

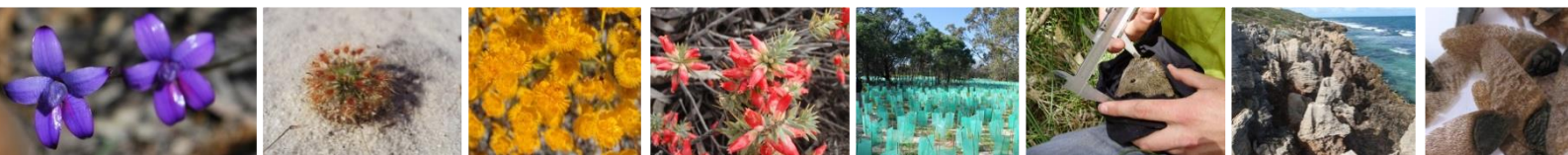


Natural Area
CONSULTING MANAGEMENT SERVICES

MetCONNx

MCR Environmental Surveys – Abernethy Road to Mundijong Junction (CH42870)

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Executive Summary

Natural Area Consulting Management Services (Natural Area) was contracted by MetCONNx to undertake a basic fauna survey and a black cockatoo habitat assessment along the main cable route (MCR) along Soldiers Road, Cardup for the Byford Rail Extension (BRE) project.

Natural Area environmental scientists traversed the site and undertook the two surveys simultaneously. The surveys returned the following results:

- five fauna species were found on site from four families
- one conservation significant species, the Forest Red Tail Black Cockatoo (*Calyptorhynchus banksii naso*) was found on site
- no evidence of black cockatoo roosting was found on site, however no nocturnal survey was undertaken to confirm whether the site is used for roosting
- 171 potential breeding trees were found on site, with 20 trees having hollows present
- two suitable hollows were recorded out of the 20 hollows present, in the following species of tree:
 - *Corymbia calophylla*
 - *Eucalyptus marginata*
- there is 16.70 ha of high-quality foraging habitat on site, with 152 individual potential foraging trees recorded
- of the 152 potential foraging trees, seven showed either direct or indirect signs of black cockatoos foraging
- all trees with foraging evidence were *Corymbia calophylla*.

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1.0 Introduction

Natural Area Consulting Management Services (Natural Area) was contracted by MetCONNx to undertake environmental surveys within the rail corridor along Soldiers Road, Cardup within the Shire of Serpentine Jarrahdale. The environmental surveys were required as part of the Byford Rail Extension (BRE) project.

1.1 Location

The site is located within the Shire of Serpentine Jarrahdale, along Soldiers Road. The site begins at the Soldiers Road/ Cardup Siding Road intersection in Cardup and extends southwest to the Mundijong Junction train station in Mundijong (Figure 1). The site is located within an Environmentally Sensitive Area (Department of Water and Environmental Regulation (DWER), 2021).

1.2 Scope

The scope of the environmental surveys at Abernethy Road to Mundijong Junction included:

- a basic fauna survey including the following:
 - searching for presence of tracks, scats, diggings, and bones
 - searching through micro-habitat including examining hollow logs, turning over rocks/logs and debris
 - an aural and visual search to identify bird species
 - recording GPS locations of conservation significant species observed
- a black cockatoo habitat assessment to collect the following data:
 - the GPS locations of each potential habitat tree
 - the height, DBH, health, and species of each potential habitat tree
 - evidence of hollows, including size, type, and location within the tree.



2.0 Site Characteristics

The characteristics of the site have a strong bearing on the fauna and black cockatoo species present. The key characteristics of the Abernethy Road to Mundijong Junction site are outlined in this section.

2.1 Regional Context

The site is located within the Perth (SWA02) IBRA subregion (Department of Climate Change, Energy, the Environment and Water (DCCEW), 2024a). This region is characterised by low lying plains, with some swampy areas and duricrusted Mesozoic sediments rising in the east. Soils are generally comprised of colluvial and aeolian sands, alluvial river flats and coastal limestones (Mitchell, Williams and Desmond, 2002). Banksia, Jarrah and Marri dominate the landscape, with some areas of *Casuarina obesa* – Marri woodlands and Melaleuca shrublands (Mitchell et al., 2002).

2.2 Climate

The climate experienced in the area is Mediterranean, with dry, hot summers and cool, wet winters. According to the Bureau of Meteorology (2024); Karnet WA, site number 009111, 2024, the region has an average:

- Rainfall of 1134.2 mm pa, with rain falling predominantly between May and September
- Maximum temperature ranging from 16.0 °C in winter to 29.8 °C in summer, with a maximum recorded temperature of 44.5 °C
- Minimum temperatures ranging from 6.6 °C in winter to 14.9 °C in summer, with a minimum recorded temperature of -2.0 °C
- Predominant wind directions include morning easterlies and afternoon westerlies with an average wind speed of 12.8 km/h and gusts of more than 100 km/h.

2.3 Black Cockatoo Habitat

There is the potential for the three threatened black cockatoos and their habitat to occur on site, including the Carnaby's Cockatoo (*Zanda latirostris*) listed as Endangered under the Environment Protection and Biodiversity Conservation (EPBC) Act 1999 (Cwlth), the Forest Red-tailed Black Cockatoo (*Calyptorhynchus banksia naso*) and the Baudin's Black Cockatoo (*Zanda baudinii*) listed as Vulnerable. All are listed as Threatened under the *Biodiversity Conservation Act 2016* (WA)(BC Act). The survey site occurs within an area classified as the following:

- Carnaby's Cockatoo Areas requiring investigation as feeding habitat in the Swan Coastal Plain IBRA Region (Department of Biodiversity, Conservation and Attractions (DBCA), 2018a)
- Carnaby's Cockatoo Unconfirmed Breeding Areas within the Swan Coastal Plain and Jarrah Forest IBRA regions (DBCA, 2018b)

The site also occurs within 6 km of areas classified as the following:

- Black Cockatoo Roosting Site with Buffer (DBCA, 2019a)
- Carnaby's Cockatoo Unconfirmed Roosting Site with Buffer (DBCA, 2018c)
- Carnaby's Cockatoo Confirmed Roosting Site with Buffer (DBCA, 2018d)

3.0 Methodology

3.1 Desktop and Literature Review

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

- likely native fauna and black cockatoo species present
- current extent of native vegetation
- likely presence of threatened or priority fauna species.

Conservation code definitions for the State and Commonwealth are provided in Appendix 1.

3.2 On-ground Fauna Survey

The fauna survey was completed in accordance with a Basic Fauna Survey as outlined in the *Technical Guidance, Terrestrial vertebrate fauna surveys for environmental impact assessment* (Environmental Protection Authority (EPA), 2020). Natural Area environmental scientists traversed the site across six days in May 2024 and undertook this survey in conjunction with other survey activities. A basic survey is defined as a low-intensity survey, which gathers broad fauna and habitat information including opportunistic fauna observations (EPA, 2020). The fauna survey included recording opportunistic sightings of fauna species while traversing the survey area, along with recording evidence of their presence in the form of:

- scats
- tracks
- diggings
- burrows, dens and warrens
- runnels (vegetative tunnels)
- calls.

3.3 Black Cockatoo Habitat Assessment

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

Natural Area environmental scientists undertook the survey across six days in May 2024 with key data recorded using Mappt software on a handheld tablet. Survey activities included:

- traversing the whole site in a systematic grid search
- recording the location and evidence of breeding, roosting and foraging activities (e.g. chew marks, feathers, scats)
- marking the GPS locations of each habitat tree with a diameter at breast height (DBH) ≥ 500 mm (≥ 300 mm for *Eucalyptus wandoo* (Wandoo) and *Eucalyptus salmonophloia* (Salmon Gum))
- recording the height, DBH, health, and species of each habitat tree
- recording evidence of hollows, including size, type, and location within the tree
- recording foraging habitat, vegetation type, and condition.

The black cockatoo foraging quality scoring tool was applied to determine the quality of foraging at all sites. Due to the proximity of sites, they were assessed collectively as a single foraging patch. The tool assigns the site with a score from 0 (low quality) to 10 (high quality) based on factors such as foraging potential,

connectivity, proximity to breeding sites, proximity to roosting sites and impact from significant plant diseases. The foraging quality scoring tool template is provided below in Table 1.

Table 1: Foraging quality scoring tool template

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

Source: DAWE, 2022

3.4 Limitations

The limitation associated with the project are outlined in Table 2 below.

Table 2: Fauna and black cockatoo survey limitations

Potential Limitation	Degree of Limitation	Comments
Availability of contextual information	None	Regional and local information was readily available for the site. Database searches and previous surveys of the site were made available to Natural Area.
Competency/experience of team	None	Survey activities were undertaken by experienced environmental scientists who have extensive experience undertaking fauna surveys and black cockatoo habitat assessments within the Swan Coastal Plain, Jarrah Forest and Avon Wheatbelt.
Survey effort and extent	Minor	<p>All of site was able to be traversed. The survey effort (basic fauna survey and black cockatoo habitat assessment) was appropriate for the requirements of the project.</p> <p>All potential black cockatoo hollows were able to be checked for occupancy by using a telescopically mounted go-pro.</p> <p>No nocturnal survey was undertaken to determine roosting habitat. Surveys were undertaken during daylight hours and found no evidence of black cockatoo roosting however, a nocturnal survey should be undertaken to confirm this.</p>
Access restrictions	None	No access restrictions were present at the time of the surveys.
Disturbances	None	No recent disturbances which may have had an impact on survey results (e.g. fire, recent clearing or floods) were identified during the survey.

4.0 Fauna Survey Results

4.1 Desktop Survey

A desktop survey of online databases indicated the potential for a total of 70 conservation significant fauna species to occur within 10 km of the survey area (Table 3). NatureMap indicated 26 conservation significant species listed under the *Biodiversity Conservation Act 2016* (WA) as potentially occurring within a 10 km radius of the site (DBCA, 2024a). The Protected Matters Search Tool (PMST) indicated 27 threatened species listed under the *Environment Protection and Biodiversity Conservation Act 1999* (Cwlth) as potentially occurring within a 10 km radius of the site (DCCEE, 2024b) (Appendix 2). A review of the DBCA threatened and priority fauna species database indicated the potential for 64 conservation significant fauna species to occur within a 20 km radius of the site (DBCA, 2024b).

Both abiotic (soil, climate) as well as biotic (food resources, predator pressure) will determine the suitability of habitats for specific fauna assemblages, based on their ecological requirements. Evaluating the site locality, existing conditions and known home ranges, Natural Area determined that the following 14 species (highlighted green in Table 3) have the potential to be present within the survey site.

Table 3: Threatened and Priority fauna species listed by DBCA

Species Name	Lifeform	Cons Code (WA)	Cons Code (EPBC)	DBCA	PMST	Nature Map
<i>Acanthophis antarcticus</i>	REPTILE	P3		X		X
<i>Actitis hypoleucos</i>	BIRD	MI	MI	X	X	X
<i>Apus pacificus</i>	BIRD	MI	MI	X	X	
<i>Arenaria interpres</i>	BIRD	MI	MI	X		
<i>Bettongia penicillata ogilbyi</i>	MAMMAL	CR	EN	X	X	
<i>Bubulcus ibis</i> as <i>Ardea ibis</i>	BIRD		MI		X	
<i>Botaurus poiciloptilus</i>	BIRD	EN	EN	X	X	
<i>Cacatua pastinator pastinator</i>	BIRD	CD		X		
<i>Calidris acuminata</i>	BIRD	MI	MI	X	X	
<i>Calidris canutus</i>	BIRD	EN	EN & MI	X		
<i>Calidris ferruginea</i>	BIRD	CR	CR & MI	X	X	X
<i>Calidris melanotos</i>	BIRD	MI	MI	X	X	
<i>Calidris pugnax</i>	BIRD	MI	MI	X		
<i>Calidris ruficollis</i>	BIRD	MI	MI	X		X
<i>Calidris subminuta</i>	BIRD	MI	MI	X		
<i>Calidris tenuirostris</i>	BIRD	CR	CR & MI	X		
<i>Calyptorhynchus banksii naso</i>	BIRD	VU	VU	X	X	X

Species Name	Lifeform	Cons Code (WA)	Cons Code (EPBC)	DBCA	PMST	Nature Map
<i>Charadrius dubius</i>	BIRD	MI	MI	X		
<i>Charadrius leschenaultii</i>	BIRD	VU	VU & MI	X	X	
<i>Chlidonias leucopterus</i>	BIRD	MI	MI	X		
<i>Ctenotus delli</i>	REPTILE	P4		X		X
<i>Ctenotus gemmula</i> (Swan Coastal Plain subpopulation)	REPTILE	P3		X		
<i>Dasyurus geoffroii</i>	MAMMAL	VU	VU	X	X	X
<i>Dasyurus geoffroii fortis</i>	MAMMAL	VU	VU	X		X
<i>Elanus scriptus</i>	BIRD	P4		X		
<i>Falco peregrinus</i>	BIRD	OS		X		X
<i>Falco peregrinus macropus</i>	BIRD	OS		X		
<i>Falsistrellus mackenziei</i>	MAMMAL	P4		X		
<i>Geotria australis</i>	FISH	P3		X		X
<i>Glareola maldivarum</i>	BIRD	MI	MI	X		
<i>Haliaeetus leucogaster</i>	BIRD		MI		X	
<i>Hydromys chrysogaster</i>	MAMMAL	P4		X		X
<i>Hydroprogne caspia</i>	BIRD	MI	MI	X		X
<i>Isoodon fusciventer</i>	MAMMAL	P4		X		X
<i>Ixobrychus dubius</i>	BIRD	P4		X		
<i>Leipoa ocellata</i>	BIRD	VU	VU	X	X	X
<i>Lerista lineata</i>	REPTILE	P3		X		
<i>Limosa lapponica</i>	BIRD	MI	MI	X		
<i>Limosa limosa</i>	BIRD	MI	MI	X		
<i>Merops ornatus</i>	BIRD		MI		X	
<i>Motacilla cinerea</i>	BIRD		MI		X	
<i>Myrmecobius fasciatus</i>	MAMMAL	EN	EN	X	X	X
<i>Neelaps calonotos</i>	REPTILE	P3		X		
<i>Notamacropus eugenii derbianus</i>	MAMMAL	P4		X		X
<i>Notamacropus irma</i>	MAMMAL	P4		X		
<i>Numenius madagascariensis</i>	BIRD	CR	CR & MI	X	X	
<i>Oxyura australis</i>	BIRD	P4		X		X

Species Name	Lifeform	Cons Code (WA)	Cons Code (EPBC)	DBCA	PMST	Nature Map
<i>Pandion haliaetus</i>	BIRD	MI	MI	X	X	
<i>Phaethon rubricauda</i>	BIRD	MI & P4	MI	X		
<i>Phascogale tapoatafa wambenger</i>	MAMMAL	CD		X		X
<i>Platycercus icterotis xanthogenys</i>	BIRD	P4		X		
<i>Plegadis falcinellus</i>	BIRD	MI	MI	X		X
<i>Pluvialis fulva</i>	BIRD	MI	MI	X		
<i>Pluvialis squatarola</i>	BIRD	MI	MI	X		
<i>Pseudocheirus occidentalis</i>	MAMMAL	CR	CR	X	X	X
<i>Rostratula australis</i>	BIRD		EN		X	
<i>Setonix brachyurus</i>	MAMMAL	VU	VU	X	X	X
<i>Stercorarius longicaudus</i>	BIRD	MI	MI	X		
<i>Sternula nereis nereis</i>	BIRD		VU		X	
<i>Thalassarche chrysostoma</i>	BIRD	VU	EN & MI	X		
<i>Thalasseus bergii</i>	BIRD	MI	MI	X		
<i>Thinornis cucullatus</i>	BIRD	P4		X	X	
<i>Tringa glareola</i>	BIRD	MI	MI	X		
<i>Tringa nebularia</i>	BIRD	MI	MI	X	X	X
<i>Tringa stagnatilis</i>	BIRD	MI	MI	X		
<i>Tyto novaehollandiae novaehollandiae</i>	BIRD	P3		X		
<i>Westralunio carteri</i>	OTHER	VU	VU	X	X	X
<i>Zanda baudinii</i>	BIRD	EN	EN	X	X	X
<i>Zanda latirostris</i>	BIRD	EN	EN	X	X	X
<i>Zanda</i> sp. 'white-tailed black cockatoo'	BIRD	EN	EN			X

4.2 Basic Fauna Survey Results

Five fauna species from four different families were observed during the survey (Table 4). There were four bird species and one mammal. One conservation significant species, the Forest Red Tailed Black Cockatoo (*Calyptorhynchus banksii naso*) (Vulnerable) was found on site. The Common Brushtail Possum (*Trichosurus vulpecula*) was observed through the presence of fresh scat on site. All other recorded species were directly observed on site. Examples of fauna species observed on site have been provided in Figure 2.

Table 4: Fauna observations within the rail alignment. * denotes introduced species

Family	Species Name	Common Name
Bird		
Cacatuidae	<i>Calyptorhynchus banksii naso</i>	Forest Red Tailed Black Cockatoo
Campephagidae	<i>Coracina novaehollandiae</i>	Black- Faced Cuckooshrike
Psittaculidae	<i>Purpureicephalus spurius</i>	Red- capped Parrot
Psittaculidae	<i>Barnardius zonarius</i>	Australian Ringneck
Mammal		
Phalangeridae	<i>Trichosurus vulpecula</i>	Common Brushtail Possum

Red- capped Parrot (*Purpureicephalus spurius*)Forest Red Tailed Black Cockatoo (*Calyptorhynchus banksii naso*)**Figure 2:** Fauna species observed. *denotes introduced species.

5.0 Black Cockatoo Habitat Assessment Results

5.1 Desktop Survey

A desktop search of the Naturemap (DBCA, 2024a), DBCA threatened and priority list (DBCA, 2024b) and PMST (DCCEW, 2024b) databases show that all three black cockatoo species are likely to occur on site (Table 5). Both abiotic (soil, climate) as well as biotic (food resources, predator pressure) will determine the suitability of habitats for specific fauna assemblages, based on their ecological requirements. Evaluating the site locality, existing conditions and known home ranges, Natural Area determined that all three species have the potential to be present within the survey site.

Table 5: Black cockatoo species with the potential to occur on site as listed by the DBCA database

Species Name	Cons Code (WA)	Cons Code (EPBC)	DBCA	PMST	Nature Map
<i>Zanda baudinii</i>	EN	EN	X	X	X
<i>Zanda latirostris</i>	EN	EN	X	X	X
<i>Calyptorhynchus banksii naso</i>	VU	VU	X	X	X

5.2 Field Survey

5.2.1 Black Cockatoo Roosting Habitat

No evidence of roosting in the form of scats or feathers was observed within the survey area at the time of the survey; however, dusk surveys would be required to confirm whether any roost sites are present within proximity to the survey area.

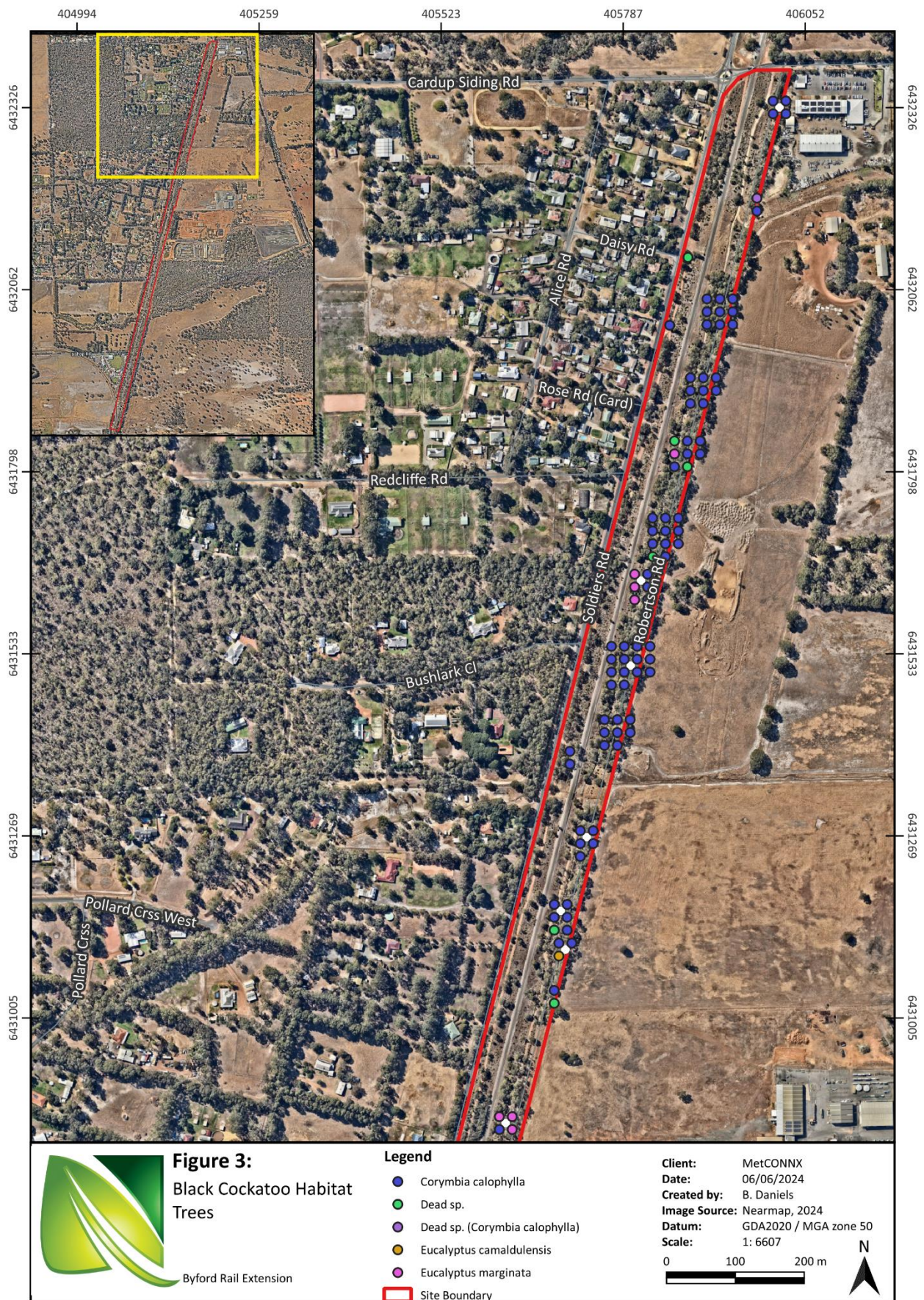
5.2.2 Black Cockatoo Breeding Habitat

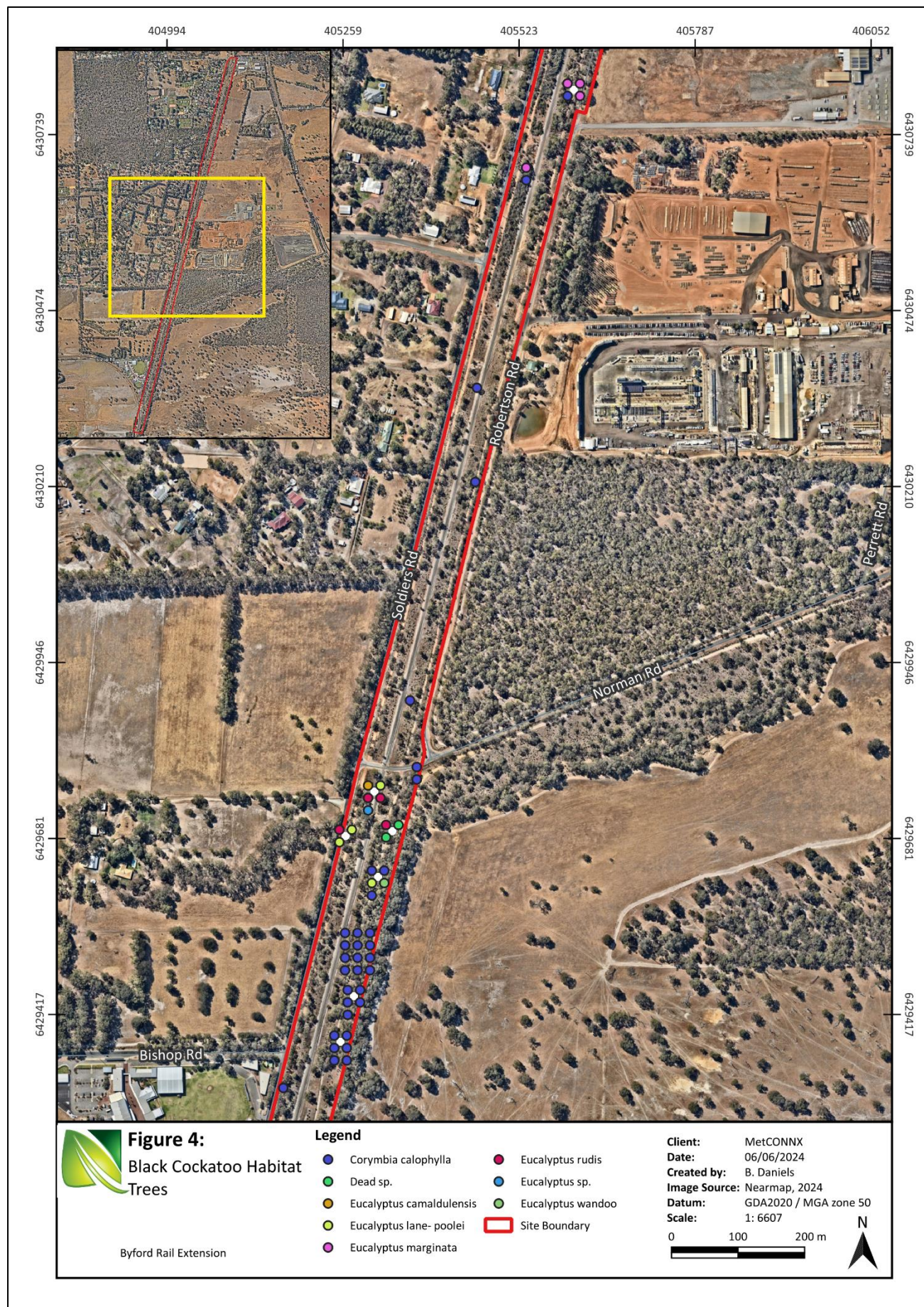
A total of 171 potential breeding trees (DBH \geq 500 mm) were found within the rail alignment (Figures 3 - 5). Trees consisted of 11 different species:

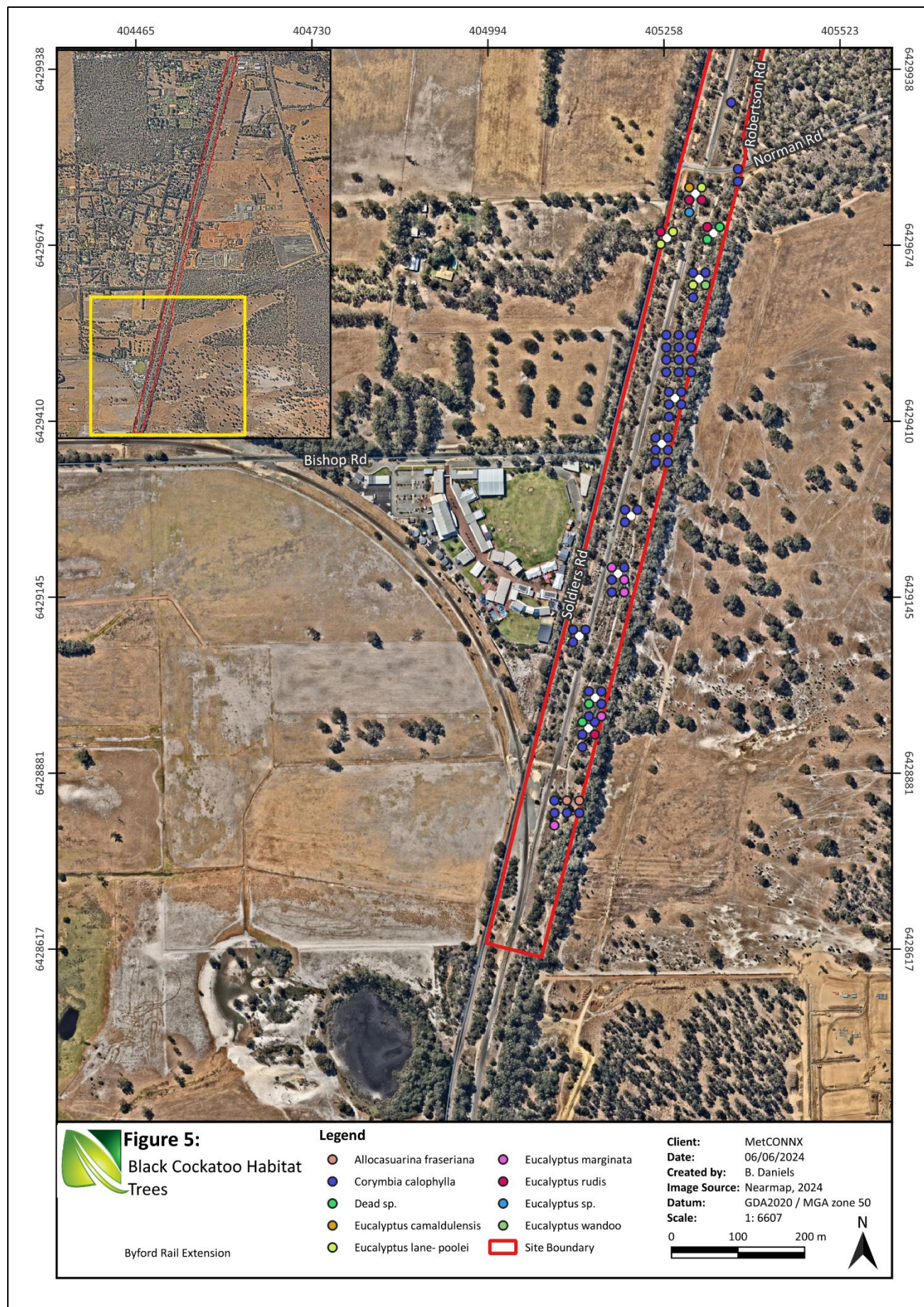
- *Allocasuarina fraseriana*
- *Corymbia calophylla*
- Dead sp.
- Dead sp. (*Corymbia calophylla*)
- *#Eucalyptus camaldulensis*
- *#Eucalyptus lane- poolei*
- *Eucalyptus marginata*
- *Eucalyptus rudis*
- *Eucalyptus* sp.
- *Eucalyptus wandoo*

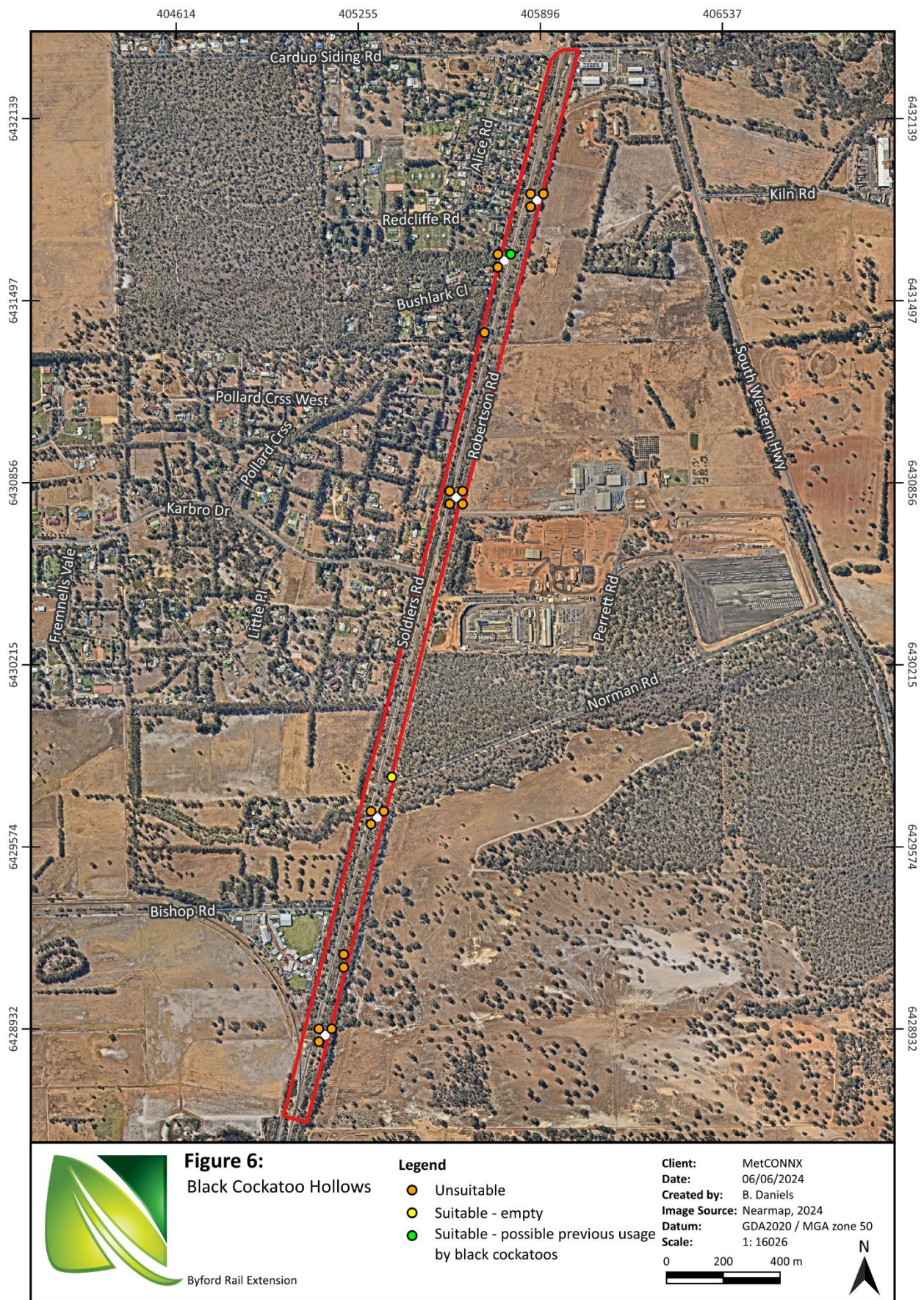
The size of the potential habitat trees ranged from 500 to 1273 mm DBH. Of these potential habitat trees, 20 had hollows present (Figure 6). Two of the hollows were deemed suitable for black cockatoo breeding purposes and had a suitable size, appropriate entrance angle, height on trunk and no current occupants, one of which showed evidence of possible usage by black cockatoos previously (Figure 7). Unsuitable hollows were classed as such due to a small entrance size (< 100 mm) or insufficient space inside the hollow. Three hollows also had bees present; however, these were already deemed unsuitable due to size.

Complete black cockatoo habitat tree data has been provided in Appendix 3.



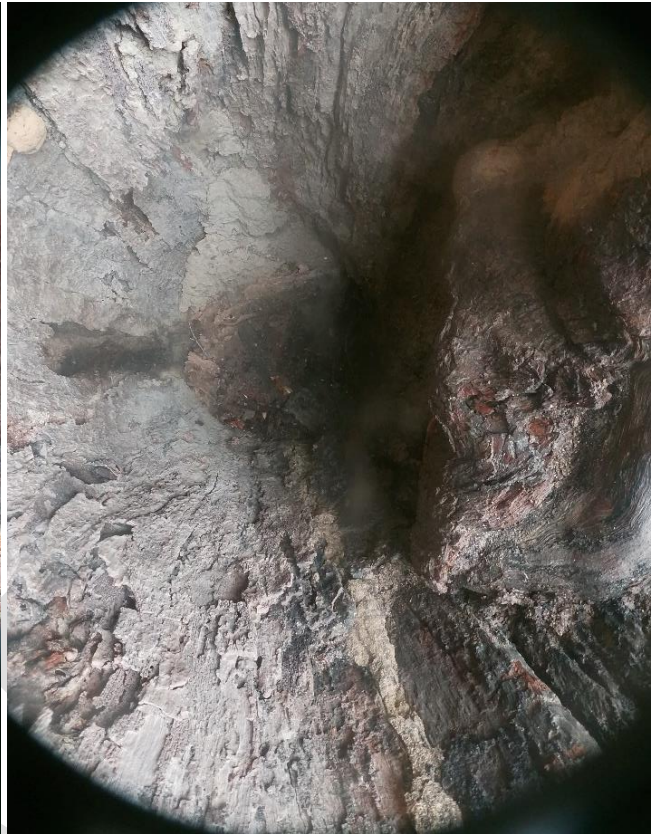




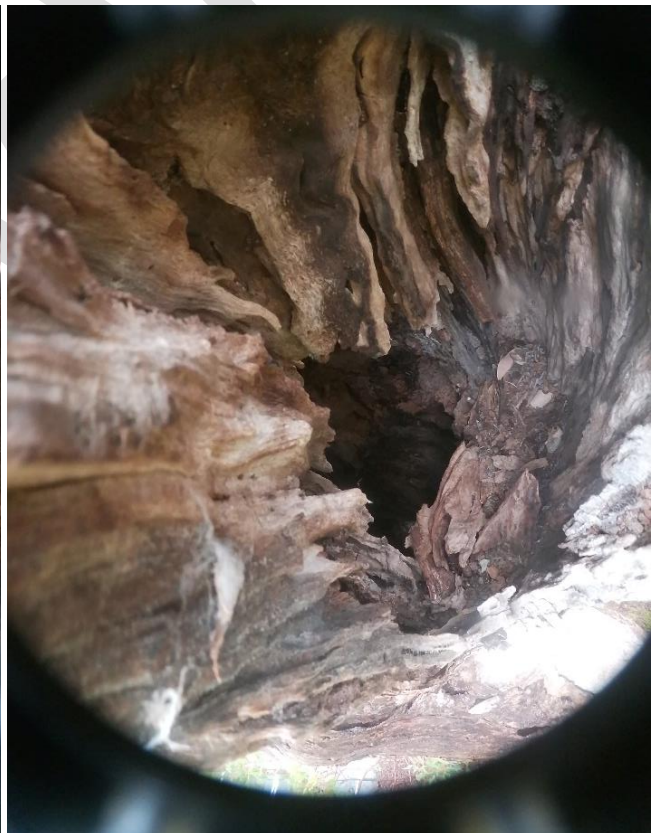
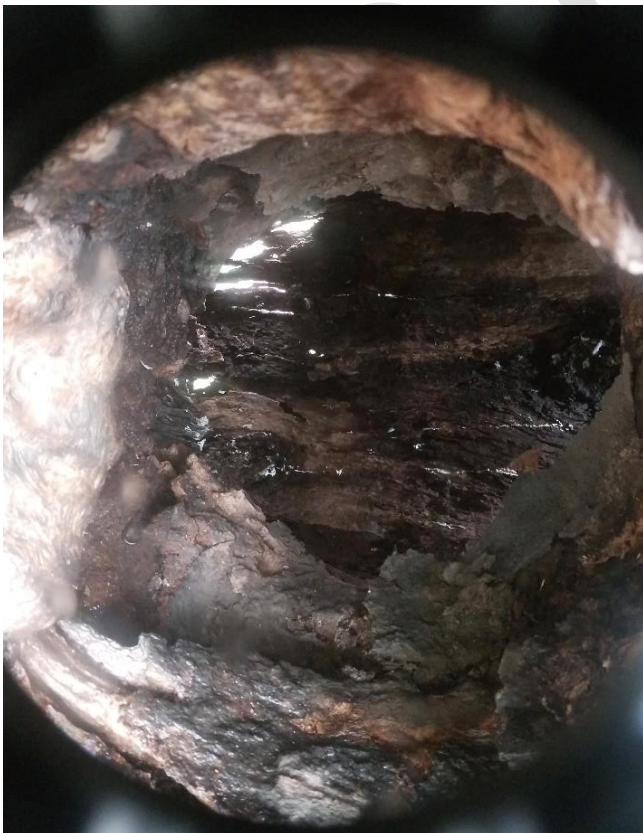




Hollow possibly used by black cockatoos



Example of a suitable hollow



Examples of unsuitable hollows

Figure 7: Examples of hollows found on site

5.2.3 Black Cockatoo Foraging Habitat

Vegetation types have been previously mapped for the site, with six appropriate vegetation types for black cockatoo foraging purposes, with a total area of 16.70 ha (Focused Vision Consulting, 2022) (Appendix 4). A breakdown of these vegetation types in regard to potential use by each black cockatoo species has been provided in Table 6. A total of 152 individual trees were recorded as potential black cockatoo foraging trees during the current survey, with foraging evidence recorded at seven individual trees. Potential foraging species recorded on site consisted of:

- *Allocasuarina fraseriana*
- *Corymbia calophylla*
- *Eucalyptus camaldulensis*
- *Eucalyptus marginata*
- *Eucalyptus sp.*
- *Eucalyptus wandoo*.

Both direct and indirect evidence of black cockatoo foraging was found on site (Figure 8). Indirect evidence included chewed marri nuts. Chew marks were identified to be from Forest Red Tail Black Cockatoos. Forest Red Tail Black Cockatoos (*Calyptorhynchus banksii naso*) were also observed to be feeding on Marri (*Corymbia calophylla*) site at the time of the survey. The black cockatoo habitat foraging scoring tool (DAWE, 2022) was used to determine the quality of the foraging available within the Byford Rail alignment. Results have been outlined in Table 7.

Table 6: Habitat areas per black cockatoo species.

Baudin's Cockatoo	Carnaby's Cockatoo	Forest Red- tailed Black Cockatoo
Total Area of Foraging Habitat (ha)		
16.70	16.70	15.65
Habitat Types		
<ul style="list-style-type: none"> ▪ Banksia/ Xanthorrhoea Woodland ▪ Marri/ Xanthorrhoea Woodland ▪ Marri/ Xanthorrhoea/ Kingia Woodland ▪ Wandoo Woodland ▪ Marri over weeds ▪ <i>Eucalyptus rudis</i> over weeds ▪ Rehab 	<ul style="list-style-type: none"> ▪ Banksia/ Xanthorrhoea Woodland ▪ Marri/ Xanthorrhoea Woodland ▪ Marri/ Xanthorrhoea/ Kingia Woodland ▪ Wandoo Woodland ▪ Marri over weeds ▪ <i>Eucalyptus rudis</i> over weeds ▪ Rehab 	<ul style="list-style-type: none"> ▪ Marri/ Xanthorrhoea Woodland ▪ Marri/ Xanthorrhoea/ Kingia Woodland ▪ Wandoo Woodland ▪ Marri over weeds

Source: Focused Vision Consulting, 2022

Table 7: Foraging quality scoring tool results

Starting score	Baudin's Cockatoo	Carnaby's Cockatoo	Forest Red-tailed Black-Cockatoo
10	Start at a score of 10 if your site is native eucalypt woodlands and forest, and proteaceous woodland and heath, particularly Marri, within the range of the species, including along roadsides and parkland cleared areas. Can include planted vegetation. This tool only applies to sites equal to or larger than 1 hectare in size.	Start at a score of 10 if your site is native shrubland, kwongan heathland or woodland, dominated by proteaceous plant species such as Banksia spp. (including Dryandra spp.), Hakea spp. and Grevillea spp., as well as native eucalypt woodland and forest that contains foraging species, within the range of the species, including along roadsides and parkland cleared areas. Also includes planted native vegetation. This tool only applies to sites equal to or larger than 1 hectare in size.	Start at a score of 10 if your site is Jarrah or Marri woodland and/or forest, or if it is on the edge of Karri forest, or if Wandoo and Blackbutt occur on the site, within the range of the subspecies, including along roadsides and parkland cleared areas. This tool only applies to sites equal to or larger than 1 hectare in size.
Attribute	Sub-tractions	Context adjustor (attributes reducing functionality of foraging habitat)	
Foraging potential	-2	8 (-2)	10
Connectivity	-2	8	10
Proximity to breeding	-2	8	10
Proximity to roosting	-1	8	10
Impact from significant plant disease	-1	8	10
Total score		8	10
Appraisal	<p>The site consists of Marri, Jarrah, Wandoo and proteaceous trees and shrubs along a roadside. There are areas of <i>Eucalyptus rudis</i> woodlands and planted eucalyptus and proteaceous species (Focused Vision Consulting, 2022). The site is larger than 1 ha. Vegetation types have been previously mapped for the site, with 16.70 ha of appropriate foraging vegetation overall (Focused Vision Consulting, 2022). There is evidence of feeding from Forest Red Tail Black Cockatoos only. The site falls within known feeding areas and an unconfirmed breeding site. The site is in close proximity (<20 km) of known night roosting habitat. There were no significant impacts from plant disease observed on site at the time of the survey.</p> <p>According to the <i>Referral Guideline for 3 WA Threatened Black Cockatoo Species</i> (DAWE, 2022) the site contains high quality foraging habitat (score of >4) for all three black cockatoo species.</p>		

Source: DAWE, 2022



Foraging evidence of Forest Red Tailed Black Cockatoos on Marri nuts



Forest Red Tail Black Cockatoos sighted foraging

Figure 8: Examples of black cockatoo foraging.

6.0 Implications of Results

6.1 Fauna

Fauna species throughout site included members from four families. A total of five species were found throughout site. Four species found were bird species, and one was a mammal. Birds were sighted through visual observation of the animal, and the mammal (Common Brushtail Possum) was found by secondary evidence (fresh scat). One conservation significant fauna species was found within the site, the Forest Red Tail Black Cockatoo (*Calyptorhynchus banksii naso*). This species is classified as Vulnerable under both WA and federal legislation.

6.2 Black Cockatoo Habitat

No evidence of black cockatoo roosting was found on site however, a nocturnal/ dusk survey would be required to confirm night roosting on site.

There were 172 potential breeding trees (DBH >500 mm) found on site. Of these, 20 had hollows present. A further internal hollow inspection with a telescopically mounted camera found that only two of the hollows are potentially suitable for black cockatoo breeding use (of an appropriate size and shape). These hollows were located in a *Corymbia calophylla* (Marri) and a *Eucalyptus marginata* (Jarrah) tree. One hollow showed chew marks on the inside, which can be a sign of previous black cockatoo habitation. No other signs of habitation were sighted however so this hollow has been classified as a potential breeding hollow. Unsuitable hollows were too small, too fractured or occupied by bees, and as such were classified as unsuitable.

Suitable vegetation present on site included several Eucalypt species (*Eucalyptus* spp. and *Corymbia calophylla*). Other vegetation types found on site during a previous survey included *Banksia* woodlands and planted areas consisting of *Eucalyptus* and proteaceous species (Focused Vision Consulting, 2022). There was 16.70 ha consisting of seven vegetation types of appropriate foraging habitat for Carnaby's and Baudin's black cockatoos and 15.65 ha consisting of four vegetation types of suitable foraging habitat for Forest Red Tail Black Cockatoos. Overall, 152 individual trees were marked as potential foraging habitat, with seven trees showing evidence of foraging activity. All seven trees were *Corymbia calophylla*. When assessed using the *Black Cockatoo Foraging Scoring Tool* (DAWE, 2022), it was found that the site consists of an appropriate size (>1 ha) and composition of foraging habitat for all three black cockatoo species and provides high quality black cockatoo feeding habitat (score of 5 - 10). Additionally, Forest Red Tail Black Cockatoos were seen foraging on site at the time of the survey. Chewed Marri nuts were found at the base of trees, indicating the site provides sizable foraging habitat for black cockatoos.

Overall, the site possesses suitable foraging habitat and potentially suitable breeding habitat for black cockatoos. The site is currently in use as a feeding ground for Forest Red Tail Black Cockatoos.

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Appendix 1: Conservation Codes

Western Australia

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

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

(Source: DBCA, 2020)

Commonwealth

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

(Source: DBCA, 2019a)

Appendix 2: Protected Matters Search Tool

DRAFT



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: 16-May-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	2
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	6
Listed Threatened Species:	40
Listed Migratory Species:	10

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:	7
Commonwealth Heritage Places:	None
Listed Marine Species:	15
Whales and Other Cetaceans:	None
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	None
Habitat Critical to the Survival of Marine Turtles:	None

Extra Information

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

State and Territory Reserves:	15
Regional Forest Agreements:	1
Nationally Important Wetlands:	None
EPBC Act Referrals:	35
Key Ecological Features (Marine):	None
Biologically Important Areas:	None
Bioregional Assessments:	None
Geological and Bioregional Assessments:	None

Details

Matters of National Environmental Significance

Wetlands of International Importance (Ramsar Wetlands)		[Resource Information]
Ramsar Site Name	Proximity	Buffer Status
Forrestdale and thomsons lakes	Within 10km of Ramsar site	In buffer area only
Peel-yalgorup system	20 - 30km upstream from Ramsar site	In feature area

Listed Threatened Ecological Communities

[Resource Information]

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

Status of Vulnerable, Disallowed and Ineligible are not MNES under the EPBC Act.

Community Name	Threatened Category	Presence Text	Buffer Status
Banksia Woodlands of the Swan Coastal Plain ecological community	Endangered	Community likely to occur within area	In feature area
Clay Pans of the Swan Coastal Plain	Critically Endangered	Community likely to occur within area	In buffer area only
Corymbia calophylla - Kingia australis woodlands on heavy soils of the Swan Coastal Plain	Endangered	Community known to occur within area	In feature area
Corymbia calophylla - Xanthorrhoea preissii woodlands and shrublands of the Swan Coastal Plain	Endangered	Community known to occur within area	In feature area
Empodisma peatlands of southwestern Australia	Endangered	Community may occur within area	In buffer area only
Tuart (Eucalyptus gomphocephala) Woodlands and Forests of the Swan Coastal Plain ecological community	Critically Endangered	Community likely to occur within area	In feature area

Listed Threatened Species			[<u>Resource Information</u>]
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			

Scientific Name	Threatened Category	Presence Text	Buffer Status
Botaurus poiciloptilus Australasian Bittern [1001]	Endangered	Species or species habitat known to occur within area	In feature area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area	In feature area
Calyptorhynchus banksii naso Forest Red-tailed Black-Cockatoo, Karrak [67034]	Vulnerable	Species or species habitat known to occur within area	In feature area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat 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 known to occur within area	In buffer area only
Tringa nebularia Common Greenshank, Greenshank [832]	Endangered	Species or species habitat likely to occur within area	In buffer area only
Zanda baudinii listed as Calyptorhynchus baudinii Baudin's Cockatoo, Baudin's Black-Cockatoo, Long-billed Black-cockatoo [87736]	Endangered	Roosting known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Zanda latirostris listed as Calyptorhynchus latirostris			
Carnaby's Black Cockatoo, Short-billed Black-cockatoo [87737]	Endangered	Breeding known to occur within area	In feature area
INSECT			
Leioproctus douglasiellus			
a short-tongued bee [66756]	Critically Endangered	Species or species habitat may occur within area	In buffer area only
Neopasiphae simplicior			
A native bee [66821]	Critically Endangered	Species or species habitat likely to occur within area	In buffer area only
MAMMAL			
Bettongia penicillata ogilbyi			
Woylie [66844]	Endangered	Species or species habitat known to occur within area	In feature area
Dasyurus geoffroii			
Chuditch, Western Quoll [330]	Vulnerable	Species or species habitat known to occur within area	In feature area
Myrmecobius fasciatus			
Numbat [294]	Endangered	Species or species habitat likely to occur within area	In buffer area only
Pseudocheirus occidentalis			
Western Ringtail Possum, Ngwayir, Womp, Woder, Ngoor, Ngoolangit [25911]	Critically Endangered	Species or species habitat likely to occur within area	In feature area
Setonix brachyurus			
Quokka [229]	Vulnerable	Species or species habitat known to occur within area	In feature area
OTHER			
Westralunio carteri			
Carter's Freshwater Mussel, Freshwater Mussel [86266]	Vulnerable	Species or species habitat known to occur within area	In buffer area only
PLANT			
Andersonia gracilis			
Slender Andersonia [14470]	Endangered	Species or species habitat likely to occur within area	In feature area
Anthocercis gracilis			
Slender Tailflower [11103]	Vulnerable	Species or species habitat may occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Banksia mimica Summer Honeypot [82765]	Endangered	Species or species habitat may occur within area	In feature area
Caladenia huegelii King Spider-orchid, Grand Spider-orchid, Rusty Spider-orchid [7309]	Endangered	Species or species habitat known to occur within area	In buffer area only
Diuris drummondii Tall Donkey Orchid [4365]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Diuris micrantha Dwarf Bee-orchid [55082]	Vulnerable	Species or species habitat known to occur within area	In feature area
Diuris purdiei Purdie's Donkey-orchid [12950]	Endangered	Species or species habitat known to occur within area	In feature area
Drakaea elastica Glossy-leafed Hammer Orchid, Glossy-leafed Hammer Orchid, Warty Hammer Orchid [16753]	Endangered	Species or species habitat known to occur within area	In feature area
Drakaea micrantha Dwarf Hammer-orchid [56755]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Eleocharis keigheryi Keighery's Eleocharis [64893]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Eucalyptus x balanites Cadda Road Mallee, Cadda Mallee [87816]	Endangered	Species or species habitat known to occur within area	In feature area
Grevillea curviloba subsp. incurva Narrow curved-leaf Grevillea [64909]	Endangered	Species or species habitat may occur within area	In buffer area only
Lasiopetalum pterocarpum Wing-fruited Lasiopetalum [64922]	Endangered	Species or species habitat known to occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Lepidosperma rostratum Beaked Lepidosperma [14152]	Endangered	Species or species habitat known to occur within area	In feature area
Morelotia australiensis listed as Tetraria australiensis Southern Tetraria [92784]	Vulnerable	Species or species habitat known to occur within area	In feature area
Synaphea sp. Fairbridge Farm (D.Papenfus 696) Selena's Synaphea [82881]	Critically Endangered	Species or species habitat known to occur within area	In feature area
Synaphea sp. Pinjarra Plain (A.S.George 17182) [86878]	Endangered	Species or species habitat known to occur within area	In feature area
Synaphea sp. Serpentine (G.R.Brand 103) [86879]	Critically Endangered	Species or species habitat known to occur within area	In feature area
Thelymitra stellata Star Sun-orchid [7060]	Endangered	Species or species habitat known to occur within area	In feature area
Verticordia plumosa var. ananeotes Tufted Plumed Featherflower [23871]	Endangered	Species or species habitat may occur within area	In buffer area only

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 Terrestrial Species			
Motacilla cinerea Grey Wagtail [642]		Species or species habitat may occur within area	In feature area
Migratory Wetlands Species			
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat likely to occur within area	In feature area
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 likely to occur within area	In feature area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat may occur within area	In buffer area only
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 likely to occur within area	In buffer area only
Tringa nebularia Common Greenshank, Greenshank [832]	Endangered	Species or species habitat likely to occur within area	In buffer area only

Other Matters Protected by the EPBC Act

Commonwealth Lands [Resource Information]		
The Commonwealth area listed below may indicate the presence of Commonwealth land in this vicinity. Due to the unreliability of the data source, all proposals should be checked as to whether it impacts on a Commonwealth area, before making a definitive decision. Contact the State or Territory government land department for further information.		
Commonwealth Land Name	State	Buffer Status
Unknown		
Commonwealth Land - [51919]	WA	In buffer area only
Commonwealth Land - [50876]	WA	In buffer area only
Commonwealth Land - [50854]	WA	In buffer area only
Commonwealth Land - [51524]	WA	In buffer area only
Commonwealth Land - [51976]	WA	In buffer area only

Commonwealth Land Name		State	Buffer Status
Commonwealth Land - [51517]		WA	In buffer area only
Commonwealth Land - [51380]		WA	In buffer area only
Listed Marine Species [Resource Information]			
Scientific Name	Threatened Category	Presence Text	Buffer Status
Bird			
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat likely to occur within area	In feature area
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 likely to occur within area	In feature area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area overfly marine area	In feature area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat likely to occur within area overfly marine area	In feature area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
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 likely to occur within area	In buffer area only
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 may occur within area overfly marine area	In buffer area only
Tringa nebularia Common Greenshank, Greenshank [832]	Endangered	Species or species habitat likely to occur within area overfly marine area	In buffer area only

Extra Information

State and Territory Reserves			[Resource Information]
Protected Area Name	Reserve Type	State	Buffer Status
Banksia	Nature Reserve	WA	In buffer area only
Cardup	Nature Reserve	WA	In buffer area only
Gooralong	Conservation Park	WA	In buffer area only
Karnet	Nature Reserve	WA	In buffer area only
Lambkin	Nature Reserve	WA	In buffer area only

Protected Area Name	Reserve Type	State	Buffer Status
Modong	Nature Reserve	WA	In buffer area only
NTWA Bushland covenant (0011)	Conservation Covenant	WA	In buffer area only
NTWA Bushland covenant (0076)	Conservation Covenant	WA	In buffer area only
Serpentine	National Park	WA	In buffer area only
Unnamed WA42044	Nature Reserve	WA	In buffer area only
Unnamed WA46587	Nature Reserve	WA	In buffer area only
Unnamed WA46818	Nature Reserve	WA	In feature area
Unnamed WA51784	Nature Reserve	WA	In buffer area only
Unnamed WA51963	Conservation Park	WA	In buffer area only
Watkins Road	Nature Reserve	WA	In buffer area only

Regional Forest Agreements
[Resource Information]

Note that all areas with completed RFAs have been included. Please see the associated resource information for specific caveats and use limitations associated with RFA boundary information.

RFA Name	State	Buffer Status
South West WA RFA	Western Australia	In buffer area only

EPBC Act Referrals
[Resource Information]

Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Huntly Bauxite Mine Transition	2022/09204		Assessment	In buffer area only
Keirnan Park Recreation Precinct	2023/09573		Referral Decision	In buffer area only
Orton Road Upgrade Project	2023/09680		Completed	In buffer area only

Controlled action				
Alcoa Pinjarra Refinery Production Increase and Bauxite Export	2020/8743	Controlled Action	Completed	In buffer area only
Byford Rail Extension, Byford, WA	2020/8764	Controlled Action	Post-Approval	In buffer area only
Byford Whitby Quarry, portion of Mining Lease M701240	2021/9045	Controlled Action	Further Information Request	In buffer area only
Clearing, mining and rehabilitation Scrivener Road	2015/7577	Controlled Action	Further Information	In buffer area only

Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Controlled action				
Gravel reserves			Request	
Construction of Road and Extension of Utilities on Turner Street, Serpentine	2008/4670	Controlled Action	Post-Approval	In buffer area only
Extraction of sand from Lot 6 Banksia Road & lots 300 & 301 Boomerang Road, WA	2010/5622	Controlled Action	Post-Approval	In buffer area only
Tonkin Highway Extension ??? Thomas Road to South Western Highway	2019/8608	Controlled Action	Post-Approval	In feature area
Not controlled action				
'Looping 10' gas transmission pipeline from Kwinana to Hopelands	2005/2212	Not Controlled Action	Completed	In buffer area only
Abernethy Road upgrade (Kardan, Tourmaline & Soldiers) Byford, WA	2015/7441	Not Controlled Action	Completed	In buffer area only
BaptistCare Byford Aged Care Facility	2021/9111	Not Controlled Action	Completed	In buffer area only
Bristle Holdings Pty Ltd, Cardup Brickworks, South of Byford	2020/8834	Not Controlled Action	Completed	In buffer area only
Construction of international rowing course and commercial/residential areas	2003/1034	Not Controlled Action	Completed	In buffer area only
Development of a wholesale nursery	2012/6622	Not Controlled Action	Completed	In buffer area only
Eradication of the European House Borer, Perth metropolitan area, WA	2009/5027	Not Controlled Action	Completed	In buffer area only
Gold Fusion Pty Ltd /Residential development/South Western Highway 40km southeast of Perth /WA/Devel	2014/7185	Not Controlled Action	Completed	In feature area
Improving rabbit biocontrol: releasing another strain of RHDV, sthrn two thirds of Australia	2015/7522	Not Controlled Action	Completed	In feature area
INDIGO Central Submarine Telecommunications Cable	2017/8127	Not Controlled Action	Completed	In feature area
Oakford Village development, Shire of Serpentine-Jarrahdale, WA	2018/8157	Not Controlled Action	Completed	In buffer area only
Residential Development, Hilbert	2020/8675	Not Controlled Action	Completed	In buffer area only

Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Not controlled action				
Residential Development, Lots 3, 5 and 900 Taylor Rd Mundijong, WA	2019/8457	Not Controlled Action	Completed	In feature area
Residential development at Lot 54 Cockram Street and Lot 119 Sparkman Road, Mundijong	2020/8618	Not Controlled Action	Completed	In buffer area only
Residential development at Taylor Road and Adams Street, Mundijong, WA	2020/8780	Not Controlled Action	Completed	In buffer area only
Residential Development Various Lots Doley Road, Orton Road and Lawrence Way, Beenyup Grove Byford,	2020/8779	Not Controlled Action	Completed	In buffer area only
Sand quarry, Lot 102 King Road, Oldbury, WA	2015/7439	Not Controlled Action	Completed	In buffer area only
Serpentine Sports Reserve, Protection of Dieback Free Area	2008/4337	Not Controlled Action	Completed	In buffer area only
Tonkin Highway Extension	2001/470	Not Controlled Action	Completed	In buffer area only
Undertake a Controlled Fuel Reduction Burn	2008/4262	Not Controlled Action	Completed	In buffer area only
Urban development of Lots 9049 and 9063, The Glades, Byford, WA	2015/7607	Not Controlled Action	Completed	In buffer area only
Wungong Transfer Mains Project	2007/3532	Not Controlled Action	Completed	In buffer area only
Not controlled action (particular manner)				
INDIGO Marine Cable Route Survey (INDIGO)	2017/7996	Not Controlled Action (Particular Manner)	Post-Approval	In feature area
Residential Subdivision on Abernethy Road, Byford	2009/4767	Not Controlled Action (Particular Manner)	Post-Approval	In buffer area only
Referral decision				
Residential Development Doley Road, Orton Road and Lawrence Way	2020/8679	Referral Decision	Completed	In buffer area only

Caveat

1 PURPOSE

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

The report contains the mapped locations of:

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

2 DISCLAIMER

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

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

3 DATA SOURCES

Threatened ecological communities

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

Threatened, migratory and marine species

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

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

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

4 LIMITATIONS

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

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

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

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

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

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

Acknowledgements

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

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

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

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

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Appendix 3: Black Cockatoo Habitat Assessment Data

Black cockatoo habitat data has been provided in the table below. Trees with suitable hollows for breeding have been highlighted in green.

Species	Habitat Type	DBH (mm)	Hollows Present	Suitable Hollows	Easting	Northing
<i>Allocasuarina fraseriana</i>	Breeding/Foraging	615	No	No	405115.0983	6428853.597
<i>Allocasuarina fraseriana</i>	Breeding/Foraging	810	No	No	405111.2704	6428834.139
<i>Corymbia calophylla</i>	Breeding/Foraging	772	No	No	405856.6724	6431707.165
<i>Corymbia calophylla</i>	Breeding/Foraging	1020	No	No	405846.5653	6431671.493
<i>Corymbia calophylla</i>	Breeding/Foraging	1009	No	No	405891.4525	6431840.043
<i>Corymbia calophylla</i>	Breeding/Foraging	668	No	No	405938.4206	6432029.402
<i>Corymbia calophylla</i>	Breeding/Foraging	644	No	No	405914.0448	6431932.196
<i>Corymbia calophylla</i>	Breeding/Foraging	538	No	No	405906.6131	6431902.766
<i>Corymbia calophylla</i>	Breeding/Foraging	555	No	No	405886.6963	6431828.153
<i>Corymbia calophylla</i>	Breeding/Foraging	767	No	No	405790.0475	6431434.72
<i>Corymbia calophylla</i>	Breeding/Foraging	515	No	No	405727.7702	6431187.023
<i>Corymbia calophylla</i>	Breeding/Foraging	592	No	No	405682.2142	6431017.581
<i>Corymbia calophylla</i>	Breeding/Foraging	567	No	No	405863.8068	6431735.108
<i>Corymbia calophylla</i>	Breeding/Foraging	760	Yes	Yes	405373.3072	6429819.831
<i>Corymbia calophylla</i>	Breeding/Foraging	558	No	No	405699.0007	6431131.863
<i>Corymbia calophylla</i>	Breeding/Foraging	778	No	No	405295.0997	6429534.371
<i>Corymbia calophylla</i>	Breeding/Foraging	878	No	No	405295.591	6429515.643

Species	Habitat Type	DBH (mm)	Hollows Present	Suitable Hollows	Easting	Northing
<i>Corymbia calophylla</i>	Breeding/Foraging	703	No	No	405303.344	6429611.735
<i>Corymbia calophylla</i>	Breeding/Foraging	579	No	No	405913.7883	6431953.528
<i>Corymbia calophylla</i>	Breeding/Foraging	542	No	No	405732.6253	6431258.828
<i>Corymbia calophylla</i>	Breeding/Foraging	593	No	No	405898.8849	6431922.266
<i>Corymbia calophylla</i>	Breeding/Foraging	589	No	No	405761.9246	6431389.055
<i>Corymbia calophylla</i>	Breeding/Foraging	601	No	No	405788.4156	6431447.835
<i>Corymbia calophylla</i>	Breeding/Foraging	773	No	No	405128.7665	6429103.109
<i>Corymbia calophylla</i>	Breeding/Foraging	773	No	No	405941.8002	6432039.267
<i>Corymbia calophylla</i>	Breeding/Foraging	1139	No	No	405928.7369	6431979.948
<i>Corymbia calophylla</i>	Breeding/Foraging	647	No	No	405810.7502	6431522.201
<i>Corymbia calophylla</i>	Breeding/Foraging	623	No	No	405872.6012	6431779.895
<i>Corymbia calophylla</i>	Breeding/Foraging	599	No	No	405891.225	6431889.972
<i>Corymbia calophylla</i>	Breeding/Foraging	599	No	No	405708.991	6431164.774
<i>Corymbia calophylla</i>	Breeding/Foraging	589	No	No	405292.4585	6429570.208
<i>Corymbia calophylla</i>	Breeding/Foraging	517	No	No	406012.8576	6432323.435
<i>Corymbia calophylla</i>	Breeding/Foraging	610	No	No	405841.8885	6431679.043
<i>Corymbia calophylla</i>	Breeding/Foraging	520	No	No	405117.7315	6428805.223
<i>Corymbia calophylla</i>	Breeding/Foraging	533	No	No	405247.1285	6429359.109
<i>Corymbia calophylla</i>	Breeding/Foraging	966	No	No	405797.4673	6431530.722
<i>Corymbia calophylla</i>	Breeding/Foraging	625	No	No	405823.0697	6431729.104

Species	Habitat Type	DBH (mm)	Hollows Present	Suitable Hollows	Easting	Northing
<i>Corymbia calophylla</i>	Breeding/Foraging	515	No	No	405249.0061	6429381.159
<i>Corymbia calophylla</i>	Breeding/Foraging	626	No	No	405870.3428	6431757.805
<i>Corymbia calophylla</i>	Breeding/Foraging	5258	No	No	405169.0475	6429306.644
<i>Corymbia calophylla</i>	Breeding/Foraging	527	No	No	405928.341	6432080.262
<i>Corymbia calophylla</i>	Breeding/Foraging	502	No	No	405258.6142	6429528.591
<i>Corymbia calophylla</i>	Breeding/Foraging	500	No	No	405162.9745	6428971.148
<i>Corymbia calophylla</i>	Breeding/Foraging	636	No	No	405867.005	6431746.488
<i>Corymbia calophylla</i>	Breeding/Foraging	622	No	No	405290.4359	6429509.686
<i>Corymbia calophylla</i>	Breeding/Foraging	517	No	No	405459.9855	6430358.406
<i>Corymbia calophylla</i>	Breeding/Foraging	667	No	No	405810.3564	6431513.615
<i>Corymbia calophylla</i>	Breeding/Foraging	501	No	No	405134.319	6428969.15
<i>Corymbia calophylla</i>	Breeding/Foraging	650	No	No	405274.2937	6429574.155
<i>Corymbia calophylla</i>	Breeding/Foraging	550	No	No	406013.0493	6432316.395
<i>Corymbia calophylla</i>	Breeding/Foraging	795	No	No	405843.8986	6431659.917
<i>Corymbia calophylla</i>	Breeding/Foraging	544	No	No	405928.4855	6432013.773
<i>Corymbia calophylla</i>	Breeding/Foraging	539	No	No	405783.6127	6431478.535
<i>Corymbia calophylla</i>	Breeding/Foraging	553	No	No	405137.4853	6429092.725
<i>Corymbia calophylla</i>	Breeding/Foraging	677	No	No	405666.5529	6431180.19
<i>Corymbia calophylla</i>	Breeding/Foraging	508	No	No	405935.7953	6432056.564
<i>Corymbia calophylla</i>	Breeding/Foraging	651	No	No	405115.6841	6428804.67

Species	Habitat Type	DBH (mm)	Hollows Present	Suitable Hollows	Easting	Northing
<i>Corymbia calophylla</i>	Breeding/Foraging	904	No	No	405782.732	6431410.311
<i>Corymbia calophylla</i>	Breeding/Foraging	500	No	No	405321.5023	6429642.203
<i>Corymbia calophylla</i>	Breeding/Foraging	669	No	No	405870.9429	6431815.529
<i>Corymbia calophylla</i>	Breeding/Foraging	575	No	No	405247.3812	6429365.837
<i>Corymbia calophylla</i>	Breeding/Foraging	590	No	No	405886.1376	6431886.749
<i>Corymbia calophylla</i>	Breeding/Foraging	558	No	No	405228.3809	6429253.488
<i>Corymbia calophylla</i>	Breeding/Foraging	568	No	No	405587.6346	6430789.384
<i>Corymbia calophylla</i>	Breeding/Foraging	547	No	No	405136.9609	6429003.935
<i>Corymbia calophylla</i>	Breeding/Foraging	709	No	No	405606.409	6430872.608
<i>Corymbia calophylla</i>	Breeding/Foraging	550	No	No	405284.1541	6429479.046
<i>Corymbia calophylla</i>	Breeding/Foraging	675	No	No	405283.7497	6429471.656
<i>Corymbia calophylla</i>	Breeding/Foraging	508	No	No	405704.2245	6431103.463
<i>Corymbia calophylla</i>	Breeding/Foraging	784	No	No	405457.3915	6430217
<i>Corymbia calophylla</i>	Breeding/Foraging	515	No	No	405767.1857	6431390.55
<i>Corymbia calophylla</i>	Breeding/Foraging	597	No	No	405848.0838	6431749.865
<i>Corymbia calophylla</i>	Breeding/Foraging	731	No	No	405922.0506	6432080.707
<i>Corymbia calophylla</i>	Breeding/Foraging	529	No	No	405709.4665	6431266.22
<i>Corymbia calophylla</i>	Breeding/Foraging	528	No	No	405287.2271	6429515.093
<i>Corymbia calophylla</i>	Breeding/Foraging	625	No	No	405238.9601	6429543.179
<i>Corymbia calophylla</i>	Breeding/Foraging	794	No	No	405114.4045	6428799.692

Species	Habitat Type	DBH (mm)	Hollows Present	Suitable Hollows	Easting	Northing
<i>Corymbia calophylla</i>	Breeding/Foraging	855	No	No	405192.1831	6429163.293
<i>Corymbia calophylla</i>	Breeding/Foraging	542	No	No	405229.8747	6429242.376
<i>Corymbia calophylla</i>	Breeding/Foraging	1031	No	No	405267.9287	6429394.034
<i>Corymbia calophylla</i>	Breeding/Foraging	713	No	No	405697.8194	6431095.954
<i>Corymbia calophylla</i>	Breeding/Foraging	830	No	No	405286.6742	6429462.883
<i>Corymbia calophylla</i>	Breeding/Foraging	615	Yes	No	405538.0021	6430682.487
<i>Corymbia calophylla</i>	Breeding/Foraging	797	No	No	405365.7099	6429757.621
<i>Corymbia calophylla</i>	Breeding/Foraging	614	No	No	405783.2811	6431470.044
<i>Corymbia calophylla</i>	Breeding/Foraging	591	No	No	405267.2427	6429386.358
<i>Corymbia calophylla</i>	Breeding/Foraging	1273	No	No	405870.4314	6431772.047
<i>Corymbia calophylla</i>	Breeding/Foraging	526	No	No	405671.0668	6431139.87
<i>Corymbia calophylla</i>	Breeding/Foraging	665	No	No	405807.0227	6431552.753
<i>Corymbia calophylla</i>	Breeding/Foraging	542	No	No	405153.6973	6428997.303
<i>Corymbia calophylla</i>	Breeding/Foraging	595	No	No	405828.9818	6431681.061
<i>Corymbia calophylla</i>	Breeding/Foraging	790	No	No	405300.3874	6429543.032
<i>Corymbia calophylla</i>	Breeding/Foraging	554	No	No	405804.2804	6431487.687
<i>Corymbia calophylla</i>	Breeding/Foraging	560	No	No	405895.1271	6431986.646
<i>Corymbia calophylla</i>	Breeding/Foraging	544	No	No	405777.8103	6431440.192
<i>Corymbia calophylla</i>	Breeding/Foraging	500	No	No	405818.9306	6431569.777
<i>Corymbia calophylla</i>	Breeding/Foraging	809	No	No	405298.8936	6429520.451

Species	Habitat Type	DBH (mm)	Hollows Present	Suitable Hollows	Easting	Northing
<i>Corymbia calophylla</i>	Breeding/Foraging	609	Yes	No	405750.8479	6431557.417
<i>Corymbia calophylla</i>	Breeding/Foraging	522	No	No	405195.2793	6429176.617
<i>Corymbia calophylla</i>	Breeding/Foraging	547	No	No	405158.5275	6428973.903
<i>Corymbia calophylla</i>	Breeding/Foraging	633	No	No	405907.1999	6431897.728
<i>Corymbia calophylla</i>	Breeding/Foraging	805	No	No	405932.8113	6432003.785
<i>Corymbia calophylla</i>	Breeding/Foraging	508	No	No	405127.0618	6429066.039
<i>Corymbia calophylla</i>	Breeding/Foraging	564	No	No	405789.9759	6431466.837
<i>Corymbia calophylla</i>	Breeding/Foraging	768	No	No	405251.2659	6429369.174
<i>Corymbia calophylla</i>	Breeding/Foraging	626	No	No	405278.5397	6429464.818
<i>Corymbia calophylla</i>	Breeding/Foraging	519	No	No	405154.6477	6428973.427
<i>Corymbia calophylla</i>	Breeding/Foraging	668	No	No	405810.4578	6431550.208
<i>Corymbia calophylla</i>	Breeding/Foraging	545	No	No	405741.8879	6431278.342
<i>Corymbia calophylla</i>	Breeding/Foraging	629	No	No	405738.8897	6431230.626
<i>Corymbia calophylla</i>	Breeding/Foraging	538	No	No	405109.5199	6428835.6
<i>Corymbia calophylla</i>	Breeding/Foraging	911	No	No	405750.3564	6431301.714
<i>Corymbia calophylla</i>	Breeding/Foraging	501	No	No	405785.1041	6431481.189
<i>Corymbia calophylla</i>	Breeding/Foraging	561	No	No	406005.9624	6432293.756
<i>Corymbia calophylla</i>	Breeding/Foraging	548	No	No	405274.6375	6429429.643
<i>Corymbia calophylla</i>	Breeding/Foraging	550	No	No	405258.9327	6429514.828
<i>Corymbia calophylla</i>	Breeding/Foraging	884	No	No	405824.0557	6431585.888

Species	Habitat Type	DBH (mm)	Hollows Present	Suitable Hollows	Easting	Northing
<i>Corymbia calophylla</i>	Breeding/Foraging	500	No	No	405359.3345	6429888.723
<i>Corymbia calophylla</i>	Breeding/Foraging	538	No	No	405913.3549	6431939
<i>Corymbia calophylla</i>	Breeding/Foraging	863	No	No	405145.5472	6429219.616
<i>Corymbia calophylla</i>	Breeding/Foraging	715	No	No	405977.4807	6432183.646
<i>Corymbia calophylla</i>	Breeding/Foraging	746	No	No	405829.9654	6431619.517
<i>Corymbia calophylla</i>	Breeding/Foraging	567	No	No	405774.6469	6431372.89
<i>Corymbia calophylla</i>	Breeding/Foraging	501	No	No	406026.4166	6432373.706
<i>Corymbia calophylla</i>	Breeding/Foraging	939	No	No	405267.3785	6429439.256
<i>Corymbia calophylla</i>	Breeding/Foraging	549	No	No	405720.2406	6431398.035
<i>Corymbia calophylla</i>	Breeding/Foraging	598	No	No	405804.8927	6431520.291
<i>Corymbia calophylla</i>	Breeding/Foraging	680	No	No	405146.8655	6428947.96
<i>Corymbia calophylla</i>	Breeding/Foraging	685	No	No	405808.3274	6431504.228
<i>Corymbia calophylla</i>	Breeding/Foraging	596	No	No	405804.2804	6431487.687
<i>Corymbia calophylla</i>	Breeding/Foraging	516	No	No	405855.135	6432010.45
<i>Corymbia calophylla</i>	Breeding/Foraging	550	No	No	405267.9157	6429425.746
<i>Corymbia calophylla</i>	Breeding/Foraging	740	Yes	No	405776.9972	6431663.098
<i>Corymbia calophylla</i>	Breeding/Foraging	1245	Yes	No	405700.1429	6431385.367
<i>Dead sp.</i>	Breeding	574	Yes	No	405884.3181	6431834.692
<i>Dead sp.</i>	Breeding	768	Yes	No	405153.3169	6428936.895
<i>Dead sp.</i>	Breeding	558	No	No	405692.5826	6431071.543

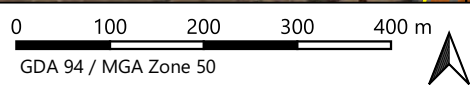
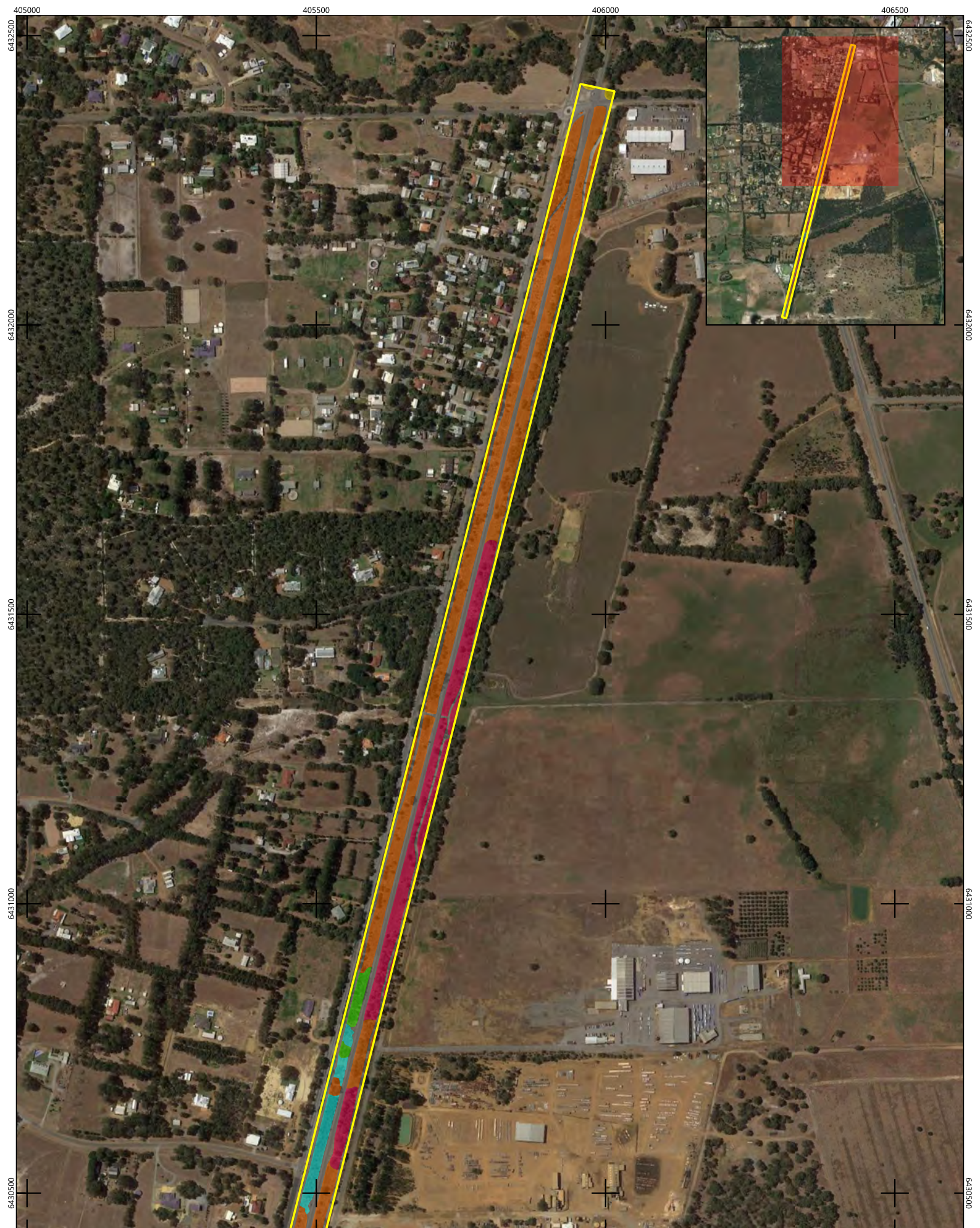
Species	Habitat Type	DBH (mm)	Hollows Present	Suitable Hollows	Easting	Northing
<i>Dead sp.</i>	Breeding	660	No	No	405338.9934	6429686.59
<i>Dead sp.</i>	Breeding	501	No	No	405707.7082	6431156.684
<i>Dead sp.</i>	Breeding	693	No	No	405324.5538	6429687.303
<i>Dead sp.</i>	Breeding	526	No	No	405849.1518	6431713.188
<i>Dead sp.</i>	Breeding	1006	No	No	405881.6371	6432109.033
<i>Dead sp.</i>	Breeding	730	Yes	No	405159.6625	6428977.465
<i>Dead sp.</i>	Breeding	756	Yes	No	405887.2279	6431854.442
<i>Dead sp. (Corymbia calophylla)</i>	Breeding	654	No	No	405986.1776	6432206.394
<i>Eucalyptus camaldulensis</i>	Breeding/Foraging	625	No	No	405300.4604	6429781.306
<i>Eucalyptus camaldulensis</i>	Breeding/Foraging	534	No	No	405708.6917	6431112.181
<i>Eucalyptus lane- poolei</i>	Breeding	548	No	No	405281.0306	6429758.431
<i>Eucalyptus lane- poolei</i>	Breeding	558	Yes	No	405323.4789	6429646.968
<i>Eucalyptus lane- poolei</i>	Breeding	534	No	No	405259.8675	6429677.896
<i>Eucalyptus lane- poolei</i>	Breeding	520	No	No	405261.5026	6429682.029
<i>Eucalyptus marginata</i>	Breeding/Foraging	719	Yes	No	405882.772	6431864.838
<i>Eucalyptus marginata</i>	Breeding/Foraging	654	Yes	No	405609.4846	6430823.977
<i>Eucalyptus marginata</i>	Breeding/Foraging	785	Yes	No	405623.8697	6430839.42
<i>Eucalyptus marginata</i>	Breeding/Foraging	695	No	No	405836.8023	6431634.985
<i>Eucalyptus marginata</i>	Breeding/Foraging	852	Yes	No	405208.7171	6429201.823
<i>Eucalyptus marginata</i>	Breeding/Foraging	528	No	No	405529.6975	6430695.768

Species	Habitat Type	DBH (mm)	Hollows Present	Suitable Hollows	Easting	Northing
<i>Eucalyptus marginata</i>	Breeding/Foraging	640	Yes	No	405628.4667	6430871.431
<i>Eucalyptus marginata</i>	Breeding/Foraging	1008	Yes	No	405199.2782	6429187.968
<i>Eucalyptus marginata</i>	Breeding/Foraging	662	No	No	405166.7362	6429041.425
<i>Eucalyptus marginata</i>	Breeding/Foraging	577	No	No	405832.3049	6431639.658
<i>Eucalyptus marginata</i>	Breeding/Foraging	952	No	No	405195.0862	6429136.606
<i>Eucalyptus marginata</i>	Breeding/Foraging	1083	Yes	No	405103.9217	6428816.345
<i>Eucalyptus marginata</i>	Breeding/Foraging	600	No	No	405600.1141	6430772.118
<i>Eucalyptus marginata</i>	Breeding/Foraging	885	Yes	Yes	405781.1851	6431695.045
<i>Eucalyptus rudis</i>	Breeding	860	No	No	405294.7623	6429715.311
<i>Eucalyptus rudis</i>	Breeding	795	No	No	405127.9807	6428917.706
<i>Eucalyptus rudis</i>	Breeding	550	No	No	405266.4283	6429695.622
<i>Eucalyptus rudis</i>	Breeding	1154	No	No	405334.6374	6429703.207
<i>Eucalyptus rudis</i>	Breeding	519	No	No	405324.021	6429767.792
<i>Eucalyptus sp.</i>	Breeding/Foraging	825	Yes	No	405328.1763	6429735.52
<i>Eucalyptus wandoo</i>	Breeding/Foraging	500	Yes	No	405315.956	6429647.652

Appendix 4: Vegetation Type Mapping








Source: Focused Vision Consulting, 2022.

DRAFT



**Figure 12a - Vegetation Units
of the Survey Area**

Legend

- | | |
|---|---|
|  Survey Area |  CcXpKa |
|  BsXp |  Cleared |
|  Cc(P) |  Rehab |
|  CcXp | |



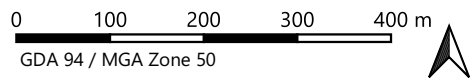









Figure 12b - Vegetation Units

- Legend**
- | | |
|--|---|
|  Study Area |  Er(P) |
|  CcXp |  EwTo |
|  CcXpKa |  Rehab |
|  Cleared | |

