



Yathroo Wind Farm

Basic and Targeted Fauna Assessment

Final

August 2025



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Prepared by
Umwelt (Australia) Pty Limited

On behalf of
Neoen Australia Pty Ltd

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Acknowledgement of Country

Umwelt acknowledges the Traditional Owners of Country throughout Australia and their continuing values, culture and connection to the land, waters and sky.

We pay our respects to Elders past and present.

The below image is from the artwork *Yapung Maryiyang* (Pathway Forward) by Saretta Fielding.



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1.0 Introduction

1.1 Project Background

Neoen Australia Pty Ltd (Neoen) is proposing the development of the Yathroo Wind Farm (the Project) located approximately 120 kilometres (km) north of Perth in the Shire of Dandaragan. The Project is expected to comprise of up to 65 Wind Turbine Generators (WTG), a Battery Energy Storage System (BESS) and associated ancillary infrastructure.

Umwelt were commissioned by Neoen in 2024 to undertake a basic and targeted vertebrate fauna assessment to guide design feasibility and support environmental approvals for the Project. This report outlines the findings of a basic and targeted fauna assessment.

1.1.1 Project Location

The Project is located within the Shire of Dandaragan, approximately 120 km north of Perth, Western Australia. The Project is situated across several freehold properties around Brand Highway and Dandaragan Road, between Dandaragan, Cataby and Regan's Ford. The Project will tie into existing 132 / 330 kV double circuit transmission infrastructure, which is scheduled to be upgraded to dual circuit 330 kV. This will provide network access and intersects the western portion of the Project.

The Project is located within the Intensive Land Use Zone, as defined by the Department of Primary Industries and Regional Development (DPIRD, 2016). Namming Nature Reserve and Moore River National Park are located west and south of the Project.

1.2 Project Area Definitions

Two areas of study were defined for the Project. The Survey Area, provided by Neoen on 1 November 2024 (YTO-PRJ-PA-008), covered 17,213 hectares (**Figure 1.1**) and formed the basis of the on-ground assessment. The Desktop Study Area included the Survey Area plus a 20 km buffer and was used to assess the broader environmental context of the Project.

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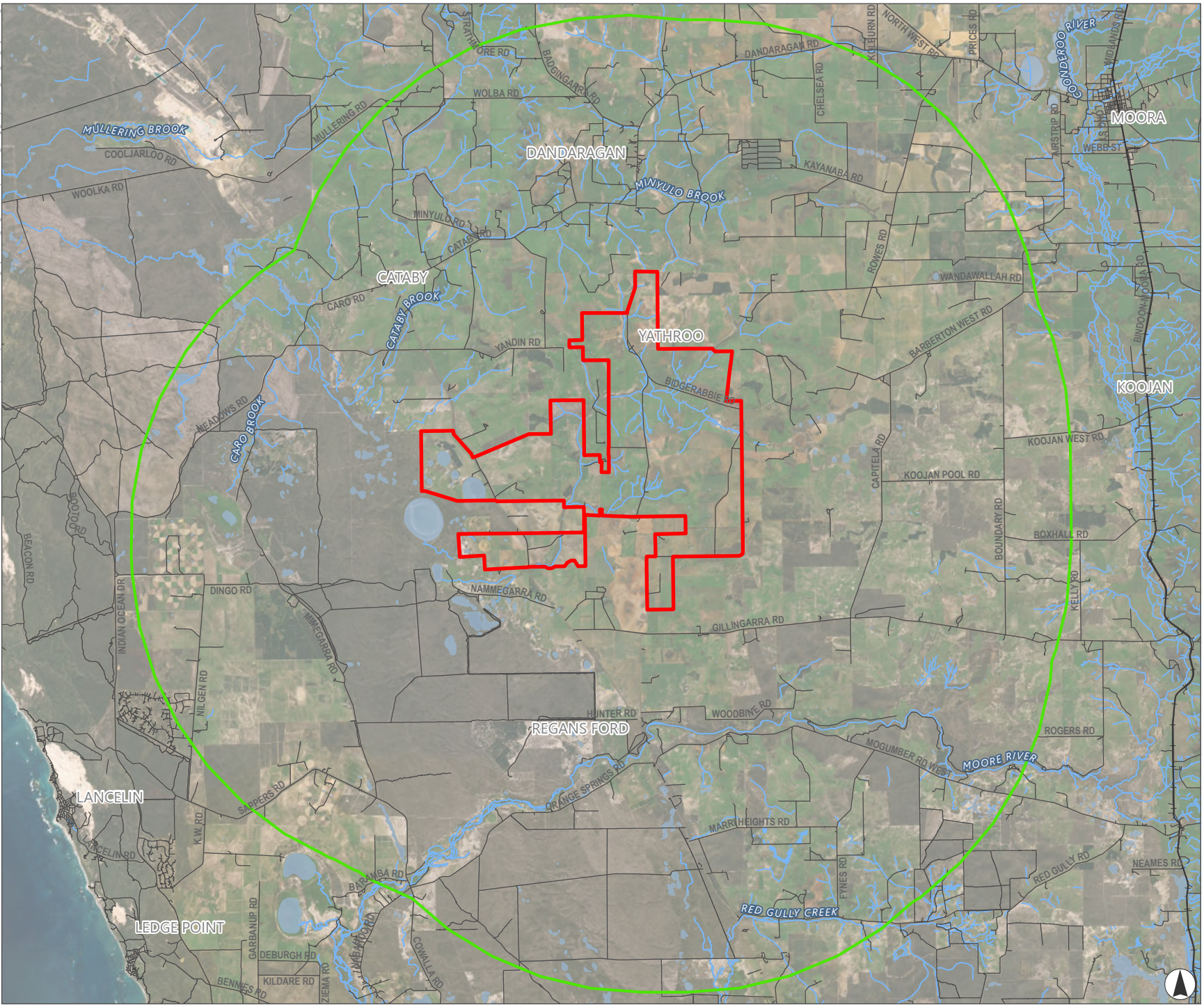
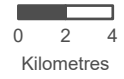
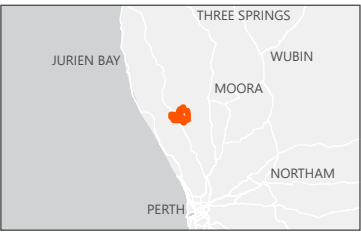


FIGURE 1.1
Project Location

- Legend**
- ▭ Survey Area
 - ▭ Desktop Study Area (DSA)
 - Railway
 - Road
 - Watercourse
 - Waterbody



Scale 1:320,000 at A4
GDA2020 MGA Zone 50



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1.3 Aims and Objectives

The purpose of this assessment was to undertake a basic and targeted terrestrial vertebrate fauna survey to identify the occurrence of terrestrial vertebrate fauna species and their supporting habitats within the Survey Area, with a focus on conservation-significant species listed under the WA *Biodiversity Conservation Act 2016* (BC Act), and the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). Specifically, the key objectives of the assessment were to:

- Conduct a desktop assessment (including database searches and literature review) on significant vertebrate fauna species potentially occurring within the Survey Area.
- Map and describe broad fauna habitat types within the Survey Area, and describe their significance to vertebrate fauna, particularly those of conservation significance.
- Conduct a single season field survey to identify vertebrate fauna species occurring within the Survey Area, with a focus on conservation significant fauna.
- Assess the likelihood and distribution of conservation significant fauna occurring within the Survey Area.

1.4 Level of Assessment and Relevant Guidance

The vertebrate fauna assessment was undertaken at a basic and targeted level as per the *Technical Guidance - Terrestrial vertebrate fauna surveys for environmental impact assessment* (EPA, 2020). The survey and reporting works were carried out in accordance with the following guidelines:

- Technical Guidance – Terrestrial vertebrate fauna surveys for environmental impact assessment (EPA, 2020).
- Referral guideline for 3 WA threatened black cockatoo species: Carnaby’s Cockatoo, Baudin’s Cockatoo and the Forest Red-tailed Black-cockatoo (DCCEEW, 2022).
- Survey guidelines for Australia’s threatened birds. Guidelines for detecting birds listed as threatened under the Environment Protection and Biodiversity Conservation Act 1999 (DCCEEW, 2010b).
- Survey guidelines for Australia’s threatened mammals. Guidelines for detecting mammals as threatened under the EPBC Act (DCCEEW, 2011a).
- Survey guidelines for Australia’s threatened reptiles. Guidelines for detecting reptiles listed as threatened under the Environment Protection and Biodiversity Conservation Act 1999 (DCCEEW, 2011b).
- Survey guidelines for Australia’s threatened bats. Guidelines for detecting bats listed as threatened under the Environment Protection and Biodiversity Conservation Act 1999 (DCCEEW, 2010a).
- Matters of National Environmental Significance Significant impact guidelines 1.1. Environment Protection and Biodiversity Conservation Act 1999 (DoE, 2013).
- Environmental Factor Guideline: Terrestrial Fauna (EPA, 2016).

2.0 Existing Environment

2.1 Biogeography

The Interim Biogeographic Regionalisation of Australia (IBRA7) classifies Australia's landscapes into 89 large, geographically distinct bioregions based on common climate, geology, landform, native vegetation and species information. These areas are further refined to 419 subregions which are more localised and homogenous geological units in each bioregion (DCCEEW, 2023a).

The Survey Area lies across two IBRA bioregions; Geraldton Sandplains (GES) and Swan Coastal Plains (SWA). The Survey Area is further located within three subregions: Lesueur Sandplain (GS2), Dandaragan Plateau (SWA01) and Perth (SWA02).

The Lesueur Sandplain subregion is described by Desmond and Chant (2002) as follows:

“The Geraldton Sandplains bioregion is composed mainly of proteaceous scrub-heaths, rich in endemics, on the sandy earths of an extensive, undulating, lateritic sandplain mantling Permian to Cretaceous strata. Extensive York Gum and Jam woodlands occur on outwash plains associated drainage. The Lesueur Sandplain (GS3) comprises coastal Aeolian and limestones, Jurassic siltstones and sandstones (often heavily lateritised) of central Perth Basin. Alluvials are associated with drainage systems. There are extensive yellow sandplains in south-eastern parts, especially where the subregions overlaps the western edge of the Pilbara Craton. Shrub-heaths rich in endemics occur on a mosaic of lateritic mesas, sandplains, coastal sands and limestones. Heath on lateritised sandplains along the subregions north-eastern margins. The climate is Mediterranean and the subregional area is 1,358,915 ha.”

The Dandaragan Plateau subregion is described by Desmond (2001) as follows:

“The plateau is bordered by Derby and Dandaragan Faults. Cretaceous marine sediments are mantled by sands and laterites. Characterised by Banksia low woodland, Jarrah - Marri woodland, Marri woodland, and by scrub-heaths on laterite pavement and on gravelly sandplains. The climate is Warm Mediterranean and annual rainfall is 700 mm and the subregional area is 447,862 ha. “

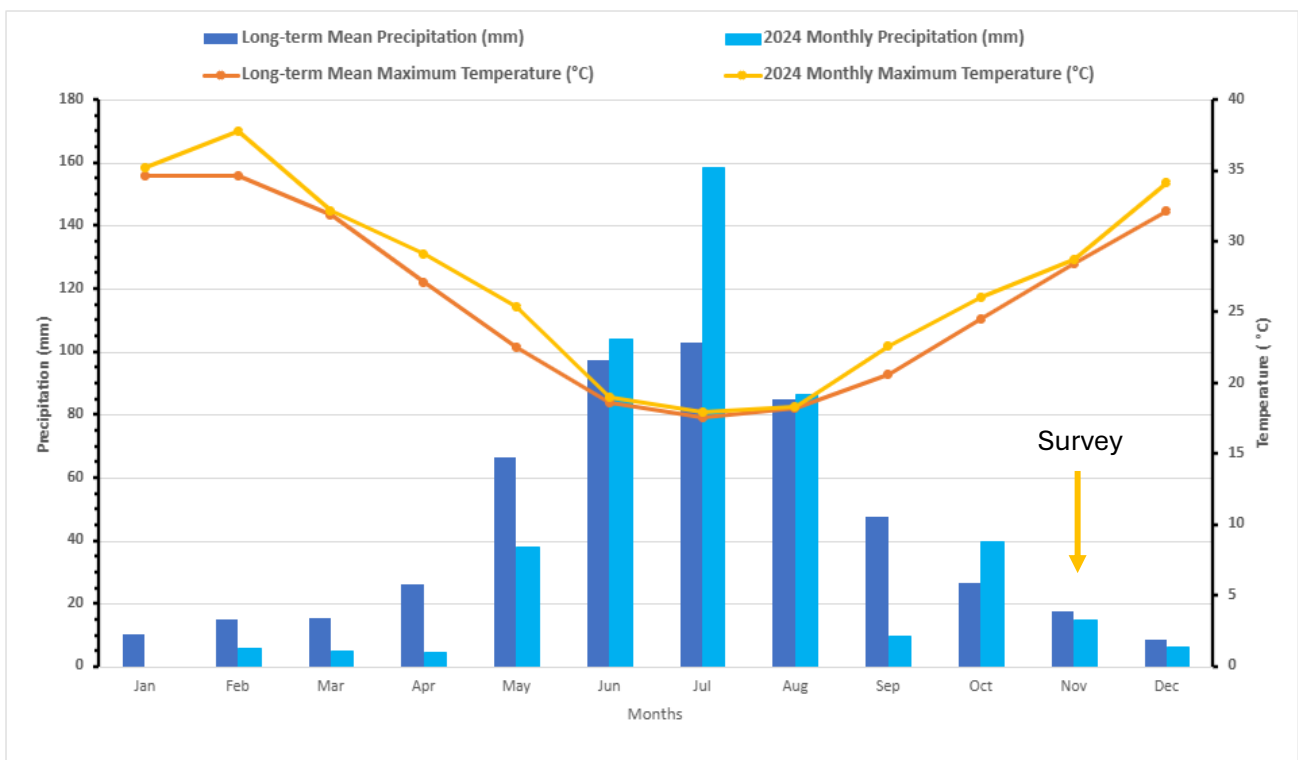
The Perth subregion is described by Mitchell, Williams and Desmond (2002) as follows:

“The Swan Coastal Plain is a low lying coastal plain, mainly covered with woodlands. It is dominated by Banksia or Tuart on sandy soils, Casuarina obesa on outwash plains, and paperbark in swampy areas. In the east, the plain rises to duricrusted Mesozoic sediments dominated by Jarrah woodland. The climate is Warm Mediterranean. Three phases of marine sand dune development provide relief. The outwash plains, once dominated by C. obesa-marri woodlands and Melaleuca shrublands, are extensive only in the south. The Perth subregion is composed of colluvial and aeolian sands, alluvial river flats, coastal limestone. Heath and/or Tuart woodlands on limestone, Banksia and JarrahBanksia woodlands on Quaternary marine dunes of various ages, Marri on colluvial and alluvials. Includes a complex series of seasonal wetlands and also includes Rottnest, Carnac and Garden Islands etc. Rainfall ranges between 600 and 1000 mm annually and the climate is Mediterranean. The subregional area is 1, 333, 901 ha.

2.2 Climate

The majority of the Survey Area is located within the Swan Coastal Plain and Geraldton Sandplains IBRA bioregions, which are characterised by a Mediterranean climate with hot, dry summers and cool, wet winters. The closest meteorological station with long-term climate data is Badgingarra Station (Station No. 9037) (BoM, 2024), situated approximately 46 km northwest of the Survey Area.

In 2024, maximum temperatures were consistently slightly above the long-term monthly averages (**Graph 2.1**). Total annual rainfall in 2024 (473.6 mm) was below the long-term average (517.7 mm), however cumulative rainfall in the six months preceding the basic and targeted fauna survey were above long-term averages (436.8.6 mm compared to 424.7 mm).



Graph 2.1 Climate Statistics for Badgingarra Station (9037) (BoM, 2024)

2.2.1 Weather

Daily weather data was sourced from Badgingarra Station (Station ID: 009037) (BoM, 2024). Weather during the survey was mild and consistent, characterised by cool overnight temperatures and warm daytime conditions. For the primary field survey, minimum daily temperatures ranged from 9.6°C to 10.4°C, while maximum temperatures varied between 25.3°C and 26.4°C, with an average of 25.8°C across the period. On the single-day supplementary survey, temperatures ranged between 18.9°C and 39.5 °C. Rainfall was low, with minor daily totals between 0.4 mm and 0.6 mm and no significant cumulative rainfall. No rainfall was recorded during the supplementary survey. Overall, the conditions were favourable for fauna survey activities and are not expected to have influenced species activity or detectability. Daily weather recorded during the survey is presented on **Table 2.1**.

Table 2.1 Temperature and Precipitation Recorded During Survey (Station ID: 9037) (BoM, 2024)

Survey Date	Temperature (°C)		Precipitation (mm)
	Min	Max	
29 October 2024	9.6	25.4	0.6
30 October 2024	9.6	25.3	0.6
31 October 2024	9.6	25.4	0.6
1 November 2024	9.7	25.5	0.5
2 November 2024	9.9	26.0	0.4
3 November 2024	10.2	26.2	0.5
4 November 2024	10.4	26.3	0.5
5 November 2024	10.4	26.4	0.5
10 December 2024	18.9	39.5	0

2.3 Geology and Soils

The Survey Area is located within the Perth, Dandaragan Plateau and Leseuer Sandplain IBRA subregions (DCCEE, 2023b). The Perth subregion (SWA02) is composed of colluvial and aeolian sands, alluvial river flats and coastal limestone (Mitchell et al., 2002). The Dandaragan Plateau subregion (SWA01) is composed of cretaceous marine sediments, mantled by sands and laterites (Desmond, 2001). The Lesueur Sandplain subregion is comprised of coastal Aeolian and limestones, Jurassic siltstones and sandstones (often highly laterised) and alluvials associated with drainage systems (Desmond & Chant, 2002).

Soil landscape mapping of the south-west of Western Australia has been published by the Department of Primary Industries and Regional Development (DPIRD) (DPIRD, 2025a). This database compiles various surveys at different scales varying between 1:20,000 and 1:3,000,000 across the south-west of Western Australia (DPIRD, 2022b). Based on this database, the Survey Area intersects 32 soil-landscape units, as summarised in **Table 2.2** and presented in **Figure 2.1**.

Table 2.2 Soil Landscape Mapping of the Project Area

Soil Unit	Description^	Mapped Extent in Project Area (ha)
Bassendean		
212Bs_1	Undulating to flat sandplain and minor swamps; pale to yellow deep sands.	328.5
212Bs_3	Low dunefields; deep, pale grey or white sands.	189.5
212Bs_4	Plain, often poorly drained; semi-wet soil, pale shallow sands over pan, sandy duplexes, wet soil.	250.2
212Bs_5	Complex pattern of dunes or low sandy rises, poorly drained plains, (Complex of Bs1, Bs4 and Bs6; Bs4 or Bs6 dominant); saline depressions and swamps.	304.6
212Bs_7	Plain, occasionally seasonally wet, and numerous sandy rises. Complex of Bs1, Bs4 and Bs6. Bs1 dominant.	15.6
212Bs_8	Gently undulating sandplain; yellow deep sand.	598.0
212Bs_9	Permanent or semi-permanent swamps.	60.7
212Bs12	Drainage line and adjacent very gently inclined footslopes; mainly sandy duplexes, brown deep sand and brown sandy earth.	1.1
Capitella		
222Cp_2c	Very gently to gently inclined hillslopes, and minor valleys, associated with Cp1b and Rw2a; pale and yellow deep sands.	471.9
Dandaragan		
222Da_1a	Hillcrests and very gently to gently inclined hillslopes; red to pale sandy gravels, shallow red to pale sands over duricrust, some red to yellow deep sands.	679.7
222Da_1b	Small hillcrests associated with rejuvenation; loamy gravel, loamy earths, duplex sandy gravel.	22.5
222Da_1c	Gently to moderately inclined small breakaway slopes; red sandy and loamy gravels.	1.1
222Da_1d	Plateau remnant, plain some hillcrests; shallow red to brown sands over gravel and duricrust, red sandy gravels.	233.4
222Da_2a	Very gently to gently inclined hillslopes, some hillcrests and plateau remnants; yellow and brown deep sands, some sandy earths.	2774.4
222Da_2b	Hillcrests and very gently to gently inclined upper hillslopes; pale and yellow deep sands, gravelly pale deep sand.	39.9
222Da_3	Colluvial slopes, very gently to gently inclined hillslopes; red to brown and yellow deep sands, some sandy gravels and sandy earths.	4643.1

Soil Unit	Description^	Mapped Extent in Project Area (ha)
222Da_4a	Very gently to gently inclined upper hillslopes, partially stripped; loamy and sandy duplexes, loamy earths, red deep sand, loamy gravel.	1017.3
222Da_4b	Gently to moderately inclined upper hillslopes, minor breakaway slopes; loamy duplexes, loamy gravel, red deep sand.	3.3
222Da_5	Stripped slopes, very gently inclined hillslopes and hillcrests on chalk outcrops; shallow calcareous loams.	188.1
222Da_6	Fans, very gently inclined footslopes and hillslopes; sandy duplexes, loamy earths, red deep sand, some sandy gravels.	783
222Da_7a	Very gently inclined footslopes and open depressions; pale and yellow deep sands, sandy duplexes.	124.9
222Da_7b	Narrow open depressions; wet soil, sandy and loamy duplexes, deep sands.	222
222Da_8a	Alluvial plain and sand filled open depressions; wet soil, sandy and loamy duplexes (often over pan or bog iron), pale deep sand, shallow loams on pans.	695.5
222Da_8b	Alluvial plain, apparently regional groundwater connected; Sandy duplexes, often wet soil.	162.1
222Da_9	Playas; shallow sands and loams over pans, often wet soil.	38.1
Rowes		
222Rw_2	Plateau residuals, hillcrests and very gently to gently inclined hillslopes; sandy gravels, gravelly pale deep sand, some duricrust.	1168.5
222Rw_3a	Colluvial slopes, very gently to gently inclined hillslopes and sand filled minor valleys; yellow deep sand, some sandy earths.	4.9
222Rw_3b	Colluvial slopes, very gently to gently inclined hillslopes and sand filled minor valleys; yellow and pale deep sands.	1749.8
222Rw_4	Narrow drainage line; deep sand, sandy duplexes, some wet soil.	111.3
Boothendarra		
224Bh_4	Gently to very gently inclined hillslopes and footslopes; sandy duplexes, deep sands and sandy gravels.	229
224Bh_7b	Steeply inclined breakaway slopes; loamy gravel, loamy duplexes (over pallid zone clays), rock outcrops.	16.4
224Bh_9	Floodplain, discharge of Cataby creek on coastal plain; sandy duplexes, some wet soil.	84.2
Total		17,213

^Source: DPIRD (2025a).

2.4 Hydrology and Surface Drainage

The Survey Area spans three groundwater catchments within the Moore–Hill Rivers Basin. A small portion of the Nambung River catchment intersects the northern extent of the Survey Area, while a small portion of the Moore River catchment intersects the southern extent. The majority of the Survey Area lies within the Minyulo–Caren Caren catchment.

The Nambung River catchment originates on the Dandaragan Plateau and terminates a few kilometres inland from Cervantes, with no outlet to the Indian Ocean. Instead, it drains internally into the region’s limestone-dominated geology. Flowing westward for approximately 22 km, the catchment includes three tributary sub-catchments; Bibby Creek, Mount Jetty Creek, and the upper eastern catchment covering a total area of approximately 3,000 km² (DWER, 2025b).

The Minyulo-Caren Caren catchment comprises Lake Guraga, a large saline/brackish lake, and a second saline lake, Namming Lake is located 3 km south of Lake Guraga. Water recharge occurs through direct precipitation, ongoing waterflow from the Caren Caren Brook system, originating 25 km north-east of Lake Guraga and, connecting streams, also passing through Crackers Swamp. Moore River catchment of the basin flows southward from Perenjari, Carnamah and Dalwllinu shires through to the Coorow, Dandaragan and Moora Shires, meeting the Gingin Brook where the catchment flows out to the Indian Ocean via Guilderton (Moore River Catchment Council, 2020).

The Caren Caren Brook traverses the central portion of the Survey Area in a north–south direction. It is a non-perennial drainage line and is classified as a minor river.

A review of the Directory of Important Wetlands (DBCWA-045); identified Lake Guraga approximately 1.4 km west of the Survey Area. No Ramsar-listed wetlands occur within the Desktop Study Area. Surface water features and catchment boundaries relevant to the Survey Area are illustrated in **Figure 2.2**.

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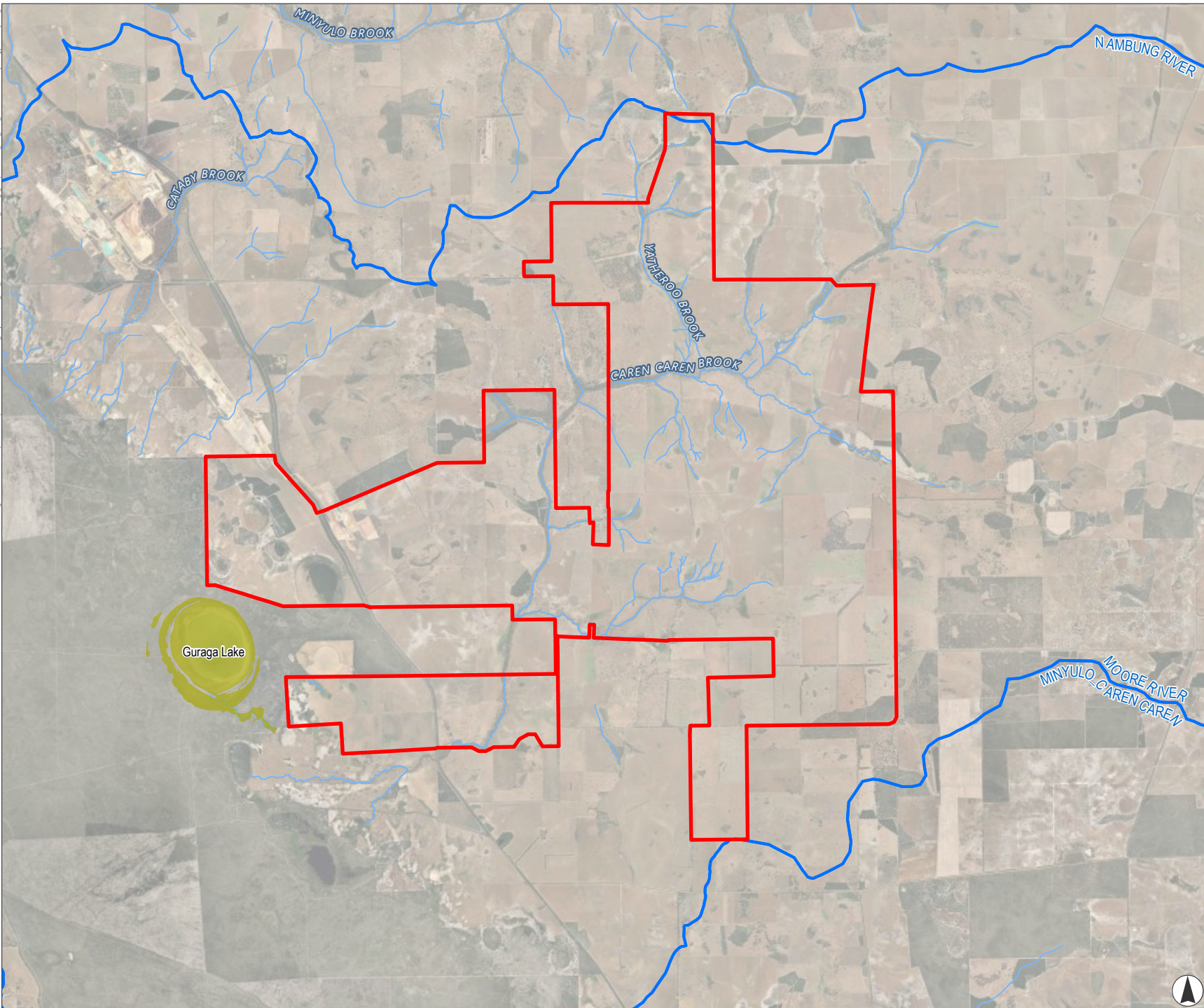


FIGURE 2.2
Surface Water and Hydrology of the Survey

- Legend
- Survey Area
 - Directory of Important Wetlands
 - Catchments
 - Watercourse



Scale 1:150,000 at A4
GDA2020 MGA Zone 50



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2.5 Pre-European Vegetation

Broad scale (1:100,000) pre-European vegetation mapping for Western Australia was completed at an association level by Beard et al. (1975). This mapping was later adapted and digitised at a scale of 1:300,000 by Beard et al. (2013) and is available from the DataWA website as Pre-European vegetation mapping (DPIRD, 2019). The Government of Western Australia (GoWA) has released vegetation statistics for vegetation system associations (VSAs) that include pre-European extent, current extent, current extent remaining and current extent protected for conservation (DBCA, 2019). The vegetation statistics for vegetation associations intersecting the Survey Area are presented in **Table 2.3**.

Seven VSAs intersect the Survey Area, as summarised in **Table 2.3**. This table also presents the current extent of each VSA relative to its pre-European extent within the relevant IBRA bioregions (DBCA, 2019). The dominant VSA, Dandaragan_999, occupies 74.9% of the Survey Area and retains only 9.4% of its pre-European extent. Just 1.2% of its current extent is protected for conservation. The remaining VSAs intersecting the Survey Area retain more than 30% of their pre-European extent, although protection levels vary.

The vegetation system association mapping is presented in **Figure 2.3**.

Table 2.3 Vegetation System Associations of the Survey Area

Vegetation System Association	Description	Pre-European extent (ha)	Current Extent^ (ha)	Extent Remaining (%)	Current Extent Protected for Conservation (%)	Extent in Survey Area (ha)
BASSEDEAN_1030	Low woodland; <i>Banksia attenuata</i> and <i>Banksia menziesii</i>	1,912.7	79,560.9	69.7	13.9	1,913
BASSEDEAN_1031	Mosaic: Shrublands; hakea scrub-heath / Shrublands; dryandra heath	1,892.6	394.9	8.6	0	1,893
BASSEDEAN_125	Bare areas; salt lakes	257.3	355.3	23.1	5.0	257
DANDARAGAN_1030	Low woodland; <i>Banksia attenuata</i> and <i>Banksia menziesii</i>	130.6	570.5	41.2	0	130
DANDARAGAN_1035	Mosaic: Medium open woodland; marri / Shrublands; dryandra heath	19.0	339.8	10.1	0	19
DANDARAGAN_999	Medium woodland; marri	12,890.9	8477.4	9.4	1.2	12,891
LESUEUR_1031	Mosaic: Shrublands; hakea scrub-heath / Shrublands; dryandra heath	109.7	73457.3	32.7	37.8	110
Total						17,213

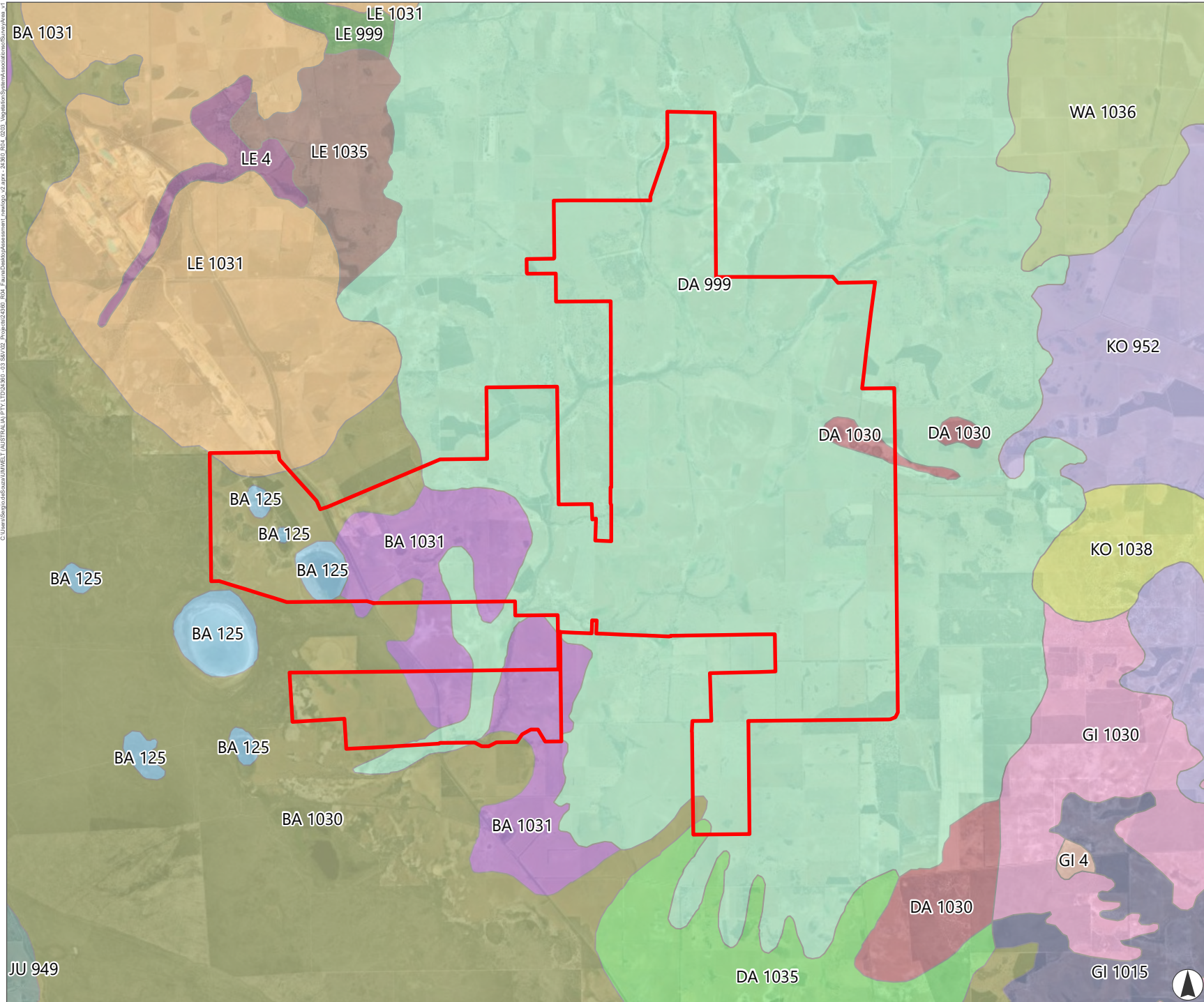


FIGURE 2.3
Vegetation System Associations of the Survey Area

- Legend**
- ▬ Survey Area
 - Pre-European Vegetation (DPIRD 2019)**
 - BA 1030 : BASSENDEAN_1030
 - BA 1031 : BASSENDEAN_1031
 - BA 125 : BASSENDEAN_125
 - DA 1030 : DANDARAGAN_1030
 - DA 1035 : DANDARAGAN_1035
 - DA 999 : DANDARAGAN_999
 - GI 1015 : GINGIN_1015
 - GI 1030 : GINGIN_1030
 - GI 4 : GINGIN_4
 - JU 949 : JURIEEN_949
 - KO 1038 : KOOJAN_1038
 - KO 952 : KOOJAN_952
 - LE 1031 : LE SUEUR_1031
 - LE 1035 : LE SUEUR_1035
 - LE 4 : LE SUEUR_4
 - LE 999 : LE SUEUR_999
 - WA 1036 : WARRO_1036



Scale 1:150,000 at A4
 GDA2020 MGA Zone 50

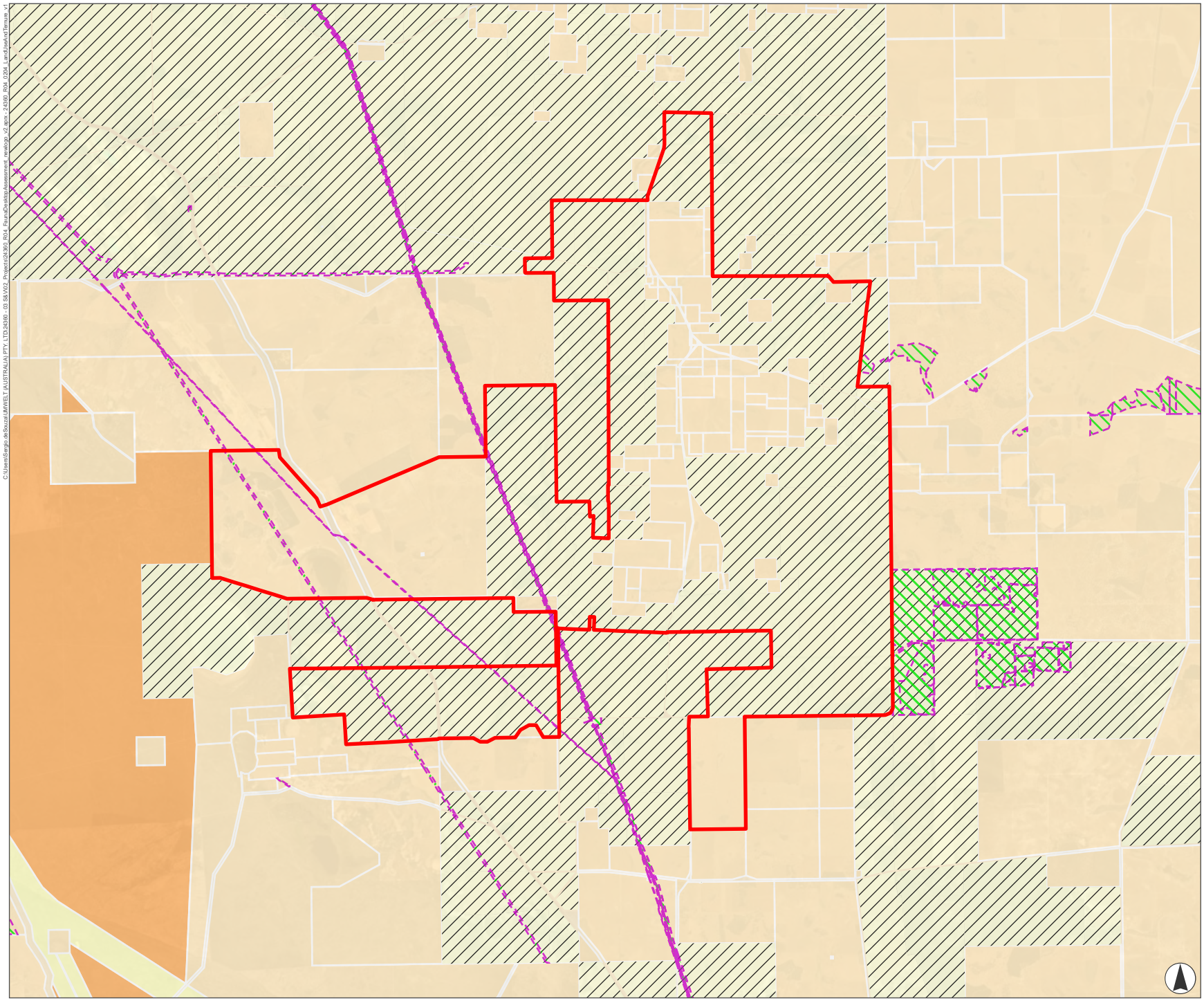


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2.6 Land Use and Tenure

The Survey Area is primarily comprised of leased Crown land that is currently used for agricultural purposes, with the remainder on Freehold land used for agricultural purposes, Shire Road Reserve and small Crown Reserves (**Figure 2.4**).

FIGURE 2.4
Land Use and Tenure



- Legend**
- Survey Area
 - Easements
 - Other Interests
 - Crown Reserve
 - Public Road
 - Unallocated Crown Land
 - Miscellaneous (Type3)
 - Crown Allotment (Type 2)
 - Lot on Survey (Type 1)



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 GDA2020 MGA Zone 50



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2.7 Environmentally Sensitive Areas

Environmentally Sensitive Areas (ESAs) are classes or areas of native vegetation where the exemptions for clearing vegetation under the Environmental Protection (Clearing of Native Vegetation) Regulations 2004 (Clearing Regulations) do not apply. ESAs are declared by the Minister for Environment under section 51B of the Environmental Protection Act 1986 (EP Act) with the current ESA notice gazetted on 8 April 2005. ESAs include the following:

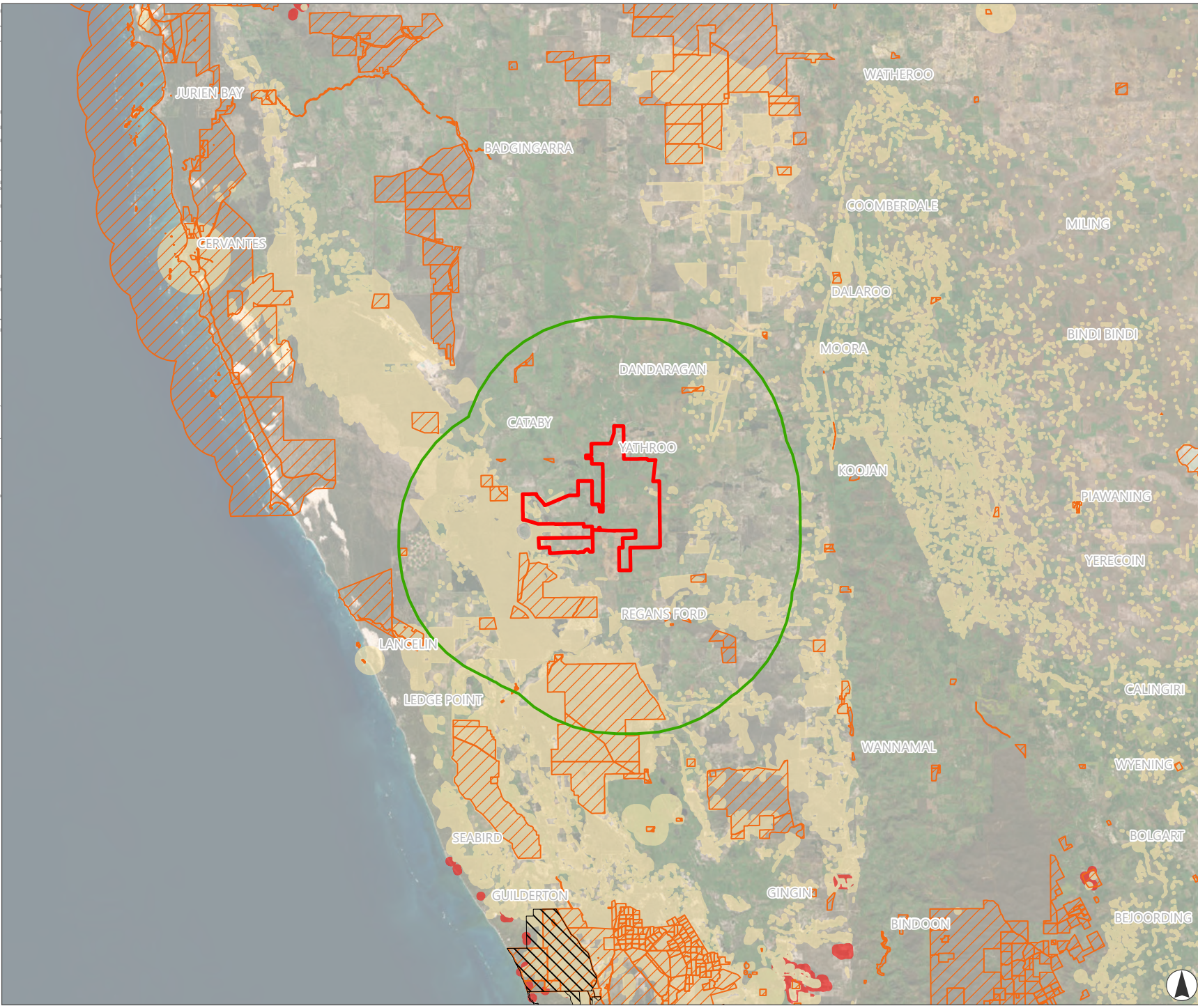
- Declared World Heritage property as defined in section 13 of *EPBC Act*.
- An area that is included on the Register of the National Estate, because of its natural heritage value, under the *Australian Heritage Council Act 2003* of the Commonwealth.
- A defined wetland and the area within 50 m of the wetland. Defined wetlands include Ramsar wetlands, conservation category wetlands and nationally important wetlands.
- The area covered by vegetation within 50 m of rare flora, to the extent to which the vegetation is continuous with the vegetation in which the rare flora is located.
- The area covered by a Threatened Ecological Community (TEC).
- Bush Forever sites.
- The areas covered by the Environmental Protection (Gnangara Mound Crown Land) Policy 1992,
- The areas covered by the Environmental Protection (Western Swamp Tortoise Habitat) Policy 2002.
- The areas covered by the lakes to which the Environmental Protection (Swan Coastal Plain Lakes) Policy 1992 applies.
- Protected wetlands as defined in the Environmental Protection (South West Agricultural Zone Wetlands) Policy 1998.

The desktop assessment identified 187 ESAs within the Desktop Study Area, none of which intersect the Survey Area (**Figure 2.5**).

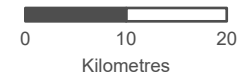
C:\Users\Sunjo\Desktop\UMWELT (AUSTRALIA) PTY LTD\24360_03\S\W\02_Project\03\4500_R01_EnumDesktopAssessment_nw\03p_v2.aprx - 24360_R01_0203_EnumAssessment\Drawings\05\24360\Area_V1

FIGURE 2.5

Environmentally Sensitive Areas within the Desktop Study Area



- Legend**
- Desktop Study Area (DSA)
 - Survey Area
 - Bush Forever Areas - 2000 (DPLH-019)
 - Legislated Lands and Waters
 - Threatened Ecological Communities (TECs)
 - Priority
 - Threatened



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GDA2020 MGA Zone 50



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3.0 Methods

3.1 Desktop Assessment

A review of terrestrial vertebrate fauna and relevant invertebrate data for the Desktop Study Area was conducted as part of the desktop assessment. This involved obtaining and reviewing reports from previous biological surveys undertaken in the vicinity, including data from the Index of Biodiversity Surveys for Assessments (IBSA) database (DWER, 2024a). Additionally, relevant regional databases and other sources were examined, as outlined in **Table 3.1**.

Table 3.1 Searches Undertaken for the Desktop Assessment

Aspect	Information Source
Biogeography	Interim Biogeographic Regionalisation for Australia (IBRA) Version 7 (Regions) (DCCEEW, 2023a)
	Interim Biogeographic Regionalisation for Australia (IBRA) Version 7 (Subregions) (DCCEEW, 2023b)
Climate	Climate Data Online (BoM, 2024)
Soil Landscape Mapping	Soil Landscape Mapping – Best Available (DRIRP-027) (DPIRD, 2025b)
Hydrology	Hydrographic Catchments – Basins (DWER-027) (DWER, 2018a)
	Hydrographic Catchments – Catchments (DWER-028) (DWER, 2018a)
	RIWI Act, Groundwater Areas (DWER-034) (DWER, 2018b)
	RIWI Act, Rivers (DWER-036) (DWER, 2018c)
	Ramsar Sites (DBCA-010) (DBCA, 2017b)
Directory of Important Wetlands in Australia – Western Australia (DBCA-045) (DBCA, 2018)	
Vegetation	Pre-European Vegetation (DPIRD-006) (DPIRD, 2019)
	Native Vegetation Extent (DPIRD-005) (DPIRD, 2023)
	Statewide Vegetation Statistics (DBCA, 2019)
Conservation Significant Fauna	DBCA NatureMap database (DBCA, 2024c)
	DBCA Threatened and Priority Fauna Database (DBCA, 2024b)
	Black-cockatoo Roosting Dataset (DBCA, 2024a)
	Great Cocky Count (BirdLife Australia, 2024)
	Black-cockatoo Dataset (DBCA, 2024a)
Great Cocky Count (BirdLife Australia, 2024)	
Black-cockatoo Breeding Dataset (DBCA, 2025)	
Matters of National Environmental Significance (MNES)	EPBC Protected Matters Search Tool (DCCEEW, 2024)

3.2 Definitions

3.2.1 Significant Fauna Species

Conservation significant fauna taxa are defined as those that are listed under Federal and/or State legislation, and/or those ranked as Priority species by DBCA. Categories given to fauna protected under State and Commonwealth legislation, and otherwise through DBCA, are summarised in **Table 3.2**. A more detailed description of conservation categories is provided in **Appendix A**.

Table 3.2 Categories Given to Threatened and Priority Fauna

Act/Category	Category	Description
EPBC Act	Extinct in the wild (EW)	Fauna known to survive only in captivity.
	Critically Endangered (CR)	Fauna facing an extremely high risk of extinction in the wild in the immediate future.
	Endangered (EN)	Fauna facing a very high risk of extinction in the wild in the near future.
	Vulnerable (VU)	Fauna facing a very high risk of extinction in the wild in the medium-term future.
	Migratory (MI)	Fauna listed under international agreements to which Australia is a party.
BC Act	Extinct in the wild (EW)	Fauna known to survive only in captivity.
	Critically Endangered (CR)	Fauna facing an extremely high risk of extinction in the wild in the immediate future.
	Endangered (EN)	Fauna facing a very high risk of extinction in the wild in the near future.
	Vulnerable (VU)	Fauna facing a very high risk of extinction in the wild in the medium-term future.
	Migratory (MI)	A subset of the migratory fauna that are known to visit Western Australia that are protected under the international agreements or treaties, excluding species that are listed as Threatened species.
	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.
	Other specially protected species (OS)	Fauna in need of special protection to ensure their conservation.
DBCA Priority Fauna	Priority 1 (P1)	Poorly known species (on threatened lands).
	Priority 2 (P2)	Poorly known species in few locations (some on conservation lands).
	Priority 3 (P3)	Poorly known species in several locations (some on conservation lands).
	Priority 4 (P4)	Rare, near threatened and other species in need of monitoring.

3.2.2 Significant Habitat

Under the EPBC Act and BC Act, significant habitat is defined as habitat critical to the survival, breeding, foraging, or movement of conservation-significant species. This includes areas essential for the long-term persistence of listed significant species or communities, such as breeding sites, feeding areas, and movement corridors. Activities that may impact such habitat require assessment under the relevant legislation. According to EPA guidance (EPA, 2020), significant fauna habitats also include rare or isolated features (e.g. rock piles, caves, springs), areas providing key resources, and habitats that function as ecological linkages, refugia, or support important life stages such as breeding or foraging.

3.2.3 Likelihood of Occurrence Assessment

A likelihood of occurrence assessment was conducted for conservation significant fauna identified during the desktop review. This assessment considered species biology, distribution, habitat preferences, the availability and quality of suitable habitat, and existing records within or near the Survey Area. Each species was assigned a likelihood ranking (**Table 3.3**) based on these factors, ranging from Known to Very Low, reflecting the probability of the species occurring within the Survey Area.

Table 3.3 Categories for Vertebrate Fauna Likelihood of Occurrence

Likelihood Category	Description
Known	The species has been recorded during the field survey or from recent, reliable records within the Survey Area.
High	The Survey Area contains suitable habitat and there are recent records of the species occurring in close proximity to the Survey Area. OR Species known distribution overlaps the Survey Area which contains suitable habitat.
Moderate	The species is known from the broader area (Desktop Study Area) and some preferred habitat is present within the Survey Area. Aerial foragers and other migratory birds that may overfly the Survey Area are also included in this category.
Low	The species has been recorded within the Desktop Study Area however, there is limited habitat (i.e. quantity, type and quality) within the Survey Area. This may include marginal and isolated habitat with limited ability for the species to access. The species may disperse through the Survey Area infrequently and is unlikely to depend on the habitat for survival.
Very Low	The Survey Area offers limited to no potential habitat for the species, is outside its known range, and/or is lacking broader habitat requirements.

3.3 Taxonomy and Nomenclature

Species nomenclature and organisation follow recognised taxonomic checklists. Bird names have been based on *The Working List of Australian Birds (Version 4.3)* (BirdLife, 2023), while all other vertebrate species have been named according to the *Checklist of the Terrestrial Vertebrate Fauna of WA* (WAM, 2024). However, where recently published scientific literature has introduced updated taxa names not yet adopted by these sources, the published nomenclature is followed.

3.4 Basic Field Survey Methods

3.4.1 Survey Personnel, Timing and Access

The basic and targeted vertebrate fauna assessment was undertaken between 29 October and 5 November 2024, by Senior Zoologist Jeremy Ringma and Ecologist Grace Ball. Jeremy has over 18 years' experience and Grace has one year of experience surveying fauna in the state. Survey Timing was selected to coincide with the most appropriate time to survey for vertebrate fauna in the southern region (EPA, 2020).

A supplementary survey was undertaken on the 10 December 2024, by Senior Zoologist and Senior Ecologist Kyler Rowson, who has over 4 years of survey experience. This survey was conducted within the recommended time period to survey terrestrial fauna, as per EPA (2020).

The Survey Area was traversed by vehicle and on foot. Appropriate landholder/manager permissions were obtained prior to undertaking field survey.

3.4.2 Habitat Assessment

Habitat assessments were undertaken at 92 locations across the Survey Area during the survey to delineate vertebrate fauna habitats. The characteristics recorded during the habitat assessments include:

- Site information, photo and GPS location (recorded in GDA2020, Zone 50).
- Vegetation: dominant upper, mid and lower strata species and percentage cover.
- Substrate.
- Surface water presence.
- Habitat components (leaf litter, rocky outcrops, tree hollows etc.).
- Disturbance signs.
- General habitat condition.

3.4.3 Habitat Mapping

The information derived from the habitat assessments (**Section 3.4.2**) were used to delineate fauna habitats within the Survey Area which were then mapped accordingly. Locations of habitat assessment points were used in conjunction with aerial imagery, digital elevation models, and soil mapping units to generate discrete fauna habitat polygons using QGIS Desktop version 3.38.2 and ArcGIS Pro. Mapping boundaries were developed using aerial photography at a scale of 1:5,000 and reflected changes in landform and vegetation patterns visible at this scale. Where appropriate, fauna habitat mapping linework followed that developed for vegetation mapping undertaken as part of the Flora and Vegetation Assessment by Umwelt (2025b).

3.4.4 Ultrasonic Recording

Ultrasonic recordings were collected using Titley Scientific Ranger devices over a total of 15 nights to survey bat activity within the Survey Area (**Table 3.4**). Recorders were strategically placed across a range of habitats to maximise species detections, with deployment locations selected based on habitat suitability. Each device was programmed for automated overnight recording, with recordings starting approximately 30 minutes before sunset and ending 30 minutes after sunrise each day. Each device was deployed for three nights. Locations of the ultrasonic units deployed during the survey are presented on **Figure 3.1**. Ultrasonic data was analysed by Bob Bullen from Bat Call Australia.

Table 3.4 Ultrasonic Units Deployed During the 2024 Survey

Site Name	Easting	Northing	Habitat Description	Date Deployed	Date Collected	Nights Active
US01	364654	6587533	Wetland with melaleuca and typha, standing water present	29/10/2024	01/11/2024	3
US02	374901	6596930	Closed melaleuca forest, no standing water	29/10/2024	01/11/2024	3
US03	380485	6582572	Mature Marri Jarrah Forest	29/10/2024	01/11/2024	3
US04	372591	6581938	Thin strip of banksia woodland surrounded by agriculture	01/11/2024	04/11/2024	3
US05	365412	6582626	Wetland with melaleuca and native sedge, standing water present	01/11/2024	04/11/2024	3
Total Survey Effort						15

Datum: GDA2020, Zone 50.

3.4.5 Remote Cameras

Ten Reconyx Hyperfire 2 remote cameras were deployed across the Survey Area for a total of 54 nights. Each camera was mounted at an appropriate height and angle to enhance detection of both diurnal and nocturnal fauna and configured to be triggered via an infrared sensor. GPS coordinates were recorded for each deployment location. Captured imagery was manually reviewed by Umwelt Zoologists following completion of the fieldwork. Deployment details are provided in **Table 3.5** and locations in **Figure 3.1**.

Table 3.5 Remote Cameras Deployed During the 2024 Survey

Site Name	Easting	Northing	Habitat Description	Date Deployed	Date Collected	Nights Deployed
CAM 01	364703.9	6587483	Wetland edge	29/10/2024	1/11/2024	3
CAM 02	375634.2	6584780	Flooded Gum forest	29/10/2024	4/11/2024	6
CAM 03	374941.9	6596823	Paperbark dampland	29/10/2024	4/11/2024	6
CAM 04	374947.5	6596912	Paperbark dampland	29/10/2024	4/11/2024	6
CAM 05	364674.5	6587493	Wetland edge	29/10/2024	1/11/2024	3
CAM 06	364642.9	6587504	Wetland edge	29/10/2024	1/11/2024	6
CAM 07	375602.6	6584805	Flooded Gum forest	29/10/2024	4/11/2024	6
CAM 08	381311.1	6582557	Mature Marri Jarrah woodland	29/10/2024	4/11/2024	6
CAM 09	381306.5	6582609	Mature Marri Jarrah woodland	29/11/2024	4/11/2024	6
CAM 10	381302.2	6582663	Mature Marri Jarrah woodland	29/11/2024	4/11/2024	6
Total Survey Effort						54

Datum: GDA2020, Zone 50.

3.4.6 Opportunistic Records

Opportunistic records of vertebrate fauna were recorded throughout the field survey. These records include both primary (direct sighting) and secondary (bird call, diggings, scat, tracks, feathers, skins etc.) evidence.

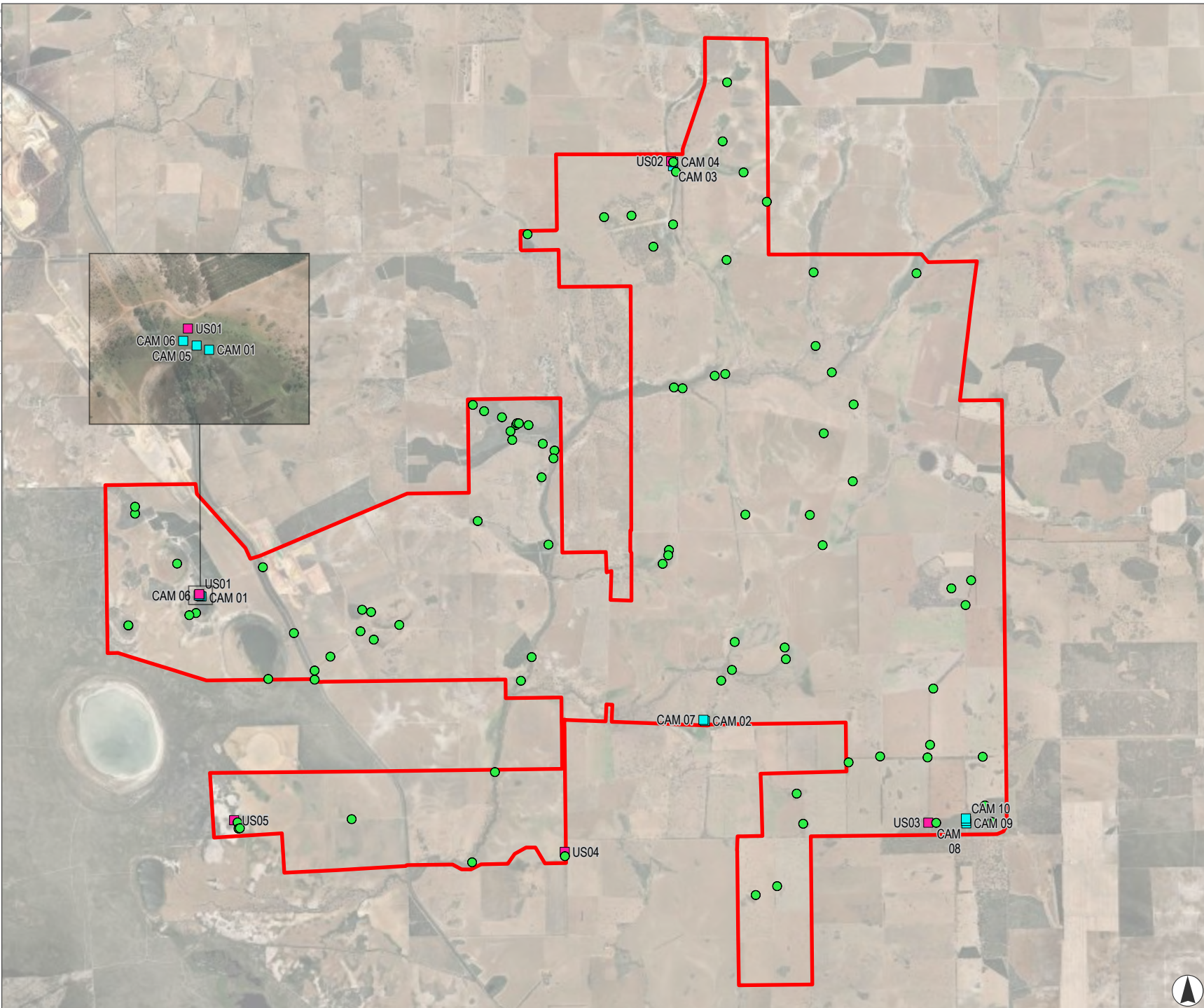
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FIGURE 3.1

Survey Effort

Legend

- Fauna Habitat Points
- Camera location
- Ultrasonic location
- Survey Area



Scale 1:115,000 at A4
GDA2020 MGA Zone 50



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3.5 Targeted Field Survey Methods – Carnaby’s Black-Cockatoo

3.5.1 Guidelines

Guidelines for the referral of actions that may result in impact to black-cockatoos (for assessment under the EPBC Act) are provided by DCCEEW (2022). The survey was conducted with strong reference to both the existing guidelines as well as the previous guidelines (DoEE, 2017). Survey methodology also followed the recommendations listed on the DCCEEW’s Species Profile and Threats Database for Carnaby’s Black-Cockatoo (DCCEEW, 2025). Ecological values for black-cockatoos within the Survey Area were based on the definitions of breeding, foraging and roosting habitat as per the EPBC Act referral guidelines for black-cockatoos (DCCEEW, 2022).

The *Referral Guideline for WA Threatened Black-Cockatoo Species* (DCCEEW, 2022) provides guidance on assessing breeding habitat, including the identification of known nesting trees, suitable nesting trees (those with hollows), and potential nesting trees (those with a minimum diameter at breast height (DBH) of 300–500 mm that may develop hollows in the future). However, when assessing the significance of potential black-cockatoo trees, the practical application of these guidelines can be challenging.

The Department of Biodiversity, Conservation and Attractions (DBCA) has advised that the methodology developed and applied by Bamford (e.g. Bamford, 2020) is an acceptable approach for assessing breeding value and foraging habitat. This method provides a structured approach to classifying trees based on their potential to support breeding. The current assessment has chosen to employ the Bamford ranking system (Bamford, 2020) to assess black-cockatoo nest-trees, and foraging habitat incorporating published data on black-cockatoo nesting preferences (further explained below).

3.5.2 Breeding

Carnaby’s Black-Cockatoo breeding trees were recorded opportunistically during the survey period. The *Referral Guideline for WA Threatened Black-Cockatoo Species* (DCCEEW, 2022) note that while typical breeding habitat comprises woodland and forests, it can also include partially cleared areas, including isolated trees. Carnaby’s Black-Cockatoo are known to nest in both live and dead trees, with many eucalypt species providing suitable sites. Nesting occurs in large hollows of mature eucalypts, with preferred species including Salmon Gum (*Eucalyptus salmonophloia*), Wandoo (*E. wandoo*), Tuart (*E. gomphocephala*), Jarrah (*E. marginata*), Flooded Gum (*Eucalyptus rudis*), York Gum (*E. loxophleba*), Powderbark (*E. accedens*), Karri (*E. diversicolor*), and Marri (*Corymbia calophylla*) (DCCEEW, 2022).

Potential nest trees were assessed within the Survey Area through ground-based observations, using binoculars where necessary. Trees considered potentially suitable for black-cockatoo nesting were systematically evaluated. For each suitable tree, the following attributes were recorded:

- tree location
- tree species
- life status (alive or dead)

- diameter at breast height (DBH)
- number of visible hollows
- aspect and estimated height of the most suitable hollow
- evidence of use, including chew marks or other signs of breeding activity
- trees were then given a nest-tree ranking in accordance with the Bamford ranking system described in **Table 3.6**.

Table 3.6 Bamford et al. (2020) Black-cockatoo Nest-tree Ranks

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

As the Survey Area is comprised of many tens of thousands of possible breeding trees, a complete census of potential breeding trees was not attempted at this point. Fauna habitat mapping noting habitat types most suitable for breeding was conducted, with results provided in **Table 5.7** of the results. A census, or detailed survey of breeding trees is recommended to be conducted once a refined impact area is defined.

3.5.3 Foraging Habitat

Bamford Habitat Quality Score

The assessment of Black-Cockatoo foraging habitat was based on the framework developed by Bamford Consulting Ecologists (BCE) in collaboration with Quessentia Consulting (Bamford, 2020). This categorisation (**Table 3.7**) aligns with the Offset Assessment Guide by the Federal Department of Agriculture, Water and the Environment (DAWE) and is generally considered a best practice approach to evaluate the foraging value of vegetation for Black-Cockatoos.

Table 3.7 Carnaby's Black-Cockatoo Foraging Habitat Scoring System Adapted from Bamford (2020)

Site Score	Carnaby's Black-Cockatoo
0	<p>No foraging value. No Proteaceae, eucalypts or other potential sources of food. Examples:</p> <ul style="list-style-type: none"> • Water bodies (e.g. salt lakes, dams, rivers). • Bare ground. • Developed sites devoid of vegetation (e.g. infrastructure, roads, gravel pits) or with vegetation of no food value, such as some suburban landscapes. • Mown grass.
1	<p>Negligible to low foraging values. Examples:</p> <ul style="list-style-type: none"> • Scattered specimens of known food plants but projected foliage cover of these is <2%. This could include urban areas with scattered foraging trees. • Paddocks that are lightly vegetated with melons or other known food-source weeds (e.g. <i>Erodium</i> spp.) that represent short-term and/or seasonal food source. • Blue gum plantations (foraging has been reported but appears to be unusual)
2	<p>Low forage value. Examples:</p> <ul style="list-style-type: none"> • Shrubland in which species of foraging value, such as shrubby banksias, have <10% projected foliage cover. • Woodland with tree banksias 2–4% projected foliage cover. • Open eucalypt woodland/mallee of small-fruited species. • Paddocks that are densely vegetated with melons or other known food-source weeds (e.g. <i>Erodium</i> spp.) that represent a short-term and/or seasonal food source.
3	<p>Low to Moderate foraging value. Examples:</p> <ul style="list-style-type: none"> • Shrubland in which species of foraging value, such as shrubby banksia, have 10–20% projected foliage cover. • Woodland with tree banksias 5–20% projected foliage cover. • Eucalypt Woodland/Mallee of small-fruited species. • Eucalypt Woodland with Marri <10% projected foliage cover.
4	<p>Moderate foraging value. Examples:</p> <ul style="list-style-type: none"> • Woodland/low forest with tree banksias (of key species <i>B. attenuata</i> and <i>B. menziesii</i>) 20–40% projected foliage cover. • Kwongan/Shrubland in which species of foraging value, such as shrubby banksias, have 20–40% projected foliage cover. • Eucalypt Woodland/Forest with Marri 20–40% projected foliage cover.
5	<p>Moderate to High foraging value. Examples:</p> <ul style="list-style-type: none"> • Banksia Low Forest (of key species <i>B. attenuata</i> and <i>B. menziesii</i>) with >60% projected foliage cover but vegetation condition reduced due to weed invasion and/or some tree deaths. • Pine Plantations with trees more than 10 years old.

Site Score	Carnaby's Black-Cockatoo
6	<p>High foraging value. Example:</p> <ul style="list-style-type: none"> Banksia Low Forest (of key species <i>B. attenuata</i> and <i>B. menziesii</i>) with >60% projected foliage cover and vegetation condition good with low weed invasion and/or low tree deaths (indicating it's robust and unlikely to decline in the medium term).

Black-cockatoo foraging signs were also recorded as part of the field survey. When observed, the following was recorded:

- location
- black-cockatoo species, based on nut chew assessments, or known preferred forage species
- forage plant species
- approximate age of the foraging evidence.

Foraging evidence categories are outlined in **Table 3.8**.

Table 3.8 Foraging Evidence Categories

Category	Description
Active	Where birds were observed in the act of foraging.
Recent	Foraging signs (e.g. chewed nuts or vegetation) were 'fresh' (i.e. foraging was likely to have occurred within days to weeks). Recent foraging signs were typically green and/or with very little sign of weathering. Approximately less than four weeks old.
Intermediate	Foraging was likely to have occurred within weeks to months previously. Approximately one to six months old.
Old	Foraging was likely to have occurred months to years previously. Approximately more than six months old.

3.5.4 Night Roosting

As per the guidance of DCCEEW (2022), areas likely to be used as night roosting sites were noted based on the topographical, physical and vegetation characteristics present (such as sites adjacent to watercourses with large trees) and/or indirect evidence of roosting (e.g. guano deposits, discarded feathers). Areas that had cockatoo activity in the late-afternoon were also recorded.

The BirdLife Australia Great Cocky Count (GCC) database of roost sites was searched for relevant local records prior to the field survey as per **Section 3.1**.

3.5.5 Watering Points

Black-cockatoos generally choose roost locations within approximately 2 km of a watering point (DCCEEW, 2022) therefore the presence (or absence) of water sources can influence the suitability of a site for use by black-cockatoos or the manner in which they may use that site. The Survey Area was assessed (directly during the field investigations and through the inspection of satellite imagery) for the presence of water sources that may provide potential watering points for black-cockatoos.

4.0 Limitations

Following the completion of the desktop assessment and field survey, a review was undertaken to identify any limitations that may have affected the comprehensiveness of the data assessment. The limitations outlined in **Table 4.1** are based on those recommended for consideration in the Technical Guidance – Terrestrial vertebrate fauna surveys for environmental impact assessment (EPA, 2020). It is considered that there are no significant limitations associated with the 2024 survey.

Table 4.1 Limitations of the Basic and Targeted Fauna Assessment

Limitation	Outcome	Comment
Availability of data and information	Not a limitation	Good contextual information for the Survey Area was available prior to the survey. Sources of information used included government databases (DBCA, DCCEEW), as well as numerous general sources pertaining to the climate, geomorphology, vegetation and fauna of the region, and fauna surveys previously conducted in the Desktop Study Area.
Competency/experience of team carrying out the survey	Not a limitation	The fauna field team was lead by Senior Zoologist Dr. Jeremy Ringma who has >16 years fauna survey experience with >5 years' experience surveying for black-cockatoo. Technical personnel with relevant expertise assisted with analysis of ultrasonic recordings (Robert Bullen).
Scope of the survey, e.g. where fauna groups were excluded from the survey	Not a limitation	The scope was a basic level vertebrate fauna survey with targeted sampling components. This was conducted within the EPA (2020) framework and relevant species-specific survey guidelines.
Timing/weather/season cycle	Not a limitation	The field survey was conducted in October/ November and December 2024. This is considered optimal timing to survey reptiles, amphibians, birds and mammals in the Southern Climatic Region (EPA, 2020). The October/November survey is within recommended survey timing for Carnaby's Black-Cockatoo breeding habitat (DCCEEW, 2022). Rainfall within the year proceeding survey was 52 mm lower than the long-term average which resulted in dryer than usual conditions. However, this is not considered to be a limitation.
Disturbances (e.g. fire, flood etc.), which may have affected results	Not a limitation	There was evidence of impact to vegetation composition and structure throughout the Survey Area as a result of human activities, including clearing and moderate levels of introduced (weed) taxa. However, the fauna investigations were unimpacted by disturbance.

Limitation	Outcome	Comment
Proportion of fauna identified, recorded and/or collected	Not a limitation	The basic fauna survey was undertaken to identify broad fauna and fauna habitat information. As such, the Survey Area was sampled opportunistically and via low-intensity sampling using cameras and remote recording devices. The survey likely detected a representative proportion of the vertebrate fauna assemblage, particularly birds, mammals, and reptiles based on habitat suitability and survey techniques. Targeted species were actively searched for using species-specific methods as part of the targeted component of the survey, increasing detection probability for those of conservation interest. All fauna recorded via incidental observations were identified in the field at the time of the survey.
Adequacy of survey intensity and proportion of survey achieved	Not a limitation	A basic and targeted survey was undertaken across the Survey Area to assist with decisions on future environmental approvals. The sampling methods and survey intensity was considered adequate for the level of survey and focused on the significant species.
Access problems	Not a limitation	The Survey Area was accessed either via roads or on foot. Most areas of the Survey Area were able to be accessed, however due to cropping, some habitat assessments were completed using binoculars from the closest access point.
Problems with data and analysis, including sampling bias	Not a limitation	Limited access to properties resulted in one camera being left on site for 4 months. However, this did not impact the data collection and is not considered a limitation. No other constraints were encountered during data collection in the field or during subsequent analysis.

5.0 Results

5.1 Desktop Assessment

5.1.1 Literature Review

One publicly available vertebrate fauna survey within the Desktop Study Area was identified through interrogation of the IBSA database (DWER, 2024b). The only conservation significant fauna recorded during the relevant survey was Carnaby’s Black-Cockatoo (EN). A summary of relevant fauna literature reviewed as part of this assessment is provided in **Table 5.1**.

Table 5.1 Literature Review

Report Title and Author	Scope	Key Findings
Yandin Wind Farm Flora, Vegetation and Avifauna Assessment (ecologia, 2017)	Avifauna Assessment	<ul style="list-style-type: none"> Forty-four species across seven habitat types were recorded. Birds recorded with the least potential to fly within the rotor-swept area (RSA) (40–152 m above ground level) potential collision zone were: Straw-necked Ibis, Black-shouldered Kite, Carnaby’s Black-Cockatoo, Butler’s Corella, Galah and Australian Kestrel. Foraging habitat for Carnaby’s Black-Cockatoo was recorded – proteaceous heath and pine plantations.

5.1.2 Significant Fauna Values

Significant fauna are those taxa listed under the EPBC and/or BC Acts, and/or those ranked as priority species by DBCA (see **Section 3.2.1**). A total of 23 significant fauna taxa (excluding eight species, five bird and three mammals, **Appendix B**, were removed based on records occurring outside of species distribution or absence of suitable habitat. were recorded in the DBCA WA Priority and Threatened Fauna Database (DBCA, 2024b), DCCEEW SPRAT Database (DCCEEW, 2024) and DBCA NatureMap database (DBCA, 2024c) as occurring or may occur in the Desktop Study Area.

- Of the 23 significant species, nine are listed as Threatened and six as Priority, and 12 species listed as migratory (MI).
- The interrogation of the DBCA WA Priority and Threatened Fauna Database (DBCA, 2024g) returned a total of 12 listed significant fauna taxa that have records in the Desktop Study Area.
- A search of the DBCA NatureMap database (DBCA, 2024d) was also undertaken as part of the desktop assessment to check for any recently added records and confirmed the records returned from the DBCA Significant Fauna Database search – with one additional species returned.
- The search of the DCCEEW SPRAT Database (DCCEEW, 2024) for MNES listed under the EPBC Act identified 15 fauna taxa listed as Threatened species, or habitat for such species, that may occur in the Desktop Study Area (**Appendix C**). However, it is worthy of note that the SPRAT database search is based on Threatened fauna taxa habitat as opposed to actual records (as per the DBCA database searches) and includes provision of species and species habitat that are ‘likely to occur’ or ‘may occur’, as well as those that are ‘known to occur’ in such areas.

Figure 5.1 presents the locations of the listed significant fauna taxa returned from the DBCA database searches (DBCA, 2024b), within the Desktop Study Area.

Table 5.2 Significant Fauna Species Returned from the Desktop Assessment

TAXON	Common Name	EPBC Status	WA Status	Source		
				PMST	NatureMap	DBCA
Birds						
<i>Actitis hypoleucos</i>	Common Sandpiper	MI	MI		X	X
<i>Aphelocephala leucopsis</i>	Southern Whiteface	VU				X
<i>Apus pacificus</i>	Fork-tailed Swift	MI	MI			X
<i>Botaurus poiciloptilus</i>	Australasian Bittern	EN	EN	X	X	
<i>Calidris acuminata</i>	Sharp-tailed Sandpiper	VU, MI	MI	X	X	
<i>Calidris canutus</i>	Red Knot	VU, MI	EN			X
<i>Calidris ferruginea</i>	Curlew Sandpiper	CR, MI	CR	X	X	X
<i>Calidris melanotos</i>	Pectoral Sandpiper	MI	MI			X
<i>Calidris ruficollis</i>	Red-necked Stint	MI	MI	X	X	
<i>Oxyura australis</i>	Blue-billed Duck		P4	X	X	
<i>Pandion cristatus</i>	Eastern Osprey	MI	MI			X
<i>Platycercus icterotis xanthogenys</i>	Western Rosella (inland)		P4	X	X	
<i>Plegadis falcinellus</i>	Glossy Ibis	MI	MI	X	X	
<i>Pluvialis fulva</i>	Pacific Golden Plover	MI	MI	X	X	
<i>Tringa glareola</i>	Wood Sandpiper	MI	MI	X	X	
<i>Tringa nebularia</i>	Common greenshank	EN, MI	MI	X	X	
<i>Zanda latirostris</i>	Carnaby's Black-Cockatoo	EN	EN	X	X	X
Mammals						
<i>Dasyurus geoffroii</i>	Chuditch, Western Quoll	VU	VU	X	X	X
<i>Phascogale tapoatafa wambenger</i>	South-western Brush-tailed Phascogale		CD, P4	X	X	
<i>Notamacropus irma</i>	Western Brush Wallaby		P4	X	X	
<i>Hydromys chrysogaster</i>	Water Rat, Rakali		P4	X	X	
Reptiles						
<i>Neelaps calonotos</i>	Black-striped Burrowing Snake		P3		X	
<i>Egernia stokesii badia</i>	Western Spiny-tailed Skink	EN	VU			X

Eight species identified in the desktop assessment have previously been recorded in the wetland habitat in the west of the Survey Area, these are:

- Sharp-tailed Sandpiper (*Calidris acuminata*) VU, MI
- Curlew Sandpiper (*Calidris ferruginea*) CR,MI
- Red-necked Stint (*Calidris ruficollis*) MI
- Blue-billed Duck (*Oxyura australis*) P4
- Glossy Ibis (*Plegadis falcinellus*) MI
- Pacific Golden Plover (*Pluvialis fulva*) MI
- Wood Sandpiper (*Tringa glareola*) MI
- Common Greenshank (*Tringa nebularia*) EN, MI.

Legend

DBCA Significant Fauna

- Common sandpiper (*Actitis hypoleucos*) WA Status (MI) EPBC Status (MI)
- Australasian bittern (*Botaurus poiciloptilus*) WA Status (EN) EPBC Status (EN)
- Sharp-tailed sandpiper (*Calidris acuminata*) WA Status (MI) EPBC Status (MI)
- Curlew sandpiper (*Calidris ferruginea*) WA Status (CR) EPBC Status (CR & MI)
- Red-necked stint (*Calidris ruficollis*) WA Status (MI) EPBC Status (MI)
- Chuditch, western quoll (*Dasyurus geoffroii*) WA Status (VU) EPBC Status (VU)
- Peregrine falcon (*Falco peregrinus*) WA Status (OS)
- Water-rat, rakali (*Hydromys chrysogaster*) WA Status (P4)
- Malleefowl (*Leipoa ocellata*) WA Status (VU) EPBC Status (VU)
- Black-striped snake (*Neelaps calonotos*) WA Status (P3)
- Western brush wallaby (*Notamacropus irma*) WA Status (P4)
- Blue-billed duck (*Oxyura australis*) WA Status (P4)
- south-western brush-tailed phascogale (*Phascogale tapoatafa wambenger*) Wa Status (CD)
- Western rosella (inland) (*Platycercus icterotis xanthogenys*) WA Status (P4)
- Glossy ibis (*Plegadis falcinellus*) WA Status (MI) EPBC Status (MI)
- Pacific golden plover (*Pluvialis fulva*) WA Status (MI) EPBC Status (MI)
- Wood sandpiper (*Tringa glareola*) WA Status (MI) EPBC Status (MI)
- Common greenshank (*Tringa nebularia*) WA Status (MI) EPBC Status (MI)
- Carnaby's cockatoo (*Zanda latirostris*) WA Status (EN) EPBC Status (EN)
- White-tailed black cockatoo (*Zanda sp.*) WA Status (EN) EPBC Status (EN)

FIGURE 5.1

DBCA Significant Fauna of the Desktop Study Area



5.1.3 Black-cockatoo Roosting and Breeding Sites

A total of three roosting sites have been recorded by Birdlife GCC and DBCA (2024; 2025) within the Desktop Study Area (**Figure 5.2**). The closest roosting site for white-tailed black-cockatoo is located approximately 6.6 km south from the Survey Area and was found to have a total of 22 white-tailed black-cockatoos recorded in 2011.

Two breeding sites have been recorded within the Desktop Study Area, the closest approximately 8 km to the South

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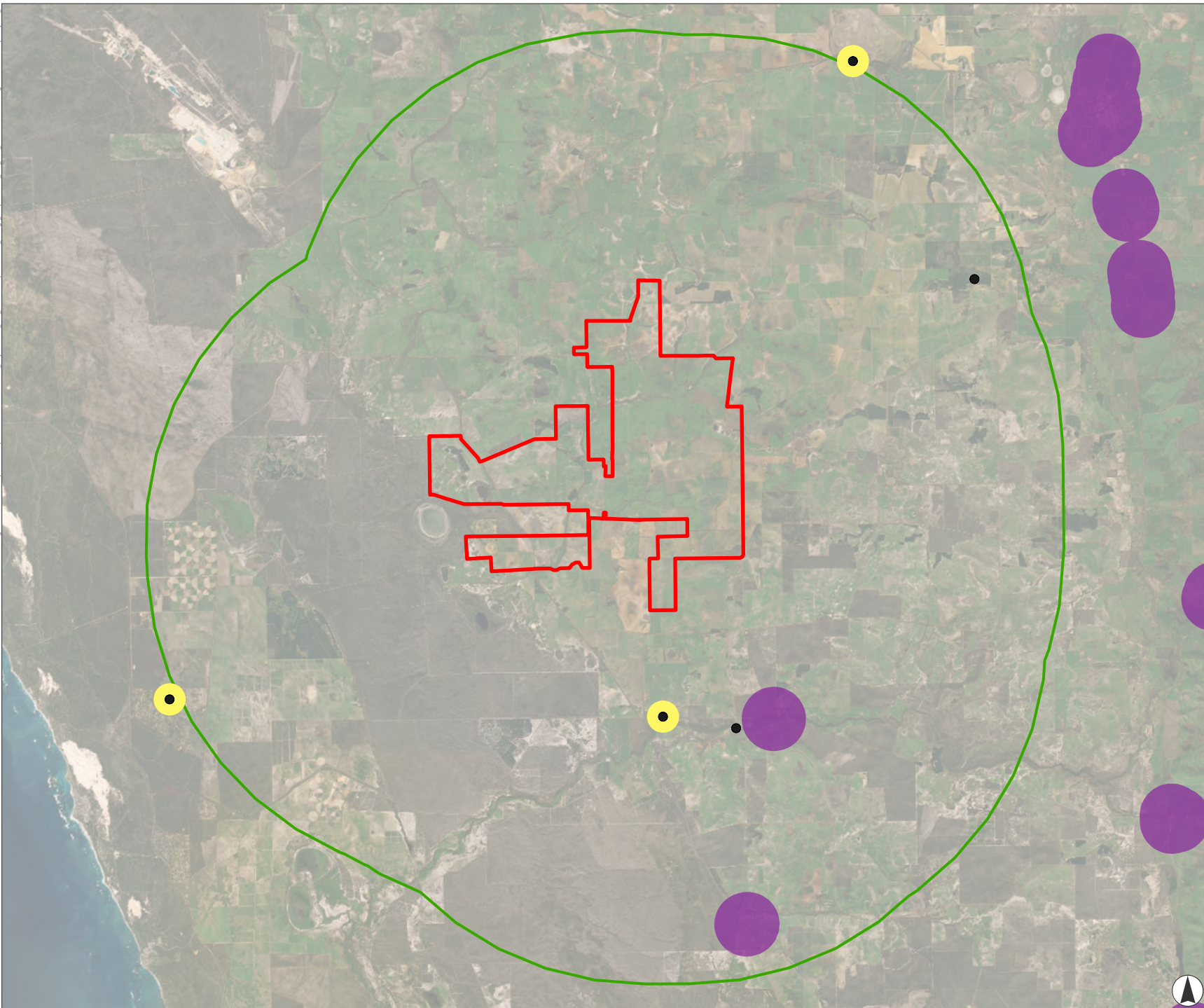


FIGURE 5.2
Black-cockatoo Roosting Sites Within the Desktop Study Area

- Legend
- Survey Area
 - Desktop Study Area (DSA)
 - Great Cocky Count
 - DBCA Black-cockatoo Roosting Sites
 - Breeding Sites



Scale 1:330,000 at A4
GDA2020 MGA Zone 50



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5.2 Field Survey Results


5.2.1 Fauna Habitats

The Survey Area comprised a complex mosaic of remnant native vegetation patches, plantations, planted windbreaks and agricultural lands. Some of the patches to the west are contiguous with larger, adjacent areas of native vegetation. The Survey Area has been subject to considerable disturbance and development with many parts still subject to these pressures. While weed invasion and plant stress (either through hydrological, pathogenic or livestock grazing means) have also impacted the condition and, hence, value to fauna of many of the native vegetation remnants, they still retain some of their original value to fauna. In some cases (for given areas or certain taxa) this value may be appreciable.


Connectivity of the remnant vegetation (for most terrestrial vertebrate fauna) is present, although tenuous in most places. The western parts of the Survey Area directly abut other existing remnants, namely Eneminga and Namming Nature Reserves. There is very limited connectivity to the north, south and east of the Survey Area, with surrounding lands largely consisting of agricultural lands. It is expected that there may be barriers to the movement of some fauna (especially the smaller, non-volant taxa such as frogs and most reptiles) to and from the Survey Area but that other, more mobile taxa (such as birds, bats and larger non-volant mammals) are unlikely to be significantly inhibited.


Twelve fauna habitat types were identified during the field investigations and these are listed in **Table 5.3** and mapped in **Figure 5.3**. The largest habitat type is the Cleared habitat type (12,007 ha, 69.8%), mainly consisting of paddocks and areas of infrastructure. The second largest habitat type is Scattered Trees (2,508 ha, 14.6%).


Table 5.3 Fauna Habitat Types Within the Survey Area


Habitat Type	Habitat Description	Representative Photograph
Wetlands (WET)	<p>Wetlands, damplands and farm dams. Often integrated with other habitat types such as <i>Waterbodies</i>, <i>Paperbark Dampland</i> and <i>Flooded Gum</i>. May be ephemeral in nature, often degraded, weedy and heavily browsed by cattle. Natural, remnant wetlands contain native sedges, rushes and grasses while degraded wetlands predominantly contain weedy <i>Juncus acutus</i>.</p> <ul style="list-style-type: none"> Area mapped: 457 ha (2.7%). 	
Water Bodies (WB)	<p>Large, permanent/semi-permanent water bodies.</p> <ul style="list-style-type: none"> Area mapped: 99 ha (0.6%). 	N/A


Habitat Type	Habitat Description	Representative Photograph
Paperbark Dampland (MEL)	<p>Dense stands of tall <i>Melaleuca</i> associated with drainages and damplands. Understory of grass sedges and non-native <i>Juncus acutus</i>. Often adjacent to <i>Eucalyptus rudis</i> forest. Fallen timber. Small, ephemeral pools creating habitat for native frogs and fish.</p> <ul style="list-style-type: none"> • Area mapped: 47 ha (0.3%). 	


Habitat Type	Habitat Description	Representative Photograph
Flooded Gum Forest (FG)	<p>Stands of <i>Eucalyptus rudis</i>. Grassy and weedy understory with grazing from cattle. Old, mature forest contains hollows suitable for nesting birds. Associated with drainages and low-lying plains. Small, ephemeral pools creating habitat for native frogs and fish. Logs and coarse woody debris.</p> <ul style="list-style-type: none"> • Area mapped: 383 ha (2.2%). 	



Habitat Type	Habitat Description	Representative Photograph
Marri Jarrah Forest (MJ)	<p>Marri (<i>Corymbia calophylla</i>) Jarrah (<i>Eucalyptus marginata</i>) forest. Mature forest with hollows. Largely intact understorey providing dense cover. Proteaceae species in understorey provides high value foraging habitat for Carnaby's Black-Cockatoo. Logs and coarse woody debris.</p> <ul style="list-style-type: none"> • Area mapped: 124 ha (0.7%). 	

Habitat Type	Habitat Description	Representative Photograph
Disturbed Woodland (DW)	<p>Eucalyptus woodland with high grazing pressure resulting in little to no understorey species. Includes planted avenue trees and wind breaks. Grassy understorey containing few native species of shrubs. Fallen logs and coarse woody debris. Lower quality foraging habitat due to lack of Proteaceae species in understorey.</p> <ul style="list-style-type: none"> • Area mapped: 985 ha (5.7%). 	

Habitat Type	Habitat Description	Representative Photograph
Scattered Trees (ST)	<p>Cleared pasture and crop with scattered paddock trees. Paddock trees mostly <i>E. rudis</i> and <i>C. calophylla</i> provide low level foraging value to Carnaby's Black-Cockatoo and potential nest hollows. Lacks logs and coarse woody debris.</p> <ul style="list-style-type: none"> • Area mapped: 2508 ha (14.6%). 	

Habitat Type	Habitat Description	Representative Photograph
Banksia Woodland (BW)	<p>Open Proteaceae woodland with shrubby understorey. High species diversity of <i>Banksia</i>, <i>Hakea</i>, <i>Grevillea</i> and other native shrubs. Sandy soils.</p> <ul style="list-style-type: none"> • Area mapped: 166 ha (1.0%). 	

Habitat Type	Habitat Description	Representative Photograph
Low Shrubland (LS)	<p>Dense Proteaceae shrubland with high species diversity of <i>Banksia</i>, <i>Hakea</i>, <i>Grevillea</i> and other native shrubs. Occurs on sandy soils and laterite jump ups.</p> <ul style="list-style-type: none"> Area mapped: 201 ha (1.2%). 	

Habitat Type	Habitat Description	Representative Photograph
Pine Plantation (PP)	Pine plantation. Understorey consisting of grass and pine needles. <ul style="list-style-type: none"> • Area mapped: 169 ha (1.0%). 	
Other (OTHER)	Highly disturbed, weedy regrowth and cultivated shrubs. <ul style="list-style-type: none"> • Area mapped: 67 ha (0.4%). 	
Cleared (CL)	Cleared, open paddocks with very few remaining paddock trees. Highly disturbed. Combination of grain and canola crops. Open pasture for sheep and cattle grazing. <ul style="list-style-type: none"> • Area mapped: 12007 ha (69.8%). 	N/A

5.2.2 Fauna Recorded

A total of 94 vertebrate fauna species were recorded across 46 families during the 2024 survey. This includes three species of amphibian, four reptiles, 75 birds and 12 mammals. Of the 94 species, 83 were recorded opportunistically, six species were recorded via ultrasonic recorder, and five species were recorded via remote camera.

A total of three species recorded by the 2024 survey are listed as conservation significant (Wood Sandpiper (MI), Peregrine Falcon (OS) and Carnaby's Black-Cockatoo (EN)), all of which were recorded opportunistically. Furthermore, five naturalised exotic species were recorded (Laughing Kookaburra, House Mouse, Red Fox, Cattle and Sheep).

The full fauna inventory recorded by the basic and targeted assessment is presented in **Appendix D**.

5.2.2.1 Ultrasonic Recorders

Six microbat species were identified within the Survey Area via ultrasonic recorders (**Table 5.4**). This included three high-flying species and three low-flying species. All species were recorded in multiple habitat types, with the Southern Forest Bat (*Vespadelus regulus*) and Gould's Wattle Bat (*Chalimolobus gouldii*) appearing at all five sites. While no conservation significant species were identified, the White-striped Free-tail Bat (*Austronomus australis*) is a known very-high flying bat, making it particularly at risk to turbine blade strikes (Bat Call WA, 2025).

Table 5.4 Bat Species Recorded via Ultrasonic Recorder Within the Survey Area

	Taxon	Common Name	Conservation Status	Habitat Types
High-flying microbats	<i>Austronomus australis</i>	White-striped Free-tailed Bat	-	Wetland, Paperbark Dampland
	<i>Vespadelus regulus</i>	Southern Forest Bat	-	Wetland, Paperbark Dampland, Marri-Jarrah Forest, Banksia Woodland
	<i>Chalimolobus gouldii</i>	Gould's Wattle Bat	-	Wetland, Paperbark Dampland, Marri-Jarrah Forest, Banksia Woodland
Low-flying microbats	<i>Chalimolobus morio</i>	Chocolate Wattle Bat	-	Wetland, Paperbark Dampland
	<i>Nyctophilus geoffroyi</i>	Lesser Long-eared Bat	-	Wetland, Paperbark Dampland, Marri-Jarrah Forest
	<i>Ozimops kitcheneri</i>	South-western Free-tailed Bat	-	Wetland, Banksia Woodland

5.2.2.2 Remote Cameras

Five species were recorded within the Survey Area via remote camera. Two native species; Western Grey Kangaroo (*Macropus fuliginosus*) and Australian Wood Duck (*Chenonetta jubata*). Three of the species recorded were non-native to Australia: Red Fox (*Vulpes vulpes*), Cattle (*Bos taurus*), and House Mouse (*Mus musculus*).

5.3 Significant Fauna Species

Three conservation significant fauna species were recorded during the survey – Carnaby’s Black-Cockatoo (*Zanda latirostris*, EN), Peregrine Falcon (*Falco peregrinus*, OS) and Wood Sandpiper (*Tringa glareola*, MI). The locations of these species are presented on **Figure 5.4**, with details presented in **Appendix E**.

5.3.1 Carnaby’s Black-Cockatoo

Carnaby’s Black-Cockatoo was encountered 14 times in the Survey Area during the basic and targeted survey in small flocks of up to 11 individuals. Foraging, nesting, and roosting habitat was assessed (see **Table 5.7**) with high value native foraging habitat encountered in three fauna habitat types, roost sites located in Flooded Gum habitat and potential nesting sites where birds were observed investigating hollows in Flooded Gum habitat.

5.3.1.1 Nesting Habitat

Potential nesting habitat occurs throughout the Survey Area. Mature Marri (*Corymbia calophylla*) trees and Flooded Gum (*Eucalyptus rudis*) occur in scattered stands in many of the paddocks. Although comprehensive mapping of potential black-cockatoo breeding trees falls outside the project scope of this report, locations of all trees assessed as potential black-cockatoo nesting trees are provided in **Appendix E**. The highest suitability breeding habitat in the Survey Area occurs in tracts of mature *Flooded Gum* habitat and the single 124 ha tract of *Marri Jarrah* Forest in the south-east of the Survey Area.

5.3.1.2 Roosting Habitat

Roost watches were undertaken on the 1st and 2nd of November 2024 at 376081 E, 6592218 N (GDA 2020, Zone 50) in a section of Flooded Gum Forest habitat with a flowing watercourse. Up to eight individuals were recorded at once. It is likely that roosting also occurs opportunistically in other similar habitat throughout the Survey Area.

Pine Plantation (169 ha) is also found in the Survey Area and may also serve as roosting habitat. Especially in the west of the Survey Area where Pine Plantation abuts permanent water and other foraging habitat.

5.3.1.3 Foraging Habitat

Table 5.5 presents a summary of the Bamford Black-cockatoo foraging habitat values of each of the Survey Area’s habitat types. Marri Jarrah Forest, Banksia Woodland and Low Shrubland habitat types are the highest ranked, with foraging values of 5-6. By contrast, Other, Cleared and Water Bodies are among the lowest ranked, with foraging values of 1-2.

Table 5.5 Foraging Habitat and Score for Fauna Habitats

Habitat Type	Foraging Habitat Value
Wetlands 457 ha (2.7 %)	<ul style="list-style-type: none"> Bamford Rank: 2-3. Important watering points with some associated vegetation such as <i>Corymbia calophylla</i> and <i>Eucalyptus rudis</i> which may provide some foraging value.
Water Bodies 99 ha (0.6%)	<ul style="list-style-type: none"> Bamford Rank: 1-2. Important watering point but containing little vegetation of foraging value.
Paperbark Dampland 47 ha (0.3%)	<ul style="list-style-type: none"> Bamford Rank: 2-3. Important watering points with some associated vegetation such as <i>Corymbia calophylla</i> and <i>Eucalyptus rudis</i> which may provide some foraging value.
Flooded Gum Forest 383 ha (2.2%)	<ul style="list-style-type: none"> Bamford Rank: 2-3. <i>Eucalyptus rudis</i> may provide some foraging value.
Marri Jarrah Forest 124 ha (0.7 ha)	<ul style="list-style-type: none"> Bamford Rank: 5-6. Excellent foraging habitat. <i>Corymbia calophylla</i> are a primary forage species while the mature midstory supports Proteaceae species and <i>Xanthorrhoea</i>.
Disturbed Woodland 124 ha (0.7 %)	<ul style="list-style-type: none"> Bamford Rank: 2-4. Of a lower value when comprised of <i>Eucalyptus rudis</i> or introduced <i>Eucalyptus</i>. Higher value when <i>Corymbia calophylla</i> canopy over <i>Xanthorrhoea</i> sp. understory.
Scattered Trees 2508 ha (14.6%)	<ul style="list-style-type: none"> Bamford Rank: 1-3. Of a lower value when comprised of <i>Eucalyptus rudis</i> or introduced <i>Eucalyptus</i>. Higher value when <i>Corymbia calophylla</i> canopy.
Banksia Woodland 166 ha (1.0%)	<ul style="list-style-type: none"> Bamford Rank: 5-6. Large tree Banksias with shrubby understory including <i>Hakea</i>, <i>Grevillea</i>, <i>Xanthorrhoea</i> and other important forage species.
Low Shrubland 201 ha (1.2%)	<ul style="list-style-type: none"> Bamford Rank: 5-6. Low, shrubby layer of <i>Banksia</i>, <i>Hakea</i>, <i>Grevillea</i>, <i>Xanthorrhoea</i> and other important forage species.
Pine Plantation 169 ha (1.0%)	<ul style="list-style-type: none"> Bamford Rank: 3-4. Pine plantation is an excellent but non-native foraging tree.
Other 67 ha (0.4%)	<ul style="list-style-type: none"> Bamford Rank: 1. Weedy regrowth provides very little forage value.
Cleared 12007 ha (69.8%)	<ul style="list-style-type: none"> Bamford Rank: 1-2. Occasional paddock trees and crops such as canola proved some foraging value.

5.3.2 Peregrine Falcon

One Peregrine Falcon (*Falco peregrinus*, OS) individual was recorded during the survey, despite not being reported in the desktop assessment. This is unsurprising as the Peregrine Falcon, while uncommon, are wide-ranging across the whole of Australia. Occurrence within WA is patchy, with a preference for wooded watercourses and ranges with exposed cliff edges. Where it occurs, it is generally present as resident individuals or pairs.

Ecology

A diurnal (or crepuscular) bird of prey that hunts on the wing, predominantly for birds (including pigeons, parrots and passerines) but may also take mammals (e.g. possums, rabbits), reptiles, fish or carrion. Nesting occurs mainly on cliff ledges, granite outcrops and quarry or mine-pit faces but may also use the old nests of other species (e.g. ravens, eagles) in tall trees or ledges on tall buildings.

Threats

Historically, the widespread use of the organochlorin insecticide DDT caused worldwide global decline of the Peregrine Falcon by reducing the thickness of eggshells. While the discontinuation of DDT use has improved the situation, localised threats persist due to illegal persecution by pigeon-fanciers and taking of eggs and nestlings. The main current threat to the species in Australia is habitat loss, particularly woodland trees for nesting.

5.3.3 Wood Sandpiper

In total, 15 Wood Sandpiper (*Tringa glareola*, MI) were recorded on two separate occasions in the same wetland in the west of the Survey Area. Wood Sandpiper are a migratory shorebird which prefer fresh-water habitats and commonly encountered in south-west Western Australia during the summer non-breeding season.

Ecology

Migratory shorebirds species migrate annually from the Arctic tundra in Russia and Alaska where they breed during the Northern Hemisphere summer (May to September) to Australia (September to April) to escape freezing conditions. In Australia, Wood Sandpiper frequent ephemeral wetlands, moving across numerous wetland sites over the course of the non-breeding season to capitalise on short term abundances of food such as emerging insects, small fish and other aquatic invertebrates.





Threats

Migratory shorebirds are threatened by loss of habitat across their migratory flyway, disturbances from human activities, and hunting and exploitation.

FIGURE 5.4

Significant Fauna Recorded in the Survey Area

Legend

-  Survey Area
-  Carnaby's Black-cockatoo (*Zanda latirostris*) WA Status (EN) EPBC Status (EN)
-  Peregrine Falcon (*Falco peregrinus*) WA Status (OS)
-  Wood Sandpiper (*Tringa glareola*) WA Status (MI) EPBC Status (MI)



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GDA2020 MGA Zone 50



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5.4 Likelihood of Occurrence of Further Conservation Significant Fauna

The database and literature review (as outlined in **Section 3.1**) returned 23 species of conservation significant fauna that may occur within the Desktop Study Area (**Section 5.1.2**). This Desktop Study Area list was then refined for the Survey Area in light of observations made during the field investigations (including the fauna habitat types present within the Survey Area; see **Section 5.2.1**). Furthermore, the Peregrine Falcon was added to this list, as it was recorded by the 2024 survey (see **Section 5.3.2**).

Twenty-four conservation significant taxa ranging from Very Low to Known are summarised in **Table 5.6**. Ten of these species have Low or Very Low likelihood of occurrence and are not expected to occur within the Survey Area (generally due to the lack of suitable habitat, or the Survey Area falling outside the core known range of the species), leaving 14 taxa of conservation significance that have a Moderate or greater likelihood of occurring in the Survey Area.

Carnaby's Black-Cockatoo (*Zanda latirostris*, EN), Wood Sandpiper (*Tringa glareola*, MI) and Peregrine Falcon (*Falco peregrinus*, OS) were recorded during the basic and targeted survey (see **Section 5.3**). Wetlands in the west of the Survey Area are excellent habitat for Migratory Shorebirds and likely support several additional species.

No conservation significant mammals were recorded during the basic and targeted surveys. The desktop assessment identified a very low likelihood of occurrence of Chuditch (*Dasyurus geoffroii*) (VU), low likelihood of occurrence of both the South-western Brush-tailed Phascogale (*Phascogale tapoatafa wambenger*) (CD), and Western Brush Wallaby (*Notamacropus Irma*) (P4), and a moderate likelihood of occurrence of Rakali (*Hydromys chrysogaster*) (P4) within the Survey Area. Although the Survey Area is within their range, the agricultural landscape provides low habitat suitability for these species. This does not rule out these species occurring within the Survey Area and suggests that, if present, they are likely at low densities and confined to pockets of remnant habitat.

Within the Survey Area, the most suitable habitat for Chuditch, South-western Brush-tailed Phascogale, and Western Brush Wallaby is the mature patch of Marri-Jarrah Forest located in the southeast (DBCA, 2012b, 2013, 2017a). Suitable habitat for Rakali include wetlands, drainages, and large waterbodies throughout the Survey Area (DBCA, 2012a).

No conservation significant reptiles were recorded during the basic and targeted surveys. The desktop assessment, however, identified the Black-striped Burrowing Snake (*Neelaps calonotos*) (P3) as moderately likely to occur within the Survey Area.

A matrix providing a summary of conservation significant fauna species and their associated fauna habitat use is provided in **Table 5.7**.

Table 5.6 Likelihood of Occurrence of Further Significant Fauna Species

Scientific Name	Common Name	EPBC Listing	WA Listing	Comments	Likelihood of Occurrence
Birds					
<i>Actitis hypoleucos</i>	Common Sandpiper	MI	MI	One record of this species occurs within the Desktop Study Area. The location of this record was provided by NatureMap (2024), and therefore spatial data is unavailable. Suitable habitat occurs in the large wetlands in the west of the Survey Area.	High
<i>Aphelocephala leucopsis</i>	Southern Whiteface	VU		This species was only detected from the PMST search. There are no records of this species within 20 km of the Survey Area. Survey Area lacks Mallee and Acacia woodland habitat preferred by the species.	Very Low
<i>Apus pacificus</i>	Fork tailed Swift	MI	MI	This species was only detected from the PMST search. There are no records of this species within 20 km of the Survey Area. Low density species which may occur in any habitat in the region but at low frequency.	Moderate
<i>Botaurus poiciloptilus</i>	Australasian Bittern	EN	EN	There is one historic record (1921) of this species occurring 12 km west of the Survey Area. This is the only known record within the Desktop Study Area. While wetland habitat occurs in the Survey Area contemporary records for the species mostly occur outside of the Survey Area bioregion.	Very low
<i>Calidris acuminata</i>	Sharp-tailed Sandpiper	VU, MI	MI	There are at least two historic records of this species within the Desktop Study Area, both of which lie within the Survey Area. Suitable habitat occurs in the large wetlands in the west of the Survey Area.	High
<i>Calidris canutus</i>	Red Knot	VU, MI	EN	This species was only detected from the PMST search. There are no records of this species within 20 km of the Survey Area. Typically prefers marine and intertidal habitat but periodically utilizes wetland habitats like those found in the west of the Survey Area.	Very Low
<i>Calidris ferruginea</i>	Curlew Sandpiper	CR, MI	CR	There are at least three records of this species within the Desktop Study Area. One of these records lies within the Survey Area and the other two lies approximately 3 km to the east. Suitable habitat occurs in the large wetlands in the west of the Survey Area.	High
<i>Calidris melanotos</i>	Pectoral Sandpiper	MI	MI	This species was only detected from the PMST search. There are no records of this species within 20 km of the Survey Area.	Low

Scientific Name	Common Name	EPBC Listing	WA Listing	Comments	Likelihood of Occurrence
				Suitable habitat occurs in the large wetlands in the west of the Survey Area; however, the species has a low abundance in Australia.	
<i>Calidris ruficollis</i>	Red-necked Stint	MI	MI	There are at least five records of this species within the Desktop Study Area. Two of these records lie within the Survey Area, and the other three lie within 3 km of the Survey Area. Suitable habitat occurs in the large wetlands in the west of the Survey Area.	High
<i>Falco peregrinus</i>	Peregrine Falcon		OS	Not returned by the desktop assessment, but one individual was observed during the 2024 survey. Foraging habitat occurs throughout the Survey area. May nest in larger trees along creek lines.	Known
<i>Oxyura australis</i>	Blue-billed Duck		P4	There are at least nine records of this species within the Desktop Study Area. Two of these records lie within the Survey Area. Suitable habitat occurs in various wetlands and farm dams throughout the Survey Area.	High
<i>Pandion cristatus</i>	Eastern Osprey	MI	MI	This species was only detected from the PMST search. There are no records of this species within 20 km of the Survey Area. Suitable habitat occurs in the large wetlands in the west of the Survey Area.	Low
<i>Platycercus icterotis xanthogenys</i>	Western Rosella (inland)		P4	There are two records of this species within the Desktop Study Area which were recorded prior to 1980. The closest record lies 5 km north of the Survey Area. May periodically venture into woodland habitats in the Survey Area.	Moderate
<i>Plegadis falcinellus</i>	Glossy Ibis	MI	MI	There are at least three records of this species within the Desktop Study Area. Two of these records lie within the Survey Area. Suitable habitat occurs in various wetlands, damplands and farm dans throughout the Survey Area.	High
<i>Pluvialis fulva</i>	Pacific Golden Plover	MI	MI	There is one record of this species within the Desktop Study Area. This record occurs within the Survey Area. Suitable habitat occurs in the large wetlands in the west of the Survey Area.	High
<i>Tringa glareola</i>	Wood Sandpiper	MI	MI	There are three records of this species within the Desktop Survey Area. Two of these records lie within the Survey Area. Suitable habitat occurs in the large wetlands in the west of the Survey Area where it was recorded during the survey.	Known

Scientific Name	Common Name	EPBC Listing	WA Listing	Comments	Likelihood of Occurrence
<i>Tringa nebularia</i>	Common Greenshank	EN, MI	MI	There are seven records of this species within the Desktop Study Area. Three of these records lie within the Survey Area. Suitable habitat occurs in the large wetlands in the west of the Survey Area.	High
<i>Zanda latirostris</i>	Carnaby's Black-Cockatoo	EN	EN	Over 310 records of this species have been recorded within the Desktop Study Area. None of these records were from within the Survey Area. Species occurs throughout the Survey Area.	Known
Mammals					
<i>Dasyurus geoffroii</i>	Chuditch, Western Quoll	VU	VU	There are two records of this species within the Desktop Study Area, both prior to 2001. One of these records lies within the Survey Area and is from 1987. May infrequently occur in woodland habitats.	Very Low
<i>Phascogale tapoatafa wambenger</i>	South-western Brush-tailed Phascogale, Wambenger		CD	There is one record of this species within the Desktop Study Area. This record is located 12 km west of the Survey Area. May infrequently occur in woodland habitats.	Low
<i>Notamacropus irma</i>	Western Brush Wallaby		P4	There are nine records of this species from within the Desktop Study Area. The closest record lies 8 km southwest of the Survey Area. All records are prior to 1990. May infrequently occur in woodland habitats.	Very Low
<i>Hydromys chrysogaster</i>	Water Rat, Rakali		P4	There are two records of this species from the Desktop Study Area. The closest record lies 9 km south of the Survey Area. May occur in wetland habitats.	Moderate
Reptiles					
<i>Neelaps calonotos</i>	Black-striped Burrowing Snake		P3	There are three records of this species within the Desktop Study Area. The closest record lies 10 km west of the Survey Area. Suitable occurs in the study Area in sections of <i>Low Shrubland</i> and Banksia woodland on sandy soils.	Moderate
<i>Egernia stokesii badia</i>	Western Spiny-tailed Skink	EN	VU	This species was only detected from the PMST search. There are no records of this species within 20 km of the Survey Area. May infrequently occur in woodland habitats.	Very Low

Table 5.7 Significant Fauna and Habitat Usage Matrix

Taxon and Likelihood of Occurrence Ranking	Activity	Wetlands	Water Bodies	Paperbark Dampland	Flooded Gum Forest	Marri Jarrah Forest	Disturbed Woodland	Scattered Trees	Banksia Woodland	Low Shrubland	Pine Plantation	Other	Cleared
Birds													
Common Sandpiper High	Breeding												
	Foraging	X	X										
	Roosting	X	X										
	Dispersal												
Southern Whiteface Very Low	Breeding												
	Foraging					X							
	Roosting												
	Dispersal					X							
Fork tailed Swift Low	Breeding												
	Foraging												
	Roosting												
	Dispersal	X	X	X	X	X	X	X	X	X	X	X	X
Australasian Bittern Very Low	Breeding												
	Foraging	X	X										
	Roosting												
	Dispersal												
Sharp-tailed Sandpiper High	Breeding												
	Foraging	X	X										
	Roosting	X	X										
	Dispersal												
Red Knot Very Low	Breeding												
	Foraging	X	X										
	Roosting	X	X										
	Dispersal												

Taxon and Likelihood of Occurrence Ranking	Activity	Wetlands	Water Bodies	Paperbark Dampland	Flooded Gum Forest	Marri Jarrah Forest	Disturbed Woodland	Scattered Trees	Banksia Woodland	Low Shrubland	Pine Plantation	Other	Cleared
Curlew Sandpiper Moderate	Breeding												
	Foraging	X	X										
	Roosting	X	X										
	Dispersal												
Pectoral Sandpiper Low	Breeding												
	Foraging	X	X										
	Roosting	X	X										
	Dispersal												
Red-necked Stint High	Breeding												
	Foraging	X	X										
	Roosting	X	X										
	Dispersal												
Peregrine Falcon Known	Breeding				X	X							
	Foraging	X	X	X	X	X	X	X	X	X	X	X	X
	Roosting				X	X							
	Dispersal	X	X	X	X	X	X	X	X	X	X	X	X
Blue-billed Duck High	Breeding	X	X										
	Foraging	X	X										
	Roosting												
	Dispersal												
Eastern Osprey Low	Breeding												
	Foraging		X										
	Roosting												
	Dispersal		X										

Taxon and Likelihood of Occurrence Ranking	Activity	Wetlands	Water Bodies	Paperbark Dampland	Flooded Gum Forest	Marri Jarrah Forest	Disturbed Woodland	Scattered Trees	Banksia Woodland	Low Shrubland	Pine Plantation	Other	Cleared
Western Rosella (inland) Moderate	Breeding												
	Foraging				X	X	X						
	Roosting												
	Dispersal												
Glossy Ibis High	Breeding		X										
	Foraging	X	X	X									
	Roosting	X	X										
	Dispersal												
Pacific Golden Plover High	Breeding												
	Foraging	X	X										
	Roosting	X	X										
	Dispersal												
Wood Sandpiper Known	Breeding												
	Foraging	X	X										
	Roosting	X	X										
	Dispersal												
Common Greenshank High	Breeding												
	Foraging	X	X										
	Roosting	X	X										
	Dispersal												
Carnaby's Black-Cockatoo Known	Breeding				X	X	X	X					
	Foraging	X	X		X	X	X	X	X	X	X		
	Roosting				X	X					X		
	Dispersal												

Taxon and Likelihood of Occurrence Ranking	Activity	Wetlands	Water Bodies	Paperbark Dampland	Flooded Gum Forest	Marri Jarrah Forest	Disturbed Woodland	Scattered Trees	Banksia Woodland	Low Shrubland	Pine Plantation	Other	Cleared
Mammals													
Chuditch, Western Quoll Very Low	Breeding												
	Foraging					X							
	Denning/ Sheltering					X							
	Dispersal					X							
South-western Brush-tailed Phascogale, Wambenger Low	Breeding					X							
	Foraging					X							
	Denning/ Sheltering					X							
	Dispersal					X							
Western Brush Wallaby Very Low	Breeding												
	Foraging					X							
	Denning/ Sheltering					X							
	Dispersal					X							
Water Rat Moderate	Breeding												
	Foraging	X	X	X	X								
	Denning/ Sheltering	X	X	X	X								
	Dispersal			X	X								
Reptiles													
Black-striped Burrowing Snake Moderate	Breeding								X	X			
	Foraging								X	X			
	Denning/ Sheltering								X	X			
	Dispersal												

Taxon and Likelihood of Occurrence Ranking	Activity	Wetlands	Water Bodies	Paperbark Dampland	Flooded Gum Forest	Marri Jarrah Forest	Disturbed Woodland	Scattered Trees	Banksia Woodland	Low Shrubland	Pine Plantation	Other	Cleared
Western Spiny-tailed Skink Very Low	Breeding												
	Foraging												
	Denning/ Sheltering												
	Dispersal								X	X			

6.0 Conclusions

- A basic and targeted vertebrate fauna survey was undertaken within the Survey Area which provided a broad understanding of the ecological values of the site. Fauna habitat types that occur within the Survey Area were described and mapped, and a likelihood of occurrence assessment of conservation significant fauna species within the Survey Area was undertaken.
- Twelve broad fauna habitats were mapped over the Survey Area which are of varying significance to conservation significant fauna. The largest of which is the Cleared habitat type, consisting mostly of paddocks, but also includes roads, tracks and infrastructure (12,007 ha, 69.8%). In the context of significant fauna, *Marri Jarrah Forest*, *Banksia Woodland*, *Low Shrubland* and *Flooded Gum Forest* habitat types are of the most value to Carnaby's Black-cockatoo, while *Wetlands* and *Water Bodies* for Wood Sandpiper and other Migratory Shorebirds likely to use the Survey Area
- There is landscape connectivity of the native vegetation remnants within the Survey Area although this is tenuous in places. There may be barriers to the movement of some fauna (especially the smaller, non-volant taxa such as frogs and most reptiles) to and from the Survey Area but other, more mobile taxa (such as birds, bats and larger non-volant mammals) are unlikely to be significantly inhibited.
- The field surveys recorded 94 species of terrestrial vertebrate (three species of amphibian, four reptiles, 75 birds and 12 mammals), of which three are of conservation significance (Carnaby's Black-Cockatoo (EN), Peregrine Falcon (OS), and Wood Sandpiper (MI). All were recorded by opportunistic observations.
- The site contains roosting, foraging and potential nesting habitat for Carnaby's Black-Cockatoo. Black-cockatoos roost and possible nest in sections of *Flooded Gum* in the Survey Area and likely roost in *Pine Plantation* in the west of the site near large, permanent water bodies. Foraging habitat occurs throughout the Survey Area, but is best in *Low Shrubland*, *Banksia Woodland* and *Marri Jarrah Forest*.
- The likelihood of occurrence assessment identified ten conservation significant species to have Low or Very Low likelihood of occurrence and not expected to occur within the Survey Area (generally due to the lack of suitable habitat, or the Survey Area falling outside the core known range of the species), leaving 14 taxa of conservation significance with a Moderate or greater likelihood of occurring in the Survey Area, seven of which are considered High, and three as Known.

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Appendix A

Conservation Codes



**Appendix Table A.1 Department of Biodiversity, Conservation and Attractions
Conservation Categories**

Category	Definition
Threatened Species	
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.
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.
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.
Extinct Species	
Extinct species (EX)	Species where “there is no reasonable doubt that the last member of the species has died”, and listing is otherwise in accordance with the ministerial guidelines (section 24 of the BC Act).
Extinct on the Wild (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).
Specially Protected Species	
Migratory (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). Migratory species include birds that are subject to an agreement between the government of Australia and the governments of Japan (JAMBA), China (CAMBA) or 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.

Category	Definition
Conservation Dependent (CD)	Species of special conservation need that are 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).
Other Specially Protected (OS)	Species 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).

Appendix Table A.2 Department of Biodiversity, Conservation and Attractions Priority Codes

Category	Definition
Poorly-known Species	
Priority 1 (P1)	<p>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, for example, 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.</p> <p>Species may be included if they are comparatively well known from one or more locations but do not meet adequacy of survey requirements for threatened listing and appear to be under immediate threat from known threatening processes. These species are in urgent need of further survey.</p>
Priority 2 (P2)	<p>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, for example, national parks, conservation parks, nature reserves and other lands with secure tenure being managed for conservation.</p> <p>Species may be included if they are comparatively well known from one or more locations but do not meet adequacy of survey requirements for threatened listing and appear to be under threat from known threatening processes. These species are in urgent need of further survey.</p>
Priority 3 (P3)	<p>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.</p> <p>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. These species need further survey.</p>
Rare, Near Threatened and Other Species in Need of Monitoring	
Priority 4 (P4)	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

Category	Definition
	<p>circumstances change. These species are usually represented on conservation lands.</p> <p>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.</p> <p>Species that have been removed from the list of threatened species during the past five years for reasons other than taxonomy.</p>

Appendix Table A.3 Environmental Protection and Biodiversity Conservation Act 1999 (EPBC Act)

Category	Definition
Extinct	A native species is eligible to be included in the extinct category at a particular time if, at that time, there is no reasonable doubt that the last member of the species has died.
Extinct in the Wild	<p>A native species is eligible to be included in the extinct in the wild category at a particular time if, at that time:</p> <p>a) it is known only to survive in cultivation, in captivity or as a naturalised population well outside its past range; or</p> <p>b) it has not been recorded in its known and/or expected habitat, at appropriate seasons, anywhere in its past range, despite exhaustive surveys over a time frame appropriate to its life cycle and form.</p>
Critically Endangered (CR)	A taxon is Critically Endangered when the best available evidence indicates that it meets any of the five criteria for the category identified in Part 7.01 of the EPBC Regulations, and it is therefore considered to be facing an extremely high risk of extinction in the wild.
Endangered (EN)	A taxon is Endangered when the best available evidence indicates that it meets any of the five criteria for the category identified in Part 7.01 of the EPBC Regulations, and it is therefore considered to be facing a very high risk of extinction in the wild.
Vulnerable (VU)	A taxon is Vulnerable when the best available evidence indicates that it meets any of the five criteria for the category identified in Part 7.01 of the EPBC Regulations, and it is therefore considered to be facing a high risk of extinction in the wild.
Conservation Dependent (CD)	<p>A native species is eligible to be included in the conservation dependent category at a particular time if, at that time:</p> <p>a) the species is the focus of a specific conservation program the cessation of which would result in the species becoming vulnerable, endangered or critically endangered; or</p> <p>b) the following subparagraphs are satisfied:</p> <ul style="list-style-type: none"> i. the species is a species of fish; ii. the species is the focus of a plan of management that provides for management actions necessary to stop the decline of, and support the

Category	Definition
	<p>recovery of, the species so that its chances of long term survival in nature are maximised;</p> <p>iii. the plan of management is in force under a law of the Commonwealth or of a State or Territory;</p> <p>iv. cessation of the plan of management would adversely affect the conservation status of the species.</p>

Appendix B

Excluded Fauna Species Returned from the Desktop Assessment

Common Name	Scientific Name	EPBC Listing	WA Listing	Reason for Exclusion
Common Noddy	<i>Anous stolidus</i>	MI	MI	Marine species. No suitable habitat in Survey Area.
Malleefowl	<i>Leipoa ocellata</i>	VU	VU	While historic occurrence is possible, no suitable habitat remains within Survey Area after extensive clearing.
Grey Wagtail	<i>Motacilla cinerea</i>	MI	MI	Extremely rare vagrant. Likely a misidentification of Eastern Yellow wagtail (<i>Motacilla tschutschensis</i>) which is also a rare migrant.
Far Eastern Curlew	<i>Numenius madagascariensis</i>	CR, MI	MI	Specialised marine/intertidal zone migratory shorebird. No suitable habitat occurs in Survey Area.
Fairy Tern	<i>Sternula nereis nereis</i>	VU	VU	Marine species. No suitable habitat in Survey Area.
Ghost Bat	<i>Macroderma gigas</i>	VU	VU	Well outside of known range. Likely a misidentification or database error.
Dibbler	<i>Parantechinus apicalis</i>	EN	WN	While historic occurrence is possible, the species no longer commonly on the mainland due to introduced predators.
Broad-faced Potoroo	<i>Potorous platyops</i>	EX	EX	This species is Extinct.

Appendix C

PMST SPRAT Search Results





Australian Government

Department of Climate Change, Energy,
the Environment and Water

EPBC Act Protected Matters Report

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

Report created: 10-Apr-2024

[Summary](#)

[Details](#)

[Matters of NES](#)

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

[Extra Information](#)

[Caveat](#)

[Acknowledgements](#)

Summary

Matters of National Environment Significance

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

World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International Importance (Ramsar)	None
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	5
Listed Threatened Species:	54
Listed Migratory Species:	11

Other Matters Protected by the EPBC Act

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

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

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

Commonwealth Lands:	4
Commonwealth Heritage Places:	1
Listed Marine Species:	16
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:	19
Regional Forest Agreements:	None
Nationally Important Wetlands:	2
EPBC Act Referrals:	17
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	Buffer Status
Banksia Woodlands of the Swan Coastal Plain ecological community	Endangered	Community likely to occur within area	In feature area
Clay Pans of the Swan Coastal Plain	Critically Endangered	Community likely to occur within area	In buffer area only
Empodisma peatlands of southwestern Australia	Endangered	Community may occur within area	In buffer area only
Honeymyrtle shrubland on limestone ridges of the Swan Coastal Plain Bioregion	Critically Endangered	Community may occur within area	In buffer area only
Tuart (<i>Eucalyptus gomphocephala</i>) Woodlands and Forests of the Swan Coastal Plain ecological community	Critically Endangered	Community likely to occur within area	In feature area

Listed Threatened Species

[\[Resource Information \]](#)

Status of Conservation Dependent and Extinct are not MNES under the EPBC Act.

Number is the current name ID.

Scientific Name	Threatened Category	Presence Text	Buffer Status
BIRD			
Aphelocephala leucopsis Southern Whiteface [529]	Vulnerable	Species or species habitat may occur within area	In feature area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat may occur within area	In feature area
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat may occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area	In feature area
Falco hypoleucos Grey Falcon [929]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Leipoa ocellata Malleefowl [934]	Vulnerable	Species or species habitat known to occur within area	In feature area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area	In feature area
Rostratula australis Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area	In feature area
Sternula nereis nereis Australian Fairy Tern [82950]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Tringa nebularia Common Greenshank, Greenshank [832]	Endangered	Species or species habitat likely to occur within area	In feature area
Zanda latirostris listed as Calyptorhynchus latirostris Carnaby's Black Cockatoo, Short-billed Black-cockatoo [87737]	Endangered	Species or species habitat known to occur within area	In feature area
FISH			
Nannatherina balstoni Balston's Pygmy Perch [66698]	Vulnerable	Species or species habitat likely to occur within area	In feature area
MAMMAL			
Dasyurus geoffroi Chuditch, Western Quoll [330]	Vulnerable	Species or species habitat known to occur within area	In feature area
Macroderma gigas Ghost Bat [174]	Vulnerable	Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Parantechinus apicalis Dibbler [313]	Endangered	Species or species habitat may occur within area	In feature area
PLANT			
Acacia forrestiana Forest's Wattle [17235]	Vulnerable	Species or species habitat known to occur within area	In feature area
Acacia splendens Splendid Wattle, Dandaragan Wattle [81510]	Endangered	Species or species habitat known to occur within area	In buffer area only
Andersonia gracilis Slender Andersonia [14470]	Endangered	Species or species habitat known to occur within area	In feature area
Anigozanthos viridis subsp. terraspectans Dwarf Green Kangaroo Paw [3435]	Vulnerable	Species or species habitat known to occur within area	In feature area
Asterolasia nivea Bindoon Starbush [8225]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
Banksia fuscobractea Dark-bract Banksia [83059]	Critically Endangered	Species or species habitat known to occur within area	In feature area
Banksia mimica Summer Honeypot [82765]	Endangered	Species or species habitat known to occur within area	In feature area
Banksia serratuloides subsp. perissa Northern Serrate Dryandra [82767]	Critically Endangered	Species or species habitat may occur within area	In buffer area only
Banksia serratuloides subsp. serratuloides Southern Serrate Dryandra [82768]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
Caleana dixonii listed as Paracaleana dixonii Sandplain Duck Orchid [87944]	Endangered	Species or species habitat known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Chamelaucium lullfitzii listed as Chamelaucium sp. Gingin (N.G.Marchant 6) Gingin Wax [92777]	Endangered (listed as Chamelaucium sp. Gingin)	Species or species habitat likely to occur within area	In feature area
Chamelaucium sp. Cataby (G.J.Keighery 11009) Griffin's Waxflower [82509]	Vulnerable	Species or species habitat known to occur within area	In buffer area only
Conospermum densiflorum subsp. unicephalatum One-headed Smokebush [64871]	Endangered	Species or species habitat likely to occur within area	In feature area
Darwinia acerosa Fine-leaved Darwinia [9004]	Endangered	Species or species habitat likely to occur within area	In buffer area only
Darwinia carnea Mogumber Bell, Narrogin Bell [9736]	Endangered	Species or species habitat may occur within area	In buffer area only
Daviesia dielsii Diels' Daviesia [19617]	Endangered	Species or species habitat may occur within area	In buffer area only
Drakaea elastica Glossy-leaved Hammer Orchid, Glossy-leaved Hammer Orchid, Warty Hammer Orchid [16753]	Endangered	Species or species habitat known to occur within area	In feature area
Eleocharis keigheryi Keighery's Eleocharis [64893]	Vulnerable	Species or species habitat known to occur within area	In buffer area only
Eremophila scaberula Rough Emu Bush [16729]	Endangered	Species or species habitat likely to occur within area	In buffer area only
Eucalyptus absita Badgingarra Box [24260]	Endangered	Species or species habitat may occur within area	In buffer area only
Eucalyptus dolorosa Dandaragan Mallee, Mount Misery Mallee [56709]	Endangered	Species or species habitat known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Eucalyptus leprophloia Scaly Butt Mallee, Scaly-butt Mallee [56712]	Endangered	Species or species habitat may occur within area	In feature area
Eucalyptus pruiniramis Midlands Gum, Jingymia Gum [56403]	Endangered	Species or species habitat likely to occur within area	In buffer area only
Goodenia arthrotricha [12448]	Endangered	Species or species habitat likely to occur within area	In buffer area only
Grevillea calliantha Foote's Grevillea, Cataby Grevillea, Black Magic Grevillea [56339]	Endangered	Species or species habitat known to occur within area	In buffer area only
Grevillea christineae Christine's Grevillea [64520]	Endangered	Species or species habitat may occur within area	In buffer area only
Grevillea curviloba subsp. incurva Narrow curved-leaf Grevillea [64909]	Endangered	Species or species habitat may occur within area	In buffer area only
Hakea megalosperma Lesueur Hakea [10505]	Vulnerable	Species or species habitat known to occur within area	In feature area
Hemiandra gardneri Red Snakebush [7945]	Endangered	Species or species habitat likely to occur within area	In feature area
Leucopogon obtectus Hidden Beard-heath [19614]	Endangered	Species or species habitat may occur within area	In buffer area only
Macarthuria keigheryi Keighery's Macarthuria [64930]	Endangered	Species or species habitat known to occur within area	In feature area
Ptychosema pusillum Dwarf Pea [11268]	Vulnerable	Species or species habitat known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Spirogardnera rubescens Spiral Bush [15667]	Endangered	Species or species habitat may occur within area	In buffer area only
Thelymitra dedmaniarum Cinnamon Sun Orchid [65105]	Endangered	Species or species habitat may occur within area	In buffer area only
Thelymitra stellata Star Sun-orchid [7060]	Endangered	Species or species habitat may occur within area	In feature area

REPTILE

Egernia stokesii badia Western Spiny-tailed Skink, Baudin Island Spiny-tailed Skink [64483]	Endangered	Species or species habitat may occur within area	In feature area
Pseudemydura umbrina Western Swamp Tortoise [1760]	Critically Endangered	Translocated population known to occur within area	In buffer area only

SHARK

Pristis pristis Freshwater Sawfish, Largetooth Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Vulnerable	Species or species habitat may occur within area	In buffer area only
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SPIDER

Idiosoma nigrum Shield-backed Trapdoor Spider, Black Rugose Trapdoor Spider [66798]	Vulnerable	Species or species habitat may occur within area	In buffer area only
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Listed Migratory Species

[[Resource Information](#)]

Scientific Name	Threatened Category	Presence Text	Buffer Status
Migratory Marine Birds			
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area	In feature 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	In buffer area only
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Migratory Terrestrial Species

Scientific Name	Threatened Category	Presence Text	Buffer Status
Motacilla cinerea Grey Wagtail [642]		Species or species habitat may occur within area	In feature area
Migratory Wetlands Species			
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat may occur within area	In feature area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat may occur within area	In feature area
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area	In feature area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area	In feature area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area	In feature area
Pandion haliaetus Osprey [952]		Species or species habitat known to occur within area	In feature area
Tringa nebularia Common Greenshank, Greenshank [832]	Endangered	Species or species habitat likely to occur within area	In feature area

Other Matters Protected by the EPBC Act

Commonwealth Lands

[\[Resource Information \]](#)

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

Commonwealth Land Name	State	Buffer Status
Defence		

Commonwealth Land Name	State	Buffer Status
Defence - LANCELIN - AIR SAFETY MARKER [50236]	WA	In buffer area only
Unknown		
Commonwealth Land - [52217]	WA	In buffer area only
Commonwealth Land - [52001]	WA	In feature area
Commonwealth Land - [52118]	WA	In buffer area only

Commonwealth Heritage Places [[Resource Information](#)]

Name	State	Status	Buffer Status
Natural			
Lancelin Defence Training Area	WA	Listed place	In buffer area only

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

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

Scientific Name	Threatened Category	Presence Text	Buffer Status
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area overfly marine area	In feature area
Chalcites osculans as Chrysococcyx osculans Black-eared Cuckoo [83425]		Species or species habitat likely to occur within area overfly marine area	In feature area
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat likely to occur within area	In feature area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area overfly marine area	In feature area
Motacilla cinerea Grey Wagtail [642]		Species or species habitat may occur within area overfly marine area	In feature area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area	In feature area
Pandion haliaetus Osprey [952]		Species or species habitat known to occur within area	In feature area
Rostratula australis as Rostratula benghalensis (sensu lato) Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area overfly marine area	In feature area
Thinornis cucullatus as Thinornis rubricollis Hooded Plover, Hooded Dotterel [87735]		Species or species habitat known to occur within area overfly marine area	In feature area
Tringa nebularia Common Greenshank, Greenshank [832]	Endangered	Species or species habitat likely to occur within area overfly marine area	In feature area

Extra Information

State and Territory Reserves			[Resource Information]
Protected Area Name	Reserve Type	State	Buffer Status
Bashford	Nature Reserve	WA	In buffer area only
Bundarra	Nature Reserve	WA	In buffer area only
Dandarangan	NRS Addition - Gazettal in Progress	WA	In buffer area only
Eneminga	Nature Reserve	WA	In buffer area only
Jam Hill	Nature Reserve	WA	In buffer area only
Minyulo	Nature Reserve	WA	In buffer area only
Moochamulla	Nature Reserve	WA	In buffer area only
Moore River	National Park	WA	In buffer area only
Namming	Nature Reserve	WA	In buffer area only
NTWA Bushland covenant (0048)	Conservation Covenant	WA	In buffer area only
NTWA Bushland covenant (0057)	Conservation Covenant	WA	In buffer area only
Quins Hill	Nature Reserve	WA	In buffer area only
South Mimegarra	Nature Reserve	WA	In buffer area only
Unnamed WA21164	5(1)(g) Reserve	WA	In buffer area only
Unnamed WA25591	Nature Reserve	WA	In buffer area only
Unnamed WA27993	Nature Reserve	WA	In buffer area only
Unnamed WA39571	Nature Reserve	WA	In buffer area only
Unnamed WA46899	Nature Reserve	WA	In buffer area only
Unnamed WA47808	Nature Reserve	WA	In buffer area only

Nationally Important Wetlands		[Resource Information]
Wetland Name	State	Buffer Status
Guraga Lake	WA	In buffer area only
Karakin Lakes	WA	In buffer area only

EPBC Act Referrals					[Resource Information]
Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status	
Bidamina Project	2022/09360		Assessment	In buffer area only	
Caravel Copper Project	2022/09422		Assessment	In buffer area only	
Waddi Wind Farm	2023/09639		Assessment	In buffer area only	

Controlled action				
Brand Highway Widening and Passing Lanes Project 34.83-164.3 SLK	2017/7864	Controlled Action	Post-Approval	In buffer area only

Not controlled action				
Agricultural Lime Sands Route Upgrade, near Calingiri, WA	2019/8609	Not Controlled Action	Completed	In buffer area only
Brand Hwy road formation and seal widening, WA	2016/7740	Not Controlled Action	Completed	In buffer area only
Development of the Dandaragan Wind Farms	2011/6006	Not Controlled Action	Completed	In feature area
Extension of horticulture Farming	2012/6318	Not Controlled Action	Completed	In buffer area only
Improving rabbit biocontrol: releasing another strain of RHDV, sthrn two thirds of Australia	2015/7522	Not Controlled Action	Completed	In feature area
Nilgen Wind Farm	2009/4694	Not Controlled Action	Completed	In buffer area only
Northern Looping project, Karratha to Gingin	2005/2251	Not Controlled Action	Completed	In buffer area only
Upgrade of Orange Springs Road	2019/8478	Not Controlled Action	Completed	In buffer area only
Waddi Wind and Solar Farm, near Dandaragan, WA	2018/8352	Not Controlled Action	Completed	In buffer area only
Walyering 3D Seismic Survey, Cataby, WA	2017/7982	Not Controlled Action	Completed	In buffer area only

Not controlled action (particular manner)				
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Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Not controlled action (particular manner)				
Mineral Sands Mine	2005/2001	Not Controlled Action (Particular Manner)	Post-Approval	In feature area
Transmission Line Rebuild and Extension	2009/5105	Not Controlled Action (Particular Manner)	Post-Approval	In feature area
Referral decision				
Transmission Line Rebuild and Extension	2009/4972	Referral Decision	Completed	In feature area

Caveat

1 PURPOSE

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

The report contains the mapped locations of:

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

2 DISCLAIMER

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

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

3 DATA SOURCES

Threatened ecological communities

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

Threatened, migratory and marine species

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

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

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

4 LIMITATIONS

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

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

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

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

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

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

Acknowledgements

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

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

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

Please feel free to provide feedback via the [Contact us](#) page.

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Appendix D

Fauna Inventory



Class	Family	Taxon	Common Name	Conservation Status	Detection Method*
Amphibia	Pelodyadidae	<i>Litoria adelaidensis</i>	Slender Tree Frog	-	O
		<i>Litoria moorei</i>	Motorbike Frog	-	O
	Myobatrachidae	<i>Crinia insignifera</i>	Sign-bearing Froglet	-	O
Reptilia	Scincidae	<i>Cryptoblepharus bunchananii</i>	Buchanan's Snake-eyed Skink	-	O
		<i>Tiliqua rugosa</i>	Bobtail	-	O
	Varanidae	<i>Varanus tristis</i>	Racehorse Goanna	-	O
	Elapidae	<i>Pseudonaja mengdeni</i>	Western Brown Snake	-	O
Aves	Casuariidae	<i>Dromaius novaehollandiae</i>	Emu	-	O
	Anatidae	<i>Cygnus atratus</i>	Black Swan	-	O
		<i>Tadorna tadornoides</i>	Australian Shelduck	-	O
		<i>Malacorhynchus membranaceus</i>	Pink-eared Duck	-	O
		<i>Chenonetta jubata</i>	Australian Wood Duck	-	C
		<i>Anas superciliosa</i>	Pacific Black Duck	-	O
		<i>Anas gracilis</i>	Grey Teal	-	O
	Phasianidae	<i>Synoicus ypsilophorus</i>	Brown Quail	-	O
		<i>Coturnix pectoralis</i>	Stubble Quail	-	O
	Cuculidae	<i>Chalcites basalis</i>	Horsfield's Bronze Cuckoo	-	O
		<i>Chalcites lucidus</i>	Shining Bronze Cuckoo	-	O
	Columbidae	<i>Phaps chalcoptera</i>	Common Bronzewing	-	O
		<i>Ocyphaps lophotes</i>	Crested Pigeon	-	O
	Rallidae	<i>Tribonyx ventralis</i>	Black-tailed Nativehen	-	O
		<i>Fulica atra</i>	Eurasian Coot	-	O
	Podicipedidae	<i>Tachybaptus novaehollandiae</i>	Australasian Grebe	-	O

Class	Family	Taxon	Common Name	Conservation Status	Detection Method*
		<i>Poliocephalus poliocephalus</i>	Hoary-Headed Grebe	-	O
	Charadriidae	<i>Erythronyx cinctus</i>	Red-kneed Dotterel	-	O
		<i>Euseyonis melanops</i>	Black-fronted Dotterel	-	O
	Scolopacidae	<i>Tringa glareola</i>	Wood Sandpiper	MI (BC; EPBC)	O
	Phalacrocoracidae	<i>Phalacrocorax sulcirostris</i>	Little Black Cormorant	-	O
		<i>Phalacrocorax carbo</i>	Great Cormorant	-	O
	Threskiornithidae	<i>Threskiornis molucca</i>	Australian White Ibis	-	O
		<i>Threskiornis spinicollis</i>	Straw-necked Ibis	-	O
		<i>Platalea flavipes</i>	Yellow-billed Spoonbill	-	O
	Ardeidae	<i>Ardea pacifica</i>	White-necked Heron	-	O
		<i>Egretta novaehollandiae</i>	White-faced Heron	-	O
	Accipitridae	<i>Aquila audax</i>	Wedge-tailed Eagle	-	O
		<i>Circus approximans</i>	Swamp Harrier	-	O
		<i>Haliastur sphenurus</i>	Whistling Kite	-	O
	Alcedinidae	<i>Dacelo novaeguineae</i>	Laughing Kookaburra*	-	O
		<i>Todiramphus sanctus</i>	Sacred Kingfisher	-	O
	Meropidae	<i>Merops ornatus</i>	Rainbow Bee-eater	-	O
	Falconidae	<i>Falco cenchroides</i>	Nankeen Kestrel	-	O
		<i>Falco peregrinus</i>	Peregrine Falcon	OS (BC)	O
	Cacatuidae	<i>Zanda latirostris</i>	Carnaby's Black-Cockatoo	EN (BC; EPBC)	O
		<i>Eolophus roseicapilla</i>	Galah	-	O
		<i>Cacatua pastinator</i>	Western Corella	-	O
		<i>Cacatua sanguinea</i>	Little Corella	-	O

Class	Family	Taxon	Common Name	Conservation Status	Detection Method*
	Psittaculidae	<i>Polytelis anthopeplus</i>	Regent Parrot	-	O
		<i>Purpureicephalus spurius</i>	Red-capped Parrot	-	O
		<i>Barnardius zonarius</i>	Australian Ringneck	-	O
	Maluridae	<i>Malurus splendens</i>	Splendid Fairywren	-	O
		<i>Malurus leucopterus</i>	White-winged Fairywren	-	O
	Meliphagidae	<i>Acanthorhynchus superciliosus</i>	Western Spinebill	-	O
		<i>Epthianura albifrons</i>	White-fronted Chat	-	O
		<i>Gliciphila melanops</i>	Tawny-crowned Honeyeater	-	O
		<i>Lichmera indistincta</i>	Brown Honeyeater	-	O
		<i>Purnella albifrons</i>	White-fronted Honeyeater	-	O
		<i>Gavicalis virescens</i>	Singing Honeyeater	-	O
	Pardalotidae	<i>Pardalotus striatus</i>	Striated Pardalote	-	O
	Acanthizidae	<i>Smicronis brevirostris</i>	Weebill	-	O
		<i>Sericornis maculatus</i>	Spotted Scrubwren	-	O
		<i>Gerygone fusca</i>	Western Gerygone	-	O
		<i>Acanthiza apicalis</i>	Inland Thornbill	-	O
		<i>Acanthiza inornata</i>	Western Thornbill	-	O
		<i>Acanthiza chrysorrhoa</i>	Yellow-rumped Thornbill	-	O
	Artamidae	<i>Artamus cinereus</i>	Black-faced Woodswallow	-	O
		<i>Gymnorhina tibicen</i>	Australian Magpie	-	O
		<i>Cracticus torquatus</i>	Grey Butcherbird	-	O
	Campephagidae	<i>Coracina novaehollandiae</i>	Black-faced Cuckooshrike	-	O
		<i>Lalage tricolor</i>	White-winged Triller	-	O

Class	Family	Taxon	Common Name	Conservation Status	Detection Method*
	Pachycephalidae	<i>Pachycephala rufiventris</i>	Rufous Whistler	-	O
		<i>Colluricincla harmonica</i>	Grey Shrikethrush	-	O
	Rhipiduridae	<i>Rhipidura leucophrys</i>	Willie Wagtail	-	O
		<i>Rhipidura albiscapa</i>	Grey Fantail	-	O
	Monarchidae	<i>Grallina cyanoleuca</i>	Magpie-lark	-	O
	Corvidae	<i>Corvus coronoides</i>	Australian Raven	-	O
	Hirundinidae	<i>Hirundo neoxena</i>	Welcome Swallow	-	O
		<i>Petrochelidon nigricans</i>	Tree Martin	-	O
	Locustellidae	<i>Cincloramphus cruralis</i>	Brown Songlark	-	O
		<i>Cincloramphus mathewsi</i>	Rufous Songlark	-	O
	Zosteropidae	<i>Zosterops lateralis</i>	Silvereeye	-	O
	Dicaeidae	<i>Dicaeum hirundinaceum</i>	Mistletoebird	-	O
	Motacillidae	<i>Anthus australis</i>	Australian Pipit	-	O
Mammalia	Tachyglossidae	<i>Tachyglossus aculeatus</i>	Short-beaked Echidna	-	O
	Macropodidae	<i>Macropus fuliginosus</i>	Western Grey Kangaroo	-	C; O
	Muridae	<i>Mus musculus</i>	House Mouse*	-	C
	Molossidae	<i>Austronomus australis</i>	White-striped Free-tailed Bat	-	U
		<i>Ozimops kitcheneri</i>	South-western Free-tailed Bat	-	U
	Vespertilionidae	<i>Chalinolobus gouldii</i>	Gould's Wattled Bat	-	U
		<i>Chalinolobus morio</i>	Chocolate Wattled Bat	-	U
		<i>Nyctophilus geoffroyi</i>	Lesser Long-eared Bat	-	U
		<i>Vespadelus regulus</i>	Southern Forest Bat	-	U
	Canidae	<i>Vulpes vulpes</i>	Red Fox*	-	C

Class	Family	Taxon	Common Name	Conservation Status	Detection Method*
	Bovidae	<i>Bos taurus</i>	Cattle*	-	C
	Caprinae	<i>Ovis aries</i>	Sheep*		O

* = Introduced species, C = Camera; O = Opportunistic; U = Ultrasonic recorder; EN = Endangered; MI = Migratory; OS = Other Specially Protected.

Appendix E

Significant Fauna Location Details

GOVERNMENT AGENCY REFERENCE ONLY

NOT FOR PUBLIC DISSEMINATION

CONTAINS LOCATIONS OF SIGNIFICANT FAUNA SPECIES



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