Neerabup North Subdivision Ecological Surveys

DevelopmentWA

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Document Tracking

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Abbreviations

Abbreviation	Description
ALA	Atlas of Living Australia
BAM Act	State *Biosecurity and Agricultural Management Act 2007*
BC Act	State *Biodiversity Conservation Act 2016*
BoM	Bureau of Meteorology
cm	centimetre
CR	Critically Endangered
DAWE	Department of Agriculture, Water and the Environment
DBCA	Department of Biodiversity, Conservation and Attractions
DBH	Diameter at Breast Height
DEC	Department of Environment and Conservation
DEE	Department of the Environment and Energy
DEWHA	Department of the Environment, Water, Heritage and the Arts
DCCEEW	Department of Climate Change, Energy, the Environment and Water
DPIRD	Department of Primary Industries and Regional Development
DSEWPaC	Department of Sustainability, Environment, Water, Population and Communities
DWER	Department of Water and Environmental Regulation
ELA	Eco Logical Australia
EN	Endangered
EPA	Environmental Protection Authority
EP Act	State *Environmental Protection Act 1986*
EPBC Act	Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*
ESA	Environmentally Sensitive Area
GDE	Groundwater Dependent Ecosystem
IBRA	Interim Biogeographic Regionalisation for Australia
km	kilometre
m	metre
mm	millimetre
MNES	Matter of National Environmental Significance
NVIS	National Vegetation Information System
P	Priority
PEC	Priority Ecological Community
PFC	Projected Foliage Cover
PMST	Protected Matters Search Tool
SCP	Swan Coastal Plain
SWA	Swan Coastal Plain bioregion
SWA02	Perth subregion
TEC	Threatened Ecological Community
VU	Vulnerable
WAM	Western Australian Museum
WAH	Western Australian Herbarium
WAOL	Western Australian Organism List
WoNS	Weed of National Significance

Executive Summary

Eco Logical Australia were engaged by DevelopmentWA to undertake a Reconnaissance Flora and Vegetation Survey, Basic Fauna Survey and a Targeted Black Cockatoo habitat assessment to support current and potential future approval requirements at Lots 1001 and 2001 Pederick Road. The survey area is 21.5 hectares and located in Neerabup, approximately 38 kilometres north of the Perth Central Business District.

A comprehensive desktop assessment was undertaken to assess the potential presence of conservation significant flora, fauna and ecological communities listed under the Commonwealth *Environment Protection Biodiversity Conservation Act 1999*, State *Biodiversity Conservation Act 2016* or as Priority by the Western Australian Department of Biodiversity, Conservation ad Attractions.

Results of the desktop assessment identified 40 conservation significant flora species possibly occurring within the survey area. While no previous flora records occurred within the survey area itself, species with the Potential to occur were assessed based on the presence of potentially suitable habitat and proximity of records to the survey area. Of the 40 conservation significant flora identified through the desktop assessment, seven were considered to have Potential to occur in the survey area, while the remaining 32 were considered Unlikely to occur.

In total, 38 conservation significant fauna species were identified from the desktop assessment, with six species considered having the Potential to occur in the survey area prior to the field assessment. This was based on the presence of suitable habitat within the survey area, number of records and proximity of records to the survey area. The remaining 32 species were considered Unlikely to occur.

A total of 13 conservation significant ecological communities were identified from the desktop assessment. Of these, seven were considered to have the Potential to occur within the survey area, with three having their boundaries intersect the survey area. The remaining six were considered Unlikely to occur within the survey area.

The field survey was conducted by Dr. Jeff Cargill (Principal Ecologist) and Leanne Yan (Graduate Environmental Consultant) on 13th June 2025. The survey was conducted in accordance with the Environmental Protection Authority *Technical Guidance: Flora and Vegetation surveys for Environmental Impact Assessment* (2016)*, Technical Guidance: Terrestrial Vertebrate Fauna Surveys for Environmental Impact Assessment* (2020), and the *Referral Guideline for 3 WA Threatened Black Cockatoo Species: Carnaby's Cockatoo, Baudin's Cockatoo and the Forest Red-tailed Black Cockatoo* (2022). Consideration was also given to the Department of the Environment, Water, Heritage and the Arts *Survey Guidelines for Australia's Threatened Birds* (2010) when designing the field survey.

Vegetation types were described from ten relevés established within the survey area. In total, 37 flora species from 18 families and 32 genera were recorded within the survey area. No conservation significant species were recorded within the survey area. Three conservation significant flora species from the desktop assessment were assessed as having the Potential to occur after the field assessment. The remaining 37 species were considered Unlikely to occur within the survey area.

Of the 36 flora species recorded during the field assessment, nine species were introduced (weed) species. All these species are listed as Permitted (s-11) under the State *Biosecurity and Agricultural Management Act 2007.*

A total of five vegetation types were delineated and mapped within the survey area. One vegetation community, namely, EmBAf, was validated on-site to be consistent with a survey undertaken by Eco Logical Australia in 2019 (Eco Logical Australia, 2021a). The most widespread of these was Vegetation Type 1 comprising 50% (6.5 hectares) of the total vegetated areas in the survey area (13.0 hectares).

This was followed by Vegetation Type 2 (3.8 hectares; 29.2% of vegetated areas) and Vegetation Type 4 and 5 (0.9 hectares; 6.9% of vegetated areas). Cleared areas covered 8.5 hectares (39.5% of the survey area).

The condition of vegetated areas ranged from Excellent to Completely Degraded, based on the vegetation condition scale of Keighery (1994) provided in Environmental Protection Authority *Technical Guidance: Flora and Vegetation surveys for Environmental Impact Assessment* (2016), for the South-west Botanical Province. The main drivers of vegetation degradation within the survey area included historical clearing, weed invasion, landform modification and rubbish dumping. Areas of degraded vegetation mostly occurred within previously cleared areas in the centre of the survey area.

Of the five vegetation types that were delineated across the survey area, Vegetation Type 3 and Vegetation Type 5 were considered to have the potential to represent aspects of the Banksia Woodlands of the Swan Coastal Plain Threatened Ecological Community (listed as Endangered under the Commonwealth *Environment Protection Biodiversity Conservation Act 1999* and as Priority 3 by the Department of Biodiversity, Conservation and Attractions). Additionally, the field survey validated that vegetation community EmBAf is representative of the Banksia Woodlands of the Swan Coastal Plain Threatened Ecological Community in line with a clarification survey undertaken in 2021 (Eco Logical Australia , 2022). Following the field survey, an additional three conservation significant ecological communities identified during the desktop assessment were considered as having the Potential to occur within the survey area, with one considered to Not occur. The remaining eight ecological communities were considered Unlikely to occur within the survey area.

A total of 14 vertebrate fauna species were recorded in the survey area, including 11 birds, two mammals and one reptile. Two conservation significant fauna species were recorded flying overhead during the survey, including Carnaby's Cockatoo (*Zanda latirostris*, listed as Endangered), and Forest Red-tailed Black Cockatoo (*Calyptorhynchus banksii naso*, listed as Vulnerable). No evidence of utilisation of the survey area by these species was observed. Following the field survey, four fauna species of the 38 that were identified from the desktop assessment were considered as having Potential to occur in the survey area. Of the remaining 32 conservation significant fauna species identified during the desktop assessment, 31 were considered Unlikely to occur in the survey area with one species, namely, the Water-rat (*Hydromys chrysogaster*), considered to Not occur.

One introduced vertebrate fauna species was recorded during the survey, namely the Red Fox (**Vulpes vulpes*). The Red Fox is listed as Declared Pest – s22(2) under the State *Biosecurity and Agriculture Management Act 2007* Act with two control categories, namely, C1 – Exclusion/Prohibited and C3 – Management/Prohibited.

A total of two fauna habitats were identified and mapped within the survey area, covering 13.1 hectares (60.4% of the survey area). Cleared areas (8.6 ha) and isolated trees (0.03 ha) accounted for the remaining 39.8% of the survey area.

The majority of the survey area was mapped as 'Low' value foraging habitat for Carnaby's Cockatoo due to the presence of suitable foraging species at low densities. Primary foraging species for Carnaby's Cockatoo recorded across the survey area included *Banksia attenuata, Banksia menziesii* and *Hakea* spp., while secondary foraging species included *Acacia saligna, Eucalyptus marginata, Jacksonia furcellata, Mesomelaena* spp., and *Xanthorrhoea preissii*. Other recorded foraging species for Carnaby's Cockatoo included *Allocasuarina fraseriana.* For Forest Red-tailed Black Cockatoos and Baudin's Cockatoo, the majority of the survey area was mapped as 'Negligible to low' value foraging habitat due to the presence of some scattered foraging species. Suitable foraging species for Forest Red-tailed Black Cockatoo and Baudin's Cockatoo recorded across the survey area included *E. marginata, A. fraseriana* and *Hakea* spp. In addition, *X. preissii* is a suitable foraging species only for Baudin's Cockatoo.

In total, nine potential breeding trees were recorded in the survey area, all of which were Jarrah (*Eucalyptus marginata*). Of those recorded, one tree contained two small hollows, both of which were considered unsuitable for black cockatoo use. However, all trees were assessed as containing 'Rank 4' hollows, being no suitable hollows present. No evidence of breeding was observed at the time of the field survey.

All potential breeding trees were considered tall trees within close proximity to water and therefore considered as potentially suitable roosting habitat for all three black cockatoo species. A total of 0.1 hectares of potential black cockatoo roosting habitat was mapped within the survey area.

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1. Introduction

1.1. Project background

DevelopmentWA proposes to undertake subdivisional works within Lots 1001 and 2001 Pederick Road within the suburb of Neerabup (herein referred to as the Project), approximately 38 kilometres (km) north of the Perth Central Business District, within the City of Wanneroo. To inform current and potential future environmental approvals requirements, Eco Logical Australia (ELA) was engaged by DevelopmentWA to undertake a Reconnaissance flora and vegetation survey, Basic Fauna survey and Targeted Black Cockatoo habitat assessment within Lots 1001 and 2001, covering an area of approximately 21.5 hectares (ha; hence referred to as the survey area; Figure 1).

This technical report summarises the results of the desktop assessment and field survey and defines the flora, vegetation, and fauna habitat within the survey area, as well as potential significance of the survey area in terms of conservation values. The results of the ecological surveys will be used to assist the environmental assessment and approval process.

1.2. Scope of works

The purpose of this project was the provide a high level assessment of the environmental values of the survey area to support the environmental assessment and approval process. Specifically, the scope of works for the project included the following:

- Undertaking an initial desktop assessment to determine environmental values and conservation significant flora, fauna, habitat, vegetation or other environmental features (such as riparian areas, wetlands) relating to the survey area;
- Undertaking a field survey to assess high level values pertaining to flora, vegetation, fauna and black cockatoo habitat values;
- Preparation of a technical flora, vegetation and fauna habitat survey report; and
- Provision of all spatial/mapping data collected during the survey.

Figure 1: Survey area location

Survey area

Roads

0 100 200 400

Metres

Datum/Projection:
GDA 1994 MGA Zone 50

Project: 25PER10317-DH Date: 8/6/2025

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2. Environmental Setting

2.1. Bioregion

The Interim Biogeographic Regionalisation for Australia (IBRA) currently classifies 89 bioregions across Australia, based on a range of biotic and abiotic factors such as climate, vegetation, fauna, geology and landform (Department of Agriculture, Water and the Environment [DAWE], 2012; Thackway and Cresswell, 1995). These bioregions are further divided into 419 sub-regions representing more localised and homogenous geomorphological units in each bioregion (DAWE, 2012). IBRA divides Western Australia into 26 biogeographic regions and 53 subregions based on dominant landscape characteristics of climate, lithology, geology, landform and vegetation.

The survey area is located within the Swan Coastal Plain bioregion (SWA) and the Perth subregion (SWA02). The Swan Coastal Plain is a low-lying coastal plain, mainly covered with woodlands dominated by Banksia or Tuart on sandy soils, *Casuarina obesa* on outwash plains, and paperbark in swampy areas (Mitchell *et al*., 2002). The Perth subregion is underlain by colluvial and aeolian sands, alluvial river flats, and coastal limestone, with three phases of marine sand dune development providing relief. Vegetation generally comprises heath and/or Tuart woodlands on limestone, Banksia, and Jarrah-Banksia woodlands on Quaternary marine dines of various ages, and Marri on colluvial and alluvials. The coastal plain includes a complex series of seasonal wetlands.

2.2. Climate

The Perth subregion experiences a warm Mediterranean climate, with rainfall ranging between 600 and 1000 millimetres (mm) annually (Mitchell *et al*., 2002). This rainfall gradient is a significant factor in determining the vegetation across the subregion.

Based on climate data from the nearby Bureau of Meteorology (BoM) Wanneroo weather station (station number 009105, rainfall data 1905-2025) the survey area receives an annual average rainfall of 784.4 mm, with most of the rainfall occurring during the months of June, July and August (BoM, 2025). In the 12 months preceding the field survey in June 2025, the survey area received a total of 575.6 mm of rainfall, which is significantly less than the long-term average (BoM, 2025; Figure 2). A total of 54.8 mm of rainfall was recorded in the three months prior to the field survey, which is lower than the long-term average of the same time period (159.4 mm; BoM, 2025).

Temperature data for the survey area was available from the Pearce RAAF WA weather station (station number 009053, temperature data 1940-2025). Mean maximum air temperature of the survey area range from 33.6°C in January to 18°C in July, while minimum temperatures of the survey area range from 17.6°C in February to 8.3°C in August (BoM, 2025; Figure 2).

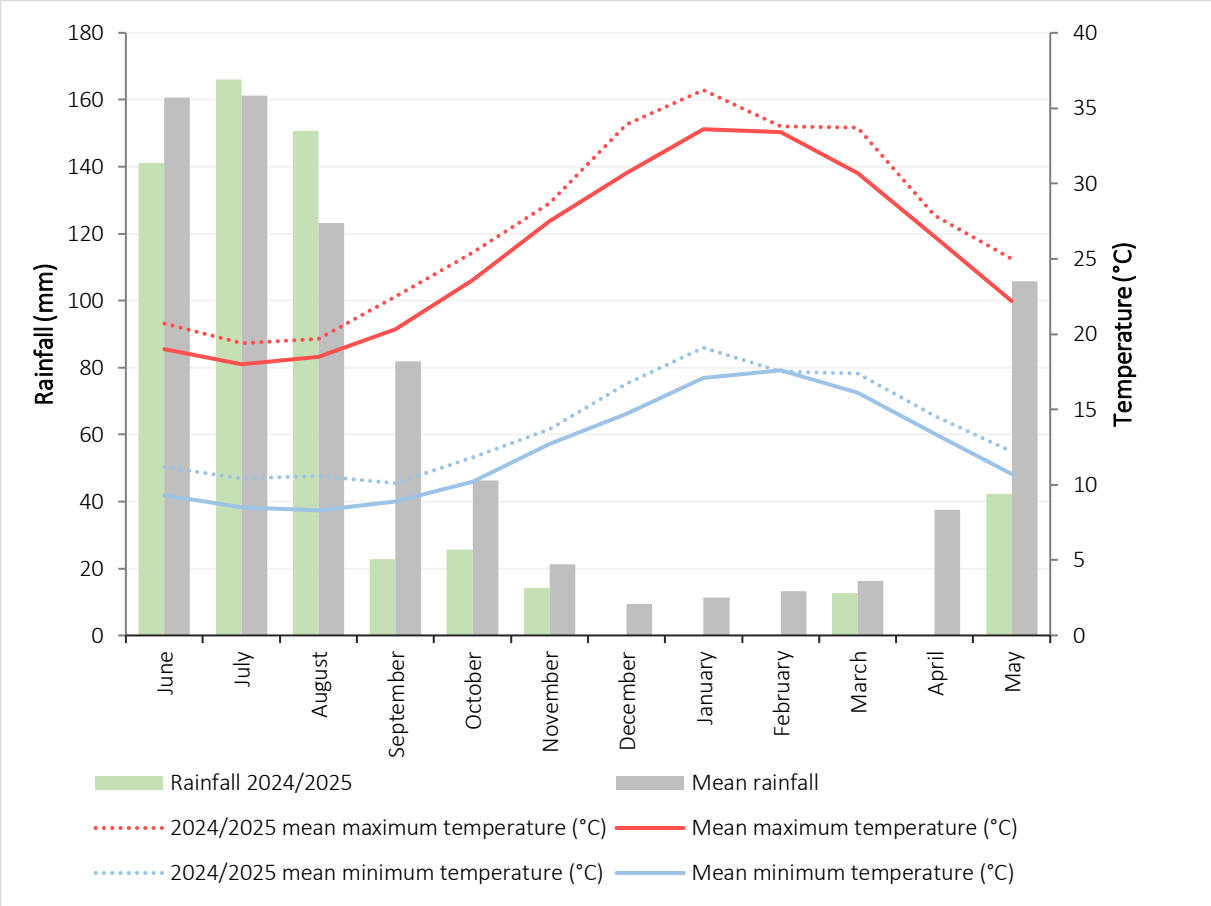

Figure 2 Rainfall and temperature data for the survey area (BoM, 2025)

2.3. Geology, landforms, and soils

The Perth Basin, on which the Swan Coastal Plain is located, is filled by Mesozoic to recent sediments. During the Quaternary, the present coastal plain was formed by deposition of sediments on an underlying eroded embayment which reaches east to the Darling Scarp (Beard, 1990). The three dune systems that run parallel to the present coastline and from west to east (youngest to oldest) are the Quindalup, Spearwood, and Bassendean systems. Chains of lakes and wetlands occur in the lows between the dunes.

Soil-landscape mapping prepared by the Department of Primary Industries and Regional Development (DPIRD), provides an inventory and condition survey of lands at a 1:250,000 scale (DPIRD, 2022). The survey area is located within the Spearwood system. The Spearwood system comprises of, “sand dunes and plains. Yellow deep sands, pale deep sands and yellow/brown shallow sands” (DPIRD, 2022; Figure 3). The survey area also intersects the Perth Coastal Zone, described as, “coastal sand dunes and calcarenite. Late Pleistocene to Recent age. Calcareous and siliceous sands and calcarenite” (Quindalup and Spearwood Systems; DPIRD, 2025a).

2.4. Regional vegetation

Vegetation type and extent have been mapped at a regional scale by Beard (1979) who categorised vegetation into broad vegetation associations. Based on this mapping at a scale of 1:250,000, DPIRD has compiled a list of vegetation extent and type across Western Australia (DPIRD, 2019; Shepherd *et al*., 2002). The survey area intersects one pre-European vegetation association, namely Spearwood 6 (Table 1; Figure 4).

Table 1 Beard's (1979) vegetation associations of the survey area

Vegetation association	Vegetation description	Pre-European extent in SWA02 subregion (ha)	Current extent in SWA02 subregion (ha)	% remaining in SWA02 subregion
Spearwood 6	Medium woodland; tuart and jarrah	56,343.01	13,362.25	23.72

Source: Department of Biodiversity, Conservation and Attractions (DBCA) Statewide Vegetation Statistics (DBCA, 2019a)

Vegetation within the Swan Coastal Plain (SCP) has been described by Heddle *et al*. (1980) as System 6 vegetation complexes. Two vegetation complexes are mapped across the survey area, namely Cottesloe Complex-Central and South and Karrakatta Complex-Central and South (DBCA, 2018; Table 2; Figure 4).

Table 2 System 6 vegetation complexes of the survey area

Vegetation complex	Vegetation complex description	SCP pre-European extent (ha) within the City of Wanneroo	SCP current extent (ha) within the City of Wanneroo	% remaining within the City of Wanneroo
Cottesloe Complex-Central and South	Mosaic of woodland of *Eucalyptus gomphocephala* (Tuart) and open forest of *Eucalyptus gomphocephala* (Tuart) – *Eucalyptus marginata* (Jarrah) – *Corymbia calophylla* (Marri); closed heath on the Limestone outcrops	13,313.58	5,545.39	41.65
Karrakatta Complex-Central and South	Predominantly open forest of *Eucalyptus gomphocephala* (Tuart) – *Eucalyptus marginata* (Jarrah) – *Corymbia calophylla* (Marri) and woodland of *Eucalyptus marginata* (Jarrah) – Banksia species. *Agonis flexuosa* (Peppermint) is co-dominant south of the Capel River.	10,539.13	1,358.88	12.89

Source: DBCA Statewide South West Vegetaiton Complex Statistics Report (DBCA, 2019b)

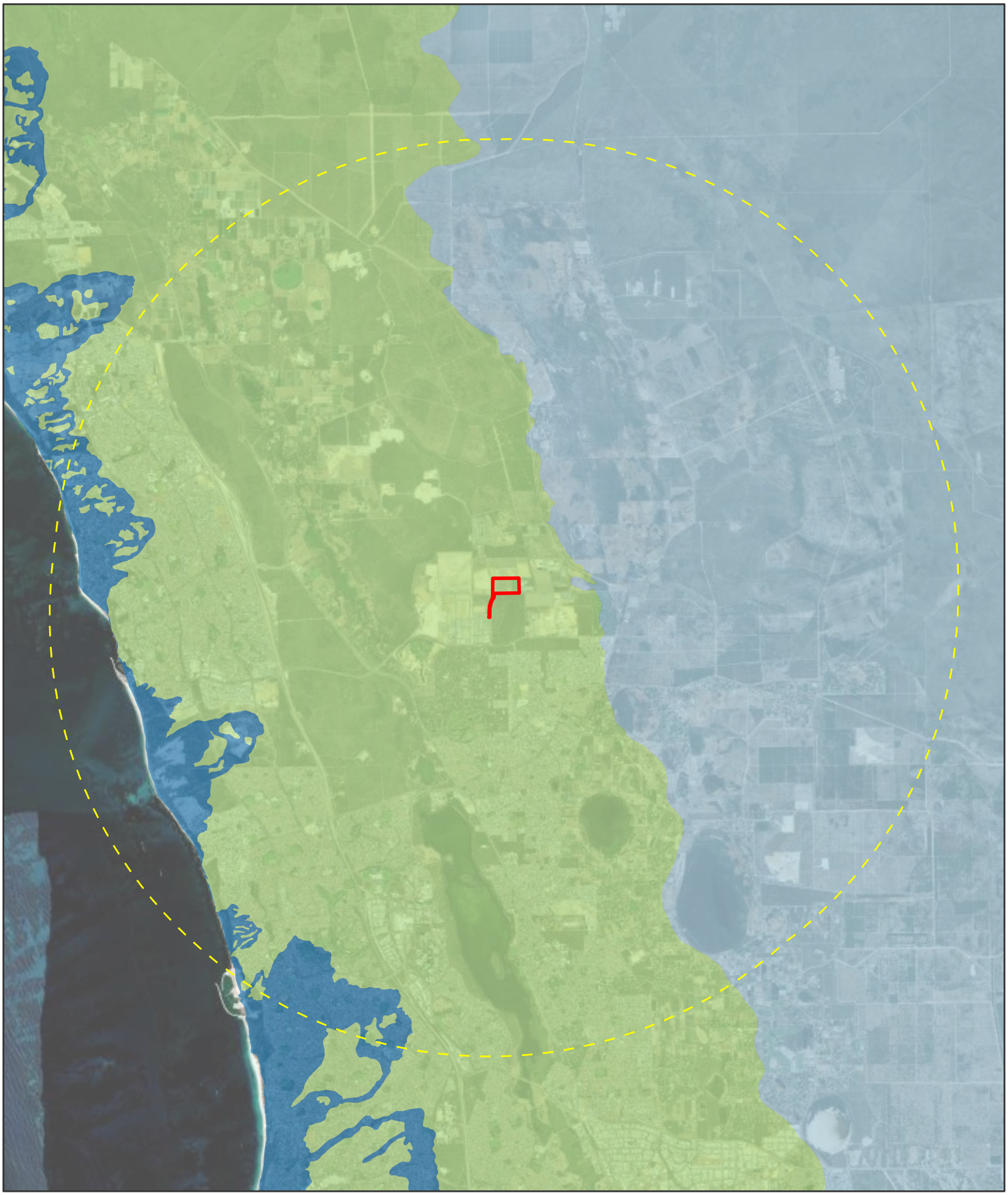

Figure 3: Land systems of the survey area

Survey area
Buffer (10km)

Land systems (DPIRD 2022)
Bassendean System
Quindalup South System
Spearwood System

0 1 2 4
Kilometers

Datum/Projection:
GDA 1994 MGA Zone 50

Project: 25PER10317-DH Date: 8/6/2025

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Figure 4: Borad-scale vegetation mapping

Survey area
Buffer (10km)

Pre-European Vegetation
Spearwood 6

System 6 vegetation complexes
Cottesloe Complex Central And South
Karrakatta Complex Central And South

0 1 2 4
Kilometers

Datum/Projection:
GDA 1994 MGA Zone 50

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2.5. Hydrology

The survey area is located within two sub catchments, Lake Joondalup, forming part of the Wanneroo Coastal Lakes catchment, and an unnamed sub catchment forming part of the Swan Avon-Lower Swan catchment (Department of Water and Environmental Regulation [DWER], 2024; Figure 5).

Two low potential terrestrial Groundwater Dependent Ecosystems (GDEs) intersect the survey area. One occurs at the northern border and the other at the southern border (BoM, 2019; Figure 5). The survey area does not intersect any areas mapped as aquatic GDEs.

Wetlands have been mapped by DBCA on the Swan Coastal Plain to be used for the purposes of land-use, planning and management. This dataset, namely the Geomorphic Wetlands of the Swan Coastal Plain, assigned a management category for each wetland (DBCA, 2025a; Hill, 1996). These management categories include conservation wetlands that support a high level of attributes and functions, 'Resource Enhancement' wetlands that are partially modified but still support substantial ecological attributes and functions, and 'Multiple-Use' wetlands, containing a few remaining important attributes and functions.

The survey area does not intersect any of the wetlands mapped under the Geomorphic Wetlands of the Swan Coastal Plain dataset (DBCA, 2025a; Hill, 1996). The closest wetland occurs approximately 1.5 km north-east of the survey area, namely Lake Pinjar, a conservation category wetland (Figure 5).

Wetlands on the Swan Coastal Plain vary in terms of size, shape, hydrology, stratigraphy, and vegetation. As such, wetlands with common features and related wetlands have been grouped under 'consanguineous suites' (DBCA, 2017a; Semeniuk, 1988). The survey area intersects the Gnangara suite.

2.6. Areas of conservation significance

Environmentally Sensitive Areas (ESAs) are defined in the *Environmental Protection (Environmentally Sensitive Areas) Notice 2005* under s51B of the State *Environmental Protection Act 1986* (EP Act). ESAs include areas declared as World Heritage, included on the Register of the National Estate, defined wetlands, Bush Forever sites, vegetation containing rare (Threatened) flora and/or Threatened Ecological Communities (TECs). The survey area intersects one ESA, namely a TEC (DWER, 2021; Figure 6).

There are no DBCA legislated lands within the survey area. The closest DBCA legislated area is the Gnangara-Moore River State Forest which occurs approximately 1.5 km to the north of the survey area (DBCA, 2025b; Figure 6).

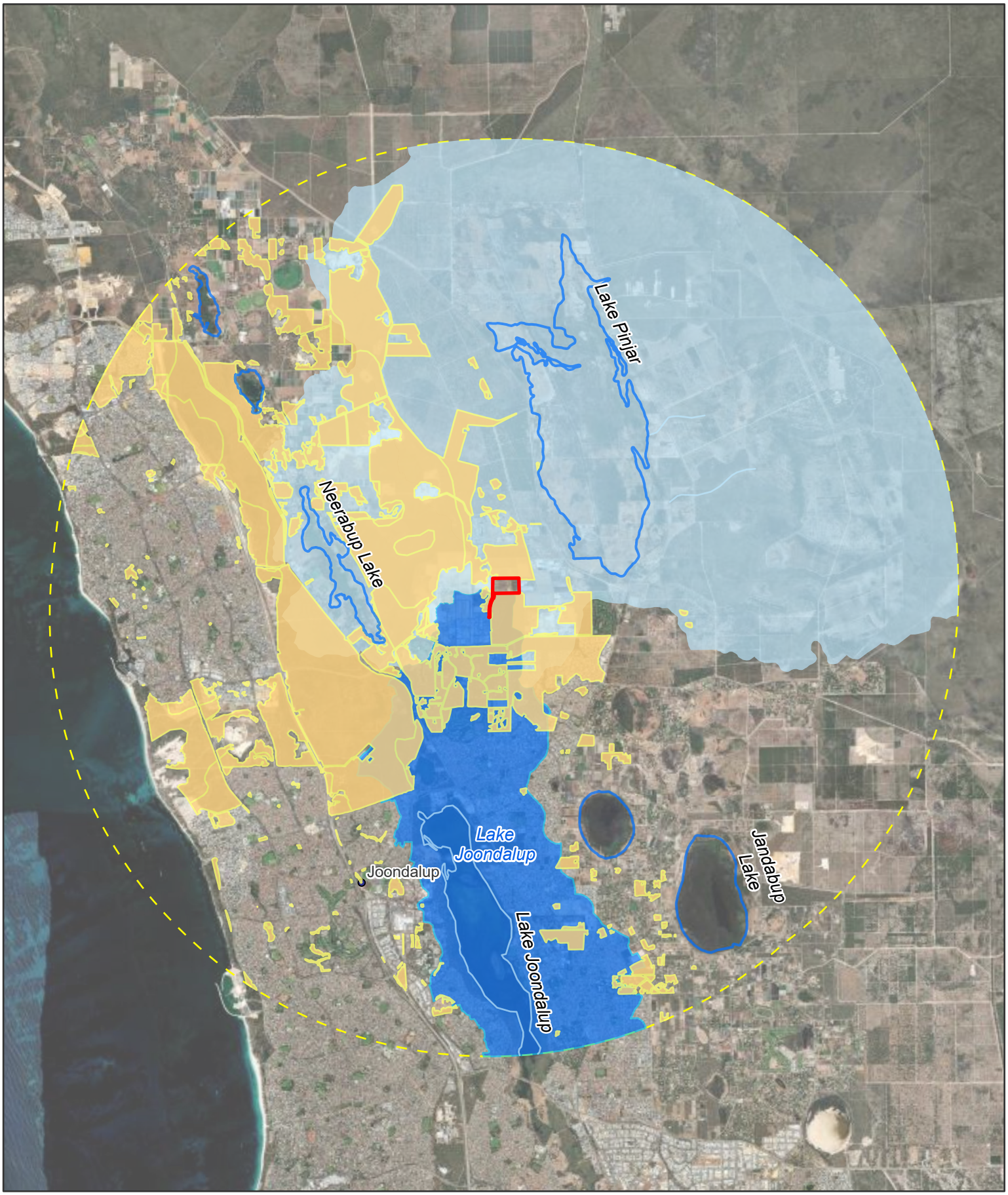

Figure 5: Hydrology of the survey area

Survey area
Buffer (10km)

Drainage
Major
Minor

Potential Terrestrial GDEs – BoM GDE Atlas (BoM 2019)
Low potential GDE - from national assessment

Hydrographic sub catchments
Lake Joondalup
Unnamed sub catchment

0 1 2 4
Kilometers

Datum/Projection:
GDA 1994 MGA Zone 50

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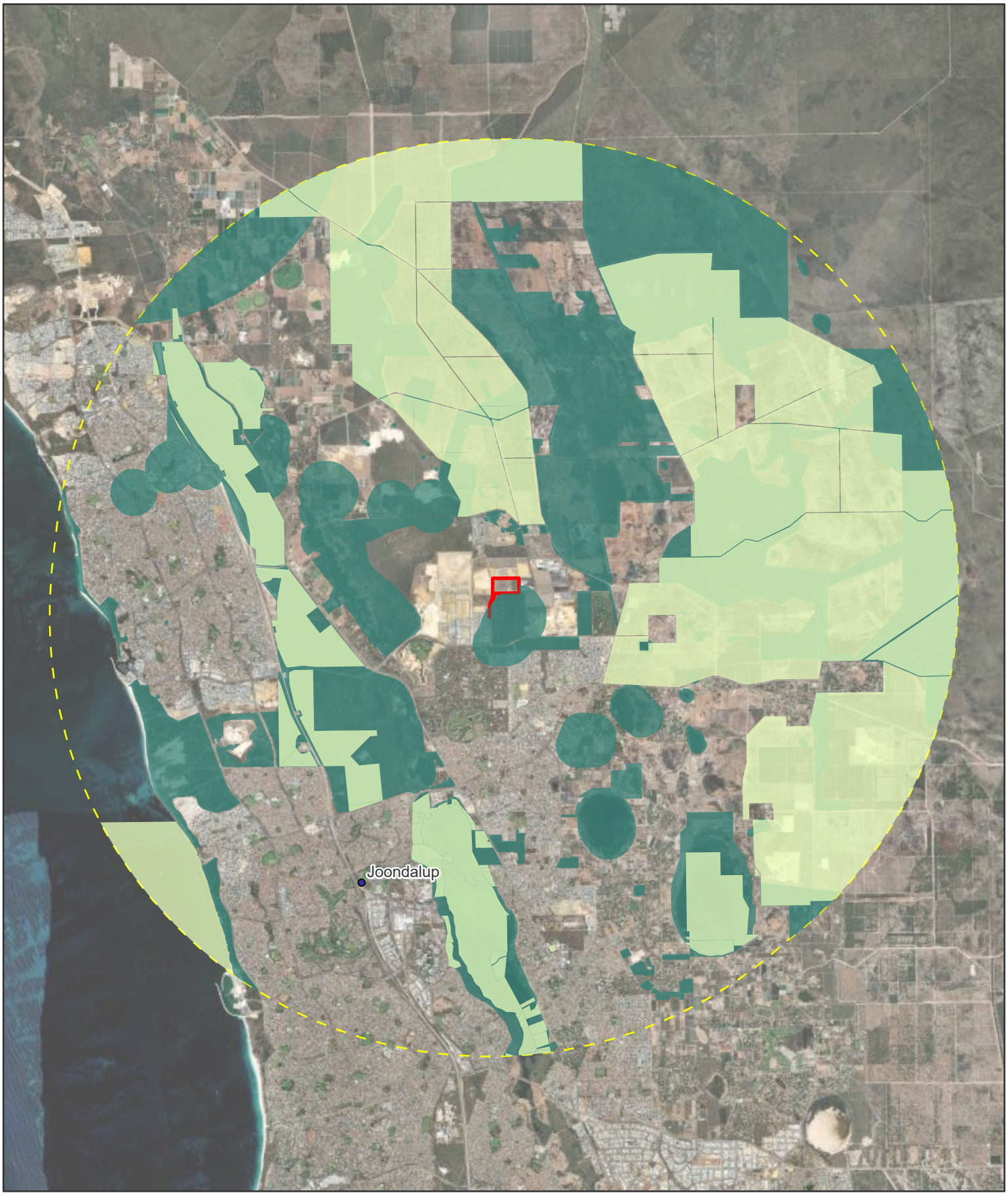

Figure 6: Areas of conservation significance in the vicinity of the survey area

Survey area
Buffer (10km)
DBCA Legislated Lands and Waters
Environmentally Sensitive Area (ESA)

0 1 2 4
Kilometers

Datum/Projection:
GDA 1994 MGA Zone 50

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3. Methodology

3.1. Desktop review

An initial desktop assessment prior to the field survey was undertaken to determine environmental values and conservation significant flora, vegetation or other environmental features (such as riparian areas, wetlands) relating to the survey area.

3.1.1. Database searches

The following Commonwealth and State databases were searched for information relating to conservation significant flora, fauna and ecological communities in order to inform the field survey. Applied search buffers used are considered suitable based on flora and fauna assemblages expected to occur within the survey area (Table 3). It should be noted that the buffers for the DBCA database searches are selected by DBCA on a case-by-case basis and are therefore not always consistent with other searches undertaken in the area.

Table 3 Database searches undertaken for the survey area

Database	Reference	Buffer (km)
Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) Protected Matters Search Tool (PMST) for Matters of National Environmental Significance (MNES), including any Threatened species and communities, listed under the EPBC Act	Department of Climate Change, Energy, the Environment and Water DCCEEW, 2024	10
Birdlife Western Australia black cockatoo roosting and nesting dataset	Birdlife, 2025	12
Database search requests to DBCA for Threatened/Priority Ecological Communities (TECs/PECs). Threatened/Priority flora, and Threatened/Priority flora	DBCA, 2025c, 2025d, 2025e	10

Additionally, Commonwealth and State government spatial datasets for land-system mapping and regional vegetation mapping were reviewed, as described in Sections 2.3 and 2.4.

3.1.2. Literature review

The following ecological survey reports relevant to the survey area were reviewed:

- Lot 2001 Pederick Rd TEC Clarification Survey (ELA, 2022);
- Neerabup Lot 2001 Pederick Rd Flora, Vegetation and Black Cockatoo Survey (ELA, 2021a); and
- Targeted Survey for *Caladenia huegelii* at Lot 2001 Pederick Rd, Neerabup (ELA, 2021b).

3.1.3. Likelihood of occurrence assessment

An assessment of the likelihood of potential conservation significant species (including Threatened and Priority flora and fauna species) and ecological communities being present within the survey area (where relevant) was carried out. Aquatic species and marine mammals were not considered in the likelihood of occurrence assessment as the survey area does not contain core habitat that these species solely rely on for survival. The criteria include factors such as location of previous records in relation to the survey area, suitable landforms, soils and habitat that appear to be present based on the desktop review and aerial imagery.

Conservation codes, categories and criteria for flora, fauna and ecological communities protected under the EPBC Act and the *Biodiversity Conservation Act 2016* (BC Act) are provided in Appendix A. Criteria used for the likelihood assessment are presented in Appendix B.

3.2. Field survey

3.2.1. Survey team and timing

The field survey was conducted by Dr. Jeff Cargill (Principal Ecologist) and Leanne Yan (Graduate Environmental Consultant) on the 13th of June 2025. The survey team's relevant licenses are provided in Table 4.

No licenses were required for the Basic fauna survey or Targeted black cockatoo habitat survey. Survey effort was consistent with the Environmental Protection Authority's (EPA) recommendations for undertaking a basic vertebrate fauna survey (EPA, 2020). Timing was consistent with the DCCEEW recommendations for undertaking surveys for black cockatoos on the Swan Coastal Plain (i.e., foraging habitat and night roosts – any time of the year; DAWE, 2022). It is noted that the Reconnaissance flora and vegetation survey was undertaken out of season.

Table 4 Survey team

Staff	Role	Flora licence/s
Dr Jeff Cargill	Principal Ecologist	Flora taking licence: FB62000138-2 Threatened Flora licence: TFL-48-1920 Threatened Flora licence: TFL 2223-0115
Leanne Yan	Graduate Environmental Consultant	N/A

3.2.2. Reconnaissance flora and vegetation survey

An out of season Reconnaissance flora and vegetation survey was undertaken across the survey area in accordance with the EPA *Technical Guidance: Flora and Vegetation Surveys for Environmental Impact Assessment* (EPA, 2016).

The desktop review, including review of aerial imagery and previous background survey reports, informed the approximate number of sites required to describe vegetation types within the survey area. A total of ten relevés were established across the survey area to delineate and characterise vegetation types, including a vegetation condition assessment. The locations of the relevés are shown in Figure 7.

At each relevé, the following information was recorded:

- A colour photograph of representative vegetation;
- Location of vegetation type;
- Description of vegetation associations in accordance with Level V of the National Vegetation Information System (NVIS) and Aplin's (1979) modification of vegetation classification adapted from Specht (1970). For each stratum, this included:
    - Dominant growth form;
    - Height;
    - Total % projected cover; and
    - Dominant genera;

- Description of vegetation condition classification according to Keighery (1994);
- Disturbance details including:
  - Fire history (time since last fire);
  - Physical disturbance, including clearing; and
  - Weed invasion.

Meandering traverses were conducted in order to develop a list of flora species present within the survey area, to identify potential supporting habitat for conservation significant flora and to record opportunistic flora (Figure 7). All flora species encountered in the field were able to be identified and recorded with no voucher specimens of unfamiliar species being collected for later identification.

Nomenclature used for the flora species within this report follows the Western Australian Plant Census as available on FloraBase (Western Australian Herbarium [WAH], 1998).

3.2.3. Basic fauna survey

A Basic fauna survey was conducted in accordance with the EPA *Technical Guidance: Terrestrial vertebrate fauna surveys for environmental impact assessment* (EPA, 2020). The survey involved personnel traversing through the survey area, delineating and mapping fauna habitats, and recording opportunistic sightings of fauna (Figure 7).

Fauna habitats were assessed for their ability to support and sustain populations of fauna, along with an assessment of the likelihood of occurrence of conservation significant fauna species. The habitat characteristics and fauna database records used in assessing likelihood of occurrence of fauna included:

- Vegetation community, structure, and condition;
- Soil and landform type;
- Extent and connectivity of bushland;
- Fauna species habitat preferences;
- Proximity of conservation significant fauna records; and
- Signs of species presence.

Opportunistic records of fauna species were made at all times during the field survey. These included visual sightings of active fauna, records of bird calls, and secondary evidence of species presence such as tracks, diggings, burrows, scats, and other signs of fauna activity.

Nomenclature used for the vertebrate fauna species within this report follows the Western Australian Museum (WAM) Checklist of the Vertebrates of Western Australia (WAM, 2024).

3.2.4. Targeted Black Cockatoo habitat assessment

A Targeted black cockatoo habitat assessment was undertaken in accordance with the *Referral guideline for 3 WA threatened black cockatoo species: Carnaby's Cockatoo* (Zanda latirostris)*, Baudin's Cockatoo* (Zanda baudinii) *and the Forest Red-tailed Black Cockatoo* (Calyptorhynchus banksii naso) (DAWE, 2022). Consideration was also given to the *Survey guidelines for Australia's threatened birds* (DEWHA, 2010).

Three species of black cockatoo occur in the south-west of Western Australia:

- Baudin's Cockatoo (*Zanda baudinii*; listed as Endangered [EN] under the EPBC Act and the BC Act);

- Carnaby's Cockatoo (*Zanda latirostris*; listed as EN under the EPBC act and the BC Act); and
- Forest Red-tailed Black Cockatoo (*Calyptorhynchus banksii naso*; listed as Vulnerable [VU] under the EPBC Act and the BC Act).

Any individuals of Carnaby's Cockatoo, Baudin's Cockatoo and/or Forest Red-tailed Black Cockatoo observed in the survey area were recorded, including number of individuals. Broad scale maps are available for the modelled distribution of all three species of black cockatoo (DAWE, 2022) and the survey area occurs within the modelled distribution of Carnaby's Cockatoos and Forest Red-tailed Black Cockatoos. Although the survey area occurs just outside the modelled distribution of Baudin's Cockatoo, ELA have taken a precautionary approach and have included an assessment of this species based on the presence of previous records within 10 km of the survey area, its highly mobile nature and ability to utilise the survey area for foraging.

To assess black cockatoo habitat, the survey involved personnel walking meandering traverses across the survey area. A comprehensive assessment and mapping of black cockatoo habitat was undertaken. Black cockatoo habitat is conventionally separated into foraging, potential breeding, and potential roosting categories, as defined in Appendix C. Field methodology for each category is described below.

3.2.4.1. Foraging habitat

Foraging habitat is defined for each species of black cockatoo in Appendix D. The foraging value (i.e., quality) of vegetation of black cockatoos depends upon several factors including the foraging plant species present, the extent and density (including projected foliage cover) of those foraging species and the overall structure and condition of foraging species present. In addition, connectivity, proximity to known breeding and roosting sites and presence of weeds and/or tree deaths (i.e., disease or drought) is also considered.

Foraging habitat delineated and mapped within the flora, vegetation, and fauna survey area was assigned a quality (i.e., negligible to low, low to moderate, moderate, moderate to high or high) based on the criteria outlined in Appendix D. The DAWE (2022) foraging quality scoring tool was also used to calculate a foraging score for the survey area.

Evidence of black cockatoo foraging (i.e., branch clippings and/or chewed marri/jarrah fruit and/or chewed Banksia cones) was also searched for to identify if the vegetation within the black cockatoo survey area has previously been or is currently being used by black cockatoos for feeding.

3.2.4.2. Potential breeding habitat

Potential breeding habitat is defined in Appendix C. The diameter at breast height (DBH) were recorded in the following ranges:

- Small; approximately 500-600 mm;
- Medium; between 600 and 1000 mm; and
- Large; over 1000 mm.

All potential nesting trees encountered within the survey area were recorded with a differential GPS (<1 metre [m] accuracy). Each potential nesting tree was also visually assessed from the ground for the presence of suitable nest hollows (defined in Appendix C) and allocated a nesting and/or hollow rank (Table 5).

Table 5 Potential breeding tree nest and/or hollow ranking

Rank	Description of tree nests and/or hollows
1	Active nest observed (adult birds seen entering or emerging from hollow, their eggs, fledglings or other evidence of recent nesting activity present); known active nest (as described in Birdlife, 2025).
2	Hollow of suitable size[1] and angle (i.e., near vertical) observed with chew marks around entrance.
3	Potentially suitable hollow observed but no chew marks present.
4	Tree lacking suitable hollows or broken branches that might have large hollows, a tree with mainly intact branches and a spreading crown.

[1] ELA takes a precautionary approach and idetnifies potentially suitable hollows as thse with an entrance diameter over 10 centimetres (cm) that could potentially accommodate black cokatoos, which requries a dimatere opening range of 12-41 cm.

3.2.4.3. Potential roosting habitat

Potential night roosting habitat is defined in Appendix C. Potential night roosting habitat was delineated by mapping trees within close proximity to water (i.e., within 12 km).

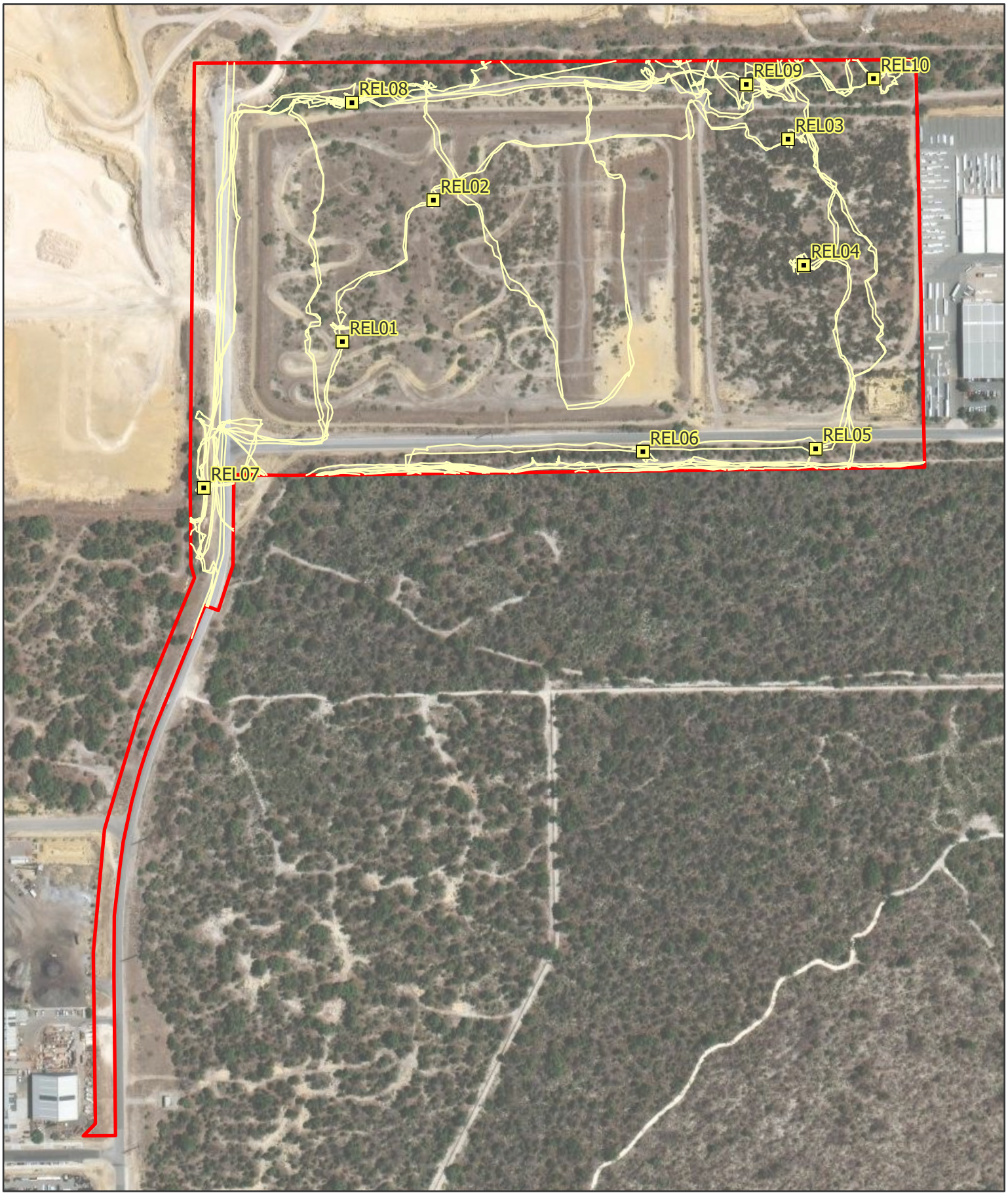

Figure 7: Survey effort

Survey area
Relevé
Traverse

0 25 50 100
Meters

Datum/Projection:
GDA 1994 MGA Zone 50

Project: 25PER10317-DH Date: 26/08/2025

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3.3. Limitations

The EPA Technical Guidance (EPA, 2020, 2016) recommend including a discussion of the constraints and limitations of the survey methods used. An assessment of potential constraints and limitations of this survey are summarised in Table 6. No potential constraints were identified.

Table 6 Survey limitations

Constraint	Limitations
Sources of information and availability of contextual information (i.e., pre-existing background versus new material).	**Not a limitation.** Land system mapping (DPIRD, 2022) and broad-scale vegetation mapping (DPIRD, 2019) were available at a scale of 1:250,000. Vegetation within the SCP has been described be Heddle *et al.* (1980) as System 6 vegetation complexes and was available at a scale of 1:250,000. Soil and landform mapping was also available. Available information was sufficient to provide context at varying scales and therefore was not considered a limitation.
Scope (i.e., what life forms, etc., were sampled).	**Not a limitation.** As per the requirements of the scope, a Reconnaissance flora and vegetation survey, a Basic fauna survey, and a Targeted black cockatoo survey, conducted in accordance with relevant State and Federal legislation and EPA guidance documents, was adequately met.
Proportion of flora collected and identified (based on sampling, timing and intensity).	**Not a limitation.** No flora species were collected during the survey. This is adequate to meet the requirements of the level of survey undertaken (Reconnaissance level). Foot traverses were undertaken across the survey are to compile a species list in order to meet the objectives of the survey.
Completeness and further work which might be needed (i.e., was the relevant survey area fully surveyed).	**Not a limitation.** The survey area was fully covered to meet requirements outlined in the scope of works. Relevé locations were selected using high resolution aerial photography, and ground-truthed in the field to ensure all apparent vegetation types identified were sampled, with replications where possible/required. Site selection and replication was considered adequate to accurately discriminate sites based on species composition and subsequently delineate vegetation type boundaries.
Mapping reliability	**Not a limitation.** Delineation and mapping of vegetation types was adequate based on the requirements of a Reconnaissance level survey. The transition between vegetation types is often discontinuous, therefore delineation of individual vegetation types was undertaken in the field and based on subtle variations of mid-understorey species composition and landform position.
Timing, weather, season, cycle.	**Not a limitation.** The survey was undertaken outside the appropriate season as specified in the EPA Technical Guidance (EPA, 2020, 2016). This is not considered to be a limitation for a Reconnaissance level survey and a Basic fauna survey.
Disturbances (fire, flood, accidental human intervention, etc.).	**Not a limitation.** Disturbances within the survey area included rubbish, weeds, tracks and clearing. These disturbances did not negatively impact the ability to meet objectives in the scope of works.
Intensity (in retrospect, was the intensity adequate).	**Not a limitation.** The survey effort was adequately met. The number of relevés established was sufficient to determine the vegetation types present and to identify any areas that potentially represent conservation significant vegetation. The area was searched sufficiently for evidence of foraging, breeding, or roosting habitat for black cockatoos.
Resources (i.e., were there adequate resources to complete the survey to the required standard).	**Not a limitation.** The number of personnel conducting this field survey in the given time was adequate to undertake the required level of survey. Additional resources, including equipment available, additional support and personnel were adequate.
Access problems (i.e., ability to access survey area)	**Not a limitation.** The survey area was adequately able to be accessed.
Experience levels (e.g., degree of expertise in plant identification to taxon level).	**Not a limitation.** Dr Jeff Cargill is suitably qualified to identify specimens, having previously undertaken flora and fauna surveys in the Swan Coastal Plain bioregion of Western Australia.

The black cockatoo habitat assessment was undertaken in accordance with the *Referral Guidelines* (DAWE, 2022). The requirement of DAWE (2022) and detail regarding how the survey meets these requirements is summarised in Table 7. All requirements are considered to have been met.

Table 7 Summary of the survey compliance with black cockatoo referral guidelines

Referral guideline recommendation	Compliant	Justification
Surveys should be done by a suitably qualified person with experience in vegetation or cockatoo surveys, depending on the type of survey being undertaken.	Yes	The Principal Ecologist undertaking the black cockatoo habitat assessment, Dr. Jeff Cargill, has over 10 years' experience conducing habitat assessments for black cockatoos.
Survey should maximise the chance of detecting the species' habitat and/or signs of use.	Yes	The survey was undertaken in June which is within the optimal time for detecting black cockatoos. Black cockatoo habitat and signs of use can be detected year-round.
Survey should determine the context of the site within the broader landscape – for example, the amount of quality of habitat nearby and in the local region (for example within 10 km).	Yes	The context of the habitats available within the survey area has been considered at a broader level and are discussed further in Section 5.
Survey should account for uncertainty and error (false presence and absences).	N/A	This recommendation refers to individual bird counts where presence/absence data is collected and is not applicable to this type of habitat assessment.
Survey should include collation of existing data on known locations of breeding and feeding birds and night roost locations.	Yes	Data has been obtained from Birdlife roosting and nesting database search (Birdlife, 2025) and DBCA Threatened fauna database search (DBCA, 2025d).
Survey should assess the extent, type and quality of the vegetation present, including the presence and extent of plants known to be used by the black cockatoos.	Yes	Foraging habitat was delineated and mapped in the field and a list of vegetation present has been compiled (refer to Section 4.3).
In potential breeding habitat, measurements of the diameter at breast height of trees in the patch of woodland/forest must be made to determine whether the habitat meets the definition of 'breeding habitat'.	Yes	Potential breeding trees are defined as trees of suitable species with a DBH over 50 cm. Trees were measured for diameter at breast height (DBH) in the field, and where the DBH was over 50 cm, these trees were recorded, and signs of use/hollows were observed (refer to Section 4.4.2).
Search for signs of use by black cockatoos (e.g. suitable nest hollows, feeding signs or feeding debris, and sighting records).	Yes	The field survey involved walking traverses through areas searching for feeding signs. In addition, where hollows were observed, chew marks and other signs of use were searched for.

4. Results

4.1. Desktop assessment

A PMST search was undertaken to identify conservation-significant flora, fauna, and ecological communities recorded within or in proximity to the survey area (DCCEEW, 2024; Appendix E). Furthermore, a review of DBCA databases for Threatened and Priority listed flora, fauna, and ecological communities was also completed (DBCA, 2025c, 2025d, 2025e). The locations of conservation significant flora, fauna and ecological communities within and in proximity to the survey area are presented in Figure 8, Figure 9, and Figure 10 respectively. In addition, the Birdlife Australia database for black cockatoo roosting and nesting sites (Birdlife, 2025) was also queried to identify sites within and in the vicinity of the survey area (Figure 11).

4.1.1. Conservation significant flora species

Conservation significant flora species previously recorded in proximity to the survey area are presented in Figure 8 (DBCA, 2025c). The pre-survey flora likelihood of occurrence assessment is provided in Appendix F. In total, 40 flora species were identified from the desktop assessment in which no previous records of conservation significant flora species were identified within the survey area.

Prior to the field survey, seven species were considered as having the Potential to occur due to the availability of potentially suitable habitat, including:

- *Caladenia huegelii* (listed as EN under the EPBC Act and Critically Endangered [CR] under the BC Act);
- *Banksia mimica* (listed as EN under the EPBC Act and VU under the BC Act);
- *Thelymitra variegata* (listed as CR under the BC Act);
- *Poranthera moorokatta* (listed as Priority 2 [P2] by DBCA);
- *Sarcozona bicarinata* (listed as P3 by DBCA);
- *Eucalyptus foecunda* subsp. *foecunda* (listed as P4 by DBCA); and
- *Jacksonia sericea* (listed as P4 by DBCA).

The remaining 33 species identified in the desktop assessment were considered Unlikely to occur in the survey area.

4.1.2. Conservation significant fauna species

Conservation significant fauna species previously recorded in proximity to the survey area are presented in Figure 9 (DBCA, 2025d). The pre-survey fauna likelihood of occurrence is provided in Appendix G. A total of 38 fauna species were identified from the desktop assessment, of which one was previously recorded within the survey area, namely the Western Brush Wallaby (*Notamacropus irma*, listed as P4 by DBCA).

Prior to the field assessment, five species, in addition to the Western Brush Wallaby, were considered having the Potential to occur in the survey area due to the availability of potentially suitable habitat and nearby records, including:

- Baudin's Cockatoo (*Zanda baudinii*; listed as EN under the EPBC Act and the BC Act);
- Carnaby's Cockatoo (*Zanda latirostris*; listed as EN under the EPBC Act and the BC Act);

- Forest Red-tailed Black Cockatoo (*Calyptorhynchus banksii naso*; listed as VU under the EPBC Act and the BC Act);
- Black-striped snake (*Neelaps calonotos*; listed as P3 by DBCA); and
- Quenda (*Isoodon fusciventer*; listed as P4 by DBCA).

The remaining 32 species identified through the desktop assessment were considered Unlikely to occur in the survey area.

4.1.3. Conservation significant ecological communities

Conservation significant ecological communities that were previously recorded in proximity to the survey area are presented in Figure 10 (DBCA, 2025e). The pre-survey ecological communities likelihood of occurrence assessment is provided in Appendix H. A total of 13 ecological communities were identified in the desktop assessment. Of these 13 communities, three had previously been recorded to intersect the survey area and were considered as having the Potential to occur due to the availability of potentially suitable habitat and the intersection of boundaries with the survey area, including:

- SCP20a: *Banksia attenuata* woodlands over species rich dense shrublands (floristic community type 20a as originally described in Gibson et al. 1994) (listed as EN under the EPBC Act and CR under the BC Act);
- Banksia Woodlands of the Swan Coastal Plain ecological community (listed as EN under the EPBC Act and P3 by DBCA); and
- Tuart (*Eucalyptus gomphocephala*) woodlands and forests of the Swan Coastal Plain (listed as CR under the EPBC Act and P3 by DBCA).

An additional four conservation significant ecological communities were considered as having the Potential to occur within the survey area:

- SCP25: Southern *Eucalyptus gomphocephala-Agonis flexuosa* woodlands (listed as CR under the EPBC Act and as P3 by DBCA);
- SCP21c: Low lying *Banksia attenuata* woodlands or shrublands (listed as EN under the EPBC Act and as P3 by DBCA);
- SCP22: *Banksia ilicifolia* woodlands (listed as EN under the EPBC Act and as P3 by DBCA); and
- SCP23b: Swan Coastal Plain *Banksia attenuate-Banksia menziesii* woodlands (listed as EN under the EPBC Act and as P3 by DBCA).

The remaining six ecological communities identified in the desktop assessment were considered Unlikely to intersect the survey area.

4.1.4. Black cockatoo roosting and nesting records

A total of 14 white-tailed black cockatoo (predominantly Carnaby's Cockatoo), four Forest Red-tailed Black Cockatoo and six joint roost sites have been confirmed within 12 km of the survey area (Birdlife, 2025; Figure 11). Additionally, a total of 13 confirmed Carnaby's Cockatoo breeding sites occur within 6-9 km of the survey area. Of these, one site has had breeding in natural hollows and 12 sites in artificial hollows (Birdlife, 2025; Figure 11). The majority of the confirmed breeding sites occur to the south-west of the survey area, in the vicinity of Lake Joondalup (DBCA, 2025d). None of these previous records are located within the survey area. It is noted that roost sites within 12 km of the survey area display sporadic usage patterns (Birdlife, 2025).

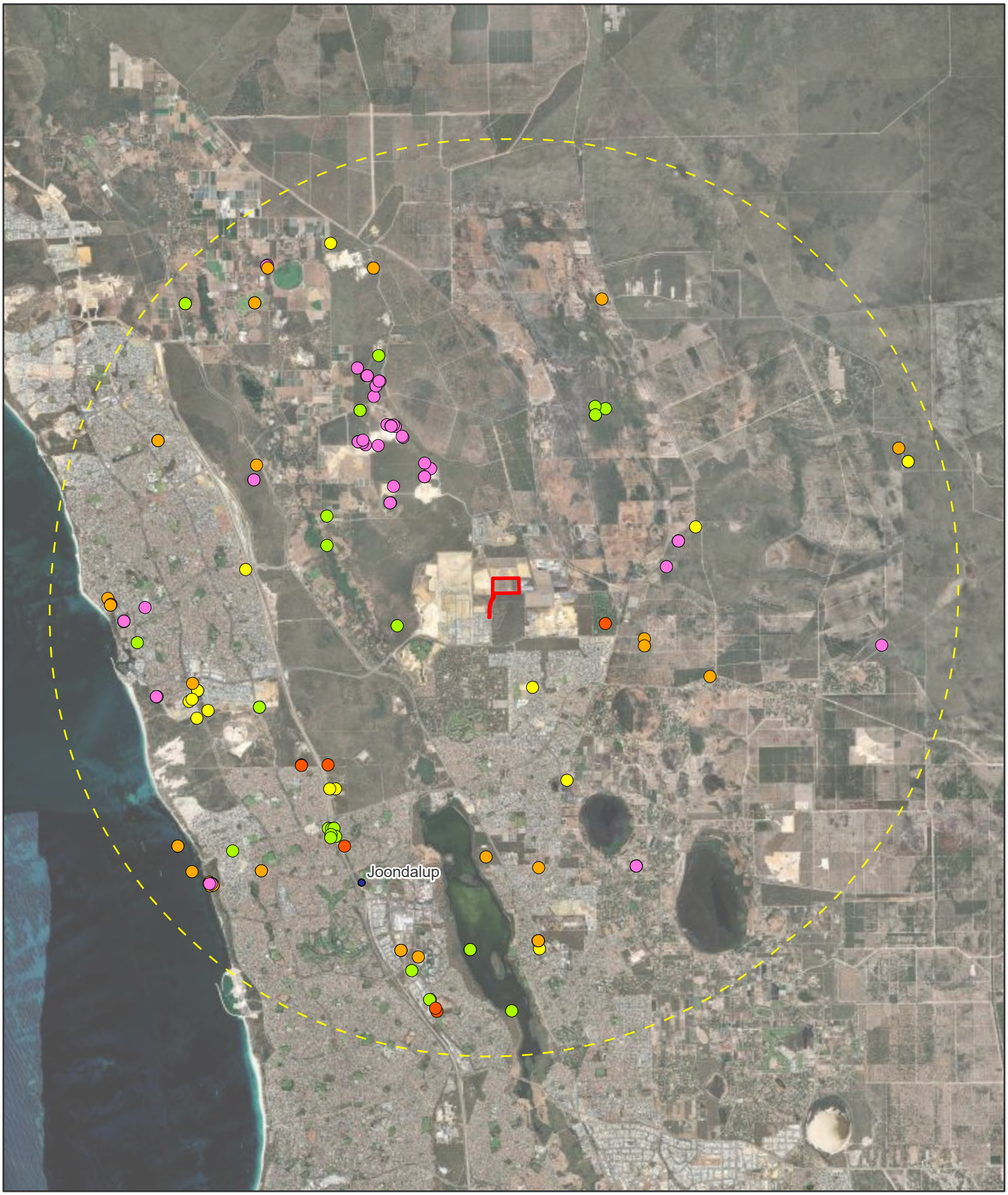

Figure 8: Conservation significant flora previously recorded within and in the vicinity of the survey area

Survey area
Buffer (10km)

Conservation significant flora locations

- Threatened
- Priority 1
- Priority 2
- Priority 3
- Priority 4

0 1 2 4
Kilometers

Datum/Projection:
GDA 1994 MGA Zone 50

Project: 25PER10317-DH Date: 8/6/2025

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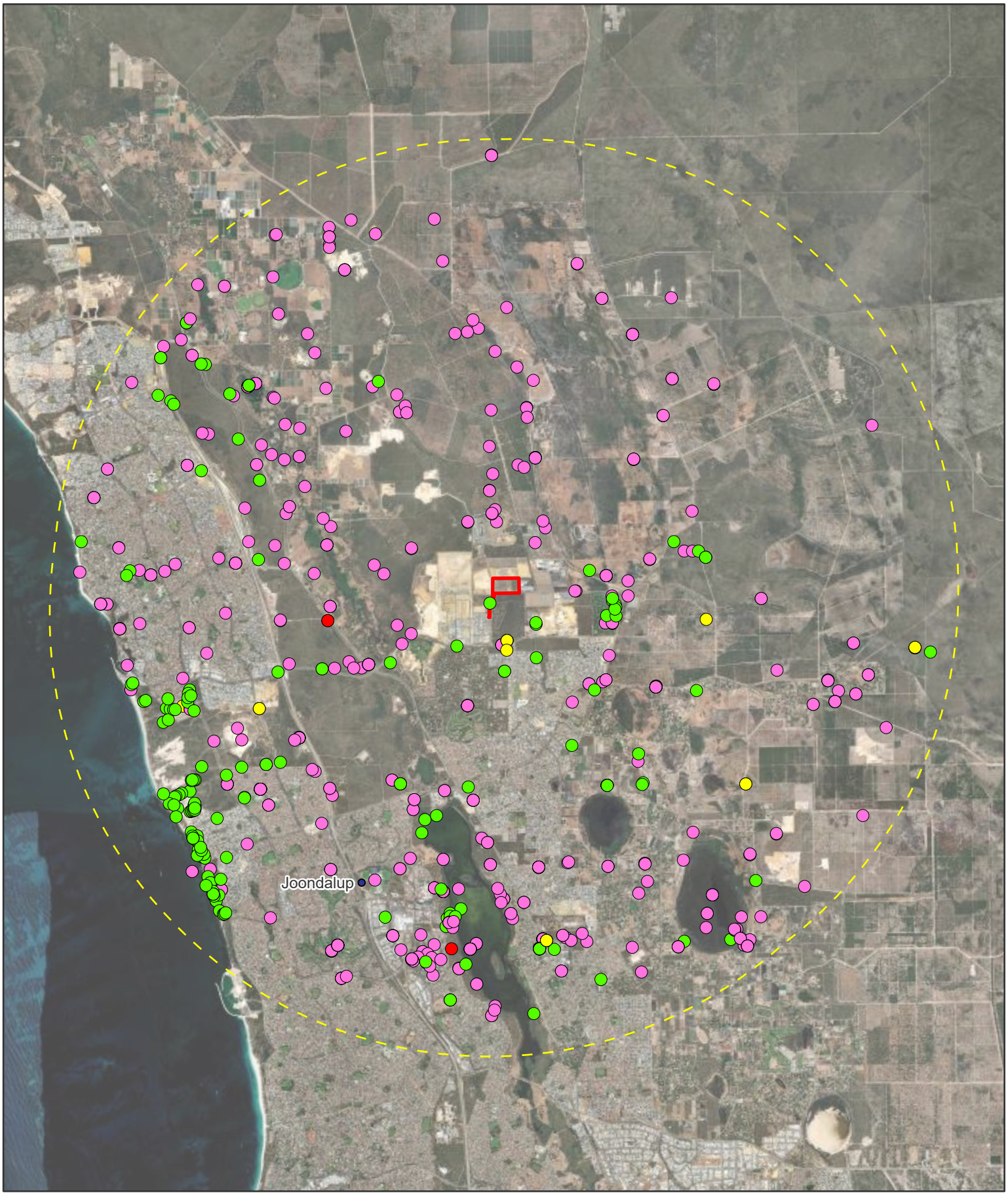

Figure 9: Conservation significant fauna previously recorded within and in the vicinity of the survey area

Survey area

Buffer (10km)

Conservation significant fauna locations

- Threatened
- Priority 2
- Priority 3
- Priority 4

0 1 2 4

Kilometers

Datum/Projection:
GDA 1994 MGA Zone 50

Project: 25PER10317-DH Date: 8/6/2025

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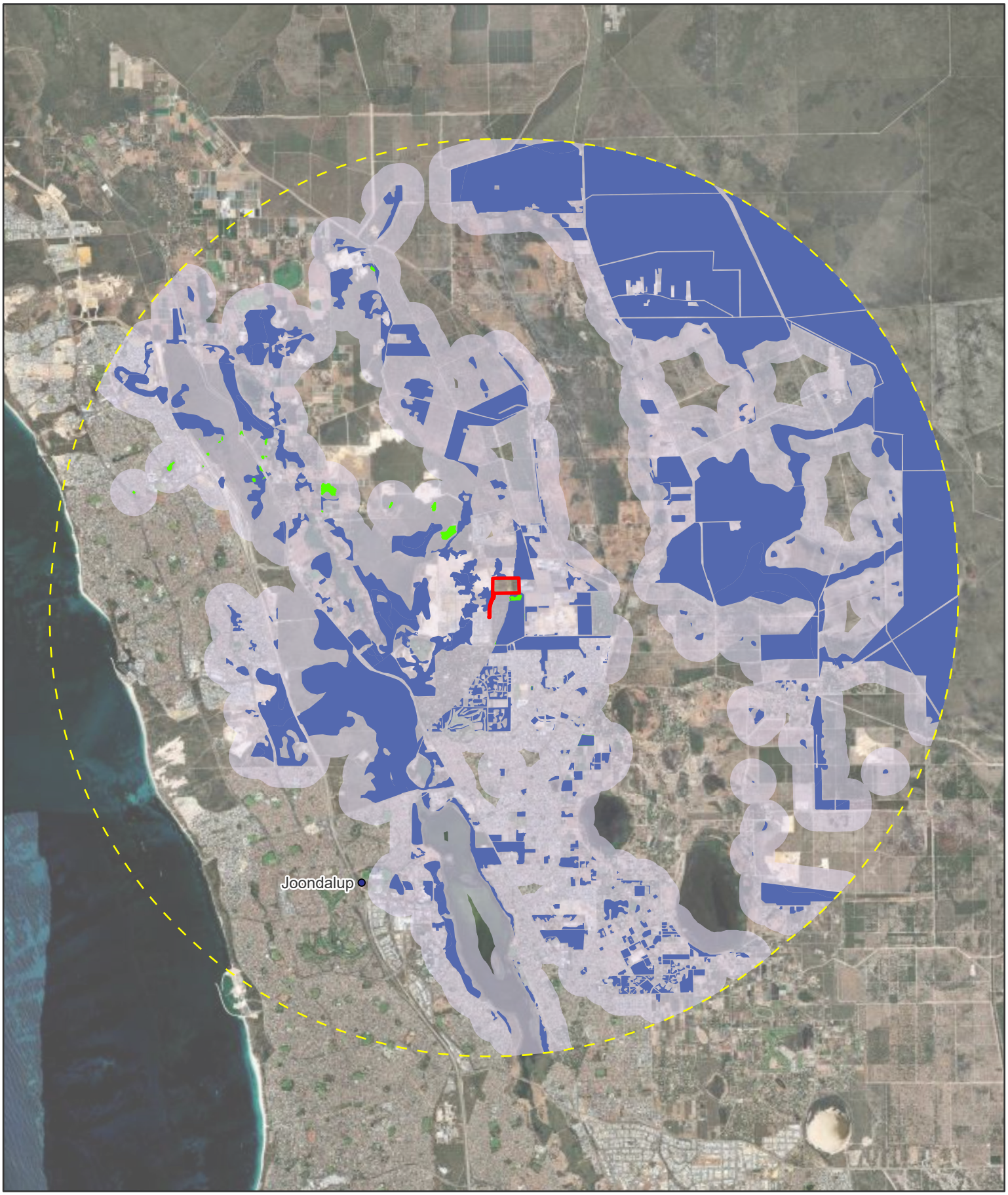

Figure 10: Conservation significant communities previously recorded within and in the vicinity of the survey area

Survey area
Buffer (10km)
Conservation significant community locations (500m)

Conservation significant community locations

Threatened
Priority 3

0 1 2 4
Kilometers

Datum/Projection:
GDA 1994 MGA Zone 50

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Figure 11: Black Cockatoo roosting and nesting sites previously recorded in the vicinity of the survey area

Survey area

Buffer (10km)

Sites

Birdlife (2025)

DBCA (2025d)

0 1 2 4

Kilometers

Datum/Projection:
GDA 1994 MGA Zone 50

Project: 25PER10317-DH Date: 8/6/2025

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4.2. Flora and vegetation survey

A total of 37 flora species (27 native and nine introduced) from 18 families and 32 genera were recorded, with 36 species recorded across ten relevés established within the survey area and one species recorded opportunistically. The families with the greatest number of species were Fabaceae (eight species), Myrtaceae (six species) and Proteaceae (five species). A full flora list is provided in Appendix I. A flora species by site matrix is presented in Appendix J and ELA relevé site data is provided in Appendix K.

4.2.1. Conservation significant flora

No conservation significant flora listed under the EPBC Act, BC Act or as Priority by DBCA were recorded during the field survey.

Following the field survey, a post-field likelihood of occurrence assessment determined that of the seven conservation significant flora species identified as having the Potential to occur within the survey area from the pre-survey likelihood assessment, three flora species are considered to have the Potential to occur. Post-survey likelihoods were determined on the basis of the proximity of nearby records and the presence of potentially suitable supporting habitat (particularly in the north-east portion of the survey area) for the following flora species:

- *Caladenia huegelii* (listed as EN under the EPBC Act and CR under the BC Act);
- *Thelymitra variegata* (listed as CR under the BC Act); and
- *Poranthera moorokatta* (listed as P2 by DBCA).

The remaining 37 conservation significant flora species are considered Unlikely to occur within the survey area based on lack of suitable habitat and historical records. The complete flora likelihood of assessment is presented in Appendix F.

4.2.2. Introduced flora

A total of nine introduced (weed) species were recorded within the survey area, representing approximately 25% of the total species recorded. All of these species are listed on the Western Australian Organism List (WAOL) database as Permitted (s-11) under the State *Biosecurity and Agricultural Management Act 2007* (BAM Act), indicating that no specific management of these species is required (DPIRD, 2025b). None of these species is listed as a Weed of National Significance (WoNS).

4.2.3. Vegetation types

Five vegetation types were delineated and mapped within the survey area, covering 13.0 ha (60.5% of the survey area). One vegetation community was validated on-site to be consistent with previous surveys undertaken within and in the vicinity of the survey area (ELA, 2021; Table 8; Figure 12). The most widespread vegetation type was Vegetation Type 1 comprising 6.5 ha (50% of the total vegetated area within the survey area). This was followed by Vegetation Type 2 (3.8 ha; 29.2% of vegetated areas) and Vegetation Type 4 (0.9 ha; 6.9% of vegetated areas). The remaining 8.5 ha of the survey area comprised of cleared areas (39.5% of the survey area) and isolated trees (0.03 ha, 0.1% of the survey area).

Table 8 Vegetation communities and types recorded within the survey area

Vegetation type/ community	Representative photograph	Relevés	Vegetation description	Extent in the survey area (ha)	Proportion of the survey area (%)
Vegetation Type 1		REL01 REL02	Regrowth comprising *J. sternbergiana, A. rostellifera, J. furcellata* tall sparse shrubland over mixed weeds.	6.5	30.2
Vegetation Type 2		REL03 REL04	Regrowth comprising *J. sternbergiana, A. rostellifera, A. saligna* tall shrubland over mixed native herbs and sedges.	3.8	17.7
Vegetation Type 3		REL05 REL06	*E. marginata, A. fraseriana* low open woodland over *B. attenuata, B. menziesii* tall open shrubland over mixed natives.	0.6	2.8

Vegetation type/ community	Representative photograph	Relevés	Vegetation description	Extent in the survey area (ha)	Proportion of the survey area (%)
Vegetation Type 4		REL07 REL08	*E. marginata* mid open woodland and *B. attenuata* low open woodland over *X. preissii* mid sparse shrubland over mixed natives and weeds.	0.9	4.2
Vegetation Type 5		REL09 REL10	*E. marginata* mid open woodland and *B. attenuata* and *B, menziesii* low woodland over mixed natives.	0.9	4.2
EmBAf		Validated on-site	*E. marginata, A. fraseriana* and *B. attenuata* Woodland over Open Shrubland of *X. preissii* over Low Shrubland of *Hibbertia hypericoides, Stirlingia latiflora, Eremaea pauciflora, Desmocladus asper* and *Mesomelaena pseudostygia* on grey loamy sands.	0.3	1.4
			Isolated trees	0.03	0.1
			Cleared	8.5	39.5
			Total	21.5	100

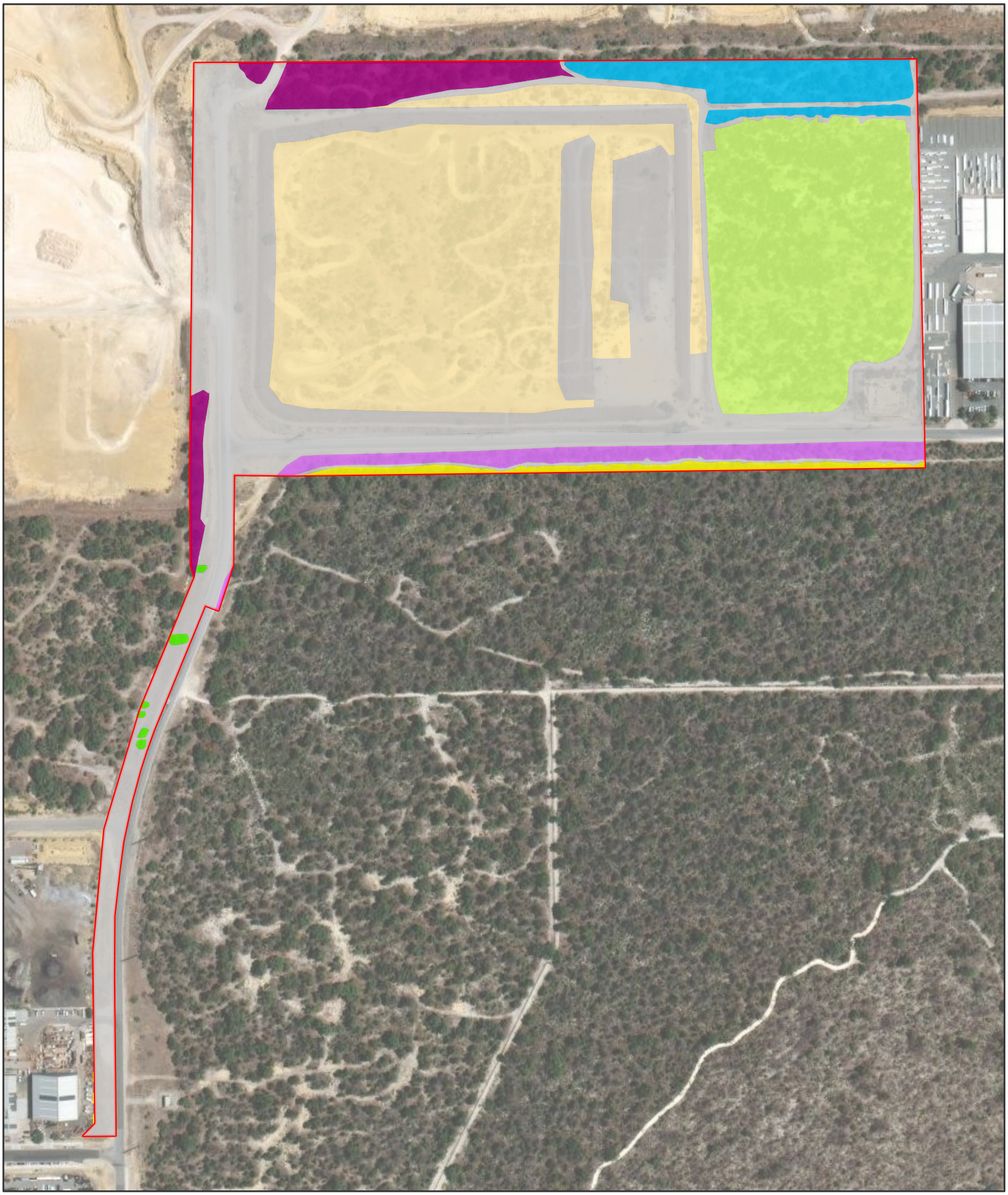

Figure 12: Vegetation types and communities recorded in the survey area

Survey area

Cleared

Isolated trees

Vegetation types

Vegetation Type 1

Vegetation Type 2

Vegetation Type 3

Vegetation Type 4

Vegetation Type 5

Vegetation communities

EmBAF

0 25 50 100

Meters

Datum/Projection:
GDA 1994 MGA Zone 50

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4.2.4. Vegetation of conservation significance

Of the five vegetation types delineated within the survey area, two vegetation types have the potential to represent aspects of the Banksia Woodlands of the Swan Coastal Plain TEC (listed as EN under the EPBC Act and as P3 by DBCA), namely, Vegetation Type 3 and Vegetation Type 5. Additional detailed floristic analysis would be required to confirm the presence of this TEC within the survey area. Additionally, vegetation community EmBAf was validated to be consistent with previous conclusions that it is representative of the Banksia Woodlands of the Swan Coastal Plain TEC (ELA, 2022). No additional TECs or PECs were considered to have the potential to occur within the survey area.

A post-survey likelihood of occurrence assessment determined that four ecological communities of conservation significance have the Potential to occur within the survey area compared to seven Potential to occur communities assessed prior to the field survey. The four Potential to occur ecological communities include:

- SCP20a: *Banksia attenuata* woodlands over species rich dense shrublands (floristic community type 20a as originally described in Gibson et al. 1994) (listed as EN under the EPBC Act and CR under the BC Act);
- Banksia Woodlands of the Swan Coastal Plain ecological community (listed as EN under the EPBC Act and as P3 by DBCA);
- SCP21c: Low lying *Banksia attenuata* woodlands or shrublands (listed as EN under the EBPC Act and as P3 by DBCA); and
- SCP23b: Swan Coastal Plain *Banksia attenuata – Banksia menziesii* woodlands (listed as EN under the EPBC Act and as P3 by DBCA).

The Aquatic Root Mat Community Number 1 of Caves of the Swan Coastal Plain community was considered to Not occur within the survey area in the post-survey likelihood of occurrence assessment. The remaining eight communities were considered Unlikely to occur within the survey area. The ecological community likelihood of occurrence assessment is provided in Appendix H.

4.2.5. Vegetation condition

The condition of intact native vegetation in the survey area ranged from Excellent to Completely Degraded (Table 9; Figure 13), based on the vegetation condition scale of Keighery (1994) provided in EPA (2016) for the South-west Botanical Province. Disturbances in the survey area included weeds, tracks, clearing and rubbish dumping. Areas of vegetation degradation were concentrated within the previously cleared area in the centre of the survey area. In total, cleared areas accounted for 39.5% of the survey area.

Table 9 Vegetation condition recorded in the survey area

Vegetation condition	Extent in the survey area (ha)[1]	Proportion of the survey area (%)[1]
Excellent	0.3	1.4
Good	2.2	10.2
Degraded	3.9	18.1
Completely Degraded	6.5	30.2
Cleared	8.5	39.5
Total	21.5	100

[1] Values are subject to rounding

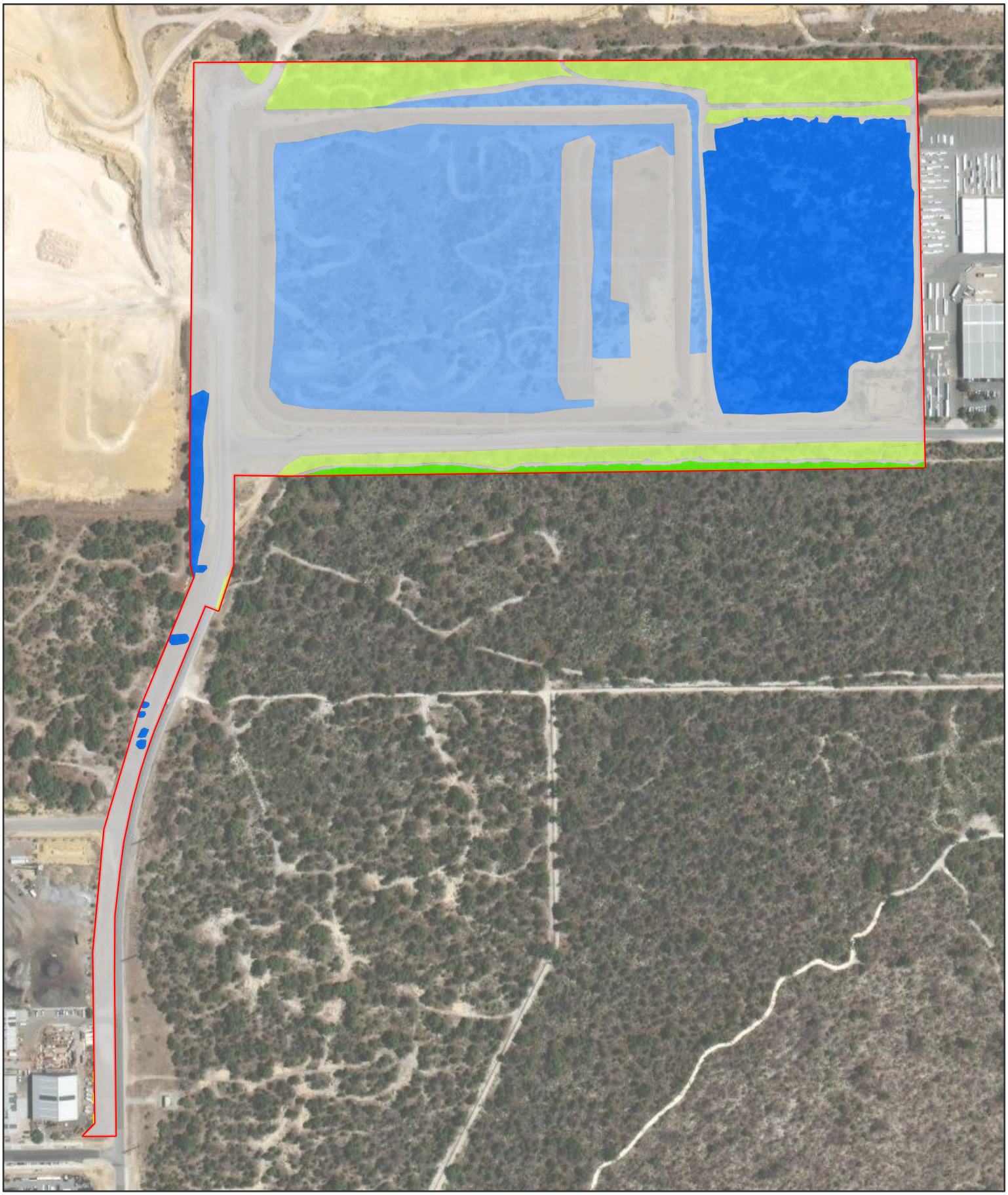

Figure 13: Vegetation condition recorded in the survey area

4.3. Fauna survey

4.3.1. Fauna overview

A total of 14 vertebrate fauna species (including one introduced species) were observed in the survey area, including 11 birds, two mammals, and one reptile. A complete fauna list is presented in Appendix L.

4.3.2. Conservation significant fauna

Two conservation significant fauna species were recorded during the field survey. This included:

- Carnaby's Cockatoo (*Zanda latirostris*), listed as EN under the EPBC Act and the BC Act; and
- Forest Red-tailed Black Cockatoo (*Calyptorhynchus banksii naso*), listed as VU under the EPBC Act and the BC Act.

Carnaby's Cockatoos and Forest Red-tailed Black Cockatoos were observed flying overhead in pairs during the field assessment. No evidence of utilisation of the survey area by these species was observed.

Following the field survey, of the six conservation significant fauna species identified from the desktop assessment as having the Potential to occur within the survey area, two were recorded and four species were considered as having the Potential to occur in the survey area due to the presence of suitable habitat and proximity of nearby records:

- Baudin's Cockatoo (*Zanda baudinii*), listed as EN under the EPBC Act and the BC Act;
- Black-striped snake, black-striped burrowing snake (*Neelaps calonotos*), listed as P3 by DBCA;
- Quenda, Southwestern brown bandicoot (*Isoodon fusciventer*), listed as P4 by DBCA; and
- Western brush wallaby (*Notamacropus irma*), listed as P4 by DBCA.

The Water rat, Rakali (*Hydromys chrysogaster*) was considered to Not occur within the survey area due to the lack of suitable habitat. The remaining 32 conservation significant species identified in the desktop assessment were considered Unlikely to occur. The complete fauna likelihood of occurrence assessment is presented in Appendix G.

4.3.3. Introduced fauna

One introduced vertebrate fauna species was recorded during the survey via tracks in the centre of the survey area, namely the Red Fox (**Vulpes vulpes*). The Red Fox is listed as Declared Pest – s22(2) under the BAM Act with two control categories, namely, C1 – Exclusion/Prohibited and C3 – Management/Prohibited.

4.3.4. Fauna habitat

Three fauna habitat types were identified and mapped in the survey area, covering 13.1 ha (60.4% of the survey area; Table 10; Figure 14). This includes Regrowth of mixed shrublands on sandy soils (10.5 ha; 48.4% of the survey area) being the most widespread fauna habitat within the survey area, Open Jarrah woodland and Banksia shrubland on sandy soils (2.3 ha; 10.6% of the survey area) and EmBAf (0.3 ha, 1.4% of the survey area).

Table 10 Fauna habitat types recorded in the survey area

Photo	Fauna habitat	Associated species	Relevés	Extent in the survey area (ha)	Proportion of the survey area (%)
	Regrowth of mixed shrublands on sandy soils	*Jacksonia sternbergiana, Acacia rostellifera, Jacksonia furcellata*	REL01, REL02, REL03, REL04	10.3	47.9
	Open Jarrah woodland and Banksia shrubland on sandy soils	*Eucalyptus marginata, Banksia attenuata, Banksia menziesii*	REL05, REL06, REL07, REL08, REL09, REL10	2.4	11.2
	EmBAf	*Eucalyptus marginata, Allocasuarina fraseriana, Banksia attenuata*	Validated on-site	0.3	1.4
	Isolated trees			0.03	0.1
	Cleared			8.5	39.5
	Total			21.5	100

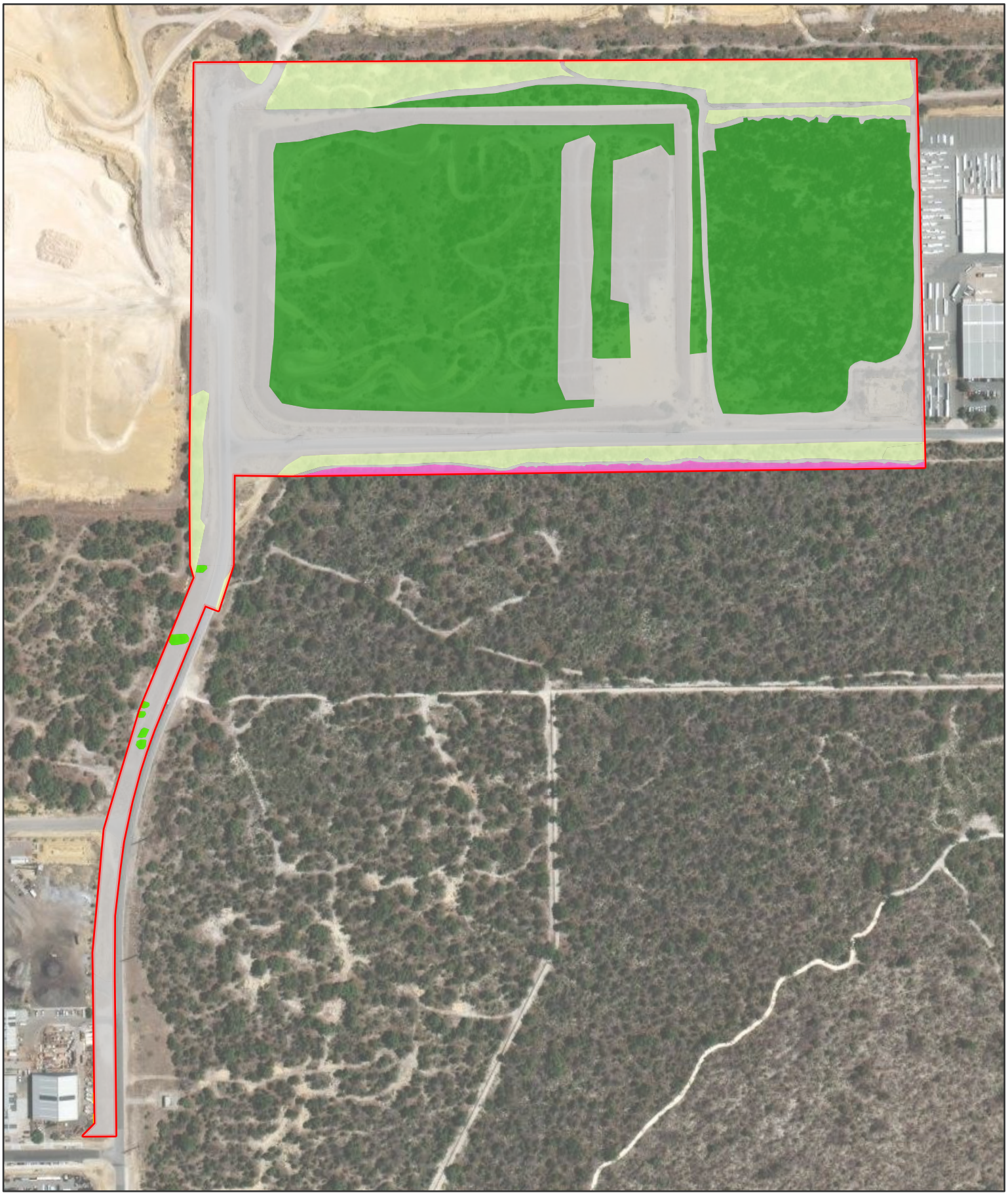

Figure 14: Fauna habitat types recorded in the survey area

Survey area

Cleared

Isolated trees

Fauna habitat

EmBAF

Open Jarrah woodland and Banksia Shrubland on sandy soils

Regrowth of mixed shrublands on sandy soils

0 25 50 100

Meters

Datum/Projection:
GDA 1994 MGA Zone 50

Project: 25PER10317-DH Date: 25/08/2025

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4.4. Black cockatoo habitat assessment

A targeted assessment of potential foraging, breeding, and roosting habitat for Carnaby's Cockatoo (*Zanda latirostris*), Forest Red-tailed Black Cockatoo (*Calyptorhynchus banksii naso*) and Baudin's Cockatoo (*Zanda baudinii*) was undertaken in the survey area. Carnaby's Cockatoo and Forest Red-tailed Black Cockatoo were both recorded during the field assessment.

The *Neerabup Lot 2001 Pederick Rd Flora, Vegetation and Black Cockatoo Survey* (ELA 2021) was reviewed to inform black cockatoo foraging habitat quality within fauna habitat, EmBAf. Black cockatoo foraging habitat quality was assessed on an outdated criteria adapted from the *Draft revised referral guideline for three threatened black cockatoo species* (DEE, 2017) and the *Offsets assessment guide* (DSEWPaC, 2012). Foraging, breeding and roosting habitat within the survey area is described in the sections below.

4.4.1. Foraging habitat

Several native flora species were observed within the survey area that provide suitable foraging resources for Carnaby's Cockatoo, Forest Red-tailed Black Cockatoo and Baudin's Cockatoo. This included primary foraging species for Carnaby's Cockatoo including *Hakea* spp., and *Banksia* spp. Secondary foraging species include *Eucalyptus marginata, Jacksonia furcellata* and *Xanthorrhoea preissii* for Carnaby's Cockatoos and *Allocasuarina fraseriana* and *Hakea* spp., for Forest Red-tailed Black Cockatoos and Baudin's Cockatoos. The field assessment validated that foraging habitat for Carnaby's Cockatoo and Forest Red-tailed Black Cockatoo within fauna habitat EmBAf is consistent with ELA (2021).

Baudin's Cockatoo foraging habitat within fauna habitat EmBAf was not previously described in ELA (2021) and has been assessed in this report according to suitable foraging species recorded during the previous survey. Suitable foraging species recorded included *Allocasuarina fraseriana, Eucalyptus marginata, Xanthorrhoea preissii, Banksia dallanneyi* and *Hakea trifurcata* (ELA, 2021).

Most of the survey area consisted of habitat containing foraging value, to varying degrees, for all three black cockatoo species. However, no foraging evidence was observed within the survey area. Foraging habitat within the survey area was defined based on criteria outlined in Appendix C and Appendix D.

For Carnaby's Cockatoos foraging quality ranged from 'Moderate to High' to 'Low' foraging value in vegetated parts of the survey area (Table 11; Figure 15). The majority of the survey area was classified as 'Low' foraging quality. Cleared areas within the survey area that contained no foraging species were classified as having no foraging value for Carnaby's Cockatoos.

Table 11 Quality of foraging habitat recorded in the survey area for Carnaby's Cockatoo

Quality	Criteria summary	Associated fauna habitat/s	Extent within the survey area (ha)	Proportion of the survey area (%)
Moderate to high	Presence of suitable foraging plant species at a high density (i.e., primary food sources present at 40-60% projected foliage cover [PFC], secondary food sources at >60% PFC) and presence of preferred food sources at several strata.	• Open Jarrah woodland and Banksia shrubland on sandy soils	0.6	2.8

Quality	Criteria summary	Associated fauna habitat/s	Extent within the survey area (ha)	Proportion of the survey area (%)
Good	High density of species suitable for foraging by black cockatoos (i.e. foliage cover of suitable species >60%) but food sources only present at one or two strata (e.g. canopy and midstorey) (DEE, 2017; DSEWPaC, 2012)	• EmBAf	0.3	1.4
Moderate	Presence of suitable foraging plant species at a low to moderate density (i.e., primary food sources present at 20-40% PFC, secondary food sources at 40-60% PFC).	• Open Jarrah woodland and Banksia shrubland on sandy soils	0.9	4.2
Low	Suitable foraging species present at a low density (i.e., primary food sources present at <10% PFC, secondary food sources present at 10-20% PFC.	• Regrowth of mixed shrublands on sandy soils • Open Jarrah woodland and Banksia shrubland on sandy soils	4.6	21.4
Negligible to low	Presence of some scattered foraging species but <2% PFC.	• Regrowth of mixed shrublands on sandy soils • Isolated trees	6.5	30.2
No foraging value	No foraging value. No Proteaceae, Eucalyptus or other potential sources of food. Examples: water bodies, bare ground, developed site, mown grass.	• Cleared	8.5	39.5
Total			21.5	100

For Forest Red-tailed Black Cockatoos, foraging quality ranged from 'High' to 'No' foraging value in vegetated parts of the survey area (Table 12; Figure 16). The majority of the survey area was classified as 'Negligible to low' foraging quality. Cleared areas within the survey area that contained no foraging species were classified as having no foraging value for Forest Red-tailed Black Cockatoos.

Table 12 Quality of foraging habitat recorded in the survey area for Forest Red-tailed Black Cockatoo

Quality	Criteria summary	Associated fauna habitat/s	Extent within the survey area (ha)	Proportion of the survey area (%)
Moderate to high	Presence of suitable foraging plant species at a high density (i.e., food sources present at 40-60% PFC) and presence of preferred food sources at several strata	• Open Jarrah woodland and Banksia shrubland on sandy soils	0.6	2.8
Moderate	Moderate foraging value density of species suitable for foraging by black cockatoos (i.e. foliage cover of suitable species 20-40%) and	• EmBAf	0.3	1.4

Quality	Criteria summary	Associated fauna habitat/s	Extent within the survey area (ha)	Proportion of the survey area (%)
	food sources only present at one or two strata (e.g. canopy and midstorey) (DEE, 2017; DSEWPaC, 2012).			
Low to moderate	Suitable foraging species present but at a lower density (i.e., foraging sources present at 5-20% PFC).	• Open Jarrah woodland and Banksia shrubland on sandy soils	0.9	4.2
Low	Suitable foraging species present at a low density (i.e., food sources present at 1-5% PFC).	• Open Jarrah woodland and Banksia shrubland on sandy soils	0.9	4.2
Negligible to low	Presence of some scattered foraging species but <1% PFC.	• Regrowth of mixed shrublands on sandy soils • Isolated trees	6.5	30.2
No foraging value	No foraging value. No Eucalypts or other potential sources of food. Examples: water bodies, bare ground, developed sites.	• Regrowth of mixed shrublands on sandy soils • Cleared	12.3	57.2
Total			21.5	100

Foraging habitat quality for Baudin's Cockatoo within the survey area ranged from 'Moderate to high' to 'No' foraging value in vegetated parts of the survey area (Table 13; Figure 17). The majority of the survey area was classified as 'Negligible to low' foraging quality. Cleared areas within the survey area that contained no foraging species were classified as having no foraging value for Baudin's Cockatoo.

Table 13 Quality of foraging habitat recorded in the survey area for Baudin's Cockatoo

Quality	Criteria summary	Associated fauna habitat/s	Extent within the survey area (ha)	Proportion of the survey area (%)
Moderate to high	Presence of suitable foraging plant species at a high density (i.e., food sources present at 40-60% PFC) and presence of preferred food sources at several strata	• Open Jarrah woodland and Banksia shrubland on sandy soils • EmBAf	0.6	2.8
Moderate	Presence of suitable foraging plant species at a low to moderate density (i.e., food sources present at 20-40% PFC).	• Open Jarrah woodland and Banksia shrubland on sandy soils	0.9	4.2
Low to moderate	Suitable foraging species present but at a lower density (i.e., foraging sources present at 5-20% PFC).	• Open Jarrah woodland and Banksia shrubland on sandy soils	0.9	4.2
Negligible to low	Presence of some scattered foraging species but <1% PFC.	• Regrowth of mixed shrublands on sandy soils • Isolated trees	6.5	30.2
No foraging value	No foraging value. No Eucalypts or other potential sources of food. Examples: water bodies, bare ground, developed sites.	• Regrowth of mixed shrublands on sandy soils • Cleared	12.3	57.2
Total			21.5	100

In addition, the DAWE (2022) scoring tool was used for each species (Appendix M). This outlines that Carnaby's Cockatoo foraging quality is High (score of 8), and Forest Red-tailed Black Cockatoo and Baudin's Cockatoo foraging quality is Moderate (score of 6).

4.4.2. Potential breeding and roosting habitat

A total of nine potential breeding trees (>500 mm DBH) were recorded within the survey area (Figure 18; Appendix N). All these trees were Jarrah (*Eucalyptus marginata*). Of those recorded, one tree contained two small hollows. However, all nine potential breeding trees were assigned a hollow rank of four (i.e., tree lacking suitable hollows or broken branches that might have large hollows, a tree with mainly intact branches and a spreading crown).

All potential breeding trees were considered tall trees within close proximity to water (Appendix C) and therefore considered as potentially suitable roosting habitat for Carnaby's Cockatoos and Forest Red-tailed Black Cockatoos. Where potential breeding and roosting trees occur within the survey area, this habitat was mapped as a polygon with a 5 m buffer. A total of 0.1 ha of potential roosting and breeding habitat was delineated and mapped within the survey area (Figure 18).

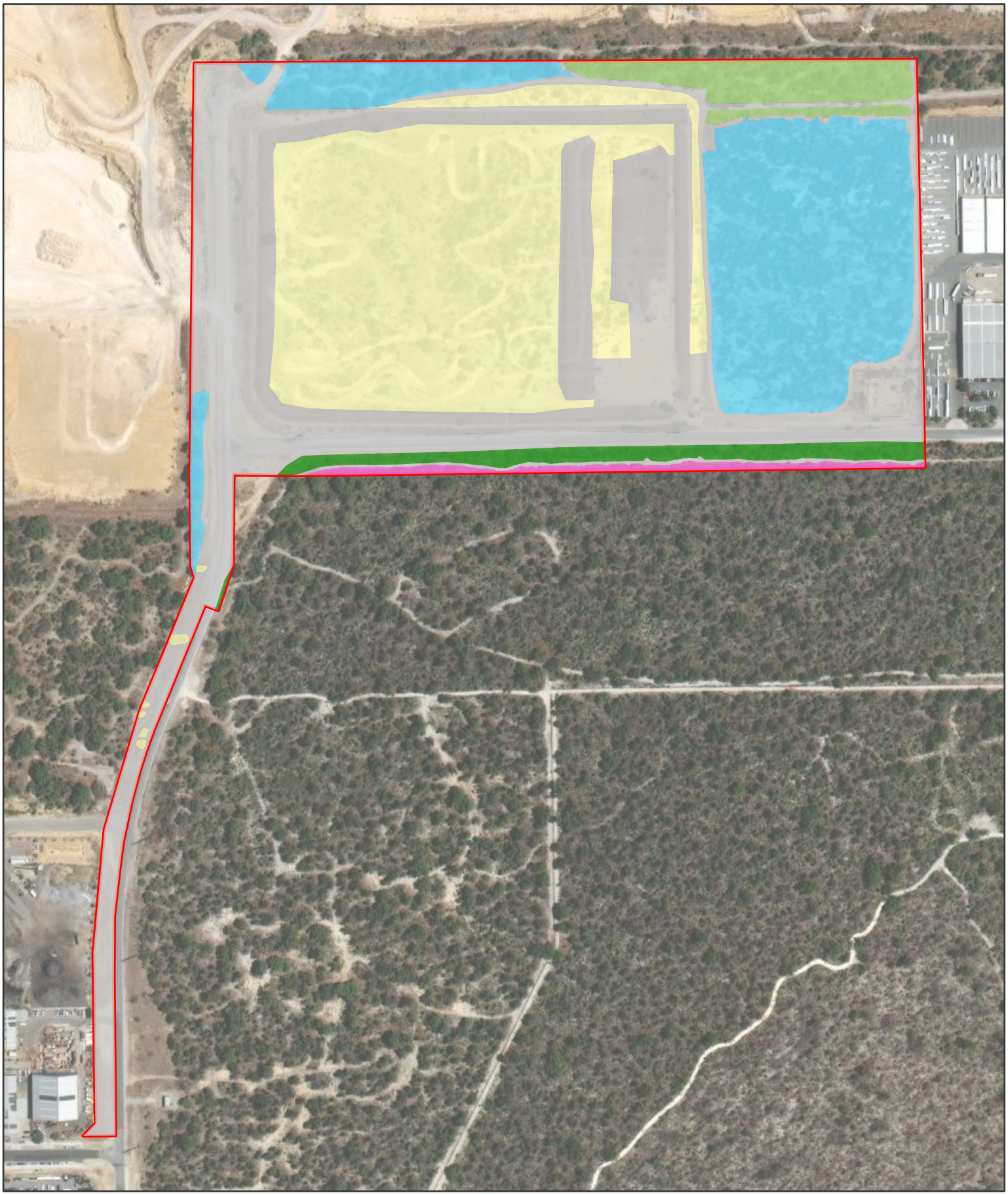

Figure 15: Carnaby's Cockatoo foraging quality recorded in the survey area

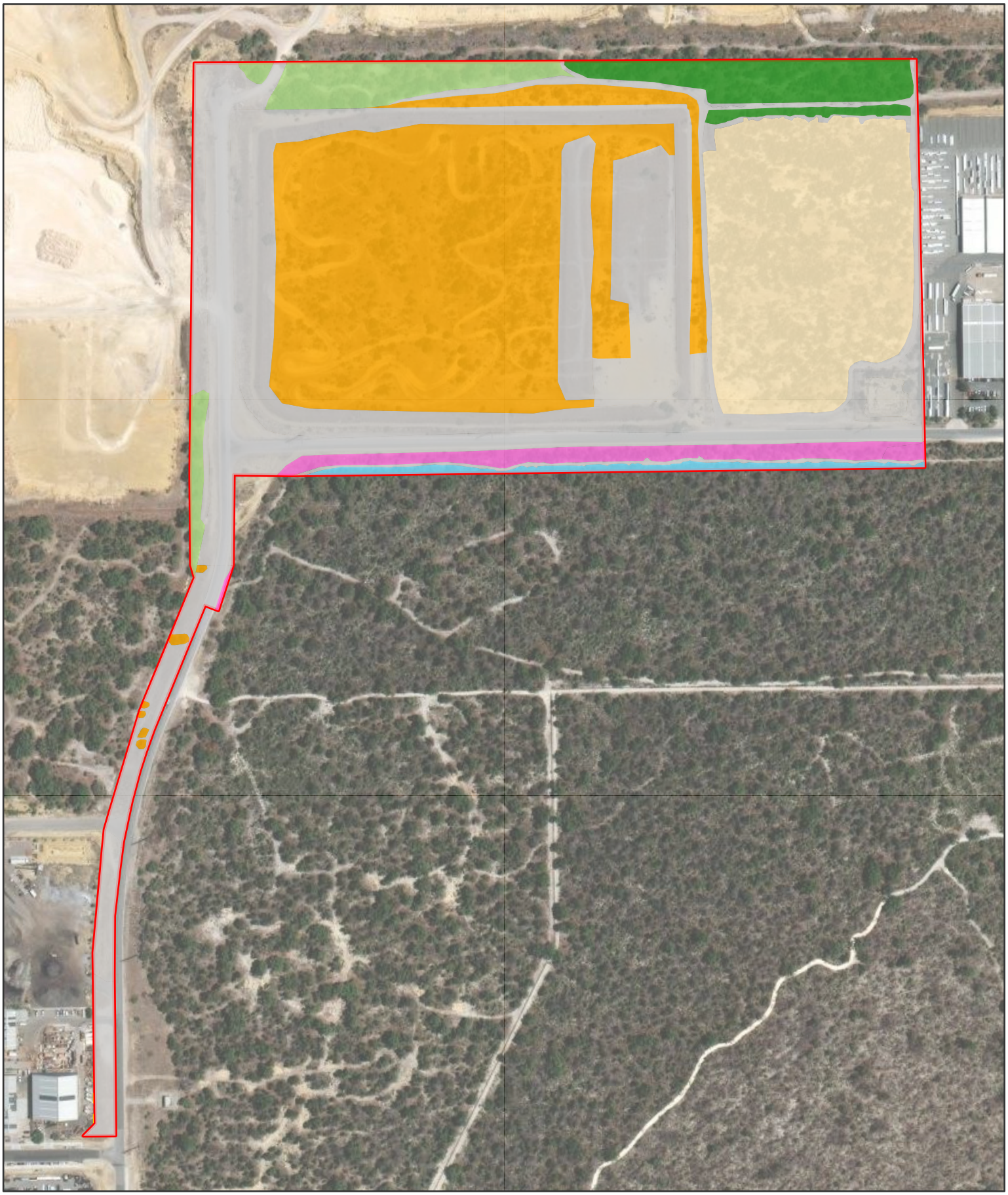

Figure 16: Forest Red-tailed Black Cockatoo foraging quality recorded in the survey area

Survey area

Cleared

Forest Red-tailed Black Cockatoo foraging habitat score

- Moderate to high
- Moderate
- Low to moderate
- Low
- Negligible to low
- No foraging value

0 25 50 100

Meters

Datum/Projection:
GDA 1994 MGA Zone 50

Project: 25PER10317-DH Date: 25/08/2025

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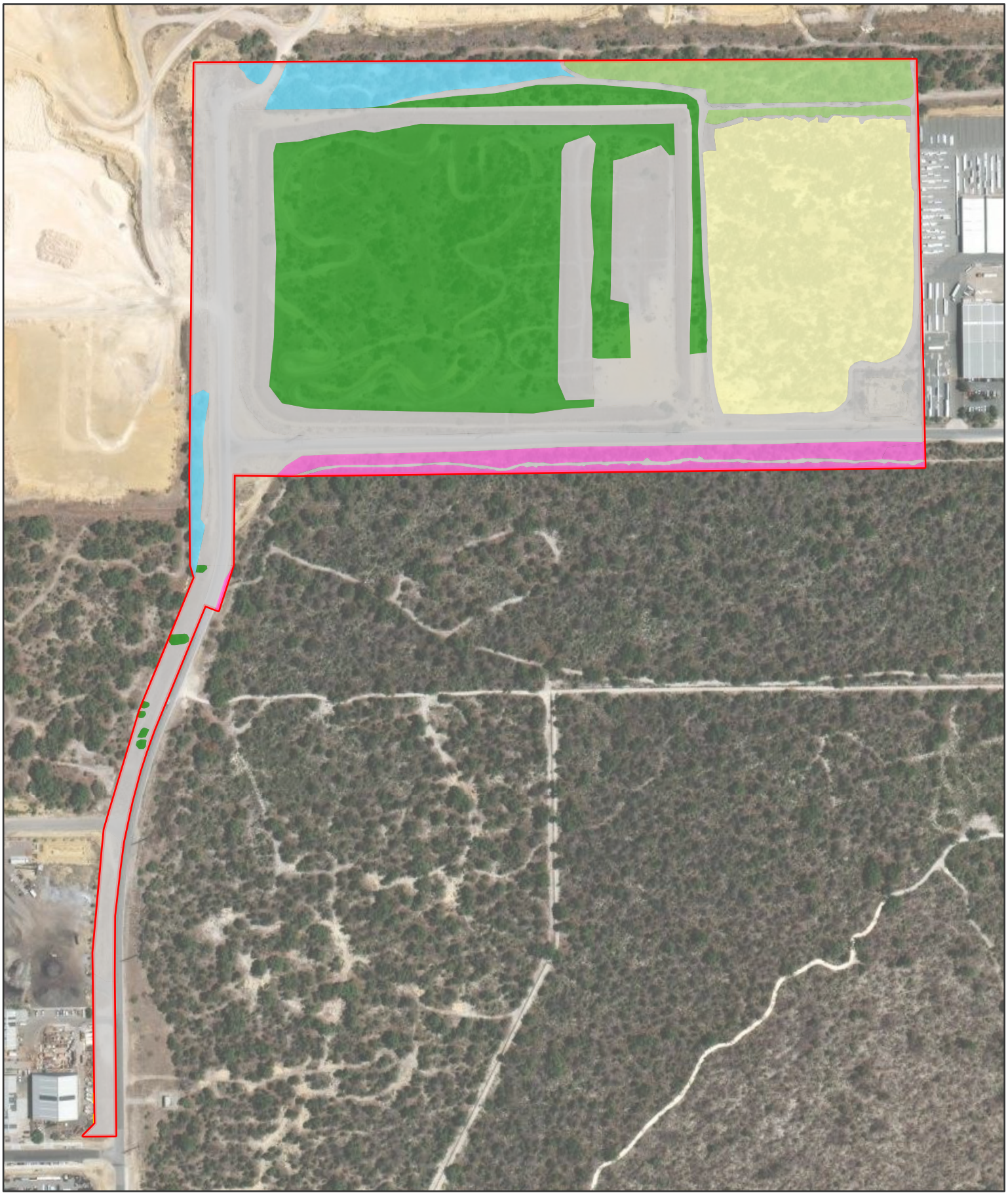

Figure 17: Baudin's Cockatoo foraging quality recorded in the survey area

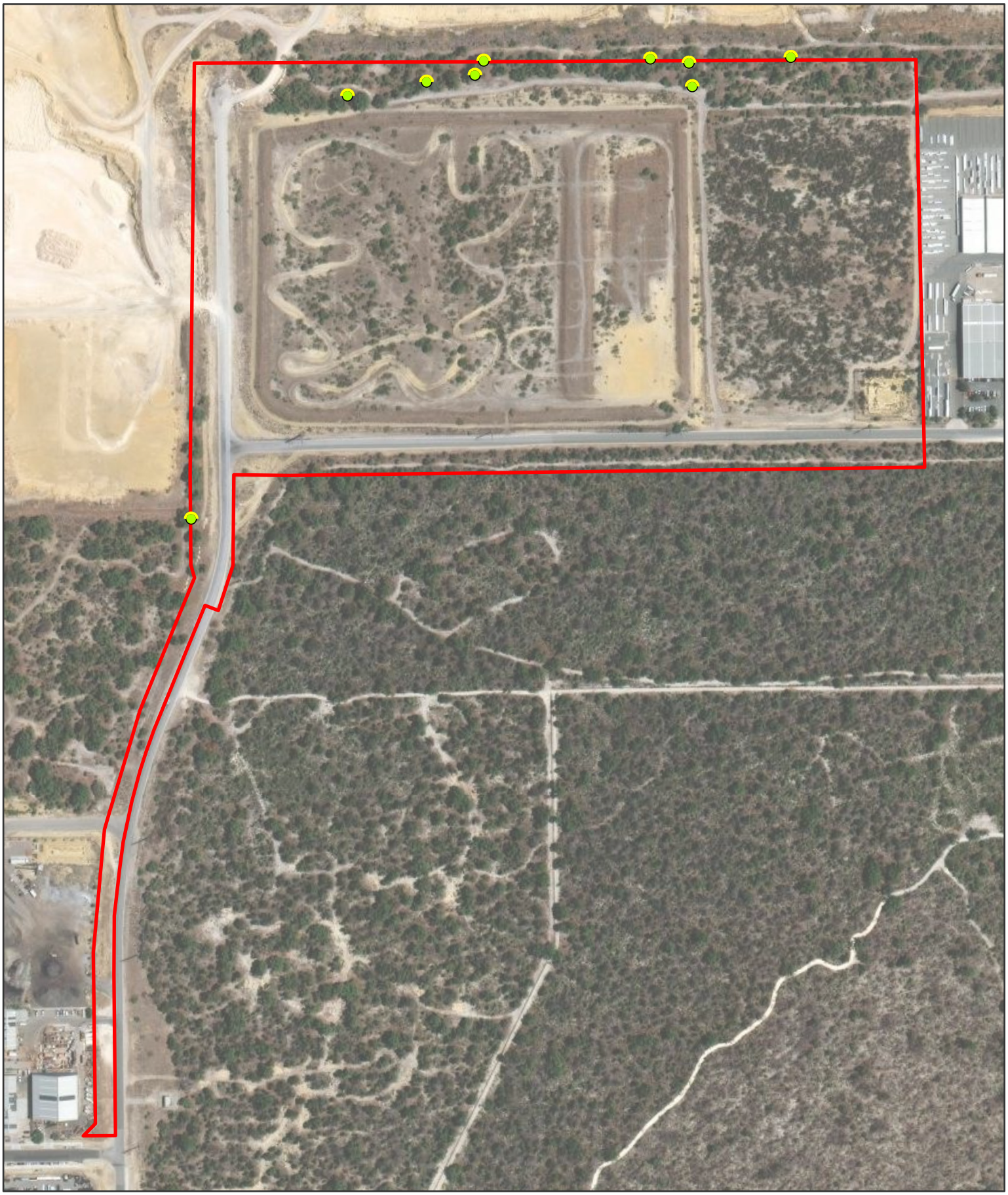

Figure 18: Potential breeding and roosting habitat recorded in the survey area

Survey area

5 m buffer

Potential Black Cockatoo breeding and roosting trees

0 25 50 100

Meters

Datum/Projection:
GDA 1994 MGA Zone 50

Project: 25PER10317-DH Date: 8/14/2025

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5. Discussion

5.1. Flora and vegetation

5.1.1. Flora

A total of 37 flora species from 32 genera and 18 families were recorded within the survey area, with flora species recorded typical of the Swan Coastal Plain bioregion (DAWE, 2012; WAH, 1998).

No Threatened flora species listed under the EPBC Act, the BC Act or as Priority as listed by DBCA were recorded within the survey area. Following the field survey, three flora species are considered as having the Potential to occur within the survey area, namely *Caladenia huegelii* (listed as EN under the EPBC Act and VU under the BC Act), *Thelymitra variegata* (listed as CR under the BC Act), and *Poranthera moorokatta* (listed as P2 by DBCA). The survey area is within the range of all three Potential to occur species and records of these species have been recorded within 8 km of the survey area. Habitat within the survey area that has the potential to support these species occurs in the north-eastern boundary of the survey area within Vegetation Type 5. The remaining 37 conservation significant flora species identified during the desktop assessment were considered Unlikely to occur in the survey area due to a lack of suitable habitat within the survey area.

Caladenia huegelii (Grand Spider Orchid) is a fairly cryptic, tuberous, perennial herb that is 0.25-0.6 m in height that produces green, cream and red flowers between September to October (WAH, 1998). Records of this species extends from Perth to Dunsborough (WAH, 1998). *C. huegelii* prefers grey or brown sand, clay loam and is thus considered as having the potential to occur within the survey area, due to the availability of suitable habitat within Vegetation Type 5 (dark brown sand) in addition to a recent record occurring within 8.5 km west of the survey area. The survey was conducted outside of the flowering period of this species, and as such, a targeted survey would be required to confirm its presence.

Thelymitra variegata (Queen of Sheba) is a tuberous, perennial herb that grows to 0.1-0.35 m in height and flowers between June to September, producing orange, red, purple and pink flowers (WAH, 1998). Previous records of this species occur in localised patches within Perth and areas between Bunbury and Dunsborough (WAH, 1998). *T. variegata* grows on sandy clay, sand, laterite and is considered to have the Potential to occur in sandy habitats within the survey area, particularly within Vegetation Type 5. The survey was conducted outside of the flowering period of this species, and as such, a targeted survey would be required to confirm its presence.

Poranthera moorokatta is a erect annual that grows to 16-47 mm in height and produces pale pink to white, narrow-triangular flowers (Barrett, 2012). The species is currently only known from two locations. At the Kings Park location, *P. moorokatta* grows in open *Banksia menziesii – B. attenuata* woodland on white silica sand in open spaces between shrubs. The Ellenbrook population grows on shallow dampland on mixed grey and white sand with scattered leaf litter (Barrett, 2012). While most records for this species occur within the Perth region, some isolated records exist from Cervantes in the north to Busselton in the south (WAH, 1998). Due to the survey area occurring within the species range, a recent record occurring within 2.5 km of the survey area and the presence of potentially suitable habitat within Vegetation Type 5, *P. moorokatta* was considered to have the Potential to occur.

There were nine introduced (weeds) flora species recorded within the survey area. Of these, none are listed as Declared Pests under the BAM Act or as WoNS in Western Australia. The high proportion of weeds recorded within the survey area (25% of the total flora species) can be attributed to the historical clearing that has taken place across the centre of the survey area within Vegetation Types 1 and 2. All

weed species encountered within the survey area are known to rapidly establish in recently disturbed areas.

5.1.2. Vegetation

Five vegetation types were delineated and mapped during the field assessment, accounting for 13.1 ha (60.2% of the survey area). One vegetation community was validated on-site (0.3 ha, 1.4% of the survey area). The most widespread of these was Vegetation Type 1, being, "Regrowth comprising *J. sternbergiana, A. rostellifera, J. furcellata* tall sparse shrubland over mixed weeds." This vegetation type occurred throughout the central portion of the previously cleared land within the survey area. Vegetation Type 1 was in Completely Degraded condition due to the presence of historical clearing, weeds, tracks, and rubbish dumping, and an understorey completely dominated by weeds.

Occurring adjacent to the east of Vegetation Type 1 was Vegetation Type 2, the second most common vegetation type within the survey area. Vegetation Type 2 is described as, "Regrowth comprising *J. sternbergiana, A. rostellifera, A. saligna* tall shrubland over mixed native herbs and sedges." This vegetation type was assessed as being in Degraded condition with the major point of difference between Vegetation Type 1 being a greater cover of natives in the understorey and overall vegetation structure.

Vegetation Type 3 occurs within the roadside batter at the southern boundary of the survey area and is described as, "*E. marginata, A. fraseriana* low open woodland over *B. attenuata, B. menziesii* tall open shrubland over mixed natives." Vegetation Type 3 was considered to be in Good condition and is significant in its function as a buffer for Excellent condition Banksia Woodlands of the Swan Coastal Plain TEC (listed as EN under the EPBC Act and as P3 by DBCA) occurring directly adjacent to the south of this vegetation type (ELA, 2021a). Vegetation Type 3 comprises regrowth on roadside batter and consists of key Banksia tree species. On this basis, this vegetation type has the potential to represent aspects of the Banksia Woodlands of the Swan Coastal Plain TEC (due primarily to functional connectivity with intact Banksia woodland to the south), although additional floristic analysis is required to confirm its presence.

Vegetation Type 4 is described as, "*E. marginata* mid open woodland and *B. attenuata* low open woodland over *X. preissii* mid sparse shrubland over mixed natives and weeds" and occupies the northern portion of the survey area where it is considered to be in Good condition, and the western boundary where it is considered to be in Degraded condition.

Vegetation Type 5 occurs in the north-eastern portion of the survey area and can be described as, "*E. marginata* mid open woodland and *B. attenuata* and *B, menziesii* low woodland over mixed natives." The field survey identified that Vegetation Type 5 broadly comprises a dominant Banksia woodland structure and therefore has the potential to represent aspects of the Banksia Woodlands of the Swan Coastal Plain TEC. However, additional floristic analysis is required to confirm the occurrence of this TEC.

The field assessment validated the presence of vegetation community EmBAf which was previously recorded by ELA (ELA, 2021a). This community is described as *Eucalyptus marginata, Allocasuarina fraseriana* and *Banksia attenuata* Woodland over Open Shrubland of *Xanthorrhoea preissii* over Low Shrubland of *Hibbertia hypericoides, Stirlingia latiflora, Eremaea pauciflora, Desmocladus asper* and *Mesomelaena pseudostygia* on grey loamy sands. A TEC clarification survey was also previously undertaken, which identified that vegetation community EmBAf was representative of the Banksia Woodlands of the Swan Coastal Plain TEC (ELA, 2022). The field assessment validated the presence of this ecological community within vegetation community EmBAf.

Following the field survey, an additional three conservation significant ecological communities are considered to have the Potential to occur, namely communities, SCP20a, SCP21c and SCP22. All three of these communities are known sub-components of the broader Banksia Woodlands of the Swan

Coastal Plain TEC. These communities were assessed as having the Potential to occur on the basis of the presence of potentially suitable habitat and SCP20a having been previously recorded in the vegetation directly south of the survey area (ELA, 2021a).

5.2. Fauna

Fauna habitat identified and mapped within the survey area is considered to provide suitable habitat for several terrestrial and avian fauna. The majority of bird species recorded during the field survey are widespread and common species. Connectivity to the survey area is restricted by roads and/or fencing and is therefore unlikely to support a large amount of Threatened mammal dispersal. However, the survey area occurs adjacent to the north of suitable habitat that has the potential to provide connectivity opportunities for some Threatened mammal species.

A total of 14 vertebrate fauna species were identified during the field survey, the majority of which are widespread and common. Two Threatened bird species were recorded during the field survey, namely, Carnaby's Cockatoo (*Zanda latirostris*; listed as EN under the EPBC Act and the BC Act), and Forest Red-tailed Black Cockatoo (*Calyptorhynchus banksii naso*; listed as VU under the EPBC Act and the BC Act). Both species were directly observed flying over the survey area in pairs. Black cockatoos are discussed further below in Section 5.2.1.

A post-field likelihood of occurrence assessment determined that of the remaining six fauna species identified from the desktop assessment as having the Potential to occur prior to the field survey, four fauna species are considered as having Potential to occur due to the presence of suitable habitat within and in the vicinity of the survey area and the proximity of nearby records. The four fauna species include Baudin's Cockatoo (*Zanda baudinii*), Black-striped snake (*Neelaps calonotos*), Quenda (*Isoodon fusciventer*), and Western brush wallaby (*Notamacropus irma*). One species, namely Water-rat (*Hydromys chrysogaster*), was considered to Not occur, and the remaining 31 fauna species was considered Unlikely to occur within the survey area.

The Black-striped snake (listed as P3 by DBCA) is a small-bodied burrowing snake, with a flat head and protruding snout that occupies Banksia woodlands in sandy areas of the Perth region. The species can be identified through its scales which are orange with a white mark inside each one and black markings on its head (WAM, 2025). In addition to the presence of potentially suitable habitat, the Black-striped snake is considered having the Potential to occur within the survey area due to there being over 10 records of the species within 10 km of the survey area.

The Quenda (listed as P4 by DBCA) is a small marsupial that can grow to 28-36 cm in length and can weigh up to 2 kg (DBCA, 2017b). Quenda are commonly found in urban and suburban areas and can be identified through their long, pointed nose, short, rounded ears, dark grey-brown fur with a creamy white belly and a dark brown tail that is 9-12 cm long (DBCA, 2017b). The species is well adapted to urban and suburban areas and often seek shelter and food in gardens, parks and remnant bushland in urban areas (DBCA, 2017b). There is suitable habitat occurring adjacent to the southern boundary of the survey area, which provides connectivity opportunities for this species. Records of the species have also been recorded within 2 km of the survey area. Therefore, the Quenda is considered to have the Potential to occur within the survey area.

The Western brush wallaby (listed as P4 by DBCA) is a medium-sized macropod that grows to 1.2 m, weighs 7-10 kg, and is endemic to south-western Australia (Wayne et al., 2021). It is pale to mid grey with distinct white facial stripes, black and white ears, and black hands and feet (DBCA, 2025f). The Western brush wallaby's optimum habitat is open forest or woodland, particularly favouring open, seasonally wet flats with low grasses and open scrubby thickets. It is also found in some areas of mallee

and heathland and is uncommon in karri forest (DBCA, 2025f). The Western brush wallaby is considered to have the Potential to occur due to one record of the species occurring within 1 km of the survey area and the occurrence of suitable habitat within vegetation adjacent to the southern boundary of the survey area, which provides connectivity opportunities.

5.2.1. Black cockatoos

Several previous records of Carnaby's Cockatoo, Baudin's Cockatoo, and Forest Red-tailed Black Cockatoo occur within 10 km of the survey area (DBCA, 2025d). The survey area occurs within the modelled range for Carnaby's Cockatoo, the 'Likely to occur' range of Forest Red-tailed Black Cockatoo and just outside the 'Likely to occur' range of Baudin's Cockatoo (DAWE, 2022). Habitat critical to the survival of Carnaby's Cockatoo includes Eucalypt woodlands that provide nest hollows used for breeding, together with nearby vegetation that provides feeding, roosting, and watering habitat that supports successful breeding (DPaW, 2013). Habitat critical for the survival of Baudin's Cockatoo and Forest-Red-tailed Black Cockatoo includes all Marri (*Corymbia calophylla*) and Jarrah (*Eucalyptus marginata*) forests, woodlands and remnants in the south-west of Western Australia receiving more than 600 mm of annual average rainfall (DEC, 2008). Aspects of the aforementioned habitats critical to the survival of all three black cockatoo species occur to varying extents, throughout the survey area.

Carnaby's Cockatoo (*Zanda latirostris*; listed as EN under the EPBC Act and the BC Act) was directly observed flying over the survey area. Foraging habitat across the survey area ranges from 'Moderate to High' to 'Negligible to low', with the majority of the survey area being mapped as 'Negligible to low' value foraging habitat for Carnaby's Cockatoos (i.e., presence of some scattered foraging species but <2% PFC.). Primary foraging species encountered throughout the survey area include *Banksia attenuata* (Slender Banksia) and *B. menziesii* (Firewood Banksia), and secondary foraging species include *Acacia saligna* (Orange Wattle)*, Eucalyptus marginata* (Jarrah)*, Jacksonia furcellata* (Grey Stinkwood) and *Xanthorrhoea preissii* (Grass Tree).

Forest Red-tailed Black Cockatoo (*Calyptorhynchus banksii naso*; listed as VU under the EPBC Act and the BC Act) was also directly observed flying over the survey area. The majority of the survey area was mapped as 'Negligible to Low' value foraging habitat for Forest Red-tailed Black Cockatoo due to the presence of scattered foraging species occurring at low densities (i.e., <2% PFC). Several other Forest Red-tailed Black Cockatoo foraging species recorded across the survey area include *E. marginata* (Jarrah), and *Allocasuarina fraseriana* (Sheoak).

Following the field survey, a post-likelihood of occurrence assessment determined that Baudin's Black Cockatoo are considered to have the Potential to occur within the survey area. This is due to the previous records of the species occurring within 10 km of the survey area. Similarly to foraging habitat for Forest Red-tailed Black Cockatoos, the majority of the survey area consists of 'Negligible to low' quality foraging habitat for Baudin's Cockatoos. Foraging species for Baudin's Cockatoo within the survey area are similar to those of Forest Red-tailed Black Cockatoos in addition to *Xanthorrhoea preissii* which were scattered across the Open Jarrah woodland and Banksia shrubland on sandy soils fauna habitat.

The survey area contains a total of nine potentially suitable breeding trees (>500 mm DBH), all of which were *E. marginata* (Jarrah). Jarrah trees provide suitable breeding habitat for all three species of black cockatoos. 13 Carnaby's Cockatoo breeding sites have been confirmed within 6-9 kms of the survey area. Of these, one was a natural hollow and 12 were artificial hollows (Birdlife, 2025). No evidence of breeding was observed at the time of the field survey. There is also a large number of unconfirmed roost sites (16 sites) and three cleared sites within 12 km of the survey area (Birdlife, 2025). This can be attributed to the progressive harvesting of pines from the nearby Gnangara, Pinjar and Yanchep pine

plantations which has likely contributed to the sporadic usage patterns of roost sites in the vicinity of the survey area by black cockatoos (Birdlife, 2025).

All potential breeding trees were considered tall trees within close proximity to water and therefore considered as potentially suitable roosting habitat for all three black cockatoo species.

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Appendix A Framework for conservation significant flora and fauna ranking

CATEGORIES OF THREATENED SPECIES UNDER THE ENVIRONMENT PROTECTION AND BIODIVERSITY CONSERVATION ACT 1999 (EPBC ACT)

Threatened fauna and flora may be listed in any one of the following categories as defined in Section 179 of the EPBC Act. Species listed as 'conservation dependent' and 'extinct' are not Matters of National Environmental Significance and therefore do not trigger the EPBC Act.

Category	Definition
Extinct (EX)	There is no reasonable doubt that the last member of the species has died.
Extinct in the Wild (EW)	Taxa known to survive only in captivity or as a naturalised population well outside its past range; or taxa has not been recorded in its known and/or expected habitat at appropriate seasons, anywhere in its past range, despite exhaustive surveys over a time frame appropriate to its life cycle and form.
Critically Endangered (CR)	Taxa considered to be facing an extremely high risk of extinction in the wild.
Endangered (EN)	Taxa considered to be facing a very high risk of extinction in the wild.
Vulnerable (VU)	Taxa considered to be facing a high risk of extinction in the wild.
Near Threatened (NT)	Taxa has been evaluated against the criteria but does not qualify for Critically Endangered, Endangered, or Vulnerable now, but is close to qualifying or is likely to qualify for a threatened category in the future.
Least Concern (LC)	Taxa has been evaluated against the criteria and does not qualify for Critically Endangered, Endangered, Vulnerable, or Near Threatened. Widespread and abundant taxa are included in this category.
Data Deficient (DD)	There is inadequate information to make a direct or indirect assessment of taxa's risk of extinction based on its distribution and/or population status.
Not Evaluated (NE)	Taxa has not yet been evaluated against the criteria.
Migratory (MI)	Not an IUCN category. Species are defined as migratory if they are listed in an international agreement approved by the Commonwealth Environment Minister, including: • the Bonn Convention (convention of the Conservation of Migratory Species of Wild Animal) for which Australia is a range state; • the agreement between the Government of Australia and the Government of the People's Republic of China for the Protection of Migratory Birds and their environment (CAMBA); • The agreement between the Government of Japan and the Government of Australia for the Protection of Migratory Birds and Birds in Danger of Extinction and their Environment (JAMBA); or • The agreement between Australia and the Republic of Korea to develop a bilateral migratory bird agreement similar to the JAMBA and CAMBA in respect to migratory bird conservation and provides a basis for collaboration on the protection of migratory shorebirds and their habitat (ROKAMBA)

CONSERVATION CODES FOR WESTERN AUSTRALIAN FLORA AND FAUNA

The Wildlife Conservation (Specially Protected Fauna) Notice 2018 and the Wildlife Conservation (Rare Flora) Notice 2018 have been transitioned under regulations 170, 171, and 172 of the Biodiversity Conservation Regulations 2018 to be the lists of Threatened, Extinct, and Specially Protected species under Part 2 of the *Biodiversity Conservation Act 2016.*

Specially protected fauna or flora are species which have been adequately searched for and are deemed to be, in the wild, threatened, extinct, or in need of special protection, and have been gazetted as such.

Threatened species (T)

Listed by order of the Minister as Threatened in the category of critically endangered, endangered, or vulnerable under section 19(1), or is a rediscovered species to be regarded as threatened species under section 26(2) of the *Biodiversity Conservation Act 2016* (BC Act).

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

Category	Code	Description
Critically Endangered	CR	Threatened species considered to be "facing an extremely high risk of extinction in the wild in the immediate future, as determined in accordance with criteria set out in the ministerial guidelines". Listed as critically endangered under section 19(1)(a) of the BC Act in accordance with the criteria set out in section 20 and the ministerial guidelines. Published under Schedule 1 Division 1 of the Biodiversity Conservation (Listing of Native Species) (Flora) Order 2024 or Schedule 2 Division 1 of the Biodiversity Conservation (Listing of Native Species) (Fauna) Order 2024.
Endangered	EN	Threatened species considered to be "facing a very high risk of extinction in the wild in the near future, as determined in accordance with criteria set out in the ministerial guidelines". Listed as endangered under section 19(1)(b) of the BC Act in accordance with the criteria set out in section 21 and the ministerial guidelines. Published under Schedule 1 Division 2 of the Biodiversity Conservation (Listing of Native Species) (Flora) Order 2024 or Schedule 2 Division 2 of the Biodiversity Conservation (Listing of Native Species) (Fauna) Order 2024.
Vulnerable	VU	Threatened species considered to be "facing a high risk of extinction in the wild in the medium-term future, as determined in accordance with criteria set out in the ministerial guidelines". Listed as vulnerable under section 19(1)(c) of the BC Act in accordance with the criteria set out in section 22 and the ministerial guidelines. Published under Schedule 1 Division 3 of the Biodiversity Conservation (Listing of Native Species) (Flora) Order 2024 or Schedule 2 Division 3 of the Biodiversity Conservation (Listing of Native Species) (Fauna) Order 2024.

Extinct species

Listed by order of the Minister as extinct under section 23(1) of the BC Act as extinct or extinct in the wild, as follows:

Category	Code	Description
Extinct species	EX	Species which have been adequately searched for and there is no reasonable doubt that the last individual has died. Published under Schedule 2 of the Biodiversity Conservation (Listing of Native Species) (Flora) Order 2024 or Schedule 3 of the Biodiversity Conservation (Listing of Native Species) (Fauna) Order 2024.
Extinct in the wild species	EW	Species that is "known only to survive in cultivation, in captivity, or as a naturalised population well outside its past range, and it has not been recorded in its known habitat or expected habitat, at appropriate seasons anywhere in its past range despite surveys over a time frame appropriate to its life cycle and form", and listing is otherwise in accordance with the ministerial guidelines (section 25 of the BC Act). Currently there are no threatened flora or fauna species listed as extinct in the wild. If listing of a species as extinct in the wild occurs, then a schedule will be added to the applicable notice.

Specially protected species

Listed by order of the Minister as specially protected under Section 13 of the BC Act. Meeting one or more of the following categories: species of special conservation interest; migratory species; cetaceans; species subject to international agreement; or species otherwise in need of special protection.

Species that are listed as threatened species (critically endangered, endangered, or vulnerable) or extinct species under the BC Act cannot also be listed as Specially Protected species.

Categories are detailed below.

Category	Code	Description
Migratory species	MI	Fauna that periodically or occasionally visit Australia or an external Territory or the exclusive economic zone; or the species is subject of an international agreement that relates to the protection of migratory species and that binds the Commonwealth; and listing is otherwise in accordance with the ministerial guidelines (section 15 of the BC Act). Includes birds that are subject to an agreement between the government of Australia and the government of Japan (JAMBA), People's Republic of China (CAMBA), and the Republic of Korea (ROKAMBA), and fauna subject to the Convention on the Conservation of Migratory Species of Wild Animals (Bonn Convention), an environmental treaty under the United Nations Environment Program. Migratory species listed under the BC Act are a subset of the migratory animals that are known to visit Western Australia, protected under the international agreements or treaties, excluding species that are listed as Threatened species. Listed as Migratory under Section 13(1)(a)(ii) of the BC Act. Published under Schedule 1 Division 2 of the Biodiversity Conservation (listing of Native Species) (Fauna) Order 2024.
Species of special conservation interest (conservation dependent fauna)	CD	Fauna of special conservation need being species dependent on ongoing conservation intervention to prevent it becoming eligible for listing as threatened, and listing is otherwise in accordance with the ministerial guidelines (section 14 of the BC Act). Listed as species of special conservation interest (conservation dependent fauna) under Section 13(1)(a)(i) of the BC Act. Published under Schedule 1 Division 1 of the Biodiversity Conservation (listing of Native Species) (Fauna) Order 2024.
Other specially protected species	OS	Fauna otherwise in need of special protection to ensure their conservation, and listing is otherwise in accordance with the ministerial guidelines (section 18 of the BC Act). Listed as Other specially protected species under Section 13(1)(b) of the BC Act. Published under Schedule 1 Division 3 of the Biodiversity Conservation (listing of Native Species) (Fauna) Order 2024.

Priority species (P)

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

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

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

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

Appendix B Likelihood of occurrence criteria

Likelihood rating	Criteria
Recorded	The species has been previously recorded within the survey area from DBCA database search results and/or from previous surveys of the survey area, and/or the species has been confirmed through a current vouchered specimen at the WA Herbarium.
Likely	The species has not previously been recorded from within the survey area. However, to qualify requires one or more of the following criteria to be met: • The species has been recorded in close proximity to the survey area, and occurs in similar habitat to that which occurs within the survey area • Core habitat and suitable landforms for the species occurs within the survey area either year-round or seasonally. In relation to fauna species, this could be that a host plant is seasonally present on site, or habitat features such as caves are present that may be used during particular times during its life cycle e.g. for breeding. In relation to both flora and fauna species, it may be there are seasonal wetlands present • There is a medium to high probability that a species uses the survey area
Potential	The species has not previously been recorded from within the survey area. However, to qualify requires one or more of the following criteria to be met: • Targeted surveys may locate the species based on records occurring in proximity to the survey area and suitable habitat occurring in the survey area • The survey area has been assessed as having potentially suitable habitat through habitat modelling • The species is known to be cryptic and may not have been detected despite extensive surveys • The species is highly mobile and has an extensive foraging range so may not have been detected during previous surveys The species has been recorded in the survey area by a previous survey or there is historic evidence of species occurrence within the survey area. However, one or more of the following criteria is met: • Doubt remains over taxonomic identification or the majority of habitat does not appear suitable (although presence cannot be ruled out due to factors such as species ecology or distribution) • Location co-ordinates for the record are doubtful
Unlikely	The species has been recorded locally through DBCA database searches. However it has not been recorded within the survey area and: • It is unlikely to occur due to the site lacking critical habitat, having at best marginally suitable habitat, and/or being severely degraded • It is unlikely to occur due to few historic record/s and no other current collections in the local area The species has been recorded within the bioregion based on literature review but has not been recorded locally or within the survey area through DBCA database searches. The species has not been recorded in the survey area despite adequate survey efforts, such as a standardised methodology of targeted searching within potentially suitable habitat.
Does not occur (one or more criteria requires to be met)	The species is not known to occur within the IBRA bioregion based on current literature and distribution. The conspicuous species has not been recorded in the survey area despite adequate survey efforts at an appropriate time of year to detect the species within potentially suitable habitat. The survey area lacks important habitat for a species that has highly selective habitat requirements. The species has been historically recorded within the survey area or locally, however it is considered locally extinct due to significant habitat changes such as land clearing and/or introduced predators.

Appendix C Black Cockatoo habitat definitions

Habitat	Definition
Foraging habitat	Foraging habitat is defined as plant species known to support foraging within the range of each species. The specific foraging requirements differ slightly between the three species as described in DAWE 2022: • **Carnaby's Cockatoo** - mainly feeds in native shrubland, kwongan heathland and woodland. Food items include seeds, flowers and nectar of native proteaceous plant species (i.e., *Banksia* spp., *Hakea* spp., and *Grevillea* spp.), as well as *Callistemon* spp. and marri (*Corymbia calophylla*). Also feeds on the seeds of introduced species including *Pinus* spp., *Erodium* spp., wild radish, canola, almonds, macadamia and pecan nuts; insects and insect larvae; occasionally flesh and juice of apples and persimmons; and liquid amber. • **Baudin's Cockatoo –** mainly feeds in eucalypt woodlands and forest, and proteaceous woodlands and heath. Food items primarily include seeds of marri, rarely jarrah (*Eucalyptus marginata*) and seeds of native proteaceous plant species (e.g., *Banksia* spp. and *Hakea* spp.). Also feeds on insects and insect larvae, pith of kangaroo paw (*Anigozanthos flavidus*); tips of *Pinus* spp.; *Macadamia* spp., almonds and pecans; seeds of apples, pears and persimmons. • **Forest Red-tailed Black Cockatoo** – mainly feeds in jarrah and marri woodlands and forest, and edges of karri forests including wandoo and blackbutt. Food items primarily include seeds of marri and jarrah. Also feeds on *Allocasuarina* cones, fruits of Snottygobble (*Persoonia longifolia*) and Mountain Marri (*Corymbia haematoxylon*). Other less important foods include Blackbutt, Bullich, *Allocasuarina fraseriana*, *Hakea* spp., Tuart, Redheart Moit (*Eucalyptus decipiens*) and Bushy Yate (*E. lehmanni*). Also, some introduced eucalypts such as river red gum (*E. camaldulensis*) and flooded or rose gum (*E. grandis*).
Night roosting habitat	Habitat that contains one, or a group of, known or potential roosting trees: • **Known roosting tree** - a tree (generally the tallest), native or introduced know to be used for night roosting or which demonstrates evidence of roosting. Usually close to an important water source and within an area of high-quality foraging habitat. During the breeding season, male black cockatoos roost in the vicinity of the nesting trees, therefore a breeding area may also be considered to be night roosting habitat. • **Potential roosting tree** - a tall tree of any species within close proximity to water.
Breeding habitat	Breeding habitat: Habitat that contains known, suitable or potential nesting trees: • **Known nesting trees**: 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 trees**: Trees with suitable nesting hollows present, although no evidence of use. Note that any species of tree may develop suitable hollows for breeding. • **Suitable nest hollow**: Any hollow with dimensions suitable for use for nesting by black cockatoos (Carnaby's Cockatoo 23-30cm [EPA 2019], Baudin's Cockatoo 30-40 cm [Chapman 2008], Forest Red-tailed Black Cockatoo 12–41 cm [Chapman 2008]). Suitable nest hollows are only found in live trees with a DBH of at least 500 mm. Usually this will be a natural hollow, but artificial hollows may also be suitable in some circumstances (for example, where the artificial hollow has been specifically designed for use by black cockatoos). Note that artificial hollows have only been shown to have value for Carnaby's Cockatoos to date. • **Potential nesting trees**: Trees that have a suitable DBH to develop a nest hollow, but do not currently have hollows. For most species of trees, suitable nest hollows are only found in live trees with a DBH of at least 500 mm. 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.

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Appendix D Black Cockatoo foraging habitat quality criteria

Foraging habitat quality	Carnaby's Cockatoo	Forest Black Cockatoo (Baudin's Cockatoo and Forest Red-tailed Black Cockatoo)
High	• Presence of suitable foraging plant species[1] at a high density (i.e., primary food sources[2] present at >60% PFC[3], secondary food sources[2] present at >70% PFC) and presence of preferred food sources at several strata; • Low weed invasion and/or low tree deaths (indicating it is robust and unlikely to decline in the medium term); and/or • Lower quality foraging habitat based on vegetation characteristics, but with evidence of use (i.e., chewed nuts, cones, seeds or flowers). • Example: Banksia forest >60% PFC and Good or higher vegetation condition with low weed invasion and/or low tree deaths.	• Presence of suitable foraging plant species[1] at a high density (i.e., food sources present at >60% PFC[3]) and presence of preferred food sources at several strata; • Low weed invasion and/or low tree deaths (indicating it is robust and unlikely to decline in the medium term); and/or • Lower quality foraging habitat based on vegetation characteristics, but with evidence of use (i.e., chewed nuts, cones, seeds or flowers). • Example: Marri-Jarrah Forest >60% PFC and Good or higher vegetation condition with low weed invasion and/or low tree deaths.
Moderate to high	• Presence of suitable foraging plant species at a high density (i.e., primary food sources present at 40-60% PFC, secondary food sources at >60% PFC) and presence of preferred food sources at several strata; • Foraging species with >60% PFC but foraging habitat viability reduced due to high weed invasion and/or tree deaths indicating that the vegetation could potentially decline in the medium term due to suppressed regrowth or disease; and/or • Lower quality foraging habitat but with evidence of use (i.e., chewed nuts, cones, seeds or flowers).	• Presence of suitable foraging plant species at a high density (i.e., food sources present at 40-60% PFC) and presence of preferred food sources at several strata; • Foraging species with >60% PFC but foraging habitat viability reduced due to high weed invasion and/or tree deaths indicating that the vegetation could potentially decline in the medium term due to suppressed regrowth or disease; and/or • Lower quality foraging habitat but with evidence of use (i.e., chewed nuts, cones, seeds or flowers).
Moderate	• Presence of suitable foraging plant species at a low to moderate density (i.e., primary food sources present at 20-40% PFC, secondary food sources at 40-60% PFC); • Foraging species with 40-60% PFC but foraging habitat viability reduced due to high weed invasion and/or tree deaths indicating that the vegetation could potentially decline in the medium term due to suppressed regrowth or disease; and/or • Lower quality foraging habitat but with evidence of use (i.e., chewed nuts, cones, seeds or flowers).	• Presence of suitable foraging plant species at a low to moderate density (i.e., food sources present at 20-40% PFC); • Foraging species with 40-60% PFC but foraging habitat viability reduced due to high weed invasion and/or tree deaths indicating that the vegetation could potentially decline in the medium term due to suppressed regrowth or disease; and/or • Lower quality foraging habitat but with evidence of use (i.e., chewed nuts, cones, seeds or flowers).
Low to moderate	• Suitable foraging species present but at a lower density (i.e., primary food sources present at 10-20% PFC, secondary food sources present at 20-40% PFC);	• Suitable foraging species present but at a lower density (i.e., food sources present at 5-20% PFC); • Foraging species with 20-40% projected foliage cover but foraging habitat viability

Foraging habitat quality	Carnaby's Cockatoo	Forest Black Cockatoo (Baudin's Cockatoo and Forest Red-tailed Black Cockatoo)
	• Foraging species with 20-40% projected foliage cover but foraging habitat viability reduced due to high weed invasion and/or tree deaths indicating that the vegetation could potentially decline in the medium term due to suppressed regrowth or disease; and/or • Lower quality foraging habitat but with evidence of use (i.e., chewed nuts, cones, seeds or flowers).	reduced due to high weed invasion and/or tree deaths indicating that the vegetation could potentially decline in the medium term due to suppressed regrowth or disease; and/or • Lower quality foraging habitat but with evidence of use (i.e., chewed nuts, cones, seeds or flowers).
Low	• Suitable foraging species present at a low density (i.e., primary food sources present at <10% PFC, secondary food sources present at 10-20% PFC); and/or • Scattered foraging species or paddocks with known food sources such as melons or weeds that represent a short-term food source.	• Suitable foraging species present at a low density (i.e., food sources present at 1-5% PFC); and/or • Scattered foraging species or paddocks with known food sources such as melons or weeds that represent a short-term food source.
Negligible to low	• Presence of some scattered foraging species but <2% PFC.	• Presence of some scattered foraging species but <1% PFC.
No foraging value	• No foraging value. No Proteaceae, eucalypts or other potential sources of food. Examples: water bodies, bare ground, developed sites, mown grass.	• No foraging value. No eucalypts or other potential sources of food. Examples: water bodies, bare ground, developed sites.

[1] Based on the list of suitable foraging plants collated from the following sources: DAWE (2022), Groom (2011), Johnstone et al. (2010), Heydenrych (2012) and Lee et al. (2013).

[2] Primary food sources for Carnaby's Cockatoo are defined as those species which are known to provide a regular foraging resource and have been designated as being 'high' priority for planting by the Department of Environment and Conservation (now known as DBCA), where as secondary food items are defined as those species that are only occasionally foraged upon, and which have been assigned as being moderate to low priority for planting by DBCA (Groom 2011).

[3] PFC = projected foliage cover

Note: the general context of the site (i.e., surrounding landscape, connectivity, proximity of species records, proximity of known breeding or roosting sites and any evidence of use) is also taken into consideration when assigning a quality rating.

References

Department of Agriculture, Water and the Environment (DAWE). 2022. *Referral guideline for 3 WA threatened black cockatoo species: Carnaby's Cockatoo, Baudin's Cockatoo and the Forest Red-tailed Black cockatoo*. Commonwealth of Australia.

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Heydenrych, B. 2012. *A preliminary investigation into restoring landscapes for Carnaby's Black Cockatoos in the Fitz-Stirling area of Gondwana Link on the south coast of Western Australia*. Greening Australia, Western Australia.

Lee, J., Finn, H., and Calver, M. 2013. Ecology of Black Cockatoos at a Mine site in the Eastern Jarrah-Marri Forest, Western Australia. *Pacific Conservation Biology* 19: 76–90.

Appendix E PMST 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: 25-Jun-2025

Summary

Matters of National Environment Significance

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

World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International Importance (Ramsar	None
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	3
Listed Threatened Species:	25
Listed Migratory Species:	12

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:	None
Commonwealth Heritage Places:	None
Listed Marine Species:	15
Whales and Other Cetaceans:	None
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:	None
Regional Forest Agreements:	None
Nationally Important Wetlands:	None
EPBC Act Referrals:	6
Key Ecological Features (Marine):	None
Biologically Important Areas:	None
Bioregional Assessments:	None
Geological and Bioregional Assessments:	None

Details

Matters of National Environmental Significance

Listed Threatened Ecological Communities [Resource Information]

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

Community Name	Threatened Category	Presence Text
Banksia Woodlands of the Swan Coastal Plain ecological community	Endangered	Community likely to occur within area
Honeymyrtle shrubland on limestone ridges of the Swan Coastal Plain Bioregion	Critically Endangered	Community may occur within area
Tuart (Eucalyptus gomphocephala) Woodlands and Forests of the Swan Coastal Plain ecological community	Critically Endangered	Community likely to occur within area

Listed Threatened Species [Resource Information]

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

Scientific Name	Threatened Category	Presence Text
BIRD		
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat may occur within area
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat may occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area
Calyptorhynchus banksii naso Forest Red-tailed Black-Cockatoo, Karrak [67034]	Vulnerable	Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Charadrius leschenaultii		
Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat may occur within area
Leipoa ocellata		
Malleefowl [934]	Vulnerable	Species or species habitat likely to occur within area
Numenius madagascariensis		
Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area
Rostratula australis		
Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area
Sternula nereis nereis		
Australian Fairy Tern [82950]	Vulnerable	Species or species habitat may occur within area
Tringa nebularia		
Common Greenshank, Greenshank [832]	Endangered	Species or species habitat likely to occur within 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
INSECT		
Hesperocolletes douglasi		
Douglas' Broad-headed Bee, Rottnest Bee [66734]	Critically Endangered	Species or species habitat may occur within area
MAMMAL		
Dasyurus geoffroii		
Chuditch, Western Quoll [330]	Vulnerable	Species or species habitat likely to occur within area
Macroderma gigas		
Ghost Bat [174]	Vulnerable	Species or species habitat may occur within area
PLANT		
Andersonia gracilis		
Slender Andersonia [14470]	Endangered	Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Anigozanthos viridis subsp. terraspectans		
Dwarf Green Kangaroo Paw [3435]	Vulnerable	Species or species habitat may occur within area
Banksia mimica		
Summer Honeypot [82765]	Endangered	Species or species habitat may occur within area
Caleana dixonii listed as Paracaleana dixonii		
Sandplain Duck Orchid [87944]	Endangered	Species or species habitat may occur within area
Diuris micrantha		
Dwarf Bee-orchid [55082]	Vulnerable	Species or species habitat may occur within area
Diuris purdiei		
Purdie's Donkey-orchid [12950]	Endangered	Species or species habitat may occur within area
Drakaea elastica		
Glossy-leafed Hammer Orchid, Glossy-leaved Hammer Orchid, Warty Hammer Orchid [16753]	Endangered	Species or species habitat likely to occur within area
Drakaea micrantha		
Dwarf Hammer-orchid [56755]	Vulnerable	Species or species habitat may occur within area
Eucalyptus argutifolia		
Yanchep Mallee, Wabling Hill Mallee [24263]	Vulnerable	Species or species habitat may occur within area
Macarthuria keigheryi		
Keighery's Macarthuria [64930]	Endangered	Species or species habitat may occur within area
SHARK		
Pristis pristis		
Freshwater Sawfish, Largetooth Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Vulnerable	Species or species habitat may occur within area

Listed Migratory Species		[Resource Information]
Scientific Name	Threatened Category	Presence Text
Migratory Marine Birds		

Scientific Name	Threatened Category	Presence Text
[Apus pacificus](#) Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Migratory Marine Species		
[Pristis pristis](#) Freshwater Sawfish, Largetooth Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Vulnerable	Species or species habitat may occur within area
Migratory Terrestrial Species		
[Motacilla cinerea](#) Grey Wagtail [642]		Species or species habitat may occur within area
Migratory Wetlands Species		
[Actitis hypoleucos](#) Common Sandpiper [59309]		Species or species habitat may occur within area
[Calidris acuminata](#) Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat may occur within area
[Calidris canutus](#) Red Knot, Knot [855]	Vulnerable	Species or species habitat may occur within area
[Calidris ferruginea](#) Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area
[Calidris melanotos](#) Pectoral Sandpiper [858]		Species or species habitat may occur within area
[Charadrius leschenaultii](#) Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat may occur within area
[Numenius madagascariensis](#) Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area
[Pandion haliaetus](#) Osprey [952]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Tringa nebularia		
Common Greenshank, Greenshank [832]	Endangered	Species or species habitat likely to occur within area

Other Matters Protected by the EPBC Act

Listed Marine Species		[Resource Information]
Scientific Name	Threatened Category	Presence Text
Bird		
Actitis hypoleucos		
Common Sandpiper [59309]		Species or species habitat may occur within area
Apus pacificus		
Fork-tailed Swift [678]		Species or species habitat likely to occur within area overfly marine area
Bubulcus ibis as Ardea ibis		
Cattle Egret [66521]		Species or species habitat may occur within area overfly marine area
Calidris acuminata		
Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat may occur within area
Calidris canutus		
Red Knot, Knot [855]	Vulnerable	Species or species habitat may occur within area overfly marine area
Calidris ferruginea		
Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area overfly marine area

Scientific Name	Threatened Category	Presence Text
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area overfly marine area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat may occur within area
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat likely to occur within area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area overfly marine area
Motacilla cinerea Grey Wagtail [642]		Species or species habitat may occur within area overfly marine area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area
Pandion haliaetus Osprey [952]		Species or species habitat may occur within 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
Tringa nebularia Common Greenshank, Greenshank [832]	Endangered	Species or species habitat likely to occur within area overfly marine area

Extra Information

EPBC Act Referrals			[Resource Information]
Title of referral	Reference	Referral Outcome	Assessment Status
Eradication of the European House Borer, Perth metropolitan area, WA	2009/5027		Completed
Subdivision Lot 4 Flynn Drive and earthworks for industrial development, 240 Fl	2009/5028		Completed
Controlled action			
Excavate sand and limestone resources	2010/5621	Controlled Action	Completed
Meridian Business Park Industrial Development	2007/3479	Controlled Action	Post-Approval
Neerabup Industrial Area, WA	2021/8917	Controlled Action	Assessment Approach
Not controlled action			
Improving rabbit biocontrol: releasing another strain of RHDV, sthrn two thirds of Australia	2015/7522	Not Controlled Action	Completed

Caveat

1 PURPOSE

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

The report contains the mapped locations of:

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

2 DISCLAIMER

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

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

3 DATA SOURCES

Threatened ecological communities

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

Threatened, migratory and marine species

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

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

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

4 LIMITATIONS

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

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

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

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

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

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

Acknowledgements

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

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

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

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

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Appendix F Flora likelihood of occurrence assessment

Species	Conservation Status		Source	Habitat	Pre-survey		Post-survey	
	EPBC Act	BC Act/ DBCA			Likelihood of occurrence	Justification	Likelihood of occurrence	Justification
Caladenia huegelii	EN	CR	DBCA, 2025c	Grey or brown sand, clay loam.	Potential	Suitable habitat may occur within the survey area. One recent record occurs 8.4 km west of the survey area.	Potential	Potentially suitable habitat is present within north-east portion of the survey area. One recent record occurs 8.4 km west of the survey area. Species is fairly cryptic and flowering period occurs outside of the survey timing (Sep-Oct).
Darwinia carnea	EN	CR	DBCA, 2025c	Lateritic loam & gravel.	Unlikely	Suitable habitat is not likely to be present within the survey area.	Unlikely	No suitable habitat is present within the survey area. One (historical) record is located within 10km of the survey area and is a cultivated plant from a nursery.
Darwinia oxylepis	EN	CR	DBCA, 2025c	Stony, peaty sand. Rocky gullies.	Unlikely	Suitable habitat is not likely to be present within the survey area.	Unlikely	No suitable habitat is present within the survey area. Survey area is outside of this species known range. One (historical) record is located within 10km of the survey area and is a cultivated plant from a nursery.
Diuris purdiei	EN	EN	DCCEEW, 2025	Grey-black sand, moist. Winter-wet swamps.	Unlikely	Suitable habitat is not likely to be present within the survey area.	Unlikely	No suitable habitat is present within the survey area.
Macarthuria keigheryi	EN	EN	DCCEEW, 2025	Low-lying winter-wet damp, grey/white sands.	Unlikely	Suitable habitat is not likely to be present within the survey area.	Unlikely	No suitable habitat is present within the survey area.

Species	Conservation Status		Source	Habitat	Pre-survey		Post-survey	
	EPBC Act	BC Act/ DBCA			Likelihood of occurrence	Justification	Likelihood of occurrence	Justification
Marianthus paralius	EN	EN	DBCA, 2025c	White sand over limestone. Low coastal cliffs.	Unlikely	Suitable habitat is not likely to be present within the survey area.	Unlikely	No suitable habitat is present within the survey area.
Melaleuca sp. Wanneroo (G.J. Keighery 16705)	EN	EN	DBCA, 2025c	Very shallow soils over limestone 'caprock' on ridges.	Unlikely	Suitable habitat is not likely to be present within the survey area.	Unlikely	No suitable habitat is present within the survey area.
Andersonia gracilis	EN	VU	DCCEEW, 2025	White/grey sand, sandy clay, gravelly loam. Winter-wet areas, near swamps.	Unlikely	Suitable habitat is not likely to be present within the survey area.	Unlikely	No suitable habitat is present within the survey area.
Banksia mimica	EN	VU	DCCEEW, 2025	White or grey sand over laterite, sandy loam.	Potential	Suitable habitat may occur within the survey area.	Unlikely	No suitable habitat is present within the survey area.
Caleana dixonii listed as *Paracaleana dixonii*	EN	VU	DCCEEW, 2025	Grey sand over granite.	Unlikely	Suitable habitat is not likely to be present within the survey area. Survey area is outside the range of species records.	Unlikely	No suitable habitat is present within the survey area.
Drakaea micrantha	VU	EN	DCCEEW, 2025	White-grey sand.	Unlikely	Suitable habitat is not likely to be present within the survey area.	Unlikely	No suitable habitat is present within the survey area.
Anigozanthos virisi subsp. *Terraspectans*	VU	VU	DCCEEW, 2025	Grey sand, clay loam. Winter-wet depressions.	Unlikely	Suitable habitat is not likely to be present within the survey area.	Unlikely	No suitable habitat is present within the survey area.
Darwinia meeboldii	VU	VU	DBCA, 2025c	Peaty soils over quartzite. Hill slopes.	Unlikely	Suitable habitat is not likely to be present within the survey area.	Unlikely	No suitable habitat is present within the survey area. One (historical) record is located within 10km of the survey area and is a cultivated plant from a nursery.

Species	Conservation Status		Source	Habitat	Pre-survey		Post-survey	
	EPBC Act	BC Act/ DBCA			Likelihood of occurrence	Justification	Likelihood of occurrence	Justification
Diuris micrantha	VU	VU	DCCEEW, 2025	Brown loamy clay. Winter-wet swamps, in shallow water.	Unlikely	Suitable habitat is not likely to be present within the survey area.	Unlikely	No suitable habitat is present within the survey area.
Eucalyptus argutifolia	VU	VU	DBCA, 2025c DCCEEW, 2025	Shallow soils over limestone. Slopes or gullies of limestone ridges, outcrops.	Unlikely	Suitable habitat is not likely to be present within the survey area.	Unlikely	No suitable habitat is present within the survey area.
Calectasia elegans	-	CR	DBCA, 2025c	Deep, grey, quartz sand in habitats that have experienced infrequent fires.	Unlikely	Suitable habitat is not likely to be present within the survey area.	Unlikely	No suitable habitat is present within the survey area.
Thelymitra variegata	-	CR	DBCA, 2025c	Sandy clay, sand, laterite.	Potential	Suitable habitat may occur within the survey area.	Potential	Potentially suitable habitat is present within the survey area (sand), with vegetation in the northeast corner providing potentially suitable condition for this species to be present. Survey area occurs within the species range. One (historical) record occurs ~8km to the south of the survey area.
Baeckea sp. Limestone (N. Gibson & M.N. Lyons 1425)	-	P1	DBCA, 2025c	Grey sand, yellow sand with limestone outcropping. On hills.	Unlikely	Suitable habitat is not likely to be present within the survey area.	Unlikely	No suitable habitat is present within the survey area.
Drosera x sidjamesii	-	P1	DBCA, 2025c	Peaty sand. Along lake margins, close to winter high-water line.	Unlikely	Suitable habitat is not likely to be present within the survey area.	Unlikely	No suitable habitat is present within the survey area.
Leucopogon maritimus	-	P1	DBCA, 2025c	Restricted to near-coastal Quindalup dunes. Deep	Unlikely	Suitable habitat is not likely to be present within the survey area.	Unlikely	No suitable habitat is present within the survey area.

Species	Conservation Status		Source	Habitat	Pre-survey		Post-survey	
	EPBC Act	BC Act/ DBCA			Likelihood of occurrence	Justification	Likelihood of occurrence	Justification
				calcareous sands, on the mid to upper slopes of dunes or in shallow sand over limestone.				
Acacia benthamii	-	P2	DBCA, 2025c	Sand. Typically on limestone breakaways.	Unlikely	Suitable habitat is not likely to be present within the survey area.	Unlikely	No suitable habitat is present within the survey area.
Poranthera moorokatta	-	P2	DBCA, 2025c	White silica sand in open spaces between shrubs, not in shaded areas or in areas of high litter cover. Shallow dampland on mixed grey and white sand with scattered leaf litter.	Potential	Suitable habitat may occur within the survey area. One record within 10km of the survey area.	Potential	Potentially suitable habitat is present within the survey area. Survey area occurs within the species range. One record from 2012 located ~2km south of the survey area.
Stenanthemum sublineare	-	P2	DBCA, 2025c	Littered white sand. Coastal plain.	Unlikely	Suitable habitat is not likely to be present within the survey area.	Unlikely	No suitable habitat is present within the survey area.
Austrostipa mundula	-	P3	DBCA, 2025c	Uncommon to rare, occurring on sandy soils in mallee-scrub and in low woodland	Unlikely	Suitable habitat is not likely to be present within the survey area.	Unlikely	No suitable habitat is present within the survey area.
Conostylis bracteata	-	P3	DBCA, 2025c	Sand, limestone. Consolidated sand dunes.	Unlikely	Suitable habitat is not likely to be present within the survey area.	Unlikely	No suitable habitat is present within the survey area.
Cyathochaeta teretifolia	-	P3	DBCA, 2025c	Grey sand, sandy clay. Swamps, creek edges.	Unlikely	Suitable habitat is not likely to be present within the survey area.	Unlikely	No suitable habitat is present within the survey area.

Species	Conservation Status		Source	Habitat	Pre-survey		Post-survey	
	EPBC Act	BC Act/ DBCA			Likelihood of occurrence	Justification	Likelihood of occurrence	Justification
Hibbertia leptotheca	-	P3	DBCA, 2025c	Limestone ridges	Unlikely	Suitable habitat is not likely to be present within the survey area.	Unlikely	No suitable habitat is present within the survey area.
Pimelea calcicola	-	P3	DBCA, 2025c	Sand. Coastal limestone ridges.	Unlikely	Suitable habitat is not likely to be present within the survey area.	Unlikely	No suitable habitat is present within the survey area.
Pithocarpa corymbulosa	-	P3	DBCA, 2025c	Gravelly or sandy loam. Amongst granite outcrops.	Unlikely	Suitable habitat is not likely to be present within the survey area.	Unlikely	No suitable habitat is present within the survey area.
Sarcozona bicarinata	-	P3	DBCA, 2025c	White sand.	Potential	Suitable habitat may occur within the survey area.	Unlikely	No suitable habitat is present within the survey area.
Stylidium maritimum	-	P3	DBCA, 2025c	Sand over limestone. Dune slopes and flats. Coastal heath and shrubland, open Banksia woodland.	Unlikely	Suitable habitat is not likely to be present within the survey area.	Unlikely	No suitable habitat is present within the survey area.
Stylidium paludicola	-	P3	DBCA, 2025c	Peaty sand over clay. Winter wet habitats. Marri and Melaleuca woodland, Melaleuca shrubland.	Unlikely	Suitable habitat is not likely to be present within the survey area.	Unlikely	No suitable habitat is present within the survey area.
Styphelia filifolia	-	P3	DBCA, 2025c	Woodland and low-lying places.	Unlikely	Suitable habitat is not likely to be present within the survey area.	Unlikely	No suitable habitat is present within the survey area.
Styphelia porcata	-	P3	DBCA, 2025c	White sand over laterite in species-rich heath or open woodland.	Unlikely	Suitable habitat is not likely to be present within the survey area.	Unlikely	No suitable habitat is present within the survey area.

Species	Conservation Status		Source	Habitat	Pre-survey		Post-survey	
	EPBC Act	BC Act/ DBCA			Likelihood of occurrence	Justification	Likelihood of occurrence	Justification
Utricularia oppositiflora	-	P3	DBCA, 2025c	Soft, acidic to neutral substrates, often growing in sandy or peaty soils that allow for adequate water flow.	Unlikely	Suitable habitat is not likely to be present within the survey area.	Unlikely	No suitable habitat is present within the survey area.
Darwinia macrostegia	-	P4	DBCA, 2025c	Stony soils, peaty sand. Rocky hillsides, gullies.	Unlikely	Suitable habitat is not likely to be present within the survey area.	Unlikely	No suitable habitat is present within the survey area. One (historical) record is located within 10km of the survey area and is a cultivated plant from a nursery.
Eucalyptus foecunda subsp. *foecunda*	-	P4	DBCA, 2025c	Coastal areas near Perth, from south of Mandurah to north of Lancelin, always on limy sands.	Potential	Suitable habitat may occur within the survey area.	Unlikely	No suitable habitat is present within the survey area.
Jacksonia sericea	-	P4	DBCA, 2025c	Calcareous & sandy soils.	Potential	Suitable habitat may occur within the survey area. Five records located within 10km of the survey area (1979-2010).	Unlikely	No suitable habitat is present within the survey area.
Stylidium longitubum	-	P4	DBCA, 2025c	Sandy clay, clay. Seasonal wetlands.	Unlikely	Suitable habitat is not likely to be present within the survey area.	Unlikely	No suitable habitat is present within the survey area.
Tripterococcus sp. Brachylobus (A.S. George 14234)	-	P4	DBCA, 2025c	Grey sand, red clay, laterite, often moist. Low-lying flats.	Unlikely	Suitable habitat is not likely to be present within the survey area. Only one historical record within 10km of the survey area.	Unlikely	No suitable habitat is present within the survey area.

Appendix G Fauna likelihood of occurrence assessment

Species	Common name	Listing		Source	Habitat	Pre-survey		Post-survey	
		EPBC Act	BC Act/ DBCA			Likelihood of occurrence	Justification	Likelihood of occurrence	Justification
Calidris ferruginea	Curlew sandpiper	CR & MI	CR	DBCA, 2025d DCCEEW, 2025	Curlew Sandpipers mainly occur on intertidal mudflats in sheltered coastal areas, such as estuaries, bays, inlets and lagoons, and also around non-tidal swamps, lakes and lagoons near the coast, and ponds in saltworks and sewage farms. They have also been occasionally recorded inland around ephemeral and permanent lakes, dams, waterholes and bore drains. sewage farms. They are also recorded inland, though less often, including around ephemeral and permanent lakes, dams, waterholes and bore drains, usually with bare edges of mud or sand.	Unlikely	Suitable habitat is unlikely to occur within the survey area	Unlikely	No suitable habitat is present within the survey area
Numenium madagascariensis	Eastern curlew, far eastern curlew	CR & MI	CR	DCCEEW, 2025	The Far Eastern Curlew is found on intertidal mudflats and sandflats, often with beds of seagrass, on sheltered coasts, especially estuaries, mangrove swamps, bays, harbours and lagoons.	Unlikely	Suitable habitat is unlikely to occur within the survey area.	Unlikely	No suitable habitat is present within the survey area.
Thalassarche chrysostoma	Grey-headed albatross	CR & MI	VU	DBCA, 2025d	Marine.	Unlikely	Suitable habitat is unlikely to occur within the survey area.	Unlikely	No suitable habitat is present within the survey area.
Macronectes giganteus	Southern giant petrel	EN & MI	MI	DBCA, 2025d	Marine species. The Southern Giant-Petrel breeds on six subantarctic and Antarctic islands in Australian territory; Macquarie Island, Heard	Unlikely	Suitable habitat is unlikely to	Unlikely	No suitable habitat is present within

Species	Common name	Listing		Source	Habitat	Pre-survey		Post-survey	
		EPBC Act	BC Act/ DBCA			Likelihood of occurrence	Justification	Likelihood of occurrence	Justification
					Island and McDonald Island in the Southern Ocean, and Giganteus Island, Hawker Island, and Frazier Island in the Australian Antarctic Territories.		occur within the survey area.		the survey area.
Tringa nebularia	Common greenshank, greenshank	EN & MI	MI	DCCEEW, 2025	The common greenshank forages at the edge of wetlands, in soft mud on mudflats, in channels, or within shallows around the edge of waterbodies. These locations are often situated near or among mangroves or other sparse, emergent or fringing vegetation such as sedges or saltmarsh. The bird occasionally feeds amongst seagrass beds. Common greenshanks roost both on the coast and inland, in estuaries and mudflats, mangrove swamps and lagoons, and in billabongs, swamps, sewage farms, and flooded crops.	Unlikely	Suitable habitat is unlikely to occur within the survey area.	Unlikely	No suitable habitat is present within the survey area.
Bettongia penicillata ogilbyi	Woylie, brush-tailed bettong	EN	CR	DBCA, 2025d	Woylies originally inhabited a wide range of landscapes. In the western deserts, Indigenous people reported that they occupied sand plains and dunes with *Triodia* spp. (spinifex) hummock grassland. The remnant subpopulations in south-western Australia inhabit woodlands and adjacent heaths with a dense understorey of shrubs, particularly *Gastrolobium* spp. (poison pea).	Unlikely	Only one (historical) record located within 10km of the survey area.	Unlikely	No suitable habitat is present within the survey area. Only one (historical) record located within 10km of the survey area.
Botaurus poiciloptilus	Australasian bittern	EN	EN	DBCA, 2025d	The Australasian Bittern occurs mainly in freshwater wetlands and, rarely, in estuaries or tidal wetlands.	Unlikely	Suitable habitat is unlikely to	Unlikely	No suitable habitat is present within

Species	Common name	Listing		Source	Habitat	Pre-survey		Post-survey	
		EPBC Act	BC Act/ DBCA			Likelihood of occurrence	Justification	Likelihood of occurrence	Justification
							occur within the survey area.		the survey area.
Petrogale lateralis lateralis	Black-flanked rock-wallaby, Black-footed rock-wallaby, moororong	EN	EN	DBCA, 2025d	Populations are scattered and restricted to sites with suitable rocky habitat with caves and crevices.	Unlikely	Suitable habitat is unlikely to occur within the survey area.	Unlikely	No suitable habitat is present within the survey area.
Rostratula australia	Australian painted snipe	EN	EN	DCCEEW, 2025	The Australian Painted Snipe inhabits many different types of shallow, brackish or freshwater terrestrial wetlands, especially temporary ones which have muddy margins and small, low-lying islands. Suitable wetlands usually support a mosaic of low, patchy vegetation, as well as lignum and canegrass.	Unlikely	Suitable habitat is unlikely to occur within the survey area.	Unlikely	No suitable habitat is present within the survey area.
Zanda baudinii	Baudin's cockatoo	EN	EN	DBCA, 2025d	Baudin's Cockatoo breeds in the jarrah, marri and karri forests of the far south-west in areas averaging more than 750 mm of rainfall annually. During the non-breeding season, the range of Baudin's Cockatoo is determined by the distribution of marri. In the northern jarrah forest, marri tends to be more common in lower parts of the landscape. Outside the breeding season, the species feeds on Banksia and Hakea species, and *Erodium botrys* (wild geranium), as well as Dryandra species.	Potential	Suitable habitat may occur within the survey area. Four records from 2002-2009 occur within 10km of the survey area.	Potential	Potentially suitable habitat is present within the survey area. Four records from 2002-2009 occur within 10km of the survey area.
Zanda latirostris	Carnaby's cockatoo	EN	EN	DBCA, 2025d DCCEEW, 2025	Carnaby's Cockatoo occurs in uncleared or remnant native Eucalypt woodlands, especially those that contain salmon gum and wandoo, and in shrubland or kwongan heathland	Potential	Suitable habitat may occur within the survey area. Two records	Recorded	This species was recorded within the survey area

Species	Common name	Listing		Source	Habitat	Pre-survey		Post-survey	
		EPBC Act	BC Act/ DBCA			Likelihood of occurrence	Justification	Likelihood of occurrence	Justification
					dominated by Hakea, Dryandra, Banksia and Grevillea species.		(2004 and 2008) are located within 1km of the survey area.		(directly observed).
Calidris canutus	Red knot, knot	VU & MI	EN	DCCEEW, 2025	During the non-breeding season in Australasia, the red knot mainly inhabits intertidal mudflats, sandflats and sandy beaches of sheltered coasts and sometimes on sandy ocean beaches or shallow pools on exposed rock platforms. They are occasionally seen on terrestrial saline wetlands near the coast and on sewage ponds and saltworks.	Unlikely	Suitable habitat is unlikely to occur within the survey area.	Unlikely	No suitable habitat is present within the survey area.
Charadrius leschenaultii	Greater sand plover, Large sand plover	VU & MI	VU	DBCA, 2025d DCCEEW, 2025	Almost entirely restricted to coastal areas, occurring mainly on sheltered sandy, shelly or muddy beaches or estuaries with large intertidal mudflats or sandbanks.	Unlikely	Suitable habitat is unlikely to occur within the survey area.	Unlikely	No suitable habitat is present within the survey area.
Calidris acuminata	Sharp-tailed sandpiper	VU & MI	MI	DCCEEW, 2025	This species utilises fresh and hypersaline environments, feeding along the edge of water on mudflats, coastal and inland wetlands, and sewage ponds. After rainfall events, the species may also feed on areas of agricultural pasture.	Unlikely	Suitable habitat is unlikely to occur within the survey area.	Unlikely	No suitable habitat is present within the survey area.
Calyptorhynchus banksii naso	Forest Red-tailed Black Cockatoo	VU	VU	DBCA, 2025d DCCEEW, 2025	The Forest Red-tailed Black Cockatoo inhabits the dense jarrah, karri (*Eucalyptus diversicolor*) and marri forests receiving more than 600 mm average rainfall annually, mainly in the hilly interior. Although most records are in jarrah-marri forests, the subspecies has been observed in a range of other forest and	Potential	Suitable habitat may occur within the survey area. One record from 2019 is located	Recorded	This species was recorded within the survey area (directly observed).

Species	Common name	Listing		Source	Habitat	Pre-survey		Post-survey	
		EPBC Act	BC Act/ DBCA			Likelihood of occurrence	Justification	Likelihood of occurrence	Justification
					woodland types, including blackbutt (*E. patens*), wandoo (*E. wandoo*), tuart (*E. gomphocephala*), Albany blackbutt (*E. staeri*), yate (*E. cornuta*) and flooded gum (*E. rudis*). This subspecies is also now seen feeding in more open agricultural areas and in the Perth metropolitan area, where it will also breed.		2.7km south of the survey area.		
Dasyurus geoffroii	Chuditch, western quoll	VU	VU	DBCA, 2025d DCCEEW, 2025	Inhabits a variety of different habitat types including rocky outcrops, eucalypt forests and woodlands, sandy lowlands, beaches, shrubland, grasslands and deserts. Predominantly though, rocky areas provide denning habitat, and foraging is predominantly done within nearby grasslands and creek lines. Chuditch have historically been present in a large variety of habitats so it is not possible to list a set of characteristic habitats that should be preserved for chuditch. However, some key aspects are required for chuditch survival in an area. These are: adequate den resources (e.g. hollow logs, burrows or rock crevices), adequate prey resources (particularly large invertebrates) and sizeable areas (> 20 000 ha.).	Unlikely	Suitable habitat is unlikely to occur within the survey area.	Unlikely	No suitable habitat is present within the survey area.
Leipoa ocellata	Malleefowl	VU	VU	DCCEEW, 2025	Malleefowl are found in arid and semi-arid areas dominated by mallee eucalypts on sandy soils. They are known to also occur in Mulga (*Acacia aneura*), Broombush (*Melaleuca uncinata*), Scrub Pine (*Callitris verrucosa*), Eucalyptus woodlands and coastal heathlands. Malleefowl require abundant leaf litter and a sandy substrate for the successful construction of nest mounds.	Unlikely	Suitable habitat is unlikely to occur within the survey area.	Unlikely	No suitable habitat is present within the survey area.

Species	Common name	Listing		Source	Habitat	Pre-survey		Post-survey	
		EPBC Act	BC Act/ DBCA			Likelihood of occurrence	Justification	Likelihood of occurrence	Justification
Macroderma gigas	Ghost bat	VU	VU	DCCEEW, 2025	They currently occupy habitats ranging from the arid Pilbara to tropical savanna woodlands and rainforests.	Unlikely	Suitable habitat is unlikely to occur within the survey area.	Unlikely	No suitable habitat is present within the survey area.
Sternula nereis nereis	Fairy tern	VU	VU	DBCA, 2025d DCCEEW, 2025	In general, Australian Fairy Terns utilise a variety of habitats including offshore, estuarine or lacustrine (lake) islands, coastal wetlands, beaches and sand spits.	Unlikely	Suitable habitat is unlikely to occur within the survey area.	Unlikely	No suitable habitat is present within the survey area.
Ardenna carneipes	Flesh-footed shearwater	MI	VU	DBCA, 2025d	The Flesh-footed Shearwater mostly inhabits the subtropics, over continental shelves and slopes. It occasionally occurs in inshore waters.	Unlikely	Suitable habitat is unlikely to occur within the survey area.	Unlikely	No suitable habitat is present within the survey area.
Thalassarche chlororhynchos	Atlantic yellow-nosed albatross	MI	VU	DBCA, 2025d	Marine. *Thalassarche chlororhynchos* feeds by surface-seizing and occasionally diving. It also feeds in association with marine mammals or gamefish that bring baitfish to the surface.	Unlikely	Suitable habitat is unlikely to occur within the survey area.	Unlikely	No suitable habitat is present within the survey area.
Apus pacificus	Fork-tailed swift	MI	MI	DBCA, 2025d DCCEEW, 2025	The Fork-tailed Swift is almost exclusively aerial, flying from less than 1 m to at least 300 m above ground and probably much higher. In Australia, they mostly occur over inland plains but sometimes above foothills or in coastal areas. They often occur over cliffs and beaches and also over islands and sometimes well out to sea. They also occur over settled areas, including towns, urban areas and cities. They mostly occur over dry or open habitats,	Unlikely	Suitable habitat is unlikely to occur within the survey area.	Unlikely	No suitable habitat is present within the survey area.

Species	Common name	Listing		Source	Habitat	Pre-survey		Post-survey	
		EPBC Act	BC Act/ DBCA			Likelihood of occurrence	Justification	Likelihood of occurrence	Justification
					including riparian woodland and tea-tree swamps, low scrub, heathland or saltmarsh.				
Calidris ruficollis	Red-necked stint	MI	MI	DBCA, 2025d	In Australasia, the Red-necked Stint is mostly found in coastal areas, including in sheltered inlets, bays, lagoons and estuaries with intertidal mudflats, often near spits, islets and banks and, sometimes, on protected sandy or coralline shores.	Unlikely	Suitable habitat is unlikely to occur within the survey area.	Unlikely	No suitable habitat is present within the survey area.
Gelochelidon nilotica	Gull-billed tern	MI	MI	DBCA, 2025d	Gull-billed Terns are found in freshwater swamps, brackish and salt lakes, beaches and estuarine mudflats, floodwaters, sewage farms, irrigated croplands and grasslands. They are only rarely found over the ocean.	Unlikely	Suitable habitat is unlikely to occur within the survey area.	Unlikely	No suitable habitat is present within the survey area.
Limosa limosa	Black-tailed godwit	MI	MI	DBCA, 2025d	Black-tailed godwits are primarily a coastal species. They are usually found in sheltered bays, estuaries, and lagoons with large intertidal mudflats and/or sandflats. Feeding habitat includes areas of mud or soft, wet sand within sandflats, intertidal mudflats, saltmarshes, and the beaches of oceanic coastlines, bays, and estuaries. Breeding takes place in areas of lowland wet meadow, or grassy marshes and damp pastures.	Unlikely	Suitable habitat is unlikely to occur within the survey area.	Unlikely	No suitable habitat is present within the survey area.
Pandion haliaetus	Osprey	MI	MI	DBCA, 2025d DCCEEW, 2025	Distributed Australia-wide. Ospreys prefer habitats with plenty of shallow water where fish are plentiful. They often built nests on small islands or structures over bodies of water that are difficult for predators to get to. Manmade structures such as power poles and other stable structures are common nesting sites.	Unlikely	Suitable habitat is unlikely to occur within the survey area.	Unlikely	No suitable habitat is present within the survey area.

Species	Common name	Listing		Source	Habitat	Pre-survey		Post-survey	
		EPBC Act	BC Act/ DBCA			Likelihood of occurrence	Justification	Likelihood of occurrence	Justification
Plegadis falcinellus	Glossy ibis	MI	MI	DBCA, 2025d	The Glossy Ibis' preferred habitat for foraging and breeding are fresh water marshes at the edges of lakes and rivers, lagoons, flood-plains, wet meadows, swamps, reservoirs, sewage ponds, rice-fields and cultivated areas under irrigation.	Unlikely	Suitable habitat is unlikely to occur within the survey area.	Unlikely	No suitable habitat is present within the survey area.
Thalasseus bergii	Crested tern	MI	MI	DBCA, 2025d	They are commonly found in near-coastal environments and estuaries, but also inhabit lakes and rivers inland.	Unlikely	Suitable habitat is unlikely to occur within the survey area.	Unlikely	No suitable habitat is present within the survey area.
Tringa glareola	Wood sandpiper	MI	MI	DBCA, 2025d	Well-vegetated, shallow, freshwater wetlands, such as swamps, billabongs, lakes, pools and waterholes. They are typically associated with emergent, aquatic plants or grass, and dominated by taller fringing vegetation, such as dense stands of rushes or reeds, shrubs, or dead or live trees, especially Melaleuca and River Red Gums *Eucalyptus camaldulensis* and often with fallen timber. The Wood Sandpiper forages on moist or dry mud at the edges of wetlands, either along shores, among open scattered aquatic vegetation, or in clear shallow water.	Unlikely	Suitable habitat is unlikely to occur within the survey area.	Unlikely	No suitable habitat is present within the survey area.
Tringa stagnatilis	Marsh sandpiper	MI	MI	DBCA, 2025d	Marsh Sandpipers are commonly seen singly, or in small to large flocks in fresh or brackish (slightly salty) wetlands such as rivers, water meadows, sewage farms, drains, lagoons and swamps.	Unlikely	Suitable habitat is unlikely to occur within the survey area.	Unlikely	No suitable habitat is present within the survey area.
Falco peregrinus	Peregrine falcon	-	OS	DBCA, 2025d	Found in most habitats, from rainforests to the arid zone, and at most altitudes, from the coast to alpine areas. Requires abundant prey and	Unlikely	Suitable habitat is unlikely to	Unlikely	No suitable habitat is present

Species	Common name	Listing		Source	Habitat	Pre-survey		Post-survey	
		EPBC Act	BC Act/ DBCA			Likelihood of occurrence	Justification	Likelihood of occurrence	Justification
					secure nest sites, preferring coastal and inland cliffs or open woodlands near water, and may even be found nesting on high city buildings especially where feral pigeons are available as prey.		occur within the survey area.		within the survey area.
Botaurus flavicollis australis (southwest subpopulation)	Black bittern (southwest subpopulation)	-	P2	DBCA, 2025d	Found in various wetland habitats, including reed beds, swamps, and lagoons.	Unlikely	Suitable habitat is unlikely to occur within the survey area.	Unlikely	No suitable habitat is present within the survey area.
Neelaps calonotos	Black-striped snake, black-striped burrowing snake	-	P3	DBCA, 2025d	Banksia woodlands and sandy areas of the Perth region.	Potential	Suitable habitat may occur within the survey area. 12 records located within 10km of the survey area.	Potential	Potentially suitable habitat is present within the survey area. 12 records located within 10km of the survey area.
Botaurus dubius	Australian little bittern	-	P4	DBCA, 2025d	The Australian Little Bittern occurs in diverse freshwater habitats, mainly where tall rushes, reeds, Typha (cumbungi), shrub thickets or other dense cover is inundated by at least 30cm of water. It can be found in vast swamps, but unlike the Australasian Bittern, it often inhabits small patches of dense wetland vegetation such as Typha along drains or in small urban lakes.	Unlikely	Suitable habitat is unlikely to occur within the survey area.	Unlikely	No suitable habitat is present within the survey area.
Hydromys chrysogaster	Water-Rat, Rakali	-	P4	DBCA, 2025d	Lives in burrows on low banks of rivers, lakes, wetlands, estuaries and even along the coast.	Unlikely	Suitable habitat is unlikely to	Does not occur	No suitable habitat is present

Species	Common name	Listing		Source	Habitat	Pre-survey		Post-survey	
		EPBC Act	BC Act/ DBCA			Likelihood of occurrence	Justification	Likelihood of occurrence	Justification
					Intact riparian vegetation and associated bank stability is critical to their survival.		occur within the survey area.		within the survey area.
Isoodon fusciventer	Quenda, Southwestern brown bandicoot	-	P4	DBCA, 2025d	Inhabits scrubby, often swampy, vegetation with dense cover up to 1 m high, often feeds in adjacent forest and woodland that is burnt on a regular basis and in areas of pasture and cropland lying close to dense cover. Populations inhabiting Jarrah and Wandoo forests are usually associated with watercourses.	Potential	Suitable habitat may occur within the survey area. Several records are located within 2km of the survey area.	Potential	Potentially suitable habitat is present within the survey area. Several records are located within 2km of the survey area. Survey area is located adjacent to the north of suitable habitat providing connectivity opportunities for this species.
Notamacropus irma	Western brush wallaby	-	P4	DBCA, 2025d	Inhabits open forest or woodland, particularly favouring open, seasonally wet flats with low grasses and open scrubby thickets. It is also found in some areas of mallee and heathland and is uncommon in karri forest.	Potential	Suitable habitat may occur within the survey area. One record (2003) within the survey area.	Potential	Potentially suitable habitat is present within the survey area. One record (2003) is

Species	Common name	Listing		Source	Habitat	Pre-survey		Post-survey	
		EPBC Act	BC Act/ DBCA			Likelihood of occurrence	Justification	Likelihood of occurrence	Justification
									located within 1km of the survey area. Survey area is located adjacent to the north of suitable habitat providing connectivity opportunities for this species.
Oxyura australis	Blue-billed duck	-	P4	DBCA, 2025d	The Blue-billed Duck is almost wholly aquatic and is seldom seen on land. Non-breeding flocks, often with several hundred individuals, congregate on large, deep open freshwater dams and lakes in autumn.	Unlikely	Suitable habitat is unlikely to occur within the survey area.	Unlikely	No suitable habitat is present within the survey area.

Appendix H Ecological communities likelihood of occurrence assessment

Community ID	Community description	Source	Listing		Likelihood of occurrence	
			EPBC Act	BC Act/ DBCA	Pre-survey	Post-survey
SCP26a	*Melaleuca huegelii - M. systena* shrublands of limestone ridges (floristic community type 26a as originally described in Gibson et al. 1994).	DBCA, 2025e	CR	CR	**Unlikely** Suitable habitat is unlikely to occur within the survey area.	**Unlikely** No suitable habitat is present within the survey area.
SCP10a	Shrublands on dry clay flats (floristic community type 10a as originally described in Gibson et al. 1994).	DBCA, 2025e	CR	EN	**Unlikely** Suitable habitat is unlikely to occur within the survey area.	**Unlikely** No suitable habitat is present within the survey area.
SCP25	Southern *Eucalyptus gomphocephala-Agonis flexuosa* woodland.	DBCA, 2025e	CR	P3	**Potential** Suitable habitat may occur within the survey area.	**Unlikely** No suitable habitat is present within the survey area
Tuart Woodlands	Tuart (*Eucalyptus gomphocephala*) woodlands and forests of the Swan Coastal Plain.	DBCA, 2025e	CR	P3	**Potential** Boundary of an occurrence intersects with the survey area.	**Unlikely** No suitable habitat is present within the survey area.
Caves SCP01	Aquatic Root Mat Community Number 1 of Caves of the Swan Coastal Plain.	DBCA, 2025e	EN	CR	**Unlikely** Suitable habitat is unlikely to occur within the survey area.	**Does not occur** No suitable habitat is present within the survey area.
SCP20a	*Banksia attenuata* woodlands over species rich dense shrublands (floristic community type 20a as originally described in Gibson et al. 1994).	DBCA, 2025e ELA, 2022	EN	CR	**Potential** Boundary of an occurrence intersects with the survey area.	**Potential** Potentially suitable habitat is present within the survey area. Previously recorded adjacent to the south of the survey area.
Banksia WL SCP	Banksia Woodlands of the Swan Coastal Plain ecological community.	DBCA, 2025e ELA, 2022	EN	P3	**Potential**	**Potential** Potentially suitable habitat is present within the survey area.

Community ID	Community description	Source	Listing		Likelihood of occurrence	
			EPBC Act	BC Act/ DBCA	Pre-survey	Post-survey
					Boundary of an occurrence intersects with the survey area.	Previously recorded adjacent to the south of the survey area.
SCP21c	Low lying *Banksia attenuata* woodlands or shrublands	DBCA, 2025e	EN	P3	**Potential** Suitable habitat may occur within the survey area.	**Potential** Potentially suitable habitat is present within the survey area.
SCP22	*Banksia ilicifolia* woodlands.	DBCA, 2025e	EN	P3	**Potential** Suitable habitat may occur within the survey area.	**Unlikely** No suitable habitat is present within the survey area.
SCP23b	Swan Coastal Plain *Banksia attenuata - Banksia menziesii* woodlands.	DBCA, 2025e	EN	P3	**Potential** Suitable habitat may occur within the survey area.	**Potential** Potentially suitable habitat is present within the survey area.
SCP24	Northern Spearwood shrublands and woodlands.	DBCA, 2025e	EN	P3	**Unlikely** Suitable habitat is unlikely to occur within the survey area.	**Unlikely** No suitable habitat is present within the survey area.
SCP29a	Coastal shrublands on shallow sands.	DBCA, 2025e	-	P3	**Unlikely** Suitable habitat is unlikely to occur within the survey area.	**Unlikely** No suitable habitat is present within the survey area.
SCP29b	Acacia shrublands on taller dunes.	DBCA, 2025e	-	P3	**Unlikely** Suitable habitat is unlikely to occur within the survey area.	**Unlikely** No suitable habitat is present within the survey area.

Appendix I Flora species list

Family	Species	Conservation Status	Introduced	Weed listing
Aizoaceae	**Carpobrotus edulis*		Yes	Permitted (s-11)
Anarthriaceae	*Lyginia barbata*			
Asparagaceae	*Lomandra hermaphrodita*			
Brassicaceae	**Brassica tournefortii*		Yes	Permitted (s-11)
Casuarinaceae	*Allocasuarina fraseriana*			
Cyperaceae	*Mesomelaena pseudostygia*			
Dasypogonaceae	*Dasypogon bromeliifolius*			
Dilleniaceae	*Hibbertia hypericoides*			
Ericaceae	*Conostephium pendulum*			
Fabaceae	*Acacia pulchella*			
Fabaceae	*Acacia rostellifera*			
Fabaceae	*Acacia saligna*			
Fabaceae	*Gompholobium tomentosum*			
Fabaceae	*Hardenbergia comptoniana*			
Fabaceae	*Jacksonia furcellata*			
Fabaceae	*Jacksonia sternbergiana*			
Fabaceae	**Lupinus cosentinii*		Yes	Permitted (s-11)
Geraniaceae	**Pelargonium capitatum*		Yes	Permitted (s-11)
Hemerocallidaceae	*Dianella revoluta*			
Myrtaceae	*Eucalyptus marginata*			
Myrtaceae	*Hypocalymma angustifolium*			
Myrtaceae	*Hypocalymma robustum*			
Myrtaceae	*Kunzea glabrescens*			
Myrtaceae	**Leptospermum laevigatum*			
Myrtaceae	*Melaleuca systena*			
Onagraceae	**Oenothera drummondii*		Yes	Permitted (s-11)
Poaceae	** Briza maxima*		Yes	Permitted (s-11)
Poaceae	**Ehrharta calycina*		Yes	Permitted (s-11)
Poaceae	**Eragrostis curvula*		Yes	Permitted (s-11)
Proteaceae	*Banksia attenuata*			
Proteaceae	*Banksia menziesii*			
Proteaceae	*Hakea prostrata*			
Proteaceae	*Persoonia saccata*			
Proteaceae	*Stirlingia latifolia*			

Family	Species	Conservation Status	Introduced	Weed listing
Restionaceae	*Desmocladus flexuosus*			
Restionaceae	*Hypolaena exsulca*			
Xanthorrhoeaceae	*Xanthorrhoea preissii*			

Appendix J Flora species list by site matrix

Species	REL01	REL02	REL03	REL04	REL05	REL06	REL07	REL08	REL09	REL10
**Brassica tournefortii*	X	X								
**Briza maxima*			X			X	X	X	X	X
**Carpobrotus edulis*		X				X	X	X		
**Ehrharta calycina*	X	X	X		X	X	X	X	X	X
**Eragrostis curvula*	X	X			X	X	X			
**Leptospermum laevigatum*			X							
**Lupinus cosentinii*		X								
**Oenothera drummondii*	X									
**Pelargonium capitatum*					X	X	X			
Acacia pulchella			X	X	X					
Acacia rostellifera	X	X		X						
Acacia saligna				X						
Allocasuarina fraseriana					X	X			X	
Banksia attenuata					X	X		X	X	X
Banksia menziesii	X		X		X	X			X	X
Conostephium pendulum									X	
Dasypogon bromeliifolius			X	X					X	X
Desmocladus flexuosus								X		
Dianella revoluta				X				X		X
Eucalyptus marginata	X	X				X	X	X	X	X
Gompholobium tomentosum				X						

Species	REL01	REL02	REL03	REL04	REL05	REL06	REL07	REL08	REL09	REL10
Hardenbergia comptoniana							X	X	X	
Hibbertia hypericoides			X	X	X	X		X	X	
Hypocalymma angustifolium				X						
Hypocalymma robustum						X		X		X
Hypolaena exsulca										X
Jacksonia furcellata		X	X	X	X	X				
Jacksonia sternbergiana	X	X	X	X	X					X
Kunzea glabrescens									X	
Lomandra hermaphrodita			X							
Lyginia barbata										X
Melaleuca systena									X	X
Mesomelaena pseudostygia			X	X					X	X
Persoonia saccata								X		X
Stirlingia latifolia						X			X	X
Xanthorrhoea preissii							X	X	X	

Appendix K Relevé data

Site Name	Date	Site Type	Observer
REL01	13/6/2025	Relevé	JC/LY
Vegetation Condition	**Disturbance**	**Age since fire (years)**	**Vegetation type**
Completely Degraded	Weeds, tracks, clearing, rubbish dumping	Old (>20)	Vegetation Type 1
Landform unit	**Aspect**	**Slope (%)**	**Soil colour**
Flat	N/A	0	Brown
Soil type	**Condition**	**Easting**	**Northing**
Sand	Moist	385402	6494854

Species	Stratum (U=Upper, M=Middle, G=Ground)	Sub-Stratum
Eucalyptus marginata	U	Trees < 10m
Acacia rostellifera	M	Shrubs > 2m
Banksia menziesii	M	Shrubs > 2m
Jacksonia sternbergiana	M	Shrubs > 2m
**Ehrharta calycina*	G	Grasses
**Eragrostis curvula*	G	Grasses

Species	Stratum (U=Upper, M=Middle, G=Ground)	Sub-Stratum
**Brassica tournefortii*	G	Herbs
**Oenothera drummondii*	G	Herbs

Site Name	Date	Site Type	Observer
REL02	13/6/2025	Relevé	JC/LY
Vegetation Condition	**Disturbance**	**Age since fire (years)**	**Vegetation type**
Completely Degraded	Weeds, tracks, clearing, rubbish dumping	Old (>20)	Vegetation Type 1
Landform unit	**Aspect**	**Slope (%)**	**Soil colour**
Flat	N/A	0	Brown
Soil type	**Condition**	**Easting**	**Northing**
Sand	Moist	385476	6494972

Species	Stratum (U=Upper, M=Middle, G=Ground)	Sub-Stratum
Eucalyptus marginata	U	Trees < 10m
Acacia rostellifera	M	Shrubs > 2m
Jacksonia furcellata	M	Shrubs > 2m
Jacksonia sternbergiana	M	Shrubs > 2m
**Ehrharta calycina*	G	Grasses
**Eragrostis curvula*	G	Grasses
**Brassica tournefortii*	G	Herbs
**Carpobrotus edulis*	G	Herbs

Species	Stratum (U=Upper, M=Middle, G=Ground)	Sub-Stratum
**Lupinus cosentinii*	G	Herbs

Site Name	Date	Site Type	Observer
REL03	13/6/2025	Relevé	JC/LY
Vegetation Condition	**Disturbance**	**Age since fire (years)**	**Vegetation type**
Degraded	Weeds, tracks, clearing, rubbish dumping	Old (>20)	Vegetation Type 2
Landform unit	**Aspect**	**Slope (%)**	**Soil colour**
Flat	N/A	0	Dark brown
Soil type	**Condition**	**Easting**	**Northing**
Sand	Moist	385769	6495023

Species	Stratum (U=Upper, M=Middle, G=Ground)	Sub-Stratum
Banksia menziesii	M	Shrubs > 2m
Jacksonia furcellata	M	Shrubs > 2m
Jacksonia sternbergiana	M	Shrubs > 2m
**Leptospermum laevigatum*	M	Shrubs > 2m
Acacia pulchella	M	Shrubs 1-2m
Hibbertia hypericoides	M	Shrubs 1-2m
**Briza maxima*	G	Grasses
**Ehrharta calycina*	G	Grasses

Species	Stratum (U=Upper, M=Middle, G=Ground)	Sub-Stratum
Dasypogon bromeliifolius	G	Herbs
Lomandra hermaphrodita	G	Herbs
Mesomelaena pseudostygia	G	Sedges

Site Name	Date	Site Type	Observer
REL04	13/6/2025	Relevé	JC/LY
Vegetation Condition	**Disturbance**	**Age since fire (years)**	**Vegetation type**
Degraded	Weeds, tracks, clearing, rubbish dumping	Old (>20)	Vegetation Type 2
Landform unit	**Aspect**	**Slope (%)**	**Soil colour**
Flat	N/A	0	Dark brown
Soil type	**Condition**	**Easting**	**Northing**
Sand	Moist	385782	6494918

Species	Stratum (U=Upper, M=Middle, G=Ground)	Sub-Stratum
Acacia pulchella	M	Shrubs > 2m
Acacia rostellifera	M	Shrubs > 2m
Acacia saligna	M	Shrubs > 2m
Jacksonia furcellata	M	Shrubs > 2m
Jacksonia sternbergiana	M	Shrubs > 2m
Gompholobium tomentosum	M	Shrubs 1-2m
Hibbertia hypericoides	M	Shrubs 1-2m
Hypocalymma angustifolium	M	Shrubs < 1m

Species	Stratum (U=Upper, M=Middle, G=Ground)	Sub-Stratum
Dasypogon bromeliifolius	G	Herbs
Dianella revoluta	G	Herbs
Mesomelaena pseudostygia	G	Sedges

Site Name	Date	Site Type	Observer
REL05	13/6/2025	Relevé	JC/LY
Vegetation Condition	**Disturbance**	**Age since fire (years)**	**Vegetation type**
Good	Weeds, tracks, clearing, rubbish dumping	Old (>20)	Vegetation Type 3
Landform unit	**Aspect**	**Slope (%)**	**Soil colour**
Slope	N	5	Brown
Soil type	**Condition**	**Easting**	**Northing**
Sand	Moist	385791	6494767

Species	Stratum (U=Upper, M=Middle, G=Ground)	Sub-Stratum
Allocasuarina fraseriana	U	Trees < 10m
Banksia attenuata	U	Trees < 10m
Banksia menziesii	U	Trees < 10m
Acacia pulchella	M	Shrubs 1-2m
Jacksonia furcellata	M	Shrubs 1-2m
Jacksonia sternbergiana	M	Shrubs 1-2m
Hibbertia hypericoides	M	Shrubs 1-2m
**Ehrharta calycina*	G	Grasses

Species	Stratum (U=Upper, M=Middle, G=Ground)	Sub-Stratum
**Eragrostis curvula*	G	Grasses
**Pelargonium capitatum*	G	Herbs

Site Name	Date	Site Type	Observer
REL06	13/6/2025	Relevé	JC/LY
Vegetation Condition	**Disturbance**	**Age since fire (years)**	**Vegetation type**
Good	Weeds, tracks, clearing, rubbish dumping	Old (>20)	Vegetation Type 3
Landform unit	**Aspect**	**Slope (%)**	**Soil colour**
Slope	N	5	Brown
Soil type	**Condition**	**Easting**	**Northing**
Sand	Moist	385649	6494765

Species	Stratum (U=Upper, M=Middle, G=Ground)	Sub-Stratum
Allocasuarina fraseriana	U	Trees < 10m
Eucalyptus marginata	U	Trees < 10m
Banksia attenuata	M	Shrubs > 2m
Banksia menziesii	M	Shrubs > 2m
Hibbertia hypericoides	M	Shrubs 1-2m
Hypocalymma robustum	M	Shrubs 1-2m
Jacksonia furcellata	M	Shrubs 1-2m
Stirlingia latifolia	M	Shrubs 1-2m

Species	Stratum (U=Upper, M=Middle, G=Ground)	Sub-Stratum
**Briza maxima*	G	Grasses
**Ehrharta calycina*	G	Grasses
**Eragrostis curvula*	G	Grasses
**Carpobrotus edulis*	G	Herbs
**Pelargonium capitatum*	G	Herbs

Site Name	Date	Site Type	Observer
REL07	13/6/2025	Relevé	JC/LY
Vegetation Condition	**Disturbance**	**Age since fire (years)**	**Vegetation type**
Degraded	Weeds, tracks, clearing, rubbish dumping	Old (>20)	Vegetation Type 4
Landform unit	**Aspect**	**Slope (%)**	**Soil colour**
Flat	N/A	0	Brown
Soil type	**Condition**	**Easting**	**Northing**
Sand	Moist	385287	6494735

Species	Stratum (U=Upper, M=Middle, G=Ground)	Sub-Stratum
Eucalyptus marginata	U	Trees 10-30m
Xanthorrhoea preissii	M	Shrubs 1-2m
**Briza maxima*	G	Grasses
**Ehrharta calycina*	G	Grasses
**Eragrostis curvula*	G	Grasses
Hardenbergia comptoniana	G	Herbs
**Pelargonium capitatum*	G	Herbs

Site Name	Date	Site Type	Observer
REL08	13/6/2025	Relevé	JC/LY
Vegetation Condition	**Disturbance**	**Age since fire (years)**	**Vegetation type**
Good	Weeds, tracks, clearing, rubbish dumping	Old (>20)	Vegetation Type 4
Landform unit	**Aspect**	**Slope (%)**	**Soil colour**
Slope	E	1	Brown
Soil type	**Condition**	**Easting**	**Northing**
Sand	Moist	385409	6495053

Species	Stratum (U=Upper, M=Middle, G=Ground)	Sub-Stratum
Eucalyptus marginata	U	Trees 10-30m
Banksia attenuata	U	Trees < 10m
Xanthorrhoea preissii	M	Shrubs 1-2m
Hibbertia hypericoides	M	Shrubs < 1m
Hypocalymma robustum	M	Shrubs < 1m
Persoonia saccata	M	Shrubs < 1m
**Briza maxima*	G	Grasses
**Ehrharta calycina*	G	Grasses

Species	Stratum (U=Upper, M=Middle, G=Ground)	Sub-Stratum
**Carpobrotus edulis*	G	Herbs
Desmocladus flexuosus	G	Herbs
Dianella revoluta	G	Herbs
Hardenbergia comptoniana	G	Herbs

Site Name	Date	Site Type	Observer
REL09	13/6/2025	Relevé	JC/LY
Vegetation Condition	**Disturbance**	**Age since fire (years)**	**Vegetation type**
Good	Weeds, tracks, clearing, rubbish dumping	Old (>20)	Vegetation Type 5
Landform unit	**Aspect**	**Slope (%)**	**Soil colour**
Flat	N/A	0	Dark brown
Soil type	**Condition**	**Easting**	**Northing**
Sand	Moist	385734	6495068

Species	Stratum (U=Upper, M=Middle, G=Ground)	Sub-Stratum
Eucalyptus marginata	U	Trees 10-30m
Allocasuarina fraseriana	U	Trees < 10m
Banksia attenuata	U	Trees < 10m
Banksia menziesii	U	Trees < 10m
Kunzea glabrescens	M	Shrubs > 2m
Hibbertia hypericoides	M	Shrubs 1-2m
Stirlingia latifolia	M	Shrubs 1-2m
Xanthorrhoea preissii	M	Shrubs 1-2m

Species	Stratum (U=Upper, M=Middle, G=Ground)	Sub-Stratum
Conostephium pendulum	M	Shrubs <1m
Melaleuca systena	M	Shrubs < 1m
**Briza maxima*	G	Grasses
**Ehrharta calycina*	G	Grasses
Dasypogon bromeliifolius	G	Herbs
Hardenbergia comptoniana	G	Herbs
Mesomelaena pseudostygia	G	Sedges

Site Name	Date	Site Type	Observer
REL010	13/6/2025	Relevé	JC/LY
Vegetation Condition	**Disturbance**	**Age since fire (years)**	**Vegetation type**
Good	Weeds, tracks, clearing, rubbish dumping	Old (>20)	Vegetation Type 5
Landform unit	**Aspect**	**Slope (%)**	**Soil colour**
Flat	N/A	0	Dark brown
Soil type	**Condition**	**Easting**	**Northing**
Sand	Moist	385840	6495073

Species	Stratum (U=Upper, M=Middle, G=Ground)	Sub-Stratum
Eucalyptus marginata	U	Trees 10-30m
Banksia attenuata	U	Trees < 10m
Banksia menziesii	U	Trees < 10m
Jacksonia sternbergiana	M	Shrubs > 2m
Hypocalymma robustum	M	Shrubs 1-2m
Stirlingia latifolia	M	Shrubs 1-2m
Hibbertia hypericoides	M	Shrubs < 1m
Melaleuca systena	M	Shrubs <1m

Species	Stratum (U=Upper, M=Middle, G=Ground)	Sub-Stratum
Persoonia saccata	M	Shrubs < 1m
**Briza maxima*	G	Grasses
**Ehrharta calycina*	G	Grasses
Dasypogon bromeliifolius	G	Herbs
Dianella revoluta	G	Herbs
Hypolaena exsulca	G	Sedges
Lyginia barbata	G	Sedges
Mesomelaena pseudostygia	G	Sedges

Appendix L Fauna species list

Species	Common name	Type	Observation type	Introduced	Listing
Corvus coronoides	Australian Raven	Bird	Directly observed		
Chenonetta jubata	Australian wood duck	Bird	Directly observed flying over site		
Tiliqua rugosa	Bobtail lizard	Reptile	Directly observed		
Lichmera indistincta	Brown honeyeater	Bird	Call		
Zanda latirostris	Carnaby's Black Cockatoo	Bird	Directly observed flying over site in pairs		EN under the EPBC Act and BC Act
Phaps chalcoptera	Common bronzewing	Bird	Directly observed		
Calyptorhynchus banksii naso	Forest Red-tailed Black Cockatoo	Bird	Directly observed flying over site in pairs		VU under the EPBC act and BC Act
Rhipidura albiscapa	Grey fantail	Bird	Directly observed		
**Vulpes vulpes*	Red fox	Mammal	Tracks	Yes	Declared Pest – s22(2)
Pachycephala rufiventris	Rufous Whistler	Bird	Directly observed		
Zosterops lateralis	Silvereye	Bird	Directly observed		
Malurus splendens	Splendid fairy-wren	Bird	Directly observed		
Macropus fuliginosus melanops	Western grey kangaroo	Mammal	Scats		
Haliastur sphenurus	Whistling kite	Bird	Directly observed		

Appendix M DAWE (2022) Scoring Tool

Starting score	Carnaby's Cockatoo
10	**Start at a score of 10** if your site is native shrubland, kwongan heathland or woodland, dominated by proteaceous species such as *Banksia* spp. (including *Dryandra* spp.), *Hakea* spp. and *Grevillea* spp., as well as native eucalypt woodland and forest that contains foraging species within the range of the species, including along roadsides and parkland cleared areas. Also includes planted native vegetation. **This tool only applies to sites equal or larger than 1 hectare in size**

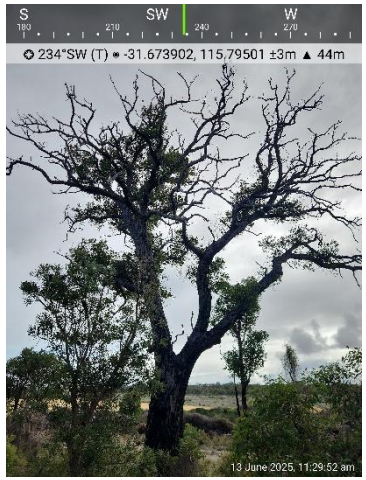
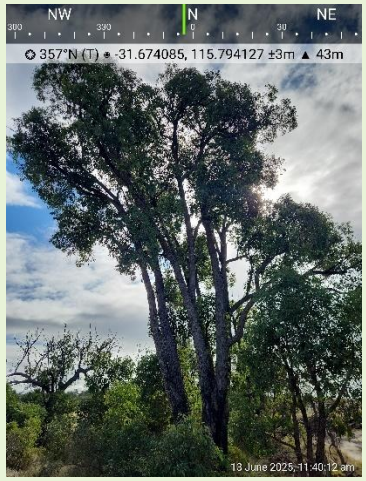
Attribute	Subtractions	Context adjustor (attributes reducing functionality of foraging habitat)	Evidence from field survey
Foraging potential	-2	Subtract 2 from your score if there is no evidence of feeding debris on your site.	No evidence observed.
Connectivity	0	Subtract 2 from your score if you have evidence to conclude that there is no other foraging habitat within 12 km of your site.	There is native shrubland dominated by proteaceous species directly south of the survey area.
Proximity to breeding	0	Subtract 2 if you have evidence to conclude that your site is more than 12 km from breeding habitat.	13 confirmed breeding sites occur within 6-9 km of the survey area (Birdlife, 2025).
Proximity to roosting	0	Subtract 1 if you have evidence to conclude that your site is more than 20 km from a known roosting habitat.	14 white-tailed black cockatoo (predominantly Carnaby's Cockatoo) and six joint roost sites have been confirmed within 12 km of the survey area (Birdlife, 2025).
Impact from significant plant disease	0	Subtract 1 if your site has disease present (e.g., Phytophthora spp. or Marri canker) and the disease is affecting more than 50% of the preferred flood plants present.	Disease was not observed during the field survey.
Total score			**8**
Appraisal		A total of 0.6 ha is considered to be Moderate to High quality for Carnaby's Cockatoo.	

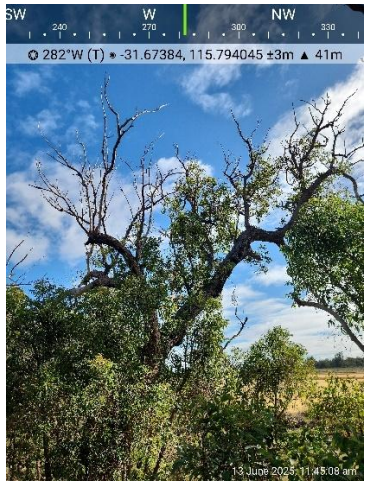
Starting score	Forest Red-tailed Black Cockatoo
10	**Start at a score of 10** if your site is Jarrah Marri woodland and/or forest, or if it is on the edge of Karri forest, or if Wandoo and Blackbutt occur on the site, within the range of the subspecies, including along roadsides and parkland cleared areas. **This tool only applies to sites equal to or large than 1 hectare in size.**

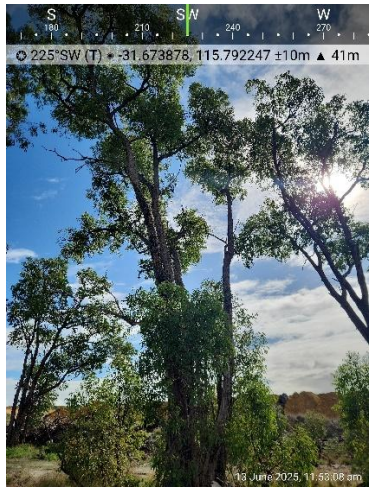
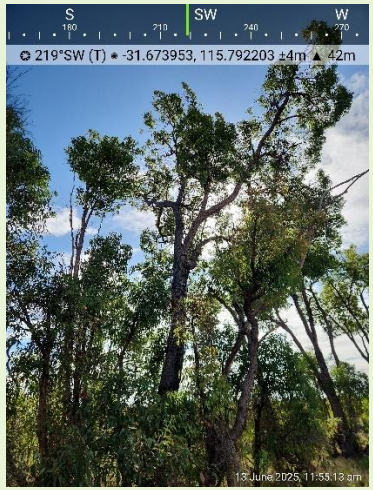
Attribute	Subtractions	Context adjustor (attributes reducing functionality of foraging habitat)	Evidence from field survey
Foraging potential	-2	Subtract 2 from your score if there is no evidence of feeding debris on your site.	No evidence observed.
Connectivity	0	Subtract 2 from your score if you have evidence to conclude that there is no other foraging habitat within 12 km of your site.	There is native shrubland to the south of the survey area that contains suitable foraging species.
Proximity to breeding	-2	Subtract 2 if you have evidence to conclude that your site is more than 12 km from breeding habitat.	No breeding habitat have been confirmed within 12 km of the survey area and no suitable breeding trees were recorded within the survey area.
Proximity to roosting	0	Subtract 1 is you have evidence to conclude that your site is more than 20 km from a known roosting habitat.	Four forest Red-tailed Black Cockatoo roosting sites and six joint roost sites have been confirmed within 12 km of the survey area (Birdlife, 2025).
Impact from significant plant disease	0	Subtract 1 if your site has disease present (e.g., Phytophthora spp. or Marri canker) and the disease is affecting more than 50% of the preferred flood plants present.	Disease was not observed during the field survey.
Total score			**6**
Appraisal	A total of 0.6 ha is considered to be Moderate to High quality for Forest Red-tailed Black Cockatoo.		

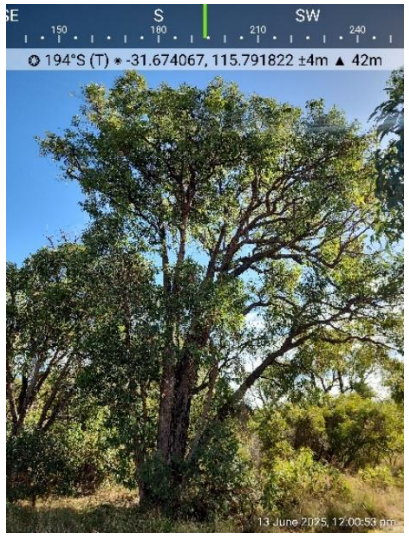
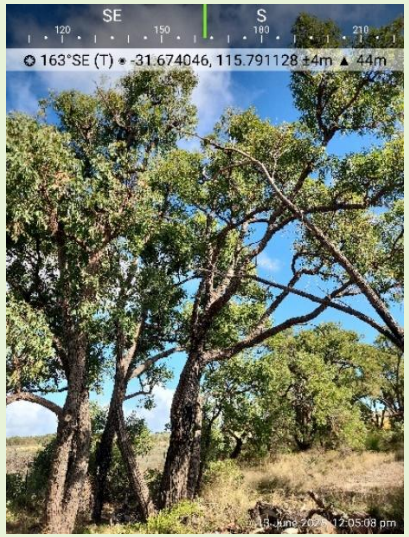
Starting score	Baudin's Cockatoo		
10	**Start at a score of 10** if your site is native eucalypt woodlands and forest, and proteaceous woodland and heath, particularly Marri, within the range of the species, including along roadsides and parkland cleared areas. Can include panted vegetation. **This tool only applies to sites equal or larger than 1 hectare in size**		
Attribute	**Subtractions**	**Context adjustor (attributes reducing functionality of foraging habitat)**	**Evidence from field survey**
Foraging potential	-2	Subtract 2 from your score if there is no evidence of feeding debris on your site.	No evidence observed.
Connectivity	0	Subtract 2 from your score if you have evidence to conclude that there is no other foraging habitat within 12 km of your site.	There is native shrubland to the south of the survey area that contains suitable foraging species.
Proximity to breeding	-2	Subtract 2 if you have evidence to conclude that your site is more than 12 km from breeding habitat.	The survey area does not occur within the species' modelled breeding range (DAWE, 2022).
Proximity to roosting	0	Subtract 1 is you have evidence to conclude that your site is more than 20 km from a known roosting habitat.	14 white-tailed black cockatoo (predominantly Carnaby's Cockatoo) and six joint roost sites have been confirmed within 12 km of the survey area (Birdlife, 2025).
Impact from significant plant disease	0	Subtract 1 if your site has disease present (e.g., Phytophthora spp. or Marri canker) and the disease is affecting more than 50% of the preferred flood plants present.	Disease was not observed during the field survey.
Total score			**6**
Appraisal	A total of 0.9 ha is considered to be Moderate to High quality for Baudin's Cockatoo.		

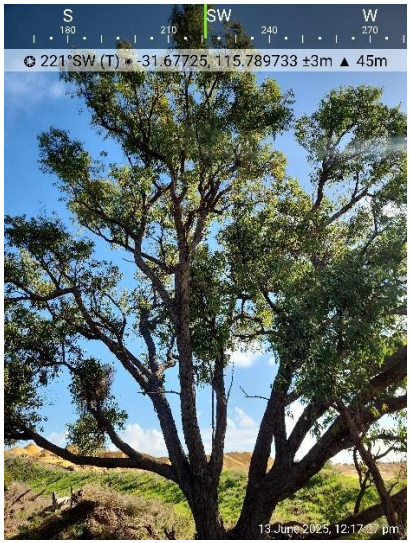
Appendix N Black Cockatoo potential breeding trees recorded in the survey area

Treed ID	Species	Common name	Stem number	DBH (mm)	Hollows	Hollow information	Other comments	Photo
Tree 1	*Eucalyptus marginata*	Jarrah	Stem 1	1,150	Yes	**Hollow Rank:** 4 (no suitable hollows present) **Number of Hollows:** 2 (both approximately 50 mm Trunk)	Lightning strike, 2x small not suitable hollows, epicormic growth, lacking foliage on outer branches	
Tree 2	*Eucalyptus marginata*	Jarrah	Stem 1	510	No	**Hollow Rank**: 4 (no suitable hollows present)	Narrow crown, small upper branches	
			Stem 2	490	No			
			Stem 3	430	No			

Treed ID	Species	Common name	Stem number	DBH (mm)	Hollows	Hollow information	Other comments	Photo
Tree 3	*Eucalyptus marginata*	Jarrah	Stem 1	880	No	**Hollow Rank:** 4 (no suitable hollows present)	Short tree (approximately 10 m tall), snapped branches, under stress, epicormic growth, poor crown development	
Tree 4	*Eucalyptus marginata*	Jarrah	Stem 1	760	No	**Hollow Rank:** 4 (no suitable hollows present)	Stress, dead upper branches poor crown development, epicormic growth, bees	

Treed ID	Species	Common name	Stem number	DBH (mm)	Hollows	Hollow information	Other comments	Photo
Tree 5	*Eucalyptus marginata*	Jarrah	Stem 1	600	No	**Hollow Rank:** 4 (no suitable hollows present)	Thin upper crown, slightly stressed, good foliage	
Tree 6	*Eucalyptus marginata*	Jarrah	Stem 1	600	No	**Hollow Rank:** 4 (no suitable hollows present)	Evidence of historical logging, thin crown	

Treed ID	Species	Common name	Stem number	DBH (mm)	Hollows	Hollow information	Other comments	Photo
Tree 7	*Eucalyptus marginata*	Jarrah	Stem 1	600 (below node)	No	**Hollow Rank:** 4 (no suitable hollows present)	Thin crown	
Tree 8	*Eucalyptus marginata*	Jarrah	Stem 1	560	No	**Hollow Rank:** 4 (no suitable hollows present)	Thin crown	

Treed ID	Species	Common name	Stem number	DBH (mm)	Hollows	Hollow information	Other comments	Photo
Tree 9	*Eucalyptus marginata*	Jarrah	Stem 1	570	No	**Hollow Rank:** 4 (no suitable hollows present)	Thin upper branches	
			Stem 2	650	No			