic values within the study area. Three quadrats were sampled within vegetation in 'Good' or better condition and five relevés were sampled in an area of 'Degraded' or lower vegetation. All quadrats and relevés were sampled during May 2022.
Seasonal timing and climatic conditions	Yes	The flora and vegetation field assessment was not conducted during the optimal spring season for biological surveys on the Swan Coastal Plain. Some annual species are less likely to be present outside their optimal survey period. In the months preceding the May field assessment, February (particularly) and March experienced drier and hotter seasonal conditions than average; however, April experienced 4 mm more rainfall than the average. These conditions, although variable from long-term averages, are generally representative of the Perth Metropolitan summer / autumn climatic conditions.
Access	No	The entire study area was mostly easily accessible on foot (except where extremely dense) and was traversed in relatively good detail during May 2022.
Mapping reliability	No	The mapping has been prepared at a scale based on ground-truthed areas, with limited extrapolation given the good accessibility of the study area. Therefore, mapping reliability is considered high.
Disturbances	No	Numerous tracks bisect the study area, which have high foot and bicycle traffic, plus some vehicular access on suitable tracks. The disturbances are considered to be a minor constraint for the survey. Due to the degraded condition of some sections of the study area, one of the vegetation units was only able to be sampled with three quadrats.
Survey completeness	No	Most areas were easily accessible and data and other information for the regional is abundant. The field surveys for the current study were all able to be completed for the entire study area and in thorough detail.

5 RESULTS AND DISCUSSION

5.1 DESKTOP ASSESSMENT

5.1.1 Threatened and Priority Flora

The DBCA database search (incorporating Western Australian Herbarium (WAH) records), NatureMap Species Report and the DCCEEW PMST conducted for the study area determined that five species of Threatened and Priority flora that have the potential to occur within a 10 km radius of the study area (**Table 7**). The list of conservation significant species comprised one Commonwealth and State-listed Vulnerable (Threatened) flora, two Priority (P) 1 and two Priority 4 species, and all are annual or short-lived perennial species, emerging and flowering in spring.

Of these five species, four have been previously recorded on Rottnest Island, and have previous known locations within the study area or within 3 km (**Figure 7**). One species, *Lepidium puberulum* (P4) has been previously recorded within the study area and has therefore been determined to be 'likely' to occur. The remaining three species that have been previously recorded on the island were determined to 'possibly' occur, and the fifth species, not known to occur on the island, was determined to be 'unlikely' to occur.

Table 7 - Threatened and Priority Flora with the Potential to occur within the Study Area

Species	EPBC Act Conservation Status	BC Act/DBCA Conservation Status	Description	Preferred Habitat	Likelihood of Occurrence	Source of Record
Diuris micrantha	Vulnerable	Vulnerable	Tuberous, perennial orchid growing to 0.3-0.6 m high with a basal tuft of narrow, linear leaves. Produces up to 7 yellow flowers with red-brown markings from August to October.	Brown/black sandy clay-loam and clayey soils. Winter-wet depressions and swamps, in shallow water.	**Unlikely**. Four previous records approx. 38 km SE of the study area, on the mainland.	PMST
Lachnagrostis nesomytica subsp. *nesomytica*		Priority 1	Loosely tufted, annual or short-lived perennial grass growing to 0.2 m high. Produces purple-green flowers known from November (likely longer period).	Peat and loam soils. Edges of salt lakes, marshes and drainage areas.	**Possible**. Two previous records in possibly similar habitat within 2.8 km, W of the study area.	DBCA, NatureMap
Lachnagrostis nesomytica subsp. *pseudofiliformis*		Priority 1	Loosely tufted, annual or short-lived perennial grass growing to 0.3-0.5 m high. Produces purple-green flowers, flowering period unknown.	Grey-brown sand, peaty soils. Coastal areas, edges of saline lakes on Garden Island.	**Possible**. Three previous records in likely similar habitat 700 m to 1.7 km W of the study area.	DBCA, NatureMap
Lepidium puberulum		Priority 4	Erect annual herb growing to 0.4 m high. Produces greenish white flowers from July to November.	Sandy soil. Coastal areas, islands, often associated with limestone.	**Likely**. One previous record within the study area.	DBCA, NatureMap
Myosotis australis		Priority 4	Erect to procumbent annual herb growing to 0.3 m high. Produces blue-white flowers from August to November.	Sandy soil. Coastal dunes and swales often associated with limestone.	**Possible**. Two previous records within 1.7 km SW from the study area is possibly similar habitat.	DBCA/WAH, NatureMap

Figure 7 - DBCA Priority Flora

FOCUSED VISION consulting

RIA22001 12 July 2022

5.1.2 Threatened and Priority Ecological Communities

A review of DBCA's Threatened and Priority Ecological Communities (TEC and PEC) database and the EPBC Protected Matters Search Tool identified that one TEC and six PECs occur within a 5 km buffer of the study area (DBCA 2022c, DCCEEW 2022b) (**Table 8**). Of these, five are Microbial communities and are not of conservation-significance due to flora and vegetation values, therefore, these communities are not discussed further in this report. The known extent of the two floristic communities of relevance to flora and vegetation values, SCP 30a and SCP 29a, are presented in **Figure 8**.

Table 8 – Threatened and Priority Ecological Communities Occurring within the Study Area

Abbreviated Identifier	Community Name	Commonwealth Category	State Category
Floristic Communities			
SCP 30a	*Callitris preissii* (or *Melaleuca lanceolata*) forests and woodlands, Swan Coastal Plain (FCT 30a (Gibson *et al.* 1994)	-	Vulnerable
SCP29a	Coastal shrublands on shallow sands	-	Priority 3
Microbial Communities			
Rottnest Island Microbial - Garden	Microbialites and microbial mats of coastal hypersaline lakes (Rottnest Island). Community 5 - Garden Lake	-	Priority 1
Rottnest Island Microbial - Serpentine	Rottnest Island Microbial Lake community 1 - Serpentine Lake	-	Priority 1
Rottnest Island Microbial - Herschel	Microbialites and microbial mats of coastal hypersaline lakes (Rottnest Island). Community 6 - Herschel Lake	-	Priority 1
Rottnest Island Microbial - Baghdad	Microbialites and microbial mats of coastal hypersaline lakes (Rottnest Island); Lake Baghdad	-	Priority 1
Government House Lake Microbial	Hypersaline microbial community 1 (Government House Lake, Rottnest)	-	Priority 2

5.1.2.1 *SCP 30a – Rottnest Island Pine (Callitris preissii) and Tea Tree (Melaleuca lanceolata) TEC*

The Rottnest Island Pine (*Callitris preissii*) and Tea Tree (*Melaleuca lanceolata*) TEC (Rottnest Island Pine and Tea Tree TEC) is listed as 'Vulnerable' under State legislation and is described as a woodland and forest community dominated by *Callitris preissii*, *Melaleuca lanceolata*, *Spyridium globulosum*, *Acanthocarpus preissii*, *Rhagodia baccata*, *Austrostipa flavescens* and *Trachymene pilosa* (Gibson *et al.* 1994). The critical habitat for the Rottnest Island Pine and Tea Tree TEC includes the dunes and swale habitat on which they occur, the fresh superficial groundwater that is likely to provide water to the trees in the community, and the catchment for this groundwater (DPaW 2014).

5.1.2.2 *SCP 29a – Coastal Shrublands on Shallow Sands*

SCP 29a (Coastal Shrublands on Shallow Sands) supports shrublands on shallow sands over limestone, in close proximity to the coast, on the southern Swan Coastal Plain. Landforms are dunes from Supergroup 4; uplands centred on Spearwood and Quindalup Dunes (Gibson *et al.* 1994). Key species include *Spyridium globulosum, Rhagodia baccata* and *Olearia axillaris* (DBCA 2022c).

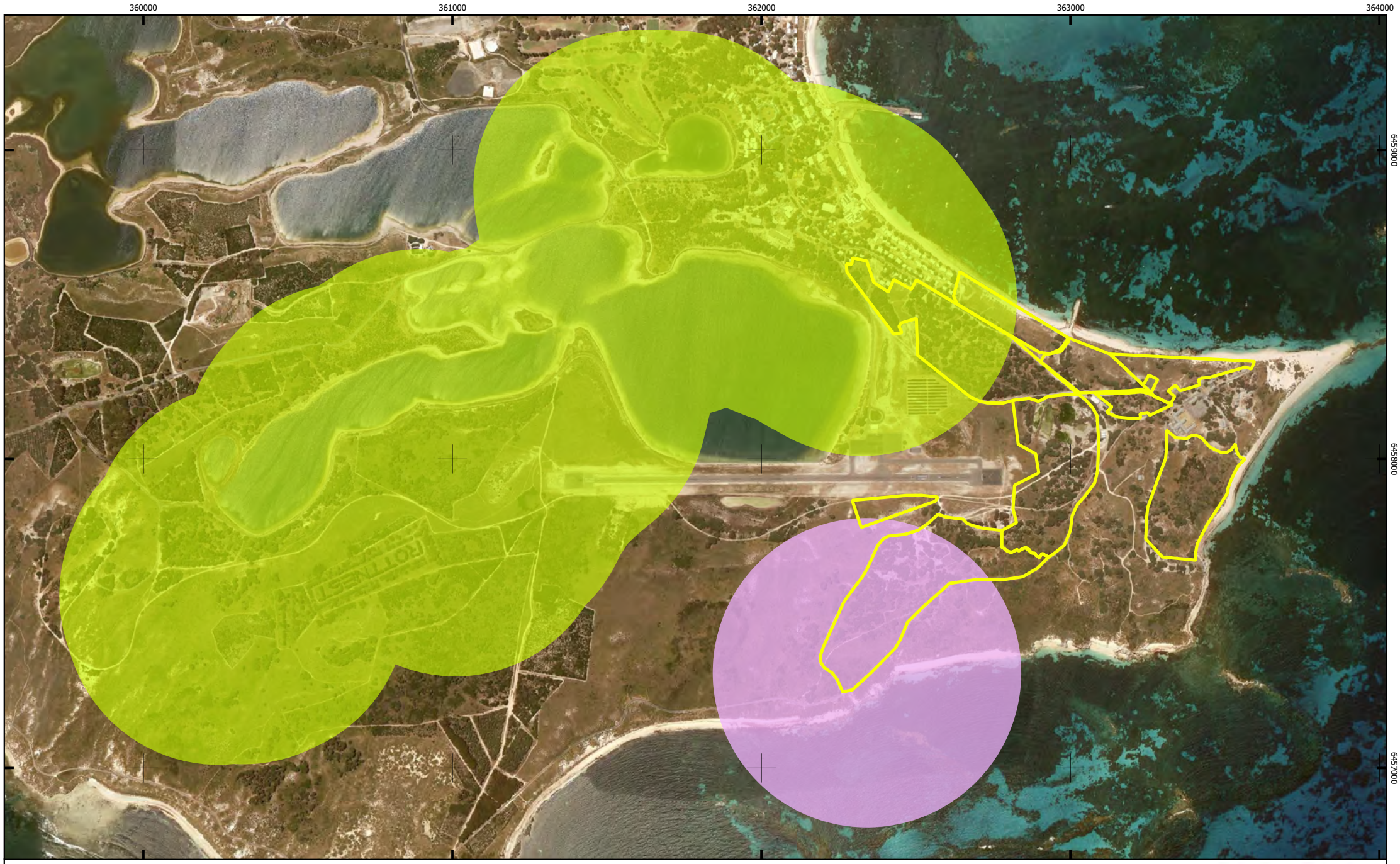


Figure 8 - Threatened and Priority Ecological Communities

FOCUSED VISION consulting

RIA22001 12 July 2022

5.2 FIELD ASSESSMENT

5.2.1 Flora

A total of 26 flora taxa, from 25 genera and 15 families was recorded during the field survey. The dominant families were found to be Poaceae (five taxa), Myrtaceae (three taxa) and Cyperaceae (three taxa). The total includes 21 (80.77%) native species and five (19.23%) introduced (weed) species. The average species richness within quadrats was 5.6 species. Four species were recorded in 50% or more of the sample sites (quadrats and relevés), indicating a greater dominance and distribution compared to other species. These species were:

- *Acanthocarpus preissii* (recorded in 75% of sample sites)
- *Melaleuca lanceolata* (recorded in 50% of sample sites
- *Poa poiformis* (recorded in 58% of sample sites
- **Trachyandra divaricarta* (recorded in 67% of sample sites).

The full list of vascular flora species recorded within each vegetation unit and at each sample site is presented in **Appendix C** and individual quadrat and relevé data is presented in **Appendix D**.

No species listed as Threatened or Priority flora under the BC Act or under the EPBC Act were recorded. All five of the potentially occurring Threatened and Priority flora resulting from the desktop assessment are annual or short-lived perennial species, emerging and flowering in spring, and would have been unlikely to be present/visible, flowering or presenting identifiable material at the time of the May field survey.

Since *Lepidium puberulum* (P4) has previously been recorded within the study area, and since this species would only be observable during late winter and spring, where clearing impacts may be proposed within areas of suitable habitat (sandy soils associated with limestone), further targeted surveys would be appropriate.

None of the recorded flora are exhibiting an extension beyond their currently documented range, in accordance with records of the Western Australian Herbarium (WAH 1998-).

No taxa listed as Declared Pest [s22(2)] plants under the BAM Act (DPIRD 2022) were recorded. In addition, none of the weed species recorded are listed as WoNS (Commonwealth of Australia 2017).

5.2.2 Vegetation

5.2.2.1 *Vegetation Condition*

The condition of the vegetation within the study area was found to range from 'Excellent' to 'Completely Degraded - Degraded' (**Table 9**). The greatest proportion of the vegetation (31.63%) was observed to be in 'Good' condition. The spatial extent of the varying vegetation condition is presented in **Figure 9**.

Table 9 - Summary Vegetation Condition within the Study Area

Vegetation Condition Rating	Area (ha)	% of Study Area
Excellent	1.020	1.69
Very Good - Excellent	0.064	0.11
Very Good	12.417	20.59
Good - Very Good	13.344	22.13
Good	19.074	31.63
Degraded - Good	4.984	8.26
Degraded	4.134	6.85
Completely Degraded - Degraded	2.223	3.69
Completely Degraded	0.00	0.00
Cleared	3.047	5.05
Total	**60.307**	**100**

5.2.2.2 *Vegetation Units*

Nine vegetation units and three other classifications (Beach, Planted and Cleared areas) were defined and mapped within the study area as described in **Table 10**. More than half of the study area (56.63%) consists of vegetation unit MlAp (*Melaleuca/Acanthocarpus* Woodland), and vegetation unit MlGl (*Melaleuca/Guichenotia* Shrubland) accounts for 16.12% of the study area.

The remaining seven vegetation units account a total of 21.64 % of the study area. The remaining three classifications (Beach, Planted and Cleared areas) occupy 5.61% of the study area. The spatial extent of the varying vegetation units is presented in **Figure 10**.

Table 10 - Summary of Recorded Vegetation Units in the Study Area

Broad Type	Vegetation Unit	Vegetation Description	Site Number	Area (ha)	% of Study Area
Woodland	**MlAp** *Melaleuca/Acanthocarpus* Woodland	*Melaluca lanceolata* Tall Shrubland over *Acanthocarpos preissii* Low Open Shrubland	Q03, Q06, Q08, Q11	34.153	56.63
Shrubland	**ArAp** *Acacia/Acanthocarpus* Shrubland	*Acacia rostellifera* Tall Open Shrubland over *Acathocarpus preissii* Low Shrubland over *Trachyandara divaricata* Low Sparse Forbland	R01	4.050	6.72
	CpMl *Callitris/Melaleuca* Shrubland	*Callitris priessi* and *Melaleuca lanceolata* Tall Shrubland	Q12	0.605	1.00
	MlGl *Melaleuca/Guichenotia* Shrubland	*Melaeluca lanceolata* and *Callitris preissii* Tall Sparse Shrubland over *Guichenotia ledifolia, Acanthocarpus preissii* and *Rhagodia baccata* Shrubland over *Trachyandara divaricata* Low Sparse Forbland	R02	9.722	16.12
	OaAp *Olearia/Acanthocarpus* Shrubland	*Olearia axillaris* Tall Sparse Shrubland over *Acanthocarpos preissii* Low Open Shrubland	R05	2.312	3.83
	TiSS *Tecticornia* Samphire Shrubland	*Tecticornia indica* subsp. *bidens* Low Samphire Shrubland	R09	2.745	4.55
Sedgelands	**GtS** *Gahnia* Sedgeland	*Gahnia trifida* Tall Sedgeland	R04	0.439	0.73
	LpAp *Lepidosperma/Acanthocarpus* Sedgeland	*Acanthocarpos preissii, Rhagodia baccata* and *Conostylis candicans* Low Open Shrubland over *Lepidosperma gladiatum* Open Sedgeland over *Trachyandara divaricata* Low Sparse Forbland	R07	2.091	3.47
Grassland	**SlG** Spinifex Grassland	*Scaevola crassifolia* Low Open Shrubland over *Spinfex longifolius* Grassland	R10	0.811	1.34
Planted		Planted non-endemic species	NA	0.334	0.55
Beach			NA	0.540	0.90
Cleared			NA	2.507	4.16
			TOTAL	**60.309**	**100**

Figure 9 - Vegetation Condition

FOCUSED VISION consulting

RIA22001 12 July 2022

Figure 10 - Vegetation Units

FOCUSED VISION consulting

5.2.2.3 *Assessment of Floristic Community Types*

All vegetation units within the study area were sampled and defined from a single relevé, unless they were suspected to be representative of the TEC, FCT 30a. Four quadrats were sampled in vegetation considered to be representative of FCT 30a and in order to analyse the similarity between these quadrats, floristic analysis was carried out in PATN (Belbin 2013). This floristic analysis grouped three of the quadrats, with the fourth (Q12) determined to be floristically dissimilar, as shown in **Figure 11**.

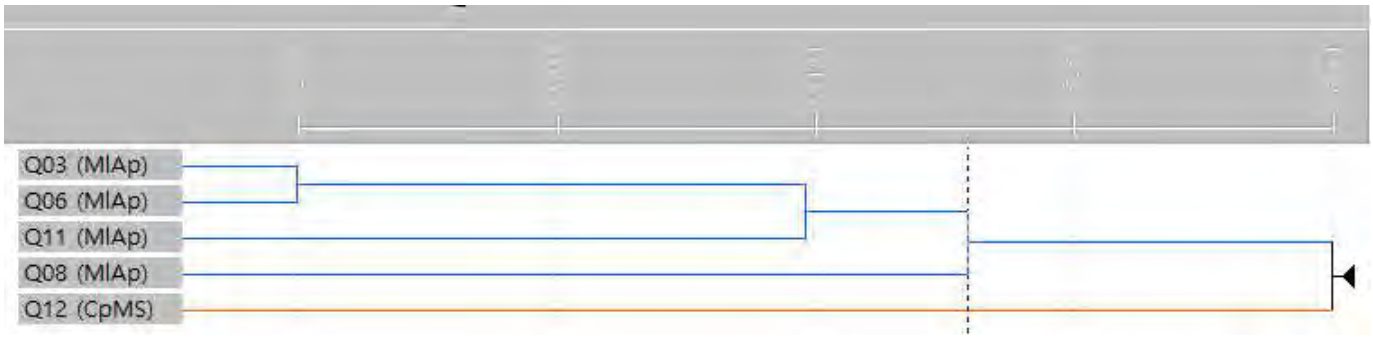


Figure 11 – Quadrat PATN Analysis Dendrogram

In order to then infer the FCT/s most likely represented by the sampled quadrats, floristic analysis was carried out, incorporating reference data from the Gibson *et al.* 1994 and Keighery *et al.* 2012 studies. The analysis was first conducted on the full suite of quadrats (batch analysis) and then via SSI, utilising multivariate cluster analysis of species presence/absence in PATN. The dendrograms resulting from the analyses are presented in **Appendix E**, with these results and the results of dissimilarity analyses presented in **Table 11**.

The floristic analysis determined that all sampled quadrats, representative of vegetation units CpMl (one quadrat) and MlAp (four quadrats) are likely representations of FCT 30a.

5.2.3 Threatened and Priority Ecological Communities

The TEC, *Callitris preissii* (or *Melaleuca lanceolata*) forests and woodlands TEC (FCT 30a) has been previously reported to occur within the study area. The community, also known as the 'Rottnest Island Pine (*Callitris preissii*) and Rottnest Island Tea Tree (*Melaleuca lanceolata*) Woodland' is listed as a 'Vulnerable' TEC under State legislation (RIA 2014). This community is described as a woodland and forest dominated by *Callitris preissii, Melaleuca lanceolata, Spyridium globulosum, Acanthocarpus preissii, Rhagodia baccata*, *Austrostipa flavescens* and *Trachymene pilosa* (Gibson *et al*. 1994). Critical habitat for this community is the sandy soils on which the community occurs and the fresh superficial groundwater that helps to sustain key dominant trees (DPaW 2014).

The survey and analyses carried out for quadrats assessed within the study area, identified that vegetation units MlAp (*Melaleuca/Acanthocarpus* Woodland) and CpMl (*Callitris/Melaleuca* Shrubland) have the greatest similarity to FCT 30a (**Table 11**). A large proportion of the study area (all areas mapped as vegetation units MlAp and CpMl) (**Figure 11**) is therefore considered to be representative of the Vulnerable TEC, FCT 30a, *Callitris preissii* (or *Melaleuca lanceolata*) forests and woodlands TEC.

Table 11 – Summary of Floristic Analysis Results

Vegetation Unit	Quadrat	Vegetation Condition	SSI Dendrogram Result*	Ref. Quadrat	FCT	Dissimilarity Value	Ref. Quadrat	FCT	Dissimilarity Value	Ref. Quadrat	FCT	Dissimilarity Value	Inferred FCT	Reasoning
CpMI *Callitris/ Melaleuca* SL	Q12	Very Good	30a, 30a2, S12	rott01	S11	0.6842	WOODP-1	30a	0.6842	WOODP-1	30a	0.6842	30a	Gibson *et al.* (1994) and Keighery *et al.* (2012) quadrats analysed present the same dissimilarity value in comparison to Q12. FCT S11 did not record a dominant species of Q12, *Callitris preissii* and is dominated by *Melaleuca acerosa,* which was absent from Q12. S12 is a sub-type of FCT 30a (DPaW 2014). Key/dominant species of Q12 and FCT 30a align. Greatest similarity to **FCT 30a**.
MIAp *Melaleuca/ Acanthocarpus* Woodland	Q03	Good - Very Good	S12, 29a, S11, 30a	rott01	S11	0.6471	GARD04	30a	0.7273	GARDEN-4	30a2	0.7273	30a	S11 is 'Northern *Acacia rostellifera – Melaleuca acerosa* shrublands', whilst FCT 30a is '*Callitris preissii* (or *Melaleuca lanceolata*) forest and woodlands'. Q03 does not contain *Acacia rostellifera* or *Melaleuca acerosa* and is therefore not considered representative of FCT S11. Based on the height and cover of canopy species, the vegetation is considered to be a Woodland or forest. FCT 29a is a shrubland, lacking the woodland canopy layer present in Q03. S12 is a sub-type of FCT 30a (DPaW 2014). Key/dominant species of Q03 and FCT 30a align. Greatest similarity to **FCT 30a**.
	Q06	Very Good	S12, S11, 29a, 30a	rott01	S11	0.5789	rott03	S12	0.6800	GARD01	30a1	0.6923	30a	S11 is 'Northern *Acacia rostellifera – Melaleuca acerosa* shrublands' and both species are absent from Q06. Based on the height and cover of canopy species, the vegetation is considered to be a woodland or forest. FCT 29a is a shrubland, lacking the woodland canopy layer present in Q06. S12 is a sub-type of FCT 30a (DPaW 2014). Key/dominant species of Q06 and FCT 30a align. Greatest similarity to **FCT 30a**.
	Q08	Good - Very Good	S19, 18, 7	rott01	S11	0.7778	rott06	S12	0.7778	cool 04	17	0.8182	30a	S11 is 'Northern *Acacia rostellifera – Melaleuca acerosa* shrublands' and Q08 did not record either species. *Melaleuca lanceolata,* dominant in Q08 does not occur within FCT 17. S12 is a sub-type of FCT 30a (DPaW 2014). Key/dominant species of Q08 do not align with S19 or FCTs 7 or 18 but do align with FCT 30a. Greatest similarity to **FCT 30a**.
	Q11	Very Good	S11, S12, 30a	rott01	S11	0.5556	MI11	13	0.7273	GARD04	30a2	0.7391	30a	S11 is 'Northern *Acacia rostellifera – Melaleuca acerosa* shrublands' and both species are absent from Q13. FCT 13 is a wetland with key dominant species that do not align with Q13. S12 is a sub-type of FCT 30a (DPaW 2014). Key/dominant species of Q13 and FCT 30a align. Greatest similarity to **FCT 30a**.

5.3 VEGETATION OF SIGNIFICANCE

5.3.1 Nationally Significant Vegetation

The National significance of the vegetation units was assessed based on presence of:

- populations of Threatened (EPBC listed) species
- TECs listed as nationally (EPBC) significant
- Ramsar Wetlands of International Importance (DAWE 2020a).

5.3.1.1 *Threatened Flora*

No EPBC-listed Threatened flora were recorded within the study area and therefore, none of the recorded vegetation units are of significance due to this factor.

5.3.1.2 *Threatened Ecological Communities*

No EPBC-listed TECs are considered to occur within the study area. Therefore, none of the defined vegetation units are considered to be of National Significance due to this factor.

5.3.1.3 *Ramsar Wetlands*

No Ramsar wetlands occur within the study area and therefore, none of the recorded vegetation units are of significance due to this factor.

5.3.2 State Significant Vegetation

The State significance of the vegetation units was assessed based on presence of:

- State listed Threatened flora
- State listed TECs
- land within (or areas recommended by DBCA for inclusion) the State-managed conservation estate.

5.3.2.1 *Threatened Flora*

No State-listed Threatened flora were recorded within the study area and therefore, none of the recorded vegetation units are of significance due to this factor.

5.3.2.2 *TECs*

Two of the defined unit, MIAp and CpMI, were considered to be representative of or form part of a State-listed TEC. Therefore, these vegetation units are considered to be State significance due to this factor.

5.3.2.3 *Conservation Estate*

Rottnest Island (Wadjemup) is an A Class Reserve. Therefore, all recorded vegetation units which occupy the reserve are considered to be of regional significance due to this factor.

5.3.3 Regionally Significant Vegetation

The regional significance of the vegetation units was assessed based on:

- the presence of populations of Priority flora or ecological communities
- the presence of ESAs or areas relevant to a conservation scheme
- the presence of conservation category wetlands
- the presence of high diversity of flora, fauna, communities, or community structure
- the presence of flora species exhibiting range extensions or undescribed species
- having a restricted regional distribution
- being represented by less than 30% of the pre-European extent.

5.3.3.1 *Priority Flora*

No State-listed Priority flora were recorded within the study area and therefore, none of the recorded vegetation units are of significance due to this factor.

5.3.3.2 *Priority Ecological Communities*

No DBCA listed PECs are considered to occur within the study area. Therefore, none of the defined units are considered significant to be of regional significance due to this factor.

5.3.3.3 *ESAs or Conservation Areas*

Rottnest Island is an A Class Reserve, which is therefore an ESA. Therefore, all recorded vegetation units which occupy the reserve are considered to be of regional significance due to this factor.

5.3.3.4 *Conservation Category Wetlands*

No conservation category wetlands occur within the study area. Therefore, none of the defined vegetation units are considered to be of regional significance due to this factor.

5.3.3.5 *High Diversity*

The mean species richness across all quadrats within vegetation units with an affinity for FCT 30a (MlAp and CpMl) was 5.6 species. This compares to the mean species richness recorded by Gibson *et al.* (1994) for FCT SCP 30a, of 21.1 species. The recorded species richness values are considered low in comparison to the respective Gibson *et al.* (1994) sites for FCT SCP 30a.

Of the total 26 species recorded, 19.23% are weeds. The diversity of native taxa recorded within quadrats is not considered high; however, surveying outside of the optimal spring season is likely to have resulted in fewer species (e.g. annuals) being present. None of the recorded vegetation units are considered to exhibit high diversity and are therefore not considered to be of regional significance due to this factor.

5.3.3.6 *Range Extending/Undescribed Flora*

No undescribed or range extending flora species were recorded within the study area. Therefore, none of the defined units are considered significant to be of regional significance due to this factor.

5.3.3.7 *Restricted Regional Representation and Distribution*

Beard (1990) vegetation association 125 is represented by 9,017.32 ha across the Swan Coastal Plain and 1,948.17 ha across the Perth IBRA sub-region, which is considered to be restricted in its representation. However, no areas of vegetation association 125 intersect the study area, and therefore, the none of the recorded vegetation units, are considered to be of regional significance due to this factor.

5.3.3.8 *Extent Remaining*

The Beard (1990) vegetation associations 125 and 15 represented within the study area fall below the unconstrained (30%) threshold, with association 125 also falling below the constrained (10%) threshold for retention in comparison to their pre-European extent. Therefore, vegetation units MlAp and CpMl, representative of the 'Low forest cypress pine', association 15 and vegetation units LpAp, TiSS and GtS, representative of the 'Bare areas; salt lakes', association 125 are considered to be of regional significance due to this factor.

5.3.4 Locally Significant Vegetation

The local significance of the vegetation units was assessed based on:

- representing small, isolated communities
- their local extent (proportion) and distribution.

5.3.4.1 *Small, Isolated Communities*

Vegetation units GtS, LpAp and SlG occur as small, isolated communities within the study area and are considered locally significant due to this factor.

5.3.4.2 *Locally Limited Extent and Distribution*

The vegetation units CpMl (*Callitris/ Melaleuca* Shrubland) and GtS (*Gahnia* Sedgeland) occupy a small portion (≤1%) of the study area, with extents of 1.0% and 0.73%, respectively. These areas are considered limited in their local extent and distribution and are considered locally significant due to this factor.

5.3.5 Summary of Vegetation Significance

The significance of the vegetation units within the study area, along with the aspects determining their significance, are summarised in **Table 12**. The level of significance for each vegetation unit is broadly summarised in **Table 13**.

Table 12 –Summary of the Significance of the Recorded Vegetation Units

Scale	Significance Aspect	Vegetation Units
National Significance	Populations of Threatened (EPBC listed) species	-
	Presence of EPBC listed TECs	-
	Presence of Ramsar wetlands	-
State Significance	Presence of State-listed Threatened flora	-
	Presence of State-listed TECs	MlAp, CpMl
	Land within the Conservation Estate	MlAp, ArAp, CpMl, MlGl, OaAp, TiSS, GtS, LpAp, SlG
Regional Significance	Presence of Priority flora	-
	Presence of PECs	-
	Presence of ESAs or areas relevant to a conservation scheme	MlAp, ArAp, CpMl, MlGl, OaAp, TiSS, GtS, LpAp, SlG
	Presence of conservation category wetlands	-
	High diversity of flora, fauna, communities, or community structure	-
	Presence of flora species exhibiting a range extension	-
	Presence of undescribed flora	-
	Having a restricted regional representation and distribution	-
	Represented by less than 30% of the pre-European extent	MlAp, CpMl, TiSS, LpAp, SlG
Local Significance	Small, isolated communities	GtS, LpAp, SlG
	Having a limited local extent and/or distribution	CpMl, GtS

Table 13 – Summary of Level of Potential Significance

Vegetation Unit	Overall Significance – Factor of Significance	Area (ha)	% of Survey Area
MlAp *Melaleuca/ Acanthocarpus* Woodland	State significance – presence of State-listed TEC State significance – land within the Conservation Estate Regional significance – within an ESA Regional significance – Represented by <30% of pre-European extent	34.153	56.63
ArAp *Acacia/Acanthocarpus* Shrubland	State significance – land within the Conservation Estate Regional significance – within an ESA	4.050	6.72
CpMl *Callitris/Melaleuca* Shrubland	State significance – presence of State-listed TEC State significance – land within the Conservation Estate Regional significance – within an ESA Regional significance – Represented by <30% of pre-European extent Local significance – limited local extent and/or distribution	0.605	1.00
MlGl *Melaleuca/ Guichenotia* Shrubland	State significance – land within the Conservation Estate Regional significance – within an ESA	9.722	16.12
OaAp *Olearia/ Acanthocarpus* Shrubland	State significance – land within the Conservation Estate Regional significance – within an ESA	2.312	3.83
TiSS *Tecticornia* Samphire Shrubland	State significance – land within the Conservation Estate Regional significance – within an ESA Regional significance – Represented by <30% of pre-European extent	2.745	4.55
GtS *Gahnia* Sedgeland	State significance – land within the Conservation Estate Regional significance – within an ESA Local significance – occurring as a small, isolated community Local significance – limited local extent and/or distribution	0.439	0.73
LpAp *Lepidosperma/ Acanthocarpus* Sedgeland	State significance – land within the Conservation Estate Regional significance – within an ESA Regional significance – Represented by <30% of pre-European extent Local significance – occurring as a small, isolated community	2.091	3.47
SlG Spinifex Grassland	State significance – land within the Conservation Estate Regional significance – within an ESA Regional significance – Represented by <30% of pre-European extent Local significance – occurring as a small, isolated community	0.811	1.34
Planted		0.334	0.55
Beach		0.540	0.90
Cleared		2.507	4.16
	TOTAL	**60.309**	**100**

6 CONCLUSIONS

The key findings and conclusions arising from the flora and vegetation assessment within the study area:

- No Threatened flora listed under the BC Act or the EPBC Act were recorded.
- No Priority species as listed by DBCA were recorded.
- No weeds listed as WoNS or DP plants under the BAM Act were recorded.
- The condition of the vegetation was found to range from 'Excellent' to 'Completely Degraded - Degraded' with the greatest proportion in 'Good' condition.
- Nine vegetation units and three other classifications (Beach, Planted and Cleared areas) were defined and mapped within the study area.
- Two of the recorded vegetation units were determined to be characteristic of the State-listed *Callitris preissii* (or *Melaleuca lanceolata*) forests and woodlands TEC (FCT 30a).
- The remaining extent of the one vegetation association supported by the study area falls below the 10% retention target in the context of the Swan Coastal Plain, and two vegetation associations relevant to the study area represented by less than 30% of pre-European extent across the Swan Coastal Plain and Perth IBRA sub-region.
- Vegetation units MlAp and CpMl are considered to be representative of the State-listed *Callitris preissii* (or *Melaleuca lanceolata*) forests and woodlands TEC (FCT 30a), and therefore, these units are considered to be of State significance.
- Rottnest Island is an A Class Reserve and an ESA, therefore all vegetation it supports is considered to be of State and regional significance.
- Vegetation units MlAp, CpMl, TiSS, LpAl and SlG are representative of pre-European vegetation associations and/or complexes that have less than 30% of their original extent remaining and are therefore considered regionally significant.
- Vegetation units GtS, LpAp and SlG occur as small, isolated communities, and are therefore considered locally significant.
- Vegetation units CpMl and GtS are limited in their local extent and/or distribution, and are therefore, considered locally significant.
- Since *Lepidium puberulum* (P4) has previously been recorded within the study area, and since this species would only be observable during late winter and spring, where clearing impacts may be proposed within areas of suitable habitat (sandy soils associated with limestone), further targeted surveys would be appropriate.

7 LIST OF PARTICIPANTS

The personnel who contributed to the project are summarised in **Table 12**.

Table 14 – Project Team

Name	Qualification	Years of Relevant Experience	Role
Kellie Bauer–Simpson Principal Ecologist	BSc. (Biological Science)	23	Project manager, field assessment, flora identification, technical and authorisation review
Lisa Chappell Senior Botanist/Environmental Scientist	BEnvSc. (Hons) (Environmental Science)	19	Field assessment, data management, floristic analysis, GIS mapping, report preparation
Olga Nazarova Botanist/Taxonomist	B.Sc. (Botany and Genetics)	4	Field survey, Flora identifications support, technical support, reporting
Megan Gray Ecologist	B.Sc. (Environmental Biology)	3	Report preparation
Kelly Hopkinson Graduate Ecologist	BSc. (Biological Science and Conservation Biology)	1	Report preparation
Will Bauer–Simpson Technician	Cert IV (Health and Safety)	10	Field safety and logistics planning, GIS mapping, spatial analysis, spatial data management
Megan Rabadan Administration		5	Data entry, editorial support

8 REFERENCES

Beard, J. S. (1990) *Plant Life of Western Australia*. Kangaroo Press, Kenthurst NSW.

Belbin L. (2013) PATN. Available at http://www.patn.org

Biodiversity Conservation Act 2016 (WA) (Austl.) Retrieved from https://www.legislation.wa.gov.au/legislation/statutes.nsf/law_a147120.html

Biosecurity and Agriculture Management Act 2007 (WA) (Austl.). Retrieved from https://www.legislation.wa.gov.au/legislation/statutes.nsf/main_mrtitle_2736_homepage.html

Bureau of Meteorology (BoM) (2022) *Climate statistics for Australian locations. Monthly climate statistic. Perth Metro (009193)* http://www.bom.gov.au/climate/averages/tables/cw_009193.shtml Accessed 12 April 2022.

Churchward, H. M. and McArthur, W. M. (1980) *Landforms and Soils of the Darling System, In: Atlas of Natural Resources, Darling Systems, Western Australia.* Department of Conservation and Environment, Western Australia.

Commonwealth of Australia (2001) *National Objectives and Targets for Biodiversity Conservation 2001-2005. Canberra.*

Commonwealth of Australia (2013) *Survey Guidelines for Australia's Threatened Orchids: Guidelines for detecting orchids listed as 'threatened' under the Environment Protection and Biodiversity Conservation Act 1999.* Canberra: Australian Government.

Commonwealth of Australia (2017) *Australian Weed Strategy 2017 - 2027*. Retrieved from https://www.agriculture.gov.au/biosecurity-trade/pests-diseases-weeds/pest-animals-and-weeds

Conservation and Land Management Act 1984 (WA) (Austl.). Retrieved from https://www.legislation.wa.gov.au/legislation/statutes.nsf/main_mrtitle_193_homepage.html

Department of Biodiversity, Conservation and Attractions (DBCA) (2018) *2017 Statewide Vegetation Statistics (formerly the CAR Reserve Analysis) – Full Report*. Remote Sensing and Spatial Analysis Section, Geographic Information Services Branch, Department of Biodiversity, Conservation and Attractions, February 2018.

Department of Biodiversity, Conservation and Attractions (DBCA) (2019) *Conservation Codes for Western Australian Flora and Fauna, January 2019*. Conservation code definitions.pdf (dpaw.wa.gov.au)

Department of Biodiversity and Conservation and Attractions (DBCA) (2022a) *Threatened and Priority Flora Database* Search Request. Ref: 06-0422FL April 2022.

Department of Biodiversity and Conservation and Attractions (DBCA) (2022b) *NatureMap Species Report*. Accessed 4 April 2022.

Department of Biodiversity and Conservation and Attractions (DBCA) (2022c) *Threatened and Priority Ecological Communities Database* Search Request. Ref: 01_0422EC April 2022.

Department of Climate Change, Energy, the Environment and Water (DCCEEW) (2022a) *Welcome to the Department of Climate Change, Energy, the Environment and Water*. Retrieved from https://www.dcceew.gov.au/

Department of Climate Change, Energy, the Environment and Water (DCCEEW) (2022b) *Protected Matters Search Tool*. Retrieved from https://www.dcceew.gov.au/environment/epbc/protected-matters-search-tool Accessed 4 April 2022.

Department of Climate Change, Energy, the Environment and Water (DCCEEW) (2021c) *Australia's bioregions (IBRA)*. Retrieved from https://www.dcceew.gov.au/environment/land/nrs/science/ibra. Accessed 12 April 2022

Department of Conservation and Land Management (CALM) (1999) *Environmental Weed Strategy of Western Australia*. Environmental Protection Branch, Como, Western Australia.

Department of Environment and Conservation (DEC) (2007) *Conserving Threatened Ecological Communities.* Publicly available brochure prepared by the Department of Environment and Conservation in conjunction with National Heritage Trust.

Department of Environment and Conservation (DEC) (2013) *Definitions, Categories and Criteria for Threatened and Priority Ecological Communities.* Species and Communities Branch, DEC, Perth, WA. Retrieved from https://www.dpaw.wa.gov.au/plants-and-animals/threatened-species-and-communities/wa-s-threatened-ecological-communities

Department of Environment and Heritage (DEH) (2003) *National Vegetation Information System*, Version 6.0 Executive Steering Committee for Australian Vegetation Information (ESCAVI).

Department of Environment Regulation (DER) (2019) *A Guide to the Exemptions and Regulations for Clearing Native Vegetation Under Part V of the Environmental Protection Act 1986.* Government of Western Australia, August 2014.

Department of Parks and Wildlife (DPaW) (2013) *Weed Prioritisation Process for DPaW (formerly DEC) – "An integrated approach to Weed Management on DPaW managed lands in WA".* Perth, Australia.

Department of Parks and Wildlife (DPaW) (2014) *Interim Recovery Plan 2014-2019 for Callitris preissii (or Melaleuca lanceolata) forests and woodlands (Swan Coastal Plain community type 30a – Gibson et al. 1994)* Interim Recovery Plan No. 340. Perth. https://www.triggbushland.org.au/images/IRP340_Callitris_preissii_forest_and_woodlands_SCP30a_2014.pdf.

Department of Primary Industries and Regional Development (DPIRD) (2017) *Declared Plant Control Handbook* https://www.agric.wa.gov.au/herbicides/declared-plant-control-handbook Accessed 10 April 2022.

Department of Primary Industries and Regional Development (DPIRD) (2022) *Western Australian Organism List (WAOL).* https://www.agric.wa.gov.au/organisms. Accessed 10 April 2022.

Department of Water and Environmental Regulation (DWER) (2022) *Clearing permits.* https://www.wa.gov.au/service/environment/environment-information-services/clearing-permits. Accessed 11 April 2022.

Environment Protection and Biodiversity Conservation Act 1999 (Cth) (Austl.). Retrieved from https://www.legislation.gov.au/Details/C2022C00169

Environmental Protection (Clearing of Native Vegetation) Regulations 2004 (WA) (Austl.). Retrieved from https://www.legislation.wa.gov.au/legislation/statutes.nsf/main_mrtitle_1384_homepage.html

Environmental Protection Act 1986 (WA) (Austl.) Retrieved from https://www.legislation.wa.gov.au/legislation/statutes.nsf/main_mrtitle_304_homepage.html

Environmental Protection Authority (EPA) (2000) *Position Statement No. 2: Environmental Protection of Native Vegetation in Western Australia: Clearing Native Vegetation with Particular Reference to Agricultural Areas.* Department of Environment and Conservation, Perth, Western Australia.

Environmental Protection Authority (EPA) (2007) *State of the Environment Report*: Western Australia 2007, Department of Environment and Conservation, Perth, Western Australia.

Environmental Protection Authority (EPA) (2008) *Guidance Statement No. 33: Environmental Guidance for Planning and Development*. May 2008. Department of Environment and Conservation, Perth, Western Australia.

Environmental Protection Authority (EPA) (2016a) *Technical Guidance - Flora and Vegetation Surveys for Environmental Impact Assessment.* Department of Environment and Conservation, Perth, Western Australia.

Environmental Protection Authority (EPA) (2016b) *Environmental Factor Guideline – Flora and Vegetation.* Environmental Protection Authority, Perth, Western Australia.

Gibson, N., Keighery, B., Keighery, G., Burbidge, A. and Lyons, M. (1994) *A Floristic Survey of the southern Swan Coastal Plain.* Unpublished report prepared by the Western Australian Department of Conservation and Land Management and the Western Australian Conservation Council for the Heritage Commission.

Government of Western Australia (2000a) *Bush Forever, Volume 2: Directory of Bush Forever sites.* Department of Environmental Protection, Perth, Western Australia.

Government of Western Australia (2000b) *Bush Forever, Volume 1: Policies, Principles and Processes.* Department of Environmental Protection, Perth, Western Australia.

Heddle, E. M., Loneragan, O. W., and Havel, J. J (1980) *Atlas of Natural Resources*. Western Australia Department of Conservation and Environment.

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

Keighery, B., Keighery, G., Longman, V.M., and Clarke, K.A. (2012) *Weed and native flora quadrat data compiled between 1990 – 1996 for the Swan Coastal Plain.* Data compiled for the Departments of Environmental Protection and Conservation and Land Management.

Minister for the Environment (WA) '*Environmental Protection Act 1986 - Environmental Protection (Environmentally Sensitive Area) Notice 2005' in Western Australia*. Western Australian Government Gazette, No 55, 8 August 2005, 1163 - 1166.

Mitchell, D., Williams K. and Desmond A. (2002) *Swan Coastal Plain 2 (SWA2 – Swan Coastal Plain subregion) in A Biodiversity Audit of Western Australia's 53 Biogeographical Subregions in 2002*. Collaboration between the Department of Conservation and Land Management and the Western Australian Museum.

Playford P.E. (1988) *Guidebook to the Geology of Rottnest*. Geological Survey of Western Australia. Geological Society of Australia, WA Division, Perth February 1988.

Rottnest Island Authority (RIA) (2014) *Rottnest Island Terrestrial Management Strategy.* November 2014.

Rottnest island Authority Act 1987 (WA) (Austl.) Retrieved from https://www.legislation.wa.gov.au/legislation/statutes.nsf/law_a714.html

Schoknecht, N. R., Tille, P. J. and Purdie, B. R. (2004) *Soil-landscape mapping in south-Western Australia: an overview of methodology and outputs*, Resource management technical report 280, Department of Agriculture and Food, Western Australia, Perth.

Western Australian Herbarium (WAH) (1998–). *Florabase—the Western Australian Flora.* Department of Biodiversity, Conservation and Attractions. https://florabase.dpaw.wa.gov.au/ Accessed 12 April 2022.

Western Australian Local Government Association (WALGA 2004) *Local Government Biodiversity Planning Guidelines for the Perth Metropolitan Region*. Western Australian Local Government Association.

APPENDIX A - DBCA NATURE MAP SEARCH REPORT

Life Form	Taxon	WA Cons Code
DICOT	*Acacia aptaneura*	
DICOT	*Acacia cyclops*	
DICOT	*Acacia lasiocarpa* var. *lasiocarpa* cockleshell gully variant (e.a.griffin 2039)	
DICOT	*Acacia littorea*	
DICOT	*Acacia rostellifera*	
DICOT	*Acacia truncata*	
DICOT	*Acrotriche cordata*	
DICOT	*Agonis flexuosa* var. *flexuosa*	
DICOT	*Alyxia buxifolia*	
DICOT	*Angianthus cunninghamii*	
DICOT	*Angianthus preissianus*	
DICOT	*Apium annuum*	
DICOT	*Arctotheca calendula*	
DICOT	*Arctotheca populifolia*	
DICOT	*Arenaria leptoclados*	
DICOT	*Argyranthemum frutescens*	
DICOT	*Atriplex cinerea*	
DICOT	*Atriplex isatidea*	
DICOT	*Atriplex rhagodioides*	
DICOT	*Atriplex sp.*	
DICOT	*Beyeria viscosa*	
DICOT	*Boronia alata*	
DICOT	*Caesalpinia gilliesii*	
DICOT	*Cakile maritima*	
DICOT	*Cakile maritima* Scop. subsp. *maritima*	
DICOT	*Calandrinia brevipedata*	
DICOT	*Calandrinia tholiformis*	
DICOT	*Callitriche stagnalis*	
DICOT	*Canarium mutabile*	
DICOT	*Cardamine hirsuta*	
DICOT	*Carduus pycnocephalus*	
DICOT	*Carpobrotus virescens*	
DICOT	*Cassytha glabella*	
DICOT	*Casuarina equisetifolia*	
DICOT	*Casuarina glauca*	
DICOT	*Casuarina obesa*	
DICOT	*Centaurea melitensis*	
DICOT	*Centaurium erythraea*	
DICOT	*Centaurium pulchellum*	
DICOT	*Centaurium tenuiflorum*	
DICOT	*Cerastium balearicum*	
DICOT	*Cerastium glomeratum*	
DICOT	*Chenopodium murale*	
DICOT	*Cirsium vulgare*	
DICOT	*Clematis linearifolia*	
DICOT	*Clematis microphylla*	
DICOT	*Comesperma confertum*	

Life Form	Taxon	WA Cons Code
DICOT	*Comesperma integerrimum*	
DICOT	*Conyza bonariensis*	
DICOT	*Conyza parva*	
DICOT	*Conyza sumatrensis*	
DICOT	*Cotula australis*	
DICOT	*Cotula bipinnata*	
DICOT	*Cotula coronopifolia*	
DICOT	*Crassula colorata*	
DICOT	*Crassula colorata* var. *colorata*	
DICOT	*Crassula decumbens*	
DICOT	*Crassula decumbens* var. *decumbens*	
DICOT	*Crassula glomerata*	
DICOT	*Crassula natans* var. *minus*	
DICOT	*Crassula thunbergiana* subsp. *thunbergiana*	
DICOT	*Cymbalaria muralis*	
DICOT	*Daucus glochidiatus*	
DICOT	*Dichondra repens*	
DICOT	*Diplolaena dampieri*	
DICOT	*Diplotaxis muralis*	
DICOT	*Dischisma arenarium*	
DICOT	*Dittrichia graveolens*	
DICOT	*Dodonaea aptera*	
DICOT	*Drosera ramellosa*	
DICOT	*Drosera stolonifera* subsp. *stolonifera*	
DICOT	*Enchylaena tomentosa* var. *tomentosa*	
DICOT	*Eremophila glabra*	
DICOT	*Eremophila glabra* subsp. *albicans*	
DICOT	*Erodium cicutarium*	
DICOT	*Erythrostemon gilliesii*	
DICOT	*Eucalyptus camaldulensis*	
DICOT	*Eucalyptus camaldulensis* subsp. *obtusa*	
DICOT	*Eucalyptus decipiens*	
DICOT	*Eucalyptus erythrocorys*	
DICOT	*Eucalyptus gomphocephala*	
DICOT	*Eucalyptus spathulata*	
DICOT	*Eucalyptus utilis*	
DICOT	*Euphorbia paralias*	
DICOT	*Euphorbia peplus*	
DICOT	*Ficus carica*	
DICOT	*Ficus elastica*	
DICOT	*Ficus macrophylla*	
DICOT	*Ficus microcarpa* subsp. *hillii*	
DICOT	*Ficus rubiginosa*	
DICOT	*Frankenia pauciflora*	
DICOT	*Galium murale*	
DICOT	*Gamochaeta calviceps*	
DICOT	*Geranium molle*	
DICOT	*Gnaphalium indutum*	
DICOT	*Gnaphalium indutum* subsp. *indutum*	

Life Form	Taxon	WA Cons Code
DICOT	*Gomphocarpus fruticosus*	
DICOT	*Gonocarpus pithyoides*	
DICOT	*Guichenotia ledifolia*	
DICOT	*Halosarcia halocnemoides* subsp. *halocnemoides*	
DICOT	*Halosarcia indica* subsp. *bidens*	
DICOT	*Hardenbergia comptoniana*	
DICOT	*Hedypnois rhagadioloides*	
DICOT	*Hedypnois rhagadioloides* subsp. *cretica*	
DICOT	*Heliophila pusilla*	
DICOT	*Heliotropium curassavicum*	
DICOT	*Hemichroa pentandra*	
DICOT	*Hibbertia racemosa*	
DICOT	*Hornungia procumbens*	
DICOT	*Hydrocotyle blepharocarpa*	
DICOT	*Hydrocotyle diantha*	
DICOT	*Hydrocotyle hispidula*	
DICOT	*Hydrocotyle* sp. Hamelinensis (G.J. Keighery s.n. PERTH 02391325)	
DICOT	*Hydrocotyle tetragonocarpa*	
DICOT	*Hypochaeris glabra*	
DICOT	*Lagunaria patersonia*	
DICOT	*Leontodon rhagadioloides*	
DICOT	*Lepidium didymum*	
DICOT	*Lepidium foliosum*	
DICOT	*Lepidium puberulum*	P4
DICOT	*Leptorhynchos scaber*	
DICOT	*Leucophyta brownii*	
DICOT	*Leucopogon insularis*	
DICOT	*Leucopogon parviflorus*	
DICOT	*Lobelia anceps*	
DICOT	*Lycium ferocissimum*	
DICOT	*Lycopersicon esculentum*	
DICOT	*Lysiana casuarinae*	
DICOT	*Lysimachia arvensis*	
DICOT	*Malva arborea*	
DICOT	*Malva parviflora*	
DICOT	*Malva preissiana*	
DICOT	*Medicago polymorpha*	
DICOT	*Medicago sativa*	
DICOT	*Melaleuca armillaris*	
DICOT	*Melaleuca huegelii*	
DICOT	*Melaleuca lanceolata*	
DICOT	*Melaleuca nesophila*	
DICOT	*Melia azedarach*	
DICOT	*Melianthus major*	
DICOT	*Melilotus indicus*	
DICOT	*Mesembryanthemum crystallinum*	
DICOT	*Millotia myosotidifolia*	
DICOT	*Minuartia mediterranea*	
DICOT	*Myoporum caprarioides*	

Life Form	Taxon	WA Cons Code
DICOT	*Myoporum insulare*	
DICOT	*Myosotis australis*	P4
DICOT	*Nerium oleander*	
DICOT	*Nicotiana glauca*	
DICOT	*Nitraria billardierei*	
DICOT	*Olea europaea*	
DICOT	*Olearia axillaris*	
DICOT	*Orobanche minor*	
DICOT	*Oxalis corniculata*	
DICOT	*Oxalis exilis*	
DICOT	*Oxalis pes-caprae*	
DICOT	*Parentucellia latifolia*	
DICOT	*Parietaria cardiostegia*	
DICOT	*Parietaria debilis*	
DICOT	*Pelargonium capitatum*	
DICOT	*Pelargonium littorale*	
DICOT	*Phyllangium divergens*	
DICOT	*Phyllanthus calycinus*	
DICOT	*Pithocarpa cordata*	
DICOT	*Pittosporum ligustrifolium*	
DICOT	*Plantago debilis*	
DICOT	*Plantago exilis*	
DICOT	*Plantago lanceolata*	
DICOT	*Podotheca angustifolia*	
DICOT	*Polycarpon tetraphyllum*	
DICOT	*Poranthera drummondii*	
DICOT	*Portulaca oleracea*	
DICOT	*Ranunculus pumilio*	
DICOT	*Ranunculus pumilio* var. *politus*	
DICOT	*Raphanus raphanistrum*	
DICOT	*Reseda alba*	
DICOT	*Reseda luteola*	
DICOT	*Rhagodia baccata*	
DICOT	*Rhagodia baccata* subsp. *baccata*	
DICOT	*Rhagodia baccata* subsp. *dioica*	
DICOT	*Rhamnus alaternus*	
DICOT	*Rhodanthe citrina*	
DICOT	*Ricinus communis*	
DICOT	*Roepera billardierei*	
DICOT	*Roepera similis*	
DICOT	*Sagina apetala*	
DICOT	*Sagina maritima*	
DICOT	*Salicornia blackiana*	
DICOT	*Salicornia quinqueflora*	
DICOT	*Salicornia* sp.	
DICOT	*Salsola australis*	
DICOT	*Samolus repens*	
DICOT	*Samolus repens* (J.R.Forst. & G.Forst.) Pers. var. *repens*	
DICOT	*Sarcocornia quinqueflora*	

Life Form	Taxon	WA Cons Code
DICOT	*Sarcocornia quinqueflora* (Bunge ex Ung.-Sternb.) A.J.Scott subsp. *quinqueflora*	
DICOT	*Scaevola crassifolia*	
DICOT	*Schenkia australis*	
DICOT	*Schinus terebinthifolius*	
DICOT	*Scholtzia involucrata*	
DICOT	*Senecio lautus* subsp. *maritimus*	
DICOT	*Senecio pinnatifolius* var. *latilobus*	
DICOT	*Senecio pinnatifolius* var. *maritimus*	
DICOT	*Silene nocturna*	
DICOT	*Sisymbrium orientale*	
DICOT	*Solanum lycopersicum*	
DICOT	*Solanum nigrum*	
DICOT	*Solanum symonii*	
DICOT	*Sonchus asper*	
DICOT	*Sonchus oleraceus*	
DICOT	*Spergularia brevifolia*	
DICOT	*Spyridium globulosum*	
DICOT	*Stackhousia pubescens*	
DICOT	*Stellaria media*	
DICOT	*Stellaria pallida*	
DICOT	*Stylidium androsaceum*	
DICOT	*Suaeda australis*	
DICOT	*Tamarix aphylla*	
DICOT	*Tamarix* sp.	
DICOT	*Tecoma stans*	
DICOT	*Tecticornia halocnemoides*	
DICOT	*Tecticornia indica* subsp. *bidens*	
DICOT	*Templetonia retusa*	
DICOT	*Tetragonia amplexicoma*	
DICOT	*Tetragonia decumbens*	
DICOT	*Tetragonia implexicoma*	
DICOT	*Thomasia cognata*	
DICOT	*Threlkeldia diffusa*	
DICOT	*Trachymene coerulea*	
DICOT	*Trachymene coerulea* subsp. *coerulea*	
DICOT	*Trachymene pilosa*	
DICOT	*Trifolium suffocatum*	
DICOT	*Trifolium tomentosum*	
DICOT	*Trifolium tomentosum* var. *tomentosum*	
DICOT	*Urtica urens*	
DICOT	*Verbascum* sp. *scsp*	
DICOT	*Waitzia nitida*	
DICOT	*Westringia dampieri*	
DICOT	*Wilsonia backhousei*	
DICOT	*Wilsonia humilis*	
DICOT	*Zygophyllum ammophilum*	
DICOT	*Zygophyllum fruticulosum*	
GYMNO	*Callitris preissii*	
GYMNO	*Pinus halepensis*	

Life Form	Taxon	WA Cons Code
GYMNO	*Pinus radiata*	
LIVERWORT	*Petalophyllum preissii*	
MONOCOT	*Acanthocarpus preissii*	
MONOCOT	*Agave americana*	
MONOCOT	*Agave attenuata*	
MONOCOT	*Agave sisalana*	
MONOCOT	*Aira cupaniana*	
MONOCOT	*Allium ampeloprasum*	
MONOCOT	*Althenia preissii*	
MONOCOT	*Amaryllis dianae*	
MONOCOT	*Amaryllis quokka*	
MONOCOT	*Amphibolis antarctica*	
MONOCOT	*Amphibolis griffithii*	
MONOCOT	*Asphodelus fistulosus*	
MONOCOT	*Austrostipa elegantissima*	
MONOCOT	*Austrostipa flavescens*	
MONOCOT	*Austrostipa* sp.	
MONOCOT	*Avellinia michelii*	
MONOCOT	*Avena barbata*	
MONOCOT	*Baumea juncea*	
MONOCOT	*Brachypodium distachyon*	
MONOCOT	*Briza minor*	
MONOCOT	*Bromus arenarius*	
MONOCOT	*Bromus diandrus*	
MONOCOT	*Bromus hordeaceus*	
MONOCOT	*Bromus madritensis*	
MONOCOT	*Bromus rubens*	
MONOCOT	*Bulbine semibarbata*	
MONOCOT	*Caladenia latifolia*	
MONOCOT	*Carex preissii*	
MONOCOT	*Carex thecata*	
MONOCOT	*Catapodium rigidum*	
MONOCOT	*Cenchrus clandestinus*	
MONOCOT	*Centrolepis polygyna*	
MONOCOT	*Conostylis candicans*	
MONOCOT	*Conostylis candicans* subsp. *calcicola*	
MONOCOT	*Conostylis candicans* subsp. *candicans*	
MONOCOT	*Cortaderia selloana*	
MONOCOT	*Cynodon dactylon*	
MONOCOT	*Cyrtostylis huegelii*	
MONOCOT	*Desmocladus flexuosus*	
MONOCOT	*Ehrharta brevifolia*	
MONOCOT	*Ehrharta brevifolia* var. *cuspidata*	
MONOCOT	*Ehrharta longiflora*	
MONOCOT	*Eragrostis curvula*	
MONOCOT	*Ferraria crispa*	
MONOCOT	*Ferraria crispa* subsp. *crispa*	
MONOCOT	*Ficinia nodosa*	
MONOCOT	*Gahnia trifida*	

Life Form	Taxon	WA Cons Code
MONOCOT	*Halophila australis*	
MONOCOT	*Halophila ovalis*	
MONOCOT	*Heterozostera tasmanica*	
MONOCOT	*Hordeum leporinum*	
MONOCOT	*Hordeum* sp.	
MONOCOT	*Hydrilla verticillata*	
MONOCOT	*Hypoxis glabella* var. *glabella*	
MONOCOT	*Iris germanica*	
MONOCOT	*Isolepis cernua*	
MONOCOT	*Isolepis cernua* var. *setiformis*	
MONOCOT	*Isolepis marginata*	
MONOCOT	*Johnsonia pubescens*	
MONOCOT	*Johnsonia pubescens* subsp. *pubescens*	
MONOCOT	*Juncus bufonius*	
MONOCOT	*Juncus kraussii* subsp. *australiensis*	
MONOCOT	*Lachnagrostis nesomytica*	
MONOCOT	*Lachnagrostis nesomytica* subsp. *nesomytica*	P1
MONOCOT	*Lachnagrostis nesomytica* subsp. *pseudofiliformis*	P1
MONOCOT	*Lachnagrostis* sp.	
MONOCOT	*Lagurus ovatus*	
MONOCOT	*Lepidosperma calcicola*	
MONOCOT	*Lepidosperma gladiatum*	
MONOCOT	*Lepidosperma pubisquameum*	
MONOCOT	*Lepidosperma squamatum*	
MONOCOT	*Leucojum aestivum*	
MONOCOT	*Lolium rigidum*	
MONOCOT	*Microlaena stipoides*	
MONOCOT	*Moraea flaccida*	
MONOCOT	*Moraea miniata*	
MONOCOT	*Narcissus papyraceus*	
MONOCOT	*Narcissus tazetta*	
MONOCOT	*Narcissus tazetta* subsp. *italicus*	
MONOCOT	*Ornithogalum arabicum*	
MONOCOT	*Parapholis incurva*	
MONOCOT	*Pauridia glabella*	
MONOCOT	*Phoenix canariensis*	
MONOCOT	*Phoenix dactylifera*	
MONOCOT	*Phormium tenax*	
MONOCOT	*Poa annua*	
MONOCOT	*Poa poiformis*	
MONOCOT	*Polypogon maritimus*	
MONOCOT	*Polypogon maritimus* var. *subspatheaceus*	
MONOCOT	*Polypogon monspeliensis*	
MONOCOT	*Polypogon tenellus*	
MONOCOT	*Posidonia australis*	
MONOCOT	*Posidonia coriacea*	
MONOCOT	*Posidonia sinuosa*	
MONOCOT	*Prasophyllum giganteum*	
MONOCOT	*Romulea rosea* var. *australis*	

Life Form	Taxon	WA Cons Code
MONOCOT	*Rostraria cristata*	
MONOCOT	*Ruppia polycarpa*	
MONOCOT	*Ruppia tuberosa*	
MONOCOT	*Rytidosperma occidentale*	
MONOCOT	*Schoenus humilis*	
MONOCOT	*Schoenus nitens*	
MONOCOT	*Sorghum bicolor*	
MONOCOT	*Spinifex hirsutus*	
MONOCOT	*Spinifex longifolius*	
MONOCOT	*Sporobolus indicus* var. *capensis*	
MONOCOT	*Sporobolus virginicus*	
MONOCOT	*Stenotaphrum secundatum*	
MONOCOT	*Syringodium isoetifolium*	
MONOCOT	*Thalassodendron pachyrhizum*	
MONOCOT	*Thysanotus patersonii*	
MONOCOT	*Trachyandra divaricata*	
MONOCOT	*Triglochin minutissima*	
MONOCOT	*Triglochin mucronata*	
MONOCOT	*Triglochin muelleri* subsp. *recurvum*	
MONOCOT	*Triglochin striata*	
MONOCOT	*Triglochin trichophora*	
MONOCOT	*Typha orientalis*	
MONOCOT	*Vulpia fasciculata*	
MONOCOT	*Vulpia muralis*	
MONOCOT	*Vulpia myuros*	
MONOCOT	*Vulpia myuros* forma *megalura*	
MONOCOT	*Washingtonia filifera*	
MONOCOT	*Washingtonia robusta*	
MONOCOT	*Wurmbea dioica* subsp. *alba*	
MONOCOT	*Wurmbea monantha*	
MONOCOT	*Zantedeschia aethiopica*	
MOSS	*Bryum pachytheca*	
MOSS	*Pseudocrossidium hornschuchianum*	
MOSS	*Racopilum cuspidigerum* var. *convolutaceum*	
MOSS	*Syntrichia pagorum*	
MOSS	*Thuidiopsis sparsa*	
MOSS	*Weissia controversa*	

APPENDIX B - EPBC PROTECTED MATTERS SEARCH REPORT

Australian Government
Department of Agriculture, Water and the Environment

EPBC Act Protected Matters Report

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

Report created: 08-Jun-2022

Summary

Matters of National Environment Significance

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

World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International Importance (Ramsar	None
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	1
Listed Threatened Species:	39
Listed Migratory Species:	65

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

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 Lands:	None
Commonwealth Heritage Places:	None
Listed Marine Species:	93
Whales and Other Cetaceans:	12
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	None
Habitat Critical to the Survival of Marine Turtles:	None

Extra Information

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

State and Territory Reserves:	1
Regional Forest Agreements:	None
Nationally Important Wetlands:	1
EPBC Act Referrals:	3
Key Ecological Features (Marine):	None
Biologically Important Areas:	13
Bioregional Assessments:	None
Geological and Bioregional Assessments:	None

Details

Matters of National Environmental Significance

Listed Threatened Ecological Communities [Resource Information]

For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.
Status of Vulnerable, Disallowed and Ineligible are not MNES under the EPBC Act.

Community Name	Threatened Category	Presence Text
Banksia Woodlands of the Swan Coastal Plain ecological community	Endangered	Community may occur within area

Listed Threatened Species [Resource Information]

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

Scientific Name	Threatened Category	Presence Text
BIRD		
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
Calidris tenuirostris Great Knot [862]	Critically Endangered	Roosting known to occur within area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat known to occur within area
Charadrius mongolus Lesser Sand Plover, Mongolian Plover [879]	Endangered	Roosting known to occur within area

Scientific Name	Threatened Category	Presence Text
Diomedea amsterdamensis Amsterdam Albatross [64405]	Endangered	Species or species habitat may occur within area
Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	Species or species habitat may 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	Species or species habitat may occur within area
Limosa lapponica menzbieri Northern Siberian Bar-tailed Godwit, Russkoye Bar-tailed Godwit [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	Foraging, feeding or related behaviour likely to occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat likely to occur within area
Pachyptila turtur subantarctica Fairy Prion (southern) [64445]	Vulnerable	Species or species habitat likely to occur within area
Rostratula australis 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

Scientific Name	Threatened Category	Presence Text
Thalassarche carteri		
Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat likely to occur within area
Thalassarche cauta		
Shy Albatross [89224]	Endangered	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	Foraging, feeding or related behaviour likely to occur within area
Thalassarche steadi		
White-capped Albatross [64462]	Vulnerable	Species or species habitat may occur within area
Zanda latirostris listed as Calyptorhynchus latirostris		
Carnaby's Black Cockatoo, Short-billed Black-cockatoo [87737]	Endangered	Species or species habitat may occur within area
FISH		
Thunnus maccoyii		
Southern Bluefin Tuna [69402]	Conservation Dependent	Species or species habitat likely to occur within area
INSECT		
Hesperocolletes douglasi		
Douglas' Broad-headed Bee, Rottnest Bee [66734]	Critically Endangered	Species or species habitat may occur within area
MAMMAL		
Balaenoptera musculus		
Blue Whale [36]	Endangered	Species or species habitat likely to occur within area
Eubalaena australis		
Southern Right Whale [40]	Endangered	Breeding known to occur within area

Scientific Name	Threatened Category	Presence Text
[Neophoca cinerea](#) Australian Sea-lion, Australian Sea Lion [22]	Endangered	Species or species habitat likely to occur within area
[Setonix brachyurus](#) Quokka [229]	Vulnerable	Species or species habitat known to occur within area
PLANT		
[Diuris micrantha](#) Dwarf Bee-orchid [55082]	Vulnerable	Species or species habitat may occur within area
REPTILE		
[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	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
SHARK		
[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
[Pristis pristis](#) Freshwater Sawfish, Largetooth Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Vulnerable	Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Rhincodon typus Whale Shark [66680]	Vulnerable	Species or species habitat may occur within area
Sphyrna lewini Scalloped Hammerhead [85267]	Conservation Dependent	Species or species habitat likely to occur within area

Listed Migratory Species		[Resource Information]
Scientific Name	Threatened Category	Presence Text
Migratory Marine Birds		
Anous stolidus Common Noddy [825]		Species or species habitat likely to occur within area
Ardenna carneipes Flesh-footed Shearwater, Fleshy-footed Shearwater [82404]		Species or species habitat likely to occur within area
Ardenna pacifica Wedge-tailed Shearwater [84292]		Breeding known to occur within area
Diomedea amsterdamensis Amsterdam Albatross [64405]	Endangered	Species or species habitat may occur within area
Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	Species or species habitat may 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	Species or species habitat may occur within area
Hydroprogne caspia Caspian Tern [808]		Breeding known to occur within area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Onychoprion anaethetus Bridled Tern [82845]		Breeding known to occur within area
Phaethon rubricauda Red-tailed Tropicbird [994]		Breeding known to occur within area
Sterna dougallii Roseate Tern [817]		Breeding known to occur within area
Thalassarche carteri Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat likely to occur within area
Thalassarche cauta Shy Albatross [89224]	Endangered	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	Foraging, feeding or related behaviour likely to occur within area
Thalassarche steadi White-capped Albatross [64462]	Vulnerable	Species or species habitat may occur within area
Migratory Marine Species		
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

Scientific Name	Threatened Category	Presence Text
Caperea marginata Pygmy Right Whale [39]		Species or species habitat may occur within area
Carcharhinus longimanus Oceanic Whitetip Shark [84108]		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	Species or species habitat known to occur within area
Eubalaena australis as Balaena glacialis australis Southern Right Whale [40]	Endangered	Breeding known to occur within area
Lamna nasus Porbeagle, Mackerel Shark [83288]		Species or species habitat may occur within area
Megaptera novaeangliae Humpback Whale [38]		Species or species habitat known to occur within area
Mobula alfredi as Manta alfredi Reef Manta Ray, Coastal Manta Ray [90033]		Species or species habitat known to occur within area
Mobula birostris as Manta birostris Giant Manta Ray [90034]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
[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
[Pristis pristis](#)		
Freshwater Sawfish, Largetooth Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Vulnerable	Species or species habitat may occur within area
[Rhincodon typus](#)		
Whale Shark [66680]	Vulnerable	Species or species habitat may occur within area
Migratory Terrestrial Species		
[Motacilla cinerea](#)		
Grey Wagtail [642]		Species or species habitat may occur within area
Migratory Wetlands Species		
[Actitis hypoleucos](#)		
Common Sandpiper [59309]		Species or species habitat known to occur within area
[Arenaria interpres](#)		
Ruddy Turnstone [872]		Roosting known to occur within area
[Calidris acuminata](#)		
Sharp-tailed Sandpiper [874]		Roosting known to occur within area
[Calidris alba](#)		
Sanderling [875]		Roosting 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

Scientific Name	Threatened Category	Presence Text
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat known to occur within area
Calidris ruficollis Red-necked Stint [860]		Roosting known to occur within area
Calidris tenuirostris Great Knot [862]	Critically Endangered	Roosting known to occur within area
Charadrius bicinctus Double-banded Plover [895]		Roosting known to occur within area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat known to occur within area
Charadrius mongolus Lesser Sand Plover, Mongolian Plover [879]	Endangered	Roosting known to occur within area
Gallinago megala Swinhoe's Snipe [864]		Roosting likely to occur within area
Gallinago stenura Pin-tailed Snipe [841]		Roosting likely 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]		Roosting known to occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat likely to occur within area
Numenius minutus Little Curlew, Little Whimbrel [848]		Roosting likely to occur within area
Numenius phaeopus Whimbrel [849]		Roosting known to occur within area

Scientific Name	Threatened Category	Presence Text
Pandion haliaetus Osprey [952]		Breeding known to occur within area
Phalaropus lobatus Red-necked Phalarope [838]		Roosting known to occur within area
Pluvialis fulva Pacific Golden Plover [25545]		Roosting known to occur within area
Pluvialis squatarola Grey Plover [865]		Roosting known to occur within area
Thalasseus bergii Greater Crested Tern [83000]		Breeding known to occur within area
Tringa brevipes Grey-tailed Tattler [851]		Roosting 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]		Roosting known to occur within area
Tringa totanus Common Redshank, Redshank [835]		Roosting known to occur within area
Xenus cinereus Terek Sandpiper [59300]		Roosting known to occur within area

Other Matters Protected by the EPBC Act

Listed Marine Species		[Resource Information]
Scientific Name	Threatened Category	Presence Text
Bird		
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
Anous stolidus Common Noddy [825]		Species or species habitat likely to occur within area
Anous tenuirostris melanops Australian Lesser Noddy [26000]	Vulnerable	Species or species habitat may occur within area
Ardenna carneipes as Puffinus carneipes Flesh-footed Shearwater, Fleshy-footed Shearwater [82404]		Species or species habitat likely to occur within area
Ardenna pacifica as Puffinus pacificus Wedge-tailed Shearwater [84292]		Breeding known to occur within area
Arenaria interpres Ruddy Turnstone [872]		Roosting known to occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]		Roosting known to occur within area
Calidris alba Sanderling [875]		Roosting known to occur within area
Calidris canutus Red Knot, Knot [855]	Endangered	Species or species habitat known to occur within area overfly marine area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area overfly marine area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat known to occur within area overfly marine area
Calidris ruficollis Red-necked Stint [860]		Roosting known to occur within area overfly marine area

Scientific Name	Threatened Category	Presence Text
Calidris tenuirostris Great Knot [862]	Critically Endangered	Roosting known to occur within area overfly marine area
Charadrius bicinctus Double-banded Plover [895]		Roosting known to occur within area overfly marine area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat known to occur within area
Charadrius mongolus Lesser Sand Plover, Mongolian Plover [879]	Endangered	Roosting known to occur within area
Charadrius ruficapillus Red-capped Plover [881]		Roosting known to occur within area overfly marine area
Chroicocephalus novaehollandiae as Larus novaehollandiae Silver Gull [82326]		Breeding known to occur within area
Diomedea amsterdamensis Amsterdam Albatross [64405]	Endangered	Species or species habitat may occur within area
Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	Species or species habitat may 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	Species or species habitat may occur within area
Gallinago megala Swinhoe's Snipe [864]		Roosting likely to occur within area overfly marine area

Scientific Name	Threatened Category	Presence Text
Gallinago stenura Pin-tailed Snipe [841]		Roosting likely to occur within area overfly marine area
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat may occur within area
Himantopus himantopus Pied Stilt, Black-winged Stilt [870]		Roosting known to occur within area overfly marine area
Hydroprogne caspia as Sterna caspia Caspian Tern [808]		Breeding known to occur within area
Larus pacificus Pacific Gull [811]		Foraging, feeding or related behaviour may occur within area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat known to occur within area
Limosa limosa Black-tailed Godwit [845]		Roosting known to occur within area overfly marine 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	Foraging, feeding or related behaviour likely to occur within area
Motacilla cinerea Grey Wagtail [642]		Species or species habitat may occur within area overfly marine area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Numenius minutus Little Curlew, Little Whimbrel [848]		Roosting likely to occur within area overfly marine area
Numenius phaeopus Whimbrel [849]		Roosting known to occur within area
Onychoprion anaethetus as Sterna anaethetus Bridled Tern [82845]		Breeding known to occur within area
Onychoprion fuscatus as Sterna fuscata Sooty Tern [90682]		Breeding known to occur within area
Pachyptila turtur Fairy Prion [1066]		Species or species habitat likely to occur within area
Pandion haliaetus Osprey [952]		Breeding known to occur within area
Phaethon rubricauda Red-tailed Tropicbird [994]		Breeding known to occur within area
Phalaropus lobatus Red-necked Phalarope [838]		Roosting known to occur within area
Pluvialis fulva Pacific Golden Plover [25545]		Roosting known to occur within area
Pluvialis squatarola Grey Plover [865]		Roosting known to occur within area overfly marine area
Puffinus assimilis Little Shearwater [59363]		Breeding known to occur within area
Recurvirostra novaehollandiae Red-necked Avocet [871]		Roosting known to occur within area overfly marine area
Rostratula australis as Rostratula benghalensis (sensu lato) Australian Painted Snipe [77037]	Endangered	Species or species habitat may occur within area overfly marine area

Scientific Name	Threatened Category	Presence Text
Sterna dougallii Roseate Tern [817]		Breeding known to occur within area
Sternula nereis as Sterna nereis Fairy Tern [82949]		Breeding known to occur within area
Thalassarche carteri Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat likely to occur within area
Thalassarche cauta Shy Albatross [89224]	Endangered	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	Foraging, feeding or related behaviour likely to occur within area
Thalassarche steadi White-capped Albatross [64462]	Vulnerable	Species or species habitat may occur within area
Thalasseus bergii as Sterna bergii Greater Crested Tern [83000]		Breeding known to occur within area
Thinornis cucullatus as Thinornis rubricollis Hooded Plover, Hooded Dotterel [87735]		Species or species habitat known to occur within area overfly marine area
Tringa brevipes as Heteroscelus brevipes Grey-tailed Tattler [851]		Roosting known to occur within area
Tringa nebularia Common Greenshank, Greenshank [832]		Species or species habitat known to occur within area overfly marine area

Scientific Name	Threatened Category	Presence Text
[Tringa stagnatilis](#) Marsh Sandpiper, Little Greenshank [833]		Roosting known to occur within area overfly marine area
[Tringa totanus](#) Common Redshank, Redshank [835]		Roosting known to occur within area overfly marine area
[Xenus cinereus](#) Terek Sandpiper [59300]		Roosting known to occur within area overfly marine 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

Scientific Name	Threatened Category	Presence Text
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
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

Scientific Name	Threatened Category	Presence Text
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
Mammal		
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]	Endangered	Species or species habitat likely to occur within area
Reptile		
Aipysurus pooleorum Shark Bay Seasnake [66061]		Species or species habitat may occur within area
Caretta caretta Loggerhead Turtle [1763]	Endangered	Foraging, feeding or related behaviour known to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
Disteira kingii Spectacled Seasnake [1123]		Species or species habitat may occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Pelamis platurus Yellow-bellied Seasnake [1091]		Species or species habitat may occur within area

Whales and Other Cetaceans		[Resource Information]
Current Scientific Name	Status	Type of Presence
Mammal		
Balaenoptera acutorostrata Minke Whale [33]		Species or species habitat may occur within area
Balaenoptera edeni Bryde's Whale [35]		Species or species habitat may occur within area
Balaenoptera musculus Blue Whale [36]	Endangered	Species or species habitat likely to occur within area
Caperea marginata Pygmy Right Whale [39]		Species or species habitat may occur within area
Delphinus delphis Common Dolphin, Short-beaked Common Dolphin [60]		Species or species habitat may occur within area
Eubalaena australis Southern Right Whale [40]	Endangered	Breeding known to occur within area
Grampus griseus Risso's Dolphin, Grampus [64]		Species or species habitat may occur within area

Current Scientific Name	Status	Type of Presence
Megaptera novaeangliae Humpback Whale [38]		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]
Protected Area Name	Reserve Type	State
Rottnest Island	State Reserve	WA

Nationally Important Wetlands	[Resource Information]
Wetland Name	State
Rottnest Island Lakes	WA

EPBC Act Referrals			[Resource Information]
Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action			
INDIGO Central Submarine Telecommunications Cable	2017/8127	Not Controlled Action	Completed
Rottnest Lodge Redevelopment	2019/8565	Not Controlled Action	Completed
Seismic Survey, Bremer Basin, Mentelle Basin and Zeewyck Sub-basin	2004/1700	Not Controlled Action	Completed

Biologically Important Areas		
Scientific Name	Behaviour	Presence

Scientific Name	Behaviour	Presence
Seabirds		
Ardenna carneipes Flesh-footed Shearwater [82404]	Aggregation	Known to occur
Ardenna pacifica Wedge-tailed Shearwater [84292]	Foraging (in high numbers)	Known to occur
Eudyptula minor Little Penguin [1085]	Foraging (provisioning young)	Known to occur
Hydroprogne caspia Caspian Tern [808]	Foraging (provisioning young)	Known to occur
Larus pacificus Pacific Gull [811]	Foraging (in high numbers)	Former Range
Onychoprion anaethetus Bridled Tern [82845]	Foraging (in high numbers)	Known to occur
Puffinus assimilis tunneyi Little Shearwater [59363]	Foraging (in high numbers)	Known to occur
Sterna dougallii Roseate Tern [817]	Foraging	Known to occur
Sternula nereis Fairy Tern [82949]	Foraging (in high numbers)	Known to occur
Seals		
Neophoca cinerea Australian Sea Lion [22]	Foraging (male)	Likely to occur
Whales		
Balaenoptera musculus brevicauda Pygmy Blue Whale [81317]	Distribution	Known to occur
Eubalaena australis Southern Right Whale [40]	Calving buffer	Known to occur

Scientific Name	Behaviour	Presence
Megaptera novaeangliae		
Humpback Whale [38]	Migration (north and south)	Known to occur

Caveat

1 PURPOSE

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

The report contains the mapped locations of:

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

2 DISCLAIMER

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

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

3 DATA SOURCES

Threatened ecological communities

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

Threatened, migratory and marine species

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

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

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

4 LIMITATIONS

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

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

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

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

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

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

Acknowledgements

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

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

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

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

Department of Agriculture Water and the Environment
GPO Box 858
Canberra City ACT 2601 Australia
+61 2 6274 1111

APPENDIX C – FLORA SPECIES BY VEGETATION UNIT

*denotes introduced (weed) species

Family	Taxon	MIAp				CpMI	ArAp	MIGl	GtS	OaAp	LpAp	TiSS	SIG
		Q03	Q06	Q08	Q11	Q12	R01	R02	R04	R05	R07	R09	R10
Asparagaceae	*Acanthocarpus preissii*	+	+	+	+		+	+		+	+		+
Araliaceae	*Trachymene coerulea*						+						
Asphodelaceae	**Asphodelus fistulosus*									+		+	+
Asphodelaceae	**Trachyandra divaricata*	+	+		+	+	+	+			+		+
Asteraceae	**Dittrichia graveolens*							+		+		+	+
Asteraceae	*Olearia axillaris*									+	+		
Casuarinaceae	*Allocasuarina huegeliana*				+								
Chenopodiaceae	*Rhagodia baccata*							+			+		
Chenopodiaceae	*Tecticornia indica* subsp. *bidens*											+	
Cupressaceae	*Callitris preissii*		+			+		+					
Cyperaceae	*Gahnia trifida*			+					+			+	
Cyperaceae	*Lepidosperma gladiatum*										+		
Cyperaceae	*Lepidosperma pubisquameum*									+			
Fabaceae	*Acacia rostellifera*				+	+	+	+			+		
Goodeniaceae	*Scaevola crassifolia*						+						+
Haemodoraceae	*Conostylis candicans*										+		
Malvaceae	*Guichenotia ledifolia*		+				+	+					
Myrtaceae	*Agonis flexuosa*					+							
Myrtaceae	*Eucalyptus platypus*					+							
Myrtaceae	*Melaleuca lanceolata*	+	+	+	+	+		+					
Poaceae	*Austrostipa flavescens*							+					
Poaceae	**Pentameris airoides*			+									
Poaceae	*Poa poiformis*	+	+	+				+		+	+	+	
Poaceae	*Spinifex longifolius*												+
Poaceae	*Sporobolus virginicus*											+	
Zygophyllaceae	*Roepera* sp.			+									

APPENDIX D – QUADRAT AND RELEVÉ SITE DATA

Site Q03

Date	2 May 2022
Botanist	Kellie Bauer-Simpson and Lisa Chappell
Quadrat Size	10 x 10 m
NW Corner Coordinates	362326mE 6457483mN
Vegetation Unit	Melaleuca/ Acanthocarpus Woodland
Slope	Flat
Landform	Valley
Soil Colour	Brown
Soil Type	Sand
Litter	70%
Bare Ground	5%
Fire Age	>10 Years
Vegetation Condition	Good to Very Good
Disturbances/Impacts	Loss of structure, no mid or understorey

Species	Height (m)	% Cover
Melaleuca lanceolata	10	70
Poa poiformis	0.2	1
Acanthocarpus preissii	0.15	<1
Trachyandra divaricata	0.1	<1
Cotyledon sp.	0.01	1

Site Q06

Date	2 May 2022
Botanist	Kellie Bauer-Simpson and Lisa Chappell
Quadrat Size	10 x 10 m
NW Corner Coordinates	362619mE 6457770mN
Vegetation Unit	Melaleuca/ Acanthocarpus Woodland
Slope	Steep
Landform	Hilltop
Soil Colour	Pale brown
Soil Type	Sand
Litter	25%
Bare Ground	15%
Fire Age	>10 Years
Vegetation Condition	Very Good
Disturbances/Impacts	Some weeds, some loss of mid-storey

Species	Height (m)	% Cover
Melaleuca lanceolata	9	20
Acanthocarpus preissii	1	15
Poa poiformis	0.7	4
Guichenotia ledifolia	0.6	7
Trachyandra divaricata		+
Callitris preissii		Associated

Site Q08

Date	2 May 2022
Botanist	Kellie Bauer-Simpson and Lisa Chappell
Quadrat Size	10 x 10 m
NW Corner Coordinates	362948mE 6457893mN
Vegetation Unit	Melaleuca/ Acanthocarpus Woodland
Slope	Flat
Landform	Swamp edge
Soil Colour	Brown
Soil Type	Sandy clay
Litter	90%
Bare Ground	2%
Fire Age	>10 Years
Vegetation Condition	Good to Very Good
Disturbances/Impacts	Fallen wood, dry conditions

Species	Height (m)	% Cover
Melaleuca lanceolata	11	70
Gahnia trifida	0.6	1
Poa poiformis	0.3	1
Acanthocarpus preissii		+
Pentameris airoides		+
Zygophyllum sp.		+

Site Q11

Date	2 May 2022
Botanist	Kellie Bauer-Simpson and Lisa Chappell
Quadrat Size	10 x 10 m
NW Corner Coordinates	362690mE 6458323mN
Vegetation Unit	Melaleuca/ Acanthocarpus Woodland
Slope	Moderate
Landform	Hillside
Soil Colour	Pale brown
Soil Type	Sand
Litter	20%
Bare Ground	5%
Fire Age	>10 Years
Vegetation Condition	Very Good
Disturbances/Impacts	Fallen wood, weeds

Species	Height (m)	% Cover
Melaleuca lanceolata	8	25
Allocasuarina huegeliana	5	1
Acanthocarpus preissii	0.8	30
Acacia rostellifera		+
Trachyandra divaricata		+

Site Q12

Date	2 May 2022
Botanist	Kellie Bauer-Simpson and Lisa Chappell
Quadrat Size	10 x 10 m
NW Corner Coordinates	362392mE 6458498mN
Vegetation Unit	Callitris/ Melaleuca Shrubland
Slope	Flat
Landform	Flat
Soil Colour	Pale brown
Soil Type	Sand
Litter	50%
Bare Ground	5%
Fire Age	5-10 Years
Vegetation Condition	Very Good
Disturbances/Impacts	No structure (rehab?)

Species	Height (m)	% Cover
Callitris preissii	4	15
Agonis flexuosa	3	5
Melaleuca lanceolata	3	5
Acacia rostellifera	3	12
Eucalyptus platypus		Associated
Trachyandra divaricata		Associated

Site R01

Date	2 May 2022
Botanist	Kellie Bauer-Simpson and Lisa Chappell
Quadrat Size	10 x 10 m
NW Corner Coordinates	362253mE 6457299mN
Vegetation Unit	Acacia/ Acanthocarpus Shrubland
Slope	Moderate
Landform	Valley
Soil Colour	Brown
Soil Type	Sand
Litter	80%
Bare Ground	0%
Fire Age	5-10 Years
Vegetation Condition	Excellent
Disturbances/Impacts	Negligible

Species	Height (m)	% Cover
Acacia rostellifera	5	20
Acanthocarpus preissii	1	40
Trachyandra divaricata	0.2	1
Guichenotia ledifolia		+
Scaevola crassifolia		+
Trachymene coerulea		+

Site R02

Date	2 May 2022
Botanist	Kellie Bauer-Simpson and Lisa Chappell
Quadrat Size	10 x 10 m
NW Corner Coordinates	362262mE 6457381mN
Vegetation Unit	Melaleuca/ Guichenotia Shrubland
Slope	Moderate
Landform	Hillside
Soil Colour	Pale brown
Soil Type	Sand
Litter	15%
Bare Ground	15%
Fire Age	5-10 Years
Vegetation Condition	Good
Disturbances/Impacts	Weeds, loss of structure

Species	Height (m)	% Cover
Melaleuca lanceolata	2.5	2
Callitris preissii	2	2
Guichenotia ledifolia	1	30
Acanthocarpus preissii	0.8	15
Rhagodia baccata	0.6	5
Trachyandra divaricata	0.3	1
Acacia rostellifera		+
Austrostipa flavescens		+
Dittrichia graveolens		+
Poa poiformis		+

Site R04

Date	2 May 2022
Botanist	Kellie Bauer-Simpson and Lisa Chappell
Quadrat Size	10 x 10 m
NW Corner Coordinates	362490mE 6457633mN
Vegetation Unit	Gahnia Sedgeland
Slope	Flat
Landform	Swamp
Soil Colour	Brown
Soil Type	Clay
Litter	5%
Bare Ground	20%
Fire Age	>10 Years
Vegetation Condition	Very Good to Excellent
Disturbances/Impacts	No diversity

Species	Height (m)	% Cover
Gahnia trifida	1.3	30

Site R05

Date	2 May 2022
Botanist	Kellie Bauer-Simpson and Lisa Chappell
Quadrat Size	10 x 10 m
NW Corner Coordinates	362486mE 6457775mN
Vegetation Unit	Olearia/ Acanthocarpus Shrubland
Slope	Moderate
Landform	Hillside
Soil Colour	Pale brown
Soil Type	Sand
Litter	15%
Bare Ground	25%
Fire Age	5-10 Years
Vegetation Condition	Very Good
Disturbances/Impacts	Weeds

Species	Height (m)	% Cover
Olearia axillaris	2	10
Acanthocarpus preissii	0.6	20
Asphodelus fistulosus	0.5	5
Poa poiformis	0.4	4
Dittrichia graveolens		+
Lepidosperma pubisquameum		+
Lepidosperma gladiatum	0.7	15
Rhagodia baccata	0.5	4

Site R07

Date	2 May 2022
Botanist	Kellie Bauer-Simpson and Lisa Chappell
Quadrat Size	10 x 10 m
NW Corner Coordinates	362738mE 6457638mN
Vegetation Unit	Lepidosperma/ Acanthocarpus Sedgeland
Slope	Steep
Landform	Hillside
Soil Colour	Very pale brown
Soil Type	Sand
Litter	10%
Bare Ground	15%
Fire Age	5-10 Years
Vegetation Condition	Good
Disturbances/Impacts	Some weeds

Species	Height (m)	% Cover
Acanthocarpus preissii	0.5	25
Conostylis candicans	0.3	8
Trachyandra divaricata	0.1	3
Acacia rostellifera		+
Olearia axillaris		+
Poa poiformis		+

Site Q09

Date	2 May 2022
Botanist	Kellie Bauer-Simpson and Lisa Chappell
Quadrat Size	10 x 10 m
NW Corner Coordinates	362987mE 6458043mN
Vegetation Unit	Tecticornia Samphire Shrubland
Slope	Flat
Landform	Swamp
Soil Colour	Pale brown
Soil Type	Clay
Litter	10%
Bare Ground	15%
Fire Age	>10 Years
Vegetation Condition	Very Good
Disturbances/Impacts	Nil

Species	Height (m)	% Cover
Spinifex longifolius	0.8	50
Scaevola crassifolia	0.3	15
Acanthocarpus preissii		+
Asphodelus fistulosus		+
Dittrichia graveolens		+
Trachyandra divaricata		+

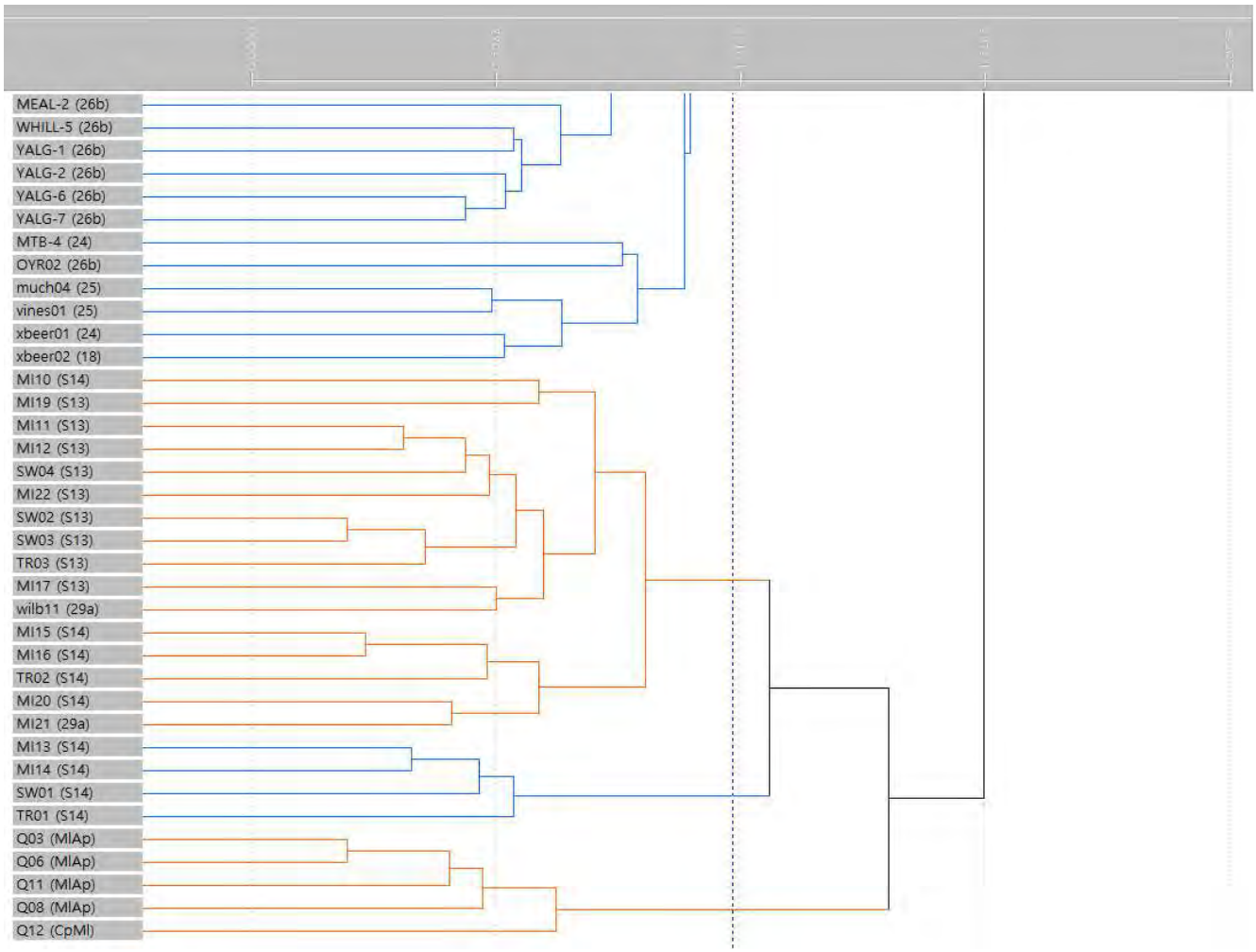
Site R10

Date	2 May 2022
Botanist	Kellie Bauer-Simpson and Lisa Chappell
Quadrat Size	10 x 10 m
NW Corner Coordinates	363577mE 6458299mN
Vegetation Unit	Spinifex Grassland
Slope	Steep
Landform	Foredune
Soil Colour	White
Soil Type	Sand
Litter	5%
Bare Ground	15%
Fire Age	>10 Years
Vegetation Condition	Degraded to Good

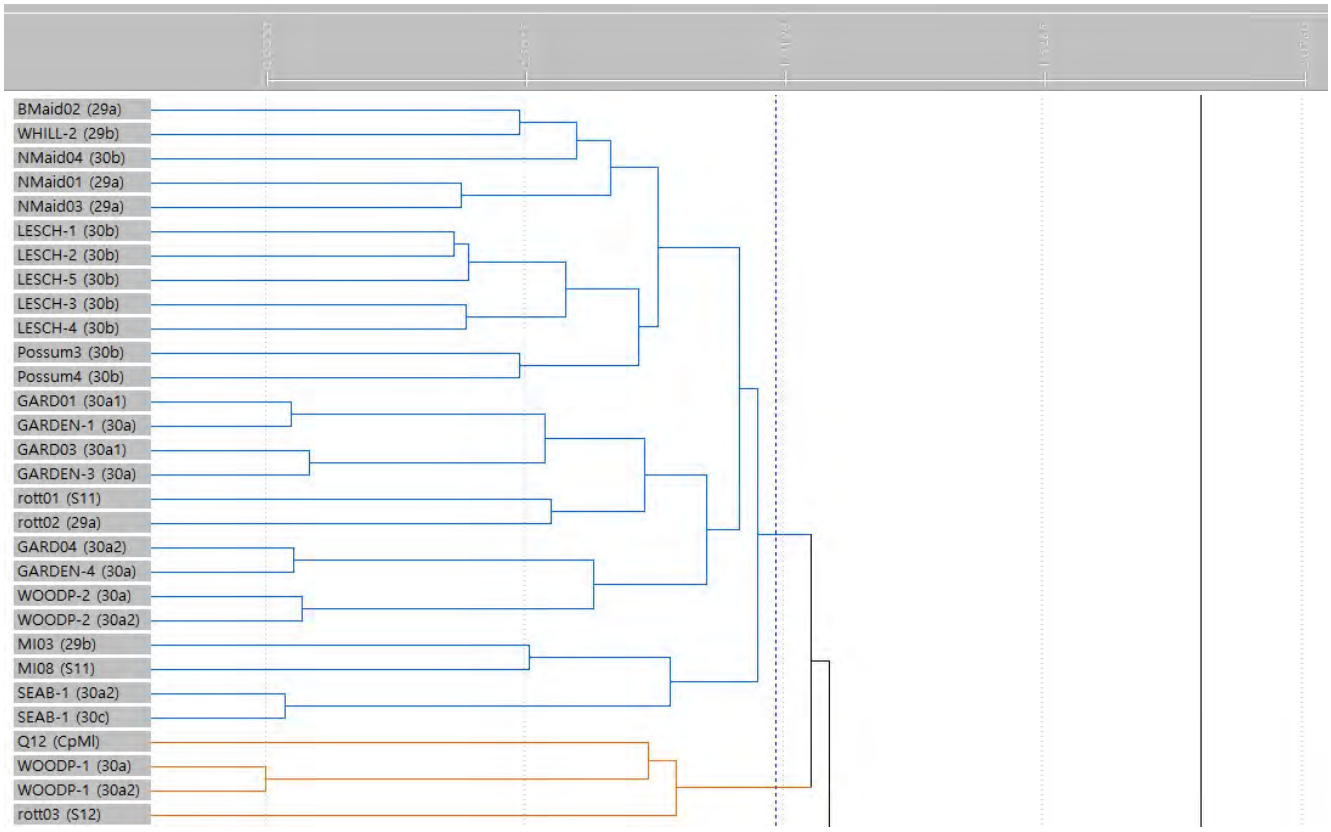
Species	Height (m)	% Cover
Spinifex longifolius	0.8	50
Scaevola crassifolia	0.3	15
Acanthocarpus preissii		+
Asphodelus fistulosus		+
Dittrichia graveolens		+
Trachyandra divaricata		+

APPENDIX E – BATCH AND SSI DENDROGRAMS

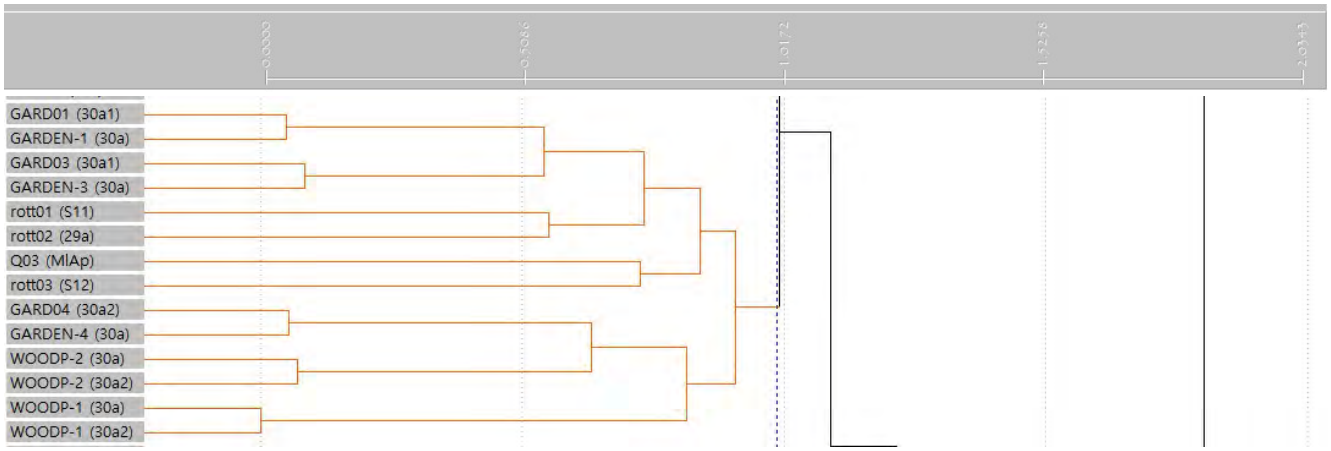
Dendrogram 1 – Excerpt Batch Analysis RIA Quadrats



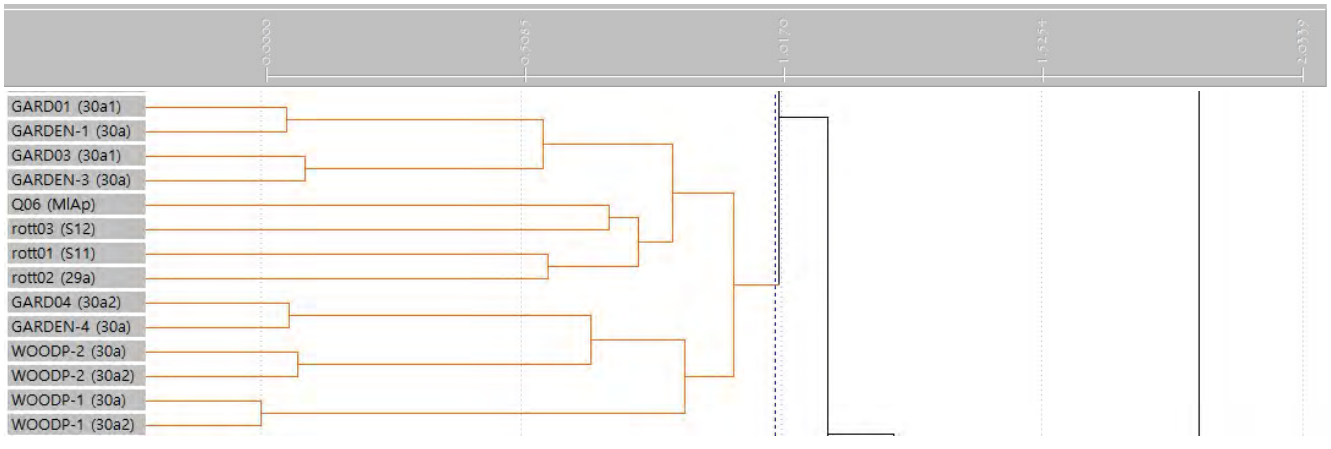
Dendrogram 2– CpMl SSI Q12



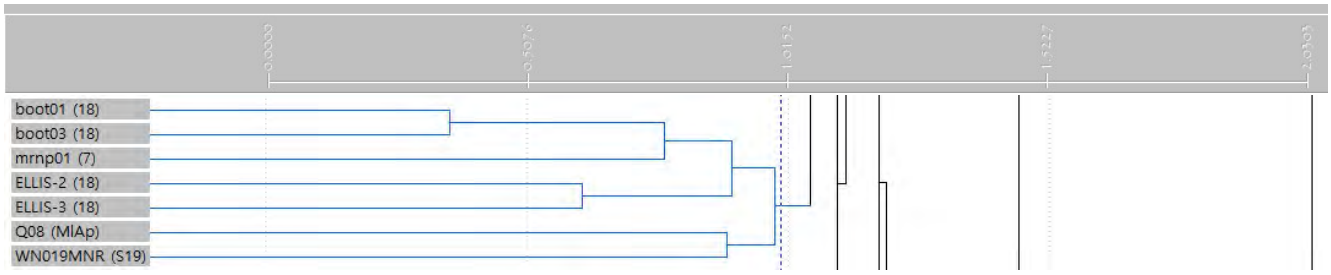
Dendrogram 3 – MlAp SSI Q03



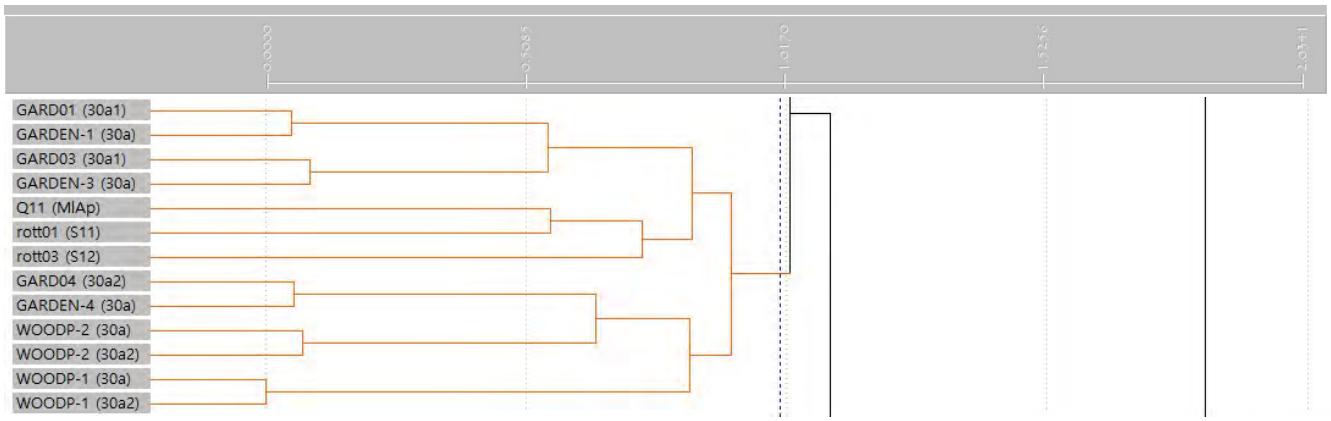
Dendrogram 4 – MlAp SSI Q06



Dendrogram 5 – MlAp SSI Q08



Dendrogram 6– MlAp SSI Q11



Appendix C
Protected Matters Search Tool Results (EPBC Act)

Australian Government
Department of Agriculture, Water and the Environment

EPBC Act Protected Matters Report

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

Report created: 18-Mar-2022

Summary

Matters of National Environment Significance

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

World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International Importance (Ramsar	None
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	1
Listed Threatened Species:	38
Listed Migratory Species:	65

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

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 Lands:	None
Commonwealth Heritage Places:	None
Listed Marine Species:	93
Whales and Other Cetaceans:	12
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	None
Habitat Critical to the Survival of Marine Turtles:	None

Extra Information

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

State and Territory Reserves:	1
Regional Forest Agreements:	None
Nationally Important Wetlands:	1
EPBC Act Referrals:	3
Key Ecological Features (Marine):	None
Biologically Important Areas:	13
Bioregional Assessments:	None
Geological and Bioregional Assessments:	None

Details

Matters of National Environmental Significance

Listed Threatened Ecological Communities [Resource Information]

For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.
Status of Vulnerable, Disallowed and Ineligible are not MNES under the EPBC Act.

Community Name	Threatened Category	Presence Text	Buffer Status
Banksia Woodlands of the Swan Coastal Plain ecological community	Endangered	Community may occur within area	In feature area

Listed Threatened Species [Resource Information]

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

Scientific Name	Threatened Category	Presence Text	Buffer Status
BIRD			
Anous tenuirostris melanops Australian Lesser Noddy [26000]	Vulnerable	Species or species habitat may occur within area	In feature area
Calidris canutus Red Knot, Knot [855]	Endangered	Species or species habitat known to occur within area	In feature area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area	In feature area
Calidris tenuirostris Great Knot [862]	Critically Endangered	Roosting known to occur within area	In feature area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat known to occur within area	In feature area
Charadrius mongolus Lesser Sand Plover, Mongolian Plover [879]	Endangered	Roosting known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Diomedea amsterdamensis Amsterdam Albatross [64405]	Endangered	Species or species habitat may occur within area	In feature area
Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Diomedea sanfordi Northern Royal Albatross [64456]	Endangered	Foraging, feeding or related behaviour likely to occur within area	In feature area
Limosa lapponica menzbieri Northern Siberian Bar-tailed Godwit, Russkoye Bar-tailed Godwit [86432]	Critically Endangered	Species or species habitat known to occur within area	In feature area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area	In feature area
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Species or species habitat may occur within area	In feature area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat likely to occur within area	In feature area
Pachyptila turtur subantarctica Fairy Prion (southern) [64445]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Rostratula australis Australian Painted Snipe [77037]	Endangered	Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
[Sternula nereis nereis](#) Australian Fairy Tern [82950]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In feature area
[Thalassarche carteri](#) Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat likely to occur within area	In feature area
[Thalassarche cauta](#) Shy Albatross [89224]	Endangered	Foraging, feeding or related behaviour likely to occur within area	In feature area
[Thalassarche impavida](#) Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area	In feature area
[Thalassarche melanophris](#) Black-browed Albatross [66472]	Vulnerable	Species or species habitat may occur within area	In feature area
[Thalassarche steadi](#) White-capped Albatross [64462]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
FISH			
[Thunnus maccoyii](#) Southern Bluefin Tuna [69402]	Conservation Dependent	Species or species habitat likely to occur within area	In feature area
INSECT			
[Hesperocolletes douglasi](#) Douglas' Broad-headed Bee, Rottnest Bee [66734]	Critically Endangered	Species or species habitat may occur within area	In feature area
MAMMAL			
[Balaenoptera musculus](#) Blue Whale [36]	Endangered	Species or species habitat likely to occur within area	In feature area
[Eubalaena australis](#) Southern Right Whale [40]	Endangered	Breeding known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
[Neophoca cinerea](#) Australian Sea-lion, Australian Sea Lion [22]	Endangered	Species or species habitat likely to occur within area	In feature area
[Setonix brachyurus](#) Quokka [229]	Vulnerable	Species or species habitat known to occur within area	In feature area
PLANT			
[Diuris micrantha](#) Dwarf Bee-orchid [55082]	Vulnerable	Species or species habitat may occur within area	In feature area
REPTILE			
[Caretta caretta](#) Loggerhead Turtle [1763]	Endangered	Foraging, feeding or related behaviour known to occur within area	In feature area
[Chelonia mydas](#) Green Turtle [1765]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In feature area
[Dermochelys coriacea](#) Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Species or species habitat known to occur within area	In feature area
[Natator depressus](#) Flatback Turtle [59257]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In feature area
SHARK			
[Carcharias taurus (west coast population)](#) Grey Nurse Shark (west coast population) [68752]	Vulnerable	Species or species habitat known to occur within area	In feature area
[Carcharodon carcharias](#) White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat known to occur within area	In feature area
[Pristis pristis](#) Freshwater Sawfish, Largetooth Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Vulnerable	Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Rhincodon typus			
Whale Shark [66680]	Vulnerable	Species or species habitat may occur within area	In feature area
Sphyrna lewini			
Scalloped Hammerhead [85267]	Conservation Dependent	Species or species habitat likely to occur within area	In feature area

Listed Migratory Species [Resource Information]

Scientific Name	Threatened Category	Presence Text	Buffer Status
Migratory Marine Birds			
Anous stolidus			
Common Noddy [825]		Species or species habitat likely to occur within area	In feature area
Ardenna carneipes			
Flesh-footed Shearwater, Fleshy-footed Shearwater [82404]		Species or species habitat likely to occur within area	In feature area
Ardenna pacifica			
Wedge-tailed Shearwater [84292]		Breeding known to occur within area	In feature area
Diomedea amsterdamensis			
Amsterdam Albatross [64405]	Endangered	Species or species habitat may occur within area	In feature area
Diomedea epomophora			
Southern Royal Albatross [89221]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Diomedea exulans			
Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Diomedea sanfordi			
Northern Royal Albatross [64456]	Endangered	Foraging, feeding or related behaviour likely to occur within area	In feature area
Hydroprogne caspia			
Caspian Tern [808]		Breeding known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area	In feature area
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Species or species habitat may occur within area	In feature area
Onychoprion anaethetus Bridled Tern [82845]		Breeding known to occur within area	In feature area
Phaethon rubricauda Red-tailed Tropicbird [994]		Breeding known to occur within area	In feature area
Sterna dougallii Roseate Tern [817]		Breeding known to occur within area	In feature area
Thalassarche carteri Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Thalassarche cauta Shy Albatross [89224]	Endangered	Foraging, feeding or related behaviour likely to occur within area	In feature area
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area	In feature area
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Species or species habitat may occur within area	In feature area
Thalassarche steadi White-capped Albatross [64462]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Migratory Marine Species			
Balaenoptera edeni Bryde's Whale [35]		Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Balaenoptera musculus Blue Whale [36]	Endangered	Species or species habitat likely to occur within area	In feature area
Caperea marginata Pygmy Right Whale [39]		Species or species habitat may occur within area	In feature area
Carcharhinus longimanus Oceanic Whitetip Shark [84108]		Species or species habitat may occur within area	In feature area
Carcharodon carcharias White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat known to occur within area	In feature area
Caretta caretta Loggerhead Turtle [1763]	Endangered	Foraging, feeding or related behaviour known to occur within area	In feature area
Chelonia mydas Green Turtle [1765]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In feature area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Species or species habitat known to occur within area	In feature area
Eubalaena australis as Balaena glacialis australis Southern Right Whale [40]	Endangered	Breeding known to occur within area	In feature area
Lamna nasus Porbeagle, Mackerel Shark [83288]		Species or species habitat may occur within area	In feature area
Megaptera novaeangliae Humpback Whale [38]		Species or species habitat known to occur within area	In feature area
Mobula alfredi as Manta alfredi Reef Manta Ray, Coastal Manta Ray [90033]		Species or species habitat known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
[Mobula birostris as Manta birostris](#) Giant Manta Ray [90034]		Species or species habitat may occur within area	In feature area
[Natator depressus](#) Flatback Turtle [59257]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In feature area
[Orcinus orca](#) Killer Whale, Orca [46]		Species or species habitat may occur within area	In feature area
[Pristis pristis](#) Freshwater Sawfish, Largetooth Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Vulnerable	Species or species habitat may occur within area	In feature area
[Rhincodon typus](#) Whale Shark [66680]	Vulnerable	Species or species habitat may occur within area	In feature area
Migratory Terrestrial Species			
[Motacilla cinerea](#) Grey Wagtail [642]		Species or species habitat may occur within area	In feature area
Migratory Wetlands Species			
[Actitis hypoleucos](#) Common Sandpiper [59309]		Species or species habitat known to occur within area	In feature area
[Arenaria interpres](#) Ruddy Turnstone [872]		Roosting known to occur within area	In feature area
[Calidris acuminata](#) Sharp-tailed Sandpiper [874]		Roosting known to occur within area	In feature area
[Calidris alba](#) Sanderling [875]		Roosting known to occur within area	In feature area
[Calidris canutus](#) Red Knot, Knot [855]	Endangered	Species or species habitat known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area	In feature area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat known to occur within area	In feature area
Calidris ruficollis Red-necked Stint [860]		Roosting known to occur within area	In feature area
Calidris tenuirostris Great Knot [862]	Critically Endangered	Roosting known to occur within area	In feature area
Charadrius bicinctus Double-banded Plover [895]		Roosting known to occur within area	In feature area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat known to occur within area	In feature area
Charadrius mongolus Lesser Sand Plover, Mongolian Plover [879]	Endangered	Roosting known to occur within area	In feature area
Gallinago megala Swinhoe's Snipe [864]		Roosting likely to occur within area	In feature area
Gallinago stenura Pin-tailed Snipe [841]		Roosting likely to occur within area	In feature area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat known to occur within area	In feature area
Limosa limosa Black-tailed Godwit [845]		Roosting known to occur within area	In feature area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat likely to occur within area	In feature area
Numenius minutus Little Curlew, Little Whimbrel [848]		Roosting likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
[Numenius phaeopus](#) Whimbrel [849]		Roosting known to occur within area	In feature area
[Pandion haliaetus](#) Osprey [952]		Breeding known to occur within area	In feature area
[Phalaropus lobatus](#) Red-necked Phalarope [838]		Roosting known to occur within area	In feature area
[Pluvialis fulva](#) Pacific Golden Plover [25545]		Roosting known to occur within area	In feature area
[Pluvialis squatarola](#) Grey Plover [865]		Roosting known to occur within area	In feature area
[Thalasseus bergii](#) Greater Crested Tern [83000]		Breeding known to occur within area	In feature area
[Tringa brevipes](#) Grey-tailed Tattler [851]		Roosting known to occur within area	In feature area
[Tringa nebularia](#) Common Greenshank, Greenshank [832]		Species or species habitat known to occur within area	In feature area
[Tringa stagnatilis](#) Marsh Sandpiper, Little Greenshank [833]		Roosting known to occur within area	In feature area
[Tringa totanus](#) Common Redshank, Redshank [835]		Roosting known to occur within area	In feature area
[Xenus cinereus](#) Terek Sandpiper [59300]		Roosting known to occur within area	In feature area

Other Matters Protected by the EPBC Act

Listed Marine Species			[Resource Information]
Scientific Name	Threatened Category	Presence Text	Buffer Status
Bird			

Scientific Name	Threatened Category	Presence Text	Buffer Status
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat known to occur within area	In feature area
Anous stolidus Common Noddy [825]		Species or species habitat likely to occur within area	In feature area
Anous tenuirostris melanops Australian Lesser Noddy [26000]	Vulnerable	Species or species habitat may occur within area	In feature area
Ardenna carneipes as Puffinus carneipes Flesh-footed Shearwater, Fleshy-footed Shearwater [82404]		Species or species habitat likely to occur within area	In feature area
Ardenna pacifica as Puffinus pacificus Wedge-tailed Shearwater [84292]		Breeding known to occur within area	In feature area
Arenaria interpres Ruddy Turnstone [872]		Roosting known to occur within area	In feature area
Calidris acuminata Sharp-tailed Sandpiper [874]		Roosting known to occur within area	In feature area
Calidris alba Sanderling [875]		Roosting known to occur within area	In feature area
Calidris canutus Red Knot, Knot [855]	Endangered	Species or species habitat known to occur within area overfly marine area	In feature area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area overfly marine area	In feature area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat known to occur within area overfly marine area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Calidris ruficollis Red-necked Stint [860]		Roosting known to occur within area overfly marine area	In feature area
Calidris tenuirostris Great Knot [862]	Critically Endangered	Roosting known to occur within area overfly marine area	In feature area
Charadrius bicinctus Double-banded Plover [895]		Roosting known to occur within area overfly marine area	In feature area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat known to occur within area	In feature area
Charadrius mongolus Lesser Sand Plover, Mongolian Plover [879]	Endangered	Roosting known to occur within area	In feature area
Charadrius ruficapillus Red-capped Plover [881]		Roosting known to occur within area overfly marine area	In feature area
Chroicocephalus novaehollandiae as Larus novaehollandiae Silver Gull [82326]		Breeding known to occur within area	In feature area
Diomedea amsterdamensis Amsterdam Albatross [64405]	Endangered	Species or species habitat may occur within area	In feature area
Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Diomedea sanfordi Northern Royal Albatross [64456]	Endangered	Foraging, feeding or related behaviour likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Gallinago megala Swinhoe's Snipe [864]		Roosting likely to occur within area overfly marine area	In feature area
Gallinago stenura Pin-tailed Snipe [841]		Roosting likely to occur within area overfly marine area	In feature area
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat may occur within area	In feature area
Himantopus himantopus Pied Stilt, Black-winged Stilt [870]		Roosting known to occur within area overfly marine area	In feature area
Hydroprogne caspia as Sterna caspia Caspian Tern [808]		Breeding known to occur within area	In feature area
Larus pacificus Pacific Gull [811]		Foraging, feeding or related behaviour may occur within area	In feature area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat known to occur within area	In feature area
Limosa limosa Black-tailed Godwit [845]		Roosting known to occur within area overfly marine area	In feature area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area	In feature area
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Species or species habitat may occur within area	In feature area
Motacilla cinerea Grey Wagtail [642]		Species or species habitat may occur within area overfly marine area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat likely to occur within area	In feature area
Numenius minutus Little Curlew, Little Whimbrel [848]		Roosting likely to occur within area overfly marine area	In feature area
Numenius phaeopus Whimbrel [849]		Roosting known to occur within area	In feature area
Onychoprion anaethetus as Sterna anaethetus Bridled Tern [82845]		Breeding known to occur within area	In feature area
Onychoprion fuscatus as Sterna fuscata Sooty Tern [90682]		Breeding known to occur within area	In feature area
Pachyptila turtur Fairy Prion [1066]		Species or species habitat likely to occur within area	In feature area
Pandion haliaetus Osprey [952]		Breeding known to occur within area	In feature area
Phaethon rubricauda Red-tailed Tropicbird [994]		Breeding known to occur within area	In feature area
Phalaropus lobatus Red-necked Phalarope [838]		Roosting known to occur within area	In feature area
Pluvialis fulva Pacific Golden Plover [25545]		Roosting known to occur within area	In feature area
Pluvialis squatarola Grey Plover [865]		Roosting known to occur within area overfly marine area	In feature area
Puffinus assimilis Little Shearwater [59363]		Breeding known to occur within area	In feature area
Recurvirostra novaehollandiae Red-necked Avocet [871]		Roosting known to occur within area overfly marine area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Rostratula australis as Rostratula benghalensis (sensu lato)			
Australian Painted Snipe [77037]	Endangered	Species or species habitat may occur within area overfly marine area	In feature area
Sterna dougallii			
Roseate Tern [817]		Breeding known to occur within area	In feature area
Sternula nereis as Sterna nereis			
Fairy Tern [82949]		Breeding known to occur within area	In feature area
Thalassarche carteri			
Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Thalassarche cauta			
Shy Albatross [89224]	Endangered	Foraging, feeding or related behaviour likely to occur within area	In feature area
Thalassarche impavida			
Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area	In feature area
Thalassarche melanophris			
Black-browed Albatross [66472]	Vulnerable	Species or species habitat may occur within area	In feature area
Thalassarche steadi			
White-capped Albatross [64462]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Thalasseus bergii as Sterna bergii			
Greater Crested Tern [83000]		Breeding known to occur within area	In feature area
Thinornis cucullatus as Thinornis rubricollis			
Hooded Dotterel, Hooded Plover [87735]		Species or species habitat known to occur within area overfly marine area	In feature area
Tringa brevipes as Heteroscelus brevipes			
Grey-tailed Tattler [851]		Roosting known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
[Tringa nebularia](#) Common Greenshank, Greenshank [832]		Species or species habitat known to occur within area overfly marine area	In feature area
[Tringa stagnatilis](#) Marsh Sandpiper, Little Greenshank [833]		Roosting known to occur within area overfly marine area	In feature area
[Tringa totanus](#) Common Redshank, Redshank [835]		Roosting known to occur within area overfly marine area	In feature area
[Xenus cinereus](#) Terek Sandpiper [59300]		Roosting known to occur within area overfly marine area	In feature area
Fish			
[Acentronura australe](#) Southern Pygmy Pipehorse [66185]		Species or species habitat may occur within area	In feature area
[Campichthys galei](#) Gale's Pipefish [66191]		Species or species habitat may occur within area	In feature area
[Heraldia nocturna](#) Upside-down Pipefish, Eastern Upside-down Pipefish, Eastern Upside-down Pipefish [66227]		Species or species habitat may occur within area	In feature area
[Hippocampus angustus](#) Western Spiny Seahorse, Narrow-bellied Seahorse [66234]		Species or species habitat may occur within area	In feature area
[Hippocampus breviceps](#) Short-head Seahorse, Short-snouted Seahorse [66235]		Species or species habitat may occur within area	In feature area
[Hippocampus subelongatus](#) West Australian Seahorse [66722]		Species or species habitat may occur within area	In feature area
[Histiogamphelus cristatus](#) Rhino Pipefish, Macleay's Crested Pipefish, Ring-back Pipefish [66243]		Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Lissocampus caudalis Australian Smooth Pipefish, Smooth Pipefish [66249]		Species or species habitat may occur within area	In feature area
Lissocampus fatiloquus Prophet's Pipefish [66250]		Species or species habitat may occur within area	In feature area
Lissocampus runa Javelin Pipefish [66251]		Species or species habitat may occur within area	In feature area
Maroubra perserrata Sawtooth Pipefish [66252]		Species or species habitat may occur within area	In feature area
Mitotichthys meraculus Western Crested Pipefish [66259]		Species or species habitat may occur within area	In feature area
Nannocampus subosseus Bonyhead Pipefish, Bony-headed Pipefish [66264]		Species or species habitat may occur within area	In feature area
Phycodurus eques Leafy Seadragon [66267]		Species or species habitat may occur within area	In feature area
Phyllopteryx taeniolatus Common Seadragon, Weedy Seadragon [66268]		Species or species habitat may occur within area	In feature area
Pugnaso curtirostris Pugnose Pipefish, Pug-nosed Pipefish [66269]		Species or species habitat may occur within area	In feature area
Solegnathus lettiensis Gunther's Pipehorse, Indonesian Pipefish [66273]		Species or species habitat may occur within area	In feature area
Stigmatopora argus Spotted Pipefish, Gulf Pipefish, Peacock Pipefish [66276]		Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
[Stigmatopora nigra](#) Widebody Pipefish, Wide-bodied Pipefish, Black Pipefish [66277]		Species or species habitat may occur within area	In feature area
[Urocampus carinirostris](#) Hairy Pipefish [66282]		Species or species habitat may occur within area	In feature area
[Vanacampus margaritifer](#) Mother-of-pearl Pipefish [66283]		Species or species habitat may occur within area	In feature area
[Vanacampus phillipi](#) Port Phillip Pipefish [66284]		Species or species habitat may occur within area	In feature area
[Vanacampus poecilolaemus](#) Longsnout Pipefish, Australian Long-snout Pipefish, Long-snouted Pipefish [66285]		Species or species habitat may occur within area	In feature area
Mammal			
[Arctocephalus forsteri](#) Long-nosed Fur-seal, New Zealand Fur-seal [20]		Species or species habitat may occur within area	In feature area
[Neophoca cinerea](#) Australian Sea-lion, Australian Sea Lion [22]	Endangered	Species or species habitat likely to occur within area	In feature area
Reptile			
[Aipysurus pooleorum](#) Shark Bay Seasnake [66061]		Species or species habitat may occur within area	In feature area
[Caretta caretta](#) Loggerhead Turtle [1763]	Endangered	Foraging, feeding or related behaviour known to occur within area	In feature area
[Chelonia mydas](#) Green Turtle [1765]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Species or species habitat known to occur within area	In feature area
Disteira kingii Spectacled Seasnake [1123]		Species or species habitat may occur within area	In feature area
Natator depressus Flatback Turtle [59257]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In feature area
Pelamis platurus Yellow-bellied Seasnake [1091]		Species or species habitat may occur within area	In feature area

Whales and Other Cetaceans			[Resource Information]
Current Scientific Name	Status	Type of Presence	Buffer Status
Mammal			
Balaenoptera acutorostrata Minke Whale [33]		Species or species habitat may occur within area	In feature area
Balaenoptera edeni Bryde's Whale [35]		Species or species habitat may occur within area	In feature area
Balaenoptera musculus Blue Whale [36]	Endangered	Species or species habitat likely to occur within area	In feature area
Caperea marginata Pygmy Right Whale [39]		Species or species habitat may occur within area	In feature area
Delphinus delphis Common Dolphin, Short-beaked Common Dolphin [60]		Species or species habitat may occur within area	In feature area
Eubalaena australis Southern Right Whale [40]	Endangered	Breeding known to occur within area	In feature area

Current Scientific Name	Status	Type of Presence	Buffer Status
Grampus griseus Risso's Dolphin, Grampus [64]		Species or species habitat may occur within area	In feature area
Megaptera novaeangliae Humpback Whale [38]		Species or species habitat known to occur within area	In feature area
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may occur within area	In feature area
Stenella attenuata Spotted Dolphin, Pantropical Spotted Dolphin [51]		Species or species habitat may occur within area	In feature area
Tursiops aduncus Indian Ocean Bottlenose Dolphin, Spotted Bottlenose Dolphin [68418]		Species or species habitat likely to occur within area	In feature area
Tursiops truncatus s. str. Bottlenose Dolphin [68417]		Species or species habitat may occur within area	In feature area

Extra Information

State and Territory Reserves			[Resource Information]
Protected Area Name	Reserve Type	State	Buffer Status
Rottnest Island	State Reserve	WA	In feature area

Nationally Important Wetlands		[Resource Information]
Wetland Name	State	Buffer Status
Rottnest Island Lakes	WA	In feature area

EPBC Act Referrals				[Resource Information]
Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Not controlled action				
INDIGO Central Submarine Telecommunications Cable	2017/8127	Not Controlled Action	Completed	In feature area
Rottnest Lodge Redevelopment	2019/8565	Not Controlled Action	Completed	In buffer area only
Seismic Survey, Bremer Basin, Mentelle Basin and Zeewyck Sub-basin	2004/1700	Not Controlled Action	Completed	In feature area

Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Not controlled action				

Biologically Important Areas

Scientific Name	Behaviour	Presence	Buffer Status
Seabirds			
Ardenna carneipes Flesh-footed Shearwater [82404]	Aggregation	Known to occur	In feature area
Ardenna pacifica Wedge-tailed Shearwater [84292]	Foraging (in high numbers)	Known to occur	In feature area
Eudyptula minor Little Penguin [1085]	Foraging (provisioning young)	Known to occur	In feature area
Hydroprogne caspia Caspian Tern [808]	Foraging (provisioning young)	Known to occur	In feature area
Larus pacificus Pacific Gull [811]	Foraging (in high numbers)	Former Range	In feature area
Onychoprion anaethetus Bridled Tern [82845]	Foraging (in high numbers)	Known to occur	In feature area
Puffinus assimilis tunneyi Little Shearwater [59363]	Foraging (in high numbers)	Known to occur	In feature area
Sterna dougallii Roseate Tern [817]	Foraging	Known to occur	In feature area
Sternula nereis Fairy Tern [82949]	Foraging (in high numbers)	Known to occur	In feature area
Seals			
Neophoca cinerea Australian Sea Lion [22]	Foraging (male)	Likely to occur	In feature area
Whales			

Scientific Name	Behaviour	Presence	Buffer Status
Balaenoptera musculus brevicauda Pygmy Blue Whale [81317]	Distribution	Known to occur	In feature area
Eubalaena australis Southern Right Whale [40]	Calving buffer	Known to occur	In feature area
Megaptera novaeangliae Humpback Whale [38]	Migration (north and south)	Known to occur	In feature area

Caveat

1 PURPOSE

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

The report contains the mapped locations of:

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

2 DISCLAIMER

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

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

3 DATA SOURCES

Threatened ecological communities

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

Threatened, migratory and marine species

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

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

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

4 LIMITATIONS

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

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

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

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

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

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

Acknowledgements

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

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

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

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

Department of Agriculture Water and the Environment
GPO Box 858
Canberra City ACT 2601 Australia
+61 2 6274 1111

Appendix D
NatureMap Search Results

NatureMap
Mapping Western Australia's biodiversity

Rottnest Island 10km Buffer Report

Created By Guest user on 21/03/2022

Current Names Only Yes
Core Datasets Only Yes
Method 'By Circle'
Centre 115° 32' 42" E,32° 00' 07" S
Buffer 10km
Group By Kingdom

Kingdom	Species	Records
Animalia	698	11597
Bacteria	1	1
Chromista	73	284
Fungi	17	18
Plantae	552	1838
Protozoa	2	2
TOTAL	**1343**	**13740**

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
Animalia					
1.		*? ?*			
2.		*Ablennes hians*			
3.		*Abudefduf saxatilis*			
4.		*Abudefduf sexfasciatus*			
5.		*Acanthaluteres brownii*			
6.		*Acanthaluteres vittiger*			
7.		*Acanthistius pardalotus*			
8.		*Acanthistius serratus*			
9.	24260	*Acanthiza apicalis (Broad-tailed Thornbill, Inland Thornbill)*			
10.	24261	*Acanthiza chrysorrhoa (Yellow-rumped Thornbill)*			
11.	25535	*Accipiter cirrocephalus (Collared Sparrowhawk)*			
12.	25536	*Accipiter fasciatus (Brown Goshawk)*			
13.		*Achelia assimilis*			Y
14.		*Achelia shepherdi*			
15.		*Achoerodus gouldii*			
16.	42368	*Acritoscincus trilineatus (Western Three-lined Skink)*			
17.		*Actacarus australis*			Y
18.		*Actacarus marindicus*			Y
19.	41323	*Actitis hypoleucos (Common Sandpiper)*		IA	
20.		*Agaue brevipes*			
21.		*Agaue circellaris*			Y
22.		*Agaue scita*			Y
23.		*Agaue tenuipes*			
24.		*Agauopsis aequilivestita*			Y
25.		*Agauopsis australiensis*			Y
26.		*Agauopsis elaborata*			Y
27.		*Agauopsis ornatella*			Y
28.		*Alabes brevis*			
29.		*Alabes brevis?*			Y
30.		*Alabes gibbosa*			
31.		*Alabes occidentalis*			
32.		*Allomycterus pilatus*			
33.		*Allothereua maculata*			
34.		*Amblygobius phalaena*			
35.		*Amblyomma albolimbatum*			
36.		*Amblyomma triguttatum*			
37.		*Ammothella biunguiculata subsp. australiensis*			
38.		*Amniataba caudavittata*			
39.		*Aname mainae*			
40.		*Anampses caeruleopunctatus*			
41.		*Anampses geographicus*			

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
42.	24310	*Anas castanea (Chestnut Teal)*			
43.	24312	*Anas gracilis (Grey Teal)*			
44.	24315	*Anas rhynchotis (Australasian Shoveler)*			
45.	24316	*Anas superciliosa (Pacific Black Duck)*			
46.	47414	*Anhinga novaehollandiae (Australasian Darter)*			
47.		*Anomalohalacarus macellus*			Y
48.		*Anoplocapros amygdaloides?*			
49.		*Anoplocapros lenticularis*			
50.		*Anoplocapros robustus*			
51.		*Anoplodactylus tenuicorpus*			Y
52.	25634	*Anous stolidus (Common Noddy)*		IA	
53.		*Antennarius nummifer*			
54.	24561	*Anthochaera carunculata (Red Wattlebird)*			
55.	25670	*Anthus australis (Australian Pipit)*			
56.	24599	*Anthus australis subsp. australis (Australian Pipit)*			
57.		*Apogon rueppellii*			
58.		*Apogon victoriae*			
59.	24991	*Aprasia repens (Sand-plain Worm-lizard)*			
60.		*Aptychotrema sp.*			
61.	25554	*Apus pacificus (Fork-tailed Swift, Pacific Swift)*		IA	
62.		*Aracana aurita*			
63.		*Araneus senicaudatus*			
64.	24208	*Arctocephalus forsteri (New Zealand Fur Seal, long-nosed fur-seal)*		S	
65.	41324	*Ardea modesta (great egret, white egret)*			
66.	41326	*Ardenna carneipes (Flesh-footed Shearwater, Fleshy-footed Shearwater)*		T	
67.	48573	*Ardenna pacifica (Wedge-tailed Shearwater)*		IA	
68.	25736	*Arenaria interpres (Ruddy Turnstone)*		IA	
69.	24778	*Arenaria interpres subsp. interpres (Ruddy Turnstone)*		IA	
70.		*Argyrodes antipodianus*			
71.		*Arhodeoporus disparilis*			Y
72.		*Arhodeoporus psammophilus*			
73.		*Arhodeoporus wadjemupis*			Y
74.		*Arothron sp.*			
75.		*Aspasmogaster occidentalis*			
76.		*Atherinomorus vaigiensis*			
77.		*Atherinosoma presbyteroides*			
78.		*Aulohalaelurus labiosus*			
79.		*Aulopus purpurissatus*			
80.		*Austracantha minax*			
81.		*Australacarus pustulatus*			
82.		*Austrolabrus maculatus*			
83.	47713	*Austronomus australis (White-striped Free-tailed Bat)*			
84.		*Auxis thazard*			
85.	24044	*Balaenoptera acutorostrata (Dwarf Minke Whale)*			
86.	24048	*Balaenoptera musculus subsp. brevicauda (Pygmy Blue Whale)*		T	
87.		*Balaenoptera sp.*			
88.		*Balistoides viridescens*			
89.		*Ballarra longipalpus*			
90.		*Barbuligobius boehlkei*			
91.		*Barnardius zonarius*			
92.		*Bathophilus nigerrimus*			Y
93.		*Batrachomoeus rubricephalus*			
94.		*Beliops xanthokrossos*			
95.		*Belonepterygion fasciolatum*			
96.		*Bianor maculatus*			
97.		*Bodianus frenchii*			
98.		*Bodianus vulpinus*			
99.		*Brachaluteres jacksonianus*			
100.		*Bradyagaue scutella*			Y
101.		*Branchiostegus australiensis?*			Y
102.		*Bythitid sp.*			
103.	25715	*Cacatua roseicapilla (Galah)*			
104.	25716	*Cacatua sanguinea (Little Corella)*			
105.	25598	*Cacomantis flabelliformis (Fan-tailed Cuckoo)*			
106.	24427	*Cacomantis flabelliformis subsp. flabelliformis (Fan-tailed Cuckoo)*			
107.		*Caesioperca immaculata (ms)*			
108.		*Caesioscorpis sp.*			Y
109.		*Caesioscorpis theagenes*			
110.	24779	*Calidris acuminata (Sharp-tailed Sandpiper)*		IA	
111.	24780	*Calidris alba (Sanderling)*		IA	

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
112.	25738	*Calidris canutus (Red Knot, knot)*		IA	
113.	24784	*Calidris ferruginea (Curlew Sandpiper)*		T	
114.	24786	*Calidris melanotos (Pectoral Sandpiper)*		IA	
115.	24788	*Calidris ruficollis (Red-necked Stint)*		IA	
116.	24789	*Calidris subminuta (Long-toed Stint)*		IA	
117.	24790	*Calidris tenuirostris (Great Knot)*		T	
118.		*Callogobius depressus*			
119.		*Callogobius mucosus*			
120.	24734	*Calyptorhynchus latirostris (Carnaby's Cockatoo, White-tailed Short-billed Black Cockatoo)*		T	
121.		*Campichthys galei*			
122.		*Caprichthys gymnura*			
123.		*Caprodon sp.*			
124.		*Capropygia unistriata*			
125.		*Caranx sp.*			
126.		*Carcharhinus brevipinna*			
127.		*Carcharhinus obscurus*			
128.		*Carcharhinus sp.*			
129.	34031	*Carcharodon carcharias (Great White Shark)*		T	
130.	25335	*Caretta caretta (Loggerhead Turtle)*		T	
131.		*Centroberyx gerrardi*			
132.		*Centropogon australis*			
133.		*Centropogon latifrons*			
134.		*Cephaloscyllium laticeps*			
135.		*Chaetodermis penicilligera*			
136.		*Chaetodermis sp.*			Y
137.		*Chaetodon assarius*			
138.		*Chaetodon lunula*			
139.	25574	*Charadrius dubius (Little Ringed Plover)*		IA	
140.	25575	*Charadrius leschenaultii (Greater Sand Plover)*		T	
141.	25576	*Charadrius mongolus (Lesser Sand Plover)*		T	
142.	24377	*Charadrius ruficapillus (Red-capped Plover)*			
143.		*Cheilodactylus gibbosus*			
144.		*Cheilodactylus rubrolabiatus*			
145.		*Cheilopogon sp.*			
146.		*Chelidonichthys kumu*			
147.		*Chelmonops curiosus*			
148.	25336	*Chelonia mydas (Green Turtle)*		T	
149.	24321	*Chenonetta jubata (Australian Wood Duck, Wood Duck)*			
150.		*Cherax sp.*			
151.	41332	*Chlidonias leucopterus (White-winged Black Tern, white-winged tern)*		IA	
152.		*Choerodon sp.*			
153.	24980	*Christinus marmoratus (Marbled Gecko)*			
154.		*Chroicocephalus novaehollandiae*			
155.		*Chromis klunzingeri*			
156.		*Chromis sp.*			
157.		*Chromis westaustralis*			
158.	24431	*Chrysococcyx basalis (Horsfield's Bronze Cuckoo)*			
159.		*Chyzeria occidentalis*			Y
160.	24288	*Circus approximans (Swamp Harrier)*			
161.		*Cirripectes hutchinsi*			
162.		*Cirripectes sp.*			
163.	24774	*Cladorhynchus leucocephalus (Banded Stilt)*			
164.		*Cleidopus gloriamaris*			
165.		*Cnidoglanis macrocephalus*			
166.		*Cochleoceps bicolor*			
167.		*Cochleoceps viridis*			
168.	25675	*Colluricincla harmonica (Grey Shrike-thrush)*			
169.	24399	*Columba livia (Domestic Pigeon)*	Y		
170.		*Conger sp.*			
171.		*Conger wilsoni*			
172.		*Copidognathus amalus*			Y
173.		*Copidognathus amaurus*			Y
174.		*Copidognathus ampliatus*			Y
175.		*Copidognathus attalus*			Y
176.		*Copidognathus australensis*			Y
177.		*Copidognathus bispinus*			Y
178.		*Copidognathus bistriatus*			Y
179.		*Copidognathus caelatus*			Y
180.		*Copidognathus canaliculifer*			Y

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
181.		*Copidognathus crassispinus*			Y
182.		*Copidognathus cribellus*			Y
183.		*Copidognathus culoatus*			Y
184.		*Copidognathus dictyotus*			Y
185.		*Copidognathus dubiosus*			Y
186.		*Copidognathus facetus*			Y
187.		*Copidognathus laeviusculus*			Y
188.		*Copidognathus laminifer*			Y
189.		*Copidognathus levigatus*			Y
190.		*Copidognathus majorinus*			Y
191.		*Copidognathus multiporus*			Y
192.		*Copidognathus nasutus*			Y
193.		*Copidognathus pumicatus*			Y
194.		*Copidognathus punctellus*			Y
195.		*Copidognathus rasilis*			Y
196.		*Copidognathus strigellus*			Y
197.		*Copidognathus vulgaris*			Y
198.		*Copidognathus wadjemupis*			Y
199.	25568	*Coracina novaehollandiae (Black-faced Cuckoo-shrike)*			
200.		*Coris auricularis*			
201.		*Cormocephalus aurantiipes*			
202.		*Cormocephalus rubriceps*			
203.		*Cormocephalus turneri*			
204.	25592	*Corvus coronoides (Australian Raven)*			
205.	24417	*Corvus coronoides subsp. perplexus (Australian Raven)*			
206.	24419	*Corvus splendens (House Crow)*			
207.		*Coryphaena hippurus*			
208.	25701	*Coturnix ypsilophora (Brown Quail)*			
209.	25595	*Cracticus tibicen (Australian Magpie)*			
210.	25596	*Cracticus torquatus (Grey Butcherbird)*			
211.		*Crapatalus arenarius*			
212.	25400	*Crinia insignifera (Squelching Froglet)*			
213.		*Cristiceps aurantiacus*			
214.		*Cristiceps australis*			
215.		*Cristiceps sp.*			
216.		*Cryptops australis*			Y
217.	25039	*Ctenotus fallens*			
218.	24322	*Cygnus atratus (Black Swan)*			
219.		*Cynoglossus sp.*			
220.		*Dactylophora nigricans*			
221.		*Daphnia carinata*			
222.	24687	*Daption capense (Cape Petrel)*			
223.		*Dasyatis brevicaudata*			
224.	24052	*Delphinus delphis (Common Dolphin)*			
225.		*Dermatopsis multiradiatus*			
226.	25346	*Dermochelys coriacea (Leatherback Turtle)*		T	
227.		*Desmodema polystictum*			Y
228.		*Dexillus muelleri*			
229.		*Dinematichthys dasyrynchus*			
230.		*Dinematichthys sp.*			
231.		*Dingosa serrata*			
232.		*Dinolestes lewini*			
233.		*Diodon nicthemerus*			
234.		*Diodon sp.*			
235.	25618	*Diomedea exulans (Wandering Albatross)*		T	
236.	30836	*Diomedea exulans subsp. exulans (Snowy Albatross)*		T	
237.		*Dipulus caecus*			
238.		*Dipulus cf. hutchinsi*			Y
239.		*Dipulus hutchinsi*			
240.		*Dotalabrus alleni*			
241.		*Dotalabrus sp.*			Y
242.		*Echeneis naucrates*			
243.		*Eeyorius hutchinsi*			
244.	25096	*Egernia kingii (King's Skink)*			
245.	25100	*Egernia napoleonis*			
246.		*Egretta novaehollandiae*			
247.		*Elanus axillaris*			
248.	47937	*Elseyornis melanops (Black-fronted Dotterel)*			
249.		*Enigmapercis sp.*			
250.		*Enoplosus armatus*			

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
251.		*Entomacrodus striatus*			
252.		*Eolophus roseicapillus*			
253.		*Epinephelides armatus*			
254.		*Epinephelus lanceolatus*			
255.		*Epinephelus rivulatus*			
256.		*Epinephelus septemfasciata*			
257.	24567	*Epthianura albifrons (White-fronted Chat)*			
258.	24258	*Equus caballus (Horse)*	Y		
259.		*Eriophora biapicata*			
260.	24379	*Erythrogonys cinctus (Red-kneed Dotterel)*			
261.	47938	*Esacus magnirostris (Beach Stone-curlew, Beach Thick-knee)*			
262.	24043	*Eubalaena australis (Southern Right Whale)*		T	
263.		*Eubalichthys caeruleoguttatus*			
264.		*Eubalichthys mosaicus*			
265.	25746	*Eudyptula minor (Little Penguin)*			
266.		*Eupetrichthys angustipes*			
267.		*Eviota bimaculata*			
268.		*Eviota sp.*			
269.	25622	*Falco cenchroides (Australian Kestrel, Nankeen Kestrel)*			
270.	24472	*Falco cenchroides subsp. cenchroides (Australian Kestrel, Nankeen Kestrel)*			
271.	25623	*Falco longipennis (Australian Hobby)*			
272.	25624	*Falco peregrinus (Peregrine Falcon)*		S	
273.		*Favonigobius lateralis*			
274.	24041	*Felis catus (Cat)*	Y		
275.	24688	*Fulmarus glacialoides (Southern Fulmar)*			
276.		*Furgaleus macki*			
277.		*Galeorhinus galeus*			
278.	25730	*Gallirallus philippensis (Buff-banded Rail)*			
279.	42314	*Gavicalis virescens (Singing Honeyeater)*			
280.		*Geogarypus taylori*			
281.	25530	*Gerygone fusca (Western Gerygone)*			
282.		*Girella tephraeops*			
283.		*Girella zebra*			
284.	24481	*Glareola maldivarum (Oriental Pratincole)*		IA	
285.	24054	*Globicephala macrorhynchus (Short-finned Pilot Whale)*			
286.		*Gobiesocid sp.*			
287.		*Gonorynchus greyi*			
288.	24443	*Grallina cyanoleuca (Magpie-lark)*			
289.	24056	*Grampus griseus (Risso's Dolphin)*			
290.		*Gymnothorax prasinus*			
291.		*Gymnothorax sp.*			
292.		*Gymnothorax woodwardi*			
293.	25627	*Haematopus fuliginosus (Sooty Oystercatcher)*			
294.	24487	*Haematopus longirostris (Pied Oystercatcher)*			
295.		*Halacarellus rottnestensis*			Y
296.		*Halacaropsis capuzina*			
297.		*Halacarus arenarius*			Y
298.		*Halacarus celatus*			Y
299.		*Halacarus discophorus*			
300.		*Halacarus flavellus*			
301.		*Halacarus fuscatus*			
302.		*Halacarus helenae*			
303.		*Halacarus mitrellus*			Y
304.		*Halacarus parvulus*			Y
305.		*Halacarus psammophilus*			Y
306.	24293	*Haliaeetus leucogaster (White-bellied Sea-Eagle)*			
307.	24295	*Haliastur sphenurus (Whistling Kite)*			
308.		*Halichoeres brownfieldi*			
309.		*Helcogramma decurrens*			
310.	25410	*Heleioporus eyrei (Moaning Frog)*			
311.	25119	*Hemiergis quadrilineata*			
312.		*Hemiramphus sp.*			
313.		*Henicops dentatus*			
314.	33974	*Hesperocolletes douglasi (Douglas's Broad-headed Bee, Short-tongued Native Bee)*		T	
315.		*Heteroclinus adelaidae*			
316.		*Heteroclinus eckloniae*			
317.		*Heteroclinus equiradiatus*			Y
318.		*Heteroclinus heptaeolus*			
319.		*Heteroclinus nasutus*			
320.		*Heteroclinus roseus*			

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
321.		*Heteroclinus sp.*			
322.		*Heteroclinus whitleyi (ms)*			
323.		*Heterodontus portusjacksoni*			
324.	47965	*Hieraaetus morphnoides (Little Eagle)*			
325.	25734	*Himantopus himantopus (Black-winged Stilt)*			
326.		*Hippocampus sp.*			
327.	24491	*Hirundo neoxena (Welcome Swallow)*			
328.		*Histrio histrio*			
329.	42410	*Hydrophis ornatus (Ornate Reef Seasnake, Sea Snake)*			
330.	43384	*Hydrophis platurus (Yellow-bellied Seasnake)*			
331.	48587	*Hydroprogne caspia (Caspian Tern)*		IA	
332.	24211	*Hydrurga leptonyx (Leopard Seal)*			
333.		*Hypoplectrodes nigroruber*			
334.		*Hypoplectrodes wilsoni*			
335.		*Hyporhamphus melanochir*			
336.		*Ichthyscopus barbatus*			
337.		*Idiommata blackwalli*			
338.		*Iso rhothophilus*			
339.		*Isopeda leishmanni*			
340.		*Isurus oxyrinchus*			Y
341.		*Kathetostoma nigrofasciatum*			
342.		*Kuiterichthys sp.*			
343.		*Kyphosus bigibbus?*			
344.		*Kyphosus cornelii*			
345.		*Kyphosus gladius MS*			
346.		*Kyphosus sydneyanus*			
347.		*Labroides dimidiatus*			
348.		*Lactoria concatenatus*			
349.		*Lactoria sp.*			
350.		*Lagocephalus sceleratus*			
351.	24367	*Lalage tricolor (White-winged Triller)*			
352.	25637	*Larus novaehollandiae (Silver Gull)*			
353.	24511	*Larus novaehollandiae subsp. novaehollandiae (Silver Gull)*			
354.	25638	*Larus pacificus (Pacific Gull)*			
355.		*Lepidoperca occidentalis*			
356.		*Lepidotrigla modesta*			
357.		*Lepidotrigla spinosa*			
358.		*Leptoscarus vaigiensis*			
359.	25128	*Lerista christinae*			
360.	25133	*Lerista elegans*			
361.	25147	*Lerista lineata (Perth Slider, Lined Skink)*		P3	
362.	25148	*Lerista lineopunctulata*			
363.	25165	*Lerista praepedita*			
364.		*Lethrinus nebulosus*			
365.		*Leviprora inops*			
366.	25005	*Lialis burtonis*			
367.	25661	*Lichmera indistincta (Brown Honeyeater)*			
368.		*Limnichthys fasciatus*			
369.	30932	*Limosa lapponica (Bar-tailed Godwit)*		IA	
370.		*Lissocampus caudalis*			
371.		*Lissocampus fatiloquus*			
372.		*Lissocampus runa*			
373.		*Lissocampus sp.*			
374.		*Litarachna halei*			Y
375.	25388	*Litoria moorei (Motorbike Frog)*			
376.		*Lohmannella arenaria*			Y
377.		*Lotella rhacinus*			
378.		*Lycosa ariadnae*			
379.		*Lycosa australicola*			
380.	24690	*Macronectes giganteus (Southern Giant Petrel)*		IA	
381.		*Macroramphosus scolopax*			
382.	25654	*Malurus splendens (Splendid Fairy-wren)*			
383.		*Maroubra perserrata*			
384.		*Maxillicosta scabriceps*			
385.	24051	*Megaptera novaeangliae (Humpback Whale)*		S	
386.	25184	*Menetia greyii*			
387.	24598	*Merops ornatus (Rainbow Bee-eater)*			
388.		*Metavelifer multiradiatus*			
389.		*Meuschenia flavolineata*			
390.		*Meuschenia freycineti*			

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
391.		*Meuschenia galii*			
392.		*Meuschenia hippocrepis*			
393.		*Microcanthus strigatus*			
394.		*Microcarbo melanoleucos*			
395.		*Missulena occatoria*			
396.		*Monodactylus argenteus*			
397.	25191	*Morethia lineoocellata*			
398.	48008	*Morus serrator (Australasian Gannet)*			
399.		*Mugil cephalus*			
400.		*Muraenichthys australis*			
401.		*Muraenichthys sp.*			
402.		*Muraenichthys tasmaniensis subsp. smithi*			
403.	24223	*Mus musculus (House Mouse)*	Y		
404.		*Mustelus antarcticus*			
405.		*Myliobatis australis*			
406.		*Nannocampus subosseus*			
407.		*Neatypus obliquus*			
408.		*Nelusetta ayraudi*			
409.		*Nematalosa vlaminghi*			
410.		*Neoaploactis tridorsalis*			
411.	24738	*Neophema elegans (Elegant Parrot)*			
412.	24739	*Neophema petrophila (Rock Parrot)*			
413.	24210	*Neophoca cinerea (Australian Sea-lion)*		T	
414.		*Neoplatycephalus conatus*			
415.		*Neosebastes nigropunctatus*			
416.		*Neosebastes pandus*			
417.		*Neosebastes sp.*			Y
418.		*Nephila edulis*			
419.		*Nesogobius sp.*			
420.		*Norfolkia brachylepis*			
421.		*Norfolkia sp.*			
422.		*Notolabrus parilus*			
423.		*Notolabrus tetricus*			
424.	25742	*Numenius phaeopus (Whimbrel)*		IA	
425.		*Nunciella aspera*			
426.	25564	*Nycticorax caledonicus (Rufous Night Heron)*			
427.		*Nymphopsis acinacispinatus subsp. bathursti*			
428.		*Odax acroptilus*			
429.		*Odax cyanomelas*			
430.		*Omegophora armilla*			
431.		*Omobranchus germaini*			
432.	41347	*Onychoprion anaethetus (Bridled Tern)*		IA	
433.		*Ophiclinus gracilis*			
434.		*Ophiclinus pectoralis*			
435.		*Ophthalmolepis lineolatus*			
436.		*Oplegnathus woodwardi*			
437.		*Optivus agrammus*			
438.		*Orectolobus hutchinsi*			
439.		*Orectolobus hutchinsi?*			Y
440.		*Orectolobus ornatus*			
441.		*Orectolobus parvimaculatus*			
442.		*Ornithonyssus bacoti*			
443.	24085	*Oryctolagus cuniculus (Rabbit)*	Y		
444.		*Oxyconger leptognathus*			
445.	25680	*Pachycephala rufiventris (Rufous Whistler)*			
446.	24624	*Pachycephala rufiventris subsp. rufiventris (Rufous Whistler)*			
447.	24692	*Pachyptila belcheri (Slender-billed Prion)*			
448.	24693	*Pachyptila desolata (Antarctic Prion)*			
449.		*Pagrus auratus*			
450.	48591	*Pandion cristatus (Osprey, Eastern Osprey)*		IA	
451.		*Parablennius intermedius*			
452.		*Parablennius postoculomaculatus*			
453.		*Parablennius sp.*			
454.		*Parapercis haackei*			
455.		*Parapercis ramsayi*			
456.		*Paraplagusia bilineata*			
457.		*Paraplesiops meleagris*			
458.		*Paraplotosus albilabris*			
459.		*Parapriacanthus elongatus*			
460.		*Parascyllium variolatum*			

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
461.		*Paraulopus cf. nigripinnis*			Y
462.		*Parazanclistius hutchinsi*			
463.	25681	*Pardalotus punctatus (Spotted Pardalote)*			
464.	25682	*Pardalotus striatus (Striated Pardalote)*			
465.		*Parequula elongata*			
466.		*Parequula melbournensis*			
467.		*Paristiopterus gallipavo*			
468.		*Parma bicolor*			
469.		*Parma mccullochi*			
470.		*Parma microlepis*			
471.		*Parma occidentalis*			
472.		*Parma sp.*			
473.		*Parma victoriae*			
474.		*Parupeneus heptacanthus*			
475.		*Parupeneus spilurus*			
476.	24674	*Pavo cristatus (Common Peafowl, Indian Peafowl)*	Y		
477.		*Pegasus lancifer*			
478.	24648	*Pelecanus conspicillatus (Australian Pelican)*			
479.		*Pelsartia humeralis*			
480.		*Pempheris klunzingeri*			
481.		*Pempheris multiradiata*			
482.		*Perryena leucometopon*			
483.	48060	*Petrochelidon ariel (Fairy Martin)*			
484.	48061	*Petrochelidon nigricans (Tree Martin)*			
485.	24659	*Petroica goodenovii (Red-capped Robin)*			
486.		*Petroscirtes breviceps*			
487.		*Petroscirtes mitratus*			
488.		*Phacacarus flavellus*			Y
489.	24663	*Phaethon rubricauda (Red-tailed Tropicbird)*		P4	
490.	25697	*Phalacrocorax carbo (Great Cormorant)*			
491.	24665	*Phalacrocorax fuscescens (Black-faced Cormorant)*			
492.	24667	*Phalacrocorax sulcirostris (Little Black Cormorant)*			
493.	25699	*Phalacrocorax varius (Pied Cormorant)*			
494.	24801	*Phalaropus lobatus (Red-necked Phalarope)*		IA	
495.	24409	*Phaps chalcoptera (Common Bronzewing)*			
496.	25587	*Phaps elegans (Brush Bronzewing)*			
497.	24675	*Phasianus colchicus (Common Pheasant, Domestic Pheasant)*	Y		
498.		*Phenacoscorpius sp.*			
499.	34039	*Phycodurus eques (Leafy Sea Dragon)*		P2	
500.	48071	*Phylidonyris niger (White-cheeked Honeyeater)*			
501.	24596	*Phylidonyris novaehollandiae (New Holland Honeyeater)*			
502.		*Phyllophryne scortea*			
503.		*Phyllopteryx taeniolatus*			
504.		*Pictilabrus laticlavius*			
505.		*Pictilabrus sp.*			
506.		*Pictilabrus viridis*			
507.		*Pinkfloydia harveii*			
508.		*Plagiotremus rhinorhynchos*			
509.		*Plagiotremus tapeinosoma*			
510.		*Platax pinnatus*			Y
511.		*Platycephalus longispinis*			
512.		*Platycephalus orbitalis*			
513.		*Platycephalus sp.*			
514.		*Platycephalus speculator*			
515.		*Plectorhinchus flavomaculatus*			
516.		*Plectorhinchus unicolor*			
517.		*Plectranthias sp.*			
518.		*Plotosus lineatus*			
519.	24382	*Pluvialis fulva (Pacific Golden Plover)*		IA	
520.	24383	*Pluvialis squatarola (Grey Plover)*		IA	
521.		*Podykipus collinus*			
522.		*Podykipus leptoiuloides*			
523.	24681	*Poliocephalus poliocephalus (Hoary-headed Grebe)*			
524.		*Polyspina piosae*			
525.		*Pomacentrus milleri*			
526.		*Pomacentrus sp.*			
527.		*Porocephalichthys dasyrhychus*			Y
528.		*Porocephalichthys dasyrhynchus*			
529.	24771	*Porzana tabuensis (Spotless Crake)*			
530.		*Posidonichthys hutchinsi*			

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
531.		*Pseudocaranx dentex*			
532.		*Pseudocaranx georgianus*			
533.		*Pseudocaranx sp.*			
534.		*Pseudocaranx wrighti*			
535.		*Pseudolabrus biserialis*			
536.		*Pseudolabrus sp.*			
537.	25258	*Pseudonaja affinis subsp. exilis (Rottnest Island Dugite)*		P4	
538.		*Pseudophycis breviuscula*			
539.		*Pterois antennata*			
540.		*Pterygotrigla polyommata*			
541.	24711	*Puffinus assimilis subsp. assimilis (Little Shearwater)*			
542.	24715	*Puffinus huttoni (Hutton's Shearwater)*		T	
543.	24716	*Puffinus pacificus (Wedge-tailed Shearwater)*		IA	
544.		*Pugnaso curtirostris*			
545.		*Pycnothea flynni*			
546.		*Rachycentron canadum*			
547.	24245	*Rattus rattus (Black Rat)*	Y		
548.		*Raveniella arenacea*			
549.		*Raveniella peckorum*			
550.	24776	*Recurvirostra novaehollandiae (Red-necked Avocet)*			
551.		*Regalecus glesne*			
552.		*Rhabdosargus sarba*			
553.	48096	*Rhipidura albiscapa (Grey Fantail)*			
554.	25614	*Rhipidura leucophrys (Willie Wagtail)*			
555.		*Rhombognathus biscutatus*			Y
556.		*Rhombognathus foveolatus*			Y
557.		*Rhombognathus lepidus*			
558.		*Rhombognathus marginalis*			
559.		*Rhombognathus placidus*			Y
560.		*Rhombognathus psammophilus*			Y
561.		*Rhombognathus scutulatus*			
562.		*Rhombognathus thalassinus*			Y
563.		*Sarda orientalis*			
564.		*Sardinops neopilchardus*			
565.		*Saurida grandisquamis*			
566.		*Saurida tumbil*			
567.		*Scaptognathides australis*			Y
568.		*Scaptognathus australis*			Y
569.		*Scaptognathus peregrinus*			Y
570.		*Scarus ghobban*			
571.		*Scarus rivulatus*			
572.		*Scarus sp.*			
573.		*Schuettea woodwardi*			
574.		*Scobinichthys granulatus*			
575.		*Scomber australasicus*			
576.		*Scomberesox saurus*			
577.		*Scomberomorus commerson*			
578.		*Scorpaena n. sp. A*			
579.		*Scorpaena n.sp. A*			
580.		*Scorpaena sp.*			
581.		*Scorpaena sumptuosa*			
582.		*Scorpaenodes steenei*			
583.		*Scorpis aequipinnis*			
584.		*Scorpis georgianus*			
585.		*Scorpis sp.*			Y
586.	25534	*Sericornis frontalis (White-browed Scrubwren)*			
587.		*Seriola dumerili*			
588.		*Seriola hippos*			
589.		*Seriola lalandi*			
590.		*Seriola sp.*			Y
591.	24145	*Setonix brachyurus (Quokka)*		T	
592.		*Siganus fuscescens*			
593.		*Sillago bassensis*			
594.		*Sillago robusta*			
595.		*Sillago vittata*			
596.		*Sillago vittata?*			
597.		*Simognathus delicatulus*			Y
598.		*Simognathus gibberosus*			Y
599.		*Simognathus gracilis*			Y
600.		*Simognathus maculatus*			Y

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
601.		*Simognathus scutatus*			Y
602.		*Simognathus uniscutatus*			
603.		*Simognathus variolosus*			Y
604.		*Siphamia cephalotes*			
605.		*Siphonognathus argyrophanes*			
606.		*Siphonognathus beddomei*			
607.		*Siphonognathus caninus*			
608.		*Siphonognathus radiatus*			
609.	30948	*Smicrornis brevirostris (Weebill)*			
610.		*Solegnathus lettiensis*			
611.		*Sphyraena obtusata*			
612.		*Spratelloides robustus*			
613.		*Squalus megalops*			
614.		*Squatina australis*			
615.		*Stegastes obreptus*			
616.	48116	*Stercorarius antarcticus (Brown Skua)*		P4	
617.	24517	*Stercorarius parasiticus (Arctic jaeger, Arctic Skua)*		IA	
618.	24518	*Stercorarius pomarinus (Pomarine Jaeger, Pomarine Skua)*		IA	
619.	24522	*Sterna bergii (Crested Tern)*			
620.	25640	*Sterna dougallii (Roseate Tern)*		IA	
621.	48594	*Sternula nereis (Fairy Tern)*			
622.		*Stethojulis bandanensis*			
623.		*Stethojulis strigiventer*			
624.		*Sticharium dorsale*			
625.		*Stigmatopora argus*			
626.		*Stigmatopora sp.*			
627.	25589	*Streptopelia chinensis (Spotted Turtle-Dove)*	Y		
628.	25590	*Streptopelia senegalensis (Laughing Turtle-Dove)*	Y		
629.	25518	*Strophurus spinigerus*			
630.	24942	*Strophurus spinigerus subsp. spinigerus*			
631.		*Suezichthys bifurcatus*			
632.		*Suezichthys cyanolaemus*			
633.		*Sutorectus tentaculatus*			
634.		*Synchiropus papilio*			
635.	25705	*Tachybaptus novaehollandiae (Australasian Grebe, Black-throated Grebe)*			
636.	24331	*Tadorna tadornoides (Australian Shelduck, Mountain Duck)*			
637.		*Tetralycosa oraria*			
638.	34007	*Thalassarche chlororhynchos (Atlantic Yellow-nosed Albatross)*		T	
639.		*Thalasseleotris adela*			
640.	48597	*Thalasseus bergii (Crested Tern)*		IA	
641.		*Thalassoma lutescens*			
642.		*Thalassoma purpureum*			
643.		*Thalassoma septemfasciata*			
644.	48135	*Thinornis rubricollis (Hooded Plover, Hooded Dotterel)*		P4	
645.		*Threpterius maculosus*			
646.		*Thunnus maccoyii*			
647.		*Thysanophrys cirronasus*			
648.	25205	*Tiliqua rugosa subsp. konowi (Rottnest Island Bobtail)*		T	
649.		*Tilodon sexfasciatum*			
650.	25549	*Todiramphus sanctus (Sacred Kingfisher)*			
651.	24309	*Todiramphus sanctus subsp. sanctus (Sacred Kingfisher)*			
652.		*Torquigener pallimaculatus*			
653.		*Torquigener paxtoni*			
654.		*Torquigener pleurogramma*			
655.		*Torquigener sp.*			
656.		*Torquigener vicinus*			
657.		*Trachichthys australis*			
658.		*Trachinocephalus myops*			
659.		*Trachinops brauni*			
660.		*Trachinops noarlungae*			
661.		*Trachurus novaezelandiae*			
662.		*Trachurus sp.*			
663.	25723	*Trichoglossus haematodus (Rainbow Lorikeet)*			
664.	24803	*Tringa brevipes (Grey-tailed Tattler)*		P4	
665.	24806	*Tringa glareola (Wood Sandpiper)*		IA	
666.	24808	*Tringa nebularia (Common Greenshank, greenshank)*		IA	
667.	24809	*Tringa stagnatilis (Marsh Sandpiper, little greenshank)*		IA	
668.		*Trinorfolkia clarkei*			
669.		*Trinorfolkia incisa*			
670.		*Tripterygiid sp.*			

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
671.		*Trygonoptera mucosa*			
672.		*Trygonoptera ovalis*			
673.		*Trygonoptera personata*			
674.		*Trygonorrhina fasciata*			
675.	48147	*Turnix varius (Painted Button-quail)*			
676.	30954	*Tursiops aduncus (Indo-Pacific Bottlenose Dolphin)*			
677.	24069	*Tursiops truncatus (Bottlenose Dolphin)*			
678.		*Upeneichthys lineatus*			
679.		*Upeneichthys stotti*			
680.		*Urolophus circularis*			
681.		*Urolophus lobatus*			
682.		*Urolophus paucimaculatus*			
683.		*Urolophus sp.*			
684.		*Urolophus viridis?*			Y
685.	25577	*Vanellus miles (Masked Lapwing)*			
686.	24386	*Vanellus tricolor (Banded Lapwing)*			
687.		*Velifer sp.*			
688.		*Venator immansueta*			
689.		*Venatrix pullastra*			
690.		*Vincentia badia*			
691.		*Vincentia punctata*			
692.		*Werthella ampliata*			Y
693.	41351	*Xenus cinereus (Terek Sandpiper)*		IA	
694.		*Zanclistius elevatus*			
695.		*Zebrias cancellatus*			
696.		*Zephyrichthys barryi*			
697.		*Zeus faber*			
698.	25765	*Zosterops lateralis (Grey-breasted White-eye, Silvereye)*			
Bacteria					
699.	27338	*Trichodesmium erythraeum*			
Chromista					
700.	26487	*Asperococcus bullosus*			
701.	35220	*Canistrocarpus cervicornis*			
702.	26586	*Caulocystis uvifera*			
703.	35912	*Cladosiphon vermicularis*			
704.	26662	*Cladostephus spongiosus*			
705.	26693	*Colpomenia peregrina*			
706.	26694	*Colpomenia sinuosa*			
707.	26713	*Cutleria kraftii*			
708.	26717	*Cystophora brownii*			
709.	26720	*Cystophora grevillei*			
710.	26764	*Dictyopteris australis*			
711.	26766	*Dictyopteris muelleri*			
712.	26767	*Dictyopteris plagiogramma*			
713.	29951	*Dictyopteris secundispiralis*			
714.	26775	*Dictyota ciliolata*			
715.	26776	*Dictyota dichotoma*			
716.	26778	*Dictyota furcellata*			
717.	26780	*Dictyota naevosa*			
718.	35218	*Dictyota nigricans*			
719.	35216	*Dictyota paniculata*			
720.	35223	*Dictyota polyclada*			
721.	29536	*Dictyota robusta*			
722.	26791	*Distromium flabellatum*			
723.	26805	*Ecklonia radiata*			
724.	48247	*Elachista nigra*	Y		
725.	48244	*Feldmannia mitchelliae*			
726.	48968	*Giraudya robusta*			Y
727.	26946	*Hormophysa cuneiformis*			
728.	26949	*Hydroclathrus clathratus*			
729.	27043	*Lobophora variegata*			
730.	27044	*Lobospira bicuspidata*			
731.	27090	*Myriodesma quercifolium*			
732.	27091	*Myriodesma serrulatum*			
733.	27115	*Padina boryana*			
734.	27116	*Padina elegans*			
735.		*Padina fraseri*			
736.	27117	*Padina gymnospora*			
737.	27118	*Padina sanctae-crucis*			

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
738.	48303	*Petalonia binghamiae*	Y		
739.	27126	*Petalonia fascia*			
740.	27151	*Platythalia angustifolia*			
741.	27152	*Platythalia quercifolia*			
742.	27163	*Polycerea nigrescens*			
743.	27164	*Polycerea zostericola*			
744.	44573	*Sargassopsis decurrens*			
745.	42641	*Sargassum aquifolium*			
746.	42781	*Sargassum carpophyllum*			
747.	27238	*Sargassum distichum*			
748.	27239	*Sargassum fallax*			
749.	27242	*Sargassum flavicans*			
750.	27245	*Sargassum ilicifolium*			
751.	27246	*Sargassum lacerifolium*			
752.	27248	*Sargassum ligulatum*			
753.	27249	*Sargassum linearifolium*			
754.	29956	*Sargassum paradoxum*			
755.	27253	*Sargassum peronii*			
756.	27254	*Sargassum podacanthum*			
757.	27255	*Sargassum polycystum*			
758.	27260	*Sargassum tristichum*			
759.	27264	*Scaberia agardhii*			
760.	27271	*Scoresbyella profunda*			
761.	27273	*Scytothalia dorycarpa*			
762.	42785	*Sirophysalis trinodis*			
763.	27292	*Sphacelaria novae-hollandiae*			Y
764.	27293	*Sphacelaria rigidula*			
765.	27294	*Sphacelaria tribuloides*			
766.	27305	*Sporochnus radiciformis*			
767.	27306	*Sporochnus scoparius*			
768.	27320	*Stypopodium australasicum*			
769.	27345	*Turbinaria gracilis*			
770.	35897	*Zonaria diesingiana*			
771.	27372	*Zonaria spiralis*			
772.	27373	*Zonaria turneriana*			
Fungi					
773.		*Agaricus sp.*			
774.	27587	*Aspicilia calcarea*			
775.	27632	*Caloplaca holocarpa*			
776.	41653	*Caloplaca kaernefeltii*			
777.	27705	*Collema implicatum*			
778.	27726	*Diplotomma alboatrum*			
779.	27748	*Flavoparmelia rutidota*			
780.	27753	*Fulgensia bracteata*			
781.	27754	*Fulgensia subbracteata*			
782.		*Gymnopilus allantopus*			
783.	45301	*Jackelixia ligulata*			
784.	27922	*Parmotrema chinense*			
785.		*Peziza sp.*			
786.		*Phellinus badius*			Y
787.		*Physcia sp.*			
788.		*Reddellomyces parvulosporus*			
789.	28194	*Xanthoria parietina*			
Plantae					
790.	3282	*Acacia cyclops (Coastal Wattle)*			
791.	3424	*Acacia littorea*			
792.	3525	*Acacia rostellifera (Summer-scented Wattle)*			
793.	3584	*Acacia truncata*			
794.	1208	*Acanthocarpus preissii*			
795.	26440	*Acanthophora dendroides*			
796.	48409	*Acetabularia caliculus*			
797.	26447	*Acrothamnion preissii*			
798.	6295	*Acrotriche cordata (Coast Ground Berry)*			
799.	1505	*Agave americana (Century Plant)*	Y		
800.	47094	*Agave attenuata*	Y		
801.	18379	*Agave sisalana*	Y		Y
802.	17202	*Agonis flexuosa var. flexuosa*			
803.	185	*Aira cupaniana (Silvery Hairgrass)*	Y		
804.	1374	*Allium ampeloprasum*	Y		

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
805.	48620	*Althenia preissii*			
806.	6565	*Alyxia buxifolia (Dysentery Bush)*			
807.	26454	*Amansia serrata*			
808.	126	*Amphibolis antarctica (Sea Nymph)*			
809.	127	*Amphibolis griffithii*			
810.	26456	*Amphiplexia hymenocladioides*			
811.	26458	*Amphiroa anceps*			
812.	26463	*Amphiroa gracilis*			
813.	7833	*Angianthus preissianus*			
814.	26465	*Anisoschizus propaguli*			Y
815.	27374	*Anotrichium tenue var. thyrsigerum*			Y
816.	26475	*Antithamnion hanovioides*			
817.	6210	*Apium annuum*			
818.	26481	*Apjohnia laetevirens*			
819.	7838	*Arctotheca calendula (Cape Weed, African Marigold)*	Y		
820.	7839	*Arctotheca populifolia (Dune Arctotheca, Beach Pumpkin, Coast Capeweed, Beach Daisy)*	Y		
821.	19883	*Arenaria leptoclados*	Y		
822.	26484	*Areschougia ligulata*			
823.	7841	*Argyranthemum frutescens (Marguerite)*	Y		
824.	26486	*Asparagopsis taxiformis*			
825.	1364	*Asphodelus fistulosus (Onion Weed)*	Y		
826.	2452	*Atriplex cinerea (Grey Saltbush)*			
827.	2463	*Atriplex isatidea (Coast Saltbush)*			
828.	48417	*Austrokallymenia roensis*			Y
829.	17237	*Austrostipa elegantissima*			
830.	17240	*Austrostipa flavescens*			
831.		*Austrostipa sp.*			
832.	231	*Avellinia michelii*	Y		
833.	233	*Avena barbata (Bearded Oat)*	Y		
834.	26497	*Avrainvillea clavatiramea*			
835.	26500	*Balliella hirsuta*			Y
836.	743	*Baumea juncea (Bare Twigrush)*			
837.	48503	*Betaphycus speciosus*			
838.	4601	*Beyeria viscosa (Pinkwood)*			
839.	26511	*Bornetia binderiana*			
840.	4403	*Boronia alata (Winged Boronia)*			
841.	26516	*Botryocladia leptopoda*			
842.	26518	*Botryocladia sonderi*			
843.	8661	*Brachypodium distachyon (False Brome)*	Y		
844.	245	*Briza minor (Shivery Grass)*	Y		
845.	247	*Bromus arenarius (Sand Brome)*			
846.	249	*Bromus diandrus (Great Brome)*	Y		
847.	250	*Bromus hordeaceus (Soft Brome)*	Y		
848.	252	*Bromus madritensis (Madrid Brome)*	Y		
849.	253	*Bromus rubens (Red Brome)*	Y		
850.	26521	*Bryopsis australis*			
851.		*Bryopsis gemellipara*			
852.	26523	*Bryopsis macraildii*			
853.	26525	*Bryopsis plumosa*			
854.	3002	*Cakile maritima (Sea Rocket)*	Y		
855.	1599	*Caladenia latifolia (Pink Fairy Orchid)*			
856.	2845	*Calandrinia brevipedata (Short-stalked Purslane)*			
857.	40827	*Calandrinia tholiformis*			
858.	26528	*Callipsygma wilsonis*			Y
859.	4717	*Callitriche stagnalis (Common Starwort)*	Y		
860.	96	*Callitris preissii (Rottnest Island Pine, Maro)*			
861.	26533	*Callophycus costatus*			
862.	26534	*Callophycus dorsifer*			
863.	26535	*Callophycus harveyanus*			
864.	26536	*Callophycus oppositifolius*			
865.	3005	*Cardamine hirsuta (Common Bittercress)*	Y		
866.	7909	*Carduus pycnocephalus (Slender Thistle)*	Y		
867.	43241	*Carex thecata*			
868.	2798	*Carpobrotus virescens (Coastal Pigface, Kolboko, Bain)*			
869.	26546	*Carpopeltis elata*			
870.	26547	*Carpopeltis phyllophora*			
871.	26548	*Carpopeltis spongeaplexus*			
872.	19842	*Casuarina equisetifolia*	Y		
873.	18321	*Casuarina glauca*	Y		

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
874.	1742	*Casuarina obesa (Swamp Sheoak, Kuli)*			
875.	13685	*Catapodium rigidum (Rigid Fescue)*	Y		
876.	26553	*Caulerpa articulata*			
877.	26556	*Caulerpa cactoides*			
878.	26559	*Caulerpa cupressoides*			
879.	47053	*Caulerpa cupressoides var. cupressoides*			
880.	44539	*Caulerpa cylindracea*			
881.	26561	*Caulerpa ellistoniae*			
882.	26562	*Caulerpa fergusonii*			
883.	26563	*Caulerpa flexilis*			
884.	27380	*Caulerpa flexilis var. muelleri*			
885.	48455	*Caulerpa geminata*			
886.	26564	*Caulerpa hedleyi*			
887.	26565	*Caulerpa heterophylla*			
888.	26568	*Caulerpa lentillifera*			
889.	26569	*Caulerpa longifolia*			
890.	27382	*Caulerpa longifolia forma crispata*			
891.	26570	*Caulerpa obscura*			
892.	26571	*Caulerpa papillosa*			
893.	37643	*Caulerpa parvifolia*			
894.	26574	*Caulerpa scalpelliformis*			
895.	26575	*Caulerpa sedoides*			
896.	26578	*Caulerpa simpliciuscula*			
897.	46993	*Caulerpa taxifolia var. distichophylla*			
898.	41564	*Cenchrus clandestinus (Kikuyu Grass)*	Y		
899.	7916	*Centaurea melitensis (Maltese Cockspur, Malta Thistle)*	Y		
900.	6539	*Centaurium erythraea (Common Centaury)*	Y		
901.	17800	*Centaurium pulchellum*	Y		
902.	6542	*Centaurium tenuiflorum*	Y		
903.	26587	*Centroceras clavulatum*			
904.	1134	*Centrolepis polygyna (Wiry Centrolepis)*			
905.	26593	*Ceramium filicula*			
906.	26599	*Ceramium puberulum*			
907.	26600	*Ceramium pusillum*			
908.	13119	*Cerastium balearicum*	Y		
909.	2889	*Cerastium glomeratum (Mouse Ear Chickweed)*	Y		
910.	26607	*Chaetomorpha aerea*			
911.	26614	*Chamaebotrys boergesenii*			Y
912.	26616	*Champia affinis*			
913.	26617	*Champia compressa*			
914.	26619	*Champia stipitata*			
915.	26622	*Chauviniella coriifolia*			
916.	2494	*Chenopodium murale (Nettle-leaf Goosefoot)*	Y		
917.	26626	*Chlorodesmis baculifera*			Y
918.	7937	*Cirsium vulgare (Spear Thistle, Scotch Thistle)*	Y		
919.	26649	*Cladophora albida*			
920.	48391	*Cladophora dalmatica*			
921.	26653	*Cladophora laetevirens*			
922.	26654	*Cladophora lehmanniana*			
923.	26656	*Cladophora prolifera*			
924.	48667	*Cladophora rhizoclonioidea*			
925.	48668	*Cladophora subsimplex*			
926.	26659	*Cladophora valonioides*			
927.	26665	*Claviclonium ovatum*			
928.	10804	*Clematis linearifolia*			
929.	26667	*Codiophyllum flabelliforme*			
930.	26671	*Codium duthieae*			
931.	26672	*Codium galeatum*			
932.	26675	*Codium laminarioides*			
933.	26676	*Codium lucasii*			
934.	26678	*Codium muelleri*			
935.	26679	*Codium perriniae*			
936.	26683	*Codium spongiosum*			
937.	26685	*Coelarthrum cliftonii*			
938.	26686	*Coelarthrum opuntia*			
939.	4552	*Comesperma confertum*			
940.	4555	*Comesperma integerrimum*			
941.	1427	*Conostylis candicans (Grey Cottonhead)*			
942.	12027	*Conostylis candicans subsp. calcicola*			
943.	7939	*Conyza bonariensis (Flaxleaf Fleabane)*	Y		

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
944.	7941	*Conyza parva*	Y		
945.	20074	*Conyza sumatrensis*	Y		
946.	277	*Cortaderia selloana (Pampas Grass)*	Y		
947.	7943	*Cotula australis (Common Cotula)*			
948.	7944	*Cotula bipinnata (Ferny Cotula)*	Y		
949.	7945	*Cotula coronopifolia (Waterbuttons)*	Y		
950.	48979	*Crassa secundata*			
951.	3137	*Crassula colorata (Dense Stonecrop)*			
952.	11563	*Crassula colorata var. colorata*			
953.	3138	*Crassula decumbens (Rufous Stonecrop)*			
954.	11349	*Crassula decumbens var. decumbens*			
955.	3140	*Crassula glomerata*	Y		
956.	15706	*Crassula natans var. minus*	Y		
957.	11345	*Crassula thunbergiana subsp. thunbergiana*	Y		
958.	26708	*Cryptonemia kallymenioides*			
959.	26712	*Curdiea obesa*			
960.	7053	*Cymbalaria muralis (Ivyleaf Toadflax)*	Y		
961.	283	*Cynodon dactylon (Couch)*	Y		
962.	10916	*Cyrtostylis huegelii*			
963.	26738	*Dasya elongata*			
964.	26749	*Dasya villosa*			
965.	6218	*Daucus glochidiatus (Australian Carrot)*			
966.	26757	*Delisea pulchra*			
967.	6616	*Dichondra repens (Kidney Weed)*			
968.	29616	*Dichotomaria marginata*			
969.	29615	*Dichotomaria obtusata*			
970.	34959	*Dichotomaria spathulata*			
971.	26758	*Dicranema revolutum*			
972.	26762	*Dictyomenia sonderi*			
973.	26769	*Dictyosphaeria cavernosa*			
974.	26770	*Dictyosphaeria sericea*			
975.	26771	*Dictyosphaeria versluysii*			
976.	4454	*Diplolaena dampieri (Southern Diplolaena)*			
977.	3011	*Diplotaxis muralis (Wall Rocket)*	Y		
978.	7054	*Dischisma arenarium*	Y		
979.	26793	*Ditria expleta*			
980.	7961	*Dittrichia graveolens (Stinkwort)*	Y		
981.	4754	*Dodonaea aptera (Coast Hop-bush)*			
982.	26794	*Dotyophycus abbottiae*			
983.	26797	*Drewiana nitella*			
984.	3128	*Drosera ramellosa (Branched Sundew)*			
985.	346	*Ehrharta brevifolia (Annual Veldt Grass)*	Y		
986.	11485	*Ehrharta brevifolia var. cuspidata*	Y		
987.	349	*Ehrharta longiflora (Annual Veldt Grass)*	Y		
988.	12064	*Enchylaena tomentosa var. tomentosa (Barrier Saltbush)*			
989.	26811	*Endosiphonia spinulosa*			
990.	26818	*Epiphloea bullosa*			
991.	376	*Eragrostis curvula (African Lovegrass)*	Y		
992.	7215	*Eremophila glabra (Tar Bush)*			
993.	17175	*Eremophila glabra subsp. albicans*			
994.	4333	*Erodium cicutarium (Common Storksbill)*	Y		
995.	26823	*Erythroclonium sonderi*			
996.	48860	*Erythrostemon gilliesii*	Y		
997.	26826	*Erythrymenia minuta*			
998.	5580	*Eucalyptus camaldulensis (River Gum, Yabalinyba)*			
999.	35345	*Eucalyptus camaldulensis subsp. obtusa (Blunt-budded River Red Gum)*			
1000.	5615	*Eucalyptus decipiens (Limestone Marlock, Moit)*			
1001.	5638	*Eucalyptus erythrocorys (Illyarrie)*			
1002.	5659	*Eucalyptus gomphocephala (Tuart, Duart)*			
1003.	5775	*Eucalyptus spathulata (Swamp Mallet)*			
1004.	18085	*Eucalyptus utilis*			
1005.	4636	*Euphorbia paralias (Sea Spurge)*	Y		
1006.	4638	*Euphorbia peplus (Petty Spurge)*	Y		
1007.	26829	*Euptilocladia spongiosa*			
1008.	26830	*Euptilota articulata*			
1009.	1515	*Ferraria crispa (Black Flag)*	Y		
1010.	11445	*Ferraria crispa subsp. crispa*	Y		
1011.	20216	*Ficinia nodosa (Knotted Club Rush)*			
1012.	1747	*Ficus carica (Common Fig)*	Y		
1013.		*Ficus elastica*			

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
1014.		*Ficus macrophylla*			
1015.		*Ficus microcarpa subsp. hillii*			Y
1016.	47095	*Ficus rubiginosa*	Y		Y
1017.	5209	*Frankenia pauciflora (Seaheath)*			
1018.	907	*Gahnia trifida (Coast Saw-sedge)*			
1019.	26835	*Galaxaura rugosa*			
1020.	7323	*Galium murale (Small Goosegrass)*	Y		
1021.	20247	*Gamochaeta calviceps*	Y		
1022.	26837	*Ganonema farinosum*			
1023.	35913	*Gelidiopsis scoparia*			
1024.	26847	*Gelidium australe*			Y
1025.	26849	*Gelidium pusillum*			
1026.	26850	*Gelinaria ulvoidea*			
1027.	4339	*Geranium molle (Dove's Foot Cranesbill)*	Y		
1028.	26854	*Gigartina disticha*			
1029.	26858	*Glaphyrymenia pustulosa*			
1030.	26860	*Gloiocladia halymenioides*			
1031.	26864	*Gloiosaccion brownii*			
1032.	7983	*Gnaphalium indutum (Tiny Cudweed)*			
1033.	6587	*Gomphocarpus fruticosus (Narrowleaf Cottonbush)*	Y		
1034.	6161	*Gonocarpus pithyoides*			
1035.	26867	*Gracilaria blodgettii*			
1036.	26872	*Gracilaria preissiana*			
1037.	26873	*Gracilaria salicornia*			
1038.	36701	*Grateloupia subpectinata*			
1039.	26886	*Griffithsia teges*			
1040.	5011	*Guichenotia ledifolia*			
1041.	26887	*Guiryella repens*			
1042.	47213	*Halimeda versatilis*			
1043.	48568	*Halopeltis australis*			
1044.	164	*Halophila ovalis (Sea Wrack)*			
1045.	35863	*Haloplegma duperreyi*			
1046.	26900	*Haloplegma preissii*			
1047.	37640	*Halymenia floresii*			
1048.	48666	*Halymenia harveyana*			
1049.	26911	*Haraldiophyllum erosum*			
1050.	3016	*Heliophila pusilla*	Y		
1051.	6707	*Heliotropium curassavicum (Smooth Heliotrope)*			
1052.	26912	*Helminthocladia australis*			
1053.	26913	*Helminthora australis*			
1054.	2689	*Hemichroa pentandra (Trailing Jointweed)*			
1055.	26914	*Hemineura frondosa*			
1056.	26915	*Hennedya crispa*			
1057.	26922	*Herposiphonia versicolor*			
1058.	26927	*Heterodoxia denticulata*			
1059.	26929	*Heterosiphonia callithamnium*			
1060.	26930	*Heterosiphonia crassipes*			
1061.	26938	*Heterosiphonia wrangelioides*			
1062.	5162	*Hibbertia racemosa (Stalked Guinea Flower)*			
1063.	26945	*Holotrichia comosa*			
1064.	449	*Hordeum leporinum (Barley Grass)*	Y		
1065.	18137	*Hornungia procumbens*	Y		
1066.	166	*Hydrilla verticillata (Water Thyme)*			
1067.	6224	*Hydrocotyle blepharocarpa*			
1068.	6229	*Hydrocotyle diantha*			
1069.	6232	*Hydrocotyle hispidula*			
1070.	6241	*Hydrocotyle tetragonocarpa*			
1071.	26961	*Hymenocladia conspersa*			
1072.	26966	*Hypnea charoides*			
1073.	35922	*Hypnea cornuta*			
1074.	35898	*Hypnea musciformis*			
1075.	26971	*Hypnea ramentacea*			
1076.	26973	*Hypnea valentiae*			
1077.	8086	*Hypochaeris glabra (Smooth Catsear)*	Y		
1078.	26981	*Hypoglossum revolutum*			
1079.	1531	*Iris germanica (Flag Iris)*	Y		
1080.	20200	*Isolepis cernua var. setiformis*			
1081.	917	*Isolepis marginata (Coarse Club-rush)*			
1082.	26984	*Jania affinis*			
1083.	26985	*Jania micrarthrodia*			

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
1084.	36141	*Jania pulchella*			
1085.	48292	*Jania rosea*			
1086.	26988	*Jania verrucosa*			
1087.	19632	*Johnsonia pubescens subsp. pubescens*			
1088.	1178	*Juncus bufonius (Toad Rush)*	Y		
1089.	11922	*Juncus kraussii subsp. australiensis*			
1090.	26991	*Kallymenia spinosa*			Y
1091.	26995	*Kuetzingia canaliculata*			
1092.	30331	*Lachnagrostis nesomytica*			Y
1093.	30332	*Lachnagrostis nesomytica subsp. nesomytica*		P1	Y
1094.	30333	*Lachnagrostis nesomytica subsp. pseudofiliformis*		P1	Y
1095.	14646	*Lagunaria patersonia*	Y		
1096.	467	*Lagurus ovatus (Hare's Tail Grass)*	Y		
1097.	26998	*Laurencia brongniartii*			
1098.	48408	*Laurencia dendroidea*			
1099.	27000	*Laurencia elata*			
1100.	27001	*Laurencia filiformis*			
1101.	27002	*Laurencia forsteri*			
1102.	48419	*Leiomenia cribrosa*			
1103.	44490	*Leontodon rhagadioloides*	Y		
1104.	19989	*Lepidium didymum*	Y		
1105.	3027	*Lepidium foliosum (Leafy Peppercress)*			
1106.	3043	*Lepidium puberulum*		P4	
1107.	42742	*Lepidosperma calcicola*			
1108.	933	*Lepidosperma gladiatum (Coast Sword-sedge, Kerbin)*			
1109.	940	*Lepidosperma pubisquameum*			
1110.	945	*Lepidosperma squamatum*			
1111.	1493	*Leucojum aestivum (Snowflake)*	Y		
1112.	16449	*Leucophyta brownii*			
1113.	6405	*Leucopogon insularis*			
1114.	6427	*Leucopogon parviflorus (Coast Beard-heath)*			
1115.	27018	*Leveillea jungermannioides*			
1116.	27020	*Liagora australasica*			
1117.	27024	*Liagora izziae*			Y
1118.	27030	*Liagora wilsoniana*			
1119.	9289	*Lobelia anceps (Angled Lobelia)*			
1120.	478	*Lolium rigidum (Wimmera Ryegrass)*	Y		
1121.	6968	*Lycium ferocissimum (African Boxthorn)*	Y		
1122.	2396	*Lysiana casuarinae*			
1123.	36375	*Lysimachia arvensis (Pimpernel)*	Y		
1124.	36480	*Malva arborea (Tree Mallow)*	Y		
1125.	4961	*Malva parviflora (Marshmallow)*	Y		
1126.	31351	*Malva preissiana*			
1127.	27055	*Martensia australis*			
1128.	48414	*Martensia denticulata*			
1129.	4079	*Medicago polymorpha (Burr Medic)*	Y		
1130.	4080	*Medicago sativa (Alfalfa)*	Y		
1131.	19721	*Melaleuca armillaris*	Y		
1132.	5920	*Melaleuca huegelii (Chenille Honeymyrtle)*			
1133.	5922	*Melaleuca lanceolata (Rottnest Teatree, Moonah)*			
1134.	5943	*Melaleuca nesophila (Mindiyed)*			
1135.	4516	*Melia azedarach (White Cedar)*			
1136.	4785	*Melianthus major*	Y		
1137.	4085	*Melilotus indicus*	Y		
1138.	27062	*Meristotheca papulosa*			
1139.	2813	*Mesembryanthemum crystallinum (Iceplant)*	Y		
1140.	27067	*Metagoniolithon chara*			
1141.	27068	*Metagoniolithon radiatum*			
1142.	27069	*Metagoniolithon stelliferum*			
1143.	27070	*Metamastophora flabellata*			
1144.	35123	*Microdictyon okamurae*			
1145.	27074	*Microdictyon umbilicatum*			
1146.	485	*Microlaena stipoides (Weeping Grass)*			
1147.	8105	*Millotia myosotidifolia*			
1148.	16693	*Minuartia mediterranea*	Y		
1149.	19179	*Moraea flaccida (One-leaf Cape Tulip)*	Y		
1150.	19180	*Moraea miniata (Two-leaf Cape Tulip)*	Y		
1151.	27079	*Mychodea carnosa*			
1152.	27083	*Mychodea pusilla*			
1153.	7289	*Myoporum caprarioides (Slender Myoporum)*			

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
1154.	7291	*Myoporum insulare (Blueberry Tree, boobialla)*			
1155.	6722	*Myosotis australis (Southern Forget-me-not)*		P4	
1156.	11019	*Narcissus papyraceus*	Y		
1157.	1495	*Narcissus tazetta (Jonquil)*	Y		
1158.	44496	*Narcissus tazetta subsp. italicus*	Y		
1159.	27098	*Neogoniolithon brassica-florida*			
1160.	44525	*Neoizziella divaricata*			
1161.	18356	*Nerium oleander*	Y		
1162.	27100	*Neurymenia fraxinifolia*			
1163.	6974	*Nicotiana glauca (Tree Tobacco)*	Y		
1164.	4366	*Nitraria billardierei (Nitre Bush)*			
1165.	27103	*Nizymenia conferta*			
1166.	27104	*Nizymenia furcata*			
1167.	6503	*Olea europaea (Olive)*	Y		
1168.	8127	*Olearia axillaris (Coastal Daisybush)*			
1169.	1372	*Ornithogalum arabicum (Lesser Cape Lily)*	Y		
1170.	7122	*Orobanche minor (Lesser Broomrape)*	Y		
1171.	4349	*Oxalis corniculata (Yellow Wood Sorrel)*	Y		
1172.	30375	*Oxalis exilis*			
1173.	4356	*Oxalis pes-caprae (Soursob)*	Y		
1174.	516	*Parapholis incurva (Coast Barbgrass)*	Y		
1175.	7089	*Parentucellia latifolia (Common Bartsia)*	Y		
1176.	12670	*Parietaria cardiostegia*			
1177.	1762	*Parietaria debilis (Pellitory)*			
1178.	43763	*Pauridia glabella*			
1179.	27120	*Pedobesia clavaeformis*			
1180.	4343	*Pelargonium capitatum (Rose Pelargonium)*	Y		
1181.	4346	*Pelargonium littorale*			
1182.	27128	*Peyssonnelia inamoena*			
1183.	27129	*Peyssonnelia novae-hollandiae*			
1184.	27133	*Phacelocarpus labillardieri*			
1185.	44540	*Phoenix canariensis (Canary Islands Date Palm)*	Y		
1186.	1042	*Phoenix dactylifera (Date Palm)*	Y		
1187.	43506	*Phormium tenax*	Y		
1188.	16825	*Phyllangium divergens*			
1189.	4675	*Phyllanthus calycinus (False Boronia)*			
1190.	27141	*Phyllodictyon anastomosans*			
1191.	17671	*Pinus halepensis*	Y		
1192.	88	*Pinus radiata (Radiata Pine)*	Y		
1193.	19745	*Pittosporum ligustrifolium*			
1194.	7299	*Plantago debilis*			
1195.	7303	*Plantago lanceolata (Ribwort Plantain)*	Y		
1196.	27144	*Platoma cyclocolpum*			
1197.	36360	*Platyclinia ramosa*			Y
1198.	27146	*Platysiphonia hypneoides*			
1199.	27154	*Plocamium angustum*			
1200.	27155	*Plocamium cartilagineum*			
1201.	27156	*Plocamium mertensii*			
1202.	27157	*Plocamium preissianum*			
1203.	571	*Poa annua (Winter Grass)*	Y		
1204.	577	*Poa poiformis (Coastal Poa)*			
1205.	8182	*Podotheca angustifolia (Sticky Longheads)*			
1206.	27162	*Pollexfenia pedicellata*			
1207.	2905	*Polycarpon tetraphyllum (Fourleaf Allseed)*	Y		
1208.	581	*Polypogon maritimus (Coast Beardgrass)*	Y		
1209.	35157	*Polypogon maritimus var. subspatheaceus*	Y		
1210.	582	*Polypogon monspeliensis (Annual Beardgrass)*	Y		
1211.	583	*Polypogon tenellus*			
1212.	27170	*Polysiphonia australiensis*			
1213.	29621	*Polysiphonia forfex*			
1214.	27179	*Polysiphonia sertularioides*			
1215.	4688	*Poranthera drummondii*			
1216.	2884	*Portulaca oleracea (Purslane, Wakati)*			
1217.	123	*Posidonia australis (Fibreball Weed)*			
1218.	105	*Posidonia coriacea*			
1219.	1674	*Prasophyllum giganteum (Bronze Leek Orchid)*			
1220.	27190	*Protokuetzingia australasica*			
1221.	27191	*Pseudobryopsis hainanensis*			
1222.	36219	*Pseudocrossidium hornschuchianum*			
1223.	27194	*Psilothallia striata*			

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
1224.	27195	*Pterocladia lucida*			
1225.	27206	*Ptilophora prolifera*			
1226.	2935	*Ranunculus pumilio (Smallflower Buttercup)*			
1227.	11831	*Ranunculus pumilio var. politus*			
1228.	3061	*Raphanus raphanistrum (Wild Radish)*	Y		
1229.	3083	*Reseda alba (White Mingnonette)*	Y		
1230.	3085	*Reseda luteola (Wild Mingnonette)*	Y		
1231.	27210	*Rhabdonia clavigera*			
1232.	2578	*Rhagodia baccata (Berry Saltbush)*			
1233.	11341	*Rhagodia baccata subsp. baccata*			
1234.	11930	*Rhagodia baccata subsp. dioica (Sea Berry Saltbush)*			
1235.	4822	*Rhamnus alaternus (Buckthorn)*	Y		
1236.	27214	*Rhipiliopsis multiplex*			Y
1237.	27215	*Rhipiliopsis peltata*			
1238.	27220	*Rhodopeltis australis*			
1239.	27221	*Rhodopeltis borealis*			
1240.	4705	*Ricinus communis (Castor Oil Plant)*	Y		
1241.	48887	*Roepera billardierei*			
1242.	48901	*Roepera similis*			
1243.	11544	*Romulea rosea var. australis (Guildford Grass)*	Y		
1244.	10970	*Rostraria cristata*	Y		
1245.	116	*Ruppia polycarpa*			
1246.	117	*Ruppia tuberosa*			
1247.	40426	*Rytidosperma occidentale*			
1248.	2906	*Sagina apetala (Annual Pearlwort)*	Y		
1249.	2908	*Sagina maritima*	Y		
1250.	48433	*Salicornia blackiana*			
1251.	48430	*Salicornia quinqueflora*			
1252.	6484	*Samolus repens (Creeping Brookweed)*			
1253.	27229	*Sarcomenia delesserioides*			
1254.	27230	*Sarconema filiforme*			
1255.	7606	*Scaevola crassifolia (Thick-leaved Fan-flower)*			
1256.	41660	*Schenkia australis*			
1257.	994	*Schoenus humilis*			
1258.	1004	*Schoenus nitens (Shiny Bog-rush)*			
1259.	27269	*Scinaia aborealis*			
1260.	27270	*Scinaia tsinglanensis*			
1261.	27274	*Sebdenia flabellata*			
1262.	27277	*Semnocarpa minuta*			
1263.	25884	*Senecio pinnatifolius var. latilobus*			
1264.	25882	*Senecio pinnatifolius var. maritimus (Coastal Groundsel)*			
1265.	2910	*Silene nocturna (Mediterranean Catchfly)*	Y		
1266.	27280	*Siphonocladus tropicus*			
1267.	3072	*Sisymbrium orientale (Indian Hedge Mustard)*	Y		
1268.	47173	*Solanum lycopersicum (Tomato)*	Y		
1269.	7022	*Solanum nigrum (Black Berry Nightshade)*	Y		
1270.	7037	*Solanum symonii*			
1271.	27281	*Solieria robusta*			
1272.	8230	*Sonchus asper (Rough Sowthistle)*	Y		
1273.	8231	*Sonchus oleraceus (Common Sowthistle)*	Y		
1274.	44731	*Sonderophycus capensis*			
1275.	616	*Sorghum bicolor (Grain Sorghum)*	Y		
1276.	27286	*Spermothamnion miniatum*			Y
1277.	624	*Spinifex hirsutus (Hairy Spinifex)*			
1278.	625	*Spinifex longifolius (Beach Spinifex)*			
1279.	635	*Sporobolus virginicus (Marine Couch)*			
1280.	27309	*Spyridia dasyoides*			
1281.	27310	*Spyridia filamentosa*			
1282.	4828	*Spyridium globulosum (Basket Bush)*			
1283.	9070	*Stackhousia pubescens (Downy Stackhousia)*			
1284.	48423	*Stauromenia lacerata*			
1285.	2918	*Stellaria media (Chickweed)*	Y		
1286.	20397	*Stellaria pallida*	Y		
1287.	636	*Stenotaphrum secundatum (Buffalo Grass)*	Y		
1288.	27318	*Struvea plumosa*			
1289.	30278	*Stylidium androsaceum*			
1290.	2639	*Suaeda australis (Seablite)*			
1291.	32438	*Syntrichia pagorum*			
1292.	132	*Syringodium isoetifolium*			
1293.	15741	*Tamarix aphylla (Athel Tree)*	Y		

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
1294.	27326	*Tanakaella itonoi*			
1295.	17923	*Tecoma stans*	Y		
1296.	33236	*Tecticornia halocnemoides (Shrubby Samphire)*			
1297.	33319	*Tecticornia indica subsp. bidens*			
1298.	4256	*Templetonia retusa (Cockies Tongues)*			
1299.	2820	*Tetragonia decumbens (Sea Spinach)*	Y		
1300.	2823	*Tetragonia implexicoma (Bower Spinach)*			
1301.	134	*Thalassodendron pachyrhizum*			
1302.	5077	*Thomasia cognata*			
1303.	2644	*Threlkeldia diffusa (Coast Bonefruit)*			
1304.	1343	*Thysanotus patersonii*			
1305.	29601	*Titanophycus validus*			
1306.	27335	*Tolypiocladia calodictyon*			
1307.	27336	*Tolypiocladia glomerulata*			
1308.	1368	*Trachyandra divaricata*	Y		
1309.	6266	*Trachymene coerulea (Blue Lace Flower)*			
1310.	19041	*Trachymene coerulea subsp. coerulea*			
1311.	27340	*Tricleocarpa cylindrica*			
1312.	4314	*Trifolium suffocatum (Suffocated Clover)*	Y		
1313.	4315	*Trifolium tomentosum (Woolly Clover)*	Y		
1314.	15509	*Trifolium tomentosum var. tomentosum*	Y		
1315.	146	*Triglochin minutissima*			
1316.	147	*Triglochin mucronata*			
1317.	151	*Triglochin striata*			
1318.	152	*Triglochin trichophora*			
1319.	27347	*Tylotus obtusatus*			
1320.	99	*Typha orientalis (Bulrush, Cumbungi)*			
1321.	35260	*Ulva compressa*			
1322.	27352	*Ulva lactuca*			
1323.	27354	*Ulva rigida*			
1324.	1767	*Urtica urens (Small Nettle)*	Y		
1325.	27356	*Valonia macrophysa*			
1326.	27360	*Vidalia spiralis*			
1327.	11137	*Vulpia fasciculata*	Y		
1328.	11018	*Vulpia muralis*	Y		
1329.	724	*Vulpia myuros (Rat's Tail Fescue)*	Y		
1330.	12052	*Vulpia myuros forma megalura*	Y		
1331.	13328	*Waitzia nitida*			
1332.	17910	*Washingtonia filifera*	Y		
1333.		*Washingtonia robusta*			Y
1334.	27361	*Webervanbossea kaliformis*			
1335.	32455	*Weissia controversa*			
1336.	6939	*Westringia dampieri*			
1337.	6659	*Wilsonia humilis (Silky Wilsonia)*			
1338.	27368	*Wrangelia plumosa*			
1339.	1398	*Wurmbea monantha*			
1340.	27370	*Yamadaella caenomyce*			
1341.	1049	*Zantedeschia aethiopica (Arum Lily)*	Y		

Protozoa

1342.	39058	*Perichaena depressa*			
1343.	39096	*Trichia contorta*			

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 wholely 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.

360 environmental | Part of SLR

10 Bermondsey Street West Leederville WA 6007 **t** (+618) 9388 8360 **f** (+618) 9381 2360
PO BOX 14, West Perth WA 6872
w 360environmental.com.au **e** admin@360environmental.com.au

people • planet • professional