



Koolyanobbing and Windarling
Powerline Corridors
and
Koolyanobbing Warehouse Expansion
Reconnaissance Flora, Vegetation and
Fauna Habitat Assessment
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Environmental solutions for

MINING

OIL & GAS

CONSTRUCTION

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1.0 INTRODUCTION

1.1 Overview

Ecotec (WA) Pty Ltd (Ecotec) was engaged by Mineral Resources Ltd (MRL) to undertake an assessment of the flora, vegetation and fauna habitat of the Windarling and Koolyanobbing powerline corridors and an area proposed for expansion of the warehouse and yard at Koolyanobbing to support a Native Vegetation Clearing Permit (NVCP) application to be submitted by MRL.

The purpose of the assessment was to:

- review available information for previous records of conservation-significant flora and fauna in the vicinity of the study area
- conduct a field assessment to determine the likelihood of conservation-significant flora and fauna being present in the area
- assess the fauna habitat present
- provide a broad description of the vegetation present
- assess the condition of vegetation in the area
- prepare a report outlining the findings of the assessment.

1.2 Location

The Koolyanobbing Operations are located approximately 50 km north of Southern Cross in the Shire of Yilgarn, Western Australia. The operation mines and processes iron ore which is transferred by rail to port for export to overseas customers.

Figure 1.1 shows the regional location of the project.

The project currently comprises a number of operational open pits at Koolyanobbing, Mt Jackson, Windarling and Deception, with ore transferred to the plant at Koolyanobbing for crushing and blending to meet customer requirements. Processed ore is loaded to train wagons at Koolyanobbing in a dedicated “rail loop”, adjacent to the existing crushing plant.

The Windarling area is located approximately 100 km north of Koolyanobbing.

Figure 1.2 and Figure 1.3 show the Koolyanobbing and Windarling powerline locations (respectively) and the areas assessed during this survey.

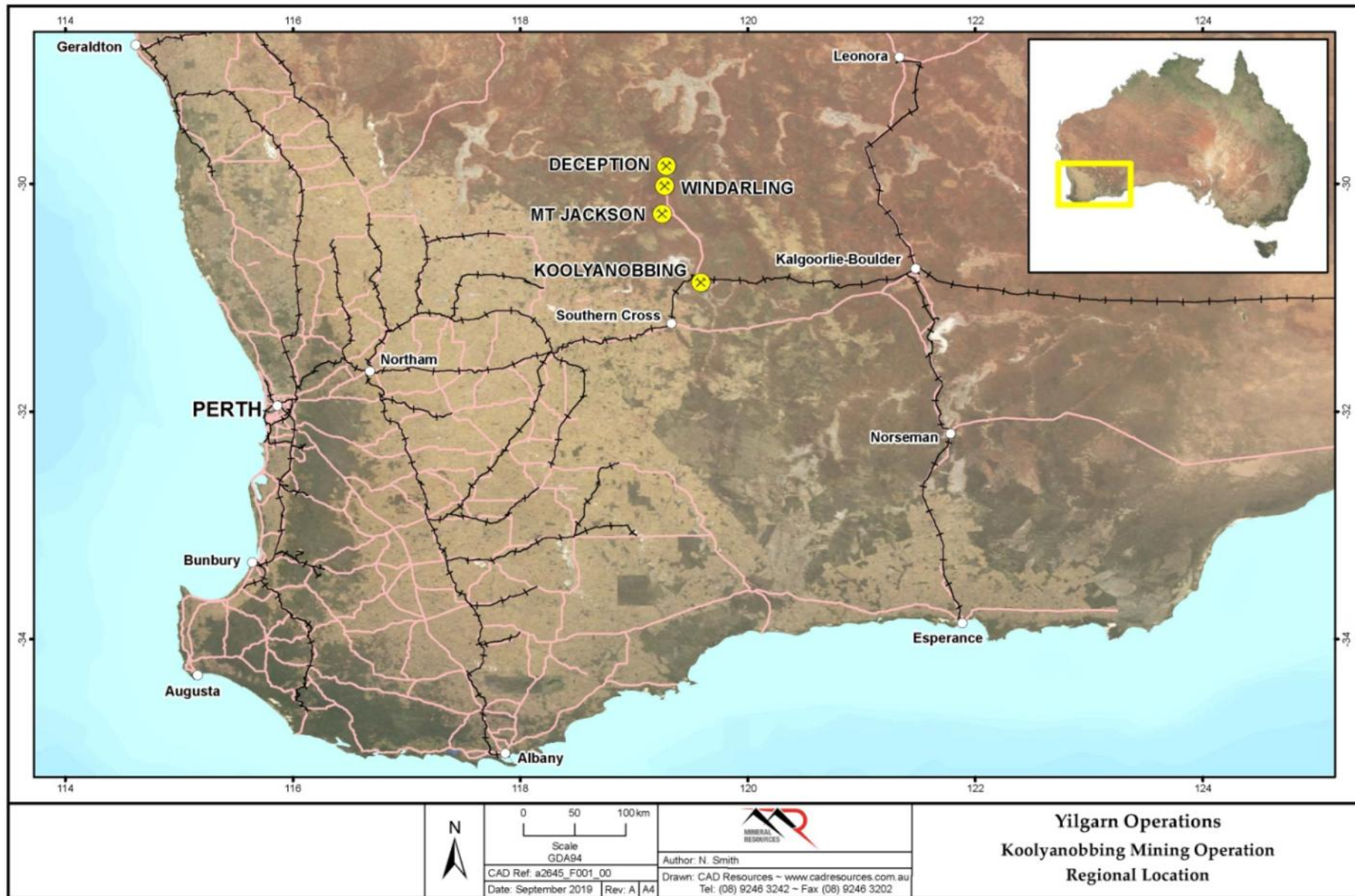


Figure 1.1: Project location.

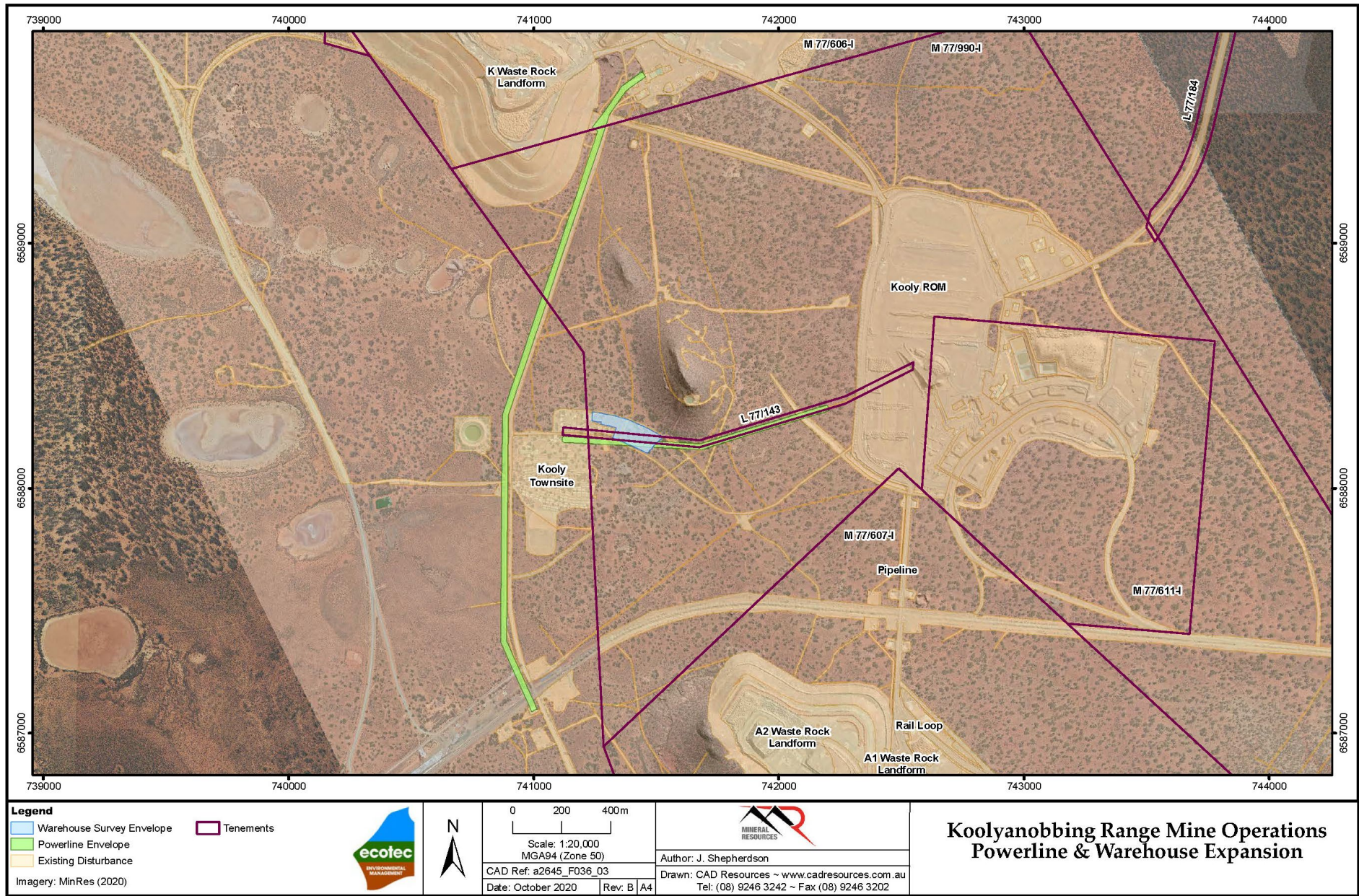


Figure 1.2: The Koolyanobbing survey areas.

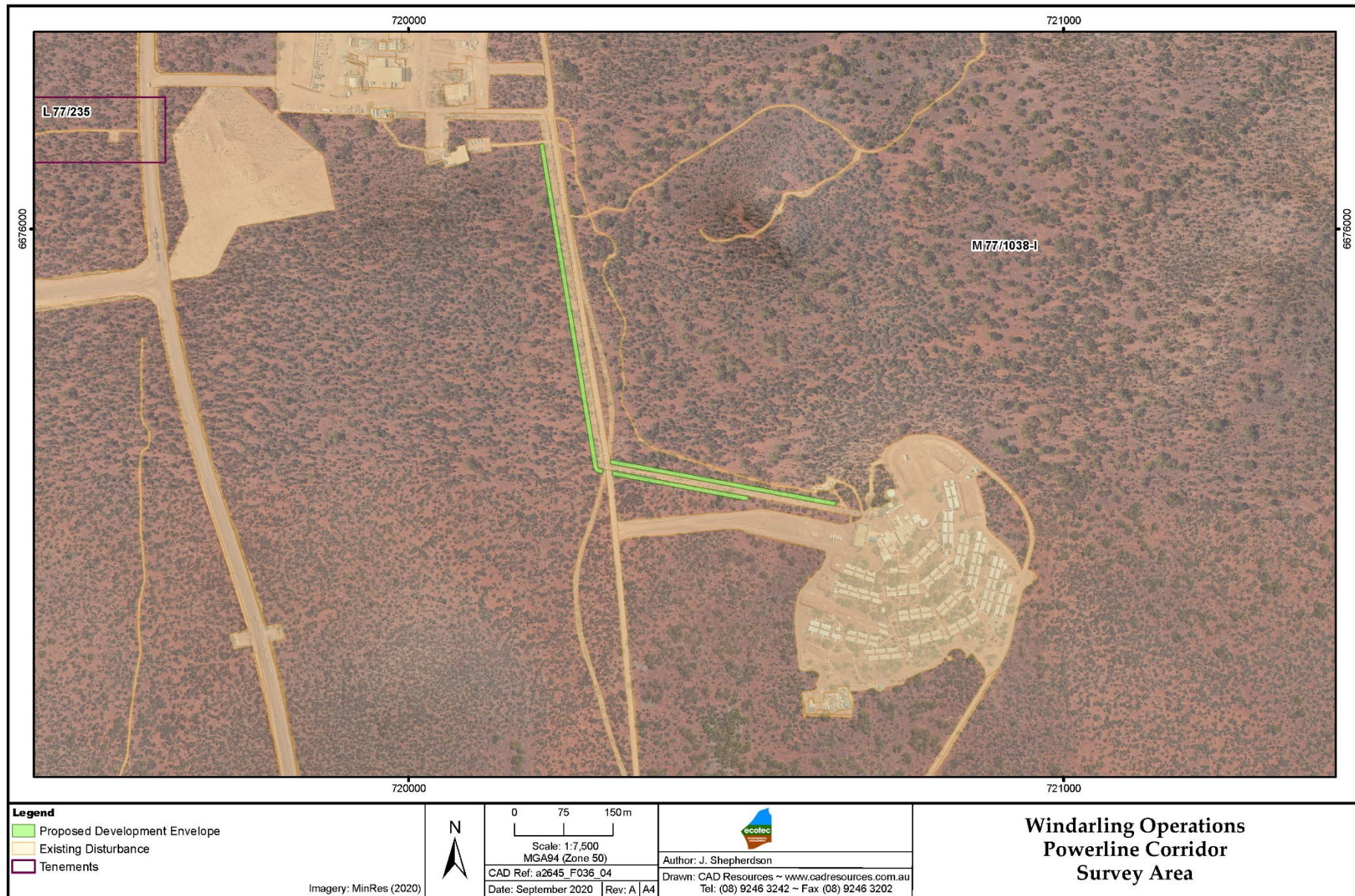


Figure 1.3: The Windarling survey area.

2.0 EXISTING ENVIRONMENT

2.1.1 Climate

The climate for the area is characterised by hot, dry summers and cold winters. Maximum temperature peaks (>30°C) occur between December and March. Rainfall occurs throughout the year with approximately 302 mm annually, occurring during an average of 44 rainfall days per year (Southern Cross Airfield data, BoM 2020).

Evaporation for the Goldfields region is over 2400 mm per annum (BoM 2020).

Figure 2.1 provides the climate averages for Southern Cross, approximately 50 km south of Koolyanobbing.

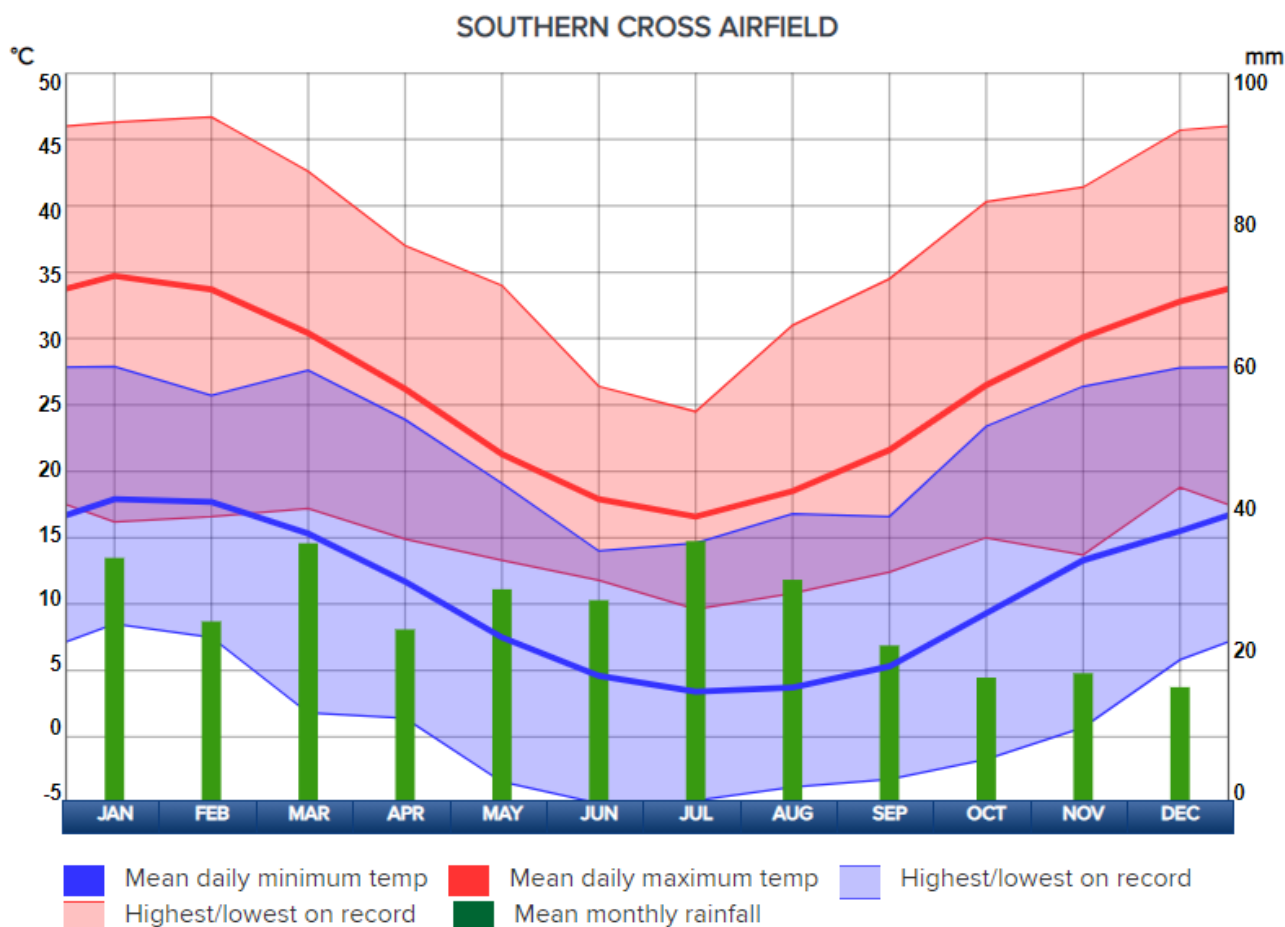


Figure 2.1: Climate data for Southern Cross airfield (Weatherzone 2020).

2.1.2 Interim Biogeographic Regionalisation for Australia

Koolyanobbing is situated within the Southern Cross subregion of the Coolgardie Bioregion (COO2) of the Interim Biogeographic Regionalisation for Australia (IBRA), located in the southern rangelands of Western Australia.

According to Cowan et. al. (2001), the Southern Cross subregion is characterised by “diverse *Eucalyptus* woodlands (*Eucalyptus salmonophloia*, *E. salubris*, *E. transcidentalis*, *E. longicornis*) rich in endemic eucalypts occur around salt lakes, on the low greenstone hills, valley alluvials and broad plains of calcareous earths. Salt lake surfaces support dwarf shrublands of samphire. The granite basement outcrops at mid-levels in the landscape and supports swards of *Borya constricta*, with stands of *Acacia acuminata* and *Eucalyptus loxophleba*. Upper levels in the landscape are the eroded remnants of a lateritic duricrust yielding yellow sandplains, gravelly sandplains and laterite breakaways. Mallees (*Eucalyptus leptopoda*, *E. platycorys* and *E. scyphocalyx*) and scrub-heaths (*Allocasuarina corniculata*, *Callitris preissii*, *Melaleuca uncinata* and *Acacia beauverdiana*) occur on these uplands, as well as on sand lunettes associated with playas along the broad valley floors, and sand sheets around the granite outcrops. The scrubs are rich in endemic acacias and Myrtaceae. The subregional area is 7,041,232 ha.”

2.1.3 Geology and land systems

The study area is located within the Southern Cross (Koolyanobbing) and Mount Jackson Plains and Hills (Windarling) Zones of the Kalgoorlie soil-landscape province, in the central eastern portion of the Yilgarn Craton.

The Kalgoorlie Province landform consists predominately of an extensive plateau of low relief. Flat to undulating plains with small valleys (occasionally broken by low narrow rocky hills, ridges, tors and bosses) are most commonly found on granitic terrain. On these plains may be found some silcrete duricrust, claypans, salt lakes with dunes and lunettes, gilgai areas, small remnants of sand plain and small dune tracts. Low breakaways with short saline footslopes are also occasionally present. Below these plains are broad, flat to undulating, shallow valley plains formed on Quaternary alluvium and colluvium. These plains show little defined drainage and some seasonal lakes and claypans with isolated granitic and basic rock outcrops. Slightly lower down in the landscape are broad, flat valleys with chains of salt lakes. Also present on these valley floors are saline flats, claypans, kopi dunes, sand dunes, and sometimes tors and bosses of outcropping granites (Tille 2006). Many of these landform features can be observed in the surrounds of the Koolyanobbing area.

The Southern Cross Zone is characterised by undulating plains and uplands (with some salt lakes and low hills) on deeply weathered mantle, colluvium and alluvium over greenstone and granitic rocks of the Yilgarn Craton. Calcareous loamy earths, Red and yellow loamy earths and Alkaline deep and shallow sandy duplexes with some Yellow sandy earths, Salt lake soils, Yellow deep sands and Red shallow loamy duplexes. Salmon gum-gimlet-morrel-York gum woodlands with acacia-casuarina thickets (and some mallee, scrub-heath and halophytic shrublands). This zone occupies an area of 2,375 km² in the eastern Wheatbelt/south-western Goldfields between Bullfinch and Mt Holland (Tille 2006).

The Southern Cross Zone has been further broken down into a number of land systems. According to DPIRD (2020) the Koolyanobbing survey area is located within Land System Fa4, characterised by ranges with numerous outcrops containing basic igneous rocks.

Figure 2.2 shows the land systems of the Koolyanobbing area.

The Mount Jackson Plains and Hills Zone is characterised by undulating plains (with some hills and stony plains) on greenstone and granitic rocks of the Yilgarn Craton. Red loamy earths with Red-brown hardpan shallow loams and some Red sandy earths, Red shallow loams and Loamy gravels. York gum-salmon gum-gimlet woodland with acacia thickets and mulga scrub. This zone occupies an area of 6,350 km² in the Goldfields between Lake Barlee and Mt Jackson (Tille 2006).

The Norseman Zone has been further broken down into a number of land systems. The Windarling survey area is located within the Tealtoo and Moriarty systems. The Tealtoo System is described as level to gently undulating loamy plains with fine ironstone gravel mantles supporting dense acacia shrublands; and the Moriarty System is described as low greenstone rises and stony plains supporting chenopod shrublands with patchy eucalypt overstoreys (DPIRD 2020).

Figure 2.3 shows the land systems of the Windarling area.

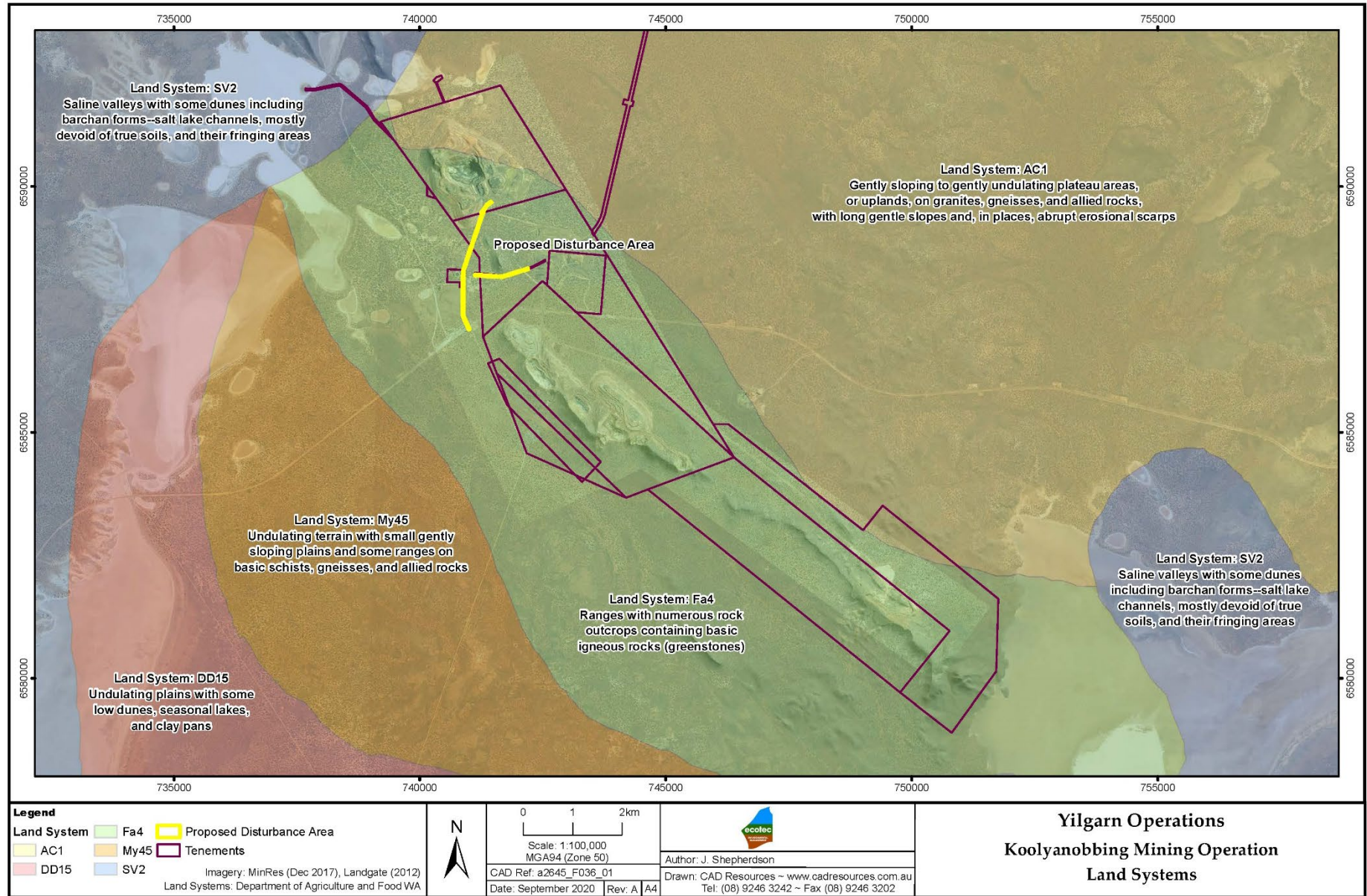


Figure 2.2: Land systems of the Koolyanobbing survey area and surrounds.

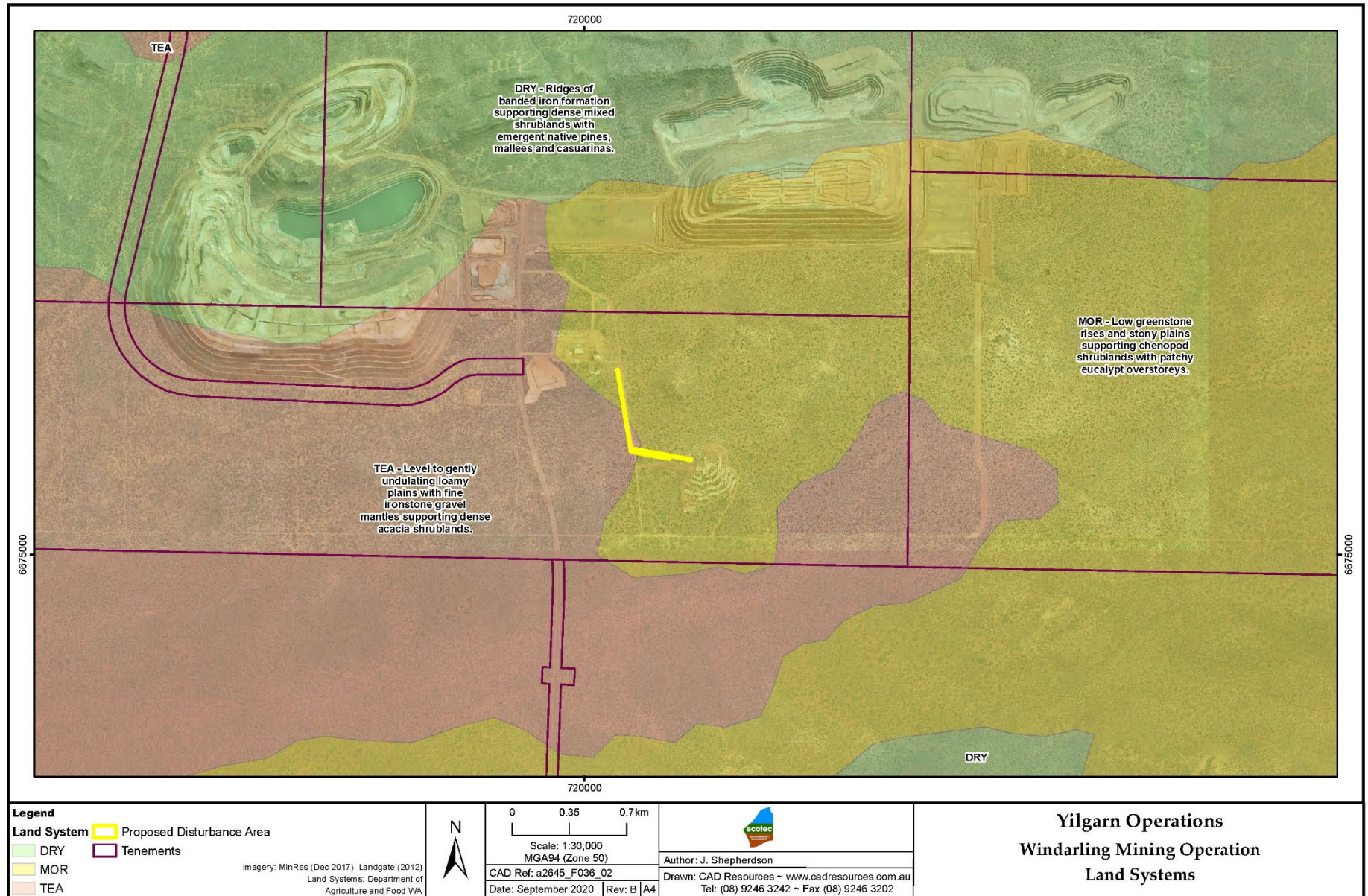


Figure 2.3: Land systems of the Windarling survey area and surrounds.

2.1.4 Surface hydrology

There are no rivers in the region and all drainage is inland to strings of salt lakes, which follow the course of ancient palaeodrainage channels. The Koolyanobbing mine site is located between Lake Deborah East, Lake Deborah West and Lake Seabrook, which form part of a chain of large, ephemeral salt lakes northwest, west and southwest of the area. These lakes follow the course of a palaeodrainage channel. Peripheral dunes around the Lake Deborah system are well developed and comprise aeolian sands (Cliffs 2009).

There are no defined catchment boundaries or surface drainage channels in the survey areas, with runoff occurring as sheet flow. Streams within the region are ephemeral. After seasonal rain, water can be held for periods of time in the steep drainage gullies of some of the ranges, but few rock-pools in the area are considered permanent (Cliffs 2009).

Permanent surface water in the area is scarce and is mainly comprised of dams excavated to provide saline groundwater to support pastoral and mining activities.

2.1.5 Existing land uses and disturbance

The Koolyanobbing mine site has been active for a large portion of the last 60 years and the Windarling mine site has been active for over 15 years. The surrounding areas have also been subject to exploration, pastoral activity and timber harvesting in the past.

The survey areas are surrounded by disturbance, including roads adjacent to most of the powerline length, waste dumps, camps and other mining facilities.

Both powerline survey areas contain existing powerlines and have been subject to historic disturbance as a result construction and maintenance of these powerlines.

The proposed warehouse and yard expansion will extend into an area of the former Koolyanobbing townsite, previously occupied by housing.

Figure 1.2 (Koolyanobbing) and Figure 1.3 (Windarling) show the location of the existing disturbance.

3.0 METHODOLOGY

3.1 Desktop assessment

A desktop review of the survey areas was undertaken on the 30th August 2020 and involved:

- searches of the NatureMap (DBCA 2020) and Protected Matters Search Tool databases (DAWE 2020a)
- review of a number of fauna, flora and vegetation assessments previously undertaken in the surrounding area (Ecotec 2019a and b)
- review of approved Mining Proposals and related biological surveys for activities in the surrounding area (Cliffs 2009).

3.2 Field work

The field work for the powerline corridors was undertaken on the 29th – 30th August (Koolyanobbing) and 2nd September (Windarling) 2020. The warehouse expansion area was surveyed on the 16th of October 2020. The field work involved a series of relevés throughout the study areas. An assessment of the vegetation, flora species and fauna habitat was undertaken of the area surrounding each point (refer to Figure 4.1 and Figure 4.2).

3.3 Personnel

The survey was undertaken by Jeremy Shepherdson, a Biologist and Environmental Consultant with more than 20 years experience in biological surveys and environmental consulting in the Goldfields. He was assisted by Lorna McDonald, an Environmental Consultant with seven years prior experience as Environmental Advisor at the Koolyanobbing Operations. Both have an excellent knowledge of flora and fauna of the region.

The desktop survey and post-fieldwork plant identification was undertaken by Botanist and Environmental Consultant Kylie Wilkinson, who also has significant experience in the survey areas, having been employed for over six years as the Biological Coordinator at the Koolyanobbing Operations.

4.0 RESULTS

4.1 Desktop assessment

The Department of Biodiversity, Conservation and Attractions (DBCA) NatureMap database search was conducted for a 10 km radius from the centre of each of the survey areas. Seventeen species of conservation significant flora were returned for the Koolyanobbing area, and 14 for the Windarling area.

The Department of Agriculture, Water and the Environment (DAWE) EPBC Act Protected Matters Search Tool (PMST) was also interrogated to provide information on matters of national environmental significance. This database search returned an additional five flora species for the Koolyanobbing area and one flora species for the Windarling area listed as Endangered under the EPBC Act, none of which have previously been recorded in the vicinity of Koolyanobbing or Windarling.

Table 4.1 lists the conservation significant flora species returned from the database searched.

The database searches also returned a number of records of conservation-significant fauna potentially inhabiting the area. The results included:

- one species of bird listed as Critically Endangered for Koolyanobbing and two species for Windarling
- two birds and one mammal listed as Vulnerable (Koolyanobbing and Windarling)
- one invertebrate listed as Priority 4 (Koolyanobbing).

The results include 11 bird species listed as Migratory and/or Marine. The salt lakes in the surrounding region potentially provide habitat for these Migratory and Marine species, but likely only opportunistically following significant rainfall events.

Table 4.2 lists the conservation significant fauna species returned in the database searches. The presence of suitable habitat for each species and likelihood of presence within the study area is included. The database search reports are included as Appendix 1. Definitions of the conservation codes used in the tables are included as Appendix 2.

Table 4.1: Conservation significant flora returned from the database searches.

Conservation Status	Species	Relevant Survey Area	Habitat (WAH 2020)	Annual / Perennial	Suitable Habitat	Likelihood	Source
T-EN (WA & EPBC)	<i>Acacia lobulata</i>	Koolyanobbing	Low granitic breakaways	Perennial	No	Unlikely	PMST
T-EN (WA & EPBC)	<i>Eremophila virens</i>	Koolyanobbing	Granite hillsides	Perennial	No	Unlikely	PMST
T-EN (WA & EPBC)	<i>Eremophila viscida</i>	Windarling, Koolyanobbing	Stone gullies, sandplains	Perennial	No	Unlikely	PMST
T-EN (EPBC) T-VU (WA)	<i>Gastrobium graniticum</i>	Koolyanobbing	Margins of rock outcrops, along drainage lines	Perennial	No	Unlikely	PMST
T-EN (WA & EPBC)	<i>Ricinocarpos brevis</i>	Windarling	Rocky hillsides, rock outcrops	Perennial	No	Unlikely	NatureMap, PMST
T-EN (EPBC) T-VU (WA)	<i>Roycea pycnophylloides</i>	Koolyanobbing	Saline flats	Perennial	Marginal	Unlikely	PMST
T-VU (WA)	<i>Tetradlea erubescens</i>	Koolyanobbing	Steep slopes, hilltops, cliffs, ridges	Perennial	No	Unlikely	NatureMap
T-EN (EPBC) T-VU (WA)	<i>Tetradlea paynterae</i> subsp. <i>cremnobata</i>	Windarling	Outcrops, ridges, breakaways, rocky slopes	Perennial	No	Unlikely	NatureMap
T-EN (EPBC) T-CR (WA)	<i>Tetradlea paynterae</i> subsp. <i>paynterae</i>	Windarling, Koolyanobbing	Rock crevices, ridges, cliffs, breakaways	Perennial	No	Unlikely	NatureMap, PMST
P1	<i>Acacia haematites</i>	Koolyanobbing	Eroded slopes below massive ironstone or lateritized duricrust outcrops	Perennial	No	Unlikely	NatureMap
P1	<i>Beyeria rostellata</i>	Koolyanobbing	Ironstone hills	Perennial	No	Unlikely	NatureMap

P1	<i>Frankenia georgei</i>	Windarling	Rocky slopes	Perennial	No	Unlikely	NatureMap
P1	<i>Hysterobaeckea ochropetala</i> subsp. <i>ochropetala</i>	Windarling	Sandy habitats, sand over laterite	Perennial	No	Unlikely	NatureMap
P1	<i>Lepidosperma ferriculmen</i>	Koolyanobbing	Stony slopes	Perennial	No	Unlikely	NatureMap
P1	<i>Verticordia</i> sp. Koolyanobbing (B.H. Smith 1457)	Koolyanobbing	Unknown	Perennial	No	Unlikely	NatureMap
P2	<i>Verticordia pulchella</i>	Koolyanobbing	Massive granite areas	Perennial	No	Unlikely	NatureMap
P3	<i>Acacia dissona</i> var. <i>indoloria</i>	Koolyanobbing	Undulating plains	Perennial	Marginal	Unlikely	NatureMap
P3	<i>Austrostipa blackii</i>	Windarling, Koolyanobbing	Rocky sites	Perennial	No	Unlikely	NatureMap
P3	<i>Gompholobium cinereum</i>	Koolyanobbing	Well-drained open sites, slopes, plains, roadsides	Perennial	Yes	Possible	NatureMap
P3	<i>Grevillea georgeana</i>	Windarling	Ironstone hilltops & slopes	Perennial	Marginal	Unlikely	NatureMap
P3	<i>Hibbertia lepidocalyx</i> subsp. <i>tuberculata</i>	Koolyanobbing	Ironstone ridges and valley slopes	Perennial	No	Unlikely	NatureMap
P3	<i>Lepidium genistoides</i>	Koolyanobbing	Adjacent to salt lakes and below granite breakaways on saline flats	Perennial	Marginal	Unlikely	NatureMap
P3	<i>Lepidosperma ferricola</i>	Windarling, Koolyanobbing	Rocky ledges, scree slopes, crevices and ravines	Perennial	No	Unlikely	NatureMap
P3	<i>Melichrus</i> sp. Bungalbin Hill (F.H. & M.P. Mollemans 3069)	Windarling	Yellow sandplain	Perennial	No	Unlikely	NatureMap
P3	<i>Philotheca coateana</i>	Windarling	Hillslopes and sandplains	Perennial	Marginal	Unlikely	NatureMap
P3	<i>Philotheca deserti</i> subsp. <i>brevifolia</i>	Windarling	Undulating plains and hills	Perennial	Marginal	Unlikely	NatureMap

P3	<i>Stenanthemum newbeyi</i>	Koolyanobbing	Hillslopes	Perennial	No	Unlikely	NatureMap
P3	<i>Styphelia saxicola</i> (previously <i>Styphelia</i> sp. Bullfinch (M. Hislop 3574))	Koolyanobbing	BIF ranges	Perennial	No	Unlikely	NatureMap
P3	<i>Verticordia mitodes</i>	Koolyanobbing	Undulating plains	Perennial	No	Unlikely	NatureMap
P4	<i>Banksia arborea</i>	Windarling, Koolyanobbing	Ironstone hills	Perennial	No	Unlikely	NatureMap
P4	<i>Eucalyptus formanii</i>	Windarling	Ironstone slopes	Perennial	No	Unlikely	NatureMap
P4	<i>Grevillea erectiloba</i>	Windarling	Lateritic ridges	Perennial	No	Unlikely	NatureMap

Table 4.2: Conservation significant fauna returned from database searches.

Common Name	Species	Relevant Survey Area	WA Status	EPBC Act Status	Preferred habitat	Likelihood of occurrence	Source
Mammals							
Boodie (inland), Burrowing Bettong (inland)	<i>Bettongia lesueur</i> subsp. <i>graii</i>	Koolyanobbing	EX	EX	Inland sandplains, hummock grassland, open woodlands.	Nil. Presumed extinct.	NatureMap
Western quoll, chuditch	<i>Dasyurus geoffroii</i>	Windarling, Koolyanobbing	T-VU S3	VU	Preferred habitat is woodland and mallee. Previously occurred throughout arid and semi-arid Australia but is now restricted to forests of south-west Western Australia.	Marginal habitat present in the surrounding areas. Unlikely due to proximity to mining activity. No prior records within the survey area. Believed to be extinct from the region. PMST database states "Species or species habitat may occur in the area".	PMST
Birds							
Curlew sandpiper	<i>Calidris ferruginea</i>	Windarling, Koolyanobbing	T-CR S1, S5	CR & MI	Coastal and subcoastal plains. Occasionally occur inland. Does not breed in Australia.	Unlikely. No suitable habitat within the survey area. Potential vagrant visitor to salt lake systems near Koolyanobbing. PMST database states "Species or species habitat may occur in the area".	PMST
Grey falcon	<i>Falco hypoleucos</i>	Windarling, Koolyanobbing	T-VU S3	VU	Acacia shrublands crossed by tree-lined water courses, tussock grasslands and open woodlands in winter.	Unlikely. Appears to be absent in WA south of latitude 26°S. PMST database states "Species or species habitat may occur in the area".	PMST

Malleefowl	<i>Leipoa ocellata</i>	Windarling, Koolyanobbing	T-VU S3	VU	Preferred habitat is scrubland and woodland dominated by mallee and <i>Acacia</i> species.	Possible (sightings). No nesting habitat present however sightings have been recorded near both locations.	NatureMap, PMST
Night parrot	<i>Pezoporus occidentalis</i>	Windarling	T-CR S1	EN	Spinifex grasslands.	Unlikely. No suitable habitat within the area. Nearest known location is Wiluna within spinifex hummock grassland. PMST database states "Species or species habitat may occur in the area".	PMST
Peregrine falcon	<i>Falco peregrinus</i>	Windarling, Koolyanobbing	OS S6	-	Most habitats; prefers coastal and inland cliffs or open woodlands near water.	Possible. Sightings recorded nearby both locations. May overfly the areas. No suitable nesting habitat present.	NatureMap
Rainbow bee-eater	<i>Merops ornatus</i>	Windarling	-	IA	Common and widespread species in WA, except the drier interior of the State and the far south-west. Occurs in lightly wooded sandy country, preferring areas near water. It nests in burrows excavated in sandy ground or banks, often at the margins of roads and tracks.	Possible. Have been observed in the wider project area.	NatureMap , PMST
11 bird species listed as Marine or Migratory species.		Windarling, Koolyanobbing	Refer to Appendix 1		Migratory and marine species predominately associated with coastal habitats but occasional visitors to inland salt lakes and other water bodies.	Unlikely. No suitable habitat. Possible short-term visitors to salt lakes in the surrounding region.	PMST
Invertebrates							

Tree-stem trapdoor spider	<i>Aganippe castellum</i>	Koolyanobbing	P4	-	Flood-prone depressions and flats that support myrtaceous shrub communities.	<p>Unlikely</p> <p>Potentially suitable habitat at the eastern end of the Koolyanobbing survey area but close proximity to ROM, dust and poor vegetation condition makes it unlikely to be present.</p> <p>No suitable habitat at Windarling.</p>	NatureMap
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4.2 Reconnaissance survey

4.2.1 Limitations

There are no recognised limitations impacting the results of this assessment, other than low rainfall in the months prior, which has reduced the abundance of annual flora species throughout the region. There are no known or expected annual flora species of conservation significance occurring in the vicinity.

4.2.2 Flora and vegetation

The reconnaissance survey was undertaken to produce a list of the flora species present at the time of the survey and to identify the broad vegetation types and vegetation condition occurring within the project area. Identification of habitat suitable for the conservation significant flora species identified in the desktop assessment was also included.

A total of 14 relevés were undertaken throughout the survey areas at Koolyanobbing - 11 for the powerline corridor and 3 for the warehouse expansion area. Five relevés were undertaken at Windarling to cover the powerline corridor. Figure 4.1 and Figure 4.2 show the relevé locations at Koolyanobbing. Figure 4.3 shows the relevé locations at Windarling. Appendix 3 provides the data collected from each of the relevé sites.

Flora

A total of 111 species of native flora from 37 families were recorded during the surveys across all the sites, with the most abundant families being Fabaceae and Chenopodiaceae with 11 and 16 species recorded respectively. The Koolyanobbing surveys resulted in identification of 82 species of native flora, while 49 were recorded at Windarling.

No flora species of conservation significance were recorded during the survey.

A total of 17 introduced flora species were recorded across the survey areas, all of these being located at Koolyanobbing.

Athel pine (*Tamarix aphylla*) was recorded at two locations at Koolyanobbing (PWR2 and WE03), within the former town site. This species is listed as a Declared Pest in WA under the *Biosecurity and Agriculture Management Act 2007* (BAM Act) and a Weed of National Significance. It is regarded as one of the worst weeds in Australia because of its invasiveness, potential for spread, and economic and environmental impacts (DAWE 2020b). The recorded locations of Athel pine are shown on Figure 4.1 and Figure 4.2.

Prickly pear (*Opuntia stricta*), also a Declared Pest and a Weed of National Significance, was recorded at PWR1, PWR2, WE02 and WE03, throughout the former Koolyanobbing town site. This area is included in the annual weed control program for the site.

The full list of species recorded is included in Appendix 4.

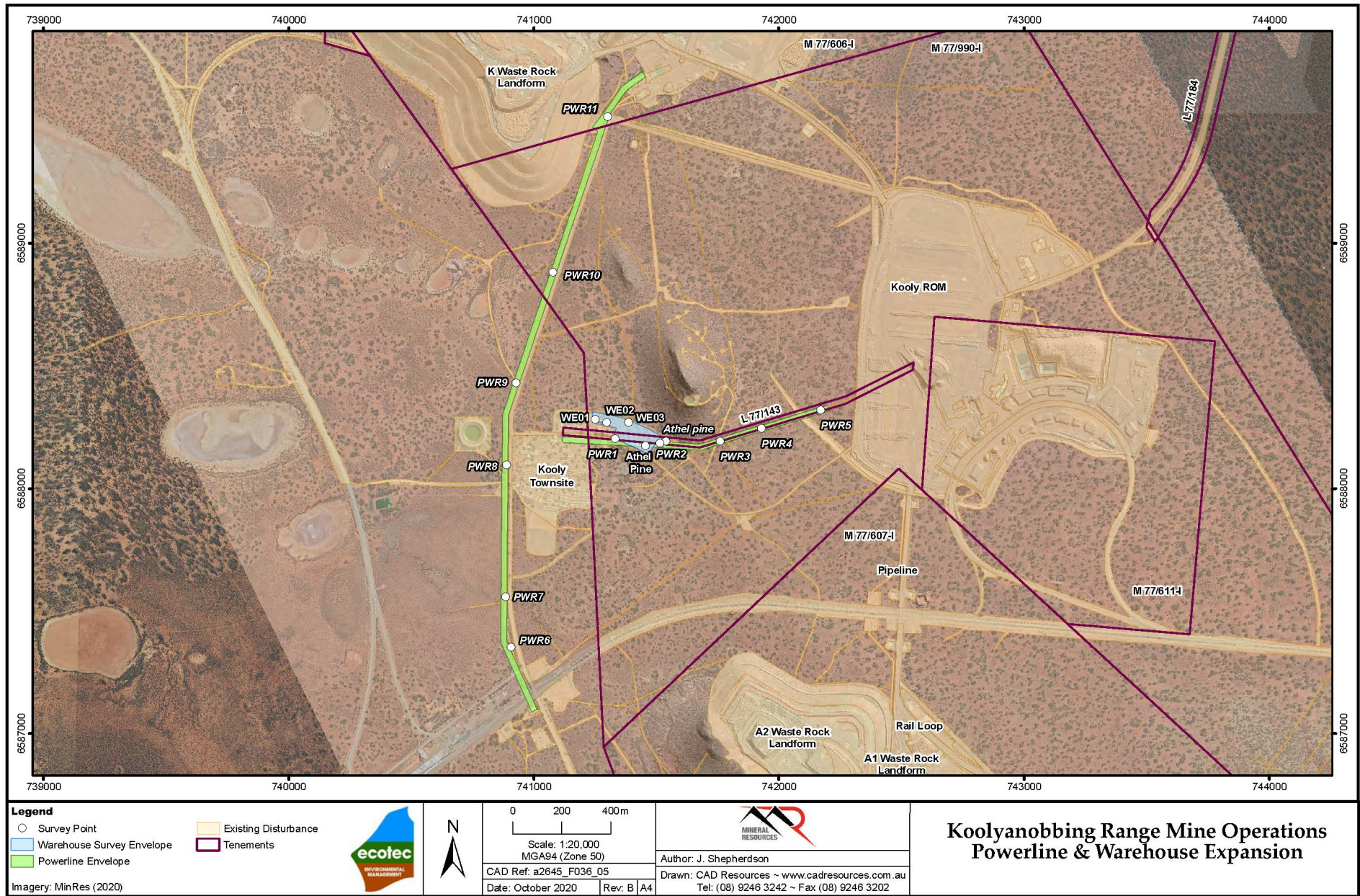


Figure 4.1: The Koolyanobbing powerline survey area and relevé locations.

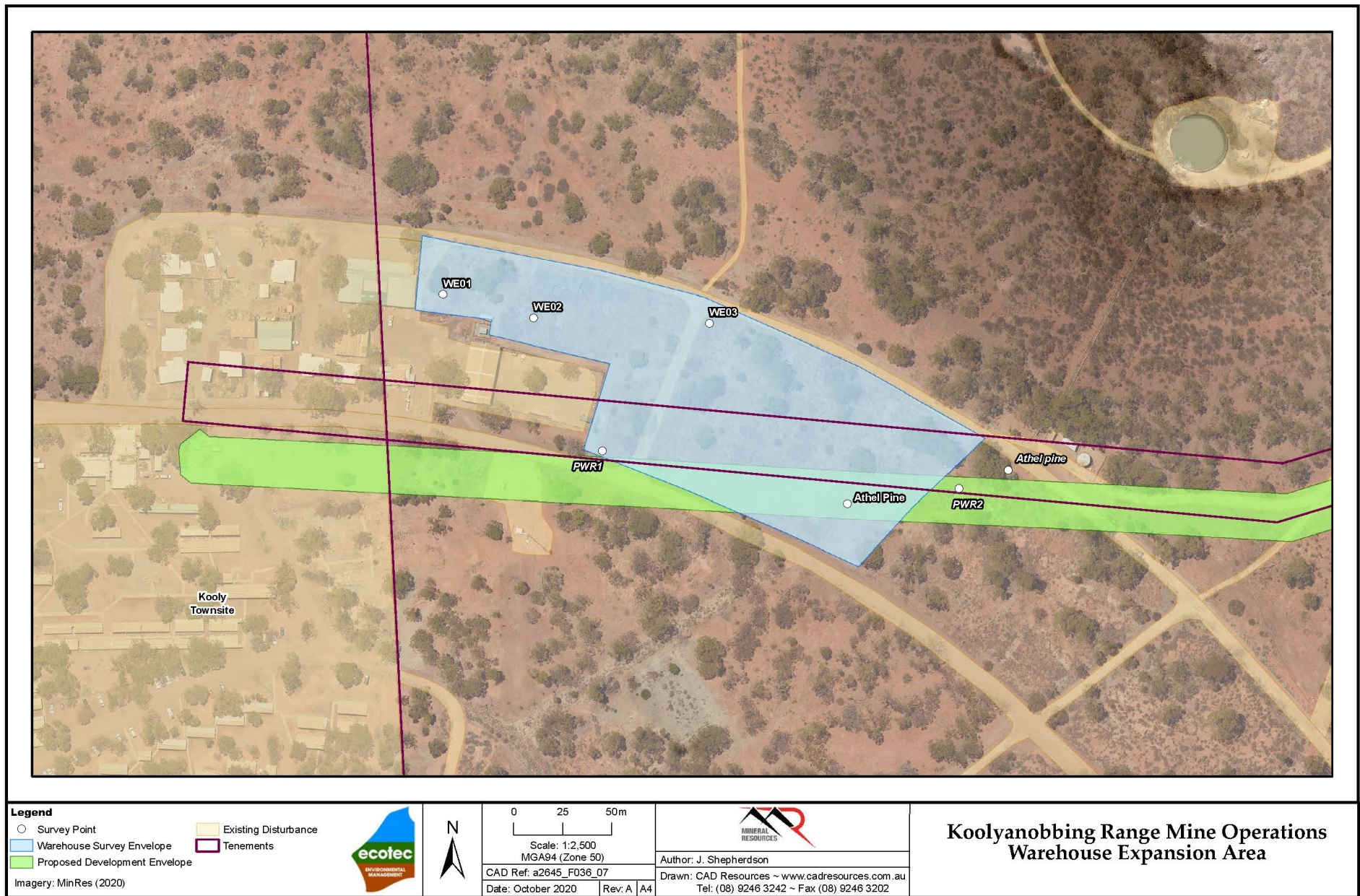


Figure 4.2: The Koolyanobbing warehouse expansion survey area and relevé locations.

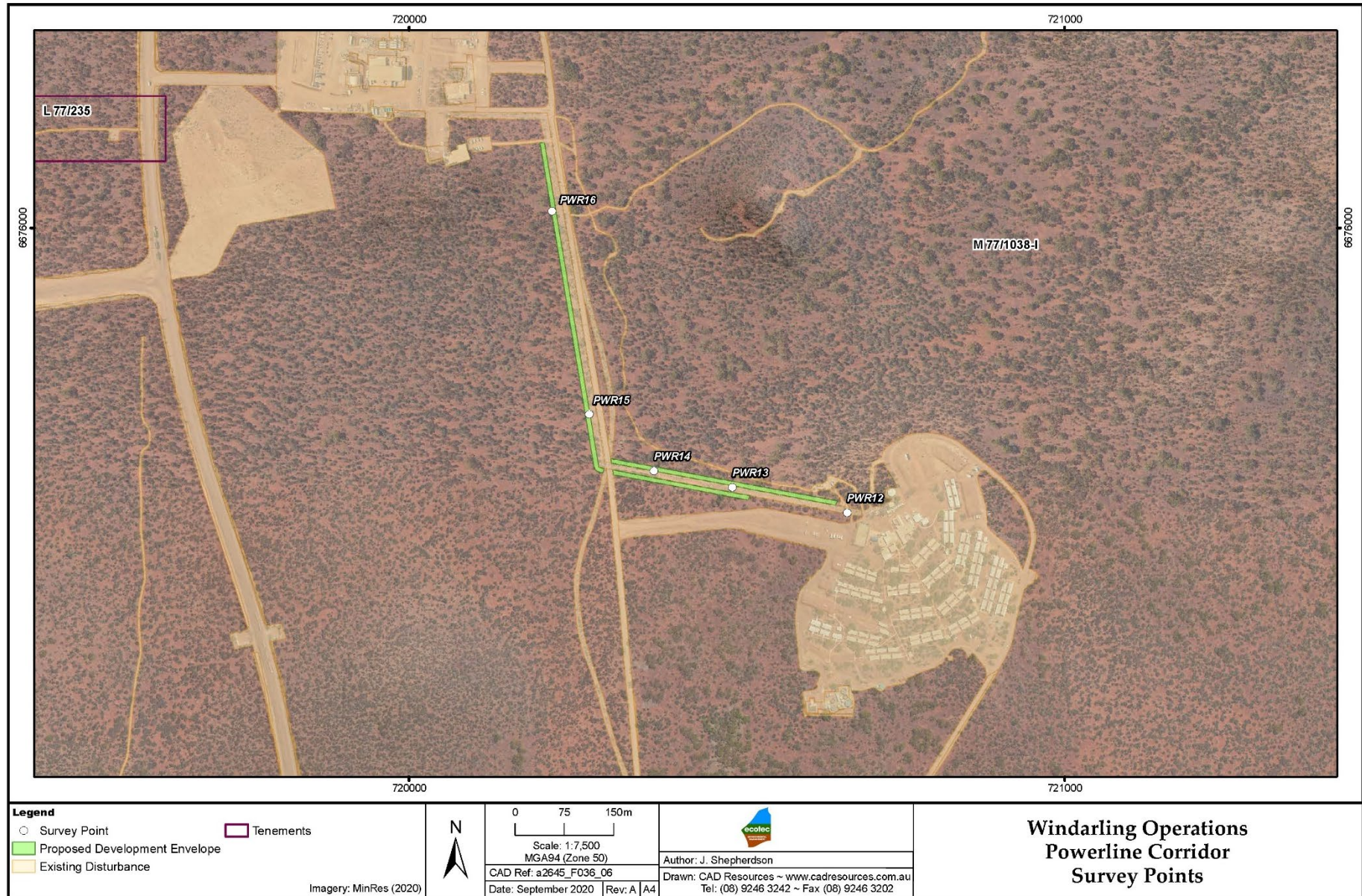


Figure 4.3: The Windarling survey area and relevé locations.

Vegetation - Koolyanobbing

The Koolyanobbing survey area was dominated by Eucalypt Open Woodland. The vegetation is consistent with Vegetation Type 1, previously mapped by Woodman Environmental Consulting during a survey of the area to the south of the rail line (Cliffs 2015a). This vegetation type was described as:

“Mid woodland of mixed species including *Eucalyptus salmonophloia*, *Eucalyptus corrugata*, *Eucalyptus salubris*, *Eucalyptus longicornis* and *Eucalyptus vittata* over tall to mid sparse shrubland dominated by *Atriplex nummularia*, *Exocarpos aphyllus*, *Eremophila scoparia*, *Scaevola spinescens* and *Senna artemisioides* subsp. *filifolia* over low sparse shrubland dominated by *Atriplex vesicaria*, *Maireana trichoptera*, *Olearia muelleri*, *Sclerolaena diacantha* and *Rhagodia drummondii* on red, brown, orange or red-brown clay, clay loam and sandy loam with dolerite, quartz and ironstone stones on plains, flats and low rises.”

Vegetation at Koolyanobbing survey site PWR7 (refer to Appendix 3) was located on the margin of a low lying area with vegetation typical of salt lake fringes. It was however a very small portion of the survey area and difficult to delineate the extent within the survey area due to the high level of existing disturbance.

The vegetation throughout the Koolyanobbing survey area was generally considered to be in Poor to Good condition, as defined by Keighery (1994), included as Table 4.4. Disturbance is found throughout the area resulting from long-term mining activity, the existing powerline corridor and vehicle tracks. Vegetation in the area proposed for expansion of the warehouse and yard is considered to be degraded as a result of historical disturbance associated with the former Koolyanobbing town site and the abundance of weed species. Several species of Eucalypt not endemic to the Koolyanobbing area are found within the WE sites (refer to Appendix 3). These are thought to have been planted as street trees when the town was functioning.

Extensive prior disturbance, proximity to current mining related activity and the narrow width of the powerline corridor (Photograph 4.1 and Photograph 4.2) makes detailed vegetation mapping difficult and inconsistent with the surrounding vegetation. It was therefore not undertaken as part of this reconnaissance survey.



Photograph 4.1: Existing disturbance associated with the powerline corridor at Koolyanobbing.



Photograph 4.2: A concrete slab, formerly associated with a house, in the area proposed for expansion of the warehouse and yard.

Vegetation - Windarling

Most of the Windarling survey area supports Eucalypt Open Woodland dominated by *Eucalyptus longissima* and *E. corrugate* with an understorey of *Acacia* and *Eremophila* shrubland.

The south-western corner of the survey area (PWR14 and PWR15) supports mixed *Acacia* shrubland dominated by *Acacia caesaneura*, *A. acuminata*, *A. burkittii* and *A. cockertoniana*.

These vegetation types are typical of the Windarling area and similar to vegetation units previously described by Western Botanical and Biota (Cliffs 2015b).

The vegetation condition within the powerline corridor was considered to be Degraded (Keighery 1994, Table 4.4d), with significant prior disturbance resulting from maintenance of the existing powerline. Vegetation in the surrounding areas is Good to Excellent.

As with the Koolyanobbing survey area, vegetation mapping was not undertaken due to the extensive prior disturbance and the narrow width of the power line corridor. Prior clearing of this area has resulted in significant changes to the vegetation structure, making it inconsistent and not representative of the surrounding vegetation.



Photograph 4.3: Existing disturbance associated with the powerline corridor at Windarling.

Table 4.3: Vegetation condition scale (Keighery 1994).

Vegetation Condition	Criterion
Excellent	Pristine or nearly so, no obvious signs of damage caused by human activities since European settlement.
Very good	Some relatively slight signs of damage caused by human activities since European settlement. For example, some signs of damage to tree trunks caused by repeated fire, the presence of some relatively non-aggressive weeds, or occasional vehicle tracks.
Good	More obvious signs of damage caused by human activity since European settlement, including some obvious impact on the vegetation structure such as that caused by low levels of grazing or slightly aggressive weeds.
Poor	Still retains basic vegetation structure or ability to regenerate it after very obvious impacts of human activities since European settlement, such as grazing, partial clearing, frequent fires or aggressive weeds.
Degraded	Severely impacted by grazing, very frequent fires, clearing or a combination of these activities. Scope for some regeneration but not to a state approaching good condition without intensive management. Usually with a number of weed species present including very aggressive species.
Completely Degraded	Areas that are completely or almost completely without native species in the structure of their vegetation i.e. areas that are cleared or 'parkland cleared' with their flora comprising weed or crop species with isolated native trees or shrubs.

4.2.3 Fauna habitat

Fauna habitat was assessed during the relevés undertaken in the study area to assist in determining the likelihood of presence of conservation significant species identified during the desktop review.

The area surrounding PWR5 at the eastern end of the Koolyanobbing site may have provided habitat suitable for the tree-stem trapdoor spider (flood-prone depressions and flats that support myrtaceous shrub communities) prior to commencement of the mining operation, however is now considered unlikely to be suitable due to disturbance, dust and vibration resulting from proximity to the ROM.

The powerline survey areas at both sites are very narrow (i.e. approximately 20 m) and have been subject to significant disturbance. The corridors are generally devoid of larger trees and do not support any dense stands of vegetation. These areas therefore do not provide habitat specifically suitable for any of the conservation significant species listed in Table 4.2.

The warehouse expansion area was originally part of the Koolyanobbing townsite and was mostly cleared of native vegetation for construction of housing. A number of large trees, some dead, are found throughout the area but lower level vegetation comprises predominately low weed species (refer to Photograph 4.2).

4.2.4 Fauna

A number of common bird species were observed during the field surveys, including:

- *Cacatua roseicapilla* (galah)
- *Coracina novaehollandiae* (black-faced cuckoo-shrike)
- *Cracticus nigrogularis* (pied butcherbird)
- *Cracticus tibicen* (Australian magpie)
- *Platycercus zonarius* subsp. *zonarius* (Australian ringneck, 28 parrot)
- *Rhipidura leucophrys* (willie wagtail)
- *Strepera versicolor* (grey currawong)

No mammal or reptile fauna species were observed in the survey areas, however common species from both orders are known to be present at times.

Due to the existing high disturbance in the areas and the proximity to well utilised roads, it is considered highly unlikely that any conservation significant fauna inhabit the survey areas.

4.2.5 Environmentally Sensitive Areas

There are no Threatened Ecological Communities (TEC) within the surveyed area, or in the nearby vicinity.

A Priority Ecological Community (PEC), known as “Koolyanobbing Vegetation Complex (banded ironstone formation) Priority 1” (DBCA 2017) is located approximately 2.5 km south of the proposed area of disturbance at Koolyanobbing. There will be no impact to this area as a result of the development.

Koolyanobbing is located within the Great Western Woodlands (Figure 4.3), an area recognised for its biological diversity. The Great Western Woodlands is regarded as the largest remaining area of intact Mediterranean-climate woodland left on Earth (DPAW 2016).

The relatively small area of disturbance within an already highly disturbed and active mining area is not considered likely to have any impact on the ecological value of the wider Great Western Woodlands.

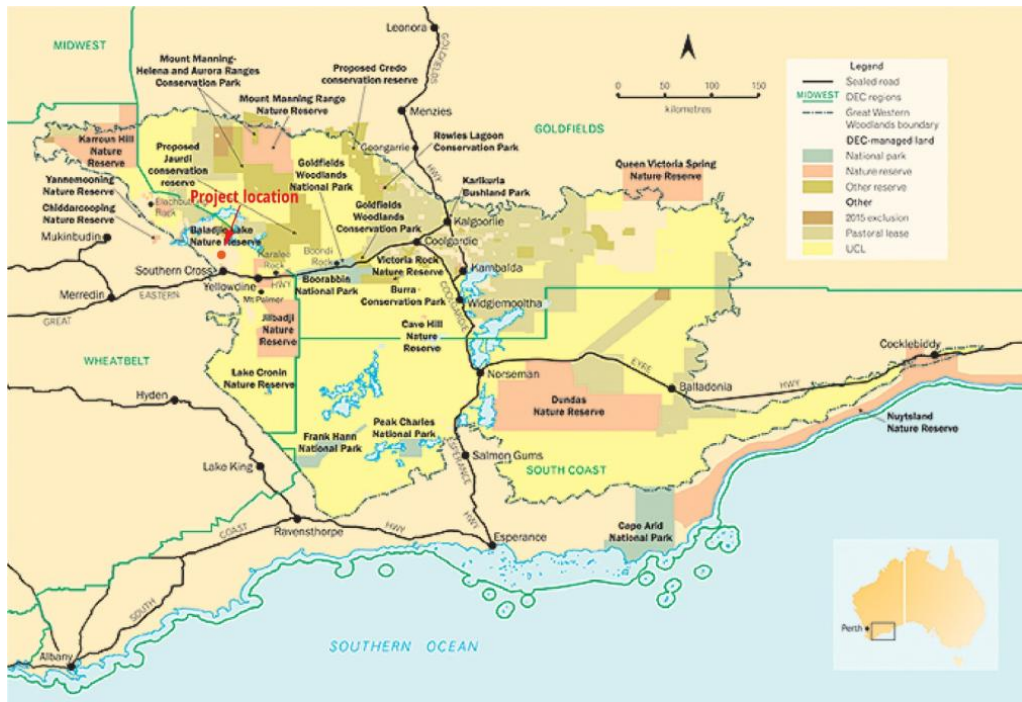


Figure 4.4: The project location within the Great Western Woodlands boundary (Source: DPaW 2014).

The “Windarling Ranges vegetation complex (banded ironstone formation) Priority 1” PEC Is located over 1 km north of the proposed area of disturbance at Windarling. There will be no impact to this area as a result of the development.

5.0 DISCUSSION

The surveyed areas at Koolyanobbing and Windarling are highly disturbed and in close proximity to active mining operations and related activity. Prior disturbance for installation of the existing powerlines has resulted in significant alteration of the vegetation in both areas. Vegetation within the narrow survey areas is generally not representative of the surrounding vegetation due to the high level of prior disturbance.

The former townsite of Koolyanobbing was almost completely cleared of vegetation for construction of housing and is now has a substantial population of weed species. A number of Eucalypt species that are not endemic to the Koolyanobbing area are present and appear to have been planted as street trees when the town was in operation.

Vegetation mapping of the survey areas was not undertaken as it is significantly different to the surrounding vegetation types and is not considered to provide any relevant or meaningful information.

No conservation significant flora was located during the survey. There is no habitat considered ideally suitable for any of the conservation significant flora returned from the database searches. Prior disturbance has undoubtedly impacted the likelihood of the presence of those that may be suited to the habitat. Both the Koolyanobbing and Windarling areas have been extensively surveyed in the past. The locations of conservation significant flora in the areas are well known and do not coincide with these surveyed areas.

Weed species are abundant in the area proposed for expansion of the warehouse and yard with 13 of the 17 introduced species recorded during the surveys found in this area. Two Athel pine (*Tamarix aphylla*) trees were located during the surveys. As a Declared Pest in WA under the *Biosecurity and Agriculture Management Act 2007* (BAM Act) and a Weed of National Significance, it is a requirement of the landholder to remove any individuals and control spread of the species. While climatic conditions in the Koolyanobbing area are not conducive to spread of Athel pine, the trees and roots (to at least a depth of 0.5 m) should be removed with care and disposed of by deep burial. Prickly pear (*Opuntia stricta*) is also found throughout the former Koolyanobbing townsite. It has been targeted during the site weed control program for a number of years and is currently under control with a limited distribution.

No weed species were recorded in the Windarling survey areas.

No conservation-significant fauna was observed during the survey, and there is no habitat present that is considered important for the survival of any of the species returned from the database searches.

While no large trees were present within the powerline corridors, a number of large trees remain within the former Koolyanobbing townsite. These as well as trees in the open woodland habitats surrounding the surveyed areas provide nesting and foraging habitat for a variety of bird species. Hollows in the older, larger trees can provide important nesting habitat for a number of native parrot species, including Major Mitchell's cockatoo (*Lophochroa leadbeateri*). None of these are likely to be impacted by any further disturbance of the surveyed areas.

Woodland is listed as one of the preferred habitats of the western quoll, however the woodland surrounding the surveyed areas of Koolyanobbing and Windarling is generally considered too open for the species. The western quoll is now largely restricted to the south-west of Western Australia with small populations in the Midwest, Wheatbelt and South Coast Regions (DBCA 2017b). The species is considered highly unlikely to be found in the vicinity of the project area.

There is no suitable malleefowl nesting habitat present in or immediately adjacent to the surveyed areas, however there is habitat that may be suitable for foraging at both locations. The species has been recorded nearby both the Koolyanobbing and Windarling survey sites, but the likelihood of nesting nearby is considered low due to the proximity to mining and associated activity. Continued disturbance of the powerline corridor is considered highly unlikely to have any impact on malleefowl.

The peregrine falcon has been recorded at both the Koolyanobbing and Windarling mine sites where it may nest on cliff faces or in abandoned pits. There is no suitable nesting habitat present although the species may overfly the area. Disturbance will not result in any impact to the peregrine falcon.

The rainbow bee-eater has been recorded around both the Koolyanobbing and Windarling mine sites where it nests in burrows constructed in sandy creek beds, topsoil stockpiles and windrows along road verges. There is no suitable

nesting habitat present within the surveyed areas although the species may overfly the area. Disturbance is not considered likely to result in any impact to the rainbow bee-eater.

The 11 migratory and marine bird species returned from the database searches may be found periodically within the salt lake systems to the north and south-east of the Koolyanobbing project area, but are only considered vagrant visitors following significant rainfall events that result in the salt lakes filling with water for an extended period of time. Disturbance of the surveyed areas presents no risk to these species.

Suitable habitat for the tree-stem trap door spider may have been present around PWR5 at Koolyanobbing prior to commencement of the operation. It is now considered highly unlikely to be present within this area due to vegetation disturbance, dust and vibration resulting from proximity to the Koolyanobbing ROM.

Disturbance within the powerline corridor areas at Koolyanobbing and Windarling is considered very unlikely to result in adverse impact to flora or fauna of conservation significance.

5.1 Assessment against the Principles for Clearing Native Vegetation

(1) Native vegetation should not be cleared if it comprises a high level of biological diversity.

The Koolyanobbing surveys recorded 82 species of native flora from 26 families. The area does not coincide with any records of conservation-significant flora and none were recorded during the survey. The Eucalypt Open Woodland vegetation is well represented in the surrounding area and does not provide specific habitat for any threatened fauna species.

The Windarling survey recorded 47 species of native flora from 18 families. The area does not coincide with any records of conservation-significant flora and none were recorded during the survey. The Eucalypt Open Woodland and Acacia Shrubland vegetation types are well represented in the surrounding area and do not provide specific habitat for any threatened fauna species.

Clearing of native vegetation within the area is not considered to be at variance to this principle.

(2) Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of, a significant habitat for fauna indigenous to Western Australia.

The Koolyanobbing survey areas do not coincide with any prior records of Specially Protected Fauna declared under the *Biodiversity Conservation Act 2016* (WA). Although several species of conservation-significant fauna have been recorded across the Koolyanobbing Range, and some may potentially utilise the area as part of a broader foraging habitat, the area is not considered to provide habitat necessary for the survival of these species. The habitat is not considered to be significant to any threatened fauna not previously recorded, but listed as potentially present, in the area.

The Windarling survey areas do not coincide with any prior records of Specially Protected Fauna declared under the *Biodiversity Conservation Act 2016* (WA). Although several species of conservation-significant fauna have been recorded across the Windarling Range, and some may potentially utilise the area as part of a broader foraging habitat, the area is not considered to provide habitat necessary for the survival of these species. The habitat is not considered to be significant to any threatened fauna not previously recorded, but listed as potentially present, in the area.

Clearing of native vegetation within the area is not considered to be at variance to this principle.

(3) Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, rare flora.

The Koolyanobbing survey areas do not coincide with any previously recorded Rare Flora taxa, and the habitat present is not suitable for any Rare Flora species listed as potentially occurring in the area. Accordingly, the area is not considered necessary for the continued existence of Rare Flora.

The Windarling survey area does not coincide with any previously recorded Rare Flora taxa, and the habitat present is not suitable for any Rare Flora species listed as potentially occurring in the area. Accordingly, the area is not considered necessary for the continued existence of Rare Flora.

Clearing of native vegetation within the area is not considered to be at variance to this principle.

(4) Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of, a threatened ecological community.

The Koolyanobbing survey areas (and the broader Koolyanobbing Project area) do not contain any threatened ecological communities listed under the *Environment Protection and Biodiversity Conservation Act 1999* (C'th). Accordingly, the area is not considered necessary for the maintenance of a threatened ecological community.

The Windarling survey area (and the broader Windarling Project area) does not contain any threatened ecological communities listed under the *Environment Protection and Biodiversity Conservation Act 1999* (C'th). Accordingly, the area is not considered necessary for the maintenance of a threatened ecological community.

Clearing of native vegetation within the area is not considered to be at variance to this principle.

(5) Native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been extensively cleared.

The Koolyanobbing survey areas support Eucalypt Open Woodland vegetation, dominated by several common *Eucalyptus* species. This vegetation type is widespread and well represented in the surrounding region. It therefore does not represent remnant vegetation.

The Windarling survey area supports Eucalypt Open Woodland and Acacia Shrubland vegetation, dominated by common *Eucalyptus* and *Acacia* species. The vegetation types are widespread and well represented in the surrounding region. They therefore do not represent remnant vegetation.

Clearing of native vegetation within the area is not considered to be at variance to this principle.

(6) Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland.

The Koolyanobbing survey areas do not contain native vegetation that is within or associated with a watercourse or wetland. The nearest surface water feature (watercourse/wetland) is the Lake Deborah system, located approximately 5 km west. Lake Seabrook is located approximately 10 km to the south-east of the area. *Melaleuca hamata* recorded at PWR10 are associated with a constructed drain channelling surface runoff from the adjacent road.

The Windarling survey area does not contain native vegetation that is within or associated with a watercourse or wetland. The nearest surface water feature (watercourse/wetland) is located over 20 kms to the east.

Clearing of native vegetation within the area is not considered to be at variance to this principle.

(7) Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation.

Clearing of native vegetation within the Koolyanobbing area will be confined to the existing powerline corridor and former townsite. Clearing will be undertaken using standard earthmoving equipment and accepted practices. Land degradation is considered unlikely.

Clearing of native vegetation within the Windarling area will be confined to the existing powerline corridor and associated access roads. Clearing will be undertaken using standard earthmoving equipment and accepted practices. Land degradation is considered unlikely.

Clearing of native vegetation within the area is not considered to be at variance to this principle.

(8) Native vegetation should not be cleared if the clearing of the vegetation is likely to have an impact on the environmental values of any adjacent or nearby conservation area.

The nearest conservation area, being the Mount Manning - Helena and Aurora Ranges Conservation Park, is located approximately 30 km north of Koolyanobbing and 7 km east of Windarling. The proposed clearing of native vegetation will not affect this conservation area.

Clearing of native vegetation within the area is not considered to be at variance to this principle.

(9) Native vegetation should not be cleared if the clearing of the vegetation is likely to cause deterioration in the quality of surface or underground water.

The Koolyanobbing area does not contain any permanent or temporary surface water features. The nearest surface water feature is the Lake Deborah system, located approximately 5 km west. There are no defined creek lines or natural drainage lines within the area. As such, clearing will not impact surface water quality.

Groundwater is estimated to be 20 – 50 m below the ground level of the area, which is not a surface water catchment. Clearing of native vegetation is not expected to have any impact on groundwater quality.

The Windarling area does not contain any permanent or temporary surface water features. The nearest surface water feature is located over 20 km east. There are no defined creek lines or natural drainage lines within the area. As such, clearing will not impact surface water quality.

Groundwater is estimated to be at least 30 m below the ground level of the area, which is not a surface water catchment. Clearing of native vegetation is not expected to have any impact on groundwater quality.

Clearing of native vegetation within the area is not considered to be at variance to this principle.

(10) Native vegetation should not be cleared if the clearing of the vegetation is likely to cause, or exacerbate, the incidence or intensity of flooding.

The Koolyanobbing survey areas are adjacent to existing roads with surface water runoff flowing generally toward the drainage system already associated with these roads. Flooding of the area as a result of any additional clearing is considered very unlikely.

The Windarling area is located adjacent to the accommodation camp car park and an existing mine access road. Runoff from the surveyed area will flow toward the drainage networks associated with the existing infrastructure. Flooding as a result of clearing vegetation is considered very unlikely.

Clearing of native vegetation within the area is not considered to be at variance to this principle.

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Appendix 1

Desktop Survey Results

Koolyanobbing Powerline

Created By Guest user on 30/08/2020

Current Names Only Yes
Core Datasets Only Yes
Method 'By Circle'
Centre 119° 31' 16" E, 30° 53' 20" S
Buffer 10km
Group By Species Group

Species Group	Species	Records
Amphibian	1	3
Bird	68	1007
Bryopsid (Moss)	6	6
Dicotyledon	165	328
Gymnosperm	1	1
Hepatic (Liverwort)	2	2
Invertebrate	6	186
Lichen	3	3
Mammal	13	50
Monocotyledon	27	37
Reptile	38	262
TOTAL	330	1885

Name ID	Species Name	Naturalised	Conservation Code	¹ Endemic To Query Area
Amphibian				
1.	25425 <i>Neobatrachus kunapalari</i> (Kunapalari Frog)			
Bird				
2.	24559 <i>Acanthagenys rufogularis</i> (Spiny-cheeked Honeyeater)			
3.	24260 <i>Acanthiza apicalis</i> (Broad-tailed Thornbill, Inland Thornbill)			
4.	24261 <i>Acanthiza chrysorrhoa</i> (Yellow-rumped Thornbill)			
5.	24264 <i>Acanthiza robustirostris</i> (Slaty-backed Thornbill)			
6.	24265 <i>Acanthiza uropygialis</i> (Chestnut-rumped Thornbill)			
7.	25536 <i>Accipiter fasciatus</i> (Brown Goshawk)			
8.	25544 <i>Aegotheles cristatus</i> (Australian Owllet-nightjar)			
9.	24312 <i>Anas gracilis</i> (Grey Teal)			
10.	24316 <i>Anas superciliosa</i> (Pacific Black Duck)			
11.	24561 <i>Anthochaera carunculata</i> (Red Wattlebird)			
12.	24285 <i>Aquila audax</i> (Wedge-tailed Eagle)			
13.	24353 <i>Artamus cyanopterus</i> (Dusky Woodswallow)			
14.	24355 <i>Artamus minor</i> (Little Woodswallow)			
15.	<i>Barnardius zonarius</i>			
16.	24722 <i>Cacatua leadbeateri</i> (Major Mitchell's Cockatoo)			
17.	47909 <i>Cheramoeca leucosterna</i> (White-backed Swallow)			
18.	24431 <i>Chrysococcyx basalis</i> (Horsfield's Bronze Cuckoo)			
19.	24434 <i>Chrysococcyx osculans</i> (Black-eared Cuckoo)			
20.	25675 <i>Colluricincla harmonica</i> (Grey Shrike-thrush)			
21.	25568 <i>Coracina novaehollandiae</i> (Black-faced Cuckoo-shrike)			
22.	24416 <i>Corvus bennetti</i> (Little Crow)			
23.	25592 <i>Corvus coronoides</i> (Australian Raven)			
24.	25593 <i>Corvus orru</i> (Torresian Crow)			
25.	24420 <i>Cracticus nigrogularis</i> (Pied Butcherbird)			
26.	25595 <i>Cracticus tibicen</i> (Australian Magpie)			
27.	25596 <i>Cracticus torquatus</i> (Grey Butcherbird)			
28.	25673 <i>Daphoenositta chrysoptera</i> (Varied Sittella)			
29.	24470 <i>Dromaius novaehollandiae</i> (Emu)			
30.	47937 <i>Euseyornis melanops</i> (Black-fronted Dotterel)			
31.	24651 <i>Eopsaltria australis</i> subsp. <i>griseogularis</i> (Western Yellow Robin)			
32.	24368 <i>Eurostopodus argus</i> (Spotted Nightjar)			
33.	25621 <i>Falco berigora</i> (Brown Falcon)			
34.	25624 <i>Falco peregrinus</i> (Peregrine Falcon)		S	
35.	25530 <i>Gerygone fusca</i> (Western Gerygone)			
36.	24295 <i>Haliastur sphenurus</i> (Whistling Kite)			

Name ID	Species Name	Naturalised	Conservation Code	¹ Endemic To Query Area
37.	47965 <i>Hieraaetus morphnoides</i> (Little Eagle)			
38.	25734 <i>Himantopus himantopus</i> (Black-winged Stilt)			
39.	24367 <i>Lalage tricolor</i> (White-winged Triller)			
40.	24557 <i>Leipoa ocellata</i> (Malleefowl)		T	
41.	25659 <i>Lichenostomus leucotis</i> (White-eared Honeyeater)			
42.	25661 <i>Lichmera indistincta</i> (Brown Honeyeater)			
43.	25651 <i>Malurus lamberti</i> (Variegated Fairy-wren)			
44.	25652 <i>Malurus leucopterus</i> (White-winged Fairy-wren)			
45.	25654 <i>Malurus splendens</i> (Splendid Fairy-wren)			
46.	24583 <i>Manorina flavigula</i> (Yellow-throated Miner)			
47.	25663 <i>Melithreptus brevirostris</i> (Brown-headed Honeyeater)			
48.	24598 <i>Merops ornatus</i> (Rainbow Bee-eater)			
49.	25693 <i>Microeca fascians</i> (Jacky Winter)			
50.	24407 <i>Ocyphaps lophotes</i> (Crested Pigeon)			
51.	24618 <i>Oreocia gutturalis</i> (Crested Bellbird)			
52.	24619 <i>Pachycephala inornata</i> (Gilbert's Whistler)			
53.	25680 <i>Pachycephala rufiventris</i> (Rufous Whistler)			
54.	25682 <i>Pardalotus striatus</i> (Striated Pardalote)			
55.	48061 <i>Petrochelidon nigricans</i> (Tree Martin)			
56.	24659 <i>Petroica goodenovii</i> (Red-capped Robin)			
57.	24409 <i>Phaps chalcoptera</i> (Common Bronzewing)			
58.	25721 <i>Platycercus zonarius</i> (Australian Ringneck, Ring-necked Parrot)			
59.	24750 <i>Platycercus zonarius</i> subsp. <i>semitorquatus</i> (Twenty-eight Parrot)			
60.	25703 <i>Podargus strigoides</i> (Tawny Frogmouth)			
61.	24683 <i>Pomatostomus superciliosus</i> (White-browed Babbler)			
62.	42344 <i>Pumella albifrons</i> (White-fronted Honeyeater)			
63.	24278 <i>Pyrrholaemus brunneus</i> (Redthroat)			
64.	25614 <i>Rhipidura leucophrys</i> (Willie Wagtail)			
65.	30948 <i>Smicrornis brevirostris</i> (Weebill)			
66.	25597 <i>Strepera versicolor</i> (Grey Currawong)			
67.	25705 <i>Tachybaptus novaehollandiae</i> (Australasian Grebe, Black-throated Grebe)			
68.	30870 <i>Taeniopygia guttata</i> (Zebra Finch)			
69.	42351 <i>Todiramphus pyrrhopygius</i> (Red-backed Kingfisher)			

Bryopsid (Moss)

70.	32330 <i>Bryum argenteum</i>			
71.	32380 <i>Gemmabryum pachythecum</i>			
72.	32386 <i>Grimmia laevigata</i>			
73.	32417 <i>Ptychostomum angustifolium</i>			
74.	32438 <i>Syntrichia pagorum</i>			
75.	32444 <i>Tortula atrovirens</i>			

Dicotyledon

76.	3248 <i>Acacia burkittii</i> (Sandhill Wattle)			
77.	36417 <i>Acacia caesaneura</i>			
78.	14619 <i>Acacia dissona</i> var. <i>indoloria</i>		P3	
79.	44473 <i>Acacia haematites</i>		P1	
80.	3389 <i>Acacia intricata</i>			
81.	3524 <i>Acacia rossei</i>			
82.	30717 <i>Acacia</i> sp. Mt Jackson (B. Ryan 176)			
83.	3590 <i>Acacia unifissilis</i>			
84.	1721 <i>Allocasuarina campestris</i>			
85.	12655 <i>Allocasuarina spinosissima</i>			
86.	6565 <i>Alyxia buxifolia</i> (Dysentery Bush)			
87.	2369 <i>Amyema benthamii</i>			
88.	2380 <i>Amyema miquelii</i> (Stalked Mistletoe)			
89.	40903 <i>Androcalva aphrix</i>			
90.	2479 <i>Atriplex stipitata</i> (Mallee Saltbush)			
91.	5349 <i>Baeckea grandibracteata</i>			
92.	32685 <i>Banksia arborea</i> (Yilgarn Dryandra)		P4	
93.	1801 <i>Banksia audax</i>			
94.	1815 <i>Banksia elderiana</i> (Swordfish Banksia)			
95.	4598 <i>Beyeria lechenaultii</i> (Pale Turpentine Bush)			
96.	34259 <i>Beyeria rostellata</i>		P1	
97.	34257 <i>Beyeria sulcata</i> var. <i>sulcata</i>			
98.	4409 <i>Boronia coeruleascens</i>			
99.	11201 <i>Boronia ternata</i> var. <i>ternata</i>			
100.	3722 <i>Bossiaea walkeri</i>			
101.	7871 <i>Brachyscome ciliaris</i>			
102.	3000 <i>Brassica tournefortii</i> (Mediterranean Turnip)	Y		
103.	40824 <i>Calandrinia sculpta</i>			

Name ID	Species Name	Naturalised	Conservation Code	¹ Endemic To Query Area
104.	5466 <i>Calytrix merrelliana</i>			
105.	5476 <i>Calytrix sapphirina</i>			
106.	3008 <i>Carrichtera annua</i> (Ward's Weed)	Y		
107.	7911 <i>Carthamus lanatus</i> (Saffron Thistle)	Y		
108.	15130 <i>Chamelaucium pauciflorum</i> subsp. <i>pauciflorum</i>			
109.	42180 <i>Chamelaucium</i> sp. <i>Bendering</i> (T.J. Alford 110)			
110.	40927 <i>Commersonia magniflora</i> subsp. <i>oblongifolia</i>			
111.	7951 <i>Cratystylis subspinescens</i> (Australian Sage, Spiny Grey Bush)			
112.	6751 <i>Cyanostegia microphylla</i> (Tinsel Flower)			
113.	7449 <i>Dampiera juncea</i> (Rush-like Dampiera)			
114.	3802 <i>Daviesia croniniana</i>			
115.	16581 <i>Daviesia intricata</i> subsp. <i>xiphophylla</i>			
116.	3821 <i>Daviesia microphylla</i>			
117.	3823 <i>Daviesia nematophylla</i>			
118.	16591 <i>Daviesia scoparia</i>			
119.	19854 <i>Dillwynia</i> sp. <i>Coolgardie</i> (V.E. Sands 637.3.1)			
120.	4766 <i>Dodonaea inaequifolia</i>			
121.	11247 <i>Dodonaea viscosa</i> subsp. <i>angustissima</i>			
122.	<i>Drosera</i> sp.			
123.	4459 <i>Drummondita hassellii</i>			
124.	6966 <i>Duboisia hopwoodii</i> (Pituri, Kundugu)			
125.	7180 <i>Eremophila alternifolia</i> (Poverty Bush)			
126.	7189 <i>Eremophila clarkii</i> (Turpentine Bush)			
127.	14895 <i>Eremophila decipiens</i> subsp. <i>decipiens</i>			
128.	7211 <i>Eremophila georgei</i>			
129.	7226 <i>Eremophila ionantha</i> (Violet-flowered Eremophila)			
130.	16363 <i>Eremophila maculata</i> subsp. <i>brevifolia</i> (Native Fuchsia)			
131.	15003 <i>Eremophila oldfieldii</i> subsp. <i>angustifolia</i>			
132.	7267 <i>Eremophila scoparia</i> (Broom Bush)			
133.	14377 <i>Erymophyllum ramosum</i> subsp. <i>ramosum</i>			
134.	14300 <i>Eucalyptus celastroides</i> subsp. <i>celastroides</i> (Mirret)			
135.	5607 <i>Eucalyptus corrugata</i> (Rough-fruited Mallee)			
136.	5701 <i>Eucalyptus longicornis</i> (Red Morrel, Moril)			
137.	5742 <i>Eucalyptus petraea</i> (Granite Rock Box)			
138.	5761 <i>Eucalyptus rigidula</i> (Stiff-leaved Mallee)			
139.	12693 <i>Eucalyptus salicola</i> (Salt Gum)			
140.	5766 <i>Eucalyptus salmonophloia</i> (Salmon Gum, Wurak)			
141.	5767 <i>Eucalyptus salubris</i> (Gimlet)			
142.	5802 <i>Eucalyptus yilgarnensis</i> (Yorrell)			
143.	16722 <i>Euryomyrtus maidenii</i>			
144.	19292 <i>Eutaxia lasiophylla</i>			
145.	10977 <i>Exocarpos aphyllus</i> (Leafless Ballart)			
146.	5197 <i>Frankenia desertorum</i>			
147.	5210 <i>Frankenia punctata</i>			
148.	5212 <i>Frankenia setosa</i> (Bristly Frankenia)			
149.	29285 <i>Gompholobium cinereum</i>		P3	
150.	10777 <i>Gompholobium gompholobioides</i>			
151.	1949 <i>Grevillea acuaría</i>			
152.	1971 <i>Grevillea cagiana</i> (Red Toothbrushes)			
153.	8830 <i>Grevillea ceratocarpa</i>			
154.	13453 <i>Grevillea didymobotrya</i> subsp. <i>didymobotrya</i>			
155.	19314 <i>Grevillea hookeriana</i> subsp. <i>apiciloba</i>			
156.	15844 <i>Grevillea juncifolia</i> subsp. <i>temulenta</i>			
157.	15766 <i>Grevillea shuttleworthiana</i> subsp. <i>obovata</i>			
158.	2104 <i>Grevillea teretifolia</i> (Round Leaf Grevillea)			
159.	15982 <i>Grevillea zygoloba</i>			
160.	2196 <i>Hakea preissii</i> (Needle Tree, Dandjin)			
161.	6684 <i>Halgania andromedifolia</i>			
162.	6691 <i>Halgania integerrima</i>			
163.	6848 <i>Hemigenia dielsii</i>			
164.	5124 <i>Hibbertia exasperata</i>			
165.	5130 <i>Hibbertia glomerosa</i> (Guinea-flower)			
166.	19690 <i>Hibbertia lepidocalyx</i> subsp. <i>tuberculata</i>		P3	
167.	12007 <i>Hybanthus floribundus</i> subsp. <i>floribundus</i>			
168.	14779 <i>Jacksonia arida</i>			
169.	13284 <i>Lawrencella rosea</i>			
170.	19726 <i>Leiocarpa semicalva</i>			
171.	19727 <i>Leiocarpa semicalva</i> subsp. <i>semicalva</i>			
172.	3028 <i>Lepidium genistoides</i>		P3	
173.	16049 <i>Leucopogon</i> sp. <i>Clyde Hill</i> (M.A. Burgman 1207)			

Name ID	Species Name	Naturalised	Conservation Code	¹ Endemic To Query Area
174.	2396 <i>Lysiana casuarinae</i>			
175.	34736 <i>Lysinema pentapetalum</i>			
176.	2533 <i>Maireana amoena</i>			
177.	2556 <i>Maireana planifolia</i> (Low Bluebush)			
178.	2566 <i>Maireana thesioides</i> (Lax Bluebush)			
179.	19486 <i>Melaleuca hamata</i>			
180.	5929 <i>Melaleuca leiocarpa</i>			
181.	9187 <i>Micromyrtus erichsenii</i>			
182.	4089 <i>Mirbelia depressa</i>			
183.	4099 <i>Mirbelia seorsifolia</i>			
184.	4104 <i>Mirbelia trichocalyx</i>			
185.	6978 <i>Nicotiana rotundifolia</i> (Round-leaved Tobacco)			
186.	12734 <i>Olearia humilis</i>			
187.	8145 <i>Olearia pimeleoides</i> (Pimelea Daisybush, Burrobunga)			
188.	30375 <i>Oxalis exilis</i>			
189.	2274 <i>Persoonia saundersiana</i>			
190.	4501 <i>Phebalium lepidotum</i>			
191.	16556 <i>Phebalium megaphyllum</i>			
192.	18537 <i>Philothea brucei</i> subsp. <i>brucei</i>			
193.	16177 <i>Phyllangium paradoxum</i>			
194.	11227 <i>Pimelea brevifolia</i> subsp. <i>modesta</i>			
195.	11910 <i>Pimelea suaveolens</i> subsp. <i>flava</i>			
196.	6812 <i>Pityrodia lepidota</i>			
197.	7299 <i>Plantago debilis</i>			
198.	8181 <i>Podolepis tepperi</i>			
199.	15822 <i>Prostanthera althoferi</i> subsp. <i>althoferi</i>			
200.	6916 <i>Prostanthera grylloana</i>			
201.	12120 <i>Prostanthera semiteres</i> subsp. <i>semiteres</i>			
202.	2732 <i>Ptilotus holosericeus</i>			
203.	2581 <i>Rhagodia drummondii</i>			
204.	13306 <i>Rhodanthe battii</i>			
205.	13241 <i>Rhodanthe chlorocephala</i> subsp. <i>rosea</i>			
206.	13234 <i>Rhodanthe manglesii</i>			
207.	13249 <i>Rhodanthe oppositifolia</i> subsp. <i>oppositifolia</i>			
208.	6018 <i>Rinzia carnos</i> (Fleshy-leaved Rinzia)			
209.	48882 <i>Roepera apiculata</i>			
210.	48898 <i>Roepera ovata</i>			
211.	7644 <i>Scaevola spinescens</i> (Currant Bush, Maroon)			
212.	8216 <i>Senecio picridioides</i>			
213.	12276 <i>Senna artemisioides</i> subsp. <i>filifolia</i>			
214.	46824 <i>Seringia velutina</i> (Velvet firebush)			
215.	7018 <i>Solanum lasiophyllum</i> (Flannel Bush, Mindjulu)			
216.	7026 <i>Solanum orbiculatum</i> (Wild Tomato)			
217.	8231 <i>Sonchus oleraceus</i> (Common Sowthistle)	Y		
218.	14797 <i>Stenanthemum newbeyi</i>		P3	
219.	33018 <i>Styphelia</i> sp. <i>Bullfinch</i> (M. Hislop 3574)		P3	
220.	12355 <i>Swainsona affinis</i>			
221.	4257 <i>Templetonia smithiana</i>			
222.	20761 <i>Tetratheca erubescens</i>		T	Y
223.	48313 <i>Teucrium disjunctum</i>			
224.	6058 <i>Thryptomene kochii</i>			
225.	12652 <i>Trichanthodium skirrophorum</i>			
226.	16986 <i>Trymalium myrtillus</i> subsp. <i>myrtillus</i>			
227.	38388 <i>Ursinia anthemoides</i> subsp. <i>anthemoides</i>	Y		
228.	6071 <i>Verticordia brachypoda</i>			
229.	6073 <i>Verticordia chrysantha</i>			
230.	6087 <i>Verticordia helmsii</i>			
231.	12432 <i>Verticordia inclusa</i>			
232.	12442 <i>Verticordia mitodes</i>		P3	
233.	6113 <i>Verticordia pritzelii</i> (Pritzel's Featherflower)			
234.	12454 <i>Verticordia pulchella</i>		P2	
235.	6114 <i>Verticordia rennieana</i>			
236.	15267 <i>Verticordia roei</i> subsp. <i>roei</i>			
237.	48629 <i>Verticordia</i> sp. <i>Koolyanobbing</i> (B.H. Smith 1457)		P1	
238.	15613 <i>Verticordia tumida</i> subsp. <i>tumida</i>			
239.	8275 <i>Waitzia acuminata</i> (Orange Immortelle)			
240.	34602 <i>Westringia cephalantha</i> var. <i>cephalantha</i>			

Gymnosperm

241. 8466 *Callitris columellaris* (White Cypress Pine)

Name ID	Species Name	Naturalised	Conservation Code	¹ Endemic To Query Area
Hepatic (Liverwort)				
242.	<i>Riccia limbata</i>			
243.	<i>Riccia</i> sp.			
Invertebrate				
244.	33902 <i>Aganippe castellum</i> (Tree-stem Trapdoor Spider)		P4	
245.	<i>Atelomastix bamfordi</i>			
246.	<i>Cercophonius sulcatus</i>			
247.	<i>Cethegus fugax</i>			
248.	<i>Latrodectus hasseltii</i>			
249.	<i>Scolopendra laeta</i>			
Lichen				
250.	41286 <i>Flavoparmelia virensica</i>			
251.	30656 <i>Xanthoparmelia curmowiae</i>			Y
252.	28162 <i>Xanthoparmelia notata</i>			
Mammal				
253.	24161 <i>Bettongia lesueur</i> subsp. <i>graii</i> (Boodie (inland), Burrowing Bettong (inland))		X	
254.	24086 <i>Cercartetus concinnus</i> (Western Pygmy-possum, Mundarda)			
255.	24186 <i>Chalinolobus gouldii</i> (Gould's Wattled Bat)			
256.	24187 <i>Chalinolobus morio</i> (Chocolate Wattled Bat)			
257.	24223 <i>Mus musculus</i> (House Mouse)	Y		
258.	24194 <i>Nyctophilus geoffroyi</i> (Lesser Long-eared Bat)			
259.	24085 <i>Oryctolagus cuniculus</i> (Rabbit)	Y		
260.	24232 <i>Pseudomys bolami</i> (Bolam's Mouse)			
261.	24237 <i>Pseudomys hermannsburgensis</i> (Sandy Inland Mouse)			
262.	24199 <i>Scotorepens balstoni</i> (Inland Broad-nosed Bat)			
263.	24109 <i>Sminthopsis dolichura</i> (Little long-tailed Dunnart)			
264.	24202 <i>Vespadelus baverstocki</i> (Inland Forest Bat)			
265.	24206 <i>Vespadelus regulus</i> (Southern Forest Bat)			
Monocotyledon				
266.	38501 <i>Anthosachne scabra</i>			
267.	207 <i>Aristida contorta</i> (Bunched Kerosene Grass)			
268.	17232 <i>Austrostipa blackii</i>		P3	
269.	17237 <i>Austrostipa elegantissima</i>			
270.	17246 <i>Austrostipa nitida</i>			
271.	17251 <i>Austrostipa scabra</i>			
272.	249 <i>Bromus diandrus</i> (Great Brome)	Y		
273.	46535 <i>Caladenia incensum</i> (Glistening spider orchid)			
274.	19219 <i>Caladenia mesocera</i>			
275.	30797 <i>Caladenia saxicola</i>			
276.	1617 <i>Caladenia sigmoidea</i>			
277.	1422 <i>Conostylis argentea</i>			
278.	15400 <i>Cyanicula amplexans</i>			
279.	349 <i>Ehrharta longiflora</i> (Annual Veldt Grass)	Y		
280.	20019 <i>Lachnagrostis filiformis</i>			
281.	31770 <i>Lepidosperma ferricola</i>		P3	
282.	31755 <i>Lepidosperma ferriculmen</i>		P1	
283.	43765 <i>Pauridia glabella</i> var. <i>glabella</i>			
284.	40424 <i>Pentameris airoides</i> subsp. <i>airoides</i>	Y		
285.	1682 <i>Prasophyllum sargentii</i>			
286.	10878 <i>Pterostylis insectifera</i>			
287.	48481 <i>Pterostylis tryphera</i>			
288.	40425 <i>Rytidosperma caespitosum</i>			
289.	1338 <i>Thysanotus manglesianus</i> (Fringed Lily)			
290.	11018 <i>Vulpia muralis</i>	Y		
291.	1403 <i>Wurmbea tenella</i> (Eight Nancy)			
292.	1248 <i>Xerolirion divaricata</i> (Basil's Asparagus)			
Reptile				
293.	42381 <i>Brachyurophis semifasciatus</i> (Southern Shovel-nosed Snake)			
294.	25456 <i>Crenadactylus ocellatus</i> (Clawless Gecko)			
295.	30893 <i>Cryptoblepharus buchananii</i>			
296.	24871 <i>Ctenophorus cristatus</i> (Bicycle Dragon)			
297.	24882 <i>Ctenophorus nuchalis</i> (Central Netted Dragon)			
298.	24886 <i>Ctenophorus reticulatus</i> (Western Netted Dragon)			
299.	24889 <i>Ctenophorus scutulatus</i> (Lozenge-marked Dragon)			
300.	25465 <i>Ctenotus uber</i> (Spotted Ctenotus)			
301.	25080 <i>Ctenotus uber</i> subsp. <i>uber</i> (Spotted Ctenotus)			
302.	25466 <i>Cyclodomorphus melanops</i> (Slender Blue-tongue)			
303.	24995 <i>Delma australis</i>			

Name ID	Species Name	Naturalised	Conservation Code	¹ Endemic To Query Area
304.	25469 <i>Diplodactylus granariensis</i>			
305.	24940 <i>Diplodactylus pulcher</i>			
306.	25094 <i>Egernia formosa</i>			
307.	25109 <i>Eremiascincus richardsonii</i> (Broad-banded Sand Swimmer)			
308.	25301 <i>Furina ornata</i> (Moon Snake)			
309.	24959 <i>Gehyra variegata</i>			
310.	25474 <i>Hemiergis initialis</i>			
311.	42408 <i>Hesperoedura reticulata</i>			
312.	24961 <i>Heteronotia binoei</i> (Bynoe's Gecko)			
313.	<i>Lerista kingi</i>			
314.	30927 <i>Lerista kingi</i>			
315.	25482 <i>Lerista macropisthopus</i>			
316.	42411 <i>Lerista timida</i>			
317.	25005 <i>Lialis burtonis</i>			
318.	30935 <i>Lucasium maini</i>			
319.	25184 <i>Menetia greyii</i>			
320.	25190 <i>Morethia butleri</i>			
321.	25254 <i>Parasuta monachus</i>			
322.	25510 <i>Pogona minor</i> (Dwarf Bearded Dragon)			
323.	24907 <i>Pogona minor subsp. minor</i> (Dwarf Bearded Dragon)			
324.	25261 <i>Pseudechis australis</i> (Mulga Snake)			
325.	25263 <i>Pseudonaja modesta</i> (Ringed Brown Snake)			
326.	25266 <i>Simoselaps bertholdi</i> (Jan's Banded Snake)			
327.	25269 <i>Suta fasciata</i> (Rosen's Snake)			
328.	24983 <i>Underwoodisaurus milii</i> (Barking Gecko)			
329.	25216 <i>Varanus giganteus</i> (Perentie)			
330.	25526 <i>Varanus tristis</i> (Racehorse Monitor)			

Conservation Codes

T - Rare or likely to become extinct
X - Presumed extinct
IA - Protected under international agreement
S - Other specially protected fauna
1 - Priority 1
2 - Priority 2
3 - Priority 3
4 - Priority 4
5 - Priority 5

¹ For NatureMap's purposes, species flagged as endemic are those whose records are wholly contained within the search area. Note that only those records complying with the search criterion are included in the calculation. For example, if you limit records to those from a specific datasource, only records from that datasource are used to determine if a species is restricted to the query area.



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.

Information on the coverage of this report and qualifications on data supporting this report are contained in the caveat at the end of the report.

Information is available about [Environment Assessments](#) and the EPBC Act including significance guidelines, forms and application process details.

Report created: 30/08/20 14:26:21

[Summary](#)

[Details](#)

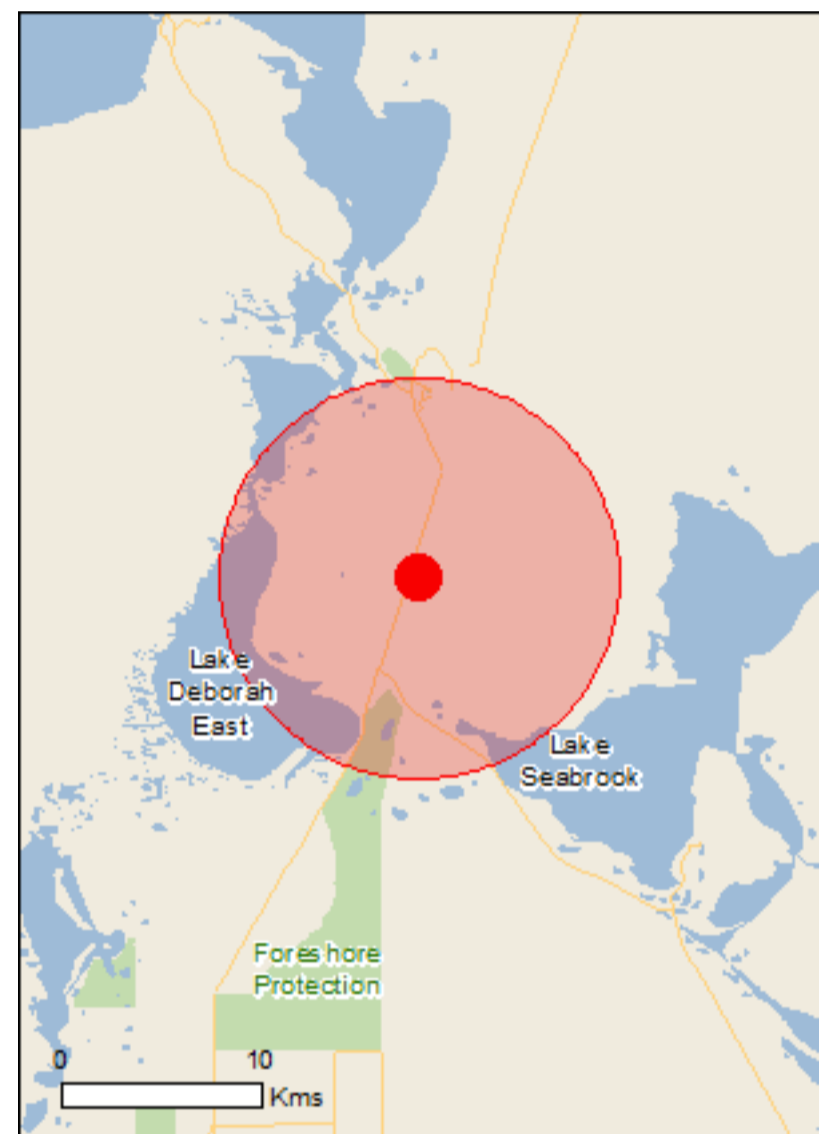
[Matters of NES](#)

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

[Extra Information](#)

[Caveat](#)

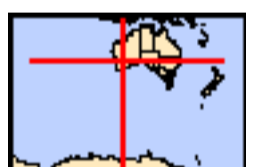
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[Coordinates](#)

Buffer: 10.0Km



Summary

Matters of National Environmental 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:	None
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	None
Listed Threatened Species:	11
Listed Migratory Species:	6

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 <http://www.environment.gov.au/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 Land:	1
Commonwealth Heritage Places:	None
Listed Marine Species:	11
Whales and Other Cetaceans:	None
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	None

Extra Information

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

State and Territory Reserves:	None
Regional Forest Agreements:	None
Invasive Species:	9
Nationally Important Wetlands:	None
Key Ecological Features (Marine)	None

Details

Matters of National Environmental Significance

Listed Threatened Species		[Resource Information]
Name	Status	Type of Presence
Birds		
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area
Falco hypoleucos Grey Falcon [929]	Vulnerable	Species or species habitat may occur within area
Leipoa ocellata Malleefowl [934]	Vulnerable	Species or species habitat known to occur within area
Mammals		
Dasyurus geoffroii Chuditch, Western Quoll [330]	Vulnerable	Species or species habitat may occur within area
Plants		
Acacia lobulata Chiddarcooping Wattle [55567]	Endangered	Species or species habitat may occur within area
Eremophila virens Campion Eremophila, Green-flowered Emu bush [21433]	Endangered	Species or species habitat may occur within area
Eremophila viscida Varnish Bush [2394]	Endangered	Species or species habitat may occur within area
Gastrolobium graniticum Granite Poison [14872]	Endangered	Species or species habitat may occur within area
Ricinocarpos brevis [82879]	Endangered	Species or species habitat known to occur within area
Roycea pycnophylloides Saltmat [21161]	Endangered	Species or species habitat may occur within area
Tetratheca paynterae Paynter's Tetratheca [66451]	Endangered	Species or species habitat may occur within area

Listed Migratory Species		[Resource Information]
Name	Threatened	Type of Presence
* Species is listed under a different scientific name on the EPBC Act - Threatened Species list.		

Name	Threatened	Type of Presence
Migratory Marine Birds		
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Migratory Terrestrial Species		
Motacilla cinerea Grey Wagtail [642]		Species or species habitat may occur within area
Migratory Wetlands Species		
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat may occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat may occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area

Other Matters Protected by the EPBC Act

Commonwealth Land [\[Resource Information \]](#)

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.

Name
Commonwealth Land -

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

* Species is listed under a different scientific name on the EPBC Act - Threatened Species list.

Name	Threatened	Type of Presence
Birds		
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat may occur within area
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Ardea alba Great Egret, White Egret [59541]		Species or species habitat likely to occur within area
Ardea ibis Cattle Egret [59542]		Species or species habitat may occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat may occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within

Name	Threatened	Type of Presence area
Chrysococcyx osculans Black-eared Cuckoo [705]		Species or species habitat known to occur within area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area
Motacilla cinerea Grey Wagtail [642]		Species or species habitat may occur within area
Thinornis rubricollis Hooded Plover [59510]		Species or species habitat may occur within area

Extra Information

Invasive Species [\[Resource Information \]](#)

Weeds reported here are the 20 species of national significance (WoNS), along with other introduced plants that are considered by the States and Territories to pose a particularly significant threat to biodiversity. The following feral animals are reported: Goat, Red Fox, Cat, Rabbit, Pig, Water Buffalo and Cane Toad. Maps from Landscape Health Project, National Land and Water Resources Audit, 2001.

Name	Status	Type of Presence
Birds		
Columba livia Rock Pigeon, Rock Dove, Domestic Pigeon [803]		Species or species habitat likely to occur within area
Mammals		
Canis lupus familiaris Domestic Dog [82654]		Species or species habitat likely to occur within area
Capra hircus Goat [2]		Species or species habitat likely to occur within area
Equus asinus Donkey, Ass [4]		Species or species habitat likely to occur within area
Equus caballus Horse [5]		Species or species habitat likely to occur within area
Felis catus Cat, House Cat, Domestic Cat [19]		Species or species habitat likely to occur within area
Oryctolagus cuniculus Rabbit, European Rabbit [128]		Species or species habitat likely to occur within area
Vulpes vulpes Red Fox, Fox [18]		Species or species habitat likely to occur within area
Plants		
Carrichtera annua Ward's Weed [9511]		Species or species habitat likely to occur within area

Caveat

The information presented in this report has been provided by a range of data sources as acknowledged at the end of the report.

This report is designed to assist in identifying the locations of places which may be relevant in determining obligations under the Environment Protection and Biodiversity Conservation Act 1999. It holds mapped locations of World and National Heritage properties, Wetlands of International and National Importance, Commonwealth and State/Territory reserves, listed threatened, migratory and marine species and listed threatened ecological communities. Mapping of Commonwealth land is not complete at this stage. Maps have been collated from a range of sources at various resolutions.

Not all species listed under the EPBC Act have been mapped (see below) and therefore a report is a general guide only. Where available data supports mapping, the type of presence that can be determined from the data is indicated in general terms. People using this information in making a referral may need to consider the qualifications below and may need to seek and consider other information sources.

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.

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

Where very little information is available for 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 reliable distribution mapping methods are used to update these distributions as time permits.

Only selected species covered by the following provisions of the EPBC Act have been mapped:

- migratory and
- marine

The following species and ecological communities have not been mapped and do not appear in reports produced from this database:

- threatened species listed as extinct or considered as vagrants
- some species and ecological communities that have only recently been listed
- some terrestrial species that overfly the Commonwealth marine area
- migratory species that are very widespread, vagrant, or only occur in small numbers

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

- non-threatened seabirds which have only been mapped for recorded breeding sites
- seals which have only been mapped for breeding sites near the Australian continent

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

Coordinates

-30.88879 119.52115

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.

Windarling Powerline

Created By Guest user on 30/08/2020

Current Names Only Yes
Core Datasets Only Yes
Method 'By Circle'
Centre 119° 17' 12" E, 30° 01' 38" S
Buffer 10km
Group By Species Group

Species Group	Species	Records
Amphibian	1	1
Bird	73	356
Dicotyledon	176	703
Gymnosperm	2	3
Invertebrate	5	33
Mammal	11	91
Monocotyledon	23	63
Pteridophyte (Fern)	4	22
Reptile	29	87
TOTAL	324	1359

Name ID	Species Name	Naturalised	Conservation Code	Endemic To Query Area
Amphibian				
1.	25425 <i>Neobatrachus kunapalari</i> (Kunapalari Frog)			
Bird				
2.	24559 <i>Acanthagenys rufogularis</i> (Spiny-cheeked Honeyeater)			
3.	24260 <i>Acanthiza apicalis</i> (Broad-tailed Thornbill, Inland Thornbill)			
4.	24261 <i>Acanthiza chrysorrhoa</i> (Yellow-rumped Thornbill)			
5.	24264 <i>Acanthiza robustirostris</i> (Slaty-backed Thornbill)			
6.	24265 <i>Acanthiza uropygialis</i> (Chestnut-rumped Thornbill)			
7.	25535 <i>Accipiter cirrocephalus</i> (Collared Sparrowhawk)			
8.	25536 <i>Accipiter fasciatus</i> (Brown Goshawk)			
9.	24561 <i>Anthochaera carunculata</i> (Red Wattlebird)			
10.	25528 <i>Aphelocephala leucopsis</i> (Southern Whiteface)			
11.	24266 <i>Aphelocephala leucopsis</i> subsp. <i>castaneiventris</i> (Southern Whiteface)			
12.	24285 <i>Aquila audax</i> (Wedge-tailed Eagle)			
13.	24353 <i>Artamus cyanopterus</i> (Dusky Woodswallow)			
14.	24355 <i>Artamus minor</i> (Little Woodswallow)			
15.	<i>Barnardius zonarius</i>			
16.	25715 <i>Cacatua roseicapilla</i> (Galah)			
17.	42307 <i>Cacomantis pallidus</i> (Pallid Cuckoo)			
18.	24269 <i>Calamanthus campestris</i> (Rufous Fieldwren)			
19.	25581 <i>Climacteris affinis</i> (White-browed Treecreeper)			
20.	25675 <i>Colluricincla harmonica</i> (Grey Shrike-thrush)			
21.	24613 <i>Colluricincla harmonica</i> subsp. <i>rufiventris</i> (Grey Shrike-thrush)			
22.	24361 <i>Coracina maxima</i> (Ground Cuckoo-shrike)			
23.	25568 <i>Coracina novaehollandiae</i> (Black-faced Cuckoo-shrike)			
24.	24416 <i>Corvus bennetti</i> (Little Crow)			
25.	25592 <i>Corvus coronoides</i> (Australian Raven)			
26.	24417 <i>Corvus coronoides</i> subsp. <i>perplexus</i> (Australian Raven)			
27.	24420 <i>Cracticus nigrogularis</i> (Pied Butcherbird)			
28.	25595 <i>Cracticus tibicen</i> (Australian Magpie)			
29.	24422 <i>Cracticus tibicen</i> subsp. <i>dorsalis</i> (White-backed Magpie)			
30.	25596 <i>Cracticus torquatus</i> (Grey Butcherbird)			
31.	24424 <i>Cracticus torquatus</i> subsp. <i>torquatus</i> (Grey Butcherbird)			
32.	25607 <i>Dicaeum hirundinaceum</i> (Mistletoebird)			
33.	24470 <i>Dromaius novaehollandiae</i> (Emu)			
34.	<i>Eolophus roseicapillus</i>			
35.	25621 <i>Falco berigora</i> (Brown Falcon)			
36.	24471 <i>Falco berigora</i> subsp. <i>berigora</i> (Brown Falcon)			
37.	25622 <i>Falco cenchroides</i> (Australian Kestrel, Nankeen Kestrel)			
38.	24472 <i>Falco cenchroides</i> subsp. <i>cenchroides</i> (Australian Kestrel, Nankeen Kestrel)			

Name ID	Species Name	Naturalised	Conservation Code	¹ Endemic To Query Area
39.	25624 <i>Falco peregrinus</i> (Peregrine Falcon)		S	
40.	25530 <i>Gerygone fusca</i> (Western Gerygone)			
41.	24557 <i>Leipoa ocellata</i> (Malleefowl)		T	
42.	25659 <i>Lichenostomus leucotis</i> (White-eared Honeyeater)			
43.	24576 <i>Lichenostomus leucotis</i> subsp. <i>novaenorciae</i> (White-eared Honeyeater)			
44.	24544 <i>Malurus lamberti</i> subsp. <i>assimilis</i> (Variegated Fairy-wren)			
45.	25654 <i>Malurus splendens</i> (Splendid Fairy-wren)			
46.	24552 <i>Malurus splendens</i> subsp. <i>splendens</i> (Splendid Fairy-wren)			
47.	24583 <i>Manorina flavigula</i> (Yellow-throated Miner)			
48.	25663 <i>Melithreptus brevirostris</i> (Brown-headed Honeyeater)			
49.	24598 <i>Merops ornatus</i> (Rainbow Bee-eater)			
50.	25693 <i>Microeca fascians</i> (Jacky Winter)			
51.	24618 <i>Oreoica gutturalis</i> (Crested Bellbird)			
52.	25680 <i>Pachycephala rufiventris</i> (Rufous Whistler)			
53.	24624 <i>Pachycephala rufiventris</i> subsp. <i>rufiventris</i> (Rufous Whistler)			
54.	25681 <i>Pardalotus punctatus</i> (Spotted Pardalote)			
55.	25682 <i>Pardalotus striatus</i> (Striated Pardalote)			
56.	24630 <i>Pardalotus striatus</i> subsp. <i>westraliensis</i> (Striated Pardalote)			
57.	48060 <i>Petrochelidon ariel</i> (Fairy Martin)			
58.	48061 <i>Petrochelidon nigricans</i> (Tree Martin)			
59.	24659 <i>Petroica goodenovii</i> (Red-capped Robin)			
60.	24409 <i>Phaps chalcoptera</i> (Common Bronzewing)			
61.	24748 <i>Platycercus varius</i> (Mulga Parrot)			
62.	24751 <i>Platycercus zonarius</i> subsp. <i>zonarius</i> (Port Lincoln Parrot)			
63.	24679 <i>Podargus strigoides</i> subsp. <i>brachypterus</i> (Tawny Frogmouth)			
64.	25722 <i>Polytelis anthopeplus</i> (Regent Parrot)			
65.	24683 <i>Pomatostomus superciliosus</i> (White-browed Babbler)			
66.	24278 <i>Pyrrholaemus brunneus</i> (Redthroat)			
67.	48096 <i>Rhipidura albiscapa</i> (Grey Fantail)			
68.	25614 <i>Rhipidura leucophrys</i> (Willie Wagtail)			
69.	30948 <i>Smicronis brevirostris</i> (Weebill)			
70.	25597 <i>Strepera versicolor</i> (Grey Currawong)			
71.	24426 <i>Strepera versicolor</i> subsp. <i>plumbea</i> (Grey Currawong)			
72.	30870 <i>Taeniopygia guttata</i> (Zebra Finch)			
73.	42351 <i>Todiramphus pyrrhopygius</i> (Red-backed Kingfisher)			
74.	24851 <i>Turnix velox</i> (Little Button-quail)			

Dicotyledon

75.	4889 <i>Abutilon cryptopetalum</i>			
76.	3200 <i>Acacia acuminata</i> (Jam, Mangard)			
77.	3216 <i>Acacia andrewsii</i>			
78.	3217 <i>Acacia aneura</i> (Mulga, Wanari)			
79.	3226 <i>Acacia assimilis</i>			
80.	15467 <i>Acacia assimilis</i> subsp. <i>assimilis</i>			
81.	36417 <i>Acacia caesaneura</i>			
82.	23977 <i>Acacia cockertoniana</i>			
83.	3269 <i>Acacia coolgardiensis</i> (Spinifex Wattle)			
84.	32118 <i>Acacia effusifolia</i>			
85.	3324 <i>Acacia erinacea</i>			
86.	3507 <i>Acacia quadrimarginea</i>			
87.	3510 <i>Acacia ramulosa</i> (Horse Mulga)			
88.	19499 <i>Acacia ramulosa</i> var. <i>ramulosa</i>			
89.	30717 <i>Acacia</i> sp. Mt Jackson (B. Ryan 176)			
90.	3577 <i>Acacia tetragonophylla</i> (Kurara, Wakalpuka)			
91.	7817 <i>Actinobole uliginosum</i> (Flannel Cudweed)			
92.	18163 <i>Actinotus</i> sp. Comet Vale (A. V. Milewski AVM 1093)			
93.	1720 <i>Allocasuarina acutivalvis</i>			
94.	13904 <i>Allocasuarina acutivalvis</i> subsp. <i>acutivalvis</i>			
95.	13905 <i>Allocasuarina acutivalvis</i> subsp. <i>prinsepiana</i>			
96.	1725 <i>Allocasuarina dielsiana</i> (Northern Sheoak)			
97.	13906 <i>Allocasuarina eriochlamys</i> subsp. <i>eriochlamys</i>			
98.	6565 <i>Alyxia buxifolia</i> (Dysentery Bush)			
99.	2373 <i>Amyema gibberula</i>			
100.	7836 <i>Angianthus tomentosus</i> (Camel-grass)			
101.	2469 <i>Atriplex nummularia</i> (Old Man Saltbush)			
102.	11791 <i>Atriplex quadrivalvata</i> var. <i>quadrivalvata</i>			
103.	32685 <i>Banksia arborea</i> (Yilgarn Dryandra)		P4	
104.	7852 <i>Bellida graminea</i> (Rosy Bellida)			
105.	4999 <i>Brachychiton gregorii</i> (Desert Kurrajong, Ngalta)			
106.	7871 <i>Brachyscome ciliaris</i>			
107.	7880 <i>Brachyscome lineariloba</i>			

Name ID	Species Name	Naturalised	Conservation Code	¹ Endemic To Query Area
108.	7882 <i>Brachyscome perpusilla</i>			
109.	7883 <i>Brachyscome pusilla</i>			
110.	44184 <i>Calandrinia baccata</i>			
111.	7903 <i>Calotis hispidula</i> (Bindy Eye)			
112.	16492 <i>Calycopeplus paucifolius</i>			
113.	12658 <i>Casuarina pauper</i> (Black Oak)			
114.	4555 <i>Comesperma integerrimum</i>			
115.	7943 <i>Cotula australis</i> (Common Cotula)			
116.	11709 <i>Crassula colorata</i> var. <i>acuminata</i>			
117.	11563 <i>Crassula colorata</i> var. <i>colorata</i>			
118.	11349 <i>Crassula decumbens</i> var. <i>decumbens</i>			
119.	3139 <i>Crassula exserta</i>			
120.	6663 <i>Cuscuta epithymum</i> (Lesser Dodder, Greater Dodder)	Y		
121.	6218 <i>Daucus glochidiatus</i> (Australian Carrot)			
122.	4766 <i>Dodonaea inaequifolia</i>			
123.	4769 <i>Dodonaea lobulata</i> (Bead Hopbush)			
124.	4779 <i>Dodonaea rigida</i>			
125.	4782 <i>Dodonaea viscosa</i> (Sticky Hopbush)			
126.	11674 <i>Dodonaea viscosa</i> subsp. <i>mucronata</i>			
127.	11202 <i>Dodonaea viscosa</i> subsp. <i>spatulata</i> (Sticky Hop-bush)			
128.	33479 <i>Dysphania melanocarpa</i> (Black Crumbweed)			
129.	33597 <i>Dysphania melanocarpa</i> forma <i>melanocarpa</i> (Black Goosefoot)			
130.	2511 <i>Enchylaena tomentosa</i> (Barrier Saltbush)			
131.	12064 <i>Enchylaena tomentosa</i> var. <i>tomentosa</i> (Barrier Saltbush)			
132.	13807 <i>Eremophila caperata</i>			
133.	7189 <i>Eremophila clarkei</i> (Turpentine Bush)			
134.	15052 <i>Eremophila forrestii</i> subsp. <i>forrestii</i>			
135.	14191 <i>Eremophila glabra</i> subsp. <i>tomentosa</i>			
136.	7230 <i>Eremophila latrobei</i> (Warty Fuchsia Bush, Mintjingka)			
137.	17576 <i>Eremophila latrobei</i> subsp. <i>latrobei</i>			
138.	7246 <i>Eremophila oldfieldii</i> (Pixie Bush)			
139.	15003 <i>Eremophila oldfieldii</i> subsp. <i>angustifolia</i>			
140.	18570 <i>Eremophila oppositifolia</i> subsp. <i>angustifolia</i>			
141.	7250 <i>Eremophila pantonii</i>			
142.	2514 <i>Eriochiton sclerolaenoides</i> (Woolly Bindii)			
143.	4331 <i>Erodium aureum</i>	Y		
144.	4333 <i>Erodium cicutarium</i> (Common Storksbill)	Y		
145.	4334 <i>Erodium cicutarium</i> (Corkscrew)			
146.	4335 <i>Erodium cygnorum</i> (Blue Heronsbill)			
147.	48436 <i>Eucalyptus clelandiorum</i>			
148.	5605 <i>Eucalyptus cornuta</i> (Yate, Yeid)			
149.	13549 <i>Eucalyptus ebbanoensis</i> subsp. <i>ebbanoensis</i>			
150.	5651 <i>Eucalyptus formanii</i>		P4	
151.	5673 <i>Eucalyptus horistes</i>			
152.	13037 <i>Eucalyptus loxophleba</i> subsp. <i>lissophloia</i>			
153.	5726 <i>Eucalyptus oleosa</i> (Giant Mallee)			
154.	5742 <i>Eucalyptus petraea</i> (Granite Rock Box)			
155.	19723 <i>Euryomyrtus patrickiae</i>			
156.	5201 <i>Frankenia georgei</i>		P1	
157.	25797 <i>Galium spurium</i>	Y		
158.	7988 <i>Gnephosis arachnoidea</i> (Cobwebby-headed Gnephosis)			
159.	6159 <i>Gonocarpus nodulosus</i>			
160.	7495 <i>Goodenia berardiana</i>			
161.	7514 <i>Goodenia havilandii</i>			
162.	1998 <i>Grevillea erectiloba</i>		P4	
163.	2000 <i>Grevillea eriobotrya</i> (Woolly Cluster Grevillea)			
164.	2009 <i>Grevillea georgeana</i>		P3	
165.	6180 <i>Haloragis trigonocarpa</i>			
166.	3016 <i>Heliophila pusilla</i>	Y		
167.	5124 <i>Hibbertia exasperata</i>			
168.	8086 <i>Hypochaeris glabra</i> (Smooth Catsear)	Y		
169.	45415 <i>Hysterobaeckea ochropetala</i>			
170.	48650 <i>Hysterobaeckea ochropetala</i> subsp. <i>ochropetala</i>		P1	
171.	8087 <i>Isoetopsis graminifolia</i> (Cushion Grass)			
172.	7397 <i>Isotoma petraea</i> (Rock Isotome, Tundiwari)			
173.	13284 <i>Lawrencella rosea</i>			
174.	12628 <i>Lemooria burkittii</i>			
175.	3033 <i>Lepidium oxytrichum</i>			
176.	16049 <i>Leucopogon</i> sp. <i>Clyde Hill</i> (M.A. Burgman 1207)			
177.	7676 <i>Levenhookia pusilla</i> (Midget Stylewort)			

Name ID	Species Name	Naturalised	Conservation Code	¹ Endemic To Query Area
178.	2538 <i>Maireana carnosa</i> (Cottony Bluebush)			
179.	2543 <i>Maireana eriosphaera</i>			
180.	2544 <i>Maireana georgei</i> (Satiny Bluebush)			
181.	11662 <i>Maireana tomentosa</i> subsp. <i>tomentosa</i>			
182.	5866 <i>Malleostemon tuberculatus</i>			
183.	5929 <i>Melaleuca leiocarpa</i>			
184.	41785 <i>Melichrus</i> sp. <i>Bungalbin Hill (F.H. & M.P. Mollemans 3069)</i>		P3	
185.	8105 <i>Millotia myosotidifolia</i>			
186.	12631 <i>Millotia perpusilla</i>			
187.	4089 <i>Mirbelia depressa</i>			
188.	6976 <i>Nicotiana occidentalis</i> (Native Tobacco)			
189.	8134 <i>Olearia exiguiifolia</i> (Small-leaved Daisy Bush)			
190.	12734 <i>Olearia humilis</i>			
191.	8140 <i>Olearia muelleri</i> (Goldfields Daisy)			
192.	8145 <i>Olearia pimeleoides</i> (Pimelea Daisybush, Burrobunga)			
193.	12670 <i>Parietaria cardiostegia</i>			
194.	18537 <i>Philotheca brucei</i> subsp. <i>brucei</i>			
195.	16833 <i>Philotheca coateana</i>		P3	
196.	18386 <i>Philotheca deserti</i> subsp. <i>brevifolia</i>		P3	
197.	7299 <i>Plantago debilis</i>			
198.	45238 <i>Podolepis aristata</i> subsp. <i>affinis</i>			
199.	8177 <i>Podolepis lessonii</i>			
200.	8181 <i>Podolepis tepperi</i>			
201.	8184 <i>Podotrochea gnaphalioides</i> (Golden Long-heads)			
202.	6916 <i>Prostanthera grylloana</i>			
203.	41650 <i>Prostanthera prostantheroides</i>			
204.	18155 <i>Psyrax suaveolens</i>			
205.	2718 <i>Ptilotus drummondii</i> (Narrowleaf Mulla Mulla)			
206.	2732 <i>Ptilotus holosericeus</i>			
207.	2747 <i>Ptilotus obovatus</i> (Cotton Bush)			
208.	2581 <i>Rhagodia drummondii</i>			
209.	11254 <i>Rhagodia preissii</i> subsp. <i>preissii</i>			
210.	13306 <i>Rhodanthe battii</i>			
211.	13241 <i>Rhodanthe chlorocephala</i> subsp. <i>rosea</i>			
212.	13234 <i>Rhodanthe manglesii</i>			
213.	13248 <i>Rhodanthe oppositifolia</i>			
214.	13252 <i>Rhodanthe pygmaea</i>			
215.	13254 <i>Rhodanthe stricta</i>			
216.	14225 <i>Ricinocarpos brevis</i>		T	
217.	48884 <i>Roepera aurantiaca</i>			
218.	48890 <i>Roepera eremaea</i>			
219.	2359 <i>Santalum spicatum</i> (Sandalwood, Wilarak)			
220.	12586 <i>Scaevola spicigera</i>			
221.	7644 <i>Scaevola spinescens</i> (Currant Bush, Maroon)			
222.	8200 <i>Schoenia cassiniana</i> (Schoenia)			
223.	2609 <i>Sclerolaena diacantha</i> (Grey Copperburr)			
224.	8206 <i>Senecio glomeratus</i> (Cluster-headed Fireweed)			
225.	8207 <i>Senecio glossanthus</i> (Slender Groundsel)			
226.	8217 <i>Senecio quadridentatus</i>			
227.	17558 <i>Senna artemisioides</i> subsp. <i>x artemisioides</i>			
228.	4970 <i>Sida calyxhymenia</i> (Tall Sida)			
229.	31854 <i>Sida</i> sp. <i>Excedentifolia</i> (J.L. Egan 1925)			
230.	31857 <i>Sida</i> sp. <i>Golden calyces glabrous</i> (H.N. Foote 32)			
231.	19712 <i>Sida</i> sp. <i>dark green fruits</i> (S. van Leeuwen 2260)			
232.	2909 <i>Silene gallica</i> (French Catchfly)	Y		
233.	6998 <i>Solanum cleistogamum</i>			
234.	7018 <i>Solanum lasiophyllum</i> (Flannel Bush, Mindjulu)			
235.	7023 <i>Solanum nummularium</i> (Money-leaved Solanum)			
236.	8231 <i>Sonchus oleraceus</i> (Common Sowthistle)	Y		
237.	3076 <i>Stenopetalum filifolium</i>			
238.	3077 <i>Stenopetalum lineare</i> (Narrow Thread Petal)			
239.	7714 <i>Stylidium dielsianum</i> (Tangle Triggerplant)			
240.	2822 <i>Tetragonia eremaea</i>			
241.	16287 <i>Tetragonia moorei</i>			
242.	23987 <i>Tetralochea paynterae</i> subsp. <i>cremnobata</i>		T	
243.	23988 <i>Tetralochea paynterae</i> subsp. <i>paynterae</i>		T	
244.	19253 <i>Trachymene ceratocarpa</i>			
245.	6279 <i>Trachymene ornata</i> (Spongefruit)			
246.	7656 <i>Velleia cynopotamica</i>			
247.	7664 <i>Velleia rosea</i> (Pink Velleia)			

Name ID	Species Name	Naturalised	Conservation Code	¹ Endemic To Query Area
248.	8268 <i>Vittadinia humerata</i>			
249.	7386 <i>Wahlenbergia gracilentia</i> (Annual Bluebell)			
250.	8275 <i>Waitzia acuminata</i> (Orange Immortelle)			

Gymnosperm

251.	92 <i>Callitris canescens</i>			
252.	8466 <i>Callitris columellaris</i> (White Cypress Pine)			

Invertebrate

253.	<i>Aname tepperi</i>			
254.	<i>Atelomastix bamfordi</i>			
255.	<i>Badumna insignis</i>			
256.	<i>Latrodectus hasseltii</i>			
257.	<i>Mainosa longipes</i>			

Mammal

258.	24251 <i>Bos taurus</i> (European Cattle)	Y		
259.	24223 <i>Mus musculus</i> (House Mouse)	Y		
260.	24096 <i>Ningui yvonneae</i> (Southern Ningui)			
261.	24224 <i>Notomys alexis</i> (Spinifex Hopping-mouse)			
262.	24229 <i>Notomys mitchellii</i> (Mitchell's Hopping-mouse)			
263.	24106 <i>Pseudantechinus woolleyae</i> (Woolley's Pseudantechinus)			
264.	24232 <i>Pseudomys bolami</i> (Bolam's Mouse)			
265.	24237 <i>Pseudomys hermannsburgensis</i> (Sandy Inland Mouse)			
266.	24109 <i>Sminthopsis dolichura</i> (Little long-tailed Dunnart)			
267.	24116 <i>Sminthopsis macroura</i> (Stripe-faced Dunnart)			
268.	24202 <i>Vespadelus baverstocki</i> (Inland Forest Bat)			

Monocotyledon

269.	199 <i>Amphipogon strictus</i> (Greybeard Grass)			
270.	1265 <i>Arthropodium curvipes</i>			
271.	17232 <i>Austrostipa blackii</i>		P3	
272.	17237 <i>Austrostipa elegantissima</i>			
273.	17251 <i>Austrostipa scabra</i>			
274.	17255 <i>Austrostipa trichophylla</i>			
275.	247 <i>Bromus arenarius</i> (Sand Brome)			
276.	249 <i>Bromus diandrus</i> (Great Brome)	Y		
277.	1215 <i>Chamaexeros fimbriata</i>			
278.	1216 <i>Chamaexeros macranthera</i>			
279.	1259 <i>Dianella revoluta</i> (Blueberry Lily)			
280.	357 <i>Enneapogon caeruleus</i> (Limestone Grass)			
281.	411 <i>Eriachne helmsii</i> (Buck Wanderrie Grass)			
282.	31770 <i>Lepidosperma ferricola</i>		P3	
283.	490 <i>Monachather paradoxus</i>			
284.	10975 <i>Paspalidium basicladum</i>			
285.	<i>Pterostylis aff. nana</i>			
286.	1338 <i>Thysanotus manglesianus</i> (Fringed Lily)			
287.	1343 <i>Thysanotus patersonii</i>			
288.	1352 <i>Thysanotus speckii</i>			
289.	17874 <i>Triodia rigidissima</i>			
290.	724 <i>Vulpia myuros</i> (Rat's Tail Fescue)	Y		
291.	33101 <i>Vulpia myuros forma myuros</i>	Y		

Pteridophyte (Fern)

292.	12796 <i>Cheilanthes adiantoides</i>			
293.	31 <i>Cheilanthes austrotenuifolia</i>			
294.	32 <i>Cheilanthes brownii</i>			
295.	37 <i>Cheilanthes lasiophylla</i> (Woolly Cloak Fern)			

Reptile

296.	30893 <i>Cryptoblepharus buchananii</i>			
297.	24886 <i>Ctenophorus reticulatus</i> (Western Netted Dragon)			
298.	25026 <i>Ctenotus atlas</i>			
299.	25054 <i>Ctenotus mimetes</i>			
300.	25074 <i>Ctenotus schomburgkii</i>			
301.	25465 <i>Ctenotus uber</i> (Spotted Ctenotus)			
302.	25080 <i>Ctenotus uber subsp. uber</i> (Spotted Ctenotus)			
303.	24995 <i>Delma australis</i>			
304.	25295 <i>Demansia psammophis subsp. cupreiceps</i> (Yellow-faced Whipsnake)			
305.	24929 <i>Diplodactylus granariensis subsp. granariensis</i>			
306.	24940 <i>Diplodactylus pulcher</i>			
307.	25092 <i>Egernia depressa</i> (Southern Pygmy Spiny-tailed Skink)			
308.	25109 <i>Eremiascincus richardsonii</i> (Broad-banded Sand Swimmer)			

Name ID	Species Name	Naturalised	Conservation Code	¹ Endemic To Query Area
309.	24959 <i>Gehyra variegata</i>			
310.	25115 <i>Hemiergis initialis</i> subsp. <i>initialis</i>			
311.	42408 <i>Hesperoedura reticulata</i>			
312.	24961 <i>Heteronotia binoei</i> (Bynoe's Gecko)			
313.	25149 <i>Lerista macropisthopus</i> subsp. <i>macropisthopus</i>			
314.	42411 <i>Lerista timida</i>			
315.	30935 <i>Lucasium maini</i>			
316.	25184 <i>Menetia greyii</i>			
317.	24904 <i>Moloch horridus</i> (Thorny Devil)			
318.	25190 <i>Morethia butleri</i>			
319.	25254 <i>Parasuta monachus</i>			
320.	25008 <i>Pygopus lepidopodus</i> (Common Scaly Foot)			
321.	25009 <i>Pygopus nigriceps</i>			
322.	24982 <i>Rhynchoedura ornata</i> (Western Beaked Gecko)			
323.	24983 <i>Underwoodisaurus milii</i> (Barking Gecko)			
324.	25211 <i>Varanus caudolineatus</i>			

Conservation Codes

T - Rare or likely to become extinct
 X - Presumed extinct
 IA - Protected under international agreement
 S - Other specially protected fauna
 1 - Priority 1
 2 - Priority 2
 3 - Priority 3
 4 - Priority 4
 5 - Priority 5

¹ For NatureMap's purposes, species flagged as endemic are those whose records are wholly contained within the search area. Note that only those records complying with the search criterion are included in the calculation. For example, if you limit records to those from a specific datasource, only records from that datasource are used to determine if a species is restricted to the query area.



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.

Information on the coverage of this report and qualifications on data supporting this report are contained in the caveat at the end of the report.

Information is available about [Environment Assessments](#) and the EPBC Act including significance guidelines, forms and application process details.

Report created: 30/08/20 14:19:51

[Summary](#)

[Details](#)

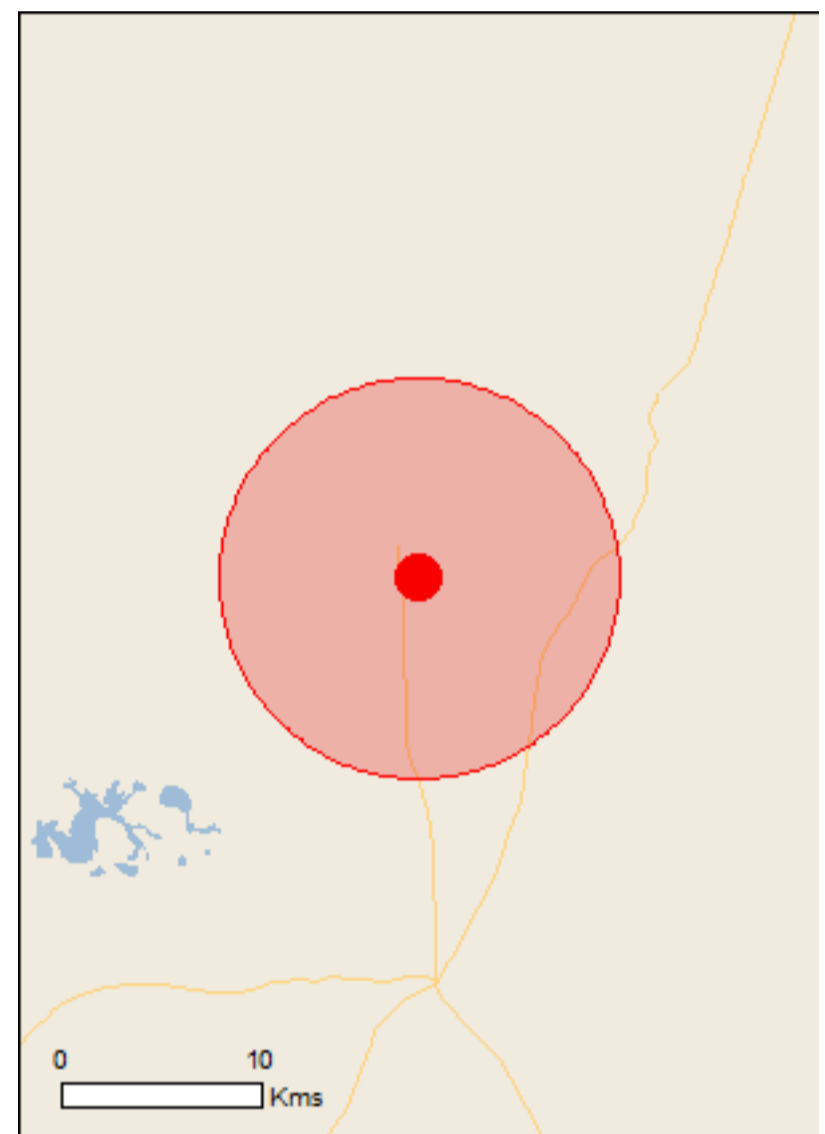
[Matters of NES](#)

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

[Extra Information](#)

[Caveat](#)

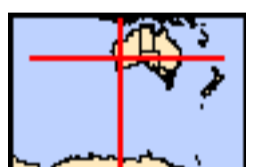
[Acknowledgements](#)



This map may contain data which are ©Commonwealth of Australia (Geoscience Australia), ©PSMA 2010

[Coordinates](#)

Buffer: 10.0Km



Summary

Matters of National Environmental 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:	None
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	None
Listed Threatened Species:	8
Listed Migratory Species:	6

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 <http://www.environment.gov.au/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 Land:	None
Commonwealth Heritage Places:	None
Listed Marine Species:	10
Whales and Other Cetaceans:	None
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	None

Extra Information

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

State and Territory Reserves:	1
Regional Forest Agreements:	None
Invasive Species:	11
Nationally Important Wetlands:	None
Key Ecological Features (Marine)	None

Details

Matters of National Environmental Significance

Listed Threatened Species [\[Resource Information \]](#)

Name	Status	Type of Presence
------	--------	------------------

Birds

Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area
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Falco hypoleucos Grey Falcon [929]	Vulnerable	Species or species habitat may occur within area
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Leipoa ocellata Malleefowl [934]	Vulnerable	Species or species habitat known to occur within area
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Pezoporus occidentalis Night Parrot [59350]	Endangered	Species or species habitat may occur within area
--	------------	--

Mammals

Dasyurus geoffroii Chuditch, Western Quoll [330]	Vulnerable	Species or species habitat may occur within area
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Plants

Eremophila viscida Varnish Bush [2394]	Endangered	Species or species habitat may occur within area
---	------------	--

Ricinocarpos brevis [82879]	Endangered	Species or species habitat known to occur within area
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Tetratheca paynterae Paynter's Tetratheca [66451]	Endangered	Species or species habitat known to occur within area
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Listed Migratory Species [\[Resource Information \]](#)

* Species is listed under a different scientific name on the EPBC Act - Threatened Species list.

Name	Threatened	Type of Presence
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Migratory Marine Birds

Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area
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Migratory Terrestrial Species

Motacilla cinerea Grey Wagtail [642]		Species or species habitat may occur within area
---	--	--

Migratory Wetlands Species

Name	Threatened	Type of Presence
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat may occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat may occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area

Other Matters Protected by the EPBC Act

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

* Species is listed under a different scientific name on the EPBC Act - Threatened Species list.

Name	Threatened	Type of Presence
Birds		
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat may occur within area
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Ardea alba Great Egret, White Egret [59541]		Species or species habitat likely to occur within area
Ardea ibis Cattle Egret [59542]		Species or species habitat may occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat may occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area
Chrysococcyx osculans Black-eared Cuckoo [705]		Species or species habitat likely to occur within area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area
Motacilla cinerea Grey Wagtail [642]		Species or species habitat may occur within area

Extra Information

State and Territory Reserves [\[Resource Information \]](#)

Name	State
Mount Manning - Helena And Aurora Ranges	WA

Invasive Species [\[Resource Information \]](#)

Weeds reported here are the 20 species of national significance (WoNS), along with other introduced plants that are considered by the States and Territories to pose a particularly significant threat to biodiversity. The following feral animals are reported: Goat, Red Fox, Cat, Rabbit, Pig, Water Buffalo and Cane Toad. Maps from Landscape Health Project, National Land and Water Resources Audit, 2001.

Name	Status	Type of Presence
------	--------	------------------

Birds

Columba livia Rock Pigeon, Rock Dove, Domestic Pigeon [803]		Species or species habitat likely to occur within area
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Mammals

Camelus dromedarius Dromedary, Camel [7]		Species or species habitat likely to occur within area
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Canis lupus familiaris Domestic Dog [82654]		Species or species habitat likely to occur within area
--	--	--

Capra hircus Goat [2]		Species or species habitat likely to occur within area
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Equus asinus Donkey, Ass [4]		Species or species habitat likely to occur within area
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Equus caballus Horse [5]		Species or species habitat likely to occur within area
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Felis catus Cat, House Cat, Domestic Cat [19]		Species or species habitat likely to occur within area
--	--	--

Mus musculus House Mouse [120]		Species or species habitat likely to occur within area
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Oryctolagus cuniculus Rabbit, European Rabbit [128]		Species or species habitat likely to occur within area
--	--	--

Vulpes vulpes Red Fox, Fox [18]		Species or species
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Name	Status	Type of Presence
Plants		
Carrichtera annua		habitat likely to occur within area
Ward's Weed [9511]		Species or species habitat likely to occur within area

Caveat

The information presented in this report has been provided by a range of data sources as acknowledged at the end of the report.

This report is designed to assist in identifying the locations of places which may be relevant in determining obligations under the Environment Protection and Biodiversity Conservation Act 1999. It holds mapped locations of World and National Heritage properties, Wetlands of International and National Importance, Commonwealth and State/Territory reserves, listed threatened, migratory and marine species and listed threatened ecological communities. Mapping of Commonwealth land is not complete at this stage. Maps have been collated from a range of sources at various resolutions.

Not all species listed under the EPBC Act have been mapped (see below) and therefore a report is a general guide only. Where available data supports mapping, the type of presence that can be determined from the data is indicated in general terms. People using this information in making a referral may need to consider the qualifications below and may need to seek and consider other information sources.

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.

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

Where very little information is available for 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 reliable distribution mapping methods are used to update these distributions as time permits.

Only selected species covered by the following provisions of the EPBC Act have been mapped:

- migratory and
- marine

The following species and ecological communities have not been mapped and do not appear in reports produced from this database:

- threatened species listed as extinct or considered as vagrants
- some species and ecological communities that have only recently been listed
- some terrestrial species that overfly the Commonwealth marine area
- migratory species that are very widespread, vagrant, or only occur in small numbers

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

- non-threatened seabirds which have only been mapped for recorded breeding sites
- seals which have only been mapped for breeding sites near the Australian continent

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

Coordinates

-30.02718 119.28653

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.

Appendix 2

Conservation Codes and Definitions

Conservation codes for Western Australian flora and fauna (BC Regulations 2018).

Code	Definition
T	<p><u>Threatened species</u></p> <p>Listed by order of the Minister as Threatened in the category of critically endangered, endangered or vulnerable under section 19(1), or is a rediscovered species to be regarded as threatened species under section 26(2) of the Biodiversity Conservation Act 2016 (BC Act).</p> <p>Threatened fauna is that subset of ‘Specially Protected Fauna’ listed under schedules 1 to 3 of the Wildlife Conservation (Specially Protected Fauna) Notice 2018 for Threatened Fauna.</p> <p>Threatened flora is that subset of ‘Rare Flora’ listed under schedules 1 to 3 of the Wildlife Conservation (Rare Flora) Notice 2018 for Threatened Flora.</p> <p>The assessment of the conservation status of these species is based on their national extent and ranked according to their level of threat using IUCN Red List categories and criteria as detailed below.</p>
CR	<p>Critically endangered species</p> <p>Threatened species considered to be “facing an extremely high risk of extinction in the wild in the immediate future, as determined in accordance with criteria set out in the ministerial guidelines”.</p> <p>Listed as critically endangered under section 19(1)(a) of the BC Act in accordance with the criteria set out in section 20 and the ministerial guidelines. Published under schedule 1 of the Wildlife Conservation (Specially Protected Fauna) Notice 2018 for critically endangered fauna or the Wildlife Conservation (Rare Flora) Notice 2018 for critically endangered flora.</p>
EN	<p>Endangered species</p> <p>Threatened species considered to be “facing a very high risk of extinction in the wild in the near future, as determined in accordance with criteria set out in the ministerial guidelines”.</p> <p>Listed as endangered under section 19(1)(b) of the BC Act in accordance with the criteria set out in section 21 and the ministerial guidelines. Published under schedule 2 of the Wildlife Conservation (Specially Protected Fauna) Notice 2018 for endangered fauna or the Wildlife Conservation (Rare Flora) Notice 2018 for endangered flora.</p>
VU	<p>Vulnerable species</p> <p>Threatened species considered to be “facing a high risk of extinction in the wild in the medium-term future, as determined in accordance with criteria set out in the ministerial guidelines”. Listed as vulnerable under section 19(1)(c) of the BC Act in accordance with the criteria set out in section 22 and the ministerial guidelines. Published under schedule 3 of the Wildlife Conservation (Specially Protected Fauna) Notice 2018 for vulnerable fauna or the Wildlife Conservation (Rare Flora) Notice 2018 for vulnerable flora.</p>
	<p><u>Extinct species</u></p> <p>Listed by order of the Minister as extinct under section 23(1) of the BC Act as extinct or extinct in the wild.</p>
EX	<p>Extinct species</p> <p>Species where “there is no reasonable doubt that the last member of the species has died”, and listing is otherwise in accordance with the ministerial guidelines (section 24 of the BC Act).</p> <p>Published as presumed extinct under schedule 4 of the Wildlife Conservation (Specially Protected Fauna) Notice 2018 for extinct fauna or the Wildlife Conservation (Rare Flora) Notice 2018 for extinct flora.</p>
EW	<p>Extinct in the wild species</p> <p>Species that “is known only to survive in cultivation, in captivity or as a naturalised population well outside its past range; and it has not been recorded in its known habitat or expected habitat, at appropriate seasons, anywhere in its past range, despite surveys over a time frame appropriate to its life cycle and form”, and listing is otherwise in accordance with the ministerial guidelines (section 25 of the BC Act).</p> <p>Currently there are no threatened fauna or threatened flora species listed as extinct in the wild. If listing of a</p>

	species as extinct in the wild occurs, then a schedule will be added to the applicable notice.
	<p><u>Specially protected species</u></p> <p>Listed by order of the Minister as specially protected under section 13(1) of the BC Act. Meeting one or more of the following categories: species of special conservation interest; migratory species; cetaceans; species subject to international agreement; or species otherwise in need of special protection.</p> <p>Species that are listed as threatened species (critically endangered, endangered or vulnerable) or extinct species under the BC Act cannot also be listed as Specially Protected species.</p>
MI	<p>Migratory species</p> <p>Fauna that periodically or occasionally visit Australia or an external Territory or the exclusive economic zone; or the species is subject of an international agreement that relates to the protection of migratory species and that binds the Commonwealth; and listing is otherwise in accordance with the ministerial guidelines (section 15 of the BC Act).</p> <p>Includes birds that are subject to an agreement between the government of Australia and the governments of Japan (JAMBA), China (CAMBA) and The Republic of Korea (ROKAMBA), and fauna subject to the Convention on the Conservation of Migratory Species of Wild Animals (Bonn Convention), an environmental treaty under the United Nations Environment Program. Migratory species listed under the BC Act are a subset of the migratory animals that are known to visit Western Australia, protected under the international agreements or treaties, excluding species that are listed as Threatened species.</p> <p>Published as migratory birds protected under an international agreement under schedule 5 of the Wildlife Conservation (Specially Protected Fauna) Notice 2018.</p>
CD	<p>Species of special conservation interest (conservation dependent fauna)</p> <p>Fauna of special conservation need being species dependent on ongoing conservation intervention to prevent it becoming eligible for listing as threatened, and listing is otherwise in accordance with the ministerial guidelines (section 14 of the BC Act).</p> <p>Published as conservation dependent fauna under schedule 6 of the Wildlife Conservation (Specially Protected Fauna) Notice 2018.</p>
OS	<p>Other specially protected species</p> <p>Fauna otherwise in need of special protection to ensure their conservation, and listing is otherwise in accordance with the ministerial guidelines (section 18 of the BC Act).</p> <p>Published as other specially protected fauna under schedule 7 of the Wildlife Conservation (Specially Protected Fauna) Notice 2018.</p>
	<p><u>Priority species</u></p> <p>Possibly threatened species that do not meet survey criteria, or are otherwise data deficient, are added to the Priority Fauna or Priority Flora Lists under Priorities 1, 2 or 3. These three categories are ranked in order of priority for survey and evaluation of conservation status so that consideration can be given to their declaration as threatened fauna or flora.</p> <p>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.</p> <p>Assessment of Priority codes is based on the Western Australian distribution of the species, unless the distribution in WA is part of a contiguous population extending into adjacent States, as defined by the known spread of locations.</p>
P1	<p>Priority 1: Poorly-known species</p> <p>Species that are known from one or a few locations (generally five or less) which are potentially at risk. All occurrences are either: very small; or on lands not managed for conservation, e.g. agricultural or pastoral lands, urban areas, road and rail reserves, gravel reserves and active mineral leases; or otherwise under threat of</p>

	<p>habitat destruction or degradation. Species may be included if they are comparatively well known from one or more locations but do not meet adequacy of survey requirements and appear to be under immediate threat from known threatening processes. Such species are in urgent need of further survey.</p>
P2	<p>Priority 2: Poorly-known species</p> <p>Species that are known from one or a few locations (generally five or less), some of which are on lands managed primarily for nature conservation, e.g. national parks, conservation parks, nature reserves and other lands with secure tenure being managed for conservation. Species may be included if they are comparatively well known from one or more locations but do not meet adequacy of survey requirements and appear to be under threat from known threatening processes. Such species are in urgent need of further survey.</p>
P3	<p>Priority 3: Poorly-known species</p> <p>Species that are known from several locations, and the species does not appear to be under imminent threat, or from few but widespread locations with either large population size or significant remaining areas of apparently suitable habitat, much of it not under imminent threat. Species may be included if they are comparatively well known from several locations but do not meet adequacy of survey requirements and known threatening processes exist that could affect them. Such species are in need of further survey.</p>
P4	<p>Priority 4: Rare, Near Threatened and other species in need of monitoring</p> <p>(a) Rare. Species that are considered to have been adequately surveyed, or for which sufficient knowledge is available, and that are considered not currently threatened or in need of special protection but could be if present circumstances change. These species are usually represented on conservation lands.</p> <p>(b) Near Threatened. Species that are considered to have been adequately surveyed and that are close to qualifying for vulnerable but are not listed as Conservation Dependent.</p> <p>(c) Species that have been removed from the list of threatened species during the past five years for reasons other than taxonomy.</p>
	<p>Specially protected fauna as defined by the <i>Wildlife Conservation (Specially Protected Fauna) Notice 2018</i>.</p>
S1	<p>Schedule 1—Fauna that is rare or is likely to become extinct as critically endangered fauna.</p>
S2	<p>Schedule 2—Fauna that is rare or is likely to become extinct as endangered fauna.</p>
S3	<p>Schedule 3—Fauna that is rare or is likely to become extinct as vulnerable fauna.</p>
S4	<p>Schedule 4—Fauna presumed to be extinct.</p>
S5	<p>Schedule 5—Migratory birds protected under an international agreement.</p>
S6	<p>Schedule 6—Fauna that is of special conservation need as conservation dependent fauna.</p>

Conservation codes for species listed under the Environmental Protection and Biodiversity Conversation Act 1999

Status	Definition
Extinct	There is no reasonable doubt that the last member of the species has died.
Extinct in the wild	It is known only to survive in cultivation, in captivity or as a naturalised population well outside its past range, or It has not been recorded in its known and/or expected habitat, at appropriate seasons, anywhere in its past range, despite exhaustive surveys over a time frame appropriate to its life cycle and form.
Critically Endangered	It is facing an extremely high risk of extinction in the wild in the immediate future, as determined in accordance with the prescribed criteria.
Endangered	It is not critically endangered; and It is facing a very high risk of extinction in the wild in the near future, as determined in accordance with the prescribed criteria.
Vulnerable	It is not critically endangered or endangered; and It is facing a high risk of extinction in the wild in the medium-term future, as determined in accordance with the prescribed criteria.
Conservation dependant	The species is the focus of a specific conservation program the cessation of which would result in the species becoming vulnerable, endangered or critically endangered; or The following subparagraphs are satisfied: - The species is a species of fish - The species is the focus of a plan of management that provides for management actions necessary to stop the decline of, and support the recovery of, the species so that its chances of long term survival in nature are maximised - The plan of management is in force under a law of the Commonwealth or of a State or Territory - Cessation of the plan of management would adversely affect the conservation status of the species.

Appendix 2

Conservation Codes and Definitions

Conservation codes for Western Australian flora and fauna (BC Regulations 2018).

Code	Definition
T	<p><u>Threatened species</u></p> <p>Listed by order of the Minister as Threatened in the category of critically endangered, endangered or vulnerable under section 19(1), or is a rediscovered species to be regarded as threatened species under section 26(2) of the Biodiversity Conservation Act 2016 (BC Act).</p> <p>Threatened fauna is that subset of ‘Specially Protected Fauna’ listed under schedules 1 to 3 of the Wildlife Conservation (Specially Protected Fauna) Notice 2018 for Threatened Fauna.</p> <p>Threatened flora is that subset of ‘Rare Flora’ listed under schedules 1 to 3 of the Wildlife Conservation (Rare Flora) Notice 2018 for Threatened Flora.</p> <p>The assessment of the conservation status of these species is based on their national extent and ranked according to their level of threat using IUCN Red List categories and criteria as detailed below.</p>
CR	<p>Critically endangered species</p> <p>Threatened species considered to be “facing an extremely high risk of extinction in the wild in the immediate future, as determined in accordance with criteria set out in the ministerial guidelines”.</p> <p>Listed as critically endangered under section 19(1)(a) of the BC Act in accordance with the criteria set out in section 20 and the ministerial guidelines. Published under schedule 1 of the Wildlife Conservation (Specially Protected Fauna) Notice 2018 for critically endangered fauna or the Wildlife Conservation (Rare Flora) Notice 2018 for critically endangered flora.</p>
EN	<p>Endangered species</p> <p>Threatened species considered to be “facing a very high risk of extinction in the wild in the near future, as determined in accordance with criteria set out in the ministerial guidelines”.</p> <p>Listed as endangered under section 19(1)(b) of the BC Act in accordance with the criteria set out in section 21 and the ministerial guidelines. Published under schedule 2 of the Wildlife Conservation (Specially Protected Fauna) Notice 2018 for endangered fauna or the Wildlife Conservation (Rare Flora) Notice 2018 for endangered flora.</p>
VU	<p>Vulnerable species</p> <p>Threatened species considered to be “facing a high risk of extinction in the wild in the medium-term future, as determined in accordance with criteria set out in the ministerial guidelines”. Listed as vulnerable under section 19(1)(c) of the BC Act in accordance with the criteria set out in section 22 and the ministerial guidelines. Published under schedule 3 of the Wildlife Conservation (Specially Protected Fauna) Notice 2018 for vulnerable fauna or the Wildlife Conservation (Rare Flora) Notice 2018 for vulnerable flora.</p>
	<p><u>Extinct species</u></p> <p>Listed by order of the Minister as extinct under section 23(1) of the BC Act as extinct or extinct in the wild.</p>
EX	<p>Extinct species</p> <p>Species where “there is no reasonable doubt that the last member of the species has died”, and listing is otherwise in accordance with the ministerial guidelines (section 24 of the BC Act).</p> <p>Published as presumed extinct under schedule 4 of the Wildlife Conservation (Specially Protected Fauna) Notice 2018 for extinct fauna or the Wildlife Conservation (Rare Flora) Notice 2018 for extinct flora.</p>
EW	<p>Extinct in the wild species</p> <p>Species that “is known only to survive in cultivation, in captivity or as a naturalised population well outside its past range; and it has not been recorded in its known habitat or expected habitat, at appropriate seasons, anywhere in its past range, despite surveys over a time frame appropriate to its life cycle and form”, and listing is otherwise in accordance with the ministerial guidelines (section 25 of the BC Act).</p>

	<p>Currently there are no threatened fauna or threatened flora species listed as extinct in the wild. If listing of a species as extinct in the wild occurs, then a schedule will be added to the applicable notice.</p>
	<p><u>Specially protected species</u></p> <p>Listed by order of the Minister as specially protected under section 13(1) of the BC Act. Meeting one or more of the following categories: species of special conservation interest; migratory species; cetaceans; species subject to international agreement; or species otherwise in need of special protection.</p> <p>Species that are listed as threatened species (critically endangered, endangered or vulnerable) or extinct species under the BC Act cannot also be listed as Specially Protected species.</p>
MI	<p>Migratory species</p> <p>Fauna that periodically or occasionally visit Australia or an external Territory or the exclusive economic zone; or the species is subject of an international agreement that relates to the protection of migratory species and that binds the Commonwealth; and listing is otherwise in accordance with the ministerial guidelines (section 15 of the BC Act).</p> <p>Includes birds that are subject to an agreement between the government of Australia and the governments of Japan (JAMBA), China (CAMBA) and The Republic of Korea (ROKAMBA), and fauna subject to the Convention on the Conservation of Migratory Species of Wild Animals (Bonn Convention), an environmental treaty under the United Nations Environment Program. Migratory species listed under the BC Act are a subset of the migratory animals that are known to visit Western Australia, protected under the international agreements or treaties, excluding species that are listed as Threatened species.</p> <p>Published as migratory birds protected under an international agreement under schedule 5 of the Wildlife Conservation (Specially Protected Fauna) Notice 2018.</p>
CD	<p>Species of special conservation interest (conservation dependent fauna)</p> <p>Fauna of special conservation need being species dependent on ongoing conservation intervention to prevent it becoming eligible for listing as threatened, and listing is otherwise in accordance with the ministerial guidelines (section 14 of the BC Act).</p> <p>Published as conservation dependent fauna under schedule 6 of the Wildlife Conservation (Specially Protected Fauna) Notice 2018.</p>
OS	<p>Other specially protected species</p> <p>Fauna otherwise in need of special protection to ensure their conservation, and listing is otherwise in accordance with the ministerial guidelines (section 18 of the BC Act).</p> <p>Published as other specially protected fauna under schedule 7 of the Wildlife Conservation (Specially Protected Fauna) Notice 2018.</p>
	<p><u>Priority species</u></p> <p>Possibly threatened species that do not meet survey criteria, or are otherwise data deficient, are added to the Priority Fauna or Priority Flora Lists under Priorities 1, 2 or 3. These three categories are ranked in order of priority for survey and evaluation of conservation status so that consideration can be given to their declaration as threatened fauna or flora.</p> <p>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.</p> <p>Assessment of Priority codes is based on the Western Australian distribution of the species, unless the distribution in WA is part of a contiguous population extending into adjacent States, as defined by the known spread of locations.</p>
P1	<p>Priority 1: Poorly-known species</p> <p>Species that are known from one or a few locations (generally five or less) which are potentially at risk. All occurrences are either: very small; or on lands not managed for conservation, e.g. agricultural or pastoral lands, urban areas, road and rail reserves, gravel reserves and active mineral leases; or otherwise under threat of</p>


	habitat destruction or degradation. Species may be included if they are comparatively well known from one or more locations but do not meet adequacy of survey requirements and appear to be under immediate threat from known threatening processes. Such species are in urgent need of further survey.
P2	<p>Priority 2: Poorly-known species</p> <p>Species that are known from one or a few locations (generally five or less), some of which are on lands managed primarily for nature conservation, e.g. national parks, conservation parks, nature reserves and other lands with secure tenure being managed for conservation. Species may be included if they are comparatively well known from one or more locations but do not meet adequacy of survey requirements and appear to be under threat from known threatening processes. Such species are in urgent need of further survey.</p>
P3	<p>Priority 3: Poorly-known species</p> <p>Species that are known from several locations, and the species does not appear to be under imminent threat, or from few but widespread locations with either large population size or significant remaining areas of apparently suitable habitat, much of it not under imminent threat. Species may be included if they are comparatively well known from several locations but do not meet adequacy of survey requirements and known threatening processes exist that could affect them. Such species are in need of further survey.</p>
P4	<p>Priority 4: Rare, Near Threatened and other species in need of monitoring</p> <p>(a) Rare. Species that are considered to have been adequately surveyed, or for which sufficient knowledge is available, and that are considered not currently threatened or in need of special protection but could be if present circumstances change. These species are usually represented on conservation lands.</p> <p>(b) Near Threatened. Species that are considered to have been adequately surveyed and that are close to qualifying for vulnerable but are not listed as Conservation Dependent.</p> <p>(c) Species that have been removed from the list of threatened species during the past five years for reasons other than taxonomy.</p>
	Specially protected fauna as defined by the <i>Wildlife Conservation (Specially Protected Fauna) Notice 2018</i>.
S1	Schedule 1—Fauna that is rare or is likely to become extinct as critically endangered fauna.
S2	Schedule 2—Fauna that is rare or is likely to become extinct as endangered fauna.
S3	Schedule 3—Fauna that is rare or is likely to become extinct as vulnerable fauna.
S4	Schedule 4—Fauna presumed to be extinct.
S5	Schedule 5—Migratory birds protected under an international agreement.
S6	Schedule 6—Fauna that is of special conservation need as conservation dependent fauna.


Conservation codes for species listed under the Environmental Protection and Biodiversity Conservation Act 1999

Status	Definition
Extinct	There is no reasonable doubt that the last member of the species has died.
Extinct in the wild	It is known only to survive in cultivation, in captivity or as a naturalised population well outside its past range, or It has not been recorded in its known and/or expected habitat, at appropriate seasons, anywhere in its past range, despite exhaustive surveys over a time frame appropriate to its life cycle and form.
Critically Endangered	It is facing an extremely high risk of extinction in the wild in the immediate future, as determined in accordance with the prescribed criteria.
Endangered	It is not critically endangered; and It is facing a very high risk of extinction in the wild in the near future, as determined in accordance with the prescribed criteria.
Vulnerable	It is not critically endangered or endangered; and It is facing a high risk of extinction in the wild in the medium-term future, as determined in accordance with the prescribed criteria.
Conservation dependant	The species is the focus of a specific conservation program the cessation of which would result in the species becoming vulnerable, endangered or critically endangered; or The following subparagraphs are satisfied: - The species is a species of fish - The species is the focus of a plan of management that provides for management actions necessary to stop the decline of, and support the recovery of, the species so that its chances of long term survival in nature are maximised - The plan of management is in force under a law of the Commonwealth or of a State or Territory - Cessation of the plan of management would adversely affect the conservation status of the species.

Appendix 3

Site Data

Site ref: PWR1	Location: Koolyanobbing	Date: 29/08/2020
		
Adjacent vegetation description	<i>Eucalyptus salmonophloia</i> and <i>E. salubris</i> open woodland over <i>Eremophila scoparia</i> , <i>Eremophila ionantha</i> and <i>Atriplex nummularia</i> low shrubland over mixed chenopod species.	
Vegetation condition	Poor	
Flora species present		
<i>Atriplex nummularia</i> <i>Atriplex semilunaris</i> <i>Atriplex vesicaria</i> <i>Austrostipa elegantissima</i> <i>*Carrichtera annua</i> <i>Enchylaena tomentosa</i> <i>Eremophila ionantha</i> <i>Eremophila drummondii</i> <i>Eremophila scoparia</i> <i>Eucalyptus salmonophloia</i> <i>Eucalyptus salubris</i> <i>Eucalyptus torquata</i> (introduced native) <i>Eucalyptus woodwardia</i> (introduced native) <i>Exocarpos aphyllus</i> <i>Maireana brevifolia</i>	<i>Maireana georgei</i> <i>Maireana tomentosa</i> <i>Maireana triptera</i> <i>Monachather paradoxus</i> <i>Olearia muelleri</i> <i>*Opuntia stricta</i> <i>Ptilotus exaltatus</i> <i>Rhagodia drummondii</i> <i>Salsola australis</i> <i>Senna artemisioides</i> subsp. <i>filifolia</i> <i>Scaevola spinescens</i> <i>Sclerolaena diacantha</i> <i>Solanum lasiophyllum</i> <i>Solanum orbiculatum</i> <i>*Sonchus oleraceus</i>	
Comments		
High level of disturbance and weed species. Former townsite and adjacent to current administration/accommodation facilities.		

Site ref: PWR2	Location: Koolyanobbing	Date: 29/08/2020
		
Adjacent vegetation description	<i>Eucalyptus salubris</i> open woodland over isolated <i>Brachychiton gregorii</i> and <i>Acacia acuminata</i> individuals over <i>Atriplex vesicaria</i> and mixed <i>Maireana</i> species low open shrubland.	
Vegetation condition	Poor	
Flora species present		
<i>Acacia acuminata</i> * <i>Agave americana</i> ? <i>Aristida contorta</i> <i>Arthropodium curvipes</i> <i>Atriplex nummularia</i> <i>Atriplex vesicaria</i> <i>Brachychiton gregorii</i> * <i>Brassica tournefortii</i> <i>Calandrinia eremaea</i> * <i>Carrichtera annua</i> * <i>Cleretum papulosum</i> <i>Enchylaena tomentosa</i> <i>Eucalyptus longicornis</i> <i>Eucalyptus salubris</i> <i>Maireana brevifolia</i>	<i>Maireana georgei</i> <i>Maireana tomentosa</i> * <i>Mesembryanthemum nodiflorum</i> * <i>Opuntia stricta</i> <i>Oxalis perennans</i> <i>Ptilotus exaltatus</i> <i>Ptilotus obovatus</i> <i>Roepera aurantiaca</i> <i>Salsola australis</i> <i>Santalum acuminatum</i> <i>Sclerolaena diacantha</i> <i>Senna artemisioides</i> subsp. <i>filifolia</i> <i>Solanum lasiophyllum</i> * <i>Sisymbrium irio</i> * <i>Tamarix aphylla</i>	
Comments		
High level of disturbance and weed species. Former townsite.		

Site ref: PWR3	Location: Koolyanobbing	Date: 29/08/2020
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Adjacent vegetation description	<i>Eucalyptus corrugata</i> , <i>Eucalyptus salubris</i> and <i>Eucalyptus longicornis</i> open woodland over <i>Eremophila scoparia</i> and <i>Atriplex nummularia</i> low open shrubland.
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Vegetation condition	Good
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Flora species present

<i>Acacia erinacea</i>	<i>Eucalyptus longicornis</i>
<i>Atriplex nummularia</i>	<i>Eucalyptus salubris</i>
<i>Atriplex vesicaria</i>	<i>Exocarpos aphyllus</i>
<i>Austrostipa elegantissima</i>	<i>Maireana georgei</i>
* <i>Carrichtera annua</i>	<i>Maireana tomentosa</i>
* <i>Centaurea melitensis</i>	<i>Olearia muelleri</i>
<i>Dysphania cristata</i>	<i>Ptilotus exaltatus</i>
<i>Enchylaena tomentosa</i>	<i>Roepera aurantiaca</i>
<i>Eremophila ionantha</i>	<i>Scaevola spinescens</i>
<i>Eremophila scoparia</i>	<i>Sclerolaena diacantha</i>
<i>Eucalyptus corrugata</i>	

Comments

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Site ref: PWR4	Location: Koolyanobbing	Date: 29/08/2020
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Adjacent vegetation description	<i>Eucalyptus corrugata</i> open woodland over <i>Eremophila scoparia</i> and <i>Atriplex vesicaria</i> low shrubland.
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Vegetation condition	Good
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Flora species present

<i>Acacia inceana</i> ?subsp. <i>conformis</i>	<i>Eucalyptus salubris</i>
<i>Atriplex nummularia</i>	<i>Exocarpos aphyllus</i>
<i>Atriplex vesicaria</i>	<i>Maireana tomentosa</i>
<i>Austrostipa elegantissima</i>	<i>Olearia muelleri</i>
* <i>Carrichtera annua</i>	<i>Ptilotus exaltatus</i>
<i>Eremophila clarkei</i>	<i>Rhagodia drummondii</i>
<i>Eremophila drummondii</i>	<i>Roepera aurantiaca</i>
<i>Eremophila ionantha</i>	<i>Santalum acuminatum</i>
<i>Eremophila scoparia</i>	<i>Scaevola spinescens</i>
<i>Eucalyptus corrugata</i>	<i>Solanum orbiculatum</i>

Comments

Site ref: PWR5	Location: Koolyanobbing	Date: 29/08/2020
		
Adjacent vegetation description	<i>Eucalyptus longicornis</i> open woodland over <i>Eremophila ionantha</i> , <i>Olearia muelleri</i> and <i>Atriplex nummularia</i> low open shrubland.	
Vegetation condition	Poor	
Flora species present		
<i>Acacia merrallii</i> <i>Acacia inceana</i> ?subsp. <i>conformis</i> <i>Atriplex nummularia</i> <i>Austrostipa elegantissima</i> <i>*Carrichtera annua</i> <i>*Centaurea melitensis</i> <i>Eremophila ionantha</i> <i>Eremophila scoparia</i> <i>Eucalyptus longicornis</i> <i>Eucalyptus salubris</i> <i>Euphorbia drummondii</i>	<i>Exocarpos aphyllus</i> <i>Maireana carnososa</i> <i>Maireana tomentosa</i> <i>Monachather paradoxus</i> <i>Olearia muelleri</i> <i>Pittosporum angustifolium</i> <i>Ptilotus holosericeus</i> <i>Roepera aurantiaca</i> <i>Santalum acuminatum</i> <i>Sclerolaena diacantha</i> <i>Senna artemisioides</i> subsp. <i>filifolia</i>	
Comments		
Dusty.		

Site ref: PWR6	Location: Koolyanobbing	Date: 30/08/20192020
		
Adjacent vegetation description	<i>Eucalyptus salubris</i> open woodland over <i>Eremophila scoparia</i> , <i>Senna artemisioides</i> subsp. <i>filifolia</i> and <i>Exocarpos aphyllus</i> shrubland.	
Vegetation condition	Good	
Flora species present		
<i>Acacia acuminata</i> <i>Acacia murrayana</i> <i>Angianthus tomentosus</i> <i>*Asphodelus fistulosus</i> <i>Atriplex vesicaria</i> <i>Austrostipa elegantissima</i> <i>*Carrichtera annua</i> <i>*Centaurea melitensis</i> <i>Comesperma integerrimum</i> <i>Dodonaea viscosa</i> <i>Dysphania cristata</i> <i>Enchylaena tomentosa</i> <i>Eragrostis dielsii</i> <i>Erodium cygnorum</i> <i>Eremophila decipiens</i> subsp. <i>decipiens</i> <i>Eremophila drummondii</i> <i>Eremophila ionantha</i>	<i>Eremophila maculata</i> subsp. <i>brevifolia</i> <i>Eremophila scoparia</i> <i>Eucalyptus salubris</i> <i>Euphorbia drummondii</i> <i>Exocarpos aphyllus</i> <i>Grevillea acuaria</i> <i>Maireana georgei</i> <i>Maireana tomentosa</i> <i>Maireana triptera</i> <i>Monachather paradoxus</i> <i>Pittosporum angustifolium</i> <i>Ptilotus exaltatus</i> <i>Scaevola spinescens</i> <i>Senecio glossanthus</i> <i>Senna artemisioides</i> subsp. <i>filifolia</i> <i>Solanum nigrum</i> <i>*Sonchus oleraceus</i>	
Comments		
High abundance of weeds.		

Site ref: PWR7	Location: Koolyanobbing	Date: 30/08/2020
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Vegetation description	Low open shrubland of mixed <i>Eremophila</i> and <i>Atriplex</i> species over chenopods, with occasional <i>Eucalyptus salubris</i> and <i>E. leptopoda</i> subsp. <i>subluta</i> individuals.
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Vegetation condition	Good
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Flora species present


<i>Acacia acuminata</i>	<i>Eucalyptus leptopoda</i> subsp. <i>subluta</i>
<i>Acacia inceana</i> ?subsp. <i>conformis</i>	<i>Eucalyptus salubris</i>
<i>Angianthus tomentosus</i>	<i>Exocarpos aphyllus</i>
<i>Atriplex nummularia</i>	<i>Frankenia setosa</i>
<i>Atriplex vesicaria</i>	<i>Maireana brevifolia</i>
<i>Austrostipa elegantissima</i>	<i>Maireana tomentosa</i>
<i>Calandrinia ?eremaea</i>	<i>Pimelea microcephala</i>
* <i>Carrichtera annua</i>	<i>Pittosporum angustifolium</i>
<i>Carpobrotus modestus</i>	<i>Ptilotus exaltatus</i>
<i>Cratystylis conocephala</i>	* <i>Salvia verbenaca</i>
<i>Dodonaea viscosa</i>	<i>Santalum acuminatum</i>
<i>Dysphania cristata</i>	<i>Scaevola spinescens</i>
<i>Enchylaena tomentosa</i>	<i>Sclerolaena tomentosa</i>
<i>Eragrostis dielsii</i>	<i>Senecio glossanthus</i>
<i>Erodium cymnorum</i>	<i>Senna artemisioides</i> subsp. <i>filifolia</i>
<i>Eremophila alternifolia</i>	* <i>Solanum nigrum</i>
<i>Eremophila decipiens</i> subsp. <i>decipiens</i>	* <i>Sonchus oleraceus</i>
<i>Eremophila ionantha</i>	* <i>Tribulus terrestris</i>

<i>Eremophila scoparia</i>	
Comments	
Significant prior disturbance.	


Site ref: PWR8	Location: Koolyanobbing	Date: 30/08/2020
		
Vegetation description	<i>Eucalyptus salubris</i> open woodland over <i>Senna artemisioides</i> subsp. <i>filifolia</i> and <i>Eremophila scoparia</i> open shrubland.	
Vegetation condition	Good	
Flora species present		
<i>Acacia colletioides</i> <i>Acacia inceana</i> ?subsp. <i>conformis</i> <i>Atriplex nummularia</i> <i>Atriplex bunburyana</i> <i>Atriplex vesicaria</i> <i>Austrostipa elegantissima</i> <i>*Carrichtera annua</i> <i>Dodonaea viscosa</i> <i>Enchylaena tomentosa</i> <i>Eragrostis dielsii</i> <i>Erodium cygnorum</i> <i>Eremophila drummondii</i> <i>Eremophila ionantha</i> <i>Eremophila scoparia</i>	<i>Eucalyptus salubris</i> <i>Exocarpos aphyllus</i> <i>Frankenia setosa</i> <i>Hydrocotyle</i> ? <i>intertexta</i> <i>Maireana georgei</i> <i>Maireana tomentosa</i> <i>Pittosporum angustifolium</i> <i>Ptilotus exaltatus</i> <i>Rhagodia drummondii</i> <i>Sclerolaena diacantha</i> <i>Senna artemisioides</i> subsp. <i>filifolia</i> <i>Senna</i> sp. <i>Solanum orbiculatum</i>	
Comments		
Prior disturbance		


Site ref: PWR9	Location: Koolyanobbing	Date: 30/08/2020
		
Adjacent vegetation description	<i>Eucalyptus yilgarnensis</i> open woodland over <i>Eremophila scoparia</i> and <i>Acacia inceana</i> low open shrubland over mixed chenopods.	
Vegetation condition	Good	
Flora species present		
<i>Acacia inceana</i> ?subsp. <i>conformis</i> <i>Acacia tetragonophylla</i> <i>Atriplex nummularia</i> <i>Atriplex vesicaria</i> <i>Austrostipa elegantissima</i> <i>*Carrichtera annua</i> <i>Cephalopterum drummondii</i> <i>Dodonaea viscosa</i> <i>Enchylaena tomentosa</i> <i>Eremophila drummondii</i> <i>Eremophila ionantha</i> <i>Eremophila scoparia</i> <i>Eucalyptus yilgarnensis</i> <i>Exocarpos aphyllus</i> <i>Frankenia setosa</i>	<i>Grevillea acuaria</i> <i>?Hybanthus floribundus</i> <i>Hydrocotyle ?intertexta</i> <i>Maireana tomentosa</i> <i>Maireana triptera</i> <i>Olearia muelleri</i> <i>Pittosporum angustifolium</i> <i>Ptilotus exaltatus</i> <i>Ptilotus holosericeus</i> <i>Ptilotus obovatus</i> <i>Rhagodia drummondii</i> <i>Scaevola spinescens</i> <i>Sclerolaena diacantha</i> <i>Senna artemisioides</i> subsp. <i>filifolia</i> <i>Solanum orbiculatum</i>	
Comments		


Site ref: PWR10	Location: Koolyanobbing	Date: 30/08/2020
		
Adjacent vegetation description	<i>Eucalyptus salubris</i> very open woodland over <i>Melaleuca hamata</i> tall shrubland over low open shrubland of <i>Atriplex vesicaria</i> and chenopods.	
Vegetation condition	Good	
Flora species present		
<i>Acacia tetragonophylla</i> <i>Angianthus tomentosus</i> <i>Atriplex codonocarpa</i> <i>Atriplex nummularia</i> <i>Atriplex vesicaria</i> <i>Austrostipa elegantissima</i> <i>*Carrichtera annua</i> <i>Carpobrotus modestus</i> <i>Cratystylis conocephala</i> <i>*Centaurea melitensis</i> <i>Dodonaea viscosa</i> <i>Enchylaena tomentosa</i> <i>Eragrostis dielsii</i> <i>Eremophila ionantha</i> <i>Eremophila scoparia</i>	<i>Eucalyptus salubris</i> <i>Exocarpos aphyllus</i> <i>Frankenia setosa</i> <i>Hydrocotyle ?intertexta</i> <i>Maireana georgei</i> <i>Maireana triptera</i> <i>Melaleuca hamata</i> <i>*Mesembryanthemum nodiflorum</i> <i>Ptilotus exaltatus</i> <i>Rhagodia drummondii</i> <i>Scaevola spinescens</i> <i>Senecio glossanthus</i> <i>*Sonchus oleraceus</i> <i>Tecticornia disarticulata</i>	
Comments		
Prior disturbance. Melaleuca has established in a constructed drain.		


Site ref: PWR11	Location: Koolyanobbing	Date: 30/08/2020
		
Adjacent vegetation description	<i>Eucalyptus corrugata</i> very open woodland over low open shrubland of <i>Atriplex</i> and <i>Maireana</i> species.	
Vegetation condition	Poor	
Flora species present		
<i>Acacia acuminata</i> <i>Atriplex codonocarpa</i> <i>Atriplex semilunaris</i> <i>Atriplex vesicaria</i> <i>Austrostipa elegantissima</i> <i>Austrostipa nitida</i> <i>*Carrichtera annua</i> <i>*Centaurea melitensis</i> <i>Enchylaena tomentosa</i> <i>Eragrostis dielsii</i> <i>Eriachne pulchella</i> <i>Erodium cygnorum</i> <i>Eremophila alternifolia</i> <i>Eremophila decipiens subsp. decipiens</i> <i>Eremophila ionantha</i> <i>Eucalyptus corrugata</i> <i>Eucalyptus salubris</i> <i>Euphorbia drummondii</i> <i>Maireana brevifolia</i>	<i>Maireana tomentosa</i> <i>Maireana triptera</i> <i>Monachather paradoxus</i> <i>Ptilotus exaltatus</i> <i>Roepera aurantiaca</i> <i>Roepera eremaea</i> <i>*Rumex vesicarius</i> <i>Salsola australis</i> <i>Scaevola spinescens</i> <i>Sclerolaena diacantha</i> <i>Senecio glossanthus</i> <i>Senna artemisioides subsp. filifolia</i> <i>Sida calyxhymentia</i> <i>Solanum cleistogamum</i> <i>Solanum lasiophyllum</i> <i>Solanum orbiculatum</i> <i>*Sonchus oleraceus</i> <i>Swainsona</i> sp. <i>*Tribulus terrestris</i>	


<i>Maireana georgei</i>	
Comments	
Prior disturbance. Weed species present.	


Site ref: PWR12	Location: Windarling	Date: 02/09/2020
		
Adjacent vegetation description	<i>Eucalyptus longissima</i> woodland over tall open shrubland of <i>Acacia caesaneura</i> over low open shrubland of mixed species.	
Vegetation condition	Degraded	
Flora species present		
<i>Acacia caesaneura</i> <i>Acacia enervia</i> <i>Acacia ramulosa</i> <i>Aristida contorta</i> <i>Cheilanthes sieberi</i> <i>Dianella revoluta</i> var. <i>divaricata</i> <i>Eremophila clarkei</i> <i>Eremophila interstans</i> subsp. <i>interstans</i> <i>Eucalyptus longissimi</i>	<i>Gastrolobium floribundum</i> <i>Monachather paradoxus</i> <i>Philothea brucei</i> subsp. <i>brucei</i> <i>Ptilotus obovatus</i> <i>Scaevola spinescens</i> <i>Sclerolaena cuneata</i> <i>Sida</i> sp. <i>Excedentifolia</i> <i>Solanum lasiophyllum</i> <i>Solanum nummularium</i>	
Comments		
High level of disturbance.		


Site ref: PWR13	Location: Windarling	Date: 02/09/2020
		
Adjacent vegetation description	<i>Eucalyptus longissima</i> very open woodland over <i>Acacia caesaneura</i> tall open shrubland over mixed <i>Acacia</i> spp. shrubland.	
Vegetation condition	Degraded	
Flora species present		
<i>Acacia acuminata</i> <i>Acacia burkittii</i> <i>Acacia caesaneura</i> <i>Acacia tetragonophylla</i> <i>Allocasuarina eriochlamys</i> subsp. <i>eriochlamys</i> <i>Aristida contorta</i> <i>Austrostipa elegantissima</i> <i>Calandrinia eremaea</i> <i>Eremophila latrobei</i> subsp. <i>latrobei</i> <i>Eucalyptus longissima</i> <i>Eremophila ?drummondii</i> <i>Goodenia rosea</i>	<i>Maireana tomentosa</i> <i>Maireana triptera</i> <i>Monachather paradoxus</i> <i>Pittosporum angustifolium</i> <i>Olearia muelleri</i> <i>Ptilotus exaltatus</i> <i>Ptilotus obovatus</i> <i>Scaevola spinescens</i> <i>Sclerolaena cuneata</i> <i>Senna artemisioides</i> subsp. <i>filifolia</i> <i>Sida petrophila</i>	
Comments		
High level of disturbance.		


Site ref: PWR14	Location: Windarling	Date: 02/09/2020
		
Adjacent vegetation description	<i>Acacia aneura</i> tall open shrubland over <i>Acacia caesaneura</i> and <i>Acacia acuminata</i> low shrubland.	
Vegetation condition	Degraded	
Flora species present		
<i>Acacia acuminata</i> <i>Acacia aneura</i> <i>Acacia caesaneura</i> <i>Acacia murrayana</i> <i>Acacia tetragonophylla</i> <i>Austrostipa elegantissima</i> <i>Brachychiton gregorii</i> <i>Cheilanthes sieberi</i> <i>Dianella revoluta</i> var. <i>divaricata</i>	<i>Eremophila alternifolia</i> <i>Eremophila clarkei</i> <i>Eremophila drummondii</i> <i>Maireana georgei</i> <i>Monachather paradoxus</i> <i>Ptilotus obovatus</i> <i>Senna artemisioides</i> subsp. <i>filifolia</i> <i>Sida</i> sp. <i>excedentifolia</i> <i>Solanum lasiophyllum</i>	
Comments		
High level of disturbance.		

Site ref: PWR15	Location: Windarling	Date: 02/09/2020
		
Adjacent vegetation description	<i>Acacia acuminata</i> and <i>Acacia ramulosa</i> open shrubland over <i>Senna artemisioides</i> , <i>Eremophila clarkei</i> and <i>Scaevola spinescens</i> very open shrubland.	
Vegetation condition	Degraded	
Flora species present		
<i>Acacia acuminata</i> <i>Acacia caesaneura</i> <i>Acacia ramulosa</i> <i>Acacia tetragonophylla</i> <i>Austrostipa elegantissima</i> <i>Brachychiton gregorii</i> <i>Dianella revoluta</i> var. <i>divaricata</i> <i>Eremophila clarkei</i> <i>Maireana georgei</i>	<i>Maireana platycarpa</i> <i>Maireana tomentosa</i> <i>Pittosporum angustifolium</i> <i>Ptilotus obovatus</i> <i>Salsola australis</i> <i>Scaevola spinescens</i> <i>Sclerolaena cuneata</i> <i>Senna artemisioides</i> subsp. <i>filifolia</i> <i>Solanum lasiophyllum</i>	
Comments		
High level of disturbance.		

Site ref: PWR16	Location: Windarling	Date: 02/09/2020
		
Adjacent vegetation description	<i>Eucalyptus corrugata</i> very open woodland over <i>Acacia cockertoniana</i> open shrubland over a mixed species open low shrubland.	
Vegetation condition	Degraded	
Flora species present		
<i>Acacia acuminata</i> <i>Acacia caesaneura</i> <i>Acacia cockertoniana</i> <i>Acacia tetragonophylla</i> <i>Allocasuarina eriochlamys</i> subsp. <i>eriochlamys</i> <i>Dodonaea lobulata</i> <i>Eremophila clarkei</i> <i>Eremophila oppositifolia</i> subsp. <i>angustifolia</i> <i>Eucalyptus corrugata</i> <i>Maireana platycarpa</i>	<i>Maireana tomentosa</i> <i>Olearia muelleri</i> <i>Philothea brucei</i> subsp. <i>brucei</i> <i>Ptilotus exaltatus</i> <i>Ptilotus obovatus</i> <i>Roepera eremaea</i> <i>Scaevola spinescens</i> <i>Sclerolaena cuneata</i> <i>Senna artemisioides</i> subsp. <i>filifolia</i>	
Comments		
High level of disturbance.		

Site ref: WE01	Location: Koolyanobbing	Date: 16/10/2020
		
Adjacent vegetation description	<i>Eucalyptus salubris</i> open woodland over isolated <i>Brachychiton gregorii</i> and <i>Acacia acuminata</i> individuals over <i>Atriplex vesicaria</i> and mixed <i>Maireana</i> species low open shrubland.	
Vegetation condition	Degraded	
Flora species present		
<i>Acacia acuminata</i> <i>Acacia tetragonophylla</i> <i>Atriplex bunburyana</i> <i>Atriplex nummularia</i> <i>Atriplex vesicaria</i> <i>Austrostipa elegantissima</i> <i>Brachychiton gregorii</i> <i>Dodonaea viscosa subsp. angustissima</i> <i>Calandrinia eremaea</i> <i>Enchylaena tomentosa</i> <i>Eremophila decipiens subsp. decipiens</i> <i>Maireana georgei</i> <i>Maireana tomentosa</i>	<i>Maireana triptera</i> <i>Pittosporum angustifolium</i> <i>Ptilotus exaltatus</i> <i>Ptilotus holosericeus</i> <i>Rhagodia drummondii</i> <i>Scaevola spinescens</i> <i>Sclerolaena diacantha</i> <i>Senna artemisioides subsp. filifolia</i> <i>Solanum cleistogamum</i> <i>Solanum hoplopetalum</i> <i>Solanum orbiculatum</i> * <i>Agave americana</i> * <i>Carrichtera annua</i>	
Comments		
High level of disturbance and weed species. Former townsite.		

Site ref: WE02	Location: Koolyanobbing	Date: 16/10/2020
		
Adjacent vegetation description	<i>Eucalyptus salubris</i> open woodland over isolated <i>Brachychiton gregorii</i> and <i>Acacia acuminata</i> individuals over <i>Atriplex vesicaria</i> and mixed <i>Maireana</i> species low open shrubland.	
Vegetation condition	Degraded	
Flora species present		
<i>Acacia acuminata</i> <i>Atriplex bunburyana</i> <i>Atriplex nummularia</i> <i>Callitris columellaris</i> <i>Eremophila decipiens</i> subsp. <i>decipiens</i> <i>Eucalyptus ?cylindrocarpa</i> <i>Eucalyptus salubris</i> <i>Eucalyptus woodwardia</i> <i>Euphorbia drummondii</i> <i>Maireana brevifolia</i> <i>Maireana georgei</i> <i>Maireana tomentosa</i> <i>Maireana triptera</i> <i>Pittosporum angustifolium</i> <i>Ptilotus exaltatus</i>	<i>Ptilotus obovatus</i> <i>Rhagodia drummondii</i> <i>Salsola australis</i> <i>Santalum acuminatum</i> <i>Scaevola spinescens</i> <i>Solanum cleistogamum</i> <i>*Asphodelus fistulosus</i> <i>*Carrichtera annua</i> <i>*Centaurea melitensis</i> <i>*Cucumis myriocarpus</i> <i>*Heliotropium europaeum</i> <i>*Opuntia stricta</i> <i>*Sisymbrium irio</i> <i>*Sonchus oleraceus</i>	
Comments		
High level of disturbance and weed species. Former townsite.		

Site ref: WE03	Location: Koolyanobbing	Date: 16/10/2020
		
Adjacent vegetation description	<i>Eucalyptus salubris</i> open woodland over isolated <i>Brachychiton gregorii</i> and <i>Acacia acuminata</i> individuals over <i>Atriplex vesicaria</i> and mixed <i>Marieana</i> species low open shrubland.	
Vegetation condition	Degraded	
Flora species present		
<i>Acacia acuminata</i> <i>?Aristida contorta</i> <i>Arthropodium curvipes</i> <i>Atriplex nummularia</i> <i>Atriplex vesicaria</i> <i>Brachychiton gregorii</i> <i>Calandrinia eremaea</i> <i>Dodonaea inaequifolia</i> <i>Enchylaena tomentosa</i> <i>Eremophila decipiens</i> subsp. <i>decipiens</i> <i>Eucalyptus ?cylindrocarpa</i> <i>Eucalyptus Eremophila</i> <i>Eucalyptus longicornis</i> <i>Eucalyptus salmonophloia</i> <i>Eucalyptus salubris</i> <i>Eucalyptus woodwardii</i> <i>Maireana brevifolia</i>	<i>Oxalis perennans</i> <i>Ptilotus exaltatus</i> <i>Ptilotus gaudichaudii</i> <i>Ptilotus obovatus</i> <i>Roepera aurantiaca</i> <i>Salsola australis</i> <i>Santalum acuminatum</i> <i>Sclerolaena diacantha</i> <i>Senna artemisioides</i> subsp. <i>filifolia</i> <i>Solanum cleistogamum</i> <i>Solanum lasiophyllum</i> <i>*Agave americana</i> <i>*Brassica tournefortii</i> <i>*Carrichtera annua</i> <i>*Centaurea melitensis</i> <i>*Cleretum papulosum</i> <i>*Mesembryanthemum nodiflorum</i>	

Maireana georgei
Maireana tomentosa

**Opuntia stricta*
**Sisymbrium irio*
**Tamarix aphylla*

Comments

High level of disturbance and weed species. Former townsite.

Appendix 4

Flora Species Recorded

Family	Genus & Species	PWR1	PWR2	PWR3	PWR4	PWR5	PWR6	PWR7	PWR8	PWR9	PWR10	PWR11	PWR12	PWR13	PWR14	PWR15	PWR16	WE01	WE02	WE03
Fabaceae	<i>Acacia acuminata</i>		X				X	X				X		X	X	X	X	X	X	X
Fabaceae	<i>Acacia aneura</i>														X					
Fabaceae	<i>Acacia burkittii</i>													X						
Fabaceae	<i>Acacia caesaneura</i>												X	X	X	X	X			
Fabaceae	<i>Acacia cockertonia</i>																X			
Fabaceae	<i>Acacia colletioides</i>								X											
Fabaceae	<i>Acacia enervia</i>												X							
Fabaceae	<i>Acacia erinacea</i>			X																
Fabaceae	<i>Acacia murrayana</i>						X								X					
Fabaceae	<i>Acacia ramulosa</i>												X			X				
Fabaceae	<i>Acacia tetragonophylla</i>									X	X			X	X	X	X	X		
Fabaceae	<i>Acacia inceana</i> ?subsp. <i>conformis</i>				X	X		X	X	X								X		
Fabaceae	<i>Acacia merrallii</i>					X														
Fabaceae	<i>Gastrolobium floribundum</i>												X							
Fabaceae	<i>Senna artemisioides</i> subsp. <i>filifolia</i>	X	X			X	X	X	X	X		X		X	X	X	X	X		X
Fabaceae	<i>Senna</i> sp.								X											
Fabaceae	<i>Swainsona</i> sp.											X								
Frankeniaceae	<i>Frankenia setosa</i>							X	X	X	X									
Goodeniaceae	<i>Scaevola spinescens</i>	X		X	X		X	X		X	X	X	X	X		X	X	X	X	
Goodeniaceae	<i>Sclerolaena cuneata</i>												X	X		X	X			
Goodeniaceae	<i>Sclerolaena diacantha</i>	X	X	X		X			X	X		X						X		X
Goodeniaceae	<i>Sclerolaena tomentosa</i>							X												
Goodeniaceae	<i>Goodenia rosea</i>													X						
Hemerocallidaceae	<i>Dianella revoluta</i> var. <i>divaricata</i>												X		X	X				
Lamiaceae	* <i>Salvia verbenaca</i>							X												
Malvaceae	<i>Brachychiton gregorii</i>		X												X	X		X		X
Malvaceae	<i>Sida calyxhymenia</i>											X								
Malvaceae	<i>Sida petrophila</i>													X						
Malvaceae	<i>Sida</i> sp. <i>excedentifolia</i>												X		X					
Montiaceae	<i>Calandrinia ?eremaea</i>							X												
Montiaceae	<i>Calandrinia eremaea</i>		X											X						X
Myrtaceae	<i>Eucalyptus ?cylindrocarpa</i>																		X	X
Myrtaceae	<i>Eucalyptus corrugata</i>			X	X							X					X			
Myrtaceae	<i>Eucalyptus eremophila</i>																			X
Myrtaceae	<i>Eucalyptus longicornis</i>		X	X		X														X
Myrtaceae	<i>Eucalyptus longissima</i>												X	X						
Myrtaceae	<i>Eucalyptus salmonophloia</i>	X																		X
Myrtaceae	<i>Eucalyptus salubris</i>	X	X	X	X	X	X	X	X		X	X					X		X	X
Myrtaceae	<i>Eucalyptus torquata</i>	X																		
Myrtaceae	<i>Eucalyptus woodwardii</i>	X																	X	X
Myrtaceae	<i>Eucalyptus yilgarensis</i>								X											
Myrtaceae	<i>Eucalyptus leptopoda</i> subsp. <i>subluta</i>							X												
Myrtaceae	<i>Melaleuca ?hamata</i>										X									
Oxalidaceae	<i>Oxalis perennans</i>		X																	X
Pittosporaceae	<i>Pittosporum angustifolium</i>					X	X	X	X	X				X		X		X	X	

