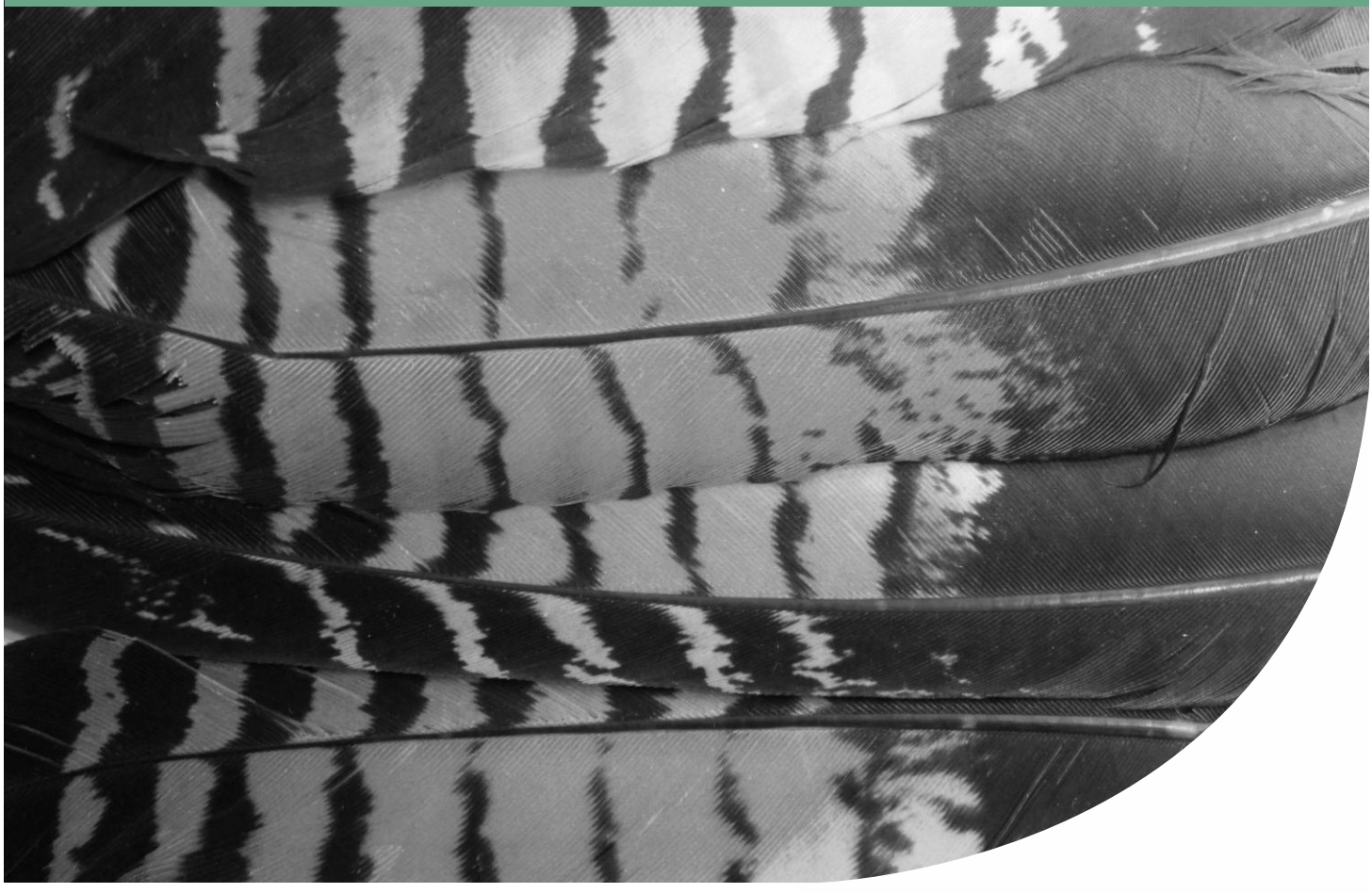
Basic Fauna and Targeted Black Cockatoo Assessment

28 Placid Waters Parade, Coodanup

Project No: EP23-081(03)

Prepared for Peel Rise Pty Ltd
July 2026



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Executive Summary

Peel Rise Pty Ltd engaged Emerge Associates to conduct a basic fauna and a targeted black cockatoo assessment within 28 Placid Waters Parade in Coodanup (referred to herein as the 'site').

As part of the assessment a desktop review of relevant background information was completed and a field survey was undertaken on 12 October, 27 October, 16 November 2023 and 26 May 2026. During the field survey opportunistic sightings of fauna were recorded and an assessment was made on the fauna habitat within the site and its suitability to provide habitat for threatened, specially protected and priority fauna. A targeted black cockatoo survey was also undertaken to determine the presence of habitat for threatened black cockatoo species.

Outcomes of the basic fauna assessment include the following:

- The site consists of six broad habitat types:
  - **Bare ground:** Walking and vehicle tracks interspersed with weedy grassland patches, inundated muddy areas and areas with no vegetation (9.19 hectares (ha)).
  - **Marsh:** Areas of clay and muddy terrain on the edge of the Serpentine River with saltmarsh vegetation and scattered dead trees (1.12 ha).
  - **Mudflats:** Areas of seasonally inundated mudflat terrain on the edge of the Serpentine River (1.39 ha).
  - **Native woodland:** Open woodland of native eucalyptus and *Casuarina obesa* with native sedges and shrubs and mostly non-native grasses (5.25 ha).
  - **Riparian woodland:** Low woodland of *Casuarina obesa*, *Eucalyptus rudis* and *Melaleuca* spp. and native sedges and grasses (2.33 ha).
  - **Scattered trees and shrubs:** Remnant native eucalypts scattered across the site with mostly grassy understory (1.95 ha).
- A total of 26 native fauna species were recorded within the site.
- One specially protected species was recorded during the survey: osprey. This species is listed as migratory under the *Environment Protection and Biodiversity Conservation Act 1999* and *Biodiversity Conservation Act 2016*.
- Despite not being recording during the survey, the following species were considered to have a high or moderate likelihood of occurring within the site:
  - Three species listed as critically endangered: curlew sandpiper and eastern curlew (EPBC Act and BC Act) and great knot (BC Act).
  - Six species listed as endangered: red knot (BC Act), lesser sand plover, Baudin's black cockatoo and Carnaby's black cockatoo (EPBC Act and BC Act), black-tailed godwit (EPBC Act) and common greenshank (EPBC Act).
  - 33 species listed as migratory EPBC Act and BC Act: Pacific swift, ruddy turnstone, sharp-tailed sandpiper, red knot, broad-pilled sandpiper, curlew sandpiper, pectoral sandpiper, red-necked stint, long-toed stint, great knot, little ringed plover, greater sand plover, lesser sand plover, white-winged black tern, gull-billed tern, Caspian tern, bar-tailed godwit, black-tailed godwit, eastern curlew, whimbrel, glossy ibis, sanderling, grey-tailed tattler, Pacific golden plover, grey plover, common tern, little tern, crested tern, common sandpiper, wood sandpiper, common greenshank, marsh sandpiper and terek sandpiper.

- Seven species listed as vulnerable: ruddy turnstone, grey plover and terek sandpiper (EPBC Act), sharp-tailed sandpiper, forest red-tailed black cockatoo, greater sand plover and Australian fairy tern (EPBC Act and BC Act).
- One other specially protected species in Western Australia: peregrine falcon.
- Three species listed as priority 4 in WA: blue-billed duck, rakali and quenda.

Outcomes of the targeted black cockatoo survey include the following:

- No species of black cockatoo was recorded during the survey.
- The site occurs within the modelled distribution of Carnaby's black cockatoo, Baudin's black cockatoo and forest red-tailed black cockatoo. The site occurs outside the modelled breeding distribution of all three species but within the 12 km of 5 known breeding sites for Carnaby's black cockatoo
- The site contains 86 habitat trees none of which contain hollows suitable for use by black cockatoos for breeding. Therefore, the site does not currently provide suitable breeding habitat for Carnaby's black cockatoo and forest red-tailed black cockatoo.
- No white-tailed black cockatoo or forest red-tailed black cockatoo roosts occur in close proximity to the site (Peck *et al.* 2019). No roosts or evidence of roosting by any species of black cockatoo was recorded within the site during the field survey. Tall native and non-native trees within the site represent suitable roosting habitat for species of black cockatoo.
- A total of 0.17 ha of foraging habitat for Carnaby's black cockatoo was mapped within the site of which 0.11 ha (64.7%) comprises primary native plants and 0.06 ha (35.3%) comprises secondary native plants.
- A total of 0.14 ha of secondary native foraging habitat for Baudin's black cockatoo was mapped within the site.
- A total of 0.12 ha of foraging habitat for forest red-tailed black cockatoo was mapped within the site of which 0.1 ha (83.33%) comprises primary native plants and 0.02 ha (16.77%) provides secondary native plants.
- Additional areas of foraging habitat of similar or higher value occur adjacent to the site and in the wider local area.

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Abbreviation Tables

Table A1: Abbreviations – Organisations

Organisations	
ALA	Atlas of Living Australia
BoM	Bureau of Meteorology
EPA	Environmental Protection Authority
DAWE	Department of Agriculture, Water and the Environment (now DCCEEW)
DBCA	Department of Biodiversity, Conservation and Attractions
DCCEEW	Department of Climate Change, Energy, the Environment and Water
DoEE	Department of the Environment and Energy
DoW	Department of Water (now DWER)
DPaW	Department of Parks and Wildlife (now DBCA)
DPIRD	Department of Primary Industries and Regional Development
DWER	Department of Water and Environmental Regulation
WAM	Western Australian Museum
WALGA	Western Australian Local Governments Association
WALIA	Western Australian Land Information Authority

Table A2: Abbreviations – Conservation codes

Conservation Codes	
CD	Conservation dependent
CR	Critically endangered
EN	Endangered
MI	Migratory
P1	Priority 1
P2	Priority 2
P3	Priority 3
P4	Priority 4
OS	Other specially protected
VU	Vulnerable

Table A3: Abbreviations –Legislation

Legislation	
BAM Act	*Biosecurity and Agriculture Management Act 2007*
BC Act	*Biodiversity Conservation Act 2016*
CALM Act	*Conservation and Land Management Act 1984*
EBPC Act	*Environment Protection and Biodiversity Conservation Act 1999*
LA Act	*Land Administration Act 1997*
SCRM Act	*Swan and Canning Rivers Management Act 2006*

Table A4: Abbreviations – Units of measurement

Units of measurement	
DBH	Diameter at breast height
cm	Centimetre
ha	Hectare
km	Kilometre
m	Metre
m AHD	m in relation to the Australian height datum
mm	Millimetre

Table A5: Abbreviations - General

General terms	
AFD	Australian Faunal Database
C3	Category 3 (DP)
DP	Declared Pest
IBRA	Interim Biogeographic Regionalisation for Australia
MNES	Matters of National Significance
PMST	Protected Search Matters Tool
UFI	Unique Feature Identifier
RSNA	Regionally Significant Natural Area

1 Introduction

1.1 Purpose

Emerge Associates (Emerge) were engaged by Peel Rise Pty Ltd to conduct a basic fauna and targeted black cockatoo assessment within 28 Placid Waters Parade in Coodanup as shown **Figure 1** (referred to herein as the 'site').

Fauna assessments are required to characterise fauna values and, in particular, confirm the presence or absence of values relevant to environmental approvals process, such as 'fauna habitat', 'threatened' fauna, 'specially protected' fauna and 'priority' fauna.

1.2 Legislation and policy

Fauna may be listed as threatened, extinct or specially protected under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) and the State *Biodiversity Conservation Act 2016* (BC Act). Threatened fauna are classified as either 'critically endangered' (CR), 'endangered' (EN) or 'vulnerable' (VU). Extinct species are classified as 'extinct' (EX) or 'extinct in the wild' (EW)[1]. Specially protected species are classified as 'migratory species' (MI), 'species of special conservation interest' (CD) or 'other specially protected' (OS). Commonwealth and/or State ministerial approval is required to impact threatened and specially protected fauna.

Native fauna that are not listed as threatened or specially protected, but are otherwise rare, under threat or poorly known, may be added to a Department of Biodiversity Conservation and Attractions (DBCA) priority list. Priority fauna are classified as either 'priority 1' (P1), 'priority 2' (P2), 'priority 3' (P3) or 'priority 4' (P4). Priority listing does not afford direct statutory protection. However, the classification of priority species is taken into account during State and Local government approval processes.

Introduced fauna that are regarded as having negative environmental or economic impacts may be listed as a 'declared pest' pursuant to the *State Biosecurity and Agriculture Management Act 2007* (BAM Act). Management of declared pests may be required during government approval processes.

Further information on legislation and policy relevant to fauna assessments is provided in **Appendix A**.

1.3 Scope of work

The scope of work was specifically to undertake a terrestrial vertebrate fauna assessment to the standard required of a 'basic' fauna survey and a 'targeted' black cockatoo survey with reference to the Environmental Protection Authority's (EPA's) technical guidance (EPA 2020) and the *Environment Protection and Biodiversity Conservation Act* black cockatoo referral guidelines (DAWE 2022b).

As part of this scope of work, the following tasks were undertaken:

[1] Currently there are no threatened species listed as extinct in the wild in Western Australia.

- Desktop study to provide contextual information and determine the likelihood of occurrence of threatened, specially protected and priority fauna.
- Field surveys to record fauna and fauna habitats, with a particular focus on habitat for threatened species of black cockatoo.
- Analysis and mapping of contextual information, fauna habitat and black cockatoo breeding, roosting and foraging (if present).
- Documentation of the desktop study, methods, results, discussion and conclusions.

2 Desktop Study

2.1 Site context

2.1.1 Location and extent

The site is located in the Shire of Mandurah in the Peel region of Western Australia and extends over 21.23 hectares (ha) as shown in **Figure 1**. The site is bounded by William Road to the east, Serpentine River to the north, residential development and a wetland to the west and Peel Parade along the Peel Inlet to the south.

2.1.2 Climate

The Peel region of Western Australia experiences a Mediterranean climate of hot dry summers and cool wet winters (BoM 2023). Recent rainfall at the closest weather station to the site has been generally consistent with long term averages, as shown in **Plate 1** (BoM 2023). Targeted surveys should be undertaken during the season that is most suitable for detection and identification of the targeted species (EPA 2020).

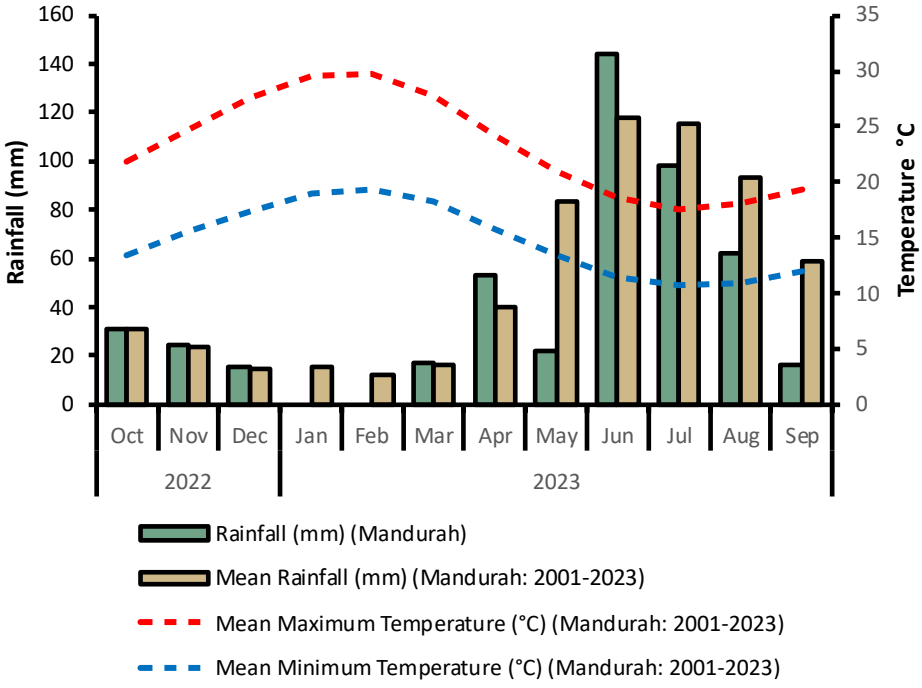

Plate 1: Recent rainfall and long-term mean temperature and rainfall

2.1.3 Geomorphology and soils

Landform and soils influence fauna habitat and species at regional and local scales. The site occurs on the Swan Coastal Plain, which is the geomorphic unit that characterises much of the Perth metropolitan area. The Swan Coastal Plain is approximately 500 km long and 20 to 30 km wide and is roughly bound by the Indian Ocean to the west and the Darling Scarp to the east. Broadly the Swan

Coastal Plain consists of two sedimentary belts of different origin. Its eastern side comprises the Pinjarra Plain which formed from the deposition of alluvial material washed down from the Darling Scarp, while its western side comprises three dune systems that run roughly parallel to the Indian Ocean coastline (Seddon 2004). These dune systems, referred to as Quindalup, Spearwood and Bassendean associations, represent a succession of coastal deposition that has occurred since the late Quaternary period (approximately two million years ago) (Kendrick *et al.* 1991) and, as a result, they contain soils at different stages of leaching and formation.

Examination of physiographic region mapping by (Gozzard 2011) places the site in the Spearwood Dunes, further including both the Serpentine River flats and the Peel-Harvey Estuary which was later confirmed during the field survey. The Spearwood Dunes typically comprise a limestone core that is overlain by yellow sand (Churchward and McArthur 1980). The physiographic regions mapped within the site are shown in **Figure 2**.

The site is not known to contain any restricted landforms or unique geological features.

2.1.4 Topography

The elevation of the site ranges from 1 m in relation to the Australian height datum (mAHD) on the eastern side to 3 mAHD on the western side (DoW 2008) (**Figure 2**).

2.1.5 Hydrology and wetlands

Wetlands are areas of seasonally, intermittently or permanently waterlogged land such as poorly drained soils, ponds, billabongs, lakes, swamps, tidal flats, estuaries, rivers and their tributaries (Wetlands Advisory Committee 1977). Many wetlands provide important fauna habitat and support high levels of fauna biodiversity and endemism.

Wetlands of national or international significance may be afforded special protection under Commonwealth or international agreements. Review of the *Ramsar List of Wetlands of International Importance* (DBCA 2017) and *A Directory of Important Wetlands in Australia – Western Australia* (DBCA 2018) indicates that one Ramsar or listed 'important wetlands' are located near the site. The Peel-Yalgorup System lies adjacent to the southern border of the site.

Examination of the Department of Water and Environmental Regulation (DWER) hydrography linear dataset (DWER 2018) shows the following no wetland or water related features occur within the site.

The *Geomorphic Wetlands of the Swan Coastal Plain* dataset maps geomorphic wetland features and classifies them based on their landform shape and water permanence (DBCA 2023a). Each wetland feature is assigned to one of three management categories: 'conservation', 'resource enhancement' and 'multiple use'.

A review of the *Geomorphic Wetlands, Swan Coastal Plain* dataset indicated that 3 multiple use wetland features (unique feature identifier (UFI) 3257, 14576 and 14572) occur within the northern and southern portions of the site (DBCA 2021a). Five 'conservation' category wetland features (UFIs 3255, 3408, 14573, 15229 and 15232) occur to the north and south of the site, comprising the Serpentine River and the Peel Inlet respectively. The locations of the geomorphic wetlands in the site are shown in **Figure 2.**

2.1.6 Regional vegetation

Vegetation types and resulting fauna habitats strongly influence the diversity and composition of fauna taxa present within an area. Native vegetation is described and mapped at different scales in order to illustrate patterns in its distribution. At a continental scale the *Interim Biogeographic Regionalisation of Australia* (IBRA) divides the Swan Coastal Plain into two floristic subregions (Environment Australia 2000).

The site is contained within the 'SWA02' or Perth subregion, which is characterised as mainly containing *Banksia* low woodland on leached sands with *Melaleuca* swamps where ill-drained; and woodland of *Eucalyptus gomphocephala* (tuart), *E. marginata* (jarrah) and *Corymbia calophylla* (marri) on less leached soils (Beard 1990). This subregion is recognised as a biodiversity hotspot and contains a wide variety of endemic fauna species.

Variations in native vegetation can be further classified based on regional vegetation mapping. Heddle *et al.* (1980) mapping shows the site as comprising the Vasse and Yoongarillup complexes. The Vasse complex is described as a mixture of closed *Melaleuca* scrub fringing *Eucalyptus rudis – Melaleuca* woodland and open forest of *E. gomphocephala – E. marginata*. The Yoongarillup complex is described as open forest of *E. gomphocephala – E. marginata – Corymbia calophylla*.

2.1.7 Historic land use

Review of historical images available from 1960 onwards shows that the majority of the site was cleared of native vegetation prior to 1960, likely for grazing or future residential uses (WALIA 2023).

2.1.8 Bush Forever

The Government of Western Australia's Bush Forever policy is a strategic plan for conserving regionally significant bushland within the Swan Coastal Plain portion of the Perth Metropolitan Region. The objective of *Bush Forever* is to protect comprehensive representations of all original ecological communities by targeting a minimum of 10% of each vegetation complex for protection (Government of WA 2000). *Bush Forever* sites are representative of regional ecosystems and habitat and have a key role in the conservation of Perth's biodiversity.

No *Bush Forever* sites occur within the site.

2.1.9 DBCA managed or legislated land

DBCA has tenure of or interests in numerous areas of land across the state for a range of purposes. Tenure categories include national parks, nature reserves, conservation parks, marine parks, marine nature reserves, marine management areas, section 5(1)(g) reserves, state forest and timber reserves. These areas are mapped within the *Legislated Lands and Waters* (DBCA 2021c) and *Lands of Interest* (DBCA 2021b) datasets. The *Legislated Lands and Waters* (DBCA 2021c) dataset includes lands subject to the following legislation; the *Conservation and Land Management Act 1984* (CALM Act 1984), *Swan and Canning Rivers Management Act 2006* (SCRM Act) and lands identified under the *Land Administration Act 1997* (LA Act). The *Lands of Interest* (DBCA 2021b) dataset includes all other lands of which DBCA is recognised as the manager but is not vested under any act. These lands

comprise of crown land and freehold land which DBCA has been acknowledged by the Department of Lands as the responsible agency.

No DBCA managed or legislated lands or lands of interest occur within or adjacent to the site.

2.1.10 Regional natural areas

Environmental Protection Bulletin no. 12 Swan *Bioplan – Peel Regionally Significant Natural Areas* (EPB 12) (EPA 2013) is used to inform strategic land use planning in the Peel Region by identifying 'Peel regionally significant natural areas' (Peel RSNAs). Peel RSNAs are natural areas which have significant flora, vegetation and landform values that represent the original landscape of the Peel Region. Development proposals which may potentially impact upon a Peel RSNA require detailed flora, vegetation and fauna investigations to be undertaken. Based on the outcomes of these investigations, development proposals should firstly aim to avoid, and then minimise, potential impacts on identified natural areas.

The 'Serpentine River Bushland' Peel RSNA intersects the northern portion of the site. This Peel RSNA extends over a large area, the majority of which occurs outside of the site but two small patches extend into the north-western and north-eastern portions of the site. The site is also intercepted by the 'Coodanup Foreshore Bushland' Peel RSNA, which extends as a strip along the length of the southern portion of the site. The Peel RSNAs mapped within the site are shown on **Figure 3**.

2.1.11 Ecological linkages

Ecological linkages are linear landscape elements that allow the movement of fauna, flora and genetic material between areas of remnant habitat. This exchange of genetic material between vegetation remnants improves the viability of those remnants by allowing greater access to breeding partners and food sources, refuge from disturbances such as fire and maintenance of genetic diversity of plant communities and populations. Ecological linkages are ideally continuous or near-continuous as the more fractured a linkage is, the less ease flora and fauna have in moving within the corridor (Alan Tingay and Associates 1998).

The South West Biodiversity Project identified and mapped ecological linkages within the South West region of Western Australia (Molloy *et al.* 2009). Two ecological linkages are associated with the site: ecological linkage no. 12 runs along the southern boundary and overlaps a small portion of the site and ecological linkage no. 13 borders the north of the site and runs along the Serpentine River. These ecological linkages are shown in **Figure 3**.

2.1.12 Threatened, specially protected and priority fauna

The Commonwealth Department of Climate Change, Energy, the Environment and Water (DCCEEW) has compiled various datasets relating to 'matters of national environmental significance' (MNES) (DCCEEW 2023b). The *Protected Matters Search Tool* provides general guidance on threatened and specially protected fauna listed under the EPBC Act that may occur within a location based on validated records and less reliable unvalidated habitat distribution modelling (DCCEEW 2023b).

DBCA's *Threatened and Priority Fauna* database and *NatureMap* database, as well as the spatial portal of the Atlas of Living Australia (ALA) contain records of threatened specially protected and

priority fauna in Western Australia (ALA 2023; DBCA 2023b, 2023c). Searches of these databases provide point data for threatened, specially protected and priority fauna within a location, comprising validated and historical unvalidated records.

A search was conducted for fauna species that have been recorded within a 10 km radius of the site using the *Protected Matters Search Tool* (DCCEEW 2023b), *NatureMap* (DBCA 2023b), DBCA's conservation significant fauna database (reference no. FAUNA7933), Atlas of Living Australia (ALA 2023) and literature references.

A total of 368 fauna species were identified from database searches as occurring or potentially occurring within 10 km of the site[2] as listed in **Appendix B.**

2.1.13 Pest fauna

The term 'pest fauna' can refer to any animal that requires some form of action to reduce its effect on the economy, the environment, human health and amenity. Pest fauna species are generally not native but some Australian or Western Australian fauna may also be considered pests.

A particularly invasive or detrimental pest species may be listed as a 'declared pest' pursuant to Western Australia's *Biosecurity and Agriculture Management Act 2007* (BAM Act), indicating that it warrants special management to limit its spread. Current pest status and control categories for Western Australia are provided in the *Western Australian Organism List* (DPIRD 2022). Further information on categories of declared pests is provided in **Appendix A**.

2.1.14 Previous surveys

No previous fauna surveys are known to have been undertaken over the site.

2.2 Likelihood of occurrence

The distribution and habitat preferences of the threatened and priority fauna species listed in **Appendix B** was reviewed against site context information described in **Section 2.1**. Likelihood of occurrence of threatened, specially protected and priority fauna species within the site was classified as 'high', 'moderate', 'low', 'negligible' or 'nil' as outlined in **Table 1**.

Table 1: Likelihood of occurrence assessment categories and definitions

<table>
<tr><th colspan="2" rowspan="2"></th><th colspan="2">Reliable record[1]</th><th rowspan="2">Unreliable record[2]</th></tr>
<tr><th>Access to site not impeded</th><th>Access to site impeded</th></tr>
<tr><td rowspan="3">Habitat</td><td>Suitable</td><td>High</td><td rowspan="2">Low</td><td rowspan="3">Nil</td></tr>
<tr><td>Potentially suitable</td><td>Moderate</td></tr>
<tr><td>Unsuitable</td><td colspan="2">Negligible</td></tr>
</table>

[1]Reliable record defined as DBCA or validated ALA record from the last ~20 years, [2]Unreliable record defined as record >20 years old or PMST prediction.

[2] Includes native and non-native species

16 threatened, 35 specially protected and three priority species were classified as having a 'high' or 'moderate' likelihood of occurrence. The legislative or policy status and habitat preferences of these species are shown in **Table 2**.

The remainder of the conservation significant fauna species identified in the desktop assessment (54 species) were considered as having a 'low', 'negligible' or 'nil' likelihood of occurrence. Refer to **Table 2** and **Appendix C** for detail on individual species likelihood of occurrence.

Table 2: Summary of conservation significant fauna species with potential to occur in the site

Species name	Common name	Status		Habitat description
		WA	EPBC Act	
Birds				
Actitis hypoleucos	Common sandpiper	MI	MI	Edge of sheltered waters salt or fresh, e.g. estuaries, mangrove creeks, rocky coasts, near-coastal saltlakes (including saltwork ponds), river pools, lagoons, claypans, drying swamps, flood waters, dams and sewage ponds. Preferring situations where low perches are available.
Apus pacificus	Pacific swift	MI	MI	Aerial, migratory species that is most often seen over inland plains and sometimes above open areas, foothills or in coastal areas. Sometimes occurs over settled areas, including towns, urban areas and cities.
Arenaria interpres	Ruddy turnstone	MI	VU (MI)	Tidal mud and reef flats, sheltered rocky coasts, stony and seaweedy beaches and sandpits, dry coral ridges (Abrolhos) and pebbly shores of near-coastal saltlakes (including saltwork ponds).
Calidris acuminata	Sharp-tailed sandpiper	VU (MI)	VU (MI)	Occurs in tidal mudflats, saltmarshes and mangroves, as well as, shallow fresh, brackish or saline inland wetlands. It is also known from floodwaters, irrigated pastures and crops, sewage ponds, saltfields.
Calidris alba	Sanderling	MI	MI	Mainly steeply shelving sandy beaches exposed to ocean swell. Also sandy inlets, estuarine sandbanks and near-coastal saltlakes (including saltwork ponds).
Calidris canutus	Red knot	EN	VU (MI)	Mud and sand flats in estuaries and on sheltered coasts. Also near-coastal saltlakes, including saltwork ponds.
Calidris ferruginea	Curlew sandpiper	CR	CR (MI)	Mainly shallows of estuaries and near-coastal saltlakes (including saltwork ponds) and drying near-coastal freshwater lakes and swamps. Also beaches and near-coastal sewage ponds.
Calidris melanotos	Pectoral sandpiper	MI	MI	Mainly fresh waters (swamps, lagoons, river pools, irrigation channels and sewage ponds); also samphire flats around estuaries and saltlakes
Calidris ruficollis	Red-necked stint	MI	MI	Tidal mudflats, saltmarshes, sandy or shelly beaches, saline and freshwater wetlands (coastal and inland), saltfields, sewage ponds.

Table 2: Summary of conservation significant fauna species with potential to occur in the site

Species name	Common name	Status		Habitat description
		WA	EPBC Act	
Calidris subminuta	Long-toed stint	MI	MI	Mainly freshwater swamps (especially when drying and where vegetation is short), river pools, lagoons and claypans; also brackish pools, sewage ponds and samphire flats around estuaries and saltlakes.
Calidris tenuirostris	Great knot	CR	VU (MI)	Mud or sand flats in estuaries and on sheltered coasts. Also near-coastal saltlakes, including saltwork.
Calyptorhynchus banksii naso	Forest red-tailed black cockatoo	VU	VU	Eucalypt and Corymbia forests, often in hilly interior. More recently also observed in more open agricultural and suburban areas including Perth metropolitan area. Attracted to seeding *Corymbia calophylla*, *Eucalyptus marginata*, introduced *Melia azedarach* and *Eucalyptus spp*. trees.
Charadrius dubius	Little ringed plover	MI	MI	Open, muddy or sandy shores of lakes, swamps, tidal areas, sewage ponds or farm dams. Rare but regular summer migrant to Australia.
Charadrius leschenaultii	Greater sand plover	VU	VU (MI)	Wide sandy or shelly beaches, sandpits, tidal mudflats, reefs, sand cays, mangroves, saltmarsh, dune wilderness, bare paddocks, seldom far inland.
Charadrius mongolus	Lesser sand plover	EN	EN (MI)	Sandy beaches and tidal estuarine flats. Also near-coastal saltlakes, including saltwork ponds.
Chlidonias leucopterus	White-winged black tern	MI	MI	Vegetated and open wetlands, brackish and saline lakes, saltfields, irrigated lands, sewage ponds and occasionally offshore.
Falco peregrinus	Peregrine falcon	OS	-	Mainly found around cliffs along coasts, rivers, ranges and around wooded watercourses and lakes.
Gelochelidon nilotica	Gull-billed tern	MI	MI	Beaches, mudflats; fresh, brackish wetlands, including far inland; grasslands, crops, ploughed fields, airfields.
Hydroprogne caspia	Caspian tern	MI	MI	Mainly sheltered areas, estuaries (when not laden with silt) and tidal creeks; occasionally near-coastal saltlakes (including saltwork ponds) and brackish pools in lower courses of rivers; rarely fresh waters.
Limicola falcinellus	Broad-billed sandpiper	-	MI, MA	Parts of the coast between Onslow and Broome, in estuarine mudflats, saltmarshes, shallow freshwater lagoons, saltworks and sewage farms, and in areas with large soft intertidal mudflats. They have also been recorded in creeks, swamps and lakes near the coast, particularly those with bare mudflats or sand exposed by receding water. Have been record in Augusta.
Limosa lapponica	Bar-tailed godwit	MI	MI	Estuarine sand and mudflats and sandy beaches with loads of seaweed; also reef flats and near-coastal saltlakes (including saltwork and sewage ponds)
Limosa limosa	Black-tailed godwit	MI	EN (MI)	Tidal mudflats, estuaries, sewage ponds, shallow river margins, brackish or saline inland lakes, flooded pastures, airfields.

Table 2: Summary of conservation significant fauna species with potential to occur in the site (continued)

Species name	Common name	Status		Habitat description
		WA	EPBC Act	
Numenius madagascariensis	Eastern curlew	CR	CR (MI)	Mainly tidal mudflats; also reef flats, sandy beaches and rarely near-coastal lakes (including saltwork ponds).
Numenius phaeopus	Whimbrel	MI	MI	Estuaries, mangroves, tidal flats, coral cays, exposed reefs, flooded paddocks, sewage ponds, bare grasslands, sportsgrounds and lawns.
Oxyura australis	Blue-billed duck	P4	-	Mainly deeper freshwater swamps and lakes; occasionally saltlakes and estuaries freshened by flood waters.
Pandion haliaetus	Osprey	MI	MI	Coasts, estuaries, bays, inlets, islands, and surrounding waters; coral atolls, reefs, lagoons, rock cliffs, stacks.
Plegadis falcinellus	Glossy Ibis	MI	MI	Well-vegetated wetlands, wet pasture, ricefields, floodwaters, floodplains, brackish or occasionally saline wetlands, mangroves, mudflats and occasionally dry grassland.
Pluvialis fulva	Pacific golden plover	MI	MI	Estuaries, mudflats, saltmarshes, mangroves; rocky reefs and stranded seaweed on ocean shores; margins of shallow open inland swamps; sewage ponds, short-grass paddocks, sportsgrounds, airfields, ploughed land.
Pluvialis squatarola	Grey Plover	MI	VU (MI)	Mudflats, saltmarsh, tidal reefs and estuaries, rarely inland.
Sterna hirundo	Common tern	MI	MI	Offshore waters, beaches, reefs, bays, estuaries, sandflats, saltfields, sewage ponds, freshwater wetlands.
Sternula albifrons	Little tern	MI	MI	Species is mainly coastal, being found on beaches, sheltered inlets, estuaries, lakes, sewage farms, lagoons, river mouths and deltas.
Sternula nereis nereis	Australian fairy tern	VU	VU	Sheltered blue-water seas close to land, estuaries (when free of silt) and near-coastal lakes.
Thalasseus bergii	Crested tern	MI	MI	Mainly blue-water seas (especially within 3 km of land), including southern estuaries in summer and autumn (when free of silt); also tidal creeks in north, but not penetrating far into larger estuaries.
Tringa brevipes	Grey-tailed tattler	P4 (MI)	MI	Tidal mud and reef flats, sheltered rocky coasts, stony and seaweedy beaches and sandpits, dry coral ridges (Abrolhos) and pebbly shores of near-coastal saltlakes (including saltwork ponds)
Tringa glareola	Wood sandpiper	MI	MI	Mainly shallow fresh waters (lagoons, swamps, claypans, river pools, dams, bore overflows and sewage ponds); occasionally brackish swamps, rarely saltlakes and estuaries.
Tringa nebularia	Common greenshank	MI	EN (MI)	Mudflats, estuaries, saltmarshes, margins of lakes, wetlands, claypans (fresh and saline), commercial saltfields, sewage ponds.
Tringa stagnatilis	Marsh sandpiper	MI	MI	Mainly shallow fresh or brackish waters: swamps, lakes, river pools, soaks, sewage ponds and bore overflows. Occasionally estuaries and salt ponds, and rarely coasts.

Table 2: Summary of conservation significant fauna species with potential to occur in the site (continued)

Species name	Common name	Status		Habitat description
		WA	EPBC Act	
Xenus cinereus	Terek sandpiper	MI	VU (MI)	Tidal mudflats, estuaries; shores and reefs of islands; coastal swamps, commercial saltfields.
Zanda baudinii	Baudin's black cockatoo	EN	EN	Mainly eucalypt forests. Attracted to seeding Corymbia calophylla, Banksia spp., Hakea spp., and to fruiting apples and pears.
Zanda latirostris	Carnaby's black cockatoo	EN	EN	Mainly proteaceous scrubs and heaths and adjacent eucalypt woodlands and forests; also plantations of Pinus spp. Attracted to seeding *Banksia spp.*, *Hakea spp.*, *Eucalyptus spp.*, *Corymbia calophylla*, *Grevillea spp.*, and *Allocasuarina spp.*
Mammals				
Hydromys chrysogaster	Rakali	P4	-	Areas with permanent water, fresh, brackish or marine. Likely to occur in all major rivers and most of the larger streams as well as bodies of permanent water in the lower south-west.
Isoodon fusciventer	Quenda	P4	-	Dense scrubby, often swampy, vegetation with dense cover up to one metre high

2.3 Black cockatoos

Three threatened species of black cockatoo occur in the south-west of WA (referred to herein collectively as 'black cockatoos'):

- *Zanda*[3] *latirostris* (Carnaby's black cockatoo) which is listed as 'endangered' under the EPBC Act and the BC Act.
- *Zanda*[3] *baudinii* (Baudin's black cockatoo) which is listed as 'endangered' under the EPBC Act and the BC Act.
- *Calyptorhynchus banksii naso* (forest red-tailed black cockatoo) which is listed as 'vulnerable' under the EPBC Act and the BC Act.

Black cockatoo habitat is conventionally separated into breeding, roosting and foraging categories. **Breeding habitat** refers to 'habitat trees' which consist of native trees of a suitable species that either contain nesting hollows or have a large enough diameter at breast height[4] (DBH) to develop a nesting hollow over time (DAWE 2022b). Black cockatoos typically utilise breeding habitat within their defined breeding season: August to March for Baudin's black cockatoo, July to December for Carnaby's black cockatoo breed and throughout the year for forest red-tailed black cockatoo, with peaks in April – June and August – October (DAWE 2022b). **Roosting habitat** consists of a stand of tall trees (>8 m) within 6 km of water and food resources and 12 km of additional foraging resources where black cockatoos rest overnight (DAWE 2022b; Glossop *et al.* 2011; Le Roux 2017; Shah 2006). **Foraging habitat** is vegetation that black cockatoos are known to feed on, which varies between

[3] Previously *Calyptorhynchus*
[4] ≥50 cm or ≥30 cm for wandoo or salmon gum

black cockatoo species (DAWE 2022b; Groom 2011; Johnstone *et al.* 2011). A full range of foraging plants and their foraging category assigned by Emerge Associates is available in **Appendix D**.

A review of black cockatoo datasets was undertaken as outlined in **Table 3** and shown in **Figure 5**. Further information on black cockatoo habitat is available in **Appendix A**. Counts for all known black cockatoo roosts within 12 km are available in **Appendix E**.

Table 3: Summary of black cockatoo background review

Category	Black cockatoo site context			Source
	Carnaby's	Baudin's	Forest red-tailed	
Site located within species distribution	Yes	Yes	Yes	(DAWE 2022b)
Site in known breeding distribution	No	No	N/A*	(DAWE 2022b)
Confirmed or possible breeding hollows within 12 kmˇ	5	N/A	0	(Glossop *et al.* 2011)
Site located in important bird area	No	N/A	N/A	(BirdLife International 2022; DPaW 2013)
Known roosts occur within site^	N/A		N/A	(Peck *et al.* 2019)
Known roosts occur within 12 km of site^	2		5	
Potential foraging habitat within site	Yes	Yes	Yes	(Emerge Associates 2021; Forest Products Commission 2020)
Potential foraging habitat in local area (including pine plantations)	Yes	Yes	Yes	

*Whilst no datasets of breeding distributions are available for forest red-tailed black cockatoos, they are known to breed across the Swan Coastal Plain (Johnstone *et al.* 2013b).
ˇResults from DBCA database search.
^'White-tailed black cockatoo roosts can be Carnaby's black cockatoo and/or Baudin's black cockatoo.

3 Methods

3.1 Field survey

Two zoologists from Emerge visited the site to conduct the basic fauna survey and targeted black cockatoo field survey on the following dates:

- 12 October 2023
- 27 October 2023
- 16 November 2023
- 26 May 2026

Transects were traversed across the site during the day to evaluate the fauna habitat and record the presence of fauna species. Fauna habitat was assessed based on vegetation condition, the overall disturbances to the area and the microhabitat characteristics such as soil type and leaf litter density as well as the presence of logs, rocks, leaf litter and water. An opportunistic fauna list was compiled which included evidence of species presence such as tracks, scats, skeletal remains, foraging evidence and calls.

3.1.1 Targeted black cockatoo

Transects were traversed across the site and the presence of potential black cockatoo breeding, night roosting and foraging habitat was recorded. If observed, the presence of black cockatoos within or near the site was noted. Active searches for evidence of breeding, roosting and foraging activity such as chew marks, branch clippings, droppings, moulted feathers and chewed marri or banksia fruit were conducted.

3.1.1.1 Breeding habitat

All native eucalypts within the site that met the required DBH were recorded. Occasionally, native eucalypts were encountered that met DBH requirements but did not contain a trunk/branch of a sufficient size to support a hollow suitable for use by black cockatoos. For example, the tree may have been less than 3 m tall or had a trunk that forked between 1.3 m and 3 m in height and after the fork no limbs had a diameter of ≥50 cm or ≥30 cm for wandoo or salmon gum. These trees were not recorded as habitat trees as the likelihood they would form a suitable hollow was low.

Habitat trees were individually identified and the attributes outlined in **Table 4** were recorded for each tree.

Table 4: Attributes recorded for each habitat tree in the site

Attribute	Description
GPS location	The location was recorded using a handheld GPS unit
Tree species	Species and common name were identified
Diameter at breast height (DBH) (cm)	DBH was measured at breast height (1.3 m) using a diameter tape
Hollows potentially suitable for breeding by a black cockatoo	Number of hollows potentially suitable for breeding by a black cockatoo recorded (assessed from ground level only)

Hollows that appeared potentially suitable for use by a black cockatoo from the ground were further inspected using a pole-mounted camera. During the hollow inspection the internal dimensions of the hollow were confirmed if possible and an assessment was made for signs of use such as chew marks around the hollow entrance, nesting material, eggs, feathers or the presence of birds within the hollow.

To be suitable for use as breeding habitat by black cockatoos it was considered a hollow must:

- have an entrance opening of at least 10 cm but preferably 20-30 cm (Groom 2010; Johnstone *et al.* 2013a; Saunders *et al.* 1982)
- be located at least 3 m from the ground (Groom 2010; Johnstone and Storr 1998; Saunders 1979b, 2014)
- be located in a trunk or branch that is generally large enough to contain a hollow that has a floor diameter of at least 40 cm and depth of 50-200 cm such that it could house an adult black cockatoo and nestlings (DPaW 2015; Johnstone and Storr 1998; Saunders 1979a; Saunders 2014)
- have vertical or near vertical orientation (Johnstone *et al.* 2013a; Johnstone and Kirkby 2008).

Each habitat tree was assigned to a category listed in **Table 5** based on current black cockatoo guidelines (DAWE 2022b).

Table 5: Habitat tree categories (DAWE 2022)

Category	Specifications
Known nesting tree	Trees (live or dead but still standing) which contains a hollow where black cockatoo breeding has been recorded or which demonstrates evidence of breeding (i.e. showing evidence of use through scratches, chew marks or feathers).
Suitable nesting tree	Trees with suitable nesting hollows present^, although no evidence of use. Note that any species of tree may develop suitable hollows for breeding.
Potential nesting tree	Trees that have a suitable DBH to develop a nest hollow, but do not currently have suitable nesting hollows. Trees suitable to develop a nest hollow in the future are 300-500 mm DBH. Note that many species of eucalypt may develop suitable hollows for breeding.

^Hollow determined to be suitable for use as breeding habitat by black cockatoos as listed above in **Section 3.1.1.1**

3.1.1.2 Roosting habitat

If present, groups of tall native and non-native trees were assumed to provide roosting habitat. The presence of active or historical roosts in these trees was determined through evidence of roosting activity, such as branch clippings, droppings or moulted feathers.

Tall groups of native and non-native trees in the site within 1000 m of an existing large roost (>150 individuals) or 500 m of an existing small roost (<150 individuals) were assumed to be associated with that roost (Glossop *et al.* 2011).

3.1.1.3 Foraging habitat

Foraging habitat was identified by assessing vegetation in the site for plant species known to provide food for black cockatoos (Davies 1966; DAWE 2022b; Groom 2011; Johnstone *et al.* 2011; Johnstone and Kirkby 1999; Johnstone and Storr 1998; Saunders 1980).

Foraging habitat was classified as either 'native' or 'non-native' based on the predominant vegetation's naturalised status and in accordance with DAWE (2022b).

It was also classified as either 'primary' or 'secondary' based on black cockatoo foraging preferences. Primary food plants were defined as those with historical and contemporary records of regular consumption by a black cockatoo species. Secondary food plants were defined as plants that black cockatoo species have been recorded consuming occasionally or that, based on their limited extent or agricultural origin, should not be considered a sustaining resource. A list of plant species classified as primary or secondary food plants is provided as **Appendix D**.

Each patch of foraging habitat was assigned a foraging value for each species of black cockatoo likely to occur within the site. As it is not always possible to separate out food plants from non-food plants, mapped foraging habitat may also include vegetation comprising non-food plants. The proportion of non-food plants in mapped foraging habitat was minimised as far as practicable.

Evidence of black cockatoo foraging, such as chewed fruits, was searched for within the site and allocated to a black cockatoo species where possible.

3.2 Data analysis

3.2.1 Fauna identification

Fauna observed during the survey were identified in the field unless unknown. Where fauna was unknown, photographs and/or noted observations were recorded. Unknown fauna was identified through the use of taxonomic keys and field guides.

3.2.1.1 Nomenclature and sources of information

Taxonomy and nomenclature of scientific and common names for mammals, reptiles and amphibians follow *the Western Australian Museum* (WAM) *Checklist of the Terrestrial Vertebrate Fauna of Western Australia* (WAM 2022). For birds taxonomy and nomenclature of scientific and common names follows the Australian Faunal Directory (AFD) (DCCEEW 2023a). Where common names were not provided by the WAM or the AFD, these have been derived from other sources as noted.

Literature listed in **Appendix A** represent the main publications used to identify fauna species and habitats within the site.

3.2.2 Fauna habitat

Fauna habitats were described according to the dominant flora species and vegetation type present, as determined from observations made during the field survey and information provided in the '*Detailed Flora and Vegetation Assessment*' (Emerge Associates 2024). Significant microhabitat features present in each habitat were also described.

The identified fauna habitats were mapped on aerial photography with the boundaries interpreted from aerial photography, Emerge Associates (2024) plant communities and notes taken in the field.

3.2.3 Black cockatoo habitat

3.2.3.1 Habitat trees

Habitat trees were classified according to the scheme outlined in **Table 5** and mapped on aerial imagery. A complete summary of the recorded attributes of habitat trees was compiled in a tabular format.

3.2.3.2 Foraging habitat value

Foraging habitat was described according to the dominant flora species or vegetation type present and mapped using boundaries interpreted from aerial photography and notes taken in the field. The foraging value of each patch of foraging habitat was attributed separately for each species of black cockatoo likely to occur in the site. Foraging value was assigned as outlined in **3.1.1.3**.

3.3 Survey limitations

It is important to note the specific constraints imposed on surveys and the degree to which these may have limited survey outcomes. An evaluation of the survey methodology against standard constraints outlined in the EPA's document *Technical Guidance – Terrestrial vertebrate fauna surveys for environmental impact assessment* (EPA 2020) is provided in **Table 6**.

Table 6: Evaluation of survey methodology against standard constraints outlined in the EPA's Technical Guidance – Terrestrial vertebrate fauna surveys for environmental impact assessment (EPA 2020)

Constraint	Degree of limitation	Details
Level of survey	No limitation	A basic survey (desktop study and field survey) in combination with a targeted black cockatoo survey was undertaken. The level of survey and survey effort are considered adequate to assess most fauna as well as the black cockatoo habitat values within the site. The basic survey was sufficient to determine the presence of suitable habitat for a range of shorebird species. Given the importance of the Peel-Harvey Estuary and the Peel Inlet to international migratory birds, additional targeted shorebird surveys would be required to determine utilisation of the site by these species.
Scope	No limitation	The survey focused on vertebrate fauna and habitat values, with particular focus on black cockatoos and other conservation significant taxa with potential to occur within the site.
Proportion of fauna identified, recorded and/or collected.	No limitation	All observed vertebrate fauna were identified.
Sources of information e.g. previously available information (whether historic or recent) as distinct from new data.	No limitation	Adequate information was available from database searches, previous surveys and literature references.

Table 6: Evaluation of survey methodology against standard constraints outlined in the EPA's Technical Guidance – Terrestrial vertebrate fauna surveys for environmental impact assessment (EPA 2020) (continued)

Constraint	Degree of limitation	Details
The proportion of the task achieved and further work which might be needed.	No limitation	The task was achieved in its entirety.
Experience level of personnel	No limitation	This fauna and black cockatoo assessment was undertaken by two qualified zoologists with over four and 3 years of zoological experience in Western Australia. Technical review was undertaken by a senior environmental consultant with over 15 years' experience in environmental science in Western Australia.
Suitability of timing, weather and season	No limitation	Survey timing is not considered to be of great importance for basic fauna assessments but the weather conditions during the survey were ideal for detecting fauna species. The survey was undertaken during the black cockatoo peak breeding season to maximise the chance of detecting breeding behaviour. However, many black cockatoo individuals leave the Swan Coastal Plain (SCP) during this time and migrate to breeding areas and as such the detectability of roosting activity was reduced. The survey was conducted outside winter, which decreases the chance of detecting shorebirds within the mudflat areas of the site but this was not the primary purpose of the survey.
Completeness	No limitation	The desktop assessment, field survey and targeted black cockatoo components of the survey were completed comprehensively.
Spatial coverage and access	No limitation	Site coverage was comprehensive (track logged).
	No limitation	All parts of the site could be accessed as required.
Survey intensity	No limitation	The intensity of the survey was adequate.
Influence of disturbance	No limitation	Parts of the site are highly modified due to historical disturbance. However, no recent disturbance was noted that may have affected outcomes of the survey.
Adequacy of resources	No limitation	All resources required to perform the survey were available. The guidance currently available from Commonwealth and State agencies on the assessment of black cockatoo habitat is limited and relies heavily on technical experts preparing their own methodology. This assessment applies an internally developed methodology that is considered to provide a systematic and balanced characterisation of black cockatoo habitat.
Compliance with EPA (2020) guidance	Minor limitation	The EPA guidance requires that a full list of all fauna species with potential to occur within the site is compiled. As part of this assessment a comprehensive list of fauna species of conservation significance was compiled. Non-conservation taxa with potential to occur within the site were not compiled into a list but are provided as raw data in **Appendix D**. Given that all species with potential to occur within the site are still identified within the relevant appendices this is not considered to affect the outcomes of this assessment.

4 Results

4.1 Fauna

4.1.1 Species inventory

A total of 26 native fauna species were directly recorded during the field survey.

A complete species list is provided in **Appendix F**.

4.1.2 Threatened, specially protected and priority fauna

One specially protected fauna species was recorded within the site during the field survey: *Pandion haliaetus* (osprey). This species is listed as migratory under the EBBC Act and BC Act (MI).

4.1.3 Declared pests

No species listed as a declared pest (C3) pursuant to the BAM Act were recorded during the field survey.

4.2 Fauna habitat

Six broad fauna habitats were identified within the site, as listed in **Table 7**.

A description, the size of the area and a representative photograph of each habitat is provided in **Table 7**. The location of each habitat is shown on **Figure 5**.

Table 7: Fauna habitats identified within the site

Fauna habitat	Description	Total area (ha)	Proportion of site (%)	Representative photograph
Bare ground	Walking and vehicle tracks interspersed with weedy grassland patches, inundated muddy areas and areas with no vegetation. • Low microhabitat complexity. • Occasional burrow or digging from rabbits • Likely only utilised by fauna for traversal between habitats • Vegetated patches may provide shelter for snakes and small reptiles.	9.19	43.29	
Marsh	Areas of clay and muddy terrain on the edge of the Serpentine River with saltmarsh vegetation and scattered dead trees (stags). Evidence of inundation at some point earlier in the year during the wetter months. • Stag trees provide nesting/perching habitat for wading species and ospreys which were observed in the area. • Microhabitat complexity is low-moderate but the habitat itself is high value to some fauna, particularly wading birds. • Cracked mud may provide habitat for reptiles. • Contiguous with areas of mudflat habitat.	1.12	5.28	

Table 7: Fauna habitats identified within the site (continued)

Fauna habitat	Description	Total area (ha)	Proportion of site (%)	Representative photograph
Mudflats	Areas of seasonally inundated mudflat terrain on the edge of the Serpentine River. Habitat was dry during the survey with evidence of vehicle disturbance during inundated periods. Little to no vegetation present. • Microhabitat complexity is low-moderate but the habitat itself is high value to some fauna, particularly wading birds. • Cracked mud may provide habitat for reptiles. • Contiguous with areas of marsh habitat.	1.39	6.55	
Native woodland	Open woodland of native eucalyptus and *Casuarina obesa* with native sedges and shrubs and mostly non-native grasses. • Some connectivity with other habitats. • Scattered trees and shrubs habitat provide minor linkage to further separated habitats. • Low microhabitat complexity with some soft soil for burrowing and woody debris from fallen branches and dead grasses. • Likely to be used by widespread and common fauna.	5.25	24.73	

Table 7: Fauna habitats identified within the site (continued)

Fauna habitat	Description	Total area (ha)	Proportion of site (%)	Representative photograph
Riparian woodland	Low woodland of *Casuarina obesa, Eucalyptus rudis* and *Melaleuca* spp. and native sedges and grasses predominantly found along the border of the mudflat and marsh areas. • High connectivity to marsh and mudflat vegetation. • High microhabitat complexity in the form of small patches of inundated ground, dense leaf litter, woody debris and dense undergrowth. • Likely utilised by ground dwelling fauna and reptiles.	2.33	10.97	
Scattered trees and shrubs	Remnant native eucalypts scattered across the site with mostly grassy understory. Mostly found in the southern and central areas of the site. • Isolated from nearby vegetation, some minor connectivity with areas of nearby adjacent vegetation. • Some tuarts and jarrah provide foraging habitat for black cockatoos • Low microhabitat complexity, likely only used as refuges between the larger and more intact habitats by small reptiles, ground dwelling fauna and avifauna.	1.95	9.19	

4.3 Black cockatoo habitat

4.3.1 Breeding

A total of 86 black cockatoo habitat trees were recorded within the site as shown in **Figure 6**.

The habitat trees comprised three *Eucalyptus gomphocephala* (tuart), eight *Eucalyptus marginata* (jarrah), 71 *Eucalyptus rudis* (flooded gum) and four stag (dead) trees.

Two trees were determined to contain a suitable hollow for use by black cockatoos for nesting from ground observations. An internal hollow inspection of habitat tree (Tree ID 480) determined that it did not have hollow cavities suitable for use by black cockatoos for nesting and so was classified as a 'potential nesting tree' consistent with (DAWE 2022a).

An internal inspection of Tree ID 565 could not be undertaken due to the presence of a swarm of bees at the base of the tree. However, further ground-based observations indicated that the hollow appeared unsuitable for black cockatoo nesting with no evidence of current or previous use.

The remaining habitat trees do not have hollow cavities suitable for use by black cockatoos for nesting and so were classified as 'potential nesting tree' consistent with (DAWE 2022a).

A summary of the habitat trees recorded within the site is provided in **Table 8** and an inventory in **Appendix G**.

Table 8: Habitat trees recorded within the site

Category	No. trees
Known nesting trees	0
Suitable nesting trees	0
Potential nesting trees	86
Total nesting trees	86

4.3.2 Roosting

No roosts or evidence of roosting were observed within the site during the survey. The site contains many tall trees that comprise potential roosting habitat.

4.3.3 Foraging

A total of 0.17 ha of foraging habitat for Carnaby's black cockatoo, 0.14 ha for Baudin's black cockatoo and 0.13 ha for forest red-tailed black cockatoo were recorded in the site as shown in **Figure 7** to **Figure 9**.

The extent of foraging habitat by value category is detailed in **Table 9**.

Table 9: Foraging habitat recorded within the site

Foraging habitat	Black cockatoo species and area of foraging habitat (ha)		
	Carnaby's	Baudin's	Forest red-tailed
Primary native	0.11	0	0.11
Primary non-native	0	0	0
Secondary native	0.06	0.14	0.02
Secondary non-native	0	0	0
Total	0.17	0.14	0.13

5 Discussion

5.1 Fauna

The 26 native fauna species recorded are mostly widespread across the Swan Coastal Plain and representative of the assemblages expected from the fauna habitats within the site. All of the species except for two were birds, with less mammals and reptiles recorded which is typical for a basic level survey.

As the site is relatively isolated from surrounding areas of contiguous intact vegetation, the lack of ground dwelling fauna is also not unexpected. There is a small amount of connectivity to riverbank vegetation along the Serpentine River which links to the south and north, which may explain the presence of Western grey kangaroo in the site.

5.1.1 Threatened, specially protected and priority fauna

Several ospreys (MI) were recorded within the site during the survey. Individuals were observed flying over the site showing prey searching behavior several times. In one instance seven ospreys were observed hovering over the southern end of the site for several minutes. It is likely that the ospreys breed and forage within the site as suitable habitat occurs. Perching and roosting occur in the following habitats: **native woodland, riparian woodland** and **scattered trees and shrubs**. The species is likely to primarily forage within the **mudflat** and **marsh** habitats in the site, while the **bare ground** habitat may be used opportunistically. A stag tree occurs less than five metres from the eastern boundary of the site in the marsh adjacent to the Serpentine River and was observed to have a nest with a fledgling and pair of adults perched on the nest tree and nearby.

Carnaby's black cockatoo, Baudin's black cockatoo and forest red-tailed black cockatoo were all considered likely to occur within the site. Each of these species is discussed further in **Section 5.3**.

A further 37 birds and two mammals were considered to possibly occur in the site.

Pacific swift (MI) and peregrine falcon (OS) are highly mobile species that may opportunistically fly over or forage in the site for short periods of time as part of a much larger home range. Neither of these species would breed within the site. Any occurrence of pacific swift or peregrine falcon in the site would likely be in the air space and largely independent from terrestrial habitat.

The blue-billed duck (P4) occurs in rivers and other water bodies across the Perth region. The Peel inlet is considered a drought refuge for the species and as such, individuals may infrequently visit the site (BirdLife International 2023).

Glossy ibis (MI) forage in wetlands and in dry grassland typically bounded by wetlands, swampy vegetation or water bodies. Given the site is adjacent to the Serpentine River and Peel Harvey Estuary where they have been observed, the species may forage within the site. It is likely the species would utilise the **mudflat** areas when inundated as well as the surrounding swampy and riparian vegetation.

Caspian tern (MI), white-winged black tern (MI), common tern (MI), little tern (MI), gull-billed tern (MI), Australian fairy tern (VU) and crested tern (MI) all utilise wetlands, estuaries and riverbanks for

foraging and stopovers for flights. It is possible these species would occur in the site, particularly in the **mudflat**, **marsh** and the **bare ground** habitat near the river.

The remaining shorebirds utilise tidal mudflats, saltmarshes and shallow waters and are regularly recorded in the Peel Inlet. The Peel Inlet is a BirdLife International Important Bird Area. It supports many migratory bird species, including more than 1% of the global population of multiple migratory shorebird species (BirdLife International 2023). Depending on the frequency and depth of inundation of the mudflat areas within the site, they may provide foraging habitat for any number of the species that frequent the Peel Inlet and the saltmarsh/wetland vegetation may provide roosting habitat for some species. It is unlikely that any species would utilise the rest of the site except perhaps for traversal between the mudflats and forays into the surrounding wetland vegetation. Targeted shorebird surveys are required to determine the level at which the **marsh** and **mudflat** habitats are used. DCCEEW (2017) recommends survey effort comprises (a) multiple surveys during the period when most shorebirds are present in the area, which aligns with the non-breeding season (approx. spring/summer) and (b) one survey during the northern hemisphere breeding season (approx. March-August).

Quenda (P4) occur throughout the Swan Coastal Plain and prefer dense, shrubby vegetation. There are numerous records of the species occurring within 10 km of the site, with the closest being 450 m away. It is therefore likely that they utilise the whole site given the dense grass throughout, with a preference for the **riparian woodland** habitat areas surrounding the mudflats.

Rakali (P4) is a medium sized native water rat that occurs in most major rivers across the Perth region. Two records of the species occurring in the Serpentine River and Murray River exists within 3 km of the site. Given the site does not extend to the riverbank edge where the species would typically persist, it is likely individuals would only occasionally occur in the site in higher tide or in inundation events where water extends further into the site.

5.2 Fauna habitat

The fauna habitat values are the highest with respect to the areas of **riparian woodland** and **marsh** habitats which occur adjacent to the **mudflats** habitats and in a shallow dampland in the centre of the site. This habitat comprised a dense, low canopy of native tree species with some areas of dense sedges and subsequently dense, interwoven woody debris and leaf litter. As such the area provides good foraging habitat for several species, likely more so when inundated, like ground dwelling mammals and some reptiles and amphibians. The **mudflats** and **marsh** habitats both provide potential foraging areas for wading birds, including specially protected and threatened species listed in **Section 4.1.2**. These areas were dry at the time of the survey but would inundate during winter, becoming high quality habitat for frogs, some birds and rakali. When drying, the muddy terrain may become a good foraging area for the aforementioned wading birds. In conjunction with the riparian forest habitat, these areas are valuable foraging and potential roosting habitat for a number of species recorded in the surrounding areas during the winter months.

The **native woodland** habitat provides a moderate quality of microhabitats and foraging area for bird species, however the dense, weedy understory of most of the areas and disturbance from human activity lower its desirability for ground dwelling fauna. Some kangaroos were observed resting and traversing through this habitat, and so it provides some value to the local kangaroo population.

The remaining **scattered trees and shrubs** habitat provides some isolated foraging habitat for black cockatoos and other ubiquitous avifauna, but little else for other species assemblages. The rest of the site comprises **bare ground** habitat within which species may traverse between surrounding habitats but it is unlikely to support fauna otherwise.

The vegetation in the southern portion of the site overlaps with a South West ecological linkage and the Coodanup Foreshore Bushland RSNA. The mudflats in the site's northern edge also align with the Serpentine River South West ecological linkage. As such, the site provides some habitat connectivity in relation to the wider environment.

5.3 Black cockatoo habitat values

No species of black cockatoo was observed during the survey via direct or indirect evidence.

Despite this, Carnaby's black cockatoo, Baudin's black cockatoo and forest red-tailed black cockatoo are all considered likely to occur within the site and it lies within their distributions and records of each species are known for the surrounding area (DBCA 2023c; DoEE 2016a, 2016b, 2016c). It is likely that the lack of observations of the species in the site is due to the small amount of foraging habitat present.

5.3.1 Breeding

The site does contain breeding habitat for all three species of black cockatoo, with a total of 86 nesting trees identified within the site. Of the 86 habitat trees, two trees were conservatively classified as 'suitable nesting trees' from the ground as hollows were not internally inspected. All trees without potentially suitable hollows (84) were classed as 'potential nesting trees' as they have the potential to form suitable hollows in the future. However, it will likely take many decades for hollows to form that are large enough to be suitable for use by black cockatoos for breeding.

The site lies within 12 km of a possible breeding site for Carnaby's black cockatoo, although outside the wider breeding distribution (Glossop *et al.* 2011).

5.3.2 Roosting

The closest black cockatoo roost to the site is 2.2 km north of the site. According to Peck *et al.* (2019) and Glossop *et al.* (2011) all large trees (>8 m height) within 1000 m of a large roost and within 500 m of a small roost are considered to be 'roost trees' or 'potential roost trees'. As such, none of the large trees in the site are considered roost trees or potential roost trees.

Tall trees within the site represent black cockatoo roosting habitat but no evidence of roosting was recorded. Therefore, there is no reason to suspect that roosting by black cockatoos has recently occurred in the site.

5.3.3 Foraging

The site contains native foraging habitat for all species of black cockatoo. The highest value foraging resource for Carnaby's black cockatoo and forest red-tailed black cockatoo is associated with *Eucalyptus marginata* and further increased for Carnaby's black cockatoo by the *Banksia* spp. in the

south-west portion of the site. Foraging values are increased for forest-red tailed black cockatoo by the *Melia azedarach*.

The lower value foraging habitat for all three species is predominantly associated with the *Eucalyptus gomphocephala* found in the southwest portion of the site. The *Jacksonia furcellata* and *Acacia saligna* further represent native foraging habitat for Carnaby's black cockatoo, although both were individual plants in canopy of non-foraging species and therefore not attributed on the map, while the *Eucalyptus marginata* and *Banksia* spp. comprise native foraging habitat for Baudin's black cockatoo. While there are records of black cockatoos consuming the fruit of these plants (DoEE 2017; Groom 2011), they are likely to be secondary options that are opportunistically consumed rather than relied upon.

6 Conclusions

Outcomes of the basic fauna assessment include the following:

- The site consists of six broad habitat types:
  - **Bare ground:** Walking and vehicle tracks interspersed with weedy grassland patches, inundated muddy areas and areas with no vegetation (9.19 ha).
  - **Marsh:** Areas of clay and muddy terrain on the edge of the Serpentine River with saltmarsh vegetation and scattered dead trees (1.12 ha).
  - **Mudflats**: Areas of seasonally inundated mudflat terrain on the edge of the Serpentine River (1.39 ha).
  - **Native woodland:** Open woodland of native eucalyptus and *Casuarina obesa* with native sedges and shrubs and mostly non-native grasses (5.25 ha).
  - **Riparian woodland:** Low woodland of *Casuarina obesa, Eucalyptus rudis* and *Melaleuca* spp. and native sedges and grasses (2.33 ha).
  - **Scattered trees and shrubs:** Remnant native eucalypts scattered across the site with mostly grassy understory (1.95 ha).
- A total of 26 native fauna species were recorded within the site.
- One specially protected species was recorded during the survey: osprey (MI).
- Despite not being recording during the survey, the following species were considered to have a high or moderate likelihood of occurring within the site:
  - Three species listed as critically endangered: curlew sandpiper, great knot and eastern curlew.
  - Six species listed as endangered: red knot, lesser sand plover, black-tailed godwit, common greenshank, Baudin's black cockatoo and Carnaby's black cockatoo.
  - 33 species listed as migratory EPBC Act and BC Act: Pacific swift, ruddy turnstone, sharp-tailed sandpiper, red knot, broad-pilled sandpiper, curlew sandpiper, pectoral sandpiper, red-necked stint, long-toed stint, great knot, little ringed plover, greater sand plover, lesser sand plover, white-winged black tern, gull-billed tern, Caspian tern, bar-tailed godwit, black-tailed godwit, eastern curlew, whimbrel, glossy ibis, sanderling, grey-tailed tattler, Pacific golden plover, grey plover, common tern, little tern, crested tern, common sandpiper, wood sandpiper, common greenshank, marsh sandpiper and terek sandpiper.
  - Seven species listed as vulnerable: ruddy turnstone, sharp-tailed sandpiper, forest red-tailed black cockatoo, greater sand plover, grey plover, Australian fairy tern and terek sandpiper.
  - One other specially protected species: peregrine falcon.
  - Three species listed as priority 4: blue-billed duck, rakali and quenda.

Outcomes of the targeted black cockatoo survey include the following:

- No species of black cockatoo was recorded during the survey.
- The site occurs within the modelled distribution of Carnaby's black cockatoo, Baudin's black cockatoo and forest red-tailed black cockatoo. The site occurs outside the modelled breeding distribution of all three species but within the 12 km of 5 known breeding sites for Carnaby's black cockatoo

- The site contains 86 habitat trees none of which contain hollows suitable for use by black cockatoos for breeding. Therefore, the site does not currently provide suitable breeding habitat for Carnaby's black cockatoo and forest red-tailed black cockatoo.
- No white-tailed black cockatoo or forest red-tailed black cockatoo roosts occur in close proximity to the site (Peck *et al.* 2019). No roosts or evidence of roosting by any species of black cockatoo was recorded within the site during the field survey. Tall native and non-native trees within the site represent suitable roosting habitat for species of black cockatoo.
- A total of 0.17 ha of foraging habitat for Carnaby's black cockatoo was mapped within the site of which 0.11 ha (64.7%) comprises primary native plants and 0.06 ha (35.3%) comprises secondary native plants.
- A total of 0.14 ha of secondary native foraging habitat for Baudin's black cockatoo was mapped within the site.
- A total of 0.12 ha of foraging habitat for forest red-tailed black cockatoo was mapped within the site of which 0.1 ha (83.33%) comprises primary native plants and 0.02 ha (16.77%) provides secondary native plants.
- Additional areas of foraging habitat of similar or higher value occur adjacent to the site and in the wider local area.

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7.2 Online references

The online resources that have been utilised in the preparation of this report are referenced in **Section 7.1**, with access date information provided in **Table R 1**.

Table R 1 Access dates for online references

Reference	Date accessed	Website or dataset name
Atlas of Living Australia	11 October 2023	Atlas of Living Australia – Spatial Portal
BirdLife International (2023)	11 October 2023	Important Bird Areas
BoM (2023)	6 November 2023	Climate Data Online
DAWE (2023)	11 October 2023	Species Profile and Threats Database
DAWE (2023)	10 October 2023	Protected Matters Search Tool
DBCA (2023)	11 September 2023	NatureMap
DCCEEW (2023)	24 November 2023	Australian Faunal Directory
WALIA (2023)	11 October 2023	Landgate Map Viewer

Figures

Figure 1: Site Location

Project:	Basic Fauna and Targeted Black Cockatoo Assessment 28 Placid Waters Parade, Coodanup
Client:	Peel Rise Pty Ltd

Plan Number:
EP23-081(03)--F03

Drawn:	GAR
Date:	19/02/2024
Checked:	AJU
Approved:	RAW
Date:	09/05/2024

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Metres

Scale: 1:6,000@A4

GDA2020 MGA Zone 50

emerge ASSOCIATES

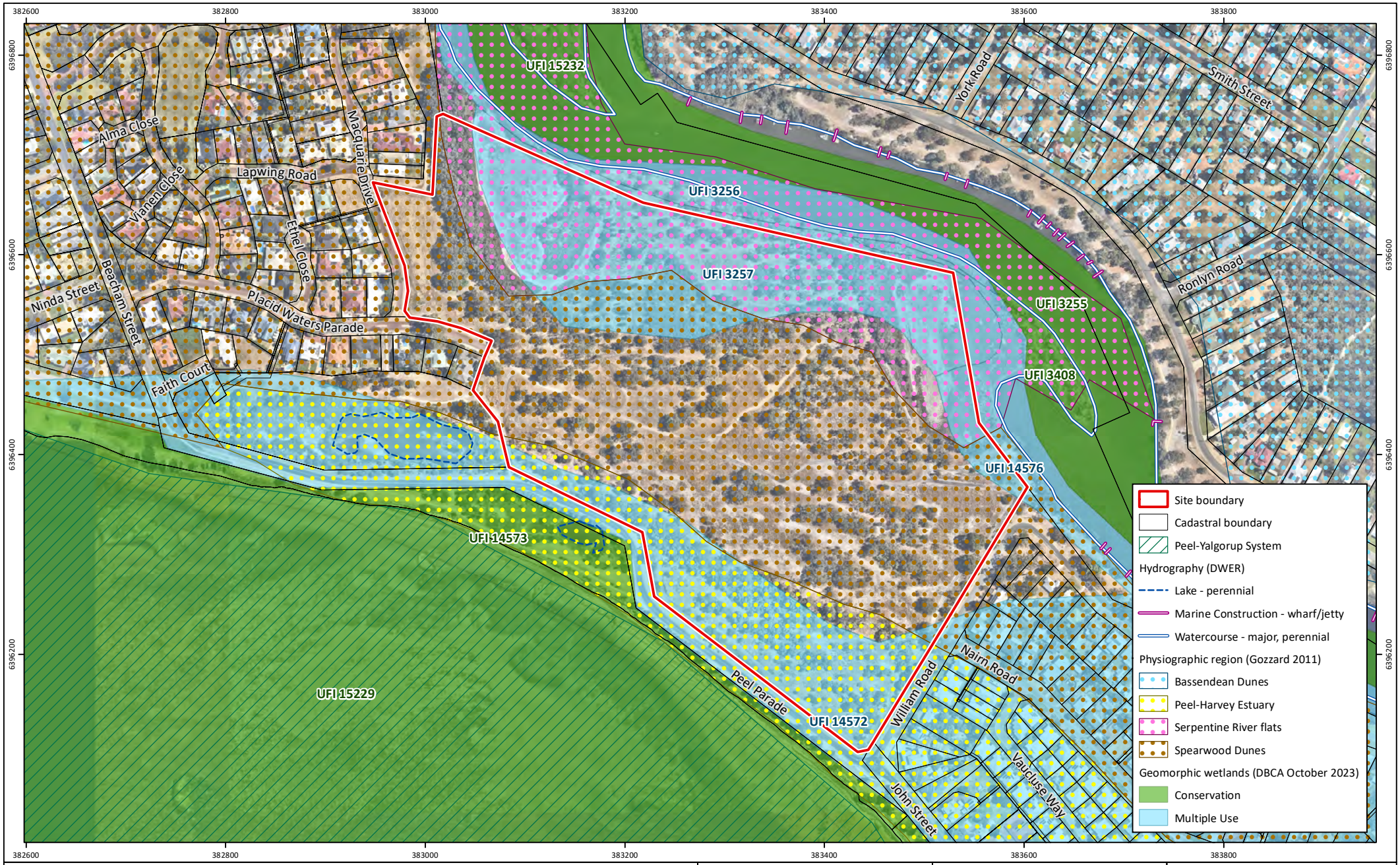

Figure 2: Hydrography, Soils and Topography

Project: Basic Fauna and Targeted Black Cockatoo Assessment
28 Placid Waters Parade, Coodanup

Client: Peel Rise Pty Ltd

Plan Number:
EP23-081(03)--F04

Drawn:	GAR
Date:	19/02/2024
Checked:	AJU
Approved:	RAW
Date:	09/05/2024

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Metres

Scale: 1:5,000@A4

GDA2020 MGA Zone 50

emerge ASSOCIATES

Figure 3: Environmental Features

Project:	Basic Fauna and Targeted Black Cockatoo Assessment 28 Placid Waters Parade, Coodanup
Client:	Peel Rise Pty Ltd

Plan Number:
EP23-081(03)--F05

Drawn:	GAR
Date:	19/02/2024
Checked:	AJU
Approved:	RAW
Date:	09/05/2024

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GDA2020 MGA Zone 50

emerge ASSOCIATES

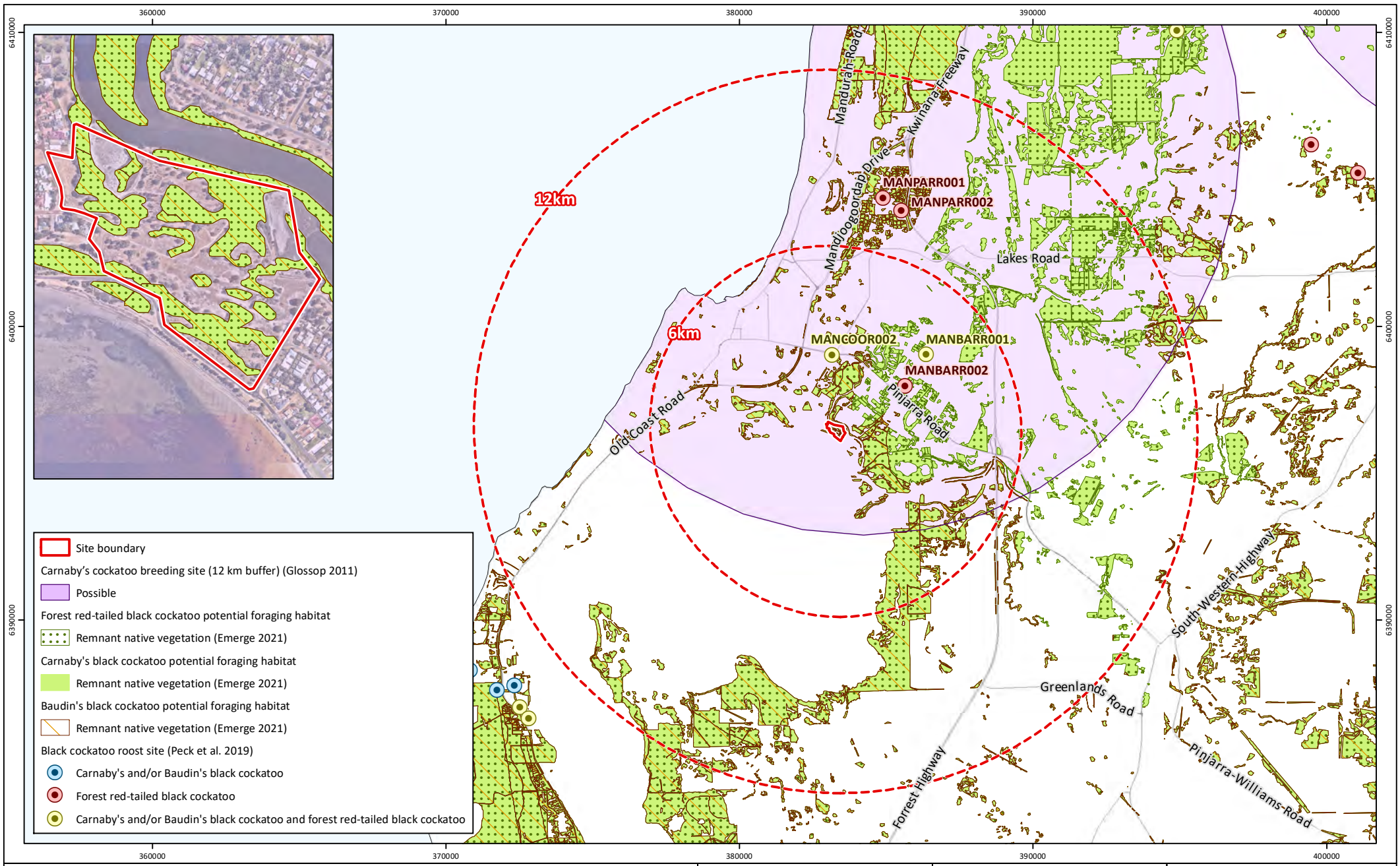

Figure 4: Black Cockatoo Habitat Context

Project:	Basic Fauna and Targeted Black Cockatoo Assessment 28 Placid Waters Parade, Coodanup
Client:	Peel Rise Pty Ltd

Plan Number:
EP23-081(03)--F06

Drawn:	GAR
Date:	19/02/2024
Checked:	AJU
Approved:	RAW
Date:	09/05/2024

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Kilometers
Scale: 1:170,000@A4
GDA 2020 MGA Zone 50

emerge ASSOCIATES

Figure 5: Fauna Habitat

Project:	Basic Fauna and Targeted Black Cockatoo Assessment 28 Placid Waters Parade, Coodanup
Client:	Peel Rise Pty Ltd

Plan Number:
EP23-081(03)--F07

Drawn:	GAR
Date:	19/02/2024
Checked:	AJU
Approved:	RAW
Date:	09/05/2024

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Metres

Scale: 1:4,000@A4

GDA2020 MGA Zone 50

emerge ASSOCIATES

Figure 6: Black Cockatoo Habitat Trees

Project: Basic Fauna and Targeted Black Cockatoo Assessment
28 Placid Waters Parade, Coodanup

Client: Peel Rise Pty Ltd

Plan Number:
EP23-081(03)--F08a

Drawn:	SCM
Date:	03/07/2026
Checked:	KSB
Approved:	SCM
Date:	03/07/2026

N

0 50 100 150
Metres

Scale: 1:4,000@A4

GDA2020 MGA Zone 50

emerge ASSOCIATES

Figure 7: Carnaby's Black Cockatoo Foraging Habitat

Project:	Basic Fauna and Targeted Black Cockatoo Assessment 28 Placid Waters Parade, Coodanup
Client:	Peel Rise Pty Ltd

Plan Number:
EP23-081(03)--F09

Drawn:	GAR
Date:	19/02/2024
Checked:	AJU
Approved:	RAW
Date:	09/05/2024

N

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Metres

Scale: 1:4,000@A4

GDA2020 MGA Zone 50

emerge ASSOCIATES

Figure 8: Baudin's Black Cockatoo Foraging Habitat

Project:	Basic Fauna and Targeted Black Cockatoo Assessment 28 Placid Waters Parade, Coodanup
Client:	Peel Rise Pty Ltd

Plan Number:
EP23-081(03)--F10

Drawn:	GAR
Date:	19/02/2024
Checked:	AJU
Approved:	RAW
Date:	09/05/2024

N

0 50 100 150
Metres

Scale: 1:4,000@A4

GDA2020 MGA Zone 50

emerge ASSOCIATES

Figure 9: Forest Red-tailed Black Cockatoo Foraging Habitat

Project: Basic Fauna and Targeted Black Cockatoo Assessment
28 Placid Waters Parade, Coodanup

Client: Peel Rise Pty Ltd

Plan Number:
EP23-081(03)--F11

Drawn:	GAR
Date:	19/02/2024
Checked:	AJU
Approved:	RAW
Date:	09/05/2024

N

0 50 100 150
Metres

Scale: 1:4,000@A4

GDA2020 MGA Zone 50

emerge ASSOCIATES

Appendix A

Additional information

Conservation Significant Fauna

Threatened and priority fauna

Fauna species considered rare or under threat warrant special protection under Commonwealth and/or State legislation. At the Commonwealth level, fauna species can be listed under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) as 'threatened', 'migratory' or 'marine' as described in **Table 1**.

Migratory species comprise birds recognised under international treaties including:

- Japan Australia Migratory Bird Agreement 1981 (JAMBA)
- China Australia Migratory Bird Agreement 1998 (CAMBA)
- Republic of Korea-Australia Migratory Bird Agreement 2007 (ROKAMBA)
- Bonn Convention 1979 (The Convention on the Conservation of Migratory Species of Wild Animals).

Fauna species listed as threatened and migratory are protected in Australia as 'matters of national environmental significance' (MNES) under the EPBC Act.

Table 1: Definitions of conservation significant fauna species pursuant to the EPBC Act

Conservation Code	Category
X	Threatened Fauna –Extinct There is no reasonable doubt that the last member of the species has died.
EW[#]	Threatened Fauna –Extinct in the Wild Taxa which are known only to survive in cultivation, captivity or as a naturalised population outside its past range, or taxa which have not been recorded in its known and/or expected habitat despite appropriate exhaustive surveys.
CR[#]	Threatened Fauna – Critically Endangered Taxa which are considered to be facing an extremely high risk of extinction in the wild.
EN[#]	Threatened Fauna – Endangered Taxa which are considered to be facing a very high risk of extinction in the wild.
VU[#]	Threatened Fauna – Vulnerable Taxa which are considered to be facing a high risk of extinction in the wild.
Migratory[#]	Migratory Fauna All migratory species that are: (i) native species; and (ii) from time to time included in the appendices to the Bonn Convention; and (b) all migratory species from time to time included in annexes established under JAMBA, CAMBA and ROKAMBA; and All native species from time to time identified in a list established under, or an instrument made under, an international agreement approved by the Minister.
Ma	Marine Fauna Species in the list established under s248 of the EPBC Act

[#]matters of national environmental significance (MNES) under the EPBC Act

In Western Australia, fauna taxa may be classed as 'threatened', 'extinct', or 'specially protected' under the *Biodiversity Conservation Act 2016* (BC Act), which is enforced by Department of Biodiversity Conservation and Attractions (DBCA) (DBCA 2019a). The definitions of these categories are provided in **Table 2**.

Table 2: Definitions of specially protected fauna schedules under the BC Act (DBCA 2019a)

Category	Conservation Code	Definition
Threatened	CR	Critically endangered Threatened species considered to be facing an extremely high risk of extinction in the wild in the immediate future.
	EN	Endangered Threatened species considered to be facing a very high risk of extinction in the wild in the near future.
	VU	Vulnerable Threatened species considered to be facing a high risk of extinction in the wild in the medium-term future.
Extinct	EX	Extinct Species where there is no reasonable doubt that the last member of the species has died.
	EW	Extinct in the wild Species that is known only to survive in cultivation, in captivity or as a naturalised population well outside its past range; and it has not been recorded in its known habitat or expected habitat, at appropriate seasons, anywhere in its past range, despite surveys over a time frame appropriate to its life cycle and form. Note that no species are currently listed as EW.
Specially protected	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 Includes birds that subject to an agreement between the government of Australia and the governments of Japan (JAMBA), China (CAMBA) and The Republic of Korea (ROKAMBA), and the Bonn Convention, relating to the protection of migratory birds.
	CD	Species of special conservation interest (conservation dependent fauna) Fauna of special conservation need being species dependent on ongoing conservation intervention to prevent it becoming eligible for listing as threatened.
	OS	Other specially protected species Fauna otherwise in need of special protection to ensure their conservation.

Fauna species that may be threatened or near threatened but lack sufficient information to be legislatively listed may be added to the DBCA's *Priority Fauna List* (DBCA 2018b). Species listed under priorities 1-3 comprise possible threatened species that do not meet survey criteria or are otherwise data deficient. Species listed under priority 4 are those 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 (DBCA 2019a).

Priority fauna species are considered during State approval processes. Priority fauna categories and definitions are listed in **Table 3** (DBCA 2019a).

Table 3: Definitions of priority fauna categories on DBCA's Priority Fauna List (DBCA 2019a)

Conservation Code	Category
P1	Priority 1 – Poorly known Species that are known from one or a few locations (generally five or less) which are potentially at risk. All occurrences are either: very small; or on lands not managed for conservation, e.g. agricultural or pastoral lands, urban areas, road and rail reserves, gravel reserves and active mineral leases; or otherwise under threat of habitat destruction or degradation. Species may be included if they are comparatively well known from one or more locations but do not meet adequacy of survey requirements and appear to be under immediate threat from known threatening processes. Such species are in urgent need of further survey.
P2	Priority 2 – Poorly known Species that are known from one or a few locations (generally five or less), some of which are on lands managed primarily for nature conservation, e.g. national parks, conservation parks, nature reserves and other lands with secure tenure being managed for conservation. Species may be included if they are comparatively well known from one or more locations but do not meet adequacy of survey requirements and appear to be under threat from known threatening processes. Such species are in urgent need of further survey.
P3	Priority 3 – Poorly known Species that are known from several locations and the species does not appear to be under imminent threat, or from few but widespread locations with either large population size or significant remaining areas of apparently suitable habitat, much of it not under imminent threat. Species may be included if they are comparatively well known from several locations but do not meet adequacy of survey requirements and known threatening processes exist that could affect them. Such species are in need of further survey.
P4	(a) Priority 4 – Rare species 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) Priority 4 – Near Threatened Species that are considered to have been adequately surveyed and that do not qualify for Conservation Dependent, but that are close to qualifying for Vulnerable. (c) Priority 4 – Other Species that have been removed from the list of threatened species during the past five years for reasons other than taxonomy.

Black cockatoos

Three threatened species of black cockatoo occur on the Swan Coastal Plain (referred to herein collectively as 'black cockatoos'):

- *Zanda*[1] *latirostris* (Carnaby's black cockatoo) which is listed as 'endangered' under the EPBC Act and the BC Act.
- *Zanda*[1] *baudinii* (Baudin's black cockatoo) which is listed as 'endangered' under the EPBC Act and the BC Act.
- *Calyptorhynchus banksii naso* (forest red-tailed black cockatoo) which is listed as 'vulnerable' under the EPBC Act and the BC Act.

There are a range of regional studies and spatial datasets available which provide information on black cockatoo records and potential habitat mapping. These are detailed below.

Species distribution and breeding range

Broad-scale maps are available for the modelled distribution of Baudin's black cockatoo, Carnaby's black cockatoo and forest red-tailed black cockatoo (DSEWPaC 2011; DoEE 2016a, b).

The modelled distribution maps also include 'known breeding areas' and 'predicted breeding range' for Baudin's black cockatoo and 'breeding range' and 'non-breeding range' for Carnaby's black cockatoo.

No breeding range modelling is available for forest red-tailed black cockatoo but the species is known to breed mainly in the jarrah forest region (DBCA 2017a) and in small populations on the Swan Coastal Plain within the Baldivis, Stake Hill, Lake McLarty and Capel area and increasingly in the Perth metropolitan area (DAWE 2022).

Breeding habitat

Department of Environment and Conservation (DEC, now Department of Biodiversity, Conservation and Attractions (DBCA)) and fauna experts, have identified and mapped Carnaby's black cockatoo habitat on the Swan Coastal Plain and Jarrah Forest regions (Glossop *et al.* 2011). This dataset includes mapping of Carnaby's black cockatoo breeding sites based on point records of breeding from a range of sources. Breeding sites were classified as 'confirmed' where eggs or chicks were recorded and 'possible' where observations relating to Carnaby's black cockatoo breeding that did not include actual records of eggs or chicks (e.g. chewed hollows or records of breeding or nesting behaviour by an expert observer).

A 12 km buffer applies to each site to 'reflect the flexible use of these areas by cockatoos and to indicate the important zone for access to potential feeding habitat' (Glossop *et al.* 2011). Glossop *et al.* (2011) state that the areas mapped in the dataset are not a comprehensive record of Carnaby's black cockatoo breeding and that many nesting sites are not known.

While this dataset only applies to Carnaby's black cockatoo, the information it contains is also applicable for Baudin's black cockatoo and forest red-tailed black cockatoo as they have similar

[1] Previously *Calyptorhynchus*

breeding habitat requirements. That is, breeding sites that are suitable for Carnaby's black cockatoo may also be suitable for Baudin's black cockatoo and forest red-tailed black cockatoo, if located within their distribution/breeding ranges.

BirdLife Australia also maintain a database of confirmed black cockatoo breeding sites which is accessible via a paid search system. BirdLife Australia have advised that their database is comprised of data collected during surveys by staff and volunteers of which most (>99%) surveys are of Carnaby's black cockatoo. They have also advised that the dataset is not comprehensive and that an absence of known nests does not necessarily indicate a lack of breeding activity.

The Carnaby's black cockatoo recovery plan also identifies 13 'important bird areas' for Carnaby's black cockatoo, which are identified as 'sites of global bird conservation importance' (DPaW 2013). These 'important bird areas' comprise sites supporting at least 20 breeding pairs or 1% of the population regularly utilising an area in the non-breeding part of the range.

Confirmed roost sites

BirdLife Australia undertakes annual monitoring of black cockatoo overnight roost sites as part of the annual 'Great Cocky Count' community-based survey. Information gathered from these monitoring events provides roost locations and recorded black cockatoo number (Birdlife Australia 2023).

Native foraging habitat

Glossop *et al*. (2011) also mapped 'areas requiring investigation as Carnaby's black cockatoo feeding habitat' for the Swan Coastal Plain and Jarrah Forest regions, based on regional vegetation mapping that may contain plant species known to be foraged upon by Carnaby's black cockatoo. Note that this dataset does not include observations or point records of Carnaby's black cockatoo feeding. This dataset represents areas of vegetation that may potentially provide foraging habitat for Carnaby's black cockatoo.

In order to account for clearing of native vegetation that has occurred since the Glossop *et al.* (2011) dataset was created and to incorporate updated vegetation mapping and information on foraging behaviour of Carnaby's black cockatoo, Emerge have revised this dataset to represent the most up to date information available. Furthermore, Emerge have used a similar methodology to Glossop et al. (2011) to define potential foraging habitat for Baudin's black cockatoo and forest-red tailed cockatoos.

Specifically, DBCA (2021), DBCA (2019b) and DPIRD (2018) regional vegetation complex mapping was used to determine which areas of remnant vegetation support plant species known to be foraged upon by Carnaby's black cockatoo, Baudin's black cockatoo or forest red-tailed cockatoos. Where these vegetation complexes intersect remnant vegetation mapped by DPIRD (2020) they were considered to represent potential foraging habitat for Carnaby's black cockatoo, Baudin's black cockatoo and/or forest red-tailed cockatoo.

Pine plantations also provide an important food source for Carnaby's black cockatoo, but were not included in the original Glossop et al. (2011) dataset. Mapping of pine plantations is available from the Forest Products Commission (Forest Products Commission 2020) and was considered in the assessment of Carnaby's black cockatoo foraging habitat.

Pest fauna

A number of legislative and policy documents exist in relation to pest fauna management at state and national levels. The *Biosecurity and Agriculture Management Act 2007* (BAM Act) is the principle legislation guiding pest fauna management in Western Australia and lists declared pest species.

Declared Pests

Part 2.3.23 of the BAM Act requires a person must not "*a) keep, breed or cultivate the declared pest; b) keep, breed or cultivate an animal, plant or other thing that is infected or infested with the declared pest; c) release into the environment the declared pest, or an animal, plant or other thing that is infected or infested with the declared pest; or d) intentionally infect or infest, or expose to infection or infestation, a plant, animal or other thing with a declared pest*".

Under the BAM Act, all declared pests are assigned a legal status, as described in **Table 4**. Species assigned to the 'declared pest, prohibited - s12' category are placed in one of three control categories, as described in **Table 5**.

The *Biosecurity and Agriculture Management Regulations 2013* specify keeping categories for species assigned to the 'declared pest - s22(2)' category, which relate to the purposes of which species can be kept, as well as the entities that can keep them. The categories are described in **Table 6**.

The Western Australian Organism List (WAOL) provides the status of organisms which have been categorised under the BAM Act (DAFWA 2016).

Table 4: Legal status of declared pest species listed under the BAM Act (DAFWA 2016)

Category	Description
Declared Pest Prohibited - s12	May only be imported and kept subject to permits. Permit conditions applicable to some species may only be appropriate or available to research organisations or similarly secure institutions.
Declared Pest s22(2)	Must satisfy any applicable import requirements when imported and may be subject to an import permit if they are potential carriers of high-risk organisms. They may also be subject to control and keeping requirements once within Western Australia

Table 5: Control categories of declared pest species listed under the BAM Act (DAFWA 2016)

Category	Description
C1	Exclusion Not established in Western Australia and control measures are to be taken, including border checks, in order to prevent them entering and establishing in the State.
C2	Eradication Present in Western Australia in low enough numbers or in sufficiently limited areas that their eradication is still a possibility.
C3	Management Established in Western Australia but it is feasible, or desirable, to manage them in order to limit their damage. Control measures can prevent a C3 pest from increasing in population size or density or moving from an area in which it is established into an area which currently is free of that pest.

Table 6: Keeping categories of declared pest species listed under the BAM Act (DAFWA 2016)

Category	Description
Prohibited	Can only be kept under a permit for public display and education purposes, and/or genuine scientific research, by entities approved by the state authority.
Exempt	No permit or conditions are required for keeping.
Restricted	Organisms which, relative to other species, have a low risk of becoming a problem for the environment, primary industry or public safety and can be kept under a permit by private individuals.

Wetland Habitat

Geomorphic wetland types

On the Swan Coastal Plain DBCA (2017b) have used the geomorphic wetland classification system developed by Semeniuk (1987) and Semeniuk and Semeniuk (1995) to classify wetlands based on the landform shape and water permanence (hydro-period) as outlined in **Table 7**. DBCA maintains a dataset of the *Geomorphic Wetlands of the Swan Coastal Plain* (DBCA 2018a).

Table 7: Geomorphic Wetlands of the Swan Coastal Plain classification categories (DBCA 2017b)

Level of inundation	Geomorphology			
	Basin	Flat	Channel	Slope
Permanently inundated	Lake	-	River	-
Seasonally inundated	Sumpland	Floodplain	Creek	-
Seasonally waterlogged	Dampland	Palusplain	-	Paluslope

Literature

The main literature used for identifying fauna and fauna habitats is listed in **Table 8** below.

Table 8: Standard literature used for identifying fauna species and habitats.

Conservation Code	Category
Birds	Johnstone and Storr (1998b), Johnstone and Storr (1998a), Pizzey and Knight (2012), Slater *et al.* (2003)
Mammals	Menkhorst and Knight (2011), Triggs (2003)
Amphibia	Tyler and Doughty (2009), Bush *et al.* (2002)
Reptiles	Bush *et al.* (2002), Wilson and Swan (2021)

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Appendix B

Database search results

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: 10-Oct-2023

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	2
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	5
Listed Threatened Species:	62
Listed Migratory Species:	67

Other Matters Protected by the EPBC Act

This part of the report summarises other matters protected under the Act that may relate to the area you nominated. Approval may be required for a proposed activity that significantly affects the environment on Commonwealth land, when the action is outside the Commonwealth land, or the environment anywhere when the action is taken on Commonwealth land. Approval may also be required for the Commonwealth or Commonwealth agencies proposing to take an action that is likely to have a significant impact on the 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:	10
Commonwealth Heritage Places:	None
Listed Marine Species:	94
Whales and Other Cetaceans:	12
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	None
Habitat Critical to the Survival of Marine Turtles:	None

Extra Information

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

State and Territory Reserves:	16
Regional Forest Agreements:	None
Nationally Important Wetlands:	2
EPBC Act Referrals:	37
Key Ecological Features (Marine):	None
Biologically Important Areas:	10
Bioregional Assessments:	None
Geological and Bioregional Assessments:	None

Details

Matters of National Environmental Significance

Wetlands of International Importance (Ramsar Wetlands) [Resource Information]

Ramsar Site Name	Proximity	Buffer Status
Becher point wetlands	Within 10km of Ramsar site	In buffer area only
Peel-yalgorup system	Within Ramsar site	In feature area

Listed Threatened Ecological Communities [Resource Information]

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

Community Name	Threatened Category	Presence Text	Buffer Status
Banksia Woodlands of the Swan Coastal Plain ecological community	Endangered	Community likely to occur within area	In feature area
Clay Pans of the Swan Coastal Plain	Critically Endangered	Community likely to occur within area	In buffer area only
Empodisma peatlands of southwestern Australia	Endangered	Community may occur within area	In buffer area only
Subtropical and Temperate Coastal Saltmarsh	Vulnerable	Community likely 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 buffer area only
Botaurus poiciloptilus			
Australasian Bittern [1001]	Endangered	Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Calidris canutus Red Knot, Knot [855]	Endangered	Species or species habitat known to occur within area	In feature area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area	In feature area
Calidris tenuirostris Great Knot [862]	Critically Endangered	Roosting known to occur within area	In feature area
Calyptorhynchus banksii naso Forest Red-tailed Black-Cockatoo, Karrak [67034]	Vulnerable	Species or species habitat known to occur within area	In feature area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat known to occur within area	In feature area
Charadrius mongolus Lesser Sand Plover, Mongolian Plover [879]	Endangered	Roosting known to occur within area	In feature area
Diomedea amsterdamensis Amsterdam Albatross [64405]	Endangered	Species or species habitat may occur within area	In feature area
Diomedea dabbenena Tristan Albatross [66471]	Endangered	Species or species habitat may occur within area	In 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
Diomedea sanfordi Northern Royal Albatross [64456]	Endangered	Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Falco hypoleucos Grey Falcon [929]	Vulnerable	Species or species habitat may occur within area	In buffer area only
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
Limosa lapponica menzbieri Northern Siberian Bar-tailed Godwit, Russkoye Bar-tailed Godwit [86432]	Critically Endangered	Species or species habitat known to occur within area	In feature area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area	In feature area
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	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 known to occur within area	In feature area
Pachyptila turtur subantarctica Fairy Prion (southern) [64445]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Phoebetria fusca Sooty Albatross [1075]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Pterodroma mollis Soft-plumaged Petrel [1036]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Rostratula australis Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Sternula nereis nereis			
Australian Fairy Tern [82950]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In feature area
Thalassarche carteri			
Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
Thalassarche cauta			
Shy Albatross [89224]	Endangered	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
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
Zanda baudinii listed as Calyptorhynchus baudinii			
Baudin's Cockatoo, Baudin's Black-Cockatoo, Long-billed Black-cockatoo [87736]	Endangered	Species or species habitat known to occur within area	In feature area
Zanda latirostris listed as Calyptorhynchus latirostris			
Carnaby's Black Cockatoo, Short-billed Black-cockatoo [87737]	Endangered	Species or species habitat known to occur within area	In feature area
FISH			
Thunnus maccoyii			
Southern Bluefin Tuna [69402]	Conservation Dependent	Species or species habitat likely to occur within area	In feature area
MAMMAL			
Balaenoptera musculus			
Blue Whale [36]	Endangered	Species or species habitat likely to occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Bettongia penicillata ogilbyi Woylie [66844]	Endangered	Species or species habitat may occur within area	In buffer area only
Dasyurus geoffroii Chuditch, Western Quoll [330]	Vulnerable	Species or species habitat known to occur within area	In feature area
Eubalaena australis Southern Right Whale [40]	Endangered	Breeding known to occur within area	In buffer area only
Neophoca cinerea Australian Sea-lion, Australian Sea Lion [22]	Endangered	Species or species habitat may occur within area	In feature area
Pseudocheirus occidentalis Western Ringtail Possum, Ngwayir, Womp, Woder, Ngoor, Ngoolangit [25911]	Critically Endangered	Species or species habitat likely to occur within area	In feature area
OTHER			
Westralunio carteri Carter's Freshwater Mussel, Freshwater Mussel [86266]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
PLANT			
Andersonia gracilis Slender Andersonia [14470]	Endangered	Species or species habitat may occur within area	In feature area
Banksia mimica Summer Honeypot [82765]	Endangered	Species or species habitat may occur within area	In buffer area only
Caladenia huegelii King Spider-orchid, Grand Spider-orchid, Rusty Spider-orchid [7309]	Endangered	Species or species habitat likely to occur within area	In feature area
Diuris drummondii Tall Donkey Orchid [4365]	Vulnerable	Species or species habitat known to occur within area	In feature area
Diuris micrantha Dwarf Bee-orchid [55082]	Vulnerable	Species or species habitat known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Diuris purdiei			
Purdie's Donkey-orchid [12950]	Endangered	Species or species habitat known to occur within area	In feature area
Drakaea elastica			
Glossy-leafed Hammer Orchid, Glossy-leaved Hammer Orchid, Warty Hammer Orchid [16753]	Endangered	Species or species habitat known to occur within area	In feature area
Drakaea micrantha			
Dwarf Hammer-orchid [56755]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Synaphea sp. Fairbridge Farm (D.Papenfus 696)			
Selena's Synaphea [82881]	Critically Endangered	Species or species habitat likely to occur within area	In feature area
Synaphea sp. Pinjarra Plain (A.S.George 17182)			
[86878]	Endangered	Species or species habitat may occur within area	In buffer area only
Synaphea sp. Serpentine (G.R.Brand 103)			
[86879]	Critically Endangered	Species or species habitat may occur within area	In feature area
Synaphea stenoloba			
Dwellingup Synaphea [66311]	Endangered	Species or species habitat known to 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

Scientific Name	Threatened Category	Presence Text	Buffer Status
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 buffer area only
Carcharodon carcharias			
White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat known to occur within area	In feature area
Galeorhinus galeus			
School Shark, Eastern School Shark, Snapper Shark, Tope, Soupfin Shark [68453]	Conservation Dependent	Species or species habitat may occur within area	In buffer area only
Pristis pristis			
Freshwater Sawfish, Largetooth Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Vulnerable	Species or species habitat may occur within area	In feature area
Rhincodon typus			
Whale Shark [66680]	Vulnerable	Species or species habitat may occur within area	In buffer area only
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 may 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 buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Ardenna grisea Sooty Shearwater [82651]		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 dabbenena Tristan Albatross [66471]	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
Diomedea sanfordi Northern Royal Albatross [64456]	Endangered	Species or species habitat may occur within area	In feature area
Hydroprogne caspia Caspian Tern [808]		Foraging, feeding or related behaviour known to occur within area	In buffer area only
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
Onychoprion anaethetus Bridled Tern [82845]		Foraging, feeding or related behaviour likely to occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
[Phoebetria fusca](#) Sooty Albatross [1075]	Vulnerable	Species or species habitat may occur within area	In buffer area only
[Sterna dougallii](#) Roseate Tern [817]		Foraging, feeding or related behaviour likely to occur within area	In buffer area only
[Sternula albifrons](#) Little Tern [82849]		Species or species habitat may occur within area	In buffer area only
[Thalassarche carteri](#) Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
[Thalassarche cauta](#) Shy Albatross [89224]	Endangered	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
[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 buffer area only

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 buffer area only
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 buffer area only
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
Mobula birostris as Manta birostris Giant Manta Ray [90034]		Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
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 buffer area only
Pristis pristis			
Freshwater Sawfish, Largetooth Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Vulnerable	Species or species habitat may occur within area	In feature area
Rhincodon typus			
Whale Shark [66680]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Migratory Terrestrial Species			
Motacilla cinerea			
Grey Wagtail [642]		Species or species habitat may occur within area	In feature area
Migratory Wetlands Species			
Actitis hypoleucos			
Common Sandpiper [59309]		Species or species habitat known to occur within area	In feature area
Arenaria interpres			
Ruddy Turnstone [872]		Roosting known to occur within area	In feature area
Calidris acuminata			
Sharp-tailed Sandpiper [874]		Roosting known to occur within area	In feature area
Calidris alba			
Sanderling [875]		Roosting known to occur within area	In feature area
Calidris canutus			
Red Knot, Knot [855]	Endangered	Species or species habitat known to occur within area	In feature area
Calidris ferruginea			
Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat known to occur within area	In feature area
Calidris ruficollis Red-necked Stint [860]		Roosting known to occur within area	In feature area
Calidris subminuta Long-toed Stint [861]		Roosting known to occur within area	In feature area
Calidris tenuirostris Great Knot [862]	Critically Endangered	Roosting known to occur within area	In feature area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat known to occur within area	In feature area
Charadrius mongolus Lesser Sand Plover, Mongolian Plover [879]	Endangered	Roosting known to occur within area	In feature area
Gallinago megala Swinhoe's Snipe [864]		Roosting likely to occur within area	In feature area
Gallinago stenura Pin-tailed Snipe [841]		Roosting likely to occur within area	In feature area
Limicola falcinellus Broad-billed Sandpiper [842]		Roosting known to occur within area	In feature area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat known to occur within area	In feature area
Limosa limosa Black-tailed Godwit [845]		Roosting known to occur within area	In feature area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area	In feature area
Numenius minutus Little Curlew, Little Whimbrel [848]		Roosting likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Numenius phaeopus Whimbrel [849]		Roosting known to occur within area	In feature area
Pandion haliaetus Osprey [952]		Breeding known to occur within area	In feature area
Philomachus pugnax Ruff (Reeve) [850]		Roosting known to occur within area	In feature area
Pluvialis fulva Pacific Golden Plover [25545]		Roosting known to occur within area	In feature area
Tringa brevipes Grey-tailed Tattler [851]		Roosting known to occur within area	In feature area
Tringa glareola Wood Sandpiper [829]		Roosting known to occur within area	In feature area
Tringa nebularia Common Greenshank, Greenshank [832]		Species or species habitat known to occur within area	In feature area
Tringa stagnatilis Marsh Sandpiper, Little Greenshank [833]		Roosting known to occur within area	In feature area
Tringa totanus Common Redshank, Redshank [835]		Roosting known to occur within area	In feature area

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 - [50429]	WA	In buffer area only
Commonwealth Land - [50681]	WA	In buffer area only
Commonwealth Land - [52003]	WA	In buffer area only
Commonwealth Land - [50414]	WA	In buffer area only

Commonwealth Land Name	State	Buffer Status
Commonwealth Land - [50408]	WA	In buffer area only
Commonwealth Land - [51109]	WA	In buffer area only
Commonwealth Land - [51492]	WA	In buffer area only
Commonwealth Land - [50426]	WA	In buffer area only
Commonwealth Land - [51112]	WA	In buffer area only
Commonwealth Land - [51114]	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 known to occur within area	In feature area
Anous stolidus Common Noddy [825]		Species or species habitat may occur within area	In feature area
Anous tenuirostris melanops Australian Lesser Noddy [26000]	Vulnerable	Species or species habitat may occur within area	In buffer area only
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 buffer area only
Ardenna grisea as Puffinus griseus Sooty Shearwater [82651]		Species or species habitat may occur within area	In buffer area only
Arenaria interpres Ruddy Turnstone [872]		Roosting known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
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]		Roosting known to occur within area	In feature area
Calidris alba Sanderling [875]		Roosting known to occur within area	In feature area
Calidris canutus Red Knot, Knot [855]	Endangered	Species or species habitat known to occur within area overfly marine area	In feature area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area overfly marine area	In feature area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat known to occur within area overfly marine area	In feature area
Calidris ruficollis Red-necked Stint [860]		Roosting known to occur within area overfly marine area	In feature area
Calidris subminuta Long-toed Stint [861]		Roosting known to occur within area overfly marine area	In feature area
Calidris tenuirostris Great Knot [862]	Critically Endangered	Roosting known to occur within area overfly marine area	In feature area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat known to occur within area	In feature area
Charadrius mongolus Lesser Sand Plover, Mongolian Plover [879]	Endangered	Roosting known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Charadrius ruficapillus Red-capped Plover [881]		Roosting known to occur within area overfly marine area	In feature area
Diomedea amsterdamensis Amsterdam Albatross [64405]	Endangered	Species or species habitat may occur within area	In feature area
Diomedea dabbenena Tristan Albatross [66471]	Endangered	Species or species habitat may occur within area	In 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
Diomedea sanfordi Northern Royal Albatross [64456]	Endangered	Species or species habitat may occur within area	In feature area
Gallinago megala Swinhoe's Snipe [864]		Roosting likely to occur within area overfly marine area	In feature area
Gallinago stenura Pin-tailed Snipe [841]		Roosting likely to occur within area overfly marine area	In feature area
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat known 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
Himantopus himantopus Pied Stilt, Black-winged Stilt [870]		Roosting known to occur within area overfly marine area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Hydroprogne caspia as Sterna caspia Caspian Tern [808]		Foraging, feeding or related behaviour known to occur within area	In buffer area only
Limicola falcinellus Broad-billed Sandpiper [842]		Roosting known to occur within area overfly marine area	In feature area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat known to occur within area	In feature area
Limosa limosa Black-tailed Godwit [845]		Roosting known to occur within area overfly marine area	In feature area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area	In feature area
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	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 known to occur within area	In feature area
Numenius minutus Little Curlew, Little Whimbrel [848]		Roosting likely to occur within area overfly marine area	In feature area
Numenius phaeopus Whimbrel [849]		Roosting known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Onychoprion anaethetus as Sterna anaethetus Bridled Tern [82845]		Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Pachyptila turtur Fairy Prion [1066]		Species or species habitat likely to occur within area	In feature area
Pandion haliaetus Osprey [952]		Breeding known to occur within area	In feature area
Philomachus pugnax Ruff (Reeve) [850]		Roosting known to occur within area overfly marine area	In feature area
Phoebetria fusca Sooty Albatross [1075]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Pluvialis fulva Pacific Golden Plover [25545]		Roosting known to occur within area	In feature area
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 buffer area only
Recurvirostra novaehollandiae Red-necked Avocet [871]		Roosting known to occur within area overfly marine area	In feature area
Rostratula australis as Rostratula benghalensis (sensu lato) Australian Painted Snipe [77037]	Endangered	Species or species habitat 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

Scientific Name	Threatened Category	Presence Text	Buffer Status
Sterna dougallii Roseate Tern [817]		Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Sternula albifrons as Sterna albifrons Little Tern [82849]		Species or species habitat may occur within area	In buffer area only
Thalassarche carteri Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
Thalassarche cauta Shy Albatross [89224]	Endangered	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
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
Tringa brevipes as Heteroscelus brevipes Grey-tailed Tattler [851]		Roosting known to occur within area	In feature area
Tringa glareola Wood Sandpiper [829]		Roosting 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]		Species or species habitat known to occur within area overfly marine area	In feature area
[Tringa stagnatilis](#) Marsh Sandpiper, Little Greenshank [833]		Roosting known to occur within area overfly marine area	In feature area
[Tringa totanus](#) Common Redshank, Redshank [835]		Roosting known to occur within area overfly marine area	In feature area
Fish			
[Acentronura australe](#) Southern Pygmy Pipehorse [66185]		Species or species habitat may occur within area	In buffer area only
[Campichthys galei](#) Gale's Pipefish [66191]		Species or species habitat may occur within area	In buffer area only
[Heraldia nocturna](#) Upside-down Pipefish, Eastern Upside-down Pipefish, Eastern Upside-down Pipefish [66227]		Species or species habitat may occur within area	In buffer area only
[Hippocampus angustus](#) Western Spiny Seahorse, Narrow-bellied Seahorse [66234]		Species or species habitat may occur within area	In buffer area only
[Hippocampus breviceps](#) Short-head Seahorse, Short-snouted Seahorse [66235]		Species or species habitat may occur within area	In buffer area only
[Hippocampus subelongatus](#) West Australian Seahorse [66722]		Species or species habitat may occur within area	In buffer area only
[Histiogamphelus cristatus](#) Rhino Pipefish, Macleay's Crested Pipefish, Ring-back Pipefish [66243]		Species or species habitat may occur within area	In buffer area only
[Lissocampus caudalis](#) Australian Smooth Pipefish, Smooth Pipefish [66249]		Species or species habitat may occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Lissocampus fatiloquus Prophet's Pipefish [66250]		Species or species habitat may occur within area	In buffer area only
Lissocampus runa Javelin Pipefish [66251]		Species or species habitat may occur within area	In buffer area only
Maroubra perserrata Sawtooth Pipefish [66252]		Species or species habitat may occur within area	In buffer area only
Mitotichthys meraculus Western Crested Pipefish [66259]		Species or species habitat may occur within area	In buffer area only
Nannocampus subosseus Bonyhead Pipefish, Bony-headed Pipefish [66264]		Species or species habitat may occur within area	In buffer area only
Phycodurus eques Leafy Seadragon [66267]		Species or species habitat may occur within area	In buffer area only
Phyllopteryx taeniolatus Common Seadragon, Weedy Seadragon [66268]		Species or species habitat may occur within area	In buffer area only
Pugnaso curtirostris Pugnose Pipefish, Pug-nosed Pipefish [66269]		Species or species habitat may occur within area	In buffer area only
Solegnathus lettiensis Gunther's Pipehorse, Indonesian Pipefish [66273]		Species or species habitat may occur within area	In buffer area only
Stigmatopora argus Spotted Pipefish, Gulf Pipefish, Peacock Pipefish [66276]		Species or species habitat may occur within area	In buffer area only
Stigmatopora nigra Widebody Pipefish, Wide-bodied Pipefish, Black Pipefish [66277]		Species or species habitat may occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
[Urocampus carinirostris](#) Hairy Pipefish [66282]		Species or species habitat may occur within area	In buffer area only
[Vanacampus margaritifer](#) Mother-of-pearl Pipefish [66283]		Species or species habitat may occur within area	In buffer area only
[Vanacampus phillipi](#) Port Phillip Pipefish [66284]		Species or species habitat may occur within area	In buffer area only
[Vanacampus poecilolaemus](#) Longsnout Pipefish, Australian Long-snout Pipefish, Long-snouted Pipefish [66285]		Species or species habitat may occur within area	In buffer area only
Mammal			
[Arctocephalus forsteri](#) Long-nosed Fur-seal, New Zealand Fur-seal [20]		Species or species habitat may occur within area	In buffer area only
[Neophoca cinerea](#) Australian Sea-lion, Australian Sea Lion [22]	Endangered	Species or species habitat may occur within area	In feature area
Reptile			
[Caretta caretta](#) Loggerhead Turtle [1763]	Endangered	Foraging, feeding or related behaviour known to occur within area	In feature area
[Chelonia mydas](#) Green Turtle [1765]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In feature area
[Dermochelys coriacea](#) Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Foraging, feeding or related behaviour known to occur within area	In feature area
[Disteira kingii](#) Spectacled Seasnake [1123]		Species or species habitat may occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
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 buffer area only
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 buffer area only
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 buffer area only
Eubalaena australis			
Southern Right Whale [40]	Endangered	Breeding known to occur within area	In buffer area only
Grampus griseus			
Risso's Dolphin, Grampus [64]		Species or species habitat may occur within area	In buffer area only
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 buffer area only

Current Scientific Name	Status	Type of Presence	Buffer Status
[Stenella attenuata](#) Spotted Dolphin, Pantropical Spotted Dolphin [51]		Species or species habitat may occur within area	In buffer area only
[Tursiops aduncus](#) Indian Ocean Bottlenose Dolphin, Spotted Bottlenose Dolphin [68418]		Species or species habitat likely to occur within area	In buffer area only
[Tursiops truncatus s. str.](#) Bottlenose Dolphin [68417]		Species or species habitat may occur within area	In buffer area only

Extra Information

State and Territory Reserves [Resource Information]

Protected Area Name	Reserve Type	State	Buffer Status
Austin Bay	Nature Reserve	WA	In buffer area only
Boodalan	Nature Reserve	WA	In buffer area only
Creery Island	Nature Reserve	WA	In buffer area only
Goegrup Lake	Nature Reserve	WA	In buffer area only
Len Howard	Conservation Park	WA	In buffer area only
NTWA Bushland covenant (0014)	Conservation Covenant	WA	In buffer area only
Unnamed WA13359	Nature Reserve	WA	In buffer area only
Unnamed WA35283	Nature Reserve	WA	In buffer area only
Unnamed WA38749	Conservation Park	WA	In buffer area only
Unnamed WA41102	5(1)(h) Reserve	WA	In buffer area only
Unnamed WA44986	Nature Reserve	WA	In buffer area only
Unnamed WA45089	Nature Reserve	WA	In buffer area only
Unnamed WA46661	Nature Reserve	WA	In buffer area only
Unnamed WA50750	Nature Reserve	WA	In buffer area only
Unnamed WA51945	5(1)(h) Reserve	WA	In buffer area only
Unnamed WA51946	5(1)(h) Reserve	WA	In buffer area only

Nationally Important Wetlands

[Resource Information]

Wetland Name	State	Buffer Status
Barraghup Swamp	WA	In buffer area only
Peel-Harvey Estuary	WA	In buffer area only

EPBC Act Referrals

[Resource Information]

Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Controlled action				
'Lakelands East' residential development, Mandurah, WA	2013/7048	Controlled Action	Post-Approval	In buffer area only
Austin Cove Estate Phase II Residential Development	2007/3885	Controlled Action	Post-Approval	In buffer area only
Construction of New Perth Bunbury Highway project	2005/2193	Controlled Action	Post-Approval	In feature area
Halls Head Shopping Centre stages 2 & 3 expansion	2010/5636	Controlled Action	Post-Approval	In buffer area only
Lot 505 Hungerford Avenue, Halls Head, WA Residential Development	2009/4789	Controlled Action	Post-Approval	In buffer area only
Mandurah Junction Commercial and Residential Development	2010/5410	Controlled Action	Completed	In buffer area only
Mixed Use Residential and Commercial Development	2009/4919	Controlled Action	Post-Approval	In buffer area only
Parklands West Estate Development	2010/5693	Controlled Action	Post-Approval	In buffer area only
Point Grey Marina Project	2010/5515	Controlled Action	Post-Approval	In buffer area only
Point Grey Residential Development - Terrestrial Component	2011/5825	Controlled Action	Post-Approval	In buffer area only
Proposed Urban Development	2008/3984	Controlled Action	Post-Approval	In buffer area only
Residential development of Lot 105 Stock Road, Lakelands, WA	2017/8041	Controlled Action	Post-Approval	In buffer area only
Urban Development Ravendale Drive, Coodanup Drive & Wanjeep Street	2011/5928	Controlled Action	Post-Approval	In buffer area only
Not controlled action				
Bushfire Mitigation Works - City of Mandurah	2020/8674	Not Controlled Action	Completed	In buffer area only
Clearing of Lot in Preparation for Development for Industrial Purposes	2008/4332	Not Controlled Action	Completed	In buffer area only

Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Not controlled action				
Construction of Secret Harbour High School	2004/1489	Not Controlled Action	Completed	In buffer area only
Demolish and replace Old Mandurah Traffic Bridge, Mandurah, WA	2015/7415	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 Central Submarine Telecommunications Cable	2017/8127	Not Controlled Action	Completed	In feature area
Lot 101 Mandurah Road, Madora Bay, WA	2012/6466	Not Controlled Action	Completed	In buffer area only
Mandurah Quay Residential Development	2010/5754	Not Controlled Action	Completed	In buffer area only
Point Grey Entrance Road	2011/5807	Not Controlled Action	Completed	In buffer area only
Residential development, Lot 179 and part Lot 180 Riverside Dr, and Lot 198 Ronlyn Rd, Furnissdale,	2016/7799	Not Controlled Action	Completed	In buffer area only
Residential Subdivision, Lot 90 Leisure Way, Halls Head, WA	2018/8175	Not Controlled Action	Completed	In buffer area only
Re-zoning of Land for Future Residential Development Purposes	2009/4908	Not Controlled Action	Completed	In buffer area only
urban residential development	2006/2924	Not Controlled Action	Completed	In feature area
Not controlled action (particular manner)				
Construction of Mandurah Entrance Road	2009/4692	Not Controlled Action (Particular Manner)	Post-Approval	In buffer area only
Coodanup residential development	2006/3073	Not Controlled Action (Particular Manner)	Post-Approval	In buffer area only
Dredging of the Yunderup Approach Channel	2007/3415	Not Controlled Action (Particular Manner)	Post-Approval	In buffer area only
INDIGO Marine Cable Route Survey (INDIGO)	2017/7996	Not Controlled Action (Particular Manner)	Post-Approval	In feature area

Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Not controlled action (particular manner)				
Maintenance Channel Dredging	2010/5528	Not Controlled Action (Particular Manner)	Post-Approval	In buffer area only
Multipurpose development stage 1 within 340ha	2004/1913	Not Controlled Action (Particular Manner)	Post-Approval	In buffer area only
South West Metropolitan Railway Project	2003/1175	Not Controlled Action (Particular Manner)	Post-Approval	In feature area
Referral decision				
Lakelands Station	2020/8718	Referral Decision	Completed	In buffer area only
Lots 1-5 Bluerise Cove & Lots 801 & 124 Pleasant Grove Rezoning and Subdivision	2008/4295	Referral Decision	Completed	In buffer area only
Nirimba Rural Residential Development	2020/8690	Referral Decision	Completed	In buffer area only
Residential Subdivision Lot 801 Pleasant Grove Circle, Falcon, WA	2012/6507	Referral Decision	Referral Publication	In buffer area only

Biologically Important Areas			
Scientific Name	Behaviour	Presence	Buffer Status
Seabirds			
Ardenna pacifica Wedge-tailed Shearwater [84292]	Foraging (in high numbers)	Known to occur	In buffer area only
Eudyptula minor Little Penguin [1085]	Foraging (provisioning young)	Known to occur	In buffer area only
Hydroprogne caspia Caspian Tern [808]	Foraging (provisioning young)	Known to occur	In buffer area only
Onychoprion anaethetus Bridled Tern [82845]	Foraging (in high numbers)	Known to occur	In buffer area only
Puffinus assimilis tunneyi Little Shearwater [59363]	Foraging (in high	Known to occur	In buffer area only

Scientific Name	Behaviour	Presence	Buffer Status
	numbers)		
[Sterna dougallii](#) Roseate Tern [817]	Foraging	Known to occur	In buffer area only
[Sternula nereis](#) Fairy Tern [82949]	Foraging (in high numbers)	Known to occur	In buffer area only
Whales			
[Balaenoptera musculus brevicauda](#) Pygmy Blue Whale [81317]	Distribution	Known to occur	In buffer area only
[Balaenoptera musculus brevicauda](#) Pygmy Blue Whale [81317]	Migration	Known to occur	In buffer area only
[Megaptera novaeangliae](#) Humpback Whale [38]	Migration (north and south)	Known to occur	In buffer area only

Caveat

1 PURPOSE

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

The report contains the mapped locations of:

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

2 DISCLAIMER

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

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

3 DATA SOURCES

Threatened ecological communities

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

Threatened, migratory and marine species

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

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

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

4 LIMITATIONS

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

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

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

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

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

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

Acknowledgements

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

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

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

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

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Category	Species name
AMPHIBIA	*Crinia georgiana*
	Crinia insignifera
	Heleioporus eyrei
	Limnodynastes dorsalis
	Litoria adelaidensis
	Litoria moorei
	Litoria spp.
	Neobatrachus pelobatoides
	Pseudophryne guentheri
BIRDS	*Acanthiza apicalis*
	Acanthiza chrysorrhoa
	Acanthiza inornata
	Acanthorhynchus superciliosus
	Accipiter cirrocephalus
	Accipiter fasciatus
	Acrocephalus australis
	Actitis hypoleucos
	Anas acuta
	Anas castanea
	Anas gracilis
	Anas platyrhynchos
	Anas platyrhynchos subsp. domesticus
	Anas rhynchotis
	Anas superciliosa
	Anhinga melanogaster
	Anhinga melanogaster subsp. novaehollandiae
	Anhinga novaehollandiae
	Anthochaera carunculata
	Anthochaera lunulata
	Apus pacificus subsp. pacificus

Aquila audax
Ardea alba subsp. modesta
Ardea garzetta subsp. nigripes
Ardea ibis
Ardea modesta
Ardea novaehollandiae
Ardea pacifica
Ardenna pacifica
Ardeotis australis
Arenaria interpres
Artamus cinereus
Aythya australis
Barnardius zonarius
Biziura lobata
Cacatua galerita
Cacatua pastinator
Cacatua roseicapilla
Cacatua sanguinea
Cacatua tenuirostris
Cacomantis flabelliformis
Cacomantis pallidus
Calidris acuminata
Calidris alba (Crocethia alba)
Calidris bairdii
Calidris canutus
Calidris ferruginea
Calidris melanotos
Calidris ruficollis
Calidris subminuta
Calidris tenuirostris
Calyptorhynchus banksii
Calyptorhynchus banksii subsp. naso

Calyptorhynchus baudinii
Calyptorhynchus latirostris
Calyptorhynchus sp.
Calyptorhynchus sp. 'white-tailed black cockatoo'
Carduelis carduelis
Charadrius dubius
Charadrius leschenaultii
Charadrius leschenaultii subsp. leschenaultii
Charadrius melanops
Charadrius mongolus
Charadrius ruficapillus
Charadrius veredus
Chenonetta jubata
Chlidonias leucopterus
Chroicocephalus novaehollandiae
Chrysococcyx basalis
Cincloramphus cruralis
Cincloramphus mathewsi
Circus approximans
Cladorhynchus leucocephalus
Colluricincla harmonica
Colluricincla harmonica subsp. rufiventris
Columba livia
Coracina novaehollandiae
Corvus coronoides
Corvus coronoides subsp. perplexus
Coturnix pectoralis
Cracticus nigrogularis
Cracticus tibicen
Cracticus tibicen subsp. dorsalis

Cracticus torquatus
Cygnus atratus
Dacelo novaeguineae
Daphoenositta chrysoptera
Daphoenositta chrysoptera subsp. pileata
Dicaeum hirundinaceum
Dromaius novaehollandiae
Egretta garzetta
Egretta novaehollandiae
Egretta sacra
Elanus axillaris
Elseyornis melanops
Eolophus roseicapillus
Eopsaltria australis subsp. griseogularis
Eopsaltria griseogularis
Epthianura albifrons
Erythrogonys cinctus
Eudyptula minor
Falco berigora
Falco cenchroides
Falco longipennis
Falco peregrinus
Fulica atra
Fulica atra subsp. australis
Gallinula tenebrosa
Gallinula tenebrosa subsp. tenebrosa
Gallinula ventralis
Gallirallus philippensis
Gavicalis virescens
Gerygone fusca
Gerygone fusca subsp. fusca
Glossopsitta porphyrocephala

Glyciphila melanops
Grallina cyanoleuca
Haematopus fuliginosus
Haematopus longirostris
Haliaeetus leucogaster
Haliastur sphenurus
Halobaena caerulea
Hieraaetus morphnoides
Himantopus himantopus
Hirundo neoxena
Hydroprogne caspia
Lalage tricolor
Larus dominicanus
Larus novaehollandiae subsp. novaehollandiae

Larus pacificus
Lichenostomus ornatus
Lichenostomus virescens
Lichmera indistincta
Lichmera indistincta subsp. indistincta
Limicola falcinellus
Limosa lapponica
Limosa limosa
Lophoictinia isura
Macronectes giganteus
Malacorhynchus membranaceus
Malurus lamberti
Malurus splendens
Megalurus gramineus
Megalurus gramineus subsp. gramineus
Melithreptus chloropsis
Merops ornatus

Microcarbo melanoleucos
Microeca fascinans
Morus serrator
Neophema elegans
Neophema petrophila
Ninox novaeseelandiae
Ninox novaeseelandiae subsp. boobook
Numenius madagascariensis
Numenius minutus
Numenius phaeopus
Nycticorax caledonicus
Ocyphaps lophotes
Onychoprion anaethetus
Oxyura australis
Pachycephala pectoralis
Pachycephala pectoralis subsp. fuliginosa
Pachycephala rufiventris
Pandion haliaetus
Pardalotus punctatus
Pardalotus striatus
Pardalotus striatus subsp. westraliensis
Pelecanus conspicillatus
Petrochelidon nigricans
Petroica boodang
Petroica goodenovii
Petroica multicolor subsp. campbelli
Phalacrocorax carbo
Phalacrocorax carbo subsp. novaehollandiae

Phalacrocorax melanoleucos
Phalacrocorax melanoleucos subsp. melanoleucos

Phalacrocorax sulcirostris
Phalacrocorax varius
Phaps chalcoptera
Phaps elegans
Philomachus pugnax
Phoebetria fusca
Phylidonyris niger
Phylidonyris nigra
Phylidonyris novaehollandiae
Platalea flavipes
Platalea regia
Platycercus icterotis
Platycercus spurius
Platycercus zonarius
Plegadis falcinellus
Pluvialis fulva
Pluvialis squatarola
Podargus strigoides
Podiceps cristatus
Podiceps cristatus subsp. australis
Poliocephalus poliocephalus
Polytelis anthopeplus
Porphyrio porphyrio
Porphyrio porphyrio subsp. bellus
Porzana fluminea
Porzana tabuensis
Pterodroma brevirostris
Pterodroma lessonii
Ptilotula ornatus
Puffinus pacificus
Purpureicephalus spurius
Recurvirostra novaehollandiae

Rhipidura albiscapa
Rhipidura fuliginosa
Rhipidura fuliginosa subsp. preissi
Rhipidura leucophrys
Rhipidura leucophrys subsp. leucophrys
Sericornis frontalis
Smicrornis brevirostris
Stercorarius antarcticus
Stercorarius parasiticus
Sterna bergii
Sterna caspia
Sterna hirundo
Sterna leucoptera
Sterna nereis
Sterna nereis subsp. nereis
Sternula albifrons
Sternula nereis
Strepera versicolor
Streptopelia chinensis
Streptopelia senegalensis
Tachybaptus novaehollandiae
Tachybaptus novaehollandiae subsp. novaehollandiae
Tadorna radjah
Tadorna tadornoides
Thalassarche chlororhynchos
Thalassarche melanophris
Thalasseus bergii
Thinornis rubricollis
Threskiornis molucca
Threskiornis spinicollis
Todiramphus sanctus

Todiramphus sanctus subsp. sanctus
Tribonyx ventralis
Trichoglossus haematodus
Tringa brevipes
Tringa glareola
Tringa hypoleucos
Tringa nebularia
Tringa stagnatilis
Tyto alba subsp. delicatula
Vanellus tricolor
Xenus cinereus
Zosterops lateralis
Zosterops lateralis subsp. gouldi

INVERTEBRATES

Aname mainae
Aname tepperi
Anidiops villosus
Arachnura higginsi
Argiope trifasciata
Austracantha minax
Backobourkia heroine
Cherax quinquecarinatus
Cormocephalus aurantiipes
Cormocephalus turneri
Cyclosa trilobata
Eriophora biapicata
Idiommata blackwalli
Idiosoma sigillatum
Lampona brevipes
Lampona cylindrata
Missulena granulosa
Missulena occatoria
Nephila edulis

	Nicodamus mainae
	Oxyopes gracilipes
	Pinkfloydia harveii
	Raveniella peckorum
	Servaea melaina
	Synemon gratiosa
	Tasmanicosa leuckartii
	Venator immansueta
Mammals	*Arctocephalus tropicalis*
	Austronomus australis
	Balaenoptera physalus
	Cercartetus concinnus
	Dasyurus geoffroii
	Eubalaena australis
	Felis catus
	Globicephala macrorhynchus
	Hydromys chrysogaster
	Isoodon fusciventer
	Isoodon obesulus
	Isoodon obesulus subsp. fusciventer
	Lobodon carcinophaga
	Macropus fuliginosus
	Macropus irma
	Mus musculus
	Myrmecobius fasciatus
	Oryctolagus cuniculus
	Ovis aries
	Phascogale tapoatafa subsp. (wam m434) ssp. (wam m434)
	Phascogale tapoatafa subsp. tapoatafa
	Phascogale tapoatafa subsp. wambenger
	Rattus fuscipes
	Rattus rattus

	Tachyglossus aculeatus
	Trichosurus vulpecula
	Trichosurus vulpecula subsp. vulpecula
	Tursiops aduncus
	Tursiops truncatus
	Vespadelus regulus
	Vulpes vulpes
REPTILES	*Acritoscincus trilineatus*
	Aprasia repens
	Caretta caretta
	Chelodina colliei
	Chelodina oblonga
	Christinus marmoratus
	Cryptoblepharus buchananii
	Ctenotus australis
	Ctenotus fallens
	Ctenotus impar
	Ctenotus labillardieri
	Ctenotus spp.
	Delma fraseri
	Demansia psammophis
	Demansia psammophis subsp. reticulata
	Echiopsis curta
	Egernia kingii
	Egernia napoleonis
	Elapognathus coronatus
	Hemiergis quadrilineata
	Hydrophis elegans
	Hydrophis platurus
	Lerista elegans
	Lerista lineata
	Lerista spp.

Lialis burtonis
Lialis spp.
Menetia greyii
Moloch horridus
Morethia lineoocellata
Neelaps bimaculatus
Neelaps calonotos
Notechis scutatus
Parasuta gouldii
Pogona minor
Pogona minor subsp. minor
Pseudonaja affinis
Pseudonaja affinis subsp. affinis
Pseudonaja nuchalis
Ramphotyphlops australis
Simoselaps bertholdi
Strophurus spinigerus
Tiliqua occipitalis
Tiliqua rugosa
Tiliqua rugosa subsp. rugosa
Underwoodisaurus milii
Varanus gouldii
Varanus tristis
Varanus tristis subsp. tristis

Appendix C

Conservation significant species and likelihood of occurrence assessment

Species name	Common name	Level of		Habitat	Likelihood of occurrence
		WA	EPBC Act		
Birds					
Actitis hypoleucos	Common sandpiper	MI	MI	Edge of sheltered waters salt or fresh, e.g. estuaries, mangrove creeks, rocky coasts, near-coastal saltlakes (including saltwork ponds), river pools, lagoons, claypans, drying swamps, flood waters, dams and sewage ponds. Preferring situations where low perches are available (Johnstone & Storr 1998).	Moderate
Anous stolidus	Common noddy	MI	MI	Tropical and subtropical seas, cayes, reefs, buoys and piles (Pizzey & Knight 2012).	Nil
Anous tenuirostris melanops	Australian lesser noddy	EN	VU	Very common in blue-water seas around the Abrolhos (endemic to this area, accidental occurrences on lower west coast of Australia) (Johnstone and Storr 1998).	Nil
Apus pacificus	Pacific swift	MI	MI	Aerial, migratory species that is most often seen over inland plains and sometimes above open areas, foothills or in coastal areas. Sometimes occurs over settled areas, including towns, urban areas and cities (Pizzey & Knight 2012).	Moderate
Ardenna carneipes	Flesh-footed shearwater	VU	MI	Marine species that breeds on islands off south coast from near Cape Leeuwin (Johnstone and Storr 1998).	Nil
Ardenna grisea	Sooty shearwater	MI	MI	Marine, migratory species that may visit south-western Australian waters from June to October (Pizzey & Knight 2012).	Nil

Species name	Common name	Level of		Habitat	Likelihood of occurrence
		WA	EPBC Act		
Ardenna pacifica	Wedge-tailed Shearwater	MI	MI	Pelagic species that inhabits tropical and subtropical seas. Common in western and eastern Australian seas. In western Australia breeds on offshore islands from Montebello to Rottnest/Carnac (Morcombe & Stewart 2021; Pizzey & Knight 2012).	Negligible
Arenaria interpres	Ruddy turnstone	MI	VU (MI)	Tidal mud and reef flats, sheltered rocky coasts, stony and seaweedy beaches and sandpits, dry coral ridges (Abrolhos) and pebbly shores of near-coastal saltlakes (including saltwork ponds) (Johnstone and Storr 1998).	Moderate
Botaurus poiciloptilus	Australasian bittern	EN	EN	In or over water, in tall reedbeds, sedges, rushes, cumbungi, lignum. Also occurs in ricefields, drains in tussocky paddocks and occasionally in saltmarshes and brackish wetlands (TSSC 2019).	Nil
Calidris acuminata	Sharp-tailed sandpiper	VU (MI)	VU (MI)	Occurs in tidal mudflats, saltmarshes and mangroves, as well as, shallow fresh, brackish or saline inland wetlands. It is also known from floodwaters, irrigated pastures and crops, sewage ponds, saltfields (Pizzey & Knight 2012).	Moderate
Calidris alba	Sanderling	MI	MI	Mainly steeply shelving sandy beaches exposed to ocean swell. Also sandy inlets, estuarine sandbanks and near-coastal saltlakes (including saltwork ponds) (Johnstone & Storr 1998).	Moderate
Calidris canutus	Red knot	EN	VU (MI)	Mud and sand flats in estuaries and on sheltered coasts. Also near-coastal saltlakes, including saltwork ponds (Pizzey & Knight 2012).	Moderate

Species name	Common name	Level of		Habitat	Likelihood of occurrence
		WA	EPBC Act		
Calidris ferruginea	Curlew sandpiper	CR	CR (MI)	Mainly shallows of estuaries and near-coastal saltlakes (including saltwork ponds) and drying near-coastal freshwater lakes and swamps. Also beaches and near-coastal sewage ponds (Johnstone & Storr 1988).	Moderate
Calidris melanotos	Pectoral sandpiper	MI	MI	Mainly fresh waters (swamps, lagoons, river pools, irrigation channels and sewage ponds); also samphire flats around estuaries and saltlakes (Johnstone & Storr 1998).	Moderate
Calidris ruficollis	Red-necked stint	MI	MI	Tidal mudflats, saltmarshes, sandy or shelly beaches, saline and freshwater wetlands (coastal and inland), saltfields, sewage ponds (Pizzey and Knight 2012).	Moderate
Calidris subminuta	Long-toed stint	MI	MI	Mainly freshwater swamps (especially when drying and where vegetation is short), river pools, lagoons and claypans; also brackish pools, sewage ponds and samphire flats around estuaries and saltlakes (Johnstone & Storr 1988).	Moderate
Calidris tenuirostris	Great knot	CR	VU (MI)	Mud or sand flats in estuaries and on sheltered coasts. Also near-coastal saltlakes, including saltwork ponds (Johnstone & Storr 1988).	Moderate
Calonectris leucomelas	Streaked shearwater	MI	MI	Regular non-breeding visitor to western Australian north of Geraldton (Pizzey & Knight 2012).	Nil

Species name	Common name	Level of		Habitat	Likelihood of occurrence
		WA	EPBC Act		
Calyptorhynchus banksii naso	Forest red-tailed black cockatoo	VU	VU	Eucalypt and Corymbia forests, often in hilly interior. More recently also observed in more open agricultural and suburban areas including Perth metropolitan area. Attracted to seeding Corymbia calophylla, Eucalyptus marginata, introduced Melia azedarach and Eucalyptus spp. trees (Johnstone et al. 2013).	High
Charadrius dubius	Little ringed plover	MI	MI	Open, muddy or sandy shores of lakes, swamps, tidal areas, sewage ponds or farm dams. Rare but regular summer migrant to Australia (Pizzey & Knight 2012).	Moderate
Charadrius leschenaultii	Great sand plover	VU	VU (MI)	Wide sandy or shelly beaches, sandpits, tidal mudflats, reefs, sand cays, mangroves, saltmarsh, dune wilderness, bare paddocks, seldom far inland (Pizzey & Knight 2012).	Moderate
Charadrius mongolus	Lesser sand plover	EN	EN (MI)	Sandy beaches and tidal estuarine flats. Also near-coastal saltlakes, including saltwork ponds (Johnstone & Storr 1998).	Moderate
Chlidonias leucopterus	White-winged black tern	MI	MI	Vegetated and open wetlands, brackish and saline lakes, saltfields, irrigated lands, sewage ponds and occasionally offshore (Pizzey & Knight 2012).	Moderate
Diomedea amsterdamensis	Amsterdam Island albatross	CR	EN (MI)	The Amsterdam albatross is a marine, pelagic seabird. It nests in open patchy vegetation (among tussocks, ferns or shrubs) near exposed ridges or hillocks (Weimerskirch et al. 1985). It sleeps and rests on ocean waters when not breeding (Marchant and Higgins 1990)	Nil

Species name	Common name	Level of		Habitat	Likelihood of occurrence
		WA	EPBC Act		
Diomedea dabbenena	Tristan albatross	CR	EN (MI)	The Tristan albatross is a marine, pelagic seabird. It forages in open water in the Atlantic Ocean near the Cape of Good Hope, South Africa. It sleeps and rests on ocean waters when not breeding (Marchant and Higgins 1990).	Nil
Diomedea epomophora	Southern royal albatross	VU	VU (MI)	Rare visitor to Western Australian seas; it breeds on subantarctic islands south of New Zealand (Johnstone and Storr 1998).	Nil
Diomedea exulans	Wandering albatross	VU	VU (MI)	Marine, pelagic and aerial species. It breeds on Macquarie Island and feeds in Australian portions of the Southern Ocean (DoE 2018).	Nil
Diomedea sanfordi	Northern royal albatross	EN	EN	Species is marine, pelagic and aerial. Habitat includes subantarctic, subtropical, and occasionally Antarctic waters (Marchant & Higgins 1990). Rare visitors to south-western Australian waters.	Nil
Falco hypoleucos	Grey falcon	VU	-	Species occurs in arid and semi-arid Australia, where it inhabits timbered lowland plains. In particular Acacia shrublands and that are crossed by tree-lined water courses. Species has also been observed hunting in treeless areas and frequenting tussock grassland and open woodlands (TSSC 2020).	Nil
Falco peregrinus	Peregrine falcon	OS	-	Mainly found around cliffs along coasts, rivers, ranges and around wooded watercourses and lakes (Johnstone and Storr 1998).	Moderate
Gallinago megala	Swinhoe's snipe	MI	MI	Wet, grassy ground; edges of reedy swamps (Pizzey & Knight 2012).	Nil

Species name	Common name	Level of		Habitat	Likelihood of occurrence
		WA	EPBC Act		
Gallinago stenura	Pin-tailed snipe	MI	MI	Boggy edges of vegetated wetlands; sewage and other ponds; stubbles, grasslands with shrubs, pastures (Pizzey & Knight 2012).	Nil
Gelochelidon nilotica	Gull-billed tern	MI	MI	Beaches, mudflats; fresh, brackish wetlands, including far inland; grasslands, crops, ploughed fields, airfields (Pizzey & Knight 2012).	Moderate
Halobaena caerulea	Blue petrel	MI	VU (MI)	Marine species that breeds on southern subantarctic and northern artic islands. Only an accidental or uncommon visitor to Western Australian waters (Johnstone & Storr 1998).	Nil
Hydroprogne caspia	Caspian tern	MI	MI	Mainly sheltered areas, estuaries (when not laden with silt) and tidal creeks; occasionally near-coastal saltlakes (including saltwork ponds) and brackish pools in lower courses of rivers; rarely fresh waters (DCCEEW 2023).	Moderate
Leipoa ocellata	Malleefowl	VU	VU	Scrubs and thickets of Eucalyptus spp., Melaleuca lanceolata and Acacia linophylla; also other dense litter-forming shrublands. Attracted to fallen wheat in stubbles and along roads (Johnstone and Storr 1998).	Nil
Limicola falcinellus	Broad-billed sandpiper	-	MI, MA	Parts of the coast between Onslow and Broome, in estuarine mudflats, saltmarshes, shallow freshwater lagoons, saltworks and sewage farms, and in areas with large soft intertidal mudflats. They have also been recorded in creeks, swamps and lakes near the coast, particularly those with bare mudflats or sand exposed by receding water. Have been record in Augusta (DCCEEW 2023).	Moderate

Species name	Common name	Level of		Habitat	Likelihood of occurrence
		WA	EPBC Act		
Limosa lapponica	Bar-tailed godwit	MI	MI	Estuarine sand and mudflats and sandy beaches with loads of seaweed; also reef flats and near-coastal saltlakes (including saltwork and sewage ponds)(Johnstone and Storr 1998).	Moderate
Limosa lapponica menzbieri	Bar-tailed godwit	CR (MI)	CR (MI)	Mainly coastal habitats such as large intertidal sandflats, banks, mudflats, estuaries, inlets, harbours, coastal lagoons and bays. Has also been recorded in coastal sewage farms and saltworks, saltlakes and brackish wetlands near coasts, sandy ocean beaches, rock platforms, and coral reef-flats (Higgins and Davies 1996).	Nil
Limosa limosa	Black-tailed godwit	EN	EN (MI)	Tidal mudflats, estuaries, sewage ponds, shallow river margins, brackish or saline inland lakes, flooded pastures, airfields (Pizzey & Knight 2012).	Moderate
Macronectes giganteus	Southern giant-petrel	MI	EN (MI)	Breeds on southern subantarctic and antarctic islands. May visit Western Australian waters from February to December (mostly June to September) (Johnstone and Storr 1998).	Negligible
Macronectes halli	Northern giant petrel	MI	VU (MI)	Breeds on subantarctic islands. May visit Western Australian water from February to September (Johnstone and Storr 1998).	Negligible
Motacilla cinerea	Grey wagtail	MI	MI	In Australia mostly near running water in disused quarries, sandy and rocky streams in escarpments and rainforests, sewage ponds, ploughed fields and airfields (Pizzey & Knight 2012).	Nil
Numenius madagascariensis	Eastern curlew	CR	CR (MI)	Mainly tidal mudflats; also reef flats, sandy beaches and rarely near-coastal lakes (including saltwork ponds) (Johnstone and Storr 1998).	Moderate

Species name	Common name	Level of		Habitat	Likelihood of occurrence
		WA	EPBC Act		
Numenius minutus	Little curlew	MI	MI	Dry grasslands, floodplains, margins of drying swamps; tidal mudflats, airfields, playing fields, crops, commercial saltfields, sewage ponds (Pizzey & Knight 2012).	Nil
Numenius phaeopus	Whimbrel	MI	MI	Estuaries, mangroves, tidal flats, coral cays, exposed reefs, flooded paddocks, sewage ponds, bare grasslands, sportsgrounds and lawns (Pizzey & Knight 2012).	Moderate
Onychoprion anaethetus	Bridled tern	MI	MI	Tropical and subtropical seas, offshore islands, rarely coasts (Pizzey & Knight 2012).	Negligible
Oxyura australis	Blue-billed duck	P4	-	Mainly deeper freshwater swamps and lakes; occasionally saltlakes and estuaries freshened by flood waters (Johnstone and Storr 1998).	Moderate
Pachyptila turtur subantarctica	Fairy prion	-	VU	Breeds on subantarctic islands and is presumed to frequent subtropical waters during non-breeding period (TSSC 2015).	Nil
Pandion haliaetus	Osprey	MI	MI	Coasts, estuaries, bays, inlets, islands, and surrounding waters; coral atolls, reefs, lagoons, rock cliffs, stacks (Pizzey & Knight 2012).	Observed on site
Phalaropus lobatus	Red-necked phalarope	MI	MI	Shallow pools in commercial saltfields, tidal mudflats, beaches, saltmarshes, freshwater wetlands (Pizzey & Knight 2012).	Nil
Phoebetria fusca	Sooty albatross	EN	VU (MI)	Marine, pelagic species that tolerates a wide range of sea surface temperatures and salinities. breeds on subtropical and subantarctic islands in the Indian and Atlantic Oceans, on vegetated cliffs and steep slopes that are sheltered from prevailing winds, often amongst tussock grass (Pizzey & Knight 2012).	Nil

Species name	Common name	Level of		Habitat	Likelihood of occurrence
		WA	EPBC Act		
Plegadis falcinellus	Glossy Ibis	MI	MI	Well-vegetated wetlands, wet pasture, ricefields, floodwaters, floodplains, brackish or occasionally saline wetlands, mangroves, mudflats and occasionally dry grassland (Pizzey & Knight 2012).	Moderate
Pluvialis fulva	Pacific golden plover	MI	MI	Estuaries, mudflats, saltmarshes, mangroves; rocky reefs and stranded seaweed on ocean shores; margins of shallow open inland swamps; sewage ponds, short-grass paddocks, sportsgrounds, airfields, ploughed land (Pizzey & Knight 2012).	Moderate
Pluvialis squatarola	Grey Plover	MI	VU (MI)	Mudflats, saltmarsh, tidal reefs and estuaries, rarely inland (Pizzey and Knight 2012).	Moderate
Pterodroma mollis	Soft-plumaged petrel	MI	VU (MI)	Marine species that breeds on temperate and subantarctic islands in south Atlantic and south Indian Ocean. Visitor to West Australian waters from March to September. Rarely observed inshore (Johnstone & Storr 1998).	Nil
Rostratula australis	Australian painted snipe	EN	EN	Mainly shallow terrestrial freshwater (occasionally brackish) wetlands, including temporary and permanent lakes, swamps and claypans (Marchant and Higgins 1993).	Nil
Stercorarius parasiticus	Arctic skua	MI	MI	Offshore waters, bays and harbours, seldom ashore. Also follows ships (Pizzey & Knight 2012).	Negligible
Sterna dougallii	Roseate tern	MI	MI	Offshore waters, islands, coral reefs, sand cays, beaches, tidal inlets (Pizzey & Knight 2012).	Nil
Sterna hirundo	Common tern	MI	MI	Offshore waters, beaches, reefs, bays, estuaries, sandflats, saltfields, sewage ponds, freshwater wetlands (Pizzey & Knight 2012).	Moderate

Species name	Common name	Level of		Habitat	Likelihood of occurrence
		WA	EPBC Act		
Sternula albifrons	Little tern	MI	VU (MI)	Species is mainly coastal, being found on beaches, sheltered inlets, estuaries, lakes, sewage farms, lagoons, river mouths and deltas (Pizzey & Knight 2012).	Moderate
Sternula nereis nereis	Australian fairy tern	VU	VU	Sheltered blue-water seas close to land, estuaries (when free of silt) and near-coastal lakes (Johnstone and Storr 1998).	Moderate
Thalassarche carteri	Indian yellow-nosed albatross	EN	VU (MI)	Marine species that inhabits seas of south and west coast of Western Australia and breeds on islands in the south Indian Ocean and in the south Atlantic (Johnstone & Storr 1998).	Nil
Thalassarche cauta	Shy albatross	VU	VU (MI)	Scarce visitor (late May to mid-October) to southwestern and western seas. Breeds on islands off Tasmania and south New Zealand (Johnstone and Storr 1998).	Nil
Thalassarche chlororhynchos	Atlantic yellow-nosed albatross	VU	MI	Marine migratory species that breeds on the Tristan da Cunha group and on Gough Island. Sparse visitor to Australian waters/shores (ACAP, undated)	Negligible
Thalassarche impavida	Campbell albatross	VU	VU (MI)	Scarce visitor to south-western and western Australian seas. Breeds on Campbell Island (Pizzey & Knight 2012).	Nil
Thalassarche melanophris	Black-browed albatross	EN	VU (MI)	Seas of south and west coasts. Visitor to Western Australian mainland from January to early November (mostly May to September). Breeds on southern subantarctic and Antarctic islands (Johnstone and Storr 1998).	Negligible

Species name	Common name	Level of		Habitat	Likelihood of occurrence
		WA	EPBC Act		
Thalassarche steadi	White-capped albatross	VU	VU (MI)	Scarce visitor (late May to mid-October) to southwestern and western seas. Breeds on islands off Tasmania and south New Zealand (Johnstone and Storr 1998).	Nil
Thalasseus bergii	Crested tern	MI	MI	Mainly blue-water seas (especially within 3 km of land), including southern estuaries in summer and autumn (when free of silt); also tidal creeks in north, but not penetrating far into larger estuaries (DCCEEW 2023).	Moderate
Thinornis rubricollis	Hooded plover	P4	VU	Margins and shallows of saltlakes, sandy and seaweedy beaches and estuaries; also dams (Johnstone and Storr 1998).	Low
Tringa brevipes	Grey-tailed tattler	P4 (MI)	MI	Tidal mud and reef flats, sheltered rocky coasts, stony and seaweedy beaches and sandpits, dry coral ridges (Abrolhos) and pebbly shores of near-coastal saltlakes (including saltwork ponds) (Johnstone and Storr 1998).	Moderate
Tringa glareola	Wood sandpiper	MI	MI	Mainly shallow fresh waters (lagoons, swamps, claypans, river pools, dams, bore overflows and sewage ponds); occasionally brackish swamps, rarely saltlakes and estuaries (Pizzey & Knight 2012).	Moderate
Tringa nebularia	Common greenshank	MI	EN (MI)	Mudflats, estuaries, saltmarshes, margins of lakes, wetlands, claypans (fresh and saline), commercial saltfields, sewage ponds (Pizzey & Knight 2012).	Moderate
Tringa stagnatilis	Marsh sandpiper	MI	MI	Mainly shallow fresh or brackish waters: swamps, lakes, river pools, soaks, sewage ponds and bore overflows. Occasionally estuaries and salt ponds, and rarely coasts (DCCEEW 2023).	Moderate

Species name	Common name	Level of		Habitat	Likelihood of occurrence
		WA	EPBC Act		
Tringa totanus	Common redshank	MI	MI	Sheltered coastal wetlands such as bays, river estuaries, lagoons, inlets and saltmarsh (with bare open flats and banks of mud or sand). Also found around saltlakes, freshwater lagoons, artificial wetlands and saltworks and sewage farms (Higgins & Davies 1999).	Nil
Xenus cinereus	Terek sandpiper	MI	VU (MI)	Tidal mudflats, estuaries; shores and reefs of islands; coastal swamps, commercial saltfields (Pizzey & Knight 2012).	Moderate
Zanda baudinii	Baudin's black cockatoo	EN	EN	Mainly eucalypt forests. Attracted to seeding Corymbia calophylla, Banksia spp., Hakea spp., and to fruiting apples and pears (Johnstone and Storr 1998).	Moderate
Zanda latirostris	Carnaby's black cockatoo	EN	EN	Mainly proteaceous scrubs and heaths and adjacent eucalypt woodlands and forests; also plantations of Pinus spp. Attracted to seeding Banksia spp., Hakea spp., Eucalyptus spp., Corymbia calophylla, Grevillea spp., and Allocasuarina spp. (Johnstone and Storr 1998).	High
Invertebrates					
Idiosoma sigillatum	Swan Coastal Plain shield-backed trapdoor spider	P3	-	Widely distributed in sandy areas on the Swan Coastal Plain and on Rottnest Island (Prince 2003). Species predominantly recorded from remnant banksia woodland vegetation and heath on sandy soils (Rix et. al 2018).	Negligible

Species name	Common name	Level of		Habitat	Likelihood of occurrence
		WA	EPBC Act		
Synemon gratiosa	Graceful sun-moth	P4	-	Coastal heathland on Quindalup dunes where it is restricted to secondary sand dunes due to the abundance of the preferred host plant Lomandra maritima. Banksia woodland on Spearwood and Bassendean dunes, where the second known host plant L. hermaphrodita is widespread (DEC 2011).	Nil
Westralunio carteri	Carter's freshwater mussel	VU	VU	Occurs in greatest abundance in slower flowing streams with stable sediments that are soft enough for burrowing amongst woody debris and exposed tree roots. Also occupies lentic systems including large water supply dams and even on-stream farm dams. Salinity tolerance quite low (Morgan et al. 2011).	Nil
Mammals					
Bettongia penicillata ogilbyi	Woylie	CR	EN	Woodlands and adjacent heaths with a dense understorey of shrubs, particularly Gastrolobium spp. (TSSC 2018).	Nil
Dasyurus geoffroii	Chuditch	VU	VU	Wide range of habitats from woodlands, dry sclerophyll forests, riparian vegetation, beaches and deserts. Appears to utilise native vegetation along roadsides in the wheatbelt (DEC 2012).	Low
Hydromys chrysogaster	Rakali	P4	-	Areas with permanent water, fresh, brackish or marine. Likely to occur in all major rivers and most of the larger streams as well as bodies of permanent water in the lower south-west (Christensen et al. 1984).	Moderate
Isoodon fusciventer	Quenda	P4	-	Dense scrubby, often swampy, vegetation with dense cover up to one metre high (DEC 2012)	Moderate

Species name	Common name	Level of		Habitat	Likelihood of occurrence
		WA	EPBC Act		
Myrmecobius fasciatus	Numbat	EN	EN	Generally dominated by Eucalyptus spp. that provide hollow logs and branches for shelter and termites for food (van Dyck & Strahan 2008).	Nil
Phascogale tapoatafa wambenger	South-western brush-tailed phascogale	CD	-	Dry sclerophyll forests and open woodlands that contain hollow-bearing trees but a sparse ground cover (Triggs 2003).	Low
Pseudocheirus occidentalis	Western ringtail possum	CR	CR	On the Swan Coastal Plain in Agonis flexuosa woodlands and Agonis flexuosa/ Eucalyptus gomphocephala forests. Also Eucalyptus marginata forests (DBCA 2017).	Low
Reptiles					
Lerista lineata	Perth slider	P3	-	Sandy coastal heath and low scrubland. Banksia spp. woodland, Eucalyptus gomphocephala open woodland over deep sands, and coastal dunes immediately adjacent to the beach (Wilson and Swan 2021).	Low
Neelaps calonotos	Black-striped snake	P3	-	Coastal and near-coastal dunes, sandplains supporting heathlands and Banksia spp. woodlands (Bush et al. 2010).	Negligible
Note: CR=critically endangered, EN=endangered, VU=vulnerable, CD=conservation dependant, MI=migratory, OS=other specially protected, P1=Priority 1, 2=Priority 2, P3=Priority 3, P4=Priority 4. Species with a high or moderate likelihood to occur within the site are shaded green.					

Appendix D

Black cockatoo foraging plants

		Foraging category as assigned by Emerge			
Species name	**Common name**	**CBC**	**BBC**	**FRTBC**	**Literature references**
Acacia baileyana	Cootamundra wattle	Secondary	-	-	Groom 2011
Acacia pentadenia	Karri wattle	Secondary	-	-	Groom 2011
Acacia saligna	Orange wattle	Secondary	-	-	Groom 2011
Agonis flexuosa	Peppermint tree	Secondary	-	-	Groom 2011
Allocasuarina fraseriana	Sheoak	Secondary	Secondary	Secondary	Johnstone & Storr 1998; Johnstone *et al.* 2010; Johnstone 2017; DoEE 2017
Allocasuarina spp.		Secondary	-	Secondary	Johnstone *et al.* 2010; Groom 2011; DSEWPaC 2012; DoEE 2017
Anigozanthos flavidus	Tall kangaroo paw	-	Secondary	-	Johnstone *et al.* 2010; DSEWPaC 2012; DoEE 2017
Araucaria heterophylla	Norfolk island pine	Secondary	-	-	Groom 2011; DoEE 2017
Banksia ashbyi	Ashby's banksia	Primary	Secondary	-	Saunders 1980; Groom 2011; DoEE 2017
Banksia attenuata	Slender banksia	Primary	Secondary	-	Saunders 1980; Johnstone *et al.* 2010; Groom 2011; DoEE 2017
Banksia baxteri	Baxter's banksia	Primary	Secondary	-	Johnstone *et al.* 2010; Groom 2011; DoEE 2017
Banksia carlinoides	Pink dryandra	Primary	Secondary	-	Johnstone *et al.* 2010; Groom 2011; DoEE 2017
Banksia coccinea	Scarlet banksia	Primary	Secondary	-	Johnstone *et al.* 2010; Groom 2011; DoEE 2017
Banksia dallanneyi	Couch honeypot dryandra	Primary	Secondary	-	Groom 2011; DoEE 2017
Banksia ericifolia	Heath-leaved banksia	Primary	Secondary	-	Johnstone *et al.* 2010; Groom 2011; DoEE 2017
Banksia fraseri		Primary	Secondary	-	Johnstone *et al.* 2010; Groom 2011; DoEE 2017
Banksia gardneri	Prostrate banksia	Primary	Secondary	-	Groom 2011; DoEE 2017
Banksia grandis	Bull banksia	Primary	Secondary	-	Saunders 1980; Johnstone & Storr 1998; Johnstone *et al.* 2010; Groom 2011; DoEE 2017
Banksia hookeriana	Hooker's banksia	Primary	Secondary	-	Johnstone *et al.* 2010; Groom 2011; DoEE 2017
Banksia ilicifolia	Holly banksia	Primary	Secondary	-	Johnstone *et al.* 2010; Groom 2011; Johnstone & Storr 1998; DoEE 2017
Banksia kippistiana		Primary	Secondary	-	Groom 2011; DoEE 2017
Banksia leptophylla		Primary	Secondary	-	Groom 2011; DoEE 2017
Banksia lindleyana	Porcupine banksia	Primary	Secondary	-	Johnstone *et al.* 2010; DoEE 2017

		Foraging category as assigned by Emerge			
Species name	**Common name**	**CBC**	**BBC**	**FRTBC**	**Literature references**
Banksia littoralis	Swamp banksia	Primary	Secondary	-	Saunders 1980; Groom 2011Johnstone & Storr 1998; Johnstone *et al.* 2010; DoEE 2017
Banksia menziesii	Firewood banksia	Primary	Secondary	-	Saunders 1980; Johnstone *et al.* 2010; Groom 2011; DoEE 2017
Banksia mucronulata	Swordfish dryandra	Primary	Secondary	-	Groom 2011; DoEE 2017
Banksia nivea	Honeypot dryandra	Primary	Secondary	-	Saunders 1980; Groom 2011; DoEE 2017
Banksia nobilis	Golden dryandra	Primary	Secondary	-	Saunders 1980; Groom 2011; DoEE 2017
Banksia praemorsa	Cut-leaf banksia	Primary	Secondary	-	Saunders 1980; Johnstone *et al.* 2010; Groom 2011; DoEE 2017
Banksia prionotes	Acorn banksia	Primary	Secondary	-	Johnstone *et al.* 2010; Groom 2011; DoEE 2017
Banksia prolata		Primary	Secondary	-	Johnstone *et al.* 2010; DoEE 2017
Banksia quercifolia	Oak-leaved banksia	Primary	Secondary	-	Johnstone & Storr 1998; Johnstone *et al.* 2010; Groom 2011; DoEE 2017
Banksia sessilis	Parrot bush	Primary	Secondary	-	Saunders 1980; Johnstone & Storr 1998; Johnstone *et al.* 2010; Groom 2011; DoEE 2017
Banksia speciosa	Showy banksia	Primary	Secondary	-	Johnstone *et al.* 2010; Groom 2011; DoEE 2017
Banksia spp.		Primary	Secondary	-	Saunders 1979; DSEWPaC 2012; DoEE 2017
Banksia squarrosa	Pingle	Primary	Secondary	-	Johnstone *et al.* 2010; Groom 2011; DoEE 2017
Banksia tricuspis	Pine banksia	Primary	Secondary	-	Groom 2011; DoEE 2017
Banksia undata	Urchin dryandra	Primary	Secondary	-	Groom 2011; DoEE 2017
Banksia verticillata	Granite banksia	Primary	Secondary	-	Saunders 1980; Groom 2011; DoEE 2017
Brassica campestris	Canola	Secondary	-	-	Groom 2011; DoEE 2017
Callistemon spp.		Secondary	Secondary	-	Johnstone *et al.* 2010; DoEE 2017
Callistemon viminalis	Captain cook bottlebrush	Secondary	-	-	Groom 2011
Callitris sp.		Secondary	-	-	Johnstone *et al.* 2010; Groom 2011
Carya illnoinensis	Pecan	Primary	Secondary	-	Johnstone *et al.* 2010; Groom 2011; Groom 2014; DoEE 2017
Casuarina cunninghamiana	River sheoak	Secondary	-	-	Groom 2011
Citrullus lanatus	Pie or afghan melon	Secondary	-	-	Johnstone *et al.* 2010; Groom 2011

Species name	Common name	Foraging category as assigned by Emerge			Literature references
		CBC	BBC	FRTBC	
Corymbia calophylla	Marri	Primary	Primary	Primary	Johnstone & Storr 1998; Johnstone & Kirkby 1999; Johnstone *et al.* 2010; DSEWPaC 2012; DoEE 2017; Johnstone 2017; Saunders 1979; Johnstone & Kirkby 2008
Corymbia citriodora	Lemon scented gum	Secondary	Secondary	Secondary	Johnstone *et al.* 2010; DSEWPaC 2012; Groom 2011; Johnstone 2017
Corymbia ficifolia	Red flowering gum	Secondary	-	-	Groom 2011
Corymbia haematoxylon	Mountain marri	Secondary	-	Secondary	Groom 2011; DoEE 2012; DoEE 2017
Corymbia maculata	Spotted gum	-	-	-	-
Darwinia citriodora	Lemon-scented darwinia	Secondary	Secondary	-	Groom 2011; Johnstone *et al.* 2010
Diospryros sp.	Sweet persimmon	Secondary	Secondary	-	Johnstone *et al.* 2010; Groom 2011; DSEWPaC 2012; DoEE 2017
Eremophila glabra	Tarbush	Secondary	-	-	Groom 2011
Erodium aureum		Secondary	-	-	Groom 2011
Erodium botrys	Long storksbill	Secondary	Secondary	-	Groom 2011; Johnstone & Storr 1998; Johnstone *et al.* 2010
Erodium spp.		Secondary	Secondary	-	Johnstone *et al.* 2010; DoEE 2017
Eucalyptus caesia	Silver princess	Secondary	-	Secondary	Johnstone *et al.* 2010; Groom 2011; DSEWPaC 2012; DoEE 2017; Johnstone 2017
Eucalyptus camaldulensis	River red gum	-	-	Secondary	DoEE 2012; DoEE 2017
Eucalyptus decipiens	Red heart/moit	-	-	Secondary	Johnstone 2017
Eucalyptus diversicolor	Karri	-	-	Primary	Johnstone *et al.* 2010; DSEWPaC 2012; DoEE 2017; Johnstone & Storr 1998
Eucalyptus erythrocorys	Illyarrie	Secondary	-	Secondary	DSEWPaC 2012; DoEE 2017; Johnstone 2017, Johnstone *et al.* 2010
Eucalyptus gomphocephala	Tuart	Secondary	-	Secondary	Johnstone *et al.* 2010; Groom 2011; DSEWPaC 2012; DoEE 2017
Eucalyptus grandis	Flooded gum, rose gum	-	-	Secondary	DoEE 2012; DoEE 2017
Eucalyptus lehmannii	Bushy yate	-	-	Secondary	Johnstone 2017
Eucalyptus leucoxylon	Yellow gum	Secondary	-	-	Groom 2014

Species name	Common name	Foraging category as assigned by Emerge			Literature references
		CBC	BBC	FRTBC	
Eucalyptus loxophleba	York gum	Secondary	-	-	Johnstone *et al.* 2010; Groom 2011; DSEWPaC 2012; DoEE 2017
Eucalyptus marginata	Jarrah	Primary	Secondary	Primary	Saunders 1980; Johnstone *et al.* 2010; Groom 2011; DSEWPaC 2012; DoEE 2017; Johnstone & Storr 1998; Johnstone & Kirkby 1999; Johnstone 2017
Eucalyptus patens	Blackbutt	Primary	-	Primary	Johnstone & Storr 1998; Johnstone & Kirkby 1999; Johnstone *et al.* 2010; DSEWPaC 2012; DoEE 2017; Johnstone 2017; Groom 2011
Eucalyptus pleurocarpa	Tallerack	Secondary	-	-	Groom 2011
Eucalyptus preissiana	Bell-fruited mallee	Secondary	-	-	Groom 2011
Eucalyptus robusta	Swamp mahogany	Secondary	-	-	Johnstone *et al.* 2010; Groom 2011
Eucalyptus salmonophloia	Salmon gum	Primary	-	-	Johnstone *et al.* 2010; Groom 2011; DSEWPaC 2012; DSEWPaC 2012; DoEE 2017
Eucalyptus staeri	Albany blackbutt	-	-	Secondary	Johnstone & Storr 1998
Eucalyptus todtiana	Coastal blackbutt	Secondary	-	-	Saunders 1980; Johnstone *et al.* 2010; Groom 2011; Johnstone & Kirkby 2008
Eucalyptus wandoo	Wandoo	Primary	Secondary	Primary	Saunders 1980; Johnstone *et al* . 2010; Groom 2011; DSEWPaC 2012; DoEE 2017
Ficus sp.	Fig	Secondary	-	-	Groom 2011
Grevillea armigera	Prickly toothbrushes	Primary	-	-	Groom 2011
Grevillea bipinnatifida	Fuschia grevillea	Primary	-	-	Groom 2011
Grevillea hookeriana	Red toothbrushes	Primary	-	-	Groom 2011
Grevillea hookeriana subsp. api	Black toothbrushes	Primary	-	-	Groom 2011
Grevillea paniculata	Kerosene bush	Primary	-	-	Groom 2011
Grevillea paradoxa	Bottlebrush grevillea	Primary	-	-	Groom 2011
Grevillea petrophiloides	Pink poker	Primary	-	-	Groom 2011
Grevillea robusta	Silky oak	Primary	-	-	Johnstone *et al.* 2010; Groom 2011

Species name	Common name	Foraging category as assigned by Emerge			Literature references
		CBC	BBC	FRTBC	
Grevillea spp.		Primary	-	-	Saunders 1979; Johnstone *et al.* 2010; DSEWPaC 2012; DoEE 2017
Grevillea wilsonii	Native fuchsia	-	Secondary	-	Johnstone *et al.* 2010
Hakea auriculata		Primary	-	-	Saunders 1980; Groom 2011
Hakea candolleana		Primary	-	-	Groom 2011
Hakea circumalata	Coastal hakea	Primary	-	-	Groom 2011
Hakea commutata		Primary	-	-	Groom 2011
Hakea conchifolia	Shell-leaved hakea	Primary	-	-	Groom 2011
Hakea costata	Ribbed hakea	Primary	-	-	Groom 2011
Hakea cristata	Snail hakea	Primary	Secondary	-	Groom 2011; Johnstone *et al.* 2010
Hakea cucullata	Snail hakea	Primary	-	-	Groom 2011
Hakea cyclocarpa	Ramshorn	Primary	-	-	Saunders 1980; Groom 2011
Hakea eneabba		Primary	-	-	Groom 2011
Hakea erinacea	Hedgehog hakea	Primary	Secondary	-	Johnstone *et al.* 2010; Groom 2011
Hakea falcata	Sickle hakea	Primary	-	-	Groom 2011
Hakea flabellifolia	Fan-leaved hakea	Primary	-	-	Groom 2011
Hakea gilbertii		Primary	-	-	Saunders 1980; Groom 2011
Hakea incrassata	Golfball or marble hakea	Primary	-	-	Johnstone *et al.* 2010; Groom 2011
Hakea lasiantha	Woolly flowered hakea	Primary	-	-	Johnstone *et al* . 2010; Groom 2011
Hakea lasianthoides		Primary	Secondary	-	Johnstone *et al.* 2010; Groom 2011
Hakea laurina	Pin-cushion hakea	Primary	-	-	Johnstone *et al.* 2010; Groom 2011
Hakea lissocarpha	Honeybush	Primary	Secondary	-	Saunders 1980; Johnstone *et al.* 2010; Groom 2011
Hakea marginata		-	Secondary	-	Johnstone *et al.* 2010
Hakea megalosperma	Lesueur hakea	Primary	-	-	Groom 2011
Hakea multilineata	Grass leaf hakea	Primary	-	-	Groom 2011
Hakea neospathulata		Primary	-	-	Groom 2011
Hakea obliqua	Needles and corks	Primary	-	-	Saunders 1980; Groom 2011
Hakea oleifolia	Dungyn	Primary	-	-	Groom 2011

Species name	Common name	Foraging category as assigned by Emerge			Literature references
		CBC	BBC	FRTBC	
Hakea pandanicarpa subsp. crassifolia	Thick-leaved hakea	Primary	-	-	Groom 2011
Hakea petiolaris	Sea urchin hakea	Primary	-	-	Groom 2011
Hakea polyanthema		Primary	-	-	Groom 2011
Hakea preissii	Needle tree	Primary	-	-	Groom 2011
Hakea prostrata	Harsh hakea	Primary	Secondary	-	Saunders 1980; Johnstone *et al.* 2010; Groom 2011
Hakea psilorrhyncha		Primary	-	-	Groom 2011
Hakea ruscifolia	Candle hakea	Primary	Secondary	-	Saunders 1980; Groom 2011; Johnstone *et al.* 2010
Hakea scoparia	Kangaroo bush	Primary	-	-	Groom 2011
Hakea smilacifolia		Primary	-	-	Groom 2011
Hakea spp.		Primary	Secondary	-	Saunders 1979; DSEWPaC 2012; DoEE 2017
Hakea stenocarpa	Narrow-fruited hakea	Primary	Secondary	-	Johnstone et al. 2010; Groom 2011
Hakea sulcata	Furrowed hakea	Primary	-	-	Groom 2011
Hakea trifurcata	Two-leaved hakea	Primary	Secondary	-	Saunders 1980; Johnstone *et al.* 2010; Groom 2011
Hakea undulata	Wavy-leaved hakea	Primary	Secondary	-	Saunders 1980; Johnstone *et al.* 2010; Groom 2011
Hakea varia	Variable-leaved hakea	Primary	Secondary	-	Saunders 1980; Groom 2011
Harpephyllum caffrum	Kaffir plum	-	-	Secondary	Johnstone 2017
Helianthus annuus	Sunflower	Secondary	-	-	Johnstone *et al.* 2010; Groom 2011
Hibiscus sp.	Hibiscus	Secondary	-	-	Groom 2011
Isopogon scabriusculus		Secondary	-	-	Groom 2011
Jacaranda mimosifolia	Jacaranda	Secondary	Secondary	-	Johnstone *et al.* 2010; Groom 2011
Jacksonia furcellata	Grey stinkwood	Secondary	-	-	Groom 2011
Kingia australis	Kingia	-	Secondary	-	Johnstone *et al.* 2010
Lambertia inermis	Chittick	Secondary	-	-	Johnstone & Storr 1998; Groom 2011
Lambertia multiflora	Many-flowered honeysuckle	Secondary	-	-	Saunders 1980; Groom 2011

Species name	Common name	Foraging category as assigned by Emerge			Literature references
		CBC	BBC	FRTBC	
Liquidamber styraciflua	Liquid amber	Primary	-	Secondary	Johnstone *et al.* 2010; Groom 2011; Groom 2014; Personal observation
Lupinus sp.	Lupin	Secondary	-	-	Saunders 1980; Groom 2011
Macadamia integrifolia	Macadamia	Primary	Secondary	-	Johnstone *et al.* 2010; Grooms 2011; Groom 2014
Malus domestica	Apple	Secondary	Secondary	-	Johnstone *et al* . 2010; Johnstone & Storr 1998; DSEWPaC 2012; DoEE 2017; Groom 2011
Melaleuca leuropoma		Secondary	-	-	Saunders 1980; Groom 2011
Melia azedarach	Cape lilac or white cedar	Secondary	-	Primary	Johnstone *et al.* 2010; Groom 2011
Mesomeleana spp.		Secondary	-	-	Johnstone *et al.* 2010; Groom 2011
Olea europea	Olive	-	-	Secondary	Johnstone 2017
Persoonia longifolia	Snottygobble	-	-	Secondary	Johnstone & Storr 1998; Johnstone & Kirkby 1999; Johnstone *et al.* 2010; DSEWPaC 2012; DoEE 2017
Pinus canariensis	Canary island pine	Primary	-	-	Johnstone *et al.* 2010; Groom 2011
Pinus caribea	Caribbean pine	Primary	-	-	Johnstone *et al.* 2010; Groom 2011
Pinus pinaster	Pinaster or maritime pine	Primary	-	-	Groom 2011
Pinus radiata	Radiata pine	Primary	Secondary	-	Johnstone *et al.* 2010; Groom 2011
Pinus spp.		Primary	Secondary	-	Johnstone & Storr 1998; Saunders 1979; Johnstone *et al.* 2010; DSEWPaC 2012; DoEE 2017
Protea 'Pink Ice'		Secondary	-	-	Groom 2011
Protea repens		Secondary	-	-	Groom 2011
Protea spp.		Secondary	-	-	Johnstone *et al.* 2010
Prunus amygdalus	Almond tree	Secondary	-	-	Johnstone & Storr 1998; Johnstone *et al.* 2010; Groom 2011; DoEE 2017
Pyrus communis	European pear	-	Secondary	-	Johnstone & Storr 1998; Johnstone *et al.* 2010; DSEWPaC 2012; DoEE 2017
Quercus spp.	Oak	-	Secondary	-	Johnstone *et al.* 2010

Species name	Common name	Foraging category as assigned by Emerge			Literature references
		CBC	BBC	FRTBC	
Raphanus raphanistrum	Wild radish	Secondary	-	-	Groom 2011; DoEE 2017
Reedia spathacea		-	Secondary	-	Johnstone *et al.* 2010
Rumex hypogaeus	Doublegee	Secondary	-	-	Saunders 1980
Stenocarpus sinuatus		Secondary	-	-	Johnstone *et al.* 2010
Syzygium smithii	Lilly pilly	Secondary	-	-	Groom 2014
Tipuana tipu	Tipu or rosewood tree	Primary	-	-	Groom 2011, Groom 2014
Xanthorrhoea preissii	Grass tree	Secondary	Secondary	-	Groom 2011; Johnstone *et al.* 2010
Xylomelum occidentale	Woody pear	Secondary	-	-	Groom 2014

CBC=Carnaby's black cockatoo, BBC=Baudin's black cockatoo and FRTBC=Forest red-tailed black cockatoo

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Appendix E

Black cockatoo roost counts

Table 1: White-tailed black cockatoo recorded in roosts within 12 km of the site

Roost ID	Year and number of individuals									
	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
MANBARR001	NS	NS	NS	NS	NS	0	NS	0	0	1
MANCOOR002	0	0	2	0	0	0	NS	0	0	NS

NS = not surveyed

Table 2: Forest red-tailed black cockatoo recorded in roosts within 12 km of the site

Roost ID	Year and number of individuals									
	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
MANBARR001	NS	NS	NS	NS	NS	46	NS	10	31	63
MANBARR002	NS	NS	NS	NS	NS	57	NS	NS	NS	20
MANCOOR002	0	0	30	0	0	0	NS	NS	NS	NS
MANPARR001	0	NS	16	0	14	0	NS	0	0	NS
MANPARR002	NS	NS	NS	NS	NS	13	NS	NS	13	14

NS = not surveyed

Appendix F

Species list

Species list
28 Placid Waters Parade, Coodanup

Category	Status	Species name	Common name	Record type
Birds				
		Anthochaera carunculata	Red wattlebird	Sight, call
		Anthochaera lunulata	Western wattlebird	Sight, call
		Barnardius zonarius	Australian ringneck	Sight, call
		Colluricincla harmonica	Grey shrikethrush	Sight, call
		Coracina novaehollandiae	Black-faced cuckoo-shrike	Sight, call
		Corvus coronoides	Australian raven	Sight, call
		Cracticus tibicen	Australian magpie	Sight, call
		Cracticus torquatus	Grey butcherbird	Sight, call
		Gerygone fusca	Western gerygone	Sight, call
		Heteroscenes pallidus	Pallid cuckoo	Sight, call
		Lichmera indistincta	Brown honeyeater	Sight, call
		Malurus splendens	Splendid fairywren	Sight, call
		Pachycephala rufiventris	Rufous whistler	Sight, call
	MI	*Pandion haliaetus*	Osprey	Sight, call
		Pelecanus conspicillatus	Australian pelican	Sight
		Phalacrocorax varius	Pied cormorant	Sight
		Phaps chalcoptera	Common bronzewing	Sight
		Purpureicephalus spurius	Red-capped parrot	Sight, call
		Rhipidura albiscapa	Grey fantail	Sight, call
		Rhipidura leucophrys	Willy wagtail	Sight, call
		Sericornis frontalis	Spotted scrubwren	Sight, call
		Smicrornis brevirostris	Weebill	Sight, call
		Synoicus ypsilophora	Brown quail	Sight
		Zosterops lateralis	Silvereye	Sight, call
Mammals				
		Macropus fuliginosus	Western grey kangaroo	Sight
Reptiles				
		Cryptoblepharus buchananii	Buchanan's Snake-eyed Skink	Sight
		Pseudonaja affinis	Dugite	Sight

Appendix G

Black cockatoo habitat tree data

Tag No.	Easting	Northing	DBH (cm)	Species	Category	Notes
530	383334.05	6396505.66	62	*Eucalyptus rudis*	Potential nesting tree	
536	383364.77	6396520.88	56	*Eucalyptus rudis*	Potential nesting tree	
541	383391.19	6396517.75	56	*Eucalyptus rudis*	Potential nesting tree	
565	383290.95	6396505.82	89	*Eucalyptus rudis*	Potential nesting tree	
574	383341.14	6396582.14	56	Stag	Potential nesting tree	
575	383335.53	6396579.96	69	*Eucalyptus rudis*	Potential nesting tree	
581	383377.88	6396571.37	56	*Eucalyptus rudis*	Potential nesting tree	
494	383440.62	6396457.23	87	*Eucalyptus rudis*	Potential nesting tree	
306	383417.75	6396285.54	51	*Eucalyptus rudis*	Potential nesting tree	
308	383422.98	6396279.40	50	*Eucalyptus rudis*	Potential nesting tree	
316	383582.76	6396378.28	77	*Eucalyptus rudis*	Potential nesting tree	
334	383519.94	6396395.17	53	*Eucalyptus rudis*	Potential nesting tree	
343	383475.07	6396337.99	62	*Eucalyptus rudis*	Potential nesting tree	
350	383433.47	6396354.03	78	*Eucalyptus rudis*	Potential nesting tree	
355	383494.60	6396394.33	70	*Eucalyptus rudis*	Potential nesting tree	
358	383358.56	6396432.88	130	*Eucalyptus rudis*	Potential nesting tree	
382	383391.69	6396410.31	83	*Eucalyptus rudis*	Potential nesting tree	
387	383432.66	6396415.45	67	*Eucalyptus rudis*	Potential nesting tree	
393	383434.46	6396382.20	70	*Eucalyptus rudis*	Potential nesting tree	
395	383443.75	6396382.64	57	*Eucalyptus rudis*	Potential nesting tree	
396	383449.69	6396388.15	62	*Eucalyptus rudis*	Potential nesting tree	
325	383458.34	6396403.55	59	*Eucalyptus rudis*	Potential nesting tree	
374	383360.38	6396445.87	64	*Eucalyptus rudis*	Potential nesting tree	
416	383461.19	6396433.08	56	*Eucalyptus rudis*	Potential nesting tree	
417	383468.85	6396444.03	87	*Eucalyptus rudis*	Potential nesting tree	
470	383071.80	6396481.86	64	*Eucalyptus gomphocephala*	Potential nesting tree	
471	383071.41	6396482.41	51	*Eucalyptus gomphocephala*	Potential nesting tree	
474	383102.63	6396446.30	67	*Eucalyptus marginata*	Potential nesting tree	
475	383116.25	6396446.01	63	*Eucalyptus marginata*	Potential nesting tree	
478	383121.81	6396452.17	54	*Eucalyptus marginata*	Potential nesting tree	
480	383135.03	6396446.23	130	*Eucalyptus marginata*	Potential nesting tree	

Tag No.	Easting	Northing	DBH (cm)	Species	Category	Notes
483	383138.75	6396457.14	57	*Eucalyptus rudis*	Potential nesting tree	
484	383157.68	6396444.50	72	*Eucalyptus marginata*	Potential nesting tree	
485	383156.73	6396429.41	64	*Eucalyptus gomphocephala*	Potential nesting tree	
486	383172.02	6396358.40	68	*Eucalyptus rudis*	Potential nesting tree	
487	383195.42	6396396.49	98	*Eucalyptus rudis*	Potential nesting tree	
488	383206.93	6396400.17	53	*Eucalyptus rudis*	Potential nesting tree	
228	383506.31	6396243.67	73	*Eucalyptus rudis*	Potential nesting tree	
239	383453.37	6396225.86	58	Stag	Potential nesting tree	
240	383442.07	6396228.73	73	Stag	Potential nesting tree	
245	383429.65	6396223.15	66	Stag	Potential nesting tree	
247	383418.60	6396236.21	58	*Eucalyptus rudis*	Potential nesting tree	
260	383356.85	6396258.00	55	*Eucalyptus rudis*	Potential nesting tree	
261	383355.93	6396271.96	54	*Eucalyptus rudis*	Potential nesting tree	
265	383342.28	6396275.35	52	*Eucalyptus rudis*	Potential nesting tree	
266	383346.07	6396272.73	70	*Eucalyptus rudis*	Potential nesting tree	
267	383336.26	6396284.37	52	*Eucalyptus rudis*	Potential nesting tree	
269	383324.62	6396276.25	61	*Eucalyptus rudis*	Potential nesting tree	
291	383287.39	6396287.79	52	*Eucalyptus rudis*	Potential nesting tree	
295	383277.85	6396293.00	54	*Eucalyptus rudis*	Potential nesting tree	
296	383272.69	6396300.93	90	*Eucalyptus rudis*	Potential nesting tree	
861	383253.29	6396313.78	61	*Eucalyptus rudis*	Potential nesting tree	
863	383244.22	6396318.78	70	*Eucalyptus rudis*	Potential nesting tree	
866	383225.09	6396299.93	69	*Eucalyptus rudis*	Potential nesting tree	
869	383236.15	6396325.89	56	*Eucalyptus rudis*	Potential nesting tree	
870	383220.99	6396330.15	68	*Eucalyptus rudis*	Potential nesting tree	
871	383216.19	6396338.96	88	*Eucalyptus rudis*	Potential nesting tree	
885	383322.77	6396370.03	58	*Eucalyptus rudis*	Potential nesting tree	
879	383325.50	6396361.53	67	*Eucalyptus rudis*	Potential nesting tree	
883	383319.03	6396360.90	80	*Eucalyptus rudis*	Potential nesting tree	
8	383394.93	6396293.48	117	*Eucalyptus rudis*	Potential nesting tree	
9	383392.70	6396275.16	53	*Eucalyptus rudis*	Potential nesting tree	

Tag No.	Easting	Northing	DBH (cm)	Species	Category	Notes
103	383445.10	6396146.05	68	*Eucalyptus rudis*	Potential nesting tree	
113	383366.29	6396197.57	52	*Eucalyptus rudis*	Potential nesting tree	
135	383404.32	6396334.06	70	*Eucalyptus rudis*	Potential nesting tree	
137	383411.81	6396335.26	51	*Eucalyptus rudis*	Potential nesting tree	
138	383408.57	6396339.55	70	*Eucalyptus rudis*	Potential nesting tree	
143	383451.84	6396301.02	63	*Eucalyptus rudis*	Potential nesting tree	
146	383473.32	6396294.18	66	*Eucalyptus rudis*	Potential nesting tree	
152	383493.64	6396291.31	58	*Eucalyptus rudis*	Potential nesting tree	
402	383086.78	6396509.31	96	*Eucalyptus rudis*	Potential nesting tree	
405	383059.22	6396545.13	113	*Eucalyptus rudis*	Potential nesting tree	
410	383028.01	6396572.71	95	*Eucalyptus rudis*	Potential nesting tree	
427	383048.74	6396622.63	55	*Eucalyptus rudis*	Potential nesting tree	
463	383144.65	6396474.51	68	*Eucalyptus marginata*	Potential nesting tree	
465	383118.97	6396486.40	68	*Eucalyptus rudis*	Potential nesting tree	
466	383117.24	6396482.17	76	*Eucalyptus marginata*	Potential nesting tree	
467	383122.55	6396477.91	102	*Eucalyptus rudis*	Potential nesting tree	
471	383207.56	6396474.35	64	*Eucalyptus rudis*	Potential nesting tree	
456	383246.64	6396432.68	76	*Eucalyptus rudis*	Potential nesting tree	
473	383263.96	6396437.20	123	*Eucalyptus rudis*	Potential nesting tree	
477	383293.45	6396444.87	60	*Eucalyptus rudis*	Potential nesting tree	
482	383298.67	6396464.11	61	*Eucalyptus rudis*	Potential nesting tree	
481	383294.82	6396464.18	65	*Eucalyptus rudis*	Potential nesting tree	
361	383281.70	6396477.66	93	*Eucalyptus rudis*	Potential nesting tree	
473	383100.16	6396462.70	80	*Eucalyptus marginata*	Potential nesting tree	