

APPENDIX E – ENVIRONMENTAL REPORTS

YANCHEP LAGOON FORESHORE MANAGEMENT PLAN (DRAFT)

Date Issued: 12th December 2025

UDLA



APPENDIX E

Appendix E contains the following documents prepared by Natural Area:

- Environmental Management Plan (EMP).
- Detailed and Targeted Flora Survey.
- Detailed Fauna Survey and Black Cockatoo Assessment.

Natural Area
CONSULTING MANAGEMENT SERVICES

UDLA

Yanchep Lagoon

Environmental Management Plan

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Acknowledgement of Country

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Natural Area acknowledges the Traditional Owners of the lands on which we operate, and recognises their continuing connection to lands, waters and communities.

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Environmental management system registered to ISO 14001:2015
Quality management system registered to ISO 9001:2015
Occupational health and safety management system registered to ISO 45001:2018

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V2	25/11/2025	Updates from recent surveys	ZS	JW	Final

Executive Summary

Natural Area Consulting Management Services (Natural Area) was contracted by UDLA to develop an environmental management plan for the Yanchep Lagoon Master Plan. The environmental management plan is to support the Preliminary Foreshore Management Plan to assist in the progression of the Yanchep Lagoon project for the City of Wanneroo. This environmental management plan outlines the existing environmental values and provides recommendations and frameworks for management according to best practice principles. The recommendations provided outline vegetation and fauna management, and revegetation of the natural environment.

Yanchep Lagoon contains the following environmental values on site:

- A total of 177 flora species (taxa) recorded, comprised of 85 introduced (weeds) and 92 native species
- A mapped environmentally sensitive area (ESA) and ecological linkage, containing contains Bush Forever site no. 397
- A total of 9 vegetation types
- Vegetation condition ranged from completely degraded to excellent
- The potential for one threatened ecological community listed under the *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC Act), Honeymyrtle shrubland on limestone ridges of the Swan Coastal Plain Bioregion.
- Two priority ecological communities, including:
    - Coastal shrublands on shallow sands, southern Swan Coastal Plain (FCT29a)
    - Acacia shrublands on taller dunes, southern Swan Coastal Plain (FCT29b).
- A total of 8,073 *Conostylis pauciflora* subsp*. pauciflora* (Priority 4).
- A total of 9 fauna habitat types
- Fauna habitat likely to support conservation significant fauna, including Quenda (*Isoodon fusciventer*) (Priority 4) and Black-striped Snake (*Neelaps calonotos*) (Priority 3).
- A total of 51 vertebrate fauna species, comprised of 27 birds, 7 mammals, and 17 reptiles.
- A total of 6 introduced fauna species, including two declared pests, European Rabbits (**Oryctolagus cuniculus*) and Red Foxes (**Vulpes vulpes*).
- One conservation significant fauna species observed, Crested Tern (*Thalasseus bergii*) listed as a Migratory (MI) species under the EPBC Act and protected under an international agreement.

The Yanchep Lagoon Master Plan design was designed to avoid vegetation in very good and excellent condition, meeting the vision statement for the site. The Yanchep Lagoon Master Plan ensures that new development or construction works are to be undertaken in areas in degraded and completely degraded condition, with the majority of the design being within the existing footprint at Yanchep Lagoon. The retention of vegetation in a very good and excellent condition accounts for assists in protecting vegetation extents and biodiversity. It is recommended to undertake management activities prior to, during, and post construction works. Recommended management strategies, include:

- flora and vegetation management
- weed control
- native fauna management
- feral pest management

- rehabilitation program.

Ongoing monitoring and management is required to be undertaken to retain and improve vegetation condition where possible.

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1.0 Introduction

1.1 Title and Scope of Works

Natural Area Consulting Management Services (Natural Area) was contracted by UDLA to develop an environmental management plan for the Yanchep Lagoon Master Plan. The environmental management plan is to support the Preliminary Foreshore Management Plan to assist in the progression of the Yanchep Lagoon project for the City of Wanneroo. The purpose of this environmental management plan is to outline existing environmental values of Yanchep Lagoon and provide recommendations and frameworks for management according to best practice principles.

1.2 Land Details

Land tenure and zoning plans for the Yanchep Lagoon Master Plan are provided in Appendix 1. Class A and C reserves are present within the Yanchep Lagoon Master Plan area; the purpose and management of each reserve is provided in Table 1. Six freehold (privately owned) land parcels are within the Yanchep Lagoon Master Plan area; details for each of these are provided in Table 2.

Table 1. Land Tenure and Zoning Plan of Reserves within the Yanchep Lagoon Master Plan

Lot Number	Deposited Plan	Reserve Number	Reserve Class	Purpose	Management
500	70083	R 48603	C Class Reserve	Foreshore Management	CoW Management
501	70083	R 29352	C Class Reserve	Foreshore Management	CoW Management
502	70083	R29352	C Class Reserve	Foreshore Management	CoW Management
510	75148	R29694	C Class Reserve	Recreation	CoW Management with Power to Lease
511	75148	R 29694	C Class Reserve	Recreation	CoW Management with Power to Lease
512	75148	R 49033	C Class Reserve	Public Recreation	CoW Management with Power to Lease
520	406005	R 12439	A Class Reserve	'Recreation Act 43 - 1968'	CoW Management with Power to Lease
521	406005	R 12439	A Class Reserve	'Recreation Act 43 - 1968'	CoW Management with Power to Lease
522	406005	R 12439	A Class Reserve	'Recreation Act 43 - 1968'	CoW Management with Power to Lease
523	406005	R 12439	A Class Reserve	'Recreation Act 43 - 1968'	CoW Management with Power to Lease
661	49302	R 48714	C Class Reserve	Community Purposes	CoW Management with Power to Lease
8002	54875	R 49246	C Class Reserve	Public Recreation	CoW Management
8013	57657	R 8013	C Class Reserve	Public Recreation	CoW Management
8026	49302	R 48603	C Class Reserve	Foreshore Management	CoW Management

Lot Number	Deposited Plan	Reserve Number	Reserve Class	Purpose	Management
8315	7667	R 29354	Class C Reserve	Public Recreation	CoW Management
9740	182685	R 43792	C Class Reserve	Reserve for Recreation	CoW Management with Power to Lease
10603	186553	R 39022	C Class Reserve	Restaurant, Café, Tavern, Retail, Function centre and related purposes	CoW Management with Power to Lease
15452	40341	R 20561	C Class Reserve	Recreation & purposes incidental thereto	CoW Management with Power to Lease

Table 2: Private Owned Freehold Land with the Yanchep Lagoon Master Plan

Lot Number	Deposited Plan	Type	DPS2 Zoning	MRS Zoning
134	40405	Freehold (Privately Owned)	Rural	Rural
135	40405	Freehold (Privately Owned)	Rural	Rural
900	411306	Freehold (Privately Owned)	Rural	Rural
901	411306	Freehold (Privately Owned)	Rural	Rural
8003	52676	Freehold (Privately Owned)	Public Purposes	Urban
9066	426335	Freehold (Privately Owned)	Urban Development	Urban

1.3 Background

Yanchep Lagoon is a coastal destination approximately 50 km north of the Perth central business district (CBD). Yanchep has been noted as an area of rapid population growth with the City of Wanneroo pursuing a placed based development to create greater opportunities for community development, tourism visitation, economic growth, and social recreation.

The purpose of the development within Yanchep Lagoon is to promote the area as an all-season destination, with a range of uses and activities. Yanchep Lagoon is renowned as a proud and much-loved local meeting place. This development will assist in re-positioning Yanchep as a prominent visitor destination.

In 2019, the council accepted the Yanchep Lagoon Masterplan as a principal blueprint for future development, amenity improvements, and activation initiatives within Yanchep Lagoon. The Department of Planning, Lands and Heritage (DPLH) recommended the preparation of a Foreshore Management Plan aligned with the Masterplan Vision. The City of Wanneroo is undertaking a Preliminary Foreshore Management Plan to progress the project, resolve matters and obtain commitment from DPLH prior to the development of a detailed Foreshore Management Plan.

1.4 Purpose of the Plan

This environmental management plan is prepared as a requirement of the Yanchep Lagoon Master Plan. The purpose of the management plan is to outline existing environmental values of Yanchep Lagoon and provide recommendations and a framework for management according to best practice principles. This environmental management plan consists of values and recommendations surrounding conservation management, vegetation and fauna management, and revegetation of the natural environment.

1.5 Objectives

The objectives of the environmental management plan are to:

- identify the natural resources and processes as well as the necessary management measures for preserving and enhancing the conservation values of the area
- identify fauna management strategies
- identify weed control methods
- identify rehabilitation and revegetation methods.

1.6 Legislative Context

State and Federal environment-related laws impact how environmental values are governed in Western Australia. The following legislation and policies are relevant to this assessment.

Aboriginal Heritage Act 1972 (WA)

The Aboriginal Heritage Act 1972 makes provision for the recognition, protection, conservation, and preservation of Aboriginal heritage in Western Australia.

Biosecurity and Agriculture Management Act 2007 (WA)

The *Biosecurity and Agriculture Management Act 2007* (BAM Act) regulates the framework for plant and animal pest and disease biosecurity in Western Australia. The framework provides for the control of declared flora and fauna species (declared organisms) that are known to be a significant environmental threat and the management, control and prevention of these declared plants and animals.

Biodiversity Conservation Act 2016 (WA)

The *Biodiversity Conservation Act 2016* (BC Act) aims to protect and conserve biodiversity as well as to promote the ecologically sustainable use of biodiversity components in the State. The BC Act provides the statute relating to conservation and legal protection of flora, fauna, and ecological communities. The BC Act follows the principles of ecologically sustainable development, detailing that decision-making processes should effectively integrate long-term and short-term economic, environmental, social, and equity considerations.

Environment Protection Act 1986 (WA)

The *Environmental Protection Act 1986* (EP Act) provides for the prevention, control and abatement of pollution and environmental harm, for the conservation, preservation, protection, enhancement, and management of the environment connected with the foregoing. The Environmental Protection Authority is established under this act and provides a structured policy framework that is consistent with the EP Act. The

EPA produces the guidelines and procedures associated with conducting environmental assessments in line with the EP Act.

Environment Protection and Biodiversity Conservation Act 1999 (Cth)

The Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) serves to protect and manage nationally and internationally important flora, fauna, ecological communities, and heritage places. The primary objective of the EPBC Act is to promote the conservation of biodiversity and the sustainable use of natural resources while allowing for ecologically sustainable development. The EPBC Act allows for the creation of conservation agreements between the Australian government and individuals, communities, or organizations to support the conservation of biodiversity.

2.0 Existing Environment

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

2.1 Regional Context

The site is located within the Swan Coastal Plain (SWA02) IBRA subregion (Department of Climate Change, Energy, the Environment and Water (DCCEEW), (2024). This region is characterised by low lying coastal plain covered with woodlands. This subregion is generally comprised of sandy soils dominated by Banksia or Tuarts (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 (BoM) (2024); Gingin Aero, site number 009178, the region is subject to:

- Average rainfall of 636.4 mm per annum, with rain falling predominantly between June and August
- Maximum temperatures ranging from 18.4 °C in winter to 33.3 °C in summer, with a maximum recorded temperature of 46.3 °C
- Minimum temperatures ranging from 6.5 °C in winter to 17.1 °C in summer, with a minimum recorded temperature of -3.7 °C.

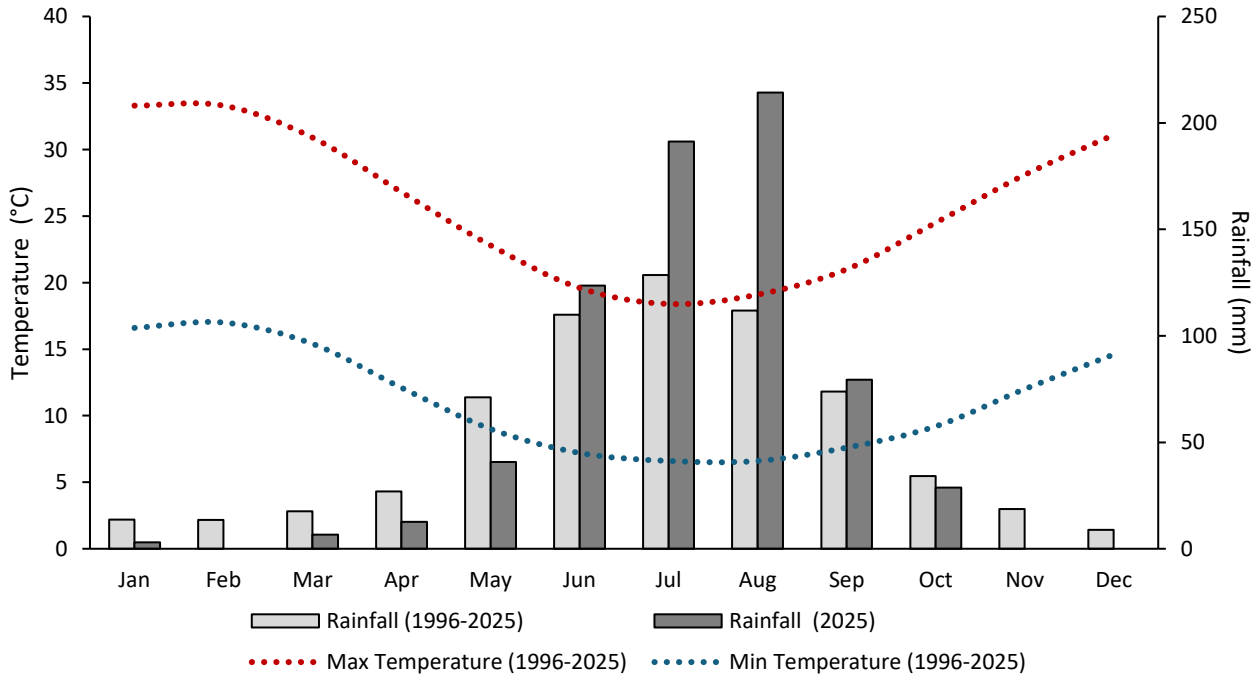


Figure 1: Temperature and rainfall data (1996-2025). Source: BoM, 2025.

2.3 Vegetation

2.3.1 Vegetation Complexes

One vegetation complex exists within the site boundary, the Quindalup Complex. It is described by Heddle, Loneragan, and Havel (1980) as a coastal dune complex consisting mainly of two alliances - the strand and fore-dune alliance and the mobile and stable dune alliance. Local variations include the low closed forest of *Melaleuca lanceolata* (Rottnest Teatree) - *Callitris preissii* (Rottnest Island Pine), the closed scrub of *Acacia rostellifera* (Summer-scented Wattle) and the low closed *Agonis flexuosa* (Peppermint) forest of Geographe Bay. The pre-European extent of this vegetation complex remaining is:

- 60.49 % within the Swan Coastal Plain
- 16.16 % within the City of Wanneroo (Government of Western Australia, 2019).

2.3.2 Ecological Linkages

Yanchep Lagoon is within an environmentally sensitive area (ESA) and a mapped ecological linkage. The ESA within Yanchep Lagoon has been identified as containing Bush Forever site no. 397. Bush Forever site no. 397 is known as the coastal strip from Wilbinga to Mindarie (DPLH, 2019). The bush forever site meets the section criteria of representation of ecological communities, rarity, maintaining ecological processes or natural systems, general criteria for the protection of wetland, and streamline and estuarine fringing vegetation and coastal vegetation.

Ecological linkages provide connectivity between patches of remnant vegetation facilitating the maintenance of ecological processes and the movement of organism within and across a landscape. Perth Regional Ecological Linkages were identified by the Perth Biodiversity Project with input from the Department of Environment, Department of Conservation and Land Management (CALM) and the Department for Planning and Infrastructure (WALGA, 2004). Perth Regional Ecological Linkage No. 1 intersects with Yanchep Lagoon, this ecological linkage links the bush forever sites 406 through to 315 and maintains connectivity along the coast for the Quindalup Complex.

2.3.3 Flora Composition

A flora survey undertaken by Natural Area (2025a) identified a total of 177 flora species (taxa) recorded from 56 families, comprised of 85 introduced (weeds) and 92 native species. The complete flora species list is provided in Appendix 2.

The survey undertaken by One Tree Botanical (2020) identified two conservation significant flora species *Stylidium maritimum* (P3) and *Conostylis candicans* subsp. *calcicola* intergrade *C. pauciflora* subsp. e*uryrhipis* (P4). A targeted flora survey was undertaken across the site in 2025 (Natural Area, 2025a), *Stylidium maritimum* (P3), was not recorded during this survey. This species has a flowering period between September and November, however, changes in weather and higher rainfall event may shift the phenological timing of the species and its detectability. The 2025 targeted survey identified and mapped *Conostylis pauciflora* subsp*. pauciflora* (P4), verified by the WA Herbarium, it is likely that this is the species identified by One Tree Botanical in 2020 as *Conostylis candicans* subsp. *calcicola* intergrade *C. pauciflora* subsp. e*uryrhipis* (P4). *Conostylis pauciflora* subsp. *pauciflora* (P4) was recorded primarily in the taller inland dunes on semi-consolidated sand with approximately 8,073 individuals recorded in the 2025 targeted flora survey (Figure 2). The conservation codes for conservation significant flora are provided in Appendix 3.



Figure 2:
Conservation Significant Flora

Yanchep, Western Australia

Legend

- *Conostylis pauciflora* subsp. *pauciflora* (P4)
- Site Boundary

Client:	UDLA
Date:	02/12/2025
Created by:	Z.Stoney
Image Source:	Nearmap, 2025
Datum:	GDA2020 / MGA zone 50
Scale:	1: 4200

0 50 100 m

N

2.3.4 Vegetation Type

A total of nine vegetation types were mapped by Natural Area (2025a), and an additional two vegetation types are listed which comprises of managed or cleared landscapes. The vegetation types are described in Table 3 and displayed on in Figure 3.

Table 3: Vegetation types identified across Yanchep Lagoon

Code	Description
Dunes On Unconsolidated Sand	
A1	An open shrubland of *Olearia axillaris* over a tussock grassland of *Spinifex longifolius.* Common species recorded include *Ficinia nodosa, Threlkedia difussa* and *Senecio pinnatifolius* var*. latilobus.* This vegetation was primarily recorded within the primary dune system along the beach.
A2	An open shrubland of *Olearia axillaris* and *Scaevola crassifolia*, over a forbland of **Pelargonium capitatum* and *Trachyandra divaricata*. Other common species recorded included **Gaudium laevigatum*, *Senecio pinnatifolius* var*. latilobus* and *Carpobrotus virescens.* Sections in the northern portion of this vegetation type were dominated by a vineland of *Cassytha aurea.* This vegetation was primarily recorded within the dune swale between OaSSlTG and ScMiOaSLgS.
A3	A shrubland of *Scaevola crassifolia, Myoporum insularis* and *Olearia axillaris* over an open to closed sedgeland of *Lepidosperma gladiatum*. Other common species recorded included *Parietaria debilis, Senecio pinnatifolius* var.*latilobus* and *Acanthocarpus preissii.* This vegetation was recorded primarily along the secondary dune system.
Coastal Limestone Cliff	
B1	An open shrubland of *Frankenia pauciflora* var. *pauciflora* and *Scaevola crassifolia* over an open chenopod shrubland of *Salicornia blackiana.* Other common species recorded included*, Olearia axillaris, Carpobrotus virescens* and *Threlkeldia diffusa.* The vegetation was recorded within the limestone outcrop along the beach.
Taller Inland Dunes On Semi-Consolidated Sand	
C1	A shrubland of *Spyridium globulosum, Acacia cyclops* and *Olearia axillaris* over a forbland of *Lomandra maritima* and *Conostylis pauciflora* subsp*. pauciflora* and a healthland of *Acanthocarpus preissii* over an open sedgeland of *Lepidosperma calcicola* and open tussock grassland of *Austrostipa flavescens* and *Poa porphyroclados.* Other common species included *Templetonia retusa, Styphelia insularis, Santalum acuminatum, Opercularia vaginata, Tricoryne elatior,* and *Leucopogon parviflorus.* This vegetation type was recorded primarily along the slopes of the taller inland dunes on semi-consolidated sands.
C2	A shrubland of *Melaleuca systema* and *Acacio lasiocarpa* over a forbland of *Lomandra maritima* and *Conost Conostylis pauciflora* subsp*. pauciflora* and a healthland of *Acanthocarpus preissii* over an open sedgeland of *Lepidosperma calcicola* and open tussock grassland of *Austrostipa flavescens* and *Poa porphyroclados.* Other common species included *Olearia axillaris, Templetonia retusa, Styphelia insularis, Santalum acuminatum, Opercularia vaginata, Tricoryne elatior,* and *Leucopogon parviflorus.* This

Code	Description
	vegetation type was recorded primarily on the dune crests of the taller inland dunes on semi-consolidated sands.
C3	A woodland of *Eucalyptus gomphocephala* over a shrubland of *Rhagodia baccata* subsp. *baccata* and *Spyridium globulosum* over a tussock grassland of **Avena barbata* and forbland of **Euphorbia terracina* and **Trachyandra divaricata*. Other species included *Acacia xanthina, Olearia axillaris, Leptomeria preissiana*, and *Threlkeldia diffusa*. This vegetation was recorded primarily in the lower slopes of the taller inland dunes on semi-consolidated sands.
Shallow Sands Over Limestone	
D1	A shrubland of *Melaleuca cardiophylla, Spyridium globulosum* and *Acacia xanthina*, over *Rhagodia baccata* subsp. *baccata*. Common species include *Leptomeria preissiana, Leucopogon parviflorus, Styphelia insularis, Lepidosperma calcicola,* and *Desmocladus asper*. This was recorded on shallow sand over limestone in the eastern portion of the site..
D2	A shrubland of *Melaleuca huegelii* subsp. *huegelii* and *Melaleuca systena* over an open sedgeland of *Lepidosperma calcicola* and open tussock grassland of *Austrostipa flavescens* and *Poa porphyroclados.* Other common species included *Templetonia retusa, Spyridium globulosum, Leucopogon parviflorus, Styphelia insularis, Desmocladus asper* and *Opercularia vaginata*. This was recorded on a crest with extensive limestone outcrops in the eastern portion of the site.
Modified Or Managed Areas	
E1	Areas that have historical disturbance, this includes infrastructure, paths, firebreaks, informal or formal paths or heavily disturbed areas.
E2	Cultivated or revegetated areas include landscape plantings of native species that are managed or recent areas subjected to rehabilitation activities.

Source: Natural Area, 2025a.



Figure 3:
Vegetation Types

Yanchep, Western Australia

Legend

A1		C3	
A2		D1	
A3		D2	
B1		E1	
C1		E2	
C2		Site Boundary	

Client:	UDLA
Date:	26/11/2025
Created by:	Z.Stoney
Image Source:	Nearmap, 2025
Datum:	GDA2020 / MGA zone 50
Scale:	1: 4200

0 50 100 m

N

2.3.5 Vegetation Condition

Vegetation condition across the site was mapped by One Tree Botanical in 2019 (One Tree Botanical, 2020) and re-assessed by Natural Area's environmental scientists in 2025 (Natural Area, 2025a). Vegetation condition was mapped using the vegetation condition scale adapted from Keighery (1994) (Table 4). The vegetation condition across the survey area was relatively similar in 2024 to 2019, with slight variations the extents of the various conditions. The vegetation condition across Yanchep Lagoon is provided in Figure 4. The variations in the extents are likely due to increases in weed populations, increases in feral pests and anthropogenic influences. Decreases in vegetation condition was prevalent in areas containing a high weed load and bare ground. Improvements in vegetation condition was evident in vegetation containing influences from management techniques, such as weed control or revegetation works.

Varying degrees of disturbance was evident across Yanchep Lagoon. Weed invasion and soil disturbance were apparent across portions of vegetation. Across Yanchep Lagoon, high traffic areas next to natural areas, contained evidence of edge effects with anthropogenic changes decreasing the surrounding vegetation condition. These high traffic areas include formalised and informal tracks.

Vegetation in an excellent condition contained a high vegetation structure with minimal to no weeds present. Very good condition vegetation included vegetation with a high-level structure and diversity with minimal to some aggressive weeds present. Vegetation in a good condition had influences of disturbance to the vegetation structure but contains the ability to regenerate without management strategies. Vegetation in a good condition typically contained a high weed load or increased coverage of bare ground.

Vegetation in a degraded condition had a reduce vegetation structure with evidence of disturbance and high weed load. The vegetation in a degraded condition requires management strategies to be put in place to improve the condition. Vegetation in completely degraded condition is almost entirely without native flora species and includes developed areas.

Table 4: Vegetation condition ratings

Category		Description
1	Pristine	Pristine or nearly so, no obvious signs of disturbance or damage caused by human activities since European settlement.
2	Excellent	Vegetation structure intact, disturbance affecting individual species and weeds are non-aggressive species. Damage to trees caused by fire, the presence of non-aggressive weeds and occasional vehicle tracks.
3	Very Good	Vegetation structure altered, obvious signs of disturbance. Disturbance to vegetation structure caused by repeated fires, the presence of some more aggressive weeds, dieback, logging and grazing.
4	Good	Vegetation structure significantly altered by very obvious signs of multiple disturbances. Retains basic vegetation structure or ability to regenerate it. Disturbance to vegetation structure caused by very frequent fires, the presence of some very aggressive weeds, partial clearing, dieback and grazing.
5	Degraded	Basic vegetation structure severely impacted by disturbance. Scope for regeneration but not to a state approaching good condition without intensive management.

Category		Description
		Disturbance to vegetation structure caused by very frequent fires, the presence of very aggressive weeds at high density, partial clearing, dieback and grazing.
6	Completely Degraded	The structure of the vegetation is no longer intact, and the area is completely or almost completely without native species. These areas are often described as 'parkland cleared' with the flora comprising weed or crop species with isolated native trees or shrubs.

Source: EPA, 2016



Figure 11:
Vegetation Condition

Yanchep, Western Australia

Legend

- Excellent
- Very Good
- Good
- Degraded
- Competely Degraded
- Site Boundary

Client:	UDLA
Date:	06/11/2025
Created by:	Z.Stoney
Image Source:	Nearmap, 2025
Datum:	GDA2020 / MGA zone 50
Scale:	1: 4200

0 50 100 m

N

2.3.6 Ecological Communities

The flora and vegetation survey undertaken by Natural Area (2025a) identified the potential for one threatened ecological community under the EPBC Act to occur, and two priority ecological communities.

Two priority ecological communities were identified during the statistical analysis to potentially occur onsite, including Coastal shrublands on shallow sands, southern Swan Coastal Plain ('floristic community type 29a') and Acacia shrublands on taller dunes, southern Swan Coastal Plain ('floristic community type 29b'). Both of these FCTs are listed as Priority 3 by DBCA. FCT 29a was represented in vegetation types A1, A2, A3, B1, C1, C2, C3, D1 and D2. FCT 29b was represented in vegetation type C1, C2, D1 and D2.

One threatened ecological community listed as Honeymyrtle shrubland on limestone ridges of the Swan Coastal Plain Bioregion, listed as Critically Endangered under the EPBC Act, was identified to potentially occur onsite. The patch within the site is recorded outside of the indicative range for this community to occur as mapped by DCCEEW (DCCEEW,2023). This patch was recorded on the Quindalup Complex, this complex has not been previously recorded to contain any known occurrence for this community (DCCEEW, 2023). The community was impacted by the fire in December 2019, which altered the structure of the community. The quadrat data from One Tree Botanical (2020) within this vegetation type pre-fire recorded higher species richness and lower weed loads compared to the survey undertaken in spring 2025. A request for further information concerning the community, including confirmation of whether this patch satisfies the applicable requirements, was submitted to DCCEEW on 7 November 2025. As a precautionary principle it should be assumed that this patch is a component of this TEC until further information.

Characteristics to be representative of the Tuart (*Eucalyptus gomphocephala*) woodlands and forests of the Swan Coastal Plain were identified on site; however, the vegetation does not meet all key diagnostic criteria to be considered as part of the threatened ecological community listed as Critically Endangered under the EPBC Act. Historic aerial imagery from 1965 shows that the *Eucalyptus gomphocephala* present within the south-western patch were planted in a line alongside an infrastructure building. Planted *Eucalyptus gomphocephala* may still be considered as part of the ecological community if it meets the key diagnostic characteristics, is in an appropriate condition, occurs in appropriate habitat, and shows evidence of post-regeneration recruitment that could contribute to longer-term persistence of the occurrence. Whilst the patches within the site do not meet the minimum patch size criteria to be considered as part of the threatened ecological community listed under the EPBC Act. The same diagnostic criteria, condition and area thresholds also apply to the priority ecological community (DBCA, 2023a).

Table 5: Key diagnostic characteristics of Tuart (*Eucalyptus gomphocephala*) Woodlands and Forests of the Swan Coastal Plain. Key diagnostic characteristics met are highlighted green.

Key Diagnostic Characteristics	Site Appraisal
Occurs in the Swan Coastal Plain Bioregion, Western Australia	Site occurs in the Swan Coastal Plain Bioregion
Primarily occurs on the Spearwood and Quindalup dune systems but can also occur on the Bassendean dunes and Pinjarra Plain. It can occur on the banks of rivers and wetlands	Site occurs on Quindalup dune systems
The presence of at least two living, established (DBH ≥15 cm) Tuart trees within the upper canopy, with a gap of ≤60 m between the canopy edges of adjacent Tuart trees	More than two Tuart trees were present
The presence of an understorey of native species, often modified by disturbance	A native understorey is present in the patch. Evidence of disturbance is present.
A patch size of at least 0.5 ha	The three separate patches are less than 0.5 ha with each patch smaller than 0.1 ha. Therefore, it does not meet the minimum patch size.

2.4 Fauna

A detailed fauna survey was undertaken by Natural Area in 2025 (Natural Area, 2025b). The assessment determined nine broad fauna habitats including beachfront (BF), coastal open heath (OH), coastal closed heath (OH), mixed trees over cleared parkland (MT), cleared parkland (CP), coastal shrubland (CS), open forest (OF), open shrubland over limestone (SL), and infrastructure (IF) (Figure 5). A total of 51 fauna species were identified during the detailed fauna survey, including 45 native and 6 introduced species. The six introduced species include the presence of the following declared pests: Rabbits (**Oryctolagus cuniculus*) and Red Foxes (**Vulpes vulpes*). One conservation significant fauna species was recorded during the field survey, the Crested Tern (*Thalasseus bergii*), listed as Migratory (MI) under the BC Act and EPBC Act. Over 10 individuals were observed resting in seaweed on the beachfront, including juveniles. Fauna species recorded within Yanchep Lagoon are provided in Table 6.

It was identified that it is likely that two conservation significant fauna species are present within the project area including Quenda (*Isoodon fusciventer*) (Priority 4) and Black-striped Snake (*Neelaps calonotos*) (Priority 3).

Table 6: Fauna observations within Yanchep Lagoon. * denotes introduced species

Family	Species	Common Name
Bird		
Acanthizidae	*Acanthiza inornata*	Western Thornbill
Cacatuidae	*Cacatua sanguinea*	Little Corella
Cuculidae	*Chalcites basalis*	Horsfield's Bronze Cuckoo

Family	Species	Common Name
Laridae	*Chroicocephalus novaehollandiae*	Silver Gull
Campephagidae	*Coracina novaehollandiae*	Black-faced Cuckooshrike
Corvidae	*Corvus coronoides*	Australian Raven
Artamidae	*Cracticus torquatus*	Grey Butcherbird
Cacatuidae	*Eolophus roseicapilla*	Galah
Falconidae	*Falco cenchroides*	Nankeen Kestrel
Meliphagidae	*Gavicalis virescens*	Singing Honeyeater
Artamidae	*Gymnorhina tibicen*	Australian Magpie
Hirundinidae	*Hirundo neoxena*	Welcome Swallow
Laridae	*Larus pacificus*	Pacific Gull
Meliphagidae	*Lichmera indistincta*	Brown Honeyeater
Maluridae	*Malurus assimilis assimilis*	Purple-backed Fairywren
Maluridae	*Malurus splendens*	Splendid Fairywren
Phalacrocoracidae	*Microcarbo melanoleucos*	Little Pied Cormorant
Strigidae	*Ninox boobook*	Boobook Owl
Phalacrocoracidae	*Phalacrocorax varius*	Pied Cormorant
Meliphagidae	*Phylidonyris novaehollandiae*	New Holland Honeyeater
Petroicidae	*Quoyornis georgianus*	White-breasted Robin
Rhipiduridae	*Rhipidura leucophrys*	Willie Wagtail
Acanthizidae	*Sericornis maculatus maculatus*	White-browed Scrubwren
Laridae	*Thalasseus bergii*	Crested Tern
Zosteropidae	*Zosterops lateralis*	Silvereye
Columbidae	**Spilopelia chinensis*	Spotted Turtle Dove
Columbidae	**Spilopelia senegalensis*	Laughing Turtle Dove
Mammal		
Molossidae	*Austronomus australis*	White-striped Free-tailed Bat
Vespertilionidae	*Chalinolobus gouldii*	Gould's Wattled Bat
Muridae	*Rattus fuscipes*	Western Bush Rat
Felidae	**Felis catus*	Cat
Muridae	**Mus musculus*	House Mouse
Leporidae	**Oryctolagus cuniculus*	Rabbit
Canidae	**Vulpes vulpes*	Red Fox

Family	Species	Common Name
Reptile		
Typhlopidae	*Anilios australis*	Southern Blind Snake
Agamidae	*Ctenophorus adelaidensis*	Western Heath Dragon
Scincidae	*Ctenotus fallens*	
Scincidae	*Cyclodomorphus celatus*	
Scincidae	*Egernia kingii*	King's Skink
Scincidae	*Hemiergis quadrilineatus*	
Scincidae	*Lerista elegans*	
Scincidae	*Lerista lineopunctulata*	Dotted-Line Robust Slider
Scincidae	*Lerista praepedita*	
Pygopodidae	*Lialis burtonis*	Burton's Legless Lizard
Scincidae	*Menetia greyii*	Dwarf Skink
Scincidae	*Morethia obscura*	
Squamata	*Pogona minor*	Western Bearded Dragon
Elapidae	*Pseudonaja affinis*	Dugite
Diplodactylidae	*Strophurus spinigerus*	Spiny-tailed Gecko
Scincidae	*Tiliqua occipitalis*	Western Bluetounge
Scincidae	*Tiliqua rugosa*	Bobtail



Figure 5:
Fauna Habitat

Yanchep, Western Australia

Legend

BF	MT
CH	OF
CP	OH
CS	SL
IF	Site Boundary

Client:	UDLA
Date:	26/11/2025
Created by:	D. Morrison
Image Source:	Nearmap, 2025
Datum:	GDA2020 / MGA zone 50
Scale:	1: 4200

0 50 100 m

N

2.5 Land Use

The proposed project area for Yanchep Lagoon is subject to a variety of land use zoning and land tenure. The land zoning is comprised of parks and recreation, urban development, public purposes and rural. Yanchep Lagoon is primarily comprised of Parks and Recreation made up of Class A and Class C reserves. The adjacent land zoning to Yanchep Lagoon are residential, urban development and parks and recreation. Residential land zoning under the district planning scheme are located to the south east of Yanchep with the urban development located to the north east. The north and south of Yanchep Lagoon Master Plan area, along the coastline is zoned as park and recreation.

The land use across Yanchep Lagoon has been identified by Australian Bureau of Agricultural and Resource Economics and Sciences (ABARES) (2024), as primarily comprised of conservation and natural environments and intensive uses. Intensive uses have been identified as transport and communications (roads), services (recreation and culture), and residential and farm infrastructure (urban residential). The surrounding land uses to the Yanchep Lagoon Master Plan area have been primarily indicated as intensive uses (transport and communications - roads), intensive uses (residential and farm infrastructure – urban residential).

2.6 Geography

A total of eight soil types were identified on site (Department of Primary Industries and Regional Development (DPIRD), 2022). The site ranges from 28 m Australian Height Datum (AHD) in the central dunes corner and 2 m AHD along the foreshore (DPRID, 2019). (Table 7 and Figure 6).

Table 7: Soil types within Yanchep Lagoon

Name	Symbol	Description
Quindalup South youngest dune phase	211Qu__Q4	The youngest phase. Irregular dunes with slopes up to 20%. Loose pale brown calcareous sand with no soil profile development
Quindalup South shallow sand flat phase	211Qu__Qs	Undulating landscapes with shallow calcareous sands over limestone and much rock outcrop
Quindalup South deep sand flat phase	211Qu__Qp	Undulating landscapes with deep calcareous sands overlying limestone. Soils have dark grey-brown sand to about 50 cm and then pale brown sand. Remnants of hummocks are often present
Quindalup South water, beach phase	211QuU_BEACH	Beach
Quindalup South second dune phase	211Qu__Q2	The second phase. A complex pattern of dunes with moderate relief. Calcareous sands have organic staining to about 20 cm, passing into pale brown sand; some cementation below 1 m
Quindalup South third dune phase	211Qu__Q3	The third phase. Irregular dunes with high relief and slopes up to 20%. Loose calcareous sand with little surface organic staining and incipient cementation at depth

Name	Symbol	Description
Quindalup South oldest dune phase	211Qu__Q1	The oldest phase. Dunes or remnants with low relief. Calcareous sands have organic staining to about 30 cm, overlying pale brown sand with definite cementation below 1 m

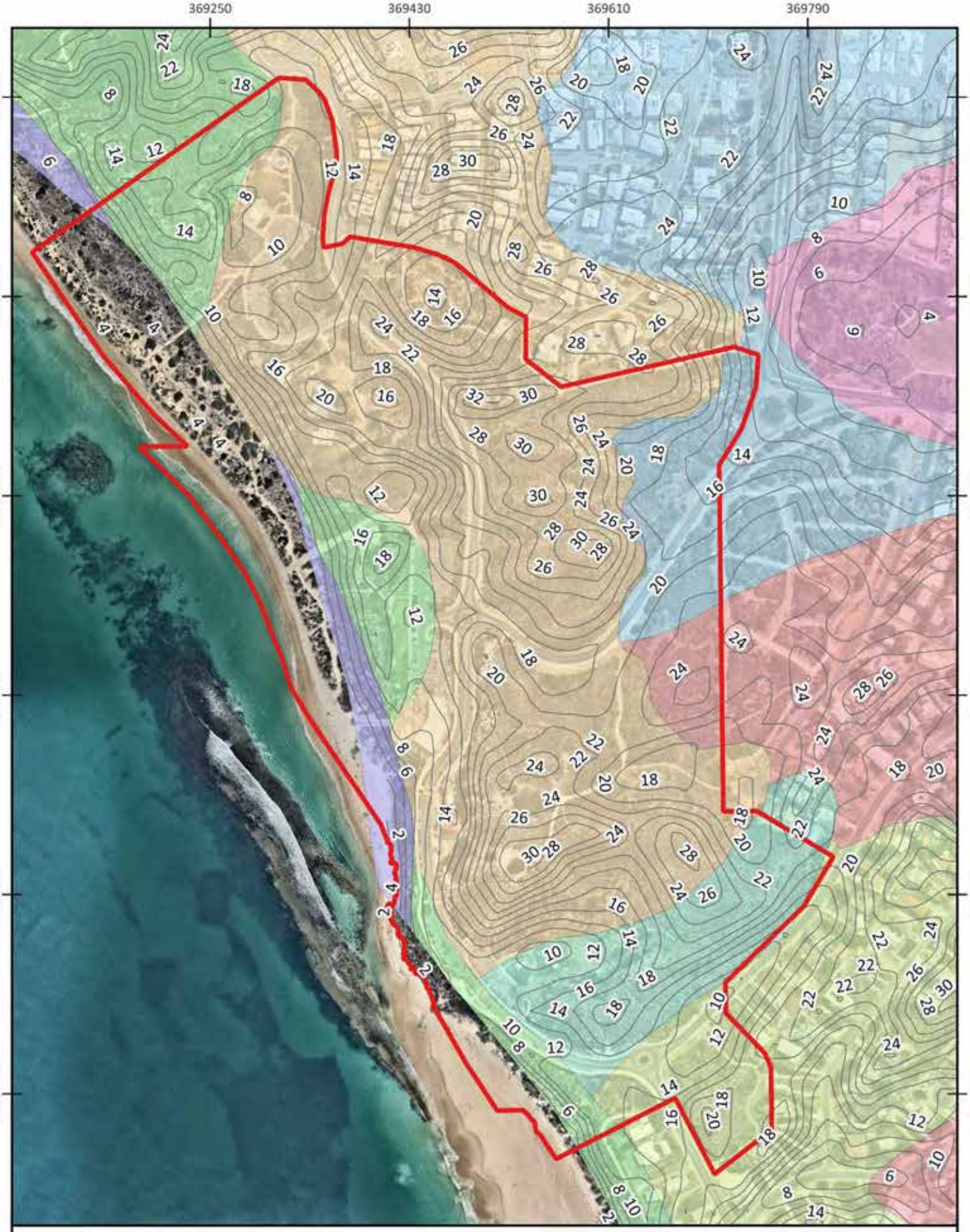


Figure 6:
Topography and Soil Type

Yanchep Lagoon, City of Wanneroo

Legend

- Contours
- 211Qu__Q1
- 211Qu__Q2
- 211Qu__Q3
- 211Qu__Q4
- 211Qu__Qp
- 211Qu__Qs
- 211QuU_BEACH
- 211Sp__Ky
- Survey Area

Client:	UDLA
Date:	07/08/2024
Created by:	Z. Stoney
Image Source:	Nearmap, 2024
Datum:	GDA2020 / MGA zone 50
Scale:	1: 4500

0 50 100 m

N

2.7 Geology

A total of two surface geology types are recorded across Yanchep Lagoon as identified from the 1:50,000 Environmental Geology series map from Department of Mines, Industry, Regulation and Safety (DMIRS) (2022). The two surface geology types include calcareous sand (S2) and limestone (LS1) (Figure 7). The description and the physical properties of the surface geology present are described in Table 8.

The geological survey of Western Australia has noted S2 as having "Moderate to steep slopes, very susceptible to remobilisation where the sparse vegetation is removed, high lime content give it considerable potential for fixing certain kinds of waste, like dissolved heavy metals, and neutralising acids, low bearing capacity, settlement is common and can be uneven." LS1 was noted as having "Variable bearing capacity dependent on degree of cementation, common solution cavities and fissures could lead to severe settlement under load, and also offers an easy path for pollutants down to the water table." The suitability of surface geology are further described in Table 9.

Table 8: Surface geology description and physical properties

Code	Description	Physical Properties						
		Permeability	Corrosion	Slope Stability	Ease of Excavation	Shrink swell Potential	Bearing capacity	SMEC
S2	Calcareous Sand – white, fine to medium grained, sub-rounded quartz and shell debris, of eolian origin	H	L-M	L	H	L	L	SP-SW
LS1	Limestone - light yellowish brown, fine to coarse grained, subangular to well rounded, quartz, trace of feldspar, shell debris, variably lithified, surface canker, of eolian origin	H	L	M-H	M-H	L	V	SP-SW

Source: Department of Mines, 1985

Table 9: Suitability of geology for specified land uses

Code	Suitability for specified land uses					
	Solid Waste Disposal	Liquid Waste Disposal	Septic Tanks	Construction of Roads	Urbanisation	Excavation (Mining and Quarrying)
S2	Activity undesirable for the environment	Activity compatible with unit	Possible problems for the environment	Possible problems for the environment	Activity undesirable for the environment	Activity undesirable for the environment

Code	Suitability for specified land uses					
	Solid Waste Disposal	**Liquid Waste Disposal**	**Septic Tanks**	**Construction of Roads**	**Urbanisation**	**Excavation (Mining and Quarrying)**
				Possible problems for the activity		
LS1	Activity undesirable for the environment	Activity compatible with unit	Possible problems for the environment	Activity compatible with unit	Activity compatible with unit	Activity compatible with unit

Source: Department of Mines, 1985.

Caves and karstic features across the City of Wanneroo have been determined and mapped. The City of Wanneroo has a large presence of Caves and Karstic features associated with the Tamala limestone geology. Whilst the LS1 geology is associated with the Tamala limestone, karstic mapping undertaken by Western Australian Speleological Group noted that Yanchep Lagoon is a low-risk karstic area (City of Wanneroo, 2022) (Figure 7). In accordance with the City of Wanneroo Local Planning Policy 4.13: Caves and Karstic Features, a desktop geotechnical assessment will need to be undertaken during any subsequent structure planning phases and on-site investigation to assess any risk.

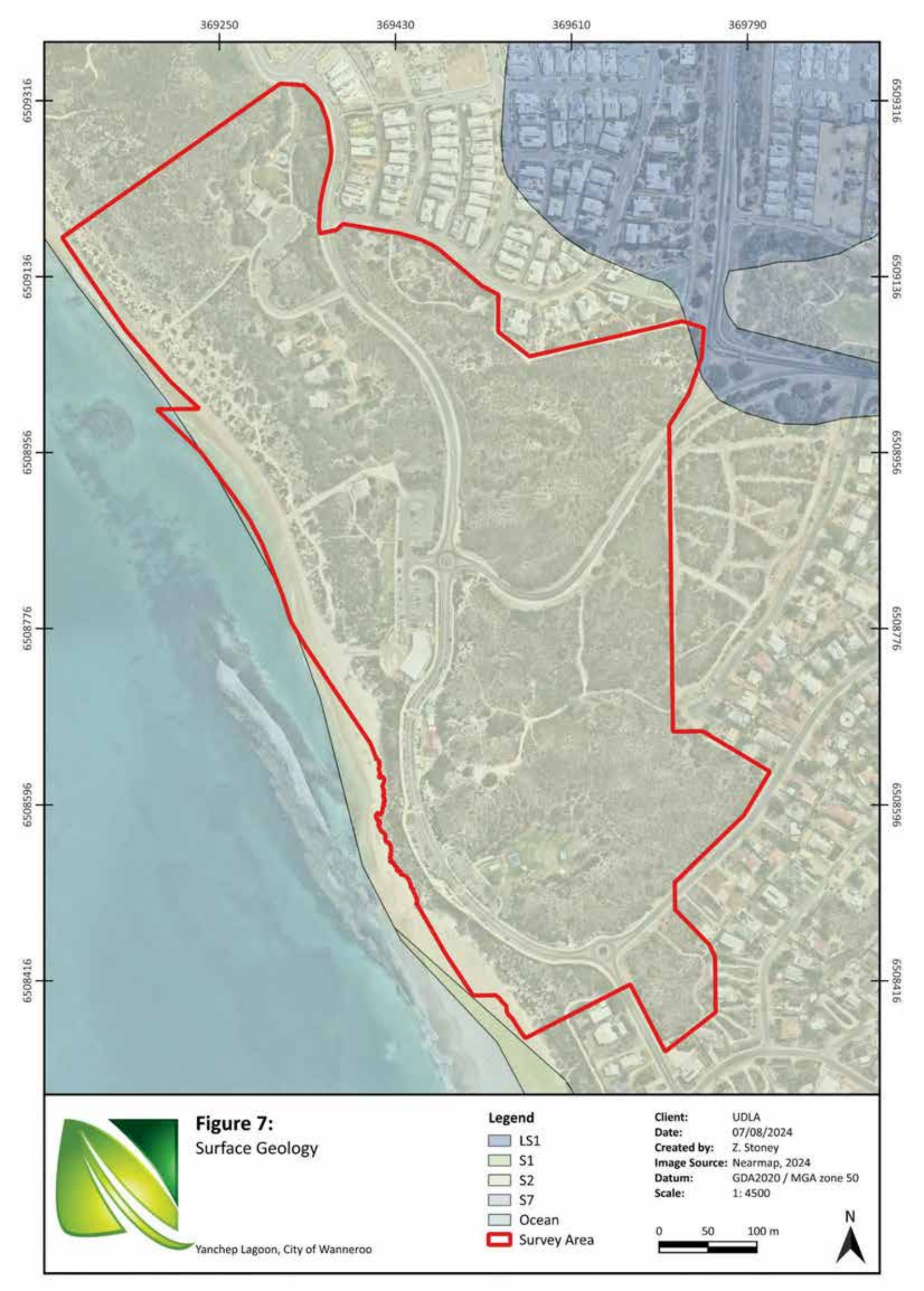


Figure 7:
Surface Geology

Yanchep Lagoon, City of Wanneroo

Legend

- LS1
- S1
- S2
- S7
- Ocean
- Survey Area

Client:	UDLA
Date:	07/08/2024
Created by:	Z. Stoney
Image Source:	Nearmap, 2024
Datum:	GDA2020 / MGA zone 50
Scale:	1: 4500

0 50 100 m

N

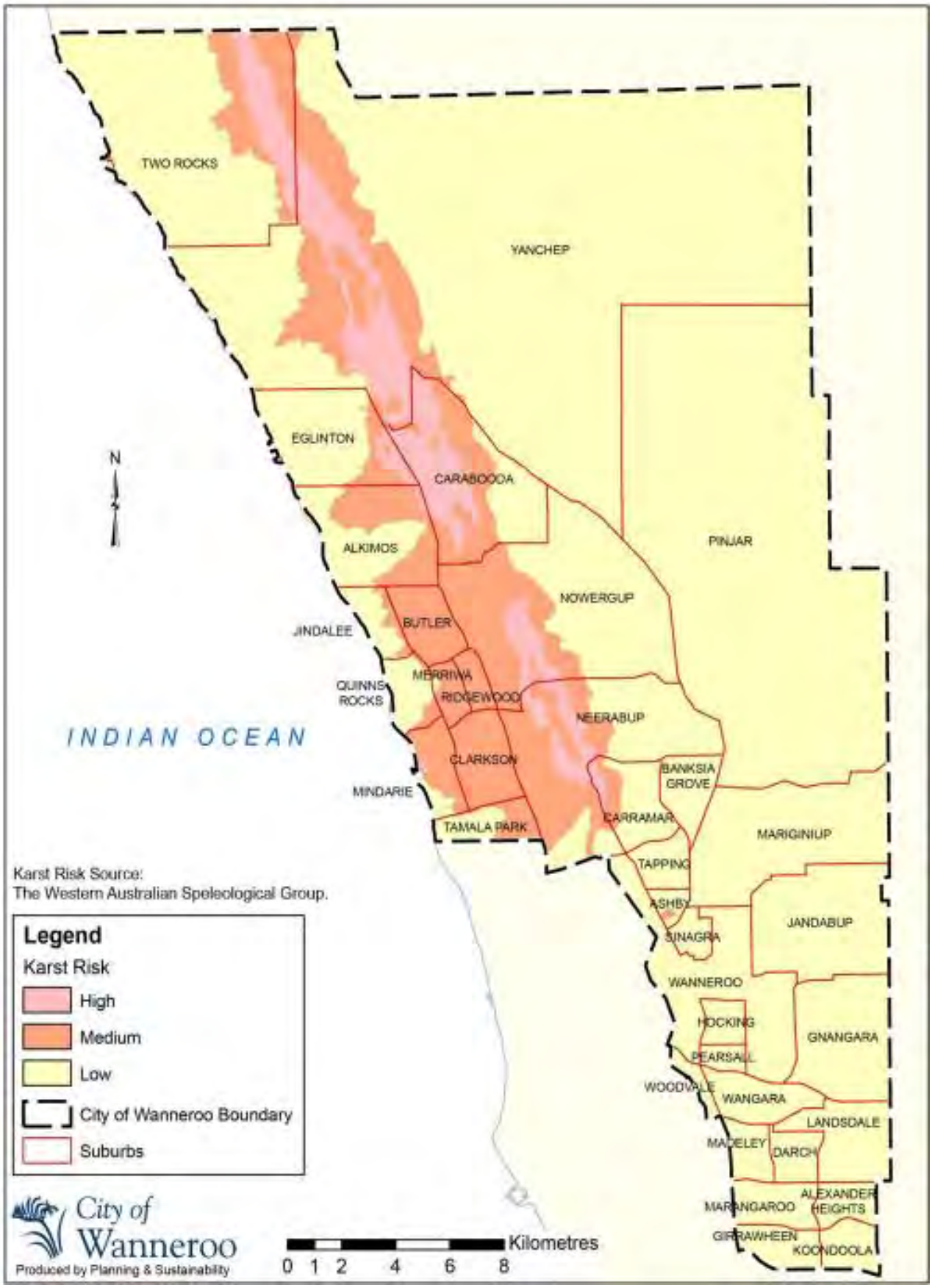


Figure 8: Karstic Risk

2.8 Soils

The likelihood of acid sulfate soil material occurring with soil profiles has been mapped for the swan coastal plain this assists in determining the risk of acid sulfate soil materials being disturbed by land development activities. No acid sulfate soil risk has been identified within the Yanchep Lagoon Master Plan area (DWER-055). No subsurface acidification risk has been identified by DPIRD (DPIRD-011)

Landscape land quality for Yanchep Lagoon was assessed utilising online datasets to assess wind erosion risk, subsurface acidification risk, land instability risk, flood risk, salinity risk, and microbial purification. Salinity risk across the site has been assessed by DPIRD (Van Gool *et al*., 2005), one category of salinity has been identified where less than 3 % of the map unit has a moderate to high salinity risk or is presently saline (L2) (DPIRD-009).

Across the site there are four wind erosion categories listed, including L2, M2, H1, and H2 (Figure 9) (DPIRD-016). Each category refers to the portion of the map unit that contains a high to extreme wind erosion risk ranging from 3-10 % (L2), 30-50 % (M2), 50-70 % (H1), and >70 % (H2). Wind erosion risk was higher closer to the coastline.

Land instability risk has been assessed by DPIRD (Van Gool et al., 2005), five risk categories for land instability has been identified across Yanchep Lagoon including, L1, L2, M1, M2, and H2 (Figure 10) (DPIRD-042). Each land instability categories refers to the portion of the map that contain a moderate to high hazard ranging from <3 % (L1), 3-10 % (L2), 10-30 % (M1), 30-50 % (M2), and >7 % (H2). The highest instability risk is recorded near the limestone cliffs and dunes adjacent to the coastline.

Flood risk has been mapped by DPIRD (Van Gool et al., 2005), two risk categories have been identified across the Yanchep Lagoon project area, L1 and H2 (Figure 11) (DPIRD-007). L1 are areas where less than 3 % of the map unit has a moderate to high floor risk which is recorded within the dune swales. The areas where greater than 70 % of the map unit has a moderate to high flood risk was recorded close to the coastlines.

Microbial purification has been assessed, across the site two ratings have been identified, M1 and H2 (Figure 12) (DPIRD-045). Where M1 refers to a map unit with 10-30 % has a very low to low rating, and H2 refers to a map unit with greater than 70 % has a very low to low rating. Majority of the site contains a a H2 rating with a section in the southern portion identified as M1.

The coastal vegetation within Yanchep Lagoon does not contain identifiable species to assess for *Phytophthora* Dieback. The area within Yanchep Lagoon has been identified as unidentifiable by mapping undertaken by project dieback (Southcoast Natural Resource Management, 2024).

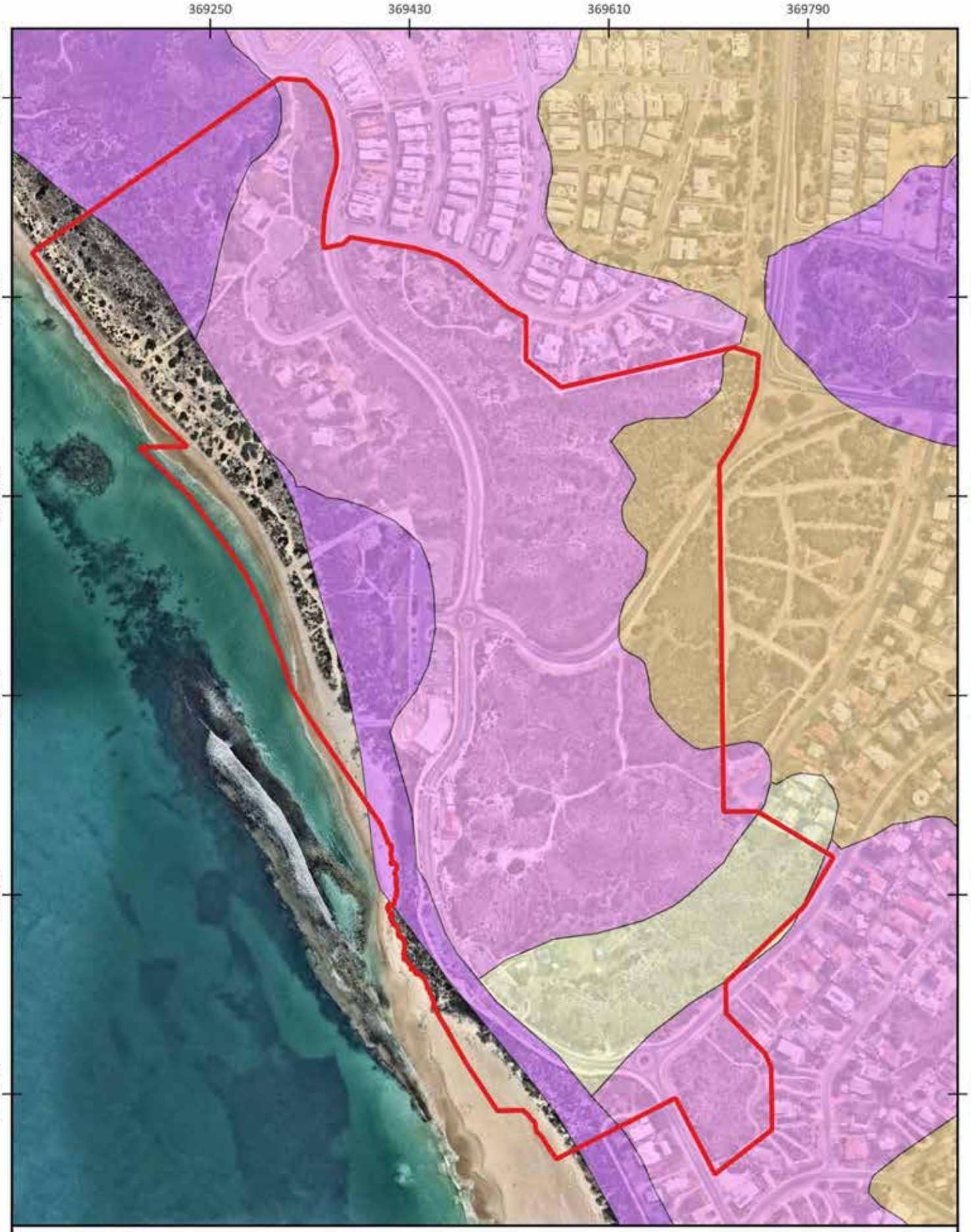


Figure 9:
Wind Erosion Risk

Yanchep Lagoon, City of Wanneroo

Legend

- L2
- M2
- H1
- H2
- Survey Area

Client:	UDLA
Date:	07/08/2024
Created by:	Z. Stoney
Image Source:	Nearmap, 2024
Datum:	GDA2020 / MGA zone 50
Scale:	1: 4500

0 50 100 m

N



Figure 10:
Land Instability Risk

Yanchep Lagoon, City of Wanneroo

Legend

- L1
- L2
- M1
- M2
- H2
- Survey Area

Client:	UDLA
Date:	07/08/2024
Created by:	Z. Stoney
Image Source:	Nearmap, 2024
Datum:	GDA2020 / MGA zone 50
Scale:	1: 4500

0 50 100 m

N



Figure 11:
Flood Risk

Yanchep Lagoon, City of Wanneroo

Legend

- L1
- H2
- Survey Area

Client:	UDLA
Date:	07/08/2024
Created by:	Z. Stoney
Image Source:	Nearmap, 2024
Datum:	GDA2020 / MGA zone 50
Scale:	1: 4500

0 50 100 m

N

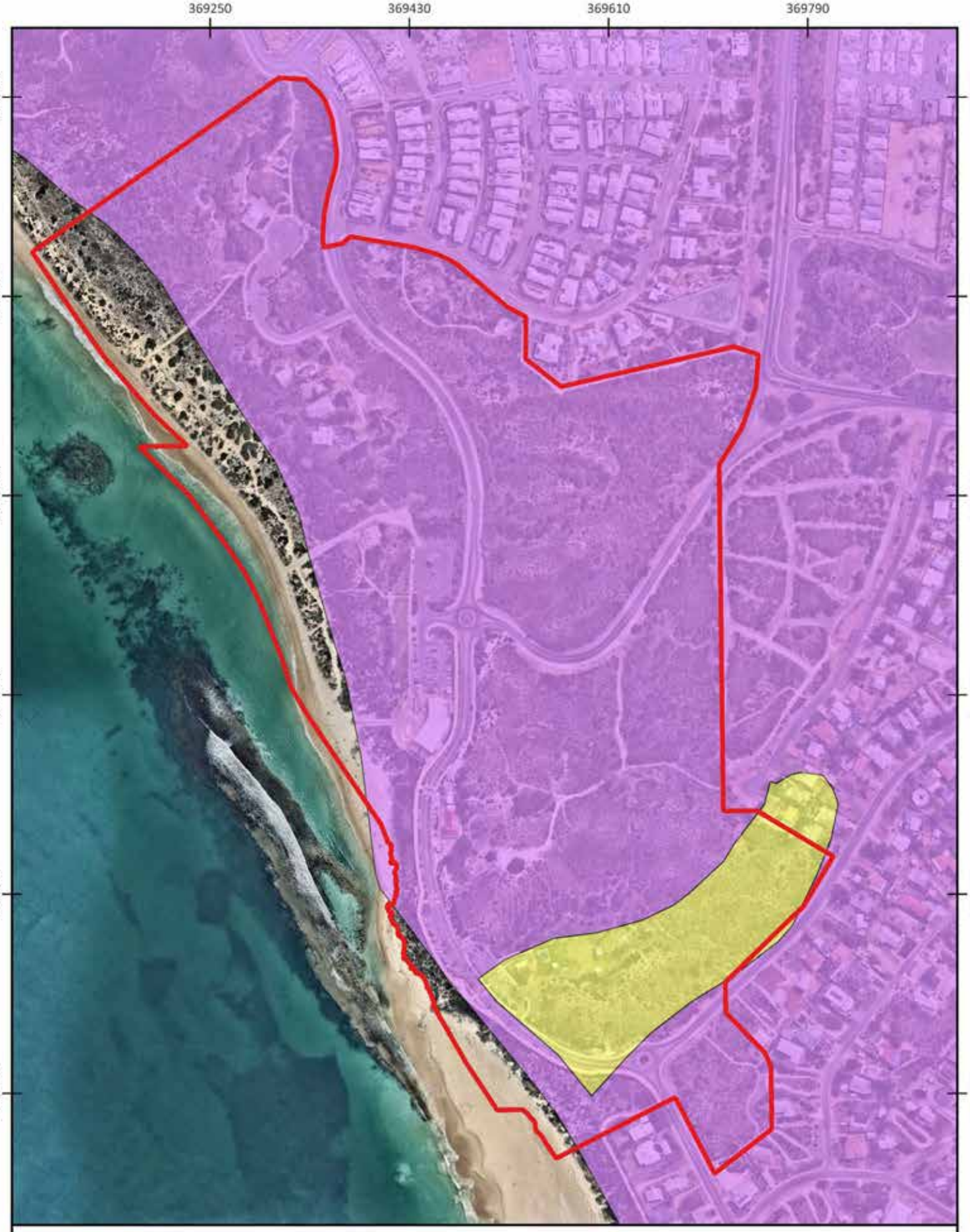


Figure 12:
Microbial purification

Yanchep Lagoon, City of Wanneroo

Legend

- M1
- H2
- Survey Area

Client:	UDLA
Date:	07/08/2024
Created by:	Z. Stoney
Image Source:	Nearmap, 2024
Datum:	GDA2020 / MGA zone 50
Scale:	1: 4500

0 50 100 m

N

2.9 Heritage

Yanchep Lagoon is within the Whadjuk People Indigenous Land Use Agreement area. Two sites are registered as Aboriginal Cultural Heritage, Yanchep Beach (ID 17599) and Limestone Reef (ID 17596) (DPLH, 2025a). The entirety of Yanchep Beach is registered as a creation/dreamtime narrative with no gender/initiation restriction. The Limestone reef is adjacent to Yanchep Beach and is a creation/dreamtime narrative with no gender/initiation restriction.

Yanchep Lagoon (ID 17949) is listed under the Local Heritage Survey (DPLH, 2025b). Three sites are listed under the Heritage List, Fisherman's Hollow (17532), Lindsay Homestead (Well & Sheep Dip) (14280), and Well & Sheep Dip (Lindsay Homestead) (14297) (DPLH, 2025c).



Figure 13:
Heritage

Yanchep Lagoon, City of Wanneroo

Legend

- Aboriginal Cultural Heritage Register (DPLH-099)
- Heritage List (DPLH-090)
- Heritage Council Local Heritage Survey (DPLH-008)
- Survey Area

Client:	UDLA
Date:	07/08/2024
Created by:	Z. Stoney
Image Source:	Nearmap, 2024
Datum:	GDA2020 / MGA zone 50
Scale:	1: 4500

0 50 100 m

N

3.0 Management Plans

3.1 Vegetation and Fauna Management Plan

3.1.1 Retention and Protection

The retention and protection of native vegetation is critical in supporting biodiversity and providing adequate faunal habitats. Yanchep Lagoon features natural amenities within its coastal dunes which are to be retained to align with the place-based drivers from Yanchep Lagoon Master Plan. Across Yanchep Lagoon the vegetation ranged from completely degraded to excellent. Vegetation in a very good to excellent condition is to be prioritised for retention and protection including a buffer to mitigate the impacts of edge effects. The Yanchep Lagoon Master Plan (UDLA, 2023) mitigates impacts to natural vegetation by developing areas in degraded and completely degraded condition and utilising the existing modified landscapes to retain and avoid vegetation.

The proposed development footprint is aligned primarily within the existing development footprint and as such reduces the need for extensive vegetation clearing. The development footprint for Yanchep Lagoon will impact approximately 0.215 ha of native vegetation extent. Impacting approximately 0.001 ha of vegetation in excellent condition, 0.052 ha in very good condition, 0.052 ha in good condition, 0.099 ha in degraded condition, and 0.011 ha in completely degraded condition. Vegetation to be retained in each condition across the site includes 0.874 ha (99.89 %) in excellent condition, 8.591 ha (99.40 %) in very good condition, and 10.120 ha (99.49 %) in good condition. The retention and removal of the different vegetation conditions are displayed in Table 10 and the various vegetation types are provided in Table 11.

It is recommended to increase the vegetation condition and structure surrounding native vegetation extents and areas in very good to excellent condition to provide a buffer and mitigate the impacts of edge effects. Increase in vegetation condition are to be undertaken in areas where vegetation condition is degraded and completely degraded.

Table 10: Vegetation condition to be retained and removed across Yanchep Lagoon

		Vegetation Condition						
		Pristine	**Excellent**	**Very Good**	**Good**	**Degraded**	**Completely Degraded**	**Total**
Retained	Area (ha)	0	0.874	8.591	10.120	4.244	7.364	31.193
	Area (%)	0	99.89	99.40	99.49	97.72	99.85	99.32
Removed	Area (ha)	0	0.001	0.052	0.052	0.099	0.011	0.215
	Area (%)	0	0.11	0.60	0.51	2.28	0.15	0.68

Table 11: Vegetation types to be retained and removed across Yanchep Lagoon

		Vegetation Type									
		A1	**A2**	**A3**	**B1**	**C1**	**C2**	**C3**	**D1**	**D2**	**Total**
Retained	Area (ha)	0.993	1.004	4.158	0.228	4.477	8.171	0.259	2.279	0.105	21.674
	Area (%)	100	100	97.70	100	98.70	99.50	98.10	99.17	100	99.02
Removed	Area (ha)	0	0	0.098	0	0.059	0.034	0.005	0.019	0	0.215
	Area (%)	0	0	2.30	0	1.30	0.50	1.90	0.83	0	0.98

Infrastructure

To protect high condition vegetation and mitigate damages to the natural environment it is recommended to establish fencing surrounding conservation areas and revegetation areas. The establishment of appropriate signage is recommended explaining the conservation areas, to inform the general public, and to discourage any unwanted modifications. Informing and educating the general public assists in raising awareness on the benefits of environmental conservation and to support future conservation efforts.

Unauthorised Access Management

Increased human population surrounding natural areas increases the pressure and impact on the environment. Localised disturbance due to urbanisation and developments includes informal tracks for walking, bikes, and other off-road vehicles. Open access into natural areas can create unwanted activities, these activities can modify landscapes, degrade the ecosystem, and facilitate the spread of weeds.

To mitigate unwanted activities across the reserves, infrastructure should be installed to restrict access. To deter illicit activities, it is recommended to place warning signage displaying relevant Local Laws and fines to act as a deterrent. Further consideration should be given to the monitoring of known hotspots for illicit activities, through liaison with the City of Wanneroo's rangers and local police.



Figure 14:
Yanchep Lagoon Master Plan and Vegetation Condition

Yanchep, Western Australia

Legend

- Development Footprint
- Excellent
- Very Good
- Good
- Degraded
- Competely Degraded
- Site Boundary

Client:	UDLA
Date:	01/12/2025
Created by:	Z.Stoney
Image Source:	Nearmap, 2025
Datum:	GDA2020 / MGA zone 50
Scale:	1: 4200

0 50 100 m

N

3.1.2 Weed Management

Weed species impact the environment creating competition of resources, introducing diseases, preventing recruitment, altering ecosystem processes, and impacting native fauna (Burgman and Lindenmayer, 1998; Csurches and Edwards, 1998). To mitigate the impact of weeds on the environment weed control should be undertaken prior to any works. The works undertaken across the site should utilise clean equipment and personal protective equipment (PPE) to mitigate the spread of weeds into natural areas. Weed species can be introduced into natural areas through the illegal dumping of garden waste by residents. It is important monitor the site for evidence of the dumping of garden waste and to undertake community awareness and education training where possible.

Weed Prioritisation

Weed prioritisation should be undertaken across the are prior to undertaking weed control works. The Ecological Impact and Invasiveness Ratings for the Swan Region (DBCA, 2023) is a tool used to determine weed management priorities for weed species recorded within an area. The prioritisation process can be used to inform management recommendations and treatment strategies for weed species present through focusing on species with the greatest ecological impact, as well as any site-specific requirements. Weed prioritisation according to ecological impact and invasiveness is provided for each species in Appendix 5 and summarised in Table 12. Out of the weed species present on site, 11 have not been allocated an ecological impact or invasiveness rating (DPaW, 2016):

- #*Grevillea olivacea* (planted)
- **Callistemon* sp. (planted)
- **Eucalyptus* sp. (planted)
- **Melaleuca* sp. (planted)
- **Metrosideros tomentosa* (planted)
- **Pelargonium × hortiorum*
- **Phoenix* sp. (planted)
- **Westringia fruticosa* (planted)
- Common Bittercress (**Cardamine hirsuta*)
- Norfolk Island Pine (**Araucaria heterophylla*).

Table 12: Ecological impact and invasiveness of weeds species present

	Ecological Impact				Invasiveness			
	High	**Medium**	**Low**	**Unknown**	**Rapid**	**Moderate**	**Slow**	**Unknown**
Number of Species	25	5	15	34	46	12	12	9

Weed Treatment

The treatment type required to control weed species is determined from the characteristics of the species. The treatment types for each weed species can typically be found on the Florabase website (Western Australian Herbarium, 1998-). It is important that the correct timing and methodology is employed for each weed species. There are seven potential weed treatments that can be undertaken to control weed species the recommended treatment types and methodology are described in Table 13. Contractors who are

undertaking weed control must be suitably qualified to reduce the potential of off-target damage, as the weed presence across most of the site are mixed with native species.

Table 13: Treatment types and methodology for targeted weed species

Treatment Number	Treatment Type	Targeted Species	Application Method and Comments
1	Non-selective (Glyphosate/Biactive Glyphosate)	Annual and perennial grass and broadleaf weeds	Spot spray target species
2	Grass selective (e.g. Fusilade)	Annual and perennial grasses	Spot spray - selective grass spray (will affect native grass species)
3	Selective (e.g. Metsulfuron)	Annual broadleaf weeds and bulbs	Spot spray – semi selective
4	Wick wipe (Glyphosate & Metsulfuron wipe)	One-leaf Cape Tulip	Wipe leaves with sponge prior to or just on flowering
5	Woody weeds (Triclopyr + Picloram, or Glyphosate)	Woody weeds and trees	Cut and paint, basal bark or drill and fill (method is species dependant as some are prone to suckering e.g. *Schinus terebinthifolia*)
6	Manual removal/hand weeding	Carnation weeds (*Euphorbia* sp.), Fleabane (*Erigeron* sp.) and other similar species including woody weed seedlings when small	Gloves required due to caustic sap of Carnation weeds. Manual removal can also include slashing
7	Selective (Triasulfuron)	Carnation weeds (*Euphorbia* sp.), Fleabane (*Erigeron* sp.) and other similar species including woody weed seedlings when small	Spot spray target species

3.1.3 Fauna Management

Pre-clearance Trapping and Relocation

To mitigate the impact to vertebrate fauna populations, a fauna trapping and relocation program should be implemented prior to the commencement of vegetation clearing. Trapping and relocation activities are to be planned on a per event basis and will need to be carried out in stages based on the schedule of clearing, as clearing is recommended to be carried out within a maximum of 48 hours from fauna trapping completion in any given area to prevent native fauna from returning/ recolonising. Exclusion fencing should be installed around the entire perimeter of the relevant development stage prior to site works to limit the movement of fauna into the development area. Fauna proof fencing should be a minimum height of 1.8 metres and flushed with the ground.

Pre-clearance fauna trapping and relocation activities are to be undertaken by suitably qualified personnel in accordance with relevant licences and best practice. The trapping and relocation program should include:

- applying for a DBCA Regulation 28 - Fauna Taking (relocation) Licence (formerly Regulation 15 – Licence to take fauna for education or public purposes)
- liaising with the DBCA and relevant landowner(s) to determine a suitable relocation site
- a minimum of five consecutive days (four nights) of trapping per trapping event
- setting out pitfalls and funnel traps along drift fence to target reptiles and amphibians
- setting out aluminium box traps (Elliot style) to target small mammals, including Quenda
- baiting Elliot traps with universal bait (oats and peanut butter)
- covering traps with a hessian bag and/or vegetation to protect captured fauna from the elements
- recording GPS locations of all traps and relocation sites
- recording species, sex and condition (health) of captured individuals
- on days when the temperature is expected to reach or exceed 35°C, traps will be closed after checking in the morning and reopened in the afternoon when it is cooler
- active searching of all portions of the site, including raking leaf litter and moving rocks, logs and similar to search for additional fauna
- relocation of fauna to the nominated location (approved by DBCA) on the day of capture, as soon as it is possible to do so
- production of a fauna trapping and relocation report detailing methods used, locations of traps (maps) and results of the trapping events including species caught and relocated.

All fauna trapping and relocation works are to be undertaken in accordance with the DBCA standard operating procedures (SOP) including:

- aluminium box traps for capture of terrestrial vertebrates (SC22-06)
- animal handling and restraint using soft containment (SC22-12)
- cage traps for live capture of terrestrial vertebrates (SC22-07)
- care of evicted pouch young (SC22-16)
- dry pitfall trapping for vertebrates (SC22-04)
- ethical wildlife photography (SC23-09)
- euthanasia of animals under field conditions (SC23-10)
- first aid for animals (SC23-08)
- funnel trapping for capture of terrestrial vertebrates (SC22-05)
- hand capture of wildlife (SC22-12)
- hand restraint of wildlife (SC23-07)
- managing disease risk and biosecurity in wildlife management (SC23-06)
- transport and temporary holding of wildlife (SC22-11).

Training and Awareness

As part of onsite inductions, pre-starts and toolbox meetings during the development process, all relevant personnel should be made aware of the fauna species likely to be present and the mitigation measures to reduce impacts to conservation significant species. Information should include:

- fauna species present or likely to be present in the area, focusing on conservation significant species
- pictures of the species and their habitats

- on-ground coordination with a fauna spotter and protocols for handling injured fauna or dependant juveniles (including incident reporting requirements).

Signage detailing the fauna present within the retained vegetation should be installed around the Yanchep Lagoon to educate the public about fauna species residing in the area and encourage protection of these species and their habitat.

Vegetation Clearing Controls

The following vegetation clearing controls should be implemented to mitigate impact to fauna:

- vegetation considered to provide habitat for conservation significant fauna species, including migratory bird species, is to be retained where possible. This may include large trees that provide suitable habitat for black cockatoos.
- vegetation clearing to commence within 48 hours of completing the fauna trapping and relocation events to prevent fauna from recolonising the area
- limit of clearing to be clearly flagged prior to commencing earthworks
- slow directional clearing of the site to be undertaken to allow fauna to disperse away from clearing activity into remaining vegetated areas.

Fauna Spotter

A licenced and experienced fauna spotter/catcher should be on site prior to and during vegetation clearing activities to relocate any fauna. The following measures should be implemented during spotting and relocation activities:

- The fauna spotter should liaise with plant operators to minimise fauna injuries or mortalities.
- Captured individuals to be relocated to appropriate habitat locations outside the proposed clearing areas which have been approved by the DBCA and relevant landowner(s).
- If injured fauna or dependant juveniles are found, individuals are to be taken to an authorised wildlife career or nearest veterinary hospital.
- Deceased fauna are to be removed and disposed of in a suitable manner.
- Rate of clearing to be consistent with capability of spotter-catcher and density of fauna found.

Infrastructure

To protect retained fauna habitat within Yanchep Lagoon, conservation fencing should be installed to restrict public access and mitigate unwanted activities within conservation areas. It is recommended that fence specification restricts public access but not inhibit native fauna movement (e.g. ringlock fencing). If areas expecting to have high human activity (such as parking lots and cafes) are adjacent to bushland, it is recommended that abutting fencing includes a skirt/apron to reduce potential interaction and between native fauna and high-risk areas.

Fauna Monitoring

Following completion of the Yanchep Lagoon Master Plan, native fauna remaining within the retained vegetation should be monitored over time to ensure they have not been impacted by the development through loss of habitat from vegetation clearing and on-going environmental disturbances (light, noise etc.) associated with the proposed development and activities. Population monitoring techniques that may be employed include:

- capture-mark-recapture
- faecal pellet counts
- camera trap surveys
- direct observation/active searching.

Anthropogenic pressures as a result of urban development may adversely impact native fauna and associated habitat through loss of habitat and increased disturbance (light, noise). Reduction in available habitat can decrease the resources and reduce the ability for fauna populations to be supported. If ongoing monitoring shows in a decline in species abundance and diversity, habitat enhancement should be considered, and removal of key threatening processes should be implemented.

3.1.4 Feral Pest Management

Feral animals impact the environment and ecosystem, they can degrade vegetation that provides food and shelter for native fauna, prey on the native fauna, and even place a risk to the survival of native fauna and threatened species.

Declared pests are listed on the Western Australian Organism List (WAOL) under the BAM Act (DPIRD, 2024). This classification requires the landowner/land manager to control the population to limit damage as a result of the presence of these species (DPIRD, 2019).

Feral animal control can be undertaken through a variety of methods including exclusion fencing, trapping, baiting, den/warren fumigation, den/warren destruction, and shooting. Feral animal control is to be undertaken by Licenced Pest Management Technicians (LPMT). Feral animal control should prioritise Rabbit, Red Fox, and Feral Cat populations. Adaptive management should be undertaken until the populations are controlled and the detrimental environmental impacts are reduced.

Community education and engagement programs should be actively promoted to ensure that relevant members of the public have an understanding of the ongoing works, and how they may be affected. Appropriate signage and notification should occur prior to, and during trapping efforts, as to inform the community and reduce the risk of off- target domestic pet capture.

Rabbit

Rabbit populations impact the environment by competing with native fauna, overgrazing, preventing regeneration and plant succession, altering ecological communities, and changing soil structure and nutrient cycling leading to erosion (Department of the Environment and Energy (DEE), 2016). Female rabbits are capable of breeding multiple times a year, typically after significant rainfall when fresh growth of plants is available (Centre for Invasive Species Solutions (CISS), 2011). Under favourable conditions, a single doe can produce 50 – 60 offsprings per annum (NSW Department of Primary Industries, 2024). When actively breeding, territorial groups form, consisting of 1-3 males and 7-10 females, with individuals capable of consuming up to 150 g of vegetation per night (over 54 kg per year) (CISS, 2011). Rabbits can support increased population densities of pest species and promote the spread and growth of weed species.

The recommended control of rabbits is to undertake bait delivery of Rabbit Haemorrhagic Disease Virus K5 strain (RHDV1 K5), followed by cage trapping, targeted ground shooting, and rabbit warren destruction, where no native vegetation is to be impacted. It is recommended to undertake RHDV1 K5 release rather than Pindone baiting due to the potential off-target impact of Pindone to native fauna species, including Quendas and Common Brushtail Possums (DPIRD, 2018). Biannual releases of RHDV1 K5 should be undertaken from November to December, and February to March.

Red Fox

Red Foxes predate on native animal species and can deplete populations of threatened fauna and alter ecosystem processes. Red foxes pose a threat to 76 threatened species in Australia and have been the primary cause of the extinction of small and medium sized mammal species in Australia (Department of the Environment, Water, Heritage, and the Arts (DEWHA), 2008a; DEWHA, 2008b).

The recommended control for Red Foxes is to undertake trapping, and targeted ground shooting. Red Fox trapping can be undertaken throughout the year and should be aimed to disrupt annual breeding cycles (June- October) and dispersing individuals (December-May). Targeted ground shooting (subject to risk assessment and approval from Western Australian Police) can be considered to remove trap-shy individuals. Den fumigation and lethal baiting with 1080 are additional control options that can be undertaken, however, due to the proximity to urbanised areas these options are not recommended for any of the reserves due to the risk of off target damage to both native fauna and domestic pets.

Cat

There is the potential for the occurrence of cats within Yanchep Lagoon due to the proximity to urbanised areas and the resources available within surrounding natural areas. Cats inhabit approximately 99% of Australia (West, 2008), and predate on native fauna species, depleting populations (Commonwealth of Australia, 2015). Approximately 80 endangered and threatened species are at risk from feral cat predation (DEWHA, 2008c).

In Australia, cats are grouped into three difference categories. Despite the separate categories, they refer to the same species and all have the potential to be a significant threat to native fauna. The three categories guide management actions that can be undertaken to mitigate the impact of cats on the natural environment (Table 14). Individual cats may move between the categories and only cats within the feral category are classed as declared pests.

Accepted control techniques for feral cats include exclusion fencing, shooting, trapping, and baiting. Due to the proximity of the reserves to urbanised areas, shooting and baiting techniques are not recommended as there is a potential of off-target damage to free-roaming domestic cats. It is recommended that trapping is undertaken to control feral cats, this method is effective in targeting known locations of feral cat populations. It is recommended to control domestic and stray cats to liaise with the City of Wanneroo to promote responsible pet ownership through education and awareness campaigns, and develop signage to inform the public. The development of local cat laws can enforce rules and penalties which can focus on reducing the damage of domestic cats in conservation areas.

Table 14: Categories of cats in Australia

Category	Definition	Management Action
Feral	▪ Live and reproduce in the wild ▪ Survive by hunting or scavenging ▪ None of their needs are satisfied intentionally by humans ▪ Unlikely to ever display socialised behaviour or willingly be in the presence of humans ▪ Only feral cats are declared pests in Western Australia	Primary focus is to reduce population and limit impacts through the use of mechanical, chemical or biological control methods
Stray	▪ Found in and around cities, towns and rural properties ▪ May depend on some resources provided by humans but are not owned	Combination of both social approach (education and awareness campaigns) and technical population/damage reduction
Domestic	▪ Owned by an individual, a household, a business or corporation ▪ Most of their needs are supplied by their owners ▪ Domestic cats are subject to the Cat Act 2011, which requires that they are registered with local authorities and identified according to the act ▪ Unconfined domestic cats that are allowed to wander in natural areas will have greater negative impacts on native fauna	Primary management will focus on pet owners by promoting responsible ownership through education and awareness campaigns. Enforcement through local or state/territory legislation

3.1.5 Environmental Impact Mitigation

To mitigate environmental impacts, all contractors working on site should undertake a site induction which outlines the environmental values of the site and outlines the responses to any environmental incidents. All vehicles and footwear are to be clean and free of debris to mitigate the spread of weeds, diseases and pathogens on site. The removal of weeds are to be conducted prior to development to reduce the spread of weeds. Rubbish and construction materials on site are dealt with efficiently and appropriately removed and disposed of.

Dust

Dust from construction work for the site have the potential to impact the surrounding environmental values, including vegetation, soil and water quality. Dust is particulate matter comprising very small solid particles of earth, organic matter, manufactured products or waste matter which may become airborne (DWER, 2021). This particulate matter has the potential to influence the health of fauna species or amenity features of the site. Dust pollution is known to impact morphological and physiological properties of plants (Kameswaran *et al*., 2019). The inhabitation of dust on plants can reduce the visual amenity of the site for locals and visitors. Dust levels should be visually monitored during construction and management actions implemented if excessive level identified.

Noise and Vibration

The surrounding land uses to Yanchep Lagoon include residential areas, this surrounding land use mean that the site would likely be subjected to existing minor noise and vibrations. Noise levels and light pollution for construction activities on site have the potential to impact fauna species. The impacts of anthropogenic noise on fauna ranges from temporary avoidance to long term behavioural changes that may impact reproductive success or change in habitat use (Erbe *et al.*, 2022; Newport *et al*., 2014). Construction works can also create vibrations which may cause behavioural and physiological changes in species that rely on vibrations to detect biotic and abiotic cues (Roberts & Elliot, 2017; Newport *et al*., 2014). It may be necessary to monitor noise and vibrations prior to, during and after construction works to determine whether there are any implications on fauna species.

Light

Artificial light is currently present adjacent to Yanchep Lagoon within the residential areas. Artificial light can disrupt behaviour and physiological changes in fauna species, including breeding and reproduction activities (Russart & Nelson, 2018). It is important that artificial light is considered in the development of Yanchep Lagoon. Lighting design should follow best practice principles (DCCEEW,2023), including:

- only adding light for specific purposes
- using adaptive light controls to manage timing, intensity and colour
- light only areas intended to avoid light spill
- use the lowest intensity appropriate for the task
- use non-reflective dark coloured surface
- use light with little or no blue wavelengths.

Dieback Management

Phytophthora cinnamomi, or Dieback, can enter bushland through infected soil on footwear, through construction activities, vehicles (infected mud and soil on the tyre tread and undercarriage), and through bushland restoration projects, working at contaminated sites and then introducing the pathogen to uninfected sites. Any personnel or contractors working on site are to undertake the relevant measures in Dieback hygiene to minimise the spread within the site.

A construction environmental management plan is recommended to be developed, including environmental impact mitigation measures such as weed control, dieback hygiene, dust suppression and tree protection during construction activities. This plan will form a condition of contract with the Building Contractor.

3.2 Revegetation Plan

3.2.1 Areas to be revegetated

Areas to be prioritised for revegetation include areas in good to completely degraded vegetation. Any tracks that are not to be utilised should be closed off and rehabilitated. Where applicable vegetation surrounding very good or excellent vegetation condition should be prioritised for revegetation to reduce the impact of edge effects. The revegetation activities to be undertaken across each revegetation zone are site specific. Areas identified to be appropriate opportunities for revegetation are displayed in Figure 17 with the total amount listed in Table 15.

Table 15: Opportunities for revegetation across the vegetation zones in Yanchep Lagoon

	Revegetation Zone			
	A	**C**	**D**	**Total**
Area (ha)	1.027	3.084	0.297	4.408

3.2.2 Site Preparation

Prior to revegetation works, site preparation is to be undertaken across the proposed areas for revegetation. The site preparation works are to include weed control, coir matting, brushing, and fencing. Brushing and coir matting should be used in conjunction to assist in dune stabilisation. Fencing along with brushing and coir matting should be undertaken across existing informal tracks requiring to be rehabilitated and to discourage unauthorised access.

Weed Control

Weed control is to be conducted prior to installation of vegetation to reduce immediate competition. Once the plants and seed has been installed, extreme care should be taken to avoid damage to emerging seedlings and installed tubestock. It is important that weeds be managed prior to seed set and no pre-emergent or residual herbicides shall be applied to seeding areas. It is important that weeds are not allowed to get to a size and density which may impact revegetation. Manual weed control should be conducted where required to ensure zero off target damage and no risk of seed being dispersed.

Coir Matting

Coir matting assists with dune stabilisation and erosion control. Direct seeding and installation of matting is to occur concurrently throughout the revegetation areas to ensure that the matting is installed immediately following seed broadcasting on site to reduce the loss of seeds. A 700 GSM coir matting is to be installed to the proposed revegetation areas. The overlap between the rolls are to be a minimum of 100 mm and are to be trenched into a depth of at least 200 mm by 150 mm wide. Matting is to be secured in place utilising 280 mm Biotek Gipper Pins with a minimum of three pins per m^2. Example coir matting installation and revegetation works are displayed in Figure 15.



Figure 15: Example of coir matting installation and revegetation works.

Fencing

Prior to the installation of plants, windbreak fencing and exclusion fencing are to be installed around the revegetation areas. Windbreak fencing is to comply with the City of Wanneroo's standard (TS 01-11-0) provided in Appendix 6 and example windbreak fencing is displayed in Figure 16. This will include:

- Installation of 2.4 m HD galvanised MaxY Star Pickets at 4 m intervals
- Installation of 7/90/30 ringlock mesh secured to the star pickets with fence post clips
- Installation of 3 strands of white PVC coated horse sighter wire
- Installation of 600 mm wide chicken wire mesh to the bottom 200 mm of the ringlock mesh (secured with C-clips)
- Installation of 915 mm 70% cream shade cloth attached to the ringlock mesh and secured with ringlock fasteners.

As this fence type includes shade cloth, it is expected that the sand will begin to accumulate following installation. This fencing should be used to assist with erosion control. Exclusion fencing should be utilised around revegetation areas to exclude fauna species. This exclusion fencing should be removed once the revegetation is established to allow for the movement of fauna species across the landscape. Sand accumulation against fencing, if not managed, can allow rabbits to mobilise over the fencing to access the revegetation areas. Exclusion fencing should include a rabbit proof skirt and comply with the City of Wanneroo's standard (TS 01-7-1), provided in Appendix 7.



Figure 16: Example windbreak fencing to be installed.

Brushing

The use of brushing materials from local sourced or vegetation marked to be cleared. The vegetation by products for brushing can be strategically placed to assist in dune stabilisation, mitigate against wind erosion, and deter the public from using closed off paths. The use of vegetation that hold seed may further increase the seed quantities to the area and assist in building up the seed back. These species include Melaleuca species. Where the base of the vegetation cannot be placed in the sand steel pins can be utilised to secure the vegetation.

3.2.3 Species List

The species used for revegetation should promote a similar ecosystem structure to the surrounding vegetation. A total of three different revegetation zones based off the vegetation structure are identified

across the site and are displayed in Figure 17. A species list for each of the various revegetation zones were identified, the recommended species list for revegetation is based on the habitat and the readily available stock is provided in Table 16. Native species which are appropriate for the habitat type and region is recommended for a higher success rate

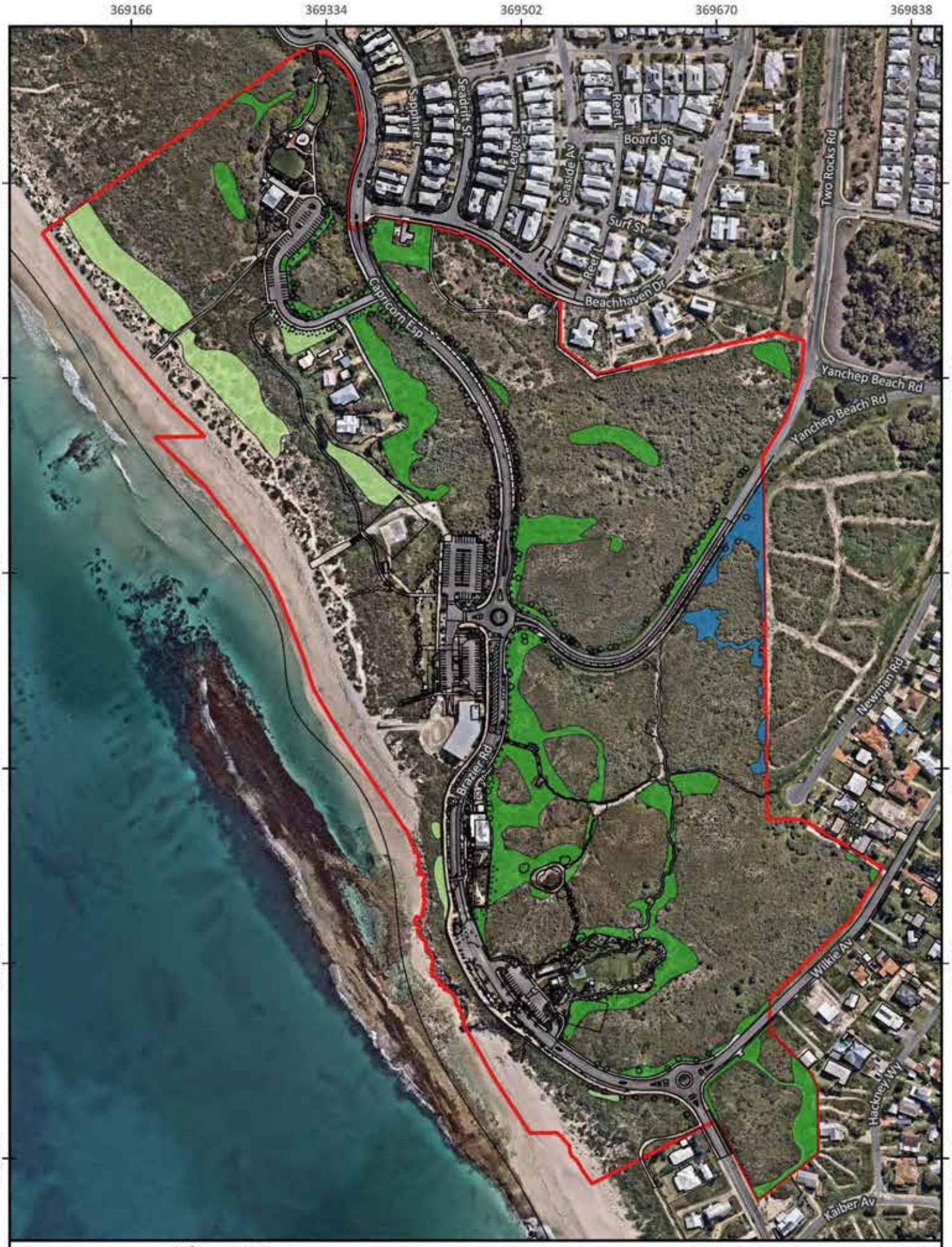


Figure 17:

Opportunities for Revegetation

Yanchep, Western Australia

Legend

Development Footprint

Revegetation Zones

- A
- C
- D

Site Boundary

Client:	UDLA
Date:	01/12/2025
Created by:	Z.Stoney
Image Source:	Nearmap, 2025
Datum:	GDA2020 / MGA zone 50
Scale:	1: 4200

0 50 100 m

N

Table 16: Recommended species for revegetation ^ denotes species that can be direct seeded

Species	Revegetation Zone		
	Dunes On Unconsolidated Sand (A)	**Taller Inland Dunes On Semi-Consolidated Sand (C)**	**Shallow Sands Over Limestone (D)**
*Acacia cochlearis^*		X	
*Acacia cyclops^*	X	X	
Acacia lasiocarpa var. *lasiocarpa^*		X	
*Acacia rostellifera^*		X	
Acacia saligna ^		X	
*Acacia truncata^*			X
*Acacia xanthina^*		X	X
Acanthocarpus preissii	X	X	X
*Allocasuarina humilis^*		X	
Allocasuarina lehmanniana subsp. *lehmanniana^*		X	
*Austrostipa flavescens^*		X	X
*Callitris preissii^*		X	
*Carpobrotus virescens^*	X		
*Clematis linearifolia^*		X	X
Comesperma confertum			
Comesperma integerrimum		X	
Dianella revoluta var. *divaricata*		X	X
Eremophila glabra subsp. *albicans*		X	

Species	Revegetation Zone		
	Dunes On Unconsolidated Sand (A)	Taller Inland Dunes On Semi-Consolidated Sand (C)	Shallow Sands Over Limestone (D)
*Eucalyptus gomphocephala^*		X	
Exocarpos sparteus		X	
*Ficinia nodosa^*	X	X	
Frankenia pauciflora var. *pauciflora*			
Gastrolobium nervosum		X	
*Gompholobium tomentosum^*		X	X
Pigea calycina		X	
*Hardenbergia comptoniana^*	X	X	X
Hemiandra glabra		X	
Hibbertia racemosa		X	
Kennedia prostrata		X	
Lepidosperma calcicola	X	X	
Lepidosperma gladiatum	X	X	
Leucophyta brownii			
Leucopogon parviflorus		X	X
Lomandra maritima	X	X	X
Lysiandra calycina		X	X
*Melaleuca cardiophylla^*		X	X
*Melaleuca huegelii^*			X

Species	Revegetation Zone		
	Dunes On Unconsolidated Sand (A)	Taller Inland Dunes On Semi-Consolidated Sand (C)	Shallow Sands Over Limestone (D)
*Melaleuca lanceolata^*		X	
*Melaleuca systena^*		X	X
Myoporum insulare	X	X	
*Olearia axillaris^*	X	X	X
*Opercularia vaginata^*		X	
Pimelea ferruginea		X	
*Pithocarpa cordata^*	X		
Rhagodia baccata subsp. *baccata^*	X	X	X
*Scaevola crassifolia^*	X	X	
Scaevola globifera		X	
Scaevola thesioides subsp. *thesioides*		X	X
Spinifex hirsutus	X		
Spinifex longifolius	X		
*Spyridium globulosum^*	X	X	X
*Templetonia retusa^*		X	X
Thomasia triphylla			X
*Threlkeldia diffusa^*	X	X	
Thysanotus manglesianus	X	X	X
*Trachymene Pilosa^*			X

Species	Revegetation Zone		
	Dunes On Unconsolidated Sand (A)	Taller Inland Dunes On Semi-Consolidated Sand (C)	Shallow Sands Over Limestone (D)
Tricoryne elatior		X	X
Trymalium ledifolium var. *ledifolium*			X

3.2.4 Seed Collection

An experienced revegetation seed collection consultant is to be engaged to conduct seed collection throughout the remnant bushland across the site to provide provenance specific seed to produce a similar vegetation representation from the immediate area. Seed collectors are required to be licenced, and Revegetation Industry Association of Western Australia (RIAWA) accredited. All seed collected is to be handled under RIAWA standards. Seed should be collected between September and April and collected in quantities to target an initial stem count target of 1 per m^2 for direct seeding. Seed collectors should ideally be the same contractor implementing the works and/or propagating plants to ensured continuity of quality and accountability of supplied stock.

3.2.5 Revegetation Program

Revegetation activities will primarily involve direct seeding and planting at the site to restore the vegetation structure of degraded and completely degraded vegetation.

Direct Seeding

Direct seeding is to be conducted when there is adequate soil moisture and rain to settle seed, typically experienced in autumn and early winter. Seeding is to be carried out by a competent and qualified revegetation consultant. Seed is to be treated prior to distribution to alleviate dormancy and stimulate germination. Seed treatments may include:

- heat treatment
- scarification
- smoke treatment
- removal of physical dormancy inhibitors.

The areas to be seeded will need to be scarified to allow for an appropriate settlement of seed within the soil and to ensure that appropriate seed to soil contact is made. Deep ripping is not suitable and will cause excessive disturbance throughout the site. It is preferential that equipment that can direct drill seeds to an appropriate depth and cover the seed with minimal seed disturbance. Where access and site conditions are not suitable to use equipment that can direct seed, seed is to be distributed across the site by hand. Seed which requires light for germination does not need drilling or covering. Seed is not to be distributed over limestone outcrops and all equipment should avoid these areas. The on-ground seeding activities are to be tracked via GPS to document the areas seeded.

Tubestock Installation

Tubestock is to be installed after first major rains following direct seeding (within a month) to not disturb emerging seedlings. Tubestock will need to be installed using mechanical augers or pottiputki's (dependent on soil composition) with the top of the root ball being buried no less than 5 mm below the soil surface.

In revegetation zone A, dunes on unconsolidated sand, *Spinifex longifolia* and *Spinifex hirsutus* are to be planted at a minimum rate of 2 to 4 plants per square metre with the other species within this zone to be planted in to be planted at a minimum rate of 1 plant per square metre. In the other revegetation zones (C and D), tubestock should be installed at 4 per square metre densities. Species should be diverse and relevant to the appropriate areas.

4.0 Implementation and Monitoring

4.1 Implementation Schedule and Reporting

The implementation and reporting schedule are provided in Appendix 8. The schedule outlines the pre-construction, during construction and post construction activities.

4.2 Monitoring

Following the development and revegetation of the site monitoring events should be undertaken prior to construction, during construction and post construction. Monitoring events allows an assessment of the site and identify the changes in the vegetation composition over time and identify threats to assist in developing management strategies as they arise.

An inspection of the site is to be carried out every six months following the completion of the development. The following factors are to be assessed:

- tube stock survival in revegetation zones
- fencing conditions
- erosion
- weed densities and extents
- infrastructure condition
- signs of litter
- signs of unauthorised tracks
- signs of feral pests.

4.2.1 Revegetation monitoring

Revegetation monitoring should be undertaken across any revegetation zones across the site to assess the progress and to identifying and inform future management techniques. Revegetation monitoring is to involve formal quadrat assessment to quantify weed coverage and tube stock. This revegetation monitoring is to involve an assessment of a minimum of one reference site per revegetation zone. The exact locations of the quadrats are to be determined by a suitably qualified environmental scientist following the completion of revegetation works.

The monitoring quadrats are to assess a 5 x 5 m area and are to be permanently marked out by metal star pickets with safety caps. The monitoring should be undertaken biannually in autumn and spring for a total of 5 years from the initial tube stock planting. A written report is to be provided at the completion of each year outlining the success of the revegetation works, comparison to previous years (where applicable) and outline any management actions required. The data to be recorded at each revegetation monitoring point are to include, but not limited to:

- photos taken in the same direction to enable comparison of plant growth and establishment over time
- species survival, vegetation health, native species coverage and composition, weed species present and density
- a general assessment of the entire site, considering maintenance issues, identification of potential success inhibiting factors, fauna presences and other relevant information.

4.2.2 Flora and Vegetation

A minimum of six photo monitoring points are to be established across retained vegetation. The location of the photo monitoring points are to be determined onsite by a suitably qualified environmental scientist. The photo monitoring points are to be established prior to any site works to allow for a visual comparison over time.

The entirely of the site is to be traversed mapping out vegetation condition and their extents in line with the vegetation condition scale adapted from Keighery (1994). Vegetation condition results are to be provided to the city at the completion of each year and outline the recommended management strategies to improve or retain vegetation.

Weed mapping should be undertaken across the Yanchep Lagoon Master Plan area to assess the population and extent of weed species to assist in informing management techniques. Weed mapping is to assess the entire site and be undertaken in a systematic grid mapping to allow for a comparison of weed species and density coverage of weed species. Weed mapping results are to be provided to the City at the completion of each year as maps and outline the recommended weed controls and management. Weed densities and cover are to be compared to the initial monitoring event where applicable.

4.2.3 Unauthorised access and infrastructure

A visual assessment should be undertaken across the site to assess the condition of infrastructure and the presence of any unauthorised access tracks. The monitoring of unauthorised access and infrastructure should be ongoing and assist in the development of any management strategies. Any litter or rubbish should be noted and removed each year when present.

4.2.4 Feral Pest

Pest population monitoring should occur before and after control events where possible. Where pre and post monitoring is not viable, annual monitoring is to occur. Monitoring of feral pests include active searching for evidence of presence, night surveys using thermal imaging, and use of trail cameras. Monitoring techniques have species-specific effectiveness and should therefore be implemented accordingly. Sampling efforts such as survey transects and placement of trail cameras should be established and standardised between baseline and subsequent monitoring events. Comparing monitoring results between monitoring events indicates the effectiveness of the control treatment, informing future management strategies.

Rabbits

Rabbit abundance index can be estimated by searching for warrens and signs of activities, and more thoroughly by counting individuals during night surveys. Signs includes prints, scat, evidence of grazing, and warren activity. The counting of individuals should be undertaken during the night due to nocturnal habits, utilising a thermal imaging scope. Pre-established transects should be followed with the individuals counted, to provide a repeatable methodology for comparison with future data.

Red Foxes

Fox abundance index can be estimated by searching for signs and dens, and by using trail cameras at areas with suspected fox activity. Signs include prints, scat, and diggings, often providing indication of the recency

of fox activity. The use of trail cameras can provide evidence of fox presence but can lack the ability to discern between individual foxes in some cases.

Cats

Cat abundance index can be estimated by searching for signs and by using trail cameras at areas with suspected cat locations. Signs include prints, scats, and scratchings, often providing indication of the recency of activity. Signs of activities do not provide information regarding the domestication status of a cat. Trail cameras can prove particularly effective at identifying individuals, as well as providing indication of the cat's domestication status (particularly when collars are present).

4.3 Completion Criteria

The desired outcomes and completion criteria for the site are outlined in Table 17.

Table 17: Completion Criteria for Yanchep Lagoon Master Plan

Factor	Completion Criteria
Revegetation	
Weed Coverage	Less than 10 %
Species richness (as percentage of species planted)	70 % of total number of species represented in quadrats
Total native species stem densities	2 plants / m^2
Erosion	No evidence of erosion across the site
Flora and Vegetation	
Vegetation Condition	Vegetation condition within the retained areas across the Yanchep Lagoon Master Plan is to be in a better condition than it was prior to construction (Where vegetation condition is completely degraded to good)
Conservation Significant Flora	Conservation significant flora population are in a healthy condition and extents are retained
Weed Coverage	Weed coverage should be less than 10% across the reserve
Declared pests and WoNS	No declared pest or WoNS to be on site
Unauthorised access and infrastructure	
Fencing	Zero to minimal damage
Signage	Signage intact and in good condition
Formalised Tracks	All formalised access in a good and useable condition
Informal Tracks	No unwanted access tracks
Rubbish	Zero rubbish present across the site
Fauna	
Native Fauna	The number of fauna species present remain stable

Factor	Completion Criteria
Native Fauna	Fauna habitat is to be maintained across Yanchep lagoon to provide adequate refuge.
Feral Pests	No declared pests to be recorded present on site

4.4 Contingencies

Following monitoring events contingencies should be assessed to ensure that the site is meeting the completion criteria. Contingencies associated with each factor for the completion criteria are provided in Table 18.

Table 18: Contingencies

Factor	Contingencies
Revegetation	
Weed Coverage	Undertake weed control across the revegetation site as outlined in section 3.1.2.
Species richness (as percentage of species planted)	Undertake infill plant across the revegetation site as outlined in section 3.2.
Total native species stem densities	Undertake infill plant across the revegetation site as outlined in section 3.2.
Erosion	Undertake erosion control, including where appropriate, dune stabilisation and coir matting with infill plantings as outlined in section 3.2.
Flora and Vegetation	
Vegetation Condition	Undertake revegetation and weed control across the site
Conservation Significant Flora	Liaise with relevant authorities and environmental consultants regarding a potential monitoring and management plan targeted towards conservation significant flora
Weed Coverage	Undertake weed control as outlined in section 3.1.2.
Declared pests and WoNS	Undertake weed control as outlined in section 3.1.2.
Unauthorised Access and Infrastructure	
Fencing	Undertake maintenance events as outlined in section 3.1.1.
Signage	Undertake maintenance events as outlined in section 3.1.1.
Formalised Tracks	Undertake maintenance events as outlined in section 3.1.1.
Informal Tracks	Close off unwanted tracks with fencing or revegetation works as outlined in section 3.1.1.
Rubbish	Undertake maintenance events as outlined in section 3.1.1
Fauna	

Factor	Contingencies
Native Fauna	Liaise with relevant authorities and environmental consultants regarding a potential monitoring and management plan targeted towards conservation significant flora as outlined in section 3.1.3
Native Fauna	Maintain and/or enhance fauna habitat through revegetation activities and development of artificial refuge if appropriate.
Feral Pests	Undertake feral pest control as outlined in section 3.1.4.

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Appendix 1: Land Tenure and Zoning Plans

Lot 8024
R 48603
(Reserve for Foreshore Management)
(CoW Management)
5.8222ha

Lot 8013
R49033
(Public Rec.)
(CoW Mgmt)

Lot 661
R 48714
(Community Purposes)
Mary Lindsay Homestead
(CoW Management with Power to Lease)
2.1775ha

8003

Lot 8002
R 49246
(Reserve for Public Recreation)
Beachhaven Park
(CoW Management)
77655sqm

BEACHHAVEN

DRIVE

TWO ROCKS RD

Lot 15452
R20561
(Reserve for Recreation & Purposes Incidental Thereto)
(CoW Management with Power to Lease)
67.7823ha

CAPRICORN

135
134
901
900

8026 R49603

Lot 501
R29352
(Foreshore Mgmt)
(CoW Mgmt)
5150sqm

Lot 500
R48603
(Foreshore Mgmt)
(CoW Mgmt)
6370sqm

9054

Lot 502
R 29352
(Foreshore Management)
(CoW Management)
1.1919ha

YANCHEP BEACH RD

ESP

12
(Private Freehold)
6041sqm

1
(Private Freehold)
1807sqm

Lot 10603
R39022
(Reserve for Restaurant, Cafe, Tavern, Retail, Function Centre and Related Purposes)
Former Yanchep Surf Club
(CoW Management with Power to Lease)
2130sqm

Lot 521
R 12439
(Reserve for Recreation)
Newman Park
(CoW Management with Power to Lease)
2.6731ha

BRAZIER RD

Local Development Plan Extent

Foreshore Managment Plan Extent

14
(Private Freehold)
2.0604ha

NEWMAN RD

Lot 520
R 12439
(Reserve for Recreation)
Newman Park
(Includes Picnic Cove)
(CoW Management with Power to Lease)
6.4391ha

Lot 522
R 12439
(Reserve for Recreation)
Newman Park
(CoW Management with Power to Lease)
2.3100ha

15
(Private Freehold)
7355sqm

Yanchep Surf Life Saving Club

Yanchep Lagoon

Lot 9740
R 43792
(Reserve for Recreation)
(CoW Management with Power to Lease)
527sqm

Yanchep Lagoon Kiosk

Lot 510
R 29694
(Reserve for Recreation)
Newman Park
(Includes Fishermans Hollow)
(CoW Management with Power to Lease)
5.6953ha

Lot 8315
R 29354
(Public Recreation)
Brazier Park

523
R12439
Newman Park

BRAZIER

WILKIE AVE

RD

(Power to Lease)
2264sqm

15451
R20561

(Recreation & Purposes Incidental Thereto)
24.2348ha

0 200
metres

LEGEND

- YANCHEP LAGOON MASTER PLAN BOUNDARY (as per RobertsDay June 2019)
- YLMP FORESHORE MANAGEMENT PLAN AREA
- YLMP LOCAL DEVELOPMENT PLAN AREA

LAND TENURE

- A CLASS RESERVE (STATE OWNED)
- C CLASS RESERVE (STATE OWNED)
- FREEHOLD (PRIVATELY OWNED)
- LEASE AREAS (under CoW management)

N

YANCHEP LAGOON MASTER PLAN
LAND TENURE - (Master Plan Overlay)

NOTE: LOTS 510 (R29694), 523 (R12439) and 9740 (R43792)
ARE SUBJECT TO SUBDIVISION - IN ORDER FOR DEALINGS WITH LANDGATE REFER DP422614

SCALE: 1: 3000 @ A3

DATE: January 2024

REF: 2024-01 YLMP land tenure V3

NOTE: While the City of Wanneroo has made every effort to ensure the accuracy and completeness of data it accepts no responsibility or liability for any errors or omissions within the information presented.
Based on information provided by and with the permission of the Western Australian Land Authority trading as LANDGATE (2012).



YANCHEP LAGOON MASTER PLAN
LAND TENURE - (Aerial Overlay)

NOTE: LOTS 510 (R29694), 523 (R12439) and 9740 (R43792) ARE SUBJECT TO SUBDIVISION - IN ORDER FOR DEALINGS WITH LANDGATE REFER DP422614

SCALE: 1: 3000 @ A3

DATE: January 2024

REF: 2024-01 YLMP land tenure V3

NOTE: While the City of Wanneroo has made every effort to ensure the accuracy and completeness of data it accepts no responsibility or liability for any errors or omissions within the information presented.
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YANCHEP LAGOON MASTER PLAN
ZONING PLAN (DPS2)

NOTE: LOTS 510 (R29694), 523 (R12439) and 9740 (R43792) ARE SUBJECT TO SUBDIVISION - IN ORDER FOR DEALINGS WITH LANDGATE REFER DP422614

SCALE: 1: 3000 @ A3

DATE: January 2024

REF: 2024-01 YLMP land tenure V3

NOTE: While the City of Wanneroo has made every effort to ensure the accuracy and completeness of data it accepts no responsibility or liability for any errors or omissions within the information presented.
Based on information provided by and with the permission of the Western Australian Land Authority trading as LANDGATE (2012).

Appendix 2: Flora Species List

The complete flora list for the site is provided in the table below with flora listed by family. *Denotes introduced species and # denotes species that are native to Western Australia but not to this local region.

Family	Species	Common Name
Aizoaceae	**Tetragonia decumbens*	Sea Spinach
Aizoaceae	*Carpobrotus virescens*	Coastal Pigface
Anacardiaceae	**Schinus terebinthifolia*	
Apiaceae	*Daucus glochidiatus*	Australian Carrot
Araliaceae	*Trachymene pilosa*	Native Parsnip
Araucariaceae	**Araucaria heterophylla (*planted)	Norfolk Island Pine
Arecaceae	**Phoenix* sp. (planted)	
Arecaceae	**Washingtonia filifera* (planted)	
Asparagaceae	**Yucca aloifolia*	
Asparagaceae	*Acanthocarpus preissii*	
Asparagaceae	*Lomandra maritima*	Maritime Mat Rush
Asparagaceae	*Thysanotus manglesianus*	Mangles' Fringed Lily
Asphodelaceae	**Asphodelus fistulosus*	Onion Weed
Asphodelaceae	**Trachyandra divaricata*	
Asteraceae	**Arctotheca calendula*	Cape Weed
Asteraceae	**Arctotis stoechadifolia*	White Arctotis
Asteraceae	**Cotula turbinata*	Funnel Weed
Asteraceae	**Erigeron bonariensis*	
Asteraceae	**Gazania linearis*	
Asteraceae	*Hypochaeris radicata	Flat Weed
Asteraceae	**Leontodon rhagadioloides*	Cretan Weed
Asteraceae	**Osteospermum ecklonis*	
Asteraceae	**Reichardia tingitana*	False Sowthistle
Asteraceae	**Sonchus oleraceus*	Common Sowthistle
Asteraceae	**Urospermum picroides*	False Hawkbit
Asteraceae	*Brachyscome bellidioides*	
Asteraceae	*Leptorhynchos scaber*	Lanky Buttons
Asteraceae	*Leucophyta brownii*	

Family	Species	Common Name
Asteraceae	*Olearia axillaris*	Coastal Daisybush
Asteraceae	*Pithocarpa cordata*	Tangle Daisy
Asteraceae	*Podotheca gnaphalioides*	Golden Long-heads
Asteraceae	*Senecio pinnatifolius* var. *latilobus*	Variable Groundsel
Asteraceae	**Hypochaeris glabra*	Smooth Cats-ear
Brassicaceae	**Brassica tournefortii*	Mediterranean Turnip
Brassicaceae	**Cakile maritima*	Sea Rocket
Brassicaceae	**Cardamine hirsuta*	Common Bittercress
Brassicaceae	**Heliophila pusilla*	
Brassicaceae	**Matthiola incana*	Common Stock
Campanulaceae	*Isotoma hypocrateriformis*	Woodbridge Poison
Campanulaceae	*Lobelia tenuior*	Slender Lobelia
Caprifoliaceae	**Centranthus macrosiphon*	
Caryophyllaceae	**Petrorhagia dubia*	
Caryophyllaceae	**Sagina maritima*	
Caryophyllaceae	**Silene gallica*	French Catchfly
Caryophyllaceae	**Stellaria media*	Chickweed
Caryophyllaceae	**Sabulina mediterranea*	
Casuarinaceae	*Allocasuarina humilis*	Dwarf Sheoak
Casuarinaceae	*Allocasuarina lehmanniana* subsp. *lehmanniana*	Dune Sheoak
Chenopodiaceae	*Atriplex isatidea*	Coast Saltbush
Chenopodiaceae	*Rhagodia baccata* subsp. *baccata*	Berry Saltbush
Chenopodiaceae	*Rhagodia baccata* subsp. *dioica*	Sea Berry Saltbush
Chenopodiaceae	*Salicornia blackiana*	
Chenopodiaceae	*Threlkeldia diffusa*	Coast Bonefruit
Crassulaceae	**Crassula glomerata*	
Crassulaceae	*Crassula colorata*	Dense Stonecrop
Cupressaceae	*Callitris preissii*	Rottnest Island Pine
Cyperaceae	**Ficinia marginata*	Coarse Club Rush
Cyperaceae	*Ficinia nodosa*	Knotted Club Rush
Cyperaceae	*Lepidosperma calcicola*	
Cyperaceae	*Lepidosperma gladiatum*	Coast Sword-sedge

Family	Species	Common Name
Cyperaceae	*Schoenus lanatus*	Woolly Bog-rush
Dilleniaceae	*Hibbertia racemosa*	Stalked Guinea Flower
Droseraceae	*Drosera macrantha*	Bridal Rainbow
Ericaceae	*Acrotriche cordata*	Coast Ground Berry
Ericaceae	*Leucopogon parviflorus*	Coast Beard-heath
Ericaceae	*Styphelia insularis*	
Euphorbiaceae	**Euphorbia australis*	Namana
Euphorbiaceae	**Euphorbia paralias*	Sea Spurge
Euphorbiaceae	**Euphorbia peplus*	Petty Spurge
Euphorbiaceae	**Euphorbia terracina*	Geraldton Carnation Weed
Fabaceae	**Medicago polymorpha*	Burr Medic
Fabaceae	**Melilotus indicus*	
Fabaceae	**Trifolium campestre* var. *campestre*	Hop Clover
Fabaceae	*Acacia cochlearis*	Rigid Wattle
Fabaceae	*Acacia cyclops*	Coastal Wattle
Fabaceae	*Acacia lasiocarpa*	Panjang
Fabaceae	*Acacia rostellifera*	Summer-scented Wattle
Fabaceae	*Acacia saligna*	Orange Wattle
Fabaceae	*Acacia truncata*	
Fabaceae	*Acacia xanthina*	White-stemmed Wattle
Fabaceae	*Gastrolobium nervosum*	
Fabaceae	*Gompholobium tomentosum*	Hairy Yellow Pea
Fabaceae	*Hardenbergia comptoniana*	Native Wisteria
Fabaceae	*Kennedia prostrata*	Scarlet Runner
Fabaceae	*Templetonia retusa*	Cockies Tongues
Frankeniaceae	*Frankenia pauciflora* var. *pauciflora*	Seaheath
Gentianaceae	*Schenkia australis*	
Gentianaceae	**Centaurium pulchellum*	
Geraniaceae	**Erodium botrys*	Long Storksbill
Geraniaceae	**Pelargonium capitatum*	Rose Pelargonium
Goodeniaceae	*Scaevola crassifolia*	Thick-leaved Fan-flower
Goodeniaceae	*Scaevola globulifera*	

Family	Species	Common Name
Goodeniaceae	*Scaevola thesioides* subsp. *thesioides*	
Haemodoraceae	*Conostylis pauciflora* subsp. *pauciflora*	
Hemerocallidaceae	*Dianella revoluta* var. *divaricata*	Flax Lily
Hemerocallidaceae	*Tricoryne elatior*	Yellow Autumn Lily
Iridaceae	**Ferraria crispa*	Black Flag
Iridaceae	**Romulea rosea*	Guildford Grass
Lamiaceae	**Stachys arvensis*	Staggerweed
Lamiaceae	**Westringia fruticosa* (planted)	
Lamiaceae	*Hemiandra glabra*	
Lauraceae	*Cassytha aurea*	
Lauraceae	*Cassytha flava*	Dodder Laurel
Lauraceae	*Cassytha glabella*	Tangled Dodder Laurel
Lauraceae	*Cassytha racemosa*	Dodder Laurel
Loganiaceae	*Phyllangium divergens*	
Malvaceae	**Lagunaria patersonia* (planted)	
Malvaceae	**Malva parviflora*	Marshmallow
Malvaceae	*Thomasia triphylla*	
Montiaceae	*Calandrinia liniflora*	Parakeelya
Myrtaceae	*#Chamelaucium uncinatum*	Geraldton Wax
Myrtaceae	*#Eucalyptus utilis* (planted)	Coastal Moort
Myrtaceae	*#Melaleuca nesophila* (planted)	Mindiyed
Myrtaceae	**Callistemon* sp. (planted)	
Myrtaceae	**Eucalyptus* sp. (planted)	
Myrtaceae	**Gaudium laevigatum*	Coast Teatree
Myrtaceae	**Metrosideros tomentosa* (planted)	Pōhutukawa
Myrtaceae	*Agonis flexuosa*	Peppermint
Myrtaceae	*Eucalyptus gomphocephala*	Tuart
Myrtaceae	*Melaleuca cardiophylla*	Tangling Melaleuca
Myrtaceae	*Melaleuca huegelii* subsp. *huegelii*	Chenille Honeymyrtle
Myrtaceae	*Melaleuca lanceolata*	Melaleuca lanceolata
Myrtaceae	*Melaleuca rhaphiophylla*	Swamp Paperbark

Family	Species	Common Name
Myrtaceae	*Melaleuca systena*	Coastal Honeymyrtle
Onagraceae	**Oenothera drummondii*	Beach Evening Primrose
Orobanchaceae	**Orobanche minor*	Lesser Broomrape
Oxalidaceae	**Oxalis pes-caprae*	Soursob
Papaveraceae	**Fumaria capreolata*	Whiteflower Fumitory
Phyllanthaceae	*Lysiandra calycina*	False Boronia
Poaceae	**Avena barbata*	Bearded Oat
Poaceae	**Briza maxima*	Blowfly Grass
Poaceae	**Briza minor*	Shivery Grass
Poaceae	**Bromus diandrus*	Great Brome
Poaceae	**Catapodium rigidum*	Rigid Fescue
Poaceae	**Cenchrus clandestinus*	Kikuyu Grass
Poaceae	**Cynodon dactylon*	Couch
Poaceae	**Ehrharta longiflora*	Annual Veldt Grass
Poaceae	**Eragrostis curvula*	African Lovegrass
Poaceae	**Lagurus ovatus*	Hare's Tail Grass
Poaceae	**Lolium perenne*	Perennial Ryegrass
Poaceae	*Lolium rigidum	Wimmera Ryegrass
Poaceae	**Poa annua*	Winter Grass
Poaceae	**Stenotaphrum secundatum* (planted)	Buffalo Grass
Poaceae	**Vulpia muralis*	
Poaceae	*Austrostipa flavescens*	
Poaceae	*Bromus arenarius*	Sand Brome
Poaceae	*Poa porphyroclados*	
Poaceae	*Spinifex hirsutus*	Hairy Spinifex
Poaceae	*Spinifex longifolius*	Beach Spinifex
Poaceae	*Ehrharta calycina	Perennial Veldt Grass
Polygalaceae	*Comesperma integerrimum*	
Primulaceae	**Lysimachia arvensis*	Pimpernel
Proteaceae	*Grevillea crithmifolia*	
Proteaceae	*#Grevillea obtusifolia* (planted)	Obtuse Leaved Grevillea
Proteaceae	*#Grevillea olivacea* (planted)	Olive Grevillea

Family	Species	Common Name
Proteaceae	**Banksia integrifolia* (planted)	
Ranunculaceae	*Clematis linearifolia*	Slender Clematis
Restionaceae	*Desmocladus asper*	
Rhamnaceae	*Cryptandra mutila*	
Rhamnaceae	*Spyridium globulosum*	Basket Bush
Rhamnaceae	*Trymalium ledifolium*	
Rosaceae	**Casuarina equisetifolia*	
Rosaceae	**Eriobotrya japonica* (planted)	
Rubiaceae	**Galium murale*	Small Goosegrass
Rubiaceae	*Opercularia vaginata*	Dog Weed
Santalaceae	*Exocarpos sparteus*	Broom Ballart
Santalaceae	*Leptomeria empetriformis*	
Santalaceae	*Leptomeria preissiana*	
Santalaceae	*Santalum acuminatum*	Quandong
Scrophulariaceae	**Bellardia trixago*	Bellardia
Scrophulariaceae	**Dischisma arenarium*	
Scrophulariaceae	*Eremophila glabra* subsp. *albicans*	Tar Bush
Scrophulariaceae	*Myoporum insulare*	Blueberry Tree
Thymelaeaceae	*Pimelea ferruginea*	
Urticaceae	*Parietaria debilis*	Pellitory
Violaceae	*Pigea calycina*	Wild Violet
Xanthorrhoeaceae	*Xanthorrhoea preissii*	Grass tree

Appendix 3: Conservation Codes

Western Australia

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

Conservation Code	Name	Description
		or flora. Species that are adequately known, are rare but not threatened, or meet criteria for near threatened, or that have been recently removed from the threatened species or other specially protected fauna lists for other than taxonomic reasons, are placed in Priority 4. These species require regular monitoring.
P1	Priority One	Poorly known species – Species that are known from one or a few locations (generally five or less) which are potentially at risk. All occurrences are either very small or on lands not managed for conservation, such as road verges, urban areas, farmland, active mineral lease and under threat of habitat destruction or degradation.
P2	Priority Two	Poorly known species – Species that are known from one or a few locations (generally five or less), some of which are on lands managed primarily for nature conservation, such as national parks, conservation parks, nature reserves, State forest, vacant Crown land, water reserves and similar.
P3	Priority Three	Poorly known species – Species that are known from several locations, and the species does not appear to be under imminent threat, or from few but widespread locations with either large population size or significant remaining areas of apparently suitable habitat, much of it not under imminent threat
P4	Priority Four	Rare or near threatened and other species in need of monitoring.

(Source: Department of Biodiversity, Conservation and Attractions, 2020a)

Commonwealth

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

(Source: Department of Biodiversity, Conservation and Attractions, 2019)

Appendix 4: Fauna Species List

Amphibian species to potentially occur within the survey area as identified by Terrestrial Ecosystems (2020)

Family	Species	Common Name
Hylidae	*Litoria moorei*	Motorbike Frog
Limnodynastidae	*Heleioporus eyrei*	Moaning Frog
Limnodynastidae	*Limnodynastes dorsalis*	Western Banjo Frog
Myobatrachidae	*Crinia insignifera*	Squelching Froglet
Myobatrachidae	*Myobatrachus gouldii*	Turtle Frog
Myobatrachidae	*Pseudophryne guentheri*	Gunther's Toadlet

Bird species to potentially occur within the survey area as identified by Terrestrial Ecosystems (2020)

Family	Species	Common Name
Accipitridae	*Accipiter cirrocephalus*	Collared Sparrowhawk
Accipitridae	*Accipiter fasciatus*	Brown Goshawk
Accipitridae	*Aquila audax*	Wedge-tailed Eagle
Accipitridae	*Circus approximans*	Swamp Harrier
Accipitridae	*Elanus axillaris*	Black-shouldered Kite
Accipitridae	*Haliastur sphenurus*	Whistling Kite
Accipitridae	*Hieraaetus morphnoides*	Little Eagle
Accipitridae	*Lophoictinia isura*	Square-tailed Kite
Anatidae	*Tadorna tadornoides*	Australian Shelduck
Podargidae	*Podargus strigoides*	Tawny Frogmouth
Casuariidae	*Dromaius novaehollandiae*	Emu
Laridae	*Chroicocephalus novaehollandiae*	Silver Gull
Threskiornithidae	*Threskiornis spinicollis*	Straw-necked Ibis
Columbidae	**Columba livia*	Domestic Pigeon
Columbidae	*Ocyphaps lophotes*	Crested Pigeon
Columbidae	*Phaps chalcoptera*	Common Bronzewing
Columbidae	*Phaps elegans*	Brush Bronzewing
Columbidae	**Spilopelia senegalensis*	Laughing Turtle-dove
Columbidae	**Spilopelia chinensis*	Spotted Turtle-dove

Family	Species	Common Name
Halcyonidae	**Dacelo novaeguineae*	Laughing Kookaburra
Halcyonidae	*Todiramphus sanctus*	Sacred Kingfisher
Meropidae	*Merops ornatus*	Rainbow Bee-eater
Cuculidae	*Cacomantis flabelliformis*	Fan-tailed Cuckoo
Cuculidae	*Chalcites basalis*	Horsfield's Bronze-cuckoo
Cuculidae	*Chalcites lucidus*	Shining Bronze-cuckoo
Cuculidae	*Heteroscenes pallidus*	Pallid Cuckoo
Falconidae	*Falco berigora*	Brown Falcon
Falconidae	*Falco cenchroides*	Nankeen Kestrel
Falconidae	*Falco longipennis*	Australian Hobby
Falconidae	*Falco peregrinus*	Peregrine Falcon
Phasianidae	*Coturnix pectoralis*	Stubble Quail
Otididae	*Ardeotis australis*	Australian Bustard
Rallidae	*Porzana tabuensis*	Spotless Crake
Acanthizidae	*Acanthiza apicalis*	Inland Thornbill
Acanthizidae	*Acanthiza chrysorrhoa*	Yellow-rumped Thornbill
Acanthizidae	*Acanthiza inornata*	Western Thornbill
Acanthizidae	*Gerygone fusca*	Western Gerygone
Acanthizidae	*Sericornis frontalis*	White-browed Scrubwren
Acanthizidae	*Smicrornis brevirostris*	Weebill
Acrocephalidae	*Acrocephalus australis*	Australian Reed-warbler
Artamidae	*Artamus cinereus*	Black-faced Woodswallow
Artamidae	*Artamus cyanopterus*	Dusky Woodswallow
Artamidae	*Artamus personatus*	Masked Woodswallow
Artamidae	*Cracticus nigrogularis*	Pied Butcherbird
Artamidae	*Cracticus torquatus*	Grey Butcherbird
Artamidae	*Gymnorhina tibicen*	Australian Magpie
Campephagidae	*Coracina novaehollandiae*	Black-faced Cuckoo-shrike
Campephagidae	*Lalage tricolor*	White-winged Triller
Corvidae	*Corvus coronoides*	Australian Raven
Hirundinidae	*Cheramoeca leucosterna*	White-backed Swallow

Family	Species	Common Name
Hirundinidae	*Hirundo neoxena*	Welcome Swallow
Hirundinidae	*Petrochelidon nigricans*	Tree Martin
Maluridae	*Malurus lamberti*	Variegated Fairy-wren
Maluridae	*Malurus leucopterus*	White-winged Fairy-wren
Maluridae	*Malurus splendens*	Splendid Fairy-wren
Maluridae	*Stipiturus malachurus*	Southern Emu-wren
Megaluridae	*Cincloramphus mathewsi*	Rufous Songlark
Megaluridae	*Acanthorhynchus superciliosus*	Western Spinebill
Megaluridae	*Anthochaera carunculata*	Red Wattlebird
Megaluridae	*Anthochaera chrysoptera*	Little Wattlebird
Megaluridae	*Anthochaera lunulata*	Western Little Wattlebird
Megaluridae	*Epthianura albifrons*	White-fronted Chat
Megaluridae	*Gavicalis virescens*	Singing Honeyeater
Megaluridae	*Gliciphila melanops*	Tawny-crowned Honeyeater
Megaluridae	*Lichenostomus ornatus*	Yellow-plumed Honeyeater
Megaluridae	*Lichmera indistincta*	Brown Honeyeater
Megaluridae	*Manorina flavigula*	Yellow-throated Miner
Megaluridae	*Melithreptus lunatus*	White-naped Honeyeater
Megaluridae	*Sugomel nigrum*	Black Honeyeater
Megaluridae	*Phylidonyris niger*	White-cheeked Honeyeater
Meliphagidae	*Phylidonyris novaehollandiae*	New Holland Honeyeater
Monarchidae	*Grallina cyanoleuca*	Magpie-lark
Motacillidae	*Anthus novaeseelandiae*	Australasian Pipit
Nectariniidae	*Dicaeum hirundinaceum*	Mistletoe Bird
Pachycephalidae	*Colluricincla harmonica*	Grey Shrike-thrush
Pachycephalidae	*Pachycephala pectoralis*	Golden Whistler
Pachycephalidae	*Pachycephala rufiventris*	Rufous Whistler
Pardalotidae	*Pardalotus punctatus*	Spotted Pardalote
Pardalotidae	*Pardalotus striatus*	Striated Pardalote
Petroicidae	*Eopsaltria georgiana*	White-breasted Robin

Family	Species	Common Name
Petroicidae	*Petroica boodang*	Scarlet Robin
Rhipiduridae	*Rhipidura albiscapa*	Grey Fantail
Rhipiduridae	*Rhipidura leucophrys*	Willie Wagtail
Timaliidae	*Zosterops lateralis*	Silvereye
Cacatuidae	*Cacatua sanguinea*	Little Corella
Cacatuidae	*Calyptorhynchus banksii naso*	Forest Red-tailed Cockatoo
Cacatuidae	*Calyptorhynchus latirostris*	Carnaby's Cockatoo
Cacatuidae	*Eolophus roseicapilla*	Galah
Psittacidae	*Barnardius zonarius*	Australian Ringneck
Psittacidae	*Neophema elegans*	Elegant Parrot
Psittacidae	**Trichoglossus haematodus*	Rainbow Lorikeet
Strigidae	*Ninox boobook*	Southern Boobook

Mammal species to potentially occur within the survey area as identified by Terrestrial Ecosystems (2020)

Family	Species	Common Name
Canidae	**Vulpes vulpes*	Red Fox
Felidae	**Felis catus*	Cat
Dasyuridae	*Sminthopsis fuliginosus*	Grey-bellied Dunnart
Macropodidae	*Macropus fuliginosus*	Western Grey Kangaroo
Macropodidae	*Notamacropus irma*	Western Brush Wallaby
Tarsipedidae	*Tarsipes rostratus*	Honey Possum
Leporidae	**Oryctolagus cuniculus*	Rabbit
Peramelidae	*Isoodon fusciventer*	Quenda
Muridae	**Mus musculus*	House Mouse
Muridae	*Rattus fuscipes*	Bush Rat
Muridae	**Rattus rattus*	Black Rat
Vespertilionidae	*Vespadelus regulus*	Southern Forest Bat

Reptile species to potentially occur within the survey area as identified by Terrestrial Ecosystems (2020)

Family	Species	Common Name
Agamidae	*Ctenophorus adelaidensis*	Western Heath Dragon

Family	Species	Common Name
Agamidae	*Pogona minor*	Dwarf Bearded Dragon
Diplodactylidae	*Crenadactylus ocellatus*	Clawless Gecko
Diplodactylidae	*Diplodactylus polyophthalmus*	Speckled Stone Gecko
Diplodactylidae	*Strophurus elderi*	Jewelled Gecko
Diplodactylidae	*Strophurus spinigerus*	South-western Spiny-tailed Gecko
Elapidae	*Brachyurophis fasciolata*	Narrow-banded Burrowing Snake
Elapidae	*Brachyurophis semifasciata*	Half-girdled Snake
Elapidae	*Demansia psammophis*	Yellow-faced Whipsnake
Elapidae	*Echiopsis curta*	Bardick
Elapidae	*Neelaps bimaculatus*	Black-naped Burrowing Snake
Elapidae	*Neelaps calonotus*	Black-striped Burrowing Snake
Elapidae	*Parasuta gouldii*	Gould's Snake
Elapidae	*Pseudonaja affinis*	Dugite
Elapidae	*Pseudonaja mengdeni*	Western Brown Snake
Elapidae	*Simoselaps bertholdi*	Jan's Banded Snake
Elapidae	*Simoselaps littoralis*	West Coast Banded Snake
Gekkonidae	*Christinus marmoratus*	Marbled Gecko
Pygopodidae	*Aprasia repens*	Southwest Sandplain Worm Lizard
Pygopodidae	*Delma concinna*	Javelin Lizard
Pygopodidae	*Delma fraseri*	Fraser's Delma
Pygopodidae	*Delma grayii*	Side-barred Delma
Pygopodidae	*Lialis burtonis*	Burton's Legless Lizard
Pygopodidae	*Pletholax gracilis*	Keeled Legless Lizard
Pygopodidae	*Pygopus lepidopodus*	Common Scaly-foot
Pythonidae	*Morelia spilota*	Carpet Python
Scincidae	*Acritoscincus trilineatus*	Western Three-lined Skink
Scincidae	*Cryptoblepharus buchananii*	Buchanan's Snake-eyed Skink
Scincidae	*Ctenotus australis*	Western Limestone Ctenotus
Scincidae	*Ctenotus fallens*	West-coast Laterite Ctenotus
Scincidae	*Cyclodomorphus celatus*	Western Slender Bluetongue
Scincidae	*Egernia kingii*	King's Skink
Scincidae	*Egernia napoleonis*	Southwestern Crevice Skink

Family	Species	Common Name
Scincidae	*Hemiergis quadrilineatum*	Two-toed Earless Skink
Scincidae	*Lerista distinguenda*	South-western Orange-tailed Slider
Scincidae	*Lerista elegans*	West Coast Four-toed Lerista
Scincidae	*Lerista lineopunctulata*	Dotted-line Robust Slider
Scincidae	*Lerista praepedita*	Blunt-tailed West-coast Slider
Scincidae	*Menetia greyii*	Common Dwarf Skink
Scincidae	*Morethia lineoocellata*	Pale-flecked Morethia
Scincidae	*Morethia obscura*	Shrubland Pale-flecked Morethia
Scincidae	*Tiliqua occipitalis*	Western Blue-tongued Lizard
Scincidae	*Tiliqua rugosa*	Bobtail
Typhlopidae	*Anilios australis*	Austral Blind Snake
Typhlopidae	*Anilios pinguis*	Rotund Blind Snake
Varanidae	*Varanus gouldii*	Gould's Goanna
Varanidae	*Varanus tristis*	Black-headed Monitor

Appendix 5: Weed Prioritisation

The complete introduced (weed) species list for the site is provided in the table below with flora listed by family with their scores for Ecological Impact and Invasiveness Ratings for the Swan Region (DBCA, 2023). *Denotes introduced species and # denotes species that are native to Western Australia but not to this local region.

Family	Species Name	Common Name	Ecological Impact	Invasiveness
Aizoaceae	**Tetragonia decumbens*	Sea Spinach	H	R
Anacardiaceae	**Schinus terebinthifolia*		H	M
Apiaceae	**Foeniculum vulgare*	Fennel	L	S
Apocynaceae	**Nerium oleander*		L	R
Araucariaceae	**Araucaria heterophylla*	Norfolk Island Pine	Not Listed	Not Listed
Arecaceae	**Phoenix sp*. (planted)		Not Listed	Not Listed
Arecaceae	**Washingtonia filifera*		U	S
Asphodelaceae	**Asphodelus fistulosus*	Onion Weed	U	R
Asphodelaceae	**Trachyandra divaricata*		M	R
Asteraceae	**Arctotheca calendula*	Cape Weed	H	R
Asteraceae	**Arctotis stoechadifolia*	White Arctotis	U	S
Asteraceae	**Cotula turbinata*	Funnel Weed	L	M
Asteraceae	**Erigeron bonariensis*		L	M
Asteraceae	**Gazania linearis*		H	R
Asteraceae	**Leontodon rhagadioloides*	Cretan Weed	U	U
Asteraceae	**Osteospermum ecklonis*		U	M
Asteraceae	**Reichardia tingitana*	False Sowthistle	U	U
Asteraceae	**Sonchus oleraceus*	Common Sowthistle	U	R
Brassicaceae	**Brassica tournefortii*	Mediterranean Turnip	H	R
Brassicaceae	**Cakile maritima*	Sea Rocket	U	R
Brassicaceae	**Cardamine hirsuta*	Common Bittercress	Not Listed	Not Listed
Brassicaceae	**Heliophila pusilla*		U	M
Brassicaceae	**Matthiola incana*	Common Stock	U	S
Caprifoliaceae	**Centranthus macrosiphon*		H	R
Caryophyllaceae	**Minuartia mediterranea*		L	R
Caryophyllaceae	**Petrorhagia dubia*		M	R

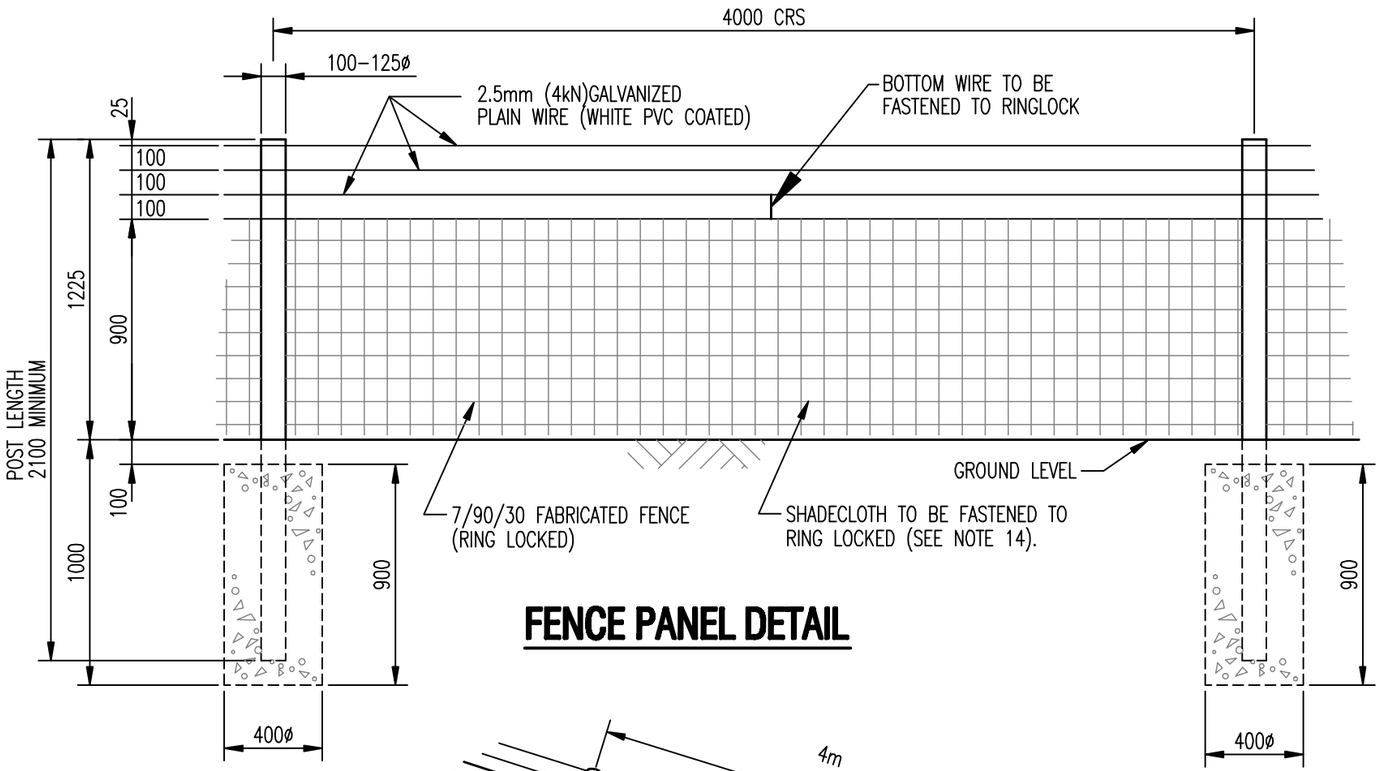
Family	Species Name	Common Name	Ecological Impact	Invasiveness
Caryophyllaceae	**Sagina maritima*		L	R
Caryophyllaceae	**Silene gallica*	French Catchfly	L	M
Caryophyllaceae	**Stellaria media*	Chickweed	L	R
Convolvulaceae	**Cuscuta planiflora*		U	U
Crassulaceae	**Crassula glomerata*		U	R
Cyperaceae	**Ficinia marginata*	Coarse Club Rush	U	U
Euphorbiaceae	**Euphorbia australis*	Namana	L	S
Euphorbiaceae	**Euphorbia paralias*	Sea Spurge	U	M
Euphorbiaceae	**Euphorbia peplus*	Petty Spurge	U	M
Euphorbiaceae	**Euphorbia terracina*	Geraldton Carnation Weed	H	R
Fabaceae	**Medicago littoralis*	Strand Medic	U	R
Fabaceae	**Medicago polymorpha*	Burr Medic	U	R
Fabaceae	**Melilotus indicus*		U	R
Fabaceae	**Trifolium campestre var. campestre*	Hop Clover	U	U
Geraniaceae	**Erodium botrys*	Long Storksbill	U	M
Geraniaceae	**Pelargonium × hortorum*		Not Listed	Not Listed
Geraniaceae	**Pelargonium capitatum*	Rose Pelargonium	H	R
Iridaceae	**Ferraria crispa*	Black Flag	H	R
Iridaceae	**Moraea flaccida*	One-leaf Cape Tulip	Not Listed	Not Listed
Iridaceae	**Romulea rosea*	Guildford Grass	U	R
Lamiaceae	**Stachys arvensis*	Staggerweed	U	R
Lamiaceae	**Westringia fruticosa* (planted)		Not Listed	Not Listed
Malvaceae	**Lagunaria patersonia* (planted)		L	S
Malvaceae	**Malva parviflora*	Marshmallow	L	U
Myrtaceae	#*Chamelaucium uncinatum*	Geraldton Wax	M	S
Myrtaceae	#*Eucalyptus utilis*	Coastal Moort	U	U
Myrtaceae	#*Melaleuca nesophila*	Mindiyed	U	M
Myrtaceae	**Callistemon* X (planted)		Not Listed	Not Listed
Myrtaceae	**Eucalyptus maculata* (planted)		H	M
Myrtaceae	**Eucalyptus sp*. (planted)		Not Listed	Not Listed

Family	Species Name	Common Name	Ecological Impact	Invasiveness
Myrtaceae	**Gaudium laevigatum*	Coast Teatree	H	R
Myrtaceae	**Melaleuca sp.* (planted)		Not Listed	Not Listed
Myrtaceae	**Metrosideros tomentosa* (planted)	Pōhutukawa	Not Listed	Not Listed
Oleaceae	**Olea europaea*	Olive	H	R
Onagraceae	**Oenothera drummondii*	Beach Evening Primrose	U	R
Orobanchaceae	**Orobanche minor*	Lesser Broomrape	U	R
Oxalidaceae	**Oxalis pes-caprae*	Soursob	H	S
Papaveraceae	**Fumaria capreolata*	Whiteflower Fumitory	H	R
Plantaginaceae	**Plantago lanceolata*	Ribwort Plantain	U	U
Poaceae	**Avena barbata*	Bearded Oat	H	R
Poaceae	**Briza maxima*	Blowfly Grass	U	R
Poaceae	**Briza minor*	Shivery Grass	U	R
Poaceae	**Bromus diandrus*	Great Brome	H	R
Poaceae	**Catapodium rigidum*	Rigid Fescue	U	M
Poaceae	**Cenchrus clandestinus*	Kikuyu Grass	H	S
Poaceae	**Cynodon dactylon*	Couch	H	R
Poaceae	**Ehrharta brevifolia var. cuspidata*		L	M
Poaceae	**Ehrharta longiflora*	Annual Veldt Grass	M	R
Poaceae	**Eragrostis curvula*	African Lovegrass	H	R
Poaceae	**Lagurus ovatus*	Hare's Tail Grass	H	R
Poaceae	**Lolium perenne*	Perennial Ryegrass	H	R
Poaceae	**Poa annua*	Winter Grass	L	R
Poaceae	**Stenotaphrum secundatum*	Buffalo Grass	H	S
Poaceae	**Vulpia mu*ralis		H	R
Poaceae	**Vulpia myuros forma megaleura*	Rat's Tail Fescue	H	R
Primulaceae	**Lysimachia arvensis*	Pimpernel	U	R
Proteaceae	*#Grevillea olivacea* (planted)	Olive Grevillea	Not Listed	Not Listed
Rosaceae	**Casuarina equisetifolia*		U	S
Rosaceae	**Eriobotrya japonica*		L	S
Rubiaceae	**Galium murale*	Small Goosegrass	L	R

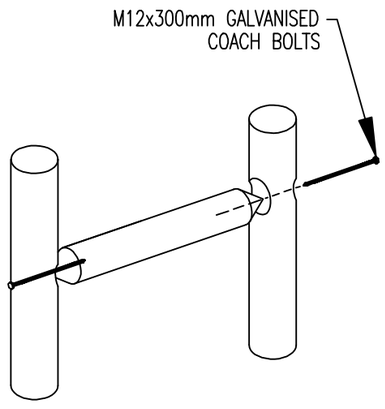
Family	Species Name	Common Name	Ecological Impact	Invasiveness
Scrophulariaceae	**Bellardia trixago*	Bellardia	U	R
Scrophulariaceae	**Dischisma arenarium*		U	R
Solanaceae	**Solanum nigrum*	Black Berry Nightshade	M	R
Tamaricaceae	**Tamarix aphylla*	Athel Tree	H	R
Verbenaceae	**Phyla nodiflora*		H	U

Appendix 6: Windbreak Fencing

No.	REVISION	BY	DATE	AUTH
0	ISSUED	C.H.	6/2010	G.M.

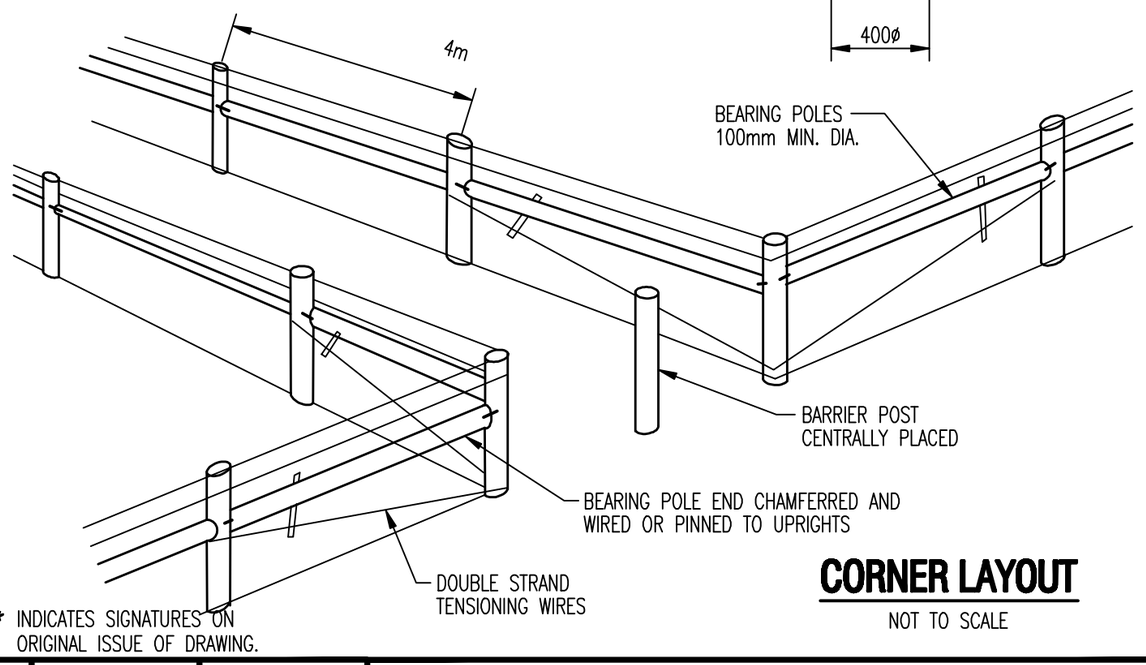


FENCE PANEL DETAIL



POLE FIXING DETAIL

NOT TO SCALE



CORNER LAYOUT

NOT TO SCALE

* INDICATES SIGNATURES ON ORIGINAL ISSUE OF DRAWING.

NOTES:

1. OPENINGS BETWEEN CORNER UNITS AND BARRIER POSTS TO BE MAXIMUM OF 1500mm.
2. BEARING POLES TO BE WIRED TO UPRIGHTS WITH 2 STRANDS PLAIN WIRE, END SHARPENED & INSERTED INTO POSTS OR END–DRILLED AND PINNED TO ENSURE SECURED FIXING.
3. ALIGNMENT BRACING TO BE LOCATED AS DIRECTED
4. INTERMEDIATE BRACING TO BE SPACED AS DIRECTED (ON STRAIGHT FENCES, MAXIMUM SPACING 125m.)
5. MESH TO BE 7/90/30 RINGLOCK FABRICATION FENCING. WIRES TO BE AS SHOWN AND TO BE GALVANIZED ACCORDING TO SPECIFICATIONS.
6. ALL UPRIGHT MEMBERS SHALL BE VERTICAL WITHIN A TOLERANCE OF 1:100.
7. THE BASE OF FOOTING HOLES SHALL BE ADEQUATELY COMPACTED BY RAMMING.
8. THE DIAMETER OF EACH TIMBER POST OR RAIL SHALL NOT VARY BY MORE THAN 25mm OVER A 2m LENGTH (OR 12.5mm PER METRE LENGTH).
9. CONCRETE FOOTING SHALL BE MIXED IN THE PROPORTIONS OF: (4) PARTS BY WEIGHT OF CLEAN DUST FREE AGGREGATE (NOT EXCEEDING 20mm SIZE), TWO (2) PARTS BY WEIGHT OF CLEAN DUST FREE SAND, ONE (1) PART BY WEIGHT OF MASONRY CEMENT, &SUFFICIENT WATER TO ENSURE A SLUMP OF NOT MORE THAN 100mm USING THE AUSTRALIAN STANDARD SLUMP TEST CONE.
10. CONCRETE SHALL ACHIEVE A MINIMUM COMPRESSIVE STRENGTH OF 20MPa AT 28 DAYS.
11. CONCRETE FOOTINGS SHALL BE CURED FOR TWENTY FOUR (24) HOURS BEFORE ERECTION OF WIRES OR MESH TO POSTS.
12. GALVANISED COATINGS FOR ALL FERROUS MATERIALS SHALL HAVE COATINGS OF ZINC IN COMPLIANCE WITH AS 1650. THE COATINGS FOR WIRES SHALL BE TYPE A (HEAVILY GALVANISED).
13. SITE TO BE LEFT IN A CLEAN STATE, FREE OF ANY SURPLUS CONSTRUCTION MATERIALS AND EQUIPMENT
14. 915mm KNITTED 70% SHADE CLOTH (LIGHT COLOUR) TO BE FASTENED TO RINGLOCK WITH RINGLOCK FASTENERS.

CAUTION:

14. THE INSTALLATION OF FENCE POSTS SHOULD NOT INTERFERE WITH EXISTING SERVICES INCLUDING STORMWATER DRAINAGE. INSTALLER IS RESPONSIBLE FOR CONTACTING SERVICES AUTHORITIES TO DETERMINE LOCATIONS AND DEPTHS OF SERVICES PRIOR TO BOLLARD INSTALLATION.

SCALE: 1:25 — 250 0 250 500 750 1000 SCALE IN MILLIMETRES	DATUM: LOCAL	GRID: LOCAL	
SURVEYED: 2010 SURVEYOR	CHECKED: * D.LAIDLOW 1/6/2010 A/COORDINATOR DESIGN AND CONSTRUCTION		
DESIGNED: C.O.W. 2010 CIVIL PROJECTS DESIGNER	AUTHORISED: * R.KORENHOF 1/6/2010 MANAGER INFRASTRUCTURE PROJECTS		
DRAWN: C.O.W. 2010 CIVIL PROJECTS DESIGNER	APPROVED: * D.BLAIR 1/6/2010 DIRECTOR INFRASTRUCTURE		

FENCING

WINDBREAK FENCING

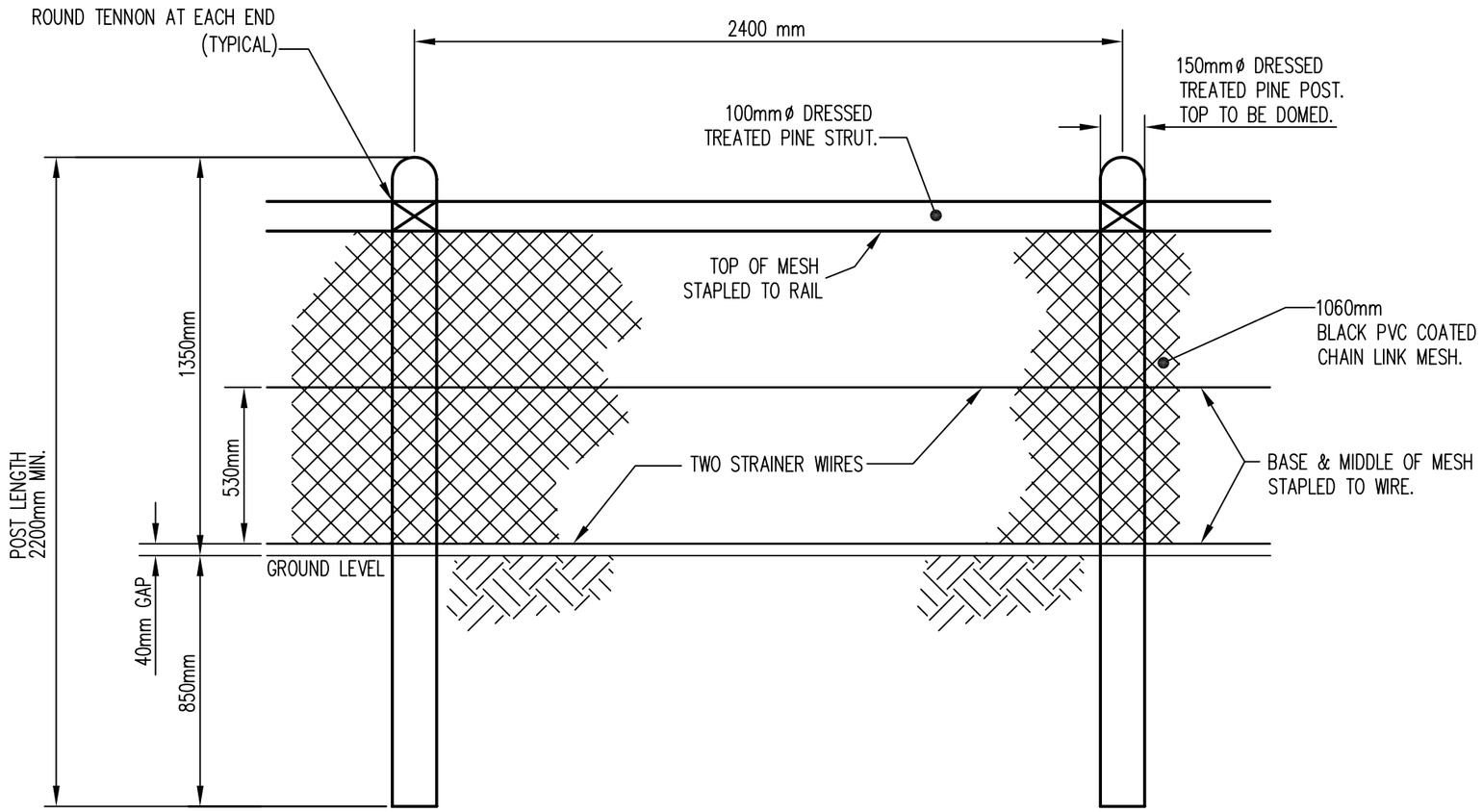
STANDARD

CITY OF WANNEROO
INFRASTRUCTURE

FILE No.	DRAWING No.	SHEET	REVISION	ORIGINAL DRG. SIZE
N/A	TS 01-11-0			A3
PROJECT No. N/A				

Appendix 7: Conservation Fencing

No	REVISION	BY	DATE	AUTH
0.	ISSUED	J.W.T.	10/2002	
1.	NOTES AND DIMENSIONS AMENDED	T.T.	2/2006	B.C.



MATERIAL SPECIFICATIONS

150–175mm x 2.2m CCA TREATED PINE LOG (FOR PINE UPRIGHTS).
1.57mm GALVANISED TIE WIRE.

NOTES

1. ALL ENDS, JOINS AND TIES TO BE FINISHED NEATLY WITH NO WIRE PROTRUSIONS.
2. WIRE TO BE WRAPPED AROUND PINE POSTS TWICE, THEN WOUND BACK AROUND WIRE THREE TIMES AND CUT OFF FLUSH.
3. FENCING WIRE TO BE FIXED TO OUTSIDE OF FENCE, EXCEPT WHERE PARK ADJOINS PRIVATE PROPERTY, WHERE IT SHOULD BE FIXED TO INSIDE OF FENCE
4. FENCE TO SMOOTHLY FOLLOW THE OVERALL CONTOURS OF THE LAND AS FOR BOLLARDS (NOT TO HAVE SUDDEN DIPS AND RISES).
5. REFER TO STANDARD DRAWING TS 01–09 FOR BOX STRAINER DETAIL.

* INDICATES SIGNATURES ON ORIGINAL ISSUE OF DRAWING.

DATUM: N/A	GRID: N/A	SURVEYOR: N/A	DESIGNED: C.O.W.	APPROVED: * B. CARTER 31/10/2002 COORDINATOR PARKS
SCALE: 1:20 (0.2 0 0.2 0.4 0.6 0.8 SCALE IN METRES)			DRAWN: C.O.W.	APPROVED: * R. KORENHOF 31/10/2002 MANAGER INFRASTRUCTURE
DESIGN ARCHIVE: V:\\TECHNICAL SERVICES DESIGN ARCHIVE			DESIGN CHECKED: * B. CARTER 31/10/2002 COORDINATOR PARKS	APPROVED: * D. BLAIR 31/10/2002 DIRECTOR TECHNICAL SERVICES
DRAWING ARCHIVE: V:\\TECHNICAL SERVICES DRAWING ARCHIVE			STANDARDS/DOCUMENT CONTROL: * J. TRIMMER 31/10/2002 PROJECTS TECHICNAL SUPPORT OFFICER	

FENCING

CONSERVATION PINE RAIL FENCING

LOCALITY: STANDARD

CITY OF WANNEROO
TECHNICAL SERVICES
INFRASTRUCTURE SERVICES

FILE No.	DRAWING No	SHEET	REVISION	ORIGINAL DRG.SIZE
	TS 01 - 7 - 1			A3

Appendix 8: Implementation and Reporting Schedule

Action	Timing	Description of Works	Evidence of Completion	Target/ Action Date - Reporting	Further Action Required?
PRE-CONSTRUCTION					
Monitoring	Prior to site works	Establish photo monitoring points and quadrats for the purpose of revegetation and weed coverage monitoring. Monitoring Program to be established and agreed with the City	Map showing locations of photo monitoring points and quadrats.	As per approved monitoring plan/ schedule agreed with the City of Wanneroo.	Not applicable
Waste management	Prior to site works and ongoing	Removal, transport and appropriate disposal of dumped rubbish, construction materials, asbestos and other contaminated waste at an approved facility in accordance with environmental and health regulations.	Before and after date stamped photographs and/ or invoices for disposal of litter and general waste. Provision of Contaminated waste docket in accordance with environmental and health regulations for the removal of contaminated waste.	To be included in the annual report commencing from approval of environmental management plan.	Potential audit of works as required.
Fencing and signage	Pre-construction and prior to clearing works.	Install temporary fencing and signage around areas of native vegetation to be retained to prevent unauthorised access. Regularly inspect fencing and signage and provide	Date stamped photographs at agreed photo monitoring points and mapping showing location of fencing and signage.	Evidence provided within 4 weeks of installation of fencing/ signage and included in the annual report.	Potential audit of works as required.

Action	Timing	Description of Works	Evidence of Completion	Target/ Action Date - Reporting	Further Action Required?
		maintenance where required including any additional measures for the prevention of unauthorised access.			
Weed Mapping	Prior to site works and ongoing.	Areas of vegetation to be retained in conservation POS should be assessed for weed abundance and mapped accordingly.	Provide weed mapping showing locations, densities and type of weeds present.	To be included in the annual report.	Heavily weed infested areas or non-compliance with agreed weed management may result in increased frequency of reporting and/ or extended maintenance period.
Weed control	Prior to site works and ongoing	Removal of all declared pests and WoNS present across the site prior to construction. Undertake ongoing weed management of the conservation areas. Aiming for less than 10% weed coverage over the site.	Date stamped photos at agreed photo monitoring points showing indicator dye or invoice from contractor.	To be included in the annual report.	Heavily weed infested areas or non-compliance with agreed weed management may result in increased frequency of reporting and/ or extended maintenance period.
Seed collection and vegetation management	Several seasons prior to development.	Build-up of local provenance seed collection over several seasons from the development area. Seed collected in accordance with industry standards.	Provide evidence from seed collection specialist of ability to propagate the seed collected. Copies of valid licences and processes to be provided.	To be included in the annual report.	Potential audit of works as required.

Action	Timing	Description of Works	Evidence of Completion	Target/ Action Date - Reporting	Further Action Required?
		Seed collection of species that are able to be propagated.	Provide evidence of harvested vegetation.		
Unauthorised access	Pre- construction and ongoing.	Early identification of potential and active access points. Identification and ongoing review of management methods to prevent unauthorised access in consultation with the City of Wanneroo. Ongoing communication of any reoccurring issues with City Rangers. Must be provided in accordance with approved documents.	Date stamped photographs and mapping showing location.	To be included in the annual report.	Potential audit of works and ongoing consultation with the City of Wanneroo as required.
Fauna management	Pre- construction and ongoing.	Undertake pre-clearance survey to determine fauna present on ground prior to site works (fauna survey ground-truthing). Install fauna exclusion fencing around entire perimeter of the relevant development stage prior to site works. Fauna exclusion fencing should be a minimum height of 1.8 metres,	Date stamped photographs and mapping showing location of fencing. Report on fauna trapped by suitably qualified and licenced expert and in accordance with DPaW advice.	To be included in the annual report.	Potential audit of works and ongoing consultation with the City of Wanneroo as required.

Action	Timing	Description of Works	Evidence of Completion	Target/ Action Date - Reporting	Further Action Required?
		pegged into the ground with taught wire to keep the bottom of the fence flush with the ground. Mustering or trapping and relocation – fauna relocated offsite. Offsite impacts remain the responsibility of the developer. Need to consider cumulative impacts of habitat removal. Feral Animal Control In accordance with section 4.1.4			
CONSTRUCTION					
Waste management	During site works and ongoing.	Removal, transport and appropriate disposal of dumped rubbish, construction materials, asbestos and other contaminated waste at an approved facility in accordance with environmental and health regulations.	Before and after date stamped photographs and/ or invoices for disposal of litter and general rubbish. Provision of validation report in accordance with environmental and health regulations for the removal of asbestos. Provision of contaminated waste docket in accordance	To be included in the annual report.	Potential audit of works as required.

Action	Timing	Description of Works	Evidence of Completion	Target/ Action Date - Reporting	Further Action Required?
			with environmental and health regulations for the removal of contaminated waste.		
Fencing and signage	At start of construction works.	Remove temporary fencing and establish permanent fencing with controlled access points. Remove temporary signage once permanent signage has been installed.	Date stamped photographs showing installed permanent, gates fencing and signage.	Included in first report following installation of permanent fencing, gates and signage.	Potential audit of works as required.
Weed control	Construction.	Undertake ongoing weed management of the conservation areas. Aiming for less than 10% weed coverage over the site. Include weeding of constructed verges surrounding conservation areas.	Date stamped photos at agreed photo monitoring points showing indicator dye or invoice from contractor.	To be included in the annual report.	Heavily weed infested areas or non-compliance with agreed weed management may result in increased frequency of reporting and/ or extended maintenance period.
Seed collection and vegetation management	Throughout construction works where required.	Build-up of local provenance seed collection over several seasons from the development area. Seed collected in accordance with industry standards.	Provide evidence from seed collection specialist of ability to propagate the seed collected. Copies of valid licences and processes to be provided.	To be included in the annual report.	Potential audit of works as required.

Action	Timing	Description of Works	Evidence of Completion	Target/ Action Date - Reporting	Further Action Required?
		Propagation of collected seed to occur during construction of the project.	Provide evidence of harvested vegetation. Provide propagation notice		
Unauthorised access	Construction and ongoing.	Identification of potential and active access points. Identification and ongoing review of management methods to prevent unauthorised access in consultation with the City of Wanneroo. Ongoing communication of any reoccurring issues with City Rangers. Must be provided in accordance with approved documents.	Date stamped photographs and mapping showing location.	To be included in the annual report.	Potential audit of works and ongoing consultation with the City of Wanneroo as required.
Fauna management	Construction and ongoing.	Ensure all personnel undertaking works are aware of fauna species on site and the relevant protection measures required. Undertake pre-clearance trapping and removal and	Report on fauna trapped and relocated by suitably qualified and licenced experts.	To be included in the annual report.	Potential audit of works and ongoing consultation with the City of Wanneroo as required.

Action	Timing	Description of Works	Evidence of Completion	Target/ Action Date - Reporting	Further Action Required?
		undertake fauna spotting during clearing works.			
Revegetation works	Construction and ongoing.	See Section 5.2.1	Date stamped photos and relevant data of revegetation site in accordance with approved success criteria monitoring. Must provide mapping showing location	Included in first report following revegetation works.	Potential audit of works and ongoing consultation with the City of Wanneroo as required.
POST CONSTRUCTION					
Waste management	Post construction works and during maintenance period.	Removal, transport and appropriate disposal of dumped rubbish, construction materials, asbestos and other contaminated waste at an approved facility in accordance with environmental and health regulations.	Before and after date stamped photographs and/ or invoices for disposal or litter or general waste. Provision of validation report in accordance with environmental and health regulations for the removal of asbestos. Provision of Contaminated waste docket in accordance with environmental and health regulations for the removal of contaminated waste.	To be included in the annual report.	Potential audit of works as required.

Action	Timing	Description of Works	Evidence of Completion	Target/ Action Date - Reporting	Further Action Required?
Fencing and signage	Post construction works and during maintenance period	Regularly inspect fencing and signage and provide maintenance where required including any additional measures for the prevention of unauthorised access.	Date stamped photographs (before and after maintenance works) showing maintenance works or replacement of fencing and signage, with a written description of works undertaken.	To be included in annual report.	Potential audit of works as required.
Weed Mapping	Post construction works and during maintenance period.	Undertake weed mapping following construction and ongoing to monitor weed populations across the site.	Provide weed mapping showing locations, densities and type of weeds present.	To be included in the annual report.	Heavily weed infested areas or non-compliance with agreed weed management may result in increased frequency of reporting and/ or extended maintenance period.
Weed control	Post construction works and during maintenance period.	Undertake ongoing weed management of the conservation areas. Aiming for less than 10% weed coverage over the site.	Date stamped photos at agreed photo monitoring points showing indicator dye or invoice from contractor.	To be included in the annual report.	Heavily weed infested areas or non-compliance with agreed weed management may result in increased frequency of reporting and/ or extended maintenance period.
Revegetation works	Post construction works and during maintenance period.	Ongoing revegetation works including infill planting to ensure attainment of completion criteria.	Date stamped photos and relevant data of revegetation site in accordance with approved success criteria monitoring.	Included in first report following revegetation works.	Potential audit of works and ongoing consultation with the City of Wanneroo as required.

Action	Timing	Description of Works	Evidence of Completion	Target/ Action Date - Reporting	Further Action Required?
		Seed collection and propagation works is to be included as part of ongoing revegetation requirements.	Must provide mapping showing location.		
Unauthorised access	Post construction works and during maintenance period.	Identification of potential and active access points. Identification and ongoing review of management methods to prevent unauthorised access in consultation with the City of Wanneroo. Ongoing communication of any reoccurring issues with City Rangers. Must be provided in accordance with approved documents.	Date stamped photographs and mapping showing location.	To be included in the annual report.	Potential audit of works and ongoing consultation with the City of Wanneroo as required.
Fauna management	Post construction works and during maintenance period.	Feral pest trapping and removal of rabbits, foxes, and feral cats. Feral pest population monitoring. Monitor native fauna populations using methods outlined in section 4.1.3	Report on fauna trapped by suitably qualified and licenced expert and in accordance with DPaW advice.	To be included in the annual report.	Potential audit of works and ongoing consultation with the City of Wanneroo as required.

Action	Timing	Description of Works	Evidence of Completion	Target/ Action Date - Reporting	Further Action Required?
Monitoring	Post construction works and during maintenance period.	Ongoing monitoring of the site as outlined in section 5.2, including the monitoring of established quadrats, photo monitoring points and vegetation condition mapping. To be assessed against completion criteria outlined in section 5.3.	Annual monitoring report outline the condition of the site with collated data from the photographic monitoring points and quadrats, with an assessment and recommendation against the completion criteria.	Final report demonstrating how all completion criteria have been adequately met in accordance with the approved environmental management plan.	Potential audit of works and ongoing consultation with the City of Wanneroo as required prior to handover.

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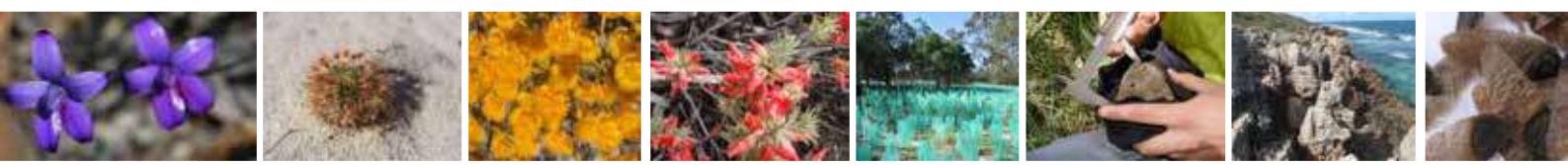
Natural Area
CONSULTING MANAGEMENT SERVICES

UDLA

Yanchep Lagoon

Detailed and Targeted Flora Survey

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Acknowledgement of Country

Ngala kaaditj Noongar moort keyen kaadak nidja boodja.
Natural Area acknowledges the Traditional Owners of the lands on which we operate, and recognises their continuing connection to lands, waters and communities.

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System Certifications

Environmental management system registered to ISO 14001:2015
Quality management system registered to ISO 9001:2015
Occupational health and safety management system registered to ISO 45001:2018

Document Title	UDLA-R-Detailed and Targeted Flora Survey
Location	ConsultingSP/Shared Documents/UDLA/2025 03 082 Yanchep Lagoon FMP/6. Reporting/CoW-R-Detailed and Targeted Flora Survey.docx

Draft/Version No.	Date	Changes	Prepared by	Approved by	Status
D1	November 2025	New Document	JG/ZS	JW/KE	Superseeded
D2	December 2025	Species ID from WA Herbarium verification	ZS	JW	Draft

Executive Summary

Natural Area Environmental Consulting Management Services (Natural Area) was subcontracted by UDLA on behalf of the City of Wanneroo (the City) to undertake a desktop assessment, detailed flora survey, and a targeted flora survey within Yanchep Lagoon. These surveys were undertaken across the area to update previous flora survey and to assist with the development of the Yanchep Lagoon Foreshore Management Plan.

The detailed and targeted flora survey determined:

- A total of 177 flora (taxa) species from 56 families, comprised of 92 native flora species, 85 introduced species and/or dubious species.
- No declared pests or Weeds of National Significance were recorded.
- A total of 9 vegetation types were identified, namely:
    - *Olearia axillaris* shrubland over *Spinifex longifolius* tussock grassland (A1)
    - *Scaevola crassifolia, Myoporum insularis* and *Olearia axillaris* shrubland over *Lepidosperma gladiatum* sedgeland (A3)
    - *Olearia axillaris* and *Scaevola crassifolia* shrubland (A2)
    - *Frankenia pauciflora* var. *pauciflora* and *Scaevola crassifolia* shrubland over *Salicornia blackiana* chenopod shrubland (B1)
    - *Spyridium globulosum, Acacia cyclops* and *Olearia axillaris* shrubland (C1)
    - *Melaleuca systena* and *Acacia lasiocarpa* shrubland over *Lomandra maritima* forbland (C2)
    - *Eucalyptus gomphocephala* woodland (C3)
    - *Melaleuca cardiophylla* shrubland (D1)
    - *Melaleuca huegelii* subsp. *huegelii* shrubland (D2).
- The condition of site ranged from completely degraded to excellent.
- Two priority ecological communities within the site:
    - Coastal shrublands on shallow sands, southern Swan Coastal Plain ('floristic community type 29a')
    - Acacia shrublands on taller dunes, southern Swan Coastal Plain ('floristic community type 29b')
- The potential for one threatened ecological community listed under the *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC Act), Honeymyrtle shrubland on limestone ridges of the Swan Coastal Plain Bioregion.
- A total of 8,073 *Conostylis pauciflora* subsp*. pauciflora* (Priority 4).

It is recommended that vegetation in a very good or better condition is prioritised for conservation and protection, with vegetation in a degraded to completely degraded condition prioritised for rehabilitation and revegetation efforts. It is important that the location *Stylidium maritimum* (Priority 3) was last recorded in 2019 is retained as it may regenerate or germinate within the area. It is recommended that no disturbances occur within the vegetation directly adjacent to the *Melaleuca huegelii* shrubland (D2) and that this vegetation is prioritised for retention.

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1.0 Introduction

Natural Area Consulting Management Services (Natural Area) was subcontracted by UDLA on behalf of the City of Wanneroo (the City) to undertake a desktop assessment, detailed flora survey, and a targeted flora survey within Yanchep Lagoon. These surveys were undertaken across the area to update previous flora survey and to assist with the development of the Yanchep Lagoon Foreshore Management Plan.

1.1 Location

The site is located within Yanchep Lagoon and is approximately 33.11 ha. Yanchep Lagoon is a coastal destination within Yanchep in the City and is approximately 50 km north of the Perth Central Business District (Figure 1). Class A and C reserves are present within the Yanchep Lagoon and are managed by the City.

1.2 Scope

The scope of works undertaken by Natural Area included:

- A desktop assessment of relevant information pertaining to significant flora and threatened ecological communities, within a 10 km radius of the survey site.
- Detailed flora and vegetation survey to determine:
  - The establishment of three quadrat per vegetation type.
  - Formation of a flora species list, outlining native and non-native species present.
  - Identification and mapping of any threatened, priority or other significant flora species listed under the *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC Act), and the *Biodiversity Conservation Act 2016* (WA) (BC Act).
  - Identification and mapping of any declared pests or Weeds of National Significance.
  - Determination of vegetation type using the structural classes described in the Australian Vegetation attribute Manual (Executive Steering Committee for Australian Vegetation Information (ESCAVI), 2003), and identification of dominant over, middle and understorey species.
  - Assessment of vegetation condition and extent using the scale attributed to Keighery (EPA, 2016). .
  - Key site characteristics, including landform, geology and soil complex.
- A targeted flora survey to determine the location, population size, and extent of conservation significant flora.

1.3 Legislative Context

State and Federal environment-related laws impact how environmental values are governed in Western Australia. The following legislation and policies are relevant to this report.

1.3.1 Relevant Legislation

***Aboriginal Heritage Act 1972* (WA)**

The Aboriginal Heritage Act 1972 (WA) makes provision for the recognition, protection, conservation, and preservation of Aboriginal heritage in Western Australia.

***Biosecurity and Agriculture Management Act 2007* (WA)**

The *Biosecurity and Agriculture Management Act 2007* (WA) (BAM Act) regulates the framework for plant and animal pest and disease biosecurity in Western Australia. The framework provides for the control of declared flora and fauna species (declared organisms) that are known to be a significant environmental threat and the management, control and prevention of these declared plants and animals.

***Biodiversity Conservation Act 2016* (WA)**

The *Biodiversity Conservation Act 2016* (WA) (BC Act) aims to protect and conserve biodiversity as well as to promote the ecologically sustainable use of biodiversity components in the State. The BC Act provides the statute relating to conservation and legal protection of flora, fauna, and ecological communities. The BC Act follows the principles of ecologically sustainable development, detailing that decision-making processes should effectively integrate long-term and short-term economic, environmental, social, and equity considerations.

***Environmental Protection Act 1986* (WA)**

The *Environmental Protection Act 1986* (WA) (EP Act) provides for the prevention, control and abatement of pollution and environmental harm, for the conservation, preservation, protection, enhancement, and management of the environment connected with the foregoing. The Environmental Protection Authority (EPA) is established under this act and provides a structured policy framework that is consistent with the EP A*ct*. The EPA produces the guidelines and procedures associated with conducting environmental assessments in line with the EP Act.

***Environment Protection and Biodiversity Conservation Act 1999* (Cth)**

The Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) serves to protect and manage nationally and internationally important flora, fauna, ecological communities, and heritage places. The primary objective of the EPBC Act is to promote the conservation of biodiversity and the sustainable use of natural resources while allowing for ecologically sustainable development. The EPBC Act allows for the creation of conservation agreements between the Australian government and individuals, communities, or organisations to support the conservation of biodiversity.

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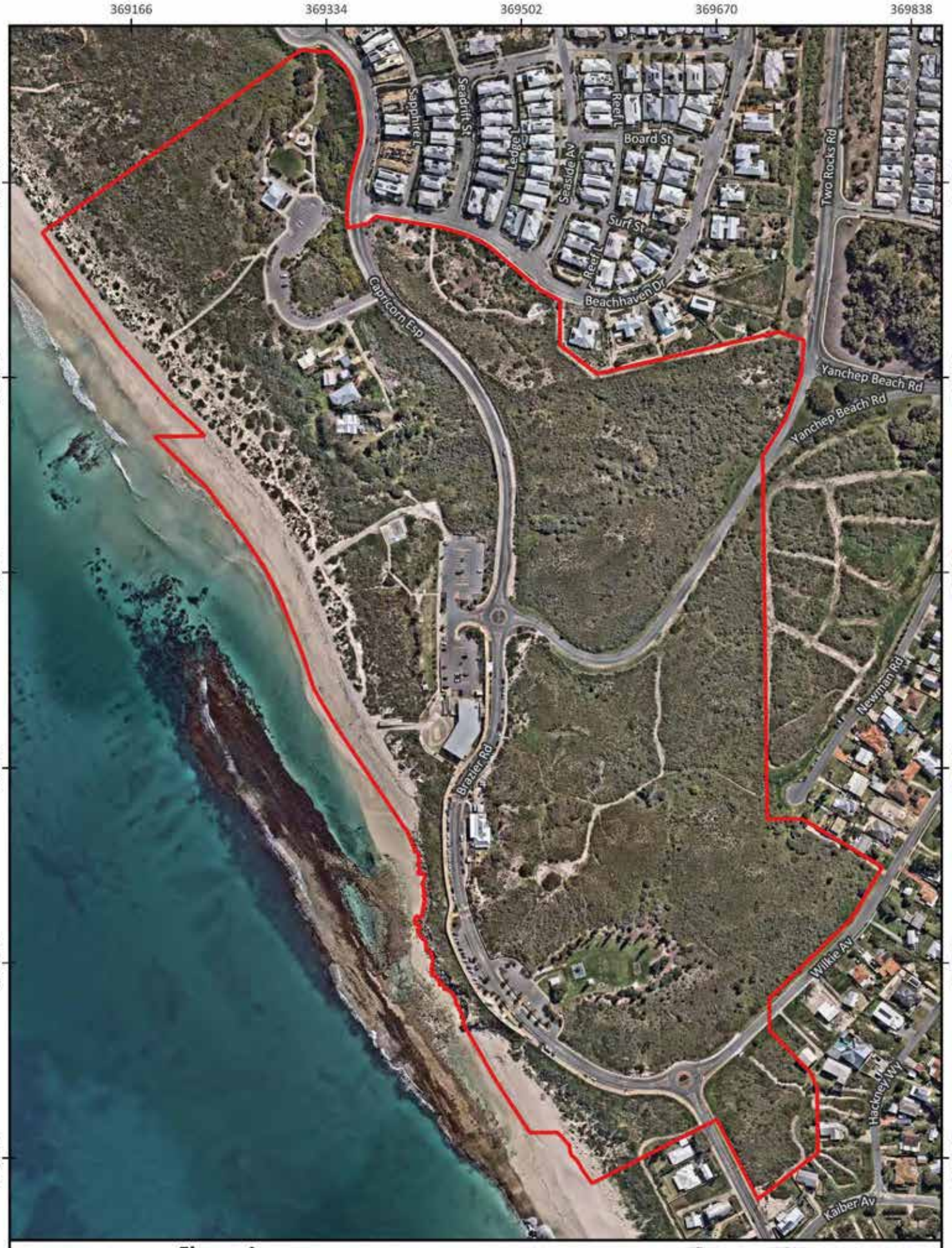


Figure 1:
Site Location

Yanchep, Western Australia

Legend
Site Boundary

Client:	UDLA
Date:	03/11/2025
Created by:	Z.Stoney
Image Source:	Nearmap, 2025
Datum:	GDA2020 / MGA zone 50
Scale:	1: 4200

0 50 100 m

N

2.0 Site Characteristics

2.1 Regional Context

The site is located within the Swan Coastal Plain (SWA02) IBRA subregion (Department of Climate Change, Energy, the Environment and Water (DCCEEW), 2024). This region is characterised by low lying coastal plain covered with woodlands. This subregion is generally comprised of sandy soils dominated by Banksia or Tuarts (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 (BoM) (2025); Gingin Aero, site number 009178, the region is subject to:

- Average rainfall of 636.4 mm per annum, with majority of rainfall between June and August (1996 - 2025) (BoM, 2025).
- Average maximum temperature range of 18.4 °C in winter to 33.3 °C in summer (1996 - 2025) (BoM, 2025).
- Average minimum temperature ranging from 6.6 °C in winter to 17.0 °C in summer (1996 - 2025) (BoM, 2025).

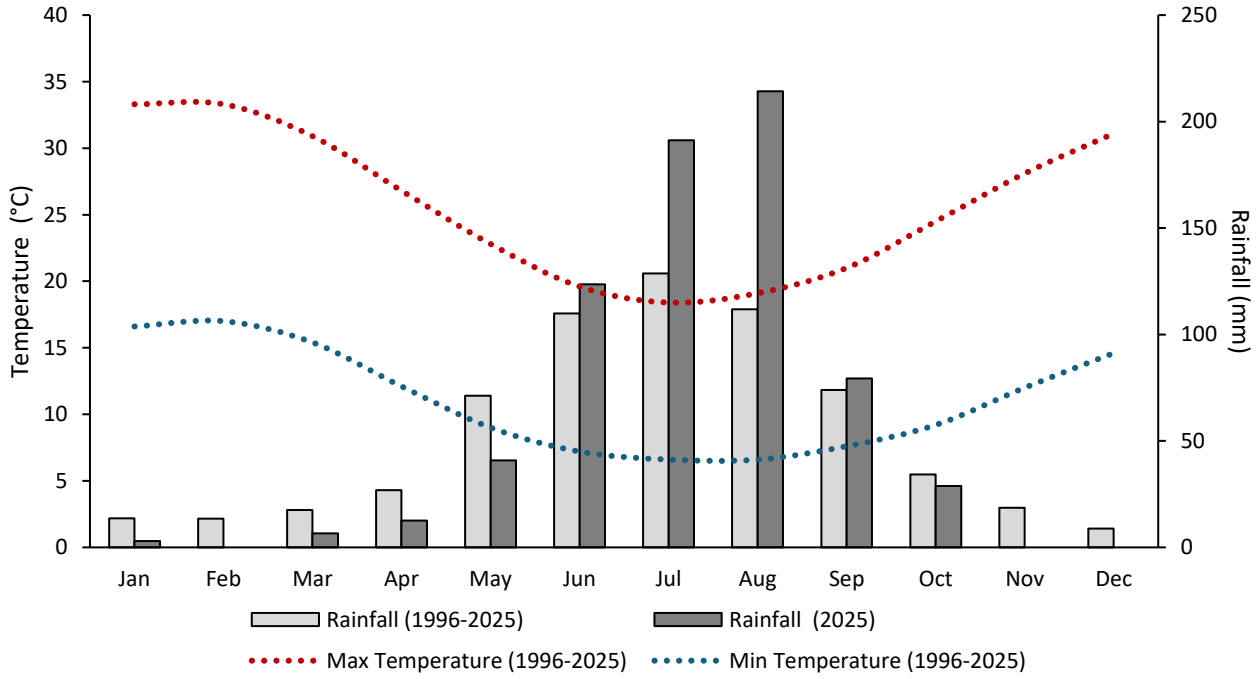


Figure 2: Temperature and rainfall data for the Gingin Aero, site number 009178. Source: BoM, 2025.

2.3 Topography and Soils

A total of seven soil types were identified on site (Department of Primary Industries and Regional Development (DPIRD), 2022). The site ranges from 28 m Australian Height Datum (AHD) in the central dunes corner and 2 m AHD along the foreshore (DPRID, 2019). (Table 1 and Figure 3).

Table 1: Soil types within the site

Name	Symbol	Description
Quindalup South youngest dune phase	211Qu__Q4	The youngest phase. Irregular dunes with slopes up to 20%. Loose pale brown calcareous sand with no soil profile development.
Quindalup South shallow sand flat phase	211Qu__Qs	Undulating landscapes with shallow calcareous sands over limestone and much rock outcrop.
Quindalup South deep sand flat phase	211Qu__Qp	Undulating landscapes with deep calcareous sands overlying limestone. Soils have dark grey-brown sand to about 50 cm and then pale brown sand. Remnants of hummocks are often present.
Quindalup South water, beach phase	211QuU_BEACH	Beach.
Quindalup South second dune phase	211Qu__Q2	The second phase. A complex pattern of dunes with moderate relief. Calcareous sands have organic staining to about 20 cm, passing into pale brown sand; some cementation below 1 m.
Quindalup South third dune phase	211Qu__Q3	The third phase. Irregular dunes with high relief and slopes up to 20%. Loose calcareous sand with little surface organic staining and incipient cementation at depth.
Quindalup South oldest dune phase	211Qu__Q1	The oldest phase. Dunes or remnants with low relief. Calcareous sands have organic staining to about 30 cm, overlying pale brown sand with definite cementation below 1 m.

2.4 Vegetation Complex

One vegetation complex exists within the site boundary, the Quindalup Complex. It is described by Heddle, Loneragan, and Havel (1980) as a coastal dune complex consisting mainly of two alliances - the strand and fore-dune alliance and the mobile and stable dune alliance. Local variations include the low closed forest of *Melaleuca lanceolata* (Rottnest Teatree) - *Callitris preissii* (Rottnest Island Pine), the closed scrub of *Acacia rostellifera* (Summer-scented Wattle) and the low closed *Agonis flexuosa* (Peppermint) forest of Geographe Bay. The pre-European extent of this vegetation complex remaining is:

- 60.49 % within the Swan Coastal Plain
- 16.16 % within the City of Wanneroo (Government of Western Australia, 2019).

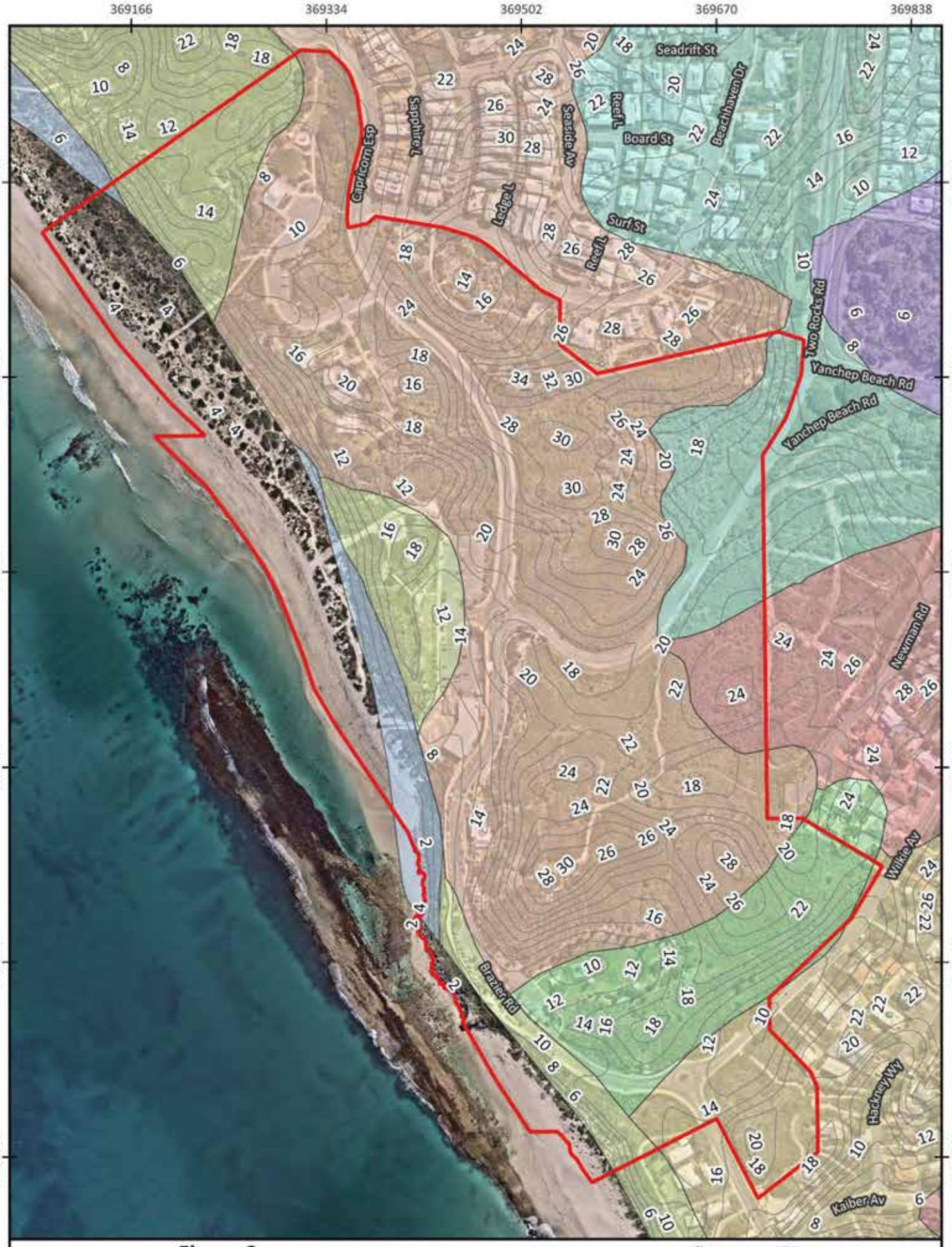


Figure 3:
Soil and Topography

Yanchep, Western Australia

Legend

- Contour (2 m)
- 211Qu__Q1
- 211Qu__Q2
- 211Qu__Q3
- 211Qu__Q4
- 211Qu__Qp
- 211Qu__Qs
- 211QuU_BEACH
- 211Sp__Ky
- Site Boundary

Client:	UDLA
Date:	03/11/2025
Created by:	Z.Stoney
Image Source:	Nearmap, 2025
Datum:	GDA2020 / MGA zone 50
Scale:	1: 4200

0 50 100 m

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2.5 Hydrology

There are no geomorphic wetlands located within the site boundary. The survey site has been identified as a moderate to low potential for terrestrial groundwater dependent ecosystem along the eastern half of the site (BoM, 2019). The Indian Ocean borders the western boundary of the site.

2.6 Heritage Values

Yanchep Lagoon is within the Whadjuk People Indigenous Land Use Agreement area. Two sites are registered as Aboriginal Cultural Heritage, Yanchep Beach (ID 17599) and Limestone Reef (ID 17596) (DPLH, 2025a). The entirety of Yanchep Beach is registered as a creation/dreamtime narrative with no gender/initiation restriction. The Limestone reef is adjacent to Yanchep Beach and is a creation/dreamtime narrative with no gender/initiation restriction.

Yanchep Lagoon (ID 17949) is listed under the Local Heritage Survey (DPLH, 2025b). Three sites are listed under the Heritage List, Fisherman's Hollow (17532), Lindsay Homestead (Well & Sheep Dip) (14280), and Well & Sheep Dip (Lindsay Homestead) (14297) (DPLH, 2025c).

2.7 Ecological Linkages

Yanchep Lagoon is within an environmentally sensitive area (ESA) and a mapped ecological linkage. The ESA within Yanchep Lagoon has been identified as containing Bush Forever site no. 397 known as the coastal strip from Wilbinga to Mindarie (DPLH, 2019). The bush forever site meets the section criteria of representation of ecological communities, rarity, maintaining ecological processes or natural systems, general criteria for the protection of wetland, and streamline and estuarine fringing vegetation and coastal vegetation.

Ecological linkages provide connectivity between patches of remnant vegetation facilitating the maintenance of ecological processes and the movement of organism within and across a landscape. Perth Regional Ecological Linkages were identified by the Perth Biodiversity Project with input from the Department of Environment, Department of Conservation and Land Management (CALM) and the Department for Planning and Infrastructure (WALGA, 2004). Perth Regional Ecological Linkage No. 1 intersects with Yanchep Lagoon, this ecological linkage links the Bush Forever sites 406 through to 315 and maintains connectivity along the coast for the Quindalup Complex (Figure 4).

2.8 Fire History

The site was impacted by fire in December 2019 in the section of bushland south of Brazier Road between Brazier Road, to the west and Newman Road in the east. The extent of the fire is approximately 4 ha.

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Figure 4:
Ecological Linkages and Native Vegetation Extents

Yanchep, Western Australia

Legend

- Ecological Linkages
- Native Vegetation Extent
- Site Boundary

Client:	UDLA
Date:	03/11/2025
Created by:	Z.Stoney
Image Source:	Nearmap, 2025
Datum:	GDA2020 / MGA zone 50
Scale:	1: 4200

0 50 100 m

N

3.0 Methodology

3.1 Desktop and Literature Review

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

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

The following databases were accessed to obtain relevant information:

- NatureMap (Department of Biodiversity, Conservation and Attractions (DBCA), 2025a)
- Protected Matters Search Tool (DCCEEW, 2025) (Appendix 1)
- FloraBase (WA Herbarium, 1998-)
- Threatened and priority flora database searches (DBCA, 2025b)
- Threatened and priority ecological community database searches (DBCA, 2025c).

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

3.2 On-ground Flora Survey

3.2.1 Detailed Flora surveys

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

Natural Area environmental scientists undertook the survey between October 20 and 23, 2025, with key data recorded using QField software on a handheld tablet. Survey activities included:

- Reassessing a total of 17 10 x 10 m quadrats established by One Tree Botanical (2020) and setting out an additional 8 quadrats across the 9 vegetation types present (Figure 5).
- Photographing each quadrat in the north-west corner and recording GPS coordinates using GDA2020 Zone 50 datum.
- Recording landscape characteristics including soil types/colour, aspect, slope, surface rock, topography and drainage.
- Determining leaf litter depth, percentage cover, and percentage of bare ground.
- Recording percentage cover, height, number alive/dead stems and life form for each flora species in the quadrats.
- Marking locations of any declared pests and/or Weeds of National Significance (WoNS) identified.
- Recording vegetation type including dominant over, middle and understorey species to describe vegetation type in line with the NVIS Level V – Association (ESCAVI, 2003).
- Condition using the scale attributed to Keighery (Table 2) (EPA, 2016).
- The use of GPS to map significant species and boundaries of differing vegetation type and condition

- Recording evidence of disturbance, such as fire.

Table 2: Vegetation condition ratings

Category		Description
1	Pristine	Pristine or nearly so, no obvious signs of disturbance or damage caused by human activities since European settlement.
2	Excellent	Vegetation structure intact, disturbance affecting individual species and weeds are non-aggressive species. Damage to trees caused by fire, the presence of non-aggressive weeds and occasional vehicle tracks.
3	Very Good	Vegetation structure altered, obvious signs of disturbance. Disturbance to vegetation structure caused by repeated fires, the presence of some more aggressive weeds, dieback, logging and grazing.
4	Good	Vegetation structure significantly altered by very obvious signs of multiple disturbances. Retains basic vegetation structure or ability to regenerate it. Disturbance to vegetation structure caused by very frequent fires, the presence of some very aggressive weeds, partial clearing, dieback and grazing.
5	Degraded	Basic vegetation structure severely impacted by disturbance. Scope for regeneration but not to a state approaching good condition without intensive management. Disturbance to vegetation structure caused by very frequent fires, the presence of very aggressive weeds at high density, partial clearing, dieback and grazing.
6	Completely Degraded	The structure of the vegetation is no longer intact, and the area is completely or almost completely without native species. These areas are often described as 'parkland cleared' with the flora comprising weed or crop species with isolated native trees or shrubs.

Source: EPA, 2016.

3.2.2 Targeted Flora surveys

The targeted flora survey was conducted in accordance with *Technical Guidance-Flora and Vegetation Surveys for Environmental Impact Assessment* (EPA, 2016). Samples were collected, or photographs taken of unfamiliar species to enable later identification.

Natural Area environmental scientists undertook the survey between October 20 and 23, 2025, with key data recorded using QField software on a handheld tablet. Survey activities included:

- Traversing the entirety of the site in 10 m wide transects to conduct a search for conservation significant flora species with the potential to occur in the area.
- Marking locations of any conservation significant flora identified and determining population size and extent.

3.3 Floristic Analysis

Floristic analysis was undertaken utilising the statistical analysis package PRIMER (version 7.0.24) to compare the data of the 25 quadrats recorded during the survey to the quadrat data from Gibson *et al*. (1994) and Keighery *et al*. (2012). To ensure that nomenclature and taxonomy is compatible, Gibson *et al*. (1994) and Keighery *et al*. (2012) data was reconciled to current species names. All quadrats used in the analysis was based on the presence-absence of flora species within a 10 x 10 metre quadrat. The surveyed quadrats were

inserted into dataset and analysed using the Bray-Curtis distance clustering to determine overall quadrat groupings.

To ensure that the results of the grouping are consistent with the original finding of the Gibson *et al*. (1994) and Keighery *et al*. (2012), a multivariate analysis of just their dataset was completed first to verify that the parameters set were accurate.

Single site insertions of each quadrat were assessed to minimise the disruption to the original dataset. The similarity of the new quadrats to the closest quadrats were utilised to determine potential floristic community type (FCT) assignments. The potential FCT assignments for each quadrat were analysed against the habitat features including, key flora combinations and hydrological status of known FCTs to determine suitability.

3.4 Limitations

The limitations associated with the detailed and targeted flora survey undertaken in Yanchep Lagoon are outlined in Table 3.

Table 3: Survey limitations

Potential Limitation	Degree of Limitation	Comments
Availability of contextual information	Moderate	Regional contextual information was readily available for the Swan Coastal Plain. Limited local contextual information is lacking for the vegetation surrounding the survey area. This area is under-represented with limited data available from historic floristic studies.
Competency/ experience of team	None	Survey activities were undertaken by environmental consultants who have experience undertaking detailed flora surveys within the Swan Coastal Plain.
Proportion of flora recorded/ collected, any identification issues	Minor	A total of 177 flora species (taxa) were recorded from 56 families during the field survey, comprised of 85 introduced (weeds) and 92 native species. Of these, 2 species (1 %) were unable to be identified to species level due to a lack of diagnostic characteristics present at the time of survey. These species were recorded within the cultivated areas of the site and identified to genus level.
Survey effort and extent	Minor	The detailed flora survey was undertaken across the site over four days. The targeted flora survey was undertaken by a team of three for four days.
Access restrictions	Minor	The limestone outcrop along the beach were unable to be accessed due to unstable cliffs and private properties within the site boundary were not accessed. All other areas were accessible during the survey.

Potential Limitation	Degree of Limitation	Comments
Survey timing	None	The survey was undertaken during spring which is the optimal season for flora surveys within the Swan Coastal Plain subregion. Whilst the survey was undertaken during flowering season, some species may flower earlier or later in the season and therefore may not be able to be identified. Of the 12 conservation significant flora species identified in the desktop survey as being likely to occur within the survey area, 2 have flowering periods outside of the survey period.
Disturbances	Minor	Recent clearing from a firebreak established between the old surf lifesaving club and private residences may have an impact on survey results. This area was recorded to be predominately surrounded by cultivated/managed areas. No other recent disturbances which may have had an impact on survey results (e.g. fire or floods) were identified during the survey.

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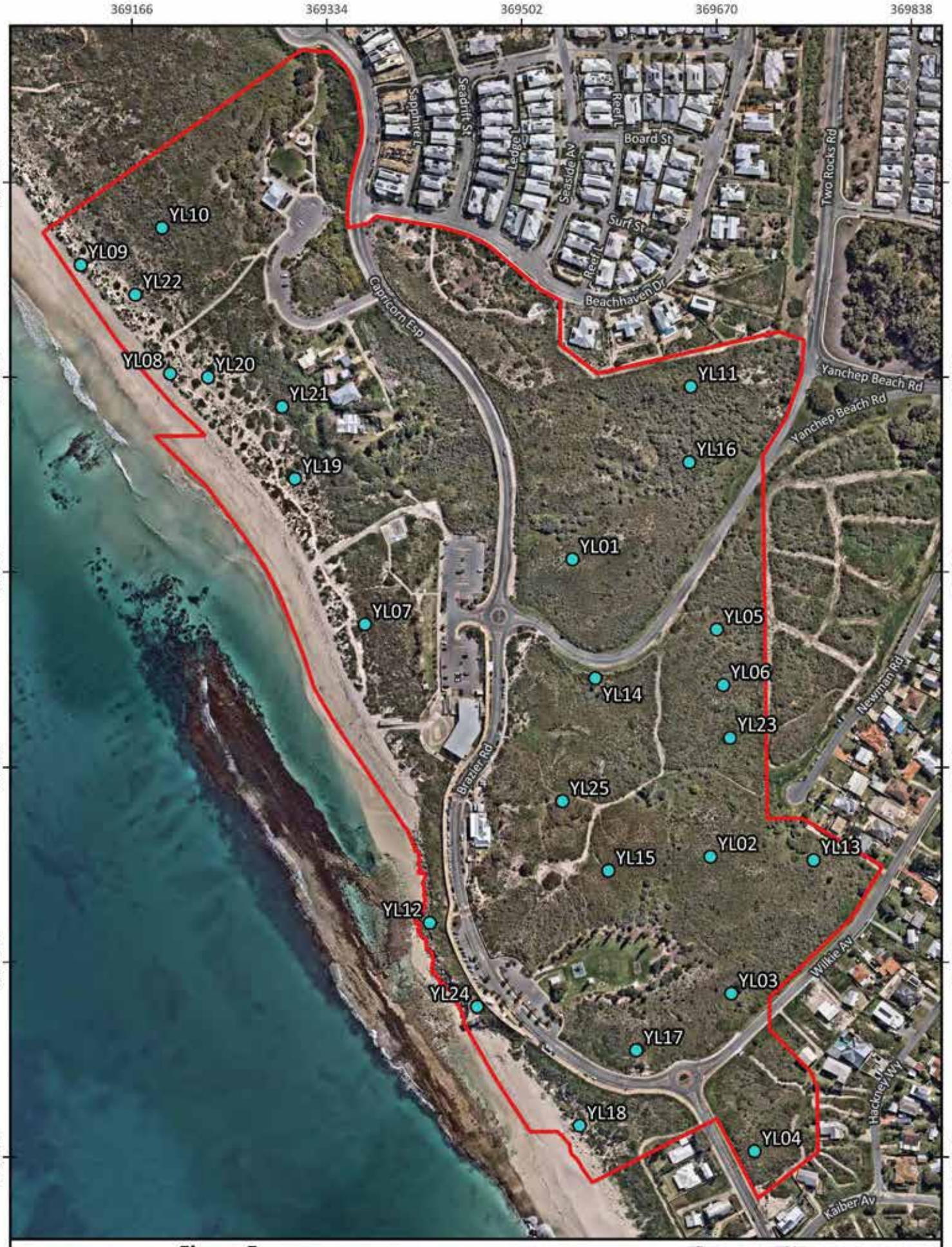


Figure 5:
Quadrat Locations

Yanchep, Western Australia

Legend

- Quadrat
- Site Boundary

Client:	UDLA
Date:	21/11/2025
Created by:	Z.Stoney
Image Source:	Nearmap, 2025
Datum:	GDA2020 / MGA zone 50
Scale:	1: 4200

0 50 100 m

N

4.0 Flora Survey Results

4.1 Desktop Survey

A desktop survey of online databases indicated the potential for a total of 33 conservation significant species to occur within 10 km of the survey area (Table 4). NatureMap indicated 24 conservation significant flora species listed under the BC Act or by the Western Australian Herbarium (1998-), as potentially occurring within 10 km radius of the site (DBCA, 2025a). A review of the Protected Matters Search Tool (PMST) (DCCEEW, 2025) indicated 10 significant flora species listed under the EPBC Act as potentially occurring within a 10 km radius of the site (Appendix 1). A review of the DBCA (2025b) threatened and priority flora database indicated 23 threatened or priority species have been recorded within 10 km of the site.

Of the conservation significant species potentially found in the area, it was determined that the site conditions (soil type, drainage, location) may be suitable for 12 (highlighted green) of these species (Table 4). Conservation code descriptions are provided in Appendix 2.

Table 4: Threatened and priority flora species listed by NatureMap, PMST and DBCA

Species Name	Cons Code (Cth)	Cons Code (WA)	Nature Map	PMST	DBCA
Acacia benthamii		P2	X		X
Amanita wadjukiorum		P3	X		
Andersonia gracilis	EN	VU		X	
Anigozanthos viridis subsp*. terraspectans*	VU	VU		X	
Baeckea sp. Limestone (N. Gibson & M.N. Lyons 1425)		P1	X		X
Banksia mimica	EN	VU		X	
Calandrinia oraria		P3	X		X
Paracaleana dixonii	EN	VU		X	
Conostylis bracteata		P3	X		X
Conostylis pauciflora subsp*. euryrhipis*		P4	X		X
Conostylis pauciflora subsp*. pauciflora*		P4	X		X
Diuris micrantha	VU	VU		X	
Diuris purdiei	EN	EN		X	
Drakaea elastica		CR		X	
Eleocharis keigheryi	VU	VU		X	
Eucalyptus argutifolia	VU	VU	X	X	X
Eucalyptus foecunda subsp*. foecunda*		P4	X		X
Haloragis luminosa		P1	X		X

Species Name	Cons Code (Cth)	Cons Code (WA)	Nature Map	PMST	DBCA
Hibbertia leptotheca		P3	X		X
Lasiopetalum membranaceum		P3	X		X
Lecania sylvestris		P2	X		X
Lecania turicensis var. *turicensis*		P2	X		X
Lepidium pseudotasmanicum		P4	X		X
Leucopogon maritimus		P1	X		X
Macarthuria keigheryi	EN	EN		X	
Pimelea calcicola		P3	X		X
Placynthium nigrum		P3	X		X
Rinodina bischoffii		P2	X		X
Sphaerolobium calcicola		P3	X		X
Stylidium maritimum		P3	X		X
Stylidium striatum		P4	X		X
Styphelia filifolia		P3	X		X
Styphelia porcata		P3	X		X

4.1.1 Threatened and Priority Ecological Communities

A review of the DBCA threatened and priority ecological community database identified 10 listed priority ecological communities (PEC) that could potentially occur within 10 km of the site (DBCA, 2025c). A review of the PMST report identified 5 listed threatened ecological communities (TEC) that could potentially occur within 10 km of the site (Table 5) (DCCEEW, 2025).

Table 5: Potential threatened and priority ecological communities within the Yanchep Lagoon

Commonwealth Name	State Name	Cons Code (Cth)	Cons Code (WA)
Aquatic Root Mat Community in Caves of the Swan Coastal Plain	Aquatic Root Mat Community Number 1 of Caves of the Swan Coastal Plain	EN	CR
Banksia Woodlands of the Swan Coastal Plain	Banksia Woodlands of the Swan Coastal Plain ecological community	EN	P3
	Banksia ilicifolia woodlands	EN	P3
	Swan Coastal Plain *Banksia attenuata - Banksia menziesii* woodlands	EN	P3
Honeymyrtle shrubland on limestone ridges of the Swan Coastal Plain Bioregion	*Melaleuca huegelii - M. systena* shrublands of limestone ridges (floristic community type (FCT) 26a as originally described in Gibson *et al*. 1994)	CR	CR
Sedgelands in Holocene dune swales of the southern Swan Coastal Plain	Sedgelands in Holocene dune swales of the southern Swan Coastal Plain (FCT 19 as originally described in in Gibson *et al*. 1994)	EN	CR
Tuart (*Eucalyptus gomphocephala*) woodlands and forests of the Swan Coastal Plain	Tuart (*Eucalyptus gomphocephala*) woodlands and forests of the Swan Coastal Plain	CR	P3
	Quindalup *Eucalyptus gomphocephala* and/or *Agonis flexuosa* woodlands	CR	P3
	Southern *Eucalyptus gomphocephala-Agonis flexuosa* woodlands	CR	P3
	Acacia shrublands on taller dunes		P3

Source: DCCEEW, 2025.

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4.2 Flora Survey Results

4.2.1 Flora

A total of 177 flora species (taxa) were recorded from 56 families during the field survey, comprising of 85 introduced (weeds) and 92 native species. Examples of native flora species are shown in Figure 6 and weed species in Figure 7. A complete flora species list is provided in Appendix 4 and quadrat data is provided in Appendix 5. No declared pests or Weed of National Significance (WoNS) were identified within the survey site.



Scaevola crassifolia (Thick-leaved Fan-flower)



Leptorhynchos scaber (Lanky Buttons)



Pimelea ferruginea



Spyridium globulosum (Basket Bush)



Hibbertia racemosa (Stalked Guinea Flower)



Carpobrotus virescens (Coastal Pigface)

Figure 6: Examples of native flora species recorded.


Common Stock (*_Matthiola incana_*)


Coast Teatree (*_Gaudium laevigatum_*)


Geraldton Carnation Weed (*_Euphorbia terracina_*)


Hare's Tail Grass (*_Lagurus ovatus_*)

Figure 7: Examples of introduced flora species recorded.

4.2.2 Conservation Significant Flora

One conservation significant flora species was identified during the targeted survey, *Conostylis pauciflora* subsp*. pauciflora* (Figure 8). This species was verified by the WA Herbarium. A total of 8,073 *Conostylis pauciflora* subsp*. pauciflora* were recorded during the targeted flora survey. The locations are provided in Figure 9. This species was recorded primarily in the semi-consolidated dune systems within the low shrublands present in C1 and *C2*.





Figure 8: *Conostylis pauciflora* subsp*. pauciflora* recorded during the targeted flora survey.



Figure 9:
Conservation Significant Flora

Yanchep, Western Australia

Legend

- *Conostylis pauciflora* subsp. *pauciflora* (P4)
- Site Boundary

Client:	UDLA
Date:	02/12/2025
Created by:	Z.Stoney
Image Source:	Nearmap, 2025
Datum:	GDA2020 / MGA zone 50
Scale:	1: 4200

0 50 100 m

N

4.2.3 Vegetation Types

A total of nine vegetation types were recorded within Yanchep Lagoon, an additional two vegetation types are listed which comprises of managed or cleared landscapes. Vegetation types are described in Table 6 and shown in Figure 10.

The nine vegetation types within the site can be broadly grouped into four different areas: coastal dunes on unconsolidated soils, inland dunes on consolidated soils, shallow soils over limestone, and limestone cliffs.

The coastal dunes on unconsolidated soils consist of a primary dune system characterised by *Olearia axillaris* shrubland over *Spinifex longifolius* tussock grassland (A1) and a secondary dune system characterised by *Scaevola crassifolia, Myoporum insularis* and *Olearia axillaris* shrubland over *Lepidosperma gladiatum* sedgeland (A3). Between these two vegetation types is a transitional zone within the dune swale consisting of *Olearia axillaris* and *Scaevola crassifolia* shrubland (A2).

The limestone cliffs located adjacent to the beach consist of *Frankenia pauciflora* var. *pauciflora* and *Scaevola crassifolia* shrubland over *Salicornia blackiana* chenopod shrubland (B1).

The inland dunes on consolidated soils feature three main vegetation classifications. The slopes are dominated primarily with taller shrubs and represented by *Spyridium globulosum, Acacia cyclops* and *Olearia axillaris* shrubland (C1). The crests consist of the vegetation type *Melaleuca systena* and *Acacia lasiocarpa* shrubland over *Lomandra maritima* forbland (C2) and the lower slopes contain taller trees forming *Eucalyptus gomphocephala* woodland (C3).

The eastern portion of the site contains the shallow soils over limestone; the slopes include the *Melaleuca cardiophylla* shrubland (D1) and the crests contain the *Melaleuca huegelii* subsp. *huegelii* shrubland (D2).

Two managed or cleared landscapes are represented within the area. These areas have been heavily modified by anthropogenic disturbances and are classified as either cleared or cultivated or revegetated areas.

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Table 6: Vegetation types recorded within Yanchep Lagoon

Vegetation Type	Description	Photograph
Dunes on Unconsolidated Sand		
Olearia axillaris shrubland over *Spinifex longifolius* tussock grassland (A1)	An open shrubland of *Olearia axillaris* over a tussock grassland of *Spinifex longifolius.* Common species recorded include *Ficinia nodosa, Threlkeldia diffusa* and *Senecio pinnatifolius* var. *latilobus.* This vegetation was primarily recorded within the primary dune system along the beach.	
Olearia axillaris and *Scaevola crassifolia* shrubland (A2)	An open shrubland of *Olearia axillaris* and *Scaevola crassifolia*, over a forbland of **Pelargonium capitatum* and **Trachyandra divaricata*. Other common species recorded included **Gaudium laevigatum*, *Senecio pinnatifolius* var. *latilobus* and *Carpobrotus virescens.* Sections in the northern portion of this vegetation type were dominated by a vineland of *Cassytha aurea.* This vegetation was primarily recorded within the dune swale between A1 and A3.	

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Vegetation Type	Description	Photograph
Scaevola crassifolia, Myoporum insularis and *Olearia axillaris* shrubland over *Lepidosperma gladiatum* sedgeland (A3)	A shrubland of *Scaevola crassifolia, Myoporum insularis* and *Olearia axillaris* over an open to closed sedgeland of *Lepidosperma gladiatum*. Other common species recorded included *Parietaria debilis, Senecio pinnatifolius* var. *latilobus* and *Acanthocarpus preissii.* This vegetation was recorded primarily along the secondary dune system.	
Coastal Limestone Cliff		
Frankenia pauciflora var. *pauciflora* and *Scaevola crassifolia* shrubland over *Salicornia blackiana* Chenopod Shrubland (B1)	An open shrubland of *Frankenia pauciflora* var. *pauciflora* and *Scaevola crassifolia* over an open chenopod shrubland of *Salicornia blackiana.* Other common species recorded included*, Olearia axillaris, Carpobrotus virescens* and *Threlkeldia diffusa.* The vegetation was recorded within the limestone outcrop along the beach.	
Taller Inland Dunes on Semi-Consolidated Sand		

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Vegetation Type	Description	Photograph
Spyridium globulosum, Acacia cyclops and *Olearia axillaris* shrubland (C1)	A shrubland of *Spyridium globulosum, Acacia cyclops* and *Olearia axillaris* over a forbland of *Lomandra maritima* and *Conostylis pauciflora* subsp*. pauciflora* and a healthland of *Acanthocarpus preissii* over an open sedgeland of *Lepidosperma calcicola* and open tussock grassland of *Austrostipa flavescens* and *Poa porphyroclados.* Other common species included *Templetonia retusa, Styphelia insularis, Santalum acuminatum, Opercularia vaginata, Tricoryne elatior,* and *Leucopogon parviflorus.* This vegetation type was recorded primarily along the slopes of the taller inland dunes on semi-consolidated sands.	
Melaleuca systena and Acacia lasiocarpa shrubland over *Lomandra maritima forbland* (C2)	A shrubland of *Melaleuca systena* and *Acacio lasiocarpa* over a forbland of *Lomandra maritima* and *Conostylis pauciflora* subsp*. pauciflora* and a healthland of *Acanthocarpus preissii* over an open sedgeland of *Lepidosperma calcicola* and open tussock grassland of *Austrostipa flavescens* and *Poa porphyroclados.* Other common species included *Olearia axillaris, Templetonia retusa, Styphelia insularis, Santalum acuminatum, Opercularia vaginata, Tricoryne elatior,* and *Leucopogon parviflorus.* This vegetation type was recorded primarily on the dune crests of the taller inland dunes on semi-consolidated sands.	

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Vegetation Type	Description	Photograph
Eucalyptus gomphocephala woodland (C3)	A woodland of *Eucalyptus gomphocephala* over a shrubland of *Rhagodia baccata* subsp. *baccata* and *Spyridium globulosum* over a tussock grassland of **Avena barbata* and forbland of **Euphorbia terracina* and **Trachyandra divaricata*. Other species included *Acacia xanthina, Olearia axillaris, Leptomeria preissiana*, and *Threlkeldia diffusa*. This vegetation was recorded primarily in the lower slopes of the taller inland dunes on semi-consolidated sands.	
Shallow Sands over Limestone		
Melaleuca cardiophylla shrubland (D1)	A shrubland of *Melaleuca cardiophylla, Spyridium globulosum* and *Acacia xanthina*, over *Rhagodia baccata* subsp. *baccata*. Common species include *Leptomeria preissiana, Leucopogon parviflorus, Styphelia insularis, Lepidosperma calcicola,* and *Desmocladus asper*. This was recorded on shallow sand over limestone in the eastern portion of the site.	

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Vegetation Type	Description	Photograph
Melaleuca huegelii subsp. *huegelii* shrubland (D2)	A shrubland of *Melaleuca huegelii* subsp. *huegelii* and *Melaleuca systena* over an open sedgeland of *Lepidosperma calcicola* and open tussock grassland of *Austrostipa flavescens* and *Poa porphyroclados.* Other common species included *Templetonia retusa, Spyridium globulosum, Leucopogon parviflorus, Styphelia insularis, Desmocladus asper* and *Opercularia vaginata*. This was recorded on a crest with extensive limestone outcrops in the eastern portion of the site.	
Modified or Managed Areas		
Cleared (E1)	Areas that have historical disturbance, this includes infrastructure, paths, firebreaks, informal or formal paths or heavily disturbed areas.	

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Vegetation Type	Description	Photograph
Cultivated or Revegetated Areas (E2)	Cultivated or revegetated areas include landscape plantings of native species that are managed or recent areas subjected to revegetation activities.	

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Figure 10:
Vegetation Types

Yanchep, Western Australia

Legend

A1		C3	
A2		D1	
A3		D2	
B1		E1	
C1		E2	
C2		Site Boundary	

Client:	UDLA
Date:	17/11/2025
Created by:	Z.Stoney
Image Source:	Nearmap, 2025
Datum:	GDA2020 / MGA zone 50
Scale:	1: 4200

0 50 100 m

N

4.2.4 Vegetation Condition

Vegetation condition on site ranged from completely degraded to excellent (Table 7, Figure 11). Vegetation condition was mapped using the vegetation condition scale adapted from Keighery (EPA, 2016).

Varying degrees of disturbance was evident across Yanchep Lagoon. Weed invasion and soil disturbance were apparent across portions of vegetation. Across Yanchep Lagoon, high traffic areas next to natural areas, contained evidence of edge effects with anthropogenic changes decreasing the surrounding vegetation condition. These high traffic areas include formalised and informal tracks. Localised variation from disturbances were present across all vegetation conditions.

Vegetation in an excellent condition contained a high vegetation structure with minimal to no weeds present. Very good condition vegetation included vegetation with a high-level structure and diversity with minimal aggressive weeds present. Vegetation in a good condition had influences of disturbance to the vegetation structure but contains the ability to regenerate without management strategies. Vegetation in a good condition typically contained a high weed load or increased coverage of bare ground.

Vegetation in a degraded condition had a reduce vegetation structure with evidence of disturbance and high weed load. The vegetation in a degraded condition requires management strategies to be put in place to improve the condition. Vegetation in completely degraded condition is almost entirely without native flora species and includes developed areas.

Table 7: Vegetation condition within Yanchep Lagoon

Vegetation Condition	Pristine	Excellent	Very Good	Good	Degraded	Completely Degraded	Total
Area (ha)	0	0.87	8.59	10.12	4.24	7.36	31.18
Area (%)	0	2.79	27.55	32.46	13.6	23.6	100

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Figure 11:
Vegetation Condition

Yanchep, Western Australia

Legend

- Excellent
- Very Good
- Good
- Degraded
- Competely Degraded
- Site Boundary

Client:	UDLA
Date:	06/11/2025
Created by:	Z.Stoney
Image Source:	Nearmap, 2025
Datum:	GDA2020 / MGA zone 50
Scale:	1: 4200

0 50 100 m

N

4.2.5 Floristic Analysis

An assessment of the quadrats recorded during the survey were compared against the quadrats surveyed by Gibson *et al.* (1994) and Keighery *et al*. (2012) to determine the FCTs and quantify the presence of any priority or threatened ecological communities. A single site insertion similarity determined the most similar site to the quadrats surveyed, utilising the dendrogram method and similarity, the potential FCTs were assessed to determine the most likely FCT based on site characteristics (Table 8). The results of the single site insertion assisted in validating the results from the grouped similarity of the site. There is ambiguity within the floristic analysis due to the coastal area around Yanchep from Mindarie to Wilbinga being underrepresented within the Gibson *et al*. (1994) and Keighery *et al*. (2012) datasets. The FCTs identified within the survey area, included:

- 29a Coastal shrublands on shallow soils
- 29b Acacia shrublands on taller dunes
- 30a *Callitris preissii* and/or *Melaleuca lanceolata* forests and woodlands
- s11 Northern *Acacia rostellifera - Melaleuca systena* shrublands
- s13 Northern *Olearia axillaris - Scaevola crassifolia* shrublands
- s14 *Spinifex longifolius* grassland and low shrublands.

Vegetation types A1, A2, and A3 are aligned predominantly with 29a. A3 does shows an overlap with s11 and s13 and A1 has an overlap with s13. Vegetation type A2, situated in a transitional zone between A1 and A3, demonstrates dominance of FCT 29a but has consistent secondary influence from s14 and overlap with s11, supporting its transitional floristic composition. B1 is primarily associated with FCT 29a and s13.

C1 and C2 display mixed patterns: C1 is strongly linked to FCT 29a and 29b with some influence of s11, while C2 shows balanced representation of 29b, and s11 with influence of 29a. C3 is dominated by FCT 29a but includes influences from s13, s14 and 30a2, the inclusion of 30a2 indicates that there are likely a presence of upland species. D1 and D2 show consistent dominance of FCT 29a with secondary influences from 29b and s11.

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Table 8: Floristic Community Type (FCT) Analysis Summary of Single Site Insertion

Single Site Insertion				Determined FCT	Rationale
Quadrat	**Dendrogram**	**Similarity**	**Potential FCT**		
YL01	24 29b	SW06 (29b, 55 %) MI04 (s11, 53 %) MI23 (24, 50 %)	24 29b s11	29b s11	Similarity and dendrogram of single site insertion and group dendrogram of site quadrats indicates FCT 29b and s11. FCT 24 is recorded to be restricted to the spearwood system.
YL02	24 29b	MI23 (24, 52 %) MI04 (s11, 47 %) MI05 (s11, 44 %)	24 29b s11	29b s11	Similarity and dendrogram of single site insertion and group dendrogram of site quadrats indicates FCT 29b and s11. FCT 24 is recorded to be restricted to the spearwood system.
YL03	24 s13 29a	wilb03 (29a, 45 %) PB-5 (29b, 36 %) PB-4 (29b, 35 %)	24 29a 29b S13	29a 29b s13	Similarity and dendrogram of single site insertion and group dendrogram of site quadrats indicates FCT 29a, 29b and s13. FCT 24 is recorded to be restricted to the spearwood system.
YL04	29b 29a S11	MI05 (s11, 43 %) MI23 (24, 43 %) MI04 (s11, 43 %)	24 29a 29b s11	29a 29b s11	Similarity and dendrogram of single site insertion and group dendrogram of site quadrats indicates FCT 29a, 29b and s11. FCT 24 is recorded to be restricted to the spearwood system.
YL05	24 S11 29b	rich02 (29a, 41 %) BU03 (27, 32 %) buck01 (24, 31 %)	24 29a 29b s11	29a 29b s11	Similarity and dendrogram of single site insertion and group dendrogram of site quadrats indicates FCT 29a, 29b and s11.

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Single Site Insertion				Determined FCT	Rationale
Quadrat	**Dendrogram**	**Similarity**	**Potential FCT**		
			27		FCT 24 and 27 is recorded to be restricted to the spearwood system.
YL06	29a 29b S11	rich02 (29a, 40 %) tokyu07 (29b, 40 %) tokyu06 (29b, 38 %)	29a 29b s11	29a 29b s11	Similarity and dendrogram of single site insertion and group dendrogram of site quadrats indicates FCT 29a, 29b and s11.
YL07	S13 29a	MI10 (s14, 50 %) m4601 (s11, 38 %) MI12(s13, 37 %)	29a s11 s13 s14	29a s11 s13 s14	Similarity and dendrogram of single site insertion and group dendrogram of site quadrats indicates FCT 29a, s11, s13 and s14.
YL08	S13 29a	MI10 (s14, 46 %) MI13 (s14, 43 %) MI16 (s14, 43 %)	29a s13 s14	29a s13 s14	Similarity and dendrogram of single site insertion and group dendrogram of site quadrats indicates FCT 29a, s13 and s14.
YL09	S14 29a	MI13 (s14, 50 %) MI16 (s14, 50 %) TR02 (s14, 50 %)	29a s14	29a s14	Similarity and dendrogram of single site insertion and group dendrogram of site quadrats indicates FCT 29a and s14.
YL10	29a S14	SW02 (s13, 44 %) SW04 (29a, 42 %) MI12 (s13, 37 %)	29a s13 s14	29a s13 s14	Similarity and dendrogram of single site insertion and group dendrogram of site quadrats indicates FCT 29a, s13 and s14.
YL11	29a 29b S11	rich02 (29a, 41 %) MI05 (s11, 40 %) MI23 (24, 40 %)	24 29a 29b s11	29a 29b s11	Similarity and dendrogram of single site insertion and group dendrogram of site quadrats indicates FCT 29a, 29b and s11.
YL12	S13 29a	wilb11 (29a, 37 %) m4601 (s11, 33 %) MI12 (s13, 33 %)	29a s11 s13	29a s11 s13	Similarity and dendrogram of single site insertion and group dendrogram of site quadrats indicates FCT 29a, s11 and s13.

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Single Site Insertion				Determined FCT	Rationale
Quadrat	**Dendrogram**	**Similarity**	**Potential FCT**		
YL13	29a S11 29b 24	tokyu06 (29b, 41 %) MI04 (s11, 39 %) MI05 (s11, 39 %)	24 29a 29b s11	29a 29b s11	Similarity and dendrogram of single site insertion and group dendrogram of site quadrats indicates FCT 29a, 29b and s11.
YL14	29a S14	PEPGRV-2 (30a2, 36 %) PRES-1 (29a, 32 %) MI19 (s13, 29 %)	29a s13 s14 30a2	29a s13 s14	Similarity and dendrogram of single site insertion and group dendrogram of site quadrats indicates FCT 29a, s13 and s14.
YL15	S11 29b	rich02 (29a, 44 %) MI05 (s11, 43 %) BURN-1 (29a, 42 %)	29a 29b s11	29a 29b s11	Similarity and dendrogram of single site insertion and group dendrogram of site quadrats indicates FCT 29a, 29b and s11.
YL16	30a2 29a	MI01 (29b, 41 %) MI05 (s11, 40 %) BURN-1 (29a, 39 %)	29a 29b s11 30a2	29a 29b s11	Similarity and dendrogram of single site insertion and group dendrogram of site quadrats indicates FCT 29a, 29b and s11. FCT 30a2 most northern distribution recorded is Trigg.
YL17	29a 29b	rich02 (29a, 39 %) MI05 (s11, 38 %) bold06 (30a2, 38 %)	29a 29b s11 30a2	29a 29b s11	Similarity and dendrogram of single site insertion and group dendrogram of site quadrats indicates FCT 29a, 29b and s11. FCT 30a2 most northern distribution recorded is Trigg.
YL18	S14 S13	MI16 (s14, 73 %) MI10 (s14, 60 %) MI15 (s14, 55 %)	s13 s14	s13 s14	Similarity and dendrogram of single site insertion and group dendrogram of site quadrats indicates s13 and s14.
YL19	29a S13	MI16 (s14, 53 %) MI10 (s14, 43 %) MI22 (s13, 42 %)	29a s13 s14	29a s13 s14	Similarity and dendrogram of single site insertion and group dendrogram of site quadrats indicates FCT 29a, s13 and s14.

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Single Site Insertion				Determined FCT	Rationale
Quadrat	**Dendrogram**	**Similarity**	**Potential FCT**		
YL20	29a S13	MI22 (s13, 44 %) MI16 (s14, 43 %) SW02 (s13, 42 %)	29a s13 s14	29a s13 s14	Similarity and dendrogram of single site insertion and group dendrogram of site quadrats indicates FCT 29a, s13 and s14.
YL21	S11 29a	TR03 (s13, 33 %) m4601 (s11, 32 %) MI11 (s13, 30 %)	29a s11 s13	29a s11 s13	Similarity and dendrogram of single site insertion and group dendrogram of site quadrats indicates FCT 29a, s11 and s13.
YL22	S13 29a	MI22 (s13, 40 %) MI12 (s13, 39 %) SW02 (s13, 39 %)	29a s13	29a s13	Similarity and dendrogram of single site insertion and group dendrogram of site quadrats indicates FCT 29a and s13.
YL23	29b 30a2 29a	MI05 (s11, 46 %) MI23 (24, 46 %) tokyu06 (29b, 42 %)	24 29a 29b s11 30a2	29a 29b s11	Similarity and dendrogram of single site insertion and group dendrogram of site quadrats indicates FCT 29a, 29b and s11. FCT 30a2 most northern distribution recorded is Trigg. FCT 24 is recorded to be restricted to the spearwood system.
YL24	S13 29a	wilb02 (s13, 44 %) MI10 (s14, 43 %) MI22 (s13, 42 %)	29a s13 s14	29a s13 s14	Similarity and dendrogram of single site insertion and group dendrogram of site quadrats indicates FCT 29a, s13 and s14.
Y25	29a S13 S14	MI19 (s13, 40 %) TR02 (s13, 40 %) TR04 (s13, 38 %)	29a s13 s14	29a s13 s14	Similarity and dendrogram of single site insertion and group dendrogram of site quadrats indicates FCT 29a, s13 and s14.

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4.2.6 Threatened and Priority Ecological Communities

The floristic analysis identified the potential for two priority ecological communities to occur within the survey area: this includes Coastal shrublands on shallow sands, southern Swan Coastal Plain (FCT29a) and Acacia shrublands on taller dunes, southern Swan Coastal Plain (FCT29b). Both of these are listed as Priority 3. FCT 29a was represented in vegetation types A1, A2, A3, B1, C1, C2, C3, D1 and D2. FCT 29b was represented in vegetation type C1, C2, D1 and D2.

The key diagnostic criteria for the Honeymyrtle shrubland on limestone ridges of the Swan Coastal Plain Bioregion, listed under the EPBC Act as Critically Endangered, were assessed within the D2 vegetation type (Table 9). The key diagnostic characteristics of this threatened ecological community were assessed as listed in the *Approved Conservation Advice for Honeymyrtle shrubland on limestone ridges of the Swan Coastal Plain Bioregion* (DCCEEW, 2023). Vegetation type D2 is likely to be representative of this threatened ecological community.

To determine the listing of threatened ecological communities under the BC Act, quadrat data is required to be compared to the Gibson *et al*. (1994) data (DBCA, 2024). An assessment of the FCT determined the vegetation to be representative of 29a with influences of 29b and 24 rather than representative of 26a. This vegetation does not meet the classification to be representative of the *Melaleuca huegelii - M. systena* shrublands of limestone ridges (floristic community type (FCT) 26a as originally described in Gibson *et al*. 1994) listed as Critically Endangered under the BC Act.

Table 9: Key diagnostic characteristics of the Honeymyrtle shrubland on limestone ridges of the Swan Coastal Plain Bioregion. Key diagnostic characteristics met are highlighted green.

Key Diagnostic Characteristics	Site Appraisal
Occurs in the Perth subregion of the Swan Coastal Plain IBRA Bioregion in WA.	Occurs in the Perth subregion of the Swan Coastal Plain IBRA Bioregion.
Occurs on shallow to skeletal soils, on the ridge slopes and tops of limestone ridges and outcrops associated with Tamala Limestone.	Occurs on limestone ridges and outcrops.
It occurs as shrubland, heath, or thickets; and it has less than 10% canopy cover of *Eucalyptus* species or other tall trees.	Occurs as a shrubland and has 0 % canopy cover of *Eucalyptus* species or other tall trees
The shrub layer is dominated by *Melaleuca huegelii* (Chenille honeymyrtle), and/or *M. systena* (Coastal honeymyrtle), and/or *Banksia sessilis* (Parrot bush) - commonly over *Acacia lasiocarpa* (Pajang), *Grevillea preissii* (Spider net grevillea) and *Spyridium globulosum* (Basket bush).	The shrub layer is dominated by *Melaleuca huegelii* (30 %) and *Melaleuca system* (5%). *Spyridium globulosum* was recorded within the vegetation type.
The ground layer is typically rich with numerous herbs (including grasses) and smaller shrubs and may develop a mossy ground cover.	30 native herbs and shrub species. The following flora species listed within the approved conservation advice were recorded within a 10 x 10 m quadrat: ▪ *Austrostipa flavescens*

Key Diagnostic Characteristics	Site Appraisal
	▪ *Leucopogon parviflorus* ▪ *Melaleuca huegelii* ▪ *Melaleuca systena* ▪ *Opercularia vaginata* ▪ *Templetonia retusa* ▪ *Spyridium globulosum* ▪ *Thysanotus manglesianus*
Minimum patch size of 0.01 ha	Patch is larger than 0.01 ha (0.1 ha)

The *Callitris preissii* (or *Melaleuca lanceolata*) forests and woodlands, Swan Coastal Plain (SCP30a), listed as threatened under the BC Act, was recorded as represented or potentially represented in quadrats YL14, YL16, YL17, and YL23 during the single site insertions. The Interim Recovery Plan for the *Callitris preissii* (or *Melaleuca lanceolata*) forests and woodlands, Swan Coastal Plain (30a), states: "All of the occurrences of the community have been mapped by Parks and Wildlife, and data stored on the corporate TEC database" (Department of Parks and Wildlife, 2014). The most northern mapped occurrence of 30a is Trigg. It is unlikely that the *Callitris preissii* (or *Melaleuca lanceolata*) forests and woodlands, Swan Coastal Plain (30a) is on site.

The key diagnostic criteria for Tuart (*Eucalyptus gomphocephala*) Woodlands and Forests of the Swan Coastal Plain, listed under the EPBC Act as Critically Endangered, were assessed for the C3 vegetation type (Table 10) (Department of Agriculture, Water and the Environment (DAWE), 2019). The key diagnostic characteristic of the patch size being at least 0.5 ha was not met. The same diagnostic criteria, condition and area thresholds also apply to the priority ecological community (DBCA, 2023a).

The location of the threatened and priority ecological communities identified within the site are displayed in Figure 12.

Table 10: Key diagnostic characteristics of Tuart (*Eucalyptus gomphocephala*) Woodlands and Forests of the Swan Coastal Plain. Key diagnostic characteristics met are highlighted green.

Key Diagnostic Characteristics	Site Appraisal
Occurs in the Swan Coastal Plain Bioregion, Western Australia	Site occurs in the Swan Coastal Plain Bioregion
Primarily occurs on the Spearwood and Quindalup dune systems but can also occur on the Bassendean dunes and Pinjarra Plain. It can occur on the banks of rivers and wetlands	Site occurs on Quindalup dune systems
The presence of at least two living, established (DBH ≥15 cm) Tuart trees within the upper canopy, with a gap of ≤60 m between the canopy edges of adjacent Tuart trees	More than two Tuart trees were present
The presence of an understorey of native species, often modified by disturbance	A native understorey is present in the patch. Evidence of disturbance is present.

Key Diagnostic Characteristics	Site Appraisal
A patch size of at least 0.5 ha	The three separate patches are less than 0.5 ha with each patch smaller than 0.1 ha. Therefore, it does not meet the minimum patch size.

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Figure 12:
Threatened and Priority Ecological Communities

Yanchep, Western Australia

Legend

- Honeymyrtle shrubland on limestone ridges of the Swan Coastal Plain Bioregion.
- FCT 29a
- FCT 29a/29b
- Site Boundary

Client:	UDLA
Date:	07/11/2025
Created by:	Z.Stoney
Image Source:	Nearmap, 2025
Datum:	GDA2020 / MGA zone 50
Scale:	1: 4200

0 50 100 m

N

5.0 Implications of Results

5.1 Flora and Vegetation

A total of 177 flora species (taxa) were recorded from 56 families during the field survey, comprised of 85 (48 %) introduced (weeds) and 92 (52 %) native species. The survey recorded 15 less native species compared to the survey undertaken in 2019 (One Tree Botanical, 2020). Many of these species that were not recorded are native annuals and may not have been presenting during the survey due to the higher weed loads impacting the presence of native flora through competition and habitat alteration. Three of the species not recorded are perennial herbs, grasses or shrubs, two of these were recorded within the section impacted by the fire following the survey and may not have been present due to this habitat alteration.

A total of nine native vegetation types were recorded within the site. The vegetation types were broadly similar to the vegetation boundaries mapped by One Tree Botanical in 2019. Variations in the boundary extents are likely influenced by anthropogenic disturbances, fire and shifting dune systems.

FCT determined during the floristic analysis of the quadrat data against Gibson *et al.* (1994) and Keighery *et al*. (2012) to potentially be present include; 29a Coastal shrublands on shallow soils, 29b Acacia shrublands on taller dunes, 30a *Callitris preissii* and/or *Melaleuca lanceolata* forests and woodlands, s11 Northern *Acacia rostellifera - Melaleuca systena* shrublands,s13 Northern *Olearia axillaris - Scaevola crassifolia* shrublands, and s14 *Spinifex longifolius* grassland and low shrublands. These overlaps and transitional influences indicate that while dominant FCTs may be assigned, secondary associations reflect environmental gradients and the dynamic nature of floristic community boundaries.

The condition of the vegetation across the site ranged from completely degraded to excellent. Variations in vegetation condition between the 2019 survey and the 2025 survey were observed across the site. Increases in vegetation condition was evident in areas that have been subjected to management, including weed control or revegetation works. Decreases in vegetation condition were prevalent in areas containing high weeds or evidence of feral pests or anthropogenic influences. Higher weed loads across the survey area may be attribute to the increased rain event experienced over winter in 2025 compared to the long term average (BoM, 2025).

5.2 Conservation Significant Flora

A total of 8,073 *Conostylis pauciflora* subsp*. pauciflora* individuals were recorded within the survey area. The individuals were recorded throughout the site in high densities, primarily restricted to the semi-consolidated dune systems within the low shrublands present in C1 and C2. This species was identified by One Tree Botanical in 2019 as *Conostylis candicans* subsp*. calcicola* intergrade *C. pauciflora* subsp*. euryrhipis*. *Conostylis pauciflora* subsp*. pauciflora* is listed as Priority 4 by DBCA.

Of the 12 conservation significant flora species identified to potentially occur within the survey area, 2 have flowering times outside of the survey period. The species with flowering periods outside of the survey period are perennial herbs or shrubs, in which identifiable features would be present during the survey period.

Stylidium maritimum (Priority 3) has previously been recorded within the survey area. This species was not identified during the targeted flora survey despite being undertaken during the peak flowering period. The area where this species was previously recorded in was noted to have higher weed loads. It is possible that the higher than average rainfall recorded in July and August 2025 (BoM, 2025) may have shifted the phenological timing of native species, impacting their detectability. Additionally, the increased rainfall has presented higher densities of weed species. This higher density may further impact the presence of native flora through competition and habitat alteration. It is important that the location it was last recorded in 2019 is retained as it may regenerate or germinate within the area.

5.3 Threatened and Priority Ecological Communities

To determine the listing of the FCT and whether any priority or threatened ecological community, the quadrats and vegetation types were assessed against the Gibson *et al*. (1994) data. Two priority ecological communities were identified during the statistical analysis to potentially occur onsite, including Coastal shrublands on shallow sands, southern Swan Coastal Plain ('floristic community type 29a') and Acacia shrublands on taller dunes, southern Swan Coastal Plain ('floristic community type 29b'). Both of these FCTs are listed as Priority 3 by DBCA.

One threatened ecological community listed as Honeymyrtle shrubland on limestone ridges of the Swan Coastal Plain Bioregion, listed as Critically Endangered under the EPBC Act, was identified to potentially occur onsite. The patch within the site is recorded outside of the indicative range for this community to occur as mapped by DCCEEW (DCCEEW,2023). This patch was recorded on the Quindalup Complex, this complex has not been previously recorded to contain any known occurrence for this community (DCCEEW, 2023). The community was impacted by the fire in December 2019, which altered the structure of the community. The quadrat data from One Tree Botanical (2020) within this vegetation type pre-fire recorded higher species richness and lower weed loads compared to the survey undertaken in spring 2025.

The recommended buffer zone for Honeymyrtle shrubland on limestone ridges of the Swan Coastal Plain Bioregion is 200 m from the outer edge of a patch if this zone is comprised of native vegetation, or 100 m for other adjacent areas. This community is within 85 m of a sealed road to the north, firebreaks are located 10 m to the east and 35 m to the west. It is recommended that no disturbances occur within the vegetation directly adjacent to the *Melaleuca huegelii* shrubland and that this vegetation is prioritised for retention.

Characteristics to be representative of the Tuart (*Eucalyptus gomphocephala*) woodlands and forests of the Swan Coastal Plain were identified on site; however, the vegetation does not meet all key diagnostic criteria to be considered as part of the threatened ecological community listed as Critically Endangered under the EPBC Act. Historic aerial imagery from 1965 shows that the *Eucalyptus gomphocephala* present within the south-western patch were planted in a line alongside an infrastructure building. Planted *Eucalyptus gomphocephala* may still be considered as part of the ecological community if it meets the key diagnostic characteristics, is in an appropriate condition, occurs in appropriate habitat, and shows evidence of post-regeneration recruitment that could contribute to longer-term persistence of the occurrence. Whilst the patches within the site do not meet the minimum patch size criteria to be considered as part of the threatened ecological community listed under the EPBC Act. The same diagnostic criteria, condition and area thresholds also apply to the priority ecological community (DBCA, 2023a).

6.0 References

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Appendix 1: PMST Report 10 km

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EPBC Act Protected Matters Report

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

Report created: 03-Jul-2025

Summary
Details
- Matters of NES
- Other Matters Protected by the EPBC Act
- Extra Information

Caveat
Acknowledgements

Summary

Matters of National Environment Significance

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

World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International Importance (Ramsar	None
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	1
Listed Threatened Ecological Communities:	5
Listed Threatened Species:	55
Listed Migratory Species:	48

Other Matters Protected by the EPBC Act

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

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

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

Commonwealth Lands:	4
Commonwealth Heritage Places:	None
Listed Marine Species:	72
Whales and Other Cetaceans:	12
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	1
Habitat Critical to the Survival of Marine Turtles:	None

Extra Information

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

State and Territory Reserves:	2
Regional Forest Agreements:	None
Nationally Important Wetlands:	1
EPBC Act Referrals:	27
Key Ecological Features (Marine):	2
Biologically Important Areas:	10
Bioregional Assessments:	None
Geological and Bioregional Assessments:	None

Details

Matters of National Environmental Significance

Commonwealth Marine Area [Resource Information]

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

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

Listed Threatened Ecological Communities [Resource Information]

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

Community Name	Threatened Category	Presence Text	Buffer Status
Aquatic Root Mat Community in Caves of the Swan Coastal Plain	Endangered	Community known to occur within area	In buffer area only
Banksia Woodlands of the Swan Coastal Plain ecological community	Endangered	Community likely to occur within area	In feature area
Honeymyrtle shrubland on limestone ridges of the Swan Coastal Plain Bioregion	Critically Endangered	Community likely to occur within area	In buffer area only
Sedgelands in Holocene dune swales of the southern Swan Coastal Plain	Endangered	Community known to occur within area	In buffer area only
Tuart (Eucalyptus gomphocephala) Woodlands and Forests of the Swan Coastal Plain ecological community	Critically Endangered	Community likely to occur within area	In feature area

Listed Threatened Species [Resource Information]

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

Scientific Name	Threatened Category	Presence Text	Buffer Status
BIRD			
Anous tenuirostris melanops			
Australian Lesser Noddy [26000]	Vulnerable	Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Ardenna grisea Sooty Shearwater [82651]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat may occur within area	In feature area
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat known to occur within area	In feature area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat likely to occur within area	In feature area
Calyptorhynchus banksii naso Forest Red-tailed Black-Cockatoo, Karrak [67034]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat known to occur within area	In feature area
Diomedea amsterdamensis Amsterdam Albatross [64405]	Endangered	Species or species habitat may occur within area	In feature area
Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	Species or species habitat may occur within area	In feature area
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Halobaena caerulea Blue Petrel [1059]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Leipoa ocellata Malleefowl [934]	Vulnerable	Species or species habitat likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Limosa lapponica menzbieri Northern Siberian Bar-tailed Godwit, Russkoye Bar-tailed Godwit [86432]	Endangered	Species or species habitat may occur within area	In feature area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area	In feature area
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area	In feature area
Pachyptila turtur subantarctica Fairy Prion (southern) [64445]	Vulnerable	Species or species habitat known to occur within area	In feature area
Phaethon rubricauda westralis Red-tailed Tropicbird (Indian Ocean), Indian Ocean Red-tailed Tropicbird [91824]	Endangered	Species or species habitat may occur within area	In feature area
Phoebetria fusca Sooty Albatross [1075]	Vulnerable	Species or species habitat may occur within area	In feature area
Pterodroma mollis Soft-plumaged Petrel [1036]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Rostratula australis Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area	In feature area
Sternula albifrons Little Tern [82849]	Vulnerable	Species or species habitat may occur within area	In feature area
Sternula nereis nereis Australian Fairy Tern [82950]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Thalassarche carteri			
Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Thalassarche cauta			
Shy Albatross [89224]	Endangered	Species or species habitat may occur within area	In feature area
Thalassarche impavida			
Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area	In feature area
Thalassarche melanophris			
Black-browed Albatross [66472]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Thalassarche steadi			
White-capped Albatross [64462]	Vulnerable	Species or species habitat may occur within area	In feature area
Tringa nebularia			
Common Greenshank, Greenshank [832]	Endangered	Species or species habitat likely to occur within area	In buffer area only
Zanda latirostris listed as Calyptorhynchus latirostris			
Carnaby's Black Cockatoo, Short-billed Black-cockatoo [87737]	Endangered	Breeding known to occur within area	In feature area
INSECT			
Hesperocolletes douglasi			
Douglas' Broad-headed Bee, Rottnest Bee [66734]	Critically Endangered	Species or species habitat may occur within area	In feature area
MAMMAL			
Balaenoptera musculus			
Blue Whale [36]	Endangered	Species or species habitat likely to occur within area	In feature area
Dasyurus geoffroii			
Chuditch, Western Quoll [330]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Eubalaena australis			
Southern Right Whale [40]	Endangered	Breeding known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Macroderma gigas Ghost Bat [174]	Vulnerable	Species or species habitat may occur within area	In feature area
Neophoca cinerea Australian Sea-lion, Australian Sea Lion [22]	Endangered	Species or species habitat likely to occur within area	In feature area
PLANT			
Andersonia gracilis Slender Andersonia [14470]	Endangered	Species or species habitat may occur within area	In feature area
Anigozanthos viridis subsp. terraspectans Dwarf Green Kangaroo Paw [3435]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
Banksia mimica Summer Honeypot [82765]	Endangered	Species or species habitat may occur within area	In buffer area only
Caleana dixonii listed as Paracaleana dixonii Sandplain Duck Orchid [87944]	Endangered	Species or species habitat may occur within area	In buffer area only
Diuris micrantha Dwarf Bee-orchid [55082]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Diuris purdiei Purdie's Donkey-orchid [12950]	Endangered	Species or species habitat may occur within area	In buffer area only
Drakaea elastica Glossy-leafed Hammer Orchid, Glossy-leaved Hammer Orchid, Warty Hammer Orchid [16753]	Endangered	Species or species habitat likely to occur within area	In buffer area only
Eleocharis keigheryi Keighery's Eleocharis [64893]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Eucalyptus argutifolia Yanchep Mallee, Wabling Hill Mallee [24263]	Vulnerable	Species or species habitat known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Macarthuria keigheryi Keighery's Macarthuria [64930]	Endangered	Species or species habitat may occur within area	In buffer area only
REPTILE			
Caretta caretta Loggerhead Turtle [1763]	Endangered	Foraging, feeding or related behaviour known to occur within area	In feature area
Chelonia mydas Green Turtle [1765]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In feature area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Foraging, feeding or related behaviour known to occur within area	In feature area
Natator depressus Flatback Turtle [59257]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In feature area
SHARK			
Carcharias taurus (west coast population) Grey Nurse Shark (west coast population) [68752]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Carcharodon carcharias White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat known to occur within area	In feature area
Pristis pristis Freshwater Sawfish, Largetooth Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Vulnerable	Species or species habitat may occur within area	In feature area
Rhincodon typus Whale Shark [66680]	Vulnerable	Species or species habitat may occur within area	In feature area
Sphyrna lewini Scalloped Hammerhead [85267]	Conservation Dependent	Species or species habitat likely to occur within area	In feature area
Listed Migratory Species			[Resource Information]

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

Scientific Name	Threatened Category	Presence Text	Buffer Status
Onychoprion anaethetus Bridled Tern [82845]		Breeding known to occur within area	In feature area
Phoebetria fusca Sooty Albatross [1075]	Vulnerable	Species or species habitat may occur within area	In feature area
Sterna dougallii Roseate Tern [817]		Foraging, feeding or related behaviour likely to occur within area	In feature area
Sternula albifrons Little Tern [82849]	Vulnerable	Species or species habitat may occur within area	In feature area
Thalassarche carteri Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Thalassarche cauta Shy Albatross [89224]	Endangered	Species or species habitat may occur within area	In feature area
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area	In feature area
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Thalassarche steadi White-capped Albatross [64462]	Vulnerable	Species or species habitat may occur within area	In feature area
Migratory Marine Species			
Balaenoptera edeni Bryde's Whale [35]		Species or species habitat may occur within area	In feature area
Balaenoptera musculus Blue Whale [36]	Endangered	Species or species habitat likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
[Caperea marginata](#) Pygmy Right Whale [39]		Species or species habitat may occur within area	In feature area
[Carcharhinus longimanus](#) Oceanic Whitetip Shark [84108]		Species or species habitat may occur within area	In feature area
[Carcharias taurus](#) Grey Nurse Shark [64469]		Species or species habitat likely to occur within area	In feature area
[Carcharodon carcharias](#) White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat known to occur within area	In feature area
[Caretta caretta](#) Loggerhead Turtle [1763]	Endangered	Foraging, feeding or related behaviour known to occur within area	In feature area
[Chelonia mydas](#) Green Turtle [1765]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In feature area
[Dermochelys coriacea](#) Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Foraging, feeding or related behaviour known to occur within area	In feature area
[Eubalaena australis as Balaena glacialis australis](#) Southern Right Whale [40]	Endangered	Breeding known to occur within area	In feature area
[Lamna nasus](#) Porbeagle, Mackerel Shark [83288]		Species or species habitat may occur within area	In feature area
[Megaptera novaeangliae](#) Humpback Whale [38]		Species or species habitat known to occur within area	In feature area
[Mobula alfredi as Manta alfredi](#) Reef Manta Ray, Coastal Manta Ray [90033]		Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Mobula birostris as Manta birostris Giant Manta Ray [90034]		Species or species habitat may occur within area	In feature area
Natator depressus Flatback Turtle [59257]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In feature area
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may occur within area	In feature area
Pristis pristis Freshwater Sawfish, Largetooth Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Vulnerable	Species or species habitat may occur within area	In feature area
Rhincodon typus Whale Shark [66680]	Vulnerable	Species or species habitat may occur within area	In feature area
Migratory Terrestrial Species			
Motacilla cinerea Grey Wagtail [642]		Species or species habitat may occur within area	In feature area
Migratory Wetlands Species			
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat likely to occur within area	In feature area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat may occur within area	In feature area
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat known to occur within area	In feature area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat likely to occur within area	In feature area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Charadrius leschenaultii			
Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat known to occur within area	In feature area
Limosa lapponica			
Bar-tailed Godwit [844]		Species or species habitat may occur within area	In feature area
Numenius madagascariensis			
Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area	In feature area
Pandion haliaetus			
Osprey [952]		Species or species habitat known to occur within area	In feature area
Tringa nebularia			
Common Greenshank, Greenshank [832]	Endangered	Species or species habitat likely to occur within area	In buffer area only

Other Matters Protected by the EPBC Act

Commonwealth Lands [Resource Information]

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

Commonwealth Land Name	State	Buffer Status
Unknown		
Commonwealth Land - [50315]	WA	In buffer area only
Commonwealth Land - [50396]	WA	In buffer area only
Commonwealth Land - [50355]	WA	In buffer area only
Commonwealth Land - [50402]	WA	In buffer area only

Listed Marine Species [Resource Information]

Scientific Name	Threatened Category	Presence Text	Buffer Status
Bird			
Actitis hypoleucos			
Common Sandpiper [59309]		Species or species habitat likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Anous stolidus Common Noddy [825]		Species or species habitat likely to occur within area	In feature area
Anous tenuirostris melanops Australian Lesser Noddy [26000]	Vulnerable	Species or species habitat may occur within area	In feature area
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area overfly marine area	In feature area
Ardenna carneipes as Puffinus carneipes Flesh-footed Shearwater, Fleshy-footed Shearwater [82404]		Foraging, feeding or related behaviour likely to occur within area	In feature area
Ardenna grisea as Puffinus griseus Sooty Shearwater [82651]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Bubulcus ibis as Ardea ibis Cattle Egret [66521]		Species or species habitat may occur within area overfly marine area	In feature area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat may occur within area	In feature area
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat known to occur within area overfly marine area	In feature area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat likely to occur within area overfly marine area	In feature area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area overfly marine area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat known to occur within area	In feature area
Chroicocephalus novaehollandiae as Larus novaehollandiae Silver Gull [82326]		Breeding known to occur within area	In buffer area only
Diomedea amsterdamensis Amsterdam Albatross [64405]	Endangered	Species or species habitat may occur within area	In feature area
Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	Species or species habitat may occur within area	In feature area
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat likely to occur within area	In feature area
Halobaena caerulea Blue Petrel [1059]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Hydroprogne caspia as Sterna caspia Caspian Tern [808]		Foraging, feeding or related behaviour known to occur within area	In feature area
Larus pacificus Pacific Gull [811]		Foraging, feeding or related behaviour may occur within area	In feature area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat may occur within area	In feature area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area overfly marine area	In feature area
Motacilla cinerea Grey Wagtail [642]		Species or species habitat may occur within area overfly marine area	In feature area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area	In feature area
Onychoprion anaethetus as Sterna anaethetus Bridled Tern [82845]		Breeding known to occur within area	In feature area
Pachyptila turtur Fairy Prion [1066]		Species or species habitat known to occur within area	In feature area
Pandion haliaetus Osprey [952]		Species or species habitat known to occur within area	In feature area
Phoebetria fusca Sooty Albatross [1075]	Vulnerable	Species or species habitat may occur within area	In feature area
Pterodroma mollis Soft-plumaged Petrel [1036]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Puffinus assimilis Little Shearwater [59363]		Foraging, feeding or related behaviour known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Rostratula australis as Rostratula benghalensis (sensu lato)			
Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area overfly marine area	In feature area
Stercorarius antarcticus as Catharacta skua			
Brown Skua [85039]		Species or species habitat may occur within area	In buffer area only
Sterna dougallii			
Roseate Tern [817]		Foraging, feeding or related behaviour likely to occur within area	In feature area
Sternula albifrons as Sterna albifrons			
Little Tern [82849]	Vulnerable	Species or species habitat may occur within area	In feature area
Thalassarche carteri			
Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Thalassarche cauta			
Shy Albatross [89224]	Endangered	Species or species habitat may occur within area	In feature area
Thalassarche impavida			
Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area	In feature area
Thalassarche melanophris			
Black-browed Albatross [66472]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Thalassarche steadi			
White-capped Albatross [64462]	Vulnerable	Species or species habitat may occur within area	In feature area
Thinornis cucullatus as Thinornis rubricollis			
Hooded Plover, Hooded Dotterel [87735]		Species or species habitat known to occur within area overfly marine area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
[Tringa nebularia](#) Common Greenshank, Greenshank [832]	Endangered	Species or species habitat likely to occur within area overfly marine area	In buffer area only
Fish			
[Acentronura australe](#) Southern Pygmy Pipehorse [66185]		Species or species habitat may occur within area	In feature area
[Campichthys galei](#) Gale's Pipefish [66191]		Species or species habitat may occur within area	In feature area
[Choeroichthys suillus](#) Pig-snouted Pipefish [66198]		Species or species habitat may occur within area	In feature area
[Halicampus brocki](#) Brock's Pipefish [66219]		Species or species habitat may occur within area	In feature area
[Hippocampus angustus](#) Western Spiny Seahorse, Narrow-bellied Seahorse [66234]		Species or species habitat may occur within area	In feature area
[Hippocampus breviceps](#) Short-head Seahorse, Short-snouted Seahorse [66235]		Species or species habitat may occur within area	In feature area
[Hippocampus subelongatus](#) West Australian Seahorse [66722]		Species or species habitat may occur within area	In feature area
[Lissocampus fatiloquus](#) Prophet's Pipefish [66250]		Species or species habitat may occur within area	In feature area
[Maroubra perserrata](#) Sawtooth Pipefish [66252]		Species or species habitat may occur within area	In feature area
[Mitotichthys meraculus](#) Western Crested Pipefish [66259]		Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Nannocampus subosseus Bonyhead Pipefish, Bony-headed Pipefish [66264]		Species or species habitat may occur within area	In feature area
Phycodurus eques Leafy Seadragon [66267]		Species or species habitat may occur within area	In feature area
Phyllopteryx taeniolatus Common Seadragon, Weedy Seadragon [66268]		Species or species habitat may occur within area	In feature area
Pugnaso curtirostris Pugnose Pipefish, Pug-nosed Pipefish [66269]		Species or species habitat may occur within area	In feature area
Solegnathus lettiensis Gunther's Pipehorse, Indonesian Pipefish [66273]		Species or species habitat may occur within area	In feature area
Stigmatopora argus Spotted Pipefish, Gulf Pipefish, Peacock Pipefish [66276]		Species or species habitat may occur within area	In feature area
Stigmatopora nigra Widebody Pipefish, Wide-bodied Pipefish, Black Pipefish [66277]		Species or species habitat may occur within area	In feature area
Syngnathoides biaculeatus Double-end Pipehorse, Double-ended Pipehorse, Alligator Pipefish [66279]		Species or species habitat may occur within area	In feature area
Urocampus carinirostris Hairy Pipefish [66282]		Species or species habitat may occur within area	In feature area
Vanacampus margaritifer Mother-of-pearl Pipefish [66283]		Species or species habitat may occur within area	In feature area
Mammal			
Arctocephalus forsteri Long-nosed Fur-seal, New Zealand Fur-seal [20]		Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
[Neophoca cinerea](#) Australian Sea-lion, Australian Sea Lion [22]	Endangered	Species or species habitat likely to occur within area	In feature area
Reptile			
[Aipysurus pooleorum](#) Shark Bay Sea Snake [66061]		Species or species habitat may occur within area	In feature area
[Caretta caretta](#) Loggerhead Turtle [1763]	Endangered	Foraging, feeding or related behaviour known to occur within area	In feature area
[Chelonia mydas](#) Green Turtle [1765]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In feature area
[Dermochelys coriacea](#) Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Foraging, feeding or related behaviour known to occur within area	In feature area
[Hydrophis kingii as Disteira kingii](#) Spectacled Sea Snake [93511]		Species or species habitat may occur within area	In feature area
[Hydrophis platura as Pelamis platurus](#) Yellow-bellied Sea Snake [93746]		Species or species habitat may occur within area	In feature area
[Natator depressus](#) Flatback Turtle [59257]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In feature area

Whales and Other Cetaceans			[Resource Information]
Current Scientific Name	Status	Type of Presence	Buffer Status
Mammal			
[Balaenoptera acutorostrata](#) Minke Whale [33]		Species or species habitat may occur within area	In feature area

Current Scientific Name	Status	Type of Presence	Buffer Status
Balaenoptera edeni Bryde's Whale [35]		Species or species habitat may occur within area	In feature area
Balaenoptera musculus Blue Whale [36]	Endangered	Species or species habitat likely to occur within area	In feature area
Caperea marginata Pygmy Right Whale [39]		Species or species habitat may occur within area	In feature area
Delphinus delphis Common Dolphin, Short-beaked Common Dolphin [60]		Species or species habitat may occur within area	In feature area
Eubalaena australis Southern Right Whale [40]	Endangered	Breeding known to occur within area	In feature area
Grampus griseus Risso's Dolphin, Grampus [64]		Species or species habitat may occur within area	In feature area
Megaptera novaeangliae Humpback Whale [38]		Species or species habitat known to occur within area	In feature area
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may occur within area	In feature area
Stenella attenuata Spotted Dolphin, Pantropical Spotted Dolphin [51]		Species or species habitat may occur within area	In feature area
Tursiops aduncus Indian Ocean Bottlenose Dolphin, Spotted Bottlenose Dolphin [68418]		Species or species habitat likely to occur within area	In feature area
Tursiops truncatus s. str. Bottlenose Dolphin [68417]		Species or species habitat may occur within area	In feature area

Australian Marine Parks [Resource Information]

Park Name	Zone & IUCN Categories	Buffer Status
Two Rocks	Multiple Use Zone (IUCN VI)	In buffer area only

Extra Information

State and Territory Reserves			[Resource Information]
Protected Area Name	Reserve Type	State	Buffer Status
Unnamed WA49994	Conservation Park	WA	In buffer area only
Yanchep	National Park	WA	In buffer area only

Nationally Important Wetlands		[Resource Information]
Wetland Name	State	Buffer Status
Loch McNess System	WA	In buffer area only

EPBC Act Referrals				[Resource Information]
Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Alkimos Seawater Desalination	2019/8453		Completed	In buffer area only
Gonneville Nickel-Copper-Platinum Group Element Mine Development Project	2024/09839		Assessment	In buffer area only
Samphire Offshore Wind Farm	2022/09306		Assessment	In buffer area only
Urban Development of Part Lot 801 Marmion Avenue, Eglinton	2024/09881		Completed	In buffer area only
Yanchep Rail Extension, WA	2018/8262		Post-Approval	In buffer area only
Controlled action				
Alkimos city centre and central development, WA	2015/7561	Controlled Action	Post-Approval	In buffer area only
Alkimos Coastal Node	2020/8861	Controlled Action	Further Information Request	In buffer area only
Butler North District Open Space playing fields development, Wanneroo, WA	2017/8053	Controlled Action	Post-Approval	In buffer area only

Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Controlled action				
Eglinton/South Yanchep Residential Development	2011/6021	Controlled Action	Post-Approval	In buffer area only
Eglinton Estates - Clearing of native vegetation from Lot 1007 & part Lot 1008	2010/5777	Controlled Action	Post-Approval	In buffer area only
Jindee Residential Development	2012/6631	Controlled Action	Post-Approval	In buffer area only
Mitchell Freeway Extension and Wanneroo Road Upgrade, WA	2018/8367	Controlled Action	Post-Approval	In buffer area only
Proposed Urban Development of Lots 1005 & 1006	2008/4638	Controlled Action	Post-Approval	In buffer area only
Residential and commercial development on part 19 (Lot 6) Taronga Place, Eglinton, WA	2017/7872	Controlled Action	Post-Approval	In buffer area only
Residential development,Lot 609, Yanchep Beach Road, Yanchep, WA	2014/7146	Controlled Action	Post-Approval	In buffer area only
Residential development Lot 1004 Alkimos WA	2011/5902	Controlled Action	Post-Approval	In buffer area only
Urban and Residential Development at Lot 9 Brighton	2011/6137	Controlled Action	Post-Approval	In buffer area only
Urban development in accordance with the Local Structure Plan	2008/4601	Controlled Action	Post-Approval	In buffer area only
Urban Residential Development at Lot 9049 Marmoin Avenue	2009/5155	Controlled Action	Post-Approval	In buffer area only
Not controlled action				
Alkimos seawater desalination plant, offshore investigations, WA	2018/8224	Not Controlled Action	Completed	In buffer area only
Amberton West urban development - Part lot 9005 Eglington WA	2013/7068	Not Controlled Action	Completed	In buffer area only
Development of new Alkimos Wastwater Treatment Plant	2007/3259	Not Controlled Action	Completed	In buffer area only
Improving rabbit biocontrol: releasing another strain of RHDV, sthrn two thirds of Australia	2015/7522	Not Controlled Action	Completed	In feature area
INDIGO West Submarine Telecommunications Cable, WA	2017/8126	Not Controlled Action	Completed	In buffer area only
Residential development, Lots 9010 and 9031, Yanchep Beach Rd, Yanchep	2016/7642	Not Controlled Action	Completed	In buffer area only

Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Not controlled action				
Residential Development Eglinton West, Lot 5000 & part Lot 5001, Pipidinny Road, Eglinton	2014/7137	Not Controlled Action	Completed	In buffer area only
residential subdivision	2005/1965	Not Controlled Action	Completed	In feature area

Key Ecological Features [Resource Information]

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

Name	Region	Buffer Status
Commonwealth marine environment within and adjacent to the west coast inshore lagoons	South-west	In buffer area only
Western rock lobster	South-west	In buffer area only

Biologically Important Areas [Resource Information]

Scientific Name	Behaviour	Presence	Buffer Status
Seabirds			
Ardenna pacifica			
Wedge-tailed Shearwater [84292]	Foraging (in high numbers)	Known to occur	In feature area
Hydroprogne caspia			
Caspian Tern [808]	Foraging (provisioning young)	Known to occur	In feature area
Larus pacificus			
Pacific Gull [811]	Foraging (in high numbers)	Former Range	In feature area
Onychoprion anaethetus			
Bridled Tern [82845]	Foraging (in high numbers)	Known to occur	In feature area
Puffinus assimilis tunneyi			
Little Shearwater [59363]	Foraging (in high numbers)	Known to occur	In feature area
Sterna dougallii			
Roseate Tern [817]	Foraging	Known to occur	In feature area
Sternula nereis			
Fairy Tern [82949]	Foraging (in high numbers)	Known to occur	In feature area

Scientific Name	Behaviour	Presence	Buffer Status
Seals			
Neophoca cinerea Australian Sea Lion [22]	Foraging (male)	Likely to occur	In feature area
Whales			
Megaptera novaeangliae Humpback Whale [38]	Migration (north)	Known to occur	In buffer area only
Megaptera novaeangliae Humpback Whale [38]	Migration (north and south)	Known to occur	In feature area

Caveat

1 PURPOSE

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

The report contains the mapped locations of:

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

2 DISCLAIMER

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

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

3 DATA SOURCES

Threatened ecological communities

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

Threatened, migratory and marine species

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

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

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

4 LIMITATIONS

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

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

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

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

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

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

Acknowledgements

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

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

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

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

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Appendix 2: Conservation Codes

A2.1 Flora and Fauna

State Flora and Fauna Conservation Codes under the *Biodiversity Conservation Act 2018* (WA)

Conservation Code	Name	Description
Threatened Species		
CR	Critically endangered	Species considered to be facing an extremely high risk of extinction within the wild in the immediate future
EN	Endangered	Species considered to be facing a very high risk of extinction in the wild in the near future
VU	Vulnerable	Species considered to be facing a high risk of extinction in the wild in the medium-term future
Extinct Species		
EX	Extinct Species	Species where 'there is no reasonable doubt that the last member of the species has died (Schedule 4 of the Wildlife Conservation (Specially Protected Fauna) Notice or the Wildlife Conservation (Rare Flora) Notice)
EW	Extinct in the Wild	Species that are known to only survive in cultivation, in captivity, or as a naturalised population well outside its past range; and it has not been recorded in its known or expected habitat at appropriate seasons anywhere in its past range, despite surveys over a timeframe appropriate to its life cycle and form
Specially Protected Species		
MI	Migratory Species	Fauna that periodically or occasionally visit Australia or an external Territory or the exclusive economic zone; or the species is subject of an international agreement that relates to the protection of migratory species and that binds the Commonwealth (Schedule 5 of the Wildlife Conservation (Specially Protected Fauna) Notice)
CD	Conservation Dependent	Species of special conservation interest (conservation dependent fauna), being species dependent on ongoing conservation intervention to prevent it becoming eligible for listing as threatened (Schedule 6 of the Wildlife Conservation (Specially Protected Fauna) Notice)
OS	Other Specially Protected Species	Fauna otherwise in need of special protection to ensure their conservation (Schedule 7 of the Wildlife Conservation (Specially Protected Fauna) Notice)

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State Flora and Fauna Conservation Codes listed by Department of Biodiversity, Conservation and Attractions

Conservation Code	Name	Description
P1	Priority One	Poorly known species – Species that are known from one or a few locations (generally five or less) which are potentially at risk. All occurrences are either very small or on lands not managed for conservation, such as road verges, urban areas, farmland, active mineral lease and under threat of habitat destruction or degradation.
P2	Priority Two	Poorly known species – Species that are known from one or a few locations (generally five or less), some of which are on lands managed primarily for nature conservation, such as national parks, conservation parks, nature reserves, State forest, vacant Crown land, water reserves and similar.
P3	Priority Three	Poorly known species – Species that are known from several locations, and the species does not appear to be under imminent threat, or from few but widespread locations with either large population size or significant remaining areas of apparently suitable habitat, much of it not under imminent threat
P4	Priority Four	Rare or near threatened and other species in need of monitoring. a) Rare. Species that are considered to have been adequately surveyed, or for which sufficient knowledge is available, and that are considered not currently threatened or in need of special protection but could be if present circumstances change. These species are usually represented on conservation lands. b) Near Threatened. Species that are considered to have been adequately surveyed and that are close to qualifying for vulnerable but are not listed as a conservation dependent specially protected species. c) Species that have been removed from the list of threatened species or lists of conservation dependent or other specially protected species, during the past five years for reasons other than taxonomy.

Source: DBCA, 2023b

DRAFT

Commonwealth Flora and Fauna Conservation Codes under the *Environmental Protection and Biodiversity Conservation Act 1999* (Cth)

Category	Description
Extinct	A native species which at a particular time if, at that time, there is no reasonable doubt that the last member of the species has died.
Extinct in the wild	A native species which at a particular time if, at that time: a) It is known only to survive in cultivation, in captivity or as a naturalised population well outside its past range; or b) It has not been recorded in its known and/or expected habitat, at appropriate seasons, anywhere in its past range, despite exhaustive surveys over a time frame appropriate to its life cycle and form.
Critically endangered	A species considered to be facing an extremely high risk of extinction in the wild and is determined that it meets any of the five criteria for the category identified in Part 7.01 of the EPBC Regulations.
Endangered	A species considered to be facing a very high risk of extinction in the wild and is determined that it meets any of the five criteria for the category identified in Part 7.01 of the EPBC Regulations.
Vulnerable	A species considered to be facing a high risk of extinction in the wild and is determined that it meets any of the five criteria for the category identified in Part 7.01 of the EPBC Regulations.
Conservation dependent	A native species which at a particular time if, at that time: a) is the focus of a specific conservation program the cessation of which would result in the species becoming vulnerable, endangered or critically endangered; or b) the following subparagraphs are satisfied: i. the species is a species of fish; ii. the species is the focus of a plan of management that provides for management actions necessary to stop the decline of, and support the recovery of, the species so that its chances of long term survival in nature are maximised; iii. the plan of management is in force under a law of the Commonwealth or of a State or Territory; iv. cessation of the plan of management would adversely affect the conservation status of the species

DRAFT

A2.2 Ecological Communities

State Ecological Community Conservation Codes under the *Biodiversity Conservation Act 2018* (WA)

Conservation Code	Name	Description
PD	Presumed Totally Destroyed	An ecological community that has been adequately searched for but for which no representative occurrences have been located. The community has been found to be totally destroyed or so extensively modified throughout its range that no occurrence of it is likely to recover its species composition and/or structure in the foreseeable future
CR	Critically Endangered	An ecological community that has been adequately surveyed and found to have been subject to a major contraction in area and/or that was originally of limited distribution and is facing severe modification or destruction throughout its range in the immediate future or is already severely degraded throughout its range but capable of being substantially restored or rehabilitated.
EN	Endangered	An ecological community that has been adequately surveyed and found to have been subject to a major contraction in area and/or was originally of limited distribution and is in danger of significant modification throughout its range or severe modification or destruction over most of its range in the near future
VU	Vulnerable	An ecological community that has been adequately surveyed and is found to be declining and/or has declined in distribution and/or condition and whose ultimate security has not yet been assured and/or a community that is still widespread but is believed likely to move into a category of higher threat in the near future if threatening processes continue or begin operating throughout its range.

DRAFT

State Ecological Community Conservation Codes listed by Department of Biodiversity, Conservation and Attractions

Conservation Code	Name	Description
P1	Priority One	**Poorly known ecological communities - very few occurrences, very restricted distribution** Ecological communities that are known from very few occurrences with a very restricted distribution (generally ≤5 occurrences or a total area of ≤100 ha). Occurrences are believed to be under threat either due to limited extent or being on lands under immediate threat (e.g. within agricultural or pastoral lands, urban areas, active mineral leases) or for which current threats exist. May include communities with occurrences on protected lands. Communities may be included if they are comparatively well-known from one or more localities but do not meet adequacy of survey requirements, and/or are not well defined, and appear to be under immediate threat from known threatening processes across their range
P2	Priority Two	**Poorly known ecological communities - few occurrences, restricted distribution** Communities that are known from few occurrences with a restricted distribution (generally ≤10 occurrences or a total area of ≤200 ha). At least some occurrences are not believed to be under immediate threat (within approximately 10 years) of destruction or degradation. Communities may be included if they are comparatively well known from one or more localities but do not meet adequacy of survey requirements, and/or are not well defined, and appear to be under threat from known threatening processes.
P3	Priority Three	**Poorly known ecological communities - inadequately surveyed or not well defined** Communities may be included if they are comparatively well known from several localities but do not meet adequacy of survey requirements and/or are not well defined, and known threatening processes exist that could affect them. his category includes three sub-categories: i. Communities that are known from several to many occurrences, a significant number or area of which are not under threat of habitat destruction or degradation. ii. Communities known from a few widespread occurrences, which are either large or with significant remaining areas of habitat in which other occurrences may occur, much of it not under imminent threat (within approximately 10 years), iii. Communities made up of large, and/or widespread occurrences, that may or may not be represented in the reserve system, but are under threat of modification across

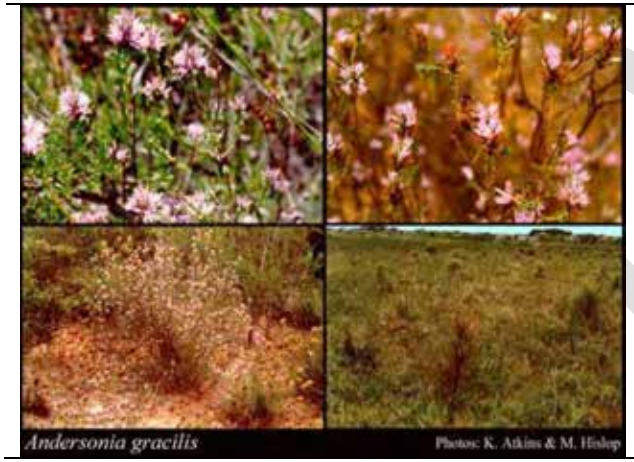
Conservation Code	Name	Description
		much of their range from processes such as grazing by domestic and/or feral stock, inappropriate fire regimes, clearing, hydrological change etc.
P4	Priority Four	**Adequately known ecological communities - rare, near threatened, or recently removed from the threatened list** Ecological communities that are adequately known, rare but not threatened or meet criteria for Near Threatened, or that have been recently removed from the threatened list. These communities require regular monitoring. i. Rare: Ecological communities known from few occurrences 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 communities are usually represented on conservation lands. ii. Near Threatened: Ecological communities that are considered to have been adequately surveyed and that do not qualify for Conservation Dependent, but that are close to qualifying for a higher threat category. iii. Ecological communities that have been removed from the list of threatened communities during the past five years.
P5	Priority Five	**Conservation dependent ecological communities** Ecological communities that are not threatened but are subject to a specific conservation program, the cessation of which would result in the community becoming threatened within five years.

Source: DBCA, 2023b

Commonwealth Ecological Community Conservation Codes under the *Environmental Protection and Biodiversity Conservation Act 1999* (Cth)

Category	Description
Critically endangered	If, at that time, an ecological community is facing an extremely high risk of extinction in the wild in the immediate future (indicative timeframe being the next 10 years).
Endangered	If, at that time, an ecological community is not critically endangered but is facing a very high risk of extinction in the wild in the near future (indicative timeframe being the next 20 years).
Vulnerable	If, at that time, an ecological community is not critically endangered or endangered but is facing a high risk of extinction in the wild in the medium-term future (indicative timeframe being the next 50 years).

Appendix 3: Significant Species

Species Name	Common Name	Description	Flowering Period	Habitat Type	Cons code	Likelihood (Y/N)	Comment
	Bentham's Wattle	Shrub, ca 1 m high. Fl. yellow,	Aug to Sep.	Sand. Typically on limestone breakaways.	P2	N	Habitat unsuitable
Amanita wadulawitu	Long-spored Lepidella				P2	N	Habitat unsuitable
		Slender erect or open straggly shrub, 0.1-0.5(-1) m high. Fl. white-pink-purple.	Sep to Nov.	White/grey sand, sandy clay, gravelly loam. Winter-wet areas, near swamps.	VU	N	Habitat unsuitable

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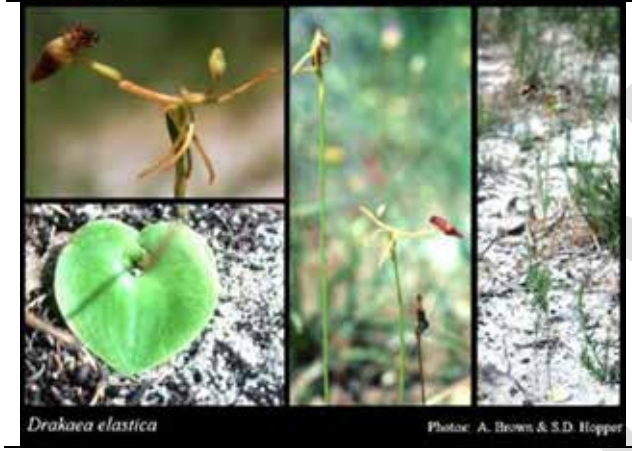
Species Name	Common Name	Description	Flowering Period	Habitat Type	Cons code	Likelihood (Y/N)	Comment
	Dwarf Green Kangaroo Paw	Rhizomatous, perrenial, herb 0.05-0.2 m high, Fl.green/yellow-green,	Aug to sep	Grey sans, clay loam. Winter wet depressions	T	N	Habitat unsuitable
Baeckea sp. Limestone (N. Gibson & M.N. Lyons 1425)					P1	N	Habitat unsuitable
	Summer Honeypot	Prostrate, lignotuberous shrub, 0.15-0.4 m high. Fl. yellow-brown.	Dec or Jan to Feb.	White or grey sand over laterite, sandy loam.	EN	N	Habitat unsuitable
Calandrinia oraria			Aug to Oct	Low coastal heath or forbland on white sands.	P3	Y	Habitat suitable

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Species Name	Common Name	Description	Flowering Period	Habitat Type	Cons code	Likelihood (Y/N)	Comment
	Sandplain Duck Orchid	Tuberous, perennial, herb, 0.09-0.2 m high. Fl. yellow-brown,	Oct to Dec or Jan	Grey sand over granite	T	N	Habitat unsuitable
Conostylis bracteata		Rhizomatous, tufted or shortly proliferous perennial, grass-like or herb, 0.2-0.45 m high. Fl. yellow,	Aug to Sep.	Sand, limestone. Consolidated sand dunes.	P3	Y	Habitat suitable
Conostylis pauciflora subsp. *euryrhipis*		Rhizomatous, stoloniferous perennial, grass-like or herb, 0.06-0.18 m high. Fl. yellow	Aug- Oct	White, Grey or Yellow Sand. Consolidated dunes	P4	Y	Habitat suitable

Species Name	Common Name	Description	Flowering Period	Habitat Type	Cons code	Likelihood (Y/N)	Comment
Conostylis pauciflora subsp. *pauciflora*		Rhizomatous, stoloniferous perennial, grass-like or herb, 0.1-0.35 m high. Fl. yellow	Aug to Oct.	Grey sand, limestone. Hillslopes, consolidated dunes.	P4	Y	Habitat suitable
	Dwarf Bee Orchid	Tuberous, perennial, herb, 0.3-0.6 m high. Fl. yellow & brown.	Sep to Oct.	Brown loamy clay. Winter-wet swamps, in shallow water.	VU	N	Habitat unsuitable

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Species Name	Common Name	Description	Flowering Period	Habitat Type	Cons code	Likelihood (Y/N)	Comment
	Purdie's Donkey Orchid	Tuberous, perennial, herb, 0.15-0.35 m high. Fl. Yellow.	Sep to Oct.	Grey-black sand, moist. Winter-wet swamps.	EN	N	Habitat unsuitable
	Glossy-leaved Hammer Orchid	Tuberous, perennial, herb, 0.12-0.3 m high. Fl. red & green & yellow.	Oct to Nov.	White or grey sand. Low-lying situations adjoining winter-wet swamps.	CR	N	Habitat unsuitable

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Species Name	Common Name	Description	Flowering Period	Habitat Type	Cons code	Likelihood (Y/N)	Comment
		Rhizomatous, clumped perennial, grass-like or herb (sedge), to 0.4 m high. Fl. Green.	Aug to Nov.	Clay, sandy loam. Emergent in freshwater: creeks, claypans.	VU	N	Habitat unsuitable
	Wabling Hill Mallee	(Mallee), 1.5-4 m high, bark smooth. Fl. white	Mar to Apr.	Shallow soils over limestone. Slopes or gullies of limestone ridges, outcrops.	T	Y	Habitat suitable
Eucalyptus foecunda subsp. *foecunda*	Fremantle Mallee	Dense emergent mallee. Bark +/- smooth; buds golden.	-	Sand over limestone.	P4	Y	Habitat suitable

Species Name	Common Name	Description	Flowering Period	Habitat Type	Cons code	Likelihood (Y/N)	Comment
Haloragis luminosa	Lantern Sea-berry				P1	N	Habitat unsuitable
Hibbertia leptotheca		Erect or spreading shrub, 0.2-0.5 m high. Fl. yellow	Jul to Oct.	Sand. Near-coastal limestone ridges, outcrops & cliffs.	P3	Y	Habitat suitable
Lasiopetalum membranaceum		Multi-stemmed shrub, 0.2-1 m high. Fl. pink-blue-purple.	Sep to Dec.	Sand over limestone.	P3	Y	Habitat suitable
Lecania sylvestris					P2	N	Habitat unsuitable
Lecania turicensis var. *turicensis*					P2	Y	Habitat suitable
Lepidium pseudotasmanicum		Erect annual or biennial, herb, 0.2-0.4(-1) m high. Fl. white-green	Feb or Dec.	Loam, sand.	P4	N	Habitat unsuitable
Leucopogon maritimus					P1	Y	Habitat suitable

Species Name	Common Name	Description	Flowering Period	Habitat Type	Cons code	Likelihood (Y/N)	Comment
		Erect or spreading perennial, herb or shrub, 0.2-0.4 m high, 0.3-0.6 m wide.	Sep to Dec or Feb to Mar.	White or grey sand.	EN	N	Habitat unsuitable
	Coastal Banjine	Erect to spreading shrub, 0.2-1 m high. Fl. Pink.	Sep to Nov.	Sand. Coastal limestone ridges.	P3	Y	Habitat suitable
Placynthium nigrum					P3	N	Habitat unsuitable
Rinodina bischoffii					P2	N	Habitat unsuitable

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Species Name	Common Name	Description	Flowering Period	Habitat Type	Cons code	Likelihood (Y/N)	Comment
		Slender, multi-stemmed, scandent or erect shrub, to 1.5 m high. Fl. orange-red	Jun or Sep to Nov.	White-grey-brown sand, sandy clay over limestone, black peaty sandy clay. Tall dunes, winter-wet flats, interdunal swamps, low-lying areas.	P3	N	Habitat unsuitable
	Coastal Triggerplant	Caespitose perennial, herb, 0.3-0.7 m high, Leaves tufted, linear to narrowly oblanceolate, 10-40 cm long, 1-5.5 mm wide, apex acute to mucronate, margin involute, glabrous. Membraneous scale leaves	Sep to Nov.	Sand over limestone. Dune slopes and flats. Coastal heath and shrubland, open Banksia woodland.	P3	Y	Habitat suitable

Species Name	Common Name	Description	Flowering Period	Habitat Type	Cons code	Likelihood (Y/N)	Comment
		present at base of mature leaves. Scape glandular throughout. Inflorescence paniculate. Fl. white/purple.					
	Fan-leaved Triggerplant	Rosetted perennial, herb, 0.15-0.55 m high, Leaves erect, oblanceolate to spathulate, 1.5-4 cm long, 1.5-6 mm wide, apex acute to acuminate, margin entire, glabrous, striate. Scape sparingly glandular on inflorescence axis, glabrous below. Inflorescence racemose. Fl. yellow.	Oct to Nov.	Brown clay loam over laterite. Hillslopes. Jarrah/Marri forest, Wandoo woodland.	P4	N	Habitat unsuitable

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Species Name	Common Name	Description	Flowering Period	Habitat Type	Cons code	Likelihood (Y/N)	Comment
Styphelia filifolia					P3	N	Habitat unsuitable
Styphelia porcata					P3	N	Habitat unsuitable

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Appendix 4: Species List

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

Family	Species	Common Name
Aizoaceae	**Tetragonia decumbens*	Sea Spinach
Aizoaceae	*Carpobrotus virescens*	Coastal Pigface
Anacardiaceae	**Schinus terebinthifolia*	
Apiaceae	*Daucus glochidiatus*	Australian Carrot
Araliaceae	*Trachymene pilosa*	Native Parsnip
Araucariaceae	**Araucaria heterophylla (*planted)	Norfolk Island Pine
Arecaceae	**Phoenix* sp. (planted)	
Arecaceae	**Washingtonia filifera* (planted)	
Asparagaceae	**Yucca aloifolia*	
Asparagaceae	*Acanthocarpus preissii*	
Asparagaceae	*Lomandra maritima*	Maritime Mat Rush
Asparagaceae	*Thysanotus manglesianus*	Mangles' Fringed Lily
Asphodelaceae	**Asphodelus fistulosus*	Onion Weed
Asphodelaceae	**Trachyandra divaricata*	
Asteraceae	**Arctotheca calendula*	Cape Weed
Asteraceae	**Arctotis stoechadifolia*	White Arctotis
Asteraceae	**Cotula turbinata*	Funnel Weed
Asteraceae	**Erigeron bonariensis*	
Asteraceae	**Gazania linearis*	
Asteraceae	**Hypochaeris radicata*	Flat Weed
Asteraceae	**Leontodon rhagadioloides*	Cretan Weed
Asteraceae	**Osteospermum ecklonis*	
Asteraceae	**Reichardia tingitana*	False Sowthistle
Asteraceae	**Sonchus oleraceus*	Common Sowthistle
Asteraceae	**Urospermum picroides*	False Hawkbit
Asteraceae	*Brachyscome bellidioides*	
Asteraceae	*Leptorhynchos scaber*	Lanky Buttons

Family	Species	Common Name
Asteraceae	*Leucophyta brownii*	
Asteraceae	*Olearia axillaris*	Coastal Daisybush
Asteraceae	*Pithocarpa cordata*	Tangle Daisy
Asteraceae	*Podotheca gnaphalioides*	Golden Long-heads
Asteraceae	*Senecio pinnatifolius* var. *latilobus*	Variable Groundsel
Asteraceae	**Hypochaeris glabra*	Smooth Cats-ear
Brassicaceae	**Brassica tournefortii*	Mediterranean Turnip
Brassicaceae	**Cakile maritima*	Sea Rocket
Brassicaceae	**Cardamine hirsuta*	Common Bittercress
Brassicaceae	**Heliophila pusilla*	
Brassicaceae	**Matthiola incana*	Common Stock
Campanulaceae	*Isotoma hypocrateriformis*	Woodbridge Poison
Campanulaceae	*Lobelia tenuior*	Slender Lobelia
Caprifoliaceae	**Centranthus macrosiphon*	
Caryophyllaceae	**Petrorhagia dubia*	
Caryophyllaceae	**Sagina maritima*	
Caryophyllaceae	**Silene gallica*	French Catchfly
Caryophyllaceae	**Stellaria media*	Chickweed
Caryophyllaceae	**Sabulina mediterranea*	
Casuarinaceae	*Allocasuarina humilis*	Dwarf Sheoak
Casuarinaceae	*Allocasuarina lehmanniana* subsp. *lehmanniana*	Dune Sheoak
Chenopodiaceae	*Atriplex isatidea*	Coast Saltbush
Chenopodiaceae	*Rhagodia baccata* subsp. *baccata*	Berry Saltbush
Chenopodiaceae	*Rhagodia baccata* subsp. *dioica*	Sea Berry Saltbush
Chenopodiaceae	*Salicornia blackiana*	
Chenopodiaceae	*Threlkeldia diffusa*	Coast Bonefruit
Crassulaceae	**Crassula glomerata*	
Crassulaceae	*Crassula colorata*	Dense Stonecrop
Cupressaceae	*Callitris preissii*	Rottnest Island Pine
Cyperaceae	**Ficinia marginata*	Coarse Club Rush
Cyperaceae	*Ficinia nodosa*	Knotted Club Rush
Cyperaceae	*Lepidosperma calcicola*	

Family	Species	Common Name
Cyperaceae	*Lepidosperma gladiatum*	Coast Sword-sedge
Cyperaceae	*Schoenus lanatus*	Woolly Bog-rush
Dilleniaceae	*Hibbertia racemosa*	Stalked Guinea Flower
Droseraceae	*Drosera macrantha*	Bridal Rainbow
Ericaceae	*Acrotriche cordata*	Coast Ground Berry
Ericaceae	*Leucopogon parviflorus*	Coast Beard-heath
Ericaceae	*Styphelia insularis*	
Euphorbiaceae	**Euphorbia australis*	Namana
Euphorbiaceae	**Euphorbia paralias*	Sea Spurge
Euphorbiaceae	**Euphorbia peplus*	Petty Spurge
Euphorbiaceae	**Euphorbia terracina*	Geraldton Carnation Weed
Fabaceae	**Medicago polymorpha*	Burr Medic
Fabaceae	**Melilotus indicus*	
Fabaceae	**Trifolium campestre* var. *campestre*	Hop Clover
Fabaceae	*Acacia cochlearis*	Rigid Wattle
Fabaceae	*Acacia cyclops*	Coastal Wattle
Fabaceae	*Acacia lasiocarpa*	Panjang
Fabaceae	*Acacia rostellifera*	Summer-scented Wattle
Fabaceae	*Acacia saligna*	Orange Wattle
Fabaceae	*Acacia truncata*	
Fabaceae	*Acacia xanthina*	White-stemmed Wattle
Fabaceae	*Gastrolobium nervosum*	
Fabaceae	*Gompholobium tomentosum*	Hairy Yellow Pea
Fabaceae	*Hardenbergia comptoniana*	Native Wisteria
Fabaceae	*Kennedia prostrata*	Scarlet Runner
Fabaceae	*Templetonia retusa*	Cockies Tongues
Frankeniaceae	*Frankenia pauciflora* var. *pauciflora*	Seaheath
Gentianaceae	*Schenkia australis*	
Gentianaceae	**Centaurium pulchellum*	
Geraniaceae	**Erodium botrys*	Long Storksbill
Geraniaceae	**Pelargonium capitatum*	Rose Pelargonium
Goodeniaceae	*Scaevola crassifolia*	Thick-leaved Fan-flower

Family	Species	Common Name
Goodeniaceae	*Scaevola globulifera*	
Goodeniaceae	*Scaevola thesioides* subsp. *thesioides*	
Haemodoraceae	*Conostylis pauciflora* subsp. *pauciflora*	
Hemerocallidaceae	*Dianella revoluta* var. *divaricata*	Flax Lily
Hemerocallidaceae	*Tricoryne elatior*	Yellow Autumn Lily
Iridaceae	**Ferraria crispa*	Black Flag
Iridaceae	**Romulea rosea*	Guildford Grass
Lamiaceae	**Stachys arvensis*	Staggerweed
Lamiaceae	**Westringia fruticosa* (planted)	
Lamiaceae	*Hemiandra glabra*	
Lauraceae	*Cassytha aurea*	
Lauraceae	*Cassytha flava*	Dodder Laurel
Lauraceae	*Cassytha glabella*	Tangled Dodder Laurel
Lauraceae	*Cassytha racemosa*	Dodder Laurel
Loganiaceae	*Phyllangium divergens*	
Malvaceae	**Lagunaria patersonia* (planted)	
Malvaceae	**Malva parviflora*	Marshmallow
Malvaceae	*Thomasia triphylla*	
Montiaceae	*Calandrinia liniflora*	Parakeelya
Myrtaceae	*#Chamelaucium uncinatum*	Geraldton Wax
Myrtaceae	*#Eucalyptus utilis* (planted)	Coastal Moort
Myrtaceae	*#Melaleuca nesophila* (planted)	Mindiyed
Myrtaceae	**Callistemon* sp. (planted)	
Myrtaceae	**Eucalyptus* sp. (planted)	
Myrtaceae	**Gaudium laevigatum*	Coast Teatree
Myrtaceae	**Metrosideros tomentosa* (planted)	Pōhutukawa
Myrtaceae	*Agonis flexuosa*	Peppermint
Myrtaceae	*Eucalyptus gomphocephala*	Tuart
Myrtaceae	*Melaleuca cardiophylla*	Tangling Melaleuca
Myrtaceae	*Melaleuca huegelii* subsp. *huegelii*	Chenille Honeymyrtle
Myrtaceae	*Melaleuca lanceolata*	Melaleuca lanceolata

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Family	Species	Common Name
Myrtaceae	*Melaleuca rhaphiophylla*	Swamp Paperbark
Myrtaceae	*Melaleuca systena*	Coastal Honeymyrtle
Onagraceae	**Oenothera drummondii*	Beach Evening Primrose
Orobanchaceae	**Orobanche minor*	Lesser Broomrape
Oxalidaceae	**Oxalis pes-caprae*	Soursob
Papaveraceae	**Fumaria capreolata*	Whiteflower Fumitory
Phyllanthaceae	*Lysiandra calycina*	False Boronia
Poaceae	**Avena barbata*	Bearded Oat
Poaceae	**Briza maxima*	Blowfly Grass
Poaceae	**Briza minor*	Shivery Grass
Poaceae	**Bromus diandrus*	Great Brome
Poaceae	**Catapodium rigidum*	Rigid Fescue
Poaceae	**Cenchrus clandestinus*	Kikuyu Grass
Poaceae	**Cynodon dactylon*	Couch
Poaceae	**Ehrharta longiflora*	Annual Veldt Grass
Poaceae	**Eragrostis curvula*	African Lovegrass
Poaceae	**Lagurus ovatus*	Hare's Tail Grass
Poaceae	**Lolium perenne*	Perennial Ryegrass
Poaceae	*Lolium rigidum	Wimmera Ryegrass
Poaceae	**Poa annua*	Winter Grass
Poaceae	**Stenotaphrum secundatum* (planted)	Buffalo Grass
Poaceae	**Vulpia muralis*	
Poaceae	*Austrostipa flavescens*	
Poaceae	*Bromus arenarius*	Sand Brome
Poaceae	*Poa porphyroclados*	
Poaceae	*Spinifex hirsutus*	Hairy Spinifex
Poaceae	*Spinifex longifolius*	Beach Spinifex
Poaceae	*Ehrharta calycina	Perennial Veldt Grass
Polygalaceae	*Comesperma integerrimum*	
Primulaceae	**Lysimachia arvensis*	Pimpernel
Proteaceae	*Grevillea crithmifolia*	
Proteaceae	*#Grevillea obtusifolia* (planted)	Obtuse Leaved Grevillea

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Family	Species	Common Name
Proteaceae	*#Grevillea olivacea* (planted)	Olive Grevillea
Proteaceae	**Banksia integrifolia* (planted)	
Ranunculaceae	*Clematis linearifolia*	Slender Clematis
Restionaceae	*Desmocladus asper*	
Rhamnaceae	*Cryptandra mutila*	
Rhamnaceae	*Spyridium globulosum*	Basket Bush
Rhamnaceae	*Trymalium ledifolium*	
Rosaceae	**Casuarina equisetifolia*	
Rosaceae	**Eriobotrya japonica* (planted)	
Rubiaceae	**Galium murale*	Small Goosegrass
Rubiaceae	*Opercularia vaginata*	Dog Weed
Santalaceae	*Exocarpos sparteus*	Broom Ballart
Santalaceae	*Leptomeria empetriformis*	
Santalaceae	*Leptomeria preissiana*	
Santalaceae	*Santalum acuminatum*	Quandong
Scrophulariaceae	**Bellardia trixago*	Bellardia
Scrophulariaceae	**Dischisma arenarium*	
Scrophulariaceae	*Eremophila glabra* subsp. *albicans*	Tar Bush
Scrophulariaceae	*Myoporum insulare*	Blueberry Tree
Thymelaeaceae	*Pimelea ferruginea*	
Urticaceae	*Parietaria debilis*	Pellitory
Violaceae	*Pigea calycina*	Wild Violet
Xanthorrhoeaceae	*Xanthorrhoea preissii*	Grass tree

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Appendix 5: Quadrat Data

Quadrat No.:	YL01
Survey Date:	22.10.2025
Personnel:	ZS, RT
Easting:	369546
Northing:	6508894
Topography:	Crest
Aspect:	W
Slope:	1-3 %
Soil:	White Sand
Surface Rock:	0 %
Leaf Litter:	5 %
Bare Ground:	10 %
Drainage:	Well
Condition:	Very Good



Notes: *Melaleuca systena* and *Acacia lasiocarpa* shrubland over *Lomandra maritima* forbland (C2). Along the dune crests of the taller inland dunes on semi-consolidated sands.

Species	Cover (%)	Height (m)
**Bromus diandrus*	3.00	0.40
**Catapodium rigidum*	0.50	0.05
**Lagurus ovatus*	10.00	0.20
**Lolium perenne*	0.50	0.60
**Lysimachia arvensis*	1.00	0.05
**Romulea rosea*	1.00	0.10
**Trachyandra divaricata*	1.00	0.20
Acacia lasiocarpa	3.00	0.25
Acanthocarpus preissii	20.00	0.40
Austrostipa flavescens	10.00	1.20
Cassytha glabella	1.00	0.20
Conostylis pauciflora subsp. *pauciflora*	15.00	0.30
Cryptandra mutila	1.00	0.30
Desmocladus asper	10.00	0.10
Dianella revoluta var. *divaricata*	1.00	0.60

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Species	Cover (%)	Height (m)
Eremophila glabra subsp*. albicans*	2.00	0.30
Gastrolobium nervosum	0.50	0.30
Gompholobium tomentosum	2.00	0.15
Hemiandra glabra	1.00	0.05
Hibbertia racemosa	1.00	0.60
Kennedia prostrata	1.00	0.10
Lepidosperma calcicola	8.00	0.30
Leucopogon parviflorus	1.00	0.25
Lomandra maritima	20.00	0.40
Lysiandra calycina	3.00	0.20
Melaleuca systena	10.00	0.50
Olearia axillaris	10.00	1.00
Opercularia vaginata	1.00	0.20
Santalum acuminatum	8.00	1.00
Scaevola thesioides subsp*. thesioides*	1.00	0.20
Styphelia insularis	4.00	0.80
Tricoryne elatior	2.00	0.30

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Quadrat No.:	**YL02**
Survey Date:	20.10.2025
Personnel:	ZS, JG
Easting:	369665
Northing:	6508638
Topography:	Crest
Aspect:	NW
Slope:	1-3 %
Soil:	White Sand
Surface Rock:	0 %
Leaf Litter:	2 %
Bare Ground:	5 %
Drainage:	Well
Condition:	Very Good



Notes: *Melaleuca systena* and *Acacia lasiocarpa* shrubland over *Lomandra maritima* forbland (C2). Along the dune crests of the taller inland dunes on semi-consolidated sands.

Species	**Cover (%)**	**Height (m)**
**Brassica tournefortii*	0.10	0.10
**Bromus diandrus*	2.00	0.30
**Crassula glomerata*	0.50	0.05
**Euphorbia terracina*	1.00	0.20
**Lagurus ovatus*	20.00	0.20
**Lolium perenne*	0.10	0.05
**Lysimachia arvensis*	0.50	0.05
**Melilotus indicus*	0.50	0.15
**Orobanche minor*	0.10	0.20
**Pelargonium capitatum*	1.00	0.10
**Romulea rosea*	1.00	0.10
**Sonchus oleraceus*	0.10	0.02
**Urospermum picroides*	0.10	0.10
Acacia lasiocarpa	1.00	0.30
Acanthocarpus preissii	4.00	0.30
Austrostipa flavescens	10.00	0.40

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Species	Cover (%)	Height (m)
Conostylis pauciflora subsp. *pauciflora*	5.00	0.30
Cryptandra mutila	1.00	0.25
Desmocladus asper	4.00	0.10
Dianella revoluta var. *divaricata*	2.00	0.60
Gompholobium tomentosum	1.00	0.30
Hardenbergia comptoniana	5.00	0.40
Hemiandra glabra	20.00	0.35
Kennedia prostrata	2.00	0.05
Lepidosperma calcicola	5.00	0.20
Leptomeria empetriformis	1.00	0.30
Leptorhynchos scaber	1.00	0.15
Leucopogon parviflorus	0.50	0.30
Lomandra maritima	10.00	0.30
Lysiandra calycina	5.00	0.30
Melaleuca systena	20.00	0.30
Olearia axillaris	2.00	1.00
Opercularia vaginata	0.10	0.15
Poa porphyroclados	2.00	0.40
Santalum acuminatum	5.00	0.50
Scaevola thesioides subsp. *thesioides*	1.00	0.20
Senecio pinnatifolius var. *latilobus*	0.50	0.35
Styphelia insularis	10.00	0.40
Templetonia retusa	1.00	0.10

DRAFT

Quadrat No.:	**YL03**
Survey Date:	20.10.2025
Personnel:	ZS, JG
Easting:	369683
Northing:	6508520
Topography:	Mid-slope
Aspect:	SE
Slope:	20-45 %
Soil:	Brown Sand
Surface Rock:	0 %
Leaf Litter:	10 %
Bare Ground:	5 %
Drainage:	Well
Condition:	Very Good



Notes: *Spyridium globulosum*, *Acacia cyclops* and *Olearia axillaris* shrubland (C1). Along the slopes of the taller inland dunes on semi-consolidated sands.

Species	**Cover (%)**	**Height (m)**
**Avena barbata*	10.00	1.00
**Bromus diandrus*	15.00	0.50
**Centranthus macrosiphon*	0.50	0.20
**Ehrharta calycina*	2.00	0.50
**Ehrharta longiflora*	5.00	0.30
**Euphorbia terracina*	3.00	0.50
**Lagurus ovatus*	15.00	0.10
**Lolium perenne*	20.00	0.40
**Lysimachia arvensis*	0.10	0.05
**Pelargonium capitatum*	0.50	0.10
**Romulea rosea*	0.50	0.10
**Sonchus oleraceus*	0.10	0.10
Acacia cyclops	0.10	0.50
Acacia lasiocarpa	2.00	0.20
Acanthocarpus preissii	5.00	0.40
Austrostipa flavescens	10.00	1.00

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Species	Cover (%)	Height (m)
Callitris preissii	10.00	3.00
Cassytha glabella	0.50	0.20
Clematis linearifolia	3.00	0.60
Conostylis pauciflora subsp*. pauciflora*	2.00	0.20
Cryptandra mutila	0.50	
Desmocladus asper	1.00	0.10
Dianella revoluta var*. divaricata*	2.00	0.50
Hardenbergia comptoniana	5.00	1.00
Leucopogon parviflorus	2.00	0.50
Lomandra maritima	15.00	0.30
Lysiandra calycina	3.00	0.40
Melaleuca systena	6.00	0.50
Poa porphyroclados	6.00	0.50
Rhagodia baccata subsp*. dioica*	7.00	0.50
Santalum acuminatum	2.00	1.00
Spyridium globulosum	8.00	1.20
Styphelia insularis	15.00	0.50
Templetonia retusa	5.00	0.60
Threlkeldia diffusa	0.10	0.20
Tricoryne elatior	2.00	0.30

DRAFT

Quadrat No.:	YL04
Survey Date:	20.10.2025
Personnel:	ZS, JG
Easting:	369703
Northing:	6508384
Topography:	Crest
Aspect:	SE
Slope:	1-3 %
Soil:	Brown Sandy Loam
Surface Rock:	0 %
Leaf Litter:	5 %
Bare Ground:	2 %
Drainage:	Well
Condition:	Very Good



Notes: *Melaleuca systena* and *Acacia lasiocarpa* shrubland over *Lomandra maritima* forbland (C2). Along the dune crests of the taller inland dunes on semi-consolidated sands.

Species	Cover (%)	Height (m)
**Avena barbata*	0.50	1.00
**Bromus diandrus*	25.00	0.30
**Crassula glomerata*	2.00	0.05
**Euphorbia terracina*	10.00	0.50
**Lagurus ovatus*	20.00	0.30
**Lolium perenne*	30.00	0.30
**Lysimachia arvensis*	2.00	0.05
**Pelargonium capitatum*	0.50	0.15
**Romulea rosea*	0.50	0.05
**Sonchus oleraceus*	5.00	0.10
**Trachyandra divaricata*	3.00	0.50
**Urospermum picroides*	0.50	0.10
Acacia lasiocarpa	4.00	0.30
Acanthocarpus preissii	6.00	0.30
Austrostipa flavescens	15.00	1.00
Cassytha glabella	5.00	0.30

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Species	Cover (%)	Height (m)
Comesperma integerrimum	2.00	0.30
Conostylis pauciflora subsp. *pauciflora*	4.00	0.30
Desmocladus asper	2.00	0.15
Dianella revoluta var. *divaricata*	2.00	0.60
Hardenbergia comptoniana	3.00	0.20
Hemiandra glabra	1.00	0.20
Lepidosperma calcicola	20.00	0.30
Lomandra maritima	17.00	0.30
Lysiandra calycina	1.00	0.40
Melaleuca systena	10.00	0.40
Myoporum insulare	15.00	1.00
Olearia axillaris	6.00	1.00
Opercularia vaginata	0.50	0.40
Poa porphyroclados	2.00	0.60
Rhagodia baccata subsp. *dioica*	3.00	0.40
Santalum acuminatum	2.00	0.60
Spyridium globulosum	2.00	0.60
Styphelia insularis	11.00	0.40
Tricoryne elatior	8.00	0.20

DRAFT

Quadrat No.:	YL05
Survey Date:	21.10.2025
Personnel:	JG, BD
Easting:	369670
Northing:	6508834
Topography:	Mid-slope
Aspect:	NW
Slope:	1-3 %
Soil:	Brown Loamy Sand
Surface Rock:	5 % Limestone
Leaf Litter:	3 %
Bare Ground:	10 %
Drainage:	Moderate
Condition:	Very Good



Notes: *Melaleuca cardiophylla* shrubland (D1). On shallow sand over limestone.

Species	Cover (%)	Height (m)
**Avena barbata*	1.00	1.00
**Bromus diandrus*	15.00	0.20
**Crassula glomerata*	0.50	0.10
**Euphorbia peplus*	5.00	0.10
**Galium murale*	0.50	0.10
**Lagurus ovatus*	20.00	0.10
**Lolium perenne*	0.50	0.50
**Lolium rigidum*	2.00	0.30
**Medicago polymorpha*	1.00	0.10
**Romulea rosea*	1.00	0.10
**Sonchus oleraceus*	0.10	0.20
Acacia xanthina	1.00	0.50
Desmocladus asper	11.00	0.10
Dianella revoluta var. *divaricata*	2.00	1.20
Hardenbergia comptoniana	3.00	2.00
Kennedia prostrata	0.10	0.10

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Species	Cover (%)	Height (m)
Leptomeria preissiana	5.00	1.00
Leucopogon parviflorus	3.00	0.50
Lomandra maritima	1.00	0.40
Lysiandra calycina	0.50	0.30
Melaleuca cardiophylla	90.00	3.00
Melaleuca huegelii subsp. *huegelii*	3.00	0.60
Poa porphyroclados	1.00	1.20
Rhagodia baccata subsp. *dioica*	6.00	2.00
Santalum acuminatum	1.00	1.40
Spyridium globulosum	1.00	1.50
Templetonia retusa	3.00	0.50

DRAFT

Quadrat No.:	YL06
Survey Date:	21.10.2025
Personnel:	JG, BD
Easting:	369676
Northing:	6508786
Topography:	Crest
Aspect:	NW
Slope:	3-5 %
Soil:	Brown Loamy Sand
Surface Rock:	15 % Limestone
Leaf Litter:	2 %
Bare Ground:	0.5 %
Drainage:	Moderate
Condition:	Very Good



Notes: *Melaleuca huegelii* subsp. *huegelii* shrubland (D2). On a crest with extensive limestone outcrops.

Species	Cover (%)	Height (m)
**Avena barbata*	2	1
**Bromus diandrus*	5	0.1
**Catapodium rigidum*	0.1	0.1
**Crassula glomerata*	1	0.1
**Ehrharta longiflora*	0.1	0.3
**Erodium botrys*	0.1	0.1
**Euphorbia peplus*	0.1	0.1
**Lagurus ovatus*	1	0.3
**Lolium perenne*	0.1	0.1
**Medicago polymorpha*	0.1	0.2
**Pelargonium capitatum*	0.1	0.1
**Romulea rosea*	0.1	0.2
**Sabulina mediterranea*	0.1	0.1
**Sonchus oleraceus*	0.2	0.1
**Vulpia myuros*	0.5	0.2
Acacia truncata	9	0.5

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Species	Cover (%)	Height (m)
Acanthocarpus preissii	0.2	0.4
Austrostipa flavescens	4	1
Carpobrotus virescens	0.2	0.1
Cassytha racemosa	0.2	0.5
Clematis linearifolia	0.2	0.3
Desmocladus asper	9	0.1
Dianella revoluta var. *divaricata*	3	0.4
Eremophila glabra subsp. *albicans*	2	0.3
Lepidosperma calcicola	1	0.1
Leptomeria preissiana	1	0.5
Leucopogon parviflorus	0.5	0.4
Lomandra maritima	0.3	0.3
Lysiandra calycina	0.1	0.1
Melaleuca cardiophylla	2	0.5
Melaleuca huegelii subsp. *huegelii*	15	0.6
Melaleuca systena	5	0.5
Olearia axillaris	0.1	0.1
Opercularia vaginata	0.3	0.4
Phyllangium divergens	0.1	0.1
Poa porphyroclados	0.2	0.6
Rhagodia baccata subsp. *baccata*	0.1	0.3
Scaevola thesioides subsp. *thesioides*	1	0.2
Scaevola crassifolia	1	1
Senecio pinnatifolius var. *latilobus*	0.1	0.2
Spyridium globulosum	0.1	0.1
Styphelia insularis	1	0.3
Templetonia retusa	2	0.4
Thomasia triphylla	2	0.5
Thysanotus manglesianus	1	0.2
Trymalium ledifolium	3	0.5

DRAFT

Quadrat No.:	**YL07**
Survey Date:	20.10.2025
Personnel:	ZS, JG
Easting:	369367
Northing:	6508838
Topography:	Lower slope
Aspect:	W
Slope:	>45 %
Soil:	White Sand
Surface Rock:	0 %
Leaf Litter:	5 %
Bare Ground:	2 %
Drainage:	Well
Condition:	Excellent



Notes: *Scaevola crassifolia, Myoporum insularis* and *Olearia axillaris* shrubland over *Lepidosperma gladiatum* sedgeland (A3). Recorded on the secondary dune system.

Species	**Cover (%)**	**Height (m)**
**Bromus diandrus*	5.00	0.40
**Crassula glomerata*	2.00	0.05
**Dischisma arenarium*	0.10	0.10
**Ficinia marginata*	0.50	0.05
**Lolium rigidum*	2.00	0.60
**Oenothera drummondii*	0.50	0.10
**Pelargonium capitatum*	5.00	0.50
**Sonchus oleraceus*	2.00	0.60
**Tetragonia decumbens*	10.00	1.10
**Trachyandra divaricata*	2.00	0.50
**Vulpia myuros*	0.10	0.20
Acanthocarpus preissii	2.00	0.60
Daucus glochidiatus	0.10	0.20
Lepidosperma gladiatum	40.00	1.30
Olearia axillaris	25.00	1.20
Parietaria debilis	1.00	0.50

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Species	Cover (%)	Height (m)
Rhagodia baccata subsp*. dioica*	4.00	0.80
Scaevola crassifolia	40.00	0.60
Senecio pinnatifolius var*. latilobus*	1.00	0.60
Spinifex longifolius	0.50	0.30
Threlkeldia diffusa	4.00	0.50

DRAFT

Quadrat No.:	**YL08**
Survey Date:	22.10.2025
Personnel:	ZS, RT
Easting:	369199
Northing:	6509055
Topography:	Upper-slope
Aspect:	E
Slope:	20-45 %
Soil:	White Sand
Surface Rock:	0 %
Leaf Litter:	5 %
Bare Ground:	50 %
Drainage:	Well
Condition:	Very Good



Notes: *Olearia axillaris* shrubland over *Spinifex longifolius* tussock grassland (A1). Recorded within the primary dune system adjacent to the beach.

Species	**Cover (%)**	**Height (m)**
**Cakile maritima*	2.00	0.80
**Euphorbia peplus*	1.00	0.35
**Pelargonium capitatum*	10.00	0.80
**Sonchus oleraceus*	2.00	0.30
**Tetragonia decumbens*	4.00	0.40
**Trachyandra divaricata*	4.00	0.30
Carpobrotus virescens	2.00	0.30
Cassytha aurea	2.00	0.60
Olearia axillaris	30.00	1.40
Rhagodia baccata subsp. *dioica*	2.00	0.40
Scaevola crassifolia	10.00	0.80
Senecio pinnatifolius var. *latilobus*	0.50	0.20
Spinifex longifolius	20.00	1.00
Threlkeldia diffusa	2.00	0.40

DRAFT

Quadrat No.:	**YL09**
Survey Date:	22.10.2025
Personnel:	ZS, RT
Easting:	369122
Northing:	6509148
Topography:	Upper-slope
Aspect:	E
Slope:	20-45 %
Soil:	White Sand
Surface Rock:	0 %
Leaf Litter:	10 %
Bare Ground:	40 %
Drainage:	Well
Condition:	Very Good



Notes: *Olearia axillaris* shrubland over *Spinifex longifolius* tussock grassland (A1). Recorded within the primary dune system adjacent to the beach.

Species	**Cover (%)**	**Height (m)**
**Asphodelus fistulosus*	1.00	0.40
**Cakile maritima*	1.00	0.20
**Crassula glomerata*	1.00	0.05
**Hypochaeris glabra*	0.50	0.10
**Lolium perenne*	5.00	0.05
**Pelargonium capitatum*	4.00	0.40
**Sonchus oleraceus*	0.50	0.10
**Tetragonia decumbens*	2.00	0.80
**Trachyandra divaricata*	3.00	0.30
**Urospermum picroides*	2.00	0.10
Carpobrotus virescens	2.00	0.15
Daucus glochidiatus	1.00	0.10
Ficinia nodosa	2.00	1.00
Olearia axillaris	40.00	1.40
Rhagodia baccata subsp. *baccata*	3.00	0.30
Rhagodia baccata subsp. *dioica*	1.00	0.20

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Species	Cover (%)	Height (m)
Scaevola crassifolia	4.00	0.50
Spinifex hirsutus	4.00	0.40
Spinifex longifolius	15.00	0.60
Threlkeldia diffusa	4.00	0.30

DRAFT

Quadrat No.:	**YL10**
Survey Date:	22.10.2025
Personnel:	ZS, RT
Easting:	369192
Northing:	6509180
Topography:	Upper-slope
Aspect:	W
Slope:	20-45 %
Soil:	White Sand
Surface Rock:	0 %
Leaf Litter:	4 %
Bare Ground:	5 %
Drainage:	Well
Condition:	Very Good



Notes: *Scaevola crassifolia, Myoporum insularis* and *Olearia axillaris* shrubland over *Lepidosperma gladiatum* sedgeland (A3). Recorded on the secondary dune system.

Species	**Cover (%)**	**Height (m)**
**Bromus diandrus*	5.00	0.40
**Crassula glomerata*	0.50	0.05
**Dischisma arenarium*	1.00	0.10
**Ehrharta longiflora*	0.50	0.80
**Lagurus ovatus*	0.50	0.20
**Pelargonium capitatum*	5.00	0.30
**Sonchus oleraceus*	0.50	0.10
**Tetragonia decumbens*	1.00	0.40
**Trachyandra divaricata*	1.00	0.40
Acanthocarpus preissii	8.00	0.30
Carpobrotus virescens	5.00	0.20
Cassytha aurea	1.00	0.10
Hardenbergia comptoniana	2.00	1.00
Olearia axillaris	20.00	1.20
Parietaria debilis	1.00	0.20
Poa porphyroclados	2.00	0.50

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Species	Cover (%)	Height (m)
Rhagodia baccata subsp. *baccata*	0.50	0.30
Scaevola crassifolia	65.00	0.60
Senecio pinnatifolius var. *latilobus*	4.00	0.30
Threlkeldia diffusa	4.00	0.30

DRAFT

Quadrat No.:	**YL11**
Survey Date:	22.10.2025
Personnel:	ZS, RT
Easting:	369648
Northing:	6509043
Topography:	Upper-slope
Aspect:	SE
Slope:	10-20 %
Soil:	Brown Sandy Loam
Surface Rock:	0 %
Leaf Litter:	4 %
Bare Ground:	5 %
Drainage:	Well
Condition:	Very Good



Notes: *Spyridium globulosum*, *Acacia cyclops* and *Olearia axillaris* shrubland (C1). Along the slopes of the taller inland dunes on semi-consolidated sands.

Species	**Cover (%)**	**Height (m)**
**Bromus diandrus*	5.00	0.40
**Crassula glomerata*	1.00	0.05
**Lagurus ovatus*	5.00	0.20
**Lolium rigidum*	10.00	0.40
**Lysimachia arvensis*	0.50	0.05
**Romulea rosea*	2.00	0.10
**Sonchus oleraceus*	0.50	0.20
Austrostipa flavescens	3.00	1.40
Cassytha flava	1.00	0.20
Clematis linearifolia	8.00	1.60
Conostylis pauciflora subsp. *pauciflora*	5.00	0.30
Desmocladus asper	4.00	0.10
Dianella revoluta var. *divaricata*	0.50	0.40
Hardenbergia comptoniana	4.00	1.40
Kennedia prostrata	2.00	0.10
Lepidosperma calcicola	10.00	0.40

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Species	Cover (%)	Height (m)
Leptomeria preissiana	20.00	1.40
Leucopogon parviflorus	1.00	0.60
Lomandra maritima	2.00	0.30
Lysiandra calycina	4.00	0.60
Melaleuca systena	10.00	0.80
Olearia axillaris	10.00	1.60
Opercularia vaginata	0.50	0.20
Poa porphyroclados	4.00	0.80
Rhagodia baccata subsp. *baccata*	4.00	0.40
Spyridium globulosum	20.00	1.60
Templetonia retusa	25.00	1.40
Thysanotus manglesianus	0.50	0.80

DRAFT

Quadrat No.:	**YL12**
Survey Date:	23.10.2025
Personnel:	ZS, JG
Easting:	369423
Northing:	6508581
Topography:	Outcrop
Aspect:	W
Slope:	10-20 %
Soil:	White Sand
Surface Rock:	80
Leaf Litter:	5
Bare Ground:	15
Drainage:	Well
Condition:	Very Good



Notes: *Frankenia pauciflora* var. *pauciflora* and *Scaevola crassifolia* shrubland over *Salicornia blackiana* chenopod shrubland (B1). Recorded within the limestone outcrop along the beach.

Species	**Cover (%)**	**Height (m)**
**Bromus diandrus*	10.00	0.30
**Crassula glomerata*	1.00	0.05
**Lolium rigidum*	1.00	0.40
**Matthiola incana*	1.00	0.50
**Medicago polymorpha*	4.00	0.05
**Melilotus indicus*	3.00	0.10
**Romulea rosea*	1.00	0.10
**Sagina maritima*	10.00	0.10
**Sonchus oleraceus*	1.00	0.10
**Tetragonia decumbens*	2.00	0.50
**Trachyandra divaricata*	1.00	0.30
**Urospermum picroides*	1.00	0.20
Acanthocarpus preissii	1.00	0.20
Carpobrotus virescens	4.00	0.20
Frankenia pauciflora	30.00	0.35
Olearia axillaris	1.00	0.60

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Species	Cover (%)	Height (m)
Rhagodia baccata subsp. *dioica*	2.00	0.30
Salicornia blackiana	4.00	0.20
Scaevola crassifolia	20.00	0.40
Threlkeldia diffusa	20.00	0.30

DRAFT

Quadrat No.:	**YL13**
Survey Date:	20.10.2025
Personnel:	ZS, JG
Easting:	369754
Northing:	6508635
Topography:	Mid-slope
Aspect:	NW
Slope:	3-5 %
Soil:	Brown Sandy Loam
Surface Rock:	0 %
Leaf Litter:	20 %
Bare Ground:	2 %
Drainage:	Well
Condition:	Good



Notes: *Spyridium globulosum*, *Acacia cyclops* and *Olearia axillaris* shrubland (C1). Along the slopes of the taller inland dunes on semi-consolidated sands.

Species	**Cover (%)**	**Height (m)**
**Avena barbata*	5.00	1.20
**Bromus diandrus*	3.00	0.30
**Crassula glomerata*	0.50	0.50
**Euphorbia terracina*	4.00	1.00
**Lagurus ovatus*	5.00	0.50
**Lolium perenne*	30.00	0.40
**Pelargonium capitatum*	3.00	0.40
**Romulea rosea*	0.50	0.05
**Sonchus oleraceus*	0.50	0.05
Acacia cochlearis	1.00	0.60
Acacia cyclops	10.00	2.50
Acanthocarpus preissii	4.00	0.30
Allocasuarina lehmanniana subsp. *lehmanniana*	1.00	2.50
Austrostipa flavescens	10.00	1.10
Callitris preissii	2.00	1.30
Cassytha glabella	2.00	1.20

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Species	Cover (%)	Height (m)
Conostylis pauciflora subsp*. pauciflora*	4.00	0.30
Desmocladus asper	8.00	0.30
Dianella revoluta var. divaricata	2.00	0.50
Eremophila glabra subsp. albicans	1.00	0.20
Gompholobium tomentosum	0.50	0.30
Hardenbergia comptoniana	5.00	1.30
Leptomeria preissiana	0.50	1.20
Leucopogon parviflorus	0.50	1.00
Lomandra maritima	4.00	0.30
Lysiandra calycina	2.00	0.60
Melaleuca systena	20.00	1.00
Olearia axillaris	1.00	0.60
Pigea calycina	4.00	0.40
Poa porphyroclados	3.00	1.00
Rhagodia baccata subsp*. dioica*	1.00	0.30
Santalum acuminatum	15.00	1.00
Scaevola thesioides subsp*. thesioides*	0.50	0.30
Spyridium globulosum	1.00	0.10
Styphelia insularis	10.00	0.60
Templetonia retusa	3.00	0.60

DRAFT

Quadrat No.:	**YL14**
Survey Date:	21.10.2025
Personnel:	JG, BD
Easting:	369566
Northing:	6508792
Topography:	Lower-slope
Aspect:	SE
Slope:	1-3 %
Soil:	Brown Sandy Loam
Surface Rock:	1 % Limestone
Leaf Litter:	20 %
Bare Ground:	0.5 %
Drainage:	Well
Condition:	Good



Notes: *Eucalyptus gomphocephala* woodland (C3). Recorded on the lower slopes of the taller inland dunes on semi-consolidated sands.

Species	**Cover (%)**	**Height (m)**
**Arctotheca calendula*	0.1	0.1
**Avena barbata*	1.5	1.1
**Bromus diandrus*	5	0.3
**Ehrharta longiflora*	0.3	1
**Euphorbia peplus*	0.5	0.4
**Ferraria crispa*	1	0.5
**Lagurus ovatus*	1	0.1
**Sonchus oleraceus*	2	1
Acacia xanthina	90	5
Eucalyptus gomphocephala	20	10
Hardenbergia comptoniana	1	0.5
Leptomeria preissiana	0.5	1.5
Rhagodia baccata subsp. *baccata*	2	1
Scaevola crassifolia	5	0.6
Spyridium globulosum	10	1.5
Threlkeldia diffusa	2	0.5

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Quadrat No.:	**YL15**
Survey Date:	20.10.2025
Personnel:	ZS, JG
Easting:	369577
Northing:	6508626
Topography:	Mid-slope
Aspect:	SE
Slope:	1-3 %
Soil:	White Sand
Surface Rock:	0
Leaf Litter:	5
Bare Ground:	2
Drainage:	Well
Condition:	Very Good



Notes: *Spyridium globulosum*, *Acacia cyclops* and *Olearia axillaris* shrubland (C1). Along the slopes of the taller inland dunes on semi-consolidated sands.

Species	**Cover (%)**	**Height (m)**
**Avena barbata*	0.50	0.50
**Bromus diandrus*	15.00	0.30
**Crassula glomerata*	0.50	0.05
**Euphorbia terracina*	2.00	0.50
**Ficinia marginata*	1.50	0.05
**Lagurus ovatus*	5.00	0.20
**Lolium perenne*	0.50	0.40
**Medicago polymorpha*	0.50	0.50
**Orobanche minor*	0.50	0.10
**Pelargonium capitatum*	6.00	0.40
**Romulea rosea*	1.00	0.15
**Sonchus oleraceus*	0.50	1.00
**Trachyandra divaricata*	0.50	0.40
Acacia cyclops	0.50	0.40
Acanthocarpus preissii	3.00	0.40
Austrostipa flavescens	8.00	0.60

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Species	Cover (%)	Height (m)
Cassytha glabella	0.50	0.30
Conostylis pauciflora subsp*. pauciflora*	4.00	0.30
Dianella revoluta var*. divaricata*	2.00	0.60
Eremophila glabra subsp*. albicans*	1.00	0.40
Hardenbergia comptoniana	4.00	0.50
Lepidosperma calcicola	4.00	0.25
Leucopogon parviflorus	4.00	0.60
Lomandra maritima	5.00	0.25
Lysiandra calycina	12.00	0.25
Melaleuca systena	7.00	0.40
Olearia axillaris	3.00	0.40
Opercularia vaginata	1.00	0.25
Hemiandra glabra	0.50	0.20
Poa porphyroclados	4.00	0.60
Rhagodia baccata subsp*. dioica*	10.00	0.30
Scaevola thesioides subsp*. thesioides*	20.00	0.60
Spyridium globulosum	2.00	0.50
Styphelia insularis	0.50	0.30
Templetonia retusa	1.00	0.40
Tricoryne elatior	1.00	0.15

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Quadrat No.:	**YL16**
Survey Date:	22.10.2025
Personnel:	ZS, RT
Easting:	369647
Northing:	6508978
Topography:	Mid-slope
Aspect:	SE
Slope:	5-10 %
Soil:	Brown Sandy Loam
Surface Rock:	2 % Limestone
Leaf Litter:	10
Bare Ground:	5
Drainage:	Well
Condition:	Very Good



Notes: *Melaleuca cardiophylla* shrubland (D1). On shallow sand over limestone.

Species	**Cover (%)**	**Height (m)**
**Avena barbata*	1.00	1.00
**Bromus diandrus*	2.00	0.40
**Ehrharta longiflora*	1.00	1.00
**Euphorbia terracina*	1.00	0.10
**Galium murale*	0.50	0.05
**Lagurus ovatus*	6.00	0.30
**Lolium rigidum*	2.00	0.30
**Lysimachia arvensis*	1.00	0.10
**Sonchus oleraceus*	1.00	0.10
Acacia xanthina	4.00	2.00
Acanthocarpus preissii	2.00	1.00
Austrostipa flavescens	6.00	1.20
Clematis linearifolia	4.00	2.00
Comesperma integerrimum	1.00	2.00
Daucus glochidiatus	3.00	0.05
Desmocladus asper	5.00	0.20

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Species	Cover (%)	Height (m)
Dianella revoluta var. *divaricata*	2.00	0.80
Hardenbergia comptoniana	2.00	2.00
Lepidosperma calcicola	2.00	0.30
Leptomeria preissiana	1.00	1.40
Leucopogon parviflorus	2.00	0.60
Lomandra maritima	4.00	0.30
Lysiandra calycina	5.00	0.80
Melaleuca cardiophylla	15.00	3.00
Melaleuca systena	2.00	0.60
Myoporum insulare	1.00	1.20
Olearia axillaris	2.00	0.40
Opercularia vaginata	6.00	0.30
Poa porphyroclados	2.00	0.80
Rhagodia baccata subsp. *baccata*	3.00	1.20
Spyridium globulosum	10.00	2.00
Styphelia insularis	4.00	1.00
Templetonia retusa	10.00	1.20
Thysanotus manglesianus	1.00	0.50
Tricoryne elatior	6.00	0.40

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Quadrat No.:	**YL17**
Survey Date:	20.10.2025
Personnel:	ZS, JG
Easting:	369601
Northing:	6508471
Topography:	Crest
Aspect:	SE
Slope:	1-3 %
Soil:	Brown Sand
Surface Rock:	0 %
Leaf Litter:	5 %
Bare Ground:	2 %
Drainage:	Well
Condition:	Very Good



Notes: *Spyridium globulosum*, *Acacia cyclops* and *Olearia axillaris* shrubland (C1). Along the slopes of the taller inland dunes on semi-consolidated sands.

Species	**Cover (%)**	**Height (m)**
**Bromus diandrus*	20.00	0.30
**Crassula glomerata*	0.50	0.05
**Euphorbia terracina*	2.00	0.50
**Ficinia marginata*	0.50	0.05
**Lagurus ovatus*	3.00	0.30
**Lolium perenne*	20.00	0.30
**Lysimachia arvensis*	0.50	0.05
**Melilotus indicus*	0.50	0.30
**Pelargonium capitatum*	0.10	0.30
**Sonchus oleraceus*	0.10	0.05
**Trachyandra divaricata*	2.00	0.30
**Urospermum picroides*	0.50	0.20
Acanthocarpus preissii	5.00	0.30
Austrostipa flavescens	5.00	1.00
Callitris preissii	1.00	0.40
Cassytha glabella	2.00	0.50

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Species	Cover (%)	Height (m)
Conostylis pauciflora subsp*. pauciflora*	5.00	0.30
Desmocladus asper	3.00	0.10
Dianella revoluta var*. divaricata*	2.00	0.50
Eremophila glabra subsp*. albicans*	1.00	0.30
Hardenbergia comptoniana	2.00	0.30
Lepidosperma calcicola	10.00	0.30
Leucopogon parviflorus	3.00	0.40
Lomandra maritima	20.00	0.40
Lysiandra calycina	1.00	0.30
Melaleuca systena	6.00	0.30
Myoporum insulare	2.00	0.50
Olearia axillaris	10.00	1.20
Poa porphyroclados	5.00	1.00
Rhagodia baccata subsp*. dioica*	2.00	0.40
Santalum acuminatum	10.00	0.60
Scaevola crassifolia	3.00	1.00
Senecio pinnatifolius var*. latilobus*	10.00	0.40
Spyridium globulosum	3.00	0.50
Styphelia insularis	5.00	0.30

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Quadrat No.:	**YL18**
Survey Date:	20.10.2025
Personnel:	ZS, JG
Easting:	369552
Northing:	6508407
Topography:	Lower Slope
Aspect:	W
Slope:	1-3 %
Soil:	White Sand
Surface Rock:	0 %
Leaf Litter:	1 %
Bare Ground:	20 %
Drainage:	Well
Condition:	Very Good



Notes: *Olearia axillaris* shrubland over *Spinifex longifolius* tussock grassland (A1). Recorded within the primary dune system adjacent to the beach.

Species	**Cover (%)**	**Height (m)**
**Bromus diandrus*	1.00	0.30
**Cakile maritima*	1.00	0.30
**Crassula glomerata*	4.00	0.10
**Dischisma arenarium*	0.10	0.10
**Sonchus oleraceus*	0.10	0.10
**Tetragonia decumbens*	10.00	0.60
**Urospermum picroides*	0.50	0.10
Ficinia nodosa	2.00	0.80
Olearia axillaris	25.00	1.10
Scaevola crassifolia	30.00	0.50
Senecio pinnatifolius var. *latilobus*	2.00	0.40
Spinifex longifolius	40.00	0.80

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Quadrat No.:	**YL19**
Survey Date:	22.10.2025
Personnel:	ZS, RT
Easting:	369307
Northing:	6508964
Topography:	Lower Slope
Aspect:	W
Slope:	1-3 %
Soil:	White Sand
Surface Rock:	0 %
Leaf Litter:	5 %
Bare Ground:	30 %
Drainage:	Well
Condition:	Good



Notes: *Olearia axillaris* and *Scaevola crassifolia* shrubland (A2). Recorded within the dune swale between A1 and A3.

Species	**Cover (%)**	**Height (m)**
**Crassula glomerata*	2.00	0.05
**Dischisma arenarium*	0.50	0.02
**Ficinia marginata*	1.00	0.05
**Pelargonium capitatum*	2.00	0.40
**Sonchus oleraceus*	0.50	0.02
**Tetragonia decumbens*	1.00	0.20
**Trachyandra divaricata*	1.00	0.40
**Urospermum picroides*	0.50	0.10
**Vulpia myuros*	1.00	0.10
Acacia xanthina	2.00	0.60
Carpobrotus virescens	20.00	0.40
Ficinia nodosa	1.00	0.60
Olearia axillaris	10.00	1.20
Scaevola crassifolia	5.00	0.60
Senecio pinnatifolius var. *latilobus*	1.00	0.40
Spinifex longifolius	20.00	0.80

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Species	Cover (%)	Height (m)
Threlkeldia diffusa	1.00	0.40

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Quadrat No.:	**YL20**
Survey Date:	22.10.2025
Personnel:	ZS, RT
Easting:	369232
Northing:	6509052
Topography:	Lower Slope
Aspect:	W
Slope:	3-5 %
Soil:	White Sand
Surface Rock:	0
Leaf Litter:	10
Bare Ground:	60
Drainage:	Well
Condition:	Degraded



Notes: *Olearia axillaris* and *Scaevola crassifolia* shrubland (A2). Recorded within the dune swale between A1 and A3.

Species	**Cover (%)**	**Height (m)**
**Asphodelus fistulosus*	0.50	0.30
**Bromus diandrus*	0.50	0.05
**Crassula glomerata*	1.00	0.05
**Dischisma arenarium*	0.50	0.05
**Ficinia marginata*	1.00	0.05
**Gaudium laevigatum*	4.00	1.00
**Lagurus ovatus*	0.50	0.20
**Lolium perenne*	0.50	0.20
**Pelargonium capitatum*	2.00	0.40
**Sonchus oleraceus*	1.00	0.10
**Tetragonia decumbens*	2.00	0.30
**Trachyandra divaricata*	1.00	0.20
Carpobrotus virescens	2.00	0.20
Cassytha aurea	2.00	0.30
Ficinia nodosa	0.50	0.60
Olearia axillaris	4.00	1.20
Rhagodia baccata subsp. *dioica*	2.00	0.30

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Species	Cover (%)	Height (m)
Scaevola crassifolia	30.00	0.80
Senecio pinnatifolius var*. latilobus*	1.00	0.30
Threlkeldia diffusa	2.00	0.40

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Quadrat No.:	**YL21**
Survey Date:	22.10.2025
Personnel:	ZS, RT
Easting:	369296
Northing:	6509026
Topography:	Mid-Slope
Aspect:	W
Slope:	>45 %
Soil:	White Sand
Surface Rock:	0 %
Leaf Litter:	2 %
Bare Ground:	1 %
Drainage:	Well
Condition:	Very Good



Notes: *Scaevola crassifolia, Myoporum insularis* and *Olearia axillaris* shrubland over *Lepidosperma gladiatum* sedgeland (A3). Recorded on the secondary dune system.

Species	**Cover (%)**	**Height (m)**
**Avena barbata*	0.50	1.20
**Bromus diandrus*	0.50	0.40
**Euphorbia terracina*	1.00	0.30
**Lolium rigidum*	0.50	0.40
**Oxalis pes-caprae*	0.50	0.30
**Sonchus oleraceus*	0.50	0.30
**Tetragonia decumbens*	1.00	1.40
**Trachyandra divaricata*	1.00	0.30
Acanthocarpus preissii	2.00	0.60
Hardenbergia comptoniana	2.00	1.00
Lepidosperma gladiatum	80.00	1.40
Parietaria debilis	0.50	0.40
Rhagodia baccata subsp. *dioica*	4.00	0.80
Santalum acuminatum	10.00	1.40
Scaevola thesioides subsp. *thesioides*	2.00	0.80
Scaevola crassifolia	10.00	1.00
Senecio pinnatifolius var. *latilobus*	1.00	0.80

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Quadrat No.:	YL22
Survey Date:	22.10.2025
Personnel:	ZS, RT
Easting:	369169
Northing:	6509123
Topography:	Lower Slope
Aspect:	W
Slope:	3-5 %
Soil:	White Sand
Surface Rock:	0 %
Leaf Litter:	20 %
Bare Ground:	30 %
Drainage:	Well
Condition:	Degraded



Notes: *Olearia axillaris* and *Scaevola crassifolia* shrubland (A2). Recorded within the dune swale between A1 and A3.

Species	Cover (%)	Height (m)
**Asphodelus fistulosus*	1.00	0.30
**Bromus diandrus*	1.00	0.10
**Crassula glomerata*	1.00	0.05
**Dischisma arenarium*	1.00	0.05
**Gaudium laevigatum*	4.00	0.80
**Hypochaeris radicata*	1.00	0.10
**Lolium perenne*	20.00	0.15
**Pelargonium capitatum*	10.00	0.40
**Sonchus oleraceus*	2.00	0.20
**Tetragonia decumbens*	2.00	0.30
**Trachyandra divaricata*	3.00	0.40
**Urospermum picroides*	1.00	0.30
Acacia cyclops	4.00	1.00
Acanthocarpus preissii	4.00	0.60
Carpobrotus virescens	3.00	0.20
Cassytha aurea	4.00	0.20

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Species	Cover (%)	Height (m)
Conostylis pauciflora subsp*. pauciflora*	1.00	0.30
Olearia axillaris	8.00	1.40
Rhagodia baccata subsp*. dioica*	2.00	0.80
Scaevola crassifolia	5.00	0.80
Senecio pinnatifolius var*. latilobus*	8.00	0.30
Threlkeldia diffusa	2.00	0.30

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Quadrat No.:	**YL23**
Survey Date:	23.10.2025
Personnel:	ZS, JG
Easting:	369682
Northing:	6508741
Topography:	Mid-slope
Aspect:	SW
Slope:	3-5 %
Soil:	White Sand
Surface Rock:	0
Leaf Litter:	5
Bare Ground:	5
Drainage:	Well
Condition:	Very Good



Notes: *Melaleuca cardiophylla* shrubland (D1). On shallow sand over limestone.

Species	**Cover (%)**	**Height (m)**
**Avena barbata*	2.00	0.40
**Bromus diandrus*	4.00	0.30
**Catapodium rigidum*	0.50	0.05
**Centaurium pulchellum*	0.50	0.02
**Crassula glomerata*	1.00	0.05
**Euphorbia terracina*	2.00	0.30
**Ficinia marginata*	0.50	0.05
**Galium murale*	0.50	0.02
**Lagurus ovatus*	5.00	0.20
**Lolium perenne*	2.00	0.30
**Lolium rigidum*	2.00	0.30
**Lysimachia arvensis*	1.00	0.05
**Medicago polymorpha*	1.00	0.05
**Melilotus indicus*	1.00	0.15
**Romulea rosea*	1.00	0.15
**Sonchus oleraceus*	1.00	0.05
Acacia rostellifera	2.00	0.80

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Species	Cover (%)	Height (m)
Acanthocarpus preissii	4.00	0.20
Austrostipa flavescens	20.00	1.20
Cassytha glabella	6.00	1.40
Clematis linearifolia	4.00	1.00
Comesperma integerrimum	0.50	0.80
Conostylis pauciflora subsp*. pauciflora*	1.00	0.20
Desmocladus asper	3.00	0.20
Dianella revoluta var*. divaricata*	4.00	0.80
Eremophila glabra subsp*. albicans*	2.00	1.00
Gompholobium tomentosum	2.00	0.40
Hardenbergia comptoniana	2.00	1.20
Hibbertia racemosa	1.00	0.60
Lepidosperma calcicola	10.00	0.30
Leucopogon parviflorus	0.50	0.40
Lomandra maritima	5.00	0.40
Lysiandra calycina	2.00	0.60
Melaleuca cardiophylla	10.00	2.00
Melaleuca systena	20.00	0.60
Olearia axillaris	2.00	1.00
Opercularia vaginata	0.50	0.30
Poa porphyroclados	2.00	0.60
Rhagodia baccata subsp*. dioica*	5.00	0.60
Santalum acuminatum	10.00	1.00
Scaevola thesioides subsp*. thesioides*	20.00	0.60
Spyridium globulosum	5.00	1.20
Styphelia insularis	2.00	0.80
Tricoryne elatior	3.00	0.30

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Quadrat No.:	**YL24**
Survey Date:	23.10.2025
Personnel:	ZS, JG
Easting:	369464
Northing:	6508509
Topography:	Outcrop
Aspect:	W
Slope:	5-10 %
Soil:	White Sand
Surface Rock:	80 % Limestone
Leaf Litter:	2 %
Bare Ground:	70 %
Drainage:	Well
Condition:	Good



Notes: *Frankenia pauciflora* var. *pauciflora* and *Scaevola crassifolia* shrubland over *Salicornia blackiana* chenopod shrubland (B1). Recorded within the limestone outcrop along the beach.

Species	**Cover (%)**	**Height (m)**
**Bromus diandrus*	2	0.2
**Crassula glomerata*	0.5	0.05
**Lolium rigidum*	1	0.3
**Lysimachia arvensis*	1	0.1
**Medicago polymorpha*	3	0.05
**Romulea rosea*	1	0.1
**Sagina maritima*	2	0.05
**Sonchus oleraceus*	1	0.2
**Tetragonia decumbens*	1	0.2
**Trachyandra divaricata*	1	0.3
Carpobrotus virescens	2	0.2
Ficinia nodosa	1	0.3
Frankenia pauciflora	10	0.4
Lepidosperma gladiatum	0.5	0.4
Olearia axillaris	2	0.6
Rhagodia baccata subsp. *dioica*	2	0.4
Scaevola crassifolia	8	0.5

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Species	Cover (%)	Height (m)
Senecio pinnatifolius var. *latilobus*	2	0.4
Threlkeldia diffusa	2	0.4

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Quadrat No.:	**YL25**
Survey Date:	23.10.2025
Personnel:	ZS, JG
Easting:	369537
Northing:	6508686
Topography:	Lower Slope
Aspect:	N
Slope:	1-3 %
Soil:	Brown Sandy Loam
Surface Rock:	0
Leaf Litter:	5
Bare Ground:	2
Drainage:	Well
Condition:	Good



Notes: *Eucalyptus gomphocephala* woodland (C3). Recorded on the lower slopes of the taller inland dunes on semi-consolidated sands.

Species	**Cover (%)**	**Height (m)**
**Avena barbata*	20	0.6
**Bromus diandrus*	10	0.4
**Catapodium rigidum*	1	0.25
**Euphorbia peplus*	1	0.05
**Euphorbia terracina*	2	0.3
**Medicago polymorpha*	0.5	0.2
**Sonchus oleraceus*	0.5	0.2
**Trachyandra divaricata*	0.5	0.3
**Urospermum picroides*	1	0.2
Eucalyptus gomphocephala	75	4
Olearia axillaris	4	1.2
Rhagodia baccata subsp. *baccata*	30	1.3
Spyridium globulosum	30	1.6

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Natural Area
CONSULTING MANAGEMENT SERVICES

UDLA

Yanchep Lagoon

Detailed Fauna Survey

and Black Cockatoo Assessment

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Environmental management system registered to ISO 14001:2015
Quality management system registered to ISO 9001:2015
Occupational health and safety management system registered to ISO 45001:2018

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Draft/Version No.	Date	Changes	Prepared by	Approved by	Status
Draft	Oct 2025	New Document	DM	KE	Draft for client comment

Executive Summary

Natural Area Consulting Management Services (Natural Area) was subcontracted by UDLA on behalf of the City of Wanneroo (the City) to undertake a desktop assessment, detailed fauna survey, and black cockatoo habitat assessment within Yanchep Lagoon. These surveys will assist with the development of the Yanchep Lagoon Foreshore Management Plan.

The works included the following activities:

- Desktop review of existing environmental values including conservation significant fauna and black cockatoo habitat records within the site and adjacent areas.
- Detailed fauna survey including trapping over 8 consecutive days (7 nights) with trap-lines (pitfall and funnel traps), box traps, trail cameras, and ultrasonic audio recording devices set out for a total of:
    - 133 pitfall traps nights (19 pitfall traps)
    - 98 funnel trap nights (14 funnel traps)
    - 126 box trap nights (18 box trap)
    - 14 trail camera nights (2 cameras)
    - 7 acoustic recorder nights (1 recorder).
- Recording opportunistic sightings and undertaking active searching when traversing the site.
- Carrying out a night survey to target nocturnal species such as bats, owls and possums using a combination of spotlighting, thermal and acoustic detectors.
- Targeted black cockatoo habitat assessment.

The detailed fauna survey determined:

- Nine different fauna habitat types within the Yanchep Lagoon site.
- A total of 51 vertebrate fauna species were recorded during the field surveys comprised of 27 birds, 7 mammals, and 17 reptiles.
- One conservation significant fauna species was observed:
    - Crested Tern (*Thalasseus bergii*) listed as a Migratory (MI) species under the EPBC Act and protected under international agreements.
- Six introduced species present, including two declared pests:
    - Red Fox (**Vulpes vulpes*)
    - Rabbit (**Oryctolagus cuniculus*).

The black cockatoo habitat assessment determined:

- A total of four potential black cockatoo habitat trees within the site, none of which had hollows (unsuitable for black cockatoo breeding).
- No evidence of black cockatoo roosting recorded within the site.
- No evidence of black cockatoo foraging recorded within the site.

This report recommends that pest management is implemented targeting rabbits and foxes to reduce the environmental degradation caused by their presence within the site. This report also recommends the consideration of native fauna species' ecology when disturbing vegetation and installing infrastructure, to minimise impacts and provide opportunities for fauna habitat amongst infrastructure where possible.

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1.0 Introduction

Natural Area Consulting Management Services (Natural Area) was subcontracted by UDLA on behalf of the City of Wanneroo (the City) to undertake a desktop assessment, detailed fauna survey, and black cockatoo habitat assessment within Yanchep Lagoon. The surveys will assist with the development of the Yanchep Lagoon Foreshore Management Plan.

1.1 Location

Yanchep Lagoon is a coastal destination approximately 50 km north of the Perth Central Business District. The site encompasses 33.11 ha of beachfront, vegetation, and infrastructure (Figure 1). Class A and C reserves are present within the Yanchep Lagoon and are managed by the City.

1.2 Scope

The scope of works undertaken by Natural Area included:

- A desktop assessment of relevant information pertaining to conservation significant fauna and black cockatoo habitat, within a 10 km radius of the survey site. The following databases were consulted:
  - Nature Map (DBCA, 2025a).
  - Department of Biodiversity, Conservation and Attractions (DBCA) fauna database (DBCA 2025b).
  - Protected Matters Search Tool (PMST) (Department of Climate Change, Energy, the Environment and Water (DCCEEW), 2025).
  - Site Characteristics including landform, geology, and soil complex.
- Detailed fauna survey to determine:
  - Key site characteristics, including the determination of fauna habitat types within the site.
  - Formation of a fauna species list, outlining native and non-native species present.
  - Identification and mapping of any threatened, priority or other significant fauna species listed under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act), and the *Biodiversity Conservation Act 2016* (WA).
  - Recording of the location of conservation significant fauna within the site.
  - Recording of the location of any declared pests observed within the site.
- A black cockatoo habitat assessment to determine the location and extent of potential or established black cockatoo habitat trees.

1.3 Legislative Context

State and Federal environment-related laws impact how environmental values are governed in Western Australia. The following legislation and policies are relevant to this report.

1.3.1 Relevant Legislation

***Aboriginal Heritage Act 1972* (WA)**

The Aboriginal Heritage Act 1972 (WA) makes provision for the recognition, protection, conservation, and preservation of Aboriginal heritage in Western Australia.

***Biosecurity and Agriculture Management Act 2007* (WA)**

The *Biosecurity and Agriculture Management Act 2007* (WA) (BAM Act) regulates the framework for plant and animal pest and disease biosecurity in Western Australia. The framework provides for the control of declared flora and fauna species (declared organisms) that are known to be a significant environmental threat and the management, control and prevention of these declared plants and animals.

***Biodiversity Conservation Act 2016* (WA)**

The *Biodiversity Conservation Act 2016* (WA) (BC Act) aims to protect and conserve biodiversity as well as to promote the ecologically sustainable use of biodiversity components in the State. The BC Act provides the statute relating to conservation and legal protection of flora, fauna, and ecological communities. The BC Act follows the principles of ecologically sustainable development, detailing that decision-making processes should effectively integrate long-term and short-term economic, environmental, social, and equity considerations.

***Environmental Protection Act 1986* (WA)**

The *Environmental Protection Act 1986* (WA) (EP Act) provides for the prevention, control and abatement of pollution and environmental harm, for the conservation, preservation, protection, enhancement, and management of the environment connected with the foregoing. The Environmental Protection Authority (EPA) is established under this act and provides a structured policy framework that is consistent with the EP A*ct*. The EPA produces the guidelines and procedures associated with conducting environmental assessments in line with the EP Act.

***Environment Protection and Biodiversity Conservation Act 1999* (Cth)**

The Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) serves to protect and manage nationally and internationally important flora, fauna, ecological communities, and heritage places. The primary objective of the EPBC Act is to promote the conservation of biodiversity and the sustainable use of natural resources while allowing for ecologically sustainable development. The EPBC Act allows for the creation of conservation agreements between the Australian government and individuals, communities, or organisations to support the conservation of biodiversity.

Heritage Act 2018 (WA)

The Heritage Act recognises the importance of and promotes understanding and appreciation of Western Australia's cultural heritage; and provides for the identification and documentation of places of cultural heritage significance and for the conservation, use, development and adaptation of such places.

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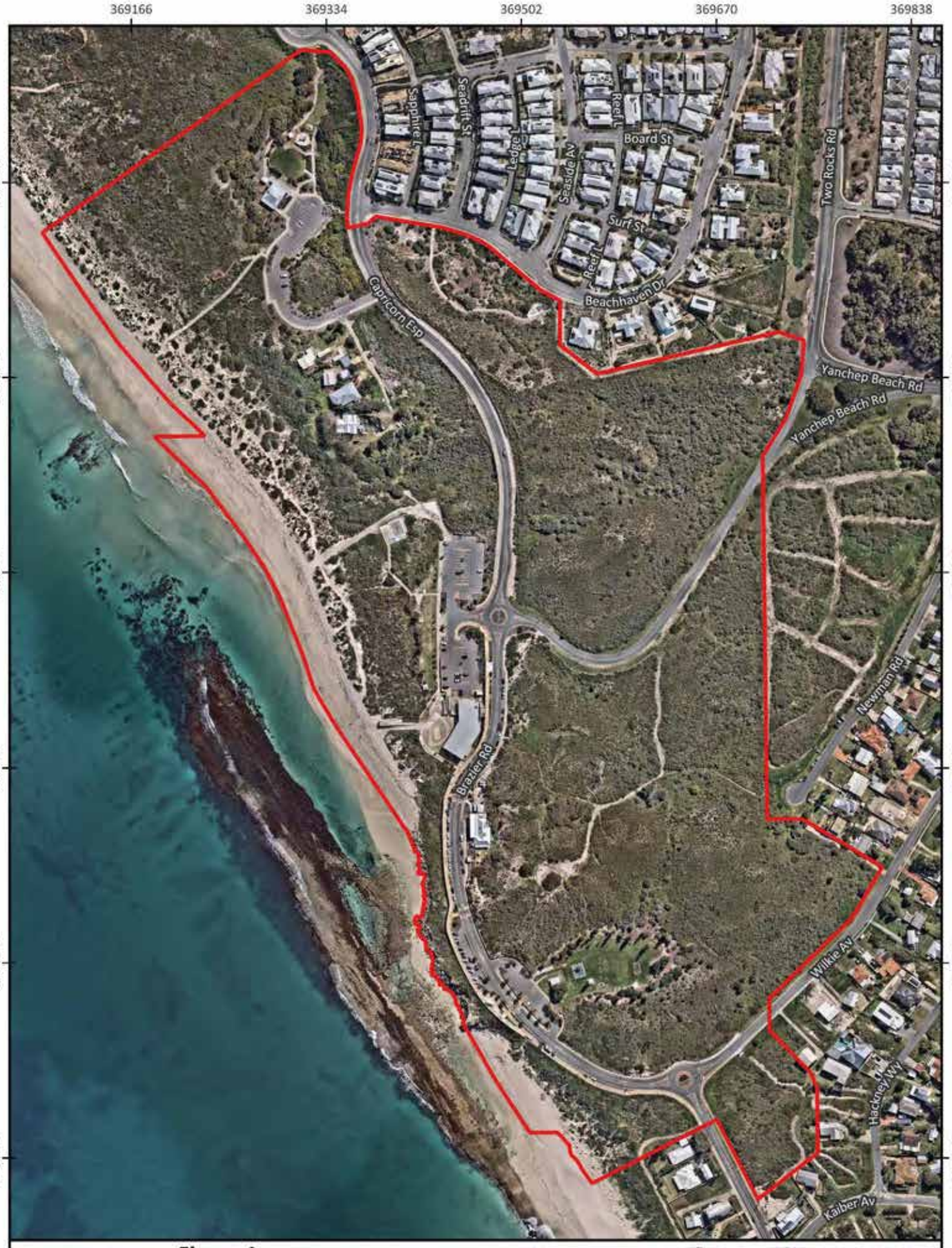


Figure 1:
Site Location

Yanchep, Western Australia

Legend
Site Boundary

Client:	UDLA
Date:	03/11/2025
Created by:	Z.Stoney
Image Source:	Nearmap, 2025
Datum:	GDA2020 / MGA zone 50
Scale:	1: 4200

0 50 100 m

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2.0 Site Characteristics

2.1 Regional Context

The site is located within the Swan Coastal Plain (SWA02) IBRA subregion (Department of Climate Change, Energy, the Environment and Water (DCCEEW), 2024). This region is characterised by low lying coastal plain covered with woodlands. This subregion is generally comprised of sandy soils dominated by Banksia or Tuarts (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 (BoM) (2025); Gingin Aero, site number 009178, the region is subject to:

- Average rainfall of 636.4 mm per annum, with majority of rainfall between June and August (1996 - 2025) (BoM, 2025).
- Average maximum temperature range of 18.4 °C in winter to 33.3 °C in summer (1996 - 2025) (BoM, 2025).
- Average minimum temperature ranging from 6.6 °C in winter to 17.0 °C in summer (1996 - 2025) (BoM, 2025).

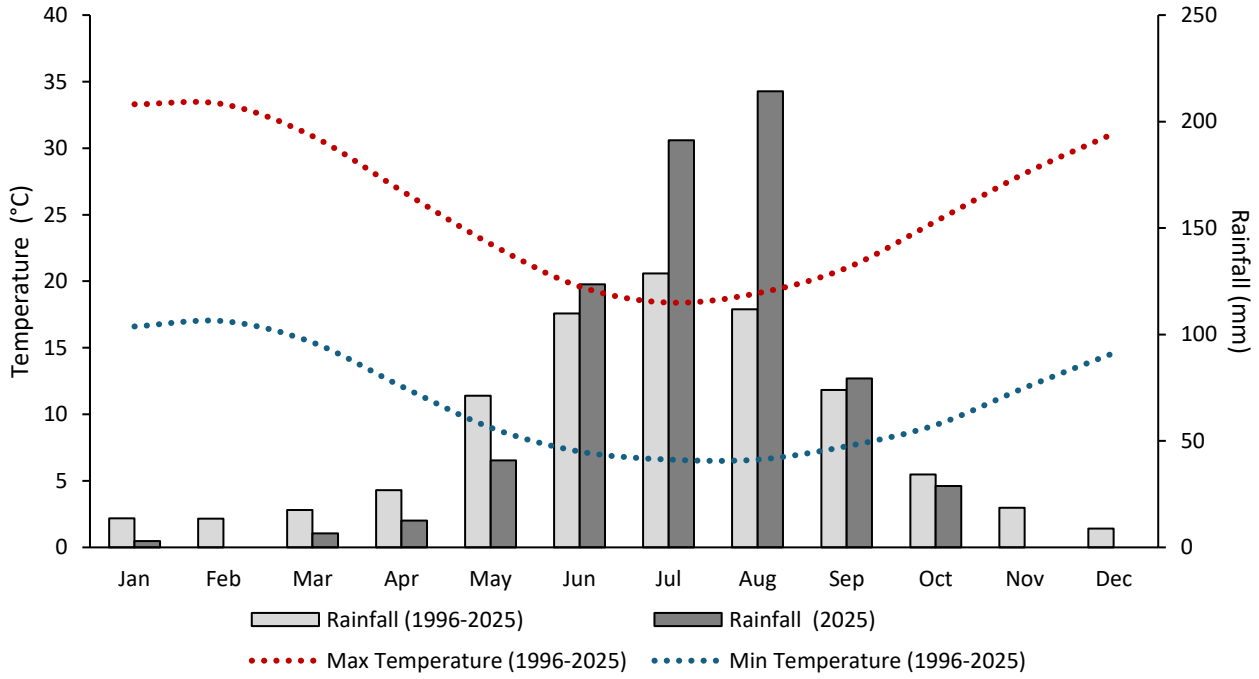


Figure 2: Temperature and rainfall data for the Gingin Aero, site number 009178. Source: BoM, 2025

2.3 Topography and Soils

A total of seven soil types were identified on site (Department of Primary Industries and Regional Development (DPIRD), 2022). The site ranges from 28 m Australian Height Datum (AHD) in the central dunes corner and 2 m AHD along the foreshore (DPRID, 2019). (Table 1 and Figure 3).

Table 1: Soil types within the site

Name	Symbol	Description
Quindalup South youngest dune phase	211Qu__Q4	The youngest phase. Irregular dunes with slopes up to 20%. Loose pale brown calcareous sand with no soil profile development.
Quindalup South shallow sand flat phase	211Qu__Qs	Undulating landscapes with shallow calcareous sands over limestone and much rock outcrop.
Quindalup South deep sand flat phase	211Qu__Qp	Undulating landscapes with deep calcareous sands overlying limestone. Soils have dark grey-brown sand to about 50 cm and then pale brown sand. Remnants of hummocks are often present.
Quindalup South water, beach phase	211QuU_BEACH	Beach.
Quindalup South second dune phase	211Qu__Q2	The second phase. A complex pattern of dunes with moderate relief. Calcareous sands have organic staining to about 20 cm, passing into pale brown sand; some cementation below 1 m.
Quindalup South third dune phase	211Qu__Q3	The third phase. Irregular dunes with high relief and slopes up to 20%. Loose calcareous sand with little surface organic staining and incipient cementation at depth.
Quindalup South oldest dune phase	211Qu__Q1	The oldest phase. Dunes or remnants with low relief. Calcareous sands have organic staining to about 30 cm, overlying pale brown sand with definite cementation below 1 m.

2.4 Vegetation Complex

One vegetation complex exists within the site boundary, the Quindalup Complex. It is described by Heddle, Loneragan, and Havel (1980) as a coastal dune complex consisting mainly of two alliances - the strand and fore-dune alliance and the mobile and stable dune alliance. Local variations include the low closed forest of *Melaleuca lanceolata* (Rottnest Teatree) - *Callitris preissii* (Rottnest Island Pine), the closed scrub of *Acacia rostellifera* (Summer-scented Wattle) and the low closed *Agonis flexuosa* (Peppermint) forest of Geographe Bay. The pre-European extent of this vegetation complex remaining is:

- 60.49 % within the Swan Coastal Plain
- 16.16 % within the City of Wanneroo (Government of Western Australia, 2019).

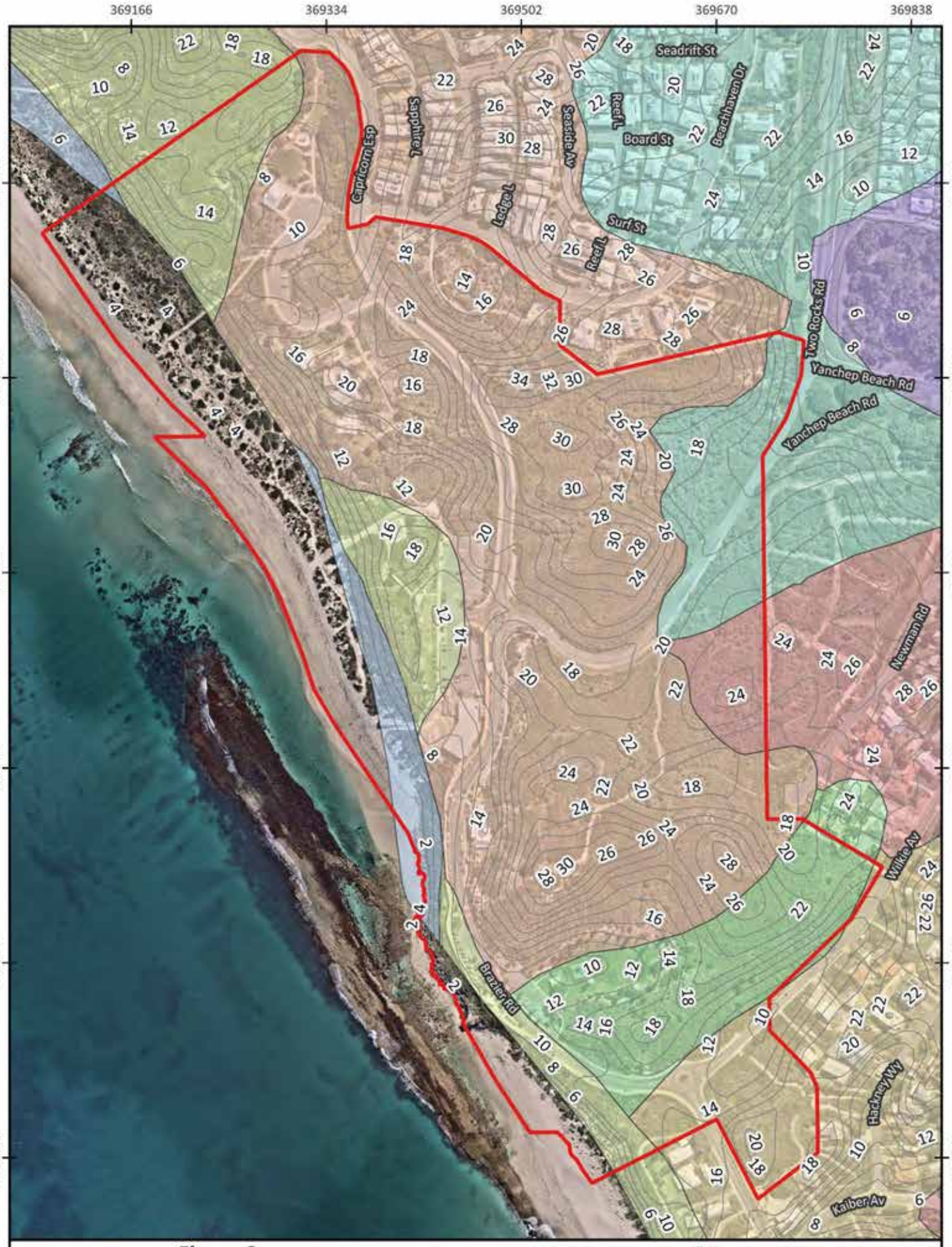


Figure 3:
Soil and Topography

Yanchep, Western Australia

Legend

- Contour (2 m)
- 211Qu__Q1
- 211Qu__Q2
- 211Qu__Q3
- 211Qu__Q4
- 211Qu__Qp
- 211Qu__Qs
- 211QuU_BEACH
- 211Sp__Ky
- Site Boundary

Client:	UDLA
Date:	03/11/2025
Created by:	Z.Stoney
Image Source:	Nearmap, 2025
Datum:	GDA2020 / MGA zone 50
Scale:	1: 4200

0 50 100 m

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2.5 Heritage Values

Yanchep Lagoon is within the Whadjuk People Indigenous Land Use Agreement area. Two sites are registered as Aboriginal Cultural Heritage, Yanchep Beach (ID 17599) and Limestone Reef (ID 17596) (DPLH, 2025), with only site 17599 occurring within the site boundary. The entirety of Yanchep Beach is registered as a creation/dreamtime narrative with no gender/initiation restriction.

2.6 Ecological Linkages

Yanchep Lagoon is within an environmentally sensitive area (ESA) and a mapped ecological linkage. The ESA within Yanchep Lagoon has been identified as containing Bush Forever site no. 397 known as the coastal strip from Wilbinga to Mindarie (DPLH, 2019). The bush forever site meets the section criteria of representation of ecological communities, rarity, maintaining ecological processes or natural systems, general criteria for the protection of wetland, and streamline and estuarine fringing vegetation and coastal vegetation.

Ecological linkages provide connectivity between patches of remnant vegetation facilitating the maintenance of ecological processes and the movement of organism within and across a landscape. Perth Regional Ecological Linkages were identified by the Perth Biodiversity Project with input from the Department of Environment, Department of Conservation and Land Management (CALM) and the Department for Planning and Infrastructure (WALGA, 2004). Perth Regional Ecological Linkage No. 1 intersects with Yanchep Lagoon, this ecological linkage links the Bush Forever sites 406 through to 315 and maintains connectivity along the coast for the Quindalup Complex (Figure 4).

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Figure 4:
Ecological Linkages and Native Vegetation Extents

Yanchep, Western Australia

Legend

- Ecological Linkages
- Native Vegetation Extent
- Site Boundary

Client:	UDLA
Date:	03/11/2025
Created by:	Z.Stoney
Image Source:	Nearmap, 2025
Datum:	GDA2020 / MGA zone 50
Scale:	1: 4200

0 50 100 m

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3.0 Methodology

3.1 Desktop and Literature Review

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

- likely native and non-native fauna species present
- likely presence of threatened or priority fauna species.

The following databases were accessed to obtain relevant information:

- NatureMap (DBCA, 2025a)
- Protected Matters Search Tool (DCCEEW, 2025) (Appendix 1)
- Threatened and priority fauna database searches (DBCA, 2025b)
- Carnaby's Cockatoo Areas requiring investigation as feeding habitat in the SCP (DBCA-057) (DBCA, 2018a)
- Carnaby's Cockatoo Confirmed Breeding Areas within the Swan Coastal Plain and Jarrah Forest IBRA region (DBCA, 2018b)
- Carnaby's Cockatoo Unconfirmed Breeding Areas within the Swan Coastal Plain and Jarrah Forest IBRA regions (DBCA, 2018c).

Conservation code definitions for the State and Commonwealth are provided in Appendix 2.

3.2 On-ground Fauna Survey

Natural Area operates under a Scientific Use License (U317/2022-2024). This licence permits Natural Area to use animals for scientific purposes in accordance with the Australian code for the care and use of animals for scientific purposes (National Health and Medical Research Council, 2013). In addition, Natural Area is also approved by the DPIRD Wildlife Animal Ethics Committee (WAEC) to undertake biological assessments within the Swan Coastal Plain Bioregion (WAEC Permit No. 22-06-69). Natural Area obtained a Fauna Taking (biological assessment) Licence from DBCA (licence no.: BA27001414) prior to completing the detailed fauna survey.

The fauna survey was conducted in accordance with a detailed fauna survey as outlined in the *Technical Guidance, Terrestrial vertebrate fauna surveys for environmental impact assessment* (EPA, 2020). Natural Area environmental consultants undertook the survey between October 13 and 22, 2025, with survey activities including:

- Trapping over eight consecutive days (seven nights) from October 13 to 20, using trap-lines, box traps, trail cameras, and acoustic recorders (Table 3, Figure 5).
- Installing seven trap-lines across a range of fauna habitat types which included dry pitfalls and funnel traps along a drift fence. Local vegetation was used to cover funnel traps and placed in pitfall buckets to provide shelter for trapped fauna.
- Installing 18 box traps with universal bait (oats and peanut butter), with newspaper placed inside for bedding and traps covered with a hessian bag and foliage to provide protection from the elements.
- All trap and trap line coordinates were recorded using a hand-help GPS and marked with flagging tape.

- Checking traps twice daily; once within three hours of sunrise and again after peak reptile activity as per WAEC guidelines (DPIRD, 2024). In addition, if the maximum is forecast to be 36 °C or higher, traps were closed after the early morning check and reopened in the late afternoon.
- All species captured were recorded and released back into site.
- Active searching included searching under logs, rocks, and hand raking through leaf litter.
- Static bird census with a five-minute census undertaken at each trap line location recording visual observations of birds and calls heard.
- Setting out two motion activated trail cameras and one passive acoustic recorder in high-activity areas to capture images and recordings of evasive/trap-shy animals.
- Walking the site to record opportunistic sightings or signs of birds, reptiles, and mammals, including calls, tracks, diggings, and scats.
- Undertaking a nocturnal survey (October 22) using spotlighting, thermal detection, and ultrasonic bat detectors (Echo Meter Touch 2 Pro).
- Recording the outcomes of the trapping and observation activities.

Table 3: Total trap nights

Number of Traps	Number of Nights	Number of Trap nights
19 Pitfalls	7	133
14 Funnels		98
18 Box Traps		126
2 Trail Cameras		14
1 Acoustic Recorder		7
	Total:	**378**

3.2.1 Weather Conditions

Local weather conditions can affect fauna activity, with low temperatures and rain likely to reduce mammals and reptile activity. The trapping period experienced a range of weather conditions with most days having warm sunny mornings, turning to colder mornings with some rain later in the trapping event. Temperatures during the trapping period ranged between 5.0°C and 33.5°C according to the Gingin Aero weather station (site number 009178) (BoM, 2025), with local site temperatures likely to be at some variance with these records due to the distance between the site and the weather station (approx. 23 km). Rainfall during the trapping period was recorded at 1.8 mm, with all rainfall occurring from 19 to 20 October (BoM, 2025). Rainfall observations were consistent with observations on site during the trapping period.

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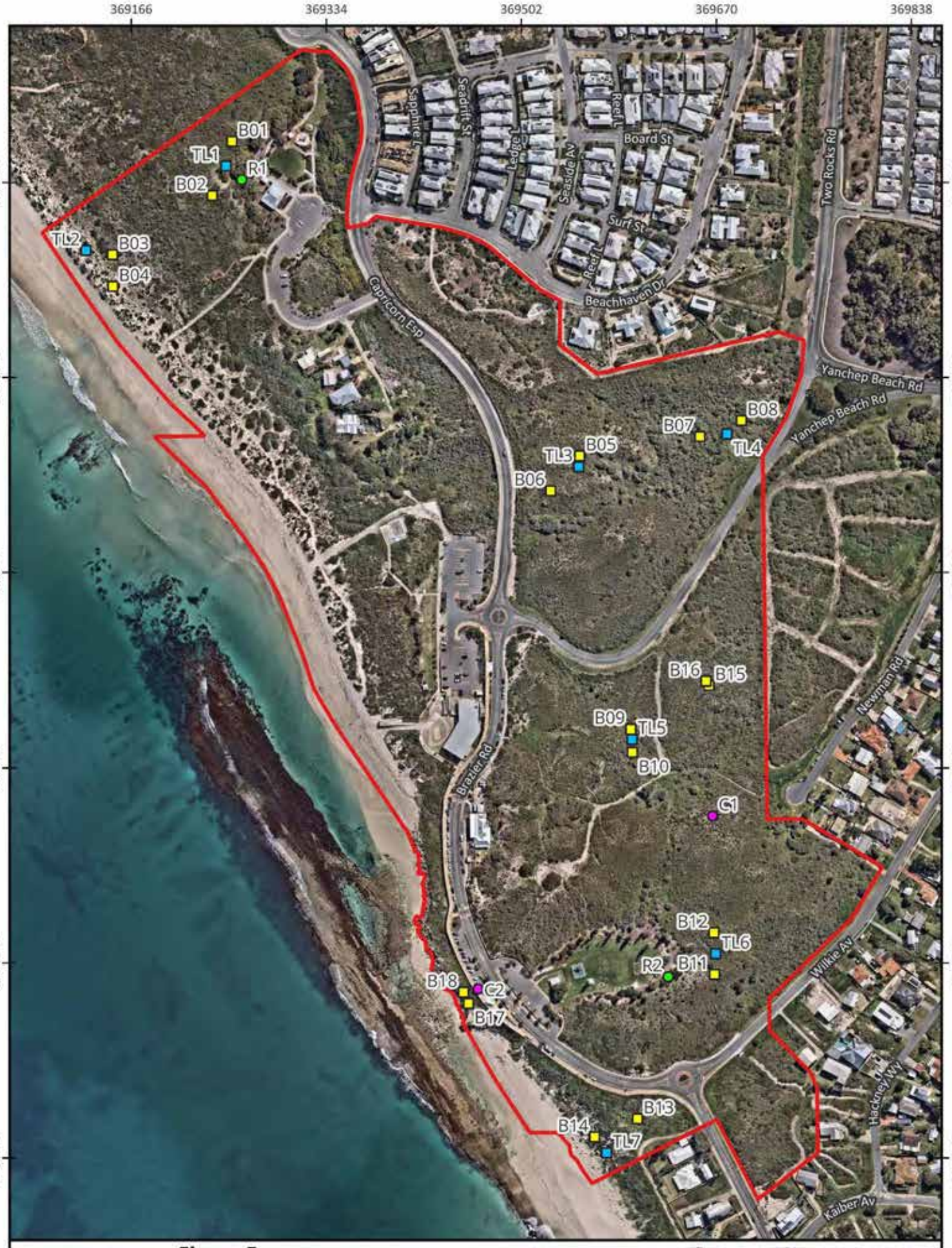


Figure 5:
Trap Locations

Yanchep, Western Australia

Legend

- Box Trap
- Audio Recorder
- Trail Camera
- Trap Line
- Site Boundary

Client:	UDLA
Date:	26/11/2025
Created by:	D. Morrison
Image Source:	Nearmap, 2025
Datum:	GDA2020 / MGA zone 50
Scale:	1: 4200

0 50 100 m

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3.3 Black Cockatoo Habitat Assessment

A black cockatoo habitat assessment was conducted in accordance with *Referral guideline for 3 WA threatened black cockatoo species: Carnaby's Cockatoo, Baudin's Cockatoo and the Forest Red-tailed Black-cockatoo* (DAWE, 2022).

Natural Area environmental scientists undertook the survey between October 14 and 18, 2025, with key data recorded using QField software on a handheld tablet. Survey activities included:

- Traversing the whole site in a systematic grid search.
- Recording the location and evidence of breeding, roosting and foraging activities (e.g. Chew marks, feathers, scats, chewed nuts).
- Marking the GPS locations of each habitat tree with a diameter at breast height (DBH) ≥ 500 mm.
- Recording the height, DBH, health, and species of each habitat tree.
- Recording evidence of hollows, including size, type, and location within the tree.
- Recording foraging habitat, vegetation type, and condition.

3.3.1 Breeding

Breeding habitat for black cockatoos consists of woodland or forest, and a breeding tree is considered as any tree species where suitable nest hollows are present (Department of Agriculture, Water, and the Environment (Department of Agriculture, Water and the Environment (DAWE), 2022). Suitable nest hollows are typically found in mature trees with a DBH > 500mm.

A scoring tool was applied to each individual tree using the Bamford tree scoring matrix (Bamford, 2016), in addition to the assessment against the Commonwealth guidelines (DAWE, 2022). The Bamford tree scoring matrix (Table 4) classes trees according to their individual characteristics (evidence of use, type, and size of hollow present).

Table 4: Bamford (2016) habitat tree scoring matrix

Class	Description of Trees and Hollows/ Activity
1	Active nest observed; adult (or immature) bird seen entering or emerging from hollow.
2	Hollow of suitable size and angle (i.e. near vertical) visible with chew marks around entrance.
3	Potentially suitable hollow visible but no chew marks present; or potentially suitable hollow present (as suggested by structure of tree, such as large, vertical trunk broken off at a height of >10 m).
4	Tree with large hollows or broken branches that might contain large hollows, but hollows or potential hollows are not vertical or near vertical; thus, a tree with or likely to have hollows of sufficient size but not to have hollows of the angle preferred by black cockatoos.
5	Tree lacking large hollows or broken branches that might have large hollows; a tree with more or less intact branches and a spreading crown.

3.3.2 Roosting Habitat

Potential roosting habitat was mapped out during the diurnal survey, with a dusk roosting survey conducted in concurrence with the nocturnal fauna survey on October 22, 2025. Potential habitat trees identified

during the diurnal survey were inspected using thermal cameras and spotlights at dusk and night to confirm the presence or absence of roosting black cockatoos within the site.

3.3.3 Foraging Habitat

To assess the quality of black cockatoo foraging habitat within the site, the Commonwealth foraging quality scoring tool (DAWE, 2022) was utilised. The black cockatoo foraging quality scoring tool assigns a habitat score between 1 and 10, with a score of 10 representing the maximum possible score and very high-quality foraging habitat. Contextual adjustors (attributes that improve or reduce functionality of foraging habitat) including tree species composition, distances from known breeding and roosting sites, distance from other foraging habitat, evidence of feeding debris, and presence of disease e.g. *Phytophthora* spp. or Marri Canker were used to evaluate habitat quality. The scoring tool template is provided in Table 5.

Foraging habitat data collected included:

- Determining the foraging value of vegetation for black cockatoos in accordance with DAWE's foraging quality scoring tool (DAWE, 2022) with results provided in tabular format.
- Recording evidence of black cockatoo foraging signs or debris including droppings, feathers, and chewed cones or nuts.
- Recording presence, extent and density of all plant species that provide foraging, including non-native food sources used by black cockatoos.
- Determining distribution and size of foraging habitat in proximity (up to 12 km) to the impact site.
- Acquiring landscape characteristics around the impact site, including details of night roosting and breeding habitat in proximity.

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Table 5: Commonwealth foraging quality scoring tool template

Starting score	Baudin's Cockatoo	Carnaby's Cockatoo	Forest Red-tailed Black-Cockatoo
10	Start at a score of 10 if your site is native eucalypt woodlands and forest, and proteaceous woodland and heath, particularly Marri, within the range of the species, including along roadsides and parkland cleared areas. Can include planted vegetation. This tool only applies to sites equal to or larger than 1 hectare in size.	Start at a score of 10 if your site is native shrubland, kwongan heathland or woodland, dominated by proteaceous plant species such as *Banksia* spp. (including *Dryandra* spp.), *Hakea* spp. and *Grevillea* spp., as well as native eucalypt woodland and forest that contains foraging species, within the range of the species, including along roadsides and parkland cleared areas. Also includes planted native vegetation. This tool only applies to sites equal to or larger than 1 hectare in size.	Start at a score of 10 if your site is Jarrah or Marri woodland and/or forest, or if it is on the edge of Karri forest, or if Wandoo and Blackbutt occur on the site, within the range of the subspecies, including along roadsides and parkland cleared areas. This tool only applies to sites equal to or larger than 1 hectare in size
Attribute	**Context adjustor (attributes reducing functionality of foraging habitat)**		
Foraging potential	Subtract 2 from your score if there is no evidence of feeding debris on your site.	Subtract 2 from your score if there is no evidence of feeding debris on your site.	Subtract 2 from your score if there is no evidence of feeding debris on your site
Connectivity	Subtract 2 from your score if you have evidence to conclude that there is no other foraging habitat within 12 km of your site.	Subtract 2 from your score if you have evidence to conclude that there is no other foraging habitat within 12 km of your site.	Subtract 2 from your score if you have evidence to conclude that there is no other foraging habitat within 12 km of your site.
Proximity to breeding	Subtract 2 if you have evidence to conclude that your site is more than 12 km from breeding habitat.	Subtract 2 if you have evidence to conclude that your site is more than 12 km from breeding habitat	Subtract 2 if you have evidence to conclude that your site is more than 12 km from breeding habitat.
Proximity to roosting	Subtract 1 if you have evidence to conclude that your site is more than 20 km from a known night roosting habitat.	Subtract 1 if you have evidence to conclude that your site is more than 20 km from a known night roosting habitat.	Subtract 1 if you have evidence to conclude that your site is more than 20 km from a known night roosting habitat.
Impact from significant plant disease	Subtract 1 if your site has disease present (e.g. *Phytophthora* spp. or Marri canker) and the disease is affecting more than 50% of the preferred food plants present.	Subtract 1 if your site has disease present (e.g. *Phytophthora* spp. or Marri canker) and the disease is affecting more than 50% of the preferred food plants present.	Subtract 1 if your site has disease present (e.g. *Phytophthora* spp. or Marri canker) and the disease is affecting more than 50% of the preferred food plants present.
Total score	Enter score	Enter score	Enter score
Appraisal	To support your habitat score, you should provide an overall appraisal of the habitat on the impact site and within 20km of the impact area to clearly explain and justify the score. It should include discussion on the foraging habitat's proximity to other resources (e.g. exact distance to proximate resources), frequency of use of proximate sites, the degree of evidence and description of vegetation type and condition.		

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3.4 Limitations

The limitations associated with the detailed fauna survey and black cockatoo habitat assessment undertaken within the site are outlined in Table 6 below.

Table 6: Survey limitations

Potential Limitation	Degree of Limitation	Comments
Availability of contextual information	None	Local and regional contextual information was readily available.
Competency/ experience of team	None	Survey activities were undertaken by experienced environmental consultants who have extensive experience undertaking detailed fauna surveys and black cockatoo habitat assessments within the Swan Coastal Plain.
Survey effort and extent	Minor	The detailed fauna survey was conducted over eight days and seven nights without hinderance. This included a total of 378 trap nights across 9 fauna habitats: OH (42), CH (77), MT (49), CS (147), OF (49), SL (14), BF (0), IF (O), CP (0) (Refer to section 4.1.2). BF, IF, and CP were not trappable due to high public access. Sample bias may influence results due to the number of traps per habitat type. A black cockatoo habitat assessment and nocturnal survey was also conducted to the intended extent without hinderance. Invertebrate and marine animals were not included in the scope of works.
Identification issues	None	All species observed and recorded were able to be identified to a species level.
Access restrictions	Minor	During the survey no access restrictions impeded surveying efforts. Public activity within the site restricted the locations of traps, cameras, and acoustic recorders to areas with low risk of public interference. Private properties within the site boundary were not accessed.
Survey timing	None	The survey was undertaken during spring which is the optimal season for fauna surveys within the Swan Coastal Plain subregion. With many migratory bird species potentially occurring within the site, October to March is the optimal time to survey migratory birds within the Swan Coastal Plain. The length of the survey

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Potential Limitation	Degree of Limitation	Comments
		provided trapping opportunities throughout a range of weather conditions, which were mostly moderately warm and sunny, with rainy periods towards the end of the trapping period. Weather conditions are unlikely to have affected the survey results.
Disturbances	None	No recent disturbances which may have had an impact on survey results (e.g. fire, recent clearing or floods) were identified during the survey.

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4.0 Results

4.1 Fauna Survey Results

4.1.1 Desktop Survey

A desktop survey of online databases indicated the potential for a total of 59 conservation significant fauna species to occur within 10 km of the survey area (Table 7). NatureMap indicated 35 conservation significant species listed under the BC Act as potentially occurring within a 10 km radius of the site (DBCA, 2025a). The PMST indicated 39 threatened species listed under the EPBC Act as potentially occurring within a 10 km radius of the site (DCCEEW, 2025) (Appendix 1). A review of the DBCA threatened and priority fauna species database indicated the potential for 35 conservation significant fauna species to occur within a 10 km radius of the site (DBCA, 2025b).

Both abiotic (soil, climate) and biotic (food resources, predator pressure) factors will determine the suitability of habitats for specific fauna assemblages based on their ecological requirements. Evaluating the site locality, existing conditions and known home ranges, Natural Area determined that 11 species (highlighted green in Table 7) have the potential to be present within the survey site. Conservation codes are provided in Appendix 2.

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

Species Name	Common Name	Cons Code (Cwlth)	Cons Code (WA)	Nature Map	PMST	DBCA
Bird						
Anous tenuirostris melanops	Australian lesser Noddy	VU	EN	X	X	X
Apus pacificus	Fork-tailed Swift	MI	MI	X		X
Ardenna grisea	Sooty Shearwater	VU & MI			X	
Arenaria interpres	Ruddy Turnstone	MI	MI	X		X
Calidris acuminata	Sharp-tailed Sandpiper	MI	MI	X	X	X
Calidris canutus	Red Knot	EN & MI	EN	X	X	X
Calidris ferruginea	Curlew Sandpiper	CR & MI	CR	X	X	X
Calidris ruficollis	Red-necked Stint	MI	MI	X		X
Calidris subminuta	Long-toed Stint	MI	MI	X		X
Calidris tenuirostris	Great Knot	CR & MI	CR	X		X
Calyptorhynchus banksii naso	Forest Red-tailed Black-Cockatoo, Karrak	VU	VU		X	
Charadrius leschenaultii	Greater Sand Plover, Large Sand Plover	VU & MI	VU		X	

Species Name	Common Name	Cons Code (Cwlth)	Cons Code (WA)	Nature Map	PMST	DBCA
Diomedea amsterdamensis	Amsterdam Albatross	EN & MI	CR		X	
Diomedea epomophora	Southern Royal Albatross	VU & MI	VU		X	
Diomedea exulans	Wandering Albatross	VU & MI	VU		X	
Halobaena caerulea	Blue Petrel	VU			X	
Hydroprogne caspia	Caspian Tern	MI	MI	X		X
Leipoa ocellata	Malleefowl	VU	VU		X	
Limosa lapponica	Bar-tailed Godwit	MI	MI	X		X
Limosa lapponica menzbieri	Northern Siberian Bar-tailed Godwit, Russkoye Bar-tailed Godwit	EN	CR		X	
Macronectes giganteus	Southern Giant Petrel	EN & MI	MI	X	X	X
Macronectes halli	Northern Giant Petrel	VU & MI			X	
Numenius madagascariensis	Eastern Curlew, Far Eastern Curlew	CR	CR		X	
Oxyura australis	Blue-Billed Duck		P4	X		X
Pachyptila turtur subantarctica	Fairy Prion (southern)	VU			X	
Phaethon rubricauda westralis	Red-tailed Tropicbird (Indian Ocean), Indian Ocean Red-tailed Tropicbird	EN			X	
Phoebetria fusca	Sooty Albatross	VU & MI	EN		X	
Pluvialis squatarola	Grey Plover	MI	MI	X		X
Pterodroma mollis	Soft-plumaged Petrel	VU			X	
Rostratula australis	Australian Painted Snipe	EN	EN		X	
Sterna dougallii	Roseate Tern	MI	MI	X		X
Sternula albifrons	Little Tern	VU & MI			X	
Sternula nereis nereis	Fairy Tern	VU	VU	X	X	X
Thalassarche carteri	Indian Yellow-nosed Albatross	VU & MI			X	

Species Name	Common Name	Cons Code (Cwlth)	Cons Code (WA)	Nature Map	PMST	DBCA
Thalassarche cauta	Shy Albatross	EN & MI	EN		X	
Thalassarche impavida	Campbell Albatross, Campbell Black-browed Albatross	VU	VU		X	
Thalassarche melanophris	Black-browed Albatross	VU & MI	EN	X	X	X
Thalassarche steadi	White-capped Albatross	VU & MI			X	
Thalasseus bergii	Crested Tern	MI	MI	X		X
Tringa nebularia	Common Greenshank	MI	MI	X	X	X
Tyto novaehollandiae novaehollandiae	Masked Owl (Southwest)		P3	X		X
Zanda latirostris	Carnaby's Cockatoo	EN	EN	X	X	X
Mammal						
Arctocephalus forsteri	New Zealand Fur Seal		OS	X		X
Balaenoptera musculus	Blue Whale	EN & MI	EN		X	
Bettongia penicillata ogilbyi	Woylie, Brush-tailed Bettong	EN	CR	X		X
Dasyurus geoffroii	Chuditch, Western quoll	VU	VU	X	X	X
Eubalaena australis	Southern right whale	EN & MI	VU	X	X	X
Hydromys chrysogaster	Water-rat, Rakali		P4	X		X
Isoodon fusciventer	Quenda, Southwestern Brown Bandicoot		P4	X		X
Macroderma gigas	Ghost Bat	VU	VU		X	
Megaptera novaeangliae	Humpback Whale	MI	CD & MI	X		X
Neophoca cinerea	Australian sea-Lion	EN	EN	X	X	X
Notamacropus irma	Western Brush Wallaby		P4	X		X
Reptile						
Caretta caretta	Loggerhead Turtle	EN & MI	EN	X	X	X
Chelonia mydas	Green Turtle	VU & MI	VU	X	X	X

Species Name	Common Name	Cons Code (Cwlth)	Cons Code (WA)	Nature Map	PMST	DBCA
Delma concinna major	Javelin Legless Lizard (Shark Bay)		P1	X		X
Dermochelys coriacea	Leatherback Turtle	EN & MI	VU	X	X	X
Natator depressus	Flatback Turtle	VU & MI	VU		X	
Neelaps calonotos	Black-striped Burrowing Snake		P3	X		X

4.1.2 Habitat Assessment

A total of nine fauna habitat types were identified within the site, distinguished by vegetation structure, human disturbances, and geographic factors including proximity to the coastline (Table 8, Figure 6).

Table 8: Fauna habitat types within the Yanchep Lagoon

Habitat Type (Code)	Description	Photo
Beachfront (BF)	White sand beaches on open coastline. Washed up seaweed and crab populations provide foraging opportunities for shorebirds and predatory fauna such as Nankeen Kestrel (*Falco cenchroides*) and Foxes (**Vulpes vulpes*). High human activity and domestic dog presence reduces fauna densities.	
Coastal Open Heath (OH)	Low density of coastal shrubs amongst dune systems and open sand. Limited shelter and exposure to the elements and predators restricts terrestrial fauna density and provides foraging opportunities for predatory fauna such as foxes and kestrels. Coastal bird species such as cormorants and gulls are common.	

Habitat Type (Code)	Description	Photo
Coastal Closed Heath (CH)	Dense assemblages of coastal shrubs, sedges and grasses amongst dune systems and some rock formations. Shrubs and rock formations provide shelter and foraging opportunities for reptiles and small bird species. Predatory species such as kestrels and foxes are less common, with high prevalence of larger reptiles such as King's Skink (*Egernia kingii*) and Dugite (*Pseudonaja affinis*).	
Mixed trees over cleared parkland (MT)	Mature planted trees adjacent to cleared areas and infrastructure. Large trees provide breeding, roosting, and foraging habitat for bird and bat species. Understory is sparse with little to no reptile activity evident. Proximity to open spaces and urban lighting that attracts insects at night likely increases nocturnal fauna activity.	
Cleared Parkland (CP)	Open grassland provides foraging opportunities for common urban species such as Willie Wagtails (*Rhipidura leucophrys*) and Ravens (*Corvus coronoides*).	
Coastal Shrublands (CS)	Rolling hills with open and closed shrublands connected by dense grasses and sedges. Sparse trees provide some habitat for foraging birds, while fauna assemblages are dominated by reptile activity within the dense shrubs. Soil conducive to burrowing snakes in some areas. Breaks in shrub coverage provide basking opportunities for reptiles such as Dugites (*Pseudonaja affinis*) and Bobtails (*Tiliqua rugosa*).	

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Habitat Type (Code)	Description	Photo
Open Forest (OF)	Tree coverage and shrubs provide breeding, roosting, and foraging habitat for bird and bat species. Trees <5 m in height with dense understory provide ample habitat for reptile and mammal species. Soil is suitable for burrowing reptiles in some areas. High occurrence of rabbit and fox diggings and warrens/dens. Tree coverage suitable for bats.	
Open Shrubland over Limestone (SL)	Sparse shrubs with exposed limestone. Low density shrubs provide little shelter, favouring transient species such as Bobtails and Rabbits. Low quality foraging for birds, mammals, and reptiles results in low fauna density.	
Infrastructure (IF)	Infrastructure such as buildings, roads, boardwalks, and streetlights provide some habitat and shelter for opportunistic species. Welcome Swallows (*Hirundo neoxena*) observed nesting within the outdoor ceilings of multiple buildings, King's skinks (*Egernia kingii*) observed sheltering under boardwalks, and Nankeen Kestrels (*Falco cenchroides*) observed perching on streetlights.	

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Figure 6:
Fauna Habitat

Yanchep, Western Australia

Legend

BF	MT
CH	OF
CP	OH
CS	SL
IF	Site Boundary

Client:	UDLA
Date:	26/11/2025
Created by:	D. Morrison
Image Source:	Nearmap, 2025
Datum:	GDA2020 / MGA zone 50
Scale:	1: 4200

0 50 100 m

N

4.1.3 Field Survey

A total of 51 fauna species were identified during the detailed fauna survey, including 45 native and 6 introduced species. All species recorded were identified to the species level. All captured native species were released back into the site, while captured pest species were humanely euthanised. A species list outlining number of recordings and locations of species by habitat type is provided in Table 9 with examples of native fauna provided in Figure 7. Further details of the habitat type and observation methods are provided in Appendix 3.

One conservation significant fauna species was recorded during the field survey, the Crested Tern (*Thalasseus bergii*), listed as Migratory (MI) under the BC Act and EPBC Act. Over 10 individuals were observed resting in seaweed on the beachfront, including juveniles.

Two bat species were recorded during the survey using ultrasonic audio recording devices and audio analysis software (Figure 7). Gould's Wattled Bat (*Chalinolobus gouldii*) was recorded within both areas of habitat type MT and White-striped Free-tailed Bat (*Austronomus australis*) was recorded within habitat type OF.

Fauna species were observed utilising infrastructure throughout the site. Structures such as fencing, boardwalks, and streetlights were used as perching for bird species, boardwalks and decks were used as shelter for reptile species, and outdoor ceilings and small gaps in buildings were observed being used for nesting by Welcome Swallows (*Hirundo neoxena*) (Figure 8).

Six introduced fauna species were recorded during the detailed fauna survey (Figure 9), including two declared pests (Declared Pest Legal Status and Control Categories outlined in Appendix 4):

- Red Fox (**Vulpes vulpes*) - Declared Pest - s22(2) (C1 Prohibited, C3 Prohibited)
- Rabbit (**Oryctolagus cuniculus*) - Declared Pest - s22(2) (C3 Prohibited).

Both fox dens and rabbit warrens were present within the site, as well as evidence of environmental impacts such as diggings and bird kills (feathers found at locations with evidence of regular fox activity) (Figures 9 and 10). One cat was observed within the site during the nocturnal survey, deemed likely to be domestic due to the coat coloration, and proximity to houses.

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Table 9: Fauna observations within the Yanchep Lagoon site boundary. * denotes introduced species

Family	Species	Common Name	Observation Method	No. Recorded	Habitat Type
Bird					
Acanthizidae	*Acanthiza inornata*	Western Thornbill	Seen	2	CH
Cacatuidae	*Cacatua sanguinea*	Little Corella	Seen	5	CS, IF
Cuculidae	*Chalcites basalis*	Horsfield's Bronze Cuckoo	Seen	1	CH
Laridae	*Chroicocephalus novaehollandiae*	Silver Gull	Seen	>10	BF, IF
Campephagidae	*Coracina novaehollandiae*	Black-faced Cuckooshrike	Seen	5	OH, CH, CS
Corvidae	*Corvus coronoides*	Australian Raven	Seen	>10	CH, CP, CS, IF
Artamidae	*Cracticus torquatus*	Grey Butcherbird	Seen	2	OCS
Cacatuidae	*Eolophus roseicapilla*	Galah	Seen	6	CP, CS, IF
Falconidae	*Falco cenchroides*	Nankeen Kestrel	Seen	2	BF, OH, CH, IF
Meliphagidae	*Gavicalis virescens*	Singing Honeyeater	Seen	>10	CH, MT, CS, OF, SL
Artamidae	*Gymnorhina tibicen*	Australian Magpie	Seen	4	CP, CS
Hirundinidae	*Hirundo neoxena*	Welcome Swallow	Seen	>10	CH, MT, CS, IF
Laridae	*Larus pacificus*	Pacific Gull	Seen	>10	BF
Meliphagidae	*Lichmera indistincta*	Brown Honeyeater	Seen	8	CH, MT, CS
Maluridae	*Malurus assimilis assimilis*	Purple-backed Fairywren	Seen	2	CH
Maluridae	*Malurus splendens*	Splendid Fairywren	Seen	10	CH, CS, SL
Phalacrocoracidae	*Microcarbo melanoleucos*	Little Pied Cormorant	Seen	4	BF
Strigidae	*Ninox boobook*	Boobook Owl	Seen	1	MT

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Family	Species	Common Name	Observation Method	No. Recorded	Habitat Type
Phalacrocoracidae	*Phalacrocorax varius*	Pied Cormorant	Seen	7	BF, CH
Meliphagidae	*Phylidonyris novaehollandiae*	New Holland Honeyeater	Seen	>10	CH, MT, CP, CS, OF
Petroicidae	*Quoyornis georgianus*	White-breasted Robin	Seen	1	MT
Rhipiduridae	*Rhipidura leucophrys*	Willie Wagtail	Seen	>10	MT, CP, CS, IF
Acanthizidae	*Sericornis maculatus maculatus*	White-browed Scrubwren	Seen	2	CH
Laridae	*Thalasseus bergii*	Crested Tern	Seen	>10	BF
Zosteropidae	*Zosterops lateralis*	Silvereye	Seen	>10	CH, MT
Columbidae	**Spilopelia chinensis*	Spotted Turtle Dove	Seen	>10	CS, IF
Columbidae	**Spilopelia senegalensis*	Laughing Turtle Dove	Seen	3	CS, IF
Mammal					
Molossidae	*Austronomus australis*	White-striped Free-tailed Bat	Audio recorded	1	OF
Vespertilionidae	*Chalinolobus gouldii*	Gould's Wattled Bat	Audio recorded	>10	MT
Muridae	*Rattus fuscipes*	Western Bush Rat	Trapped	2	CS
Felidae	**Felis catus*	Cat	Seen	1	CS, IF
Muridae	**Mus musculus*	House Mouse	Trapped	1	OH
Leporidae	**Oryctolagus cuniculus*	Rabbit	Seen, Evidence	>10	CH, MT, CP, CS, SL, OF
Canidae	**Vulpes vulpes*	Red Fox	Seen, Evidence	≥1	BF, OH, CH, CS, OF
Reptile					
Typhlopidae	*Anilios australis*	Southern Blind Snake	Trapped	5	CS
Agamidae	*Ctenophorus adelaidensis*	Western Heath Dragon	Trapped	1	OH

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Family	Species	Common Name	Observation Method	No. Recorded	Habitat Type
Scincidae	*Ctenotus fallens*		Trapped	20	OH, CH, MT, CS, OF
Scincidae	*Cyclodomorphus celatus*		Trapped	4	OH, CS
Scincidae	*Egernia kingii*	King's Skink	Trapped, Seen	5	OH, CH, IF
Scincidae	*Hemiergis quadrilineatus*		Trapped	8	MT, CS, CH
Scincidae	*Lerista elegans*		Trapped	13	OH, CH, MT, CS, OF
Scincidae	*Lerista lineopunctulata*	Dotted-Line Robust Slider	Trapped	1	CS
Scincidae	*Lerista praepedita*		Trapped	1	CS
Pygopodidae	*Lialis burtonis*	Burton's Legless Lizard	Trapped	5	CS
Scincidae	*Menetia greyii*	Dwarf Skink	Trapped	1	MT
Scincidae	*Morethia obscura*		Trapped	1	CH
Squamata	*Pogona minor*	Western Bearded Dragon	Seen	1	OF
Elapidae	*Pseudonaja affinis*	Dugite	Trapped, Seen	3	CH, MT, IF
Diplodactylidae	*Strophurus spinigerus*	Spiny-tailed Gecko	Trapped, Seen	8	OH, CH, CS, OF
Scincidae	*Tiliqua occipitalis*	Western Bluetongue	Trapped	2	CS
Scincidae	*Tiliqua rugosa*	Bobtail	Trapped, Seen	35	OH, CH, MT, CS, OF, SL

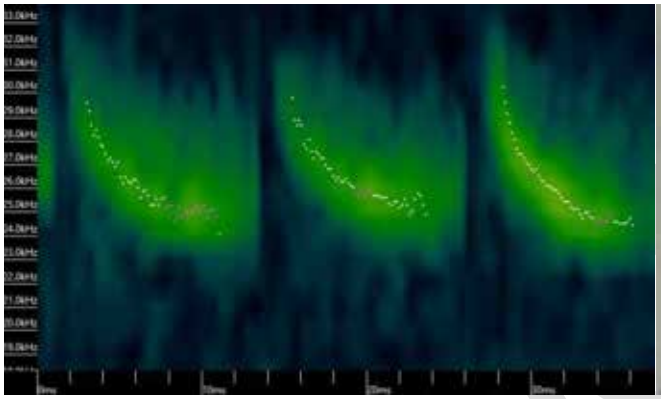
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Nankeen Kestrel (*Falco cenchroides*)



Splendid Fairywren (*Malurus splendens*)



Gould's Wattled Bat (*Chalinolobus gouldii*) recording



Western Bush Rat (*Rattus fuscipes*)



Dugite (*Pseudonaja affinis*)



Burton's Legless Lizard (*Lialis burtonis*)



South-western Spiny-tailed Gecko (*Strophurus spinigerus*)



King's Skink (*Egernia kingii*)

Figure 7: Examples of native fauna species observed within Yanchep Lagoon.



Welcome Swallow (*Hirundo neoxena*) fledgelings cached in ceiling of outdoor structure



Galah (*Eolophus roseicapilla*) flock perched on boardwalk



Nankeen Kestrel (*Falco cenchroides*) perched on streetlight



Splendid Fairywren (*Malurus splendens*) perched on fence while foraging

Figure 8: Examples of fauna species utilising infrastructure within Yanchep Lagoon.

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Rabbit (*_Oryctolagus cuniculus_)



Rabbit digging



Red Fox (*_Vulpes vulpes_) prints



Predated Splendid Fairywren (_Malurus splendens_)



Spotted Turtle Dove (*_Spilopelia chinensis_)



House Mouse (*_Mus musculus_), euthanised

Figure 9: Examples of introduced fauna species and their impacts observed within Yanchep Lagoon.

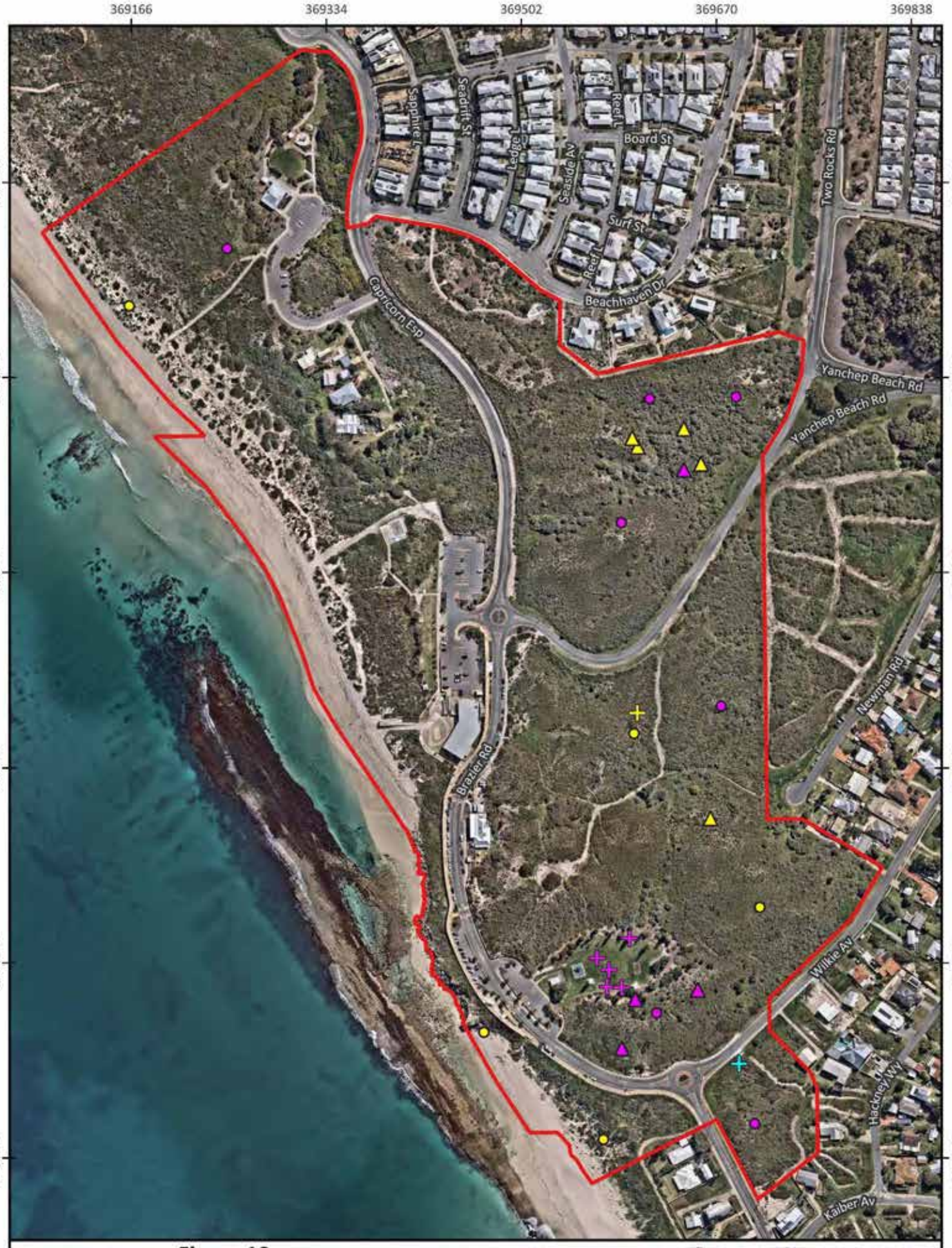


Figure 10:
Declared Pest Fauna Locations

Yanchep, Western Australia

Legend

- Cat Sighting
- Fox Den
- Fox Evidence
- Fox Sighting
- Rabbit Evidence
- Rabbit Sighting
- Rabbit Warren
- Site Boundary

Client:	UDLA
Date:	26/11/2025
Created by:	D. Morrison
Image Source:	Nearmap, 2025
Datum:	GDA2020 / MGA zone 50
Scale:	1: 4200

0 50 100 m

N

4.2 Black Cockatoo Habitat Assessment Results

4.2.1 Desktop Survey

There is the potential for one black cockatoo species and their habitat to occur on site, the Carnaby's Cockatoo (*Zanda latirostris*), listed as Endangered under the EPBC Act and the BC Act. According to NationalMap the survey site occurs within an area classified as:

- Carnaby's Cockatoo Areas requiring investigation as feeding habitat in the SCP (DBCA-057) (DBCA, 2018a)
- Carnaby's Cockatoo Confirmed Breeding Areas within the Swan Coastal Plain and Jarrah Forest IBRA region (DBCA, 2018b)
- Carnaby's Cockatoo Unconfirmed Breeding Areas within the Swan Coastal Plain and Jarrah Forest IBRA regions (DBCA, 2018c).

A desktop search of NatureMap database (DBCA, 2025a) and the Protected Matters Search Tool (DCCEEW, 2025) indicated the potential for the Carnaby's Cockatoo (*Zanda latirostris*) to occur within the survey area due to the proximity to known breeding sites (within 10 km).

4.2.2 Field Survey

Potential Breeding Habitat

Suitable breeding habitat for black cockatoos was not present within the site boundary. Of the four potential habitat trees (DBH > 500 mm) that were recorded within the site (Figure 11, Appendix 5), none were observed to contain hollows, each scoring 5 for the Bamford (2016) habitat tree grading (Table 4). No other secondary evidence such as scats or feathers were observed within the survey area.

Roosting Habitat

No evidence of roosting in the form of scats or feathers was observed within the survey area at the time of the survey. Dusk surveys were conducted in concurrence with the nocturnal fauna survey and observed no roosting of black cockatoos within the survey area. The presence of *Eucalyptus gomphocephala* (Tuart) trees within the site, including four trees with DBH > 500 mmm, provide potential roosting opportunities for black cockatoo species, however, the exposure to winds and the distance of the trees from high quality black cockatoo habitat significantly reduces the likelihood of the utilisation of these trees for roosting.

Foraging Habitat

No evidence of foraging was observed within the survey area. The presence of *Eucalyptus gomphocephala* (Tuart) trees within the site, including four trees with DBH > 500 mmm, provide potential foraging (Table 10).

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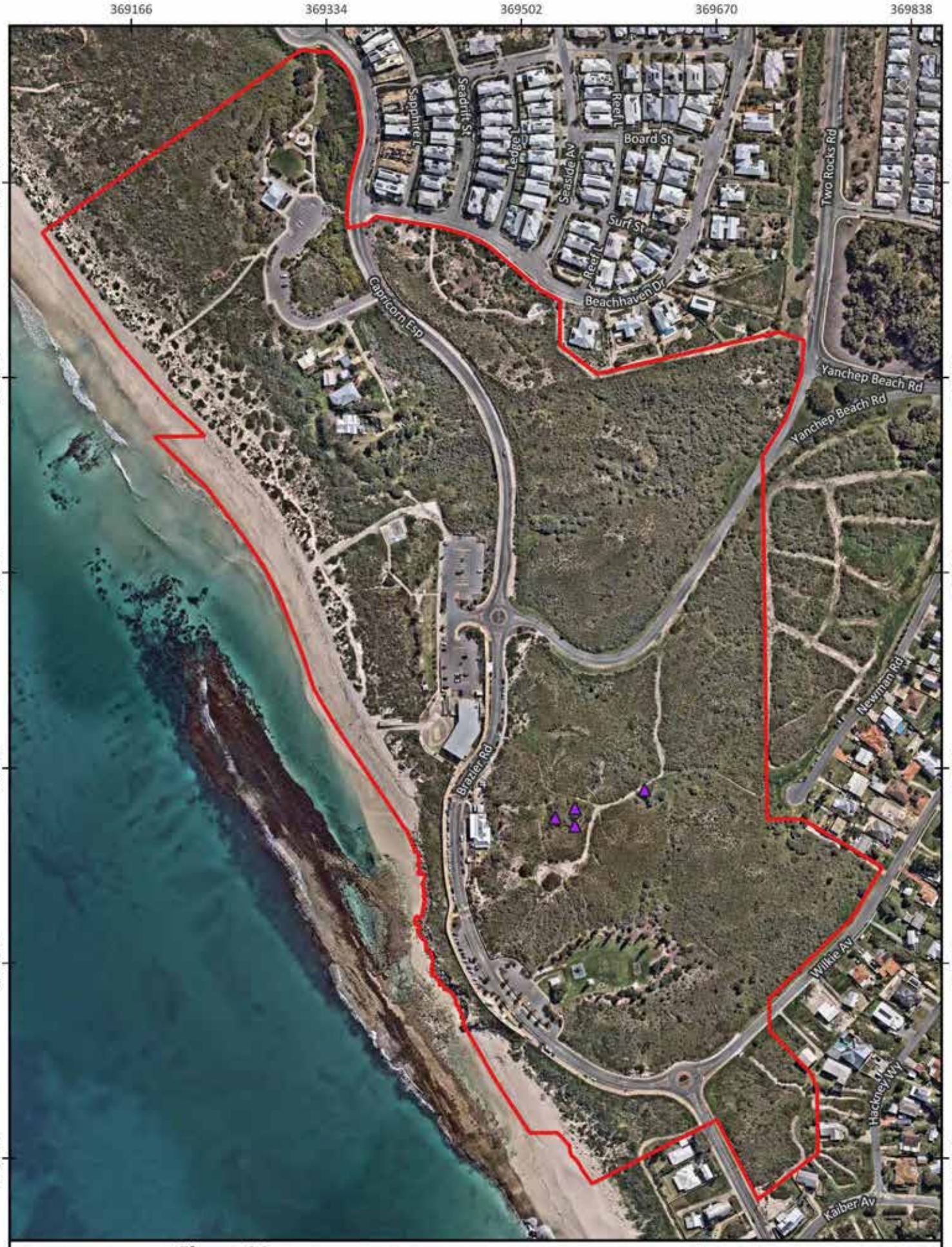


Figure 11:
Black Cockatoo Potential Habitat Trees

Yanchep, Western Australia

Legend

- *Eucalyptus gomphocephala* (Tuart)
- Site Boundary

Client:	UDLA
Date:	26/11/2025
Created by:	D. Morrison
Image Source:	Nearmap, 2025
Datum:	GDA2020 / MGA zone 50
Scale:	1: 4200

0 50 100 m

N

Table 10: Foraging quality scoring tool results

Starting score	Baudin's Cockatoo	Carnaby's Cockatoo	Forest Red-tailed Black-Cockatoo
10	Start at a score of 10 if your site is native eucalypt woodlands and forest, and proteaceous woodland and heath, particularly Marri, within the range of the species, including along roadsides and parkland cleared areas. Can include planted vegetation. This tool only applies to sites equal to or larger than 1 hectare in size.	Start at a score of 10 if your site is native shrubland, kwongan heathland or woodland, dominated by proteaceous plant species such as Banksia spp. (including Dryandra spp.), Hakea spp. and Grevillea spp., as well as native eucalypt woodland and forest that contains foraging species, within the range of the species, including along roadsides and parkland cleared areas. Also includes planted native vegetation. This tool only applies to sites equal to or larger than 1 hectare in size.	Start at a score of 10 if your site is Jarrah or Marri woodland and/or forest, or if it is on the edge of Karri forest, or if Wandoo and Blackbutt occur on the site, within the range of the subspecies, including along roadsides and parkland cleared areas. This tool only applies to sites equal to or larger than 1 hectare in size.

Attribute	Sub-tractions	Context adjustor (attributes reducing functionality of foraging habitat)		
Foraging potential	-2	-	-2	-
Connectivity	-2	-	0	-
Proximity to breeding	-2	-	-2	-
Proximity to roosting	-1	-	0	-
Impact from significant plant disease	-1	-	0	-
Total score		**N/A**	**6**	**N/A**
Appraisal	With limited foraging opportunities within the site due to isolated patches of potential habitat trees, foraging is unlikely to occur with regularity. Transient individuals or groups may utilise *Eucalyptus gomphocephala* (Tuart) trees within the site, given the proximity to known roosting sites (within 4 km) as well as sightings of Carnaby's Cockatoos identified in the desktop assessment (within 2 km).			

Source: DAWE, 2022.

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5.0 Implications of Results and Recommendations

5.1 Fauna

Of the 59 conservation significant species identified as potentially occurring within the site during the desktop assessment, 1 was recorded within the site, the Crested Tern (*Thalasseus bergii*, MI). Approximately 15 individuals were seen resting amongst seaweed on the beachfront, with juveniles and adults present, indicating this area may be significant habitat for rearing chicks. While no other species recorded were of conservation significance, habitat types within the site are likely able to support populations of Quenda (*Isoodon fusciventer*) and Black-striped Burrowing Snakes (*Neelaps calonotos*), as well as migratory shorebirds along the beachfront. The absence of Quenda populations may be due to predation pressure by the fox (**Vulpes vulpes*) population within the site, as well as interspecific competition with rabbits (**Oryctolagus cuniculus*). The site occurs within Bush Forever Site 397 and Perth Regional Ecological Linkage No. 1, linking to bush forever sites 406 through to 315, maintaining ecological connectivity along the coast. The ecological significance of the site within the regional context highlights the importance of effective management both within the site and surrounding bushlands.

The detailed fauna survey identified 51 species within the site through the implementation of a 7 traplines, 18 box traps, active searching, a nocturnal survey, and installation of trail cameras and ultrasonic audio recording devices (Figure 5). Habitat types that were unable to have any traps installed due to logistical restrictions or high public access include BF, CP, and IF. Habitat type SL was unable to have a trapline installed due to the presence of limestone. Theses habitat types were surveyed by active searching, a nocturnal survey, and box traps installed in SL, with survey efforts able to identify significant fauna assemblages present.

Of the 51 species recorded during the survey, 6 were introduced species, 2 of which are declared pests: Rabbit (**Oryctolagus cuniculus*) and Red Fox (**Vulpes vulpes*). Abundant evidence of both rabbits and foxes across the site (Figure 10) indicates that established populations are at relatively high densities, with fresh sign of both species recorded during the survey including evidence of environmental impacts such as diggings and native bird kills (Figure 9). The presence of these species is likely to negatively impact native fauna assemblages through competition, predation, and habitat degradation. Failure to control feral populations may lead to the loss of native species populations within the site, and prevent incursion of native species such as quenda, which are likely able to inhabit habitat types CH, CS, OF, and SL under pest free conditions. While eradication of rabbits and foxes is not likely due to neighbouring populations able to quickly incur into the site, it is recommended that ongoing management of rabbit and fox populations occurs both within the site, as well as surrounding habitat. The sighting of one cat during the nocturnal survey indicates that roaming domesticated cats, and possibly feral cats may be further negatively impacting the native fauna populations within the site. As no evidence of cat activity such as prints and scat was recorded within the site, it is likely that cat presence within the site is not significant at present. It is recommended that monitoring for changes in the presence and activity of cats within the site occurs, with control measures implemented if activity increases.

The survey recorded several instances of infrastructure being utilised by fauna populations throughout the site (Figure 8). In the absence of tall trees throughout large portions of the site, infrastructure such as

streetlights, fences, and boardwalks were observed being utilised by birds while foraging and hunting. Welcome Swallows (*Hirundo neoxena*) were observed nesting in sheltered ceilings, King's Skinks (*Egernia kingii*) observed sheltering underneath boardwalks, and Gould's Wattled Bats (*Chalinolobus gouldii*) were recorded in areas with tall trees adjacent to lights that attract insects at night. These observations illustrate the ability of fauna to utilise infrastructure, expanding potential habitat to areas outside of undisturbed vegetation. Given this occurrence, it is recommended that any future disturbances or installation of infrastructure within the site attempt to facilitate potential use of the infrastructure by native fauna in accordance with the relevant ecology of the native species.

5.2 Black Cockatoo Habitat

The desktop assessment indicated the possibility for the occurrence of one of the three black cockatoo species to occur within the site, the Carnaby's Cockatoo (*Zanda latirostris*). No evidence of black cockatoo presence within the site was recorded during the Black Cockatoo Habitat Assessment. While four potential habitat trees (*Eucalyptus gomphocephala* (Tuarts) with DBH > 500 mm) were recorded within the site (Figure 11), none had hollows, indicating that there is no breeding habitat within the site. The distance from quality black cockatoo habitat and the wind exposed position of three of the four potential habitat trees makes roosting within the site highly unlikely. Foraging opportunities for cockatoos within the site is limited, with suitable foraging opportunities among the small patches of Tuarts. These may be utilised by transient cockatoos traveling through the area. It is unlikely that the site contains any critical habitat for black cockatoo populations.

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8.0 References

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Appendix 1: PMST Report 10 km

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EPBC Act Protected Matters Report

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

Report created: 03-Jul-2025

Summary
Details
- Matters of NES
- Other Matters Protected by the EPBC Act
- Extra Information

Caveat
Acknowledgements

Summary

Matters of National Environment Significance

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

World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International Importance (Ramsar	None
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	1
Listed Threatened Ecological Communities:	5
Listed Threatened Species:	55
Listed Migratory Species:	48

Other Matters Protected by the EPBC Act

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

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

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

Commonwealth Lands:	4
Commonwealth Heritage Places:	None
Listed Marine Species:	72
Whales and Other Cetaceans:	12
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	1
Habitat Critical to the Survival of Marine Turtles:	None

Extra Information

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

State and Territory Reserves:	2
Regional Forest Agreements:	None
Nationally Important Wetlands:	1
EPBC Act Referrals:	27
Key Ecological Features (Marine):	2
Biologically Important Areas:	10
Bioregional Assessments:	None
Geological and Bioregional Assessments:	None

Details

Matters of National Environmental Significance

Commonwealth Marine Area [Resource Information]

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

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

Listed Threatened Ecological Communities [Resource Information]

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

Community Name	Threatened Category	Presence Text	Buffer Status
Aquatic Root Mat Community in Caves of the Swan Coastal Plain	Endangered	Community known to occur within area	In buffer area only
Banksia Woodlands of the Swan Coastal Plain ecological community	Endangered	Community likely to occur within area	In feature area
Honeymyrtle shrubland on limestone ridges of the Swan Coastal Plain Bioregion	Critically Endangered	Community likely to occur within area	In buffer area only
Sedgelands in Holocene dune swales of the southern Swan Coastal Plain	Endangered	Community known to occur within area	In buffer area only
Tuart (Eucalyptus gomphocephala) Woodlands and Forests of the Swan Coastal Plain ecological community	Critically Endangered	Community likely to occur within area	In feature area

Listed Threatened Species [Resource Information]

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

Scientific Name	Threatened Category	Presence Text	Buffer Status
BIRD			
Anous tenuirostris melanops			
Australian Lesser Noddy [26000]	Vulnerable	Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Ardenna grisea Sooty Shearwater [82651]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat may occur within area	In feature area
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat known to occur within area	In feature area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat likely to occur within area	In feature area
Calyptorhynchus banksii naso Forest Red-tailed Black-Cockatoo, Karrak [67034]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat known to occur within area	In feature area
Diomedea amsterdamensis Amsterdam Albatross [64405]	Endangered	Species or species habitat may occur within area	In feature area
Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	Species or species habitat may occur within area	In feature area
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Halobaena caerulea Blue Petrel [1059]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Leipoa ocellata Malleefowl [934]	Vulnerable	Species or species habitat likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Limosa lapponica menzbieri Northern Siberian Bar-tailed Godwit, Russkoye Bar-tailed Godwit [86432]	Endangered	Species or species habitat may occur within area	In feature area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area	In feature area
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area	In feature area
Pachyptila turtur subantarctica Fairy Prion (southern) [64445]	Vulnerable	Species or species habitat known to occur within area	In feature area
Phaethon rubricauda westralis Red-tailed Tropicbird (Indian Ocean), Indian Ocean Red-tailed Tropicbird [91824]	Endangered	Species or species habitat may occur within area	In feature area
Phoebetria fusca Sooty Albatross [1075]	Vulnerable	Species or species habitat may occur within area	In feature area
Pterodroma mollis Soft-plumaged Petrel [1036]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Rostratula australis Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area	In feature area
Sternula albifrons Little Tern [82849]	Vulnerable	Species or species habitat may occur within area	In feature area
Sternula nereis nereis Australian Fairy Tern [82950]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Thalassarche carteri			
Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Thalassarche cauta			
Shy Albatross [89224]	Endangered	Species or species habitat may occur within area	In feature area
Thalassarche impavida			
Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area	In feature area
Thalassarche melanophris			
Black-browed Albatross [66472]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Thalassarche steadi			
White-capped Albatross [64462]	Vulnerable	Species or species habitat may occur within area	In feature area
Tringa nebularia			
Common Greenshank, Greenshank [832]	Endangered	Species or species habitat likely to occur within area	In buffer area only
Zanda latirostris listed as Calyptorhynchus latirostris			
Carnaby's Black Cockatoo, Short-billed Black-cockatoo [87737]	Endangered	Breeding known to occur within area	In feature area
INSECT			
Hesperocolletes douglasi			
Douglas' Broad-headed Bee, Rottnest Bee [66734]	Critically Endangered	Species or species habitat may occur within area	In feature area
MAMMAL			
Balaenoptera musculus			
Blue Whale [36]	Endangered	Species or species habitat likely to occur within area	In feature area
Dasyurus geoffroii			
Chuditch, Western Quoll [330]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Eubalaena australis			
Southern Right Whale [40]	Endangered	Breeding known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Macroderma gigas Ghost Bat [174]	Vulnerable	Species or species habitat may occur within area	In feature area
Neophoca cinerea Australian Sea-lion, Australian Sea Lion [22]	Endangered	Species or species habitat likely to occur within area	In feature area
PLANT			
Andersonia gracilis Slender Andersonia [14470]	Endangered	Species or species habitat may occur within area	In feature area
Anigozanthos viridis subsp. terraspectans Dwarf Green Kangaroo Paw [3435]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
Banksia mimica Summer Honeypot [82765]	Endangered	Species or species habitat may occur within area	In buffer area only
Caleana dixonii listed as Paracaleana dixonii Sandplain Duck Orchid [87944]	Endangered	Species or species habitat may occur within area	In buffer area only
Diuris micrantha Dwarf Bee-orchid [55082]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Diuris purdiei Purdie's Donkey-orchid [12950]	Endangered	Species or species habitat may occur within area	In buffer area only
Drakaea elastica Glossy-leafed Hammer Orchid, Glossy-leaved Hammer Orchid, Warty Hammer Orchid [16753]	Endangered	Species or species habitat likely to occur within area	In buffer area only
Eleocharis keigheryi Keighery's Eleocharis [64893]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Eucalyptus argutifolia Yanchep Mallee, Wabling Hill Mallee [24263]	Vulnerable	Species or species habitat known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Macarthuria keigheryi Keighery's Macarthuria [64930]	Endangered	Species or species habitat may occur within area	In buffer area only
REPTILE			
Caretta caretta Loggerhead Turtle [1763]	Endangered	Foraging, feeding or related behaviour known to occur within area	In feature area
Chelonia mydas Green Turtle [1765]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In feature area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Foraging, feeding or related behaviour known to occur within area	In feature area
Natator depressus Flatback Turtle [59257]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In feature area
SHARK			
Carcharias taurus (west coast population) Grey Nurse Shark (west coast population) [68752]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Carcharodon carcharias White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat known to occur within area	In feature area
Pristis pristis Freshwater Sawfish, Largetooth Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Vulnerable	Species or species habitat may occur within area	In feature area
Rhincodon typus Whale Shark [66680]	Vulnerable	Species or species habitat may occur within area	In feature area
Sphyrna lewini Scalloped Hammerhead [85267]	Conservation Dependent	Species or species habitat likely to occur within area	In feature area
Listed Migratory Species			[Resource Information]

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

Scientific Name	Threatened Category	Presence Text	Buffer Status
Onychoprion anaethetus Bridled Tern [82845]		Breeding known to occur within area	In feature area
Phoebetria fusca Sooty Albatross [1075]	Vulnerable	Species or species habitat may occur within area	In feature area
Sterna dougallii Roseate Tern [817]		Foraging, feeding or related behaviour likely to occur within area	In feature area
Sternula albifrons Little Tern [82849]	Vulnerable	Species or species habitat may occur within area	In feature area
Thalassarche carteri Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Thalassarche cauta Shy Albatross [89224]	Endangered	Species or species habitat may occur within area	In feature area
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area	In feature area
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Thalassarche steadi White-capped Albatross [64462]	Vulnerable	Species or species habitat may occur within area	In feature area
Migratory Marine Species			
Balaenoptera edeni Bryde's Whale [35]		Species or species habitat may occur within area	In feature area
Balaenoptera musculus Blue Whale [36]	Endangered	Species or species habitat likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
[Caperea marginata](#) Pygmy Right Whale [39]		Species or species habitat may occur within area	In feature area
[Carcharhinus longimanus](#) Oceanic Whitetip Shark [84108]		Species or species habitat may occur within area	In feature area
[Carcharias taurus](#) Grey Nurse Shark [64469]		Species or species habitat likely to occur within area	In feature area
[Carcharodon carcharias](#) White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat known to occur within area	In feature area
[Caretta caretta](#) Loggerhead Turtle [1763]	Endangered	Foraging, feeding or related behaviour known to occur within area	In feature area
[Chelonia mydas](#) Green Turtle [1765]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In feature area
[Dermochelys coriacea](#) Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Foraging, feeding or related behaviour known to occur within area	In feature area
[Eubalaena australis as Balaena glacialis australis](#) Southern Right Whale [40]	Endangered	Breeding known to occur within area	In feature area
[Lamna nasus](#) Porbeagle, Mackerel Shark [83288]		Species or species habitat may occur within area	In feature area
[Megaptera novaeangliae](#) Humpback Whale [38]		Species or species habitat known to occur within area	In feature area
[Mobula alfredi as Manta alfredi](#) Reef Manta Ray, Coastal Manta Ray [90033]		Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Mobula birostris as Manta birostris Giant Manta Ray [90034]		Species or species habitat may occur within area	In feature area
Natator depressus Flatback Turtle [59257]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In feature area
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may occur within area	In feature area
Pristis pristis Freshwater Sawfish, Largetooth Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Vulnerable	Species or species habitat may occur within area	In feature area
Rhincodon typus Whale Shark [66680]	Vulnerable	Species or species habitat may occur within area	In feature area
Migratory Terrestrial Species			
Motacilla cinerea Grey Wagtail [642]		Species or species habitat may occur within area	In feature area
Migratory Wetlands Species			
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat likely to occur within area	In feature area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat may occur within area	In feature area
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat known to occur within area	In feature area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat likely to occur within area	In feature area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Charadrius leschenaultii			
Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat known to occur within area	In feature area
Limosa lapponica			
Bar-tailed Godwit [844]		Species or species habitat may occur within area	In feature area
Numenius madagascariensis			
Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area	In feature area
Pandion haliaetus			
Osprey [952]		Species or species habitat known to occur within area	In feature area
Tringa nebularia			
Common Greenshank, Greenshank [832]	Endangered	Species or species habitat likely to occur within area	In buffer area only

Other Matters Protected by the EPBC Act

Commonwealth Lands [Resource Information]

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

Commonwealth Land Name	State	Buffer Status
Unknown		
Commonwealth Land - [50315]	WA	In buffer area only
Commonwealth Land - [50396]	WA	In buffer area only
Commonwealth Land - [50355]	WA	In buffer area only
Commonwealth Land - [50402]	WA	In buffer area only

Listed Marine Species [Resource Information]

Scientific Name	Threatened Category	Presence Text	Buffer Status
Bird			
Actitis hypoleucos			
Common Sandpiper [59309]		Species or species habitat likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Anous stolidus Common Noddy [825]		Species or species habitat likely to occur within area	In feature area
Anous tenuirostris melanops Australian Lesser Noddy [26000]	Vulnerable	Species or species habitat may occur within area	In feature area
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area overfly marine area	In feature area
Ardenna carneipes as Puffinus carneipes Flesh-footed Shearwater, Fleshy-footed Shearwater [82404]		Foraging, feeding or related behaviour likely to occur within area	In feature area
Ardenna grisea as Puffinus griseus Sooty Shearwater [82651]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Bubulcus ibis as Ardea ibis Cattle Egret [66521]		Species or species habitat may occur within area overfly marine area	In feature area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat may occur within area	In feature area
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat known to occur within area overfly marine area	In feature area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat likely to occur within area overfly marine area	In feature area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area overfly marine area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat known to occur within area	In feature area
Chroicocephalus novaehollandiae as Larus novaehollandiae Silver Gull [82326]		Breeding known to occur within area	In buffer area only
Diomedea amsterdamensis Amsterdam Albatross [64405]	Endangered	Species or species habitat may occur within area	In feature area
Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	Species or species habitat may occur within area	In feature area
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat likely to occur within area	In feature area
Halobaena caerulea Blue Petrel [1059]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Hydroprogne caspia as Sterna caspia Caspian Tern [808]		Foraging, feeding or related behaviour known to occur within area	In feature area
Larus pacificus Pacific Gull [811]		Foraging, feeding or related behaviour may occur within area	In feature area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat may occur within area	In feature area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area overfly marine area	In feature area
Motacilla cinerea Grey Wagtail [642]		Species or species habitat may occur within area overfly marine area	In feature area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area	In feature area
Onychoprion anaethetus as Sterna anaethetus Bridled Tern [82845]		Breeding known to occur within area	In feature area
Pachyptila turtur Fairy Prion [1066]		Species or species habitat known to occur within area	In feature area
Pandion haliaetus Osprey [952]		Species or species habitat known to occur within area	In feature area
Phoebetria fusca Sooty Albatross [1075]	Vulnerable	Species or species habitat may occur within area	In feature area
Pterodroma mollis Soft-plumaged Petrel [1036]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Puffinus assimilis Little Shearwater [59363]		Foraging, feeding or related behaviour known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Rostratula australis as Rostratula benghalensis (sensu lato)			
Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area overfly marine area	In feature area
Stercorarius antarcticus as Catharacta skua			
Brown Skua [85039]		Species or species habitat may occur within area	In buffer area only
Sterna dougallii			
Roseate Tern [817]		Foraging, feeding or related behaviour likely to occur within area	In feature area
Sternula albifrons as Sterna albifrons			
Little Tern [82849]	Vulnerable	Species or species habitat may occur within area	In feature area
Thalassarche carteri			
Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Thalassarche cauta			
Shy Albatross [89224]	Endangered	Species or species habitat may occur within area	In feature area
Thalassarche impavida			
Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area	In feature area
Thalassarche melanophris			
Black-browed Albatross [66472]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Thalassarche steadi			
White-capped Albatross [64462]	Vulnerable	Species or species habitat may occur within area	In feature area
Thinornis cucullatus as Thinornis rubricollis			
Hooded Plover, Hooded Dotterel [87735]		Species or species habitat known to occur within area overfly marine area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
[Tringa nebularia](#) Common Greenshank, Greenshank [832]	Endangered	Species or species habitat likely to occur within area overfly marine area	In buffer area only
Fish			
[Acentronura australe](#) Southern Pygmy Pipehorse [66185]		Species or species habitat may occur within area	In feature area
[Campichthys galei](#) Gale's Pipefish [66191]		Species or species habitat may occur within area	In feature area
[Choeroichthys suillus](#) Pig-snouted Pipefish [66198]		Species or species habitat may occur within area	In feature area
[Halicampus brocki](#) Brock's Pipefish [66219]		Species or species habitat may occur within area	In feature area
[Hippocampus angustus](#) Western Spiny Seahorse, Narrow-bellied Seahorse [66234]		Species or species habitat may occur within area	In feature area
[Hippocampus breviceps](#) Short-head Seahorse, Short-snouted Seahorse [66235]		Species or species habitat may occur within area	In feature area
[Hippocampus subelongatus](#) West Australian Seahorse [66722]		Species or species habitat may occur within area	In feature area
[Lissocampus fatiloquus](#) Prophet's Pipefish [66250]		Species or species habitat may occur within area	In feature area
[Maroubra perserrata](#) Sawtooth Pipefish [66252]		Species or species habitat may occur within area	In feature area
[Mitotichthys meraculus](#) Western Crested Pipefish [66259]		Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Nannocampus subosseus Bonyhead Pipefish, Bony-headed Pipefish [66264]		Species or species habitat may occur within area	In feature area
Phycodurus eques Leafy Seadragon [66267]		Species or species habitat may occur within area	In feature area
Phyllopteryx taeniolatus Common Seadragon, Weedy Seadragon [66268]		Species or species habitat may occur within area	In feature area
Pugnaso curtirostris Pugnose Pipefish, Pug-nosed Pipefish [66269]		Species or species habitat may occur within area	In feature area
Solegnathus lettiensis Gunther's Pipehorse, Indonesian Pipefish [66273]		Species or species habitat may occur within area	In feature area
Stigmatopora argus Spotted Pipefish, Gulf Pipefish, Peacock Pipefish [66276]		Species or species habitat may occur within area	In feature area
Stigmatopora nigra Widebody Pipefish, Wide-bodied Pipefish, Black Pipefish [66277]		Species or species habitat may occur within area	In feature area
Syngnathoides biaculeatus Double-end Pipehorse, Double-ended Pipehorse, Alligator Pipefish [66279]		Species or species habitat may occur within area	In feature area
Urocampus carinirostris Hairy Pipefish [66282]		Species or species habitat may occur within area	In feature area
Vanacampus margaritifer Mother-of-pearl Pipefish [66283]		Species or species habitat may occur within area	In feature area
Mammal			
Arctocephalus forsteri Long-nosed Fur-seal, New Zealand Fur-seal [20]		Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
[Neophoca cinerea](#) Australian Sea-lion, Australian Sea Lion [22]	Endangered	Species or species habitat likely to occur within area	In feature area
Reptile			
[Aipysurus pooleorum](#) Shark Bay Sea Snake [66061]		Species or species habitat may occur within area	In feature area
[Caretta caretta](#) Loggerhead Turtle [1763]	Endangered	Foraging, feeding or related behaviour known to occur within area	In feature area
[Chelonia mydas](#) Green Turtle [1765]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In feature area
[Dermochelys coriacea](#) Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Foraging, feeding or related behaviour known to occur within area	In feature area
[Hydrophis kingii as Disteira kingii](#) Spectacled Sea Snake [93511]		Species or species habitat may occur within area	In feature area
[Hydrophis platura as Pelamis platurus](#) Yellow-bellied Sea Snake [93746]		Species or species habitat may occur within area	In feature area
[Natator depressus](#) Flatback Turtle [59257]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In feature area

Whales and Other Cetaceans			[Resource Information]
Current Scientific Name	Status	Type of Presence	Buffer Status
Mammal			
[Balaenoptera acutorostrata](#) Minke Whale [33]		Species or species habitat may occur within area	In feature area

Current Scientific Name	Status	Type of Presence	Buffer Status
Balaenoptera edeni Bryde's Whale [35]		Species or species habitat may occur within area	In feature area
Balaenoptera musculus Blue Whale [36]	Endangered	Species or species habitat likely to occur within area	In feature area
Caperea marginata Pygmy Right Whale [39]		Species or species habitat may occur within area	In feature area
Delphinus delphis Common Dolphin, Short-beaked Common Dolphin [60]		Species or species habitat may occur within area	In feature area
Eubalaena australis Southern Right Whale [40]	Endangered	Breeding known to occur within area	In feature area
Grampus griseus Risso's Dolphin, Grampus [64]		Species or species habitat may occur within area	In feature area
Megaptera novaeangliae Humpback Whale [38]		Species or species habitat known to occur within area	In feature area
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may occur within area	In feature area
Stenella attenuata Spotted Dolphin, Pantropical Spotted Dolphin [51]		Species or species habitat may occur within area	In feature area
Tursiops aduncus Indian Ocean Bottlenose Dolphin, Spotted Bottlenose Dolphin [68418]		Species or species habitat likely to occur within area	In feature area
Tursiops truncatus s. str. Bottlenose Dolphin [68417]		Species or species habitat may occur within area	In feature area

Australian Marine Parks [Resource Information]

Park Name	Zone & IUCN Categories	Buffer Status
Two Rocks	Multiple Use Zone (IUCN VI)	In buffer area only

Extra Information

State and Territory Reserves			[Resource Information]
Protected Area Name	Reserve Type	State	Buffer Status
Unnamed WA49994	Conservation Park	WA	In buffer area only
Yanchep	National Park	WA	In buffer area only

Nationally Important Wetlands		[Resource Information]
Wetland Name	State	Buffer Status
Loch McNess System	WA	In buffer area only

EPBC Act Referrals				[Resource Information]
Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Alkimos Seawater Desalination	2019/8453		Completed	In buffer area only
Gonneville Nickel-Copper-Platinum Group Element Mine Development Project	2024/09839		Assessment	In buffer area only
Samphire Offshore Wind Farm	2022/09306		Assessment	In buffer area only
Urban Development of Part Lot 801 Marmion Avenue, Eglinton	2024/09881		Completed	In buffer area only
Yanchep Rail Extension, WA	2018/8262		Post-Approval	In buffer area only
Controlled action				
Alkimos city centre and central development, WA	2015/7561	Controlled Action	Post-Approval	In buffer area only
Alkimos Coastal Node	2020/8861	Controlled Action	Further Information Request	In buffer area only
Butler North District Open Space playing fields development, Wanneroo, WA	2017/8053	Controlled Action	Post-Approval	In buffer area only

Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Controlled action				
Eglinton/South Yanchep Residential Development	2011/6021	Controlled Action	Post-Approval	In buffer area only
Eglinton Estates - Clearing of native vegetation from Lot 1007 & part Lot 1008	2010/5777	Controlled Action	Post-Approval	In buffer area only
Jindee Residential Development	2012/6631	Controlled Action	Post-Approval	In buffer area only
Mitchell Freeway Extension and Wanneroo Road Upgrade, WA	2018/8367	Controlled Action	Post-Approval	In buffer area only
Proposed Urban Development of Lots 1005 & 1006	2008/4638	Controlled Action	Post-Approval	In buffer area only
Residential and commercial development on part 19 (Lot 6) Taronga Place, Eglinton, WA	2017/7872	Controlled Action	Post-Approval	In buffer area only
Residential development,Lot 609, Yanchep Beach Road, Yanchep, WA	2014/7146	Controlled Action	Post-Approval	In buffer area only
Residential development Lot 1004 Alkimos WA	2011/5902	Controlled Action	Post-Approval	In buffer area only
Urban and Residential Development at Lot 9 Brighton	2011/6137	Controlled Action	Post-Approval	In buffer area only
Urban development in accordance with the Local Structure Plan	2008/4601	Controlled Action	Post-Approval	In buffer area only
Urban Residential Development at Lot 9049 Marmoin Avenue	2009/5155	Controlled Action	Post-Approval	In buffer area only
Not controlled action				
Alkimos seawater desalination plant, offshore investigations, WA	2018/8224	Not Controlled Action	Completed	In buffer area only
Amberton West urban development - Part lot 9005 Eglington WA	2013/7068	Not Controlled Action	Completed	In buffer area only
Development of new Alkimos Wastwater Treatment Plant	2007/3259	Not Controlled Action	Completed	In buffer area only
Improving rabbit biocontrol: releasing another strain of RHDV, sthrn two thirds of Australia	2015/7522	Not Controlled Action	Completed	In feature area
INDIGO West Submarine Telecommunications Cable, WA	2017/8126	Not Controlled Action	Completed	In buffer area only
Residential development, Lots 9010 and 9031, Yanchep Beach Rd, Yanchep	2016/7642	Not Controlled Action	Completed	In buffer area only

Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Not controlled action				
Residential Development Eglinton West, Lot 5000 & part Lot 5001, Pipidinny Road, Eglinton	2014/7137	Not Controlled Action	Completed	In buffer area only
residential subdivision	2005/1965	Not Controlled Action	Completed	In feature area

Key Ecological Features [Resource Information]

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

Name	Region	Buffer Status
Commonwealth marine environment within and adjacent to the west coast inshore lagoons	South-west	In buffer area only
Western rock lobster	South-west	In buffer area only

Biologically Important Areas [Resource Information]

Scientific Name	Behaviour	Presence	Buffer Status
Seabirds			
Ardenna pacifica			
Wedge-tailed Shearwater [84292]	Foraging (in high numbers)	Known to occur	In feature area
Hydroprogne caspia			
Caspian Tern [808]	Foraging (provisioning young)	Known to occur	In feature area
Larus pacificus			
Pacific Gull [811]	Foraging (in high numbers)	Former Range	In feature area
Onychoprion anaethetus			
Bridled Tern [82845]	Foraging (in high numbers)	Known to occur	In feature area
Puffinus assimilis tunneyi			
Little Shearwater [59363]	Foraging (in high numbers)	Known to occur	In feature area
Sterna dougallii			
Roseate Tern [817]	Foraging	Known to occur	In feature area
Sternula nereis			
Fairy Tern [82949]	Foraging (in high numbers)	Known to occur	In feature area

Scientific Name	Behaviour	Presence	Buffer Status
Seals			
Neophoca cinerea Australian Sea Lion [22]	Foraging (male)	Likely to occur	In feature area
Whales			
Megaptera novaeangliae Humpback Whale [38]	Migration (north)	Known to occur	In buffer area only
Megaptera novaeangliae Humpback Whale [38]	Migration (north and south)	Known to occur	In feature area

Caveat

1 PURPOSE

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

The report contains the mapped locations of:

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

2 DISCLAIMER

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

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

3 DATA SOURCES

Threatened ecological communities

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

Threatened, migratory and marine species

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

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

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

4 LIMITATIONS

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

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

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

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

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

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

Acknowledgements

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

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

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

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

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Appendix 2: Conservation Codes

State Flora and Fauna Conservation Codes under the *Biodiversity Conservation Act 2018* (WA)

Conservation Code	Name	Description
Threatened Species		
CR	Critically endangered	Species considered to be facing an extremely high risk of extinction within the wild in the immediate future
EN	Endangered	Species considered to be facing a very high risk of extinction in the wild in the near future
VU	Vulnerable	Species considered to be facing a high risk of extinction in the wild in the medium-term future
Extinct Species		
EX	Extinct Species	Species where 'there is no reasonable doubt that the last member of the species has died (Schedule 4 of the Wildlife Conservation (Specially Protected Fauna) Notice or the Wildlife Conservation (Rare Flora) Notice)
EW	Extinct in the Wild	Species that are known to only survive in cultivation, in captivity, or as a naturalised population well outside its past range; and it has not been recorded in its known or expected habitat at appropriate seasons anywhere in its past range, despite surveys over a timeframe appropriate to its life cycle and form
Specially Protected Species		
MI	Migratory Species	Fauna that periodically or occasionally visit Australia or an external Territory or the exclusive economic zone; or the species is subject of an international agreement that relates to the protection of migratory species and that binds the Commonwealth (Schedule 5 of the Wildlife Conservation (Specially Protected Fauna) Notice)
CD	Conservation Dependent	Species of special conservation interest (conservation dependent fauna), being species dependent on ongoing conservation intervention to prevent it becoming eligible for listing as threatened (Schedule 6 of the Wildlife Conservation (Specially Protected Fauna) Notice)
OS	Other Specially Protected Species	Fauna otherwise in need of special protection to ensure their conservation (Schedule 7 of the Wildlife Conservation (Specially Protected Fauna) Notice)

State Flora and Fauna Conservation Codes listed by Department of Biodiversity, Conservation and Attractions

Conservation Code	Name	Description
P1	Priority One	Poorly known species – Species that are known from one or a few locations (generally five or less) which are potentially at risk. All occurrences are either very small or on lands not managed for conservation, such as road verges, urban areas, farmland, active mineral lease and under threat of habitat destruction or degradation.
P2	Priority Two	Poorly known species – Species that are known from one or a few locations (generally five or less), some of which are on lands managed primarily for nature conservation, such as national parks, conservation parks, nature reserves, State forest, vacant Crown land, water reserves and similar.
P3	Priority Three	Poorly known species – Species that are known from several locations, and the species does not appear to be under imminent threat, or from few but widespread locations with either large population size or significant remaining areas of apparently suitable habitat, much of it not under imminent threat
P4	Priority Four	Rare or near threatened and other species in need of monitoring. a) Rare. Species that are considered to have been adequately surveyed, or for which sufficient knowledge is available, and that are considered not currently threatened or in need of special protection but could be if present circumstances change. These species are usually represented on conservation lands. b) Near Threatened. Species that are considered to have been adequately surveyed and that are close to qualifying for vulnerable but are not listed as a conservation dependent specially protected species. c) Species that have been removed from the list of threatened species or lists of conservation dependent or other specially protected species, during the past five years for reasons other than taxonomy.

Source: DBCA, 2023

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Commonwealth Flora and Fauna Conservation Codes under the *Environmental Protection and Biodiversity Conservation Act 1999* (Cth)

Category	Description
Extinct	A native species which at a particular time if, at that time, there is no reasonable doubt that the last member of the species has died.
Extinct in the wild	A native species which at a particular time if, at that time: a) It is known only to survive in cultivation, in captivity or as a naturalised population well outside its past range; or b) It has not been recorded in its known and/or expected habitat, at appropriate seasons, anywhere in its past range, despite exhaustive surveys over a time frame appropriate to its life cycle and form.
Critically endangered	A species considered to be facing an extremely high risk of extinction in the wild and is determined that it meets any of the five criteria for the category identified in Part 7.01 of the EPBC Regulations.
Endangered	A species considered to be facing a very high risk of extinction in the wild and is determined that it meets any of the five criteria for the category identified in Part 7.01 of the EPBC Regulations.
Vulnerable	A species considered to be facing a high risk of extinction in the wild and is determined that it meets any of the five criteria for the category identified in Part 7.01 of the EPBC Regulations.
Conservation dependent	A native species which at a particular time if, at that time: a) is the focus of a specific conservation program the cessation of which would result in the species becoming vulnerable, endangered or critically endangered; or b) the following subparagraphs are satisfied: i. the species is a species of fish; ii. the species is the focus of a plan of management that provides for management actions necessary to stop the decline of, and support the recovery of, the species so that its chances of long term survival in nature are maximised; iii. the plan of management is in force under a law of the Commonwealth or of a State or Territory; iv. cessation of the plan of management would adversely affect the conservation status of the species

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Appendix 3: Detailed Fauna Field Survey Results

Fauna observations and observation methods within the Yanchep Lagoon site boundary. * denotes introduced species

Species	Common Name	Seen	Pitfall	Funnel	Box	Camera	Audio
Bird							
Acanthiza inornata	Western Thornbill	x					
Cacatua sanguinea	Little Corella	x					
Chalcites basalis	Horsfield's Bronze Cuckoo	x					
Chroicocephalus novaehollandiae	Silver Gull	x					
Coracina novaehollandiae	Black-faced Cuckooshrike	x					
Corvus coronoides	Australian Raven	x					
Cracticus torquatus	Grey Butcherbird	x					
Eolophus roseicapilla	Galah	x					
Falco cenchroides	Nankeen Kestrel	x					
Gavicalis virescens	Singing Honeyeater	x					
Gymnorhina tibicen	Australian Magpie	x					
Hirundo neoxena	Welcome Swallow	x					
Larus pacificus	Pacific Gull	x					
Lichmera indistincta	Brown Honeyeater	x					
Malurus assimilis assimilis	Purple-backed Fairywren	x					
Malurus splendens	Splendid Fairywren	x					
Microcarbo melanoleucos	Little Pied Cormorant	x					

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Species	Common Name	Seen	Pitfall	Funnel	Box	Camera	Audio
Ninox boobook	Boobook Owl	x					
Phalacrocorax varius	Pied Cormorant	x					
Phylidonyris novaehollandiae	New Holland Honeyeater	x					
Quoyornis georgianus	White-breasted Robin	x					
Rhipidura leucophrys	Willie Wagtail	x					
Sericornis maculatus maculatus	White-browed Scrubwren	x					
Thalasseus bergii	Crested Tern	x					
Zosterops lateralis	Silvereye	x					
**Spilopelia chinensis*	Spotted Turtle Dove	x					
**Spilopelia senegalensis*	Laughing Turtle Dove	x					
Mammal							
Austronomus australis	White-striped Free-tailed Bat						x
Chalinolobus gouldii	Gould's Wattled Bat						x
Rattus fuscipes	Western Bush Rat				x		
**Felis catus*	Cat	x					
**Mus musculus*	House Mouse		x				
**Oryctolagus cuniculus*	Rabbit	x					
**Vulpes vulpes*	Red Fox	x				x	
Reptile							

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Species	Common Name	Seen	Pitfall	Funnel	Box	Camera	Audio
Anilios australis	Southern Blind Snake		x				
Ctenophorus adelaidensis	Western Heath Dragon		x				
Ctenotus fallens			x	x			
Cyclodomorphus celatus			x				
Egernia kingii	King's Skink				x	x	
Hemiergis quadrilineatus			x				
Lerista elegans			x				
Lerista lineopunctulata	Dotted-Line Robust Slider		x				
Lerista praepedita				x			
Lialis burtonis	Burton's Legless Lizard		x	x			
Menetia greyii	Dwarf Skink		x				
Morethia obscura			x				
Pogona minor	Western Bearded Dragon	x					
Pseudonaja affinis	Dugite	x		x			
Strophurus spinigerus	Spiny-tailed Gecko		x	x			
Tiliqua occipitalis	Western Bluetounge		x	x			
Tiliqua rugosa	Bobtail	x	x				

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Fauna observations by habitat type within the Yanchep Lagoon site boundary. * denotes introduced species

Species	Common Name	BF	OH	CH	MT	CP	CS	OF	SL	IF
Bird										
Acanthiza inornata	Western Thornbill			x						
Cacatua sanguinea	Little Corella						x			x
Chalcites basalis	Horsfield's Bronze Cuckoo			x						
Chroicocephalus novaehollandiae	Silver Gull	x								x
Coracina novaehollandiae	Black-faced Cuckooshrike		x	x			x			
Corvus coronoides	Australian Raven			x		x	x			x
Cracticus torquatus	Grey Butcherbird						x			
Eolophus roseicapilla	Galah					x	x			x
Falco cenchroides	Nankeen Kestrel	x	x	x						x
Gavicalis virescens	Singing Honeyeater			x	x		x	x	x	
Gymnorhina tibicen	Australian Magpie					x	x			
Hirundo neoxena	Welcome Swallow			x	x		x			
Larus pacificus	Pacific Gull	x								
Lichmera indistincta	Brown Honeyeater			x	x		x			
Malurus assimilis assimilis	Purple-backed Fairywren			x						
Malurus splendens	Splendid Fairywren			x			x		x	
Microcarbo melanoleucos	Little Pied Cormorant	x								
Ninox boobook	Boobook Owl				x					

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Species	Common Name	BF	OH	CH	MT	CP	CS	OF	SL	IF
Phalacrocorax varius	Pied Cormorant	x		x						
Phylidonyris novaehollandiae	New Holland Honeyeater			x	x	x	x	x		
Quoyornis georgianus	White-breasted Robin				x					
Rhipidura leucophrys	Willie Wagtail				x	x	x			x
Sericornis maculatus maculatus	White-browed Scrubwren			x						
Thalasseus bergii	Crested Tern	x								
Zosterops lateralis	Silvereye			x	x					
**Spilopelia chinensis*	Spotted Turtle Dove						x			x
**Spilopelia senegalensis*	Laughing Turtle Dove						x			x
Mammal										
Austronomus australis	White-striped Free-tailed Bat							x		
Chalinolobus gouldii	Gould's Wattled Bat				x					
Rattus fuscipes	Western Bush Rat						x			
**Felis catus*	Cat						x			x
**Mus musculus*	House Mouse		x							
**Oryctolagus cuniculus*	Rabbit			x	x	x	x	x	x	
**Vulpes vulpes*	Red Fox	x	x	x			x	x		
Reptile										
Anilios australis	Southern Blind Snake						x			

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Species	Common Name	BF	OH	CH	MT	CP	CS	OF	SL	IF
Ctenophorus adelaidensis	Western Heath Dragon		x							
Ctenotus fallens			x	x	x		x	x		
Cyclodomorphus celatus			x				x			
Egernia kingii	King's Skink		x	x						x
Hemiergis quadrilineatus				x	x		x			
Lerista elegans			x	x	x		x	x		
Lerista lineopunctulata	Dotted-Line Robust Slider						x			
Lerista praepedita							x			
Lialis burtonis	Burton's Legless Lizard						x			
Menetia greyii	Dwarf Skink				x					
Morethia obscura				x						
Pogona minor	Western Bearded Dragon							x		
Pseudonaja affinis	Dugite			x	x					x
Strophurus spinigerus	Spiny-tailed Gecko		x	x			x	x		
Tiliqua occipitalis	Western Bluetounge						x			
Tiliqua rugosa	Bobtail		x	x	x		x	x	x	

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Appendix 4: Declared Pest Legal Status and Control Categories

Legal status of organisms as listed under the *Biosecurity and Agriculture Management Act 2007* (WA)

Legal Status	Definition
Permitted - s11	Organisms that are allowed entry into WA.
Declared Pest, Prohibited - s12	Organisms that are prohibited from entry into WA. Where there are reasonable grounds that the organism may have adverse effect on: i. another organism ii. human beings iii. the environment or part of the environment iv. agricultural activities, fishing or pearling activities, or related commercial activities, carried on or intended to be carried on, in the State or part of the State. Or it may have an adverse effect on any of those things if it were present in the State or part of the State, or if it were present in the State or the part in greater numbers or to a greater extent.
Declared Pest - s22(2)	Organisms that are present in WA and are under a control category. Where there are reasonable grounds that the organism may have adverse effect on: i. another organism in the area ii. human beings in the area iii. the environment or part of the environment in the area iv. agricultural activities, fishing or pearling activities, or related commercial activities, carried on or intended to be carried on, in the State or part of the State in the area. Or it may have an adverse effect on any of those things if it were present in the area, or if it were present in the area in greater numbers or to a greater extent.
Permitted, Requires Permit - r73	Organisms may only be imported subject to an import permit. These organisms may be subject to restriction under legislation other than the *Biosecurity and Agriculture Management Act 2007*. Permit conditions applicable to some species may only be appropriate or available to research organisations or similarly secure institutions.
Unlisted - s14	Is not a permitted organism or a declared pest. Unlisted organisms are automatically prohibited entry into Western Australia.

Declared pests listed under the *Biosecurity and Agriculture Management Act 2007* (WA) under section 22 (2) are subjected to control categories listed under the Biosecurity and Agriculture Management Regulations 2013 (WA).

Control Category	Definition
C1 Exclusion	If in the opinion of the Minister introduction of the declared pest into an area or part of an area for which it is declared should be prevented;
C2 Eradication	If in the opinion of the Minister eradication of the declared pest from an area or part of an area for which it is declared is feasible;

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Control Category	Definition
C3 Management	If in the opinion of the Minister eradication of the declared pest from an area or part of an area for which it is declared is not feasible but that it is necessary to i. alleviate the harmful impact of the declared pest in the area ii. reduce the number or distribution of the declared pest in the area iii. prevent or contain the spread of the declared pest in the area.
Unassigned	Declared pests that are recognised as having a harmful impact under certain circumstances, where their subsequent control requirements are determined by a Plan or other legislative arrangements under the Act.

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Appendix 5: Black Cockatoo Habitat Assessment Data

Black cockatoo habitat assessment data is outlined below. Green highlight denotes the tree is suitable for black cockatoo breeding habitat.

Tree ID	Species	DBH (mm)	Height (m)	No. of Hollows	Hollow Size (cm)
1	*Eucalyptus gomphocephala*	500	8	0	-
2	*Eucalyptus gomphocephala*	670	5	0	-
3	*Eucalyptus gomphocephala*	580	6	0	-
4	*Eucalyptus gomphocephala*	560	6	0	-

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Natural Area
CONSULTING MANAGEMENT SERVICES

UDLA

Yanchep Lagoon

Environmental Management Plan

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Acknowledgement of Country

Ngala kaaditj Noongar moort keyen kaadak nidja boodja.
Natural Area acknowledges the Traditional Owners of the lands on which we operate, and recognises their continuing connection to lands, waters and communities.

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System Certifications

Environmental management system registered to ISO 14001:2015
Quality management system registered to ISO 9001:2015
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V2	25/11/2025	Updates from recent surveys	ZS	JW	Final

Executive Summary

Natural Area Consulting Management Services (Natural Area) was contracted by UDLA to develop an environmental management plan for the Yanchep Lagoon Master Plan. The environmental management plan is to support the Preliminary Foreshore Management Plan to assist in the progression of the Yanchep Lagoon project for the City of Wanneroo. This environmental management plan outlines the existing environmental values and provides recommendations and frameworks for management according to best practice principles. The recommendations provided outline vegetation and fauna management, and revegetation of the natural environment.

Yanchep Lagoon contains the following environmental values on site:

- A total of 177 flora species (taxa) recorded, comprised of 85 introduced (weeds) and 92 native species
- A mapped environmentally sensitive area (ESA) and ecological linkage, containing contains Bush Forever site no. 397
- A total of 9 vegetation types
- Vegetation condition ranged from completely degraded to excellent
- The potential for one threatened ecological community listed under the *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC Act), Honeymyrtle shrubland on limestone ridges of the Swan Coastal Plain Bioregion.
- Two priority ecological communities, including:
    - Coastal shrublands on shallow sands, southern Swan Coastal Plain (FCT29a)
    - Acacia shrublands on taller dunes, southern Swan Coastal Plain (FCT29b).
- A total of 8,073 *Conostylis pauciflora* subsp*. pauciflora* (Priority 4).
- A total of 9 fauna habitat types
- Fauna habitat likely to support conservation significant fauna, including Quenda (*Isoodon fusciventer*) (Priority 4) and Black-striped Snake (*Neelaps calonotos*) (Priority 3).
- A total of 51 vertebrate fauna species, comprised of 27 birds, 7 mammals, and 17 reptiles.
- A total of 6 introduced fauna species, including two declared pests, European Rabbits (**Oryctolagus cuniculus*) and Red Foxes (**Vulpes vulpes*).
- One conservation significant fauna species observed, Crested Tern (*Thalasseus bergii*) listed as a Migratory (MI) species under the EPBC Act and protected under an international agreement.

The Yanchep Lagoon Master Plan design was designed to avoid vegetation in very good and excellent condition, meeting the vision statement for the site. The Yanchep Lagoon Master Plan ensures that new development or construction works are to be undertaken in areas in degraded and completely degraded condition, with the majority of the design being within the existing footprint at Yanchep Lagoon. The retention of vegetation in a very good and excellent condition accounts for assists in protecting vegetation extents and biodiversity. It is recommended to undertake management activities prior to, during, and post construction works. Recommended management strategies, include:

- flora and vegetation management
- weed control
- native fauna management
- feral pest management

- rehabilitation program.

Ongoing monitoring and management is required to be undertaken to retain and improve vegetation condition where possible.

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1.0 Introduction

1.1 Title and Scope of Works

Natural Area Consulting Management Services (Natural Area) was contracted by UDLA to develop an environmental management plan for the Yanchep Lagoon Master Plan. The environmental management plan is to support the Preliminary Foreshore Management Plan to assist in the progression of the Yanchep Lagoon project for the City of Wanneroo. The purpose of this environmental management plan is to outline existing environmental values of Yanchep Lagoon and provide recommendations and frameworks for management according to best practice principles.

1.2 Land Details

Land tenure and zoning plans for the Yanchep Lagoon Master Plan are provided in Appendix 1. Class A and C reserves are present within the Yanchep Lagoon Master Plan area; the purpose and management of each reserve is provided in Table 1. Six freehold (privately owned) land parcels are within the Yanchep Lagoon Master Plan area; details for each of these are provided in Table 2.

Table 1. Land Tenure and Zoning Plan of Reserves within the Yanchep Lagoon Master Plan

Lot Number	Deposited Plan	Reserve Number	Reserve Class	Purpose	Management
500	70083	R 48603	C Class Reserve	Foreshore Management	CoW Management
501	70083	R 29352	C Class Reserve	Foreshore Management	CoW Management
502	70083	R29352	C Class Reserve	Foreshore Management	CoW Management
510	75148	R29694	C Class Reserve	Recreation	CoW Management with Power to Lease
511	75148	R 29694	C Class Reserve	Recreation	CoW Management with Power to Lease
512	75148	R 49033	C Class Reserve	Public Recreation	CoW Management with Power to Lease
520	406005	R 12439	A Class Reserve	'Recreation Act 43 - 1968'	CoW Management with Power to Lease
521	406005	R 12439	A Class Reserve	'Recreation Act 43 - 1968'	CoW Management with Power to Lease
522	406005	R 12439	A Class Reserve	'Recreation Act 43 - 1968'	CoW Management with Power to Lease
523	406005	R 12439	A Class Reserve	'Recreation Act 43 - 1968'	CoW Management with Power to Lease
661	49302	R 48714	C Class Reserve	Community Purposes	CoW Management with Power to Lease
8002	54875	R 49246	C Class Reserve	Public Recreation	CoW Management
8013	57657	R 8013	C Class Reserve	Public Recreation	CoW Management
8026	49302	R 48603	C Class Reserve	Foreshore Management	CoW Management

Lot Number	Deposited Plan	Reserve Number	Reserve Class	Purpose	Management
8315	7667	R 29354	Class C Reserve	Public Recreation	CoW Management
9740	182685	R 43792	C Class Reserve	Reserve for Recreation	CoW Management with Power to Lease
10603	186553	R 39022	C Class Reserve	Restaurant, Café, Tavern, Retail, Function centre and related purposes	CoW Management with Power to Lease
15452	40341	R 20561	C Class Reserve	Recreation & purposes incidental thereto	CoW Management with Power to Lease

Table 2: Private Owned Freehold Land with the Yanchep Lagoon Master Plan

Lot Number	Deposited Plan	Type	DPS2 Zoning	MRS Zoning
134	40405	Freehold (Privately Owned)	Rural	Rural
135	40405	Freehold (Privately Owned)	Rural	Rural
900	411306	Freehold (Privately Owned)	Rural	Rural
901	411306	Freehold (Privately Owned)	Rural	Rural
8003	52676	Freehold (Privately Owned)	Public Purposes	Urban
9066	426335	Freehold (Privately Owned)	Urban Development	Urban

1.3 Background

Yanchep Lagoon is a coastal destination approximately 50 km north of the Perth central business district (CBD). Yanchep has been noted as an area of rapid population growth with the City of Wanneroo pursuing a placed based development to create greater opportunities for community development, tourism visitation, economic growth, and social recreation.

The purpose of the development within Yanchep Lagoon is to promote the area as an all-season destination, with a range of uses and activities. Yanchep Lagoon is renowned as a proud and much-loved local meeting place. This development will assist in re-positioning Yanchep as a prominent visitor destination.

In 2019, the council accepted the Yanchep Lagoon Masterplan as a principal blueprint for future development, amenity improvements, and activation initiatives within Yanchep Lagoon. The Department of Planning, Lands and Heritage (DPLH) recommended the preparation of a Foreshore Management Plan aligned with the Masterplan Vision. The City of Wanneroo is undertaking a Preliminary Foreshore Management Plan to progress the project, resolve matters and obtain commitment from DPLH prior to the development of a detailed Foreshore Management Plan.

1.4 Purpose of the Plan

This environmental management plan is prepared as a requirement of the Yanchep Lagoon Master Plan. The purpose of the management plan is to outline existing environmental values of Yanchep Lagoon and provide recommendations and a framework for management according to best practice principles. This environmental management plan consists of values and recommendations surrounding conservation management, vegetation and fauna management, and revegetation of the natural environment.

1.5 Objectives

The objectives of the environmental management plan are to:

- identify the natural resources and processes as well as the necessary management measures for preserving and enhancing the conservation values of the area
- identify fauna management strategies
- identify weed control methods
- identify rehabilitation and revegetation methods.

1.6 Legislative Context

State and Federal environment-related laws impact how environmental values are governed in Western Australia. The following legislation and policies are relevant to this assessment.

Aboriginal Heritage Act 1972 (WA)

The Aboriginal Heritage Act 1972 makes provision for the recognition, protection, conservation, and preservation of Aboriginal heritage in Western Australia.

Biosecurity and Agriculture Management Act 2007 (WA)

The *Biosecurity and Agriculture Management Act 2007* (BAM Act) regulates the framework for plant and animal pest and disease biosecurity in Western Australia. The framework provides for the control of declared flora and fauna species (declared organisms) that are known to be a significant environmental threat and the management, control and prevention of these declared plants and animals.

Biodiversity Conservation Act 2016 (WA)

The *Biodiversity Conservation Act 2016* (BC Act) aims to protect and conserve biodiversity as well as to promote the ecologically sustainable use of biodiversity components in the State. The BC Act provides the statute relating to conservation and legal protection of flora, fauna, and ecological communities. The BC Act follows the principles of ecologically sustainable development, detailing that decision-making processes should effectively integrate long-term and short-term economic, environmental, social, and equity considerations.

Environment Protection Act 1986 (WA)

The *Environmental Protection Act 1986* (EP Act) provides for the prevention, control and abatement of pollution and environmental harm, for the conservation, preservation, protection, enhancement, and management of the environment connected with the foregoing. The Environmental Protection Authority is established under this act and provides a structured policy framework that is consistent with the EP Act. The

EPA produces the guidelines and procedures associated with conducting environmental assessments in line with the EP Act.

Environment Protection and Biodiversity Conservation Act 1999 (Cth)

The Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) serves to protect and manage nationally and internationally important flora, fauna, ecological communities, and heritage places. The primary objective of the EPBC Act is to promote the conservation of biodiversity and the sustainable use of natural resources while allowing for ecologically sustainable development. The EPBC Act allows for the creation of conservation agreements between the Australian government and individuals, communities, or organizations to support the conservation of biodiversity.

2.0 Existing Environment

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

2.1 Regional Context

The site is located within the Swan Coastal Plain (SWA02) IBRA subregion (Department of Climate Change, Energy, the Environment and Water (DCCEEW), (2024). This region is characterised by low lying coastal plain covered with woodlands. This subregion is generally comprised of sandy soils dominated by Banksia or Tuarts (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 (BoM) (2024); Gingin Aero, site number 009178, the region is subject to:

- Average rainfall of 636.4 mm per annum, with rain falling predominantly between June and August
- Maximum temperatures ranging from 18.4 °C in winter to 33.3 °C in summer, with a maximum recorded temperature of 46.3 °C
- Minimum temperatures ranging from 6.5 °C in winter to 17.1 °C in summer, with a minimum recorded temperature of -3.7 °C.

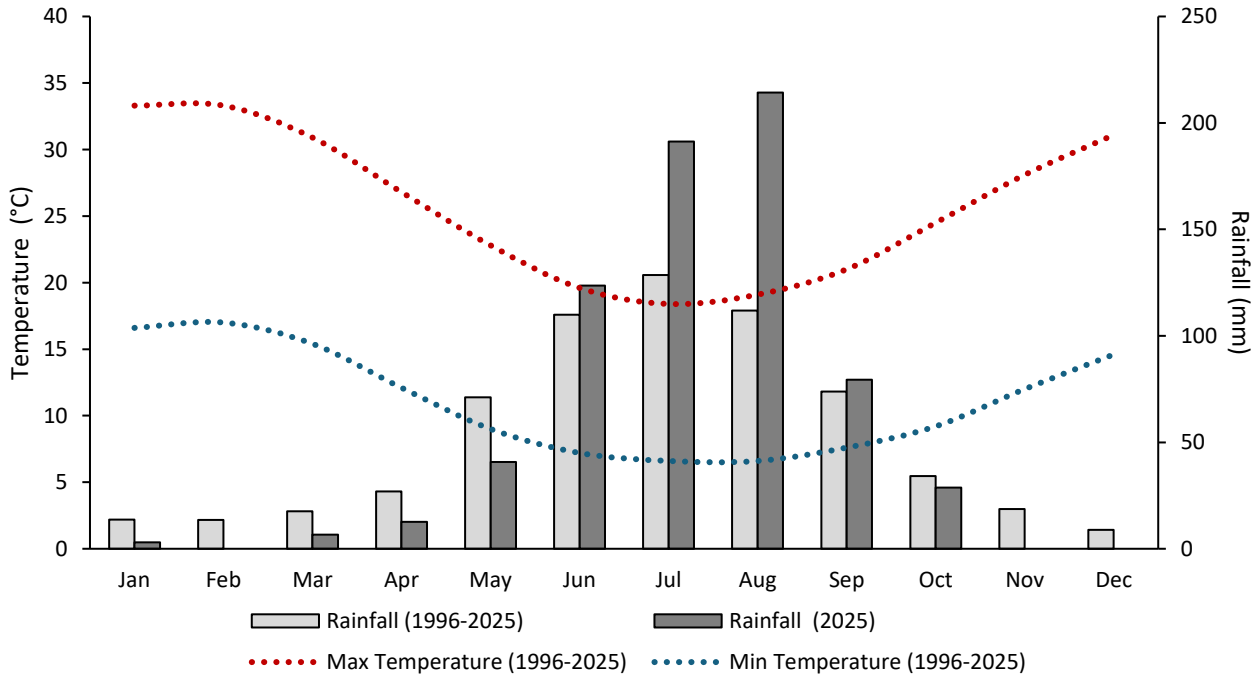


Figure 1: Temperature and rainfall data (1996-2025). Source: BoM, 2025.

2.3 Vegetation

2.3.1 Vegetation Complexes

One vegetation complex exists within the site boundary, the Quindalup Complex. It is described by Heddle, Loneragan, and Havel (1980) as a coastal dune complex consisting mainly of two alliances - the strand and fore-dune alliance and the mobile and stable dune alliance. Local variations include the low closed forest of *Melaleuca lanceolata* (Rottnest Teatree) - *Callitris preissii* (Rottnest Island Pine), the closed scrub of *Acacia rostellifera* (Summer-scented Wattle) and the low closed *Agonis flexuosa* (Peppermint) forest of Geographe Bay. The pre-European extent of this vegetation complex remaining is:

- 60.49 % within the Swan Coastal Plain
- 16.16 % within the City of Wanneroo (Government of Western Australia, 2019).

2.3.2 Ecological Linkages

Yanchep Lagoon is within an environmentally sensitive area (ESA) and a mapped ecological linkage. The ESA within Yanchep Lagoon has been identified as containing Bush Forever site no. 397. Bush Forever site no. 397 is known as the coastal strip from Wilbinga to Mindarie (DPLH, 2019). The bush forever site meets the section criteria of representation of ecological communities, rarity, maintaining ecological processes or natural systems, general criteria for the protection of wetland, and streamline and estuarine fringing vegetation and coastal vegetation.

Ecological linkages provide connectivity between patches of remnant vegetation facilitating the maintenance of ecological processes and the movement of organism within and across a landscape. Perth Regional Ecological Linkages were identified by the Perth Biodiversity Project with input from the Department of Environment, Department of Conservation and Land Management (CALM) and the Department for Planning and Infrastructure (WALGA, 2004). Perth Regional Ecological Linkage No. 1 intersects with Yanchep Lagoon, this ecological linkage links the bush forever sites 406 through to 315 and maintains connectivity along the coast for the Quindalup Complex.

2.3.3 Flora Composition

A flora survey undertaken by Natural Area (2025a) identified a total of 177 flora species (taxa) recorded from 56 families, comprised of 85 introduced (weeds) and 92 native species. The complete flora species list is provided in Appendix 2.

The survey undertaken by One Tree Botanical (2020) identified two conservation significant flora species *Stylidium maritimum* (P3) and *Conostylis candicans* subsp. *calcicola* intergrade *C. pauciflora* subsp. e*uryrhipis* (P4). A targeted flora survey was undertaken across the site in 2025 (Natural Area, 2025a), *Stylidium maritimum* (P3), was not recorded during this survey. This species has a flowering period between September and November, however, changes in weather and higher rainfall event may shift the phenological timing of the species and its detectability. The 2025 targeted survey identified and mapped *Conostylis pauciflora* subsp*. pauciflora* (P4), verified by the WA Herbarium, it is likely that this is the species identified by One Tree Botanical in 2020 as *Conostylis candicans* subsp. *calcicola* intergrade *C. pauciflora* subsp. e*uryrhipis* (P4). *Conostylis pauciflora* subsp. *pauciflora* (P4) was recorded primarily in the taller inland dunes on semi-consolidated sand with approximately 8,073 individuals recorded in the 2025 targeted flora survey (Figure 2). The conservation codes for conservation significant flora are provided in Appendix 3.



Figure 2:
Conservation Significant Flora

Yanchep, Western Australia

Legend

- *Conostylis pauciflora* subsp. *pauciflora* (P4)
- Site Boundary

Client:	UDLA
Date:	02/12/2025
Created by:	Z.Stoney
Image Source:	Nearmap, 2025
Datum:	GDA2020 / MGA zone 50
Scale:	1: 4200

0 50 100 m

N

2.3.4 Vegetation Type

A total of nine vegetation types were mapped by Natural Area (2025a), and an additional two vegetation types are listed which comprises of managed or cleared landscapes. The vegetation types are described in Table 3 and displayed on in Figure 3.

Table 3: Vegetation types identified across Yanchep Lagoon

Code	Description
Dunes On Unconsolidated Sand	
A1	An open shrubland of *Olearia axillaris* over a tussock grassland of *Spinifex longifolius.* Common species recorded include *Ficinia nodosa, Threlkedia difussa* and *Senecio pinnatifolius* var*. latilobus.* This vegetation was primarily recorded within the primary dune system along the beach.
A2	An open shrubland of *Olearia axillaris* and *Scaevola crassifolia*, over a forbland of **Pelargonium capitatum* and *Trachyandra divaricata*. Other common species recorded included **Gaudium laevigatum*, *Senecio pinnatifolius* var*. latilobus* and *Carpobrotus virescens.* Sections in the northern portion of this vegetation type were dominated by a vineland of *Cassytha aurea.* This vegetation was primarily recorded within the dune swale between OaSSlTG and ScMiOaSLgS.
A3	A shrubland of *Scaevola crassifolia, Myoporum insularis* and *Olearia axillaris* over an open to closed sedgeland of *Lepidosperma gladiatum*. Other common species recorded included *Parietaria debilis, Senecio pinnatifolius* var.*latilobus* and *Acanthocarpus preissii.* This vegetation was recorded primarily along the secondary dune system.
Coastal Limestone Cliff	
B1	An open shrubland of *Frankenia pauciflora* var. *pauciflora* and *Scaevola crassifolia* over an open chenopod shrubland of *Salicornia blackiana.* Other common species recorded included*, Olearia axillaris, Carpobrotus virescens* and *Threlkeldia diffusa.* The vegetation was recorded within the limestone outcrop along the beach.
Taller Inland Dunes On Semi-Consolidated Sand	
C1	A shrubland of *Spyridium globulosum, Acacia cyclops* and *Olearia axillaris* over a forbland of *Lomandra maritima* and *Conostylis pauciflora* subsp*. pauciflora* and a healthland of *Acanthocarpus preissii* over an open sedgeland of *Lepidosperma calcicola* and open tussock grassland of *Austrostipa flavescens* and *Poa porphyroclados.* Other common species included *Templetonia retusa, Styphelia insularis, Santalum acuminatum, Opercularia vaginata, Tricoryne elatior,* and *Leucopogon parviflorus.* This vegetation type was recorded primarily along the slopes of the taller inland dunes on semi-consolidated sands.
C2	A shrubland of *Melaleuca systema* and *Acacio lasiocarpa* over a forbland of *Lomandra maritima* and *Conost Conostylis pauciflora* subsp*. pauciflora* and a healthland of *Acanthocarpus preissii* over an open sedgeland of *Lepidosperma calcicola* and open tussock grassland of *Austrostipa flavescens* and *Poa porphyroclados.* Other common species included *Olearia axillaris, Templetonia retusa, Styphelia insularis, Santalum acuminatum, Opercularia vaginata, Tricoryne elatior,* and *Leucopogon parviflorus.* This

Code	Description
	vegetation type was recorded primarily on the dune crests of the taller inland dunes on semi-consolidated sands.
C3	A woodland of *Eucalyptus gomphocephala* over a shrubland of *Rhagodia baccata* subsp. *baccata* and *Spyridium globulosum* over a tussock grassland of **Avena barbata* and forbland of **Euphorbia terracina* and **Trachyandra divaricata*. Other species included *Acacia xanthina, Olearia axillaris, Leptomeria preissiana*, and *Threlkeldia diffusa*. This vegetation was recorded primarily in the lower slopes of the taller inland dunes on semi-consolidated sands.
Shallow Sands Over Limestone	
D1	A shrubland of *Melaleuca cardiophylla, Spyridium globulosum* and *Acacia xanthina*, over *Rhagodia baccata* subsp. *baccata*. Common species include *Leptomeria preissiana, Leucopogon parviflorus, Styphelia insularis, Lepidosperma calcicola,* and *Desmocladus asper*. This was recorded on shallow sand over limestone in the eastern portion of the site..
D2	A shrubland of *Melaleuca huegelii* subsp. *huegelii* and *Melaleuca systena* over an open sedgeland of *Lepidosperma calcicola* and open tussock grassland of *Austrostipa flavescens* and *Poa porphyroclados.* Other common species included *Templetonia retusa, Spyridium globulosum, Leucopogon parviflorus, Styphelia insularis, Desmocladus asper* and *Opercularia vaginata*. This was recorded on a crest with extensive limestone outcrops in the eastern portion of the site.
Modified Or Managed Areas	
E1	Areas that have historical disturbance, this includes infrastructure, paths, firebreaks, informal or formal paths or heavily disturbed areas.
E2	Cultivated or revegetated areas include landscape plantings of native species that are managed or recent areas subjected to rehabilitation activities.

Source: Natural Area, 2025a.



Figure 3:
Vegetation Types

Yanchep, Western Australia

Legend

A1		C3	
A2		D1	
A3		D2	
B1		E1	
C1		E2	
C2		Site Boundary	

Client:	UDLA
Date:	26/11/2025
Created by:	Z.Stoney
Image Source:	Nearmap, 2025
Datum:	GDA2020 / MGA zone 50
Scale:	1: 4200

0 50 100 m

N

2.3.5 Vegetation Condition

Vegetation condition across the site was mapped by One Tree Botanical in 2019 (One Tree Botanical, 2020) and re-assessed by Natural Area's environmental scientists in 2025 (Natural Area, 2025a). Vegetation condition was mapped using the vegetation condition scale adapted from Keighery (1994) (Table 4). The vegetation condition across the survey area was relatively similar in 2024 to 2019, with slight variations the extents of the various conditions. The vegetation condition across Yanchep Lagoon is provided in Figure 4. The variations in the extents are likely due to increases in weed populations, increases in feral pests and anthropogenic influences. Decreases in vegetation condition was prevalent in areas containing a high weed load and bare ground. Improvements in vegetation condition was evident in vegetation containing influences from management techniques, such as weed control or revegetation works.

Varying degrees of disturbance was evident across Yanchep Lagoon. Weed invasion and soil disturbance were apparent across portions of vegetation. Across Yanchep Lagoon, high traffic areas next to natural areas, contained evidence of edge effects with anthropogenic changes decreasing the surrounding vegetation condition. These high traffic areas include formalised and informal tracks.

Vegetation in an excellent condition contained a high vegetation structure with minimal to no weeds present. Very good condition vegetation included vegetation with a high-level structure and diversity with minimal to some aggressive weeds present. Vegetation in a good condition had influences of disturbance to the vegetation structure but contains the ability to regenerate without management strategies. Vegetation in a good condition typically contained a high weed load or increased coverage of bare ground.

Vegetation in a degraded condition had a reduce vegetation structure with evidence of disturbance and high weed load. The vegetation in a degraded condition requires management strategies to be put in place to improve the condition. Vegetation in completely degraded condition is almost entirely without native flora species and includes developed areas.

Table 4: Vegetation condition ratings

Category		Description
1	Pristine	Pristine or nearly so, no obvious signs of disturbance or damage caused by human activities since European settlement.
2	Excellent	Vegetation structure intact, disturbance affecting individual species and weeds are non-aggressive species. Damage to trees caused by fire, the presence of non-aggressive weeds and occasional vehicle tracks.
3	Very Good	Vegetation structure altered, obvious signs of disturbance. Disturbance to vegetation structure caused by repeated fires, the presence of some more aggressive weeds, dieback, logging and grazing.
4	Good	Vegetation structure significantly altered by very obvious signs of multiple disturbances. Retains basic vegetation structure or ability to regenerate it. Disturbance to vegetation structure caused by very frequent fires, the presence of some very aggressive weeds, partial clearing, dieback and grazing.
5	Degraded	Basic vegetation structure severely impacted by disturbance. Scope for regeneration but not to a state approaching good condition without intensive management.

Category		Description
		Disturbance to vegetation structure caused by very frequent fires, the presence of very aggressive weeds at high density, partial clearing, dieback and grazing.
6	Completely Degraded	The structure of the vegetation is no longer intact, and the area is completely or almost completely without native species. These areas are often described as 'parkland cleared' with the flora comprising weed or crop species with isolated native trees or shrubs.

Source: EPA, 2016



Figure 11:
Vegetation Condition

Yanchep, Western Australia

Legend

- Excellent
- Very Good
- Good
- Degraded
- Competely Degraded
- Site Boundary

Client:	UDLA
Date:	06/11/2025
Created by:	Z.Stoney
Image Source:	Nearmap, 2025
Datum:	GDA2020 / MGA zone 50
Scale:	1: 4200

0 50 100 m

N

2.3.6 Ecological Communities

The flora and vegetation survey undertaken by Natural Area (2025a) identified the potential for one threatened ecological community under the EPBC Act to occur, and two priority ecological communities.

Two priority ecological communities were identified during the statistical analysis to potentially occur onsite, including Coastal shrublands on shallow sands, southern Swan Coastal Plain ('floristic community type 29a') and Acacia shrublands on taller dunes, southern Swan Coastal Plain ('floristic community type 29b'). Both of these FCTs are listed as Priority 3 by DBCA. FCT 29a was represented in vegetation types A1, A2, A3, B1, C1, C2, C3, D1 and D2. FCT 29b was represented in vegetation type C1, C2, D1 and D2.

One threatened ecological community listed as Honeymyrtle shrubland on limestone ridges of the Swan Coastal Plain Bioregion, listed as Critically Endangered under the EPBC Act, was identified to potentially occur onsite. The patch within the site is recorded outside of the indicative range for this community to occur as mapped by DCCEEW (DCCEEW,2023). This patch was recorded on the Quindalup Complex, this complex has not been previously recorded to contain any known occurrence for this community (DCCEEW, 2023). The community was impacted by the fire in December 2019, which altered the structure of the community. The quadrat data from One Tree Botanical (2020) within this vegetation type pre-fire recorded higher species richness and lower weed loads compared to the survey undertaken in spring 2025. A request for further information concerning the community, including confirmation of whether this patch satisfies the applicable requirements, was submitted to DCCEEW on 7 November 2025. As a precautionary principle it should be assumed that this patch is a component of this TEC until further information.

Characteristics to be representative of the Tuart (*Eucalyptus gomphocephala*) woodlands and forests of the Swan Coastal Plain were identified on site; however, the vegetation does not meet all key diagnostic criteria to be considered as part of the threatened ecological community listed as Critically Endangered under the EPBC Act. Historic aerial imagery from 1965 shows that the *Eucalyptus gomphocephala* present within the south-western patch were planted in a line alongside an infrastructure building. Planted *Eucalyptus gomphocephala* may still be considered as part of the ecological community if it meets the key diagnostic characteristics, is in an appropriate condition, occurs in appropriate habitat, and shows evidence of post-regeneration recruitment that could contribute to longer-term persistence of the occurrence. Whilst the patches within the site do not meet the minimum patch size criteria to be considered as part of the threatened ecological community listed under the EPBC Act. The same diagnostic criteria, condition and area thresholds also apply to the priority ecological community (DBCA, 2023a).

Table 5: Key diagnostic characteristics of Tuart (*Eucalyptus gomphocephala*) Woodlands and Forests of the Swan Coastal Plain. Key diagnostic characteristics met are highlighted green.

Key Diagnostic Characteristics	Site Appraisal
Occurs in the Swan Coastal Plain Bioregion, Western Australia	Site occurs in the Swan Coastal Plain Bioregion
Primarily occurs on the Spearwood and Quindalup dune systems but can also occur on the Bassendean dunes and Pinjarra Plain. It can occur on the banks of rivers and wetlands	Site occurs on Quindalup dune systems
The presence of at least two living, established (DBH ≥15 cm) Tuart trees within the upper canopy, with a gap of ≤60 m between the canopy edges of adjacent Tuart trees	More than two Tuart trees were present
The presence of an understorey of native species, often modified by disturbance	A native understorey is present in the patch. Evidence of disturbance is present.
A patch size of at least 0.5 ha	The three separate patches are less than 0.5 ha with each patch smaller than 0.1 ha. Therefore, it does not meet the minimum patch size.

2.4 Fauna

A detailed fauna survey was undertaken by Natural Area in 2025 (Natural Area, 2025b). The assessment determined nine broad fauna habitats including beachfront (BF), coastal open heath (OH), coastal closed heath (OH), mixed trees over cleared parkland (MT), cleared parkland (CP), coastal shrubland (CS), open forest (OF), open shrubland over limestone (SL), and infrastructure (IF) (Figure 5). A total of 51 fauna species were identified during the detailed fauna survey, including 45 native and 6 introduced species. The six introduced species include the presence of the following declared pests: Rabbits (**Oryctolagus cuniculus*) and Red Foxes (**Vulpes vulpes*). One conservation significant fauna species was recorded during the field survey, the Crested Tern (*Thalasseus bergii*), listed as Migratory (MI) under the BC Act and EPBC Act. Over 10 individuals were observed resting in seaweed on the beachfront, including juveniles. Fauna species recorded within Yanchep Lagoon are provided in Table 6.

It was identified that it is likely that two conservation significant fauna species are present within the project area including Quenda (*Isoodon fusciventer*) (Priority 4) and Black-striped Snake (*Neelaps calonotos*) (Priority 3).

Table 6: Fauna observations within Yanchep Lagoon. * denotes introduced species

Family	Species	Common Name
Bird		
Acanthizidae	*Acanthiza inornata*	Western Thornbill
Cacatuidae	*Cacatua sanguinea*	Little Corella
Cuculidae	*Chalcites basalis*	Horsfield's Bronze Cuckoo

Family	Species	Common Name
Laridae	*Chroicocephalus novaehollandiae*	Silver Gull
Campephagidae	*Coracina novaehollandiae*	Black-faced Cuckooshrike
Corvidae	*Corvus coronoides*	Australian Raven
Artamidae	*Cracticus torquatus*	Grey Butcherbird
Cacatuidae	*Eolophus roseicapilla*	Galah
Falconidae	*Falco cenchroides*	Nankeen Kestrel
Meliphagidae	*Gavicalis virescens*	Singing Honeyeater
Artamidae	*Gymnorhina tibicen*	Australian Magpie
Hirundinidae	*Hirundo neoxena*	Welcome Swallow
Laridae	*Larus pacificus*	Pacific Gull
Meliphagidae	*Lichmera indistincta*	Brown Honeyeater
Maluridae	*Malurus assimilis assimilis*	Purple-backed Fairywren
Maluridae	*Malurus splendens*	Splendid Fairywren
Phalacrocoracidae	*Microcarbo melanoleucos*	Little Pied Cormorant
Strigidae	*Ninox boobook*	Boobook Owl
Phalacrocoracidae	*Phalacrocorax varius*	Pied Cormorant
Meliphagidae	*Phylidonyris novaehollandiae*	New Holland Honeyeater
Petroicidae	*Quoyornis georgianus*	White-breasted Robin
Rhipiduridae	*Rhipidura leucophrys*	Willie Wagtail
Acanthizidae	*Sericornis maculatus maculatus*	White-browed Scrubwren
Laridae	*Thalasseus bergii*	Crested Tern
Zosteropidae	*Zosterops lateralis*	Silvereye
Columbidae	**Spilopelia chinensis*	Spotted Turtle Dove
Columbidae	**Spilopelia senegalensis*	Laughing Turtle Dove
Mammal		
Molossidae	*Austronomus australis*	White-striped Free-tailed Bat
Vespertilionidae	*Chalinolobus gouldii*	Gould's Wattled Bat
Muridae	*Rattus fuscipes*	Western Bush Rat
Felidae	**Felis catus*	Cat
Muridae	**Mus musculus*	House Mouse
Leporidae	**Oryctolagus cuniculus*	Rabbit
Canidae	**Vulpes vulpes*	Red Fox

Family	Species	Common Name
Reptile		
Typhlopidae	*Anilios australis*	Southern Blind Snake
Agamidae	*Ctenophorus adelaidensis*	Western Heath Dragon
Scincidae	*Ctenotus fallens*	
Scincidae	*Cyclodomorphus celatus*	
Scincidae	*Egernia kingii*	King's Skink
Scincidae	*Hemiergis quadrilineatus*	
Scincidae	*Lerista elegans*	
Scincidae	*Lerista lineopunctulata*	Dotted-Line Robust Slider
Scincidae	*Lerista praepedita*	
Pygopodidae	*Lialis burtonis*	Burton's Legless Lizard
Scincidae	*Menetia greyii*	Dwarf Skink
Scincidae	*Morethia obscura*	
Squamata	*Pogona minor*	Western Bearded Dragon
Elapidae	*Pseudonaja affinis*	Dugite
Diplodactylidae	*Strophurus spinigerus*	Spiny-tailed Gecko
Scincidae	*Tiliqua occipitalis*	Western Bluetounge
Scincidae	*Tiliqua rugosa*	Bobtail



Figure 5:
Fauna Habitat

Yanchep, Western Australia

Legend

BF	MT
CH	OF
CP	OH
CS	SL
IF	Site Boundary

Client:	UDLA
Date:	26/11/2025
Created by:	D. Morrison
Image Source:	Nearmap, 2025
Datum:	GDA2020 / MGA zone 50
Scale:	1: 4200

0 50 100 m

N

2.5 Land Use

The proposed project area for Yanchep Lagoon is subject to a variety of land use zoning and land tenure. The land zoning is comprised of parks and recreation, urban development, public purposes and rural. Yanchep Lagoon is primarily comprised of Parks and Recreation made up of Class A and Class C reserves. The adjacent land zoning to Yanchep Lagoon are residential, urban development and parks and recreation. Residential land zoning under the district planning scheme are located to the south east of Yanchep with the urban development located to the north east. The north and south of Yanchep Lagoon Master Plan area, along the coastline is zoned as park and recreation.

The land use across Yanchep Lagoon has been identified by Australian Bureau of Agricultural and Resource Economics and Sciences (ABARES) (2024), as primarily comprised of conservation and natural environments and intensive uses. Intensive uses have been identified as transport and communications (roads), services (recreation and culture), and residential and farm infrastructure (urban residential). The surrounding land uses to the Yanchep Lagoon Master Plan area have been primarily indicated as intensive uses (transport and communications - roads), intensive uses (residential and farm infrastructure – urban residential).

2.6 Geography

A total of eight soil types were identified on site (Department of Primary Industries and Regional Development (DPIRD), 2022). The site ranges from 28 m Australian Height Datum (AHD) in the central dunes corner and 2 m AHD along the foreshore (DPRID, 2019). (Table 7 and Figure 6).

Table 7: Soil types within Yanchep Lagoon

Name	Symbol	Description
Quindalup South youngest dune phase	211Qu__Q4	The youngest phase. Irregular dunes with slopes up to 20%. Loose pale brown calcareous sand with no soil profile development
Quindalup South shallow sand flat phase	211Qu__Qs	Undulating landscapes with shallow calcareous sands over limestone and much rock outcrop
Quindalup South deep sand flat phase	211Qu__Qp	Undulating landscapes with deep calcareous sands overlying limestone. Soils have dark grey-brown sand to about 50 cm and then pale brown sand. Remnants of hummocks are often present
Quindalup South water, beach phase	211QuU_BEACH	Beach
Quindalup South second dune phase	211Qu__Q2	The second phase. A complex pattern of dunes with moderate relief. Calcareous sands have organic staining to about 20 cm, passing into pale brown sand; some cementation below 1 m
Quindalup South third dune phase	211Qu__Q3	The third phase. Irregular dunes with high relief and slopes up to 20%. Loose calcareous sand with little surface organic staining and incipient cementation at depth

Name	Symbol	Description
Quindalup South oldest dune phase	211Qu__Q1	The oldest phase. Dunes or remnants with low relief. Calcareous sands have organic staining to about 30 cm, overlying pale brown sand with definite cementation below 1 m

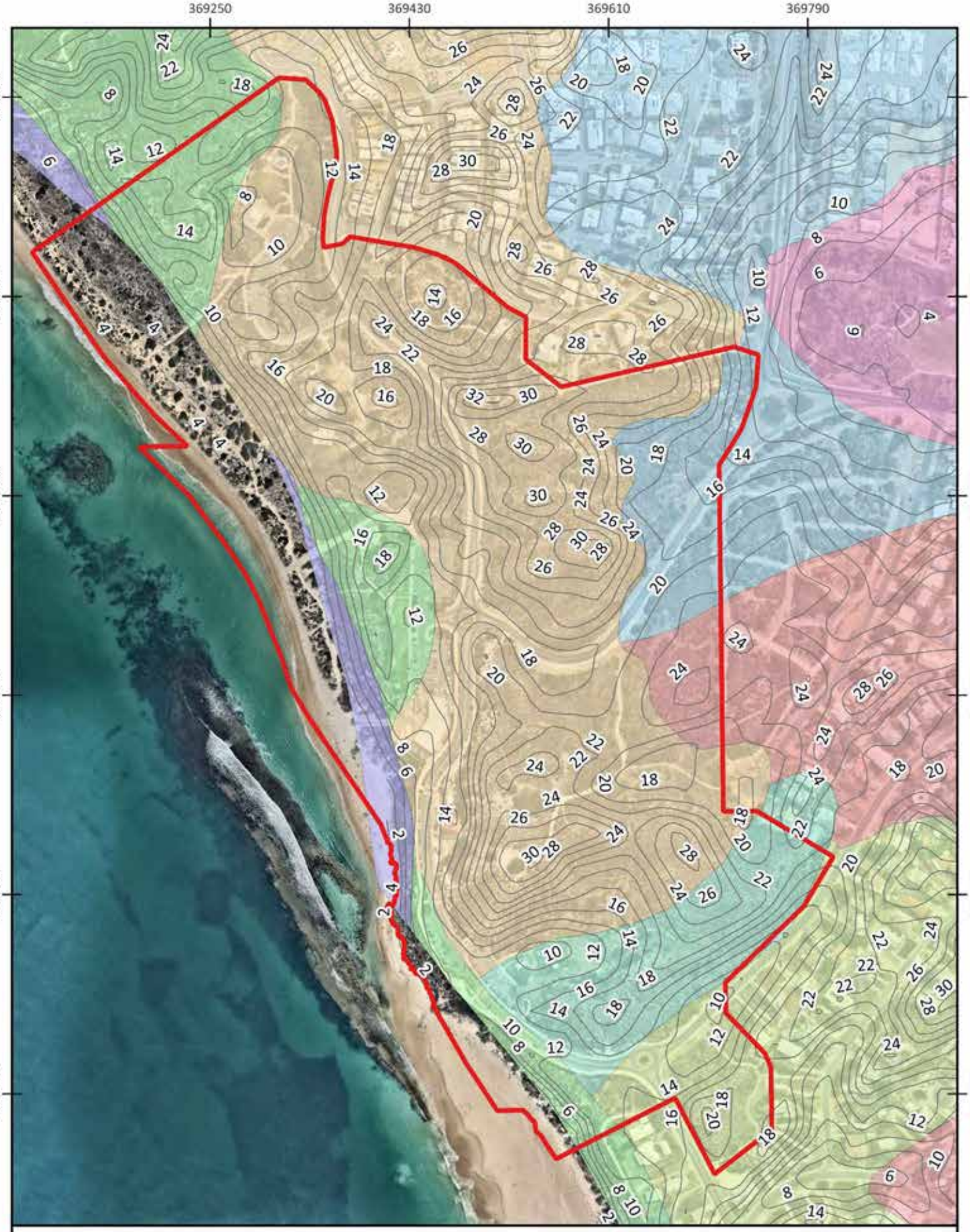


Figure 6:
Topography and Soil Type

Yanchep Lagoon, City of Wanneroo

Legend

- Contours
- 211Qu__Q1
- 211Qu__Q2
- 211Qu__Q3
- 211Qu__Q4
- 211Qu__Qp
- 211Qu__Qs
- 211QuU_BEACH
- 211Sp__Ky
- Survey Area

Client:	UDLA
Date:	07/08/2024
Created by:	Z. Stoney
Image Source:	Nearmap, 2024
Datum:	GDA2020 / MGA zone 50
Scale:	1: 4500

0 50 100 m

N

2.7 Geology

A total of two surface geology types are recorded across Yanchep Lagoon as identified from the 1:50,000 Environmental Geology series map from Department of Mines, Industry, Regulation and Safety (DMIRS) (2022). The two surface geology types include calcareous sand (S2) and limestone (LS1) (Figure 7). The description and the physical properties of the surface geology present are described in Table 8.

The geological survey of Western Australia has noted S2 as having "Moderate to steep slopes, very susceptible to remobilisation where the sparse vegetation is removed, high lime content give it considerable potential for fixing certain kinds of waste, like dissolved heavy metals, and neutralising acids, low bearing capacity, settlement is common and can be uneven." LS1 was noted as having "Variable bearing capacity dependent on degree of cementation, common solution cavities and fissures could lead to severe settlement under load, and also offers an easy path for pollutants down to the water table." The suitability of surface geology are further described in Table 9.

Table 8: Surface geology description and physical properties

Code	Description	Physical Properties						
		Permeability	Corrosion	Slope Stability	Ease of Excavation	Shrink swell Potential	Bearing capacity	SMEC
S2	Calcareous Sand – white, fine to medium grained, sub-rounded quartz and shell debris, of eolian origin	H	L-M	L	H	L	L	SP-SW
LS1	Limestone - light yellowish brown, fine to coarse grained, subangular to well rounded, quartz, trace of feldspar, shell debris, variably lithified, surface canker, of eolian origin	H	L	M-H	M-H	L	V	SP-SW

Source: Department of Mines, 1985

Table 9: Suitability of geology for specified land uses

Code	Suitability for specified land uses					
	Solid Waste Disposal	Liquid Waste Disposal	Septic Tanks	Construction of Roads	Urbanisation	Excavation (Mining and Quarrying)
S2	Activity undesirable for the environment	Activity compatible with unit	Possible problems for the environment	Possible problems for the environment	Activity undesirable for the environment	Activity undesirable for the environment

Code	Suitability for specified land uses					
	Solid Waste Disposal	**Liquid Waste Disposal**	**Septic Tanks**	**Construction of Roads**	**Urbanisation**	**Excavation (Mining and Quarrying)**
				Possible problems for the activity		
LS1	Activity undesirable for the environment	Activity compatible with unit	Possible problems for the environment	Activity compatible with unit	Activity compatible with unit	Activity compatible with unit

Source: Department of Mines, 1985.

Caves and karstic features across the City of Wanneroo have been determined and mapped. The City of Wanneroo has a large presence of Caves and Karstic features associated with the Tamala limestone geology. Whilst the LS1 geology is associated with the Tamala limestone, karstic mapping undertaken by Western Australian Speleological Group noted that Yanchep Lagoon is a low-risk karstic area (City of Wanneroo, 2022) (Figure 7). In accordance with the City of Wanneroo Local Planning Policy 4.13: Caves and Karstic Features, a desktop geotechnical assessment will need to be undertaken during any subsequent structure planning phases and on-site investigation to assess any risk.

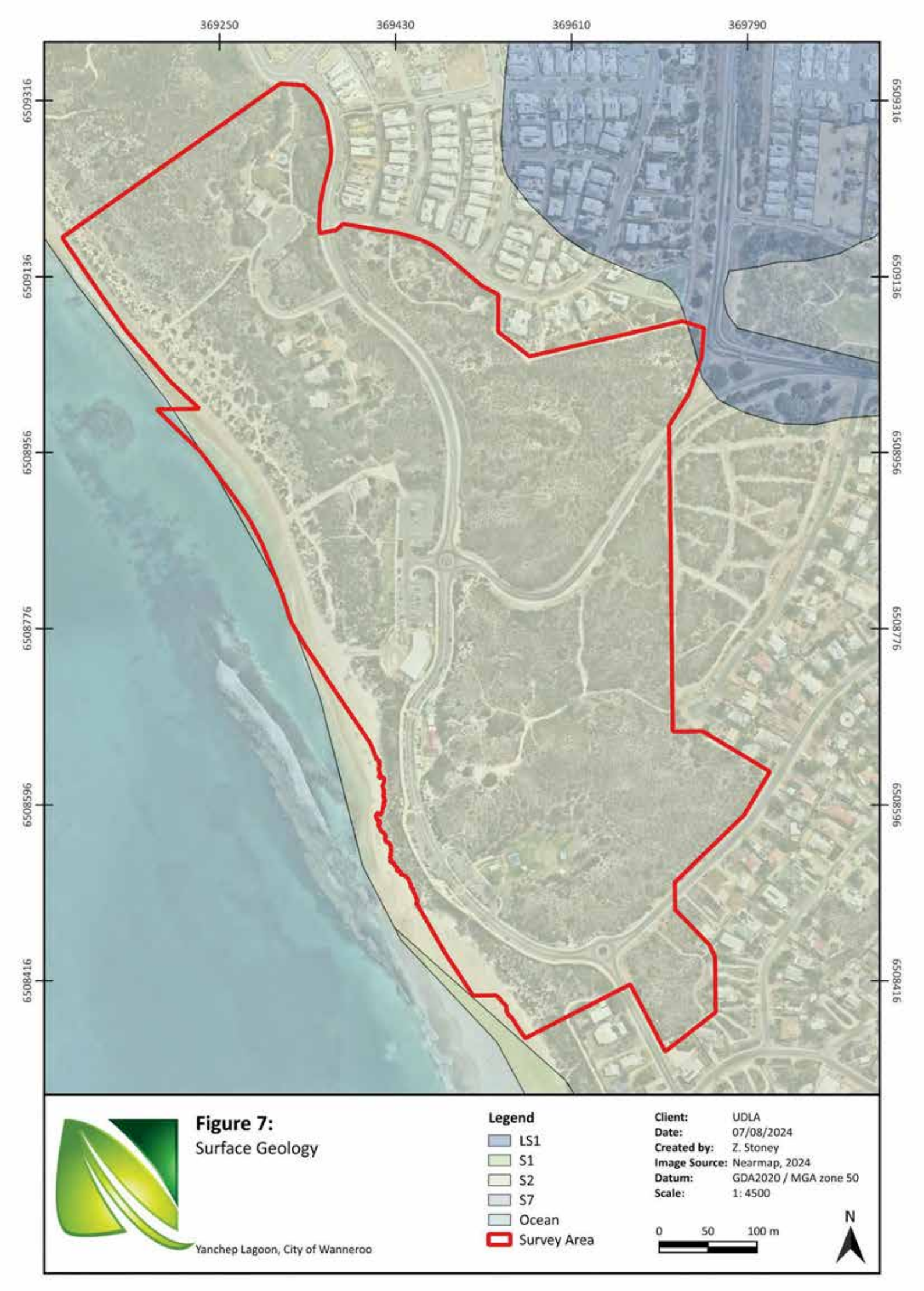


Figure 7:
Surface Geology

Yanchep Lagoon, City of Wanneroo

Legend

- LS1
- S1
- S2
- S7
- Ocean
- Survey Area

Client:	UDLA
Date:	07/08/2024
Created by:	Z. Stoney
Image Source:	Nearmap, 2024
Datum:	GDA2020 / MGA zone 50
Scale:	1: 4500

0 50 100 m

N

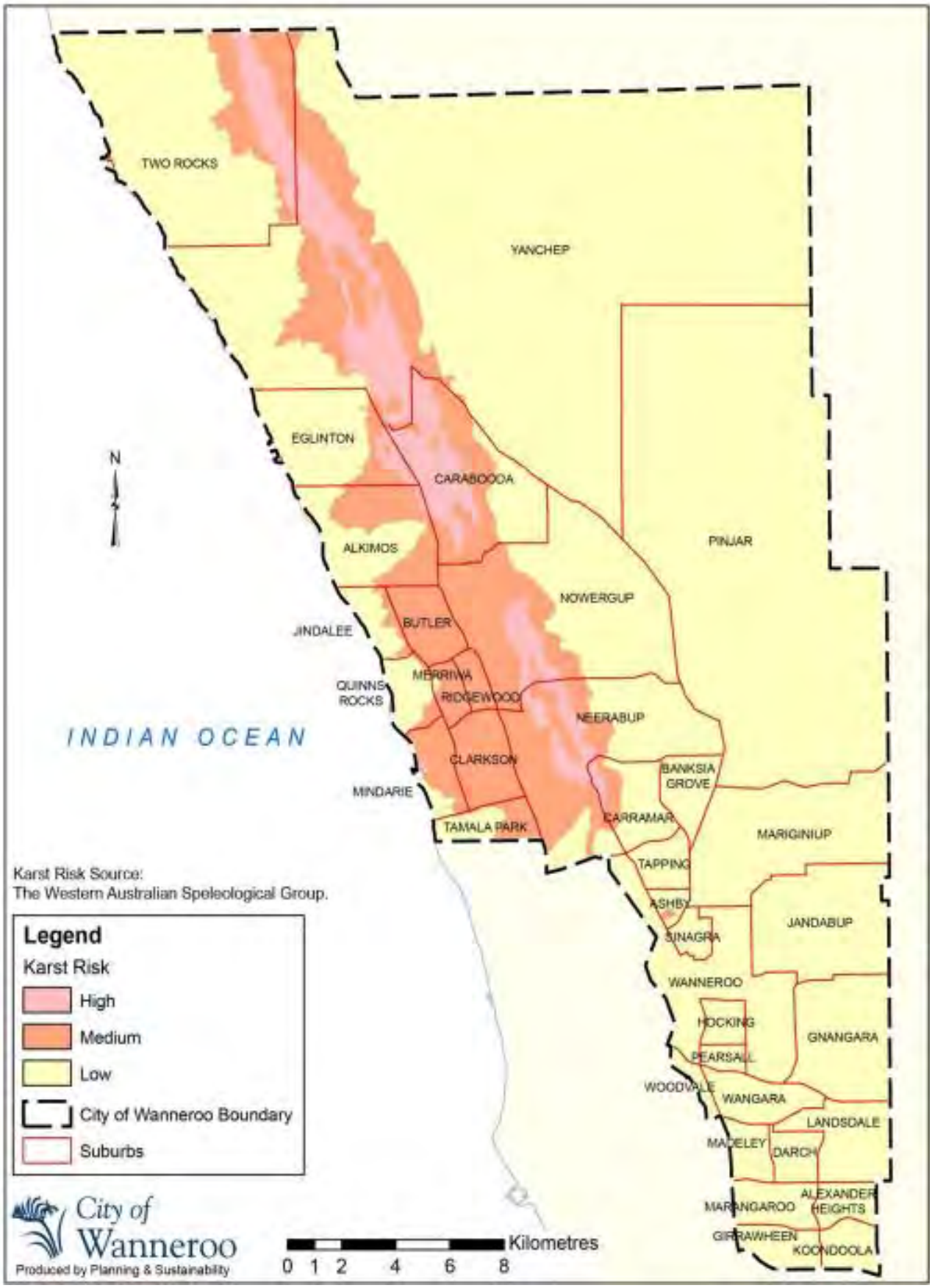


Figure 8: Karstic Risk

2.8 Soils

The likelihood of acid sulfate soil material occurring with soil profiles has been mapped for the swan coastal plain this assists in determining the risk of acid sulfate soil materials being disturbed by land development activities. No acid sulfate soil risk has been identified within the Yanchep Lagoon Master Plan area (DWER-055). No subsurface acidification risk has been identified by DPIRD (DPIRD-011)

Landscape land quality for Yanchep Lagoon was assessed utilising online datasets to assess wind erosion risk, subsurface acidification risk, land instability risk, flood risk, salinity risk, and microbial purification. Salinity risk across the site has been assessed by DPIRD (Van Gool *et al*., 2005), one category of salinity has been identified where less than 3 % of the map unit has a moderate to high salinity risk or is presently saline (L2) (DPIRD-009).

Across the site there are four wind erosion categories listed, including L2, M2, H1, and H2 (Figure 9) (DPIRD-016). Each category refers to the portion of the map unit that contains a high to extreme wind erosion risk ranging from 3-10 % (L2), 30-50 % (M2), 50-70 % (H1), and >70 % (H2). Wind erosion risk was higher closer to the coastline.

Land instability risk has been assessed by DPIRD (Van Gool et al., 2005), five risk categories for land instability has been identified across Yanchep Lagoon including, L1, L2, M1, M2, and H2 (Figure 10) (DPIRD-042). Each land instability categories refers to the portion of the map that contain a moderate to high hazard ranging from <3 % (L1), 3-10 % (L2), 10-30 % (M1), 30-50 % (M2), and >7 % (H2). The highest instability risk is recorded near the limestone cliffs and dunes adjacent to the coastline.

Flood risk has been mapped by DPIRD (Van Gool et al., 2005), two risk categories have been identified across the Yanchep Lagoon project area, L1 and H2 (Figure 11) (DPIRD-007). L1 are areas where less than 3 % of the map unit has a moderate to high floor risk which is recorded within the dune swales. The areas where greater than 70 % of the map unit has a moderate to high flood risk was recorded close to the coastlines.

Microbial purification has been assessed, across the site two ratings have been identified, M1 and H2 (Figure 12) (DPIRD-045). Where M1 refers to a map unit with 10-30 % has a very low to low rating, and H2 refers to a map unit with greater than 70 % has a very low to low rating. Majority of the site contains a a H2 rating with a section in the southern portion identified as M1.

The coastal vegetation within Yanchep Lagoon does not contain identifiable species to assess for *Phytophthora* Dieback. The area within Yanchep Lagoon has been identified as unidentifiable by mapping undertaken by project dieback (Southcoast Natural Resource Management, 2024).

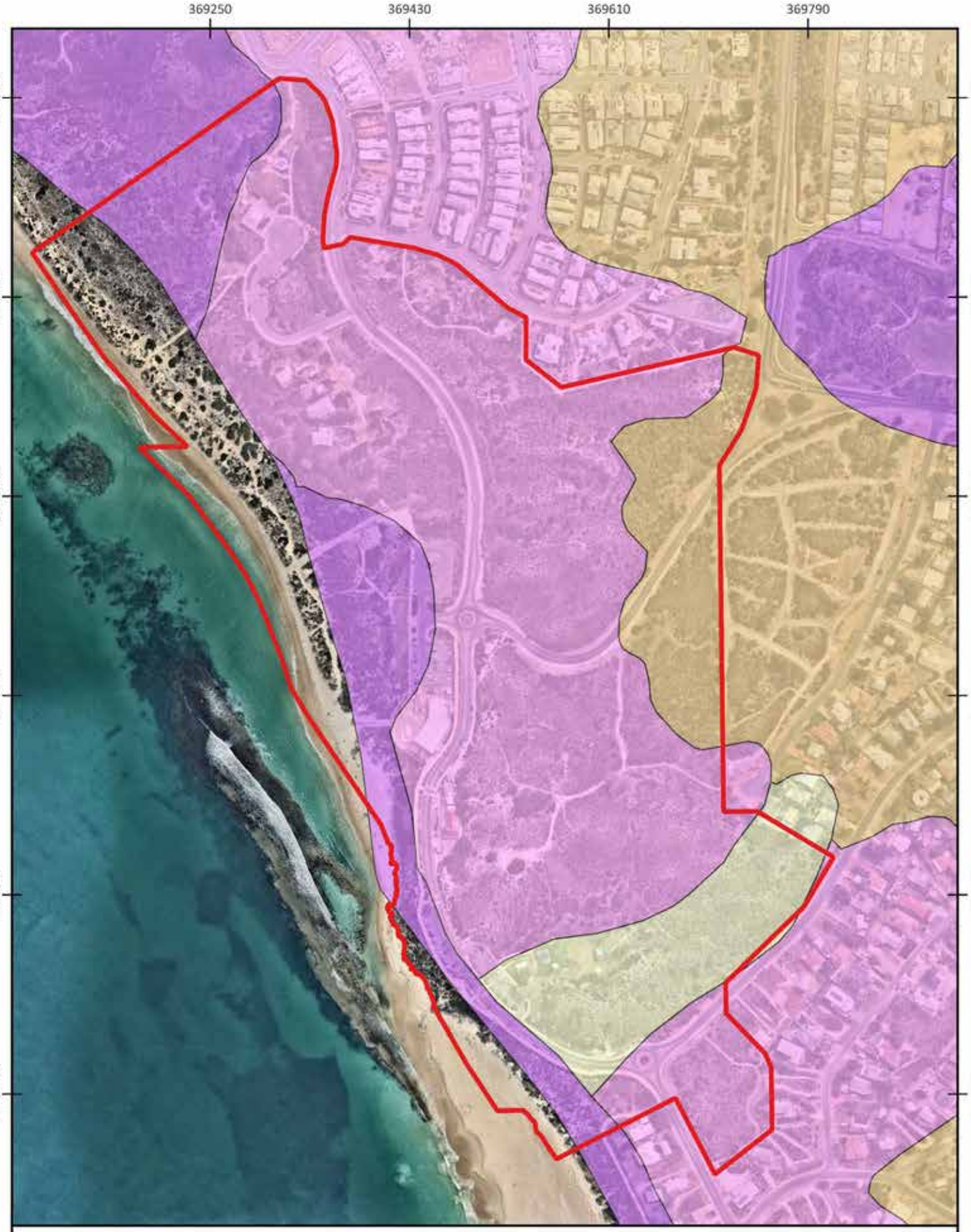


Figure 9:
Wind Erosion Risk

Yanchep Lagoon, City of Wanneroo

Legend

- L2
- M2
- H1
- H2
- Survey Area

Client:	UDLA
Date:	07/08/2024
Created by:	Z. Stoney
Image Source:	Nearmap, 2024
Datum:	GDA2020 / MGA zone 50
Scale:	1: 4500

0 50 100 m

N



Figure 10:
Land Instability Risk

Yanchep Lagoon, City of Wanneroo

Legend

- L1
- L2
- M1
- M2
- H2
- Survey Area

Client:	UDLA
Date:	07/08/2024
Created by:	Z. Stoney
Image Source:	Nearmap, 2024
Datum:	GDA2020 / MGA zone 50
Scale:	1: 4500

0 50 100 m

N



Figure 11:
Flood Risk

Yanchep Lagoon, City of Wanneroo

Legend

- L1
- H2
- Survey Area

Client:	UDLA
Date:	07/08/2024
Created by:	Z. Stoney
Image Source:	Nearmap, 2024
Datum:	GDA2020 / MGA zone 50
Scale:	1: 4500

0 50 100 m

N

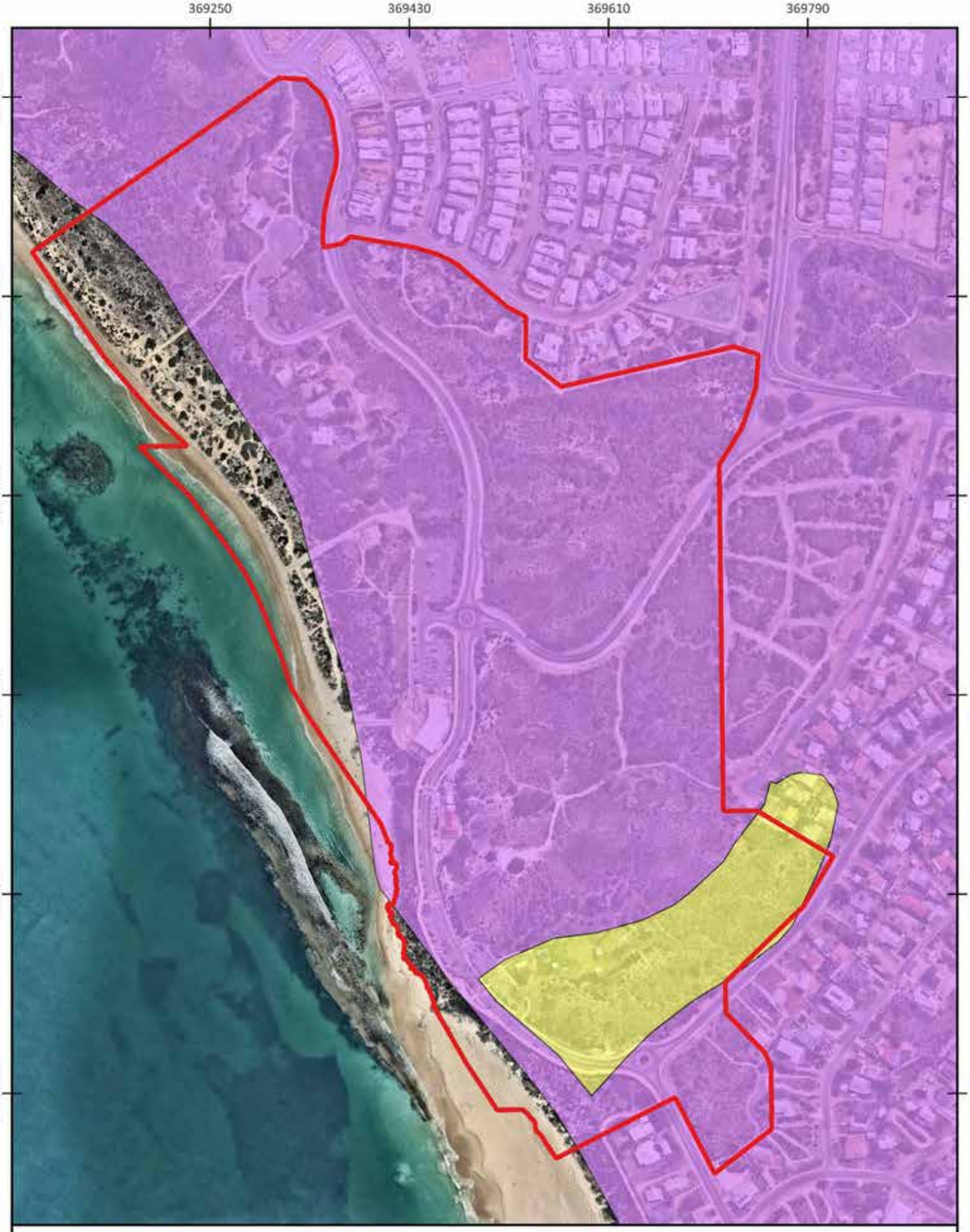


Figure 12:
Microbial purification

Yanchep Lagoon, City of Wanneroo

Legend

- M1
- H2
- Survey Area

Client:	UDLA
Date:	07/08/2024
Created by:	Z. Stoney
Image Source:	Nearmap, 2024
Datum:	GDA2020 / MGA zone 50
Scale:	1: 4500

0 50 100 m

N

2.9 Heritage

Yanchep Lagoon is within the Whadjuk People Indigenous Land Use Agreement area. Two sites are registered as Aboriginal Cultural Heritage, Yanchep Beach (ID 17599) and Limestone Reef (ID 17596) (DPLH, 2025a). The entirety of Yanchep Beach is registered as a creation/dreamtime narrative with no gender/initiation restriction. The Limestone reef is adjacent to Yanchep Beach and is a creation/dreamtime narrative with no gender/initiation restriction.

Yanchep Lagoon (ID 17949) is listed under the Local Heritage Survey (DPLH, 2025b). Three sites are listed under the Heritage List, Fisherman's Hollow (17532), Lindsay Homestead (Well & Sheep Dip) (14280), and Well & Sheep Dip (Lindsay Homestead) (14297) (DPLH, 2025c).



Figure 13:
Heritage

Yanchep Lagoon, City of Wanneroo

Legend

- Aboriginal Cultural Heritage Register (DPLH-099)
- Heritage List (DPLH-090)
- Heritage Council Local Heritage Survey (DPLH-008)
- Survey Area

Client:	UDLA
Date:	07/08/2024
Created by:	Z. Stoney
Image Source:	Nearmap, 2024
Datum:	GDA2020 / MGA zone 50
Scale:	1: 4500

0 50 100 m

N

3.0 Management Plans

3.1 Vegetation and Fauna Management Plan

3.1.1 Retention and Protection

The retention and protection of native vegetation is critical in supporting biodiversity and providing adequate faunal habitats. Yanchep Lagoon features natural amenities within its coastal dunes which are to be retained to align with the place-based drivers from Yanchep Lagoon Master Plan. Across Yanchep Lagoon the vegetation ranged from completely degraded to excellent. Vegetation in a very good to excellent condition is to be prioritised for retention and protection including a buffer to mitigate the impacts of edge effects. The Yanchep Lagoon Master Plan (UDLA, 2023) mitigates impacts to natural vegetation by developing areas in degraded and completely degraded condition and utilising the existing modified landscapes to retain and avoid vegetation.

The proposed development footprint is aligned primarily within the existing development footprint and as such reduces the need for extensive vegetation clearing. The development footprint for Yanchep Lagoon will impact approximately 0.215 ha of native vegetation extent. Impacting approximately 0.001 ha of vegetation in excellent condition, 0.052 ha in very good condition, 0.052 ha in good condition, 0.099 ha in degraded condition, and 0.011 ha in completely degraded condition. Vegetation to be retained in each condition across the site includes 0.874 ha (99.89 %) in excellent condition, 8.591 ha (99.40 %) in very good condition, and 10.120 ha (99.49 %) in good condition. The retention and removal of the different vegetation conditions are displayed in Table 10 and the various vegetation types are provided in Table 11.

It is recommended to increase the vegetation condition and structure surrounding native vegetation extents and areas in very good to excellent condition to provide a buffer and mitigate the impacts of edge effects. Increase in vegetation condition are to be undertaken in areas where vegetation condition is degraded and completely degraded.

Table 10: Vegetation condition to be retained and removed across Yanchep Lagoon

		Vegetation Condition						
		Pristine	**Excellent**	**Very Good**	**Good**	**Degraded**	**Completely Degraded**	**Total**
Retained	Area (ha)	0	0.874	8.591	10.120	4.244	7.364	31.193
	Area (%)	0	99.89	99.40	99.49	97.72	99.85	99.32
Removed	Area (ha)	0	0.001	0.052	0.052	0.099	0.011	0.215
	Area (%)	0	0.11	0.60	0.51	2.28	0.15	0.68

Table 11: Vegetation types to be retained and removed across Yanchep Lagoon

		Vegetation Type									
		A1	**A2**	**A3**	**B1**	**C1**	**C2**	**C3**	**D1**	**D2**	**Total**
Retained	Area (ha)	0.993	1.004	4.158	0.228	4.477	8.171	0.259	2.279	0.105	21.674
	Area (%)	100	100	97.70	100	98.70	99.50	98.10	99.17	100	99.02
Removed	Area (ha)	0	0	0.098	0	0.059	0.034	0.005	0.019	0	0.215
	Area (%)	0	0	2.30	0	1.30	0.50	1.90	0.83	0	0.98

Infrastructure

To protect high condition vegetation and mitigate damages to the natural environment it is recommended to establish fencing surrounding conservation areas and revegetation areas. The establishment of appropriate signage is recommended explaining the conservation areas, to inform the general public, and to discourage any unwanted modifications. Informing and educating the general public assists in raising awareness on the benefits of environmental conservation and to support future conservation efforts.

Unauthorised Access Management

Increased human population surrounding natural areas increases the pressure and impact on the environment. Localised disturbance due to urbanisation and developments includes informal tracks for walking, bikes, and other off-road vehicles. Open access into natural areas can create unwanted activities, these activities can modify landscapes, degrade the ecosystem, and facilitate the spread of weeds.

To mitigate unwanted activities across the reserves, infrastructure should be installed to restrict access. To deter illicit activities, it is recommended to place warning signage displaying relevant Local Laws and fines to act as a deterrent. Further consideration should be given to the monitoring of known hotspots for illicit activities, through liaison with the City of Wanneroo's rangers and local police.



Figure 14:
Yanchep Lagoon Master Plan and Vegetation Condition

Yanchep, Western Australia

Legend

- Development Footprint
- Excellent
- Very Good
- Good
- Degraded
- Competely Degraded
- Site Boundary

Client:	UDLA
Date:	01/12/2025
Created by:	Z.Stoney
Image Source:	Nearmap, 2025
Datum:	GDA2020 / MGA zone 50
Scale:	1: 4200

0 50 100 m

N

3.1.2 Weed Management

Weed species impact the environment creating competition of resources, introducing diseases, preventing recruitment, altering ecosystem processes, and impacting native fauna (Burgman and Lindenmayer, 1998; Csurches and Edwards, 1998). To mitigate the impact of weeds on the environment weed control should be undertaken prior to any works. The works undertaken across the site should utilise clean equipment and personal protective equipment (PPE) to mitigate the spread of weeds into natural areas. Weed species can be introduced into natural areas through the illegal dumping of garden waste by residents. It is important monitor the site for evidence of the dumping of garden waste and to undertake community awareness and education training where possible.

Weed Prioritisation

Weed prioritisation should be undertaken across the are prior to undertaking weed control works. The Ecological Impact and Invasiveness Ratings for the Swan Region (DBCA, 2023) is a tool used to determine weed management priorities for weed species recorded within an area. The prioritisation process can be used to inform management recommendations and treatment strategies for weed species present through focusing on species with the greatest ecological impact, as well as any site-specific requirements. Weed prioritisation according to ecological impact and invasiveness is provided for each species in Appendix 5 and summarised in Table 12. Out of the weed species present on site, 11 have not been allocated an ecological impact or invasiveness rating (DPaW, 2016):

- #*Grevillea olivacea* (planted)
- **Callistemon* sp. (planted)
- **Eucalyptus* sp. (planted)
- **Melaleuca* sp. (planted)
- **Metrosideros tomentosa* (planted)
- **Pelargonium × hortiorum*
- **Phoenix* sp. (planted)
- **Westringia fruticosa* (planted)
- Common Bittercress (**Cardamine hirsuta*)
- Norfolk Island Pine (**Araucaria heterophylla*).

Table 12: Ecological impact and invasiveness of weeds species present

	Ecological Impact				Invasiveness			
	High	**Medium**	**Low**	**Unknown**	**Rapid**	**Moderate**	**Slow**	**Unknown**
Number of Species	25	5	15	34	46	12	12	9

Weed Treatment

The treatment type required to control weed species is determined from the characteristics of the species. The treatment types for each weed species can typically be found on the Florabase website (Western Australian Herbarium, 1998-). It is important that the correct timing and methodology is employed for each weed species. There are seven potential weed treatments that can be undertaken to control weed species the recommended treatment types and methodology are described in Table 13. Contractors who are

undertaking weed control must be suitably qualified to reduce the potential of off-target damage, as the weed presence across most of the site are mixed with native species.

Table 13: Treatment types and methodology for targeted weed species

Treatment Number	Treatment Type	Targeted Species	Application Method and Comments
1	Non-selective (Glyphosate/Biactive Glyphosate)	Annual and perennial grass and broadleaf weeds	Spot spray target species
2	Grass selective (e.g. Fusilade)	Annual and perennial grasses	Spot spray - selective grass spray (will affect native grass species)
3	Selective (e.g. Metsulfuron)	Annual broadleaf weeds and bulbs	Spot spray – semi selective
4	Wick wipe (Glyphosate & Metsulfuron wipe)	One-leaf Cape Tulip	Wipe leaves with sponge prior to or just on flowering
5	Woody weeds (Triclopyr + Picloram, or Glyphosate)	Woody weeds and trees	Cut and paint, basal bark or drill and fill (method is species dependant as some are prone to suckering e.g. *Schinus terebinthifolia*)
6	Manual removal/hand weeding	Carnation weeds (*Euphorbia* sp.), Fleabane (*Erigeron* sp.) and other similar species including woody weed seedlings when small	Gloves required due to caustic sap of Carnation weeds. Manual removal can also include slashing
7	Selective (Triasulfuron)	Carnation weeds (*Euphorbia* sp.), Fleabane (*Erigeron* sp.) and other similar species including woody weed seedlings when small	Spot spray target species

3.1.3 Fauna Management

Pre-clearance Trapping and Relocation

To mitigate the impact to vertebrate fauna populations, a fauna trapping and relocation program should be implemented prior to the commencement of vegetation clearing. Trapping and relocation activities are to be planned on a per event basis and will need to be carried out in stages based on the schedule of clearing, as clearing is recommended to be carried out within a maximum of 48 hours from fauna trapping completion in any given area to prevent native fauna from returning/ recolonising. Exclusion fencing should be installed around the entire perimeter of the relevant development stage prior to site works to limit the movement of fauna into the development area. Fauna proof fencing should be a minimum height of 1.8 metres and flushed with the ground.

Pre-clearance fauna trapping and relocation activities are to be undertaken by suitably qualified personnel in accordance with relevant licences and best practice. The trapping and relocation program should include:

- applying for a DBCA Regulation 28 - Fauna Taking (relocation) Licence (formerly Regulation 15 – Licence to take fauna for education or public purposes)
- liaising with the DBCA and relevant landowner(s) to determine a suitable relocation site
- a minimum of five consecutive days (four nights) of trapping per trapping event
- setting out pitfalls and funnel traps along drift fence to target reptiles and amphibians
- setting out aluminium box traps (Elliot style) to target small mammals, including Quenda
- baiting Elliot traps with universal bait (oats and peanut butter)
- covering traps with a hessian bag and/or vegetation to protect captured fauna from the elements
- recording GPS locations of all traps and relocation sites
- recording species, sex and condition (health) of captured individuals
- on days when the temperature is expected to reach or exceed 35°C, traps will be closed after checking in the morning and reopened in the afternoon when it is cooler
- active searching of all portions of the site, including raking leaf litter and moving rocks, logs and similar to search for additional fauna
- relocation of fauna to the nominated location (approved by DBCA) on the day of capture, as soon as it is possible to do so
- production of a fauna trapping and relocation report detailing methods used, locations of traps (maps) and results of the trapping events including species caught and relocated.

All fauna trapping and relocation works are to be undertaken in accordance with the DBCA standard operating procedures (SOP) including:

- aluminium box traps for capture of terrestrial vertebrates (SC22-06)
- animal handling and restraint using soft containment (SC22-12)
- cage traps for live capture of terrestrial vertebrates (SC22-07)
- care of evicted pouch young (SC22-16)
- dry pitfall trapping for vertebrates (SC22-04)
- ethical wildlife photography (SC23-09)
- euthanasia of animals under field conditions (SC23-10)
- first aid for animals (SC23-08)
- funnel trapping for capture of terrestrial vertebrates (SC22-05)
- hand capture of wildlife (SC22-12)
- hand restraint of wildlife (SC23-07)
- managing disease risk and biosecurity in wildlife management (SC23-06)
- transport and temporary holding of wildlife (SC22-11).

Training and Awareness

As part of onsite inductions, pre-starts and toolbox meetings during the development process, all relevant personnel should be made aware of the fauna species likely to be present and the mitigation measures to reduce impacts to conservation significant species. Information should include:

- fauna species present or likely to be present in the area, focusing on conservation significant species
- pictures of the species and their habitats

- on-ground coordination with a fauna spotter and protocols for handling injured fauna or dependant juveniles (including incident reporting requirements).

Signage detailing the fauna present within the retained vegetation should be installed around the Yanchep Lagoon to educate the public about fauna species residing in the area and encourage protection of these species and their habitat.

Vegetation Clearing Controls

The following vegetation clearing controls should be implemented to mitigate impact to fauna:

- vegetation considered to provide habitat for conservation significant fauna species, including migratory bird species, is to be retained where possible. This may include large trees that provide suitable habitat for black cockatoos.
- vegetation clearing to commence within 48 hours of completing the fauna trapping and relocation events to prevent fauna from recolonising the area
- limit of clearing to be clearly flagged prior to commencing earthworks
- slow directional clearing of the site to be undertaken to allow fauna to disperse away from clearing activity into remaining vegetated areas.

Fauna Spotter

A licenced and experienced fauna spotter/catcher should be on site prior to and during vegetation clearing activities to relocate any fauna. The following measures should be implemented during spotting and relocation activities:

- The fauna spotter should liaise with plant operators to minimise fauna injuries or mortalities.
- Captured individuals to be relocated to appropriate habitat locations outside the proposed clearing areas which have been approved by the DBCA and relevant landowner(s).
- If injured fauna or dependant juveniles are found, individuals are to be taken to an authorised wildlife career or nearest veterinary hospital.
- Deceased fauna are to be removed and disposed of in a suitable manner.
- Rate of clearing to be consistent with capability of spotter-catcher and density of fauna found.

Infrastructure

To protect retained fauna habitat within Yanchep Lagoon, conservation fencing should be installed to restrict public access and mitigate unwanted activities within conservation areas. It is recommended that fence specification restricts public access but not inhibit native fauna movement (e.g. ringlock fencing). If areas expecting to have high human activity (such as parking lots and cafes) are adjacent to bushland, it is recommended that abutting fencing includes a skirt/apron to reduce potential interaction and between native fauna and high-risk areas.

Fauna Monitoring

Following completion of the Yanchep Lagoon Master Plan, native fauna remaining within the retained vegetation should be monitored over time to ensure they have not been impacted by the development through loss of habitat from vegetation clearing and on-going environmental disturbances (light, noise etc.) associated with the proposed development and activities. Population monitoring techniques that may be employed include:

- capture-mark-recapture
- faecal pellet counts
- camera trap surveys
- direct observation/active searching.

Anthropogenic pressures as a result of urban development may adversely impact native fauna and associated habitat through loss of habitat and increased disturbance (light, noise). Reduction in available habitat can decrease the resources and reduce the ability for fauna populations to be supported. If ongoing monitoring shows in a decline in species abundance and diversity, habitat enhancement should be considered, and removal of key threatening processes should be implemented.

3.1.4 Feral Pest Management

Feral animals impact the environment and ecosystem, they can degrade vegetation that provides food and shelter for native fauna, prey on the native fauna, and even place a risk to the survival of native fauna and threatened species.

Declared pests are listed on the Western Australian Organism List (WAOL) under the BAM Act (DPIRD, 2024). This classification requires the landowner/land manager to control the population to limit damage as a result of the presence of these species (DPIRD, 2019).

Feral animal control can be undertaken through a variety of methods including exclusion fencing, trapping, baiting, den/warren fumigation, den/warren destruction, and shooting. Feral animal control is to be undertaken by Licenced Pest Management Technicians (LPMT). Feral animal control should prioritise Rabbit, Red Fox, and Feral Cat populations. Adaptive management should be undertaken until the populations are controlled and the detrimental environmental impacts are reduced.

Community education and engagement programs should be actively promoted to ensure that relevant members of the public have an understanding of the ongoing works, and how they may be affected. Appropriate signage and notification should occur prior to, and during trapping efforts, as to inform the community and reduce the risk of off- target domestic pet capture.

Rabbit

Rabbit populations impact the environment by competing with native fauna, overgrazing, preventing regeneration and plant succession, altering ecological communities, and changing soil structure and nutrient cycling leading to erosion (Department of the Environment and Energy (DEE), 2016). Female rabbits are capable of breeding multiple times a year, typically after significant rainfall when fresh growth of plants is available (Centre for Invasive Species Solutions (CISS), 2011). Under favourable conditions, a single doe can produce 50 – 60 offsprings per annum (NSW Department of Primary Industries, 2024). When actively breeding, territorial groups form, consisting of 1-3 males and 7-10 females, with individuals capable of consuming up to 150 g of vegetation per night (over 54 kg per year) (CISS, 2011). Rabbits can support increased population densities of pest species and promote the spread and growth of weed species.

The recommended control of rabbits is to undertake bait delivery of Rabbit Haemorrhagic Disease Virus K5 strain (RHDV1 K5), followed by cage trapping, targeted ground shooting, and rabbit warren destruction, where no native vegetation is to be impacted. It is recommended to undertake RHDV1 K5 release rather than Pindone baiting due to the potential off-target impact of Pindone to native fauna species, including Quendas and Common Brushtail Possums (DPIRD, 2018). Biannual releases of RHDV1 K5 should be undertaken from November to December, and February to March.

Red Fox

Red Foxes predate on native animal species and can deplete populations of threatened fauna and alter ecosystem processes. Red foxes pose a threat to 76 threatened species in Australia and have been the primary cause of the extinction of small and medium sized mammal species in Australia (Department of the Environment, Water, Heritage, and the Arts (DEWHA), 2008a; DEWHA, 2008b).

The recommended control for Red Foxes is to undertake trapping, and targeted ground shooting. Red Fox trapping can be undertaken throughout the year and should be aimed to disrupt annual breeding cycles (June- October) and dispersing individuals (December-May). Targeted ground shooting (subject to risk assessment and approval from Western Australian Police) can be considered to remove trap-shy individuals. Den fumigation and lethal baiting with 1080 are additional control options that can be undertaken, however, due to the proximity to urbanised areas these options are not recommended for any of the reserves due to the risk of off target damage to both native fauna and domestic pets.

Cat

There is the potential for the occurrence of cats within Yanchep Lagoon due to the proximity to urbanised areas and the resources available within surrounding natural areas. Cats inhabit approximately 99% of Australia (West, 2008), and predate on native fauna species, depleting populations (Commonwealth of Australia, 2015). Approximately 80 endangered and threatened species are at risk from feral cat predation (DEWHA, 2008c).

In Australia, cats are grouped into three difference categories. Despite the separate categories, they refer to the same species and all have the potential to be a significant threat to native fauna. The three categories guide management actions that can be undertaken to mitigate the impact of cats on the natural environment (Table 14). Individual cats may move between the categories and only cats within the feral category are classed as declared pests.

Accepted control techniques for feral cats include exclusion fencing, shooting, trapping, and baiting. Due to the proximity of the reserves to urbanised areas, shooting and baiting techniques are not recommended as there is a potential of off-target damage to free-roaming domestic cats. It is recommended that trapping is undertaken to control feral cats, this method is effective in targeting known locations of feral cat populations. It is recommended to control domestic and stray cats to liaise with the City of Wanneroo to promote responsible pet ownership through education and awareness campaigns, and develop signage to inform the public. The development of local cat laws can enforce rules and penalties which can focus on reducing the damage of domestic cats in conservation areas.

Table 14: Categories of cats in Australia

Category	Definition	Management Action
Feral	▪ Live and reproduce in the wild ▪ Survive by hunting or scavenging ▪ None of their needs are satisfied intentionally by humans ▪ Unlikely to ever display socialised behaviour or willingly be in the presence of humans ▪ Only feral cats are declared pests in Western Australia	Primary focus is to reduce population and limit impacts through the use of mechanical, chemical or biological control methods
Stray	▪ Found in and around cities, towns and rural properties ▪ May depend on some resources provided by humans but are not owned	Combination of both social approach (education and awareness campaigns) and technical population/damage reduction
Domestic	▪ Owned by an individual, a household, a business or corporation ▪ Most of their needs are supplied by their owners ▪ Domestic cats are subject to the Cat Act 2011, which requires that they are registered with local authorities and identified according to the act ▪ Unconfined domestic cats that are allowed to wander in natural areas will have greater negative impacts on native fauna	Primary management will focus on pet owners by promoting responsible ownership through education and awareness campaigns. Enforcement through local or state/territory legislation

3.1.5 Environmental Impact Mitigation

To mitigate environmental impacts, all contractors working on site should undertake a site induction which outlines the environmental values of the site and outlines the responses to any environmental incidents. All vehicles and footwear are to be clean and free of debris to mitigate the spread of weeds, diseases and pathogens on site. The removal of weeds are to be conducted prior to development to reduce the spread of weeds. Rubbish and construction materials on site are dealt with efficiently and appropriately removed and disposed of.

Dust

Dust from construction work for the site have the potential to impact the surrounding environmental values, including vegetation, soil and water quality. Dust is particulate matter comprising very small solid particles of earth, organic matter, manufactured products or waste matter which may become airborne (DWER, 2021). This particulate matter has the potential to influence the health of fauna species or amenity features of the site. Dust pollution is known to impact morphological and physiological properties of plants (Kameswaran *et al*., 2019). The inhabitation of dust on plants can reduce the visual amenity of the site for locals and visitors. Dust levels should be visually monitored during construction and management actions implemented if excessive level identified.

Noise and Vibration

The surrounding land uses to Yanchep Lagoon include residential areas, this surrounding land use mean that the site would likely be subjected to existing minor noise and vibrations. Noise levels and light pollution for construction activities on site have the potential to impact fauna species. The impacts of anthropogenic noise on fauna ranges from temporary avoidance to long term behavioural changes that may impact reproductive success or change in habitat use (Erbe *et al.*, 2022; Newport *et al*., 2014). Construction works can also create vibrations which may cause behavioural and physiological changes in species that rely on vibrations to detect biotic and abiotic cues (Roberts & Elliot, 2017; Newport *et al*., 2014). It may be necessary to monitor noise and vibrations prior to, during and after construction works to determine whether there are any implications on fauna species.

Light

Artificial light is currently present adjacent to Yanchep Lagoon within the residential areas. Artificial light can disrupt behaviour and physiological changes in fauna species, including breeding and reproduction activities (Russart & Nelson, 2018). It is important that artificial light is considered in the development of Yanchep Lagoon. Lighting design should follow best practice principles (DCCEEW,2023), including:

- only adding light for specific purposes
- using adaptive light controls to manage timing, intensity and colour
- light only areas intended to avoid light spill
- use the lowest intensity appropriate for the task
- use non-reflective dark coloured surface
- use light with little or no blue wavelengths.

Dieback Management

Phytophthora cinnamomi, or Dieback, can enter bushland through infected soil on footwear, through construction activities, vehicles (infected mud and soil on the tyre tread and undercarriage), and through bushland restoration projects, working at contaminated sites and then introducing the pathogen to uninfected sites. Any personnel or contractors working on site are to undertake the relevant measures in Dieback hygiene to minimise the spread within the site.

A construction environmental management plan is recommended to be developed, including environmental impact mitigation measures such as weed control, dieback hygiene, dust suppression and tree protection during construction activities. This plan will form a condition of contract with the Building Contractor.

3.2 Revegetation Plan

3.2.1 Areas to be revegetated

Areas to be prioritised for revegetation include areas in good to completely degraded vegetation. Any tracks that are not to be utilised should be closed off and rehabilitated. Where applicable vegetation surrounding very good or excellent vegetation condition should be prioritised for revegetation to reduce the impact of edge effects. The revegetation activities to be undertaken across each revegetation zone are site specific. Areas identified to be appropriate opportunities for revegetation are displayed in Figure 17 with the total amount listed in Table 15.

Table 15: Opportunities for revegetation across the vegetation zones in Yanchep Lagoon

	Revegetation Zone			
	A	**C**	**D**	**Total**
Area (ha)	1.027	3.084	0.297	4.408

3.2.2 Site Preparation

Prior to revegetation works, site preparation is to be undertaken across the proposed areas for revegetation. The site preparation works are to include weed control, coir matting, brushing, and fencing. Brushing and coir matting should be used in conjunction to assist in dune stabilisation. Fencing along with brushing and coir matting should be undertaken across existing informal tracks requiring to be rehabilitated and to discourage unauthorised access.

Weed Control

Weed control is to be conducted prior to installation of vegetation to reduce immediate competition. Once the plants and seed has been installed, extreme care should be taken to avoid damage to emerging seedlings and installed tubestock. It is important that weeds be managed prior to seed set and no pre-emergent or residual herbicides shall be applied to seeding areas. It is important that weeds are not allowed to get to a size and density which may impact revegetation. Manual weed control should be conducted where required to ensure zero off target damage and no risk of seed being dispersed.

Coir Matting

Coir matting assists with dune stabilisation and erosion control. Direct seeding and installation of matting is to occur concurrently throughout the revegetation areas to ensure that the matting is installed immediately following seed broadcasting on site to reduce the loss of seeds. A 700 GSM coir matting is to be installed to the proposed revegetation areas. The overlap between the rolls are to be a minimum of 100 mm and are to be trenched into a depth of at least 200 mm by 150 mm wide. Matting is to be secured in place utilising 280 mm Biotek Gipper Pins with a minimum of three pins per m^2. Example coir matting installation and revegetation works are displayed in Figure 15.



Figure 15: Example of coir matting installation and revegetation works.

Fencing

Prior to the installation of plants, windbreak fencing and exclusion fencing are to be installed around the revegetation areas. Windbreak fencing is to comply with the City of Wanneroo's standard (TS 01-11-0) provided in Appendix 6 and example windbreak fencing is displayed in Figure 16. This will include:

- Installation of 2.4 m HD galvanised MaxY Star Pickets at 4 m intervals
- Installation of 7/90/30 ringlock mesh secured to the star pickets with fence post clips
- Installation of 3 strands of white PVC coated horse sighter wire
- Installation of 600 mm wide chicken wire mesh to the bottom 200 mm of the ringlock mesh (secured with C-clips)
- Installation of 915 mm 70% cream shade cloth attached to the ringlock mesh and secured with ringlock fasteners.

As this fence type includes shade cloth, it is expected that the sand will begin to accumulate following installation. This fencing should be used to assist with erosion control. Exclusion fencing should be utilised around revegetation areas to exclude fauna species. This exclusion fencing should be removed once the revegetation is established to allow for the movement of fauna species across the landscape. Sand accumulation against fencing, if not managed, can allow rabbits to mobilise over the fencing to access the revegetation areas. Exclusion fencing should include a rabbit proof skirt and comply with the City of Wanneroo's standard (TS 01-7-1), provided in Appendix 7.



Figure 16: Example windbreak fencing to be installed.

Brushing

The use of brushing materials from local sourced or vegetation marked to be cleared. The vegetation by products for brushing can be strategically placed to assist in dune stabilisation, mitigate against wind erosion, and deter the public from using closed off paths. The use of vegetation that hold seed may further increase the seed quantities to the area and assist in building up the seed back. These species include Melaleuca species. Where the base of the vegetation cannot be placed in the sand steel pins can be utilised to secure the vegetation.

3.2.3 Species List

The species used for revegetation should promote a similar ecosystem structure to the surrounding vegetation. A total of three different revegetation zones based off the vegetation structure are identified

across the site and are displayed in Figure 17. A species list for each of the various revegetation zones were identified, the recommended species list for revegetation is based on the habitat and the readily available stock is provided in Table 16. Native species which are appropriate for the habitat type and region is recommended for a higher success rate

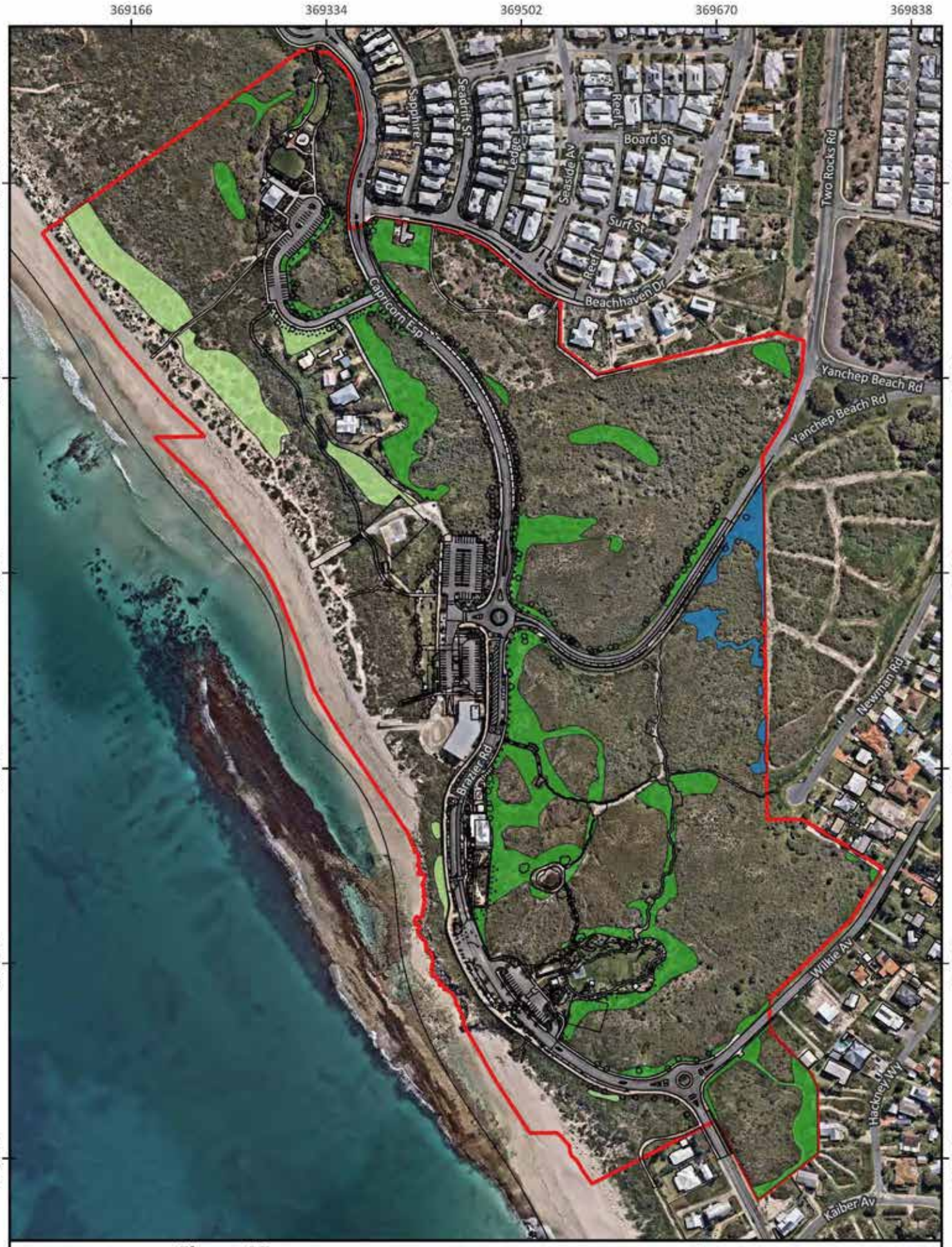


Figure 17:

Opportunities for Revegetation

Yanchep, Western Australia

Legend

Development Footprint

Revegetation Zones

- A
- C
- D

Site Boundary

Client:	UDLA
Date:	01/12/2025
Created by:	Z.Stoney
Image Source:	Nearmap, 2025
Datum:	GDA2020 / MGA zone 50
Scale:	1: 4200

0 50 100 m

N

Table 16: Recommended species for revegetation ^ denotes species that can be direct seeded

Species	Revegetation Zone		
	Dunes On Unconsolidated Sand (A)	**Taller Inland Dunes On Semi-Consolidated Sand (C)**	**Shallow Sands Over Limestone (D)**
*Acacia cochlearis^*		X	
*Acacia cyclops^*	X	X	
Acacia lasiocarpa var. *lasiocarpa^*		X	
*Acacia rostellifera^*		X	
Acacia saligna ^		X	
*Acacia truncata^*			X
*Acacia xanthina^*		X	X
Acanthocarpus preissii	X	X	X
*Allocasuarina humilis^*		X	
Allocasuarina lehmanniana subsp. *lehmanniana^*		X	
*Austrostipa flavescens^*		X	X
*Callitris preissii^*		X	
*Carpobrotus virescens^*	X		
*Clematis linearifolia^*		X	X
Comesperma confertum			
Comesperma integerrimum		X	
Dianella revoluta var. *divaricata*		X	X
Eremophila glabra subsp. *albicans*		X	

Species	Revegetation Zone		
	Dunes On Unconsolidated Sand (A)	Taller Inland Dunes On Semi-Consolidated Sand (C)	Shallow Sands Over Limestone (D)
*Eucalyptus gomphocephala^*		X	
Exocarpos sparteus		X	
*Ficinia nodosa^*	X	X	
Frankenia pauciflora var. *pauciflora*			
Gastrolobium nervosum		X	
*Gompholobium tomentosum^*		X	X
Pigea calycina		X	
*Hardenbergia comptoniana^*	X	X	X
Hemiandra glabra		X	
Hibbertia racemosa		X	
Kennedia prostrata		X	
Lepidosperma calcicola	X	X	
Lepidosperma gladiatum	X	X	
Leucophyta brownii			
Leucopogon parviflorus		X	X
Lomandra maritima	X	X	X
Lysiandra calycina		X	X
*Melaleuca cardiophylla^*		X	X
*Melaleuca huegelii^*			X

Species	Revegetation Zone		
	Dunes On Unconsolidated Sand (A)	Taller Inland Dunes On Semi-Consolidated Sand (C)	Shallow Sands Over Limestone (D)
*Melaleuca lanceolata^*		X	
*Melaleuca systena^*		X	X
Myoporum insulare	X	X	
*Olearia axillaris^*	X	X	X
*Opercularia vaginata^*		X	
Pimelea ferruginea		X	
*Pithocarpa cordata^*	X		
Rhagodia baccata subsp. *baccata^*	X	X	X
*Scaevola crassifolia^*	X	X	
Scaevola globifera		X	
Scaevola thesioides subsp. *thesioides*		X	X
Spinifex hirsutus	X		
Spinifex longifolius	X		
*Spyridium globulosum^*	X	X	X
*Templetonia retusa^*		X	X
Thomasia triphylla			X
*Threlkeldia diffusa^*	X	X	
Thysanotus manglesianus	X	X	X
*Trachymene Pilosa^*			X

Species	Revegetation Zone		
	Dunes On Unconsolidated Sand (A)	Taller Inland Dunes On Semi-Consolidated Sand (C)	Shallow Sands Over Limestone (D)
Tricoryne elatior		X	X
Trymalium ledifolium var. *ledifolium*			X

3.2.4 Seed Collection

An experienced revegetation seed collection consultant is to be engaged to conduct seed collection throughout the remnant bushland across the site to provide provenance specific seed to produce a similar vegetation representation from the immediate area. Seed collectors are required to be licenced, and Revegetation Industry Association of Western Australia (RIAWA) accredited. All seed collected is to be handled under RIAWA standards. Seed should be collected between September and April and collected in quantities to target an initial stem count target of 1 per m^2 for direct seeding. Seed collectors should ideally be the same contractor implementing the works and/or propagating plants to ensured continuity of quality and accountability of supplied stock.

3.2.5 Revegetation Program

Revegetation activities will primarily involve direct seeding and planting at the site to restore the vegetation structure of degraded and completely degraded vegetation.

Direct Seeding

Direct seeding is to be conducted when there is adequate soil moisture and rain to settle seed, typically experienced in autumn and early winter. Seeding is to be carried out by a competent and qualified revegetation consultant. Seed is to be treated prior to distribution to alleviate dormancy and stimulate germination. Seed treatments may include:

- heat treatment
- scarification
- smoke treatment
- removal of physical dormancy inhibitors.

The areas to be seeded will need to be scarified to allow for an appropriate settlement of seed within the soil and to ensure that appropriate seed to soil contact is made. Deep ripping is not suitable and will cause excessive disturbance throughout the site. It is preferential that equipment that can direct drill seeds to an appropriate depth and cover the seed with minimal seed disturbance. Where access and site conditions are not suitable to use equipment that can direct seed, seed is to be distributed across the site by hand. Seed which requires light for germination does not need drilling or covering. Seed is not to be distributed over limestone outcrops and all equipment should avoid these areas. The on-ground seeding activities are to be tracked via GPS to document the areas seeded.

Tubestock Installation

Tubestock is to be installed after first major rains following direct seeding (within a month) to not disturb emerging seedlings. Tubestock will need to be installed using mechanical augers or pottiputki's (dependent on soil composition) with the top of the root ball being buried no less than 5 mm below the soil surface.

In revegetation zone A, dunes on unconsolidated sand, *Spinifex longifolia* and *Spinifex hirsutus* are to be planted at a minimum rate of 2 to 4 plants per square metre with the other species within this zone to be planted in to be planted at a minimum rate of 1 plant per square metre. In the other revegetation zones (C and D), tubestock should be installed at 4 per square metre densities. Species should be diverse and relevant to the appropriate areas.

4.0 Implementation and Monitoring

4.1 Implementation Schedule and Reporting

The implementation and reporting schedule are provided in Appendix 8. The schedule outlines the pre-construction, during construction and post construction activities.

4.2 Monitoring

Following the development and revegetation of the site monitoring events should be undertaken prior to construction, during construction and post construction. Monitoring events allows an assessment of the site and identify the changes in the vegetation composition over time and identify threats to assist in developing management strategies as they arise.

An inspection of the site is to be carried out every six months following the completion of the development. The following factors are to be assessed:

- tube stock survival in revegetation zones
- fencing conditions
- erosion
- weed densities and extents
- infrastructure condition
- signs of litter
- signs of unauthorised tracks
- signs of feral pests.

4.2.1 Revegetation monitoring

Revegetation monitoring should be undertaken across any revegetation zones across the site to assess the progress and to identifying and inform future management techniques. Revegetation monitoring is to involve formal quadrat assessment to quantify weed coverage and tube stock. This revegetation monitoring is to involve an assessment of a minimum of one reference site per revegetation zone. The exact locations of the quadrats are to be determined by a suitably qualified environmental scientist following the completion of revegetation works.

The monitoring quadrats are to assess a 5 x 5 m area and are to be permanently marked out by metal star pickets with safety caps. The monitoring should be undertaken biannually in autumn and spring for a total of 5 years from the initial tube stock planting. A written report is to be provided at the completion of each year outlining the success of the revegetation works, comparison to previous years (where applicable) and outline any management actions required. The data to be recorded at each revegetation monitoring point are to include, but not limited to:

- photos taken in the same direction to enable comparison of plant growth and establishment over time
- species survival, vegetation health, native species coverage and composition, weed species present and density
- a general assessment of the entire site, considering maintenance issues, identification of potential success inhibiting factors, fauna presences and other relevant information.

4.2.2 Flora and Vegetation

A minimum of six photo monitoring points are to be established across retained vegetation. The location of the photo monitoring points are to be determined onsite by a suitably qualified environmental scientist. The photo monitoring points are to be established prior to any site works to allow for a visual comparison over time.

The entirely of the site is to be traversed mapping out vegetation condition and their extents in line with the vegetation condition scale adapted from Keighery (1994). Vegetation condition results are to be provided to the city at the completion of each year and outline the recommended management strategies to improve or retain vegetation.

Weed mapping should be undertaken across the Yanchep Lagoon Master Plan area to assess the population and extent of weed species to assist in informing management techniques. Weed mapping is to assess the entire site and be undertaken in a systematic grid mapping to allow for a comparison of weed species and density coverage of weed species. Weed mapping results are to be provided to the City at the completion of each year as maps and outline the recommended weed controls and management. Weed densities and cover are to be compared to the initial monitoring event where applicable.

4.2.3 Unauthorised access and infrastructure

A visual assessment should be undertaken across the site to assess the condition of infrastructure and the presence of any unauthorised access tracks. The monitoring of unauthorised access and infrastructure should be ongoing and assist in the development of any management strategies. Any litter or rubbish should be noted and removed each year when present.

4.2.4 Feral Pest

Pest population monitoring should occur before and after control events where possible. Where pre and post monitoring is not viable, annual monitoring is to occur. Monitoring of feral pests include active searching for evidence of presence, night surveys using thermal imaging, and use of trail cameras. Monitoring techniques have species-specific effectiveness and should therefore be implemented accordingly. Sampling efforts such as survey transects and placement of trail cameras should be established and standardised between baseline and subsequent monitoring events. Comparing monitoring results between monitoring events indicates the effectiveness of the control treatment, informing future management strategies.

Rabbits

Rabbit abundance index can be estimated by searching for warrens and signs of activities, and more thoroughly by counting individuals during night surveys. Signs includes prints, scat, evidence of grazing, and warren activity. The counting of individuals should be undertaken during the night due to nocturnal habits, utilising a thermal imaging scope. Pre-established transects should be followed with the individuals counted, to provide a repeatable methodology for comparison with future data.

Red Foxes

Fox abundance index can be estimated by searching for signs and dens, and by using trail cameras at areas with suspected fox activity. Signs include prints, scat, and diggings, often providing indication of the recency

of fox activity. The use of trail cameras can provide evidence of fox presence but can lack the ability to discern between individual foxes in some cases.

Cats

Cat abundance index can be estimated by searching for signs and by using trail cameras at areas with suspected cat locations. Signs include prints, scats, and scratchings, often providing indication of the recency of activity. Signs of activities do not provide information regarding the domestication status of a cat. Trail cameras can prove particularly effective at identifying individuals, as well as providing indication of the cat's domestication status (particularly when collars are present).

4.3 Completion Criteria

The desired outcomes and completion criteria for the site are outlined in Table 17.

Table 17: Completion Criteria for Yanchep Lagoon Master Plan

Factor	Completion Criteria
Revegetation	
Weed Coverage	Less than 10 %
Species richness (as percentage of species planted)	70 % of total number of species represented in quadrats
Total native species stem densities	2 plants / m^2
Erosion	No evidence of erosion across the site
Flora and Vegetation	
Vegetation Condition	Vegetation condition within the retained areas across the Yanchep Lagoon Master Plan is to be in a better condition than it was prior to construction (Where vegetation condition is completely degraded to good)
Conservation Significant Flora	Conservation significant flora population are in a healthy condition and extents are retained
Weed Coverage	Weed coverage should be less than 10% across the reserve
Declared pests and WoNS	No declared pest or WoNS to be on site
Unauthorised access and infrastructure	
Fencing	Zero to minimal damage
Signage	Signage intact and in good condition
Formalised Tracks	All formalised access in a good and useable condition
Informal Tracks	No unwanted access tracks
Rubbish	Zero rubbish present across the site
Fauna	
Native Fauna	The number of fauna species present remain stable

Factor	Completion Criteria
Native Fauna	Fauna habitat is to be maintained across Yanchep lagoon to provide adequate refuge.
Feral Pests	No declared pests to be recorded present on site

4.4 Contingencies

Following monitoring events contingencies should be assessed to ensure that the site is meeting the completion criteria. Contingencies associated with each factor for the completion criteria are provided in Table 18.

Table 18: Contingencies

Factor	Contingencies
Revegetation	
Weed Coverage	Undertake weed control across the revegetation site as outlined in section 3.1.2.
Species richness (as percentage of species planted)	Undertake infill plant across the revegetation site as outlined in section 3.2.
Total native species stem densities	Undertake infill plant across the revegetation site as outlined in section 3.2.
Erosion	Undertake erosion control, including where appropriate, dune stabilisation and coir matting with infill plantings as outlined in section 3.2.
Flora and Vegetation	
Vegetation Condition	Undertake revegetation and weed control across the site
Conservation Significant Flora	Liaise with relevant authorities and environmental consultants regarding a potential monitoring and management plan targeted towards conservation significant flora
Weed Coverage	Undertake weed control as outlined in section 3.1.2.
Declared pests and WoNS	Undertake weed control as outlined in section 3.1.2.
Unauthorised Access and Infrastructure	
Fencing	Undertake maintenance events as outlined in section 3.1.1.
Signage	Undertake maintenance events as outlined in section 3.1.1.
Formalised Tracks	Undertake maintenance events as outlined in section 3.1.1.
Informal Tracks	Close off unwanted tracks with fencing or revegetation works as outlined in section 3.1.1.
Rubbish	Undertake maintenance events as outlined in section 3.1.1
Fauna	

Factor	Contingencies
Native Fauna	Liaise with relevant authorities and environmental consultants regarding a potential monitoring and management plan targeted towards conservation significant flora as outlined in section 3.1.3
Native Fauna	Maintain and/or enhance fauna habitat through revegetation activities and development of artificial refuge if appropriate.
Feral Pests	Undertake feral pest control as outlined in section 3.1.4.

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Appendix 1: Land Tenure and Zoning Plans

Lot 8024
R 48603
(Reserve for Foreshore Management)
(CoW Management)
5.8222ha

Lot 8013
R49033
(Public Rec.)
(CoW Mgmt)

Lot 661
R 48714
(Community Purposes)
Mary Lindsay Homestead
(CoW Management with Power to Lease)
2.1775ha

8003

Lot 8002
R 49246
(Reserve for Public Recreation)
Beachhaven Park
(CoW Management)
77655sqm

BEACHHAVEN

DRIVE

TWO ROCKS RD

Lot 15452
R20561
(Reserve for Recreation & Purposes Incidental Thereto)
(CoW Management with Power to Lease)
67.7823ha

CAPRICORN

135
134
901
900

8026 R49603

Lot 501
R29352
(Foreshore Mgmt)
(CoW Mgmt)
5150sqm

Lot 500
R48603
(Foreshore Mgmt)
(CoW Mgmt)
6370sqm

9054

Lot 502
R 29352
(Foreshore Management)
(CoW Management)
1.1919ha

YANCHEP BEACH RD

ESP

12
(Private Freehold)
6041sqm

1
(Private Freehold)
1807sqm

Lot 10603
R39022
(Reserve for Restaurant, Cafe, Tavern, Retail, Function Centre and Related Purposes)
Former Yanchep Surf Club
(CoW Management with Power to Lease)
2130sqm

Lot 521
R 12439
(Reserve for Recreation)
Newman Park
(CoW Management with Power to Lease)
2.6731ha

BRAZIER RD

Local Development Plan Extent

Foreshore Managment Plan Extent

14
(Private Freehold)
2.0604ha

NEWMAN RD

Lot 520
R 12439
(Reserve for Recreation)
Newman Park
(Includes Picnic Cove)
(CoW Management with Power to Lease)
6.4391ha

Lot 522
R 12439
(Reserve for Recreation)
Newman Park
(CoW Management with Power to Lease)
2.3100ha

15
(Private Freehold)
7355sqm

Yanchep Surf Life Saving Club

Yanchep Lagoon

Lot 9740
R 43792
(Reserve for Recreation)
(CoW Management with Power to Lease)
527sqm

Yanchep Lagoon Kiosk

Lot 510
R 29694
(Reserve for Recreation)
Newman Park
(Includes Fishermans Hollow)
(CoW Management with Power to Lease)
5.6953ha

Lot 8315
R 29354
(Public Recreation)
Brazier Park

523
R12439
Newman Park

BRAZIER

WILKIE AVE

RD

(Power to Lease)
2264sqm

15451
R20561

(Recreation & Purposes Incidental Thereto)
24.2348ha

0 200
metres

LEGEND

- YANCHEP LAGOON MASTER PLAN BOUNDARY (as per RobertsDay June 2019)
- YLMP FORESHORE MANAGEMENT PLAN AREA
- YLMP LOCAL DEVELOPMENT PLAN AREA

LAND TENURE

- A CLASS RESERVE (STATE OWNED)
- C CLASS RESERVE (STATE OWNED)
- FREEHOLD (PRIVATELY OWNED)
- LEASE AREAS (under CoW management)

N

YANCHEP LAGOON MASTER PLAN
LAND TENURE - (Master Plan Overlay)

NOTE: LOTS 510 (R29694), 523 (R12439) and 9740 (R43792)
ARE SUBJECT TO SUBDIVISION - IN ORDER FOR DEALINGS WITH LANDGATE REFER DP422614

SCALE: 1: 3000 @ A3

DATE: January 2024

REF: 2024-01 YLMP land tenure V3

NOTE: While the City of Wanneroo has made every effort to ensure the accuracy and completeness of data it accepts no responsibility or liability for any errors or omissions within the information presented.
Based on information provided by and with the permission of the Western Australian Land Authority trading as LANDGATE (2012).



YANCHEP LAGOON MASTER PLAN
LAND TENURE - (Aerial Overlay)

NOTE: LOTS 510 (R29694), 523 (R12439) and 9740 (R43792) ARE SUBJECT TO SUBDIVISION - IN ORDER FOR DEALINGS WITH LANDGATE REFER DP422614

SCALE: 1: 3000 @ A3

DATE: January 2024

REF: 2024-01 YLMP land tenure V3

NOTE: While the City of Wanneroo has made every effort to ensure the accuracy and completeness of data it accepts no responsibility or liability for any errors or omissions within the information presented.
Based on information provided by and with the permission of the Western Australian Land Authority trading as LANDGATE (2012).



YANCHEP LAGOON MASTER PLAN
ZONING PLAN (DPS2)

NOTE: LOTS 510 (R29694), 523 (R12439) and 9740 (R43792) ARE SUBJECT TO SUBDIVISION - IN ORDER FOR DEALINGS WITH LANDGATE REFER DP422614

SCALE: 1: 3000 @ A3

DATE: January 2024

REF: 2024-01 YLMP land tenure V3

NOTE: While the City of Wanneroo has made every effort to ensure the accuracy and completeness of data it accepts no responsibility or liability for any errors or omissions within the information presented.
Based on information provided by and with the permission of the Western Australian Land Authority trading as LANDGATE (2012).

Appendix 2: Flora Species List

The complete flora list for the site is provided in the table below with flora listed by family. *Denotes introduced species and # denotes species that are native to Western Australia but not to this local region.

Family	Species	Common Name
Aizoaceae	**Tetragonia decumbens*	Sea Spinach
Aizoaceae	*Carpobrotus virescens*	Coastal Pigface
Anacardiaceae	**Schinus terebinthifolia*	
Apiaceae	*Daucus glochidiatus*	Australian Carrot
Araliaceae	*Trachymene pilosa*	Native Parsnip
Araucariaceae	**Araucaria heterophylla (*planted)	Norfolk Island Pine
Arecaceae	**Phoenix* sp. (planted)	
Arecaceae	**Washingtonia filifera* (planted)	
Asparagaceae	**Yucca aloifolia*	
Asparagaceae	*Acanthocarpus preissii*	
Asparagaceae	*Lomandra maritima*	Maritime Mat Rush
Asparagaceae	*Thysanotus manglesianus*	Mangles' Fringed Lily
Asphodelaceae	**Asphodelus fistulosus*	Onion Weed
Asphodelaceae	**Trachyandra divaricata*	
Asteraceae	**Arctotheca calendula*	Cape Weed
Asteraceae	**Arctotis stoechadifolia*	White Arctotis
Asteraceae	**Cotula turbinata*	Funnel Weed
Asteraceae	**Erigeron bonariensis*	
Asteraceae	**Gazania linearis*	
Asteraceae	*Hypochaeris radicata	Flat Weed
Asteraceae	**Leontodon rhagadioloides*	Cretan Weed
Asteraceae	**Osteospermum ecklonis*	
Asteraceae	**Reichardia tingitana*	False Sowthistle
Asteraceae	**Sonchus oleraceus*	Common Sowthistle
Asteraceae	**Urospermum picroides*	False Hawkbit
Asteraceae	*Brachyscome bellidioides*	
Asteraceae	*Leptorhynchos scaber*	Lanky Buttons
Asteraceae	*Leucophyta brownii*	

Family	Species	Common Name
Asteraceae	*Olearia axillaris*	Coastal Daisybush
Asteraceae	*Pithocarpa cordata*	Tangle Daisy
Asteraceae	*Podotheca gnaphalioides*	Golden Long-heads
Asteraceae	*Senecio pinnatifolius* var. *latilobus*	Variable Groundsel
Asteraceae	**Hypochaeris glabra*	Smooth Cats-ear
Brassicaceae	**Brassica tournefortii*	Mediterranean Turnip
Brassicaceae	**Cakile maritima*	Sea Rocket
Brassicaceae	**Cardamine hirsuta*	Common Bittercress
Brassicaceae	**Heliophila pusilla*	
Brassicaceae	**Matthiola incana*	Common Stock
Campanulaceae	*Isotoma hypocrateriformis*	Woodbridge Poison
Campanulaceae	*Lobelia tenuior*	Slender Lobelia
Caprifoliaceae	**Centranthus macrosiphon*	
Caryophyllaceae	**Petrorhagia dubia*	
Caryophyllaceae	**Sagina maritima*	
Caryophyllaceae	**Silene gallica*	French Catchfly
Caryophyllaceae	**Stellaria media*	Chickweed
Caryophyllaceae	**Sabulina mediterranea*	
Casuarinaceae	*Allocasuarina humilis*	Dwarf Sheoak
Casuarinaceae	*Allocasuarina lehmanniana* subsp. *lehmanniana*	Dune Sheoak
Chenopodiaceae	*Atriplex isatidea*	Coast Saltbush
Chenopodiaceae	*Rhagodia baccata* subsp. *baccata*	Berry Saltbush
Chenopodiaceae	*Rhagodia baccata* subsp. *dioica*	Sea Berry Saltbush
Chenopodiaceae	*Salicornia blackiana*	
Chenopodiaceae	*Threlkeldia diffusa*	Coast Bonefruit
Crassulaceae	**Crassula glomerata*	
Crassulaceae	*Crassula colorata*	Dense Stonecrop
Cupressaceae	*Callitris preissii*	Rottnest Island Pine
Cyperaceae	**Ficinia marginata*	Coarse Club Rush
Cyperaceae	*Ficinia nodosa*	Knotted Club Rush
Cyperaceae	*Lepidosperma calcicola*	
Cyperaceae	*Lepidosperma gladiatum*	Coast Sword-sedge

Family	Species	Common Name
Cyperaceae	*Schoenus lanatus*	Woolly Bog-rush
Dilleniaceae	*Hibbertia racemosa*	Stalked Guinea Flower
Droseraceae	*Drosera macrantha*	Bridal Rainbow
Ericaceae	*Acrotriche cordata*	Coast Ground Berry
Ericaceae	*Leucopogon parviflorus*	Coast Beard-heath
Ericaceae	*Styphelia insularis*	
Euphorbiaceae	**Euphorbia australis*	Namana
Euphorbiaceae	**Euphorbia paralias*	Sea Spurge
Euphorbiaceae	**Euphorbia peplus*	Petty Spurge
Euphorbiaceae	**Euphorbia terracina*	Geraldton Carnation Weed
Fabaceae	**Medicago polymorpha*	Burr Medic
Fabaceae	**Melilotus indicus*	
Fabaceae	**Trifolium campestre* var. *campestre*	Hop Clover
Fabaceae	*Acacia cochlearis*	Rigid Wattle
Fabaceae	*Acacia cyclops*	Coastal Wattle
Fabaceae	*Acacia lasiocarpa*	Panjang
Fabaceae	*Acacia rostellifera*	Summer-scented Wattle
Fabaceae	*Acacia saligna*	Orange Wattle
Fabaceae	*Acacia truncata*	
Fabaceae	*Acacia xanthina*	White-stemmed Wattle
Fabaceae	*Gastrolobium nervosum*	
Fabaceae	*Gompholobium tomentosum*	Hairy Yellow Pea
Fabaceae	*Hardenbergia comptoniana*	Native Wisteria
Fabaceae	*Kennedia prostrata*	Scarlet Runner
Fabaceae	*Templetonia retusa*	Cockies Tongues
Frankeniaceae	*Frankenia pauciflora* var. *pauciflora*	Seaheath
Gentianaceae	*Schenkia australis*	
Gentianaceae	**Centaurium pulchellum*	
Geraniaceae	**Erodium botrys*	Long Storksbill
Geraniaceae	**Pelargonium capitatum*	Rose Pelargonium
Goodeniaceae	*Scaevola crassifolia*	Thick-leaved Fan-flower
Goodeniaceae	*Scaevola globulifera*	

Family	Species	Common Name
Goodeniaceae	*Scaevola thesioides* subsp. *thesioides*	
Haemodoraceae	*Conostylis pauciflora* subsp. *pauciflora*	
Hemerocallidaceae	*Dianella revoluta* var. *divaricata*	Flax Lily
Hemerocallidaceae	*Tricoryne elatior*	Yellow Autumn Lily
Iridaceae	**Ferraria crispa*	Black Flag
Iridaceae	**Romulea rosea*	Guildford Grass
Lamiaceae	**Stachys arvensis*	Staggerweed
Lamiaceae	**Westringia fruticosa* (planted)	
Lamiaceae	*Hemiandra glabra*	
Lauraceae	*Cassytha aurea*	
Lauraceae	*Cassytha flava*	Dodder Laurel
Lauraceae	*Cassytha glabella*	Tangled Dodder Laurel
Lauraceae	*Cassytha racemosa*	Dodder Laurel
Loganiaceae	*Phyllangium divergens*	
Malvaceae	**Lagunaria patersonia* (planted)	
Malvaceae	**Malva parviflora*	Marshmallow
Malvaceae	*Thomasia triphylla*	
Montiaceae	*Calandrinia liniflora*	Parakeelya
Myrtaceae	*#Chamelaucium uncinatum*	Geraldton Wax
Myrtaceae	*#Eucalyptus utilis* (planted)	Coastal Moort
Myrtaceae	*#Melaleuca nesophila* (planted)	Mindiyed
Myrtaceae	**Callistemon* sp. (planted)	
Myrtaceae	**Eucalyptus* sp. (planted)	
Myrtaceae	**Gaudium laevigatum*	Coast Teatree
Myrtaceae	**Metrosideros tomentosa* (planted)	Pōhutukawa
Myrtaceae	*Agonis flexuosa*	Peppermint
Myrtaceae	*Eucalyptus gomphocephala*	Tuart
Myrtaceae	*Melaleuca cardiophylla*	Tangling Melaleuca
Myrtaceae	*Melaleuca huegelii* subsp. *huegelii*	Chenille Honeymyrtle
Myrtaceae	*Melaleuca lanceolata*	Melaleuca lanceolata
Myrtaceae	*Melaleuca rhaphiophylla*	Swamp Paperbark

Family	Species	Common Name
Myrtaceae	*Melaleuca systena*	Coastal Honeymyrtle
Onagraceae	**Oenothera drummondii*	Beach Evening Primrose
Orobanchaceae	**Orobanche minor*	Lesser Broomrape
Oxalidaceae	**Oxalis pes-caprae*	Soursob
Papaveraceae	**Fumaria capreolata*	Whiteflower Fumitory
Phyllanthaceae	*Lysiandra calycina*	False Boronia
Poaceae	**Avena barbata*	Bearded Oat
Poaceae	**Briza maxima*	Blowfly Grass
Poaceae	**Briza minor*	Shivery Grass
Poaceae	**Bromus diandrus*	Great Brome
Poaceae	**Catapodium rigidum*	Rigid Fescue
Poaceae	**Cenchrus clandestinus*	Kikuyu Grass
Poaceae	**Cynodon dactylon*	Couch
Poaceae	**Ehrharta longiflora*	Annual Veldt Grass
Poaceae	**Eragrostis curvula*	African Lovegrass
Poaceae	**Lagurus ovatus*	Hare's Tail Grass
Poaceae	**Lolium perenne*	Perennial Ryegrass
Poaceae	*Lolium rigidum	Wimmera Ryegrass
Poaceae	**Poa annua*	Winter Grass
Poaceae	**Stenotaphrum secundatum* (planted)	Buffalo Grass
Poaceae	**Vulpia muralis*	
Poaceae	*Austrostipa flavescens*	
Poaceae	*Bromus arenarius*	Sand Brome
Poaceae	*Poa porphyroclados*	
Poaceae	*Spinifex hirsutus*	Hairy Spinifex
Poaceae	*Spinifex longifolius*	Beach Spinifex
Poaceae	*Ehrharta calycina	Perennial Veldt Grass
Polygalaceae	*Comesperma integerrimum*	
Primulaceae	**Lysimachia arvensis*	Pimpernel
Proteaceae	*Grevillea crithmifolia*	
Proteaceae	*#Grevillea obtusifolia* (planted)	Obtuse Leaved Grevillea
Proteaceae	*#Grevillea olivacea* (planted)	Olive Grevillea

Family	Species	Common Name
Proteaceae	**Banksia integrifolia* (planted)	
Ranunculaceae	*Clematis linearifolia*	Slender Clematis
Restionaceae	*Desmocladus asper*	
Rhamnaceae	*Cryptandra mutila*	
Rhamnaceae	*Spyridium globulosum*	Basket Bush
Rhamnaceae	*Trymalium ledifolium*	
Rosaceae	**Casuarina equisetifolia*	
Rosaceae	**Eriobotrya japonica* (planted)	
Rubiaceae	**Galium murale*	Small Goosegrass
Rubiaceae	*Opercularia vaginata*	Dog Weed
Santalaceae	*Exocarpos sparteus*	Broom Ballart
Santalaceae	*Leptomeria empetriformis*	
Santalaceae	*Leptomeria preissiana*	
Santalaceae	*Santalum acuminatum*	Quandong
Scrophulariaceae	**Bellardia trixago*	Bellardia
Scrophulariaceae	**Dischisma arenarium*	
Scrophulariaceae	*Eremophila glabra* subsp. *albicans*	Tar Bush
Scrophulariaceae	*Myoporum insulare*	Blueberry Tree
Thymelaeaceae	*Pimelea ferruginea*	
Urticaceae	*Parietaria debilis*	Pellitory
Violaceae	*Pigea calycina*	Wild Violet
Xanthorrhoeaceae	*Xanthorrhoea preissii*	Grass tree

Appendix 3: Conservation Codes

Western Australia

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

Conservation Code	Name	Description
		or flora. Species that are adequately known, are rare but not threatened, or meet criteria for near threatened, or that have been recently removed from the threatened species or other specially protected fauna lists for other than taxonomic reasons, are placed in Priority 4. These species require regular monitoring.
P1	Priority One	Poorly known species – Species that are known from one or a few locations (generally five or less) which are potentially at risk. All occurrences are either very small or on lands not managed for conservation, such as road verges, urban areas, farmland, active mineral lease and under threat of habitat destruction or degradation.
P2	Priority Two	Poorly known species – Species that are known from one or a few locations (generally five or less), some of which are on lands managed primarily for nature conservation, such as national parks, conservation parks, nature reserves, State forest, vacant Crown land, water reserves and similar.
P3	Priority Three	Poorly known species – Species that are known from several locations, and the species does not appear to be under imminent threat, or from few but widespread locations with either large population size or significant remaining areas of apparently suitable habitat, much of it not under imminent threat
P4	Priority Four	Rare or near threatened and other species in need of monitoring.

(Source: Department of Biodiversity, Conservation and Attractions, 2020a)

Commonwealth

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

(Source: Department of Biodiversity, Conservation and Attractions, 2019)

Appendix 4: Fauna Species List

Amphibian species to potentially occur within the survey area as identified by Terrestrial Ecosystems (2020)

Family	Species	Common Name
Hylidae	*Litoria moorei*	Motorbike Frog
Limnodynastidae	*Heleioporus eyrei*	Moaning Frog
Limnodynastidae	*Limnodynastes dorsalis*	Western Banjo Frog
Myobatrachidae	*Crinia insignifera*	Squelching Froglet
Myobatrachidae	*Myobatrachus gouldii*	Turtle Frog
Myobatrachidae	*Pseudophryne guentheri*	Gunther's Toadlet

Bird species to potentially occur within the survey area as identified by Terrestrial Ecosystems (2020)

Family	Species	Common Name
Accipitridae	*Accipiter cirrocephalus*	Collared Sparrowhawk
Accipitridae	*Accipiter fasciatus*	Brown Goshawk
Accipitridae	*Aquila audax*	Wedge-tailed Eagle
Accipitridae	*Circus approximans*	Swamp Harrier
Accipitridae	*Elanus axillaris*	Black-shouldered Kite
Accipitridae	*Haliastur sphenurus*	Whistling Kite
Accipitridae	*Hieraaetus morphnoides*	Little Eagle
Accipitridae	*Lophoictinia isura*	Square-tailed Kite
Anatidae	*Tadorna tadornoides*	Australian Shelduck
Podargidae	*Podargus strigoides*	Tawny Frogmouth
Casuariidae	*Dromaius novaehollandiae*	Emu
Laridae	*Chroicocephalus novaehollandiae*	Silver Gull
Threskiornithidae	*Threskiornis spinicollis*	Straw-necked Ibis
Columbidae	**Columba livia*	Domestic Pigeon
Columbidae	*Ocyphaps lophotes*	Crested Pigeon
Columbidae	*Phaps chalcoptera*	Common Bronzewing
Columbidae	*Phaps elegans*	Brush Bronzewing
Columbidae	**Spilopelia senegalensis*	Laughing Turtle-dove
Columbidae	**Spilopelia chinensis*	Spotted Turtle-dove

Family	Species	Common Name
Halcyonidae	**Dacelo novaeguineae*	Laughing Kookaburra
Halcyonidae	*Todiramphus sanctus*	Sacred Kingfisher
Meropidae	*Merops ornatus*	Rainbow Bee-eater
Cuculidae	*Cacomantis flabelliformis*	Fan-tailed Cuckoo
Cuculidae	*Chalcites basalis*	Horsfield's Bronze-cuckoo
Cuculidae	*Chalcites lucidus*	Shining Bronze-cuckoo
Cuculidae	*Heteroscenes pallidus*	Pallid Cuckoo
Falconidae	*Falco berigora*	Brown Falcon
Falconidae	*Falco cenchroides*	Nankeen Kestrel
Falconidae	*Falco longipennis*	Australian Hobby
Falconidae	*Falco peregrinus*	Peregrine Falcon
Phasianidae	*Coturnix pectoralis*	Stubble Quail
Otididae	*Ardeotis australis*	Australian Bustard
Rallidae	*Porzana tabuensis*	Spotless Crake
Acanthizidae	*Acanthiza apicalis*	Inland Thornbill
Acanthizidae	*Acanthiza chrysorrhoa*	Yellow-rumped Thornbill
Acanthizidae	*Acanthiza inornata*	Western Thornbill
Acanthizidae	*Gerygone fusca*	Western Gerygone
Acanthizidae	*Sericornis frontalis*	White-browed Scrubwren
Acanthizidae	*Smicrornis brevirostris*	Weebill
Acrocephalidae	*Acrocephalus australis*	Australian Reed-warbler
Artamidae	*Artamus cinereus*	Black-faced Woodswallow
Artamidae	*Artamus cyanopterus*	Dusky Woodswallow
Artamidae	*Artamus personatus*	Masked Woodswallow
Artamidae	*Cracticus nigrogularis*	Pied Butcherbird
Artamidae	*Cracticus torquatus*	Grey Butcherbird
Artamidae	*Gymnorhina tibicen*	Australian Magpie
Campephagidae	*Coracina novaehollandiae*	Black-faced Cuckoo-shrike
Campephagidae	*Lalage tricolor*	White-winged Triller
Corvidae	*Corvus coronoides*	Australian Raven
Hirundinidae	*Cheramoeca leucosterna*	White-backed Swallow

Family	Species	Common Name
Hirundinidae	*Hirundo neoxena*	Welcome Swallow
Hirundinidae	*Petrochelidon nigricans*	Tree Martin
Maluridae	*Malurus lamberti*	Variegated Fairy-wren
Maluridae	*Malurus leucopterus*	White-winged Fairy-wren
Maluridae	*Malurus splendens*	Splendid Fairy-wren
Maluridae	*Stipiturus malachurus*	Southern Emu-wren
Megaluridae	*Cincloramphus mathewsi*	Rufous Songlark
Megaluridae	*Acanthorhynchus superciliosus*	Western Spinebill
Megaluridae	*Anthochaera carunculata*	Red Wattlebird
Megaluridae	*Anthochaera chrysoptera*	Little Wattlebird
Megaluridae	*Anthochaera lunulata*	Western Little Wattlebird
Megaluridae	*Epthianura albifrons*	White-fronted Chat
Megaluridae	*Gavicalis virescens*	Singing Honeyeater
Megaluridae	*Gliciphila melanops*	Tawny-crowned Honeyeater
Megaluridae	*Lichenostomus ornatus*	Yellow-plumed Honeyeater
Megaluridae	*Lichmera indistincta*	Brown Honeyeater
Megaluridae	*Manorina flavigula*	Yellow-throated Miner
Megaluridae	*Melithreptus lunatus*	White-naped Honeyeater
Megaluridae	*Sugomel nigrum*	Black Honeyeater
Megaluridae	*Phylidonyris niger*	White-cheeked Honeyeater
Meliphagidae	*Phylidonyris novaehollandiae*	New Holland Honeyeater
Monarchidae	*Grallina cyanoleuca*	Magpie-lark
Motacillidae	*Anthus novaeseelandiae*	Australasian Pipit
Nectariniidae	*Dicaeum hirundinaceum*	Mistletoe Bird
Pachycephalidae	*Colluricincla harmonica*	Grey Shrike-thrush
Pachycephalidae	*Pachycephala pectoralis*	Golden Whistler
Pachycephalidae	*Pachycephala rufiventris*	Rufous Whistler
Pardalotidae	*Pardalotus punctatus*	Spotted Pardalote
Pardalotidae	*Pardalotus striatus*	Striated Pardalote
Petroicidae	*Eopsaltria georgiana*	White-breasted Robin

Family	Species	Common Name
Petroicidae	*Petroica boodang*	Scarlet Robin
Rhipiduridae	*Rhipidura albiscapa*	Grey Fantail
Rhipiduridae	*Rhipidura leucophrys*	Willie Wagtail
Timaliidae	*Zosterops lateralis*	Silvereye
Cacatuidae	*Cacatua sanguinea*	Little Corella
Cacatuidae	*Calyptorhynchus banksii naso*	Forest Red-tailed Cockatoo
Cacatuidae	*Calyptorhynchus latirostris*	Carnaby's Cockatoo
Cacatuidae	*Eolophus roseicapilla*	Galah
Psittacidae	*Barnardius zonarius*	Australian Ringneck
Psittacidae	*Neophema elegans*	Elegant Parrot
Psittacidae	**Trichoglossus haematodus*	Rainbow Lorikeet
Strigidae	*Ninox boobook*	Southern Boobook

Mammal species to potentially occur within the survey area as identified by Terrestrial Ecosystems (2020)

Family	Species	Common Name
Canidae	**Vulpes vulpes*	Red Fox
Felidae	**Felis catus*	Cat
Dasyuridae	*Sminthopsis fuliginosus*	Grey-bellied Dunnart
Macropodidae	*Macropus fuliginosus*	Western Grey Kangaroo
Macropodidae	*Notamacropus irma*	Western Brush Wallaby
Tarsipedidae	*Tarsipes rostratus*	Honey Possum
Leporidae	**Oryctolagus cuniculus*	Rabbit
Peramelidae	*Isoodon fusciventer*	Quenda
Muridae	**Mus musculus*	House Mouse
Muridae	*Rattus fuscipes*	Bush Rat
Muridae	**Rattus rattus*	Black Rat
Vespertilionidae	*Vespadelus regulus*	Southern Forest Bat

Reptile species to potentially occur within the survey area as identified by Terrestrial Ecosystems (2020)

Family	Species	Common Name
Agamidae	*Ctenophorus adelaidensis*	Western Heath Dragon

Family	Species	Common Name
Agamidae	*Pogona minor*	Dwarf Bearded Dragon
Diplodactylidae	*Crenadactylus ocellatus*	Clawless Gecko
Diplodactylidae	*Diplodactylus polyophthalmus*	Speckled Stone Gecko
Diplodactylidae	*Strophurus elderi*	Jewelled Gecko
Diplodactylidae	*Strophurus spinigerus*	South-western Spiny-tailed Gecko
Elapidae	*Brachyurophis fasciolata*	Narrow-banded Burrowing Snake
Elapidae	*Brachyurophis semifasciata*	Half-girdled Snake
Elapidae	*Demansia psammophis*	Yellow-faced Whipsnake
Elapidae	*Echiopsis curta*	Bardick
Elapidae	*Neelaps bimaculatus*	Black-naped Burrowing Snake
Elapidae	*Neelaps calonotus*	Black-striped Burrowing Snake
Elapidae	*Parasuta gouldii*	Gould's Snake
Elapidae	*Pseudonaja affinis*	Dugite
Elapidae	*Pseudonaja mengdeni*	Western Brown Snake
Elapidae	*Simoselaps bertholdi*	Jan's Banded Snake
Elapidae	*Simoselaps littoralis*	West Coast Banded Snake
Gekkonidae	*Christinus marmoratus*	Marbled Gecko
Pygopodidae	*Aprasia repens*	Southwest Sandplain Worm Lizard
Pygopodidae	*Delma concinna*	Javelin Lizard
Pygopodidae	*Delma fraseri*	Fraser's Delma
Pygopodidae	*Delma grayii*	Side-barred Delma
Pygopodidae	*Lialis burtonis*	Burton's Legless Lizard
Pygopodidae	*Pletholax gracilis*	Keeled Legless Lizard
Pygopodidae	*Pygopus lepidopodus*	Common Scaly-foot
Pythonidae	*Morelia spilota*	Carpet Python
Scincidae	*Acritoscincus trilineatus*	Western Three-lined Skink
Scincidae	*Cryptoblepharus buchananii*	Buchanan's Snake-eyed Skink
Scincidae	*Ctenotus australis*	Western Limestone Ctenotus
Scincidae	*Ctenotus fallens*	West-coast Laterite Ctenotus
Scincidae	*Cyclodomorphus celatus*	Western Slender Bluetongue
Scincidae	*Egernia kingii*	King's Skink
Scincidae	*Egernia napoleonis*	Southwestern Crevice Skink

Family	Species	Common Name
Scincidae	*Hemiergis quadrilineatum*	Two-toed Earless Skink
Scincidae	*Lerista distinguenda*	South-western Orange-tailed Slider
Scincidae	*Lerista elegans*	West Coast Four-toed Lerista
Scincidae	*Lerista lineopunctulata*	Dotted-line Robust Slider
Scincidae	*Lerista praepedita*	Blunt-tailed West-coast Slider
Scincidae	*Menetia greyii*	Common Dwarf Skink
Scincidae	*Morethia lineoocellata*	Pale-flecked Morethia
Scincidae	*Morethia obscura*	Shrubland Pale-flecked Morethia
Scincidae	*Tiliqua occipitalis*	Western Blue-tongued Lizard
Scincidae	*Tiliqua rugosa*	Bobtail
Typhlopidae	*Anilios australis*	Austral Blind Snake
Typhlopidae	*Anilios pinguis*	Rotund Blind Snake
Varanidae	*Varanus gouldii*	Gould's Goanna
Varanidae	*Varanus tristis*	Black-headed Monitor

Appendix 5: Weed Prioritisation

The complete introduced (weed) species list for the site is provided in the table below with flora listed by family with their scores for Ecological Impact and Invasiveness Ratings for the Swan Region (DBCA, 2023). *Denotes introduced species and # denotes species that are native to Western Australia but not to this local region.

Family	Species Name	Common Name	Ecological Impact	Invasiveness
Aizoaceae	**Tetragonia decumbens*	Sea Spinach	H	R
Anacardiaceae	**Schinus terebinthifolia*		H	M
Apiaceae	**Foeniculum vulgare*	Fennel	L	S
Apocynaceae	**Nerium oleander*		L	R
Araucariaceae	**Araucaria heterophylla*	Norfolk Island Pine	Not Listed	Not Listed
Arecaceae	**Phoenix sp*. (planted)		Not Listed	Not Listed
Arecaceae	**Washingtonia filifera*		U	S
Asphodelaceae	**Asphodelus fistulosus*	Onion Weed	U	R
Asphodelaceae	**Trachyandra divaricata*		M	R
Asteraceae	**Arctotheca calendula*	Cape Weed	H	R
Asteraceae	**Arctotis stoechadifolia*	White Arctotis	U	S
Asteraceae	**Cotula turbinata*	Funnel Weed	L	M
Asteraceae	**Erigeron bonariensis*		L	M
Asteraceae	**Gazania linearis*		H	R
Asteraceae	**Leontodon rhagadioloides*	Cretan Weed	U	U
Asteraceae	**Osteospermum ecklonis*		U	M
Asteraceae	**Reichardia tingitana*	False Sowthistle	U	U
Asteraceae	**Sonchus oleraceus*	Common Sowthistle	U	R
Brassicaceae	**Brassica tournefortii*	Mediterranean Turnip	H	R
Brassicaceae	**Cakile maritima*	Sea Rocket	U	R
Brassicaceae	**Cardamine hirsuta*	Common Bittercress	Not Listed	Not Listed
Brassicaceae	**Heliophila pusilla*		U	M
Brassicaceae	**Matthiola incana*	Common Stock	U	S
Caprifoliaceae	**Centranthus macrosiphon*		H	R
Caryophyllaceae	**Minuartia mediterranea*		L	R
Caryophyllaceae	**Petrorhagia dubia*		M	R

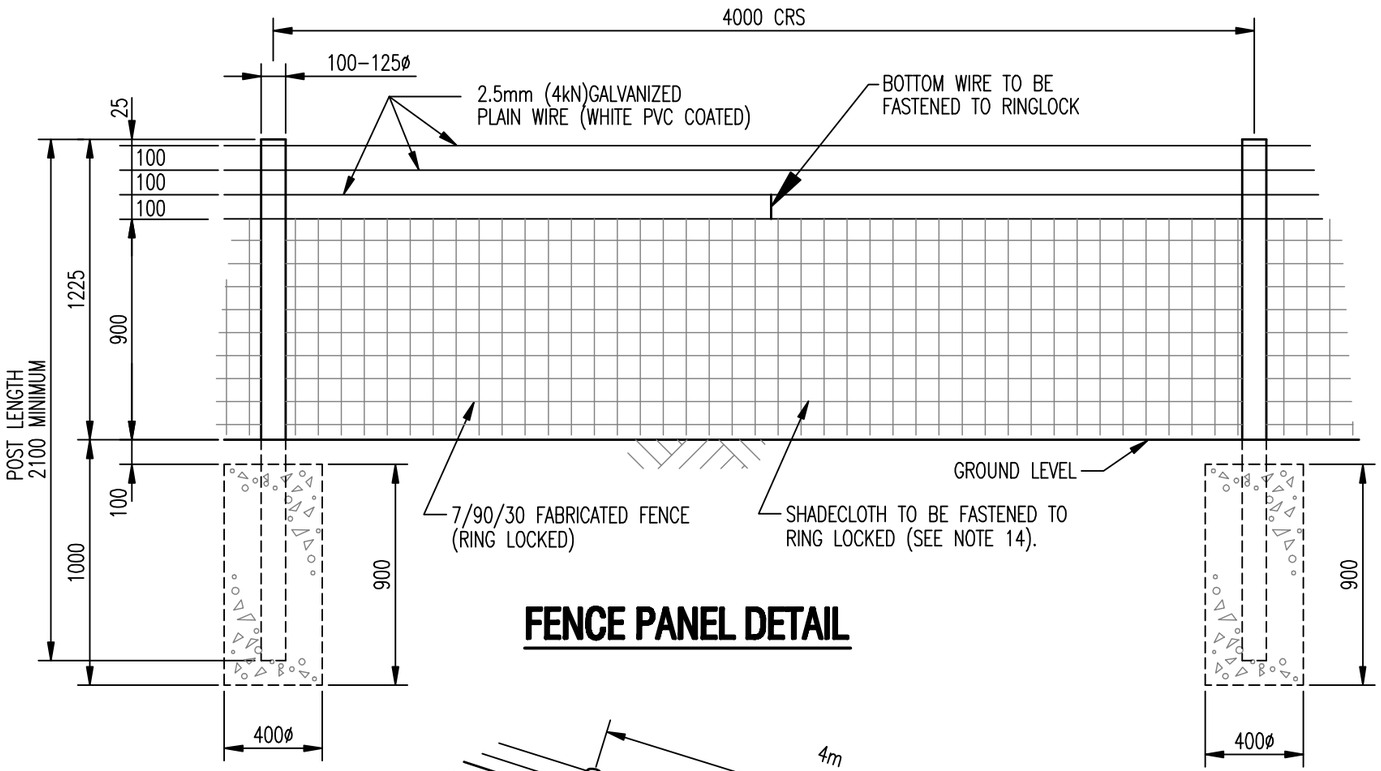
Family	Species Name	Common Name	Ecological Impact	Invasiveness
Caryophyllaceae	**Sagina maritima*		L	R
Caryophyllaceae	**Silene gallica*	French Catchfly	L	M
Caryophyllaceae	**Stellaria media*	Chickweed	L	R
Convolvulaceae	**Cuscuta planiflora*		U	U
Crassulaceae	**Crassula glomerata*		U	R
Cyperaceae	**Ficinia marginata*	Coarse Club Rush	U	U
Euphorbiaceae	**Euphorbia australis*	Namana	L	S
Euphorbiaceae	**Euphorbia paralias*	Sea Spurge	U	M
Euphorbiaceae	**Euphorbia peplus*	Petty Spurge	U	M
Euphorbiaceae	**Euphorbia terracina*	Geraldton Carnation Weed	H	R
Fabaceae	**Medicago littoralis*	Strand Medic	U	R
Fabaceae	**Medicago polymorpha*	Burr Medic	U	R
Fabaceae	**Melilotus indicus*		U	R
Fabaceae	**Trifolium campestre var. campestre*	Hop Clover	U	U
Geraniaceae	**Erodium botrys*	Long Storksbill	U	M
Geraniaceae	**Pelargonium × hortorum*		Not Listed	Not Listed
Geraniaceae	**Pelargonium capitatum*	Rose Pelargonium	H	R
Iridaceae	**Ferraria crispa*	Black Flag	H	R
Iridaceae	**Moraea flaccida*	One-leaf Cape Tulip	Not Listed	Not Listed
Iridaceae	**Romulea rosea*	Guildford Grass	U	R
Lamiaceae	**Stachys arvensis*	Staggerweed	U	R
Lamiaceae	**Westringia fruticosa* (planted)		Not Listed	Not Listed
Malvaceae	**Lagunaria patersonia* (planted)		L	S
Malvaceae	**Malva parviflora*	Marshmallow	L	U
Myrtaceae	#*Chamelaucium uncinatum*	Geraldton Wax	M	S
Myrtaceae	#*Eucalyptus utilis*	Coastal Moort	U	U
Myrtaceae	#*Melaleuca nesophila*	Mindiyed	U	M
Myrtaceae	**Callistemon* X (planted)		Not Listed	Not Listed
Myrtaceae	**Eucalyptus maculata* (planted)		H	M
Myrtaceae	**Eucalyptus sp*. (planted)		Not Listed	Not Listed

Family	Species Name	Common Name	Ecological Impact	Invasiveness
Myrtaceae	**Gaudium laevigatum*	Coast Teatree	H	R
Myrtaceae	**Melaleuca sp.* (planted)		Not Listed	Not Listed
Myrtaceae	**Metrosideros tomentosa* (planted)	Pōhutukawa	Not Listed	Not Listed
Oleaceae	**Olea europaea*	Olive	H	R
Onagraceae	**Oenothera drummondii*	Beach Evening Primrose	U	R
Orobanchaceae	**Orobanche minor*	Lesser Broomrape	U	R
Oxalidaceae	**Oxalis pes-caprae*	Soursob	H	S
Papaveraceae	**Fumaria capreolata*	Whiteflower Fumitory	H	R
Plantaginaceae	**Plantago lanceolata*	Ribwort Plantain	U	U
Poaceae	**Avena barbata*	Bearded Oat	H	R
Poaceae	**Briza maxima*	Blowfly Grass	U	R
Poaceae	**Briza minor*	Shivery Grass	U	R
Poaceae	**Bromus diandrus*	Great Brome	H	R
Poaceae	**Catapodium rigidum*	Rigid Fescue	U	M
Poaceae	**Cenchrus clandestinus*	Kikuyu Grass	H	S
Poaceae	**Cynodon dactylon*	Couch	H	R
Poaceae	**Ehrharta brevifolia var. cuspidata*		L	M
Poaceae	**Ehrharta longiflora*	Annual Veldt Grass	M	R
Poaceae	**Eragrostis curvula*	African Lovegrass	H	R
Poaceae	**Lagurus ovatus*	Hare's Tail Grass	H	R
Poaceae	**Lolium perenne*	Perennial Ryegrass	H	R
Poaceae	**Poa annua*	Winter Grass	L	R
Poaceae	**Stenotaphrum secundatum*	Buffalo Grass	H	S
Poaceae	**Vulpia mu*ralis		H	R
Poaceae	**Vulpia myuros forma megaleura*	Rat's Tail Fescue	H	R
Primulaceae	**Lysimachia arvensis*	Pimpernel	U	R
Proteaceae	*#Grevillea olivacea* (planted)	Olive Grevillea	Not Listed	Not Listed
Rosaceae	**Casuarina equisetifolia*		U	S
Rosaceae	**Eriobotrya japonica*		L	S
Rubiaceae	**Galium murale*	Small Goosegrass	L	R

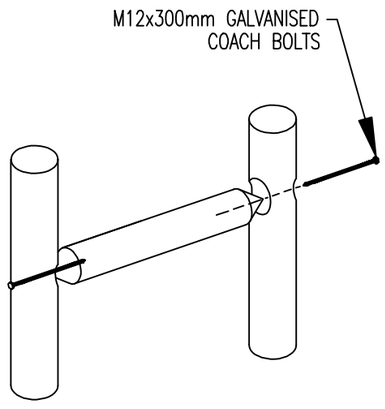
Family	Species Name	Common Name	Ecological Impact	Invasiveness
Scrophulariaceae	**Bellardia trixago*	Bellardia	U	R
Scrophulariaceae	**Dischisma arenarium*		U	R
Solanaceae	**Solanum nigrum*	Black Berry Nightshade	M	R
Tamaricaceae	**Tamarix aphylla*	Athel Tree	H	R
Verbenaceae	**Phyla nodiflora*		H	U

Appendix 6: Windbreak Fencing

No.	REVISION	BY	DATE	AUTH
0	ISSUED	C.H.	6/2010	G.M.

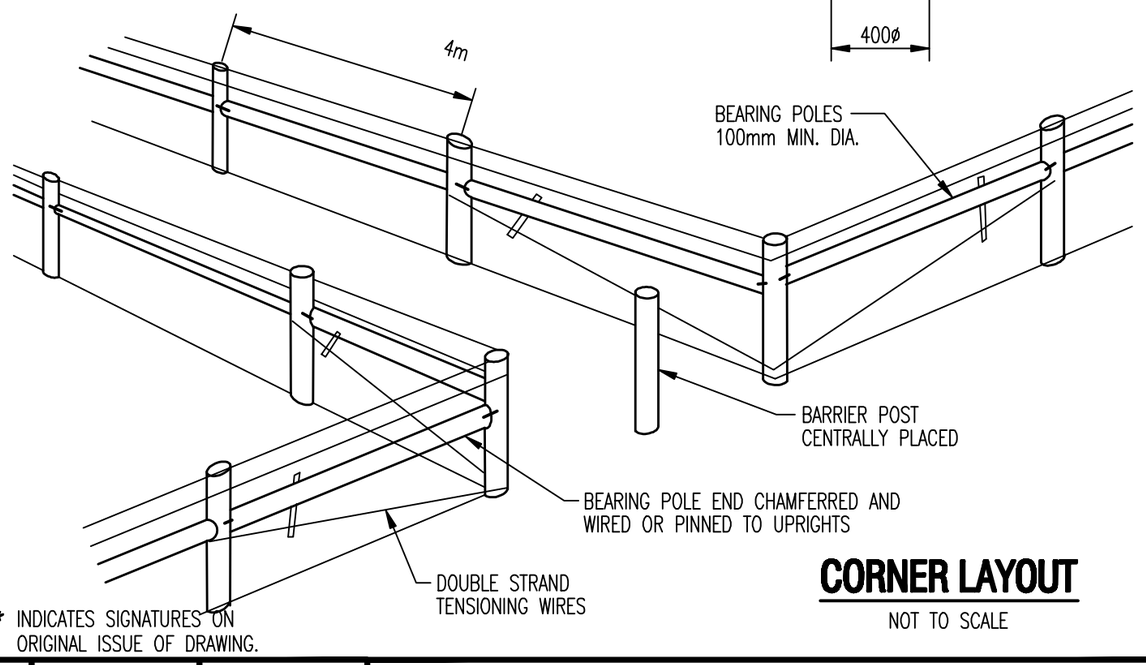


FENCE PANEL DETAIL



POLE FIXING DETAIL

NOT TO SCALE



CORNER LAYOUT

NOT TO SCALE

* INDICATES SIGNATURES ON ORIGINAL ISSUE OF DRAWING.

NOTES:

1. OPENINGS BETWEEN CORNER UNITS AND BARRIER POSTS TO BE MAXIMUM OF 1500mm.
2. BEARING POLES TO BE WIRED TO UPRIGHTS WITH 2 STRANDS PLAIN WIRE, END SHARPENED & INSERTED INTO POSTS OR END–DRILLED AND PINNED TO ENSURE SECURED FIXING.
3. ALIGNMENT BRACING TO BE LOCATED AS DIRECTED
4. INTERMEDIATE BRACING TO BE SPACED AS DIRECTED (ON STRAIGHT FENCES, MAXIMUM SPACING 125m.)
5. MESH TO BE 7/90/30 RINGLOCK FABRICATION FENCING. WIRES TO BE AS SHOWN AND TO BE GALVANIZED ACCORDING TO SPECIFICATIONS.
6. ALL UPRIGHT MEMBERS SHALL BE VERTICAL WITHIN A TOLERANCE OF 1:100.
7. THE BASE OF FOOTING HOLES SHALL BE ADEQUATELY COMPACTED BY RAMMING.
8. THE DIAMETER OF EACH TIMBER POST OR RAIL SHALL NOT VARY BY MORE THAN 25mm OVER A 2m LENGTH (OR 12.5mm PER METRE LENGTH).
9. CONCRETE FOOTING SHALL BE MIXED IN THE PROPORTIONS OF: (4) PARTS BY WEIGHT OF CLEAN DUST FREE AGGREGATE (NOT EXCEEDING 20mm SIZE), TWO (2) PARTS BY WEIGHT OF CLEAN DUST FREE SAND, ONE (1) PART BY WEIGHT OF MASONRY CEMENT, &SUFFICIENT WATER TO ENSURE A SLUMP OF NOT MORE THAN 100mm USING THE AUSTRALIAN STANDARD SLUMP TEST CONE.
10. CONCRETE SHALL ACHIEVE A MINIMUM COMPRESSIVE STRENGTH OF 20MPa AT 28 DAYS.
11. CONCRETE FOOTINGS SHALL BE CURED FOR TWENTY FOUR (24) HOURS BEFORE ERECTION OF WIRES OR MESH TO POSTS.
12. GALVANISED COATINGS FOR ALL FERROUS MATERIALS SHALL HAVE COATINGS OF ZINC IN COMPLIANCE WITH AS 1650. THE COATINGS FOR WIRES SHALL BE TYPE A (HEAVILY GALVANISED).
13. SITE TO BE LEFT IN A CLEAN STATE, FREE OF ANY SURPLUS CONSTRUCTION MATERIALS AND EQUIPMENT
14. 915mm KNITTED 70% SHADE CLOTH (LIGHT COLOUR) TO BE FASTENED TO RINGLOCK WITH RINGLOCK FASTENERS.

CAUTION:

14. THE INSTALLATION OF FENCE POSTS SHOULD NOT INTERFERE WITH EXISTING SERVICES INCLUDING STORMWATER DRAINAGE. INSTALLER IS RESPONSIBLE FOR CONTACTING SERVICES AUTHORITIES TO DETERMINE LOCATIONS AND DEPTHS OF SERVICES PRIOR TO BOLLARD INSTALLATION.

SCALE: 1:25 — 250 0 250 500 750 1000 SCALE IN MILLIMETRES	DATUM: LOCAL	GRID: LOCAL	
SURVEYED: 2010 SURVEYOR	CHECKED: * D.LAIDLOW 1/6/2010 A/COORDINATOR DESIGN AND CONSTRUCTION		
DESIGNED: C.O.W. 2010 CIVIL PROJECTS DESIGNER	AUTHORISED: * R.KORENHOF 1/6/2010 MANAGER INFRASTRUCTURE PROJECTS		
DRAWN: C.O.W. 2010 CIVIL PROJECTS DESIGNER	APPROVED: * D.BLAIR 1/6/2010 DIRECTOR INFRASTRUCTURE		

FENCING

WINDBREAK FENCING

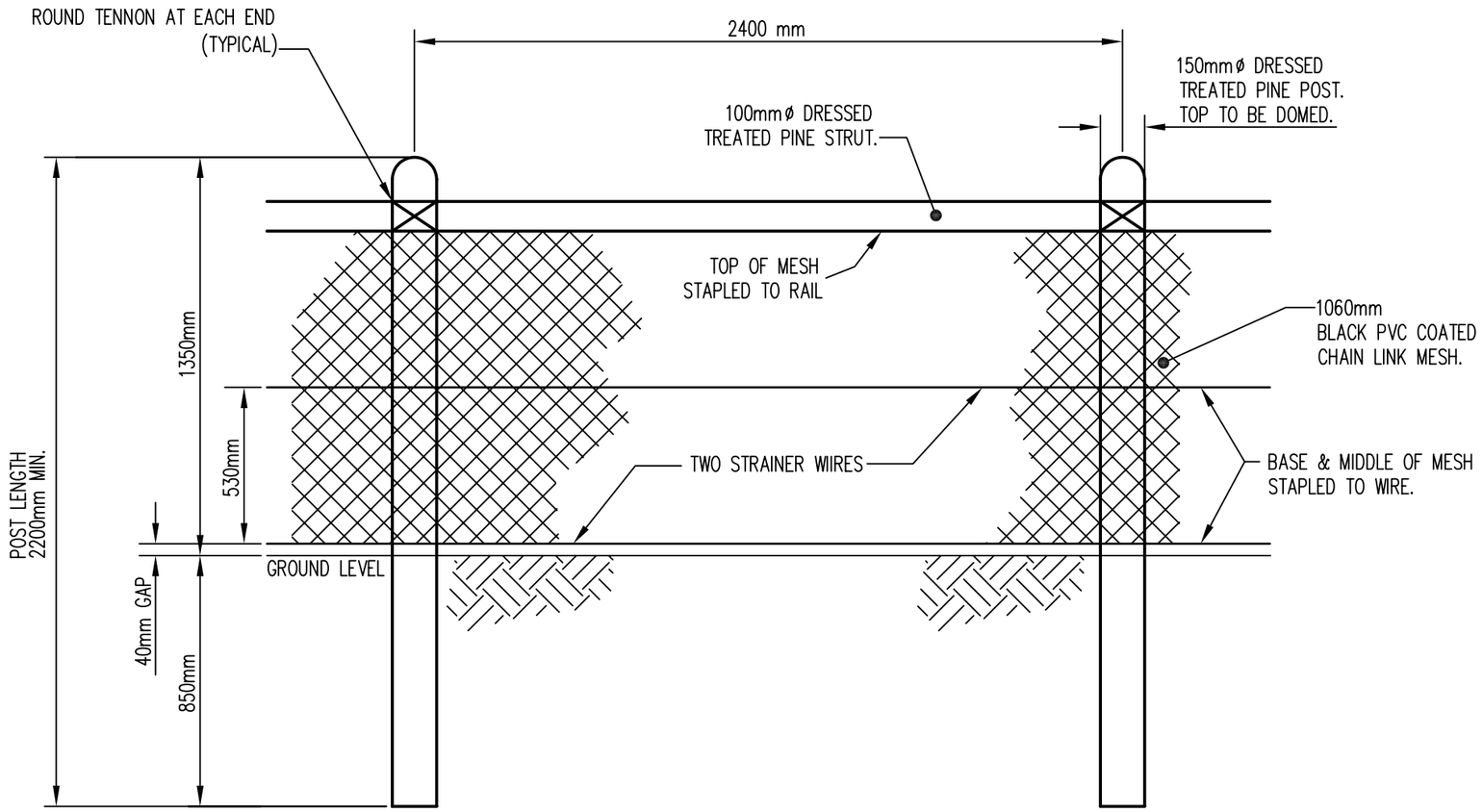
STANDARD

CITY OF WANNEROO
INFRASTRUCTURE

FILE No.	DRAWING No.	SHEET	REVISION	ORIGINAL DRG. SIZE
N/A	TS 01-11-0			A3
PROJECT No. N/A				

Appendix 7: Conservation Fencing

No	REVISION	BY	DATE	AUTH
0.	ISSUED	J.W.T.	10/2002	
1.	NOTES AND DIMENSIONS AMENDED	T.T.	2/2006	B.C.



MATERIAL SPECIFICATIONS

150–175mm x 2.2m CCA TREATED PINE LOG (FOR PINE UPRIGHTS).
1.57mm GALVANISED TIE WIRE.

NOTES

1. ALL ENDS, JOINS AND TIES TO BE FINISHED NEATLY WITH NO WIRE PROTRUSIONS.
2. WIRE TO BE WRAPPED AROUND PINE POSTS TWICE, THEN WOUND BACK AROUND WIRE THREE TIMES AND CUT OFF FLUSH.
3. FENCING WIRE TO BE FIXED TO OUTSIDE OF FENCE, EXCEPT WHERE PARK ADJOINS PRIVATE PROPERTY, WHERE IT SHOULD BE FIXED TO INSIDE OF FENCE
4. FENCE TO SMOOTHLY FOLLOW THE OVERALL CONTOURS OF THE LAND AS FOR BOLLARDS (NOT TO HAVE SUDDEN DIPS AND RISES).
5. REFER TO STANDARD DRAWING TS 01–09 FOR BOX STRAINER DETAIL.

* INDICATES SIGNATURES ON ORIGINAL ISSUE OF DRAWING.

DATUM: N/A	GRID: N/A	SURVEYOR: N/A	DESIGNED: C.O.W.	APPROVED: * B. CARTER 31/10/2002 COORDINATOR PARKS
SCALE: 1:20 (0.2 0 0.2 0.4 0.6 0.8 SCALE IN METRES)			DRAWN: C.O.W.	APPROVED: * R. KORENHOF 31/10/2002 MANAGER INFRASTRUCTURE
DESIGN ARCHIVE: V:\\TECHNICAL SERVICES DESIGN ARCHIVE			DESIGN CHECKED: * B. CARTER 31/10/2002 COORDINATOR PARKS	APPROVED: * D. BLAIR 31/10/2002 DIRECTOR TECHNICAL SERVICES
DRAWING ARCHIVE: V:\\TECHNICAL SERVICES DRAWING ARCHIVE			STANDARDS/DOCUMENT CONTROL: * J. TRIMMER 31/10/2002 PROJECTS TECHICNAL SUPPORT OFFICER	

FENCING

CONSERVATION PINE RAIL FENCING

LOCALITY: STANDARD

CITY OF WANNEROO
TECHNICAL SERVICES
INFRASTRUCTURE SERVICES

FILE No.	DRAWING No	SHEET	REVISION	ORIGINAL DRG.SIZE
	TS 01 - 7 - 1			A3

Appendix 8: Implementation and Reporting Schedule

Action	Timing	Description of Works	Evidence of Completion	Target/ Action Date - Reporting	Further Action Required?
PRE-CONSTRUCTION					
Monitoring	Prior to site works	Establish photo monitoring points and quadrats for the purpose of revegetation and weed coverage monitoring. Monitoring Program to be established and agreed with the City	Map showing locations of photo monitoring points and quadrats.	As per approved monitoring plan/ schedule agreed with the City of Wanneroo.	Not applicable
Waste management	Prior to site works and ongoing	Removal, transport and appropriate disposal of dumped rubbish, construction materials, asbestos and other contaminated waste at an approved facility in accordance with environmental and health regulations.	Before and after date stamped photographs and/ or invoices for disposal of litter and general waste. Provision of Contaminated waste docket in accordance with environmental and health regulations for the removal of contaminated waste.	To be included in the annual report commencing from approval of environmental management plan.	Potential audit of works as required.
Fencing and signage	Pre-construction and prior to clearing works.	Install temporary fencing and signage around areas of native vegetation to be retained to prevent unauthorised access. Regularly inspect fencing and signage and provide	Date stamped photographs at agreed photo monitoring points and mapping showing location of fencing and signage.	Evidence provided within 4 weeks of installation of fencing/ signage and included in the annual report.	Potential audit of works as required.

Action	Timing	Description of Works	Evidence of Completion	Target/ Action Date - Reporting	Further Action Required?
		maintenance where required including any additional measures for the prevention of unauthorised access.			
Weed Mapping	Prior to site works and ongoing.	Areas of vegetation to be retained in conservation POS should be assessed for weed abundance and mapped accordingly.	Provide weed mapping showing locations, densities and type of weeds present.	To be included in the annual report.	Heavily weed infested areas or non-compliance with agreed weed management may result in increased frequency of reporting and/ or extended maintenance period.
Weed control	Prior to site works and ongoing	Removal of all declared pests and WoNS present across the site prior to construction. Undertake ongoing weed management of the conservation areas. Aiming for less than 10% weed coverage over the site.	Date stamped photos at agreed photo monitoring points showing indicator dye or invoice from contractor.	To be included in the annual report.	Heavily weed infested areas or non-compliance with agreed weed management may result in increased frequency of reporting and/ or extended maintenance period.
Seed collection and vegetation management	Several seasons prior to development.	Build-up of local provenance seed collection over several seasons from the development area. Seed collected in accordance with industry standards.	Provide evidence from seed collection specialist of ability to propagate the seed collected. Copies of valid licences and processes to be provided.	To be included in the annual report.	Potential audit of works as required.

Action	Timing	Description of Works	Evidence of Completion	Target/ Action Date - Reporting	Further Action Required?
		Seed collection of species that are able to be propagated.	Provide evidence of harvested vegetation.		
Unauthorised access	Pre- construction and ongoing.	Early identification of potential and active access points. Identification and ongoing review of management methods to prevent unauthorised access in consultation with the City of Wanneroo. Ongoing communication of any reoccurring issues with City Rangers. Must be provided in accordance with approved documents.	Date stamped photographs and mapping showing location.	To be included in the annual report.	Potential audit of works and ongoing consultation with the City of Wanneroo as required.
Fauna management	Pre- construction and ongoing.	Undertake pre-clearance survey to determine fauna present on ground prior to site works (fauna survey ground-truthing). Install fauna exclusion fencing around entire perimeter of the relevant development stage prior to site works. Fauna exclusion fencing should be a minimum height of 1.8 metres,	Date stamped photographs and mapping showing location of fencing. Report on fauna trapped by suitably qualified and licenced expert and in accordance with DPaW advice.	To be included in the annual report.	Potential audit of works and ongoing consultation with the City of Wanneroo as required.

Action	Timing	Description of Works	Evidence of Completion	Target/ Action Date - Reporting	Further Action Required?
		pegged into the ground with taught wire to keep the bottom of the fence flush with the ground. Mustering or trapping and relocation – fauna relocated offsite. Offsite impacts remain the responsibility of the developer. Need to consider cumulative impacts of habitat removal. Feral Animal Control In accordance with section 4.1.4			
CONSTRUCTION					
Waste management	During site works and ongoing.	Removal, transport and appropriate disposal of dumped rubbish, construction materials, asbestos and other contaminated waste at an approved facility in accordance with environmental and health regulations.	Before and after date stamped photographs and/ or invoices for disposal of litter and general rubbish. Provision of validation report in accordance with environmental and health regulations for the removal of asbestos. Provision of contaminated waste docket in accordance	To be included in the annual report.	Potential audit of works as required.

Action	Timing	Description of Works	Evidence of Completion	Target/ Action Date - Reporting	Further Action Required?
			with environmental and health regulations for the removal of contaminated waste.		
Fencing and signage	At start of construction works.	Remove temporary fencing and establish permanent fencing with controlled access points. Remove temporary signage once permanent signage has been installed.	Date stamped photographs showing installed permanent, gates fencing and signage.	Included in first report following installation of permanent fencing, gates and signage.	Potential audit of works as required.
Weed control	Construction.	Undertake ongoing weed management of the conservation areas. Aiming for less than 10% weed coverage over the site. Include weeding of constructed verges surrounding conservation areas.	Date stamped photos at agreed photo monitoring points showing indicator dye or invoice from contractor.	To be included in the annual report.	Heavily weed infested areas or non-compliance with agreed weed management may result in increased frequency of reporting and/ or extended maintenance period.
Seed collection and vegetation management	Throughout construction works where required.	Build-up of local provenance seed collection over several seasons from the development area. Seed collected in accordance with industry standards.	Provide evidence from seed collection specialist of ability to propagate the seed collected. Copies of valid licences and processes to be provided.	To be included in the annual report.	Potential audit of works as required.

Action	Timing	Description of Works	Evidence of Completion	Target/ Action Date - Reporting	Further Action Required?
		Propagation of collected seed to occur during construction of the project.	Provide evidence of harvested vegetation. Provide propagation notice		
Unauthorised access	Construction and ongoing.	Identification of potential and active access points. Identification and ongoing review of management methods to prevent unauthorised access in consultation with the City of Wanneroo. Ongoing communication of any reoccurring issues with City Rangers. Must be provided in accordance with approved documents.	Date stamped photographs and mapping showing location.	To be included in the annual report.	Potential audit of works and ongoing consultation with the City of Wanneroo as required.
Fauna management	Construction and ongoing.	Ensure all personnel undertaking works are aware of fauna species on site and the relevant protection measures required. Undertake pre-clearance trapping and removal and	Report on fauna trapped and relocated by suitably qualified and licenced experts.	To be included in the annual report.	Potential audit of works and ongoing consultation with the City of Wanneroo as required.

Action	Timing	Description of Works	Evidence of Completion	Target/ Action Date - Reporting	Further Action Required?
		undertake fauna spotting during clearing works.			
Revegetation works	Construction and ongoing.	See Section 5.2.1	Date stamped photos and relevant data of revegetation site in accordance with approved success criteria monitoring. Must provide mapping showing location	Included in first report following revegetation works.	Potential audit of works and ongoing consultation with the City of Wanneroo as required.
POST CONSTRUCTION					
Waste management	Post construction works and during maintenance period.	Removal, transport and appropriate disposal of dumped rubbish, construction materials, asbestos and other contaminated waste at an approved facility in accordance with environmental and health regulations.	Before and after date stamped photographs and/ or invoices for disposal or litter or general waste. Provision of validation report in accordance with environmental and health regulations for the removal of asbestos. Provision of Contaminated waste docket in accordance with environmental and health regulations for the removal of contaminated waste.	To be included in the annual report.	Potential audit of works as required.

Action	Timing	Description of Works	Evidence of Completion	Target/ Action Date - Reporting	Further Action Required?
Fencing and signage	Post construction works and during maintenance period	Regularly inspect fencing and signage and provide maintenance where required including any additional measures for the prevention of unauthorised access.	Date stamped photographs (before and after maintenance works) showing maintenance works or replacement of fencing and signage, with a written description of works undertaken.	To be included in annual report.	Potential audit of works as required.
Weed Mapping	Post construction works and during maintenance period.	Undertake weed mapping following construction and ongoing to monitor weed populations across the site.	Provide weed mapping showing locations, densities and type of weeds present.	To be included in the annual report.	Heavily weed infested areas or non-compliance with agreed weed management may result in increased frequency of reporting and/ or extended maintenance period.
Weed control	Post construction works and during maintenance period.	Undertake ongoing weed management of the conservation areas. Aiming for less than 10% weed coverage over the site.	Date stamped photos at agreed photo monitoring points showing indicator dye or invoice from contractor.	To be included in the annual report.	Heavily weed infested areas or non-compliance with agreed weed management may result in increased frequency of reporting and/ or extended maintenance period.
Revegetation works	Post construction works and during maintenance period.	Ongoing revegetation works including infill planting to ensure attainment of completion criteria.	Date stamped photos and relevant data of revegetation site in accordance with approved success criteria monitoring.	Included in first report following revegetation works.	Potential audit of works and ongoing consultation with the City of Wanneroo as required.

Action	Timing	Description of Works	Evidence of Completion	Target/ Action Date - Reporting	Further Action Required?
		Seed collection and propagation works is to be included as part of ongoing revegetation requirements.	Must provide mapping showing location.		
Unauthorised access	Post construction works and during maintenance period.	Identification of potential and active access points. Identification and ongoing review of management methods to prevent unauthorised access in consultation with the City of Wanneroo. Ongoing communication of any reoccurring issues with City Rangers. Must be provided in accordance with approved documents.	Date stamped photographs and mapping showing location.	To be included in the annual report.	Potential audit of works and ongoing consultation with the City of Wanneroo as required.
Fauna management	Post construction works and during maintenance period.	Feral pest trapping and removal of rabbits, foxes, and feral cats. Feral pest population monitoring. Monitor native fauna populations using methods outlined in section 4.1.3	Report on fauna trapped by suitably qualified and licenced expert and in accordance with DPaW advice.	To be included in the annual report.	Potential audit of works and ongoing consultation with the City of Wanneroo as required.

Action	Timing	Description of Works	Evidence of Completion	Target/ Action Date - Reporting	Further Action Required?
Monitoring	Post construction works and during maintenance period.	Ongoing monitoring of the site as outlined in section 5.2, including the monitoring of established quadrats, photo monitoring points and vegetation condition mapping. To be assessed against completion criteria outlined in section 5.3.	Annual monitoring report outline the condition of the site with collated data from the photographic monitoring points and quadrats, with an assessment and recommendation against the completion criteria.	Final report demonstrating how all completion criteria have been adequately met in accordance with the approved environmental management plan.	Potential audit of works and ongoing consultation with the City of Wanneroo as required prior to handover.

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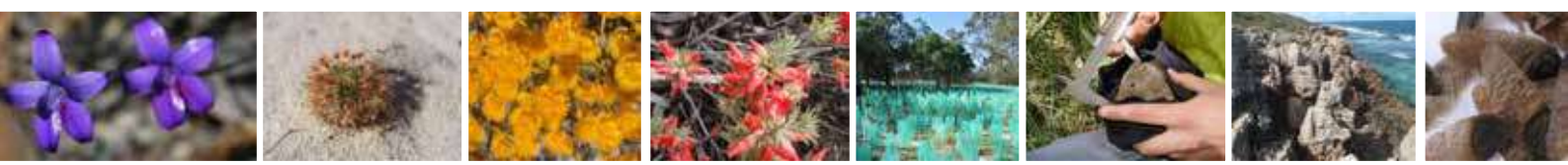
Natural Area
CONSULTING MANAGEMENT SERVICES

UDLA

Yanchep Lagoon

Detailed and Targeted Flora Survey

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info@naturalarea.com.au
www.naturalarea.com.au



Acknowledgement of Country

Ngala kaaditj Noongar moort keyen kaadak nidja boodja.
Natural Area acknowledges the Traditional Owners of the lands on which we operate, and recognises their continuing connection to lands, waters and communities.

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System Certifications

Environmental management system registered to ISO 14001:2015
Quality management system registered to ISO 9001:2015
Occupational health and safety management system registered to ISO 45001:2018

Document Title	UDLA-R-Detailed and Targeted Flora Survey
Location	ConsultingSP/Shared Documents/UDLA/2025 03 082 Yanchep Lagoon FMP/6. Reporting/CoW-R-Detailed and Targeted Flora Survey.docx

Draft/Version No.	Date	Changes	Prepared by	Approved by	Status
D1	November 2025	New Document	JG/ZS	JW/KE	Superseeded
D2	December 2025	Species ID from WA Herbarium verification	ZS	JW	Draft

Executive Summary

Natural Area Environmental Consulting Management Services (Natural Area) was subcontracted by UDLA on behalf of the City of Wanneroo (the City) to undertake a desktop assessment, detailed flora survey, and a targeted flora survey within Yanchep Lagoon. These surveys were undertaken across the area to update previous flora survey and to assist with the development of the Yanchep Lagoon Foreshore Management Plan.

The detailed and targeted flora survey determined:

- A total of 177 flora (taxa) species from 56 families, comprised of 92 native flora species, 85 introduced species and/or dubious species.
- No declared pests or Weeds of National Significance were recorded.
- A total of 9 vegetation types were identified, namely:
    - *Olearia axillaris* shrubland over *Spinifex longifolius* tussock grassland (A1)
    - *Scaevola crassifolia, Myoporum insularis* and *Olearia axillaris* shrubland over *Lepidosperma gladiatum* sedgeland (A3)
    - *Olearia axillaris* and *Scaevola crassifolia* shrubland (A2)
    - *Frankenia pauciflora* var. *pauciflora* and *Scaevola crassifolia* shrubland over *Salicornia blackiana* chenopod shrubland (B1)
    - *Spyridium globulosum, Acacia cyclops* and *Olearia axillaris* shrubland (C1)
    - *Melaleuca systena* and *Acacia lasiocarpa* shrubland over *Lomandra maritima* forbland (C2)
    - *Eucalyptus gomphocephala* woodland (C3)
    - *Melaleuca cardiophylla* shrubland (D1)
    - *Melaleuca huegelii* subsp. *huegelii* shrubland (D2).
- The condition of site ranged from completely degraded to excellent.
- Two priority ecological communities within the site:
    - Coastal shrublands on shallow sands, southern Swan Coastal Plain ('floristic community type 29a')
    - Acacia shrublands on taller dunes, southern Swan Coastal Plain ('floristic community type 29b')
- The potential for one threatened ecological community listed under the *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC Act), Honeymyrtle shrubland on limestone ridges of the Swan Coastal Plain Bioregion.
- A total of 8,073 *Conostylis pauciflora* subsp*. pauciflora* (Priority 4).

It is recommended that vegetation in a very good or better condition is prioritised for conservation and protection, with vegetation in a degraded to completely degraded condition prioritised for rehabilitation and revegetation efforts. It is important that the location *Stylidium maritimum* (Priority 3) was last recorded in 2019 is retained as it may regenerate or germinate within the area. It is recommended that no disturbances occur within the vegetation directly adjacent to the *Melaleuca huegelii* shrubland (D2) and that this vegetation is prioritised for retention.

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1.0 Introduction

Natural Area Consulting Management Services (Natural Area) was subcontracted by UDLA on behalf of the City of Wanneroo (the City) to undertake a desktop assessment, detailed flora survey, and a targeted flora survey within Yanchep Lagoon. These surveys were undertaken across the area to update previous flora survey and to assist with the development of the Yanchep Lagoon Foreshore Management Plan.

1.1 Location

The site is located within Yanchep Lagoon and is approximately 33.11 ha. Yanchep Lagoon is a coastal destination within Yanchep in the City and is approximately 50 km north of the Perth Central Business District (Figure 1). Class A and C reserves are present within the Yanchep Lagoon and are managed by the City.

1.2 Scope

The scope of works undertaken by Natural Area included:

- A desktop assessment of relevant information pertaining to significant flora and threatened ecological communities, within a 10 km radius of the survey site.
- Detailed flora and vegetation survey to determine:
  - The establishment of three quadrat per vegetation type.
  - Formation of a flora species list, outlining native and non-native species present.
  - Identification and mapping of any threatened, priority or other significant flora species listed under the *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC Act), and the *Biodiversity Conservation Act 2016* (WA) (BC Act).
  - Identification and mapping of any declared pests or Weeds of National Significance.
  - Determination of vegetation type using the structural classes described in the Australian Vegetation attribute Manual (Executive Steering Committee for Australian Vegetation Information (ESCAVI), 2003), and identification of dominant over, middle and understorey species.
  - Assessment of vegetation condition and extent using the scale attributed to Keighery (EPA, 2016). .
  - Key site characteristics, including landform, geology and soil complex.
- A targeted flora survey to determine the location, population size, and extent of conservation significant flora.

1.3 Legislative Context

State and Federal environment-related laws impact how environmental values are governed in Western Australia. The following legislation and policies are relevant to this report.

1.3.1 Relevant Legislation

***Aboriginal Heritage Act 1972* (WA)**

The Aboriginal Heritage Act 1972 (WA) makes provision for the recognition, protection, conservation, and preservation of Aboriginal heritage in Western Australia.

***Biosecurity and Agriculture Management Act 2007* (WA)**

The *Biosecurity and Agriculture Management Act 2007* (WA) (BAM Act) regulates the framework for plant and animal pest and disease biosecurity in Western Australia. The framework provides for the control of declared flora and fauna species (declared organisms) that are known to be a significant environmental threat and the management, control and prevention of these declared plants and animals.

***Biodiversity Conservation Act 2016* (WA)**

The *Biodiversity Conservation Act 2016* (WA) (BC Act) aims to protect and conserve biodiversity as well as to promote the ecologically sustainable use of biodiversity components in the State. The BC Act provides the statute relating to conservation and legal protection of flora, fauna, and ecological communities. The BC Act follows the principles of ecologically sustainable development, detailing that decision-making processes should effectively integrate long-term and short-term economic, environmental, social, and equity considerations.

***Environmental Protection Act 1986* (WA)**

The *Environmental Protection Act 1986* (WA) (EP Act) provides for the prevention, control and abatement of pollution and environmental harm, for the conservation, preservation, protection, enhancement, and management of the environment connected with the foregoing. The Environmental Protection Authority (EPA) is established under this act and provides a structured policy framework that is consistent with the EP A*ct*. The EPA produces the guidelines and procedures associated with conducting environmental assessments in line with the EP Act.

***Environment Protection and Biodiversity Conservation Act 1999* (Cth)**

The Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) serves to protect and manage nationally and internationally important flora, fauna, ecological communities, and heritage places. The primary objective of the EPBC Act is to promote the conservation of biodiversity and the sustainable use of natural resources while allowing for ecologically sustainable development. The EPBC Act allows for the creation of conservation agreements between the Australian government and individuals, communities, or organisations to support the conservation of biodiversity.

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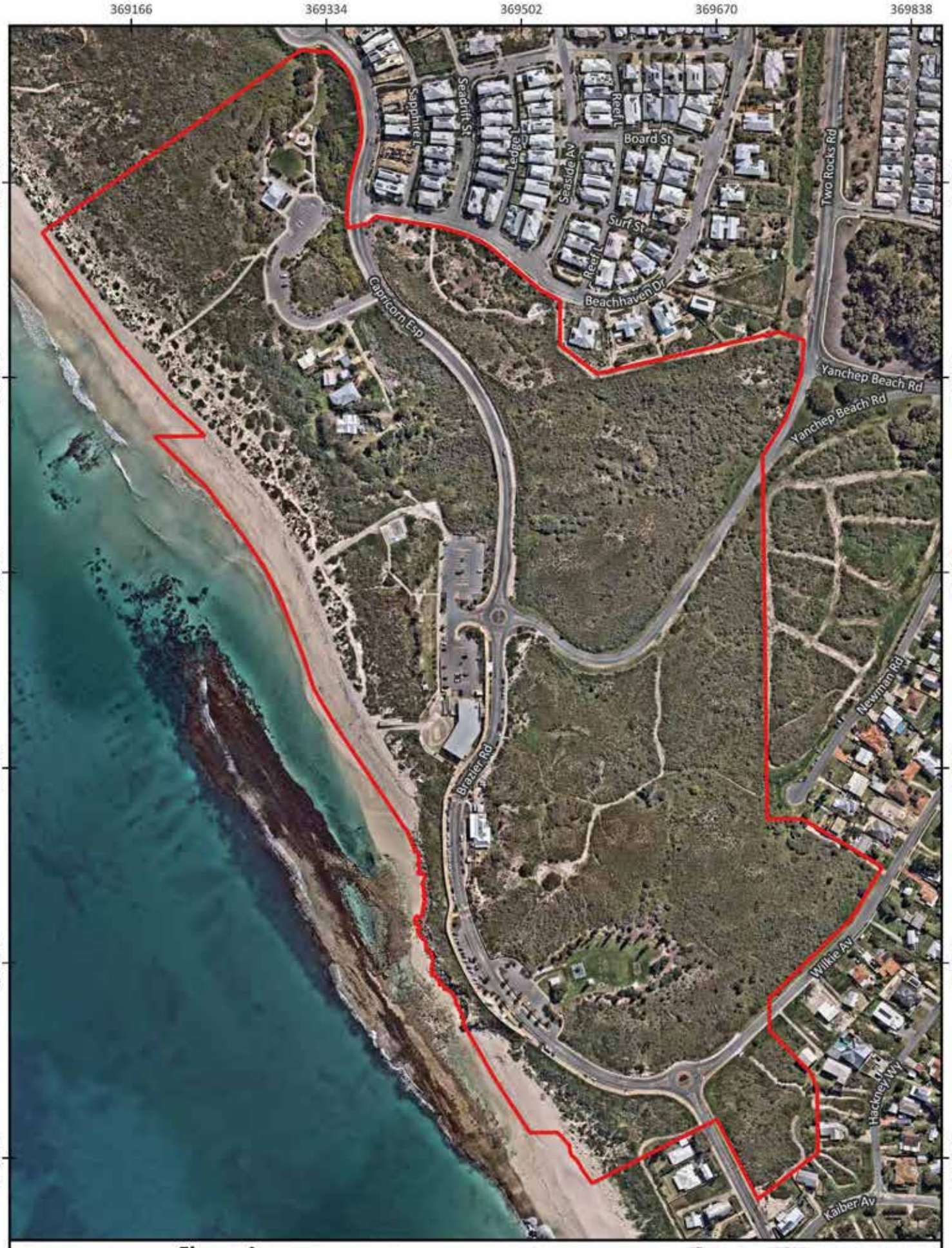


Figure 1:
Site Location

Yanchep, Western Australia

Legend
Site Boundary

Client:	UDLA
Date:	03/11/2025
Created by:	Z.Stoney
Image Source:	Nearmap, 2025
Datum:	GDA2020 / MGA zone 50
Scale:	1: 4200

0 50 100 m

N

2.0 Site Characteristics

2.1 Regional Context

The site is located within the Swan Coastal Plain (SWA02) IBRA subregion (Department of Climate Change, Energy, the Environment and Water (DCCEEW), 2024). This region is characterised by low lying coastal plain covered with woodlands. This subregion is generally comprised of sandy soils dominated by Banksia or Tuarts (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 (BoM) (2025); Gingin Aero, site number 009178, the region is subject to:

- Average rainfall of 636.4 mm per annum, with majority of rainfall between June and August (1996 - 2025) (BoM, 2025).
- Average maximum temperature range of 18.4 °C in winter to 33.3 °C in summer (1996 - 2025) (BoM, 2025).
- Average minimum temperature ranging from 6.6 °C in winter to 17.0 °C in summer (1996 - 2025) (BoM, 2025).

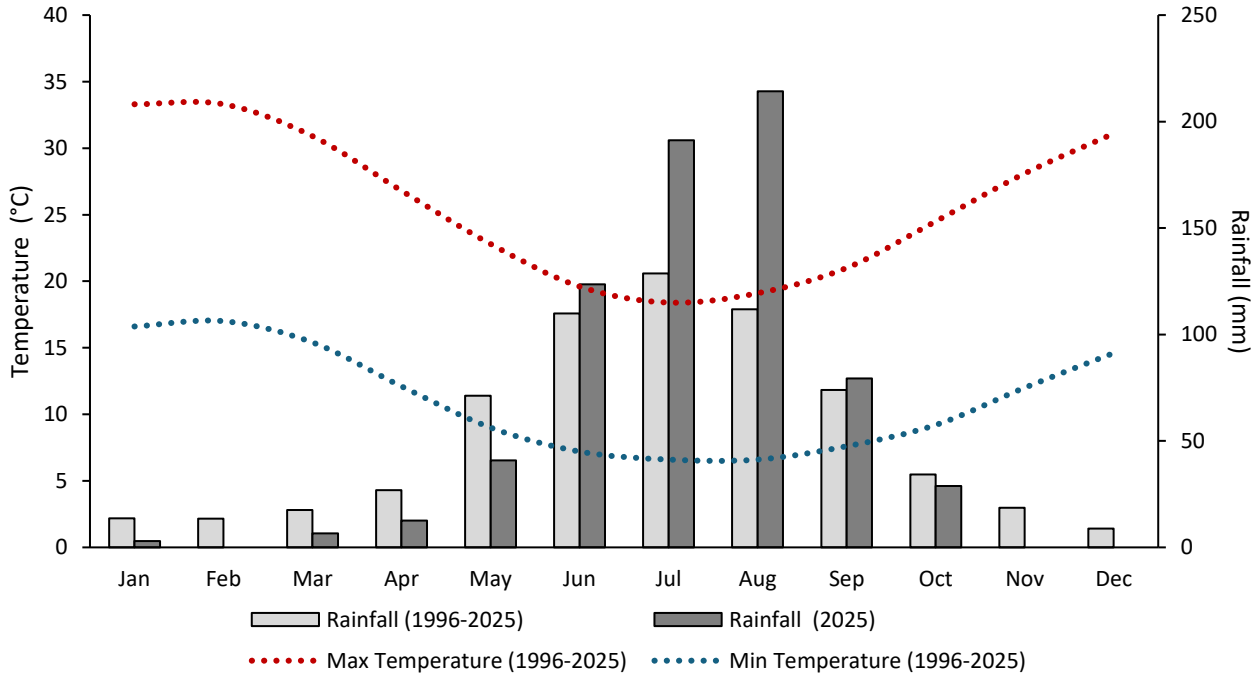


Figure 2: Temperature and rainfall data for the Gingin Aero, site number 009178. Source: BoM, 2025.

2.3 Topography and Soils

A total of seven soil types were identified on site (Department of Primary Industries and Regional Development (DPIRD), 2022). The site ranges from 28 m Australian Height Datum (AHD) in the central dunes corner and 2 m AHD along the foreshore (DPRID, 2019). (Table 1 and Figure 3).

Table 1: Soil types within the site

Name	Symbol	Description
Quindalup South youngest dune phase	211Qu__Q4	The youngest phase. Irregular dunes with slopes up to 20%. Loose pale brown calcareous sand with no soil profile development.
Quindalup South shallow sand flat phase	211Qu__Qs	Undulating landscapes with shallow calcareous sands over limestone and much rock outcrop.
Quindalup South deep sand flat phase	211Qu__Qp	Undulating landscapes with deep calcareous sands overlying limestone. Soils have dark grey-brown sand to about 50 cm and then pale brown sand. Remnants of hummocks are often present.
Quindalup South water, beach phase	211QuU_BEACH	Beach.
Quindalup South second dune phase	211Qu__Q2	The second phase. A complex pattern of dunes with moderate relief. Calcareous sands have organic staining to about 20 cm, passing into pale brown sand; some cementation below 1 m.
Quindalup South third dune phase	211Qu__Q3	The third phase. Irregular dunes with high relief and slopes up to 20%. Loose calcareous sand with little surface organic staining and incipient cementation at depth.
Quindalup South oldest dune phase	211Qu__Q1	The oldest phase. Dunes or remnants with low relief. Calcareous sands have organic staining to about 30 cm, overlying pale brown sand with definite cementation below 1 m.

2.4 Vegetation Complex

One vegetation complex exists within the site boundary, the Quindalup Complex. It is described by Heddle, Loneragan, and Havel (1980) as a coastal dune complex consisting mainly of two alliances - the strand and fore-dune alliance and the mobile and stable dune alliance. Local variations include the low closed forest of *Melaleuca lanceolata* (Rottnest Teatree) - *Callitris preissii* (Rottnest Island Pine), the closed scrub of *Acacia rostellifera* (Summer-scented Wattle) and the low closed *Agonis flexuosa* (Peppermint) forest of Geographe Bay. The pre-European extent of this vegetation complex remaining is:

- 60.49 % within the Swan Coastal Plain
- 16.16 % within the City of Wanneroo (Government of Western Australia, 2019).

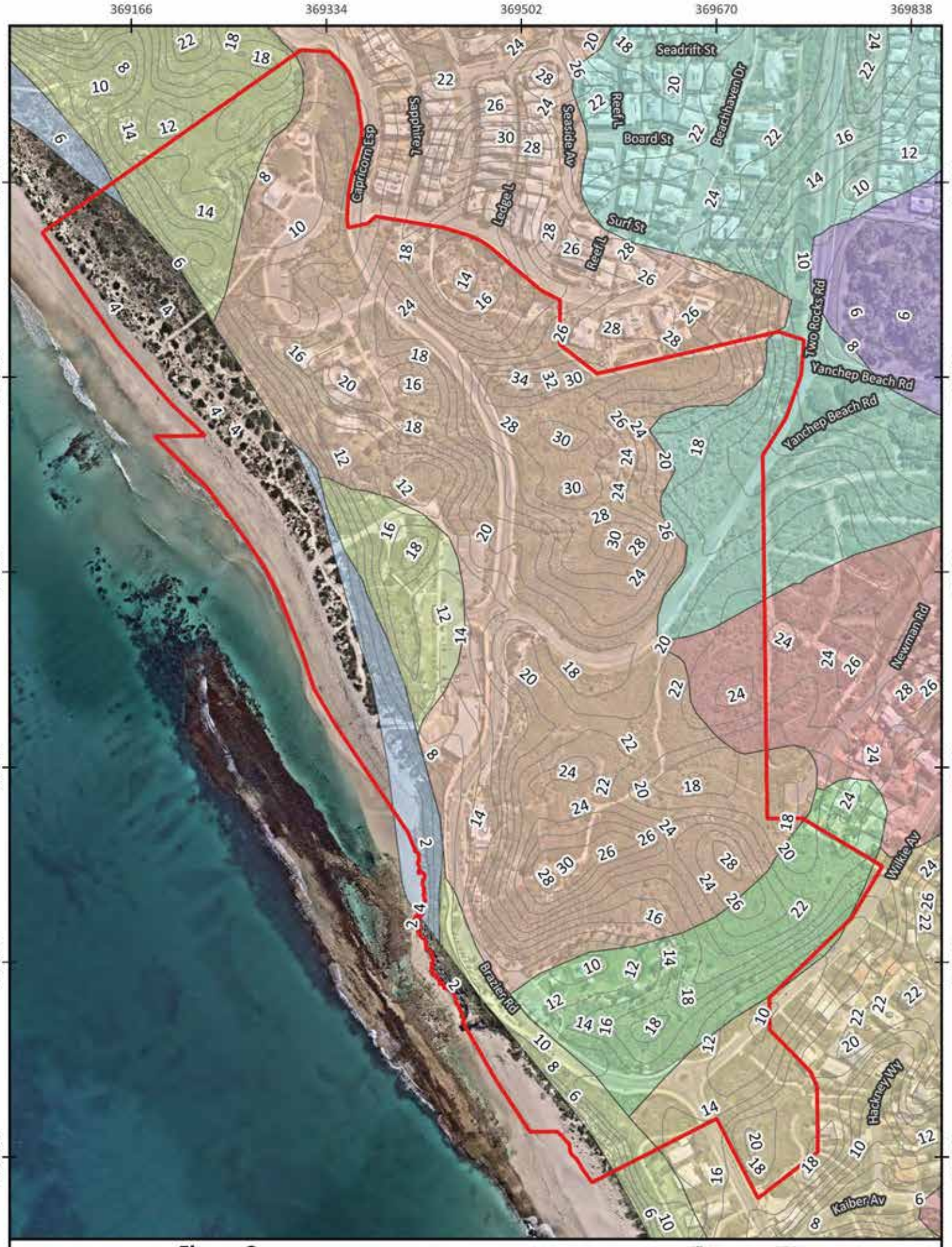


Figure 3:
Soil and Topography

Yanchep, Western Australia

Legend

- Contour (2 m)
- 211Qu__Q1
- 211Qu__Q2
- 211Qu__Q3
- 211Qu__Q4
- 211Qu__Qp
- 211Qu__Qs
- 211QuU_BEACH
- 211Sp__Ky
- Site Boundary

Client:	UDLA
Date:	03/11/2025
Created by:	Z.Stoney
Image Source:	Nearmap, 2025
Datum:	GDA2020 / MGA zone 50
Scale:	1: 4200

0 50 100 m

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2.5 Hydrology

There are no geomorphic wetlands located within the site boundary. The survey site has been identified as a moderate to low potential for terrestrial groundwater dependent ecosystem along the eastern half of the site (BoM, 2019). The Indian Ocean borders the western boundary of the site.

2.6 Heritage Values

Yanchep Lagoon is within the Whadjuk People Indigenous Land Use Agreement area. Two sites are registered as Aboriginal Cultural Heritage, Yanchep Beach (ID 17599) and Limestone Reef (ID 17596) (DPLH, 2025a). The entirety of Yanchep Beach is registered as a creation/dreamtime narrative with no gender/initiation restriction. The Limestone reef is adjacent to Yanchep Beach and is a creation/dreamtime narrative with no gender/initiation restriction.

Yanchep Lagoon (ID 17949) is listed under the Local Heritage Survey (DPLH, 2025b). Three sites are listed under the Heritage List, Fisherman's Hollow (17532), Lindsay Homestead (Well & Sheep Dip) (14280), and Well & Sheep Dip (Lindsay Homestead) (14297) (DPLH, 2025c).

2.7 Ecological Linkages

Yanchep Lagoon is within an environmentally sensitive area (ESA) and a mapped ecological linkage. The ESA within Yanchep Lagoon has been identified as containing Bush Forever site no. 397 known as the coastal strip from Wilbinga to Mindarie (DPLH, 2019). The bush forever site meets the section criteria of representation of ecological communities, rarity, maintaining ecological processes or natural systems, general criteria for the protection of wetland, and streamline and estuarine fringing vegetation and coastal vegetation.

Ecological linkages provide connectivity between patches of remnant vegetation facilitating the maintenance of ecological processes and the movement of organism within and across a landscape. Perth Regional Ecological Linkages were identified by the Perth Biodiversity Project with input from the Department of Environment, Department of Conservation and Land Management (CALM) and the Department for Planning and Infrastructure (WALGA, 2004). Perth Regional Ecological Linkage No. 1 intersects with Yanchep Lagoon, this ecological linkage links the Bush Forever sites 406 through to 315 and maintains connectivity along the coast for the Quindalup Complex (Figure 4).

2.8 Fire History

The site was impacted by fire in December 2019 in the section of bushland south of Brazier Road between Brazier Road, to the west and Newman Road in the east. The extent of the fire is approximately 4 ha.

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Figure 4:
Ecological Linkages and Native Vegetation Extents

Yanchep, Western Australia

Legend

- Ecological Linkages
- Native Vegetation Extent
- Site Boundary

Client:	UDLA
Date:	03/11/2025
Created by:	Z.Stoney
Image Source:	Nearmap, 2025
Datum:	GDA2020 / MGA zone 50
Scale:	1: 4200

0 50 100 m

N

3.0 Methodology

3.1 Desktop and Literature Review

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

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

The following databases were accessed to obtain relevant information:

- NatureMap (Department of Biodiversity, Conservation and Attractions (DBCA), 2025a)
- Protected Matters Search Tool (DCCEEW, 2025) (Appendix 1)
- FloraBase (WA Herbarium, 1998-)
- Threatened and priority flora database searches (DBCA, 2025b)
- Threatened and priority ecological community database searches (DBCA, 2025c).

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

3.2 On-ground Flora Survey

3.2.1 Detailed Flora surveys

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

Natural Area environmental scientists undertook the survey between October 20 and 23, 2025, with key data recorded using QField software on a handheld tablet. Survey activities included:

- Reassessing a total of 17 10 x 10 m quadrats established by One Tree Botanical (2020) and setting out an additional 8 quadrats across the 9 vegetation types present (Figure 5).
- Photographing each quadrat in the north-west corner and recording GPS coordinates using GDA2020 Zone 50 datum.
- Recording landscape characteristics including soil types/colour, aspect, slope, surface rock, topography and drainage.
- Determining leaf litter depth, percentage cover, and percentage of bare ground.
- Recording percentage cover, height, number alive/dead stems and life form for each flora species in the quadrats.
- Marking locations of any declared pests and/or Weeds of National Significance (WoNS) identified.
- Recording vegetation type including dominant over, middle and understorey species to describe vegetation type in line with the NVIS Level V – Association (ESCAVI, 2003).
- Condition using the scale attributed to Keighery (Table 2) (EPA, 2016).
- The use of GPS to map significant species and boundaries of differing vegetation type and condition

- Recording evidence of disturbance, such as fire.

Table 2: Vegetation condition ratings

Category		Description
1	Pristine	Pristine or nearly so, no obvious signs of disturbance or damage caused by human activities since European settlement.
2	Excellent	Vegetation structure intact, disturbance affecting individual species and weeds are non-aggressive species. Damage to trees caused by fire, the presence of non-aggressive weeds and occasional vehicle tracks.
3	Very Good	Vegetation structure altered, obvious signs of disturbance. Disturbance to vegetation structure caused by repeated fires, the presence of some more aggressive weeds, dieback, logging and grazing.
4	Good	Vegetation structure significantly altered by very obvious signs of multiple disturbances. Retains basic vegetation structure or ability to regenerate it. Disturbance to vegetation structure caused by very frequent fires, the presence of some very aggressive weeds, partial clearing, dieback and grazing.
5	Degraded	Basic vegetation structure severely impacted by disturbance. Scope for regeneration but not to a state approaching good condition without intensive management. Disturbance to vegetation structure caused by very frequent fires, the presence of very aggressive weeds at high density, partial clearing, dieback and grazing.
6	Completely Degraded	The structure of the vegetation is no longer intact, and the area is completely or almost completely without native species. These areas are often described as 'parkland cleared' with the flora comprising weed or crop species with isolated native trees or shrubs.

Source: EPA, 2016.

3.2.2 Targeted Flora surveys

The targeted flora survey was conducted in accordance with *Technical Guidance-Flora and Vegetation Surveys for Environmental Impact Assessment* (EPA, 2016). Samples were collected, or photographs taken of unfamiliar species to enable later identification.

Natural Area environmental scientists undertook the survey between October 20 and 23, 2025, with key data recorded using QField software on a handheld tablet. Survey activities included:

- Traversing the entirety of the site in 10 m wide transects to conduct a search for conservation significant flora species with the potential to occur in the area.
- Marking locations of any conservation significant flora identified and determining population size and extent.

3.3 Floristic Analysis

Floristic analysis was undertaken utilising the statistical analysis package PRIMER (version 7.0.24) to compare the data of the 25 quadrats recorded during the survey to the quadrat data from Gibson *et al*. (1994) and Keighery *et al*. (2012). To ensure that nomenclature and taxonomy is compatible, Gibson *et al*. (1994) and Keighery *et al*. (2012) data was reconciled to current species names. All quadrats used in the analysis was based on the presence-absence of flora species within a 10 x 10 metre quadrat. The surveyed quadrats were

inserted into dataset and analysed using the Bray-Curtis distance clustering to determine overall quadrat groupings.

To ensure that the results of the grouping are consistent with the original finding of the Gibson *et al*. (1994) and Keighery *et al*. (2012), a multivariate analysis of just their dataset was completed first to verify that the parameters set were accurate.

Single site insertions of each quadrat were assessed to minimise the disruption to the original dataset. The similarity of the new quadrats to the closest quadrats were utilised to determine potential floristic community type (FCT) assignments. The potential FCT assignments for each quadrat were analysed against the habitat features including, key flora combinations and hydrological status of known FCTs to determine suitability.

3.4 Limitations

The limitations associated with the detailed and targeted flora survey undertaken in Yanchep Lagoon are outlined in Table 3.

Table 3: Survey limitations

Potential Limitation	Degree of Limitation	Comments
Availability of contextual information	Moderate	Regional contextual information was readily available for the Swan Coastal Plain. Limited local contextual information is lacking for the vegetation surrounding the survey area. This area is under-represented with limited data available from historic floristic studies.
Competency/ experience of team	None	Survey activities were undertaken by environmental consultants who have experience undertaking detailed flora surveys within the Swan Coastal Plain.
Proportion of flora recorded/ collected, any identification issues	Minor	A total of 177 flora species (taxa) were recorded from 56 families during the field survey, comprised of 85 introduced (weeds) and 92 native species. Of these, 2 species (1 %) were unable to be identified to species level due to a lack of diagnostic characteristics present at the time of survey. These species were recorded within the cultivated areas of the site and identified to genus level.
Survey effort and extent	Minor	The detailed flora survey was undertaken across the site over four days. The targeted flora survey was undertaken by a team of three for four days.
Access restrictions	Minor	The limestone outcrop along the beach were unable to be accessed due to unstable cliffs and private properties within the site boundary were not accessed. All other areas were accessible during the survey.

Potential Limitation	Degree of Limitation	Comments
Survey timing	None	The survey was undertaken during spring which is the optimal season for flora surveys within the Swan Coastal Plain subregion. Whilst the survey was undertaken during flowering season, some species may flower earlier or later in the season and therefore may not be able to be identified. Of the 12 conservation significant flora species identified in the desktop survey as being likely to occur within the survey area, 2 have flowering periods outside of the survey period.
Disturbances	Minor	Recent clearing from a firebreak established between the old surf lifesaving club and private residences may have an impact on survey results. This area was recorded to be predominately surrounded by cultivated/managed areas. No other recent disturbances which may have had an impact on survey results (e.g. fire or floods) were identified during the survey.

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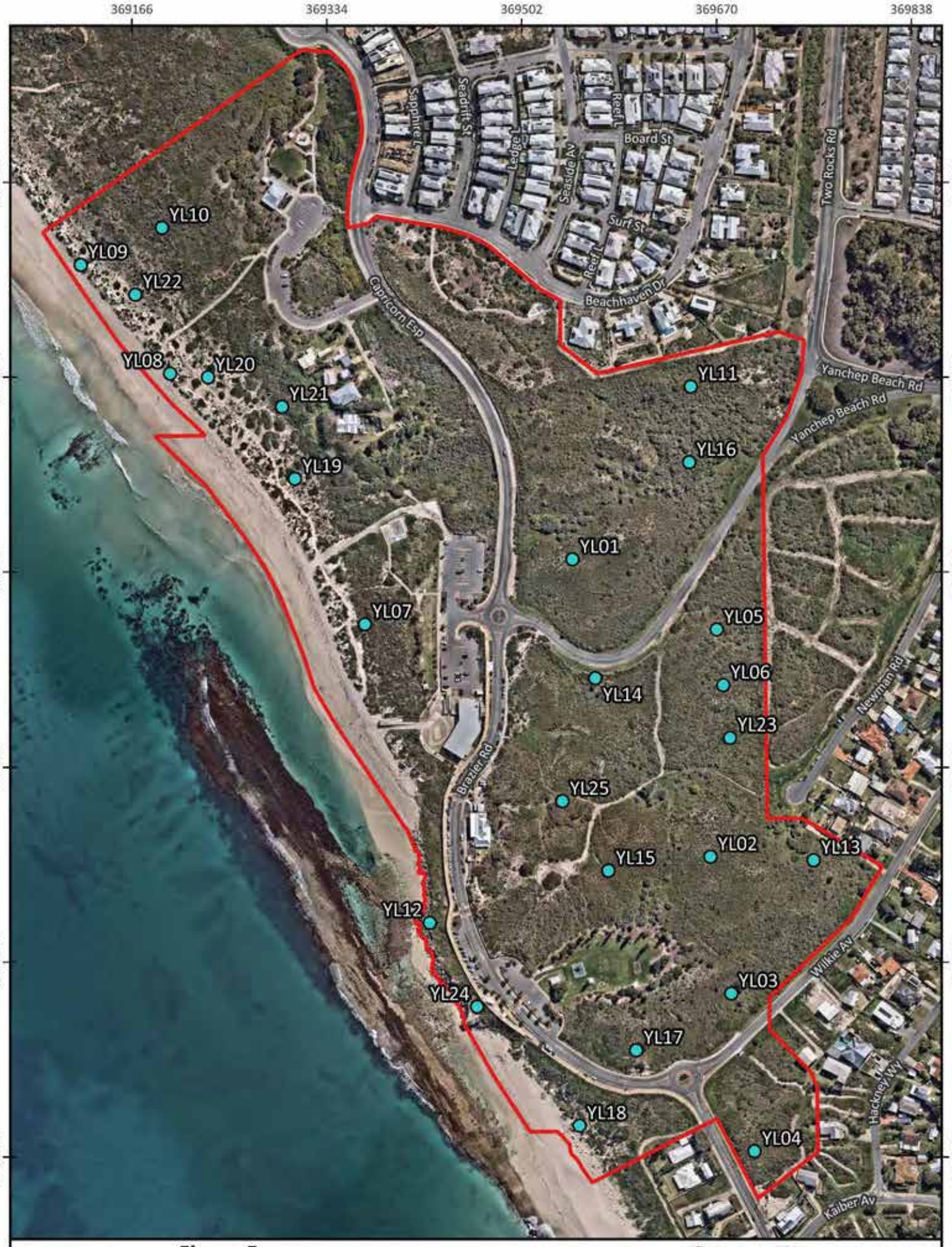


Figure 5:
Quadrat Locations

Yanchep, Western Australia

Legend

- Quadrat
- Site Boundary

Client:	UDLA
Date:	21/11/2025
Created by:	Z.Stoney
Image Source:	Nearmap, 2025
Datum:	GDA2020 / MGA zone 50
Scale:	1: 4200

0 50 100 m

N

4.0 Flora Survey Results

4.1 Desktop Survey

A desktop survey of online databases indicated the potential for a total of 33 conservation significant species to occur within 10 km of the survey area (Table 4). NatureMap indicated 24 conservation significant flora species listed under the BC Act or by the Western Australian Herbarium (1998-), as potentially occurring within 10 km radius of the site (DBCA, 2025a). A review of the Protected Matters Search Tool (PMST) (DCCEEW, 2025) indicated 10 significant flora species listed under the EPBC Act as potentially occurring within a 10 km radius of the site (Appendix 1). A review of the DBCA (2025b) threatened and priority flora database indicated 23 threatened or priority species have been recorded within 10 km of the site.

Of the conservation significant species potentially found in the area, it was determined that the site conditions (soil type, drainage, location) may be suitable for 12 (highlighted green) of these species (Table 4). Conservation code descriptions are provided in Appendix 2.

Table 4: Threatened and priority flora species listed by NatureMap, PMST and DBCA

Species Name	Cons Code (Cth)	Cons Code (WA)	Nature Map	PMST	DBCA
Acacia benthamii		P2	X		X
Amanita wadjukiorum		P3	X		
Andersonia gracilis	EN	VU		X	
Anigozanthos viridis subsp*. terraspectans*	VU	VU		X	
Baeckea sp. Limestone (N. Gibson & M.N. Lyons 1425)		P1	X		X
Banksia mimica	EN	VU		X	
Calandrinia oraria		P3	X		X
Paracaleana dixonii	EN	VU		X	
Conostylis bracteata		P3	X		X
Conostylis pauciflora subsp*. euryrhipis*		P4	X		X
Conostylis pauciflora subsp*. pauciflora*		P4	X		X
Diuris micrantha	VU	VU		X	
Diuris purdiei	EN	EN		X	
Drakaea elastica		CR		X	
Eleocharis keigheryi	VU	VU		X	
Eucalyptus argutifolia	VU	VU	X	X	X
Eucalyptus foecunda subsp*. foecunda*		P4	X		X
Haloragis luminosa		P1	X		X

Species Name	Cons Code (Cth)	Cons Code (WA)	Nature Map	PMST	DBCA
Hibbertia leptotheca		P3	X		X
Lasiopetalum membranaceum		P3	X		X
Lecania sylvestris		P2	X		X
Lecania turicensis var. *turicensis*		P2	X		X
Lepidium pseudotasmanicum		P4	X		X
Leucopogon maritimus		P1	X		X
Macarthuria keigheryi	EN	EN		X	
Pimelea calcicola		P3	X		X
Placynthium nigrum		P3	X		X
Rinodina bischoffii		P2	X		X
Sphaerolobium calcicola		P3	X		X
Stylidium maritimum		P3	X		X
Stylidium striatum		P4	X		X
Styphelia filifolia		P3	X		X
Styphelia porcata		P3	X		X

4.1.1 Threatened and Priority Ecological Communities

A review of the DBCA threatened and priority ecological community database identified 10 listed priority ecological communities (PEC) that could potentially occur within 10 km of the site (DBCA, 2025c). A review of the PMST report identified 5 listed threatened ecological communities (TEC) that could potentially occur within 10 km of the site (Table 5) (DCCEEW, 2025).

Table 5: Potential threatened and priority ecological communities within the Yanchep Lagoon

Commonwealth Name	State Name	Cons Code (Cth)	Cons Code (WA)
Aquatic Root Mat Community in Caves of the Swan Coastal Plain	Aquatic Root Mat Community Number 1 of Caves of the Swan Coastal Plain	EN	CR
Banksia Woodlands of the Swan Coastal Plain	Banksia Woodlands of the Swan Coastal Plain ecological community	EN	P3
	Banksia ilicifolia woodlands	EN	P3
	Swan Coastal Plain *Banksia attenuata - Banksia menziesii* woodlands	EN	P3
Honeymyrtle shrubland on limestone ridges of the Swan Coastal Plain Bioregion	*Melaleuca huegelii - M. systena* shrublands of limestone ridges (floristic community type (FCT) 26a as originally described in Gibson *et al*. 1994)	CR	CR
Sedgelands in Holocene dune swales of the southern Swan Coastal Plain	Sedgelands in Holocene dune swales of the southern Swan Coastal Plain (FCT 19 as originally described in in Gibson *et al*. 1994)	EN	CR
Tuart (*Eucalyptus gomphocephala*) woodlands and forests of the Swan Coastal Plain	Tuart (*Eucalyptus gomphocephala*) woodlands and forests of the Swan Coastal Plain	CR	P3
	Quindalup *Eucalyptus gomphocephala* and/or *Agonis flexuosa* woodlands	CR	P3
	Southern *Eucalyptus gomphocephala-Agonis flexuosa* woodlands	CR	P3
	Acacia shrublands on taller dunes		P3

Source: DCCEEW, 2025.

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4.2 Flora Survey Results

4.2.1 Flora

A total of 177 flora species (taxa) were recorded from 56 families during the field survey, comprising of 85 introduced (weeds) and 92 native species. Examples of native flora species are shown in Figure 6 and weed species in Figure 7. A complete flora species list is provided in Appendix 4 and quadrat data is provided in Appendix 5. No declared pests or Weed of National Significance (WoNS) were identified within the survey site.



Scaevola crassifolia (Thick-leaved Fan-flower)



Leptorhynchos scaber (Lanky Buttons)



Pimelea ferruginea



Spyridium globulosum (Basket Bush)



Hibbertia racemosa (Stalked Guinea Flower)



Carpobrotus virescens (Coastal Pigface)

Figure 6: Examples of native flora species recorded.


Common Stock (*_Matthiola incana_*)


Coast Teatree (*_Gaudium laevigatum_*)


Geraldton Carnation Weed (*_Euphorbia terracina_*)


Hare's Tail Grass (*_Lagurus ovatus_*)

Figure 7: Examples of introduced flora species recorded.

4.2.2 Conservation Significant Flora

One conservation significant flora species was identified during the targeted survey, *Conostylis pauciflora* subsp*. pauciflora* (Figure 8). This species was verified by the WA Herbarium. A total of 8,073 *Conostylis pauciflora* subsp*. pauciflora* were recorded during the targeted flora survey. The locations are provided in Figure 9. This species was recorded primarily in the semi-consolidated dune systems within the low shrublands present in C1 and *C2*.





Figure 8: *Conostylis pauciflora* subsp*. pauciflora* recorded during the targeted flora survey.



Figure 9:
Conservation Significant Flora

Yanchep, Western Australia

Legend

- *Conostylis pauciflora* subsp. *pauciflora* (P4)
- Site Boundary

Client:	UDLA
Date:	02/12/2025
Created by:	Z.Stoney
Image Source:	Nearmap, 2025
Datum:	GDA2020 / MGA zone 50
Scale:	1: 4200

0 50 100 m

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4.2.3 Vegetation Types

A total of nine vegetation types were recorded within Yanchep Lagoon, an additional two vegetation types are listed which comprises of managed or cleared landscapes. Vegetation types are described in Table 6 and shown in Figure 10.

The nine vegetation types within the site can be broadly grouped into four different areas: coastal dunes on unconsolidated soils, inland dunes on consolidated soils, shallow soils over limestone, and limestone cliffs.

The coastal dunes on unconsolidated soils consist of a primary dune system characterised by *Olearia axillaris* shrubland over *Spinifex longifolius* tussock grassland (A1) and a secondary dune system characterised by *Scaevola crassifolia, Myoporum insularis* and *Olearia axillaris* shrubland over *Lepidosperma gladiatum* sedgeland (A3). Between these two vegetation types is a transitional zone within the dune swale consisting of *Olearia axillaris* and *Scaevola crassifolia* shrubland (A2).

The limestone cliffs located adjacent to the beach consist of *Frankenia pauciflora* var. *pauciflora* and *Scaevola crassifolia* shrubland over *Salicornia blackiana* chenopod shrubland (B1).

The inland dunes on consolidated soils feature three main vegetation classifications. The slopes are dominated primarily with taller shrubs and represented by *Spyridium globulosum, Acacia cyclops* and *Olearia axillaris* shrubland (C1). The crests consist of the vegetation type *Melaleuca systena* and *Acacia lasiocarpa* shrubland over *Lomandra maritima* forbland (C2) and the lower slopes contain taller trees forming *Eucalyptus gomphocephala* woodland (C3).

The eastern portion of the site contains the shallow soils over limestone; the slopes include the *Melaleuca cardiophylla* shrubland (D1) and the crests contain the *Melaleuca huegelii* subsp. *huegelii* shrubland (D2).

Two managed or cleared landscapes are represented within the area. These areas have been heavily modified by anthropogenic disturbances and are classified as either cleared or cultivated or revegetated areas.

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Table 6: Vegetation types recorded within Yanchep Lagoon

Vegetation Type	Description	Photograph
Dunes on Unconsolidated Sand		
Olearia axillaris shrubland over *Spinifex longifolius* tussock grassland (A1)	An open shrubland of *Olearia axillaris* over a tussock grassland of *Spinifex longifolius.* Common species recorded include *Ficinia nodosa, Threlkeldia diffusa* and *Senecio pinnatifolius* var. *latilobus.* This vegetation was primarily recorded within the primary dune system along the beach.	
Olearia axillaris and *Scaevola crassifolia* shrubland (A2)	An open shrubland of *Olearia axillaris* and *Scaevola crassifolia*, over a forbland of **Pelargonium capitatum* and **Trachyandra divaricata*. Other common species recorded included **Gaudium laevigatum*, *Senecio pinnatifolius* var. *latilobus* and *Carpobrotus virescens.* Sections in the northern portion of this vegetation type were dominated by a vineland of *Cassytha aurea.* This vegetation was primarily recorded within the dune swale between A1 and A3.	

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Vegetation Type	Description	Photograph
Scaevola crassifolia, Myoporum insularis and *Olearia axillaris* shrubland over *Lepidosperma gladiatum* sedgeland (A3)	A shrubland of *Scaevola crassifolia, Myoporum insularis* and *Olearia axillaris* over an open to closed sedgeland of *Lepidosperma gladiatum*. Other common species recorded included *Parietaria debilis, Senecio pinnatifolius* var. *latilobus* and *Acanthocarpus preissii.* This vegetation was recorded primarily along the secondary dune system.	
Coastal Limestone Cliff		
Frankenia pauciflora var. *pauciflora* and *Scaevola crassifolia* shrubland over *Salicornia blackiana* Chenopod Shrubland (B1)	An open shrubland of *Frankenia pauciflora* var. *pauciflora* and *Scaevola crassifolia* over an open chenopod shrubland of *Salicornia blackiana.* Other common species recorded included*, Olearia axillaris, Carpobrotus virescens* and *Threlkeldia diffusa.* The vegetation was recorded within the limestone outcrop along the beach.	
Taller Inland Dunes on Semi-Consolidated Sand		

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Vegetation Type	Description	Photograph
Spyridium globulosum, Acacia cyclops and *Olearia axillaris* shrubland (C1)	A shrubland of *Spyridium globulosum, Acacia cyclops* and *Olearia axillaris* over a forbland of *Lomandra maritima* and *Conostylis pauciflora* subsp*. pauciflora* and a healthland of *Acanthocarpus preissii* over an open sedgeland of *Lepidosperma calcicola* and open tussock grassland of *Austrostipa flavescens* and *Poa porphyroclados.* Other common species included *Templetonia retusa, Styphelia insularis, Santalum acuminatum, Opercularia vaginata, Tricoryne elatior,* and *Leucopogon parviflorus.* This vegetation type was recorded primarily along the slopes of the taller inland dunes on semi-consolidated sands.	
Melaleuca systena and Acacia lasiocarpa shrubland over *Lomandra maritima forbland* (C2)	A shrubland of *Melaleuca systena* and *Acacio lasiocarpa* over a forbland of *Lomandra maritima* and *Conostylis pauciflora* subsp*. pauciflora* and a healthland of *Acanthocarpus preissii* over an open sedgeland of *Lepidosperma calcicola* and open tussock grassland of *Austrostipa flavescens* and *Poa porphyroclados.* Other common species included *Olearia axillaris, Templetonia retusa, Styphelia insularis, Santalum acuminatum, Opercularia vaginata, Tricoryne elatior,* and *Leucopogon parviflorus.* This vegetation type was recorded primarily on the dune crests of the taller inland dunes on semi-consolidated sands.	

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Vegetation Type	Description	Photograph
Eucalyptus gomphocephala woodland (C3)	A woodland of *Eucalyptus gomphocephala* over a shrubland of *Rhagodia baccata* subsp. *baccata* and *Spyridium globulosum* over a tussock grassland of **Avena barbata* and forbland of **Euphorbia terracina* and **Trachyandra divaricata*. Other species included *Acacia xanthina, Olearia axillaris, Leptomeria preissiana*, and *Threlkeldia diffusa*. This vegetation was recorded primarily in the lower slopes of the taller inland dunes on semi-consolidated sands.	
Shallow Sands over Limestone		
Melaleuca cardiophylla shrubland (D1)	A shrubland of *Melaleuca cardiophylla, Spyridium globulosum* and *Acacia xanthina*, over *Rhagodia baccata* subsp. *baccata*. Common species include *Leptomeria preissiana, Leucopogon parviflorus, Styphelia insularis, Lepidosperma calcicola,* and *Desmocladus asper*. This was recorded on shallow sand over limestone in the eastern portion of the site.	

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Vegetation Type	Description	Photograph
Melaleuca huegelii subsp. *huegelii* shrubland (D2)	A shrubland of *Melaleuca huegelii* subsp. *huegelii* and *Melaleuca systena* over an open sedgeland of *Lepidosperma calcicola* and open tussock grassland of *Austrostipa flavescens* and *Poa porphyroclados.* Other common species included *Templetonia retusa, Spyridium globulosum, Leucopogon parviflorus, Styphelia insularis, Desmocladus asper* and *Opercularia vaginata*. This was recorded on a crest with extensive limestone outcrops in the eastern portion of the site.	
Modified or Managed Areas		
Cleared (E1)	Areas that have historical disturbance, this includes infrastructure, paths, firebreaks, informal or formal paths or heavily disturbed areas.	

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Vegetation Type	Description	Photograph
Cultivated or Revegetated Areas (E2)	Cultivated or revegetated areas include landscape plantings of native species that are managed or recent areas subjected to revegetation activities.	

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Figure 10:
Vegetation Types

Yanchep, Western Australia

Legend

A1		C3	
A2		D1	
A3		D2	
B1		E1	
C1		E2	
C2		Site Boundary	

Client:	UDLA
Date:	17/11/2025
Created by:	Z.Stoney
Image Source:	Nearmap, 2025
Datum:	GDA2020 / MGA zone 50
Scale:	1: 4200

0 50 100 m

N

4.2.4 Vegetation Condition

Vegetation condition on site ranged from completely degraded to excellent (Table 7, Figure 11). Vegetation condition was mapped using the vegetation condition scale adapted from Keighery (EPA, 2016).

Varying degrees of disturbance was evident across Yanchep Lagoon. Weed invasion and soil disturbance were apparent across portions of vegetation. Across Yanchep Lagoon, high traffic areas next to natural areas, contained evidence of edge effects with anthropogenic changes decreasing the surrounding vegetation condition. These high traffic areas include formalised and informal tracks. Localised variation from disturbances were present across all vegetation conditions.

Vegetation in an excellent condition contained a high vegetation structure with minimal to no weeds present. Very good condition vegetation included vegetation with a high-level structure and diversity with minimal aggressive weeds present. Vegetation in a good condition had influences of disturbance to the vegetation structure but contains the ability to regenerate without management strategies. Vegetation in a good condition typically contained a high weed load or increased coverage of bare ground.

Vegetation in a degraded condition had a reduce vegetation structure with evidence of disturbance and high weed load. The vegetation in a degraded condition requires management strategies to be put in place to improve the condition. Vegetation in completely degraded condition is almost entirely without native flora species and includes developed areas.

Table 7: Vegetation condition within Yanchep Lagoon

Vegetation Condition	Pristine	Excellent	Very Good	Good	Degraded	Completely Degraded	Total
Area (ha)	0	0.87	8.59	10.12	4.24	7.36	31.18
Area (%)	0	2.79	27.55	32.46	13.6	23.6	100

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Figure 11:
Vegetation Condition

Yanchep, Western Australia

Legend

- Excellent
- Very Good
- Good
- Degraded
- Competely Degraded
- Site Boundary

Client:	UDLA
Date:	06/11/2025
Created by:	Z.Stoney
Image Source:	Nearmap, 2025
Datum:	GDA2020 / MGA zone 50
Scale:	1: 4200

0 50 100 m

N

4.2.5 Floristic Analysis

An assessment of the quadrats recorded during the survey were compared against the quadrats surveyed by Gibson *et al.* (1994) and Keighery *et al*. (2012) to determine the FCTs and quantify the presence of any priority or threatened ecological communities. A single site insertion similarity determined the most similar site to the quadrats surveyed, utilising the dendrogram method and similarity, the potential FCTs were assessed to determine the most likely FCT based on site characteristics (Table 8). The results of the single site insertion assisted in validating the results from the grouped similarity of the site. There is ambiguity within the floristic analysis due to the coastal area around Yanchep from Mindarie to Wilbinga being underrepresented within the Gibson *et al*. (1994) and Keighery *et al*. (2012) datasets. The FCTs identified within the survey area, included:

- 29a Coastal shrublands on shallow soils
- 29b Acacia shrublands on taller dunes
- 30a *Callitris preissii* and/or *Melaleuca lanceolata* forests and woodlands
- s11 Northern *Acacia rostellifera - Melaleuca systena* shrublands
- s13 Northern *Olearia axillaris - Scaevola crassifolia* shrublands
- s14 *Spinifex longifolius* grassland and low shrublands.

Vegetation types A1, A2, and A3 are aligned predominantly with 29a. A3 does shows an overlap with s11 and s13 and A1 has an overlap with s13. Vegetation type A2, situated in a transitional zone between A1 and A3, demonstrates dominance of FCT 29a but has consistent secondary influence from s14 and overlap with s11, supporting its transitional floristic composition. B1 is primarily associated with FCT 29a and s13.

C1 and C2 display mixed patterns: C1 is strongly linked to FCT 29a and 29b with some influence of s11, while C2 shows balanced representation of 29b, and s11 with influence of 29a. C3 is dominated by FCT 29a but includes influences from s13, s14 and 30a2, the inclusion of 30a2 indicates that there are likely a presence of upland species. D1 and D2 show consistent dominance of FCT 29a with secondary influences from 29b and s11.

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Table 8: Floristic Community Type (FCT) Analysis Summary of Single Site Insertion

Single Site Insertion				Determined FCT	Rationale
Quadrat	**Dendrogram**	**Similarity**	**Potential FCT**		
YL01	24 29b	SW06 (29b, 55 %) MI04 (s11, 53 %) MI23 (24, 50 %)	24 29b s11	29b s11	Similarity and dendrogram of single site insertion and group dendrogram of site quadrats indicates FCT 29b and s11. FCT 24 is recorded to be restricted to the spearwood system.
YL02	24 29b	MI23 (24, 52 %) MI04 (s11, 47 %) MI05 (s11, 44 %)	24 29b s11	29b s11	Similarity and dendrogram of single site insertion and group dendrogram of site quadrats indicates FCT 29b and s11. FCT 24 is recorded to be restricted to the spearwood system.
YL03	24 s13 29a	wilb03 (29a, 45 %) PB-5 (29b, 36 %) PB-4 (29b, 35 %)	24 29a 29b S13	29a 29b s13	Similarity and dendrogram of single site insertion and group dendrogram of site quadrats indicates FCT 29a, 29b and s13. FCT 24 is recorded to be restricted to the spearwood system.
YL04	29b 29a S11	MI05 (s11, 43 %) MI23 (24, 43 %) MI04 (s11, 43 %)	24 29a 29b s11	29a 29b s11	Similarity and dendrogram of single site insertion and group dendrogram of site quadrats indicates FCT 29a, 29b and s11. FCT 24 is recorded to be restricted to the spearwood system.
YL05	24 S11 29b	rich02 (29a, 41 %) BU03 (27, 32 %) buck01 (24, 31 %)	24 29a 29b s11	29a 29b s11	Similarity and dendrogram of single site insertion and group dendrogram of site quadrats indicates FCT 29a, 29b and s11.

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Single Site Insertion				Determined FCT	Rationale
Quadrat	**Dendrogram**	**Similarity**	**Potential FCT**		
			27		FCT 24 and 27 is recorded to be restricted to the spearwood system.
YL06	29a 29b S11	rich02 (29a, 40 %) tokyu07 (29b, 40 %) tokyu06 (29b, 38 %)	29a 29b s11	29a 29b s11	Similarity and dendrogram of single site insertion and group dendrogram of site quadrats indicates FCT 29a, 29b and s11.
YL07	S13 29a	MI10 (s14, 50 %) m4601 (s11, 38 %) MI12(s13, 37 %)	29a s11 s13 s14	29a s11 s13 s14	Similarity and dendrogram of single site insertion and group dendrogram of site quadrats indicates FCT 29a, s11, s13 and s14.
YL08	S13 29a	MI10 (s14, 46 %) MI13 (s14, 43 %) MI16 (s14, 43 %)	29a s13 s14	29a s13 s14	Similarity and dendrogram of single site insertion and group dendrogram of site quadrats indicates FCT 29a, s13 and s14.
YL09	S14 29a	MI13 (s14, 50 %) MI16 (s14, 50 %) TR02 (s14, 50 %)	29a s14	29a s14	Similarity and dendrogram of single site insertion and group dendrogram of site quadrats indicates FCT 29a and s14.
YL10	29a S14	SW02 (s13, 44 %) SW04 (29a, 42 %) MI12 (s13, 37 %)	29a s13 s14	29a s13 s14	Similarity and dendrogram of single site insertion and group dendrogram of site quadrats indicates FCT 29a, s13 and s14.
YL11	29a 29b S11	rich02 (29a, 41 %) MI05 (s11, 40 %) MI23 (24, 40 %)	24 29a 29b s11	29a 29b s11	Similarity and dendrogram of single site insertion and group dendrogram of site quadrats indicates FCT 29a, 29b and s11.
YL12	S13 29a	wilb11 (29a, 37 %) m4601 (s11, 33 %) MI12 (s13, 33 %)	29a s11 s13	29a s11 s13	Similarity and dendrogram of single site insertion and group dendrogram of site quadrats indicates FCT 29a, s11 and s13.

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Single Site Insertion				Determined FCT	Rationale
Quadrat	**Dendrogram**	**Similarity**	**Potential FCT**		
YL13	29a S11 29b 24	tokyu06 (29b, 41 %) MI04 (s11, 39 %) MI05 (s11, 39 %)	24 29a 29b s11	29a 29b s11	Similarity and dendrogram of single site insertion and group dendrogram of site quadrats indicates FCT 29a, 29b and s11.
YL14	29a S14	PEPGRV-2 (30a2, 36 %) PRES-1 (29a, 32 %) MI19 (s13, 29 %)	29a s13 s14 30a2	29a s13 s14	Similarity and dendrogram of single site insertion and group dendrogram of site quadrats indicates FCT 29a, s13 and s14.
YL15	S11 29b	rich02 (29a, 44 %) MI05 (s11, 43 %) BURN-1 (29a, 42 %)	29a 29b s11	29a 29b s11	Similarity and dendrogram of single site insertion and group dendrogram of site quadrats indicates FCT 29a, 29b and s11.
YL16	30a2 29a	MI01 (29b, 41 %) MI05 (s11, 40 %) BURN-1 (29a, 39 %)	29a 29b s11 30a2	29a 29b s11	Similarity and dendrogram of single site insertion and group dendrogram of site quadrats indicates FCT 29a, 29b and s11. FCT 30a2 most northern distribution recorded is Trigg.
YL17	29a 29b	rich02 (29a, 39 %) MI05 (s11, 38 %) bold06 (30a2, 38 %)	29a 29b s11 30a2	29a 29b s11	Similarity and dendrogram of single site insertion and group dendrogram of site quadrats indicates FCT 29a, 29b and s11. FCT 30a2 most northern distribution recorded is Trigg.
YL18	S14 S13	MI16 (s14, 73 %) MI10 (s14, 60 %) MI15 (s14, 55 %)	s13 s14	s13 s14	Similarity and dendrogram of single site insertion and group dendrogram of site quadrats indicates s13 and s14.
YL19	29a S13	MI16 (s14, 53 %) MI10 (s14, 43 %) MI22 (s13, 42 %)	29a s13 s14	29a s13 s14	Similarity and dendrogram of single site insertion and group dendrogram of site quadrats indicates FCT 29a, s13 and s14.

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Single Site Insertion				Determined FCT	Rationale
Quadrat	**Dendrogram**	**Similarity**	**Potential FCT**		
YL20	29a S13	MI22 (s13, 44 %) MI16 (s14, 43 %) SW02 (s13, 42 %)	29a s13 s14	29a s13 s14	Similarity and dendrogram of single site insertion and group dendrogram of site quadrats indicates FCT 29a, s13 and s14.
YL21	S11 29a	TR03 (s13, 33 %) m4601 (s11, 32 %) MI11 (s13, 30 %)	29a s11 s13	29a s11 s13	Similarity and dendrogram of single site insertion and group dendrogram of site quadrats indicates FCT 29a, s11 and s13.
YL22	S13 29a	MI22 (s13, 40 %) MI12 (s13, 39 %) SW02 (s13, 39 %)	29a s13	29a s13	Similarity and dendrogram of single site insertion and group dendrogram of site quadrats indicates FCT 29a and s13.
YL23	29b 30a2 29a	MI05 (s11, 46 %) MI23 (24, 46 %) tokyu06 (29b, 42 %)	24 29a 29b s11 30a2	29a 29b s11	Similarity and dendrogram of single site insertion and group dendrogram of site quadrats indicates FCT 29a, 29b and s11. FCT 30a2 most northern distribution recorded is Trigg. FCT 24 is recorded to be restricted to the spearwood system.
YL24	S13 29a	wilb02 (s13, 44 %) MI10 (s14, 43 %) MI22 (s13, 42 %)	29a s13 s14	29a s13 s14	Similarity and dendrogram of single site insertion and group dendrogram of site quadrats indicates FCT 29a, s13 and s14.
Y25	29a S13 S14	MI19 (s13, 40 %) TR02 (s13, 40 %) TR04 (s13, 38 %)	29a s13 s14	29a s13 s14	Similarity and dendrogram of single site insertion and group dendrogram of site quadrats indicates FCT 29a, s13 and s14.

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4.2.6 Threatened and Priority Ecological Communities

The floristic analysis identified the potential for two priority ecological communities to occur within the survey area: this includes Coastal shrublands on shallow sands, southern Swan Coastal Plain (FCT29a) and Acacia shrublands on taller dunes, southern Swan Coastal Plain (FCT29b). Both of these are listed as Priority 3. FCT 29a was represented in vegetation types A1, A2, A3, B1, C1, C2, C3, D1 and D2. FCT 29b was represented in vegetation type C1, C2, D1 and D2.

The key diagnostic criteria for the Honeymyrtle shrubland on limestone ridges of the Swan Coastal Plain Bioregion, listed under the EPBC Act as Critically Endangered, were assessed within the D2 vegetation type (Table 9). The key diagnostic characteristics of this threatened ecological community were assessed as listed in the *Approved Conservation Advice for Honeymyrtle shrubland on limestone ridges of the Swan Coastal Plain Bioregion* (DCCEEW, 2023). Vegetation type D2 is likely to be representative of this threatened ecological community.

To determine the listing of threatened ecological communities under the BC Act, quadrat data is required to be compared to the Gibson *et al*. (1994) data (DBCA, 2024). An assessment of the FCT determined the vegetation to be representative of 29a with influences of 29b and 24 rather than representative of 26a. This vegetation does not meet the classification to be representative of the *Melaleuca huegelii - M. systena* shrublands of limestone ridges (floristic community type (FCT) 26a as originally described in Gibson *et al*. 1994) listed as Critically Endangered under the BC Act.

Table 9: Key diagnostic characteristics of the Honeymyrtle shrubland on limestone ridges of the Swan Coastal Plain Bioregion. Key diagnostic characteristics met are highlighted green.

Key Diagnostic Characteristics	Site Appraisal
Occurs in the Perth subregion of the Swan Coastal Plain IBRA Bioregion in WA.	Occurs in the Perth subregion of the Swan Coastal Plain IBRA Bioregion.
Occurs on shallow to skeletal soils, on the ridge slopes and tops of limestone ridges and outcrops associated with Tamala Limestone.	Occurs on limestone ridges and outcrops.
It occurs as shrubland, heath, or thickets; and it has less than 10% canopy cover of *Eucalyptus* species or other tall trees.	Occurs as a shrubland and has 0 % canopy cover of *Eucalyptus* species or other tall trees
The shrub layer is dominated by *Melaleuca huegelii* (Chenille honeymyrtle), and/or *M. systena* (Coastal honeymyrtle), and/or *Banksia sessilis* (Parrot bush) - commonly over *Acacia lasiocarpa* (Pajang), *Grevillea preissii* (Spider net grevillea) and *Spyridium globulosum* (Basket bush).	The shrub layer is dominated by *Melaleuca huegelii* (30 %) and *Melaleuca system* (5%). *Spyridium globulosum* was recorded within the vegetation type.
The ground layer is typically rich with numerous herbs (including grasses) and smaller shrubs and may develop a mossy ground cover.	30 native herbs and shrub species. The following flora species listed within the approved conservation advice were recorded within a 10 x 10 m quadrat: ▪ *Austrostipa flavescens*

Key Diagnostic Characteristics	Site Appraisal
	▪ *Leucopogon parviflorus* ▪ *Melaleuca huegelii* ▪ *Melaleuca systena* ▪ *Opercularia vaginata* ▪ *Templetonia retusa* ▪ *Spyridium globulosum* ▪ *Thysanotus manglesianus*
Minimum patch size of 0.01 ha	Patch is larger than 0.01 ha (0.1 ha)

The *Callitris preissii* (or *Melaleuca lanceolata*) forests and woodlands, Swan Coastal Plain (SCP30a), listed as threatened under the BC Act, was recorded as represented or potentially represented in quadrats YL14, YL16, YL17, and YL23 during the single site insertions. The Interim Recovery Plan for the *Callitris preissii* (or *Melaleuca lanceolata*) forests and woodlands, Swan Coastal Plain (30a), states: "All of the occurrences of the community have been mapped by Parks and Wildlife, and data stored on the corporate TEC database" (Department of Parks and Wildlife, 2014). The most northern mapped occurrence of 30a is Trigg. It is unlikely that the *Callitris preissii* (or *Melaleuca lanceolata*) forests and woodlands, Swan Coastal Plain (30a) is on site.

The key diagnostic criteria for Tuart (*Eucalyptus gomphocephala*) Woodlands and Forests of the Swan Coastal Plain, listed under the EPBC Act as Critically Endangered, were assessed for the C3 vegetation type (Table 10) (Department of Agriculture, Water and the Environment (DAWE), 2019). The key diagnostic characteristic of the patch size being at least 0.5 ha was not met. The same diagnostic criteria, condition and area thresholds also apply to the priority ecological community (DBCA, 2023a).

The location of the threatened and priority ecological communities identified within the site are displayed in Figure 12.

Table 10: Key diagnostic characteristics of Tuart (*Eucalyptus gomphocephala*) Woodlands and Forests of the Swan Coastal Plain. Key diagnostic characteristics met are highlighted green.

Key Diagnostic Characteristics	Site Appraisal
Occurs in the Swan Coastal Plain Bioregion, Western Australia	Site occurs in the Swan Coastal Plain Bioregion
Primarily occurs on the Spearwood and Quindalup dune systems but can also occur on the Bassendean dunes and Pinjarra Plain. It can occur on the banks of rivers and wetlands	Site occurs on Quindalup dune systems
The presence of at least two living, established (DBH ≥15 cm) Tuart trees within the upper canopy, with a gap of ≤60 m between the canopy edges of adjacent Tuart trees	More than two Tuart trees were present
The presence of an understorey of native species, often modified by disturbance	A native understorey is present in the patch. Evidence of disturbance is present.

Key Diagnostic Characteristics	Site Appraisal
A patch size of at least 0.5 ha	The three separate patches are less than 0.5 ha with each patch smaller than 0.1 ha. Therefore, it does not meet the minimum patch size.

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Figure 12:
Threatened and Priority Ecological Communities

Yanchep, Western Australia

Legend

- Honeymyrtle shrubland on limestone ridges of the Swan Coastal Plain Bioregion.
- FCT 29a
- FCT 29a/29b
- Site Boundary

Client:	UDLA
Date:	07/11/2025
Created by:	Z.Stoney
Image Source:	Nearmap, 2025
Datum:	GDA2020 / MGA zone 50
Scale:	1: 4200

0 50 100 m

N

5.0 Implications of Results

5.1 Flora and Vegetation

A total of 177 flora species (taxa) were recorded from 56 families during the field survey, comprised of 85 (48 %) introduced (weeds) and 92 (52 %) native species. The survey recorded 15 less native species compared to the survey undertaken in 2019 (One Tree Botanical, 2020). Many of these species that were not recorded are native annuals and may not have been presenting during the survey due to the higher weed loads impacting the presence of native flora through competition and habitat alteration. Three of the species not recorded are perennial herbs, grasses or shrubs, two of these were recorded within the section impacted by the fire following the survey and may not have been present due to this habitat alteration.

A total of nine native vegetation types were recorded within the site. The vegetation types were broadly similar to the vegetation boundaries mapped by One Tree Botanical in 2019. Variations in the boundary extents are likely influenced by anthropogenic disturbances, fire and shifting dune systems.

FCT determined during the floristic analysis of the quadrat data against Gibson *et al.* (1994) and Keighery *et al*. (2012) to potentially be present include; 29a Coastal shrublands on shallow soils, 29b Acacia shrublands on taller dunes, 30a *Callitris preissii* and/or *Melaleuca lanceolata* forests and woodlands, s11 Northern *Acacia rostellifera - Melaleuca systena* shrublands,s13 Northern *Olearia axillaris - Scaevola crassifolia* shrublands, and s14 *Spinifex longifolius* grassland and low shrublands. These overlaps and transitional influences indicate that while dominant FCTs may be assigned, secondary associations reflect environmental gradients and the dynamic nature of floristic community boundaries.

The condition of the vegetation across the site ranged from completely degraded to excellent. Variations in vegetation condition between the 2019 survey and the 2025 survey were observed across the site. Increases in vegetation condition was evident in areas that have been subjected to management, including weed control or revegetation works. Decreases in vegetation condition were prevalent in areas containing high weeds or evidence of feral pests or anthropogenic influences. Higher weed loads across the survey area may be attribute to the increased rain event experienced over winter in 2025 compared to the long term average (BoM, 2025).

5.2 Conservation Significant Flora

A total of 8,073 *Conostylis pauciflora* subsp*. pauciflora* individuals were recorded within the survey area. The individuals were recorded throughout the site in high densities, primarily restricted to the semi-consolidated dune systems within the low shrublands present in C1 and C2. This species was identified by One Tree Botanical in 2019 as *Conostylis candicans* subsp*. calcicola* intergrade *C. pauciflora* subsp*. euryrhipis*. *Conostylis pauciflora* subsp*. pauciflora* is listed as Priority 4 by DBCA.

Of the 12 conservation significant flora species identified to potentially occur within the survey area, 2 have flowering times outside of the survey period. The species with flowering periods outside of the survey period are perennial herbs or shrubs, in which identifiable features would be present during the survey period.

Stylidium maritimum (Priority 3) has previously been recorded within the survey area. This species was not identified during the targeted flora survey despite being undertaken during the peak flowering period. The area where this species was previously recorded in was noted to have higher weed loads. It is possible that the higher than average rainfall recorded in July and August 2025 (BoM, 2025) may have shifted the phenological timing of native species, impacting their detectability. Additionally, the increased rainfall has presented higher densities of weed species. This higher density may further impact the presence of native flora through competition and habitat alteration. It is important that the location it was last recorded in 2019 is retained as it may regenerate or germinate within the area.

5.3 Threatened and Priority Ecological Communities

To determine the listing of the FCT and whether any priority or threatened ecological community, the quadrats and vegetation types were assessed against the Gibson *et al*. (1994) data. Two priority ecological communities were identified during the statistical analysis to potentially occur onsite, including Coastal shrublands on shallow sands, southern Swan Coastal Plain ('floristic community type 29a') and Acacia shrublands on taller dunes, southern Swan Coastal Plain ('floristic community type 29b'). Both of these FCTs are listed as Priority 3 by DBCA.

One threatened ecological community listed as Honeymyrtle shrubland on limestone ridges of the Swan Coastal Plain Bioregion, listed as Critically Endangered under the EPBC Act, was identified to potentially occur onsite. The patch within the site is recorded outside of the indicative range for this community to occur as mapped by DCCEEW (DCCEEW,2023). This patch was recorded on the Quindalup Complex, this complex has not been previously recorded to contain any known occurrence for this community (DCCEEW, 2023). The community was impacted by the fire in December 2019, which altered the structure of the community. The quadrat data from One Tree Botanical (2020) within this vegetation type pre-fire recorded higher species richness and lower weed loads compared to the survey undertaken in spring 2025.

The recommended buffer zone for Honeymyrtle shrubland on limestone ridges of the Swan Coastal Plain Bioregion is 200 m from the outer edge of a patch if this zone is comprised of native vegetation, or 100 m for other adjacent areas. This community is within 85 m of a sealed road to the north, firebreaks are located 10 m to the east and 35 m to the west. It is recommended that no disturbances occur within the vegetation directly adjacent to the *Melaleuca huegelii* shrubland and that this vegetation is prioritised for retention.

Characteristics to be representative of the Tuart (*Eucalyptus gomphocephala*) woodlands and forests of the Swan Coastal Plain were identified on site; however, the vegetation does not meet all key diagnostic criteria to be considered as part of the threatened ecological community listed as Critically Endangered under the EPBC Act. Historic aerial imagery from 1965 shows that the *Eucalyptus gomphocephala* present within the south-western patch were planted in a line alongside an infrastructure building. Planted *Eucalyptus gomphocephala* may still be considered as part of the ecological community if it meets the key diagnostic characteristics, is in an appropriate condition, occurs in appropriate habitat, and shows evidence of post-regeneration recruitment that could contribute to longer-term persistence of the occurrence. Whilst the patches within the site do not meet the minimum patch size criteria to be considered as part of the threatened ecological community listed under the EPBC Act. The same diagnostic criteria, condition and area thresholds also apply to the priority ecological community (DBCA, 2023a).

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Appendix 1: PMST Report 10 km

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EPBC Act Protected Matters Report

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

Report created: 03-Jul-2025

Summary
Details
- Matters of NES
- Other Matters Protected by the EPBC Act
- Extra Information

Caveat
Acknowledgements

Summary

Matters of National Environment Significance

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

World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International Importance (Ramsar	None
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	1
Listed Threatened Ecological Communities:	5
Listed Threatened Species:	55
Listed Migratory Species:	48

Other Matters Protected by the EPBC Act

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

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

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

Commonwealth Lands:	4
Commonwealth Heritage Places:	None
Listed Marine Species:	72
Whales and Other Cetaceans:	12
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	1
Habitat Critical to the Survival of Marine Turtles:	None

Extra Information

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

State and Territory Reserves:	2
Regional Forest Agreements:	None
Nationally Important Wetlands:	1
EPBC Act Referrals:	27
Key Ecological Features (Marine):	2
Biologically Important Areas:	10
Bioregional Assessments:	None
Geological and Bioregional Assessments:	None

Details

Matters of National Environmental Significance

Commonwealth Marine Area [Resource Information]

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

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

Listed Threatened Ecological Communities [Resource Information]

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

Community Name	Threatened Category	Presence Text	Buffer Status
Aquatic Root Mat Community in Caves of the Swan Coastal Plain	Endangered	Community known to occur within area	In buffer area only
Banksia Woodlands of the Swan Coastal Plain ecological community	Endangered	Community likely to occur within area	In feature area
Honeymyrtle shrubland on limestone ridges of the Swan Coastal Plain Bioregion	Critically Endangered	Community likely to occur within area	In buffer area only
Sedgelands in Holocene dune swales of the southern Swan Coastal Plain	Endangered	Community known to occur within area	In buffer area only
Tuart (Eucalyptus gomphocephala) Woodlands and Forests of the Swan Coastal Plain ecological community	Critically Endangered	Community likely to occur within area	In feature area

Listed Threatened Species [Resource Information]

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

Scientific Name	Threatened Category	Presence Text	Buffer Status
BIRD			
Anous tenuirostris melanops			
Australian Lesser Noddy [26000]	Vulnerable	Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Ardenna grisea Sooty Shearwater [82651]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat may occur within area	In feature area
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat known to occur within area	In feature area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat likely to occur within area	In feature area
Calyptorhynchus banksii naso Forest Red-tailed Black-Cockatoo, Karrak [67034]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat known to occur within area	In feature area
Diomedea amsterdamensis Amsterdam Albatross [64405]	Endangered	Species or species habitat may occur within area	In feature area
Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	Species or species habitat may occur within area	In feature area
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Halobaena caerulea Blue Petrel [1059]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Leipoa ocellata Malleefowl [934]	Vulnerable	Species or species habitat likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Limosa lapponica menzbieri Northern Siberian Bar-tailed Godwit, Russkoye Bar-tailed Godwit [86432]	Endangered	Species or species habitat may occur within area	In feature area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area	In feature area
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area	In feature area
Pachyptila turtur subantarctica Fairy Prion (southern) [64445]	Vulnerable	Species or species habitat known to occur within area	In feature area
Phaethon rubricauda westralis Red-tailed Tropicbird (Indian Ocean), Indian Ocean Red-tailed Tropicbird [91824]	Endangered	Species or species habitat may occur within area	In feature area
Phoebetria fusca Sooty Albatross [1075]	Vulnerable	Species or species habitat may occur within area	In feature area
Pterodroma mollis Soft-plumaged Petrel [1036]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Rostratula australis Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area	In feature area
Sternula albifrons Little Tern [82849]	Vulnerable	Species or species habitat may occur within area	In feature area
Sternula nereis nereis Australian Fairy Tern [82950]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Thalassarche carteri			
Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Thalassarche cauta			
Shy Albatross [89224]	Endangered	Species or species habitat may occur within area	In feature area
Thalassarche impavida			
Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area	In feature area
Thalassarche melanophris			
Black-browed Albatross [66472]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Thalassarche steadi			
White-capped Albatross [64462]	Vulnerable	Species or species habitat may occur within area	In feature area
Tringa nebularia			
Common Greenshank, Greenshank [832]	Endangered	Species or species habitat likely to occur within area	In buffer area only
Zanda latirostris listed as Calyptorhynchus latirostris			
Carnaby's Black Cockatoo, Short-billed Black-cockatoo [87737]	Endangered	Breeding known to occur within area	In feature area
INSECT			
Hesperocolletes douglasi			
Douglas' Broad-headed Bee, Rottnest Bee [66734]	Critically Endangered	Species or species habitat may occur within area	In feature area
MAMMAL			
Balaenoptera musculus			
Blue Whale [36]	Endangered	Species or species habitat likely to occur within area	In feature area
Dasyurus geoffroii			
Chuditch, Western Quoll [330]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Eubalaena australis			
Southern Right Whale [40]	Endangered	Breeding known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Macroderma gigas Ghost Bat [174]	Vulnerable	Species or species habitat may occur within area	In feature area
Neophoca cinerea Australian Sea-lion, Australian Sea Lion [22]	Endangered	Species or species habitat likely to occur within area	In feature area
PLANT			
Andersonia gracilis Slender Andersonia [14470]	Endangered	Species or species habitat may occur within area	In feature area
Anigozanthos viridis subsp. terraspectans Dwarf Green Kangaroo Paw [3435]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
Banksia mimica Summer Honeypot [82765]	Endangered	Species or species habitat may occur within area	In buffer area only
Caleana dixonii listed as Paracaleana dixonii Sandplain Duck Orchid [87944]	Endangered	Species or species habitat may occur within area	In buffer area only
Diuris micrantha Dwarf Bee-orchid [55082]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Diuris purdiei Purdie's Donkey-orchid [12950]	Endangered	Species or species habitat may occur within area	In buffer area only
Drakaea elastica Glossy-leafed Hammer Orchid, Glossy-leaved Hammer Orchid, Warty Hammer Orchid [16753]	Endangered	Species or species habitat likely to occur within area	In buffer area only
Eleocharis keigheryi Keighery's Eleocharis [64893]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Eucalyptus argutifolia Yanchep Mallee, Wabling Hill Mallee [24263]	Vulnerable	Species or species habitat known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Macarthuria keigheryi Keighery's Macarthuria [64930]	Endangered	Species or species habitat may occur within area	In buffer area only
REPTILE			
Caretta caretta Loggerhead Turtle [1763]	Endangered	Foraging, feeding or related behaviour known to occur within area	In feature area
Chelonia mydas Green Turtle [1765]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In feature area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Foraging, feeding or related behaviour known to occur within area	In feature area
Natator depressus Flatback Turtle [59257]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In feature area
SHARK			
Carcharias taurus (west coast population) Grey Nurse Shark (west coast population) [68752]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Carcharodon carcharias White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat known to occur within area	In feature area
Pristis pristis Freshwater Sawfish, Largetooth Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Vulnerable	Species or species habitat may occur within area	In feature area
Rhincodon typus Whale Shark [66680]	Vulnerable	Species or species habitat may occur within area	In feature area
Sphyrna lewini Scalloped Hammerhead [85267]	Conservation Dependent	Species or species habitat likely to occur within area	In feature area
Listed Migratory Species			[Resource Information]

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

Scientific Name	Threatened Category	Presence Text	Buffer Status
Onychoprion anaethetus Bridled Tern [82845]		Breeding known to occur within area	In feature area
Phoebetria fusca Sooty Albatross [1075]	Vulnerable	Species or species habitat may occur within area	In feature area
Sterna dougallii Roseate Tern [817]		Foraging, feeding or related behaviour likely to occur within area	In feature area
Sternula albifrons Little Tern [82849]	Vulnerable	Species or species habitat may occur within area	In feature area
Thalassarche carteri Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Thalassarche cauta Shy Albatross [89224]	Endangered	Species or species habitat may occur within area	In feature area
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area	In feature area
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Thalassarche steadi White-capped Albatross [64462]	Vulnerable	Species or species habitat may occur within area	In feature area
Migratory Marine Species			
Balaenoptera edeni Bryde's Whale [35]		Species or species habitat may occur within area	In feature area
Balaenoptera musculus Blue Whale [36]	Endangered	Species or species habitat likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
[Caperea marginata](#) Pygmy Right Whale [39]		Species or species habitat may occur within area	In feature area
[Carcharhinus longimanus](#) Oceanic Whitetip Shark [84108]		Species or species habitat may occur within area	In feature area
[Carcharias taurus](#) Grey Nurse Shark [64469]		Species or species habitat likely to occur within area	In feature area
[Carcharodon carcharias](#) White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat known to occur within area	In feature area
[Caretta caretta](#) Loggerhead Turtle [1763]	Endangered	Foraging, feeding or related behaviour known to occur within area	In feature area
[Chelonia mydas](#) Green Turtle [1765]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In feature area
[Dermochelys coriacea](#) Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Foraging, feeding or related behaviour known to occur within area	In feature area
[Eubalaena australis as Balaena glacialis australis](#) Southern Right Whale [40]	Endangered	Breeding known to occur within area	In feature area
[Lamna nasus](#) Porbeagle, Mackerel Shark [83288]		Species or species habitat may occur within area	In feature area
[Megaptera novaeangliae](#) Humpback Whale [38]		Species or species habitat known to occur within area	In feature area
[Mobula alfredi as Manta alfredi](#) Reef Manta Ray, Coastal Manta Ray [90033]		Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Mobula birostris as Manta birostris Giant Manta Ray [90034]		Species or species habitat may occur within area	In feature area
Natator depressus Flatback Turtle [59257]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In feature area
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may occur within area	In feature area
Pristis pristis Freshwater Sawfish, Largetooth Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Vulnerable	Species or species habitat may occur within area	In feature area
Rhincodon typus Whale Shark [66680]	Vulnerable	Species or species habitat may occur within area	In feature area
Migratory Terrestrial Species			
Motacilla cinerea Grey Wagtail [642]		Species or species habitat may occur within area	In feature area
Migratory Wetlands Species			
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat likely to occur within area	In feature area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat may occur within area	In feature area
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat known to occur within area	In feature area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat likely to occur within area	In feature area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Charadrius leschenaultii			
Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat known to occur within area	In feature area
Limosa lapponica			
Bar-tailed Godwit [844]		Species or species habitat may occur within area	In feature area
Numenius madagascariensis			
Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area	In feature area
Pandion haliaetus			
Osprey [952]		Species or species habitat known to occur within area	In feature area
Tringa nebularia			
Common Greenshank, Greenshank [832]	Endangered	Species or species habitat likely to occur within area	In buffer area only

Other Matters Protected by the EPBC Act

Commonwealth Lands [Resource Information]

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

Commonwealth Land Name	State	Buffer Status
Unknown		
Commonwealth Land - [50315]	WA	In buffer area only
Commonwealth Land - [50396]	WA	In buffer area only
Commonwealth Land - [50355]	WA	In buffer area only
Commonwealth Land - [50402]	WA	In buffer area only

Listed Marine Species [Resource Information]

Scientific Name	Threatened Category	Presence Text	Buffer Status
Bird			
Actitis hypoleucos			
Common Sandpiper [59309]		Species or species habitat likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Anous stolidus Common Noddy [825]		Species or species habitat likely to occur within area	In feature area
Anous tenuirostris melanops Australian Lesser Noddy [26000]	Vulnerable	Species or species habitat may occur within area	In feature area
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area overfly marine area	In feature area
Ardenna carneipes as Puffinus carneipes Flesh-footed Shearwater, Fleshy-footed Shearwater [82404]		Foraging, feeding or related behaviour likely to occur within area	In feature area
Ardenna grisea as Puffinus griseus Sooty Shearwater [82651]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Bubulcus ibis as Ardea ibis Cattle Egret [66521]		Species or species habitat may occur within area overfly marine area	In feature area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat may occur within area	In feature area
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat known to occur within area overfly marine area	In feature area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat likely to occur within area overfly marine area	In feature area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area overfly marine area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat known to occur within area	In feature area
Chroicocephalus novaehollandiae as Larus novaehollandiae Silver Gull [82326]		Breeding known to occur within area	In buffer area only
Diomedea amsterdamensis Amsterdam Albatross [64405]	Endangered	Species or species habitat may occur within area	In feature area
Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	Species or species habitat may occur within area	In feature area
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat likely to occur within area	In feature area
Halobaena caerulea Blue Petrel [1059]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Hydroprogne caspia as Sterna caspia Caspian Tern [808]		Foraging, feeding or related behaviour known to occur within area	In feature area
Larus pacificus Pacific Gull [811]		Foraging, feeding or related behaviour may occur within area	In feature area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat may occur within area	In feature area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area overfly marine area	In feature area
Motacilla cinerea Grey Wagtail [642]		Species or species habitat may occur within area overfly marine area	In feature area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area	In feature area
Onychoprion anaethetus as Sterna anaethetus Bridled Tern [82845]		Breeding known to occur within area	In feature area
Pachyptila turtur Fairy Prion [1066]		Species or species habitat known to occur within area	In feature area
Pandion haliaetus Osprey [952]		Species or species habitat known to occur within area	In feature area
Phoebetria fusca Sooty Albatross [1075]	Vulnerable	Species or species habitat may occur within area	In feature area
Pterodroma mollis Soft-plumaged Petrel [1036]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Puffinus assimilis Little Shearwater [59363]		Foraging, feeding or related behaviour known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Rostratula australis as Rostratula benghalensis (sensu lato)			
Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area overfly marine area	In feature area
Stercorarius antarcticus as Catharacta skua			
Brown Skua [85039]		Species or species habitat may occur within area	In buffer area only
Sterna dougallii			
Roseate Tern [817]		Foraging, feeding or related behaviour likely to occur within area	In feature area
Sternula albifrons as Sterna albifrons			
Little Tern [82849]	Vulnerable	Species or species habitat may occur within area	In feature area
Thalassarche carteri			
Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Thalassarche cauta			
Shy Albatross [89224]	Endangered	Species or species habitat may occur within area	In feature area
Thalassarche impavida			
Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area	In feature area
Thalassarche melanophris			
Black-browed Albatross [66472]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Thalassarche steadi			
White-capped Albatross [64462]	Vulnerable	Species or species habitat may occur within area	In feature area
Thinornis cucullatus as Thinornis rubricollis			
Hooded Plover, Hooded Dotterel [87735]		Species or species habitat known to occur within area overfly marine area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
[Tringa nebularia](#) Common Greenshank, Greenshank [832]	Endangered	Species or species habitat likely to occur within area overfly marine area	In buffer area only
Fish			
[Acentronura australe](#) Southern Pygmy Pipehorse [66185]		Species or species habitat may occur within area	In feature area
[Campichthys galei](#) Gale's Pipefish [66191]		Species or species habitat may occur within area	In feature area
[Choeroichthys suillus](#) Pig-snouted Pipefish [66198]		Species or species habitat may occur within area	In feature area
[Halicampus brocki](#) Brock's Pipefish [66219]		Species or species habitat may occur within area	In feature area
[Hippocampus angustus](#) Western Spiny Seahorse, Narrow-bellied Seahorse [66234]		Species or species habitat may occur within area	In feature area
[Hippocampus breviceps](#) Short-head Seahorse, Short-snouted Seahorse [66235]		Species or species habitat may occur within area	In feature area
[Hippocampus subelongatus](#) West Australian Seahorse [66722]		Species or species habitat may occur within area	In feature area
[Lissocampus fatiloquus](#) Prophet's Pipefish [66250]		Species or species habitat may occur within area	In feature area
[Maroubra perserrata](#) Sawtooth Pipefish [66252]		Species or species habitat may occur within area	In feature area
[Mitotichthys meraculus](#) Western Crested Pipefish [66259]		Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Nannocampus subosseus Bonyhead Pipefish, Bony-headed Pipefish [66264]		Species or species habitat may occur within area	In feature area
Phycodurus eques Leafy Seadragon [66267]		Species or species habitat may occur within area	In feature area
Phyllopteryx taeniolatus Common Seadragon, Weedy Seadragon [66268]		Species or species habitat may occur within area	In feature area
Pugnaso curtirostris Pugnose Pipefish, Pug-nosed Pipefish [66269]		Species or species habitat may occur within area	In feature area
Solegnathus lettiensis Gunther's Pipehorse, Indonesian Pipefish [66273]		Species or species habitat may occur within area	In feature area
Stigmatopora argus Spotted Pipefish, Gulf Pipefish, Peacock Pipefish [66276]		Species or species habitat may occur within area	In feature area
Stigmatopora nigra Widebody Pipefish, Wide-bodied Pipefish, Black Pipefish [66277]		Species or species habitat may occur within area	In feature area
Syngnathoides biaculeatus Double-end Pipehorse, Double-ended Pipehorse, Alligator Pipefish [66279]		Species or species habitat may occur within area	In feature area
Urocampus carinirostris Hairy Pipefish [66282]		Species or species habitat may occur within area	In feature area
Vanacampus margaritifer Mother-of-pearl Pipefish [66283]		Species or species habitat may occur within area	In feature area
Mammal			
Arctocephalus forsteri Long-nosed Fur-seal, New Zealand Fur-seal [20]		Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
[Neophoca cinerea](#) Australian Sea-lion, Australian Sea Lion [22]	Endangered	Species or species habitat likely to occur within area	In feature area
Reptile			
[Aipysurus pooleorum](#) Shark Bay Sea Snake [66061]		Species or species habitat may occur within area	In feature area
[Caretta caretta](#) Loggerhead Turtle [1763]	Endangered	Foraging, feeding or related behaviour known to occur within area	In feature area
[Chelonia mydas](#) Green Turtle [1765]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In feature area
[Dermochelys coriacea](#) Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Foraging, feeding or related behaviour known to occur within area	In feature area
[Hydrophis kingii as Disteira kingii](#) Spectacled Sea Snake [93511]		Species or species habitat may occur within area	In feature area
[Hydrophis platura as Pelamis platurus](#) Yellow-bellied Sea Snake [93746]		Species or species habitat may occur within area	In feature area
[Natator depressus](#) Flatback Turtle [59257]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In feature area

Whales and Other Cetaceans			[Resource Information]
Current Scientific Name	Status	Type of Presence	Buffer Status
Mammal			
[Balaenoptera acutorostrata](#) Minke Whale [33]		Species or species habitat may occur within area	In feature area

Current Scientific Name	Status	Type of Presence	Buffer Status
Balaenoptera edeni Bryde's Whale [35]		Species or species habitat may occur within area	In feature area
Balaenoptera musculus Blue Whale [36]	Endangered	Species or species habitat likely to occur within area	In feature area
Caperea marginata Pygmy Right Whale [39]		Species or species habitat may occur within area	In feature area
Delphinus delphis Common Dolphin, Short-beaked Common Dolphin [60]		Species or species habitat may occur within area	In feature area
Eubalaena australis Southern Right Whale [40]	Endangered	Breeding known to occur within area	In feature area
Grampus griseus Risso's Dolphin, Grampus [64]		Species or species habitat may occur within area	In feature area
Megaptera novaeangliae Humpback Whale [38]		Species or species habitat known to occur within area	In feature area
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may occur within area	In feature area
Stenella attenuata Spotted Dolphin, Pantropical Spotted Dolphin [51]		Species or species habitat may occur within area	In feature area
Tursiops aduncus Indian Ocean Bottlenose Dolphin, Spotted Bottlenose Dolphin [68418]		Species or species habitat likely to occur within area	In feature area
Tursiops truncatus s. str. Bottlenose Dolphin [68417]		Species or species habitat may occur within area	In feature area

Australian Marine Parks [Resource Information]

Park Name	Zone & IUCN Categories	Buffer Status
Two Rocks	Multiple Use Zone (IUCN VI)	In buffer area only

Extra Information

State and Territory Reserves			[Resource Information]
Protected Area Name	Reserve Type	State	Buffer Status
Unnamed WA49994	Conservation Park	WA	In buffer area only
Yanchep	National Park	WA	In buffer area only

Nationally Important Wetlands		[Resource Information]
Wetland Name	State	Buffer Status
Loch McNess System	WA	In buffer area only

EPBC Act Referrals				[Resource Information]
Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Alkimos Seawater Desalination	2019/8453		Completed	In buffer area only
Gonneville Nickel-Copper-Platinum Group Element Mine Development Project	2024/09839		Assessment	In buffer area only
Samphire Offshore Wind Farm	2022/09306		Assessment	In buffer area only
Urban Development of Part Lot 801 Marmion Avenue, Eglinton	2024/09881		Completed	In buffer area only
Yanchep Rail Extension, WA	2018/8262		Post-Approval	In buffer area only
Controlled action				
Alkimos city centre and central development, WA	2015/7561	Controlled Action	Post-Approval	In buffer area only
Alkimos Coastal Node	2020/8861	Controlled Action	Further Information Request	In buffer area only
Butler North District Open Space playing fields development, Wanneroo, WA	2017/8053	Controlled Action	Post-Approval	In buffer area only

Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Controlled action				
Eglinton/South Yanchep Residential Development	2011/6021	Controlled Action	Post-Approval	In buffer area only
Eglinton Estates - Clearing of native vegetation from Lot 1007 & part Lot 1008	2010/5777	Controlled Action	Post-Approval	In buffer area only
Jindee Residential Development	2012/6631	Controlled Action	Post-Approval	In buffer area only
Mitchell Freeway Extension and Wanneroo Road Upgrade, WA	2018/8367	Controlled Action	Post-Approval	In buffer area only
Proposed Urban Development of Lots 1005 & 1006	2008/4638	Controlled Action	Post-Approval	In buffer area only
Residential and commercial development on part 19 (Lot 6) Taronga Place, Eglinton, WA	2017/7872	Controlled Action	Post-Approval	In buffer area only
Residential development,Lot 609, Yanchep Beach Road, Yanchep, WA	2014/7146	Controlled Action	Post-Approval	In buffer area only
Residential development Lot 1004 Alkimos WA	2011/5902	Controlled Action	Post-Approval	In buffer area only
Urban and Residential Development at Lot 9 Brighton	2011/6137	Controlled Action	Post-Approval	In buffer area only
Urban development in accordance with the Local Structure Plan	2008/4601	Controlled Action	Post-Approval	In buffer area only
Urban Residential Development at Lot 9049 Marmoin Avenue	2009/5155	Controlled Action	Post-Approval	In buffer area only
Not controlled action				
Alkimos seawater desalination plant, offshore investigations, WA	2018/8224	Not Controlled Action	Completed	In buffer area only
Amberton West urban development - Part lot 9005 Eglington WA	2013/7068	Not Controlled Action	Completed	In buffer area only
Development of new Alkimos Wastwater Treatment Plant	2007/3259	Not Controlled Action	Completed	In buffer area only
Improving rabbit biocontrol: releasing another strain of RHDV, sthrn two thirds of Australia	2015/7522	Not Controlled Action	Completed	In feature area
INDIGO West Submarine Telecommunications Cable, WA	2017/8126	Not Controlled Action	Completed	In buffer area only
Residential development, Lots 9010 and 9031, Yanchep Beach Rd, Yanchep	2016/7642	Not Controlled Action	Completed	In buffer area only

Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Not controlled action				
Residential Development Eglinton West, Lot 5000 & part Lot 5001, Pipidinny Road, Eglinton	2014/7137	Not Controlled Action	Completed	In buffer area only
residential subdivision	2005/1965	Not Controlled Action	Completed	In feature area

Key Ecological Features [Resource Information]

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

Name	Region	Buffer Status
Commonwealth marine environment within and adjacent to the west coast inshore lagoons	South-west	In buffer area only
Western rock lobster	South-west	In buffer area only

Biologically Important Areas [Resource Information]

Scientific Name	Behaviour	Presence	Buffer Status
Seabirds			
Ardenna pacifica			
Wedge-tailed Shearwater [84292]	Foraging (in high numbers)	Known to occur	In feature area
Hydroprogne caspia			
Caspian Tern [808]	Foraging (provisioning young)	Known to occur	In feature area
Larus pacificus			
Pacific Gull [811]	Foraging (in high numbers)	Former Range	In feature area
Onychoprion anaethetus			
Bridled Tern [82845]	Foraging (in high numbers)	Known to occur	In feature area
Puffinus assimilis tunneyi			
Little Shearwater [59363]	Foraging (in high numbers)	Known to occur	In feature area
Sterna dougallii			
Roseate Tern [817]	Foraging	Known to occur	In feature area
Sternula nereis			
Fairy Tern [82949]	Foraging (in high numbers)	Known to occur	In feature area

Scientific Name	Behaviour	Presence	Buffer Status
Seals			
Neophoca cinerea Australian Sea Lion [22]	Foraging (male)	Likely to occur	In feature area
Whales			
Megaptera novaeangliae Humpback Whale [38]	Migration (north)	Known to occur	In buffer area only
Megaptera novaeangliae Humpback Whale [38]	Migration (north and south)	Known to occur	In feature area

Caveat

1 PURPOSE

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

The report contains the mapped locations of:

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

2 DISCLAIMER

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

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

3 DATA SOURCES

Threatened ecological communities

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

Threatened, migratory and marine species

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

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

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

4 LIMITATIONS

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

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

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

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

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

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

Acknowledgements

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

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

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

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

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Appendix 2: Conservation Codes

A2.1 Flora and Fauna

State Flora and Fauna Conservation Codes under the *Biodiversity Conservation Act 2018* (WA)

Conservation Code	Name	Description
Threatened Species		
CR	Critically endangered	Species considered to be facing an extremely high risk of extinction within the wild in the immediate future
EN	Endangered	Species considered to be facing a very high risk of extinction in the wild in the near future
VU	Vulnerable	Species considered to be facing a high risk of extinction in the wild in the medium-term future
Extinct Species		
EX	Extinct Species	Species where 'there is no reasonable doubt that the last member of the species has died (Schedule 4 of the Wildlife Conservation (Specially Protected Fauna) Notice or the Wildlife Conservation (Rare Flora) Notice)
EW	Extinct in the Wild	Species that are known to only survive in cultivation, in captivity, or as a naturalised population well outside its past range; and it has not been recorded in its known or expected habitat at appropriate seasons anywhere in its past range, despite surveys over a timeframe appropriate to its life cycle and form
Specially Protected Species		
MI	Migratory Species	Fauna that periodically or occasionally visit Australia or an external Territory or the exclusive economic zone; or the species is subject of an international agreement that relates to the protection of migratory species and that binds the Commonwealth (Schedule 5 of the Wildlife Conservation (Specially Protected Fauna) Notice)
CD	Conservation Dependent	Species of special conservation interest (conservation dependent fauna), being species dependent on ongoing conservation intervention to prevent it becoming eligible for listing as threatened (Schedule 6 of the Wildlife Conservation (Specially Protected Fauna) Notice)
OS	Other Specially Protected Species	Fauna otherwise in need of special protection to ensure their conservation (Schedule 7 of the Wildlife Conservation (Specially Protected Fauna) Notice)

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State Flora and Fauna Conservation Codes listed by Department of Biodiversity, Conservation and Attractions

Conservation Code	Name	Description
P1	Priority One	Poorly known species – Species that are known from one or a few locations (generally five or less) which are potentially at risk. All occurrences are either very small or on lands not managed for conservation, such as road verges, urban areas, farmland, active mineral lease and under threat of habitat destruction or degradation.
P2	Priority Two	Poorly known species – Species that are known from one or a few locations (generally five or less), some of which are on lands managed primarily for nature conservation, such as national parks, conservation parks, nature reserves, State forest, vacant Crown land, water reserves and similar.
P3	Priority Three	Poorly known species – Species that are known from several locations, and the species does not appear to be under imminent threat, or from few but widespread locations with either large population size or significant remaining areas of apparently suitable habitat, much of it not under imminent threat
P4	Priority Four	Rare or near threatened and other species in need of monitoring. a) Rare. Species that are considered to have been adequately surveyed, or for which sufficient knowledge is available, and that are considered not currently threatened or in need of special protection but could be if present circumstances change. These species are usually represented on conservation lands. b) Near Threatened. Species that are considered to have been adequately surveyed and that are close to qualifying for vulnerable but are not listed as a conservation dependent specially protected species. c) Species that have been removed from the list of threatened species or lists of conservation dependent or other specially protected species, during the past five years for reasons other than taxonomy.

Source: DBCA, 2023b

DRAFT

Commonwealth Flora and Fauna Conservation Codes under the *Environmental Protection and Biodiversity Conservation Act 1999* (Cth)

Category	Description
Extinct	A native species which at a particular time if, at that time, there is no reasonable doubt that the last member of the species has died.
Extinct in the wild	A native species which at a particular time if, at that time: a) It is known only to survive in cultivation, in captivity or as a naturalised population well outside its past range; or b) It has not been recorded in its known and/or expected habitat, at appropriate seasons, anywhere in its past range, despite exhaustive surveys over a time frame appropriate to its life cycle and form.
Critically endangered	A species considered to be facing an extremely high risk of extinction in the wild and is determined that it meets any of the five criteria for the category identified in Part 7.01 of the EPBC Regulations.
Endangered	A species considered to be facing a very high risk of extinction in the wild and is determined that it meets any of the five criteria for the category identified in Part 7.01 of the EPBC Regulations.
Vulnerable	A species considered to be facing a high risk of extinction in the wild and is determined that it meets any of the five criteria for the category identified in Part 7.01 of the EPBC Regulations.
Conservation dependent	A native species which at a particular time if, at that time: a) is the focus of a specific conservation program the cessation of which would result in the species becoming vulnerable, endangered or critically endangered; or b) the following subparagraphs are satisfied: i. the species is a species of fish; ii. the species is the focus of a plan of management that provides for management actions necessary to stop the decline of, and support the recovery of, the species so that its chances of long term survival in nature are maximised; iii. the plan of management is in force under a law of the Commonwealth or of a State or Territory; iv. cessation of the plan of management would adversely affect the conservation status of the species

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A2.2 Ecological Communities

State Ecological Community Conservation Codes under the *Biodiversity Conservation Act 2018* (WA)

Conservation Code	Name	Description
PD	Presumed Totally Destroyed	An ecological community that has been adequately searched for but for which no representative occurrences have been located. The community has been found to be totally destroyed or so extensively modified throughout its range that no occurrence of it is likely to recover its species composition and/or structure in the foreseeable future
CR	Critically Endangered	An ecological community that has been adequately surveyed and found to have been subject to a major contraction in area and/or that was originally of limited distribution and is facing severe modification or destruction throughout its range in the immediate future or is already severely degraded throughout its range but capable of being substantially restored or rehabilitated.
EN	Endangered	An ecological community that has been adequately surveyed and found to have been subject to a major contraction in area and/or was originally of limited distribution and is in danger of significant modification throughout its range or severe modification or destruction over most of its range in the near future
VU	Vulnerable	An ecological community that has been adequately surveyed and is found to be declining and/or has declined in distribution and/or condition and whose ultimate security has not yet been assured and/or a community that is still widespread but is believed likely to move into a category of higher threat in the near future if threatening processes continue or begin operating throughout its range.

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State Ecological Community Conservation Codes listed by Department of Biodiversity, Conservation and Attractions

Conservation Code	Name	Description
P1	Priority One	**Poorly known ecological communities - very few occurrences, very restricted distribution** Ecological communities that are known from very few occurrences with a very restricted distribution (generally ≤5 occurrences or a total area of ≤100 ha). Occurrences are believed to be under threat either due to limited extent or being on lands under immediate threat (e.g. within agricultural or pastoral lands, urban areas, active mineral leases) or for which current threats exist. May include communities with occurrences on protected lands. Communities may be included if they are comparatively well-known from one or more localities but do not meet adequacy of survey requirements, and/or are not well defined, and appear to be under immediate threat from known threatening processes across their range
P2	Priority Two	**Poorly known ecological communities - few occurrences, restricted distribution** Communities that are known from few occurrences with a restricted distribution (generally ≤10 occurrences or a total area of ≤200 ha). At least some occurrences are not believed to be under immediate threat (within approximately 10 years) of destruction or degradation. Communities may be included if they are comparatively well known from one or more localities but do not meet adequacy of survey requirements, and/or are not well defined, and appear to be under threat from known threatening processes.
P3	Priority Three	**Poorly known ecological communities - inadequately surveyed or not well defined** Communities may be included if they are comparatively well known from several localities but do not meet adequacy of survey requirements and/or are not well defined, and known threatening processes exist that could affect them. his category includes three sub-categories: i. Communities that are known from several to many occurrences, a significant number or area of which are not under threat of habitat destruction or degradation. ii. Communities known from a few widespread occurrences, which are either large or with significant remaining areas of habitat in which other occurrences may occur, much of it not under imminent threat (within approximately 10 years), iii. Communities made up of large, and/or widespread occurrences, that may or may not be represented in the reserve system, but are under threat of modification across

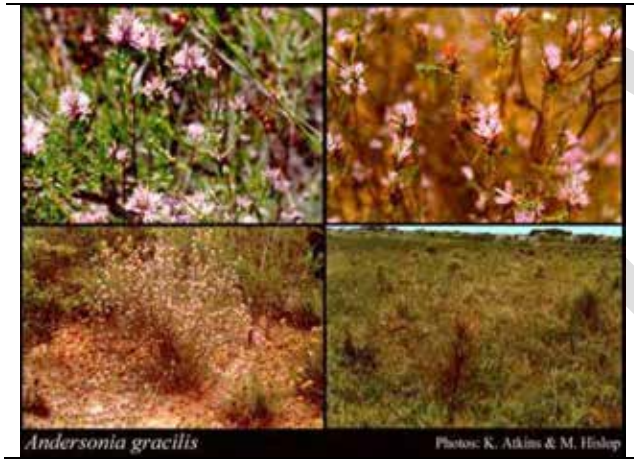
Conservation Code	Name	Description
		much of their range from processes such as grazing by domestic and/or feral stock, inappropriate fire regimes, clearing, hydrological change etc.
P4	Priority Four	**Adequately known ecological communities - rare, near threatened, or recently removed from the threatened list** Ecological communities that are adequately known, rare but not threatened or meet criteria for Near Threatened, or that have been recently removed from the threatened list. These communities require regular monitoring. i. Rare: Ecological communities known from few occurrences 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 communities are usually represented on conservation lands. ii. Near Threatened: Ecological communities that are considered to have been adequately surveyed and that do not qualify for Conservation Dependent, but that are close to qualifying for a higher threat category. iii. Ecological communities that have been removed from the list of threatened communities during the past five years.
P5	Priority Five	**Conservation dependent ecological communities** Ecological communities that are not threatened but are subject to a specific conservation program, the cessation of which would result in the community becoming threatened within five years.

Source: DBCA, 2023b

Commonwealth Ecological Community Conservation Codes under the *Environmental Protection and Biodiversity Conservation Act 1999* (Cth)

Category	Description
Critically endangered	If, at that time, an ecological community is facing an extremely high risk of extinction in the wild in the immediate future (indicative timeframe being the next 10 years).
Endangered	If, at that time, an ecological community is not critically endangered but is facing a very high risk of extinction in the wild in the near future (indicative timeframe being the next 20 years).
Vulnerable	If, at that time, an ecological community is not critically endangered or endangered but is facing a high risk of extinction in the wild in the medium-term future (indicative timeframe being the next 50 years).

Appendix 3: Significant Species

Species Name	Common Name	Description	Flowering Period	Habitat Type	Cons code	Likelihood (Y/N)	Comment
	Bentham's Wattle	Shrub, ca 1 m high. Fl. yellow,	Aug to Sep.	Sand. Typically on limestone breakaways.	P2	N	Habitat unsuitable
Amanita wadulawitu	Long-spored Lepidella				P2	N	Habitat unsuitable
		Slender erect or open straggly shrub, 0.1-0.5(-1) m high. Fl. white-pink-purple.	Sep to Nov.	White/grey sand, sandy clay, gravelly loam. Winter-wet areas, near swamps.	VU	N	Habitat unsuitable

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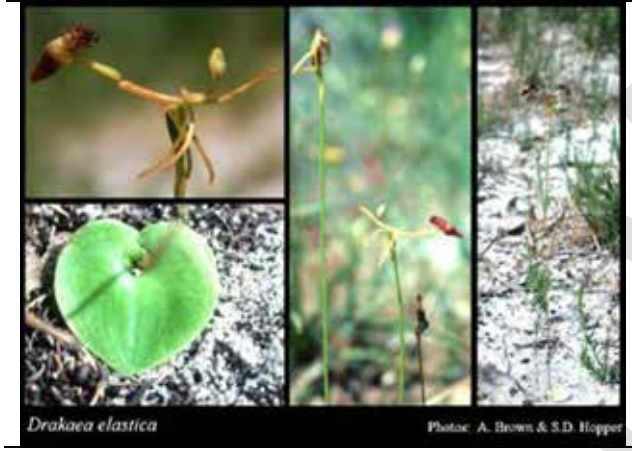
Species Name	Common Name	Description	Flowering Period	Habitat Type	Cons code	Likelihood (Y/N)	Comment
	Dwarf Green Kangaroo Paw	Rhizomatous, perrenial, herb 0.05-0.2 m high, Fl.green/yellow-green,	Aug to sep	Grey sans, clay loam. Winter wet depressions	T	N	Habitat unsuitable
Baeckea sp. Limestone (N. Gibson & M.N. Lyons 1425)					P1	N	Habitat unsuitable
	Summer Honeypot	Prostrate, lignotuberous shrub, 0.15-0.4 m high. Fl. yellow-brown.	Dec or Jan to Feb.	White or grey sand over laterite, sandy loam.	EN	N	Habitat unsuitable
Calandrinia oraria			Aug to Oct	Low coastal heath or forbland on white sands.	P3	Y	Habitat suitable

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Species Name	Common Name	Description	Flowering Period	Habitat Type	Cons code	Likelihood (Y/N)	Comment
	Sandplain Duck Orchid	Tuberous, perennial, herb, 0.09-0.2 m high. Fl. yellow-brown,	Oct to Dec or Jan	Grey sand over granite	T	N	Habitat unsuitable
Conostylis bracteata		Rhizomatous, tufted or shortly proliferous perennial, grass-like or herb, 0.2-0.45 m high. Fl. yellow,	Aug to Sep.	Sand, limestone. Consolidated sand dunes.	P3	Y	Habitat suitable
Conostylis pauciflora subsp. *euryrhipis*		Rhizomatous, stoloniferous perennial, grass-like or herb, 0.06-0.18 m high. Fl. yellow	Aug- Oct	White, Grey or Yellow Sand. Consolidated dunes	P4	Y	Habitat suitable

Species Name	Common Name	Description	Flowering Period	Habitat Type	Cons code	Likelihood (Y/N)	Comment
Conostylis pauciflora subsp. *pauciflora*		Rhizomatous, stoloniferous perennial, grass-like or herb, 0.1-0.35 m high. Fl. yellow	Aug to Oct.	Grey sand, limestone. Hillslopes, consolidated dunes.	P4	Y	Habitat suitable
	Dwarf Bee Orchid	Tuberous, perennial, herb, 0.3-0.6 m high. Fl. yellow & brown.	Sep to Oct.	Brown loamy clay. Winter-wet swamps, in shallow water.	VU	N	Habitat unsuitable

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Species Name	Common Name	Description	Flowering Period	Habitat Type	Cons code	Likelihood (Y/N)	Comment
	Purdie's Donkey Orchid	Tuberous, perennial, herb, 0.15-0.35 m high. Fl. Yellow.	Sep to Oct.	Grey-black sand, moist. Winter-wet swamps.	EN	N	Habitat unsuitable
	Glossy-leaved Hammer Orchid	Tuberous, perennial, herb, 0.12-0.3 m high. Fl. red & green & yellow.	Oct to Nov.	White or grey sand. Low-lying situations adjoining winter-wet swamps.	CR	N	Habitat unsuitable

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Species Name	Common Name	Description	Flowering Period	Habitat Type	Cons code	Likelihood (Y/N)	Comment
		Rhizomatous, clumped perennial, grass-like or herb (sedge), to 0.4 m high. Fl. Green.	Aug to Nov.	Clay, sandy loam. Emergent in freshwater: creeks, claypans.	VU	N	Habitat unsuitable
	Wabling Hill Mallee	(Mallee), 1.5-4 m high, bark smooth. Fl. white	Mar to Apr.	Shallow soils over limestone. Slopes or gullies of limestone ridges, outcrops.	T	Y	Habitat suitable
Eucalyptus foecunda subsp. *foecunda*	Fremantle Mallee	Dense emergent mallee. Bark +/- smooth; buds golden.	-	Sand over limestone.	P4	Y	Habitat suitable

Species Name	Common Name	Description	Flowering Period	Habitat Type	Cons code	Likelihood (Y/N)	Comment
Haloragis luminosa	Lantern Sea-berry				P1	N	Habitat unsuitable
Hibbertia leptotheca		Erect or spreading shrub, 0.2-0.5 m high. Fl. yellow	Jul to Oct.	Sand. Near-coastal limestone ridges, outcrops & cliffs.	P3	Y	Habitat suitable
Lasiopetalum membranaceum		Multi-stemmed shrub, 0.2-1 m high. Fl. pink-blue-purple.	Sep to Dec.	Sand over limestone.	P3	Y	Habitat suitable
Lecania sylvestris					P2	N	Habitat unsuitable
Lecania turicensis var. *turicensis*					P2	Y	Habitat suitable
Lepidium pseudotasmanicum		Erect annual or biennial, herb, 0.2-0.4(-1) m high. Fl. white-green	Feb or Dec.	Loam, sand.	P4	N	Habitat unsuitable
Leucopogon maritimus					P1	Y	Habitat suitable

Species Name	Common Name	Description	Flowering Period	Habitat Type	Cons code	Likelihood (Y/N)	Comment
		Erect or spreading perennial, herb or shrub, 0.2-0.4 m high, 0.3-0.6 m wide.	Sep to Dec or Feb to Mar.	White or grey sand.	EN	N	Habitat unsuitable
	Coastal Banjine	Erect to spreading shrub, 0.2-1 m high. Fl. Pink.	Sep to Nov.	Sand. Coastal limestone ridges.	P3	Y	Habitat suitable
Placynthium nigrum					P3	N	Habitat unsuitable
Rinodina bischoffii					P2	N	Habitat unsuitable

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Species Name	Common Name	Description	Flowering Period	Habitat Type	Cons code	Likelihood (Y/N)	Comment
		Slender, multi-stemmed, scandent or erect shrub, to 1.5 m high. Fl. orange-red	Jun or Sep to Nov.	White-grey-brown sand, sandy clay over limestone, black peaty sandy clay. Tall dunes, winter-wet flats, interdunal swamps, low-lying areas.	P3	N	Habitat unsuitable
	Coastal Triggerplant	Caespitose perennial, herb, 0.3-0.7 m high, Leaves tufted, linear to narrowly oblanceolate, 10-40 cm long, 1-5.5 mm wide, apex acute to mucronate, margin involute, glabrous. Membraneous scale leaves	Sep to Nov.	Sand over limestone. Dune slopes and flats. Coastal heath and shrubland, open Banksia woodland.	P3	Y	Habitat suitable

Species Name	Common Name	Description	Flowering Period	Habitat Type	Cons code	Likelihood (Y/N)	Comment
		present at base of mature leaves. Scape glandular throughout. Inflorescence paniculate. Fl. white/purple.					
	Fan-leaved Triggerplant	Rosetted perennial, herb, 0.15-0.55 m high, Leaves erect, oblanceolate to spathulate, 1.5-4 cm long, 1.5-6 mm wide, apex acute to acuminate, margin entire, glabrous, striate. Scape sparingly glandular on inflorescence axis, glabrous below. Inflorescence racemose. Fl. yellow.	Oct to Nov.	Brown clay loam over laterite. Hillslopes. Jarrah/Marri forest, Wandoo woodland.	P4	N	Habitat unsuitable

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Species Name	Common Name	Description	Flowering Period	Habitat Type	Cons code	Likelihood (Y/N)	Comment
Styphelia filifolia					P3	N	Habitat unsuitable
Styphelia porcata					P3	N	Habitat unsuitable

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Appendix 4: Species List

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

Family	Species	Common Name
Aizoaceae	**Tetragonia decumbens*	Sea Spinach
Aizoaceae	*Carpobrotus virescens*	Coastal Pigface
Anacardiaceae	**Schinus terebinthifolia*	
Apiaceae	*Daucus glochidiatus*	Australian Carrot
Araliaceae	*Trachymene pilosa*	Native Parsnip
Araucariaceae	**Araucaria heterophylla (*planted)	Norfolk Island Pine
Arecaceae	**Phoenix* sp. (planted)	
Arecaceae	**Washingtonia filifera* (planted)	
Asparagaceae	**Yucca aloifolia*	
Asparagaceae	*Acanthocarpus preissii*	
Asparagaceae	*Lomandra maritima*	Maritime Mat Rush
Asparagaceae	*Thysanotus manglesianus*	Mangles' Fringed Lily
Asphodelaceae	**Asphodelus fistulosus*	Onion Weed
Asphodelaceae	**Trachyandra divaricata*	
Asteraceae	**Arctotheca calendula*	Cape Weed
Asteraceae	**Arctotis stoechadifolia*	White Arctotis
Asteraceae	**Cotula turbinata*	Funnel Weed
Asteraceae	**Erigeron bonariensis*	
Asteraceae	**Gazania linearis*	
Asteraceae	**Hypochaeris radicata*	Flat Weed
Asteraceae	**Leontodon rhagadioloides*	Cretan Weed
Asteraceae	**Osteospermum ecklonis*	
Asteraceae	**Reichardia tingitana*	False Sowthistle
Asteraceae	**Sonchus oleraceus*	Common Sowthistle
Asteraceae	**Urospermum picroides*	False Hawkbit
Asteraceae	*Brachyscome bellidioides*	
Asteraceae	*Leptorhynchos scaber*	Lanky Buttons

Family	Species	Common Name
Asteraceae	*Leucophyta brownii*	
Asteraceae	*Olearia axillaris*	Coastal Daisybush
Asteraceae	*Pithocarpa cordata*	Tangle Daisy
Asteraceae	*Podotheca gnaphalioides*	Golden Long-heads
Asteraceae	*Senecio pinnatifolius* var. *latilobus*	Variable Groundsel
Asteraceae	**Hypochaeris glabra*	Smooth Cats-ear
Brassicaceae	**Brassica tournefortii*	Mediterranean Turnip
Brassicaceae	**Cakile maritima*	Sea Rocket
Brassicaceae	**Cardamine hirsuta*	Common Bittercress
Brassicaceae	**Heliophila pusilla*	
Brassicaceae	**Matthiola incana*	Common Stock
Campanulaceae	*Isotoma hypocrateriformis*	Woodbridge Poison
Campanulaceae	*Lobelia tenuior*	Slender Lobelia
Caprifoliaceae	**Centranthus macrosiphon*	
Caryophyllaceae	**Petrorhagia dubia*	
Caryophyllaceae	**Sagina maritima*	
Caryophyllaceae	**Silene gallica*	French Catchfly
Caryophyllaceae	**Stellaria media*	Chickweed
Caryophyllaceae	**Sabulina mediterranea*	
Casuarinaceae	*Allocasuarina humilis*	Dwarf Sheoak
Casuarinaceae	*Allocasuarina lehmanniana* subsp. *lehmanniana*	Dune Sheoak
Chenopodiaceae	*Atriplex isatidea*	Coast Saltbush
Chenopodiaceae	*Rhagodia baccata* subsp. *baccata*	Berry Saltbush
Chenopodiaceae	*Rhagodia baccata* subsp. *dioica*	Sea Berry Saltbush
Chenopodiaceae	*Salicornia blackiana*	
Chenopodiaceae	*Threlkeldia diffusa*	Coast Bonefruit
Crassulaceae	**Crassula glomerata*	
Crassulaceae	*Crassula colorata*	Dense Stonecrop
Cupressaceae	*Callitris preissii*	Rottnest Island Pine
Cyperaceae	**Ficinia marginata*	Coarse Club Rush
Cyperaceae	*Ficinia nodosa*	Knotted Club Rush
Cyperaceae	*Lepidosperma calcicola*	

Family	Species	Common Name
Cyperaceae	*Lepidosperma gladiatum*	Coast Sword-sedge
Cyperaceae	*Schoenus lanatus*	Woolly Bog-rush
Dilleniaceae	*Hibbertia racemosa*	Stalked Guinea Flower
Droseraceae	*Drosera macrantha*	Bridal Rainbow
Ericaceae	*Acrotriche cordata*	Coast Ground Berry
Ericaceae	*Leucopogon parviflorus*	Coast Beard-heath
Ericaceae	*Styphelia insularis*	
Euphorbiaceae	**Euphorbia australis*	Namana
Euphorbiaceae	**Euphorbia paralias*	Sea Spurge
Euphorbiaceae	**Euphorbia peplus*	Petty Spurge
Euphorbiaceae	**Euphorbia terracina*	Geraldton Carnation Weed
Fabaceae	**Medicago polymorpha*	Burr Medic
Fabaceae	**Melilotus indicus*	
Fabaceae	**Trifolium campestre* var. *campestre*	Hop Clover
Fabaceae	*Acacia cochlearis*	Rigid Wattle
Fabaceae	*Acacia cyclops*	Coastal Wattle
Fabaceae	*Acacia lasiocarpa*	Panjang
Fabaceae	*Acacia rostellifera*	Summer-scented Wattle
Fabaceae	*Acacia saligna*	Orange Wattle
Fabaceae	*Acacia truncata*	
Fabaceae	*Acacia xanthina*	White-stemmed Wattle
Fabaceae	*Gastrolobium nervosum*	
Fabaceae	*Gompholobium tomentosum*	Hairy Yellow Pea
Fabaceae	*Hardenbergia comptoniana*	Native Wisteria
Fabaceae	*Kennedia prostrata*	Scarlet Runner
Fabaceae	*Templetonia retusa*	Cockies Tongues
Frankeniaceae	*Frankenia pauciflora* var. *pauciflora*	Seaheath
Gentianaceae	*Schenkia australis*	
Gentianaceae	**Centaurium pulchellum*	
Geraniaceae	**Erodium botrys*	Long Storksbill
Geraniaceae	**Pelargonium capitatum*	Rose Pelargonium
Goodeniaceae	*Scaevola crassifolia*	Thick-leaved Fan-flower

Family	Species	Common Name
Goodeniaceae	*Scaevola globulifera*	
Goodeniaceae	*Scaevola thesioides* subsp. *thesioides*	
Haemodoraceae	*Conostylis pauciflora* subsp. *pauciflora*	
Hemerocallidaceae	*Dianella revoluta* var. *divaricata*	Flax Lily
Hemerocallidaceae	*Tricoryne elatior*	Yellow Autumn Lily
Iridaceae	**Ferraria crispa*	Black Flag
Iridaceae	**Romulea rosea*	Guildford Grass
Lamiaceae	**Stachys arvensis*	Staggerweed
Lamiaceae	**Westringia fruticosa* (planted)	
Lamiaceae	*Hemiandra glabra*	
Lauraceae	*Cassytha aurea*	
Lauraceae	*Cassytha flava*	Dodder Laurel
Lauraceae	*Cassytha glabella*	Tangled Dodder Laurel
Lauraceae	*Cassytha racemosa*	Dodder Laurel
Loganiaceae	*Phyllangium divergens*	
Malvaceae	**Lagunaria patersonia* (planted)	
Malvaceae	**Malva parviflora*	Marshmallow
Malvaceae	*Thomasia triphylla*	
Montiaceae	*Calandrinia liniflora*	Parakeelya
Myrtaceae	*#Chamelaucium uncinatum*	Geraldton Wax
Myrtaceae	*#Eucalyptus utilis* (planted)	Coastal Moort
Myrtaceae	*#Melaleuca nesophila* (planted)	Mindiyed
Myrtaceae	**Callistemon* sp. (planted)	
Myrtaceae	**Eucalyptus* sp. (planted)	
Myrtaceae	**Gaudium laevigatum*	Coast Teatree
Myrtaceae	**Metrosideros tomentosa* (planted)	Pōhutukawa
Myrtaceae	*Agonis flexuosa*	Peppermint
Myrtaceae	*Eucalyptus gomphocephala*	Tuart
Myrtaceae	*Melaleuca cardiophylla*	Tangling Melaleuca
Myrtaceae	*Melaleuca huegelii* subsp. *huegelii*	Chenille Honeymyrtle
Myrtaceae	*Melaleuca lanceolata*	Melaleuca lanceolata

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Family	Species	Common Name
Myrtaceae	*Melaleuca rhaphiophylla*	Swamp Paperbark
Myrtaceae	*Melaleuca systena*	Coastal Honeymyrtle
Onagraceae	**Oenothera drummondii*	Beach Evening Primrose
Orobanchaceae	**Orobanche minor*	Lesser Broomrape
Oxalidaceae	**Oxalis pes-caprae*	Soursob
Papaveraceae	**Fumaria capreolata*	Whiteflower Fumitory
Phyllanthaceae	*Lysiandra calycina*	False Boronia
Poaceae	**Avena barbata*	Bearded Oat
Poaceae	**Briza maxima*	Blowfly Grass
Poaceae	**Briza minor*	Shivery Grass
Poaceae	**Bromus diandrus*	Great Brome
Poaceae	**Catapodium rigidum*	Rigid Fescue
Poaceae	**Cenchrus clandestinus*	Kikuyu Grass
Poaceae	**Cynodon dactylon*	Couch
Poaceae	**Ehrharta longiflora*	Annual Veldt Grass
Poaceae	**Eragrostis curvula*	African Lovegrass
Poaceae	**Lagurus ovatus*	Hare's Tail Grass
Poaceae	**Lolium perenne*	Perennial Ryegrass
Poaceae	*Lolium rigidum	Wimmera Ryegrass
Poaceae	**Poa annua*	Winter Grass
Poaceae	**Stenotaphrum secundatum* (planted)	Buffalo Grass
Poaceae	**Vulpia muralis*	
Poaceae	*Austrostipa flavescens*	
Poaceae	*Bromus arenarius*	Sand Brome
Poaceae	*Poa porphyroclados*	
Poaceae	*Spinifex hirsutus*	Hairy Spinifex
Poaceae	*Spinifex longifolius*	Beach Spinifex
Poaceae	*Ehrharta calycina	Perennial Veldt Grass
Polygalaceae	*Comesperma integerrimum*	
Primulaceae	**Lysimachia arvensis*	Pimpernel
Proteaceae	*Grevillea crithmifolia*	
Proteaceae	*#Grevillea obtusifolia* (planted)	Obtuse Leaved Grevillea

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Family	Species	Common Name
Proteaceae	*#Grevillea olivacea* (planted)	Olive Grevillea
Proteaceae	**Banksia integrifolia* (planted)	
Ranunculaceae	*Clematis linearifolia*	Slender Clematis
Restionaceae	*Desmocladus asper*	
Rhamnaceae	*Cryptandra mutila*	
Rhamnaceae	*Spyridium globulosum*	Basket Bush
Rhamnaceae	*Trymalium ledifolium*	
Rosaceae	**Casuarina equisetifolia*	
Rosaceae	**Eriobotrya japonica* (planted)	
Rubiaceae	**Galium murale*	Small Goosegrass
Rubiaceae	*Opercularia vaginata*	Dog Weed
Santalaceae	*Exocarpos sparteus*	Broom Ballart
Santalaceae	*Leptomeria empetriformis*	
Santalaceae	*Leptomeria preissiana*	
Santalaceae	*Santalum acuminatum*	Quandong
Scrophulariaceae	**Bellardia trixago*	Bellardia
Scrophulariaceae	**Dischisma arenarium*	
Scrophulariaceae	*Eremophila glabra* subsp. *albicans*	Tar Bush
Scrophulariaceae	*Myoporum insulare*	Blueberry Tree
Thymelaeaceae	*Pimelea ferruginea*	
Urticaceae	*Parietaria debilis*	Pellitory
Violaceae	*Pigea calycina*	Wild Violet
Xanthorrhoeaceae	*Xanthorrhoea preissii*	Grass tree

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Appendix 5: Quadrat Data

Quadrat No.:	YL01
Survey Date:	22.10.2025
Personnel:	ZS, RT
Easting:	369546
Northing:	6508894
Topography:	Crest
Aspect:	W
Slope:	1-3 %
Soil:	White Sand
Surface Rock:	0 %
Leaf Litter:	5 %
Bare Ground:	10 %
Drainage:	Well
Condition:	Very Good



Notes: *Melaleuca systena* and *Acacia lasiocarpa* shrubland over *Lomandra maritima* forbland (C2). Along the dune crests of the taller inland dunes on semi-consolidated sands.

Species	Cover (%)	Height (m)
**Bromus diandrus*	3.00	0.40
**Catapodium rigidum*	0.50	0.05
**Lagurus ovatus*	10.00	0.20
**Lolium perenne*	0.50	0.60
**Lysimachia arvensis*	1.00	0.05
**Romulea rosea*	1.00	0.10
**Trachyandra divaricata*	1.00	0.20
Acacia lasiocarpa	3.00	0.25
Acanthocarpus preissii	20.00	0.40
Austrostipa flavescens	10.00	1.20
Cassytha glabella	1.00	0.20
Conostylis pauciflora subsp. *pauciflora*	15.00	0.30
Cryptandra mutila	1.00	0.30
Desmocladus asper	10.00	0.10
Dianella revoluta var. *divaricata*	1.00	0.60

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Species	Cover (%)	Height (m)
Eremophila glabra subsp*. albicans*	2.00	0.30
Gastrolobium nervosum	0.50	0.30
Gompholobium tomentosum	2.00	0.15
Hemiandra glabra	1.00	0.05
Hibbertia racemosa	1.00	0.60
Kennedia prostrata	1.00	0.10
Lepidosperma calcicola	8.00	0.30
Leucopogon parviflorus	1.00	0.25
Lomandra maritima	20.00	0.40
Lysiandra calycina	3.00	0.20
Melaleuca systena	10.00	0.50
Olearia axillaris	10.00	1.00
Opercularia vaginata	1.00	0.20
Santalum acuminatum	8.00	1.00
Scaevola thesioides subsp*. thesioides*	1.00	0.20
Styphelia insularis	4.00	0.80
Tricoryne elatior	2.00	0.30

DRAFT

Quadrat No.:	**YL02**
Survey Date:	20.10.2025
Personnel:	ZS, JG
Easting:	369665
Northing:	6508638
Topography:	Crest
Aspect:	NW
Slope:	1-3 %
Soil:	White Sand
Surface Rock:	0 %
Leaf Litter:	2 %
Bare Ground:	5 %
Drainage:	Well
Condition:	Very Good



Notes: *Melaleuca systena* and *Acacia lasiocarpa* shrubland over *Lomandra maritima* forbland (C2). Along the dune crests of the taller inland dunes on semi-consolidated sands.

Species	**Cover (%)**	**Height (m)**
**Brassica tournefortii*	0.10	0.10
**Bromus diandrus*	2.00	0.30
**Crassula glomerata*	0.50	0.05
**Euphorbia terracina*	1.00	0.20
**Lagurus ovatus*	20.00	0.20
**Lolium perenne*	0.10	0.05
**Lysimachia arvensis*	0.50	0.05
**Melilotus indicus*	0.50	0.15
**Orobanche minor*	0.10	0.20
**Pelargonium capitatum*	1.00	0.10
**Romulea rosea*	1.00	0.10
**Sonchus oleraceus*	0.10	0.02
**Urospermum picroides*	0.10	0.10
Acacia lasiocarpa	1.00	0.30
Acanthocarpus preissii	4.00	0.30
Austrostipa flavescens	10.00	0.40

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Species	Cover (%)	Height (m)
Conostylis pauciflora subsp. *pauciflora*	5.00	0.30
Cryptandra mutila	1.00	0.25
Desmocladus asper	4.00	0.10
Dianella revoluta var. *divaricata*	2.00	0.60
Gompholobium tomentosum	1.00	0.30
Hardenbergia comptoniana	5.00	0.40
Hemiandra glabra	20.00	0.35
Kennedia prostrata	2.00	0.05
Lepidosperma calcicola	5.00	0.20
Leptomeria empetriformis	1.00	0.30
Leptorhynchos scaber	1.00	0.15
Leucopogon parviflorus	0.50	0.30
Lomandra maritima	10.00	0.30
Lysiandra calycina	5.00	0.30
Melaleuca systena	20.00	0.30
Olearia axillaris	2.00	1.00
Opercularia vaginata	0.10	0.15
Poa porphyroclados	2.00	0.40
Santalum acuminatum	5.00	0.50
Scaevola thesioides subsp. *thesioides*	1.00	0.20
Senecio pinnatifolius var. *latilobus*	0.50	0.35
Styphelia insularis	10.00	0.40
Templetonia retusa	1.00	0.10

DRAFT

Quadrat No.:	**YL03**
Survey Date:	20.10.2025
Personnel:	ZS, JG
Easting:	369683
Northing:	6508520
Topography:	Mid-slope
Aspect:	SE
Slope:	20-45 %
Soil:	Brown Sand
Surface Rock:	0 %
Leaf Litter:	10 %
Bare Ground:	5 %
Drainage:	Well
Condition:	Very Good



Notes: *Spyridium globulosum*, *Acacia cyclops* and *Olearia axillaris* shrubland (C1). Along the slopes of the taller inland dunes on semi-consolidated sands.

Species	**Cover (%)**	**Height (m)**
**Avena barbata*	10.00	1.00
**Bromus diandrus*	15.00	0.50
**Centranthus macrosiphon*	0.50	0.20
**Ehrharta calycina*	2.00	0.50
**Ehrharta longiflora*	5.00	0.30
**Euphorbia terracina*	3.00	0.50
**Lagurus ovatus*	15.00	0.10
**Lolium perenne*	20.00	0.40
**Lysimachia arvensis*	0.10	0.05
**Pelargonium capitatum*	0.50	0.10
**Romulea rosea*	0.50	0.10
**Sonchus oleraceus*	0.10	0.10
Acacia cyclops	0.10	0.50
Acacia lasiocarpa	2.00	0.20
Acanthocarpus preissii	5.00	0.40
Austrostipa flavescens	10.00	1.00

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Species	Cover (%)	Height (m)
Callitris preissii	10.00	3.00
Cassytha glabella	0.50	0.20
Clematis linearifolia	3.00	0.60
Conostylis pauciflora subsp*. pauciflora*	2.00	0.20
Cryptandra mutila	0.50	
Desmocladus asper	1.00	0.10
Dianella revoluta var*. divaricata*	2.00	0.50
Hardenbergia comptoniana	5.00	1.00
Leucopogon parviflorus	2.00	0.50
Lomandra maritima	15.00	0.30
Lysiandra calycina	3.00	0.40
Melaleuca systena	6.00	0.50
Poa porphyroclados	6.00	0.50
Rhagodia baccata subsp*. dioica*	7.00	0.50
Santalum acuminatum	2.00	1.00
Spyridium globulosum	8.00	1.20
Styphelia insularis	15.00	0.50
Templetonia retusa	5.00	0.60
Threlkeldia diffusa	0.10	0.20
Tricoryne elatior	2.00	0.30

DRAFT

Quadrat No.:	YL04
Survey Date:	20.10.2025
Personnel:	ZS, JG
Easting:	369703
Northing:	6508384
Topography:	Crest
Aspect:	SE
Slope:	1-3 %
Soil:	Brown Sandy Loam
Surface Rock:	0 %
Leaf Litter:	5 %
Bare Ground:	2 %
Drainage:	Well
Condition:	Very Good



Notes: *Melaleuca systena* and *Acacia lasiocarpa* shrubland over *Lomandra maritima* forbland (C2). Along the dune crests of the taller inland dunes on semi-consolidated sands.

Species	Cover (%)	Height (m)
**Avena barbata*	0.50	1.00
**Bromus diandrus*	25.00	0.30
**Crassula glomerata*	2.00	0.05
**Euphorbia terracina*	10.00	0.50
**Lagurus ovatus*	20.00	0.30
**Lolium perenne*	30.00	0.30
**Lysimachia arvensis*	2.00	0.05
**Pelargonium capitatum*	0.50	0.15
**Romulea rosea*	0.50	0.05
**Sonchus oleraceus*	5.00	0.10
**Trachyandra divaricata*	3.00	0.50
**Urospermum picroides*	0.50	0.10
Acacia lasiocarpa	4.00	0.30
Acanthocarpus preissii	6.00	0.30
Austrostipa flavescens	15.00	1.00
Cassytha glabella	5.00	0.30

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Species	Cover (%)	Height (m)
Comesperma integerrimum	2.00	0.30
Conostylis pauciflora subsp. *pauciflora*	4.00	0.30
Desmocladus asper	2.00	0.15
Dianella revoluta var. *divaricata*	2.00	0.60
Hardenbergia comptoniana	3.00	0.20
Hemiandra glabra	1.00	0.20
Lepidosperma calcicola	20.00	0.30
Lomandra maritima	17.00	0.30
Lysiandra calycina	1.00	0.40
Melaleuca systena	10.00	0.40
Myoporum insulare	15.00	1.00
Olearia axillaris	6.00	1.00
Opercularia vaginata	0.50	0.40
Poa porphyroclados	2.00	0.60
Rhagodia baccata subsp. *dioica*	3.00	0.40
Santalum acuminatum	2.00	0.60
Spyridium globulosum	2.00	0.60
Styphelia insularis	11.00	0.40
Tricoryne elatior	8.00	0.20

DRAFT

Quadrat No.:	YL05
Survey Date:	21.10.2025
Personnel:	JG, BD
Easting:	369670
Northing:	6508834
Topography:	Mid-slope
Aspect:	NW
Slope:	1-3 %
Soil:	Brown Loamy Sand
Surface Rock:	5 % Limestone
Leaf Litter:	3 %
Bare Ground:	10 %
Drainage:	Moderate
Condition:	Very Good



Notes: *Melaleuca cardiophylla* shrubland (D1). On shallow sand over limestone.

Species	Cover (%)	Height (m)
**Avena barbata*	1.00	1.00
**Bromus diandrus*	15.00	0.20
**Crassula glomerata*	0.50	0.10
**Euphorbia peplus*	5.00	0.10
**Galium murale*	0.50	0.10
**Lagurus ovatus*	20.00	0.10
**Lolium perenne*	0.50	0.50
**Lolium rigidum*	2.00	0.30
**Medicago polymorpha*	1.00	0.10
**Romulea rosea*	1.00	0.10
**Sonchus oleraceus*	0.10	0.20
Acacia xanthina	1.00	0.50
Desmocladus asper	11.00	0.10
Dianella revoluta var. *divaricata*	2.00	1.20
Hardenbergia comptoniana	3.00	2.00
Kennedia prostrata	0.10	0.10

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Species	Cover (%)	Height (m)
Leptomeria preissiana	5.00	1.00
Leucopogon parviflorus	3.00	0.50
Lomandra maritima	1.00	0.40
Lysiandra calycina	0.50	0.30
Melaleuca cardiophylla	90.00	3.00
Melaleuca huegelii subsp. *huegelii*	3.00	0.60
Poa porphyroclados	1.00	1.20
Rhagodia baccata subsp. *dioica*	6.00	2.00
Santalum acuminatum	1.00	1.40
Spyridium globulosum	1.00	1.50
Templetonia retusa	3.00	0.50

DRAFT

Quadrat No.:	YL06
Survey Date:	21.10.2025
Personnel:	JG, BD
Easting:	369676
Northing:	6508786
Topography:	Crest
Aspect:	NW
Slope:	3-5 %
Soil:	Brown Loamy Sand
Surface Rock:	15 % Limestone
Leaf Litter:	2 %
Bare Ground:	0.5 %
Drainage:	Moderate
Condition:	Very Good



Notes: *Melaleuca huegelii* subsp. *huegelii* shrubland (D2). On a crest with extensive limestone outcrops.

Species	Cover (%)	Height (m)
**Avena barbata*	2	1
**Bromus diandrus*	5	0.1
**Catapodium rigidum*	0.1	0.1
**Crassula glomerata*	1	0.1
**Ehrharta longiflora*	0.1	0.3
**Erodium botrys*	0.1	0.1
**Euphorbia peplus*	0.1	0.1
**Lagurus ovatus*	1	0.3
**Lolium perenne*	0.1	0.1
**Medicago polymorpha*	0.1	0.2
**Pelargonium capitatum*	0.1	0.1
**Romulea rosea*	0.1	0.2
**Sabulina mediterranea*	0.1	0.1
**Sonchus oleraceus*	0.2	0.1
**Vulpia myuros*	0.5	0.2
Acacia truncata	9	0.5

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Species	Cover (%)	Height (m)
Acanthocarpus preissii	0.2	0.4
Austrostipa flavescens	4	1
Carpobrotus virescens	0.2	0.1
Cassytha racemosa	0.2	0.5
Clematis linearifolia	0.2	0.3
Desmocladus asper	9	0.1
Dianella revoluta var. *divaricata*	3	0.4
Eremophila glabra subsp. *albicans*	2	0.3
Lepidosperma calcicola	1	0.1
Leptomeria preissiana	1	0.5
Leucopogon parviflorus	0.5	0.4
Lomandra maritima	0.3	0.3
Lysiandra calycina	0.1	0.1
Melaleuca cardiophylla	2	0.5
Melaleuca huegelii subsp. *huegelii*	15	0.6
Melaleuca systena	5	0.5
Olearia axillaris	0.1	0.1
Opercularia vaginata	0.3	0.4
Phyllangium divergens	0.1	0.1
Poa porphyroclados	0.2	0.6
Rhagodia baccata subsp. *baccata*	0.1	0.3
Scaevola thesioides subsp. *thesioides*	1	0.2
Scaevola crassifolia	1	1
Senecio pinnatifolius var. *latilobus*	0.1	0.2
Spyridium globulosum	0.1	0.1
Styphelia insularis	1	0.3
Templetonia retusa	2	0.4
Thomasia triphylla	2	0.5
Thysanotus manglesianus	1	0.2
Trymalium ledifolium	3	0.5

DRAFT

Quadrat No.:	**YL07**
Survey Date:	20.10.2025
Personnel:	ZS, JG
Easting:	369367
Northing:	6508838
Topography:	Lower slope
Aspect:	W
Slope:	>45 %
Soil:	White Sand
Surface Rock:	0 %
Leaf Litter:	5 %
Bare Ground:	2 %
Drainage:	Well
Condition:	Excellent



Notes: *Scaevola crassifolia, Myoporum insularis* and *Olearia axillaris* shrubland over *Lepidosperma gladiatum* sedgeland (A3). Recorded on the secondary dune system.

Species	**Cover (%)**	**Height (m)**
**Bromus diandrus*	5.00	0.40
**Crassula glomerata*	2.00	0.05
**Dischisma arenarium*	0.10	0.10
**Ficinia marginata*	0.50	0.05
**Lolium rigidum*	2.00	0.60
**Oenothera drummondii*	0.50	0.10
**Pelargonium capitatum*	5.00	0.50
**Sonchus oleraceus*	2.00	0.60
**Tetragonia decumbens*	10.00	1.10
**Trachyandra divaricata*	2.00	0.50
**Vulpia myuros*	0.10	0.20
Acanthocarpus preissii	2.00	0.60
Daucus glochidiatus	0.10	0.20
Lepidosperma gladiatum	40.00	1.30
Olearia axillaris	25.00	1.20
Parietaria debilis	1.00	0.50

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Species	Cover (%)	Height (m)
Rhagodia baccata subsp*. dioica*	4.00	0.80
Scaevola crassifolia	40.00	0.60
Senecio pinnatifolius var*. latilobus*	1.00	0.60
Spinifex longifolius	0.50	0.30
Threlkeldia diffusa	4.00	0.50

DRAFT

Quadrat No.:	**YL08**
Survey Date:	22.10.2025
Personnel:	ZS, RT
Easting:	369199
Northing:	6509055
Topography:	Upper-slope
Aspect:	E
Slope:	20-45 %
Soil:	White Sand
Surface Rock:	0 %
Leaf Litter:	5 %
Bare Ground:	50 %
Drainage:	Well
Condition:	Very Good



Notes: *Olearia axillaris* shrubland over *Spinifex longifolius* tussock grassland (A1). Recorded within the primary dune system adjacent to the beach.

Species	**Cover (%)**	**Height (m)**
**Cakile maritima*	2.00	0.80
**Euphorbia peplus*	1.00	0.35
**Pelargonium capitatum*	10.00	0.80
**Sonchus oleraceus*	2.00	0.30
**Tetragonia decumbens*	4.00	0.40
**Trachyandra divaricata*	4.00	0.30
Carpobrotus virescens	2.00	0.30
Cassytha aurea	2.00	0.60
Olearia axillaris	30.00	1.40
Rhagodia baccata subsp. *dioica*	2.00	0.40
Scaevola crassifolia	10.00	0.80
Senecio pinnatifolius var. *latilobus*	0.50	0.20
Spinifex longifolius	20.00	1.00
Threlkeldia diffusa	2.00	0.40

DRAFT

Quadrat No.:	**YL09**
Survey Date:	22.10.2025
Personnel:	ZS, RT
Easting:	369122
Northing:	6509148
Topography:	Upper-slope
Aspect:	E
Slope:	20-45 %
Soil:	White Sand
Surface Rock:	0 %
Leaf Litter:	10 %
Bare Ground:	40 %
Drainage:	Well
Condition:	Very Good



Notes: *Olearia axillaris* shrubland over *Spinifex longifolius* tussock grassland (A1). Recorded within the primary dune system adjacent to the beach.

Species	**Cover (%)**	**Height (m)**
**Asphodelus fistulosus*	1.00	0.40
**Cakile maritima*	1.00	0.20
**Crassula glomerata*	1.00	0.05
**Hypochaeris glabra*	0.50	0.10
**Lolium perenne*	5.00	0.05
**Pelargonium capitatum*	4.00	0.40
**Sonchus oleraceus*	0.50	0.10
**Tetragonia decumbens*	2.00	0.80
**Trachyandra divaricata*	3.00	0.30
**Urospermum picroides*	2.00	0.10
Carpobrotus virescens	2.00	0.15
Daucus glochidiatus	1.00	0.10
Ficinia nodosa	2.00	1.00
Olearia axillaris	40.00	1.40
Rhagodia baccata subsp. *baccata*	3.00	0.30
Rhagodia baccata subsp. *dioica*	1.00	0.20

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Species	Cover (%)	Height (m)
Scaevola crassifolia	4.00	0.50
Spinifex hirsutus	4.00	0.40
Spinifex longifolius	15.00	0.60
Threlkeldia diffusa	4.00	0.30

DRAFT

Quadrat No.:	**YL10**
Survey Date:	22.10.2025
Personnel:	ZS, RT
Easting:	369192
Northing:	6509180
Topography:	Upper-slope
Aspect:	W
Slope:	20-45 %
Soil:	White Sand
Surface Rock:	0 %
Leaf Litter:	4 %
Bare Ground:	5 %
Drainage:	Well
Condition:	Very Good



Notes: *Scaevola crassifolia, Myoporum insularis* and *Olearia axillaris* shrubland over *Lepidosperma gladiatum* sedgeland (A3). Recorded on the secondary dune system.

Species	**Cover (%)**	**Height (m)**
**Bromus diandrus*	5.00	0.40
**Crassula glomerata*	0.50	0.05
**Dischisma arenarium*	1.00	0.10
**Ehrharta longiflora*	0.50	0.80
**Lagurus ovatus*	0.50	0.20
**Pelargonium capitatum*	5.00	0.30
**Sonchus oleraceus*	0.50	0.10
**Tetragonia decumbens*	1.00	0.40
**Trachyandra divaricata*	1.00	0.40
Acanthocarpus preissii	8.00	0.30
Carpobrotus virescens	5.00	0.20
Cassytha aurea	1.00	0.10
Hardenbergia comptoniana	2.00	1.00
Olearia axillaris	20.00	1.20
Parietaria debilis	1.00	0.20
Poa porphyroclados	2.00	0.50

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Species	Cover (%)	Height (m)
Rhagodia baccata subsp. *baccata*	0.50	0.30
Scaevola crassifolia	65.00	0.60
Senecio pinnatifolius var. *latilobus*	4.00	0.30
Threlkeldia diffusa	4.00	0.30

DRAFT

Quadrat No.:	**YL11**
Survey Date:	22.10.2025
Personnel:	ZS, RT
Easting:	369648
Northing:	6509043
Topography:	Upper-slope
Aspect:	SE
Slope:	10-20 %
Soil:	Brown Sandy Loam
Surface Rock:	0 %
Leaf Litter:	4 %
Bare Ground:	5 %
Drainage:	Well
Condition:	Very Good



Notes: *Spyridium globulosum*, *Acacia cyclops* and *Olearia axillaris* shrubland (C1). Along the slopes of the taller inland dunes on semi-consolidated sands.

Species	**Cover (%)**	**Height (m)**
**Bromus diandrus*	5.00	0.40
**Crassula glomerata*	1.00	0.05
**Lagurus ovatus*	5.00	0.20
**Lolium rigidum*	10.00	0.40
**Lysimachia arvensis*	0.50	0.05
**Romulea rosea*	2.00	0.10
**Sonchus oleraceus*	0.50	0.20
Austrostipa flavescens	3.00	1.40
Cassytha flava	1.00	0.20
Clematis linearifolia	8.00	1.60
Conostylis pauciflora subsp. *pauciflora*	5.00	0.30
Desmocladus asper	4.00	0.10
Dianella revoluta var. *divaricata*	0.50	0.40
Hardenbergia comptoniana	4.00	1.40
Kennedia prostrata	2.00	0.10
Lepidosperma calcicola	10.00	0.40

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Species	Cover (%)	Height (m)
Leptomeria preissiana	20.00	1.40
Leucopogon parviflorus	1.00	0.60
Lomandra maritima	2.00	0.30
Lysiandra calycina	4.00	0.60
Melaleuca systena	10.00	0.80
Olearia axillaris	10.00	1.60
Opercularia vaginata	0.50	0.20
Poa porphyroclados	4.00	0.80
Rhagodia baccata subsp. *baccata*	4.00	0.40
Spyridium globulosum	20.00	1.60
Templetonia retusa	25.00	1.40
Thysanotus manglesianus	0.50	0.80

DRAFT

Quadrat No.:	**YL12**
Survey Date:	23.10.2025
Personnel:	ZS, JG
Easting:	369423
Northing:	6508581
Topography:	Outcrop
Aspect:	W
Slope:	10-20 %
Soil:	White Sand
Surface Rock:	80
Leaf Litter:	5
Bare Ground:	15
Drainage:	Well
Condition:	Very Good



Notes: *Frankenia pauciflora* var. *pauciflora* and *Scaevola crassifolia* shrubland over *Salicornia blackiana* chenopod shrubland (B1). Recorded within the limestone outcrop along the beach.

Species	**Cover (%)**	**Height (m)**
**Bromus diandrus*	10.00	0.30
**Crassula glomerata*	1.00	0.05
**Lolium rigidum*	1.00	0.40
**Matthiola incana*	1.00	0.50
**Medicago polymorpha*	4.00	0.05
**Melilotus indicus*	3.00	0.10
**Romulea rosea*	1.00	0.10
**Sagina maritima*	10.00	0.10
**Sonchus oleraceus*	1.00	0.10
**Tetragonia decumbens*	2.00	0.50
**Trachyandra divaricata*	1.00	0.30
**Urospermum picroides*	1.00	0.20
Acanthocarpus preissii	1.00	0.20
Carpobrotus virescens	4.00	0.20
Frankenia pauciflora	30.00	0.35
Olearia axillaris	1.00	0.60

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Species	Cover (%)	Height (m)
Rhagodia baccata subsp. *dioica*	2.00	0.30
Salicornia blackiana	4.00	0.20
Scaevola crassifolia	20.00	0.40
Threlkeldia diffusa	20.00	0.30

DRAFT

Quadrat No.:	**YL13**
Survey Date:	20.10.2025
Personnel:	ZS, JG
Easting:	369754
Northing:	6508635
Topography:	Mid-slope
Aspect:	NW
Slope:	3-5 %
Soil:	Brown Sandy Loam
Surface Rock:	0 %
Leaf Litter:	20 %
Bare Ground:	2 %
Drainage:	Well
Condition:	Good



Notes: *Spyridium globulosum*, *Acacia cyclops* and *Olearia axillaris* shrubland (C1). Along the slopes of the taller inland dunes on semi-consolidated sands.

Species	**Cover (%)**	**Height (m)**
**Avena barbata*	5.00	1.20
**Bromus diandrus*	3.00	0.30
**Crassula glomerata*	0.50	0.50
**Euphorbia terracina*	4.00	1.00
**Lagurus ovatus*	5.00	0.50
**Lolium perenne*	30.00	0.40
**Pelargonium capitatum*	3.00	0.40
**Romulea rosea*	0.50	0.05
**Sonchus oleraceus*	0.50	0.05
Acacia cochlearis	1.00	0.60
Acacia cyclops	10.00	2.50
Acanthocarpus preissii	4.00	0.30
Allocasuarina lehmanniana subsp. *lehmanniana*	1.00	2.50
Austrostipa flavescens	10.00	1.10
Callitris preissii	2.00	1.30
Cassytha glabella	2.00	1.20

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Species	Cover (%)	Height (m)
Conostylis pauciflora subsp*. pauciflora*	4.00	0.30
Desmocladus asper	8.00	0.30
Dianella revoluta var. divaricata	2.00	0.50
Eremophila glabra subsp. albicans	1.00	0.20
Gompholobium tomentosum	0.50	0.30
Hardenbergia comptoniana	5.00	1.30
Leptomeria preissiana	0.50	1.20
Leucopogon parviflorus	0.50	1.00
Lomandra maritima	4.00	0.30
Lysiandra calycina	2.00	0.60
Melaleuca systena	20.00	1.00
Olearia axillaris	1.00	0.60
Pigea calycina	4.00	0.40
Poa porphyroclados	3.00	1.00
Rhagodia baccata subsp*. dioica*	1.00	0.30
Santalum acuminatum	15.00	1.00
Scaevola thesioides subsp*. thesioides*	0.50	0.30
Spyridium globulosum	1.00	0.10
Styphelia insularis	10.00	0.60
Templetonia retusa	3.00	0.60

DRAFT

Quadrat No.:	**YL14**
Survey Date:	21.10.2025
Personnel:	JG, BD
Easting:	369566
Northing:	6508792
Topography:	Lower-slope
Aspect:	SE
Slope:	1-3 %
Soil:	Brown Sandy Loam
Surface Rock:	1 % Limestone
Leaf Litter:	20 %
Bare Ground:	0.5 %
Drainage:	Well
Condition:	Good



Notes: *Eucalyptus gomphocephala* woodland (C3). Recorded on the lower slopes of the taller inland dunes on semi-consolidated sands.

Species	**Cover (%)**	**Height (m)**
**Arctotheca calendula*	0.1	0.1
**Avena barbata*	1.5	1.1
**Bromus diandrus*	5	0.3
**Ehrharta longiflora*	0.3	1
**Euphorbia peplus*	0.5	0.4
**Ferraria crispa*	1	0.5
**Lagurus ovatus*	1	0.1
**Sonchus oleraceus*	2	1
Acacia xanthina	90	5
Eucalyptus gomphocephala	20	10
Hardenbergia comptoniana	1	0.5
Leptomeria preissiana	0.5	1.5
Rhagodia baccata subsp. *baccata*	2	1
Scaevola crassifolia	5	0.6
Spyridium globulosum	10	1.5
Threlkeldia diffusa	2	0.5

DRAFT

Quadrat No.:	**YL15**
Survey Date:	20.10.2025
Personnel:	ZS, JG
Easting:	369577
Northing:	6508626
Topography:	Mid-slope
Aspect:	SE
Slope:	1-3 %
Soil:	White Sand
Surface Rock:	0
Leaf Litter:	5
Bare Ground:	2
Drainage:	Well
Condition:	Very Good



Notes: *Spyridium globulosum*, *Acacia cyclops* and *Olearia axillaris* shrubland (C1). Along the slopes of the taller inland dunes on semi-consolidated sands.

Species	**Cover (%)**	**Height (m)**
**Avena barbata*	0.50	0.50
**Bromus diandrus*	15.00	0.30
**Crassula glomerata*	0.50	0.05
**Euphorbia terracina*	2.00	0.50
**Ficinia marginata*	1.50	0.05
**Lagurus ovatus*	5.00	0.20
**Lolium perenne*	0.50	0.40
**Medicago polymorpha*	0.50	0.50
**Orobanche minor*	0.50	0.10
**Pelargonium capitatum*	6.00	0.40
**Romulea rosea*	1.00	0.15
**Sonchus oleraceus*	0.50	1.00
**Trachyandra divaricata*	0.50	0.40
Acacia cyclops	0.50	0.40
Acanthocarpus preissii	3.00	0.40
Austrostipa flavescens	8.00	0.60

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Species	Cover (%)	Height (m)
Cassytha glabella	0.50	0.30
Conostylis pauciflora subsp*. pauciflora*	4.00	0.30
Dianella revoluta var*. divaricata*	2.00	0.60
Eremophila glabra subsp*. albicans*	1.00	0.40
Hardenbergia comptoniana	4.00	0.50
Lepidosperma calcicola	4.00	0.25
Leucopogon parviflorus	4.00	0.60
Lomandra maritima	5.00	0.25
Lysiandra calycina	12.00	0.25
Melaleuca systena	7.00	0.40
Olearia axillaris	3.00	0.40
Opercularia vaginata	1.00	0.25
Hemiandra glabra	0.50	0.20
Poa porphyroclados	4.00	0.60
Rhagodia baccata subsp*. dioica*	10.00	0.30
Scaevola thesioides subsp*. thesioides*	20.00	0.60
Spyridium globulosum	2.00	0.50
Styphelia insularis	0.50	0.30
Templetonia retusa	1.00	0.40
Tricoryne elatior	1.00	0.15

DRAFT

Quadrat No.:	**YL16**
Survey Date:	22.10.2025
Personnel:	ZS, RT
Easting:	369647
Northing:	6508978
Topography:	Mid-slope
Aspect:	SE
Slope:	5-10 %
Soil:	Brown Sandy Loam
Surface Rock:	2 % Limestone
Leaf Litter:	10
Bare Ground:	5
Drainage:	Well
Condition:	Very Good



Notes: *Melaleuca cardiophylla* shrubland (D1). On shallow sand over limestone.

Species	**Cover (%)**	**Height (m)**
**Avena barbata*	1.00	1.00
**Bromus diandrus*	2.00	0.40
**Ehrharta longiflora*	1.00	1.00
**Euphorbia terracina*	1.00	0.10
**Galium murale*	0.50	0.05
**Lagurus ovatus*	6.00	0.30
**Lolium rigidum*	2.00	0.30
**Lysimachia arvensis*	1.00	0.10
**Sonchus oleraceus*	1.00	0.10
Acacia xanthina	4.00	2.00
Acanthocarpus preissii	2.00	1.00
Austrostipa flavescens	6.00	1.20
Clematis linearifolia	4.00	2.00
Comesperma integerrimum	1.00	2.00
Daucus glochidiatus	3.00	0.05
Desmocladus asper	5.00	0.20

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Species	Cover (%)	Height (m)
Dianella revoluta var. *divaricata*	2.00	0.80
Hardenbergia comptoniana	2.00	2.00
Lepidosperma calcicola	2.00	0.30
Leptomeria preissiana	1.00	1.40
Leucopogon parviflorus	2.00	0.60
Lomandra maritima	4.00	0.30
Lysiandra calycina	5.00	0.80
Melaleuca cardiophylla	15.00	3.00
Melaleuca systena	2.00	0.60
Myoporum insulare	1.00	1.20
Olearia axillaris	2.00	0.40
Opercularia vaginata	6.00	0.30
Poa porphyroclados	2.00	0.80
Rhagodia baccata subsp. *baccata*	3.00	1.20
Spyridium globulosum	10.00	2.00
Styphelia insularis	4.00	1.00
Templetonia retusa	10.00	1.20
Thysanotus manglesianus	1.00	0.50
Tricoryne elatior	6.00	0.40

DRAFT

Quadrat No.:	**YL17**
Survey Date:	20.10.2025
Personnel:	ZS, JG
Easting:	369601
Northing:	6508471
Topography:	Crest
Aspect:	SE
Slope:	1-3 %
Soil:	Brown Sand
Surface Rock:	0 %
Leaf Litter:	5 %
Bare Ground:	2 %
Drainage:	Well
Condition:	Very Good



Notes: *Spyridium globulosum*, *Acacia cyclops* and *Olearia axillaris* shrubland (C1). Along the slopes of the taller inland dunes on semi-consolidated sands.

Species	**Cover (%)**	**Height (m)**
**Bromus diandrus*	20.00	0.30
**Crassula glomerata*	0.50	0.05
**Euphorbia terracina*	2.00	0.50
**Ficinia marginata*	0.50	0.05
**Lagurus ovatus*	3.00	0.30
**Lolium perenne*	20.00	0.30
**Lysimachia arvensis*	0.50	0.05
**Melilotus indicus*	0.50	0.30
**Pelargonium capitatum*	0.10	0.30
**Sonchus oleraceus*	0.10	0.05
**Trachyandra divaricata*	2.00	0.30
**Urospermum picroides*	0.50	0.20
Acanthocarpus preissii	5.00	0.30
Austrostipa flavescens	5.00	1.00
Callitris preissii	1.00	0.40
Cassytha glabella	2.00	0.50

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Species	Cover (%)	Height (m)
Conostylis pauciflora subsp*. pauciflora*	5.00	0.30
Desmocladus asper	3.00	0.10
Dianella revoluta var*. divaricata*	2.00	0.50
Eremophila glabra subsp*. albicans*	1.00	0.30
Hardenbergia comptoniana	2.00	0.30
Lepidosperma calcicola	10.00	0.30
Leucopogon parviflorus	3.00	0.40
Lomandra maritima	20.00	0.40
Lysiandra calycina	1.00	0.30
Melaleuca systena	6.00	0.30
Myoporum insulare	2.00	0.50
Olearia axillaris	10.00	1.20
Poa porphyroclados	5.00	1.00
Rhagodia baccata subsp*. dioica*	2.00	0.40
Santalum acuminatum	10.00	0.60
Scaevola crassifolia	3.00	1.00
Senecio pinnatifolius var*. latilobus*	10.00	0.40
Spyridium globulosum	3.00	0.50
Styphelia insularis	5.00	0.30

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Quadrat No.:	**YL18**
Survey Date:	20.10.2025
Personnel:	ZS, JG
Easting:	369552
Northing:	6508407
Topography:	Lower Slope
Aspect:	W
Slope:	1-3 %
Soil:	White Sand
Surface Rock:	0 %
Leaf Litter:	1 %
Bare Ground:	20 %
Drainage:	Well
Condition:	Very Good



Notes: *Olearia axillaris* shrubland over *Spinifex longifolius* tussock grassland (A1). Recorded within the primary dune system adjacent to the beach.

Species	**Cover (%)**	**Height (m)**
**Bromus diandrus*	1.00	0.30
**Cakile maritima*	1.00	0.30
**Crassula glomerata*	4.00	0.10
**Dischisma arenarium*	0.10	0.10
**Sonchus oleraceus*	0.10	0.10
**Tetragonia decumbens*	10.00	0.60
**Urospermum picroides*	0.50	0.10
Ficinia nodosa	2.00	0.80
Olearia axillaris	25.00	1.10
Scaevola crassifolia	30.00	0.50
Senecio pinnatifolius var. *latilobus*	2.00	0.40
Spinifex longifolius	40.00	0.80

DRAFT

Quadrat No.:	**YL19**
Survey Date:	22.10.2025
Personnel:	ZS, RT
Easting:	369307
Northing:	6508964
Topography:	Lower Slope
Aspect:	W
Slope:	1-3 %
Soil:	White Sand
Surface Rock:	0 %
Leaf Litter:	5 %
Bare Ground:	30 %
Drainage:	Well
Condition:	Good



Notes: *Olearia axillaris* and *Scaevola crassifolia* shrubland (A2). Recorded within the dune swale between A1 and A3.

Species	**Cover (%)**	**Height (m)**
**Crassula glomerata*	2.00	0.05
**Dischisma arenarium*	0.50	0.02
**Ficinia marginata*	1.00	0.05
**Pelargonium capitatum*	2.00	0.40
**Sonchus oleraceus*	0.50	0.02
**Tetragonia decumbens*	1.00	0.20
**Trachyandra divaricata*	1.00	0.40
**Urospermum picroides*	0.50	0.10
**Vulpia myuros*	1.00	0.10
Acacia xanthina	2.00	0.60
Carpobrotus virescens	20.00	0.40
Ficinia nodosa	1.00	0.60
Olearia axillaris	10.00	1.20
Scaevola crassifolia	5.00	0.60
Senecio pinnatifolius var. *latilobus*	1.00	0.40
Spinifex longifolius	20.00	0.80

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Species	Cover (%)	Height (m)
Threlkeldia diffusa	1.00	0.40

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Quadrat No.:	**YL20**
Survey Date:	22.10.2025
Personnel:	ZS, RT
Easting:	369232
Northing:	6509052
Topography:	Lower Slope
Aspect:	W
Slope:	3-5 %
Soil:	White Sand
Surface Rock:	0
Leaf Litter:	10
Bare Ground:	60
Drainage:	Well
Condition:	Degraded



Notes: *Olearia axillaris* and *Scaevola crassifolia* shrubland (A2). Recorded within the dune swale between A1 and A3.

Species	**Cover (%)**	**Height (m)**
**Asphodelus fistulosus*	0.50	0.30
**Bromus diandrus*	0.50	0.05
**Crassula glomerata*	1.00	0.05
**Dischisma arenarium*	0.50	0.05
**Ficinia marginata*	1.00	0.05
**Gaudium laevigatum*	4.00	1.00
**Lagurus ovatus*	0.50	0.20
**Lolium perenne*	0.50	0.20
**Pelargonium capitatum*	2.00	0.40
**Sonchus oleraceus*	1.00	0.10
**Tetragonia decumbens*	2.00	0.30
**Trachyandra divaricata*	1.00	0.20
Carpobrotus virescens	2.00	0.20
Cassytha aurea	2.00	0.30
Ficinia nodosa	0.50	0.60
Olearia axillaris	4.00	1.20
Rhagodia baccata subsp. *dioica*	2.00	0.30

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Species	Cover (%)	Height (m)
Scaevola crassifolia	30.00	0.80
Senecio pinnatifolius var*. latilobus*	1.00	0.30
Threlkeldia diffusa	2.00	0.40

DRAFT

Quadrat No.:	**YL21**
Survey Date:	22.10.2025
Personnel:	ZS, RT
Easting:	369296
Northing:	6509026
Topography:	Mid-Slope
Aspect:	W
Slope:	>45 %
Soil:	White Sand
Surface Rock:	0 %
Leaf Litter:	2 %
Bare Ground:	1 %
Drainage:	Well
Condition:	Very Good



Notes: *Scaevola crassifolia, Myoporum insularis* and *Olearia axillaris* shrubland over *Lepidosperma gladiatum* sedgeland (A3). Recorded on the secondary dune system.

Species	**Cover (%)**	**Height (m)**
**Avena barbata*	0.50	1.20
**Bromus diandrus*	0.50	0.40
**Euphorbia terracina*	1.00	0.30
**Lolium rigidum*	0.50	0.40
**Oxalis pes-caprae*	0.50	0.30
**Sonchus oleraceus*	0.50	0.30
**Tetragonia decumbens*	1.00	1.40
**Trachyandra divaricata*	1.00	0.30
Acanthocarpus preissii	2.00	0.60
Hardenbergia comptoniana	2.00	1.00
Lepidosperma gladiatum	80.00	1.40
Parietaria debilis	0.50	0.40
Rhagodia baccata subsp. *dioica*	4.00	0.80
Santalum acuminatum	10.00	1.40
Scaevola thesioides subsp. *thesioides*	2.00	0.80
Scaevola crassifolia	10.00	1.00
Senecio pinnatifolius var. *latilobus*	1.00	0.80

DRAFT

Quadrat No.:	YL22
Survey Date:	22.10.2025
Personnel:	ZS, RT
Easting:	369169
Northing:	6509123
Topography:	Lower Slope
Aspect:	W
Slope:	3-5 %
Soil:	White Sand
Surface Rock:	0 %
Leaf Litter:	20 %
Bare Ground:	30 %
Drainage:	Well
Condition:	Degraded



Notes: *Olearia axillaris* and *Scaevola crassifolia* shrubland (A2). Recorded within the dune swale between A1 and A3.

Species	Cover (%)	Height (m)
**Asphodelus fistulosus*	1.00	0.30
**Bromus diandrus*	1.00	0.10
**Crassula glomerata*	1.00	0.05
**Dischisma arenarium*	1.00	0.05
**Gaudium laevigatum*	4.00	0.80
**Hypochaeris radicata*	1.00	0.10
**Lolium perenne*	20.00	0.15
**Pelargonium capitatum*	10.00	0.40
**Sonchus oleraceus*	2.00	0.20
**Tetragonia decumbens*	2.00	0.30
**Trachyandra divaricata*	3.00	0.40
**Urospermum picroides*	1.00	0.30
Acacia cyclops	4.00	1.00
Acanthocarpus preissii	4.00	0.60
Carpobrotus virescens	3.00	0.20
Cassytha aurea	4.00	0.20

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Species	Cover (%)	Height (m)
Conostylis pauciflora subsp*. pauciflora*	1.00	0.30
Olearia axillaris	8.00	1.40
Rhagodia baccata subsp*. dioica*	2.00	0.80
Scaevola crassifolia	5.00	0.80
Senecio pinnatifolius var*. latilobus*	8.00	0.30
Threlkeldia diffusa	2.00	0.30

DRAFT

Quadrat No.:	**YL23**
Survey Date:	23.10.2025
Personnel:	ZS, JG
Easting:	369682
Northing:	6508741
Topography:	Mid-slope
Aspect:	SW
Slope:	3-5 %
Soil:	White Sand
Surface Rock:	0
Leaf Litter:	5
Bare Ground:	5
Drainage:	Well
Condition:	Very Good



Notes: *Melaleuca cardiophylla* shrubland (D1). On shallow sand over limestone.

Species	**Cover (%)**	**Height (m)**
**Avena barbata*	2.00	0.40
**Bromus diandrus*	4.00	0.30
**Catapodium rigidum*	0.50	0.05
**Centaurium pulchellum*	0.50	0.02
**Crassula glomerata*	1.00	0.05
**Euphorbia terracina*	2.00	0.30
**Ficinia marginata*	0.50	0.05
**Galium murale*	0.50	0.02
**Lagurus ovatus*	5.00	0.20
**Lolium perenne*	2.00	0.30
**Lolium rigidum*	2.00	0.30
**Lysimachia arvensis*	1.00	0.05
**Medicago polymorpha*	1.00	0.05
**Melilotus indicus*	1.00	0.15
**Romulea rosea*	1.00	0.15
**Sonchus oleraceus*	1.00	0.05
Acacia rostellifera	2.00	0.80

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Species	Cover (%)	Height (m)
Acanthocarpus preissii	4.00	0.20
Austrostipa flavescens	20.00	1.20
Cassytha glabella	6.00	1.40
Clematis linearifolia	4.00	1.00
Comesperma integerrimum	0.50	0.80
Conostylis pauciflora subsp*. pauciflora*	1.00	0.20
Desmocladus asper	3.00	0.20
Dianella revoluta var*. divaricata*	4.00	0.80
Eremophila glabra subsp*. albicans*	2.00	1.00
Gompholobium tomentosum	2.00	0.40
Hardenbergia comptoniana	2.00	1.20
Hibbertia racemosa	1.00	0.60
Lepidosperma calcicola	10.00	0.30
Leucopogon parviflorus	0.50	0.40
Lomandra maritima	5.00	0.40
Lysiandra calycina	2.00	0.60
Melaleuca cardiophylla	10.00	2.00
Melaleuca systena	20.00	0.60
Olearia axillaris	2.00	1.00
Opercularia vaginata	0.50	0.30
Poa porphyroclados	2.00	0.60
Rhagodia baccata subsp*. dioica*	5.00	0.60
Santalum acuminatum	10.00	1.00
Scaevola thesioides subsp*. thesioides*	20.00	0.60
Spyridium globulosum	5.00	1.20
Styphelia insularis	2.00	0.80
Tricoryne elatior	3.00	0.30

DRAFT

Quadrat No.:	**YL24**
Survey Date:	23.10.2025
Personnel:	ZS, JG
Easting:	369464
Northing:	6508509
Topography:	Outcrop
Aspect:	W
Slope:	5-10 %
Soil:	White Sand
Surface Rock:	80 % Limestone
Leaf Litter:	2 %
Bare Ground:	70 %
Drainage:	Well
Condition:	Good



Notes: *Frankenia pauciflora* var. *pauciflora* and *Scaevola crassifolia* shrubland over *Salicornia blackiana* chenopod shrubland (B1). Recorded within the limestone outcrop along the beach.

Species	**Cover (%)**	**Height (m)**
**Bromus diandrus*	2	0.2
**Crassula glomerata*	0.5	0.05
**Lolium rigidum*	1	0.3
**Lysimachia arvensis*	1	0.1
**Medicago polymorpha*	3	0.05
**Romulea rosea*	1	0.1
**Sagina maritima*	2	0.05
**Sonchus oleraceus*	1	0.2
**Tetragonia decumbens*	1	0.2
**Trachyandra divaricata*	1	0.3
Carpobrotus virescens	2	0.2
Ficinia nodosa	1	0.3
Frankenia pauciflora	10	0.4
Lepidosperma gladiatum	0.5	0.4
Olearia axillaris	2	0.6
Rhagodia baccata subsp. *dioica*	2	0.4
Scaevola crassifolia	8	0.5

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Species	Cover (%)	Height (m)
Senecio pinnatifolius var. *latilobus*	2	0.4
Threlkeldia diffusa	2	0.4

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Quadrat No.:	**YL25**
Survey Date:	23.10.2025
Personnel:	ZS, JG
Easting:	369537
Northing:	6508686
Topography:	Lower Slope
Aspect:	N
Slope:	1-3 %
Soil:	Brown Sandy Loam
Surface Rock:	0
Leaf Litter:	5
Bare Ground:	2
Drainage:	Well
Condition:	Good



Notes: *Eucalyptus gomphocephala* woodland (C3). Recorded on the lower slopes of the taller inland dunes on semi-consolidated sands.

Species	**Cover (%)**	**Height (m)**
**Avena barbata*	20	0.6
**Bromus diandrus*	10	0.4
**Catapodium rigidum*	1	0.25
**Euphorbia peplus*	1	0.05
**Euphorbia terracina*	2	0.3
**Medicago polymorpha*	0.5	0.2
**Sonchus oleraceus*	0.5	0.2
**Trachyandra divaricata*	0.5	0.3
**Urospermum picroides*	1	0.2
Eucalyptus gomphocephala	75	4
Olearia axillaris	4	1.2
Rhagodia baccata subsp. *baccata*	30	1.3
Spyridium globulosum	30	1.6

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Natural Area
CONSULTING MANAGEMENT SERVICES

UDLA

Yanchep Lagoon

Detailed Fauna Survey

and Black Cockatoo Assessment

Natural Area Holdings Pty Ltd
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Acknowledgement of Country

Ngala kaaditj Noongar moort keyen kaadak nidja boodja.
Natural Area acknowledges the Traditional Owners of the lands on which we operate, and recognises their continuing connection to lands, waters and communities.

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System Certifications

Environmental management system registered to ISO 14001:2015
Quality management system registered to ISO 9001:2015
Occupational health and safety management system registered to ISO 45001:2018

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Draft/Version No.	Date	Changes	Prepared by	Approved by	Status
Draft	Oct 2025	New Document	DM	KE	Draft for client comment

Executive Summary

Natural Area Consulting Management Services (Natural Area) was subcontracted by UDLA on behalf of the City of Wanneroo (the City) to undertake a desktop assessment, detailed fauna survey, and black cockatoo habitat assessment within Yanchep Lagoon. These surveys will assist with the development of the Yanchep Lagoon Foreshore Management Plan.

The works included the following activities:

- Desktop review of existing environmental values including conservation significant fauna and black cockatoo habitat records within the site and adjacent areas.
- Detailed fauna survey including trapping over 8 consecutive days (7 nights) with trap-lines (pitfall and funnel traps), box traps, trail cameras, and ultrasonic audio recording devices set out for a total of:
    - 133 pitfall traps nights (19 pitfall traps)
    - 98 funnel trap nights (14 funnel traps)
    - 126 box trap nights (18 box trap)
    - 14 trail camera nights (2 cameras)
    - 7 acoustic recorder nights (1 recorder).
- Recording opportunistic sightings and undertaking active searching when traversing the site.
- Carrying out a night survey to target nocturnal species such as bats, owls and possums using a combination of spotlighting, thermal and acoustic detectors.
- Targeted black cockatoo habitat assessment.

The detailed fauna survey determined:

- Nine different fauna habitat types within the Yanchep Lagoon site.
- A total of 51 vertebrate fauna species were recorded during the field surveys comprised of 27 birds, 7 mammals, and 17 reptiles.
- One conservation significant fauna species was observed:
    - Crested Tern (*Thalasseus bergii*) listed as a Migratory (MI) species under the EPBC Act and protected under international agreements.
- Six introduced species present, including two declared pests:
    - Red Fox (**Vulpes vulpes*)
    - Rabbit (**Oryctolagus cuniculus*).

The black cockatoo habitat assessment determined:

- A total of four potential black cockatoo habitat trees within the site, none of which had hollows (unsuitable for black cockatoo breeding).
- No evidence of black cockatoo roosting recorded within the site.
- No evidence of black cockatoo foraging recorded within the site.

This report recommends that pest management is implemented targeting rabbits and foxes to reduce the environmental degradation caused by their presence within the site. This report also recommends the consideration of native fauna species' ecology when disturbing vegetation and installing infrastructure, to minimise impacts and provide opportunities for fauna habitat amongst infrastructure where possible.

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1.0 Introduction

Natural Area Consulting Management Services (Natural Area) was subcontracted by UDLA on behalf of the City of Wanneroo (the City) to undertake a desktop assessment, detailed fauna survey, and black cockatoo habitat assessment within Yanchep Lagoon. The surveys will assist with the development of the Yanchep Lagoon Foreshore Management Plan.

1.1 Location

Yanchep Lagoon is a coastal destination approximately 50 km north of the Perth Central Business District. The site encompasses 33.11 ha of beachfront, vegetation, and infrastructure (Figure 1). Class A and C reserves are present within the Yanchep Lagoon and are managed by the City.

1.2 Scope

The scope of works undertaken by Natural Area included:

- A desktop assessment of relevant information pertaining to conservation significant fauna and black cockatoo habitat, within a 10 km radius of the survey site. The following databases were consulted:
  - Nature Map (DBCA, 2025a).
  - Department of Biodiversity, Conservation and Attractions (DBCA) fauna database (DBCA 2025b).
  - Protected Matters Search Tool (PMST) (Department of Climate Change, Energy, the Environment and Water (DCCEEW), 2025).
  - Site Characteristics including landform, geology, and soil complex.
- Detailed fauna survey to determine:
  - Key site characteristics, including the determination of fauna habitat types within the site.
  - Formation of a fauna species list, outlining native and non-native species present.
  - Identification and mapping of any threatened, priority or other significant fauna species listed under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act), and the *Biodiversity Conservation Act 2016* (WA).
  - Recording of the location of conservation significant fauna within the site.
  - Recording of the location of any declared pests observed within the site.
- A black cockatoo habitat assessment to determine the location and extent of potential or established black cockatoo habitat trees.

1.3 Legislative Context

State and Federal environment-related laws impact how environmental values are governed in Western Australia. The following legislation and policies are relevant to this report.

1.3.1 Relevant Legislation

***Aboriginal Heritage Act 1972* (WA)**

The Aboriginal Heritage Act 1972 (WA) makes provision for the recognition, protection, conservation, and preservation of Aboriginal heritage in Western Australia.

***Biosecurity and Agriculture Management Act 2007* (WA)**

The *Biosecurity and Agriculture Management Act 2007* (WA) (BAM Act) regulates the framework for plant and animal pest and disease biosecurity in Western Australia. The framework provides for the control of declared flora and fauna species (declared organisms) that are known to be a significant environmental threat and the management, control and prevention of these declared plants and animals.

***Biodiversity Conservation Act 2016* (WA)**

The *Biodiversity Conservation Act 2016* (WA) (BC Act) aims to protect and conserve biodiversity as well as to promote the ecologically sustainable use of biodiversity components in the State. The BC Act provides the statute relating to conservation and legal protection of flora, fauna, and ecological communities. The BC Act follows the principles of ecologically sustainable development, detailing that decision-making processes should effectively integrate long-term and short-term economic, environmental, social, and equity considerations.

***Environmental Protection Act 1986* (WA)**

The *Environmental Protection Act 1986* (WA) (EP Act) provides for the prevention, control and abatement of pollution and environmental harm, for the conservation, preservation, protection, enhancement, and management of the environment connected with the foregoing. The Environmental Protection Authority (EPA) is established under this act and provides a structured policy framework that is consistent with the EP A*ct*. The EPA produces the guidelines and procedures associated with conducting environmental assessments in line with the EP Act.

***Environment Protection and Biodiversity Conservation Act 1999* (Cth)**

The Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) serves to protect and manage nationally and internationally important flora, fauna, ecological communities, and heritage places. The primary objective of the EPBC Act is to promote the conservation of biodiversity and the sustainable use of natural resources while allowing for ecologically sustainable development. The EPBC Act allows for the creation of conservation agreements between the Australian government and individuals, communities, or organisations to support the conservation of biodiversity.

Heritage Act 2018 (WA)

The Heritage Act recognises the importance of and promotes understanding and appreciation of Western Australia's cultural heritage; and provides for the identification and documentation of places of cultural heritage significance and for the conservation, use, development and adaptation of such places.

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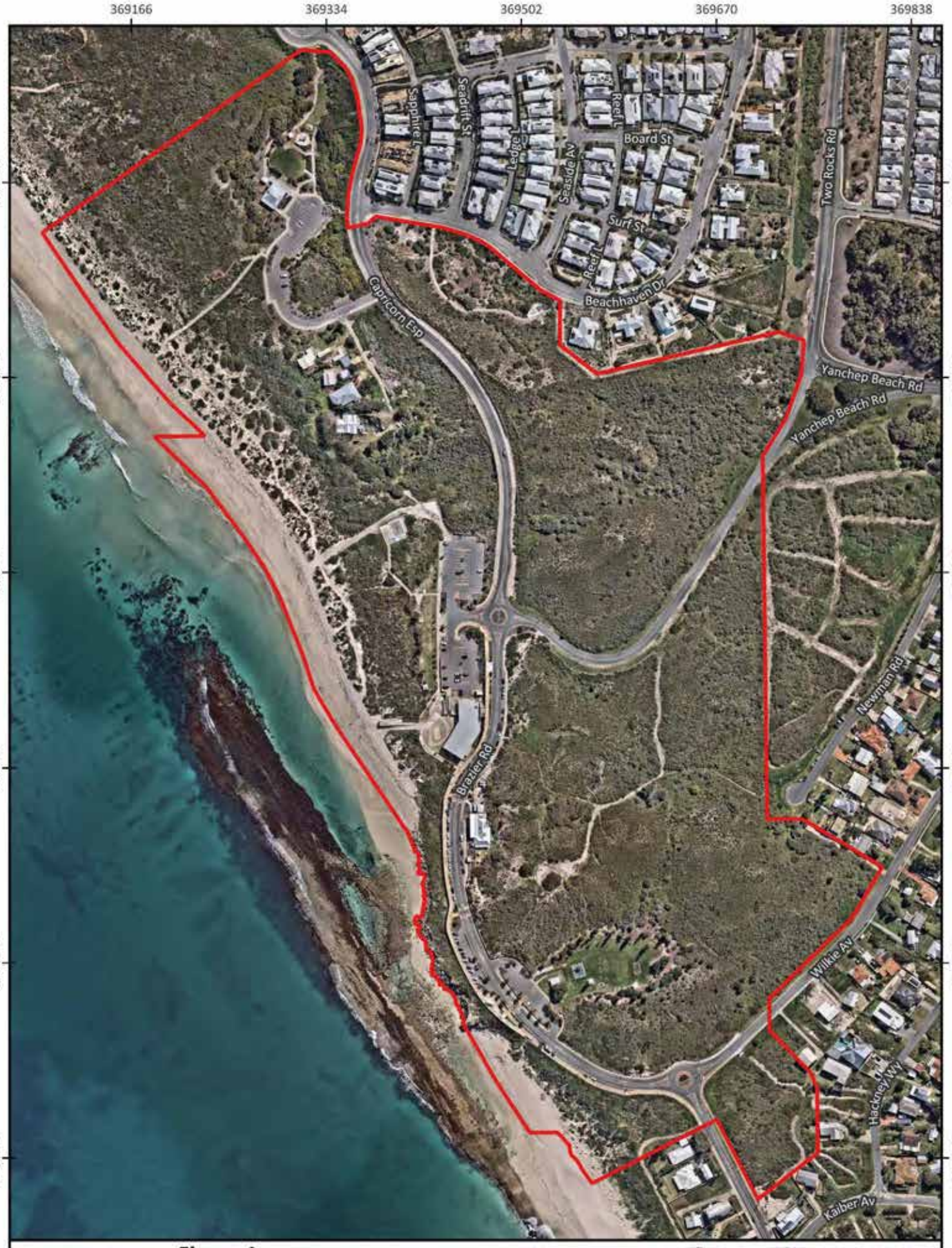


Figure 1:
Site Location

Yanchep, Western Australia

Legend
Site Boundary

Client:	UDLA
Date:	03/11/2025
Created by:	Z.Stoney
Image Source:	Nearmap, 2025
Datum:	GDA2020 / MGA zone 50
Scale:	1: 4200

0 50 100 m

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2.0 Site Characteristics

2.1 Regional Context

The site is located within the Swan Coastal Plain (SWA02) IBRA subregion (Department of Climate Change, Energy, the Environment and Water (DCCEEW), 2024). This region is characterised by low lying coastal plain covered with woodlands. This subregion is generally comprised of sandy soils dominated by Banksia or Tuarts (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 (BoM) (2025); Gingin Aero, site number 009178, the region is subject to:

- Average rainfall of 636.4 mm per annum, with majority of rainfall between June and August (1996 - 2025) (BoM, 2025).
- Average maximum temperature range of 18.4 °C in winter to 33.3 °C in summer (1996 - 2025) (BoM, 2025).
- Average minimum temperature ranging from 6.6 °C in winter to 17.0 °C in summer (1996 - 2025) (BoM, 2025).

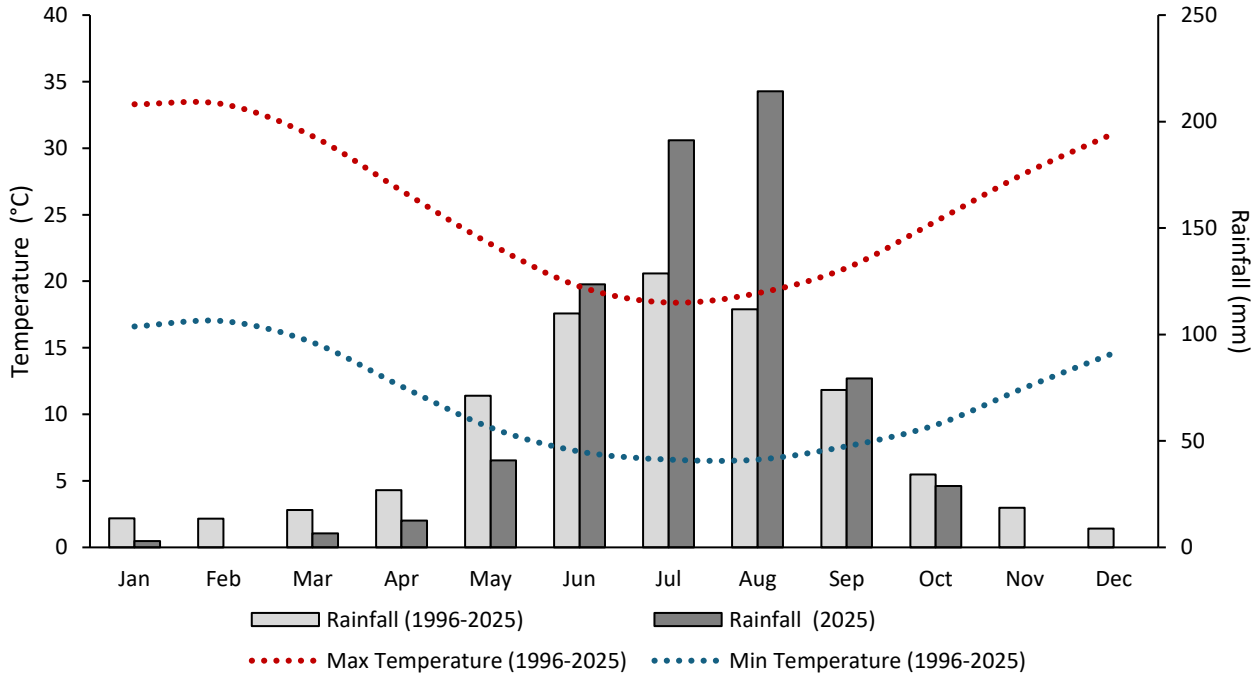


Figure 2: Temperature and rainfall data for the Gingin Aero, site number 009178. Source: BoM, 2025

2.3 Topography and Soils

A total of seven soil types were identified on site (Department of Primary Industries and Regional Development (DPIRD), 2022). The site ranges from 28 m Australian Height Datum (AHD) in the central dunes corner and 2 m AHD along the foreshore (DPRID, 2019). (Table 1 and Figure 3).

Table 1: Soil types within the site

Name	Symbol	Description
Quindalup South youngest dune phase	211Qu__Q4	The youngest phase. Irregular dunes with slopes up to 20%. Loose pale brown calcareous sand with no soil profile development.
Quindalup South shallow sand flat phase	211Qu__Qs	Undulating landscapes with shallow calcareous sands over limestone and much rock outcrop.
Quindalup South deep sand flat phase	211Qu__Qp	Undulating landscapes with deep calcareous sands overlying limestone. Soils have dark grey-brown sand to about 50 cm and then pale brown sand. Remnants of hummocks are often present.
Quindalup South water, beach phase	211QuU_BEACH	Beach.
Quindalup South second dune phase	211Qu__Q2	The second phase. A complex pattern of dunes with moderate relief. Calcareous sands have organic staining to about 20 cm, passing into pale brown sand; some cementation below 1 m.
Quindalup South third dune phase	211Qu__Q3	The third phase. Irregular dunes with high relief and slopes up to 20%. Loose calcareous sand with little surface organic staining and incipient cementation at depth.
Quindalup South oldest dune phase	211Qu__Q1	The oldest phase. Dunes or remnants with low relief. Calcareous sands have organic staining to about 30 cm, overlying pale brown sand with definite cementation below 1 m.

2.4 Vegetation Complex

One vegetation complex exists within the site boundary, the Quindalup Complex. It is described by Heddle, Loneragan, and Havel (1980) as a coastal dune complex consisting mainly of two alliances - the strand and fore-dune alliance and the mobile and stable dune alliance. Local variations include the low closed forest of *Melaleuca lanceolata* (Rottnest Teatree) - *Callitris preissii* (Rottnest Island Pine), the closed scrub of *Acacia rostellifera* (Summer-scented Wattle) and the low closed *Agonis flexuosa* (Peppermint) forest of Geographe Bay. The pre-European extent of this vegetation complex remaining is:

- 60.49 % within the Swan Coastal Plain
- 16.16 % within the City of Wanneroo (Government of Western Australia, 2019).

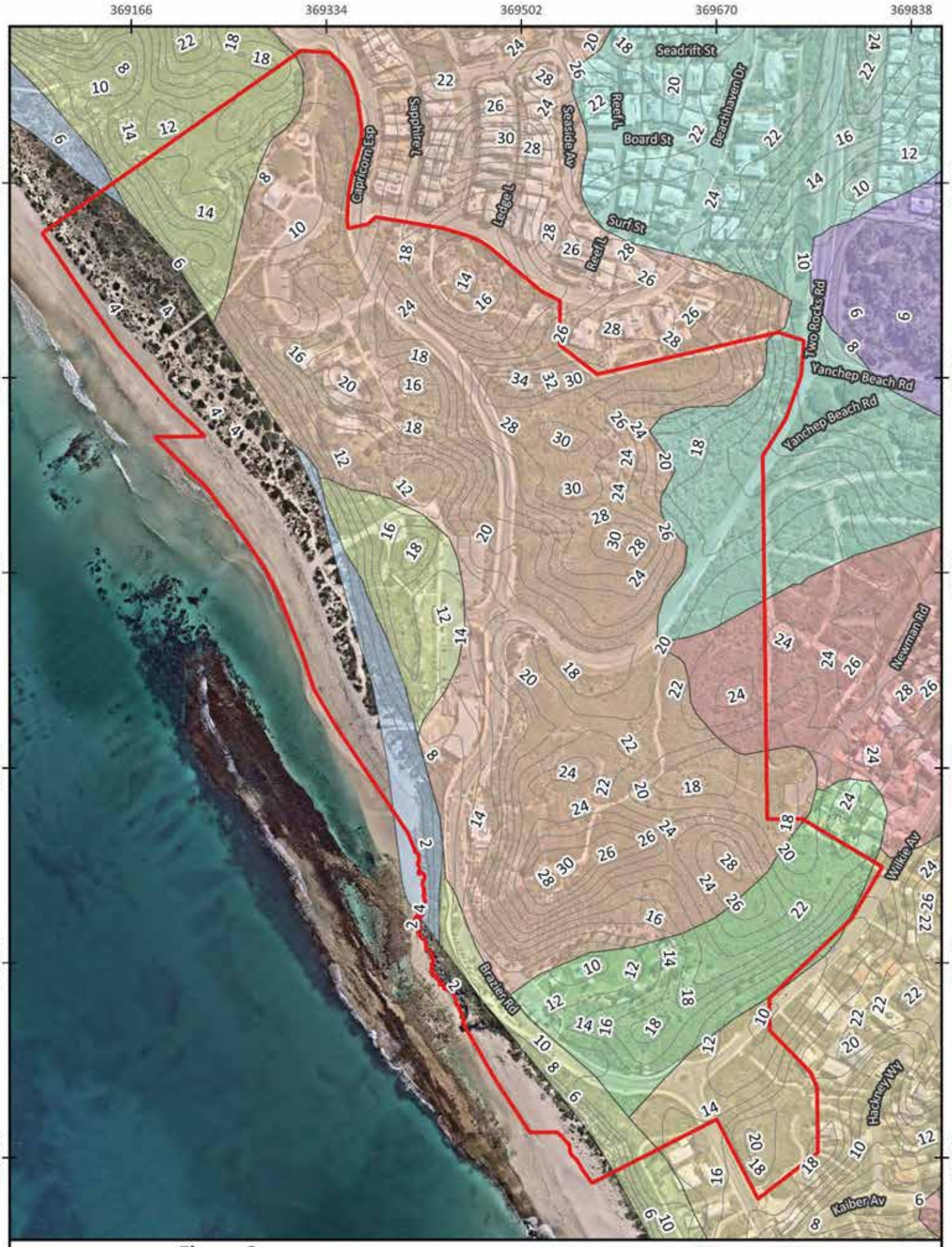


Figure 3:
Soil and Topography

Yanchep, Western Australia

Legend

- Contour (2 m)
- 211Qu__Q1
- 211Qu__Q2
- 211Qu__Q3
- 211Qu__Q4
- 211Qu__Qp
- 211Qu__Qs
- 211QuU_BEACH
- 211Sp__Ky
- Site Boundary

Client:	UDLA
Date:	03/11/2025
Created by:	Z.Stoney
Image Source:	Nearmap, 2025
Datum:	GDA2020 / MGA zone 50
Scale:	1: 4200

0 50 100 m

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2.5 Heritage Values

Yanchep Lagoon is within the Whadjuk People Indigenous Land Use Agreement area. Two sites are registered as Aboriginal Cultural Heritage, Yanchep Beach (ID 17599) and Limestone Reef (ID 17596) (DPLH, 2025), with only site 17599 occurring within the site boundary. The entirety of Yanchep Beach is registered as a creation/dreamtime narrative with no gender/initiation restriction.

2.6 Ecological Linkages

Yanchep Lagoon is within an environmentally sensitive area (ESA) and a mapped ecological linkage. The ESA within Yanchep Lagoon has been identified as containing Bush Forever site no. 397 known as the coastal strip from Wilbinga to Mindarie (DPLH, 2019). The bush forever site meets the section criteria of representation of ecological communities, rarity, maintaining ecological processes or natural systems, general criteria for the protection of wetland, and streamline and estuarine fringing vegetation and coastal vegetation.

Ecological linkages provide connectivity between patches of remnant vegetation facilitating the maintenance of ecological processes and the movement of organism within and across a landscape. Perth Regional Ecological Linkages were identified by the Perth Biodiversity Project with input from the Department of Environment, Department of Conservation and Land Management (CALM) and the Department for Planning and Infrastructure (WALGA, 2004). Perth Regional Ecological Linkage No. 1 intersects with Yanchep Lagoon, this ecological linkage links the Bush Forever sites 406 through to 315 and maintains connectivity along the coast for the Quindalup Complex (Figure 4).

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Figure 4:
Ecological Linkages and Native Vegetation Extents

Yanchep, Western Australia

Legend

- Ecological Linkages
- Native Vegetation Extent
- Site Boundary

Client:	UDLA
Date:	03/11/2025
Created by:	Z.Stoney
Image Source:	Nearmap, 2025
Datum:	GDA2020 / MGA zone 50
Scale:	1: 4200

0 50 100 m

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3.0 Methodology

3.1 Desktop and Literature Review

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

- likely native and non-native fauna species present
- likely presence of threatened or priority fauna species.

The following databases were accessed to obtain relevant information:

- NatureMap (DBCA, 2025a)
- Protected Matters Search Tool (DCCEEW, 2025) (Appendix 1)
- Threatened and priority fauna database searches (DBCA, 2025b)
- Carnaby's Cockatoo Areas requiring investigation as feeding habitat in the SCP (DBCA-057) (DBCA, 2018a)
- Carnaby's Cockatoo Confirmed Breeding Areas within the Swan Coastal Plain and Jarrah Forest IBRA region (DBCA, 2018b)
- Carnaby's Cockatoo Unconfirmed Breeding Areas within the Swan Coastal Plain and Jarrah Forest IBRA regions (DBCA, 2018c).

Conservation code definitions for the State and Commonwealth are provided in Appendix 2.

3.2 On-ground Fauna Survey

Natural Area operates under a Scientific Use License (U317/2022-2024). This licence permits Natural Area to use animals for scientific purposes in accordance with the Australian code for the care and use of animals for scientific purposes (National Health and Medical Research Council, 2013). In addition, Natural Area is also approved by the DPIRD Wildlife Animal Ethics Committee (WAEC) to undertake biological assessments within the Swan Coastal Plain Bioregion (WAEC Permit No. 22-06-69). Natural Area obtained a Fauna Taking (biological assessment) Licence from DBCA (licence no.: BA27001414) prior to completing the detailed fauna survey.

The fauna survey was conducted in accordance with a detailed fauna survey as outlined in the *Technical Guidance, Terrestrial vertebrate fauna surveys for environmental impact assessment* (EPA, 2020). Natural Area environmental consultants undertook the survey between October 13 and 22, 2025, with survey activities including:

- Trapping over eight consecutive days (seven nights) from October 13 to 20, using trap-lines, box traps, trail cameras, and acoustic recorders (Table 3, Figure 5).
- Installing seven trap-lines across a range of fauna habitat types which included dry pitfalls and funnel traps along a drift fence. Local vegetation was used to cover funnel traps and placed in pitfall buckets to provide shelter for trapped fauna.
- Installing 18 box traps with universal bait (oats and peanut butter), with newspaper placed inside for bedding and traps covered with a hessian bag and foliage to provide protection from the elements.
- All trap and trap line coordinates were recorded using a hand-help GPS and marked with flagging tape.

- Checking traps twice daily; once within three hours of sunrise and again after peak reptile activity as per WAEC guidelines (DPIRD, 2024). In addition, if the maximum is forecast to be 36 °C or higher, traps were closed after the early morning check and reopened in the late afternoon.
- All species captured were recorded and released back into site.
- Active searching included searching under logs, rocks, and hand raking through leaf litter.
- Static bird census with a five-minute census undertaken at each trap line location recording visual observations of birds and calls heard.
- Setting out two motion activated trail cameras and one passive acoustic recorder in high-activity areas to capture images and recordings of evasive/trap-shy animals.
- Walking the site to record opportunistic sightings or signs of birds, reptiles, and mammals, including calls, tracks, diggings, and scats.
- Undertaking a nocturnal survey (October 22) using spotlighting, thermal detection, and ultrasonic bat detectors (Echo Meter Touch 2 Pro).
- Recording the outcomes of the trapping and observation activities.

Table 3: Total trap nights

Number of Traps	Number of Nights	Number of Trap nights
19 Pitfalls	7	133
14 Funnels		98
18 Box Traps		126
2 Trail Cameras		14
1 Acoustic Recorder		7
	Total:	**378**

3.2.1 Weather Conditions

Local weather conditions can affect fauna activity, with low temperatures and rain likely to reduce mammals and reptile activity. The trapping period experienced a range of weather conditions with most days having warm sunny mornings, turning to colder mornings with some rain later in the trapping event. Temperatures during the trapping period ranged between 5.0°C and 33.5°C according to the Gingin Aero weather station (site number 009178) (BoM, 2025), with local site temperatures likely to be at some variance with these records due to the distance between the site and the weather station (approx. 23 km). Rainfall during the trapping period was recorded at 1.8 mm, with all rainfall occurring from 19 to 20 October (BoM, 2025). Rainfall observations were consistent with observations on site during the trapping period.

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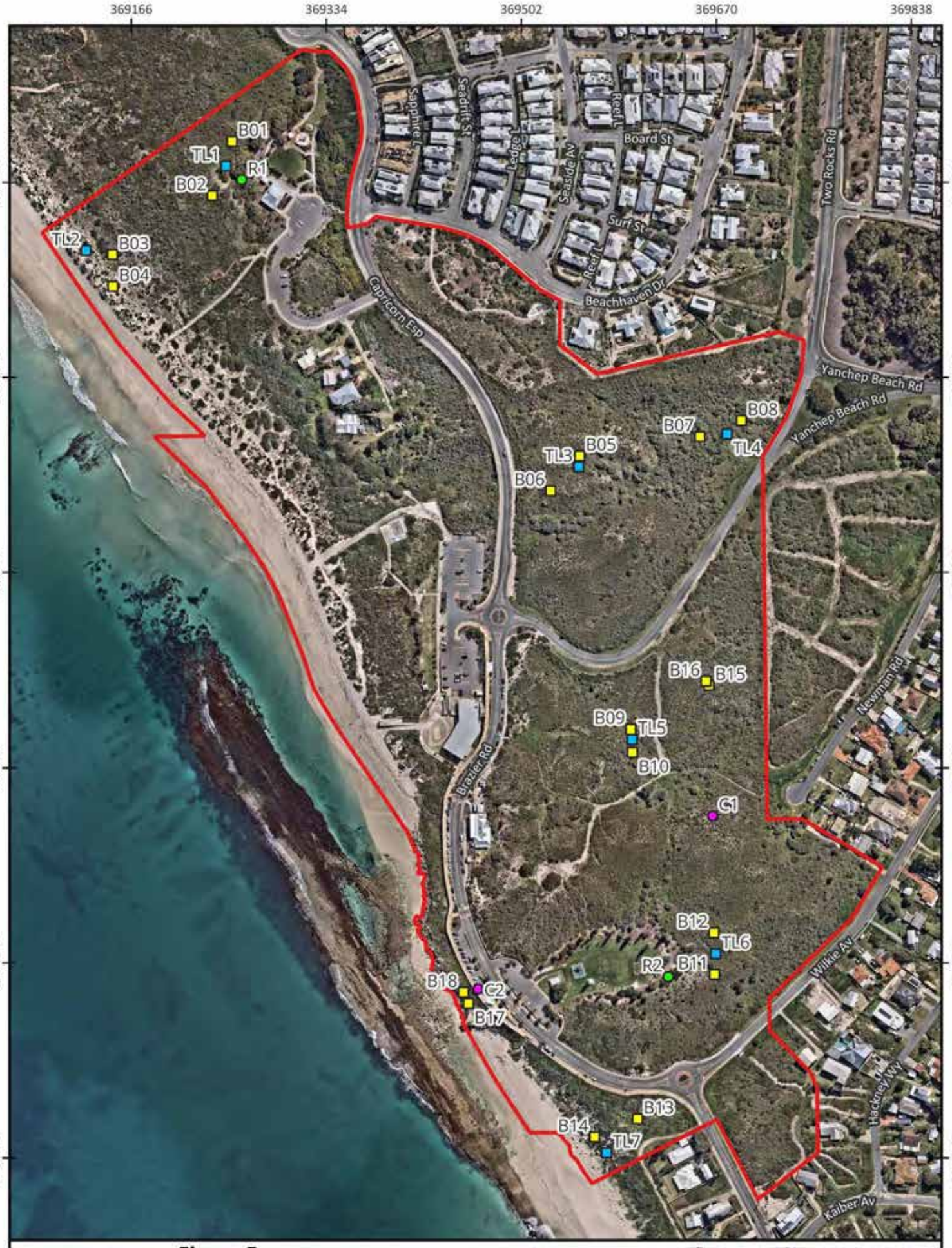


Figure 5:
Trap Locations

Yanchep, Western Australia

Legend

- Box Trap
- Audio Recorder
- Trail Camera
- Trap Line
- Site Boundary

Client:	UDLA
Date:	26/11/2025
Created by:	D. Morrison
Image Source:	Nearmap, 2025
Datum:	GDA2020 / MGA zone 50
Scale:	1: 4200

0 50 100 m

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3.3 Black Cockatoo Habitat Assessment

A black cockatoo habitat assessment was conducted in accordance with *Referral guideline for 3 WA threatened black cockatoo species: Carnaby's Cockatoo, Baudin's Cockatoo and the Forest Red-tailed Black-cockatoo* (DAWE, 2022).

Natural Area environmental scientists undertook the survey between October 14 and 18, 2025, with key data recorded using QField software on a handheld tablet. Survey activities included:

- Traversing the whole site in a systematic grid search.
- Recording the location and evidence of breeding, roosting and foraging activities (e.g. Chew marks, feathers, scats, chewed nuts).
- Marking the GPS locations of each habitat tree with a diameter at breast height (DBH) ≥ 500 mm.
- Recording the height, DBH, health, and species of each habitat tree.
- Recording evidence of hollows, including size, type, and location within the tree.
- Recording foraging habitat, vegetation type, and condition.

3.3.1 Breeding

Breeding habitat for black cockatoos consists of woodland or forest, and a breeding tree is considered as any tree species where suitable nest hollows are present (Department of Agriculture, Water, and the Environment (Department of Agriculture, Water and the Environment (DAWE), 2022). Suitable nest hollows are typically found in mature trees with a DBH > 500mm.

A scoring tool was applied to each individual tree using the Bamford tree scoring matrix (Bamford, 2016), in addition to the assessment against the Commonwealth guidelines (DAWE, 2022). The Bamford tree scoring matrix (Table 4) classes trees according to their individual characteristics (evidence of use, type, and size of hollow present).

Table 4: Bamford (2016) habitat tree scoring matrix

Class	Description of Trees and Hollows/ Activity
1	Active nest observed; adult (or immature) bird seen entering or emerging from hollow.
2	Hollow of suitable size and angle (i.e. near vertical) visible with chew marks around entrance.
3	Potentially suitable hollow visible but no chew marks present; or potentially suitable hollow present (as suggested by structure of tree, such as large, vertical trunk broken off at a height of >10 m).
4	Tree with large hollows or broken branches that might contain large hollows, but hollows or potential hollows are not vertical or near vertical; thus, a tree with or likely to have hollows of sufficient size but not to have hollows of the angle preferred by black cockatoos.
5	Tree lacking large hollows or broken branches that might have large hollows; a tree with more or less intact branches and a spreading crown.

3.3.2 Roosting Habitat

Potential roosting habitat was mapped out during the diurnal survey, with a dusk roosting survey conducted in concurrence with the nocturnal fauna survey on October 22, 2025. Potential habitat trees identified

during the diurnal survey were inspected using thermal cameras and spotlights at dusk and night to confirm the presence or absence of roosting black cockatoos within the site.

3.3.3 Foraging Habitat

To assess the quality of black cockatoo foraging habitat within the site, the Commonwealth foraging quality scoring tool (DAWE, 2022) was utilised. The black cockatoo foraging quality scoring tool assigns a habitat score between 1 and 10, with a score of 10 representing the maximum possible score and very high-quality foraging habitat. Contextual adjustors (attributes that improve or reduce functionality of foraging habitat) including tree species composition, distances from known breeding and roosting sites, distance from other foraging habitat, evidence of feeding debris, and presence of disease e.g. *Phytophthora* spp. or Marri Canker were used to evaluate habitat quality. The scoring tool template is provided in Table 5.

Foraging habitat data collected included:

- Determining the foraging value of vegetation for black cockatoos in accordance with DAWE's foraging quality scoring tool (DAWE, 2022) with results provided in tabular format.
- Recording evidence of black cockatoo foraging signs or debris including droppings, feathers, and chewed cones or nuts.
- Recording presence, extent and density of all plant species that provide foraging, including non-native food sources used by black cockatoos.
- Determining distribution and size of foraging habitat in proximity (up to 12 km) to the impact site.
- Acquiring landscape characteristics around the impact site, including details of night roosting and breeding habitat in proximity.

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Table 5: Commonwealth foraging quality scoring tool template

Starting score	Baudin's Cockatoo	Carnaby's Cockatoo	Forest Red-tailed Black-Cockatoo
10	Start at a score of 10 if your site is native eucalypt woodlands and forest, and proteaceous woodland and heath, particularly Marri, within the range of the species, including along roadsides and parkland cleared areas. Can include planted vegetation. This tool only applies to sites equal to or larger than 1 hectare in size.	Start at a score of 10 if your site is native shrubland, kwongan heathland or woodland, dominated by proteaceous plant species such as *Banksia* spp. (including *Dryandra* spp.), *Hakea* spp. and *Grevillea* spp., as well as native eucalypt woodland and forest that contains foraging species, within the range of the species, including along roadsides and parkland cleared areas. Also includes planted native vegetation. This tool only applies to sites equal to or larger than 1 hectare in size.	Start at a score of 10 if your site is Jarrah or Marri woodland and/or forest, or if it is on the edge of Karri forest, or if Wandoo and Blackbutt occur on the site, within the range of the subspecies, including along roadsides and parkland cleared areas. This tool only applies to sites equal to or larger than 1 hectare in size
Attribute	**Context adjustor (attributes reducing functionality of foraging habitat)**		
Foraging potential	Subtract 2 from your score if there is no evidence of feeding debris on your site.	Subtract 2 from your score if there is no evidence of feeding debris on your site.	Subtract 2 from your score if there is no evidence of feeding debris on your site
Connectivity	Subtract 2 from your score if you have evidence to conclude that there is no other foraging habitat within 12 km of your site.	Subtract 2 from your score if you have evidence to conclude that there is no other foraging habitat within 12 km of your site.	Subtract 2 from your score if you have evidence to conclude that there is no other foraging habitat within 12 km of your site.
Proximity to breeding	Subtract 2 if you have evidence to conclude that your site is more than 12 km from breeding habitat.	Subtract 2 if you have evidence to conclude that your site is more than 12 km from breeding habitat	Subtract 2 if you have evidence to conclude that your site is more than 12 km from breeding habitat.
Proximity to roosting	Subtract 1 if you have evidence to conclude that your site is more than 20 km from a known night roosting habitat.	Subtract 1 if you have evidence to conclude that your site is more than 20 km from a known night roosting habitat.	Subtract 1 if you have evidence to conclude that your site is more than 20 km from a known night roosting habitat.
Impact from significant plant disease	Subtract 1 if your site has disease present (e.g. *Phytophthora* spp. or Marri canker) and the disease is affecting more than 50% of the preferred food plants present.	Subtract 1 if your site has disease present (e.g. *Phytophthora* spp. or Marri canker) and the disease is affecting more than 50% of the preferred food plants present.	Subtract 1 if your site has disease present (e.g. *Phytophthora* spp. or Marri canker) and the disease is affecting more than 50% of the preferred food plants present.
Total score	Enter score	Enter score	Enter score
Appraisal	To support your habitat score, you should provide an overall appraisal of the habitat on the impact site and within 20km of the impact area to clearly explain and justify the score. It should include discussion on the foraging habitat's proximity to other resources (e.g. exact distance to proximate resources), frequency of use of proximate sites, the degree of evidence and description of vegetation type and condition.		

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3.4 Limitations

The limitations associated with the detailed fauna survey and black cockatoo habitat assessment undertaken within the site are outlined in Table 6 below.

Table 6: Survey limitations

Potential Limitation	Degree of Limitation	Comments
Availability of contextual information	None	Local and regional contextual information was readily available.
Competency/ experience of team	None	Survey activities were undertaken by experienced environmental consultants who have extensive experience undertaking detailed fauna surveys and black cockatoo habitat assessments within the Swan Coastal Plain.
Survey effort and extent	Minor	The detailed fauna survey was conducted over eight days and seven nights without hinderance. This included a total of 378 trap nights across 9 fauna habitats: OH (42), CH (77), MT (49), CS (147), OF (49), SL (14), BF (0), IF (O), CP (0) (Refer to section 4.1.2). BF, IF, and CP were not trappable due to high public access. Sample bias may influence results due to the number of traps per habitat type. A black cockatoo habitat assessment and nocturnal survey was also conducted to the intended extent without hinderance. Invertebrate and marine animals were not included in the scope of works.
Identification issues	None	All species observed and recorded were able to be identified to a species level.
Access restrictions	Minor	During the survey no access restrictions impeded surveying efforts. Public activity within the site restricted the locations of traps, cameras, and acoustic recorders to areas with low risk of public interference. Private properties within the site boundary were not accessed.
Survey timing	None	The survey was undertaken during spring which is the optimal season for fauna surveys within the Swan Coastal Plain subregion. With many migratory bird species potentially occurring within the site, October to March is the optimal time to survey migratory birds within the Swan Coastal Plain. The length of the survey

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Potential Limitation	Degree of Limitation	Comments
		provided trapping opportunities throughout a range of weather conditions, which were mostly moderately warm and sunny, with rainy periods towards the end of the trapping period. Weather conditions are unlikely to have affected the survey results.
Disturbances	None	No recent disturbances which may have had an impact on survey results (e.g. fire, recent clearing or floods) were identified during the survey.

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4.0 Results

4.1 Fauna Survey Results

4.1.1 Desktop Survey

A desktop survey of online databases indicated the potential for a total of 59 conservation significant fauna species to occur within 10 km of the survey area (Table 7). NatureMap indicated 35 conservation significant species listed under the BC Act as potentially occurring within a 10 km radius of the site (DBCA, 2025a). The PMST indicated 39 threatened species listed under the EPBC Act as potentially occurring within a 10 km radius of the site (DCCEEW, 2025) (Appendix 1). A review of the DBCA threatened and priority fauna species database indicated the potential for 35 conservation significant fauna species to occur within a 10 km radius of the site (DBCA, 2025b).

Both abiotic (soil, climate) and biotic (food resources, predator pressure) factors will determine the suitability of habitats for specific fauna assemblages based on their ecological requirements. Evaluating the site locality, existing conditions and known home ranges, Natural Area determined that 11 species (highlighted green in Table 7) have the potential to be present within the survey site. Conservation codes are provided in Appendix 2.

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

Species Name	Common Name	Cons Code (Cwlth)	Cons Code (WA)	Nature Map	PMST	DBCA
Bird						
Anous tenuirostris melanops	Australian lesser Noddy	VU	EN	X	X	X
Apus pacificus	Fork-tailed Swift	MI	MI	X		X
Ardenna grisea	Sooty Shearwater	VU & MI			X	
Arenaria interpres	Ruddy Turnstone	MI	MI	X		X
Calidris acuminata	Sharp-tailed Sandpiper	MI	MI	X	X	X
Calidris canutus	Red Knot	EN & MI	EN	X	X	X
Calidris ferruginea	Curlew Sandpiper	CR & MI	CR	X	X	X
Calidris ruficollis	Red-necked Stint	MI	MI	X		X
Calidris subminuta	Long-toed Stint	MI	MI	X		X
Calidris tenuirostris	Great Knot	CR & MI	CR	X		X
Calyptorhynchus banksii naso	Forest Red-tailed Black-Cockatoo, Karrak	VU	VU		X	
Charadrius leschenaultii	Greater Sand Plover, Large Sand Plover	VU & MI	VU		X	

Species Name	Common Name	Cons Code (Cwlth)	Cons Code (WA)	Nature Map	PMST	DBCA
Diomedea amsterdamensis	Amsterdam Albatross	EN & MI	CR		X	
Diomedea epomophora	Southern Royal Albatross	VU & MI	VU		X	
Diomedea exulans	Wandering Albatross	VU & MI	VU		X	
Halobaena caerulea	Blue Petrel	VU			X	
Hydroprogne caspia	Caspian Tern	MI	MI	X		X
Leipoa ocellata	Malleefowl	VU	VU		X	
Limosa lapponica	Bar-tailed Godwit	MI	MI	X		X
Limosa lapponica menzbieri	Northern Siberian Bar-tailed Godwit, Russkoye Bar-tailed Godwit	EN	CR		X	
Macronectes giganteus	Southern Giant Petrel	EN & MI	MI	X	X	X
Macronectes halli	Northern Giant Petrel	VU & MI			X	
Numenius madagascariensis	Eastern Curlew, Far Eastern Curlew	CR	CR		X	
Oxyura australis	Blue-Billed Duck		P4	X		X
Pachyptila turtur subantarctica	Fairy Prion (southern)	VU			X	
Phaethon rubricauda westralis	Red-tailed Tropicbird (Indian Ocean), Indian Ocean Red-tailed Tropicbird	EN			X	
Phoebetria fusca	Sooty Albatross	VU & MI	EN		X	
Pluvialis squatarola	Grey Plover	MI	MI	X		X
Pterodroma mollis	Soft-plumaged Petrel	VU			X	
Rostratula australis	Australian Painted Snipe	EN	EN		X	
Sterna dougallii	Roseate Tern	MI	MI	X		X
Sternula albifrons	Little Tern	VU & MI			X	
Sternula nereis nereis	Fairy Tern	VU	VU	X	X	X
Thalassarche carteri	Indian Yellow-nosed Albatross	VU & MI			X	

Species Name	Common Name	Cons Code (Cwlth)	Cons Code (WA)	Nature Map	PMST	DBCA
Thalassarche cauta	Shy Albatross	EN & MI	EN		X	
Thalassarche impavida	Campbell Albatross, Campbell Black-browed Albatross	VU	VU		X	
Thalassarche melanophris	Black-browed Albatross	VU & MI	EN	X	X	X
Thalassarche steadi	White-capped Albatross	VU & MI			X	
Thalasseus bergii	Crested Tern	MI	MI	X		X
Tringa nebularia	Common Greenshank	MI	MI	X	X	X
Tyto novaehollandiae novaehollandiae	Masked Owl (Southwest)		P3	X		X
Zanda latirostris	Carnaby's Cockatoo	EN	EN	X	X	X
Mammal						
Arctocephalus forsteri	New Zealand Fur Seal		OS	X		X
Balaenoptera musculus	Blue Whale	EN & MI	EN		X	
Bettongia penicillata ogilbyi	Woylie, Brush-tailed Bettong	EN	CR	X		X
Dasyurus geoffroii	Chuditch, Western quoll	VU	VU	X	X	X
Eubalaena australis	Southern right whale	EN & MI	VU	X	X	X
Hydromys chrysogaster	Water-rat, Rakali		P4	X		X
Isoodon fusciventer	Quenda, Southwestern Brown Bandicoot		P4	X		X
Macroderma gigas	Ghost Bat	VU	VU		X	
Megaptera novaeangliae	Humpback Whale	MI	CD & MI	X		X
Neophoca cinerea	Australian sea-Lion	EN	EN	X	X	X
Notamacropus irma	Western Brush Wallaby		P4	X		X
Reptile						
Caretta caretta	Loggerhead Turtle	EN & MI	EN	X	X	X
Chelonia mydas	Green Turtle	VU & MI	VU	X	X	X

Species Name	Common Name	Cons Code (Cwlth)	Cons Code (WA)	Nature Map	PMST	DBCA
Delma concinna major	Javelin Legless Lizard (Shark Bay)		P1	X		X
Dermochelys coriacea	Leatherback Turtle	EN & MI	VU	X	X	X
Natator depressus	Flatback Turtle	VU & MI	VU		X	
Neelaps calonotos	Black-striped Burrowing Snake		P3	X		X

4.1.2 Habitat Assessment

A total of nine fauna habitat types were identified within the site, distinguished by vegetation structure, human disturbances, and geographic factors including proximity to the coastline (Table 8, Figure 6).

Table 8: Fauna habitat types within the Yanchep Lagoon

Habitat Type (Code)	Description	Photo
Beachfront (BF)	White sand beaches on open coastline. Washed up seaweed and crab populations provide foraging opportunities for shorebirds and predatory fauna such as Nankeen Kestrel (*Falco cenchroides*) and Foxes (**Vulpes vulpes*). High human activity and domestic dog presence reduces fauna densities.	
Coastal Open Heath (OH)	Low density of coastal shrubs amongst dune systems and open sand. Limited shelter and exposure to the elements and predators restricts terrestrial fauna density and provides foraging opportunities for predatory fauna such as foxes and kestrels. Coastal bird species such as cormorants and gulls are common.	

Habitat Type (Code)	Description	Photo
Coastal Closed Heath (CH)	Dense assemblages of coastal shrubs, sedges and grasses amongst dune systems and some rock formations. Shrubs and rock formations provide shelter and foraging opportunities for reptiles and small bird species. Predatory species such as kestrels and foxes are less common, with high prevalence of larger reptiles such as King's Skink (*Egernia kingii*) and Dugite (*Pseudonaja affinis*).	
Mixed trees over cleared parkland (MT)	Mature planted trees adjacent to cleared areas and infrastructure. Large trees provide breeding, roosting, and foraging habitat for bird and bat species. Understory is sparse with little to no reptile activity evident. Proximity to open spaces and urban lighting that attracts insects at night likely increases nocturnal fauna activity.	
Cleared Parkland (CP)	Open grassland provides foraging opportunities for common urban species such as Willie Wagtails (*Rhipidura leucophrys*) and Ravens (*Corvus coronoides*).	
Coastal Shrublands (CS)	Rolling hills with open and closed shrublands connected by dense grasses and sedges. Sparse trees provide some habitat for foraging birds, while fauna assemblages are dominated by reptile activity within the dense shrubs. Soil conducive to burrowing snakes in some areas. Breaks in shrub coverage provide basking opportunities for reptiles such as Dugites (*Pseudonaja affinis*) and Bobtails (*Tiliqua rugosa*).	

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Habitat Type (Code)	Description	Photo
Open Forest (OF)	Tree coverage and shrubs provide breeding, roosting, and foraging habitat for bird and bat species. Trees <5 m in height with dense understory provide ample habitat for reptile and mammal species. Soil is suitable for burrowing reptiles in some areas. High occurrence of rabbit and fox diggings and warrens/dens. Tree coverage suitable for bats.	
Open Shrubland over Limestone (SL)	Sparse shrubs with exposed limestone. Low density shrubs provide little shelter, favouring transient species such as Bobtails and Rabbits. Low quality foraging for birds, mammals, and reptiles results in low fauna density.	
Infrastructure (IF)	Infrastructure such as buildings, roads, boardwalks, and streetlights provide some habitat and shelter for opportunistic species. Welcome Swallows (*Hirundo neoxena*) observed nesting within the outdoor ceilings of multiple buildings, King's skinks (*Egernia kingii*) observed sheltering under boardwalks, and Nankeen Kestrels (*Falco cenchroides*) observed perching on streetlights.	

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Figure 6:
Fauna Habitat

Yanchep, Western Australia

Legend

BF	MT
CH	OF
CP	OH
CS	SL
IF	Site Boundary

Client:	UDLA
Date:	26/11/2025
Created by:	D. Morrison
Image Source:	Nearmap, 2025
Datum:	GDA2020 / MGA zone 50
Scale:	1: 4200

0 50 100 m

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4.1.3 Field Survey

A total of 51 fauna species were identified during the detailed fauna survey, including 45 native and 6 introduced species. All species recorded were identified to the species level. All captured native species were released back into the site, while captured pest species were humanely euthanised. A species list outlining number of recordings and locations of species by habitat type is provided in Table 9 with examples of native fauna provided in Figure 7. Further details of the habitat type and observation methods are provided in Appendix 3.

One conservation significant fauna species was recorded during the field survey, the Crested Tern (*Thalasseus bergii*), listed as Migratory (MI) under the BC Act and EPBC Act. Over 10 individuals were observed resting in seaweed on the beachfront, including juveniles.

Two bat species were recorded during the survey using ultrasonic audio recording devices and audio analysis software (Figure 7). Gould's Wattled Bat (*Chalinolobus gouldii*) was recorded within both areas of habitat type MT and White-striped Free-tailed Bat (*Austronomus australis*) was recorded within habitat type OF.

Fauna species were observed utilising infrastructure throughout the site. Structures such as fencing, boardwalks, and streetlights were used as perching for bird species, boardwalks and decks were used as shelter for reptile species, and outdoor ceilings and small gaps in buildings were observed being used for nesting by Welcome Swallows (*Hirundo neoxena*) (Figure 8).

Six introduced fauna species were recorded during the detailed fauna survey (Figure 9), including two declared pests (Declared Pest Legal Status and Control Categories outlined in Appendix 4):

- Red Fox (**Vulpes vulpes*) - Declared Pest - s22(2) (C1 Prohibited, C3 Prohibited)
- Rabbit (**Oryctolagus cuniculus*) - Declared Pest - s22(2) (C3 Prohibited).

Both fox dens and rabbit warrens were present within the site, as well as evidence of environmental impacts such as diggings and bird kills (feathers found at locations with evidence of regular fox activity) (Figures 9 and 10). One cat was observed within the site during the nocturnal survey, deemed likely to be domestic due to the coat coloration, and proximity to houses.

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Table 9: Fauna observations within the Yanchep Lagoon site boundary. * denotes introduced species

Family	Species	Common Name	Observation Method	No. Recorded	Habitat Type
Bird					
Acanthizidae	*Acanthiza inornata*	Western Thornbill	Seen	2	CH
Cacatuidae	*Cacatua sanguinea*	Little Corella	Seen	5	CS, IF
Cuculidae	*Chalcites basalis*	Horsfield's Bronze Cuckoo	Seen	1	CH
Laridae	*Chroicocephalus novaehollandiae*	Silver Gull	Seen	>10	BF, IF
Campephagidae	*Coracina novaehollandiae*	Black-faced Cuckooshrike	Seen	5	OH, CH, CS
Corvidae	*Corvus coronoides*	Australian Raven	Seen	>10	CH, CP, CS, IF
Artamidae	*Cracticus torquatus*	Grey Butcherbird	Seen	2	OCS
Cacatuidae	*Eolophus roseicapilla*	Galah	Seen	6	CP, CS, IF
Falconidae	*Falco cenchroides*	Nankeen Kestrel	Seen	2	BF, OH, CH, IF
Meliphagidae	*Gavicalis virescens*	Singing Honeyeater	Seen	>10	CH, MT, CS, OF, SL
Artamidae	*Gymnorhina tibicen*	Australian Magpie	Seen	4	CP, CS
Hirundinidae	*Hirundo neoxena*	Welcome Swallow	Seen	>10	CH, MT, CS, IF
Laridae	*Larus pacificus*	Pacific Gull	Seen	>10	BF
Meliphagidae	*Lichmera indistincta*	Brown Honeyeater	Seen	8	CH, MT, CS
Maluridae	*Malurus assimilis assimilis*	Purple-backed Fairywren	Seen	2	CH
Maluridae	*Malurus splendens*	Splendid Fairywren	Seen	10	CH, CS, SL
Phalacrocoracidae	*Microcarbo melanoleucos*	Little Pied Cormorant	Seen	4	BF
Strigidae	*Ninox boobook*	Boobook Owl	Seen	1	MT

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Family	Species	Common Name	Observation Method	No. Recorded	Habitat Type
Phalacrocoracidae	*Phalacrocorax varius*	Pied Cormorant	Seen	7	BF, CH
Meliphagidae	*Phylidonyris novaehollandiae*	New Holland Honeyeater	Seen	>10	CH, MT, CP, CS, OF
Petroicidae	*Quoyornis georgianus*	White-breasted Robin	Seen	1	MT
Rhipiduridae	*Rhipidura leucophrys*	Willie Wagtail	Seen	>10	MT, CP, CS, IF
Acanthizidae	*Sericornis maculatus maculatus*	White-browed Scrubwren	Seen	2	CH
Laridae	*Thalasseus bergii*	Crested Tern	Seen	>10	BF
Zosteropidae	*Zosterops lateralis*	Silvereye	Seen	>10	CH, MT
Columbidae	**Spilopelia chinensis*	Spotted Turtle Dove	Seen	>10	CS, IF
Columbidae	**Spilopelia senegalensis*	Laughing Turtle Dove	Seen	3	CS, IF
Mammal					
Molossidae	*Austronomus australis*	White-striped Free-tailed Bat	Audio recorded	1	OF
Vespertilionidae	*Chalinolobus gouldii*	Gould's Wattled Bat	Audio recorded	>10	MT
Muridae	*Rattus fuscipes*	Western Bush Rat	Trapped	2	CS
Felidae	**Felis catus*	Cat	Seen	1	CS, IF
Muridae	**Mus musculus*	House Mouse	Trapped	1	OH
Leporidae	**Oryctolagus cuniculus*	Rabbit	Seen, Evidence	>10	CH, MT, CP, CS, SL, OF
Canidae	**Vulpes vulpes*	Red Fox	Seen, Evidence	≥1	BF, OH, CH, CS, OF
Reptile					
Typhlopidae	*Anilios australis*	Southern Blind Snake	Trapped	5	CS
Agamidae	*Ctenophorus adelaidensis*	Western Heath Dragon	Trapped	1	OH

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Family	Species	Common Name	Observation Method	No. Recorded	Habitat Type
Scincidae	*Ctenotus fallens*		Trapped	20	OH, CH, MT, CS, OF
Scincidae	*Cyclodomorphus celatus*		Trapped	4	OH, CS
Scincidae	*Egernia kingii*	King's Skink	Trapped, Seen	5	OH, CH, IF
Scincidae	*Hemiergis quadrilineatus*		Trapped	8	MT, CS, CH
Scincidae	*Lerista elegans*		Trapped	13	OH, CH, MT, CS, OF
Scincidae	*Lerista lineopunctulata*	Dotted-Line Robust Slider	Trapped	1	CS
Scincidae	*Lerista praepedita*		Trapped	1	CS
Pygopodidae	*Lialis burtonis*	Burton's Legless Lizard	Trapped	5	CS
Scincidae	*Menetia greyii*	Dwarf Skink	Trapped	1	MT
Scincidae	*Morethia obscura*		Trapped	1	CH
Squamata	*Pogona minor*	Western Bearded Dragon	Seen	1	OF
Elapidae	*Pseudonaja affinis*	Dugite	Trapped, Seen	3	CH, MT, IF
Diplodactylidae	*Strophurus spinigerus*	Spiny-tailed Gecko	Trapped, Seen	8	OH, CH, CS, OF
Scincidae	*Tiliqua occipitalis*	Western Bluetongue	Trapped	2	CS
Scincidae	*Tiliqua rugosa*	Bobtail	Trapped, Seen	35	OH, CH, MT, CS, OF, SL

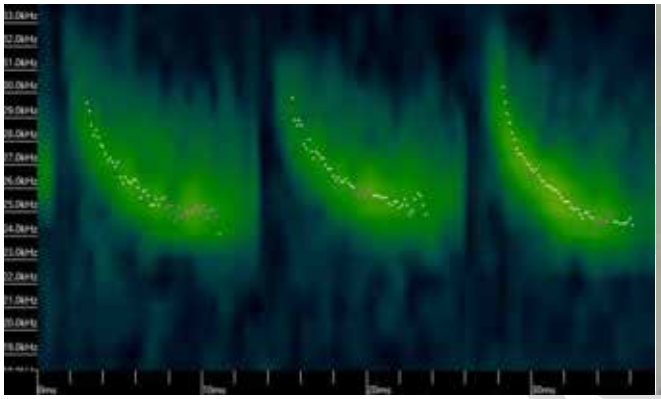
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Nankeen Kestrel (*Falco cenchroides*)



Splendid Fairywren (*Malurus splendens*)



Gould's Wattled Bat (*Chalinolobus gouldii*) recording



Western Bush Rat (*Rattus fuscipes*)



Dugite (*Pseudonaja affinis*)



Burton's Legless Lizard (*Lialis burtonis*)



South-western Spiny-tailed Gecko (*Strophurus spinigerus*)



King's Skink (*Egernia kingii*)

Figure 7: Examples of native fauna species observed within Yanchep Lagoon.



Welcome Swallow (*Hirundo neoxena*) fledgelings cached in ceiling of outdoor structure



Galah (*Eolophus roseicapilla*) flock perched on boardwalk



Nankeen Kestrel (*Falco cenchroides*) perched on streetlight



Splendid Fairywren (*Malurus splendens*) perched on fence while foraging

Figure 8: Examples of fauna species utilising infrastructure within Yanchep Lagoon.

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Rabbit (*_Oryctolagus cuniculus_)



Rabbit digging



Red Fox (*_Vulpes vulpes_) prints



Predated Splendid Fairywren (_Malurus splendens_)



Spotted Turtle Dove (*_Spilopelia chinensis_)



House Mouse (*_Mus musculus_), euthanised

Figure 9: Examples of introduced fauna species and their impacts observed within Yanchep Lagoon.

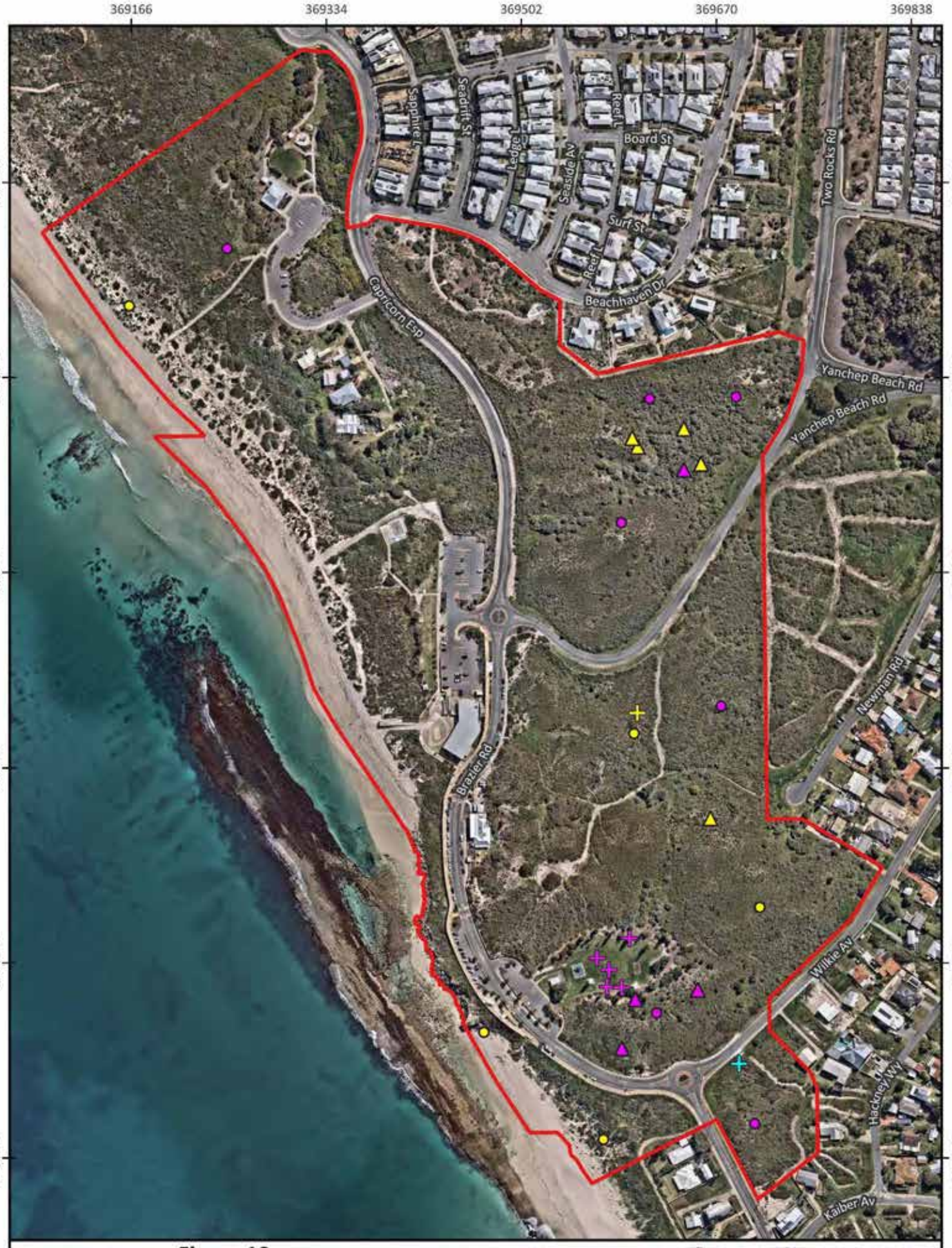


Figure 10:
Declared Pest Fauna Locations

Yanchep, Western Australia

Legend

- Cat Sighting
- Fox Den
- Fox Evidence
- Fox Sighting
- Rabbit Evidence
- Rabbit Sighting
- Rabbit Warren
- Site Boundary

Client:	UDLA
Date:	26/11/2025
Created by:	D. Morrison
Image Source:	Nearmap, 2025
Datum:	GDA2020 / MGA zone 50
Scale:	1: 4200

0 50 100 m

N

4.2 Black Cockatoo Habitat Assessment Results

4.2.1 Desktop Survey

There is the potential for one black cockatoo species and their habitat to occur on site, the Carnaby's Cockatoo (*Zanda latirostris*), listed as Endangered under the EPBC Act and the BC Act. According to NationalMap the survey site occurs within an area classified as:

- Carnaby's Cockatoo Areas requiring investigation as feeding habitat in the SCP (DBCA-057) (DBCA, 2018a)
- Carnaby's Cockatoo Confirmed Breeding Areas within the Swan Coastal Plain and Jarrah Forest IBRA region (DBCA, 2018b)
- Carnaby's Cockatoo Unconfirmed Breeding Areas within the Swan Coastal Plain and Jarrah Forest IBRA regions (DBCA, 2018c).

A desktop search of NatureMap database (DBCA, 2025a) and the Protected Matters Search Tool (DCCEEW, 2025) indicated the potential for the Carnaby's Cockatoo (*Zanda latirostris*) to occur within the survey area due to the proximity to known breeding sites (within 10 km).

4.2.2 Field Survey

Potential Breeding Habitat

Suitable breeding habitat for black cockatoos was not present within the site boundary. Of the four potential habitat trees (DBH > 500 mm) that were recorded within the site (Figure 11, Appendix 5), none were observed to contain hollows, each scoring 5 for the Bamford (2016) habitat tree grading (Table 4). No other secondary evidence such as scats or feathers were observed within the survey area.

Roosting Habitat

No evidence of roosting in the form of scats or feathers was observed within the survey area at the time of the survey. Dusk surveys were conducted in concurrence with the nocturnal fauna survey and observed no roosting of black cockatoos within the survey area. The presence of *Eucalyptus gomphocephala* (Tuart) trees within the site, including four trees with DBH > 500 mmm, provide potential roosting opportunities for black cockatoo species, however, the exposure to winds and the distance of the trees from high quality black cockatoo habitat significantly reduces the likelihood of the utilisation of these trees for roosting.

Foraging Habitat

No evidence of foraging was observed within the survey area. The presence of *Eucalyptus gomphocephala* (Tuart) trees within the site, including four trees with DBH > 500 mmm, provide potential foraging (Table 10).

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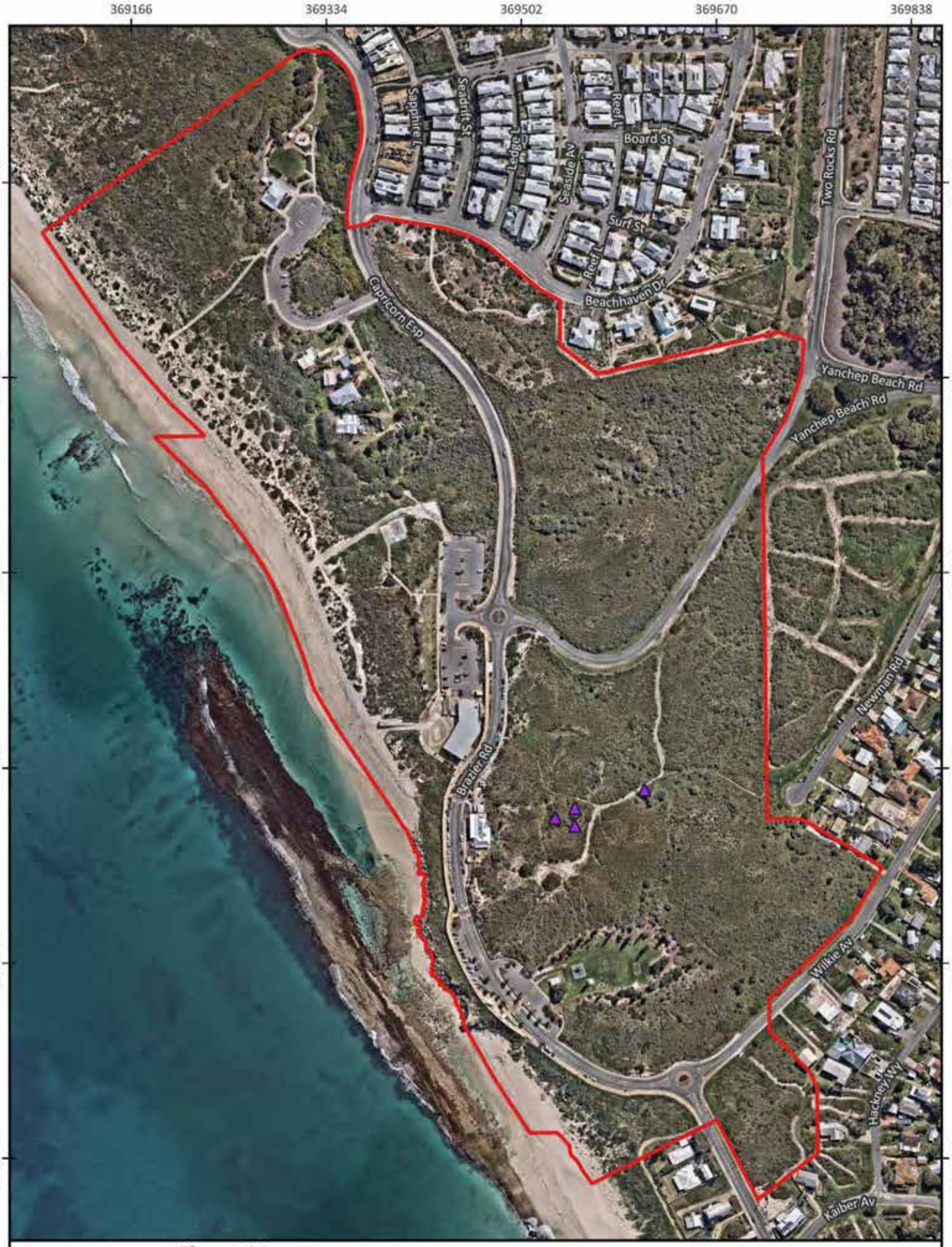


Figure 11:
Black Cockatoo Potential Habitat Trees

Yanchep, Western Australia

Legend

- *Eucalyptus gomphocephala* (Tuart)
- Site Boundary

Client:	UDLA
Date:	26/11/2025
Created by:	D. Morrison
Image Source:	Nearmap, 2025
Datum:	GDA2020 / MGA zone 50
Scale:	1: 4200

0 50 100 m

N

Table 10: Foraging quality scoring tool results

Starting score	Baudin's Cockatoo	Carnaby's Cockatoo	Forest Red-tailed Black-Cockatoo
10	Start at a score of 10 if your site is native eucalypt woodlands and forest, and proteaceous woodland and heath, particularly Marri, within the range of the species, including along roadsides and parkland cleared areas. Can include planted vegetation. This tool only applies to sites equal to or larger than 1 hectare in size.	Start at a score of 10 if your site is native shrubland, kwongan heathland or woodland, dominated by proteaceous plant species such as Banksia spp. (including Dryandra spp.), Hakea spp. and Grevillea spp., as well as native eucalypt woodland and forest that contains foraging species, within the range of the species, including along roadsides and parkland cleared areas. Also includes planted native vegetation. This tool only applies to sites equal to or larger than 1 hectare in size.	Start at a score of 10 if your site is Jarrah or Marri woodland and/or forest, or if it is on the edge of Karri forest, or if Wandoo and Blackbutt occur on the site, within the range of the subspecies, including along roadsides and parkland cleared areas. This tool only applies to sites equal to or larger than 1 hectare in size.

Attribute	Sub-tractions	Context adjustor (attributes reducing functionality of foraging habitat)		
Foraging potential	-2	-	-2	-
Connectivity	-2	-	0	-
Proximity to breeding	-2	-	-2	-
Proximity to roosting	-1	-	0	-
Impact from significant plant disease	-1	-	0	-
Total score		**N/A**	**6**	**N/A**
Appraisal	With limited foraging opportunities within the site due to isolated patches of potential habitat trees, foraging is unlikely to occur with regularity. Transient individuals or groups may utilise *Eucalyptus gomphocephala* (Tuart) trees within the site, given the proximity to known roosting sites (within 4 km) as well as sightings of Carnaby's Cockatoos identified in the desktop assessment (within 2 km).			

Source: DAWE, 2022.

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5.0 Implications of Results and Recommendations

5.1 Fauna

Of the 59 conservation significant species identified as potentially occurring within the site during the desktop assessment, 1 was recorded within the site, the Crested Tern (*Thalasseus bergii*, MI). Approximately 15 individuals were seen resting amongst seaweed on the beachfront, with juveniles and adults present, indicating this area may be significant habitat for rearing chicks. While no other species recorded were of conservation significance, habitat types within the site are likely able to support populations of Quenda (*Isoodon fusciventer*) and Black-striped Burrowing Snakes (*Neelaps calonotos*), as well as migratory shorebirds along the beachfront. The absence of Quenda populations may be due to predation pressure by the fox (**Vulpes vulpes*) population within the site, as well as interspecific competition with rabbits (**Oryctolagus cuniculus*). The site occurs within Bush Forever Site 397 and Perth Regional Ecological Linkage No. 1, linking to bush forever sites 406 through to 315, maintaining ecological connectivity along the coast. The ecological significance of the site within the regional context highlights the importance of effective management both within the site and surrounding bushlands.

The detailed fauna survey identified 51 species within the site through the implementation of a 7 traplines, 18 box traps, active searching, a nocturnal survey, and installation of trail cameras and ultrasonic audio recording devices (Figure 5). Habitat types that were unable to have any traps installed due to logistical restrictions or high public access include BF, CP, and IF. Habitat type SL was unable to have a trapline installed due to the presence of limestone. Theses habitat types were surveyed by active searching, a nocturnal survey, and box traps installed in SL, with survey efforts able to identify significant fauna assemblages present.

Of the 51 species recorded during the survey, 6 were introduced species, 2 of which are declared pests: Rabbit (**Oryctolagus cuniculus*) and Red Fox (**Vulpes vulpes*). Abundant evidence of both rabbits and foxes across the site (Figure 10) indicates that established populations are at relatively high densities, with fresh sign of both species recorded during the survey including evidence of environmental impacts such as diggings and native bird kills (Figure 9). The presence of these species is likely to negatively impact native fauna assemblages through competition, predation, and habitat degradation. Failure to control feral populations may lead to the loss of native species populations within the site, and prevent incursion of native species such as quenda, which are likely able to inhabit habitat types CH, CS, OF, and SL under pest free conditions. While eradication of rabbits and foxes is not likely due to neighbouring populations able to quickly incur into the site, it is recommended that ongoing management of rabbit and fox populations occurs both within the site, as well as surrounding habitat. The sighting of one cat during the nocturnal survey indicates that roaming domesticated cats, and possibly feral cats may be further negatively impacting the native fauna populations within the site. As no evidence of cat activity such as prints and scat was recorded within the site, it is likely that cat presence within the site is not significant at present. It is recommended that monitoring for changes in the presence and activity of cats within the site occurs, with control measures implemented if activity increases.

The survey recorded several instances of infrastructure being utilised by fauna populations throughout the site (Figure 8). In the absence of tall trees throughout large portions of the site, infrastructure such as

streetlights, fences, and boardwalks were observed being utilised by birds while foraging and hunting. Welcome Swallows (*Hirundo neoxena*) were observed nesting in sheltered ceilings, King's Skinks (*Egernia kingii*) observed sheltering underneath boardwalks, and Gould's Wattled Bats (*Chalinolobus gouldii*) were recorded in areas with tall trees adjacent to lights that attract insects at night. These observations illustrate the ability of fauna to utilise infrastructure, expanding potential habitat to areas outside of undisturbed vegetation. Given this occurrence, it is recommended that any future disturbances or installation of infrastructure within the site attempt to facilitate potential use of the infrastructure by native fauna in accordance with the relevant ecology of the native species.

5.2 Black Cockatoo Habitat

The desktop assessment indicated the possibility for the occurrence of one of the three black cockatoo species to occur within the site, the Carnaby's Cockatoo (*Zanda latirostris*). No evidence of black cockatoo presence within the site was recorded during the Black Cockatoo Habitat Assessment. While four potential habitat trees (*Eucalyptus gomphocephala* (Tuarts) with DBH > 500 mm) were recorded within the site (Figure 11), none had hollows, indicating that there is no breeding habitat within the site. The distance from quality black cockatoo habitat and the wind exposed position of three of the four potential habitat trees makes roosting within the site highly unlikely. Foraging opportunities for cockatoos within the site is limited, with suitable foraging opportunities among the small patches of Tuarts. These may be utilised by transient cockatoos traveling through the area. It is unlikely that the site contains any critical habitat for black cockatoo populations.

DRAFT

8.0 References

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Appendix 1: PMST Report 10 km

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EPBC Act Protected Matters Report

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

Report created: 03-Jul-2025

Summary
Details
- Matters of NES
- Other Matters Protected by the EPBC Act
- Extra Information

Caveat
Acknowledgements

Summary

Matters of National Environment Significance

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

World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International Importance (Ramsar	None
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	1
Listed Threatened Ecological Communities:	5
Listed Threatened Species:	55
Listed Migratory Species:	48

Other Matters Protected by the EPBC Act

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

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

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

Commonwealth Lands:	4
Commonwealth Heritage Places:	None
Listed Marine Species:	72
Whales and Other Cetaceans:	12
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	1
Habitat Critical to the Survival of Marine Turtles:	None

Extra Information

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

State and Territory Reserves:	2
Regional Forest Agreements:	None
Nationally Important Wetlands:	1
EPBC Act Referrals:	27
Key Ecological Features (Marine):	2
Biologically Important Areas:	10
Bioregional Assessments:	None
Geological and Bioregional Assessments:	None

Details

Matters of National Environmental Significance

Commonwealth Marine Area [Resource Information]

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

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

Listed Threatened Ecological Communities [Resource Information]

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

Community Name	Threatened Category	Presence Text	Buffer Status
Aquatic Root Mat Community in Caves of the Swan Coastal Plain	Endangered	Community known to occur within area	In buffer area only
Banksia Woodlands of the Swan Coastal Plain ecological community	Endangered	Community likely to occur within area	In feature area
Honeymyrtle shrubland on limestone ridges of the Swan Coastal Plain Bioregion	Critically Endangered	Community likely to occur within area	In buffer area only
Sedgelands in Holocene dune swales of the southern Swan Coastal Plain	Endangered	Community known to occur within area	In buffer area only
Tuart (Eucalyptus gomphocephala) Woodlands and Forests of the Swan Coastal Plain ecological community	Critically Endangered	Community likely to occur within area	In feature area

Listed Threatened Species [Resource Information]

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

Scientific Name	Threatened Category	Presence Text	Buffer Status
BIRD			
Anous tenuirostris melanops			
Australian Lesser Noddy [26000]	Vulnerable	Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Ardenna grisea Sooty Shearwater [82651]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat may occur within area	In feature area
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat known to occur within area	In feature area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat likely to occur within area	In feature area
Calyptorhynchus banksii naso Forest Red-tailed Black-Cockatoo, Karrak [67034]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat known to occur within area	In feature area
Diomedea amsterdamensis Amsterdam Albatross [64405]	Endangered	Species or species habitat may occur within area	In feature area
Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	Species or species habitat may occur within area	In feature area
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Halobaena caerulea Blue Petrel [1059]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Leipoa ocellata Malleefowl [934]	Vulnerable	Species or species habitat likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Limosa lapponica menzbieri Northern Siberian Bar-tailed Godwit, Russkoye Bar-tailed Godwit [86432]	Endangered	Species or species habitat may occur within area	In feature area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area	In feature area
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area	In feature area
Pachyptila turtur subantarctica Fairy Prion (southern) [64445]	Vulnerable	Species or species habitat known to occur within area	In feature area
Phaethon rubricauda westralis Red-tailed Tropicbird (Indian Ocean), Indian Ocean Red-tailed Tropicbird [91824]	Endangered	Species or species habitat may occur within area	In feature area
Phoebetria fusca Sooty Albatross [1075]	Vulnerable	Species or species habitat may occur within area	In feature area
Pterodroma mollis Soft-plumaged Petrel [1036]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Rostratula australis Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area	In feature area
Sternula albifrons Little Tern [82849]	Vulnerable	Species or species habitat may occur within area	In feature area
Sternula nereis nereis Australian Fairy Tern [82950]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Thalassarche carteri			
Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Thalassarche cauta			
Shy Albatross [89224]	Endangered	Species or species habitat may occur within area	In feature area
Thalassarche impavida			
Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area	In feature area
Thalassarche melanophris			
Black-browed Albatross [66472]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Thalassarche steadi			
White-capped Albatross [64462]	Vulnerable	Species or species habitat may occur within area	In feature area
Tringa nebularia			
Common Greenshank, Greenshank [832]	Endangered	Species or species habitat likely to occur within area	In buffer area only
Zanda latirostris listed as Calyptorhynchus latirostris			
Carnaby's Black Cockatoo, Short-billed Black-cockatoo [87737]	Endangered	Breeding known to occur within area	In feature area
INSECT			
Hesperocolletes douglasi			
Douglas' Broad-headed Bee, Rottnest Bee [66734]	Critically Endangered	Species or species habitat may occur within area	In feature area
MAMMAL			
Balaenoptera musculus			
Blue Whale [36]	Endangered	Species or species habitat likely to occur within area	In feature area
Dasyurus geoffroii			
Chuditch, Western Quoll [330]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Eubalaena australis			
Southern Right Whale [40]	Endangered	Breeding known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Macroderma gigas Ghost Bat [174]	Vulnerable	Species or species habitat may occur within area	In feature area
Neophoca cinerea Australian Sea-lion, Australian Sea Lion [22]	Endangered	Species or species habitat likely to occur within area	In feature area
PLANT			
Andersonia gracilis Slender Andersonia [14470]	Endangered	Species or species habitat may occur within area	In feature area
Anigozanthos viridis subsp. terraspectans Dwarf Green Kangaroo Paw [3435]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
Banksia mimica Summer Honeypot [82765]	Endangered	Species or species habitat may occur within area	In buffer area only
Caleana dixonii listed as Paracaleana dixonii Sandplain Duck Orchid [87944]	Endangered	Species or species habitat may occur within area	In buffer area only
Diuris micrantha Dwarf Bee-orchid [55082]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Diuris purdiei Purdie's Donkey-orchid [12950]	Endangered	Species or species habitat may occur within area	In buffer area only
Drakaea elastica Glossy-leafed Hammer Orchid, Glossy-leaved Hammer Orchid, Warty Hammer Orchid [16753]	Endangered	Species or species habitat likely to occur within area	In buffer area only
Eleocharis keigheryi Keighery's Eleocharis [64893]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Eucalyptus argutifolia Yanchep Mallee, Wabling Hill Mallee [24263]	Vulnerable	Species or species habitat known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Macarthuria keigheryi Keighery's Macarthuria [64930]	Endangered	Species or species habitat may occur within area	In buffer area only
REPTILE			
Caretta caretta Loggerhead Turtle [1763]	Endangered	Foraging, feeding or related behaviour known to occur within area	In feature area
Chelonia mydas Green Turtle [1765]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In feature area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Foraging, feeding or related behaviour known to occur within area	In feature area
Natator depressus Flatback Turtle [59257]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In feature area
SHARK			
Carcharias taurus (west coast population) Grey Nurse Shark (west coast population) [68752]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Carcharodon carcharias White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat known to occur within area	In feature area
Pristis pristis Freshwater Sawfish, Largetooth Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Vulnerable	Species or species habitat may occur within area	In feature area
Rhincodon typus Whale Shark [66680]	Vulnerable	Species or species habitat may occur within area	In feature area
Sphyrna lewini Scalloped Hammerhead [85267]	Conservation Dependent	Species or species habitat likely to occur within area	In feature area
Listed Migratory Species			[Resource Information]

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

Scientific Name	Threatened Category	Presence Text	Buffer Status
Onychoprion anaethetus Bridled Tern [82845]		Breeding known to occur within area	In feature area
Phoebetria fusca Sooty Albatross [1075]	Vulnerable	Species or species habitat may occur within area	In feature area
Sterna dougallii Roseate Tern [817]		Foraging, feeding or related behaviour likely to occur within area	In feature area
Sternula albifrons Little Tern [82849]	Vulnerable	Species or species habitat may occur within area	In feature area
Thalassarche carteri Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Thalassarche cauta Shy Albatross [89224]	Endangered	Species or species habitat may occur within area	In feature area
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area	In feature area
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Thalassarche steadi White-capped Albatross [64462]	Vulnerable	Species or species habitat may occur within area	In feature area
Migratory Marine Species			
Balaenoptera edeni Bryde's Whale [35]		Species or species habitat may occur within area	In feature area
Balaenoptera musculus Blue Whale [36]	Endangered	Species or species habitat likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
[Caperea marginata](#) Pygmy Right Whale [39]		Species or species habitat may occur within area	In feature area
[Carcharhinus longimanus](#) Oceanic Whitetip Shark [84108]		Species or species habitat may occur within area	In feature area
[Carcharias taurus](#) Grey Nurse Shark [64469]		Species or species habitat likely to occur within area	In feature area
[Carcharodon carcharias](#) White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat known to occur within area	In feature area
[Caretta caretta](#) Loggerhead Turtle [1763]	Endangered	Foraging, feeding or related behaviour known to occur within area	In feature area
[Chelonia mydas](#) Green Turtle [1765]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In feature area
[Dermochelys coriacea](#) Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Foraging, feeding or related behaviour known to occur within area	In feature area
[Eubalaena australis as Balaena glacialis australis](#) Southern Right Whale [40]	Endangered	Breeding known to occur within area	In feature area
[Lamna nasus](#) Porbeagle, Mackerel Shark [83288]		Species or species habitat may occur within area	In feature area
[Megaptera novaeangliae](#) Humpback Whale [38]		Species or species habitat known to occur within area	In feature area
[Mobula alfredi as Manta alfredi](#) Reef Manta Ray, Coastal Manta Ray [90033]		Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Mobula birostris as Manta birostris Giant Manta Ray [90034]		Species or species habitat may occur within area	In feature area
Natator depressus Flatback Turtle [59257]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In feature area
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may occur within area	In feature area
Pristis pristis Freshwater Sawfish, Largetooth Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Vulnerable	Species or species habitat may occur within area	In feature area
Rhincodon typus Whale Shark [66680]	Vulnerable	Species or species habitat may occur within area	In feature area
Migratory Terrestrial Species			
Motacilla cinerea Grey Wagtail [642]		Species or species habitat may occur within area	In feature area
Migratory Wetlands Species			
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat likely to occur within area	In feature area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat may occur within area	In feature area
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat known to occur within area	In feature area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat likely to occur within area	In feature area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Charadrius leschenaultii			
Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat known to occur within area	In feature area
Limosa lapponica			
Bar-tailed Godwit [844]		Species or species habitat may occur within area	In feature area
Numenius madagascariensis			
Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area	In feature area
Pandion haliaetus			
Osprey [952]		Species or species habitat known to occur within area	In feature area
Tringa nebularia			
Common Greenshank, Greenshank [832]	Endangered	Species or species habitat likely to occur within area	In buffer area only

Other Matters Protected by the EPBC Act

Commonwealth Lands [Resource Information]

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

Commonwealth Land Name	State	Buffer Status
Unknown		
Commonwealth Land - [50315]	WA	In buffer area only
Commonwealth Land - [50396]	WA	In buffer area only
Commonwealth Land - [50355]	WA	In buffer area only
Commonwealth Land - [50402]	WA	In buffer area only

Listed Marine Species [Resource Information]

Scientific Name	Threatened Category	Presence Text	Buffer Status
Bird			
Actitis hypoleucos			
Common Sandpiper [59309]		Species or species habitat likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Anous stolidus Common Noddy [825]		Species or species habitat likely to occur within area	In feature area
Anous tenuirostris melanops Australian Lesser Noddy [26000]	Vulnerable	Species or species habitat may occur within area	In feature area
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area overfly marine area	In feature area
Ardenna carneipes as Puffinus carneipes Flesh-footed Shearwater, Fleshy-footed Shearwater [82404]		Foraging, feeding or related behaviour likely to occur within area	In feature area
Ardenna grisea as Puffinus griseus Sooty Shearwater [82651]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Bubulcus ibis as Ardea ibis Cattle Egret [66521]		Species or species habitat may occur within area overfly marine area	In feature area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat may occur within area	In feature area
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat known to occur within area overfly marine area	In feature area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat likely to occur within area overfly marine area	In feature area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area overfly marine area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat known to occur within area	In feature area
Chroicocephalus novaehollandiae as Larus novaehollandiae Silver Gull [82326]		Breeding known to occur within area	In buffer area only
Diomedea amsterdamensis Amsterdam Albatross [64405]	Endangered	Species or species habitat may occur within area	In feature area
Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	Species or species habitat may occur within area	In feature area
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat likely to occur within area	In feature area
Halobaena caerulea Blue Petrel [1059]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Hydroprogne caspia as Sterna caspia Caspian Tern [808]		Foraging, feeding or related behaviour known to occur within area	In feature area
Larus pacificus Pacific Gull [811]		Foraging, feeding or related behaviour may occur within area	In feature area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat may occur within area	In feature area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area overfly marine area	In feature area
Motacilla cinerea Grey Wagtail [642]		Species or species habitat may occur within area overfly marine area	In feature area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area	In feature area
Onychoprion anaethetus as Sterna anaethetus Bridled Tern [82845]		Breeding known to occur within area	In feature area
Pachyptila turtur Fairy Prion [1066]		Species or species habitat known to occur within area	In feature area
Pandion haliaetus Osprey [952]		Species or species habitat known to occur within area	In feature area
Phoebetria fusca Sooty Albatross [1075]	Vulnerable	Species or species habitat may occur within area	In feature area
Pterodroma mollis Soft-plumaged Petrel [1036]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Puffinus assimilis Little Shearwater [59363]		Foraging, feeding or related behaviour known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Rostratula australis as Rostratula benghalensis (sensu lato)			
Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area overfly marine area	In feature area
Stercorarius antarcticus as Catharacta skua			
Brown Skua [85039]		Species or species habitat may occur within area	In buffer area only
Sterna dougallii			
Roseate Tern [817]		Foraging, feeding or related behaviour likely to occur within area	In feature area
Sternula albifrons as Sterna albifrons			
Little Tern [82849]	Vulnerable	Species or species habitat may occur within area	In feature area
Thalassarche carteri			
Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Thalassarche cauta			
Shy Albatross [89224]	Endangered	Species or species habitat may occur within area	In feature area
Thalassarche impavida			
Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area	In feature area
Thalassarche melanophris			
Black-browed Albatross [66472]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Thalassarche steadi			
White-capped Albatross [64462]	Vulnerable	Species or species habitat may occur within area	In feature area
Thinornis cucullatus as Thinornis rubricollis			
Hooded Plover, Hooded Dotterel [87735]		Species or species habitat known to occur within area overfly marine area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
[Tringa nebularia](#) Common Greenshank, Greenshank [832]	Endangered	Species or species habitat likely to occur within area overfly marine area	In buffer area only
Fish			
[Acentronura australe](#) Southern Pygmy Pipehorse [66185]		Species or species habitat may occur within area	In feature area
[Campichthys galei](#) Gale's Pipefish [66191]		Species or species habitat may occur within area	In feature area
[Choeroichthys suillus](#) Pig-snouted Pipefish [66198]		Species or species habitat may occur within area	In feature area
[Halicampus brocki](#) Brock's Pipefish [66219]		Species or species habitat may occur within area	In feature area
[Hippocampus angustus](#) Western Spiny Seahorse, Narrow-bellied Seahorse [66234]		Species or species habitat may occur within area	In feature area
[Hippocampus breviceps](#) Short-head Seahorse, Short-snouted Seahorse [66235]		Species or species habitat may occur within area	In feature area
[Hippocampus subelongatus](#) West Australian Seahorse [66722]		Species or species habitat may occur within area	In feature area
[Lissocampus fatiloquus](#) Prophet's Pipefish [66250]		Species or species habitat may occur within area	In feature area
[Maroubra perserrata](#) Sawtooth Pipefish [66252]		Species or species habitat may occur within area	In feature area
[Mitotichthys meraculus](#) Western Crested Pipefish [66259]		Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Nannocampus subosseus Bonyhead Pipefish, Bony-headed Pipefish [66264]		Species or species habitat may occur within area	In feature area
Phycodurus eques Leafy Seadragon [66267]		Species or species habitat may occur within area	In feature area
Phyllopteryx taeniolatus Common Seadragon, Weedy Seadragon [66268]		Species or species habitat may occur within area	In feature area
Pugnaso curtirostris Pugnose Pipefish, Pug-nosed Pipefish [66269]		Species or species habitat may occur within area	In feature area
Solegnathus lettiensis Gunther's Pipehorse, Indonesian Pipefish [66273]		Species or species habitat may occur within area	In feature area
Stigmatopora argus Spotted Pipefish, Gulf Pipefish, Peacock Pipefish [66276]		Species or species habitat may occur within area	In feature area
Stigmatopora nigra Widebody Pipefish, Wide-bodied Pipefish, Black Pipefish [66277]		Species or species habitat may occur within area	In feature area
Syngnathoides biaculeatus Double-end Pipehorse, Double-ended Pipehorse, Alligator Pipefish [66279]		Species or species habitat may occur within area	In feature area
Urocampus carinirostris Hairy Pipefish [66282]		Species or species habitat may occur within area	In feature area
Vanacampus margaritifer Mother-of-pearl Pipefish [66283]		Species or species habitat may occur within area	In feature area
Mammal			
Arctocephalus forsteri Long-nosed Fur-seal, New Zealand Fur-seal [20]		Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
[Neophoca cinerea](#) Australian Sea-lion, Australian Sea Lion [22]	Endangered	Species or species habitat likely to occur within area	In feature area
Reptile			
[Aipysurus pooleorum](#) Shark Bay Sea Snake [66061]		Species or species habitat may occur within area	In feature area
[Caretta caretta](#) Loggerhead Turtle [1763]	Endangered	Foraging, feeding or related behaviour known to occur within area	In feature area
[Chelonia mydas](#) Green Turtle [1765]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In feature area
[Dermochelys coriacea](#) Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Foraging, feeding or related behaviour known to occur within area	In feature area
[Hydrophis kingii as Disteira kingii](#) Spectacled Sea Snake [93511]		Species or species habitat may occur within area	In feature area
[Hydrophis platura as Pelamis platurus](#) Yellow-bellied Sea Snake [93746]		Species or species habitat may occur within area	In feature area
[Natator depressus](#) Flatback Turtle [59257]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In feature area

Whales and Other Cetaceans			[Resource Information]
Current Scientific Name	Status	Type of Presence	Buffer Status
Mammal			
[Balaenoptera acutorostrata](#) Minke Whale [33]		Species or species habitat may occur within area	In feature area

Current Scientific Name	Status	Type of Presence	Buffer Status
Balaenoptera edeni Bryde's Whale [35]		Species or species habitat may occur within area	In feature area
Balaenoptera musculus Blue Whale [36]	Endangered	Species or species habitat likely to occur within area	In feature area
Caperea marginata Pygmy Right Whale [39]		Species or species habitat may occur within area	In feature area
Delphinus delphis Common Dolphin, Short-beaked Common Dolphin [60]		Species or species habitat may occur within area	In feature area
Eubalaena australis Southern Right Whale [40]	Endangered	Breeding known to occur within area	In feature area
Grampus griseus Risso's Dolphin, Grampus [64]		Species or species habitat may occur within area	In feature area
Megaptera novaeangliae Humpback Whale [38]		Species or species habitat known to occur within area	In feature area
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may occur within area	In feature area
Stenella attenuata Spotted Dolphin, Pantropical Spotted Dolphin [51]		Species or species habitat may occur within area	In feature area
Tursiops aduncus Indian Ocean Bottlenose Dolphin, Spotted Bottlenose Dolphin [68418]		Species or species habitat likely to occur within area	In feature area
Tursiops truncatus s. str. Bottlenose Dolphin [68417]		Species or species habitat may occur within area	In feature area

Australian Marine Parks [Resource Information]

Park Name	Zone & IUCN Categories	Buffer Status
Two Rocks	Multiple Use Zone (IUCN VI)	In buffer area only

Extra Information

State and Territory Reserves			[Resource Information]
Protected Area Name	Reserve Type	State	Buffer Status
Unnamed WA49994	Conservation Park	WA	In buffer area only
Yanchep	National Park	WA	In buffer area only

Nationally Important Wetlands		[Resource Information]
Wetland Name	State	Buffer Status
Loch McNess System	WA	In buffer area only

EPBC Act Referrals				[Resource Information]
Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Alkimos Seawater Desalination	2019/8453		Completed	In buffer area only
Gonneville Nickel-Copper-Platinum Group Element Mine Development Project	2024/09839		Assessment	In buffer area only
Samphire Offshore Wind Farm	2022/09306		Assessment	In buffer area only
Urban Development of Part Lot 801 Marmion Avenue, Eglinton	2024/09881		Completed	In buffer area only
Yanchep Rail Extension, WA	2018/8262		Post-Approval	In buffer area only
Controlled action				
Alkimos city centre and central development, WA	2015/7561	Controlled Action	Post-Approval	In buffer area only
Alkimos Coastal Node	2020/8861	Controlled Action	Further Information Request	In buffer area only
Butler North District Open Space playing fields development, Wanneroo, WA	2017/8053	Controlled Action	Post-Approval	In buffer area only

Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Controlled action				
Eglinton/South Yanchep Residential Development	2011/6021	Controlled Action	Post-Approval	In buffer area only
Eglinton Estates - Clearing of native vegetation from Lot 1007 & part Lot 1008	2010/5777	Controlled Action	Post-Approval	In buffer area only
Jindee Residential Development	2012/6631	Controlled Action	Post-Approval	In buffer area only
Mitchell Freeway Extension and Wanneroo Road Upgrade, WA	2018/8367	Controlled Action	Post-Approval	In buffer area only
Proposed Urban Development of Lots 1005 & 1006	2008/4638	Controlled Action	Post-Approval	In buffer area only
Residential and commercial development on part 19 (Lot 6) Taronga Place, Eglinton, WA	2017/7872	Controlled Action	Post-Approval	In buffer area only
Residential development,Lot 609, Yanchep Beach Road, Yanchep, WA	2014/7146	Controlled Action	Post-Approval	In buffer area only
Residential development Lot 1004 Alkimos WA	2011/5902	Controlled Action	Post-Approval	In buffer area only
Urban and Residential Development at Lot 9 Brighton	2011/6137	Controlled Action	Post-Approval	In buffer area only
Urban development in accordance with the Local Structure Plan	2008/4601	Controlled Action	Post-Approval	In buffer area only
Urban Residential Development at Lot 9049 Marmoin Avenue	2009/5155	Controlled Action	Post-Approval	In buffer area only
Not controlled action				
Alkimos seawater desalination plant, offshore investigations, WA	2018/8224	Not Controlled Action	Completed	In buffer area only
Amberton West urban development - Part lot 9005 Eglington WA	2013/7068	Not Controlled Action	Completed	In buffer area only
Development of new Alkimos Wastwater Treatment Plant	2007/3259	Not Controlled Action	Completed	In buffer area only
Improving rabbit biocontrol: releasing another strain of RHDV, sthrn two thirds of Australia	2015/7522	Not Controlled Action	Completed	In feature area
INDIGO West Submarine Telecommunications Cable, WA	2017/8126	Not Controlled Action	Completed	In buffer area only
Residential development, Lots 9010 and 9031, Yanchep Beach Rd, Yanchep	2016/7642	Not Controlled Action	Completed	In buffer area only

Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Not controlled action				
Residential Development Eglinton West, Lot 5000 & part Lot 5001, Pipidinny Road, Eglinton	2014/7137	Not Controlled Action	Completed	In buffer area only
residential subdivision	2005/1965	Not Controlled Action	Completed	In feature area

Key Ecological Features [Resource Information]

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

Name	Region	Buffer Status
Commonwealth marine environment within and adjacent to the west coast inshore lagoons	South-west	In buffer area only
Western rock lobster	South-west	In buffer area only

Biologically Important Areas [Resource Information]

Scientific Name	Behaviour	Presence	Buffer Status
Seabirds			
Ardenna pacifica			
Wedge-tailed Shearwater [84292]	Foraging (in high numbers)	Known to occur	In feature area
Hydroprogne caspia			
Caspian Tern [808]	Foraging (provisioning young)	Known to occur	In feature area
Larus pacificus			
Pacific Gull [811]	Foraging (in high numbers)	Former Range	In feature area
Onychoprion anaethetus			
Bridled Tern [82845]	Foraging (in high numbers)	Known to occur	In feature area
Puffinus assimilis tunneyi			
Little Shearwater [59363]	Foraging (in high numbers)	Known to occur	In feature area
Sterna dougallii			
Roseate Tern [817]	Foraging	Known to occur	In feature area
Sternula nereis			
Fairy Tern [82949]	Foraging (in high numbers)	Known to occur	In feature area

Scientific Name	Behaviour	Presence	Buffer Status
Seals			
Neophoca cinerea Australian Sea Lion [22]	Foraging (male)	Likely to occur	In feature area
Whales			
Megaptera novaeangliae Humpback Whale [38]	Migration (north)	Known to occur	In buffer area only
Megaptera novaeangliae Humpback Whale [38]	Migration (north and south)	Known to occur	In feature area

Caveat

1 PURPOSE

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

The report contains the mapped locations of:

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

2 DISCLAIMER

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

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

3 DATA SOURCES

Threatened ecological communities

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

Threatened, migratory and marine species

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

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

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

4 LIMITATIONS

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

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

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

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

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

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

Acknowledgements

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

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

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

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

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Appendix 2: Conservation Codes

State Flora and Fauna Conservation Codes under the *Biodiversity Conservation Act 2018* (WA)

Conservation Code	Name	Description
Threatened Species		
CR	Critically endangered	Species considered to be facing an extremely high risk of extinction within the wild in the immediate future
EN	Endangered	Species considered to be facing a very high risk of extinction in the wild in the near future
VU	Vulnerable	Species considered to be facing a high risk of extinction in the wild in the medium-term future
Extinct Species		
EX	Extinct Species	Species where 'there is no reasonable doubt that the last member of the species has died (Schedule 4 of the Wildlife Conservation (Specially Protected Fauna) Notice or the Wildlife Conservation (Rare Flora) Notice)
EW	Extinct in the Wild	Species that are known to only survive in cultivation, in captivity, or as a naturalised population well outside its past range; and it has not been recorded in its known or expected habitat at appropriate seasons anywhere in its past range, despite surveys over a timeframe appropriate to its life cycle and form
Specially Protected Species		
MI	Migratory Species	Fauna that periodically or occasionally visit Australia or an external Territory or the exclusive economic zone; or the species is subject of an international agreement that relates to the protection of migratory species and that binds the Commonwealth (Schedule 5 of the Wildlife Conservation (Specially Protected Fauna) Notice)
CD	Conservation Dependent	Species of special conservation interest (conservation dependent fauna), being species dependent on ongoing conservation intervention to prevent it becoming eligible for listing as threatened (Schedule 6 of the Wildlife Conservation (Specially Protected Fauna) Notice)
OS	Other Specially Protected Species	Fauna otherwise in need of special protection to ensure their conservation (Schedule 7 of the Wildlife Conservation (Specially Protected Fauna) Notice)

State Flora and Fauna Conservation Codes listed by Department of Biodiversity, Conservation and Attractions

Conservation Code	Name	Description
P1	Priority One	Poorly known species – Species that are known from one or a few locations (generally five or less) which are potentially at risk. All occurrences are either very small or on lands not managed for conservation, such as road verges, urban areas, farmland, active mineral lease and under threat of habitat destruction or degradation.
P2	Priority Two	Poorly known species – Species that are known from one or a few locations (generally five or less), some of which are on lands managed primarily for nature conservation, such as national parks, conservation parks, nature reserves, State forest, vacant Crown land, water reserves and similar.
P3	Priority Three	Poorly known species – Species that are known from several locations, and the species does not appear to be under imminent threat, or from few but widespread locations with either large population size or significant remaining areas of apparently suitable habitat, much of it not under imminent threat
P4	Priority Four	Rare or near threatened and other species in need of monitoring. a) Rare. Species that are considered to have been adequately surveyed, or for which sufficient knowledge is available, and that are considered not currently threatened or in need of special protection but could be if present circumstances change. These species are usually represented on conservation lands. b) Near Threatened. Species that are considered to have been adequately surveyed and that are close to qualifying for vulnerable but are not listed as a conservation dependent specially protected species. c) Species that have been removed from the list of threatened species or lists of conservation dependent or other specially protected species, during the past five years for reasons other than taxonomy.

Source: DBCA, 2023

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Commonwealth Flora and Fauna Conservation Codes under the *Environmental Protection and Biodiversity Conservation Act 1999* (Cth)

Category	Description
Extinct	A native species which at a particular time if, at that time, there is no reasonable doubt that the last member of the species has died.
Extinct in the wild	A native species which at a particular time if, at that time: a) It is known only to survive in cultivation, in captivity or as a naturalised population well outside its past range; or b) It has not been recorded in its known and/or expected habitat, at appropriate seasons, anywhere in its past range, despite exhaustive surveys over a time frame appropriate to its life cycle and form.
Critically endangered	A species considered to be facing an extremely high risk of extinction in the wild and is determined that it meets any of the five criteria for the category identified in Part 7.01 of the EPBC Regulations.
Endangered	A species considered to be facing a very high risk of extinction in the wild and is determined that it meets any of the five criteria for the category identified in Part 7.01 of the EPBC Regulations.
Vulnerable	A species considered to be facing a high risk of extinction in the wild and is determined that it meets any of the five criteria for the category identified in Part 7.01 of the EPBC Regulations.
Conservation dependent	A native species which at a particular time if, at that time: a) is the focus of a specific conservation program the cessation of which would result in the species becoming vulnerable, endangered or critically endangered; or b) the following subparagraphs are satisfied: i. the species is a species of fish; ii. the species is the focus of a plan of management that provides for management actions necessary to stop the decline of, and support the recovery of, the species so that its chances of long term survival in nature are maximised; iii. the plan of management is in force under a law of the Commonwealth or of a State or Territory; iv. cessation of the plan of management would adversely affect the conservation status of the species

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Appendix 3: Detailed Fauna Field Survey Results

Fauna observations and observation methods within the Yanchep Lagoon site boundary. * denotes introduced species

Species	Common Name	Seen	Pitfall	Funnel	Box	Camera	Audio
Bird							
Acanthiza inornata	Western Thornbill	x					
Cacatua sanguinea	Little Corella	x					
Chalcites basalis	Horsfield's Bronze Cuckoo	x					
Chroicocephalus novaehollandiae	Silver Gull	x					
Coracina novaehollandiae	Black-faced Cuckooshrike	x					
Corvus coronoides	Australian Raven	x					
Cracticus torquatus	Grey Butcherbird	x					
Eolophus roseicapilla	Galah	x					
Falco cenchroides	Nankeen Kestrel	x					
Gavicalis virescens	Singing Honeyeater	x					
Gymnorhina tibicen	Australian Magpie	x					
Hirundo neoxena	Welcome Swallow	x					
Larus pacificus	Pacific Gull	x					
Lichmera indistincta	Brown Honeyeater	x					
Malurus assimilis assimilis	Purple-backed Fairywren	x					
Malurus splendens	Splendid Fairywren	x					
Microcarbo melanoleucos	Little Pied Cormorant	x					

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Species	Common Name	Seen	Pitfall	Funnel	Box	Camera	Audio
Ninox boobook	Boobook Owl	x					
Phalacrocorax varius	Pied Cormorant	x					
Phylidonyris novaehollandiae	New Holland Honeyeater	x					
Quoyornis georgianus	White-breasted Robin	x					
Rhipidura leucophrys	Willie Wagtail	x					
Sericornis maculatus maculatus	White-browed Scrubwren	x					
Thalasseus bergii	Crested Tern	x					
Zosterops lateralis	Silvereye	x					
**Spilopelia chinensis*	Spotted Turtle Dove	x					
**Spilopelia senegalensis*	Laughing Turtle Dove	x					
Mammal							
Austronomus australis	White-striped Free-tailed Bat						x
Chalinolobus gouldii	Gould's Wattled Bat						x
Rattus fuscipes	Western Bush Rat				x		
**Felis catus*	Cat	x					
**Mus musculus*	House Mouse		x				
**Oryctolagus cuniculus*	Rabbit	x					
**Vulpes vulpes*	Red Fox	x				x	
Reptile							

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Species	Common Name	Seen	Pitfall	Funnel	Box	Camera	Audio
Anilios australis	Southern Blind Snake		x				
Ctenophorus adelaidensis	Western Heath Dragon		x				
Ctenotus fallens			x	x			
Cyclodomorphus celatus			x				
Egernia kingii	King's Skink				x	x	
Hemiergis quadrilineatus			x				
Lerista elegans			x				
Lerista lineopunctulata	Dotted-Line Robust Slider		x				
Lerista praepedita				x			
Lialis burtonis	Burton's Legless Lizard		x	x			
Menetia greyii	Dwarf Skink		x				
Morethia obscura			x				
Pogona minor	Western Bearded Dragon	x					
Pseudonaja affinis	Dugite	x		x			
Strophurus spinigerus	Spiny-tailed Gecko		x	x			
Tiliqua occipitalis	Western Bluetounge		x	x			
Tiliqua rugosa	Bobtail	x	x				

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Fauna observations by habitat type within the Yanchep Lagoon site boundary. * denotes introduced species

Species	Common Name	BF	OH	CH	MT	CP	CS	OF	SL	IF
Bird										
Acanthiza inornata	Western Thornbill			x						
Cacatua sanguinea	Little Corella						x			x
Chalcites basalis	Horsfield's Bronze Cuckoo			x						
Chroicocephalus novaehollandiae	Silver Gull	x								x
Coracina novaehollandiae	Black-faced Cuckooshrike		x	x			x			
Corvus coronoides	Australian Raven			x		x	x			x
Cracticus torquatus	Grey Butcherbird						x			
Eolophus roseicapilla	Galah					x	x			x
Falco cenchroides	Nankeen Kestrel	x	x	x						x
Gavicalis virescens	Singing Honeyeater			x	x		x	x	x	
Gymnorhina tibicen	Australian Magpie					x	x			
Hirundo neoxena	Welcome Swallow			x	x		x			
Larus pacificus	Pacific Gull	x								
Lichmera indistincta	Brown Honeyeater			x	x		x			
Malurus assimilis assimilis	Purple-backed Fairywren			x						
Malurus splendens	Splendid Fairywren			x			x		x	
Microcarbo melanoleucos	Little Pied Cormorant	x								
Ninox boobook	Boobook Owl				x					

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Species	Common Name	BF	OH	CH	MT	CP	CS	OF	SL	IF
Phalacrocorax varius	Pied Cormorant	x		x						
Phylidonyris novaehollandiae	New Holland Honeyeater			x	x	x	x	x		
Quoyornis georgianus	White-breasted Robin				x					
Rhipidura leucophrys	Willie Wagtail				x	x	x			x
Sericornis maculatus maculatus	White-browed Scrubwren			x						
Thalasseus bergii	Crested Tern	x								
Zosterops lateralis	Silvereye			x	x					
**Spilopelia chinensis*	Spotted Turtle Dove						x			x
**Spilopelia senegalensis*	Laughing Turtle Dove						x			x
Mammal										
Austronomus australis	White-striped Free-tailed Bat							x		
Chalinolobus gouldii	Gould's Wattled Bat				x					
Rattus fuscipes	Western Bush Rat						x			
**Felis catus*	Cat						x			x
**Mus musculus*	House Mouse		x							
**Oryctolagus cuniculus*	Rabbit			x	x	x	x	x	x	
**Vulpes vulpes*	Red Fox	x	x	x			x	x		
Reptile										
Anilios australis	Southern Blind Snake						x			

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Species	Common Name	BF	OH	CH	MT	CP	CS	OF	SL	IF
Ctenophorus adelaidensis	Western Heath Dragon		x							
Ctenotus fallens			x	x	x		x	x		
Cyclodomorphus celatus			x				x			
Egernia kingii	King's Skink		x	x						x
Hemiergis quadrilineatus				x	x		x			
Lerista elegans			x	x	x		x	x		
Lerista lineopunctulata	Dotted-Line Robust Slider						x			
Lerista praepedita							x			
Lialis burtonis	Burton's Legless Lizard						x			
Menetia greyii	Dwarf Skink				x					
Morethia obscura				x						
Pogona minor	Western Bearded Dragon							x		
Pseudonaja affinis	Dugite			x	x					x
Strophurus spinigerus	Spiny-tailed Gecko		x	x			x	x		
Tiliqua occipitalis	Western Bluetounge						x			
Tiliqua rugosa	Bobtail		x	x	x		x	x	x	

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Appendix 4: Declared Pest Legal Status and Control Categories

Legal status of organisms as listed under the *Biosecurity and Agriculture Management Act 2007* (WA)

Legal Status	Definition
Permitted - s11	Organisms that are allowed entry into WA.
Declared Pest, Prohibited - s12	Organisms that are prohibited from entry into WA. Where there are reasonable grounds that the organism may have adverse effect on: i. another organism ii. human beings iii. the environment or part of the environment iv. agricultural activities, fishing or pearling activities, or related commercial activities, carried on or intended to be carried on, in the State or part of the State. Or it may have an adverse effect on any of those things if it were present in the State or part of the State, or if it were present in the State or the part in greater numbers or to a greater extent.
Declared Pest - s22(2)	Organisms that are present in WA and are under a control category. Where there are reasonable grounds that the organism may have adverse effect on: i. another organism in the area ii. human beings in the area iii. the environment or part of the environment in the area iv. agricultural activities, fishing or pearling activities, or related commercial activities, carried on or intended to be carried on, in the State or part of the State in the area. Or it may have an adverse effect on any of those things if it were present in the area, or if it were present in the area in greater numbers or to a greater extent.
Permitted, Requires Permit - r73	Organisms may only be imported subject to an import permit. These organisms may be subject to restriction under legislation other than the *Biosecurity and Agriculture Management Act 2007*. Permit conditions applicable to some species may only be appropriate or available to research organisations or similarly secure institutions.
Unlisted - s14	Is not a permitted organism or a declared pest. Unlisted organisms are automatically prohibited entry into Western Australia.

Declared pests listed under the *Biosecurity and Agriculture Management Act 2007* (WA) under section 22 (2) are subjected to control categories listed under the Biosecurity and Agriculture Management Regulations 2013 (WA).

Control Category	Definition
C1 Exclusion	If in the opinion of the Minister introduction of the declared pest into an area or part of an area for which it is declared should be prevented;
C2 Eradication	If in the opinion of the Minister eradication of the declared pest from an area or part of an area for which it is declared is feasible;

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Control Category	Definition
C3 Management	If in the opinion of the Minister eradication of the declared pest from an area or part of an area for which it is declared is not feasible but that it is necessary to i. alleviate the harmful impact of the declared pest in the area ii. reduce the number or distribution of the declared pest in the area iii. prevent or contain the spread of the declared pest in the area.
Unassigned	Declared pests that are recognised as having a harmful impact under certain circumstances, where their subsequent control requirements are determined by a Plan or other legislative arrangements under the Act.

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Appendix 5: Black Cockatoo Habitat Assessment Data

Black cockatoo habitat assessment data is outlined below. Green highlight denotes the tree is suitable for black cockatoo breeding habitat.

Tree ID	Species	DBH (mm)	Height (m)	No. of Hollows	Hollow Size (cm)
1	*Eucalyptus gomphocephala*	500	8	0	-
2	*Eucalyptus gomphocephala*	670	5	0	-
3	*Eucalyptus gomphocephala*	580	6	0	-
4	*Eucalyptus gomphocephala*	560	6	0	-

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