
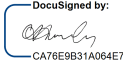



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# Strawberry Bridge Flora and Vegetation Survey, Lockier

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Revision Number 1.00

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## 1 Introduction

Arc Infrastructure aims to undertake remediation works of the damaged footings at Strawberry Bridge in Lockier. The project will involve construction of the rock armoury to provide guide banks and /or scour protection measures at Strawberry Bridge. The footings of the rail bridge across the Irwin River were damaged during a high rainfall event in 2008. The footings on the east abutment shifted due to the high velocity of water going under the bridge.

Arc infrastructure intends to repair the footings and install rock armoury on the embankment adjacent the bridge and across the river bed to stabilise the riverbank and the abutments/footings from future high rainfall events, especially cyclones. Potential future damage could result in derailments and collapse of the bridge endangering train drivers and causing significant environmental impacts to the River in terms of spills and contamination. Additionally, the line is a significant rail freight route for commodities between the mid-west and Perth and the south-west region.

In order to undertake remediation works and installation of the rock armoury, a number of trees within the river bed need to be cleared to allow access for machinery and to allow for the rock armoury and scour protection of the embankments to be installed. Therefore a basic flora and vegetation survey and targeted tree assessment was undertaken by Arc's Ecologist and Environmental Partner to determine what vegetation was present within the remediation site.

### 1.1 Background

Strawberry bridge is constructed of four simply supported spans of approximately 18.5 m length with open transom top deck. The bridge spans consist of twin braced steel beams supported on concrete piers and abutments. East abutment is supported by timber piles while the west abutment is on the spread footings.

Irwin River gets significant flows during cyclone events or heavy rainfall events upstream of bridge location. Known major events includes following:

- Cyclone Ingrid 1970 - Caused scour.
- Cyclone Mavis – 1971 - Caused significant scouring behind east abutment and pier 1.
- 1999/2000 – Major flood event caused west end gabion embankment protection to roll up as well as exposing bottom of pier 1, east abutment was not exposed.
- 2006/2007 - Major flood caused erosion around base of pier 1 and bank damage around abutment 1 and behind abutment. Abutment 1 was reinstated by gravel/rock fill behind it.
- 2008 - Movement in the east abutment observed. Abutment was subsequently anchored using ground anchor in 2013. This work is now considered insufficient to retain the stability of the infrastructure in an ongoing capacity. With the guide banks and/or scour protection measures required to provide sufficient protection to the abutments and embankment behind abutment, piers from significant scouring/washaway causing bridge stability issues, especially during cyclone events.

### 1.2 Site Location

The Strawberry Bridge remediation site is located at the intersection of the Midland Railway – Millendon Junction to Narngulu (Line 3) and the Irwin River (Figure 1). It is approximately 17km west of the Mingenew town centre, and 6318.1m<sup>2</sup> in size. The remediation site occurs off Midlands Road north of the Milo Road intersection in the suburb of Lockier and within the Shire of Mingenew. The site is situated within two separate lots P00430088 and P004330090.

### 1.3 Scope

The scope of this project included:

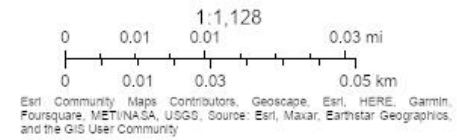
- Desktop assessment of the remediation site
- Vegetation and targeted tree survey within the remediation site

- GPS locations of all trees present and record their species and size
- Prepare a report with the outcomes of the survey.



January 30, 2023

-  Habitat\_Trees\_Strawberry
-  KM pegs
-  Rail Centreline (operational mainlines)
-  Rail Corridor



Sharon Hynes

Western Australian Land Information Authority (Landgate) | Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community | Esri Community Maps Contributors, Geoscapes, Esri, HERE, Garmin, Foursquare, METI/NASA, USGS

**Figure 1:** Strawberry Bridge remediation area with clearing footprint shown in red

## 2 Desktop Assessment

### 2.1 Climate

The climate experienced at the site is semi-arid to warm mediterranean with hot dry summers, and cool wet winters. According to the closest Bureau of Meteorology weather station in Mingenew (Station ID: 008088) the mean winter temperatures in the area ranged from 6.9 °C to 19.2 °C, with the mean summer temperatures ranging from 19.1 °C to 36.4 °C. The mean annual rainfall is 399.2mm. The mean monthly rainfall ranges between 6.2-79.8mm with majority of rain falling between May and August (Bureau of Meteorology, 2023).

### 2.2 Geology and Soils

The soil type within the remediation site are both part of the Irwin 2 subsystem associated with the Irwin River with two different phases occurring. The first phase is the Irwin 2 subsystem described as level alluvial flats with sandy and loamy duplex soils (map unit symbol: 224Ir\_2) occurring on the banks of the river. The second is the Irwin subsystem 2 river channel phase (map unit symbol: 224Ir\_2Dr), this phase is described as drainage lines in the alluvial plain, red sandy earth and loams and semi wet soils occurring in the centre of the river channel (Department of Primary Industry and Regional Development, 2023).

### 2.3 Hydrology

The site is not within a Public Drinking Water Source Area. The site occurs on the main stream of the Irwin River. The area is also a RIWI Act Proclaimed Groundwater Area, however proposed works will not impact on the groundwater in the area, and no groundwater is to be taken during the works.

### 2.4 Remnant Vegetation

The site occurs within the Avon Wheatbelt 1 (AW 1 – Ancient Drainage subregion). This subregion is described as an area of ancient disconnected drainage lines that dissects the Tertiary plateau in the Yilgarn Craton. It comprises of low relief dunes in an undulating landscape. Vegetation present is dominated by proteaceous scrub-heaths on lateritic uplands, mixed eucalypts on sandplains, *Allocasuarina huegeliana* and Jam-York Gum Woodlands on lower elevations and alluvial and eluvial soils (Department of Conservation and Land Management, 2022).

The pre-European vegetation remaining in the area is described as (Beard *et al.*, 2013):

- System Association Name: Irwin
- Vegetation Association Number: IRWIN\_352
- Structure Description:
- Floristic description: Wheatbelt; York gum, salmon gum etc. *Eucalyptus loxophleba*, *E. salmonophloia*. Riverine; rivergum *E. camaldulensis*.

### 2.5 Habitat Connectivity

Habitat connectivity at the site comprises of open woodland over grassland along the Irwin River in a rural landscape. The clearing of the trees surrounding the bridge is unlikely to impact the habitat connectivity or linkages of vegetation along the river line.

### 2.6 Environmentally Sensitive Areas

The remediation site is not within a listed Environmentally Sensitive Area (ESA) (Department of Water and Environmental Regulation, 2023).

## 2.7 Heritage

The site is located within the registered Aboriginal Heritage Place Irwin River (SC04) the Place ID number is 18907 (Department of Planning, Lands and Heritage, 2023). Aboriginal heritage surveys have been carried out for the remediation site and a Section 18 (ref 80-05279) has been issued from the Department of Planning, Lands and Heritage for the proposed works.

## 3 Methodology

### 3.1 Desktop Methodology

A desktop survey was undertaken of available literature and databases to determine the potential for any conservation significant species of communities that may occur within 10km of the site, including the following databases:

- Protected matters search tool (DCCEEW, 2023).
- NatureMap (DBCA, 2023)
- Threatened and Priority flora and communities databases (DBCA)
- Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act). Administered by the Australian
- Government Department of Agriculture, Water and the Environment (DAWE); and
- Biodiversity Conservation Act 2016 (BC Act). Administered by the Western Australian

#### 3.1.1 Fauna

A desktop survey of conservation significant fauna species known to occur within 10 km of the survey area was undertaken using the following databases:

- Protected matters search tool (DCCEEW, 2023).
- NatureMap (DBCA, 2023)
- Threatened and Priority fauna database (DBCA)
- The conservation significance of fauna species has been assessed using data from the following sources:
  - Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act). Administered by the Australian
  - Government Department of Agriculture, Water and the Environment (DAWE); and
  - Biodiversity Conservation Act 2016 (BC Act). Administered by the Western Australian Department of Biodiversity Conservation and Attractions (DBCA).
- Desktop assessment for the Black Cockatoo habitat consisted of reviewing DBCA locational records and a range of publicly available datasets relevant to Black Cockatoo breeding, roosting and foraging areas. These included:
  - Carnaby's Cockatoo Confirmed (DBCA\_050) and Unconfirmed Roost Sites (DBCA\_051; DBCA, 2018a).
  - Carnaby's Cockatoo Confirmed Breeding Habitat (DBCA 2018b)
  - Black Cockatoo Breeding Sites - Buffered DBCA\_063 (DBCA, 2019a).
  - Black Cockatoo Roosting Sites – Buffered DBCA\_064 (DBCA, 2019b).

### 3.2 Site Survey Methodology

An on-ground flora and vegetation survey and targeted trees assessment was undertaken by Arc's Ecologist Sharon Hynes and Environmental Partner Claire Hamersley on the 20<sup>th</sup> December 2022. The entire site was traversed with the following parameters recorded:

- vegetation community
- floristic species composition
- vegetation condition

- trees present – including GPS location, species, diameter at breast height (DBH), photograph of each tree.

### 3.3 Limitations

An assessment of potential limitations was undertaken in accordance with the EPA (2016) *Technical Guidance Flora and Vegetation Surveys for Environmental Impact Assessment* (Table 1).

**Table 1:** Assessment of potential survey limitations

Potential Limitation	Comment
Availability of contextual Information	<b>Nil limitation</b> – publicly available contextual information is readily available for the region.
Experience of personnel	<b>Nil Limitation</b> – Sharon Hynes has over 14 years' experience conducting targeted, reconnaissance and detailed flora surveys and fauna habitat assessments within Western Australia, including the Avon Wheatbelt bioregion and is competent in taxonomic identification and assessment of vegetation in these areas. Claire Hamersley has over 20 years' environmental management experience in the agricultural and water sectors, primarily across Western Australia; more recently in the Victorian water industry.
Proportion of flora identified	<b>Nil Limitation</b> – All flora on site was identified at the time of the survey. Minimal species were present as it was a completely disturbed site, with no native understorey present surrounded by farmland.
Access Restrictions	<b>Nil limitation</b> – no access issues were encountered during the survey. The survey areas was relatively small and the entire area was traversed with all trees marked with GPS location.
Survey Timing	<b>Nil limitation</b> – Although the survey was completed outside of the optimal survey time being spring, the December survey is not considered a limitation due to the degraded nature of the site and the fact that the area is flooded during winter and spring rainfall, meaning access would be restricted during those times.
Disturbances that may affect results	<b>Nil Limitation</b> - No recent disturbances have occurred within the survey area, which could have affected the results of the survey. All disturbances within the area are historical and continuous relating to agriculture and the rail line, and unlikely to have created any limitations in detection of species during the survey period.



## 5 Desktop Assessment Results

### 5.1 Threatened and Priority Flora and Fauna

The desktop survey of PMST and DBCA threatened and priority flora and fauna databases for the survey area including a 10 km buffer indicated the potential 41 conservation significant species this included (Appendix 1):

- 15 birds, including 12 Threatened species and three specially protected under International Agreement
- two threatened mammals,
- one threatened reptile
- one threatened invertebrate
- 22 plants, including nine priority species and 13 threatened species.

As this area was much larger than the specific site it may include species that are unlikely to occur within the actual survey area. These databases also contain very old records of species that may have since become locally or regionally extinct. Habitat for the species listed as potentially occurring is not present or severely degraded within the site due to ongoing surrounding agricultural practices and disturbance from the active rail line in the area. Therefore, it is considered unlikely that any of these species would occur in this area particularly due to degradation and lack of native middle and understorey flora species and potential fertiliser runoff from surrounding properties. Fauna habitat for these listed species is also considered not present or of low value due to lack of understorey and limited foraging for black cockatoos in the area (Appendix 1).

### 5.2 Threatened and Priority Ecological Communities

A review of the Protected Matters Search Tool indicated the potential for the critically endangered ecological community – Eucalypt Woodlands of the Western Australian Wheatbelt to occur (Department of Climate Change, Energy, the Environment and Water (DCCEEW), 2023). These woodlands are dominated by Eucalypt trees (except for mallees) with a highly variable native understorey.

### 5.3 Black Cockatoo Habitat

A review of DBCA databases indicated the site was not within 40km of known breeding area and not within 200km of known roosting habitat of Carnaby's Cockatoo (DBCA, 2018a, 2018b, 2019a and 2019b).

## 6 Survey Results

### 6.1 Floristic Composition and Vegetation Community

A total of eight flora species were recorded on site, of which three species were native and five were introduced (weed) species (Table 2). One vegetation community was present on site, namely *Eucalyptus camaldulensis* Woodland over \**Cynodon dactylon* Dense Low Grass. The remediation site was parkland cleared with majority of the site consisting of *E. camaldulensis* over introduces grasses, with a few *Casuarina obesa* (Swamp Sheoak) trees and \**Ricinus communis* shrubs scattered throughout and a small stand of *Acacia rostellifera* (Summer-scented Wattle) (231.1m<sup>2</sup>) adjacent the eastern access track east of the bridge (Figure 2).



**Figure 2:** Vegetation community on site facing north towards the rail bridge (top), *Acacia rostellifera* Scrub (bottom)

**Table 2:** Species list within the Strawberry Bridge proposed clearing area

Family	Species Name	Common Name	Introduced Species
Fabaceae	<i>Acacia rostellifera</i>	Summer-scented Wattle	
Poaceae	<i>Avena barbata</i>	Bearded Oat	X
Casuarinaceae	<i>Casuarina obesa</i>	Swamp Sheoak	
Poaceae	<i>Cenchrus setaceus</i>	Fountain Grass	X
Poaceae	<i>Cynodon dactylon</i>	Couch	X
Poaceae	<i>Eragrostis curvula</i>	African Lovegrass	X
Myrtaceae	<i>Eucalyptus camaldulensis</i>	River Gum	
Euphorbiaceae	<i>Ricinus communis</i>	Castor Oil Plant	X


## 6.2 Vegetation Condition





Vegetation condition on site was Completely Degraded with the entire area parkland cleared with majority of the site consisting of *Eucalyptus camaldulensis* (River Gum) Woodland over \**Cynodon dactylon* introduced grassland. Apart from a small stand of *Acacia rostellifera* on the eastern access way and a few scattered \*Castor Oil plants (*Ricinus communis*) and *Casuarina obesa* trees present no other species and no understorey species are present within the proposed clearing area.





## 6.3 Trees and Fauna Habitat





A total of 52 trees were recorded across the remediation site, with the majority of them being multiple stemmed mallees with diameter at breast height (DBH) ranging from 7cm to 50cm (Table 3). A further six trees were marked in the field but these were located outside of the rail corridor boundary or on the boundary line and are to be retained. All of the trees were *Eucalyptus camaldulensis* (River Gum). Twelve of the trees had a DBH greater than 500mm, although nesting habitat for black cockatoos was not present within the site. Limited foraging sources were recorded on site except for the trees themselves, which had limited fruit present and no proteaceous understorey present. The foraging and nesting habitat in the area was considered low value, due to the degraded nature of the area.





**Table 3:** Trees within the clearing footprint





Tree ID Number	Species	DBH (cm)	Photograph
1	<i>Eucalyptus camaldulensis</i>	10	

Tree ID Number	Species	DBH (cm)	Photograph
2	<i>Eucalyptus camaldulensis</i>	15	 A photograph showing a close-up of a tree trunk with smooth, light-colored bark. The trunk is surrounded by green foliage and a dirt path.
3	<i>Eucalyptus camaldulensis</i>	10	 A photograph showing a close-up of a tree trunk with smooth, light-colored bark. The trunk is surrounded by green foliage and a dirt path.
4	<i>Eucalyptus camaldulensis</i>	20	 A photograph showing a close-up of a tree trunk with smooth, light-colored bark. The trunk is surrounded by green foliage and a dirt path.
5	<i>Eucalyptus camaldulensis</i>	15	 A photograph showing a close-up of a tree trunk with smooth, light-colored bark. The trunk is surrounded by green foliage and a dirt path.





Tree ID Number	Species	DBH (cm)	Photograph
6	<i>Eucalyptus camaldulensis</i>	20	
7	<i>Eucalyptus camaldulensis</i>	10	
8	<i>Eucalyptus camaldulensis</i>	25	
9	<i>Eucalyptus camaldulensis</i>	15	





Tree ID Number	Species	DBH (cm)	Photograph
10	<i>Eucalyptus camaldulensis</i>	10	
11	<i>Eucalyptus camaldulensis</i>	15	
12	<i>Eucalyptus camaldulensis</i>	30	
13	<i>Eucalyptus camaldulensis</i>	15	No photo
14	<i>Eucalyptus camaldulensis</i>	25	





Tree ID Number	Species	DBH (cm)	Photograph
15	<i>Eucalyptus camaldulensis</i>	40	
16	<i>Eucalyptus camaldulensis</i>	15	
17	<i>Eucalyptus camaldulensis</i>	20	
18	<i>Eucalyptus camaldulensis</i>	10	





Tree ID Number	Species	DBH (cm)	Photograph
19	<i>Eucalyptus camaldulensis</i>	15	
20	<i>Eucalyptus camaldulensis</i>	10	
21	<i>Eucalyptus camaldulensis</i>	7	
22	<i>Eucalyptus camaldulensis</i>	20	No photo
23	<i>Eucalyptus camaldulensis</i>	25	











Tree ID Number	Species	DBH (cm)	Photograph
24	<i>Eucalyptus camaldulensis</i>	10	 A photograph of a young Eucalyptus camaldulensis tree with a diameter of 10 cm. The tree has a light-colored trunk and is surrounded by dry, brownish ground cover. A white fence is visible in the background.
25	<i>Eucalyptus camaldulensis</i>	10	 A photograph of a young Eucalyptus camaldulensis tree with a diameter of 10 cm. The tree is surrounded by green grass and dry leaves.
26	<i>Eucalyptus camaldulensis</i>	20	 A photograph of a young Eucalyptus camaldulensis tree with a diameter of 20 cm. The tree is surrounded by green grass and dry leaves.
27	<i>Eucalyptus camaldulensis</i>	15	 A photograph of a young Eucalyptus camaldulensis tree with a diameter of 15 cm. The tree is surrounded by green grass and dry leaves.




Tree ID Number	Species	DBH (cm)	Photograph
28	<i>Eucalyptus camaldulensis</i>	15	
29	<i>Eucalyptus camaldulensis</i>	10	
30	<i>Eucalyptus camaldulensis</i>	10	
31	<i>Eucalyptus camaldulensis</i>	10	

Tree ID Number	Species	DBH (cm)	Photograph
32	<i>Eucalyptus camaldulensis</i>	10	
33	<i>Eucalyptus camaldulensis</i>	20	
34	<i>Eucalyptus camaldulensis</i>	10	
35	<i>Eucalyptus camaldulensis</i>	35	

Tree ID Number	Species	DBH (cm)	Photograph
36	<i>Eucalyptus camaldulensis</i>	25	
37	<i>Eucalyptus camaldulensis</i>	25	
38	<i>Eucalyptus camaldulensis</i>	10	
39	<i>Eucalyptus camaldulensis</i>	30	No photo
40	<i>Eucalyptus camaldulensis</i>	30	

Tree ID Number	Species	DBH (cm)	Photograph
41	<i>Eucalyptus camaldulensis</i>	20	
42	<i>Eucalyptus camaldulensis</i>	10	No photo
43	<i>Eucalyptus camaldulensis</i>	50	
44	<i>Eucalyptus camaldulensis</i>	25	
45	<i>Eucalyptus camaldulensis</i>	40	

Tree ID Number	Species	DBH (cm)	Photograph
46	<i>Eucalyptus camaldulensis</i>	50	
47	<i>Eucalyptus camaldulensis</i>	40	
48	<i>Eucalyptus camaldulensis</i>	25	
49	<i>Eucalyptus camaldulensis</i>	40	

Tree ID Number	Species	DBH (cm)	Photograph
50	<i>Eucalyptus camaldulensis</i>	40	
51	<i>Eucalyptus camaldulensis</i>	25	
52	<i>Eucalyptus camaldulensis</i>	30	

## 8 Conclusion and recommendation

### 8.1 Vegetation, Threatened and Priority Flora and Ecological Communities

The remediation areas is dominated by *Eucalyptus camaldulensis* trees which is one of the dominant species that makes up the threatened ecological community (TEC) Eucalyptus Woodlands of the Western Australian Wheatbelt. However, the degraded nature of the site the lack of native mid and understorey species and the fact that most of the trees are in a mallee form, it is not considered to be representative of the TEC (Department of Environment and Energy, 2016).

### 8.2 Tree Assessment

Majority of the trees recorded were presenting as mallees due to the nature of strong currents through the river bed in winter and spring. The area has been historically cleared with many of the trees smaller in size than would be expected of a mature *E. camaldulensis* woodland. There were also many juvenile trees germinating within the remediation area and the surrounding river bed and banks. Therefore, trees will be able to re-establish and be left to regeminate in areas that are not required for post works maintenance access for the bridge or the rock armoury.

No nesting habitat for threatened black cockatoos was present. Most trees (42) were not considered to be habitat trees for black cockatoos, with only 10 trees meeting or exceeding 300mm criteria for habitat trees of threatened black cockatoos in the Avon Wheatbelt region. However, due to the low value foraging habitat present in the area the degraded nature of the site and it being surrounded by agricultural land, it is unlikely that black cockatoos would use this as a roosting area. Black cockatoos' prefer roosting for the majority of the year in the denser forests near water sources in the south-west. No breeding habitat is present within the clearing area and the closest confirmed roosting area is 200km south of the site it is unlikely that the clearing area would be utilised for more than transient feeding.

### 8.3 Referral and Approvals

As native vegetation is proposed to be cleared for the development site, it is recommended that a native vegetation clearing referral as regulated under the *WA Environmental Protection Act 1986* is undertaken prior to disturbance. The clearing for this site is considered necessary as the damage to the bridge footings is leading to instability of the bridge and may cause injury or fatality of train drivers if a derailment occurs, as well as considerable environmental damage if freight and diesel is to enter the waterway.



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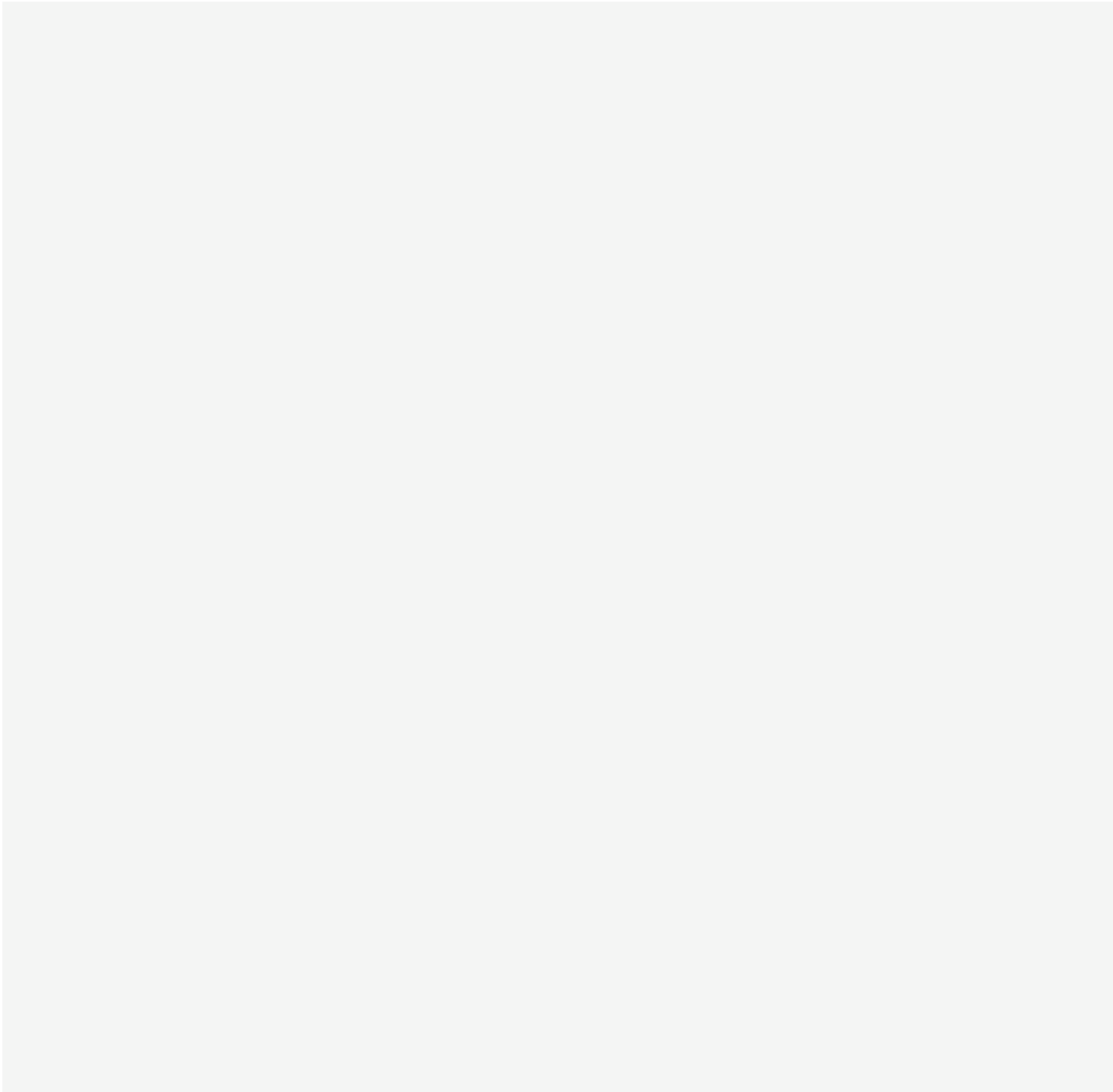
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## Appendix

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## Appendix 1

A compiled list of threatened and priority species that were indicated to potentially occur within 10km of the proposed clearing area.

Species	Common Name	Group	Cons Code	PMST	DBCA	Species present	Likelihood of occurrence post survey
<i>Actitis hypoleucos</i>	Common Sandpiper	BIRD	MI	X		No	Unlikely - habitat unsuitable
<i>Apus pacificus</i>	Fork-tailed Swift	BIRD	MI	X		No	Unlikely - habitat unsuitable
<i>Ardea ibis</i>	Cattle Egret	BIRD	MI	X		No	Unlikely - habitat unsuitable
<i>Calidris acuminata</i>	Sharp-tailed Sandpiper	BIRD	MI	X		No	Unlikely - habitat unsuitable
<i>Calidris ferrugina</i>	Curlew Sandpiper	BIRD	CR	X		No	Unlikely - habitat unsuitable
<i>Calidris melanotos</i>	Pectoral Sandpiper	BIRD	MI	X		No	Unlikely - habitat unsuitable
<i>Chalcites osculans</i>	Black-eared Cuckoo	BIRD	SP/IA	X		No	Unlikely - habitat unsuitable
<i>Falco hypoleucos</i>	Grey Falcon	BIRD	VU	X		No	Unlikely - habitat on site is suitable although this species was not observed on site and is would have a high likelihood of detection if present, no nests were noted within trees on site.
<i>Haliaeetus leucogaster</i>	White-bellied Sea Eagle	BIRD	SP/IA	X		No	Unlikely - habitat unsuitable
<i>Leipoa ocellata</i>	Malleefowl	BIRD	VU	X		No	Unlikely - habitat unsuitable

<i>Merops ornatus</i>	Rainbow Bee-eater	BIRD	SP/IA	X		No	Unlikely - habitat unsuitable
<i>Motacilla cinerea</i>	Grey Wagtail	BIRD	MI	X		No	Unlikely - habitat unsuitable
<i>Numenius madagascariensis</i>	Eastern Curlew, Far Eastern Curlew	BIRD	CR	X		No	Unlikely - habitat unsuitable
<i>Rostratula benghalensis</i>	Australian Painted Snip	BIRD	EN	X		No	Unlikely - habitat unsuitable
<i>Calyptorhynchus latirostris</i>	Carnaby's Cockatoo	BIRD	EN	X	X	No	Unlikely - No breeding trees are present. Although foraging and potential roosting trees are present there is minimal foraging sources in the site or within a 10km buffer. The site is not within 40km from known Carnaby's Cockatoo breeding areas, and not within 200km of known roosting sites. The site may be utilised as transient feeding on the way to larger and higher value feeding areas
<i>Dasyurus geoffroii</i>	Chuditch	MAMMAL	VU	X		No	Unlikely - habitat unsuitable
<i>Macroderma gigas</i>	Ghost Bat	MAMMAL	VU	X		No	Unlikely - habitat unsuitable
<i>Acacia flabellifolia</i>		PLANT	P3		X	No	Unlikely - no shrubs or understorey present on site
<i>Acacia isoneura subsp. isoneura</i>		PLANT	P3		X	No	Unlikely - no shrubs or understorey present on site
<i>Acacia telmica</i>		PLANT	P3		X	No	Unlikely - no shrubs or understorey present on site
<i>Baeckea sp. Walkaway</i>		PLANT	P3		X	No	Unlikely - no shrubs or understorey present on site

<i>Banksia scabrella</i>		PLANT	P4		X	No	Unlikely - no shrubs or understorey present on site
<i>Caladenia hoffmanii</i>	Hoffman's Spider Orchid	PLANT	EN	X		No	Unlikely - not within known range of this species, which starts north of Geraldton
<i>Paracaleana dixonii</i>	Sandplain Duck Orchid	PLANT	EN	X		No	Unlikely - soil type unsuitable
<i>Chorizema humile</i>		PLANT	T	X		No	Unlikely - no shrubs or understorey present on site
<i>Conostylis dielsii subsp. teres</i>	Irwin's Conostylis	PLANT	EN	X		No	Unlikely - no shrubs or understorey present on site
<i>Conostylis micrantha</i>	Small-flowered Conostylis	PLANT	EN	X		No	Unlikely - no shrubs or understorey present on site
<i>Daviesia speciosa</i>	Beautiful Daviesia	PLANT	EN	X		No	Unlikely - no shrubs or understorey present on site
<i>Eremaea acutifolia</i>		PLANT	P3		X	No	Unlikely - no shrubs or understorey present on site
<i>Eucalyptus crispata</i>	Yandanooka Mallee	PLANT	VU	X		No	Unlikely - soil type unsuitable
<i>Eucalyptus ebbanoensis subsp. photina</i>		PLANT	P4		X	No	Unlikely - soil type unsuitable
<i>Eucalyptus leprophloia</i>	Scaly Butt Mallee	PLANT	EN	X		No	Unlikely - soil type unsuitable
<i>Hemiandra gardneri</i>	Red Snakebush	PLANT	EN	X		No	Unlikely - no shrubs or understorey present on site
<i>Roycea pycnophylloides</i>	Saltmat	PLANT	EN	X		No	Unlikely - habitat unsuitable
<i>Scholtzia prostrata</i>		PLANT	P3		X	No	Unlikely - no shrubs or understorey present on site

<i>Thelymitra stellata</i>	Star Sun-orchid	PLANT	EN	X		No	Unlikely - soil type and habitat unsuitable
<i>Thryptomene nitida</i>		PLANT	P3		X	No	Unlikely - no shrubs or understorey present on site
<i>Verticordia densiflora</i> var. <i>roseostella</i>		PLANT	P3		X	No	Unlikely - no shrubs or understorey present on site
<i>Wurmbea tubulosa</i>	Long-flowered Nancy	PLANT	EN	X	X	No	Unlikely - no shrubs or understorey present on site
<i>Egernia stokesi badia</i>	Western Spiny-tailed Skink	REPTILE	EN	X		No	Unlikely - habitat unsuitable
<i>Idiosoma nigrum</i>	Sheld-backed Trapdoor Spider	SPIDER	EN	X		No	Unlikely - habitat unsuitable, soil type unsuitable and floods in winter/spring