



Natural Area
CONSULTING MANAGEMENT SERVICES

City of Rockingham Mersey Point Bus Terminus Offset Revegetation Plan

Natural Area Holdings Pty Ltd
57 Boulder Road, Malaga, WA, 6090
Ph: (08) 9209 2767
info@naturalarea.com.au
www.naturalarea.com.au



Disclaimer

Natural Area Holdings Pty Ltd, trading as Natural Area Consulting Management Services (Natural Area), has prepared this report for the sole use of the Client and for the purposes as stated in the agreement between the Client and Natural Area under which this work was completed. This report may not be relied upon by any other party without the express written agreement of Natural Area.

Natural Area has exercised due and customary care in the preparation of this document and has not, unless specifically stated, independently verified information provided by others. No other warranty, expressed or implied, is made in relation to the contents of this report. Therefore, Natural Area assumes no liability for any loss resulting from errors, omission or misrepresentations made by others. This document has been made at the request of the Client. The use of this document by unauthorised third parties without written permission from Natural Area shall be at their own risk, and we accept no duty of care to any such third party.

Any recommendations, opinions or findings stated in this report are based on circumstances and facts as they existed at the time Natural Area performed the work. Any changes in such circumstances and facts upon which this document is based may adversely affect any recommendations, opinions or findings contained in this document.

No part of this document may be copied, duplicated or disclosed without the express written permission of the Client and Natural Area.

Document Title	NAH COR Mersey Point Bus Terminus Revegetation Plan				
Location	Client Folders NAC V2\City of Rockingham\Mersey Point - Bus Terminus\Report				
Draft/Version No.	Date	Changes	Prepared by	Approved by	Status
D1	15/02/2021	New Document	KG, MG	SH	Draft for client review and comment
V1	06/04/2021	Minor amendments	SH	BC	Final

Executive Summary

Natural Area Consulting Management Services (Natural Area) was commissioned by the City of Rockingham (the City) to prepare an offset revegetation plan which includes a detailed flora and vegetation assessment and a basic fauna survey. Surveys were undertaken in the proposed clearing area and the proposed offset planting areas to prepare an offset revegetation plan. The proposed clearing is required for the installation of a new bus terminus adjacent to Arcadia Drive, Shoalwater. Survey outcomes are presented in this plan to support the clearing permit application processes for the City.

The survey of the Mersey Point (proposed clearing area) site identified:

- a total of 26 flora species from 16 families of which 14 were introduced and 12 native species
- the presence of one vegetation type *Acacia rostellifera* Shrubland
- vegetation condition across the site being Good
- no threatened ecological communities
- two bird species within the survey area, Willie Wagtail (*Rhipidura leucophrys*) and *Laughing Turtle Dove (*Spilopelia senegalensis*).

Five proposed revegetation areas were identified to offset the residual impact of clearing vegetation for the proposed Mersey Bus terminal site. All areas are found within the same dune system along Shoalwater Beach. These areas were selected as they are also located within the Bush Forever Site 355, to maintain the vegetation cover within the site and enhance vegetation condition present in the area.

The survey of the proposed offset sites identified the following:

- One vegetation type was present across all sites, *Acacia rostellifera* Shrubland.
- Three of the proposed offset sites have recent signs of revegetation efforts.
- Vegetation condition ranged from Good to Completely Degraded.
- Two fauna species were observed during the survey, *Ctenopus fallens* and the European Rabbit (*Oryctolagus cuniculus*), with the European Rabbit listed as a C3 declared pest.

The aim of the revegetation activities within the proposed offset sites are to:

- restore the sites to self-sustaining ecosystems that extend into the existing areas of vegetation
- restore understory cover and increase species diversity
- remove competition on native flora due to presence of invasive species.

A revegetation strategy has been developed for the five proposed offset sites which includes aspects of site preparation including weed control, pest animal control, rubbish removal and fencing, with indicative planting numbers and a cost schedule provided. For the revegetation works to be considered successful, the following completion criteria have been assigned:

- one plant per square metre by year 5
- 70% survival of tubestock by year 5
- at least 90% of species in the planting list are represented in total species composition by year 5
- a maximum of 5% weed coverage within the offset sites
- vegetation condition in offset sites to be Good or better to match what was found in the clearing area.

Contents

Executive Summary	3
Contents	4
1.0 Introduction	6
1.1 Scope.....	6
1.2 Objectives	6
1.3 Location.....	6
1.3.1 Mersey Point Site.....	7
1.3.1 Offset Sites.....	7
1.4 Site History	7
1.5 Tenure and Current Land Use	7
2.0 Site Characteristics.....	9
2.1 Regional Context.....	9
2.2 Climate	9
2.3 Topography and Soils.....	9
2.4 Vegetation Complex.....	10
2.5 Hydrology.....	10
3.0 Methodology.....	12
3.1 Desktop and Literature Review.....	12
3.2 On-ground Flora Survey.....	12
3.2.1 Vegetation Type.....	13
3.2.2 Vegetation Condition.....	14
3.3 Limitations	15
4.0 Results.....	16
4.1 Desktop Survey	16
4.1.1 Significant Flora	16
4.1.2 Threatened Ecological Communities	16
4.1.3 Significant Fauna.....	17
4.2 Survey Results – Mersey Point Bus Terminus Site	18
4.2.1 Flora	18
4.2.2 Vegetation Type.....	18
4.2.3 Threatened and Priority Ecological Communities	18
4.2.4 Vegetation Condition.....	19
4.2.5 Fauna	19

4.3	Survey Results – Offset Sites.....	24
4.3.1	Flora.....	24
4.3.2	Vegetation Type.....	24
4.3.3	Threatened Ecological Communities.....	25
4.3.4	Vegetation Condition.....	26
4.3.5	Fauna.....	26
5.0	Revegetation Plan Objectives.....	28
5.1	Revegetation Requirements.....	28
5.2	Revegetation Aims.....	28
6.0	Revegetation Plan.....	29
6.1	Site Preparation.....	29
6.1.1	Weed Control.....	29
6.1.2	Pest Animal Control.....	32
6.1.3	Rubbish Removal.....	32
6.1.4	Fencing.....	33
6.2	Revegetation Methodology.....	37
6.2.1	Sourcing of Tubestock.....	37
6.2.2	Planting.....	37
6.2.3	Planting Density.....	37
6.2.4	Watering.....	37
6.2.5	General Maintenance.....	37
6.3	Flora Species List.....	38
6.4	Completion Criteria.....	40
6.5	Monitoring.....	40
7.0	Implementation and Cost Schedules.....	41
7.1	Implementation Schedule.....	41
7.2	Indicative Costings.....	41
8.0	References.....	43
Appendix 1:	NatureMap Report.....	46
Appendix 2:	Protected Matters Search Tool Report.....	61
Appendix 3:	Conservation Codes.....	80
Appendix 4:	Mersey Point Flora List.....	83
Appendix 5:	Offset Site Flora List.....	84
Appendix 6:	Quadrat Data.....	86

1.0 Introduction

Natural Area Consulting Management Services (Natural Area) was commissioned by the City of Rockingham (the City) to prepare an offset revegetation plan which includes a detailed flora and vegetation assessment and a basic fauna survey. The assessment was undertaken within the proposed clearing area and the proposed offset planting areas to prepare an offset revegetation plan. The proposed clearing is required for the installation of a new bus terminus adjacent to Arcadia Drive, Shoalwater. Survey outcomes are presented in this plan to support the clearing permit application processes for the City.

1.1 Scope

Natural Area's scope of works associated with the revegetation plan included:

- desktop database searches to identify flora ecological communities that may be present at the site, including any conservation significant species and ecological communities
- desktop review of available data for the site including vegetation complex, soils characteristics and topography
- a site survey to:
 - document vegetation condition within both areas (to be cleared and proposed offset sites)
 - flora survey of species present (native and non-native)
 - determine key site characteristics
 - determine the extent of vegetation types and condition
- reporting survey outcomes and preparing an offset revegetation plan in line with Department of Water and Environmental Regulation's *A guide to preparing revegetation plans for clearing permits*
- preparation of documentation required to obtain clearing permit.

1.2 Objectives

The aim of the revegetation plan is to investigate the condition of the proposed clearing area and the proposed offsets sites. Including determining suitable species to be planted in revegetation sites.

Accordingly, this plan will:

- describe the Offset sites, including location and description of key characteristics
- outline management aims and objectives for each offset site
- describe rehabilitation activities, rationale, and methodology for each offset site
- provide success criteria, monitoring and reporting requirements for each offset site
- describe contingency plans if success criteria are not met for each offset site
- outline weed and pest control activities for the offset sites
- provide an indicative implementation schedule and costings for each offset site.

1.3 Location

The proposed clearing area and offset sites are approximately 42 km's west of the Perth Central Business District, within the suburb of Shoalwater in the City Rockingham (Figure 1). The sites are situated within the vegetated dune system of Shoalwater Beach adjacent to the Shoalwater Island Marine Park. The proposed clearing area and offset sites are located within the Bush Forever Site – 355 (*Point Peron and Adjacent Bushland, Peron/Shoalwater Bay*) (Department of Planning, Lands and Heritage, 2021).

1.3.1 Mersey Point Site

The proposed site for the Mersey Bus terminal area is located on the northern end of the Mersey Point Jetty carpark extending to Arcadia Drive, this covers an area of 0.252 ha of remnant coastal scrub. The clearing area is located within Lot 24 on Deposited Plan 243261 (Reserve 22948) (PIN 11425501), adjacent to Arcadia Drive and in close proximity to facilities servicing tourism for Penguin Island, including Pengo's café and the Penguin Island Ferry (Figure 1).

1.3.1 Offset Sites

Five proposed offset sites were identified to offset the residual impact of clearing vegetation for the proposed Mersey Bus terminal site. All sites are found within the same dune system along Shoalwater Beach, with the furthest offset site located approximately 0.5 km north of the clearing area (Figure 1). Offset sites were chosen based on the similarity of vegetation type to the clearing area, close proximity to clearing site and the fact that they also make up part of the Bush Forever Site 355. With the outcomes of the offset meant to enhance vegetation cover and condition within Site 355.

1.4 Site History

The greater area along Shoalwater Beach including Penguin Island forms the Shoalwater Island Marine Park, which consists of four zones:

1. 'no take' sanctuary zones
2. special purpose zone (wildlife protection)
3. special purpose zone (scientific reference)
4. general use zone.

As a result of the area's high conservation value, it also holds high commercial, tourism and cultural values (Cardno, 2019 & GHD Woodhead, 2019). Two grants were approved in previous years regarding the coastal rehabilitation of Shoalwater Beach, with the *Shoalwater Foreshore Beach Path and Coastal Rehabilitation Project* awarded in 2012 and the *Coastal Rehabilitation at Shoalwater Bay Beach, Shoalwater* being awarded in 2016 (DPLH, 2020). This highlights the ongoing attempts to rehabilitate the area.

1.5 Tenure and Current Land Use

The City of Rockingham's (2021) IntraMap tool, zones the proposed clearing area and offset sites as Passive Foreshore and is currently managed by the City of Rockingham (Cardno, 2019).



Figure 1:
 Site Boundary
 Mersey Point, Rockingham

0 50 100 m



Client: City of Rockingham
 Date: 17/03/2021
 Created by: M. Gray
 Image Source: Nearmap 2021
 Datum: GDA 94

2.0 Site Characteristics

Site characteristics, including soils, vegetation complexes and climate will inform the revegetation plan, as the aim is to restore vegetation species and condition to the offset areas that are more degraded than the vegetation within the proposed clearing area. Key characteristics are outlined in this section.

2.1 Regional Context

According to Interim Biogeographical Regionalisation of Australia (IBRA) descriptions, the proposed clearing and offset sites are located within the Swan Coastal Plain region. This region comprises of two major divisions, namely Swan Coastal Plain 1- Dandaragan Plateau and Swan Coastal Plain 2- Perth Coastal Plain (Department of Primary Industry and Regional Development, 2021a).

The sites are located within the Perth Coastal Plain 2 (SWA 2- Swan Coastal Plain subregion) and is described as a low-lying coastal plain with sands of colluvial and aeolian origin. The region is dominated by Banksia and/or Jarrah Woodland over sandy soils associated with dune systems, with Paperbark (*Melaleuca*) in swampy/dampland areas and Jarrah Woodland to the east where the Swan Coastal Plain rises (Mitchell *et al*, 2002).

2.2 Climate

The climate experienced in the area is Mediterranean, with dry, hot summers and cool, wet winters.

According to the Bureau of Meteorology (Garden Island, Station ID 009256 2021):

- average rainfall is 598 mm pa, with the majority falling between May and August
- average maximum temperatures range from 17.9 °C in winter 28.2 °C in summer, with the highest recorded maximum being 43.4 °C
- average minimum temperatures range from 11.2 °C in winter to 19.4 °C in summer, with the lowest recorded minimum being 3.5 °C
- predominant wind directions included morning easterlies and south-westerly sea breezes during summer months, with an average wind speed of 19.3 km/h and gust of more than 100 km/h.

2.3 Topography and Soils

Site topography ranges from 1 to 2 m Australian Height Datum (AHD) rising from west to east (Department of Water and Environmental Regulation, 2021). The proposed clearing area is located on the Quindalup Dune System within the Swan Coastal Plain. This system is characterised by coastal dunes with calcareous deep sands and tallow sands (DPIRD, 2021b). Two soil types were identified using the Natural Resource Information Portal (NRInfo) and are described in Table 1 (Figure 2) (DPRID, 2021b).

Table 1: Soil types and descriptions

Name	Symbol	Description
Quindalup South Qf1 Phase	211Qu__Qf1	Foredune/blowout complexes (semi-erosional) with very low relief ridge and swale topography with deep uniform calcareous sands.
Quindalup South Qf2 Phase	211Qu__Qf2	Relict foredunes and gently undulating beach ridge plain with deep uniform calcareous sands.

Source: DPIRD, 2021

2.4 Vegetation Complex

The vegetation complex within the proposed clearing area indicated by National Map is the *Quindalup Complex* (Department of Biodiversity, Conservation and Attractions, 2021a). This complex is described by Heddle *et. al.* (1980) as a low closed forest and shrubland restricted to the coastal dunes. These dunes can be subdivided into two alliances, namely strand and foredune or the mobile and stable dunes. These alliances are divided according to changes in vegetation with

- the strand and fore dune alliance containing species such as
 - *Angianthus cunninghamii*
 - *Arctotheca nivea*
 - *Atriplex isatidea*
- the mobile and stable dune containing species such as
 - *Acacia cyclops*
 - *Anthocercis littorea*
 - *Lepidosperma gladiatum*
 - *Myoporum insulare*.

The vegetation differs in its physiognomy and species composition from one place to another due to variation in dune environment caused by edaphic or topographical factors and the degree of shelter from salt laden winds (Heddle *et. al.*, 1980).

2.5 Hydrology

According to the NationalMap, no geomorphic wetlands are located within the proposed clearing area or offset sites, however there are three located within a 5 km buffer (DBCA, 2021b). This includes two small multiple use wetlands to the east and the conservation category wetland, Lake Richmond to the north-east.



Figure 2:
Soil types and Quadrat Locations
Mersey Point, Shoalwater

0 50 100 m



Client: City of Rockingham
Date: 17/03/2021
Created by: M. Gray
Image Source: Nearmap 2021
Datum: GDA 94

3.0 Methodology

3.1 Desktop and Literature Review

Desktop surveys were undertaken to determine:

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

The following databases were accessed to obtain relevant information:

- NatureMap (Department of Biodiversity, Conservation and Attractions, 2021e) (Appendix 1)
- Protected Matters Search Tool (Department of Agriculture, Water and the Environment, 2021b), (Appendix 2)
- National Map (Australian Government, 2021)
- NRInfo (Department of Primary Industries and Regional Development, 2021a)
- FloraBase (Department of Biodiversity, Conservation and Attractions, 2021d)
- Threatened and priority flora and ecological community database searches (Department of Biodiversity, Conservation and Attractions, 2021f).

Conservation code definitions for the State and Commonwealth and the data relating to conservation significant species from database searches were summarised into field reference guides to aid with on-ground flora surveys (Appendix 3).

3.2 On-ground Flora Survey

Natural Area personnel, Sharon Hynes (Lead Botanist) and Megan Gray surveyed the site on March 9th, 2021, with key GPS data recorded using Mappt software on a handheld Samsung tablet. The flora and vegetation surveys were carried out in accordance with *EPA Technical Guidance – Flora and Vegetation Surveys for Environmental Impact Assessment* (Environmental Protection Authority, 2016).

Field activities included:

- Setting out a total of three 10 m x 10 m quadrats across the one vegetation type present (Figure 2). A photograph was taken of each quadrat from the north-east corner, with the photo for Quadrat 3 taken from the south-east as the vegetation was too dense to see the quadrat accurately (Appendix 6).
- Walking the site and identifying flora species present within the site and surrounding area, targeting declared rare and priority species indicated as potentially present during desktop assessments.
- Assessing vegetation condition across the site.
- Using a GPS to map significant species and boundaries of differing vegetation types and condition.
- Determining the presence of any further threatened or priority listed flora species and/or ecological communities listed under the Biodiversity and Conservation Act 2016 (WA) and/or the Environment Protection and Biodiversity Conservation Act 1999 (Commonwealth).
- Identifying potential offset sites with a similar vegetation type and lower vegetation condition than that of the proposed clearing area, which can therefore be enhanced to match the clearing area.

Samples were collected and any unfamiliar species were recorded and photographed to enable later identification. A photo was taken of each quadrat. The following data was collected using a modified recording sheet based on the NAIA templates developed for the Perth Biodiversity Project:

1. Vegetation type, which was determined using the structural classes described in *Bush Forever Volume 2* (Government of Western Australia, 2000), which records dominant over, middle and understorey species. A tablet device equipped with GPS mapping software was used to mark the change in vegetation type across the site. A description of the various structural classes is provided in Table 3.
2. Vegetation condition was assessed using the rating scale attributed to Keighery in *Bush Forever Volume 2* (Government of Western Australia, 2000) (Table 4).
3. Aspect of the site.
4. Topography of the site.
5. Slope of the site.
6. Soil type.
7. Soil colour.
8. Gravel as a percentage of cover.
9. Rock as a percentage of cover.
10. Leaf litter as a percentage of cover.
11. Bare ground as a percentage of cover.
12. Drainage of the site.
13. Flora species present including percentage cover, height, habit and life form. Where species could not be identified in the field, samples were collected, or photographs taken for later identification. Additional species were recorded whilst the site was being traversed. Conservation significant species were targeted using the field reference guide compiled from the results of database searches.
14. Fauna sightings or evidence of fauna use within the sites.

3.2.1 Vegetation Type

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

Table 2: Vegetation structural classes

Life Form/Height Class	Canopy Percentage Cover			
	100 – 70%	70 – 30%	30 – 10%	10 – 2 %
Trees over 30 m	Tall closed forest	Tall open forest	Tall woodland	Tall open woodland
Trees 10 – 30 m	Closed forest	Open forest	Woodland	Open woodland
Trees under 10 m	Low closed forest	Low open forest	Low woodland	Low open woodland
Tree Mallee	Closed tree mallee	Tree mallee	Open tree mallee	Very open tree mallee

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

(Source: Government of Western Australia, 2000)

3.2.2 Vegetation Condition

Vegetation condition was assessed using the rating scale attributed to Keighery in *Bush Forever Volume 2* (Table 3) (Government of Western Australia, 2000).

Table 3: Vegetation condition ratings

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

(Source: Government of Western Australia, 2000)

3.3 Limitations

Several limitations associated with both desktop and on-ground flora surveys exist, including:

- database searches provide an indication of what flora species may be present, with on ground surveys required to confirm those present
- information on flora species provided on some databases include out-of-date species names, meaning that names need to be checked for currency
- herbarium records are largely limited to vouchered specimens
- plant species flower at different times and are not always able to be identified
- on-ground surveys indicate species present at the time of the assessment, with species flowering at different times not always able to be identified
- not all species flower every year
- the differing databases are reliant on information submitted via various reporting mechanisms, so all records of a particular species or ecological community within a specified area may not be complete
- survey was conducted outside of spring, optimum time; therefore, annuals that occur during spring would not have been present during the survey.

Despite these limitations, Natural Area estimates that 80 – 90% of flora species within the survey area were identified.

4.0 Results

4.1 Desktop Survey

A review of NatureMap identified a total of 253 flora and 376 fauna species which could potentially occur within a 5 km radius of the proposed clearing area including:

- 175 dicots
- 78 monocots
- 6 amphibians
- 189 birds
- 123 fish
- 19 mammals
- 39 reptiles.

4.1.1 Significant Flora

A review of NatureMap indicated two conservation significant flora species listed under the *Biodiversity Conservation Act 2016 (WA)*, as potentially occurring within 5 km of the proposed clearing area (DBCA, 2021c). A review of the Protected Matters Search Tool (PMST) indicated one significant flora species listed under the *Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) (Cwlth)* as potentially occurring within a 5 km radius of the site (DAWE, 2021). Flora species potentially occurring are listed in Table 5, with conservation code descriptions provided in Appendix 3.

A review of the DBCA threatened and priority flora database indicated two priority species have the potential to be recorded within 5 km of the site (DBCA, 2021e). Of the conservation significant species potentially found in the area, it was determined that the site conditions (soil type, drainage, location) may be suitable for one of these species; *Dodonaea hackettiana* (Table 5). Conservation code descriptions are provided in Appendix 3.

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

Species Name	Cons. Code	Nature Map	PMST	DBCA
<i>Diuris micrantha</i>	VU		X	
<i>Dodonaea hackettiana</i>	P4	X		X
<i>Sphaerolobium calcicola</i>	P3	X		X

4.1.2 Threatened Ecological Communities

A review of the PMST report identified four listed Threatened Ecological Communities that could potential occur within 5 km of the site (Table 6) (DAWE, 2021). A review of the DBCA database confirmed that the proposed clearing site falls within a 5 km buffer of five known TECs, with one community of *Thrombolite (microbial) community of coastal freshwater lakes of the Swan Coastal Plain (Lake Richmond)* and four communities of *Sedgelands in Holocene dune swales of the southern Swan Coastal Plain* (DBCA, 2021e).

Table 6: Potential Threatened Ecological Communities within the site.

Name	Status	Presence
Banksia Woodlands of the Swan Coastal Plain ecological community	Endangered	Community known to occur within the area. Unlikely to occur, habitat and soil unsuitable
Sedgeland in Holocene dune swales of the southern Swan Coastal Plain	Endangered	Community known to occur within area.
Thrombolite (microbial) community of coastal freshwater lakes of the Swan Coastal Plain (Lake Richmond)	Endangered	Community known to occur in the area. Unlikely to occur, habitat unsuitable
Tuart (<i>Eucalyptus gomphocephala</i>) Woodlands and Forests of the Swan Coastal Plain	Critically Endangered	Community known to occur within the area.

4.1.3 Significant Fauna

A review of NatureMap indicated five conservation significant fauna species listed under the *Biodiversity Conservation Act 2016 (WA)*, potentially occurring within 5 km of the site (DBCA, 2021a). A review of the Protected Matters Search Tool (PMST) (DAWE, 2021) indicated three significant fauna species listed under the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) (Cwlth) as potentially occurring within a 5 km radius of the site. Fauna species potentially occurring are listed in Table 7. Conservation Code descriptions are provided in Appendix 3. Database search result listed potentially occurring species including marine and transient bird species. These have not been included as they would not occur within the actual clearing area or would not be affected by clearing activities, as there is no primary habitat present for these species.

A review of the DBCA threatened and priority fauna database indicated five priority species have the potential to be recorded within 5 km of the site (DBCA, 2021e). Of the conservation significant species potentially found in the area, it was determined that the site conditions (habitat, vegetation, location) may be suitable for two of these species (highlighted green; Table 5).

Table 7: Threatened and Priority fauna listed by NatureMap, PMST and DBCA

Species Name	Common Name	Cons. Code	Nature Map	PMST	DBCA
<i>Bettongia penicillata ogilbyi</i>	Woylie	EN		X	
<i>Dasyurus geoffroii</i>	Chuditch	VU		X	
<i>Idiosoma sigillatum</i>	Swan Coastal Plain Shield-backed Trapdoor Spider	P3	X		X
<i>Isoodon fusciventer</i>	Quenda, Southwestern Brown Bandicoot	P4	X		X
<i>Lerista lineata</i>	Perth Slider, Lined Skink	P3	X		X
<i>Neelaps calonotos</i>	Black-Striped Burrowing Snake	P3	X		X

Species Name	Common Name	Cons. Code	Nature Map	PMST	DBCA
<i>Phascogale tapoatafa subsp. wambenger</i>	South-western Brush-tailed Phascogale	CD / S	X		X
<i>Pseudocheirus occidentalis</i>	Western Ringtail Possum	CR		X	

4.2 Survey Results – Mersey Point Bus Terminus Site

4.2.1 Flora

A total of 26 flora species from 16 families were recorded within the site. Of these, 14 were introduced species and 12 were native species. Examples of native flora species recorded are shown in Figure 3, with introduced species shown in Figure 4. A complete flora list is provided in Appendix 4.

4.2.2 Vegetation Type

One vegetation type was recorded within the proposed Mersey Point Site, namely *Acacia rostellifera* Shrubland. With no overstory vegetation, a dense middle story of *Acacia rostellifera*, *Rhagodia baccata* and *Tetragonia decumbens**, with an understory that consists of weedy grasses, primarily Wimmera Ryegrass (*Lolium rigidum*) and Great Brome (*Bromus diandrus*). Full species list and quadrat photos are provided in Appendix 6.

4.2.3 Threatened and Priority Ecological Communities

No threatened or priority ecological communities were recorded within the proposed Mersey Bus Terminus clearing area. The survey determined that no coastal freshwater lakes, *Banksia* species or *Eucalyptus gomphocephala* were present within the proposed clearing area and therefore their subsequent communities were not present.

The Department of Environment and Conservation Species and Community Branch (2011) provides a description of the key characteristics of the TEC, *Sedgeland of the Holocene dune swales of the southern Swan Coastal Plain*. Summarised as occurring in damplands or sumplands that are waterlogged throughout winter and retain high moisture in surface soil in summer, with the presence of typical and common native species including:

- *Acacia rostellifera*
- *Acacia saligna*
- *Xanthorrhoea preissii*
- *Baumea juncea*
- *Ficinia nodosa*
- *Lepidosperma gladiatum*
- *Poa porphyroclados*.

The vegetation and floristic survey did not identify this community or any other PEC or TEC within the proposed clearing area. Although the species *A. rostellifera* and *F. nodosa* (planted) were identified they are not considered to be within sedgeland vegetation type. Furthermore, the quadrat survey identified the area as having well-draining sand.

4.2.4 Vegetation Condition

The current vegetation condition is Good across the entire proposed clearing area, with no native overstory a dense native and weedy middle story of *Acacia rostellifera*, *Rhagodia baccata* and *Tetragonia decumbens** and a weedy understory of introduced grasses.

4.2.5 Fauna

A total of two fauna species were observed within the proposed clearing site, namely the Willie Wagtail (*Rhipidura leucophrys*) and Laughing Turtle Dove (*Spilopelia senegalensis*). These species are common throughout in the Perth Region and seem to thrive in urban and disturbed habitats.



Olearia axillaris (Coastal Daisybush)



Spyridium globulosum (Basket Bush)



Rhagodia baccata (Berry Saltbush)



Clematis linearifolia



Alyxia buxifolia (Dysentery Bush)



Spinifex longifolius (Beach Spinifex)

Figure 3: Examples of native flora species recorded



Great Brome (**Bromus diandrus*)



Sea Spinach (**Tetragonia decumbens*)



Lesser Dodder (**Cuscuta epithymum*)



Gazania (**Gazania linearis*)



Dune Onion Weed (**Trachyandra divaricata*)



Rose Pelargonium (**Pelargonium capitatum*)

Figure 4: Examples of introduced (weed) species recorded



Figure 5.1:
Vegetation Condition
Mersey Point, Shoalwater

0 25 50 m



Client: City of Rockingham
Date: 17/03/2021
Created by: M. Gray
Image Source: Nearmap 2021
Datum: GDA 94



Figure 5.2:
Vegetation Condition
Mersey Point, Shoalwater

0 25 50 m



Client: City of Rockingham
Date: 17/03/2021
Created by: M. Gray
Image Source: Nearmap 2021
Datum: GDA 94

4.3 Survey Results – Offset Sites

The five proposed offset sites were chosen based on vegetation condition and similarities in vegetation composition to the proposed clearing area.



4.3.1 Flora




Common weed species throughout all offset sites was Sea Spinach (*Tetragonia decumbens**) and Great Brome (*Bromus diandrus**). Tuart (*Eucalyptus gomphocephala*) was in close proximity to Offset Site 4. A flora list for the proposed offset sites is provided in Appendix 5.

4.3.2 Vegetation Type

The vegetation type of *Acacia rostellifera* was recorded at the proposed clearing site and all five of the proposed offset sites with differing vegetation condition. Many sites have remnant species from previous rehabilitation efforts and would require a range of infill efforts to enhance vegetation condition and composition. A description of the vegetation types of each offset site is listed in Table 8.

Table 8: Vegetation type and description of each proposed offset site

Offset Site No.	Vegetation Type and Description	Photo
Offset Site 1	<p><i>Acacia rostellifera</i> Shrubland</p> <p>Sparse midstory of <i>Acacia rostellifera</i> over <i>Tetragonia decumbens*</i> and an understory of mixed weedy grasses and herbs.</p>	
Offset Site 2	<p><i>Acacia rostellifera</i> Shrubland</p> <p>Sparse to no midstory of <i>Acacia rostellifera</i> over <i>Spinifex longifolia</i> and <i>Tetragonia decumbens*</i> and weedy grass understory.</p>	

Offset Site No.	Vegetation Type and Description	Photo
Offset Site 3	<p><i>Acacia rostellifera</i> Shrubland</p> <p>Previous restoration site. Sparse midstory of <i>Acacia rostellifera</i> over mixed shrubs and an understory of *<i>Trachyandra divaricata</i>.</p>	
Offset Site 4	<p><i>Acacia rostellifera</i> Shrubland</p> <p>Previous restoration site. Sparse midstory of <i>Acacia rostellifera</i> over mixed shrubs and an understory of mixed weedy grasses and herbs. Presence of <i>Eucalyptus gomphocephala</i> nearby.</p>	
Offset Site 5	<p><i>Acacia rostellifera</i> Shrubland</p> <p>Previous restoration site. Completely Degraded. Surrounding vegetation sparse to no midstory of <i>Acacia rostellifera</i> over mixed planted shrubs with no understory.</p>	

4.3.3 Threatened Ecological Communities

No threatened or priority ecological communities were recorded within the five offset sites. The survey determined that no coastal freshwater lakes, *Banksia* species or sedges were present within the offset sites, therefore subsequent communities were not present.

The Department of Agriculture, Water and the Environment (2019) provides a description of the key characteristics of the TEC, *Tuart (Eucalyptus gomphocephala) Woodlands and Forests of the Swan Coastal Plain*. Primarily occurring within the Spearwood and Quindalup dune system the defining feature is the

presence of at least two living Tuart trees in the upper canopy layer, with a gap of no more than 60 m between their canopies.

Offset Site 4 identified two individual Tuart trees that were in the upper canopy layer with approximately 100 m distance between canopies (Figure 6). Due to this difference to key characteristics the area is not considered to be within a TEC. However, by including Tuart into the species mix of Offset Site 4, it will provide the potential for restoration of the *Tuart (Eucalyptus gomphocephala) Woodlands and Forests of the Swan Coastal Plain* community in this location.

4.3.4 Vegetation Condition

Vegetation condition within offset sites ranged from Good to Completely Degraded. All but one offset site had a vegetation condition of Degraded, with Offset Site 1 having a small portion of vegetation that was of Good condition (Table 9 and Figure 5.1 & 5.2). The offset sites make up a combined area of 0.326 ha, with the smallest site, Offset Site 5 also being completely degraded covering 0.020 ha (Table 9).

Table 9: Vegetation Condition of the proposed Offset Sites.

Site	Vegetation Condition	Area (ha)	Percentage Cover %
Offset 1	Good	0.022	82.9
	Degraded	0.107	17.1
Offset 2	Degraded	0.053	100
Offset 3	Degraded	0.072	100
Offset 4	Degraded	0.051	100
Offset 5	Completely Degraded	0.020	100
Total Area (ha)		0.326	

4.3.5 Fauna

Two fauna species, *Ctenotus fallens* and the European Rabbit (*Oryctolagus cuniculus*) were observed through observation and presence indicators. With the European Rabbit listed as a C3 declared pest on the Western Australian Organism List under the *Biosecurity and Agriculture Management Act 2007* (WA).



Figure 6:
Tuart Tree Locations
Mersey Point, Shoalwater

0 10 20 m



Client: City of Rockingham
Date: 17/03/2021
Created by: M. Gray
Image Source: Nearmap 2021
Datum: GDA 94

5.0 Revegetation Plan Objectives

5.1 Revegetation Requirements

Clearing vegetation in Western Australia is regulated under Part V Division 2 of the EP Act and the Environmental Protection (Clearing of Native Vegetation) Regulations 2004 (Clearing Regulations). Revegetation plans are required to outline the establishment and maintenance of the revegetation of offset areas that have been selected due to a clearing permit approval. The EP Act states that the plan must include a completion criterion that outlines the monitoring, reporting and assessment of the effectiveness of revegetation efforts until expiry of the clearing permit.

5.2 Revegetation Aims

The aim of the revegetation activities within the offset sites are to:

- restore the sites to self-sustaining ecosystems that extend into the existing areas of vegetation
- restore understory cover and increase species diversity
- remove competition on native flora due to presence of invasive species.

6.0 Revegetation Plan

The major aim of the revegetation plan is to reintroduce native middle and understory species into the area that will result in a similar vegetative type and structure to the existing vegetation across the dune system of Shoalwater Beach.

The restoration activities will occur over a five year period from site preparation works, installation and plant establishment and five years' of post-installation monitoring and maintenance. The plan focusses on the planting of native understory species along with a small number of middle to upper storey species to increase vegetation cover. The flora and vegetation assessment carried out by Natural Area identified species that could be used for planting.

Plan development has included the following activities:

- identification of flora species within the offset site and nearby vegetated areas, including native and weed species
- assessment of vegetation condition
- the presence of waste materials, and pests that could reduce the success of rehabilitation outcomes
- development of success and monitoring criteria to be implemented after the initial installation of tubestock.

6.1 Site Preparation

Site preparation ahead of revegetation works will include:

- weed control
- pest animal control, if required
- removal of rubbish
- installation of fencing or other suitable barrier to delineate the revegetation areas from formalised paths and structures and to prevent trampling by the public.

No soil preparation activities, such as ripping, are required for the sandy soils present in the offset areas, noting that the presence of limestone may be encountered in some locations. The use of mechanical augers or other planting equipment may be required to assist with planting.

6.1.1 Weed Control

Consideration should be given to the use of herbicides in bushland and wetland areas through permitted off-label use by the Australian Pesticides and Veterinary Medicines Authority (APVMA). It is recommended that herbicides such as Metsulfuron and Triasulfuron be used at the recommended dose and in a targeted fashion within the site to reduce their potential residual effect in soils. Recommended weed treatments and treatment times are outlined in Table 9 (DBCA, 2021b; Brown and Brooks, 2002). Weeds recorded on site and their specific weed control methodologies are shown in Table 10.

Table 10: Weed Treatment types, target species and methodology

Treatment Number	Treatment Type	Targeted Species	Application Method and Comments
1	Glyphosate spray (non-selective)	Annual and perennial grass and broadleaf weeds	Spot spray target species
2	Selective grass herbicide (Quizalofop or Fusilade)	Annual and perennial grasses	Spot spray - selective grass spray (will affect native grass species)
3	Metsulfuron	Annual broadleaf weeds and bulbs	Spot spray – semi selective
4	Glyphosate glove/sponge wipe	One-leaf Cape Tulip	Wipe leaves with sponge prior to or just on flowering
5	Triclopyr, Picloram, or Glyphosate	Woody weeds and trees	Cut and paint or drill and fill (Method is species dependant as some are prone to suckering e.g. Japanese Pepper, Olives)
6	Manual removal/hand weeding	Carnation weeds (<i>Euphorbia</i> sp.), Fleabane (<i>Conyza</i> sp.) and other similar species including woody weed seedlings when small	Gloves required due to caustic sap of Carnation weeds
7	Triasulfuron	Carnation weed (<i>Euphorbia</i> sp.), Brassicaceae weeds post emergence and other annual species	Spot spray – selective

Source: DBCA, 2021b

A weed prioritisation rating system has been developed by the Department of Biodiversity, Conservation and Attractions (DBCA) (2019) to determine priority for control of weed species based on their ecological impact in the Swan Region. Weed species noted on site are listed in Table 11, with different management categories for control assigned under the *Biosecurity and Agriculture Management Regulations 2013* (WA) according to their invasiveness and environmental impact. These species should be the focus of weed control activities within the revegetation areas, followed by lower priority species.

Table 11: Weed control methodology

Species Name	Common Name	Treatment No.	Timing
High Impact			
<i>Avena barbata</i>	Bearded Oat	2	Jul - Oct
<i>Bromus diandrus</i>	Great Brome	1 and/or 2	Jun - Aug
<i>Carpobrotus edulis</i>	Hottentot Fig	1 and/or 6	Jun - Oct
<i>Cynodon dactylon</i>	Couch	1 and/or 2	Nov - Feb
<i>Euphorbia terracina</i>	Geraldton Carnation Weed	6, Logran	Jun - Aug
<i>Gazania linearis</i>	Gazania	1	Aug - Dec
<i>Lagurus ovatus</i>	Hare's Tail Grass	2 and/or 6	Jun - Sep
<i>Lolium rigidum</i>	Wimmera Ryegrass	1, 2 and/or 6	Jun - Oct
<i>Pelargonium capitatum</i>	Rose Pelargonium	3 and/or 6	Jun - Oct
<i>Schinus terebinthifolia</i>	Brazilian Pepper	5	Year Round
<i>Tetragonia decumbens</i>	Sea Spinach	1 and 6	Mar - Nov
Medium Impact			
<i>Cuscuta epithymum</i>	Lesser Dodder	1	Jun - Oct
<i>Trachyandra divaricata</i>	Dune Onion Weed	1 (+chlorsulfuron), 4 and/or 6	Jun - Aug
Low Impact			
<i>Erigeron bonariensis</i>	Flaxleaf Fleabane	1	Sep - May

6.1.2 Pest Animal Control

European Rabbit

Rabbits are a highly invasive species due to their ability to reach sexual maturity in a short period of time, their short gestation period and ability to cope with environmental variability. The direct and indirect effects of rabbits pose a threat to the ecology of local areas and the viability of rehabilitation activities as they browse on young plants and tubestock due to their high palatability and nutrient content. The grazing activities of rabbits often alter the ecology of plant communities by selecting species that are resistant to regular cropping such as grasses and reducing natural regeneration. Rabbits also have the potential to exacerbate erosion, promote weed growth as well as competing for resources with native fauna. An indirect effect of rabbit populations is to provide an increased food supply to introduced predators which in turn predate native fauna (Pech and Hood, 1998).

Signs of the European Rabbit (*Oryctolagus cuniculus*) were observed on site in the form of scats within Offset Site 5 (Figure 7). As this species is highly active it is likely to be present throughout the dune system. The European Rabbit is listed as a C3 declared pest on the Western Australian Organism List (WAOL) under the *Biosecurity and Agriculture Management Act 2007* (WA), this classification requires management by the landowner/manager to reduce the impact and spread of the species.

Due to the proximity of the offset sites to a known dog beach (Shoalwater Beach), the use of baiting such as 1080 cannot be used for the control of rabbits as the potential to adversely affect domestic animals is likely. Installation of tree guards will be required to provide a barrier that will assist with allowing tubestock to become established. Trapping of rabbits can be considered as an alternative control measure, however this will need to be undertaken in conjunction with trapping of the larger foreshore reserve to make an effective difference.

6.1.3 Rubbish Removal

Rubbish within the sites was limited to items such as wrappers, napkins that were windblown into vegetation due to the proximity of facilities such as the Pengos Café, Recreational Parkland Areas and Residential Housing (Figure 1). Other miscellaneous items such as a garden lattice was found within the clearing site (Figure 7). Rubbish removal is recommended prior to revegetation works and during maintenance activities.



Plastic and Paper Rubbish (Wind Blown)



Garden Lattice



European Rabbit (scats)



Various Items

Figure 7: Examples of disturbance, rubbish and pests

6.1.4 Fencing

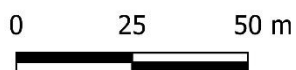
Fencing was installed in 2016 as part of the *Coastal Rehabilitation at Shoalwater Bay Beach* grant and is currently separating pathways and infrastructure from native vegetation along the Shoalwater Beach dune system. These fences act as a method to deter people from accessing the native vegetation and ultimately reducing impacts associated with their presence, specifically during the plant establishment period. Much of the existing fence line creates an acceptable barrier between offset sites and human activity. Existing fencing between the carpark and proposed clearing area will need to be removed with new fencing required to be installed along the new boundary separating remnant vegetation and Offset Site 1 from infrastructure (Figure 9.1 & 9.2). Additional fencing will need to be installed at Offset Sites 3 and 4 to provide a proficient barrier to human activity. New fencing design is to be consistent with the existing fence line (Figure 8).



Figure 8: Existing fence line along Shoalwater Beach dune system



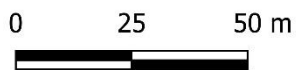
Figure 9.1:
 Fencing
 Mersey Point, Shoalwater



Client: City of Rockingham
 Date: 17/03/2021
 Created by: M. Gray
 Image Source: Nearmap 2021
 Datum: GDA 94



Figure 9.2:
 Fencing
 Mersey Point, Shoalwater



Client: City of Rockingham
 Date: 17/03/2021
 Created by: M. Gray
 Image Source: Nearmap 2021
 Datum: GDA 94

6.2 Revegetation Methodology

This section includes revegetation methodology, indicative implementation schedule and costings, and completion criteria for a 5-year revegetation plan.

6.2.1 Sourcing of Tubestock

It is recommended that tubestock is sourced from a Nursery Industry Accreditation Scheme Australia (NIASA) accredited nursery and where possible grown from local provenance seed and/or cuttings, hardened off and in good condition prior to planting. Seed can be collected from the clearing area although the lack of native understorey will mean certain species will need to be sourced elsewhere.

6.2.2 Planting

Planting activities should be carried out after the first significant winter rains, typically from May to July each year, to encourage establishment in accordance with approved plans. It is recommended that tree guards be installed on each plant. Costings have been provided for UV stabilised plastic tree guards although Corflute guards are an option; these are more costly at \$3.20 per guard for supply and installation.

6.2.3 Planting Density

Recommended planting densities in dryland areas is 1 plant/m² with a ratio of one tree to ten shrubs to 100 herbs/sedges, in order to achieve a similar vegetation structure to that present in surrounding remnant vegetation. Planting numbers should also account for existing native cover of plants in the area.

6.2.4 Watering

In an increasingly drying climate, it is common for tubestock planting to be watered on installation and during the first and potentially the second summer to assist with plant establishment, improve seedling survival and reduce water stress over summer months. This can be achieved through periodic watering visits using a mobile watering unit with the addition of a wetting agent, which has the advantage of being a cost-effective method of delivering water, when needed, to required locations. To reduce mortality, watering should occur directly on planting (if planting occurs on a dry day) and once every month during the first two summers (November – February) at a rate of 2 L per plant. However, if plants are suffering drought stress, additional watering may be required.

6.2.5 General Maintenance

General maintenance should be carried out on an as required basis for a five-year period post planting and may include:

- weed control
- rubbish removal
- infill planting as required
- pest animal management.

6.3 Flora Species List

The five offset sites were chosen as they represented deteriorated patches within a stretch of vegetation that makes up an important ecological linkage of vegetation along the Perth coast. The flora species list includes species of various habitat, specifically understory species that will allow the improvement of vegetation structure and diversity within the system. Species were selected that are known to the area and have a high probability of being sourced as local provenance stock from reputable nurseries (Table 13). The revegetation species (Table 13) should be utilised for any infill planting required in offset sites. Table 13 also provides indicative plant numbers for each of the proposed offset sites with the determined plant numbers accounting for 30% existing native vegetation. Total plant numbers for the combined offset sites is 2,290.

Table 13: Planting lists and indicative numbers per revegetation area

Species Name	Common Name	Lifeform	Offset Sites					Total per Species
			Site 1	Site 2	Site 3	Site 4	Site 5	
<i>Acacia cochlearis</i>	Rigid Wattle	Shrub	10	6	8	6	4	34
<i>Acacia rostellifera</i>	Summer-scented Wattle	Shrub	8	4	8	6	4	30
<i>Acacia saligna</i>	Orange Wattle	Shrub	4	0	6	6	0	16
<i>Acanthocarpus preissii</i>		Perennial Herb	120	60	80	60	30	350
<i>Alyxia buxifolia</i>	Dysentery Bush	Shrub	10	4	6	4	0	24
<i>Austrostipa flavescens</i>		Grass	10	0	20	20	0	50
<i>Carpobrotus virescens</i>	Coastal Pigface	Perennial Herb	40	20	20	20	0	100
<i>Clematis linearifolia</i>		Climber	6	5	0	5	4	20
<i>Conostylis candicans</i> subsp. <i>calcicola</i>		Perennial Herb	20	40	80	40	20	200
<i>Eucalyptus gomphocephala</i>	Tuart	Tree	0	0	0	3	0	3
<i>Ficinia nodosa</i>	Knotted Club Rush	Sedge	120	50	40	40	20	270
<i>Hardenbergia comptoniana</i>	Native Wisteria	Climber	4	0	10	4	0	18
<i>Lepidosperma gladiatum</i>	Coast Sword-sedge	Sedge	120	40	40	40	20	260
<i>Leucophyta brownii</i>		Shrub	10	4	6	0	4	24
<i>Lomandra maritima</i>		Perennial Herb	100	40	40	20	10	210
<i>Olearia axillaris</i>	Coastal Daisybush	Shrub	10	4	6	4	0	24
<i>Rhagodia baccata</i>	Berry Saltbush	Shrub	10	6	10	4	0	30
<i>Scaevola crassifolia</i>	Thick-leaved Fan-flower	Shrub	20	8	4	4	0	36

Species Name	Common Name	Lifeform	Offset Sites					Total per Species
			Site 1	Site 2	Site 3	Site 4	Site 5	
<i>Spinifex longifolia</i>	Beach Spinifex	Grass	120	40	80	40	20	300
<i>Spyridium globulosum</i>	Basket Bush	Shrub	8	4	0	4	4	20
<i>Threlkeldia diffusa</i>	Coast Bonefruit	Perennial Herb	80	40	40	30	0	190
		Total	830	375	504	360	140	2209

6.4 Completion Criteria

Monitoring activities will assess the success of the revegetation works by comparing outcomes to the completion criteria. For the revegetation works to be considered successful, the criteria for completion are as follows:

- one plant per square metre by year 5
- 70% survival of tubestock by year 5
- at least 90% of species on the revegetation list are represented in total species composition by year 5
- a maximum of 5% weed coverage within the revegetation areas
- vegetation condition in offset sites to be Good or better to match what was found in the clearing area.

6.5 Monitoring

Monitoring of revegetation within all offset sites will occur twice annually during autumn and spring for three years after the initial planting. Monitoring will involve:

- setting up 10 photo monitoring points after initial planting has occurred (two in each revegetation area), with photos taken in the same direction to enable comparison of plant growth over time
- establishing one 5 x 5 m quadrat within each offset site (with two in Offset Site 1) with plant/species survival, vegetation health and community structure recorded
- reporting the outcomes of biannual monitoring events to the City, including any recommendations for infill planting and maintenance actions.

Monitoring should be carried out by personnel with botanical knowledge and experience, either by the City of Rockingham or through use of a consultant and/or contractor. Monitoring information and maintenance requirements are listed in Table 12.

Table 12: Monitoring and maintenance requirements

Monitoring	Information and Maintenance Requirements
Timing	Monitoring should be undertaken biannually in autumn and spring
Weed monitoring	If weed cover exceeds 25% for the monitoring quadrats weed control is required and should be undertaken in autumn and spring following monitoring
Planting's survival	If planting survival within the 5 x 5 m monitoring quadrats or across the entire site is below 70% then infill planting should occur the following winter
Watering	Watering should occur in summer post initial planting if plants are showing signs of water stress or decline in health, watering should occur once a month with 2L per plant to ensure plant survival over the dry summer period until plants are effectively established

7.0 Implementation and Cost Schedules

7.1 Implementation Schedule

The implementation schedule (Table 14) provided below is indicative based on best practise timing to undertake various revegetation activities. Initial on-ground works including weed control and introduced fauna control in the site are to occur before planting commences. If plants can be procured earlier in 2021 for planting in winter 2021 that can be undertaken. This Revegetation Plan outlines implementation and costings for a five year revegetation project, however, if completion criteria are not met by the end of the five years then works will be extended until they are met.

Table 14: Implementation Schedule

Item	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Procurement/ordering of plants												
Chemical weed control												
Fence installation												
Rabbit trapping program (if required)												
Planting and infill planting (if required)												
Monitoring												
Ongoing maintenance												

7.2 Indicative Costings

An indicative cost schedule for the revegetation works is provided in Table 15. This includes costs for site preparation, supply and installation of plants and ongoing maintenance. The costings are based on all works being undertaken by a commercial revegetation contractor.

Pricing notes:

- tubestock costings are based on an average per plant cost; actual costs will be dependent on species availability, where plants are sourced, and the contractor chosen to implement the works
- weed control costs are based on a team of two operators utilising a motorised spray unit; costs are higher during the maintenance period as additional care will be required around planted tubestock to avoid off target damage
- if works can be undertaken by City, this line item can be ignored
- the requirement for infill planting and other maintenance items such as feral animal control will be driven by site monitoring. The below costs are indicative and subject to change based on monitoring outcomes.

Table 15: Indicative cost schedule

Activity	Unit	Year 1 (Jul 2022 - Jun 2023)			Year 2 (Jul 2023 - Jun 2024)			Year 3 (Jul 2024 - Jun 2025)			Year 4 (Jul 2025 - Jun 2026)			Year 5 (Jul 2026 - Jun 2027)		
		Qty	Unit rate	Cost (\$ ex GST)	Qty	Unit rate	Cost (\$ ex GST)	Qty	Unit rate	Cost (\$ ex GST)	Qty	Unit rate	Cost (\$ ex GST)	Qty	Unit rate	Cost (\$ ex GST)
Boundary fence installation	Lm	375	40.00	15,000.00												
Rabbit control (if required)	Event	1	2,000.00	2,000.00												
Rubbish removal and disposal	Item	2	68.00	136.00												
Initial weed control - Glyphosate	Event	1	1,200.00	1,200.00												
Initial weed control - grass selective	Event	1	1,275.00	1,275.00												
Post planting weed control	Event				2	2,475.00	4,950.00	2	2,475.00	4,950.00	2	2,475.00	4,950.00	2	2,475.00	4,950.00
Plant supply initial	Ea.	2,290	2.10	4,809.00												
Initial plant installation	Ea.	2,290	1.20	2,748.00												
Tree guards supply and install	Ea.	2,290	1.72	3,938.80												
Infill plant supply	Ea.				1,000	2.10	2,100.00									
Infill plant installation	Ea.				1,000	1.20	1,200.00									
General maintenance	Event				2	2,100.00	4,200.00	2	2,100.00	4,200.00	2	2,100.00	4,200.00	2	2,100.00	4,200.00
Monitoring	Event				1	2,000.00	2,000.00	1	2,000.00	2,000.00	1	2,000.00	2,000.00	1	2,000.00	2,000.00
Yearly Total (ex GST)				31,106.80			14,450.00			11,150.00			11,150.00			11,150.00
GST				3,110.68			1,445.00			1,115.00			1,115.00			1,115.00
Yearly Total (inc GST)				34,217.48			15,895.00			12,265.00			12,265.00			12,265.00
Project Total (ex GST)				79,006.80												
GST				7,900.68												
Project Total (inc GST)				86,907.48												

8.0 References

- Australian Government. (2021). *NationalMap*. Retrieved from. <http://nationalmap.gov.au>
- Biodiversity Conservation Act 2016 (WA)*. Retrieved from https://www.legislation.wa.gov.au/legislation/statutes.nsf/main_mrtitle_13811_homepage.html
- Biosecurity and Agriculture Management Act 2007 (WA)*. Retrieved from https://www.legislation.wa.gov.au/legislation/statutes.nsf/main_mrtitle_2736_homepage.html
- Brown, K., & Brooks, B. (2002). *Bushland Weeds – A practical guide to their management*. Greenwood, W.A: Environmental Weeds Action Network (Inc.).
- Bureau of Meteorology. (2021). *Climate Data Online*. Retrieved from <http://www.bom.gov.au/climate/data/>
- Cardno. (2019). *Safety Bay/Shoalwater Coastal Management Study*. Unpublished report prepared for the City of Rockingham. Retrieved from <https://rockingham.wa.gov.au/planning-and-building/current-projects-and-works/safety-bay-and-shoalwater-foreshore-master-plan-pr>
- City of Rockingham (2021). *IntraMaps*. Retrieved from <https://rockingham.wa.gov.au/planning-and-building>
- Department of Agriculture, Water and the Environment. (2019). *Approved Conservation Advice (incorporating listing advice) for the Tuart (Eucalyptus gomphocephala) woodlands and forests of the Swan Coastal Plain ecological community*. Retrieved from <http://www.environment.gov.au/biodiversity/threatened/communities/pubs/153-conservation-advice.pdf>
- Department of the Agriculture, Water and the Environment. (2021). *Categories of Threatened Species*, retrieved November 2020 via www.environment.gov.au/biodiversity/threatened/species.
- Department of Biodiversity, Conservation and Attractions. (2021a). *Conservation Codes*. Retrieved from <https://www.dpaw.wa.gov.au/images/documents/plants-animals/threatened-species/Listings/Conservation%20code%20definitions.pdf>
- Department of the Agriculture, Water and the Environment. (2021b). *Protected Matters Search Tool*. Retrieved from <http://www.environment.gov.au/epbc/pmst/>.
- Department of Biodiversity and Conservation and Attractions. (2021c). *Geomorphic Wetlands, Swan Coastal Plain (DBCA-019)*. Retrieved from <http://nationalmap.gov.au>.
- Department of Biodiversity, Conservation and Attractions. (2021d). *FloraBase*. Retrieved from <https://florabase.dpaw.wa.gov.au/>
- Department of Biodiversity, Conservation and Attractions. (2021e). *NatureMap*. Retrieved from <http://naturemap.dpaw.wa.gov.au/default.aspx>.

Department of Biodiversity, Conservation and Attractions. (2019). *Prioritisation process for weed management*. Retrieved from <https://www.agric.wa.gov.au/declared-plants/declared-plant-requirements>

Department of Biodiversity, Conservation and Attractions. (2021f). Threatened and Priority flora, fauna and ecological community database searches, personal communication.

Department of Biodiversity and Conservation and Attractions. (2021a). *Vegetation Complexes – Swan Coastal Plain (DBCA-046)*. Retrieved from <http://nationalmap.gov.au>.

Department of Environment and Conservation Species and Community Branch. (2011). *Sedgeland in Holocene dune swales – Recovery Plan*. Retrieved from <https://www.environment.gov.au/system/files/resources/5be5ff39-3fbc-4db5-809d-690f989ae75a/files/sedgeland-holocene.pdf>

Department of Planning, Lands and Heritage. (2021b). *NationalMap – Bush Forever Areas 2000 (DPLH-019)*. Retrieved from <http://nationalmap.gov.au>.

Department of Planning, Lands and Heritage. (2020). *Coastwest Achievements 2011 to 2019*. (pg. 43 & 46). Retrieved from <https://www.dplh.wa.gov.au/coastalgrants>.

Department of Primary Industries and Regional Development. (2017). *Fisheries – Shoalwater Islands*. Retrieved from <http://www.fish.wa.gov.au/Sustainability-and-Environment/Aquatic-Biodiversity/Marine-Protected-Areas/Pages/Recreational-fishing-in-Shoalwater-Islands-Marine-Park.aspx>

Department of Primary Industries and Regional Development. (2021a). *NRInfo: DOEE_IBRA_Subregions*. Retrieved from <https://www.agric.wa.gov.au/resource-assessment/nrinfo-western-australia>.

Department of Primary Industries and Regional Development. (2021b). *NRInfo: Soil Landscape Mapping*. Retrieved from <https://www.agric.wa.gov.au/resource-assessment/nrinfo-western-australia>

Department of Water and Environmental Regulation (2021a). *Perth Groundwater Map*. Retrieved from <https://maps.water.wa.gov.au/#/webmap/gwm>.

Environmental Protection Authority. (2016). *Technical Guidance, Terrestrial vertebrate fauna surveys for environmental impact assessment*. Retrieved from https://www.epa.wa.gov.au/sites/default/files/Policies_and_Guidance/2020.09.17%20-%20EPA%20Technical%20Guidance%20-%20Vertebrate%20Fauna%20Surveys%20-%20Final.pdf

Environmental Protection and Biodiversity Conservation Act 1999 (Cwlth). Retrieved from <https://www.legislation.gov.au/Series/C2004A00485>

GHD Woodhead. (2019). *Safety Bay / Shoalwater Foreshore Revitalisation Masterplan Report – Design Drivers Report*. Unpublished report prepared for the City of Rockingham. Retrieved from <https://rockingham.wa.gov.au/planning-and-building/current-projects-and-works/safety-bay-and-shoalwater-foreshore-master-plan-pr>.

Government of Western Australian. (2000). *Bush Forever (Vol. 2)*. Perth, W.A: Department of Environmental Protection.

Hedde, E., Loneragan, O., & Havel, J. (1980). *Vegetation Complexes of the Darling System Western Australia. In Atlas of Natural Resources - Darling System, Western Australia (pp. 37 - 72)*. Canberra, W.A: Department of Conservation and Environment, Western Australia.

Pech, R. and Hood, G. (1998). 'Foxes Rabbits and Alternative Prey', in *Journal of Applied Ecology*, 35: 434-453.

Mitchell, D., Williams, K., & Desmond, A. (2002). *Swan Coastal Plain 2 (SWA2 – Swan Coastal Plain Subregion)*. Retrieved from <http://www.dpaw.wa.gov.au/about-us/science-andresearch/biological-surveys/117-a-biodiversity-audit-of-wa>.

Appendix 1: NatureMap Report

NatureMap Species Report

Created By Guest user on 08/02/2021

Current Names Only Yes
 Core Datasets Only Yes
 Method 'By Circle'
 Centre 115° 42' 09" E, 32° 18' 09" S
 Buffer 5km
 Group By Species Group

Species Group	Species	Records
Alga	264	1174
Amphibian	6	65
Bird	189	2779
Bryopsid (Moss)	1	1
Dicotyledon	175	527
Fish	123	323
Fungus	1	1
Invertebrate	28	81
Lichen	6	6
Mammal	19	156
Monocotyledon	78	229
Reptile	39	229
TOTAL	929	5571

Name ID	Species Name	Naturalised	Conservation Code	Endemic To Query Area
Alga				
1.	26440 <i>Acanthophora dendroides</i>			
2.	48409 <i>Acetabularia caliculus</i>			
3.	13146 <i>Acetabularia peniculus</i>			
4.	29931 <i>Acrosorium minus</i>			Y
5.	26449 <i>Adelophycus corneus</i>			
6.	26454 <i>Amansia serrata</i>			
7.	26458 <i>Amphiroa anceps</i>			
8.	26463 <i>Amphiroa gracilis</i>			
9.	<i>Anotrichium crinitum</i>			
10.	26466 <i>Anotrichium elongatum</i>			
11.	26469 <i>Anotrichium tenue</i>			
12.	26475 <i>Antithamnion hanovioides</i>			
13.	26484 <i>Areschougia ligulata</i>			
14.	26486 <i>Asparagopsis taxiformis</i>			
15.	26487 <i>Asperococcus bullosus</i>			
16.	49098 <i>Bangia fuscopurpurea</i>			
17.	26511 <i>Bornetia binderiana</i>			
18.	26518 <i>Botryocladia sonderi</i>			
19.	26520 <i>Brongniartella australis</i>			
20.	26521 <i>Bryopsis australis</i>			
21.	26522 <i>Bryopsis foliosa</i>			
22.	<i>Bryopsis gemellipara</i>			
23.	26525 <i>Bryopsis plumosa</i>			
24.	26527 <i>Calliblepharis planicaulis</i>			Y
25.	26533 <i>Callophycus costatus</i>			
26.	26534 <i>Callophycus dorsifer</i>			
27.	26535 <i>Callophycus harveyanus</i>			
28.	26536 <i>Callophycus oppositifolius</i>			
29.	26538 <i>Callophyllis rangiferina</i>			
30.	35220 <i>Canistrocarpus cervicornis</i>			
31.	35910 <i>Canistrocarpus crispatus</i>			
32.	26546 <i>Carpopeltis elata</i>			
33.	26547 <i>Carpopeltis phyllophora</i>			
34.	26549 <i>Carpothamnion gunnianum</i>			
35.	26556 <i>Caulerpa cactoides</i>			
36.	44539 <i>Caulerpa cylindracea</i>			
37.	26563 <i>Caulerpa flexilis</i>			

Name ID	Species Name	Naturalised	Conservation Code	¹ Endemic To Query Area
38.	27380 <i>Caulerpa flexilis</i> var. <i>muelleri</i>			
39.	48455 <i>Caulerpa geminata</i>			
40.	27382 <i>Caulerpa longifolia</i> forma <i>crispata</i>			
41.	26570 <i>Caulerpa obscura</i>			
42.	26571 <i>Caulerpa papillosa</i>			
43.	26573 <i>Caulerpa racemosa</i>			
44.	26574 <i>Caulerpa scalpelliformis</i>			
45.	26575 <i>Caulerpa sedoides</i>			
46.	26578 <i>Caulerpa simpliciuscula</i>			
47.	46993 <i>Caulerpa taxifolia</i> var. <i>distichophylla</i>			
48.	26580 <i>Caulerpa trifaria</i>			
49.	26583 <i>Caulerpa vesiculifera</i>			
50.	26586 <i>Caulocystis uvifera</i>			
51.	26587 <i>Centroceras clavulatum</i>			
52.	26593 <i>Ceramium filicula</i>			
53.	26599 <i>Ceramium puberulum</i>			
54.	26607 <i>Chaetomorpha aerea</i>			
55.	26616 <i>Champia affinis</i>			
56.	26617 <i>Champia compressa</i>			
57.	49084 <i>Champia parvula</i> var. <i>amphibolis</i>			Y
58.	26619 <i>Champia stipitata</i>			
59.	26621 <i>Champia zostericola</i>			
60.	26622 <i>Chauviniella coriifolia</i>			
61.	26638 <i>Chondria lanceolata</i>			Y
62.	26650 <i>Cladophora coelothrix</i>			
63.	48391 <i>Cladophora dalmatica</i>			
64.	36316 <i>Cladophora herpestica</i>			
65.	26654 <i>Cladophora lehmanniana</i>			
66.	26658 <i>Cladophora vagabunda</i>			
67.	26659 <i>Cladophora valonioides</i>			
68.	26661 <i>Cladosiphon filum</i>			
69.	26662 <i>Cladostephus spongiosus</i>			
70.	26665 <i>Clavicornium ovatum</i>			
71.	26666 <i>Cliftonaea pectinata</i>			
72.	26668 <i>Codium australasicum</i>			
73.	26671 <i>Codium duthieae</i>			
74.	26672 <i>Codium galeatum</i>			
75.	26675 <i>Codium laminarioides</i>			
76.	26682 <i>Codium spinescens</i>			
77.	26683 <i>Codium spongiosum</i>			
78.	26690 <i>Coeloclonium verticillatum</i>			
79.	26694 <i>Colpomenia sinuosa</i>			
80.	26701 <i>Craspedocarpus blepharicarpus</i>			
81.	26702 <i>Craspedocarpus ramentaceus</i>			
82.	26704 <i>Craspedocarpus venosus</i>			
83.	26711 <i>Curdiea irvineae</i>			
84.	26712 <i>Curdiea obesa</i>			
85.	26714 <i>Cutleria multifida</i>			
86.	26720 <i>Cystophora grevillei</i>			
87.	26739 <i>Dasya extensa</i>			
88.	26740 <i>Dasya frutescens</i>			
89.	26751 <i>Dasyclonium flaccidum</i>			
90.	26752 <i>Dasyclonium incisum</i>			
91.	26757 <i>Delisea pulchra</i>			
92.	34959 <i>Dichotomaria spathulata</i>			
93.	26758 <i>Dicranema revolutum</i>			
94.	26759 <i>Dicroglossum crispatum</i>			
95.	26761 <i>Dictyomenia harveyana</i>			
96.	26762 <i>Dictyomenia sonderi</i>			
97.	26763 <i>Dictyomenia tridens</i>			
98.	26764 <i>Dictyopteris australis</i>			
99.	26766 <i>Dictyopteris muelleri</i>			
100.	26775 <i>Dictyota ciliolata</i>			
101.	26776 <i>Dictyota dichotoma</i>			
102.	27392 <i>Dictyota dichotoma</i> var. <i>intricata</i>			
103.	29537 <i>Dictyota fastigiata</i>			
104.	35218 <i>Dictyota nigricans</i>			
105.	35223 <i>Dictyota polyclada</i>			
106.	26803 <i>Echinothamnion hystrix</i>			
107.	26805 <i>Ecklonia radiata</i>			

Name ID	Species Name	Naturalised	Conservation Code	¹ Endemic To Query Area
108.	26810 <i>Encyothalia cliftonii</i>			
109.	26811 <i>Endosiphonia spinulosa</i>			
110.	26821 <i>Erythroclonium muelleri</i>			
111.	26822 <i>Erythroclonium sedoides</i>			
112.	26823 <i>Erythroclonium sonderi</i>			
113.	26829 <i>Euptilocladia spongiosa</i>			
114.	26830 <i>Euptilota articulata</i>			
115.	48244 <i>Feldmannia mitchelliae</i>			
116.	26835 <i>Galaxaura rugosa</i>			
117.	35913 <i>Gelidiopsis scoparia</i>			
118.	26848 <i>Gelidium crinale</i>			
119.	26849 <i>Gelidium pusillum</i>			
120.	26850 <i>Gelinarina ulvoidea</i>			
121.	26854 <i>Gigartina disticha</i>			
122.	26859 <i>Gloiocladia australe</i>			
123.	26860 <i>Gloiocladia halymenioides</i>			
124.	26864 <i>Gloiosaccion brownii</i>			
125.	26867 <i>Gracilaria blodgettii</i>			
126.	26868 <i>Gracilaria cliftonii</i>			
127.	26871 <i>Gracilaria flagelliformis</i>			
128.	26872 <i>Gracilaria preissiana</i>			
129.	38120 <i>Grateloupia imbricata</i>	Y		
130.	36701 <i>Grateloupia subpectinata</i>			
131.	26884 <i>Griffithsia ovalis</i>			
132.	26886 <i>Griffithsia teges</i>			
133.	26887 <i>Guiryella repens</i>			
134.	47213 <i>Halimeda versatilis</i>			
135.	48568 <i>Halopeltis australis</i>			
136.	26900 <i>Haloplegma preissii</i>			
137.	37640 <i>Halymenia floresii</i>			
138.	48666 <i>Halymenia harveyana</i>			
139.	26911 <i>Haraldiophyllum erosum</i>			
140.	26912 <i>Helminthocladia australis</i>			
141.	26914 <i>Hemineura frondosa</i>			
142.	26915 <i>Hennedya crispa</i>			
143.	45954 <i>Herposiphonia pectinata</i>			Y
144.	26919 <i>Herposiphonia rostrata</i>			
145.	26927 <i>Heterodoxia denticulata</i>			
146.	26929 <i>Heterosiphonia callithamnium</i>			
147.	26930 <i>Heterosiphonia crassipes</i>			
148.	26936 <i>Heterosiphonia muelleri</i>			
149.	26938 <i>Heterosiphonia wrangelioides</i>			
150.	26942 <i>Hirsutithalia laricina</i>			
151.	26946 <i>Hormophysa cuneiformis</i>			
152.	26949 <i>Hydroclathrus clathratus</i>			
153.	26951 <i>Hydrolithon farinosum</i>			
154.	26960 <i>Hymenocladia chondricola</i>			
155.	26966 <i>Hypnea charoides</i>			
156.	35922 <i>Hypnea cornuta</i>			
157.	35898 <i>Hypnea musciformis</i>			
158.	26971 <i>Hypnea ramentacea</i>			
159.	26973 <i>Hypnea valentiae</i>			
160.	26981 <i>Hypoglossum revolutum</i>			
161.	26984 <i>Jania affinis</i>			
162.	26985 <i>Jania micrarthrodia</i>			
163.	26994 <i>Kuetzingia angusta</i>			
164.	26995 <i>Kuetzingia canaliculata</i>			
165.	26998 <i>Laurencia brongniartii</i>			
166.	48408 <i>Laurencia dendroidea</i>			
167.	27000 <i>Laurencia elata</i>			
168.	27001 <i>Laurencia filiformis</i>			
169.	27002 <i>Laurencia forsteri</i>			
170.	27008 <i>Laurencia shepherdii</i>			
171.	48419 <i>Leiomenia cribrosa</i>			
172.	27011 <i>Lenormandia latifolia</i>			
173.	27013 <i>Lenormandia spectabilis</i>			
174.	27015 <i>Leptosomia rosea</i>			
175.	27018 <i>Leveillea jungermannioides</i>			
176.	27043 <i>Lobophora variegata</i>			
177.	27044 <i>Lobospira bicuspidata</i>			

Name ID	Species Name	Naturalised	Conservation Code	¹ Endemic To Query Area
178.	27050 <i>Lophocladia kuetzingii</i>			
179.	27053 <i>Macrothamnion pellucidum</i>			
180.	48414 <i>Martensia denticulata</i>			
181.	35874 <i>Mazoyerella arachnoidea</i>			Y
182.	27067 <i>Metagoniolithon chara</i>			
183.	27069 <i>Metagoniolithon stelliferum</i>			
184.	27070 <i>Metamastophora flabellata</i>			
185.	27083 <i>Mychodea pusilla</i>			
186.	27089 <i>Myriodesma peronii</i>			
187.	27090 <i>Myriodesma quercifolium</i>			
188.	27092 <i>Myriodesma tuberosum</i>			
189.	27100 <i>Neurymenia fraxinifolia</i>			
190.	27102 <i>Nitophyllum pulchellum</i>			Y
191.	27103 <i>Nizymenia conferta</i>			
192.	27107 <i>Osmundaria prolifera</i>			
193.	27407 <i>Osmundaria spiralis</i> var. <i>cliftonii</i>			
194.	27113 <i>Padina australis</i>			
195.	27116 <i>Padina elegans</i>			
196.	36259 <i>Palisada cruciata</i>			
197.	27119 <i>Papenfussiella extensa</i>			
198.	27121 <i>Penicillus nodulosus</i>			
199.	27126 <i>Petalonia fascia</i>			
200.	27131 <i>Phacelocarpus alatus</i>			
201.	27133 <i>Phacelocarpus labillardieri</i>			
202.	27134 <i>Phacelocarpus peperocarpus</i>			
203.	27149 <i>Platysiphonia mutabilis</i>			
204.	27152 <i>Platythalia quercifolia</i>			
205.	27155 <i>Plocamium cartilagineum</i>			
206.	27156 <i>Plocamium mertensii</i>			
207.	27157 <i>Plocamium preissianum</i>			
208.	27161 <i>Pollexfenia lobata</i>			
209.	27162 <i>Pollexfenia pedicellata</i>			
210.	27163 <i>Polycerea nigrescens</i>			
211.	27164 <i>Polycerea zostericola</i>			
212.	29621 <i>Polysiphonia forfex</i>			
213.	27175 <i>Polysiphonia infestans</i>			
214.	27184 <i>Porphyra lucasii</i>			
215.	27193 <i>Psilothallia siliculosa</i>			
216.	27194 <i>Psilothallia striata</i>			
217.	27195 <i>Pterocladia lucida</i>			
218.	27196 <i>Pterocladia rectangularis</i>			
219.	27198 <i>Pteroclediella capillacea</i>			
220.	27206 <i>Ptilophora prolifera</i>			
221.	27211 <i>Rhabdonia coccinea</i>			
222.	27220 <i>Rhodopeltis australis</i>			
223.	27222 <i>Rhodophyllis volans</i>			
224.	48877 <i>Rosenvingea australis</i>			Y
225.	27226 <i>Rosenvingea orientalis</i>			
226.	35222 <i>Rugulopteryx radicans</i>			
227.	27230 <i>Sarconema filiforme</i>			
228.	27239 <i>Sargassum fallax</i>			
229.	27241 <i>Sargassum fissifolium</i>			
230.	27245 <i>Sargassum ilicifolium</i>			
231.	27246 <i>Sargassum lacerifolium</i>			
232.	27249 <i>Sargassum linearifolium</i>			
233.	27253 <i>Sargassum peronii</i>			
234.	27254 <i>Sargassum podacanthum</i>			
235.	27260 <i>Sargassum tristichum</i>			
236.	27264 <i>Scaberia agardhii</i>			
237.	27269 <i>Scinaia aborealis</i>			
238.	35911 <i>Scytosiphon lomentaria</i>			
239.	27273 <i>Scytothalia dorycarpa</i>			
240.	27279 <i>Shepleya claviformis</i>			Y
241.	42785 <i>Sirophysalis trinodis</i>			
242.	27281 <i>Solieria robusta</i>			
243.	44731 <i>Sonderophycus capensis</i>			
244.	27294 <i>Sphacelaria tribuloides</i>			
245.	27301 <i>Spongoclonium conspicuum</i>			
246.	27305 <i>Sporochnus radiformis</i>			
247.	27306 <i>Sporochnus scoparius</i>			

Name ID	Species Name	Naturalised	Conservation Code	¹ Endemic To Query Area
248.	27309 <i>Spyridia dasyoides</i>			
249.	27310 <i>Spyridia filamentosa</i>			
250.	27318 <i>Struvea plumosa</i>			
251.	27325 <i>Taenioma perpusillum</i>			
252.	27331 <i>Thuretia quercifolia</i>			
253.	27345 <i>Turbinaria gracilis</i>			
254.	27347 <i>Tylotus obtusatus</i>			
255.	35260 <i>Ulva compressa</i>			
256.	27351 <i>Ulva fasciata</i>			
257.	27352 <i>Ulva lactuca</i>			
258.	35862 <i>Ulva taeniata</i>			Y
259.	27360 <i>Vidalia spiralis</i>			
260.	27365 <i>Wrangelia abietina</i>			
261.	27368 <i>Wrangelia plumosa</i>			
262.	27369 <i>Wrangelia velutina</i>			
263.	27371 <i>Zonaria crenata</i>			
264.	35897 <i>Zonaria diesingiana</i>			

Amphibian

265.	25399 <i>Crinia glauerti</i> (Clicking Frog)			
266.	25400 <i>Crinia insignifera</i> (Squelching Froglet)			
267.	25410 <i>Heleioporus eyrei</i> (Moaning Frog)			
268.	25415 <i>Limnodynastes dorsalis</i> (Western Banjo Frog)			
269.	25378 <i>Litoria adelaidensis</i> (Slender Tree Frog)			
270.	25388 <i>Litoria moorei</i> (Motorbike Frog)			

Bird

271.	24260 <i>Acanthiza apicalis</i> (Broad-tailed Thornbill, Inland Thornbill)			
272.	24261 <i>Acanthiza chrysorrhoa</i> (Yellow-rumped Thornbill)			
273.	24262 <i>Acanthiza inornata</i> (Western Thornbill)			
274.	25535 <i>Accipiter cirrocephalus</i> (Collared Sparrowhawk)			
275.	24281 <i>Accipiter cirrocephalus</i> subsp. <i>cirrocephalus</i> (Collared Sparrowhawk)			
276.	25536 <i>Accipiter fasciatus</i> (Brown Goshawk)			
277.	24282 <i>Accipiter fasciatus</i> subsp. <i>fasciatus</i> (Brown Goshawk)			
278.	25755 <i>Acrocephalus australis</i> (Australian Reed Warbler)			
279.	41323 <i>Actitis hypoleucos</i> (Common Sandpiper)		IA	
280.	<i>Amandava subflava</i>			Y
281.	25646 <i>Amytornis pumelli</i> (Dusky Grasswren)			
282.	25647 <i>Amytornis striatus</i> (Striated Grasswren)			
283.	25648 <i>Amytornis textilis</i> (Thick-billed Grasswren)		P4	
284.	24312 <i>Anas gracilis</i> (Grey Teal)			
285.	<i>Anas platyrhynchos</i> subsp. <i>domesticus</i>			
286.	24315 <i>Anas rhynchotis</i> (Australasian Shoveler)			
287.	24316 <i>Anas superciliosa</i> (Pacific Black Duck)			
288.	47414 <i>Anhinga novaehollandiae</i> (Australasian Darter)			
289.	24506 <i>Anous tenuirostris</i> subsp. <i>melanops</i> (Australian Lesser Noddy)		T	
290.	<i>Anser anser</i>			
291.	24561 <i>Anthochaera carunculata</i> (Red Wattlebird)			
292.	24562 <i>Anthochaera lunulata</i> (Western Little Wattlebird)			
293.	41324 <i>Ardea modesta</i> (great egret, white egret)			
294.	24340 <i>Ardea novaehollandiae</i> (White-faced Heron)			
295.	41326 <i>Ardenna carneipes</i> (Flesh-footed Shearwater, Fleishy-footed Shearwater)		T	
296.	25736 <i>Arenaria interpres</i> (Ruddy Turnstone)		IA	
297.	24318 <i>Aythya australis</i> (Hardhead)			
298.	<i>Barnardius zonarius</i>			
299.	24319 <i>Biziura lobata</i> (Musk Duck)			
300.	25714 <i>Cacatua pastinator</i> (Western Long-billed Corella)			
301.	25715 <i>Cacatua roseicapilla</i> (Galah)			
302.	25716 <i>Cacatua sanguinea</i> (Little Corella)			
303.	24729 <i>Cacatua tenuirostris</i> (Eastern Long-billed Corella)	Y		
304.	25598 <i>Cacomantis flabelliformis</i> (Fan-tailed Cuckoo)			
305.	24780 <i>Calidris alba</i> (Sanderling)		IA	
306.	25738 <i>Calidris canutus</i> (Red Knot, knot)		IA	
307.	24788 <i>Calidris ruficollis</i> (Red-necked Stint)		IA	
308.	24790 <i>Calidris tenuirostris</i> (Great Knot)		T	
309.	25717 <i>Calyptorhynchus banksii</i> (Red-tailed Black-Cockatoo)			
310.	24731 <i>Calyptorhynchus banksii</i> subsp. <i>naso</i> (Forest Red-tailed Black Cockatoo)		T	
311.	24734 <i>Calyptorhynchus latirostris</i> (Carnaby's Cockatoo, White-tailed Short-billed Black Cockatoo)		T	
312.	48400 <i>Calyptorhynchus</i> sp. (white-tailed black cockatoo)		T	
313.	24377 <i>Charadrius ruficapillus</i> (Red-capped Plover)			

Name ID	Species Name	Naturalised	Conservation Code	¹ Endemic To Query Area
314.	24321 <i>Chenonetta jubata</i> (Australian Wood Duck, Wood Duck)			
315.	<i>Chroicocephalus novaehollandiae</i>			
316.	24432 <i>Chrysococcyx lucidus</i> subsp. <i>plagosus</i> (Shining Bronze Cuckoo)			
317.	24288 <i>Circus approximans</i> (Swamp Harrier)			
318.	24774 <i>Cladorhynchus leucocephalus</i> (Banded Stilt)			
319.	25675 <i>Colluricincla harmonica</i> (Grey Shrike-thrush)			
320.	24399 <i>Columba livia</i> (Domestic Pigeon)	Y		
321.	25568 <i>Coracina novaehollandiae</i> (Black-faced Cuckoo-shrike)			
322.	25592 <i>Corvus coronoides</i> (Australian Raven)			
323.	24420 <i>Cracticus nigrogularis</i> (Pied Butcherbird)			
324.	25595 <i>Cracticus tibicen</i> (Australian Magpie)			
325.	25596 <i>Cracticus torquatus</i> (Grey Butcherbird)			
326.	24322 <i>Cygnus atratus</i> (Black Swan)			
327.	24323 <i>Cygnus olor</i> (Mute Swan)	Y		
328.	30901 <i>Dacelo novaeguineae</i> (Laughing Kookaburra)	Y		
329.	24687 <i>Daption capense</i> (Cape Petrel)			
330.	<i>Diomedea</i> sp.			Y
331.	<i>Egretta novaehollandiae</i>			
332.	<i>Elanus axillaris</i>			
333.	25540 <i>Elanus caeruleus</i> (Black-shouldered Kite)			
334.	<i>Eolophus roseicapillus</i>			
335.	24567 <i>Epthianura albifrons</i> (White-fronted Chat)			
336.	25746 <i>Eudyptula minor</i> (Little Penguin)			
337.	24818 <i>Eudyptula minor</i> subsp. <i>novaehollandiae</i> (Little Penguin)			
338.	24368 <i>Eurostopodus argus</i> (Spotted Nightjar)			
339.	25621 <i>Falco berigora</i> (Brown Falcon)			
340.	25622 <i>Falco cenchroides</i> (Australian Kestrel, Nankeen Kestrel)			
341.	25623 <i>Falco longipennis</i> (Australian Hobby)			
342.	25624 <i>Falco peregrinus</i> (Peregrine Falcon)		S	
343.	25727 <i>Fulica atra</i> (Eurasian Coot)			
344.	24761 <i>Fulica atra</i> subsp. <i>australis</i> (Eurasian Coot)			
345.	25729 <i>Gallinula tenebrosa</i> (Dusky Moorhen)			
346.	24763 <i>Gallinula tenebrosa</i> subsp. <i>tenebrosa</i> (Dusky Moorhen)			
347.	25730 <i>Gallirallus philippensis</i> (Buff-banded Rail)			
348.	24765 <i>Gallirallus philippensis</i> subsp. <i>mellori</i> (Buff-banded Rail)			
349.	25530 <i>Gerygone fusca</i> (Western Gerygone)			
350.	24443 <i>Grallina cyanoleuca</i> (Magpie-lark)			
351.	25627 <i>Haematopus fuliginosus</i> (Sooty Oystercatcher)			
352.	24487 <i>Haematopus longirostris</i> (Pied Oystercatcher)			
353.	24293 <i>Haliaeetus leucogaster</i> (White-bellied Sea-Eagle)			
354.	24295 <i>Haliastur sphenurus</i> (Whistling Kite)			
355.	24689 <i>Halobaena caerulea</i> (Blue Petrel)			
356.	47965 <i>Hieraaetus morphnoides</i> (Little Eagle)			
357.	25734 <i>Himantopus himantopus</i> (Black-winged Stilt)			
358.	24491 <i>Hirundo neoxena</i> (Welcome Swallow)			
359.	48587 <i>Hydroprogne caspia</i> (Caspian Tern)		IA	
360.	30920 <i>Larus crassirostris</i> (Black-tailed Gull)			Y
361.	25637 <i>Larus novaehollandiae</i> (Silver Gull)			
362.	24511 <i>Larus novaehollandiae</i> subsp. <i>novaehollandiae</i> (Silver Gull)			
363.	25638 <i>Larus pacificus</i> (Pacific Gull)			
364.	25659 <i>Lichenostomus leucotis</i> (White-eared Honeyeater)			
365.	25661 <i>Lichmera indistincta</i> (Brown Honeyeater)			
366.	24582 <i>Lichmera indistincta</i> subsp. <i>indistincta</i> (Brown Honeyeater)			
367.	30932 <i>Limosa lapponica</i> (Bar-tailed Godwit)		IA	
368.	24690 <i>Macronectes giganteus</i> (Southern Giant Petrel)		IA	
369.	24326 <i>Malacorhynchus membranaceus</i> (Pink-eared Duck)			
370.	25649 <i>Malurus coronatus</i> (Purple-crowned Fairy-wren)		T	
371.	25650 <i>Malurus elegans</i> (Red-winged Fairy-wren)			
372.	25651 <i>Malurus lamberti</i> (Variegated Fairy-wren)			
373.	25652 <i>Malurus leucopterus</i> (White-winged Fairy-wren)			
374.	25653 <i>Malurus melanocephalus</i> (Red-backed Fairy-wren)			
375.	25654 <i>Malurus splendens</i> (Splendid Fairy-wren)			
376.	25758 <i>Megalurus gramineus</i> (Little Grassbird)			
377.	25657 <i>Megapodius reinwardt</i> (Orange-footed Scrubfowl, Orange-legged Scrubfowl)			
378.	25662 <i>Meliphaga albilineata</i> (White-lined Honeyeater)			
379.	25663 <i>Melithreptus brevirostris</i> (Brown-headed Honeyeater)			
380.	25664 <i>Melithreptus cyanotis</i> (Blue-faced Honeyeater)			
381.	25665 <i>Melithreptus gularis</i> (Black-chinned Honeyeater)			
382.	24598 <i>Merops ornatus</i> (Rainbow Bee-eater)			
383.	<i>Microcarbo melanoleucos</i>			

Name ID	Species Name	Naturalised	Conservation Code	¹ Endemic To Query Area
384.	48008 <i>Morus serrator</i> (Australasian Gannet)			
385.	25666 <i>Myzomela erythrocephala</i> (Red-headed Honeyeater)			
386.	25742 <i>Numenius phaeopus</i> (Whimbrel)		IA	
387.	25564 <i>Nycticorax caledonicus</i> (Rufous Night Heron)			
388.	24497 <i>Oceanites oceanicus</i> (Wilson's Storm-petrel)		IA	
389.	41347 <i>Onychoprion anaethetus</i> (Bridled Tern)		IA	
390.	24328 <i>Oxyura australis</i> (Blue-billed Duck)		P4	
391.	25680 <i>Pachycephala rufiventris</i> (Rufous Whistler)			
392.	24692 <i>Pachyptila belcheri</i> (Slender-billed Prion)			
393.	24693 <i>Pachyptila desolata</i> (Antarctic Prion)			
394.	25707 <i>Pachyptila salvini</i> (Salvin's Prion)			
395.	24697 <i>Pachyptila vittata</i> (Broad-billed Prion)			
396.	48591 <i>Pandion cristatus</i> (Osprey, Eastern Osprey)		IA	
397.	25681 <i>Pardalotus punctatus</i> (Spotted Pardalote)			
398.	24625 <i>Pardalotus punctatus</i> subsp. <i>punctatus</i> (Spotted Pardalote)			
399.	25682 <i>Pardalotus striatus</i> (Striated Pardalote)			
400.	24674 <i>Pavo cristatus</i> (Common Peafowl, Indian Peafowl)	Y		
401.	24648 <i>Pelecanus conspicillatus</i> (Australian Pelican)			
402.	48061 <i>Petrochelidon nigricans</i> (Tree Martin)			
403.	24663 <i>Phaethon rubricauda</i> (Red-tailed Tropicbird)		P4	
404.	25697 <i>Phalacrocorax carbo</i> (Great Cormorant)			
405.	25698 <i>Phalacrocorax melanoleucos</i> (Little Pied Cormorant)			
406.	24667 <i>Phalacrocorax sulcirostris</i> (Little Black Cormorant)			
407.	25699 <i>Phalacrocorax varius</i> (Pied Cormorant)			
408.	24668 <i>Phalacrocorax varius</i> subsp. <i>hypoleucos</i> (Pied Cormorant)			
409.	24409 <i>Phaps chalcoptera</i> (Common Bronzewing)			
410.	25667 <i>Philemon argenticeps</i> (Silver-crowned Friarbird)			
411.	48071 <i>Phylidonyris niger</i> (White-cheeked Honeyeater)			
412.	24596 <i>Phylidonyris novaehollandiae</i> (New Holland Honeyeater)			
413.	24841 <i>Platalea flavipes</i> (Yellow-billed Spoonbill)			
414.	25720 <i>Platycercus icterotis</i> (Western Rosella)			
415.	25721 <i>Platycercus zonarius</i> (Australian Ringneck, Ring-necked Parrot)			
416.	24750 <i>Platycercus zonarius</i> subsp. <i>semitorquatus</i> (Twenty-eight Parrot)			
417.	25704 <i>Podiceps cristatus</i> (Great Crested Grebe)			
418.	24681 <i>Poliiocephalus poliocephalus</i> (Hoary-headed Grebe)			
419.	25731 <i>Porphyrio porphyrio</i> (Purple Swamphen)			
420.	24767 <i>Porphyrio porphyrio</i> subsp. <i>bellus</i> (Purple Swamphen)			
421.	24769 <i>Porzana fluminea</i> (Australian Spotted Crane)			
422.	24771 <i>Porzana tabuensis</i> (Spotless Crane)			
423.	24702 <i>Pterodroma brevirostris</i> (Kerguelen Petrel)			
424.	24703 <i>Pterodroma lessonii</i> (White-headed Petrel)			
425.	25711 <i>Pterodroma mollis</i> (Soft-plumaged Petrel)			
426.	25712 <i>Puffinus assimilis</i> (Little Shearwater)			
427.	<i>Purpureicephalus spurius</i>			
428.	30867 <i>Pycnonotus jocosus</i> subsp. <i>jocosus</i> (Red-whiskered Bulbul)	Y		Y
429.	24776 <i>Recurvirostra novaehollandiae</i> (Red-necked Avocet)			
430.	48096 <i>Rhipidura albiscapa</i> (Grey Fantail)			
431.	25614 <i>Rhipidura leucophrys</i> (Willie Wagtail)			
432.	48237 <i>Rostratula australis</i> (Australian Painted Snipe)		T	
433.	25534 <i>Sericornis frontalis</i> (White-browed Scrubwren)			
434.	30948 <i>Smicromis brevirostris</i> (Weebill)			
435.	48116 <i>Stercorarius antarcticus</i> (Brown Skua)		P4	
436.	24517 <i>Stercorarius parasiticus</i> (Arctic jaeger, Arctic Skua)		IA	
437.	24522 <i>Sterna bergii</i> (Crested Tern)			
438.	25640 <i>Sterna dougallii</i> (Roseate Tern)		IA	
439.	25641 <i>Sterna fuscata</i> (Sooty Tern)			
440.	24525 <i>Sterna fuscata</i> subsp. <i>nubilosa</i> (Sooty Tern)			
441.	25642 <i>Sterna hirundo</i> (Common Tern)		IA	
442.	25643 <i>Sterna hybrida</i> (Whiskered Tern)			
443.	24534 <i>Sterna striata</i> (White-fronted Tern)			
444.	48594 <i>Sternula nereis</i> (Fairy Tern)			
445.	25655 <i>Stipiturus malachurus</i> (Southern Emu-wren)			
446.	25656 <i>Stipiturus ruficeps</i> (Rufous-crowned Emu-wren)			
447.	25589 <i>Streptopelia chinensis</i> (Spotted Turtle-Dove)	Y		
448.	25590 <i>Streptopelia senegalensis</i> (Laughing Turtle-Dove)	Y		
449.	25705 <i>Tachybaptus novaehollandiae</i> (Australasian Grebe, Black-throated Grebe)			
450.	24682 <i>Tachybaptus novaehollandiae</i> subsp. <i>novaehollandiae</i> (Australasian Grebe, Black-throated Grebe)			
451.	24331 <i>Tadorna tadornoides</i> (Australian Shelduck, Mountain Duck)			
452.	34007 <i>Thalassarche chlororhynchos</i> (Atlantic Yellow-nosed Albatross)		T	

Name ID	Species Name	Naturalised	Conservation Code	¹ Endemic To Query Area
453.	48597 <i>Thalasseus bergii</i> (Crested Tern)		IA	
454.	24845 <i>Threskiornis spinicollis</i> (Straw-necked Ibis)			
455.	25549 <i>Todiramphus sanctus</i> (Sacred Kingfisher)			
456.	25723 <i>Trichoglossus haematodus</i> (Rainbow Lorikeet)			
457.	24808 <i>Tringa nebularia</i> (Common Greenshank, greenshank)		IA	
458.	24386 <i>Vanellus tricolor</i> (Banded Lapwing)			
459.	25765 <i>Zosterops lateralis</i> (Grey-breasted White-eye, Silvereye)			

Bryopsid (Moss)

460.	32445 <i>Tortula muralis</i>			
------	------------------------------	--	--	--

Dicotyledon

461.	3282 <i>Acacia cyclops</i> (Coastal Wattle)			
462.	11611 <i>Acacia lasiocarpa</i> var. <i>lasiocarpa</i>			
463.	3525 <i>Acacia rostellifera</i> (Summer-scented Wattle)			
464.	3527 <i>Acacia saligna</i> (Orange Wattle, Kudjong)			
465.	30032 <i>Acacia saligna</i> subsp. <i>saligna</i>			
466.	11837 <i>Adenanthos cygnorum</i> subsp. <i>cygnorum</i> (Common Woollybush)			
467.	4582 <i>Adriana quadripartita</i> (Bitter Bush)			
468.	20331 <i>Aeonium arboreum</i>	Y		
469.	6565 <i>Alyxia buxifolia</i> (Dysentery Bush)			
470.	46276 <i>Ambrosia tenuifolia</i> (Lacy Ragweed)	Y		
471.	6949 <i>Anthocercis littorea</i> (Yellow Tailflower)			
472.	6210 <i>Apium annuum</i>			
473.	7838 <i>Arctotheca calendula</i> (Cape Weed, African Marigold)	Y		
474.	46393 <i>Arctotheca calendula</i> x <i>populifolia</i>	Y		
475.	7839 <i>Arctotheca populifolia</i> (Dune Arctotheca, Beach Pumpkin, Coast Capeweed, Beach Daisy)	Y		
476.	2462 <i>Atriplex hypoleuca</i>			
477.	2471 <i>Atriplex prostrata</i> (Hastate Orache)	Y		
478.	16989 <i>Baeckea</i> sp. <i>Nanga</i> (A.S. George 11346)			
479.	16636 <i>Boronia crenulata</i> subsp. <i>viminea</i>			
480.	2999 <i>Brassica rapa</i>	Y		
481.	3000 <i>Brassica tournefortii</i> (Mediterranean Turnip)	Y		
482.	2995 <i>Brassica</i> x <i>napus</i>	Y		
483.	3002 <i>Cakile maritima</i> (Sea Rocket)	Y		
484.	2845 <i>Calandrinia brevipedata</i> (Short-stalked Purslane)			
485.	35816 <i>Calothamnus quadrifidus</i> subsp. <i>quadrifidus</i>			
486.	3005 <i>Cardamine hirsuta</i> (Common Bittercress)	Y		
487.	7909 <i>Carduus pycnocephalus</i> (Slender Thistle)	Y		
488.	7910 <i>Carduus tenuiflorus</i> (Slender Thistle, Winged Slender Thistle, Sheep Thistle)	Y		
489.	2795 <i>Carpobrotus edulis</i> (Hottentot Fig)	Y		
490.	2957 <i>Cassytha racemosa</i> (Dodder Laurel)			
491.	11799 <i>Cassytha racemosa</i> forma <i>racemosa</i>			
492.	18321 <i>Casuarina glauca</i>	Y		
493.	1742 <i>Casuarina obesa</i> (Swamp Sheoak, Kuli)			
494.	6214 <i>Centella asiatica</i>			
495.	2889 <i>Cerastium glomeratum</i> (Mouse Ear Chickweed)	Y		
496.	2483 <i>Chenopodium album</i> (Fat Hen)	Y		
497.	2490 <i>Chenopodium glaucum</i> (Glaucous Goosefoot)	Y		
498.	2494 <i>Chenopodium murale</i> (Nettle-leaf Goosefoot)	Y		
499.	7937 <i>Cirsium vulgare</i> (Spear Thistle, Scotch Thistle)	Y		
500.	2929 <i>Clematis pubescens</i> (Common Clematis)			
501.	4552 <i>Comesperma confertum</i>			
502.	7939 <i>Conyza bonariensis</i> (Flaxleaf Fleabane)	Y		
503.	7940 <i>Conyza canadensis</i> (Canadian Fleabane)	Y		
504.	20074 <i>Conyza sumatrensis</i>	Y		
505.	17015 <i>Cotyledon orbiculata</i>	Y		
506.	11563 <i>Crassula colorata</i> var. <i>colorata</i>			
507.	3140 <i>Crassula glomerata</i>	Y		
508.	4802 <i>Cryptandra mutila</i>			
509.	6663 <i>Cuscuta epithymum</i> (Lesser Dodder, Greater Dodder)	Y		
510.	4454 <i>Diplolaena dampieri</i> (Southern Diplolaena)			
511.	3011 <i>Diploxaxis muralis</i> (Wall Rocket)	Y		
512.	7054 <i>Dischisma arenarium</i>	Y		
513.	4754 <i>Dodonaea aptera</i> (Coast Hop-bush)			
514.	4763 <i>Dodonaea hackettiana</i> (Hackett's Hopbush)		P4	
515.	3118 <i>Drosera pallida</i> (Pale Rainbow)			
516.	33500 <i>Dysphania ambrosioides</i> (Mexican Tea)	Y		
517.	12064 <i>Enchylaena tomentosa</i> var. <i>tomentosa</i> (Barrier Saltbush)			
518.	11570 <i>Epilobium billardioreanum</i> subsp. <i>billardioreanum</i> (Smooth Willow Herb)			

Name ID	Species Name	Naturalised	Conservation Code	¹ Endemic To Query Area
519.	11992 <i>Epilobium billardioreanum</i> subsp. <i>intermedium</i>			
520.	6133 <i>Epilobium hirtigerum</i> (Hairy Willow Herb)			
521.	17175 <i>Eremophila glabra</i> subsp. <i>albicans</i>			
522.	4333 <i>Erodium cicutarium</i> (Common Storksbill)	Y		
523.	4336 <i>Erodium moschatum</i> (Musky Crowfoot)	Y		
524.	5659 <i>Eucalyptus gomphocephala</i> (Tuart, Duart)			
525.	17342 <i>Euphorbia cyathophora</i>	Y		
526.	4627 <i>Euphorbia helioscopia</i> (Sun Spurge)	Y		
527.	4638 <i>Euphorbia peplus</i> (Petty Spurge)	Y		
528.	4648 <i>Euphorbia terracina</i> (Geraldton Carnation Weed)	Y		
529.	10765 <i>Exocarpos sparteus</i> (Broom Ballart, Djuk)			
530.	1747 <i>Ficus carica</i> (Common Fig)	Y		
531.	6221 <i>Foeniculum vulgare</i> (Fennel)	Y		
532.	2969 <i>Fumaria capreolata</i> (Whiteflower Fumitory)	Y		
533.	2971 <i>Fumaria muralis</i> (Wall Fumitory)	Y		
534.	7323 <i>Galium murale</i> (Small Goosegrass)	Y		
535.	20346 <i>Gamochoaeta coarctata</i>	Y		
536.	16311 <i>Gazania linearis</i>	Y		
537.	4339 <i>Geranium molle</i> (Dove's Foot Cranesbill)	Y		
538.	2216 <i>Hakea varia</i> (Variable-leaved Hakea)			
539.	3961 <i>Hardenbergia comptoniana</i> (Native Wisteria)			
540.	6639 <i>Hemiandra pungens</i> (Snakebush)			
541.	5117 <i>Hibbertia cuneiformis</i> (Cutleaf Hibbertia)			
542.	5162 <i>Hibbertia racemosa</i> (Stalked Guinea Flower)			
543.	18137 <i>Homungia procumbens</i>	Y		
544.	6241 <i>Hydrocotyle tetragonocarpa</i>			
545.	8086 <i>Hypochaeris glabra</i> (Smooth Catsear)	Y		
546.	9352 <i>Hypochaeris radicata</i> (Flat Weed, Cats-ear)	Y		
547.	19700 <i>Isotropis cuneifolia</i> subsp. <i>cuneifolia</i>			
548.	4012 <i>Jacksonia furcellata</i> (Grey Stinkwood)			
549.	4037 <i>Kennedia coccinea</i> (Coral Vine)			
550.	4044 <i>Kennedia prostrata</i> (Scarlet Runner)			
551.	44490 <i>Leontodon rhagadioloides</i>	Y		
552.	3027 <i>Lepidium foliosum</i> (Leafy Peppergrass)			
553.	2352 <i>Leptomeria preissiana</i>			
554.	5850 <i>Leptospermum laevigatum</i> (Coast Teatree)	Y		
555.	6427 <i>Leucopogon parviflorus</i> (Coast Beard-heath)			
556.	9289 <i>Lobelia anceps</i> (Angled Lobelia)			
557.	6968 <i>Lycium ferocissimum</i> (African Boxthorn)	Y		
558.	36375 <i>Lysimachia arvensis</i> (Pimpernel)	Y		
559.	36480 <i>Malva arborea</i> (Tree Mallow)	Y		
560.	4961 <i>Malva parviflora</i> (Marshmallow)	Y		
561.	31351 <i>Malva preissiana</i>			
562.	36522 <i>Malva pseudolavatera</i>	Y		
563.	4079 <i>Medicago polymorpha</i> (Burr Medic)	Y		
564.	4080 <i>Medicago sativa</i> (Alfalfa)	Y		
565.	34676 <i>Meionectes brownii</i> (Swamp Raspwort)			
566.	5900 <i>Melaleuca cuticularis</i> (Saltwater Paperbark)			
567.	13271 <i>Melaleuca huegelii</i> subsp. <i>huegelii</i>			
568.	13273 <i>Melaleuca incana</i> subsp. <i>incana</i>			
569.	5959 <i>Melaleuca raphiophylla</i> (Swamp Paperbark)			
570.	4085 <i>Melilotus indicus</i>	Y		
571.	16693 <i>Minuartia mediterranea</i>	Y		
572.	2412 <i>Muehlenbeckia adpressa</i> (Climbing Lignum)			
573.	7289 <i>Myoporum caprarioides</i> (Slender Myoporum)			
574.	7291 <i>Myoporum insulare</i> (Blueberry Tree, boobialla)			
575.	18356 <i>Nerium oleander</i>	Y		
576.	6138 <i>Oenothera drummondii</i> (Beach Evening Primrose)	Y		
577.	8127 <i>Olearia axillaris</i> (Coastal Daisybush)			
578.	8149 <i>Olearia rudis</i> (Rough Daisybush)			
579.	7348 <i>Opercularia hispidula</i> (Hispid Stinkweed)			
580.	18255 <i>Opercularia vaginata</i> (Dog Weed)			
581.	29276 <i>Opuntia monacantha</i> (Barbary Fig)	Y		
582.	17756 <i>Osteospermum ecklonis</i>	Y		
583.	4349 <i>Oxalis corniculata</i> (Yellow Wood Sorrel)	Y		
584.	4356 <i>Oxalis pes-caprae</i> (Soursob)	Y		
585.	2965 <i>Papaver rhoeas</i> (Field Poppy)	Y		
586.	4343 <i>Pelargonium capitatum</i> (Rose Pelargonium)	Y		
587.	6734 <i>Phylla nodiflora</i> var. <i>nodiflora</i>	Y		
588.	4675 <i>Phyllanthus calycinus</i> (False Boronia)			

Name ID	Species Name	Naturalised	Conservation Code	¹ Endemic To Query Area
589.	42281 <i>Pithocarpa cordata</i>			
590.	19745 <i>Pittosporum ligustrifolium</i>			
591.	7303 <i>Plantago lanceolata</i> (Ribwort Plantain)	Y		
592.	8182 <i>Podotheca angustifolia</i> (Sticky Longheads)			
593.	2905 <i>Polycarpon tetraphyllum</i> (Fourleaf Allseed)	Y		
594.	8189 <i>Pseudognaphalium luteoalbum</i> (Jersey Cudweed)			
595.	4181 <i>Pultenaea reticulata</i>			
596.	3061 <i>Raphanus raphanistrum</i> (Wild Radish)	Y		
597.	8197 <i>Reichardia tingitana</i> (False Sowthistle)	Y		
598.	2578 <i>Rhagodia baccata</i> (Berry Saltbush)			
599.	11930 <i>Rhagodia baccata</i> subsp. <i>dioica</i> (Sea Berry Saltbush)			
600.	4822 <i>Rhamnus alaternus</i> (Buckthorn)	Y		
601.	3066 <i>Rorippa nasturtium-aquaticum</i> (Watercress)	Y		
602.	2433 <i>Rumex crispus</i> (Curled Dock)	Y		
603.	2906 <i>Sagina apetala</i> (Annual Pearlwort)	Y		
604.	2908 <i>Sagina maritima</i>	Y		
605.	48433 <i>Salicornia blackiana</i>			
606.	6484 <i>Samolus repens</i> (Creeping Brookweed)			
607.	14107 <i>Samolus repens</i> var. <i>paucifolius</i>			
608.	7368 <i>Scabiosa atropurpurea</i> (Purple Pincushion)	Y		
609.	7606 <i>Scaevola crassifolia</i> (Thick-leaved Fan-flower)			
610.	48834 <i>Schinus terebinthifolia</i>	Y		
611.	20665 <i>Senecio angulatus</i>	Y		
612.	25878 <i>Senecio condylus</i>			
613.	20161 <i>Senecio pinnatifolius</i>			
614.	8220 <i>Senecio vulgaris</i> (Common Groundsel)	Y		
615.	3072 <i>Sisymbrium orientale</i> (Indian Hedge Mustard)	Y		
616.	7020 <i>Solanum linnaeanum</i> (Apple of Sodom)	Y		
617.	7022 <i>Solanum nigrum</i> (Black Berry Nightshade)	Y		
618.	45036 <i>Solidago chilensis</i>	Y		
619.	8231 <i>Sonchus oleraceus</i> (Common Sowthistle)	Y		
620.	2915 <i>Spergularia rubra</i> (Sand Spurry)	Y		
621.	20348 <i>Sphaerolobium calcicola</i>		P3	
622.	4828 <i>Spyridium globulosum</i> (Basket Bush)			
623.	2918 <i>Stellaria media</i> (Chickweed)	Y		
624.	4256 <i>Templetonia retusa</i> (Cockies Tongues)			
625.	2820 <i>Tetragonia decumbens</i> (Sea Spinach)	Y		
626.	2823 <i>Tetragonia implexicoma</i> (Bower Spinach)			
627.	5077 <i>Thomasia cognata</i>			
628.	2644 <i>Threlkeldia diffusa</i> (Coast Bonefruit)			
629.	19041 <i>Trachymene coerulea</i> subsp. <i>coerulea</i>			
630.	6280 <i>Trachymene pilosa</i> (Native Parsnip)			
631.	17145 <i>Trifolium angustifolium</i> var. <i>angustifolium</i>	Y		
632.	4309 <i>Trifolium scabrum</i> (Rough Clover)	Y		
633.	1767 <i>Urtica urens</i> (Small Nettle)	Y		
634.	7107 <i>Verbascum virgatum</i> (Twiggy Mullein)	Y		
635.	6658 <i>Wilsonia backhousei</i> (Narrow-leaf Wilsonia)			

Fish

636.	??			
637.	<i>Ablennes hians</i>			
638.	<i>Acanthaluteres brownii</i>			
639.	<i>Acanthaluteres spilomelanurus</i>			
640.	<i>Acanthistius serratus</i>			
641.	<i>Aetapcus maculatus</i>			
642.	<i>Afurcagobius suppositus</i>			
643.	<i>Alabes gibbosa</i>			
644.	<i>Alabes occidentalis</i>			
645.	<i>Alabes</i> sp.			Y
646.	<i>Allenichthys glauerti</i>			
647.	<i>Anoplocapros amygdaloides?</i>			
648.	<i>Anoplocapros robustus</i>			
649.	<i>Anoplocapros</i> sp.			
650.	<i>Aploactisoma milesii</i> subsp. <i>milesii</i>			Y
651.	<i>Aplodactylus westralis</i>			
652.	<i>Apogon rueppellii</i>			
653.	<i>Apogon victoriae</i>			
654.	<i>Aptychotrema</i> sp.			
655.	<i>Aptychotrema vincentiana</i>			
656.	<i>Aracana aurita</i>			
657.	<i>Asymbolus</i> sp.			

Name ID	Species Name	Naturalised	Conservation Code	¹ Endemic To Query Area
				Y
658.	<i>Atherina sp.</i>			
659.	<i>Atherinosoma presbyteroides</i>			
660.	<i>Atherinosoma wallacei</i>			
661.	<i>Batrachomoeus rubricephalus</i>			
662.	<i>Brachaluteres jacksonianus</i>			
663.	<i>Carassius auratus</i>			
664.	34034 <i>Carcharias taurus (Grey Nurse Shark)</i>		T	
665.	<i>Chaetodermis penicilligera</i>			
666.	<i>Cheilodactylus rubrolabiatus</i>			
667.	<i>Chelidonichthys kumu</i>			
668.	<i>Cirrhimuraena calamus</i>			
669.	<i>Cleidopus gloriamaris</i>			
670.	<i>Conger wilsoni</i>			
671.	<i>Cristiceps aurantiacus</i>			
672.	<i>Cristiceps australis</i>			
673.	<i>Dactylophora nigricans</i>			
674.	<i>Dactylopus dactylopus</i>			
675.	<i>Decapterus muroadsi</i>			
676.	<i>Dinolestes lewini</i>			
677.	<i>Diodon nichthemerus</i>			
678.	<i>Echeneis naucrates</i>			
679.	<i>Enoplosus armatus</i>			
680.	<i>Eubalichthys caeruleoguttatus</i>			
681.	<i>Eubalichthys cyanoura</i>			
682.	<i>Eubalichthys mosaicus</i>			
683.	<i>Eubalichthys sp.</i>			
684.	<i>Euleptorhamphus viridis</i>			
685.	<i>Favonigobius lateralis</i>			
686.	<i>Filicampus tigris</i>			
687.	<i>Furgaleus macki</i>			
688.	<i>Girella zebra</i>			
689.	<i>Gnathanacanthus goetzei</i>			
690.	<i>Gnathophis longicaudatus</i>			
691.	<i>Gonorynchus greyi</i>			
692.	<i>Gymnapistes marmoratus</i>			
693.	<i>Gymnothorax sp.</i>			
694.	<i>Gymnothorax woodwardi</i>			
695.	<i>Haletta semifasciata</i>			
696.	<i>Halichoeres brownfieldi</i>			
697.	<i>Heteroclinus sp.</i>			
698.	<i>Heterodontus portusjacksoni</i>			
699.	<i>Hexanchus nakamurai</i>			Y
700.	<i>Hippocampus elongatus</i>			
701.	<i>Hippocampus tuberculatus</i>			
702.	<i>Histrio histrio</i>			
703.	<i>Hypnos monopterygium</i>			
704.	<i>Lagocephalus sceleratus</i>			
705.	<i>Leviprora inops</i>			
706.	<i>Lotella rhacinus</i>			
707.	<i>Meuschenia freycineti</i>			
708.	<i>Mitotichthys meraculus</i>			
709.	<i>Monacanthus chinensis</i>			
710.	<i>Mustelus antarcticus</i>			
711.	<i>Myliobatis sp.</i>			
712.	<i>Neoodax balteatus</i>			
713.	<i>Neosebastes pandus</i>			
714.	<i>Notolabrus parilus</i>			
715.	<i>Odax cyanomelas</i>			
716.	<i>Omegophora armilla</i>			
717.	<i>Ophichthus melanochir</i>			
718.	<i>Ophisurus serpens</i>			
719.	<i>Parablennius postocolomaculatus</i>			
720.	<i>Paraplesiops meleagris</i>			
721.	<i>Paraplotosus albilabris</i>			
722.	<i>Paristiopterus gallipavo</i>			
723.	<i>Parma occidentalis</i>			
724.	<i>Pegasus sp.</i>			Y
725.	<i>Pelates sexlineatus</i>			
726.	<i>Pentaceropsis recurvirostris</i>			

Name ID	Species Name	Naturalised	Conservation Code	¹ Endemic To Query Area
727.	<i>Phyllophryne scortea</i>			
728.	<i>Phyllophryne</i> sp.			
729.	<i>Phyllopteryx taeniolatus</i>			
730.	<i>Pomatomus saltatrix</i>			
731.	<i>Pseudocalliurichthys goodladi</i>			
732.	<i>Pterygotrigla polyommata</i>			
733.	<i>Rachycentron canadum</i>			
734.	<i>Rhynchobatus djiddensis</i>			
735.	<i>Saurida tumbil</i>			
736.	<i>Saurida undosquamis</i>			
737.	<i>Scobinichthys granulatus</i>			
738.	<i>Scorpaena sumptuosa</i>			
739.	<i>Scorpius georgianus</i>			
740.	<i>Seriola hippos</i>			
741.	<i>Sillago</i> sp.			
742.	<i>Siphonognathus argyrophanes</i>			
743.	<i>Siphonognathus radiatus</i>			
744.	<i>Sphyræna</i> sp.			
745.	<i>Squatina australis</i>			
746.	<i>Stigmatopora argus</i>			
747.	<i>Stigmatopora nigra</i>			
748.	<i>Strongylura leiura</i>			
749.	<i>Sutorectus tentaculatus</i>			
750.	<i>Tetrapturus angustirostris</i>			
751.	<i>Thyrsites atun</i>			
752.	<i>Thysanophrys cirronasus</i>			
753.	<i>Torquigener pleurogramma</i>			
754.	<i>Trachinocephalus myops</i>			
755.	<i>Trygonoptera mucosa</i>			
756.	<i>Trygonorrhina fasciata</i>			
757.	<i>Urolophus lobatus</i>			
758.	<i>Zanclistius elevatus</i>			

Fungus

759.	<i>Rickenella fibula</i>			
------	--------------------------	--	--	--

Invertebrate

760.	<i>Ammothella biunguiculata</i> subsp. <i>australiensis</i>			
761.	<i>Aname mainae</i>			
762.	<i>Araneus senicaudatus</i>			
763.	<i>Argiope protensa</i>			
764.	<i>Austracantha minax</i>			
765.	<i>Backbourkia brounii</i>			
766.	<i>Cormocephalus aurantiipes</i>			
767.	<i>Dingosa serrata</i>			
768.	<i>Hogna crispipes</i>			
769.	48935 <i>Idiosoma sigillatum</i> (Swan Coastal Plain shield-backed trapdoor spider)		P3	
770.	<i>Isometroides vescus</i>			
771.	<i>Isopeda leishmanni</i>			
772.	<i>Lampona cylindrata</i>			
773.	<i>Latrodectus hasseltii</i>			
774.	<i>Lycosa gilberta</i>			
775.	<i>Missulena granulosa</i>			
776.	<i>Missulena occatoria</i>			
777.	<i>Nymphopsis acinacispinatus</i> subsp. <i>bathursti</i>			
778.	<i>Oratemnus curtus</i>			
779.	<i>Pycnothea flynni</i>			
780.	<i>Supunna funerea</i>			
781.	<i>Synsphyronus callus</i>			
782.	<i>Tasmanicosa leuckartii</i>			
783.	<i>Tetrallycosa oraria</i>			
784.	<i>Tuoba pallida</i>			
785.	<i>Urodacus novaehollandiae</i>			
786.	<i>Venator immansueta</i>			
787.	34113 <i>Westralunio carteri</i> (Carter's Freshwater Mussel)		T	

Lichen

788.	<i>Caloplaca</i> sp.			
789.	27698 <i>Clauzadeana macula</i>			
790.	27754 <i>Fulgensia subbracteata</i>			
791.	45299 <i>Jackelixia elixii</i>			
792.	27975 <i>Physcia stellaris</i>			

Name ID	Species Name	Naturalised	Conservation Code	¹ Endemic To Query Area
793.	<i>Verrucaria</i> sp.			
Mammal				
794.	24044 <i>Balaenoptera acutorostrata</i> (Dwarf Minke Whale)			
795.	24186 <i>Chalinolobus gouldii</i> (Gould's Wattle Bat)			
796.	24043 <i>Eubalaena australis</i> (Southern Right Whale)		T	
797.	24041 <i>Felis catus</i> (Cat)	Y		
798.	24054 <i>Globicephala macrorhynchus</i> (Short-finned Pilot Whale)			
799.	24211 <i>Hydrurga leptonyx</i> (Leopard Seal)			
800.	48588 <i>Isoodon fusciventer</i> (Quenda, southwestern brown bandicoot)		P4	
801.	24079 <i>Mesoplodon hectori</i> (Hector's Beaked Whale)			
802.	24080 <i>Mesoplodon layardii</i> (Strap-toothed Beaked Whale)			
803.	24223 <i>Mus musculus</i> (House Mouse)	Y		
804.	24210 <i>Neophoca cinerea</i> (Australian Sea-lion)		T	
805.	24085 <i>Oryctolagus cuniculus</i> (Rabbit)	Y		
806.	48070 <i>Phascogale tapoatafa</i> subsp. <i>wambenger</i> (South-western Brush-tailed Phascogale, Wambenger)		S	
807.	24243 <i>Rattus fuscipes</i> (Western Bush Rat)			
808.	24245 <i>Rattus rattus</i> (Black Rat)	Y		
809.	30954 <i>Tursiops aduncus</i> (Indo-Pacific Bottlenose Dolphin)			
810.	24069 <i>Tursiops truncatus</i> (Bottlenose Dolphin)			
811.	24040 <i>Vulpes vulpes</i> (Red Fox)	Y		
812.	24083 <i>Ziphius cavirostris</i> (Cuvier's Beaked Whale)			
Monocotyledon				
813.	1208 <i>Acanthocarpus preissii</i>			
814.	1505 <i>Agave americana</i> (Century Plant)	Y		
815.	47094 <i>Agave attenuata</i>	Y		
816.	126 <i>Amphibolis antarctica</i> (Sea Nymph)			
817.	127 <i>Amphibolis griffithii</i>			
818.	226 <i>Arundo donax</i> (Giant Reed)	Y		
819.	1364 <i>Asphodelus fistulosus</i> (Onion Weed)	Y		
820.	17240 <i>Austrostipa flavescens</i>			
821.	233 <i>Avena barbata</i> (Bearded Oat)	Y		
822.	234 <i>Avena fatua</i> (Wild Oat)	Y		
823.	743 <i>Baumea juncea</i> (Bare Twigrush)			
824.	8661 <i>Brachypodium distachyon</i> (False Brome)	Y		
825.	244 <i>Briza maxima</i> (Blowfly Grass)	Y		
826.	249 <i>Bromus diandrus</i> (Great Brome)	Y		
827.	15348 <i>Caladenia flava</i> subsp. <i>flava</i>			
828.	15375 <i>Caladenia pholcoidea</i>			
829.	17685 <i>Chaetanthus aristatus</i>			
830.	1427 <i>Conostylis candicans</i> (Grey Cottonhead)			
831.	11438 <i>Conostylis candicans</i> subsp. <i>candicans</i>			
832.	283 <i>Cynodon dactylon</i> (Couch)	Y		
833.	816 <i>Cyperus tenuiflorus</i> (Scaly Sedge)	Y		
834.	17663 <i>Desmocladus asper</i>			
835.	48717 <i>Dracaena trifasciata</i>	Y		Y
836.	349 <i>Ehrharta longiflora</i> (Annual Veldt Grass)	Y		
837.	376 <i>Eragrostis curvula</i> (African Lovegrass)	Y		
838.	20216 <i>Ficinia nodosa</i> (Knotted Club Rush)			
839.	907 <i>Gahnia trifida</i> (Coast Saw-sedge)			
840.	161 <i>Halophila australis</i>			
841.	164 <i>Halophila ovalis</i> (Sea Wrack)			
842.	11451 <i>Hemarthria uncinata</i> var. <i>uncinata</i>			
843.	31115 <i>Heterozostera polychlamys</i>			
844.	449 <i>Hordeum leporinum</i> (Barley Grass)	Y		
845.	452 <i>Hyparrhenia hirta</i> (Tambookie Grass)	Y		
846.	17841 <i>Hypolaena pubescens</i>			
847.	20200 <i>Isolepis cernua</i> var. <i>setiformis</i>			
848.	11922 <i>Juncus kraussii</i> subsp. <i>australiensis</i>			
849.	1188 <i>Juncus pallidus</i> (Pale Rush)			
850.	20019 <i>Lachnagrostis filiformis</i>			
851.	467 <i>Lagurus ovatus</i> (Hare's Tail Grass)	Y		
852.	42742 <i>Lepidosperma calcicola</i>			
853.	933 <i>Lepidosperma gladiatum</i> (Coast Sword-sedge, Kerbin)			
854.	937 <i>Lepidosperma longitudinale</i> (Pithy Sword-sedge)			
855.	940 <i>Lepidosperma pubisquamum</i>			
856.	<i>Lepidosperma</i> sp.			
857.	945 <i>Lepidosperma squamatum</i>			
858.	476 <i>Lolium perenne</i> (Perennial Ryegrass)	Y		

Name ID	Species Name	Naturalised	Conservation Code	¹ Endemic To Query Area
859.	10957 <i>Lolium perenne x rigidum</i>	Y		
860.	478 <i>Lolium rigidum</i> (<i>Wimmera Ryegrass</i>)	Y		
861.	11073 <i>Lolium x hybridum</i>	Y		
862.	1231 <i>Lomandra maritima</i>			
863.	44496 <i>Narcissus tazetta</i> subsp. <i>italicus</i>	Y		
864.	516 <i>Parapholis incurva</i> (<i>Coast Barbgrass</i>)	Y		
865.	533 <i>Paspalum vaginatum</i> (<i>Salt Water Couch</i>)			
866.	571 <i>Poa annua</i> (<i>Winter Grass</i>)	Y		
867.	577 <i>Poa poiformis</i> (<i>Coastal Poa</i>)			
868.	578 <i>Poa porphyroclados</i>			
869.	582 <i>Polypogon monspeliensis</i> (<i>Annual Beardgrass</i>)	Y		
870.	123 <i>Posidonia australis</i> (<i>Fibreball Weed</i>)			
871.	125 <i>Posidonia sinuosa</i>			
872.	111 <i>Potamogeton ochreatus</i> (<i>Blunt Pondweed</i>)			
873.	15426 <i>Pterostylis aspera</i>			
874.	1556 <i>Romulea rosea</i> (<i>Guildford Grass</i>)	Y		
875.	116 <i>Ruppia polycarpa</i>			
876.	48356 <i>Schoenoplectus tabernaemontani</i>			
877.	992 <i>Schoenus grandiflorus</i> (<i>Large Flowered Bogrush</i>)			
878.	1004 <i>Schoenus nitens</i> (<i>Shiny Bog-rush</i>)			
879.	603 <i>Secale cereale</i> (<i>Rye</i>)	Y		
880.	635 <i>Sporobolus virginicus</i> (<i>Marine Couch</i>)			
881.	636 <i>Stenotaphrum secundatum</i> (<i>Buffalo Grass</i>)	Y		
882.	44492 <i>Stuckenia pectinata</i>			
883.	132 <i>Syringodium isoetifolium</i>			
884.	1319 <i>Thysanotus arenarius</i>			
885.	1368 <i>Trachyandra divaricata</i>	Y		
886.	1361 <i>Tricoryne elatior</i> (<i>Yellow Autumn Lily</i>)			
887.	151 <i>Triglochin striata</i>			
888.	99 <i>Typha orientalis</i> (<i>Bulrush, Cumbungi</i>)			
889.	724 <i>Vulpia myuros</i> (<i>Rat's Tail Fescue</i>)	Y		
890.	1256 <i>Xanthorrhoea preissii</i> (<i>Grass tree, Palga</i>)			

Reptile

891.	42368 <i>Acritoscincus trilineatus</i> (<i>Western Three-lined Skink</i>)			
892.	24991 <i>Aprasia repens</i> (<i>Sand-plain Worm-lizard</i>)			
893.	42381 <i>Brachyurophis semifasciatus</i> (<i>Southern Shovel-nosed Snake</i>)			
894.	25335 <i>Caretta caretta</i> (<i>Loggerhead Turtle</i>)		T	
895.	43380 <i>Chelodina colliei</i> (<i>South-western Snake-necked Turtle</i>)			
896.	24980 <i>Christinus marmoratus</i> (<i>Marbled Gecko</i>)			
897.	30893 <i>Cryptoblepharus buchananii</i>			
898.	30899 <i>Ctenophorus adelaidensis</i> (<i>Southern Heath Dragon, Western Heath Dragon</i>)			
899.	25027 <i>Ctenotus australis</i>			
900.	25039 <i>Ctenotus fallens</i>			
901.	25766 <i>Delma fraseri</i> (<i>Fraser's Legless Lizard</i>)			
902.	24999 <i>Delma grayii</i>			
903.	25346 <i>Dermochelys coriacea</i> (<i>Leatherback Turtle</i>)		T	
904.	25096 <i>Egernia kingii</i> (<i>King's Skink</i>)			
905.	25250 <i>Elapognathus coronatus</i> (<i>Crowned Snake</i>)			
906.	25119 <i>Hemiergis quadrilineata</i>			
907.	25366 <i>Hydrophis elegans</i> (<i>Elegant Seasnake, Bar-bellied Seasnake</i>)			
908.	43384 <i>Hydrophis platurus</i> (<i>Yellow-bellied Seasnake</i>)			
909.	25133 <i>Lerista elegans</i>			
910.	25147 <i>Lerista lineata</i> (<i>Perth Slider, Lined Skink</i>)		P3	
911.	25148 <i>Lerista lineopunctulata</i>			
912.	25165 <i>Lerista praepedita</i>			
913.	25005 <i>Lialis burtonis</i>			
914.	25184 <i>Menetia greyii</i>			
915.	25191 <i>Morethia lineoocellata</i>			
916.	25344 <i>Natator depressus</i> (<i>Flatback Turtle</i>)		T	
917.	25249 <i>Neelaps calonotos</i> (<i>Black-striped Snake, black-striped burrowing snake</i>)		P3	
918.	25253 <i>Parasuta gouldii</i>			
919.	25510 <i>Pogona minor</i> (<i>Dwarf Bearded Dragon</i>)			
920.	24907 <i>Pogona minor</i> subsp. <i>minor</i> (<i>Dwarf Bearded Dragon</i>)			
921.	25511 <i>Pseudonaja affinis</i> (<i>Dugite</i>)			
922.	25259 <i>Pseudonaja affinis</i> subsp. <i>affinis</i> (<i>Dugite</i>)			
923.	25008 <i>Pygopus lepidopodus</i> (<i>Common Scaly Foot</i>)			
924.	25266 <i>Simoselaps bertholdi</i> (<i>Jan's Banded Snake</i>)			
925.	25518 <i>Strophurus spinigerus</i>			
926.	25519 <i>Tiliqua rugosa</i>			
927.	25204 <i>Tiliqua rugosa</i> subsp. <i>aspera</i>			

Name ID	Species Name	Naturalised	Conservation Code	¹ Endemic To Query Area
928.	25207 <i>Tiliqua rugosa subsp. rugosa</i>			
929.	25218 <i>Varanus gouldii</i> (Bungarra or Sand Monitor)			

Conservation Codes

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

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

Appendix 2: Protected Matters Search Tool Report



EPBC Act Protected Matters Report

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

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

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

Report created: 08/02/21 17:48:36

[Summary](#)

[Details](#)

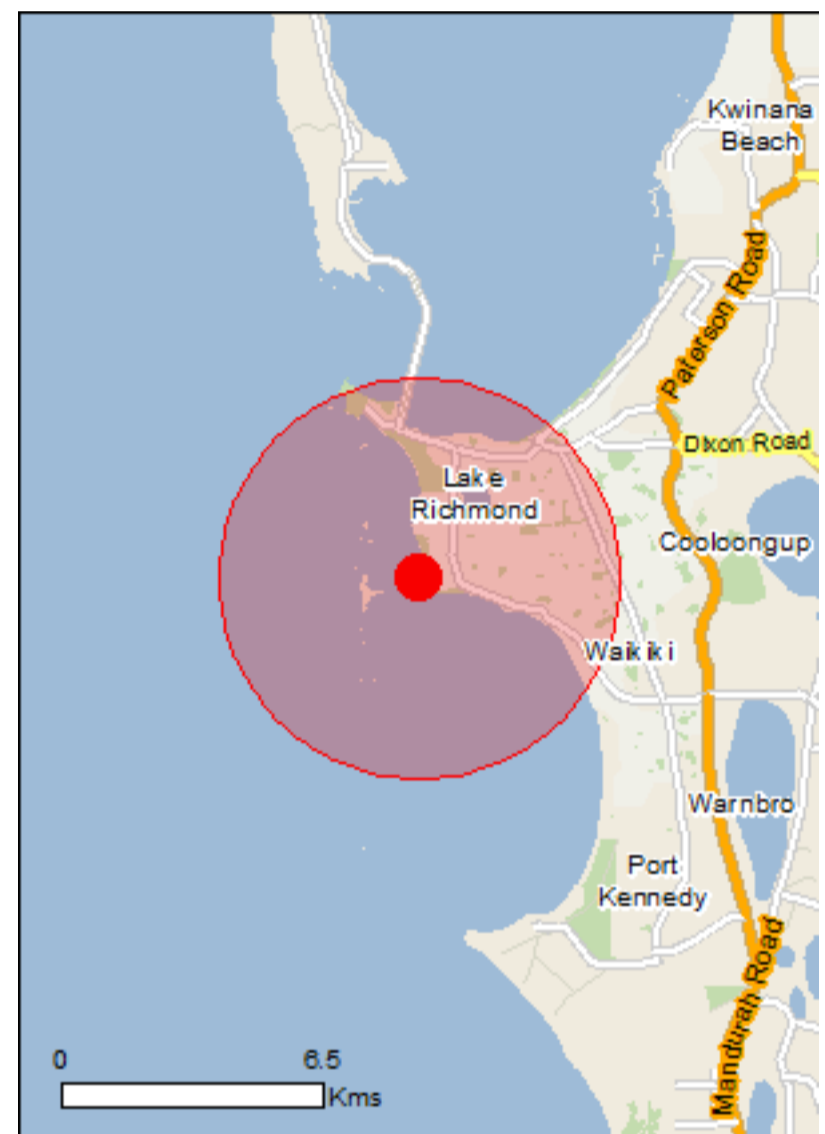
[Matters of NES](#)

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

[Extra Information](#)

[Caveat](#)

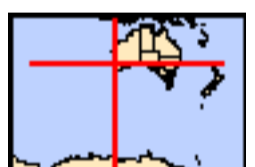
[Acknowledgements](#)



This map may contain data which are
©Commonwealth of Australia
(Geoscience Australia), ©PSMA 2015

[Coordinates](#)

Buffer: 5.0Km



Summary

Matters of National Environmental Significance

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

World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International Importance:	1
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	4
Listed Threatened Species:	42
Listed Migratory Species:	46

Other Matters Protected by the EPBC Act

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

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

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

Commonwealth Land:	2
Commonwealth Heritage Places:	None
Listed Marine Species:	78
Whales and Other Cetaceans:	12
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	None

Extra Information

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

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

Details

Matters of National Environmental Significance

Wetlands of International Importance (Ramsar)

[\[Resource Information \]](#)

Name	Proximity
Becher point wetlands	Within 10km of Ramsar

Listed Threatened Ecological Communities

[\[Resource Information \]](#)

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

Name	Status	Type of Presence
Banksia Woodlands of the Swan Coastal Plain ecological community	Endangered	Community may occur within area
Sedgelands in Holocene dune swales of the southern Swan Coastal Plain	Endangered	Community known to occur within area
Thrombolite (microbial) community of coastal freshwater lakes of the Swan Coastal Plain (Lake Richmond)	Endangered	Community known to occur within area
Tuart (Eucalyptus gomphocephala) Woodlands and Forests of the Swan Coastal Plain ecological community	Critically Endangered	Community likely to occur within area

Listed Threatened Species

[\[Resource Information \]](#)

Name	Status	Type of Presence
Birds		
Anous tenuirostris melanops Australian Lesser Noddy [26000]	Vulnerable	Species or species habitat may occur within area
Botaurus poiciloptilus Australasian Bittern [1001]	Endangered	Species or species habitat likely 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 likely to occur within area
Calyptorhynchus banksii naso Forest Red-tailed Black-Cockatoo, Karrak [67034]	Vulnerable	Species or species habitat likely to occur within area
Calyptorhynchus latirostris Carnaby's Cockatoo, Short-billed Black-Cockatoo [59523]	Endangered	Species or species habitat known to occur within area
Diomedea amsterdamensis Amsterdam Albatross [64405]	Endangered	Species or species habitat may occur within area
Diomedea dabbenena Tristan Albatross [66471]	Endangered	Species or species habitat may occur within area

Name	Status	Type of Presence
Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea sanfordi Northern Royal Albatross [64456]	Endangered	Foraging, feeding or related behaviour likely to occur within area
Halobaena caerulea Blue Petrel [1059]	Vulnerable	Species or species habitat may occur within area
Leipoa ocellata Malleefowl [934]	Vulnerable	Species or species habitat may occur within area
Limosa lapponica menzbieri Northern Siberian Bar-tailed Godwit, Bar-tailed Godwit (menzbieri) [86432]	Critically Endangered	Species or species habitat known to occur within area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Species or species habitat may occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat likely to occur within area
Pachyptila turtur subantarctica Fairy Prion (southern) [64445]	Vulnerable	Species or species habitat likely to occur within area
Phoebastria fusca Sooty Albatross [1075]	Vulnerable	Species or species habitat may occur within area
Pterodroma mollis Soft-plumaged Petrel [1036]	Vulnerable	Species or species habitat may occur within area
Rostratula australis Australian Painted Snipe [77037]	Endangered	Species or species habitat known to occur within area
Sternula nereis nereis Australian Fairy Tern [82950]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Thalassarche carteri Indian Yellow-nosed Albatross [64464]	Vulnerable	Foraging, feeding or related behaviour may 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	Species or species habitat may occur within area

Name	Status	Type of Presence
Thalassarche steadi White-capped Albatross [64462]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Mammals		
Balaenoptera musculus Blue Whale [36]	Endangered	Species or species habitat likely to occur within area
Bettongia penicillata ogilbyi Woylie [66844]	Endangered	Species or species habitat may occur within area
Dasyurus geoffroii Chuditch, Western Quoll [330]	Vulnerable	Species or species habitat likely to occur within area
Eubalaena australis Southern Right Whale [40]	Endangered	Breeding known to occur within area
Megaptera novaeangliae Humpback Whale [38]	Vulnerable	Species or species habitat known to occur within area
Neophoca cinerea Australian Sea-lion, Australian Sea Lion [22]	Endangered	Species or species habitat known to occur within area
Pseudocheirus occidentalis Western Ringtail Possum, Ngwayir, Womp, Woder, Ngoor, Ngoolangit [25911]	Critically Endangered	Species or species habitat may occur within area
Plants		
Diuris micrantha Dwarf Bee-orchid [55082]	Vulnerable	Species or species habitat likely to occur within area
Reptiles		
Caretta caretta Loggerhead Turtle [1763]	Endangered	Foraging, feeding or related behaviour known to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Foraging, feeding or related behaviour known to occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Sharks		
Carcharias taurus (west coast population) Grey Nurse Shark (west coast population) [68752]	Vulnerable	Species or species habitat known to occur within area
Carcharodon carcharias White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat known to occur within area
Rhincodon typus Whale Shark [66680]	Vulnerable	Species or species habitat may occur within area
Listed Migratory Species		[Resource Information]
* Species is listed under a different scientific name on the EPBC Act - Threatened Species list.		
Name	Threatened	Type of Presence
Migratory Marine Birds		

Name	Threatened	Type of Presence
Anous stolidus Common Noddy [825]		Species or species habitat may occur within area
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Ardenna carneipes Flesh-footed Shearwater, Fleshy-footed Shearwater [82404]		Species or species habitat likely to occur within area
Diomedea amsterdamensis Amsterdam Albatross [64405]	Endangered	Species or species habitat may occur within area
Diomedea dabbenena Tristan Albatross [66471]	Endangered	Species or species habitat may occur within area
Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea sanfordi Northern Royal Albatross [64456]	Endangered	Foraging, feeding or related behaviour likely to occur within area
Hydroprogne caspia Caspian Tern [808]		Breeding known to occur within area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Species or species habitat may occur within area
Onychoprion anaethetus Bridled Tern [82845]		Breeding known to occur within area
Phoebastria fusca Sooty Albatross [1075]	Vulnerable	Species or species habitat may occur within area
Sterna dougallii Roseate Tern [817]		Breeding known to occur within area
Thalassarche carteri Indian Yellow-nosed Albatross [64464]	Vulnerable	Foraging, feeding or related behaviour may 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	Species or species habitat may occur within area
Thalassarche steadi White-capped Albatross [64462]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area

Name	Threatened	Type of Presence
Migratory Marine Species		
Balaena glacialis australis Southern Right Whale [75529]	Endangered*	Breeding known to occur within area
Balaenoptera edeni Bryde's Whale [35]		Species or species habitat may occur within area
Balaenoptera musculus Blue Whale [36]	Endangered	Species or species habitat likely to occur within area
Caperea marginata Pygmy Right Whale [39]		Species or species habitat may occur within area
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	Foraging, feeding or related behaviour known to occur within area
Lamna nasus Porbeagle, Mackerel Shark [83288]		Species or species habitat may occur within area
Manta alfredi Reef Manta Ray, Coastal Manta Ray, Inshore Manta Ray, Prince Alfred's Ray, Resident Manta Ray [84994]		Species or species habitat likely to occur within area
Manta birostris Giant Manta Ray, Chevron Manta Ray, Pacific Manta Ray, Pelagic Manta Ray, Oceanic Manta Ray [84995]		Species or species habitat likely to occur within area
Megaptera novaeangliae Humpback Whale [38]	Vulnerable	Species or species habitat known to occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may occur within area
Rhincodon typus Whale Shark [66680]	Vulnerable	Species or species habitat may occur within area
Migratory Terrestrial Species		
Motacilla cinerea Grey Wagtail [642]		Species or species habitat may occur within area
Migratory Wetlands Species		
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat known to occur

Name	Threatened	Type of Presence within area
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat likely 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 likely to occur within area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat likely to occur within area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat known to occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat likely to occur within area
Pandion haliaetus Osprey [952]		Breeding known to occur within area
Thalasseus bergii Crested Tern [83000]		Breeding known to occur within area
Tringa nebularia Common Greenshank, Greenshank [832]		Species or species habitat likely to occur within area

Other Matters Protected by the EPBC Act

Commonwealth Land [\[Resource Information \]](#)

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

Name
Commonwealth Land - Defence - ROCKINGHAM - NAVY CPSO

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

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

Name	Threatened	Type of Presence
Birds		
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat known to occur within area
Anous stolidus Common Noddy [825]		Species or species habitat may occur within area
Anous tenuirostris melanops Australian Lesser Noddy [26000]	Vulnerable	Species or species habitat may occur within area
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Ardea alba Great Egret, White Egret [59541]		Species or species

Name	Threatened	Type of Presence
Ardea ibis Cattle Egret [59542]		habitat known to occur within area Species or species habitat may occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat likely 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 likely to occur within area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat likely to occur within area
Catharacta skua Great Skua [59472]		Species or species habitat may occur within area
Diomedea amsterdamensis Amsterdam Albatross [64405]	Endangered	Species or species habitat may occur within area
Diomedea dabbenena Tristan Albatross [66471]	Endangered	Species or species habitat may occur within area
Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea sanfordi Northern Royal Albatross [64456]	Endangered	Foraging, feeding or related behaviour likely to occur within area
Eudyptula minor Little Penguin [1085]		Breeding known to occur within area
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat known to occur within area
Halobaena caerulea Blue Petrel [1059]	Vulnerable	Species or species habitat may occur within area
Larus novaehollandiae Silver Gull [810]		Breeding known to occur within area
Larus pacificus Pacific Gull [811]		Breeding known to occur within area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat known to occur within area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Species or species

Name	Threatened	Type of Presence
Merops ornatus Rainbow Bee-eater [670]		habitat may occur within area Species or species habitat may occur within area
Motacilla cinerea Grey Wagtail [642]		Species or species habitat may occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat likely to occur within area
Pachyptila turtur Fairy Prion [1066]		Species or species habitat likely to occur within area
Pandion haliaetus Osprey [952]		Breeding known to occur within area
Pelagodroma marina White-faced Storm-Petrel [1016]		Breeding known to occur within area
Phoebastria fusca Sooty Albatross [1075]	Vulnerable	Species or species habitat may occur within area
Pterodroma mollis Soft-plumaged Petrel [1036]	Vulnerable	Species or species habitat may occur within area
Puffinus assimilis Little Shearwater [59363]		Breeding known to occur within area
Puffinus carneipes Flesh-footed Shearwater, Fleshy-footed Shearwater [1043]		Species or species habitat likely to occur within area
Rostratula benghalensis (sensu lato) Painted Snipe [889]	Endangered*	Species or species habitat known to occur within area
Sterna anaethetus Bridled Tern [814]		Breeding known to occur within area
Sterna bergii Crested Tern [816]		Breeding known to occur within area
Sterna caspia Caspian Tern [59467]		Breeding known to occur within area
Sterna dougallii Roseate Tern [817]		Breeding known to occur within area
Sterna fuscata Sooty Tern [794]		Breeding known to occur within area
Sterna nereis Fairy Tern [796]		Breeding known to occur within area
Thalassarche carteri Indian Yellow-nosed Albatross [64464]	Vulnerable	Foraging, feeding or related behaviour may 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

Name	Threatened	Type of Presence
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Species or species habitat may occur within area
Thalassarche steadi White-capped Albatross [64462]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Thinornis rubricollis Hooded Plover [59510]		Species or species habitat may occur within area
Tringa nebularia Common Greenshank, Greenshank [832]		Species or species habitat likely to occur within area
Fish		
Acentronura australe Southern Pygmy Pipehorse [66185]		Species or species habitat may occur within area
Campichthys galei Gale's Pipefish [66191]		Species or species habitat may occur within area
Heraldia nocturna Upside-down Pipefish, Eastern Upside-down Pipefish, Eastern Upside-down Pipefish [66227]		Species or species habitat may occur within area
Hippocampus angustus Western Spiny Seahorse, Narrow-bellied Seahorse [66234]		Species or species habitat may occur within area
Hippocampus breviceps Short-head Seahorse, Short-snouted Seahorse [66235]		Species or species habitat may occur within area
Hippocampus subelongatus West Australian Seahorse [66722]		Species or species habitat may occur within area
Histiogamphelus cristatus Rhino Pipefish, Macleay's Crested Pipefish, Ring-back Pipefish [66243]		Species or species habitat may occur within area
Lissocampus caudalis Australian Smooth Pipefish, Smooth Pipefish [66249]		Species or species habitat may occur within area
Lissocampus fatiloquus Prophet's Pipefish [66250]		Species or species habitat may occur within area
Lissocampus runa Javelin Pipefish [66251]		Species or species habitat may occur within area
Maroubra perserrata Sawtooth Pipefish [66252]		Species or species habitat may occur within area
Mitotichthys meraculus Western Crested Pipefish [66259]		Species or species habitat may occur within area
Nannocampus subosseus Bonyhead Pipefish, Bony-headed Pipefish [66264]		Species or species habitat may occur within area
Phycodurus eques Leafy Seadragon [66267]		Species or species habitat may occur within area

Name	Threatened	Type of Presence
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
Urocampus carinirostris Hairy Pipefish [66282]		Species or species habitat may occur within area
Vanacampus margaritifer Mother-of-pearl Pipefish [66283]		Species or species habitat may occur within area
Vanacampus phillipi Port Phillip Pipefish [66284]		Species or species habitat may occur within area
Vanacampus poecilolaemus Longsnout Pipefish, Australian Long-snout Pipefish, Long-snouted Pipefish [66285]		Species or species habitat may occur within area
Mammals		
Arctocephalus forsteri Long-nosed Fur-seal, New Zealand Fur-seal [20]		Species or species habitat may occur within area
Neophoca cinerea Australian Sea-lion, Australian Sea Lion [22]	Endangered	Species or species habitat known to occur within area
Reptiles		
Caretta caretta Loggerhead Turtle [1763]	Endangered	Foraging, feeding or related behaviour known to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Foraging, feeding or related behaviour known to occur within area
Disteira kingii Spectacled Seasnake [1123]		Species or species habitat may occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Whales and other Cetaceans		
[Resource Information]		
Name	Status	Type of Presence
Mammals		
Balaenoptera acutorostrata Minke Whale [33]		Species or species habitat may occur within

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

Extra Information

State and Territory Reserves	[Resource Information]
Name	State
Penguin Island	WA
Unnamed WA43903	WA
Unnamed WA48968	WA

Invasive Species [Resource Information]

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

Name	Status	Type of Presence
Birds		
Acridotheres tristis Common Myna, Indian Myna [387]		Species or species

Name	Status	Type of Presence
Anas platyrhynchos Mallard [974]		habitat likely to occur within area Species or species habitat likely to occur within area
Carduelis carduelis European Goldfinch [403]		Species or species habitat likely to occur within area
Columba livia Rock Pigeon, Rock Dove, Domestic Pigeon [803]		Species or species habitat likely to occur within area
Passer domesticus House Sparrow [405]		Species or species habitat likely to occur within area
Passer montanus Eurasian Tree Sparrow [406]		Species or species habitat likely to occur within area
Streptopelia chinensis Spotted Turtle-Dove [780]		Species or species habitat likely to occur within area
Streptopelia senegalensis Laughing Turtle-dove, Laughing Dove [781]		Species or species habitat likely to occur within area
Sturnus vulgaris Common Starling [389]		Species or species habitat likely to occur within area
Turdus merula Common Blackbird, Eurasian Blackbird [596]		Species or species habitat likely to occur within area
Mammals		
Bos taurus Domestic Cattle [16]		Species or species habitat likely to occur within area
Canis lupus familiaris Domestic Dog [82654]		Species or species habitat likely to occur within area
Felis catus Cat, House Cat, Domestic Cat [19]		Species or species habitat likely to occur within area
Funambulus pennantii Northern Palm Squirrel, Five-striped Palm Squirrel [129]		Species or species habitat likely to occur within area
Mus musculus House Mouse [120]		Species or species habitat likely to occur within area
Oryctolagus cuniculus Rabbit, European Rabbit [128]		Species or species habitat likely to occur within area
Rattus norvegicus Brown Rat, Norway Rat [83]		Species or species habitat likely to occur within area
Rattus rattus Black Rat, Ship Rat [84]		Species or species habitat likely to occur within area
Vulpes vulpes Red Fox, Fox [18]		Species or species

Name	Status	Type of Presence
habitat likely to occur within area		
Plants		
Asparagus asparagoides Bridal Creeper, Bridal Veil Creeper, Smilax, Florist's Smilax, Smilax Asparagus [22473]		Species or species habitat likely to occur within area
Brachiaria mutica Para Grass [5879]		Species or species habitat may occur within area
Cenchrus ciliaris Buffel-grass, Black Buffel-grass [20213]		Species or species habitat may occur within area
Chrysanthemoides monilifera Bitou Bush, Boneseed [18983]		Species or species habitat may occur within area
Chrysanthemoides monilifera subsp. monilifera Boneseed [16905]		Species or species habitat likely to occur within area
Genista linifolia Flax-leaved Broom, Mediterranean Broom, Flax Broom [2800]		Species or species habitat likely to occur within area
Genista sp. X Genista monspessulana Broom [67538]		Species or species habitat may occur within area
Lantana camara Lantana, Common Lantana, Kamara Lantana, Large-leaf Lantana, Pink Flowered Lantana, Red Flowered Lantana, Red-Flowered Sage, White Sage, Wild Sage [10892]		Species or species habitat likely to occur within area
Lycium ferocissimum African Boxthorn, Boxthorn [19235]		Species or species habitat likely to occur within area
Olea europaea Olive, Common Olive [9160]		Species or species habitat may occur within area
Opuntia spp. Prickly Pears [82753]		Species or species habitat likely to occur within area
Pinus radiata Radiata Pine Monterey Pine, Insignis Pine, Wilding Pine [20780]		Species or species habitat may occur within area
Rubus fruticosus aggregate Blackberry, European Blackberry [68406]		Species or species habitat likely to occur within area
Salix spp. except S.babylonica, S.x calodendron & S.x reichardtii Willows except Weeping Willow, Pussy Willow and Sterile Pussy Willow [68497]		Species or species habitat likely to occur within area
Salvinia molesta Salvinia, Giant Salvinia, Aquarium Watermoss, Kariba Weed [13665]		Species or species habitat likely to occur within area
Tamarix aphylla Athel Pine, Athel Tree, Tamarisk, Athel Tamarisk, Athel Tamarix, Desert Tamarisk, Flowering Cypress, Salt Cedar [16018]		Species or species habitat likely to occur within area
Reptiles		
Hemidactylus frenatus Asian House Gecko [1708]		Species or species habitat likely to occur within area

Caveat

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

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

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

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

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

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

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

- migratory and
- marine

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

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

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

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

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

Coordinates

-32.30255 115.70244

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.

© Commonwealth of Australia

Department of Agriculture Water and the Environment

GPO Box 858

Canberra City ACT 2601 Australia

+61 2 6274 1111

Appendix 3: Conservation Codes

Conservation codes are used to describe the status of species and ecological communities that are no longer common and under threat of extinction. Species and communities can be listed under state legislation and/or commonwealth legislation.

Western Australia

Conservation Code	Name	Description
T	Threatened	Flora and fauna 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 <i>Biodiversity Conservation Act 2016</i> (BC Act).
EX	Extinct species	Flora or fauna 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	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).
MI	Migratory Species	Fauna that periodically or occasionally visit Australia or an external Territory or the exclusive economic zone; or the species is subject of an international agreement that relates to the protection of migratory species and that binds the Commonwealth; and listing is otherwise in accordance with the ministerial guidelines (section 15 of the BC Act).
CD	Species of special conservation interest (conservation dependent fauna)	Fauna of special conservation need being species dependent on ongoing conservation intervention to prevent it becoming eligible for listing as threatened, and listing is otherwise in accordance with the ministerial guidelines (section 14 of the BC Act).
OS	Specially Protected	Fauna otherwise in need of special protection to ensure their conservation, and listing is otherwise in accordance with the ministerial guidelines (section 18 of the BC Act).
<i>Schedule 1 species that are ranked by the DBCA according to their level of threat using IUCN Red List criteria</i>		
CR	Critically endangered	Species facing an extremely high risk of extinction in the wild in the immediate future
EN	Endangered	Species facing a very high risk of extinction in the wild in the near future

Conservation Code	Name	Description
VU	Vulnerable	Species considered to be facing a high risk of extinction in the wild in the medium-term future
<i>Taxa that have not been adequately surveyed for listing under Schedule 1 or 2 of the Wildlife Protection Act are added to the Priority Lists under priorities 1, 2 or 3, according to the priority for further survey and evaluation of their conservation status.</i>		
1	Priority One	Species that are known from one or a few locations (generally five or less) which are potentially at risk. All occurrences are either: very small; or on lands not managed for conservation, e.g. agricultural or pastoral lands, urban areas, road and rail reserves, gravel reserves and active mineral leases; or otherwise under threat of habitat destruction or degradation. Species may be included if they are comparatively well known from one or more locations but do not meet adequacy of survey requirements and appear to be under immediate threat from known threatening processes. Such species are in urgent need of further survey
2	Priority Two	Species that are known from one or a few locations (generally five or less), some of which are on lands managed primarily for nature conservation, e.g. national parks, conservation parks, nature reserves and other lands with secure tenure being managed for conservation. Species may be included if they are comparatively well known from one or more locations but do not meet adequacy of survey requirements and appear to be under threat from known threatening processes. Such species are in urgent need of further survey.
3	Priority Three	Species that are known from several locations, and the species does not appear to be under imminent threat, or from few but widespread locations with either large population size or significant remaining areas of apparently suitable habitat, much of it not under imminent threat. Species may be included if they are comparatively well known from several locations but do not meet adequacy of survey requirements and known threatening processes exist that could affect them. Such species are in need of further survey.
4	Priority Four	(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.

Conservation Code	Name	Description
		Taxa that have been removed from the list of threatened species during the past five years for reasons other than taxonomy.

(Source: Department of Biodiversity Conservation and Attractions, 2021a)

Commonwealth

Category	Description
Critically Endangered	Taxa facing an extremely high risk of extinction in the wild in the immediate future
Endangered	Taxa facing a very high risk of extinction in the wild in the near future
Vulnerable	Taxa facing a high risk of extinction in the wild in the medium term

(Source: Department of the Agriculture, Water and the Environment. (2021)

Appendix 4: Mersey Point Flora List

The complete flora list from the proposed clearing area at Mersey is provided below with flora listed by species name with weeds listed first, then native species. * denotes introduced species

Family	Species Name	Common Name
Introduced (weed) Species		
Poaceae	* <i>Avena barbata</i>	Bearded Oat
Poaceae	* <i>Bromus diandrus</i>	Great Brome
Aizoaceae	* <i>Carpobrotus edulis</i>	Hottentot Fig
Convolvulaceae	* <i>Cuscuta epithymum</i>	Lesser Dodder
Poaceae	* <i>Cynodon dactylon</i>	Couch
Asteraceae	* <i>Erigeron bonariensis</i>	Flaxleaf Fleabane
Euphorbiaceae	* <i>Euphorbia terracina</i>	Geraldton Carnation Weed
Asteraceae	* <i>Gazania linearis</i>	Gazania
Poaceae	* <i>Lagurus ovatus</i>	Hare's Tail Grass
Poaceae	* <i>Lolium rigidum</i>	Wimmera Ryegrass
Geraniaceae	* <i>Pelargonium capitatum</i>	Rose Pelargonium
Anacardiaceae	* <i>Schinus terebinthifolia</i>	Brazilian Pepper
Aizoaceae	* <i>Tetragonia decumbens</i>	Sea Spinach
Asphodelaceae	* <i>Trachyandra divaricata</i>	Dune Onion Weed
Native species		
Fabaceae	<i>Acacia cochlearis</i>	Rigid Wattle
Fabaceae	<i>Acacia rostellifera</i>	Summer-scented Wattle
Asparagaceae	<i>Acanthocarpus preissii</i>	
Apocynaceae	<i>Alyxia buxifolia</i>	Dysentery Bush
Ranunculaceae	<i>Clematis linearifolia</i>	
Cyperaceae	<i>Ficinia nodosa</i>	Knotted Club Rush
Cyperaceae	<i>Lepidosperma longitudinale</i>	Pithy Sword-sedge
Asteraceae	<i>Olearia axillaris</i>	Coastal Daisybush
Chenopodiaceae	<i>Rhagodia baccata</i>	Berry Saltbush
Goodeniaceae	<i>Scaevola crassifolia</i>	Thick-leaved Fan-flower
Poaceae	<i>Spinifex longifolius</i>	Beach Spinifex
Rhamnaceae	<i>Spyridium globulosum</i>	Basket Bush

Appendix 5: Offset Site Flora List

Below is a species matrix of all flora taxa found at the proposed clearing and offset sites.

Family	Species Name	Common Name	Lifeform	Clearing Area	Offset 1	Offset 2	Offset 3	Offset 4	Offset 5
Poaceae	<i>*Avena barbata</i>	Bearded Oat	Grass	X	X				
Poaceae	<i>*Bromus diandrus</i>	Great Brome	Grass	X	X	X		X	
Aizoaceae	<i>*Carpobrotus edulis</i>	Hottentot Fig	Perennial Herb	X	X				
Convolvulaceae	<i>*Cuscuta epithymum</i>	Lesser Dodder	Climber	X					
Poaceae	<i>*Cynodon dactylon</i>	Couch	Grass	X				X	
Asteraceae	<i>*Erigeron bonariensis</i>	Flaxleaf Fleabane	Herb	X	X				
Euphorbiaceae	<i>*Euphorbia terracina</i>	Geraldton Carnation Weed	Perennial Herb	X	X			X	
Asteraceae	<i>*Gazania linearis</i>	Gazania	Perennial Herb	X	X				
Poaceae	<i>*Lagurus ovatus</i>	Hare's Tail Grass	Grass	X	X				X
Poaceae	<i>*Lolium rigidum</i>	Wimmera Ryegrass	Grass	X	X			X	
Geraniaceae	<i>*Pelargonium capitatum</i>	Rose Pelargonium	Shrub	X	X				
Anacardiaceae	<i>*Schinus terebinthifolia</i>	Brazilian Pepper	Tree	X	X				
Aizoaceae	<i>*Tetragonia decumbens</i>	Sea Spinach	Shrub	X	X	X	X	X	
Asphodelaceae	<i>*Trachyandra divaricata</i>	Dune Onion Weed	Perennial Herb	X	X	X	X	X	
Fabaceae	<i>Acacia cochlearis</i>	Rigid Wattle	Shrub	X		X		X	X
Fabaceae	<i>Acacia rostellifera</i>	Summer-scented Wattle	Shrub	X	X	X	X	X	
Fabaceae	<i>Acacia saligna</i>	Orange Wattle	Shrub				X		
Asparagaceae	<i>Acanthocarpus preissii</i>		Perennial Herb	X	X				
Apocynaceae	<i>Alyxia buxifolia</i>	Dysentery Bush	Shrub	X					
Ranunculaceae	<i>Clematis linearifolia</i>		Climber	X					
Myrtaceae	<i>Eucalyptus gomphocephala</i>	Tuart	Tree					X	

Family	Species Name	Common Name	Lifeform	Clearing Area	Offset 1	Offset 2	Offset 3	Offset 4	Offset 5
Cyperaceae	<i>Ficinia nodosa</i>	Knotted Club Rush	Sedge	X	X				
Cyperaceae	<i>Lepidosperma gladiatum</i>	Coast Sword-sedge	Sedge				X	X	
Asteraceae	<i>Olearia axillaris</i>	Coastal Daisybush	Shrub	X	X			X	X
Chenopodiaceae	<i>Rhagodia baccata</i>	Berry Saltbush	Shrub	X	X		X		X
Goodeniaceae	<i>Scaevola crassifolia</i>	Thick-leaved Fan-flower	Shrub	X	X	X	X		X
Poaceae	<i>Spinifex longifolius</i>	Beach Spinifex	Grass	X	X	X	X	X	
Rhamnaceae	<i>Spyridium globulosum</i>	Basket Bush	Shrub	X					

Appendix 6: Quadrat Data

Quadrat No.: 1 (10 x 10 m)
Survey Date: 09/03/2021
Personnel: SH MG
Latitude: -31.302717
Longitude: 115.702275
Location: Mersey Point
Topography: Secondary Dune
Aspect: South
Slope: 1-3%
Soil: Yellow sand
Rock: 0
Leaf Litter: 2cm, 40%
Bare Ground: 1%
Drainage: Well
Condition: Good



Notes: *Acacia rostellifera* Shrubland

Species	Height (m)	Cover (%)
* <i>Avena barbata</i>	0.1	0.1
* <i>Bromus diandrus</i>	40	40
* <i>Euphorbia terracina</i>	2	2
* <i>Tetragonia decumbens</i>	25	25
* <i>Trachyandra divaricata</i>	1	1
<i>Acacia rostellifera</i>	2	25
<i>Rhagodia baccata</i>	1.2	30
<i>Spyridium globulosum</i>	1.6	5

Quadrat No.: 2 (10 x 10 m)
Survey Date: 09/03/2021
Personnel: SH MG
Latitude: -32.302486
Longitude: 115.702700
Location: Mersey Point
Topography: Secondary Dune
Aspect: Flat
Slope: 0%
Soil: Yellow sand
Rock: 0
Leaf Litter: 3cm, 30%
Bare Ground: 0%
Drainage: Well
Condition: Good



Notes: *Acacia rostelifera* Shrubland

Species	Height (m)	Cover (%)
<i>*Bromus diandrus</i>	40	40
<i>*Euphorbia terracina</i>	5	5
<i>*Lolium rigidum</i>	20	20
<i>Acacia rostelifera</i>	10	10
<i>Alyxia buxifolia</i>	0.5	0.5
<i>Rhagodia baccata</i>	35	35
<i>Schinus terebinthifolia</i>	1	1
<i>Spyridium globulosum</i>	1	1

Quadrat No.: 3 (10 x 10 m)
Survey Date: 09/03/2021
Personnel: SH MG
Latitude: -32.302300
Longitude: 115.702575
Location: Mersey Point
Topography: Secondary Dune
Aspect: West
Slope: 1-3%
Soil: Yellow sand
Rock: 0%
Leaf Litter: 2cm, 25%
Bare Ground: 0%
Drainage: Well
Condition Good



Notes: *Acacia rostelifera* Shrubland

Species	Height (m)	Cover (%)
<i>*Bromus diandrus</i>	20	20
<i>*Cuscuta epithymum</i>	0.1	0.1
<i>*Euphorbia terracina</i>	0.1	0.1
<i>*Lolium rigidum</i>	20	20
<i>*Tetragonia decumbens</i>	25	25
<i>*Trachyandra divaricata</i>	0.1	0.1
<i>Acacia cochlearis</i>	1	1
<i>Acacia rostelifera</i>	25	25
<i>Alyxia buxifolia</i>	0.5	0.5
<i>Rhagodia baccata</i>	35	35