

Basic vertebrate fauna risk assessment

Eureka project area

Prepared for: Red Dirt Metals

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EXECUTIVE SUMMARY

Red Dirt Metals is planning to mine an area adjacent to the now closed Eureka Mine which was mined for most of the 1990s. The project area assessed comprises a single area (~721ha) on tenements M24/189, M24/585, M24/586, M24/585 and P25/5116.

The project area supports the following two broad fauna habitats: a) eucalypt woodland over shrubland, and mixed shrubland. In addition there are multiple areas that have been disturbed by earlier and more recent exploration and mining activity and these are largely devoid of terrestrial vertebrate fauna.

Clearing vegetation and activities associated with the mine development and operation will result in the loss of small fauna and those that retreat to burrows, such as reptiles and mammals. Nocturnal species are unlikely to be active when most of the land clearing and construction work is taking place which will inevitably result in these individuals being killed or injured in their burrows or as they attempt to escape. Larger terrestrial animals and avian species will most often move to adjacent areas. These species will be required to establish new activity areas and home ranges, and this could result in the temporary displacement of resident species, however, this loss of fauna is unlikely to have a significant impact when considered in a bioregional context.

There are no conservation significant vertebrate fauna species potentially in the project area that are likely to be significantly impacted by the proposed vegetation clearing program and mine development and operations. Therefore referral under the *EPBC Act* is not recommended.

It is recommended that:

- an induction program that includes a component on managing fauna is a mandatory component of working on the Eureka mining project;
- pets are not permitted on site;
- all waste and rubbish be contained in bins and regularly removed from site or buried so it is unavailable to pest species;
- feeding of native fauna should be actively discouraged;
- a feral and pest animal management program focussing on feral cats, and rabbits if their abundance increases, is implemented to reduce the negative impacts on native fauna;
- speed limits are implemented and enforced on-site;
- signage is erected to indicate the maximum travelling speeds and the possible presence of wildlife crossing roads;
- the impact of dust on adjacent vegetation and fauna habitat is managed and monitored against appropriate KPIs; and
- a vertebrate fauna management plan is prepared and implemented for the Eureka mining project.

1. INTRODUCTION

1.1 BACKGROUND

Red Dirt Metals is planning to mine an area adjacent to the now closed Eureka Mine (i.e. project area) which was mined for most of the 1990s. The project area is approximately 48km north of Kalgoorlie and approximately 2km west of the Goldfields Highway (Figure 1).

The project area assessed in this report comprises a single area (~721ha; Figure 2) on tenements M24/189, M24/585, M24/586, M24/585 and P25/5116.

1.2 PROJECT OBJECTIVES AND SCOPE OF WORKS

Terrestrial Ecosystems was commissioned by Red Dirt Metals to undertake a Basic level fauna risk assessment and a search of the project area for **Malleefowl** and their mounds. The purpose of this Basic level fauna risk assessment was to provide information to the Department of Mines, Industry Regulation and Safety and / or the Environmental Protection Authority (EPA) on the potential impacts on the vertebrate fauna assemblage in the project area to enable the proposed development to be adequately assessed. The methodology broadly follows that described in the Environmental Protection Authority (EPA; 2020) *Technical Guidance – Terrestrial vertebrate fauna surveys for environmental impact assessment*.

A Basic level fauna risk assessment involves undertaking a desktop review and site visit. The objectives of this fauna risk assessment were to:

- provide an indication of the vertebrate fauna assemblage (i.e. reptiles, amphibians, mammals and birds) on and near the project area so that potential impacts on the fauna and fauna assemblage might be adequately assessed;
- identify the presence and/or potential risk of impacts on species of conservation significance that are present or likely to be present in the project area;
- assess the impact and environmental risks associated with the proposed development on the fauna assemblage;
- determine if any additional surveys are required to assess the potential impact on fauna assemblages in the project area, in particular, impacts on species of conservation significance; and
- make recommendations that avoid, mitigate or minimise potential impacts on resident fauna.

To achieve these objectives, Terrestrial Ecosystems:

- searched the Commonwealth Governments database of fauna of national environmental significance to identify species potentially occurring within the area that are protected under the *Environment Protection and Biodiversity Conservation Act 1999 (EPBC 1999)* or international migratory bird agreements (JAMBA/CAMBA);
- searched Terrestrial Ecosystems' database (includes Atlas of Living Australia and Western Australian Museum (WAM) collection) to identify potential vertebrate fauna within the area;
- reviewed previous fauna surveys conducted near the project area;
- undertook a search of the project area for Malleefowl and their mounds and to identify available fauna habitat types;
- discussed the likelihood of species listed under the *EPBC Act* and the Western Australian *Biodiversity Conservation Act 2016 (BC Act 2016)* being present in the project area; and
- provided management recommendations to avoid, mitigate and minimise potential impacts on the fauna in the project area.

2. EXISTING ENVIRONMENT

2.1 LOCATION OF PROJECT AREA

The project area is in the Murchison 1 (MUR1 – East Murchison subregion) IBRA bioregion. Cowan (2003) described the East Murchison IBRA subregion as internally draining, with extensive areas of elevated red desert sandplains with minimal dune development. The bioregion includes broad plains with red-brown soils and breakaway complexes as well as red sandplains. Vegetation is dominated by Mulga woodlands often with ephemerals, hummock grasslands, saltbush shrublands and halosarcia shrublands.

The threatening processes for conservation significant fauna were listed by Cowan (2003) as foxes and cats. In addition, cattle grazing and mining activity over many years have significantly degraded small parcels of land dotted throughout the landscape.

2.2 LAND USE HISTORY

The dominant land uses for the bioregion are native pasture to support grazing and unallocated crown land, and to a much lesser extent mining (Cowan 2003).

2.3 CLIMATE

The project area is characterised as semi-arid. Kalgoorlie, which is 48km to the south, has an annual rainfall of approximately 266mm, although this varies considerably from year-to-year. The highest mean maximum and minimum temperatures in Kalgoorlie are in January with an average of 33.7°C and 18.3°C, respectively (Bureau of Meteorology 2022). The lowest mean daily maximum and minimum temperatures occur in July (Chart 1). Rainfall is spread over the year with summer thunderstorms and winter rains resulting from low pressure cells moving in an easterly direction.

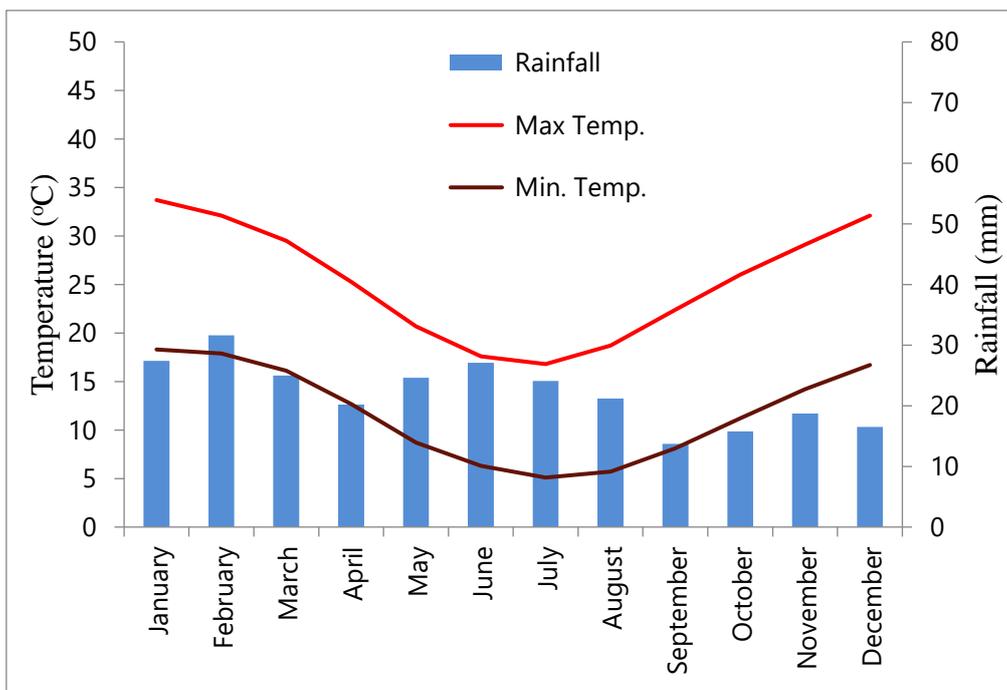


Chart 1. Monthly weather for Kalgoorlie

2.4 REGIONAL BIOLOGICAL FAUNA CONTEXT OF PROJECT AREA

Numerous vertebrate fauna surveys have been undertaken near the project area. These include:

- Bamford, M.J., Davies, S.J.J.F., Ladd, P.G. (1990) *Biological Survey of the Kangaroo Hills and Calooli Timber Reserves, Coolgardie*, Western Australia.
- Chapman, A., Kealley, I., McMillan, D., McMillan, P., Rolland, G, (1991) *Biological surveys of four Goldfields Reserves*, Department of Conservation and Land Management, 1-26.
- Hart and Associates (2000) *Anaconda Nickel Ltd, Cawse Expansion Project, Fauna Survey*, Unpublished report for Anaconda Nickel Ltd, Perth.
- McKenzie, N.L., Rolfe, J.K. and Youngson, W.K. (1992) IV Vertebrate fauna, *Records of the Western Australian Museum*, Supplement, No 41, 37-64.
- Ninox Wildlife Consulting (1999) *Fauna Survey for the White Foil Gold Project*, Unpublished report for Mines and Resources Australia Pty Ltd, Perth.
- Thompson, S.A. (2004) *Mine site rehabilitation index using reptile assemblage as a bio-indicator*, PhD thesis, Edith Cowan University.

In addition, we have included in the Thompson (2004) fauna survey data, data collected after Thompson's (2004) PhD was completed. Data in the Atlas of Living Australia and Western Australian Museum collection have also been added to the information contained in Appendix B, and the compilation of the species lists for the project area.

The most useful and representative data for the project area is the information from Thompson's PhD thesis and the additional data from these surveys. These surveys were undertaken in fauna habitat similar to that in the project area and are nearby. Hart and Associates (2000) also surveyed the Cawse mine site, which is nearby.

2.4.1 Fauna species at risk

In the now dated Cowan (2003) report, fauna species identified as being at risk in the East Murchison subregion were Bilby (*Macrotis lagotis*), Marsupial Mole (*Notoryctes typhlops*), Mulgara (*Dasyercus cristicauda*), Malleefowl (*Leipoa ocellata*), Princess Parrot (*Polytelis alexandrae*), Slender-billed Thornbill (*Acanthiza iredalei iredalei*), Giant Desert Skink (*Liopholis kintorei*) and Peregrine Falcon (*Falco peregrinus*).

Since then the Grey Falcon (*Falco hypoleucos*), Night Parrot (*Pezoporus occidentalis*) and the Sandhill Dunnart (*Sminthopsis psammophila*) have been added to the list for many areas.

This report assesses the potential for the current list of conservation significant species likely to be found in the project area being impacted by the proposed development.

3. METHODOLOGY

3.1 DATABASE SEARCHES

A search of the *EPBC Act 1999* online list of threatened species was undertaken to identify species of conservation interest to the Commonwealth Government under the *EPBC Act* in the vicinity of the project area. In addition, a desktop search of the Terrestrial Ecosystems' fauna survey database was used to develop an appreciation of the vertebrate fauna assemblages in and near the project area.

Other more general texts were also used to provide supplementary information on vertebrates in the bioregion, including Tyler et al. (2000) for frogs; Storr et al. (1983, 1990, 1999, 2002) and Thompson and Thompson (2010) for reptiles; Johnstone and Storr (1998b, 2004) for birds; and Van Dyck and Strahan (2008) for mammals.

Collectively these sources of information were used to create lists of species expected to utilise the project and adjacent areas. It should be noted that these lists will include species that have been recorded in the general region but are possibly vagrants and they will not generally be found in the project area due to a lack of suitable habitat. Vagrants can be recorded almost anywhere. Many of the bird, mammal, reptile and amphibian species have specific habitat requirements that may be present in the general area but not in the project area. Also, the ecology of many of these species is often not well understood and it can sometimes be difficult to indicate those species whose specific habitat requirements are not present in the project area. Consequently, many species will be included in the lists produced from database searches but will not be present in the actual project area.

There are errors in most databases, including Atlas of Living Australia and the WA Museum (WAM) collection. These errors occur because of a misidentification of individuals, taxonomic name changes and incorrect coordinates being entered into the database. Terrestrial Ecosystems was unable to verify the primary records, so it has used the information provided. Readers should therefore appreciate that species lists and fauna surveys reported in the appendices may include these errors. These databases also contain historical records and therefore include species that are no longer present in the area (e.g. *Myrmecobius fasciatus*, *Bettongia lesueur* and *Macrotis lagotis*).

Because the project area is within 30km of White Flag and Black Flag Lakes, numerous water birds are likely to be present in database searches, even though there is no available habitat for these species in the project area.

3.2 MALLEEFOWL SEARCH

The project area was searched on foot and with an ATV for Malleefowl and their mounds on 10-11 May 2022. The Malleefowl and mound survey was also used to record fauna habitat types and condition in the project area.

3.3 FAUNA HABITAT ASSESSMENT

The fauna habitat assessment was undertaken for the entire project area. This field assessment had two foci:

- assessing fauna habitat types and their condition; and
- assessing the possible presence of and recording evidence of conservation significant fauna so that mine planning can minimise potential impacts and so that mitigation and management strategies can be developed and implemented to reduce potential impacts.

The fauna habitat assessor stopped at multiple locations within the project area and recorded a suite of data about the fauna habitat and its condition. This information included a description of the habitat structure,

habitat condition, landform, soils and vegetation and time since last fire. The following data were recorded at each location as part of the habitat assessment:

Observer's Name:	
Coordinates of the location as UTM (GDA94):	
Fire history – options	
<input type="checkbox"/> > 5 years	
<input type="checkbox"/> 1-5 years	
<input type="checkbox"/> < 1 year	
Landform – options	
<input type="checkbox"/> Beach	<input type="checkbox"/> Lower slope
<input type="checkbox"/> Clay plain	<input type="checkbox"/> Mid slope
<input type="checkbox"/> Cliff	<input type="checkbox"/> Ridge
<input type="checkbox"/> Creek line	<input type="checkbox"/> River
<input type="checkbox"/> Dam	<input type="checkbox"/> Rocky outcrop / breakaway
<input type="checkbox"/> Drainage line	<input type="checkbox"/> Salt lake
<input type="checkbox"/> Dune crest	<input type="checkbox"/> Sand dune
<input type="checkbox"/> Dune slope	<input type="checkbox"/> Sand plain
<input type="checkbox"/> Dune swale	<input type="checkbox"/> Stony plain
<input type="checkbox"/> Escarpment	<input type="checkbox"/> Swamp
<input type="checkbox"/> Flat	<input type="checkbox"/> Undulating
<input type="checkbox"/> Gorge	<input type="checkbox"/> Upper slope
<input type="checkbox"/> Gully	<input type="checkbox"/> Wetland
<input type="checkbox"/> Intertidal / mangrove	<input type="checkbox"/> Water hole
<input type="checkbox"/> Lake / lake edge	
Habitat quality – options	
<input type="checkbox"/> <i>High quality fauna habitat</i> – These areas closely approximate the vegetation mix and quality that would have been in the area prior to any disturbance. The habitat has connectivity with other habitats and is likely to contain the most natural vertebrate fauna assemblage.	
<input type="checkbox"/> <i>Very good fauna habitat</i> - These areas show minimal signs of disturbance (e.g. grazing, clearing, fragmentation, weeds) and generally retain many of the characteristics of the habitat if it had not been disturbed. The habitat has connectivity with other habitats and fauna assemblages in these areas are likely to be minimally effected by disturbance.	
<input type="checkbox"/> <i>Good fauna habitat</i> – These areas showed signs of disturbance (e.g. grazing, clearing, fragmentation, weeds) but generally retain many of the characteristics of the habitat if it had not been disturbed. The habitat has connectivity with other habitats and fauna assemblages in these areas are likely to be affected by disturbance.	
<input type="checkbox"/> <i>Disturbed fauna habitat</i> – These areas showed signs of significant disturbance. Many of the trees, shrubs and undergrowth are cleared. These areas may be in the early succession and regeneration stages. Areas may show signs of significant grazing, containing weeds or have been damaged by vehicle or machinery. Habitats are fragmented or have limited connectivity with other fauna habitats. Fauna assemblages in these areas are likely to differ significantly from what might be expected in the area had the disturbance not occurred.	

Observer's Name:	
<input type="checkbox"/> <i>Highly degraded fauna habitat</i> – These areas often have a significant loss of vegetation, an abundance of weeds, and a large number of vehicle tracks or are completely cleared. Limited or no fauna habitat connectivity. Fauna assemblages in these areas are likely to be significantly different to what might have been in the area pre-disturbance.	
<i>Habitat structure</i> – combined into habitat description	
<i>Upper stratum</i>	
<input type="checkbox"/> Tall open woodland	<input type="checkbox"/> Scattered tall trees
<input type="checkbox"/> Tall woodland	<input type="checkbox"/> Scattered trees
<input type="checkbox"/> Open woodland	<input type="checkbox"/> Scattered low trees
<input type="checkbox"/> Woodland	<input type="checkbox"/> Low closed forest
<input type="checkbox"/> Open forest	<input type="checkbox"/> Low open forest
<input type="checkbox"/> Closed forest	<input type="checkbox"/> Low woodland
<input type="checkbox"/> Tall closed forest	<input type="checkbox"/> Low open woodland
<input type="checkbox"/> Tall open forest	
<i>Middle stratum</i>	
<input type="checkbox"/> Shrubland	<input type="checkbox"/> Open heath
<input type="checkbox"/> Tall shrubland	<input type="checkbox"/> Low closed heath
<input type="checkbox"/> Tall open shrubland	<input type="checkbox"/> Low open heath
<input type="checkbox"/> Low shrubland	<input type="checkbox"/> Tall closed scrub
<input type="checkbox"/> Scattered low shrubs	<input type="checkbox"/> Tall open scrub
<input type="checkbox"/> Low open shrubland	<input type="checkbox"/> Scattered tall shrubs
<input type="checkbox"/> Scattered tall shrubs	<input type="checkbox"/> Open shrubland
<input type="checkbox"/> Closed heath	<input type="checkbox"/> Scattered shrubs
<i>Lower stratum</i>	
<input type="checkbox"/> Closed hummock grassland	<input type="checkbox"/> Closed tussock grassland / sedgeland / herbland
<input type="checkbox"/> Mid-dense hummock grassland	<input type="checkbox"/> Tussock grass land / sedgeland / herbland
<input type="checkbox"/> Hummock grassland	<input type="checkbox"/> Open tussock grassland / sedgeland / herbland
<input type="checkbox"/> Open hummock grassland	<input type="checkbox"/> Scattered tussock / grasses / sedges / herbs
<input type="checkbox"/> Scattered hummock grassland	<input type="checkbox"/> Very open tussock grassland / herbland
Soil Type – options	
<input type="checkbox"/> Sand	<input type="checkbox"/> Silty loam
<input type="checkbox"/> Loamy sand	<input type="checkbox"/> Sand clay loam
<input type="checkbox"/> Clayey sand	<input type="checkbox"/> Clay
<input type="checkbox"/> Clay loam	<input type="checkbox"/> Peat / organic
<input type="checkbox"/> Silty clay loam	<input type="checkbox"/> Stony
<input type="checkbox"/> Sandy loam	
Soil colour - options	

Observer's Name:	
<input type="checkbox"/> Black	<input type="checkbox"/> Red
<input type="checkbox"/> Brown	<input type="checkbox"/> White
<input type="checkbox"/> Grey	<input type="checkbox"/> Yellow
<input type="checkbox"/> Orange	
Surface stones – options	
<input type="checkbox"/> None	<input type="checkbox"/> Boulders (>250mm)
<input type="checkbox"/> Pebbles (0-50mm)	<input type="checkbox"/> Rocks
<input type="checkbox"/> Cobbles (51-250)	

3.4 SURVEY AND REPORTING STAFF

Dr Scott Thompson and John Radford undertook the site investigation, fauna habitat assessment and search for Malleefowl and their mounds. Dr Graham Thompson prepared the report and Dr Scott Thompson reviewed the report before it was sent to the client. Both senior scientists have appropriate relevant post-graduate qualifications, extensive experience in conducting fauna assessments in the Goldfields, have published research articles on biodiversity, fauna assemblages, conservation significant species, survey strategies for Malleefowl, trapping techniques and temporal variations in trapped fauna assemblages based on Goldfields surveys and are therefore appropriately trained and experienced for the task of preparing this assessment.

3.5 LIMITATIONS

This Basic fauna risk assessment is based on information contained in the Commonwealth Government's online EPBC database of matters of national environmental significance (MNES) and other published and unpublished fauna survey data for the bioregion and a site visit. It is acknowledged that multiple surveys conducted in different seasons, repeated over several years are necessary to fully appreciate the fauna assemblage in the project area.

The Environmental Protection Authority's (EPA; 2020) *Technical Guidance – Terrestrial vertebrate fauna surveys for environmental impact assessment* suggested that fauna surveys may be limited by many variables. Limitations associated with each of these variables are assessed in Table 1.

Table 1. Fauna survey limitations and constraints

Possible limitations	Constraint (yes/no); significant, moderate or negligible	Comment
Competency and experience of the consultant carrying out this assessment	No	The environmental scientists that undertook the site assessment, drafted and reviewed this report are familiar with the vertebrate fauna of this bioregion.
Scope	No	All aspects of the scope of works have been addressed.
Proportion of fauna identified, recorded and/or collected	No	Not applicable.

Possible limitations	Constraint (yes/no); significant, moderate or negligible	Comment
Accuracy of previous survey work	Yes, negligible	Terrestrial Ecosystems has reported fauna survey data recorded by various authors but is not able to vouch for the accuracy of much of this information. It is acknowledged that the taxonomy of Western Australian vertebrates is continually being revised and the nomenclature of some of the species listed in the appendices may have changed since publication by the authors.
Sources of information	Yes, negligible	Vertebrate fauna information was available from on-line databases and unpublished and published reports of surveys conducted in the bioregion in a variety of habitat types. Many of these surveys employed a low level of trapping effort which significantly impacts on the capacity of these data to represent the fauna assemblages in the areas surveyed.
Proportion of the task achieved	No	All tasks completed.
Timing/weather/ season/ cycle	N/A	Weather was suitable for a site investigation.
Disturbances which affected results of the survey	No	Disturbance areas throughout the project area have been factored into this assessment.
Intensity of survey effort	N/A	
Completeness	No	All aspects of this assessment have been completed.
Resources	No	Adequate resources were available.
Remoteness and/or access problems	No	All areas could be accessed.
Availability of contextual information on the region	No	There is adequate contextual information to determine vertebrate fauna species potentially in the project area.

4. RESULTS

4.1 FAUNA HABITAT

The project area supports the following two broad fauna habitats:

- eucalypt woodland over shrubland (Plates 1-4); and
- mixed shrubland (Plates 5-6).

In addition there are multiple areas that have been disturbed (Plates 7-10) by earlier and more recent exploration and mining activity and these areas are largely devoid of terrestrial vertebrate fauna.



Plate 1. Eucalypt woodland over shrubland



Plate 2. Eucalypt woodland over shrubland



Plate 3. Eucalypt woodland over shrubland



Plate 4. Eucalypt woodland over shrubland



Plate 5. Mixed shrubland



Plate 6. Mixed shrubland



Plate 7. Disturbed area



Plate 8. Disturbed area



Plate 9. Disturbed area



Plate 10. Disturbed area

The results of the rapid habitat assessment are provided in Appendix D. Images of the habitat at each of these assessment points provides a more comprehensive overview of the habitats in the project area.

4.2 MALLEEFOWL

The project area was searched for Malleefowl mounds and tracks. No Malleefowl or their mounds were present in the project area.

4.3 FERAL PESTS

Rabbits were present in the project area (Plates 11-12).



Plate 11. Rabbit warren



Plate 12. Rabbit scats

4.4 BIOREGIONAL VERTEBRATE FAUNA

Appendix B provides a summary of the fauna survey data that are available near the project area. There are appreciable differences in the recorded fauna assemblages within and among fauna surveys shown in Appendix B. These differences are partially due to the low survey effort often deployed and they also reflect variations in soils and vegetation as well as temporal variations in the fauna assemblages.

Tables 2-6 provide a list of vertebrate species potentially found near the project area that have been compiled based on the fauna survey report results shown in Appendix B.

Table 2. Birds potentially found near the project area

Family	Species	Common Name
Casuariidae	<i>Dromaius novaehollandiae</i>	Emu
Megapodiidae	<i>Leipoa ocellata</i>	Malleefowl
Anatidae	<i>Stictonetta naevosa</i>	Freckled Duck
	<i>Chenonetta jubata</i>	Australian Wood Duck
	<i>Anas gracilis</i>	Grey Teal
	<i>Anas superciliosa</i>	Pacific Black Duck
Podicipedidae	<i>Poliocephalus poliocephalus</i>	Hoary-headed Grebe
Columbidae	<i>Phaps chalcoptera</i>	Common Bronzewing

Family	Species	Common Name
	<i>Phaps elegans</i>	Brush Bronzewing
	<i>Ocyphaps lophotes</i>	Crested Pigeon
Podargidae	<i>Podargus strigoides</i>	Tawny Frogmouth
Caprimulgidae	<i>Eurostopodus argus</i>	Spotted Nightjar
Aegothelidae	<i>Aegotheles cristatus</i>	Australian Owlet-nightjar
Anhingidae	<i>Anhinga melanogaster</i>	Australasian Darter
Otididae	<i>Ardeotis australis</i>	Australian Bustard
Phalacrocoracidae	<i>Phalacrocorax sulcirostris</i>	Little Black Cormorant

Family	Species	Common Name
Ardeidae	<i>Ixobrychus sinensis</i>	Yellow Bittern
	<i>Nycticorax caledonicus</i>	Nankeen Night Heron
Accipitridae	<i>Elanus axillaris</i>	Black-shouldered Kite
	<i>Lophoictinia isura</i>	Square-tailed Kite
	<i>Aquila audax</i>	Wedge-tailed Eagle
Falconidae	<i>Falco cenchroides</i>	Nankeen Kestrel
	<i>Falco berigora</i>	Brown Falcon
Rallidae	<i>Fulica atra</i>	Eurasian Coot
Charadriidae	<i>Charadrius ruficapillus</i>	Red-capped Plover
	<i>Vanellus tricolor</i>	Banded Lapwing
Scolopacidae	<i>Tringa glareola</i>	Wood Sandpiper
Cacatuidae	<i>Eolophus roseicapillus</i>	Galah
	<i>Nymphicus hollandicus</i>	Cockatiel
Psittacidae	<i>Glossopsitta porphyrocephala</i>	Purple-crowned Lorikeet
	<i>Polytelis anthopeplus</i>	Regent Parrot
	<i>Platycercus icterotis</i>	Western Rosella
	<i>Barnardius zonarius</i>	Australian Ringneck
	<i>Psephotus varius</i>	Mulga Parrot
Cuculidae	<i>Chalcites basalis</i>	Horsfield's Bronze-cuckoo
	<i>Chalcites osculans</i>	Black-eared Cuckoo
	<i>Chalcites lucidus</i>	Shining Bronze-cuckoo
	<i>Cacomantis pallidus</i>	Pallid Cuckoo
Strigidae	<i>Ninox novaeseelandiae</i>	Southern Boobook
Tytonidae	<i>Tyto alba</i>	Barn Owl
Halcyonidae	<i>Todiramphus pyrrhopygius</i>	Red-backed Kingfisher
Meropidae	<i>Merops ornatus</i>	Rainbow Bee-eater
Climacteridae	<i>Climacteris rufa</i>	Rufous Treecreeper
Ptilonorhynchidae	<i>Ptilonorhynchus maculatus</i>	Spotted Bowerbird
Maluridae	<i>Malurus splendens</i>	Splendid Fairy-wren
	<i>Malurus leucopterus</i>	White-winged Fairy-wren
	<i>Malurus pulcherrimus</i>	Blue-breasted Fairy-wren

Family	Species	Common Name
Acanthizidae	<i>Sericornis frontalis</i>	White-browed Scrubwren
	<i>Hylacola cauta</i>	Shy Heathwren
	<i>Calamanthus campestris</i>	Rufous Fieldwren
	<i>Pyrrholaemus brunneus</i>	Redthroat
	<i>Smicronis brevirostris</i>	Weebill
	<i>Gerygone fusca</i>	Western Gerygone
	<i>Gerygone fusca</i>	Western Gerygone
	<i>Acanthiza robustirostris</i>	Slaty-backed Thornbill
	<i>Acanthiza chrysorrhoa</i>	Yellow-rumped Thornbill
	<i>Acanthiza uropygialis</i>	Chestnut-rumped Thornbill
	<i>Acanthiza iredalei</i>	Slender-billed Thornbill
	<i>Acanthiza apicalis</i>	Inland Thornbill
	<i>Aphelocephala leucopsis</i>	Southern Whiteface
	<i>Aphelocephala leucopsis</i>	Southern Whiteface
Pardalotidae	<i>Pardalotus punctatus</i>	Spotted Pardalote
	<i>Pardalotus rubricatus</i>	Red-browed Pardalote
	<i>Pardalotus striatus</i>	Striated Pardalote
Meliphagidae	<i>Certhionyx variegatus</i>	Pied Honeyeater
	<i>Lichenostomus virescens</i>	Singing Honeyeater
	<i>Lichenostomus leucotis</i>	White-eared Honeyeater
	<i>Lichenostomus flavicollis</i>	Yellow-throated Honeyeater
	<i>Lichenostomus cratitius</i>	Purple-gaped Honeyeater
	<i>Lichenostomus ornatus</i>	Yellow-plumed Honeyeater
	<i>Lichenostomus plumulus</i>	Grey-fronted Honeyeater
	<i>Purnella albifrons</i>	White-fronted Honeyeater
	<i>Manorina flavigula</i>	Yellow-throated Miner
	<i>Acanthagenys rufogularis</i>	Spiny-cheeked Honeyeater
<i>Anthochaera carunculata</i>	Red Wattlebird	

Family	Species	Common Name
	<i>Epthianura tricolor</i>	Crimson Chat
	<i>Epthianura aurifrons</i>	Orange Chat
	<i>Epthianura albifrons</i>	White-fronted Chat
	<i>Sugomel niger</i>	Black Honeyeater
	<i>Lichmera indistincta</i>	Brown Honeyeater
	<i>Phylidonyris niger</i>	White-cheeked Honeyeater
	<i>Melithreptus brevirostris</i>	Brown-headed Honeyeater
Pomatostomidae	<i>Pomatostomus superciliosus</i>	White-browed Babbler
Psophodidae	<i>Cinclosoma castanotum</i>	Chestnut Quail-thrush
Neosittidae	<i>Daphoenositta chrysoptera</i>	Varied Sittella
Campephagidae	<i>Coracina maxima</i>	Ground Cuckoo-shrike
	<i>Coracina novaehollandiae</i>	Black-faced Cuckoo-shrike
	<i>Lalage sueurii</i>	White-winged Triller
Pachycephalidae	<i>Pachycephala inornata</i>	Gilbert's Whistler
	<i>Pachycephala pectoralis</i>	Golden Whistler
	<i>Pachycephala simplex</i>	Grey Whistler
	<i>Pachycephala rufiventris</i>	Rufous Whistler
	<i>Colluricincla harmonica</i>	Grey Shrike-thrush
	<i>Oreica gutturalis</i>	Crested Bellbird
Artamidae	<i>Artamus personatus</i>	Masked Woodswallow
	<i>Artamus cinereus</i>	Black-faced Woodswallow
	<i>Artamus cyanopterus</i>	Dusky Woodswallow
	<i>Cracticus torquatus</i>	Grey Butcherbird

Family	Species	Common Name
	<i>Cracticus nigrogularis</i>	Pied Butcherbird
	<i>Cracticus tibicen</i>	Australian Magpie
	<i>Strepera versicolor</i>	Grey Currawong
Rhipiduridae	<i>Rhipidura albiscapa</i>	Grey Fantail
	<i>Rhipidura leucophrys</i>	Willie Wagtail
Corvidae	<i>Corvus coronoides</i>	Australian Raven
	<i>Corvus bennetti</i>	Little Crow
	<i>Corvus orru</i>	Torresian Crow
Monarchidae	<i>Grallina cyanoleuca</i>	Magpie-lark
Petroicidae	<i>Microeca fascinans</i>	Jacky Winter
	<i>Petroica goodenovii</i>	Red-capped Robin
	<i>Melanodryas cucullata</i>	Hooded Robin
	<i>Eopsaltria griseogularis</i>	Western Yellow Robin
	<i>Drymodes brunneopygia</i>	Southern Scrub-robin
Megaluridae	<i>Cincloramphus mathewsi</i>	Rufous Songlark
	<i>Cincloramphus cruralis</i>	Brown Songlark
Timaliidae	<i>Zosterops lateralis</i>	Mauritius Olive White-eye
Hirundinidae	<i>Cheramoeca leucosterna</i>	White-backed Swallow
	<i>Hirundo neoxena</i>	Welcome Swallow
	<i>Petrochelidon ariel</i>	Fairy Martin
	<i>Hirundo nigricans</i>	Tree Martin
Nectariniidae	<i>Dicaeum hirundinaceum</i>	Mistletoebird
Estrildidae	<i>Taeniopygia guttata</i>	Zebra Finch
Motacillidae	<i>Anthus novaeseelandiae</i>	Australasian Pipit

Table 3. Amphibians potentially found near the project area

Family	Species	Common Name
Hylidae	<i>Litoria moorei</i>	Motorbike Frog
Limnodynastidae	<i>Neobatrachus kunapalari</i>	Kunapalari Frog
	<i>Neobatrachus pelobatooides</i>	Humming Frog

Family	Species	Common Name
	<i>Neobatrachus sutor</i>	Shoemaker Frog
	<i>Neobatrachus wilsmorei</i>	Goldfields Bullfrog
Myobatrachidae	<i>Pseudophryne occidentalis</i>	Orange-crowned Toadlet

Table 4. Mammals potentially found near the project area

Family	Species	Common Name
Bovidae	<i>Capra hircus</i>	Goat
Bovidae	<i>Ovis aries</i>	Sheep
Canidae	<i>Canis familiaris</i>	Dog
	<i>Canis lupus</i>	Dingo
	<i>Vulpes vulpes</i>	Red Fox
Felidae	<i>Felis catus</i>	Cat
Molossidae	<i>Austronomus australis</i>	White-striped Free-tail Bat
	<i>Mormopterus planiceps</i>	Southern Free-tail Bat
Vespertilionidae	<i>Chalinolobus gouldii</i>	Gould's Wattled Bat
	<i>Chalinolobus morio</i>	Chocolate Wattled Bat
	<i>Mormopterus</i> sp.	Free-tail Bat sp.
	<i>Nyctophilus geoffroyi</i>	Lesser Long-eared Bat
	<i>Nyctophilus gouldi</i>	Gould's Long-eared Bat
	<i>Nyctophilus major</i>	Greater Long-eared Bat
	<i>Scotorepens balstoni</i>	Inland Broad-nosed Bat
	<i>Vespadelus baverstocki</i>	Inland Forest Bat
	<i>Vespadelus regulus</i>	Southern Forest Bat
Dasyuridae	<i>Antechinomys laniger</i>	Kultarr
	<i>Ningai ridei</i>	Wongai Ningai
	<i>Ningai yvonneae</i>	Mallee Ningai
	<i>Pseudantechinus woolleyae</i>	Woolley's False Antechinus
	<i>Sminthopsis crassicaudata</i>	Fat-tailed Dunnart
	<i>Sminthopsis crassicaudata</i>	Fat-tailed Dunnart
	<i>Sminthopsis dolichura</i>	Little Long-tailed Dunnart
	<i>Sminthopsis gilberti</i>	Gilbert's Dunnart
	<i>Sminthopsis murina</i>	Common Dunnart
	<i>Sminthopsis ooldea</i>	Ooldea Dunnart
Myrmecobiidae	<i>Myrmecobius fasciatus</i>	Numbat

Family	Species	Common Name
Burramyidae	<i>Cercartetus concinnus</i>	Southwestern Pygmy Possum
Macropodidae	<i>Macropus fuliginosus</i>	Western Grey Kangaroo
	<i>Macropus robustus</i>	Euro
	<i>Macropus rufus</i>	Red Kangaroo
Potoroidae	<i>Bettongia lesueur</i>	Burrowing Bettong
Leporidae	<i>Oryctolagus cuniculus</i>	European Rabbit
Tachyglossidae	<i>Tachyglossus aculeatus</i>	Short-beaked Echidna
Thylacomyidae	<i>Macrotis lagotis</i>	Bilby

Table 5. Reptiles potentially found near the project area

Family	Species	Common Name
Agamidae	<i>Ctenophorus caudicinctus</i>	Ring-tailed Dragon
	<i>Ctenophorus cristatus</i>	Crested Dragon
	<i>Ctenophorus fordi</i>	Mallee Dragon
	<i>Ctenophorus isolepis</i>	Crested Dragon
	<i>Ctenophorus maculatus</i>	Spotted Dragon
	<i>Ctenophorus nuchalis</i>	Central Netted Dragon
	<i>Ctenophorus reticulatus</i>	Western Netted Dragon
	<i>Ctenophorus salinarum</i>	Saltpan Dragon
	<i>Ctenophorus scutulatus</i>	Lozenge-marked Dragon
	<i>Diporiphora amphiboluroides</i>	Mulga Dragon
	<i>Moloch horridus</i>	Thorny Devil
	<i>Pogona minor</i>	Western Bearded Dragon
	<i>Tympanocryptis cephalus</i>	Pebble Dragon
	<i>Tympanocryptis lineata</i>	Lined Earless Dragon
	Boidae	<i>Morelia spilota imbricata</i>
Carphodactylidae	<i>Nephrurus laevisimus</i>	Smooth Knob-tail
	<i>Nephrurus vertebralis</i>	Midline Knob-tail
	<i>Underwoodisaurus milii</i>	Barking Gecko
Diplodactylidae	<i>Amalosia reticulata</i>	Reticulated Velvet Gecko
	<i>Crenadactylus ocellatus</i>	Clawless Gecko
	<i>Diplodactylus conspicillatus</i>	Fat-tailed Diplodactylus
	<i>Diplodactylus granariensis</i>	Wheat-belt Stone Gecko
	<i>Diplodactylus pulcher</i>	Fine-faced Gecko
	<i>Hesperoedura reticulata</i>	Reticulated Velvet Gecko
	<i>Lucasium damaeum</i>	Beaded Gecko
	<i>Lucasium maini</i>	Main's Ground Gecko
	<i>Oedura marmorata</i>	Marbled Velvet Gecko

Family	Species	Common Name	
	<i>Strophurus assimilis</i>	Goldfields Spiny-tailed Gecko	
	<i>Strophurus elderi</i>	Jewelled Gecko	
Elapidae	<i>Acanthophis pyrrhus</i>	Desert Death Adder	
	<i>Brachyuropis fasciolata</i>	Narrow-banded Burrowing Snake	
	<i>Brachyuropis semifasciata</i>	Half-girdlerd Snake	
	<i>Demansia psammophis</i>	Yellow-faced Whipsnake	
	<i>Echiopsis curta</i>	Bardick	
	<i>Furina ornata</i>	Orange-naped Snake	
	<i>Neelaps bimaculatus</i>	Black-naped Burrowing Snake	
	<i>Parasuta gouldii</i>	Gould's Snake	
	<i>Parasuta monachus</i>	Monk Snake	
	<i>Pseudechis australis</i>	Mulga Snake	
	<i>Pseudonaja affinis</i>	Dugite	
	<i>Pseudonaja mengdeni</i>	Gwardar	
	<i>Pseudonaja modesta</i>	Ringed Brown Snake	
	<i>Simoselaps bertholdi</i>	Jan's Banded Snake	
	<i>Suta fasciata</i>	Rosen's Snake	
	<i>Suta suta</i>	Curl Snake	
	Gekkonidae	<i>Christinus marmoratus</i>	Marbled Gecko
		<i>Gehyra purpurascens</i>	Purplish Dtella
<i>Gehyra variegata</i>		Tree Dtella	
<i>Hemidactylus frenatus</i>		Asian House Gecko	
<i>Heteronotia binoei</i>		Bynoe's Prickly Gecko	
	<i>Rhynchoedura ornata</i>	Western Beaked Gecko	
Pygopodidae	<i>Aprasia repens</i>	Sedgeland's Worm-lizard	
	<i>Delma australis</i>	Marble-faced Delma	
	<i>Delma butleri</i>	Unbanded Delma	
	<i>Delma fraseri</i>	Fraser's Delma	

Family	Species	Common Name
	<i>Lialis burtonis</i>	Burton's Snake-lizard
	<i>Pygopus lepidopodus</i>	Common Scaly-foot
	<i>Pygopus nigriceps</i>	Western Hooded Scaly-foot
Scincidae	<i>Cryptoblepharus buchananii</i>	Buchanan's Snake-eyed Skink
	<i>Ctenotus atlas</i>	Southern Mallee Ctenotus
	<i>Ctenotus australis</i>	Western Limestone Ctenotus
	<i>Ctenotus brooksi</i>	Wedgsnout Ctenotus
	<i>Ctenotus leonhardii</i>	Leonhardi's Ctenotus
	<i>Ctenotus schomburgkii</i>	Schomburgk's Ctenotus
	<i>Ctenotus uber</i>	Spotted Ctenotus
	<i>Cyclodomorphus branchialis</i>	Common Slender Bluetongue
	<i>Cyclodomorphus melanops</i>	Spinifex Slender Bluetongue
	<i>Egernia depressa</i>	Southern Pygmy Spiny-tailed Skink
	<i>Egernia formosa</i>	Goldfields Crevice-skink
	<i>Egernia richardi</i>	Bright Crevice-skink
	<i>Egernia stokesii</i>	Western Spiny-tailed Skink
	<i>Eremiascincus richardsonii</i>	Broad-banded Sand Swimmer
	<i>Hemiergis initialis</i>	South-western Earless Skink
	<i>Hemiergis peronii</i>	Lowlands Earless Skink
	<i>Lampropholis guichenoti</i>	Pale-flecked Garden Skink
	<i>Lerista kingi</i>	King's Slider
	<i>Lerista picturata</i>	Southern Robust Slider
	<i>Lerista picturata</i>	Southern Robust Slider
	<i>Lerista timida</i>	Timid Slider
	<i>Liopholis inornata</i>	Desert Skink
	<i>Liopholis striata</i>	Nocturnal Desert Skink
	<i>Menetia greyii</i>	Common Dwarf Skink

Family	Species	Common Name
	<i>Morethia adelaidensis</i>	Saltbush Morethia Skink
	<i>Morethia butleri</i>	Woodland Morethia Skink
	<i>Morethia obscura</i>	Shrubland Morethia Skink
	<i>Tiliqua occipitalis</i>	Western Blue-tongued Lizard
	<i>Tiliqua rugosa</i>	Bobtail
Typhlopidae	<i>Anilius australis</i>	Austral Blind Snake
	<i>Anilius bicolor</i>	Dark-spined Blind Snake
	<i>Anilius bituberculatus</i>	Prong-snouted Blind Snake
	<i>Anilius hamatus</i>	Pale-headed Blind Snake
	<i>Anilius waitii</i>	Waite's Blind Snake
Varanidae	<i>Varanus caudolineatus</i>	Stripe-tailed Monitor
	<i>Varanus gouldii</i>	Gould's Goanna
	<i>Varanus tristis</i>	Black-headed Monitor

4.5 CONSERVATION SIGNIFICANT FAUNA

Conservation significant fauna are protected by the Commonwealth *EPBC Act 1999*, and this list includes species covered by international treaties such as the Japan-Australia Migratory Bird Agreement (JAMBA) and China-Australia Migratory Bird Agreement (CAMBA) and the Western Australia (WA) *BC Act 2016*. The WA *BC Act 2016* provides for the publishing of the *Wildlife Conservation (Specially Protected Fauna) Notice* that lists species under multiple categories. In addition, DBCA maintains a list of fauna that require monitoring under four priorities based on the current knowledge of their distribution, abundance and threatening processes. The *EPBC Act 1999* and *BC Act 2016* imply legislative requirements for the management of anthropogenic impacts to minimise the effects of disturbances on species and their habitats. Priority species have no statutory protection, other than the DBCA wishes to monitor potential impacts on these species. Environmental consultants and proponents of developments are encouraged to avoid and minimise impacts on these species. Definitions of the significant fauna under the WA *Wildlife Conservation Act* are provided in Appendix C.

Two threatened species of fauna were identified under the *EPBC Act 1999 / BC Act* as potentially occurring in the project area or surrounds. There are two species listed on the DBCA's Threatened and Priority Fauna List that potentially occur in the project area or surrounds. The following is an assessment of the likelihood of each of the species listed in Table 6 being found in the project area. Species that are waders, shore birds, or have a preference for salt lakes or clay pans have not been included in the list, although they were recorded in the search of the MNES online database, as there is no suitable habitat for these species in the project area.

Table 6. Conservation significant species potential occur in and near the project area

Species	DBCA Schedule / Priority	Status under Commonwealth EPBC Act	Comment on the potential impact on species
Night Parrot (<i>Pezoporus occidentalis</i>)	Critically Endangered	Endangered	Highly unlikely to occur in the project area due a lack of suitable habitat.
Sandhill Dunnart (<i>Sminthopsis psammophila</i>)	Endangered	Endangered	Highly unlikely to occur in the project area due a lack of suitable habitat.
Malleefowl (<i>Leipoa ocellata</i>)	Vulnerable	Vulnerable	Not present in the project area.
Chuditch (<i>Dasyurus geoffroii</i>)	Vulnerable	Vulnerable	Highly unlikely to occur in the project area due a lack of suitable habitat.
Grey Falcon (<i>Falco hypoleucos</i>)	Vulnerable	Vulnerable	Highly unlikely to occur in the project area.
Princess Parrot (<i>Polytelis alexandrae</i>)	Vulnerable	Vulnerable	May infrequently be seen in the area; however, clearing vegetation is unlikely to impact on this species.
Fork-tailed Swift (<i>Apus pacificus</i>)	Migratory	Migratory	May infrequently be seen in the area; however, clearing vegetation is unlikely to impact on this species.
Grey Wagtail (<i>Motacilla cinerea</i>)	Migratory	Migratory	Highly unlikely to be seen in the project area, so the potential for impact on this species is low.
Peregrine Falcon (<i>Falco peregrinus</i>)	Other specially protected fauna		May infrequently be seen in the area; however, clearing vegetation is unlikely to impact on this species.
Woma (<i>Aspidites ramsayi</i>)	Priority 1		Highly unlikely to occur in the project area due a lack of suitable habitat.
Mulgara (<i>Dasyercus blythi</i>)	Priority 4		Not present in the project area.

Species	DBCAs Schedule / Priority	Status under Commonwealth EPBC Act	Comment on the potential impact on species
Central Long-eared Bat <i>(Nyctophilus major tor)</i>	Priority 3		May be present in the project area

Night Parrot (*Pezoporus occidentalis*) – Critically endangered under the WA *BC Act 2016* and endangered under the *EPBC Act 1999*

The Night Parrot is a small, arid-adapted, nocturnal, ground-feeding parrot (Johnstone and Storr 1998c, Threatened Species Scientific Committee 2016). Its length is 22-25cm with a body mass of approximately 104g (Threatened Species Scientific Committee 2016), although it was suggested that they were semi-nomadic, the Night Parrots in south-western Queensland appear to be sedentary (Murphy 2015).

The Night Parrot was probably originally distributed over much of the semi-arid and arid Australia (Garnett *et al.* 2011, Threatened Species Scientific Committee 2016). Recordings in north-west and western Queensland in the early 1990-2000s were in a broad cross section of the habitats available (Cupitt and Cupitt 2008, Garnett *et al.* 2011, Boles *et al.* 2016). There have been recent sightings in the Pilbara in 1980, 2005 and 2017, central WA in 1979, north-eastern South Australia in 1979, western Queensland (including Pullen-Pullen-Mt Windsor-Diamantina population) in 1980, 1990, 1993, 2006 and 2013-17 (Davis and Metcalf 2008, Garnett *et al.* 2011, Charalambous 2016, Pickrell 2016, AG staff 2017, Palaszczuk and Miles 2017, Rykers 2017, AG staff 2018), Pilbara in 2017 (Jones 2017), and the northern Goldfields (Jackett *et al.* 2017). Garnett *et al.* (2011) suggested that there were between 50-250 mature individuals in less than 5% of its previous range.

Wilson’s (1937) summary of observations provided information on the early records of Night Parrots’ preferred habitat and breeding sites. Recent information indicates its preferred habitat appears to be in *Triodia* grasslands, chenopod shrublands, shrubby samphire and floristically diverse habitats dominated by large-seeded species (Threatened Species Scientific Committee 2016, McCarthy 2017, Murphy *et al.* 2017b). At Pullen Pullen Reserve it nests in large, more or less ring-shaped *Triodia*, and the nest consists of a tunnel (25-30° and 0° to the ground; 20-33cm long) through an apron of dead spinifex leaves that leads to a chamber under a live hummock, with a shallow depression (3-4cm) excavated into the gravelly/sandy soil (Murphy *et al.* 2017a). In the northern Goldfields the nest was again in a spinifex hummock; it was circular, with an excavated depression (~1.5-2.0cm) in sandy substrate (Hamilton *et al.* 2017a, Jackett *et al.* 2017). The entrance tunnel was 62cm long, and was downward sloping (27°) with the entrance 28cm above the ground (Hamilton *et al.* 2017a). It has clutches of two to four sub-elliptical, white eggs with a lustrous appearance (Murphy *et al.* 2017a). Breeding followed significant rains in March for the observations in Pullen-Pullen Reserve and in April in the northern Goldfields (Hamilton *et al.* 2017a, Murphy *et al.* 2017a), but it is thought that breeding generally occurs between April and October (Murphy *et al.* 2017a).

Murphy *et al.* (2017b) placed a GPS tag on Night Parrots and reported that the two birds called at dusk from their diurnal roosts among spinifex hummocks and then flew to more floristically diverse habitats dominated by large-seeded, prolifically seeding species to feed.

The project area is within the medium priority search area for Night Parrots (Department of Parks and Wildlife 2017b). There is no spinifex present in the project area that is similar to that described as suitable habitat in the available reports (Department of Parks and Wildlife 2017a, Hamilton *et al.* 2017b, Murphy *et al.* 2017b).

Malleefowl (*Leipoa ocellata*) – Vulnerable under the WA *BC Act 2016* and the *EPBC Act 1999*

Malleefowl is a member of the family of birds (Megapodiidae) that builds a nest mound in which it incubates its eggs. This relatively large, mostly terrestrial bird nests in the same general area year-after-year, and will often use the same nest mound (Frith 1962, Priddel and Wheeler 2003). Outside the breeding period, birds will range over several square kilometres (Booth 1987, Benshemesh 2007). Chicks are independent from hatching

and disperse widely, moving up to 2km per day (Benshemesh 2007) and do not appear to respond to habitat boundaries.

Malleefowl have been found in mallee regions of southern Australia from approximately the 26th parallel of latitude southwards. Malleefowl are mostly found in semi-arid and arid shrub lands and low woodlands dominated by mallee in the more temperate areas (Frith 1962, Parsons et al. 2008). Malleefowl are now only found throughout these regions in fragmented patches of dense vegetation due to clearing of habitat for agriculture, increased fire frequency, competition with exotic herbivores (sheep, rabbits, cattle, goats) and kangaroos, predation by foxes and cats, inbreeding as a result of fragmentation and possibly hunting for food.

Malleefowl build large mounds of sand, gravel and vegetation that can be 3-5m wide and over 1m high. This is mostly done between autumn and spring as a combined effort of the pair intending to use the mound. Once completed, the male then spends most of his time tending the mound, whereas the female spends most of her time foraging.

There were no Malleefowl or their mounds in the project area.

Chuditch (*Dasyurus geoffroii*) – Vulnerable under the *BC Act 2016* and *EPBC Act 1999*

The Chuditch is the largest carnivorous marsupial in Western Australia (WA). It is usually active from dusk to dawn. Formally known from over 70% of Australia, the Chuditch now has a patchy distribution throughout the Jarrah forest and mixed Karri/Marri/Jarrah forest of south-west WA and other isolated areas (Serena and Soderquist 2008). Chuditch are solitary animals for most of their life and den in hollow logs, burrows, culverts, etc and have also been recorded in tree hollows and rock cavities. Chuditch are opportunistic feeders, and forage primarily on the ground at night. Their diet can include other mammals, birds, lizards, bird and reptile eggs but the majority is a mixture of large invertebrates (e.g. spiders, scorpions and crickets; Serena and Soderquist 2008).

Chuditch disappeared from the northern Goldfields a long-time ago, so it is highly improbable that they are present in the project area and there is no habitat suitable for this dasyurid.

Grey Falcon (*Falco hypoleucos*) – Vulnerable under the *BC Act 2016* and *EPBC Act 1999*.

This is Australia's rarest falcon, and it is mostly found in areas of less than 500mm rainfall north of latitude 26°S in Western Australia (Schoenjahn et al. 2019, Threatened Species Scientific Committee 2020). It is mostly found in timbered lowland plains, particularly *Acacia* shrublands that are crossed by tree-lined water courses (Threatened Species Scientific Committee 2020). However, this species has been observed in treeless areas and frequents tussock grassland and open woodland (Threatened Species Scientific Committee 2020).

This species was not seen during the site visit, has not been recorded in other fauna surveys in the project or adjacent areas, and if it was present, would move away once disturbed.

Princess Parrot (*Polytelis alexandrae*) - Vulnerable species under the *EPBC Act 1999* and as a Priority 4 species with DBCA

Very little is known about the Princess Parrot, even the exact extent of its geographical distribution. The species is found mostly in the inland arid areas of Australia, and in Western Australia in the Gibson, Little Sandy and Great Victoria Deserts (Johnstone and Storr 1998a, Pavey et al. 2014). However, they occasionally occur in lightly wooded areas adjacent to the sandy deserts (e.g. see Moriarty 1972). It is thought to be nomadic within the central desert regions of Australia, occupying arid shrub lands, particularly those dominated by Mulga, Desert Oak and spinifex. Due to the paucity of information on the species, accurate estimates of its population size are difficult, however, this species is probably threatened by habitat loss to agricultural practices and changes in fire regimes.

Dr S. Thompson sighted a single specimen of this parrot in a survey near the Wanjarri Nature Reserve in 2006. It is highly unlikely that Princess Parrots would be seen this far away from their normal habitat in the sandy deserts.

Sandhill Dunnart (*Sminthopsis psammophila*) - Endangered under the *BC Act 2016* and the *EPBC Act 1999*

The Sandhill Dunnart is a small, dasyurid with a body length of approximately 8-12 cm, and a tail length approximately 10-12 cm (Threatened Species Scientific Committee 2015). It has been recorded from numerous widely dispersed localities in the Great Victoria Desert and the Eyre Peninsula (Woinarski et al. 2014) and more recently in areas west of the Great Victoria Desert.

The Sandhill Dunnart occupies sandy semi-arid and arid areas dominated by mature spinifex. They live in burrows dug under large spinifex hummocks as well as hollow logs and Hopping Mice burrows (Woinarski et al. 2014).

The project area is outside its existing known extant geographic range, and the habitat that it has recently been recorded in is not present in the project area, so it is highly improbable that it is present.

Oriental Plover (*Charadrius veredus*) - Migratory species under the *EPBC Act 1999* and the *WA BC Act 2016*

A migrant species with patchy distribution in Australia, the Oriental Plover is sparsely distributed across arid and semi-arid Australia, but avoids truly desert regions. Its preferred habitat is dry plains. The species is under threat because of habitat reduction due to agriculture and changing fire regimes. The Oriental Plover has not been recorded in the general area during any of the other regional surveys.

Terrestrial Ecosystems' assessment is that the Oriental Plover is unlikely to be seen in the project area, due to a lack of previous records in the general area.

Fork-tailed Swift (*Apus pacificus*) - Migratory species under the *EPBC Act 1999* and the *WA BC Act 2016*

This species breeds in the northeast and mid-east Asia and winters in Australia and southern New Guinea. It is a visitor to most parts of Western Australia, beginning to arrive in the Kimberley in late September, in the Pilbara in November and in the southwest land division in mid-December, and leaving by late April. The Fork-tailed Swift is an almost exclusively aerial species, foraging and sleeping on the wing. It rarely comes to earth, usually only for breeding. It is common in the Kimberley, uncommon to moderately common near northwest, west and southeast coasts and rare to scarce elsewhere. It is rarely seen in the Goldfields.

Terrestrial Ecosystems' assessment is that the Fork-tailed Swift may infrequently be seen in the project area. However, the proposed vegetation clearing is unlikely to significantly impact on this species as it is essentially an aerial species and it will move away to other areas if it is disturbed.

Grey Wagtail (*Motacilla cinerea*) - Migratory species under the *EPBC Act 1999* and the *WA BC Act 2016*

The Grey Wagtail is a small yellow breasted bird with a grey back and head. Johnstone and Storr (2004) reported this migratory species as breeding in Palearctic from western Europe and north-west Africa to eastern Asia and wintering in Africa, south-east Asia, Indonesia, the Philippines, New Guinea and Australia. Its preferred habitat in Australia is banks and rocks in fast-running fresh water including rivers, streams and creeks where it feeds on insects. The Atlas of Living Australia records two sightings on the south-coast of Western Australia and none around the project area.

It is highly unlikely to be seen in the project area due to a lack of suitable habitat.

Peregrine Falcon (*Falco peregrinus*) – Other specially protected species under the *WA BC Act 2016*

The Peregrine Falcon is uncommon, although widespread throughout much of Australia excluding the extremely dry areas and has a wide and patchy distribution. It shows habitat preference for areas near cliffs

along coastlines, rivers and ranges and within woodlands along watercourses and around lakes. Nesting sites include ledges along cliffs, granite outcrops and quarries, hollow trees near wetlands and old nests of other large bird species. There is no evidence to suggest any change in status in the last 50 years. The Peregrine Falcon has been recorded in other fauna surveys near the project area.

Terrestrial Ecosystems' assessment is that the Peregrine Falcon may infrequently be seen in the project area, however, the proposed developments are unlikely to significantly impact on this species as it will move away to other areas if it is disturbed.

4.5.1 Vertebrate fauna risk assessment

Fauna surveys to support environmental approval are part of the environmental risk assessment undertaken to consider what potential impacts a development might have on the biodiversity on a particular area and region. Potential impacts on fauna from the proposed development are identified and briefly described above. Tables 7, 8 and 9 provide a summary of the risk assessment associated with this project.

Any risk assessment is a product of the likelihood of an impact occurring and the consequences of that impact. Likelihood and consequences are categorised and described below. The assessed risk level (likelihood x consequences) is then calculated as the overall risk for the development. This is followed by an assessment of the acceptability of the risk associated with each of the impacts. Disturbances and vegetation clearing have an impact on the fauna at multiple scales – site, local, landscape and regional. Each of these is considered in the risk assessment. This assessment should be considered in the context of the summary in Table 9.

Table 7. Fauna impact risk assessment descriptors

Likelihood		
Level	Description	Criteria
A	Rare	The environmental event may occur, or one or more conservation significant species may be present in exceptional circumstances.
B	Unlikely	The environmental event could occur, or one or more conservation significant species could be present at some time.
C	Moderate	The environmental event should occur, or one or more conservation significant species should be present at some time.
D	Likely	The environmental event will probably occur, or one or more conservation significant species will be present in most circumstances.
E	Almost certain	The environmental event is expected to occur, or one or more conservation significant species is expected to be present in most circumstances.
Consequences		
Level	Description	Criteria
1	Insignificant	Insignificant impact on fauna of conservation significance or regional biodiversity, and the loss of individuals will be insignificant in the context of the availability of similar fauna or fauna assemblages in the area.
2	Minor	Impact on fauna localised and no significant impact on species of conservation significance in the project area. Loss of species at the local scale.
3	Moderate	An appreciable loss of fauna in a regional context or a limited impact on species of conservation significance in the project area.
4	Major	Significant impact on conservation significant fauna or their habitat in the project area and/or regional biodiversity and/or a significant loss in the biodiversity at the landscape scale.
5	Catastrophic	Loss of species at the regional scale and/or a significant loss of species categorised as 'vulnerable' or 'endangered' under the EPBC Act (1999) at a regional scale.
Acceptability of Risk		
Level of risk	Management action required	

Likelihood	
Low	No action required.
Moderate	Avoid if possible, routine management with internal audit and review of monitoring results annually.
High	Externally approved management plan to reduce risks, monitor major risks annually with external audit and review of management plan outcomes annually.
Extreme	Unacceptable, project should be redesigned or not proceed.

Table 8. Levels of acceptable risk

		Likelihood				
		Rare or very low (A)	Unlikely or low (B)	Moderate (C)	Likely (D)	Almost certain (E)
Consequence	Insignificant (1)	Low	Low	Low	Low	Low
	Minor (2)	Low	Low	Low	Moderate	Moderate
	Moderate (3)	Low	Moderate	Moderate	High	High
	Major (4)	Moderate	Moderate	High	High	Extreme
	Catastrophic (5)	Moderate	High	High	Extreme	Extreme

Table 9. A risk assessment of the impact of ground disturbance activity on fauna

			Before management			With management			
Potential impacts			Inherent risk			Risk controls	Residual risk		
Factor			Likelihood	Consequence	Significance		Likelihood	Consequence	Significance
Fauna survey data	Inadequate survey data to adequately assess the risks	Unknown loss of fauna, fauna of conservation significance, and fauna assemblages, and an incomplete fauna assessment.	B	2	Low				
	Inadequacy of comparative data	Limits on the availability of comparative data reduced the capacity to assess the uniqueness of the fauna assemblages in the project area.	B	2	Low				
Clearing vegetation	Loss of fauna habitat – local scale	Loss of terrestrial fauna in the project area.	E	2	Mod	Where possible, reduce the extent of clearing and leave large Eucalypt trees.	E	2	Mod
	Loss of fauna habitat – landscape scale	Loss of some fauna during vegetation clearing.	B	1	Low				
	Loss of fauna habitat – regional scale	Small loss of some fauna from the region.	B	1	Low				
	Loss of a threatened ecological fauna community	Loss of an undetected threatened ecological fauna community.	A	3	Low				

			Before management			With management			
	Habitat fragmentation	Fauna movement restricted resulting in the death of fauna and a loss of biodiversity.	A	2	Low				
Death or loss of conservation significant fauna	Loss of a unique terrestrial fauna ecosystem	Loss of an ecosystem containing fauna with high species richness, high abundance and numerous top of the food chain predators.	A	2	Low				
Human impacts	Increase or spread of weeds	Changed vegetation and a resulting loss of fauna habitat.	E	2	Mod	Implementation of a weed management plan.	D	2	Low
	Road kills	Animals being killed by vehicles as they cross roads	E	1	Low	Limiting speeds	E	1	Low
	Increase in feral fauna; specifically the fox, wild dog and cat	Increased predation on the native fauna	C	3	Mod	Implementation of a feral animal control program(s)	C	2	Low
	Dust	Increased potential for dust	E	2	Mod	Implementation of a dust management plan.	C	2	Low

5. DISCUSSION

5.1 ADEQUACY OF THE FAUNA SURVEY DATA FOR FAUNA HABITATS REPRESENTED IN THE PROJECT AREA

The EPA's (2020) Technical Guidance on terrestrial fauna surveys indicated that the type of survey should be determined based on:

- level of existing regional knowledge;
- type and comprehensiveness of recent local surveys;
- degree of existing disturbance or fragmentation at the regional scale;
- extent, distribution and significance of habitats;
- significance of species likely to be present;
- sensitivity of the environment to the proposed activities; and
- scale and nature of impact.

Fauna survey data provided by Bamford, et al. (1990), Chapman, et al. (1991), Hart and Associates (2000), McKenzie, et al (1992), Ninnox (1999) and Thompson (2004) provide a good indication of the vertebrate fauna assemblage in the project. Thompson (2004) has provided in excess of 120,000 pit/funnel trap-nights of data in fauna habitats similar to that present in the project area, so the results of this survey alone are much more comprehensive than is typically undertaken for a Detailed fauna assessment.

5.1.1 Amphibians

Amphibians typically found in eucalypt woodlands in the Goldfields are listed in Table 2. All the Limnodynastidae species are burrowing frogs and only come to the surface to feed and breed after substantial rain. *Pseudophryne occidentalis* finds shelter under rocks and in crevices during the dry periods and enters temporary ponds to breed after major rainfall events. All species have a wide-spread distribution in the Goldfields and are abundant. There are no conservation significant amphibians in the Goldfields.

5.1.2 Reptiles

Reptile species richness in the project area will be comparable with similar eucalypt woodlands elsewhere in the bioregion. The list provided in Appendix B represents species likely to be found over a large area of diverse habitat types. Eucalypt woodlands would typically support up to 40 species of reptiles, but many of these would be in low abundance Table 5. Fauna habitats in the project area are likely to be similar to that in the adjacent areas, so the loss of reptiles during vegetation clearing is unlikely to be significant in a bioregional context.

5.1.3 Birds

The number of birds and bird species in the northern Goldfields fluctuates based on seasons and recent rainfall (Craig and Chapman 2003). The project area is likely to support a similar assemblage to that present in the adjacent areas. Birds of conservation significance potentially found in the general area include the Malleefowl, Peregrine Falcon and perhaps very infrequently Princess Parrot.

Malleefowl are not present in the project area.

The Princess Parrot is nomadic and moves around the arid interior often in search of water and resources, and has not been recorded this far away from the sandy deserts, so it is unlikely to be recorded in the project area. The Peregrine Falcon will normally have a very large home range in the Goldfields, and clearing a small section

of the project area, particularly when similar habitat exists in the adjacent areas, is unlikely to significantly impact on this species.

The proposed vegetation clearing for the development of a mine and associated infrastructure is unlikely to significantly impact on the avian fauna of the bioregion.

5.1.4 Mammals

The number of small terrestrial mammals potentially caught in the project area would be low due the sparsely vegetated habitat. Although, records of Numbats (*Myrmecobius fasciatus*), Burrowing Bettongs (*Bettongia lesueur*) and Bilbies (*Macrotis lagotis*) are shown in the Atlas of Living Australia and Western Australian Museum records (Appendix B) for the general area, they are no longer present in the vicinity of the project area, having been predated on by foxes, cats and dogs many years ago. None of the mammals potentially found in the project area are of conservation significance. The loss of small mammals during vegetation clearing is unlikely to be significant in a bioregional context.

It was noted during the site visit that there was evidence of rabbits (Plates 11-12) in the project area and surrounds.

5.2 BIODIVERSITY VALUE OF THE PROJECT AREA

An ecological assessment of a site should consider its biodiversity value at the genetic, species and ecosystem levels, and its ecological functional value at the ecosystem level. There are inadequate data to assess the ecological value at the genetic level.

Fauna habitat types represented in the project area are abundant and in similar condition in adjacent areas. Therefore, the fauna assemblage that is present in the project area will also be present and abundant in the adjacent areas. The available fauna survey data (Appendix B) provides a good indication of the vertebrate fauna that are potentially in the project area.

5.2.1 Ecological functional value at the ecosystem level

Vertebrate species potentially in the project area are wide-ranging and have been recorded in various other fauna surveys in the bioregion (Appendix B). Some of the project area has been disturbed by previous mining or exploration activity, with the consequence that the project area will have a depleted vertebrate fauna assemblage in these areas. The most significant impact on vertebrate fauna in the project area and surrounds will have been feral cats, foxes and wild dogs.

5.2.2 Maintenance of threatened ecological communities

No threatened ecological communities were identified in or near the project area.

5.2.3 Condition of fauna habitat

Undisturbed areas are generally in good condition, but the disturbed areas are likely to be largely devoid of vertebrate fauna.

5.2.4 Ecological linkages

The project area does not provide an important ecological linkage or terrestrial fauna movement corridor.

5.2.5 Abundance and distribution of similar habitat in the adjacent areas

The assessed project area is approximately 721ha. There is an abundance of similar habitat in adjacent areas and throughout the bioregion.

6. POTENTIAL IMPACTS

6.1 POTENTIAL IMPACTS ON FAUNA

Clearing of vegetation will potentially affect vertebrate fauna in the project area in numerous ways, including death/injury of fauna during vegetation clearing and impacts with vehicles and the loss of habitat.

Although there are anticipated short term impacts on the generic vertebrate fauna assemblage, they are not considered to result in significant impacts when considered in a bioregional context in the longer term.

6.2 DIRECT IMPACTS

6.2.1 Animal deaths during the clearing process and displacement of fauna

Clearing vegetation and activities associated with the mining development will result in the loss of small fauna and those that retreat to burrows, such as reptiles and mammals. Nocturnal species are unlikely to be active when most of the land clearing and construction work is taking place which will inevitably result in these individuals being killed or injured in their burrows or as they attempt to escape. Larger terrestrial animals and avian species will most often move to adjacent areas. These species will be required to establish new activity areas and home ranges, and this could result in the temporary displacement of resident species, however, this loss of fauna is unlikely to have a significant impact when considered in a bioregional context.

6.2.2 Reduction or loss of activity areas and closure of burrows

Clearing vegetation and associated construction activities are likely to destroy reptile and mammal burrows or foraging habitat that are currently in use or could be used again. Clearing vegetation that forms part of the activity area of individuals has the potential to force these animals into adjacent areas. These areas may offer fewer resources placing individuals under survival pressure. It could also cause individuals to move into the territories of other individuals increasing competition for resources. Forced relocations could increase the possibility of predation.

6.3 INDIRECT IMPACTS

In addition to the obvious impact of vegetation clearing there can be an equally significant or greater impact in the adjacent areas because of 'edge effects'. Edge effects can lead to the disruption of ecological processes such as predation and dispersal, animal movements and can change assemblage structure. The consequence is that the impact area will always be much larger than the cleared area. Vehicle tracks also have the propensity to develop weed infestations which can impact on natural fauna habitats. Cleared corridors can also provide improved predator access to areas, enhance the invasion of pest species into areas and may act as inhibitors or disrupt fauna migration and movement patterns.

There are numerous potential threats associated with vegetation clearing and the construction of infrastructure that could have an impact on the vertebrate fauna in the project area. Some of these are discussed below.

6.3.1 Habitat fragmentation

In addition to vegetation clearing, infrastructure including tracks, has the potential to fragment habitat. Cleared linear tracks of land are 'unnatural' in much of the habitat. These linear structures that partition existing activity areas, isolate sections of established communities and may alter long and medium-term patterns of movement around established home ranges particularly for small mammals and reptiles. A reduction in the population

because of this infrastructure would be difficult to detect given our current knowledge of the spatial ecology for most of the small mammals known to be in the area.

As most of the tracks within the project area will be relatively narrow and in sparsely vegetated areas, the potential impact associated with habitat fragmentation is likely to be low.

6.3.2 Introduced fauna and weeds

An increase in habitat fragmentation and human activity is often associated with an increase in the abundance of introduced species such as the house mouse (*Mus musculus*), foxes (*Vulpes vulpes*), cat (*Felis catus*) and wild dogs (*Canis lupus*). This increase may be due to a decline in habitat health, increased road kills, poor disposal of waste and easier access to areas via tracks.

House mice, foxes, cats and wild dogs are known to be established in the area. In many situations they have become a 'naturalised' species in the Australian bush. Increases in fox, dog or cat numbers can have a detrimental impact on native fauna because they predate on and compete with native species, severely disrupting the natural balance. The cat is a particularly damaging predator on native fauna and any increase in their numbers could have a detrimental effect of local native fauna (Kinneer 1993, Bamford 1995, Stobo-Wilson et al. 2021, Tuft et al. 2021); hence it is important to ensure that populations of the feral predators, such as cats are under control.

Infrastructure known to support feral species, such as rubbish disposal sites and bins, should be managed to minimise increases in these populations.

Introduced plant species can successfully and rapidly invade areas of cleared native vegetation or otherwise disturbed by humans. Introduced plant species may replace native species that provide shelter or foraging areas for native fauna. Major changes to the structure of vegetation will alter the fauna habitat and consequently may influence fauna species composition. Preparing and implementing a weed management plan will largely reduce their threat to native fauna species.

6.3.3 Road fauna deaths

An increase in road fauna deaths is likely to occur where new roads / tracks are constructed or upgraded, in particular, affecting kangaroos, nocturnal birds and ground dwelling large carnivorous predators. Species such as goannas and raptors are attracted to carrion on road verges and therefore, there is an increased propensity for these species to be killed by vehicles.

6.3.4 Fire

Increased human activity is often associated with an altered fire regime which lead to a degradation of natural ecosystems. Fire has been identified as one of the threatening processes for some conservation significant species as a number of small mammal and bird species rely on long unburnt vegetation.

Large and widespread fires are unlikely to be a significant threat to native fauna species near the project area due to the sparseness of the vegetation.

6.3.5 Anthropogenic activity

Unnatural noises, vibrations, artificial light sources, and vehicle and human movement in an area may be sufficient to force individuals or fauna species to move from adjacent areas, or alter their activity periods. This form of disturbance is likely to occur during the vegetation clearing and when mining activity commences. The overall impact is likely to be confined to a relatively small area and is unlikely to be a significant impact.

6.3.6 Dust

Dust generated from shifting topsoil and spoil and vehicle traffic can potentially degrade surrounding vegetation, reducing its ability to absorb sunlight and influencing photosynthetic rates. Degradation of these areas may potentially render habitat unsuitable for fauna. Dust suppression and management programs are an essential component of minimising impacts on fauna in areas adjacent to the mine. An effective dust management and monitoring program is required.

6.3.7 Uncapped drill holes

An ongoing potential risk to terrestrial fauna is the presence of uncapped drill holes with the opening near ground level within the project area. Small animals, particularly lizards and mammals, can become trapped in the drill holes and eventually die. Therefore drill holes that are open for periods of months or years can be particularly detrimental to small animal populations (Malnic 1997).

6.4 NATIVE VEGETATION CLEARING PRINCIPLES

The *Environmental Protection Act (1986)* provides criteria to judge the potential impact of a development on clearing native vegetation on flora and fauna. These criteria have been listed below with a response to indicate how clearing of the vegetation in the project area might be judged against these principles as they relate to fauna and fauna assemblages (Table 10). Where possible, native vegetation should not be cleared if any of the following principles are compromised.

Table 10. A response to the native vegetation clearing principles

Principle	Response
It comprises a high level of biological diversity.	The vertebrate fauna assemblages in the project area do not represent a high level of biodiversity.
It comprises the whole or a part of, or is necessary for the maintenance of, a significant habitat for fauna indigenous to Western Australia.	There is no fauna habitat in the project area that is necessary for the maintenance of fauna indigenous to Western Australia.
It includes, or is necessary for the continued existence or, rare flora.	N/A
It comprises the whole or a part of, or is necessary for the maintenance of, a threatened ecological community.	The project area does not include habitat, that if it was lost would threaten the survival of a threatened ecological community.
It is significant as a remnant of native vegetation in an area that has been extensively cleared.	The area contains no remnant vegetation communities that are significant.
It is growing in, or in association with, an environment associated with a watercourses or wetland.	There is no water course or wetland near the project area, other than ephemeral creek lines.
The clearing of the vegetation is likely to cause appreciable land degradation.	N/A
The clearing of the vegetation is likely to have an impact on the environmental values of any adjacent or nearby conservation area.	Clearing of vegetation is unlikely to impact on the environmental values of the bioregion.
The clearing of the vegetation is likely to cause deterioration in the quality of surface or underground water.	N/A

Principle	Response
The clearing of the vegetation is likely to cause, or exacerbate the incidence of flooding.	N/A

6.5 REFERRAL UNDER THE EPBC ACT

The proposed vegetation clearing of the project area will not significantly impact on a conservation significant species, therefore a referral under the *EPBC Act* is not recommended.

7. SUMMARY

The total area assessed was ~721ha. The project area supports the following two broad fauna habitats: a) eucalypt woodland over shrubland, and b) mixed shrubland.

Clearing native vegetation and development of a mine is likely to result in the loss of small vertebrate fauna on-site that are unable to move away during the clearing process. Vegetation clearing will result in the loss of numerous small vertebrates in the project area and indirect impacts such as a reduction or loss of activity areas and closure of burrows, habitat fragmentation, increased presence of feral predators, road deaths and unnatural noises, vibrations, artificial light sources and vehicle and human movement in an area may force animals into adjacent areas. The consequence will be that some fauna will be lost, and others will shift into neighbouring areas. Migrants increase competition for resources, which may result in the subsequent loss of migrants or local individuals. Individuals shifted out of their established activity areas are also vulnerable to predation until they have become established in their new areas. There are no conservation significant vertebrate fauna potentially significantly impacted by the proposed vegetation clearing and mine development and operations.

The implementation of the recommended management strategies will mitigate or minimise potential impacts on the vertebrate fauna in the project area.

8. RECOMMENDATIONS

8.1 INDUCTION AND AWARENESS

All contractors and people involved in exploration or construction of the mine should be made aware of the possible presence and issues associated with terrestrial fauna in the area through the induction process.

Recommendation 1: An induction program that includes a component on managing fauna is a mandatory component of working on the Eureka mining project.

8.2 MINIMISING SECONDARY IMPACTS TO THE HABITAT

Pets and feral animals have the potential to impact on fauna. Pets should not be permitted on site and feral and pest fauna numbers monitored and controlled. All rubbish likely to attract animals should be suitably contained and disposed of so as not to encourage the feeding of fauna around the site.

Recommendation 2: Pets are not permitted on site.

Recommendation 3: All waste and rubbish be contained in bins and regularly removed from site or buried so it is unavailable to pest species.

Recommendation 4: Feeding of native fauna should be actively discouraged.

Recommendation 5: A feral and pest animal management program focussing on feral cats is implemented to reduce the predation on native fauna.

8.3 ROAD FAUNA DEATHS

Increased activity will result in increased traffic and a consequential increase in the fauna deaths on tracks. Limiting vehicle speed on mine roads can reduce collisions with fauna, particularly larger animals such as kangaroos and emus. Dead animals on the road also have the propensity to attract raptors, goannas and even cattle, which are then likely to be killed.

Recommendation 6: Speed limits are implemented and enforced on-site. These should be determined based on the quality and condition of the roads, but be a maximum of 80km/h.

Recommendation 7: Signage is erected to indicate the maximum travelling speeds and the possible presence of wildlife crossing roads.

8.4 DUST

Dust generated from mining activity and vehicles can potentially degrade surrounding vegetation, reducing its ability to absorb sunlight and influencing photosynthetic rates. Degradation of these areas will potentially render habitat unsuitable for fauna. Dust suppression and management programs are an essential component of minimising mining impacts on fauna in areas adjacent to the mine.

Recommendation 8: The impact of dust on adjacent vegetation and fauna habitat is managed and monitored against appropriate KPIs.

8.5 VERTEBRATE FAUNA MANAGEMENT PLAN

Fauna management plans describe the procedures and protocols that must be implemented to avoid, mitigate and minimise impacts on fauna during the vegetation clearing, infrastructure development and operational stages of a project. Such plans deal with the method of vegetation clearing, reducing fauna deaths on the roads, the impacts of artificial light spill, vibration, dust, feral species management, monitoring and recording conservation species, monitoring impacts on fauna in adjacent areas, staff inductions, etc.

Recommendation 10: A vertebrate fauna management plan is prepared and implemented for the Eureka mining project.

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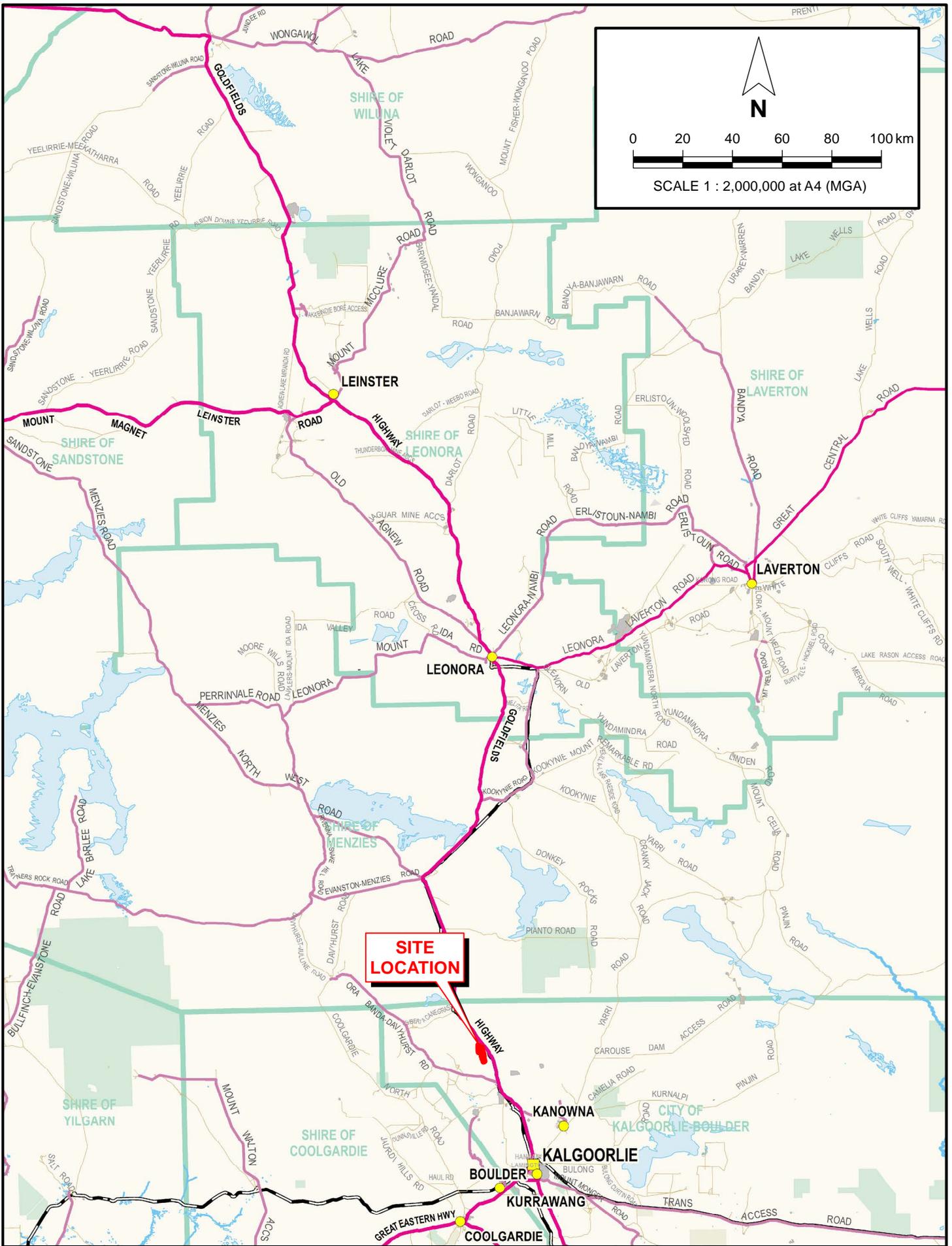
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Figures

Basic vertebrate fauna risk assessment
Eureka project area





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TERRESTRIAL ECOSYSTEMS

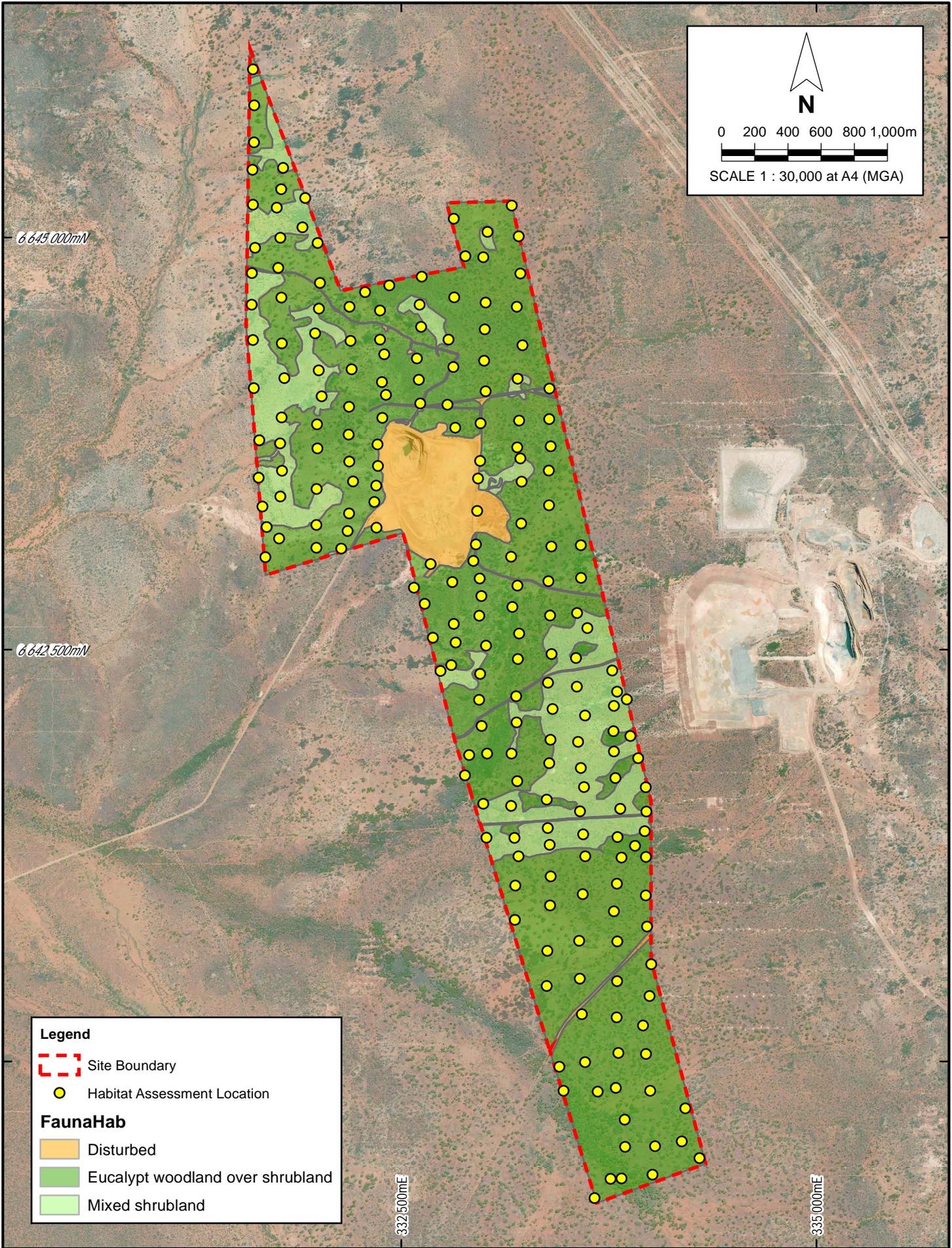
Drawn: S. Thompson Date: 9 Aug 2022

Warridar Mining Pty Ltd
 VERTEBRATE FAUNA RECONNAISSANCE SURVEY AND RISK ASSESSMENT
 EUREKA PROJECT

REGIONAL LOCATION

Figure 1

Job: 2022-0025




N
 0 200 400 600 800 1,000m

 SCALE 1 : 30,000 at A4 (MGA)

Legend

-  Site Boundary
-  Habitat Assessment Location

FaunaHab

-  Disturbed
-  Eucalypt woodland over shrubland
-  Mixed shrubland

PINPOINT CARTOGRAPHICS (08) 9562 7136
 2022-0025-Eureka-f02.mxd


TERRESTRIAL ECOSYSTEMS
 Drawn: S. Thompson Date: 10 Aug 2022

Warridar Mining Pty Ltd
 VERTEBRATE FAUNA RECONNAISSANCE SURVEY AND RISK ASSESSMENT
 EUREKA PROJECT
FAUNA HABITAT TYPES

Figure 2
 Job: 2022-0025

Appendix A.

Results of the *EPBC Act* Protected Matters Search

Basic vertebrate fauna risk assessment
Eureka project 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. Please see the caveat for interpretation of information provided here.

Report created: 19-Apr-2022

[Summary](#)

[Details](#)

[Matters of NES](#)

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

[Extra Information](#)

[Caveat](#)

[Acknowledgements](#)

Summary

Matters of National Environment Significance

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

World Heritage Properties:	None
National Heritage Places:	1
Wetlands of International Importance (Ramsar)	None
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	None
Listed Threatened Species:	13
Listed Migratory Species:	7

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

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 Lands:	79
Commonwealth Heritage Places:	None
Listed Marine Species:	11
Whales and Other Cetaceans:	None
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	None
Habitat Critical to the Survival of Marine Turtles:	None

Extra Information

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

State and Territory Reserves:	8
Regional Forest Agreements:	None
Nationally Important Wetlands:	2
EPBC Act Referrals:	6
Key Ecological Features (Marine):	None
Biologically Important Areas:	None
Bioregional Assessments:	None
Geological and Bioregional Assessments:	None

Details

Matters of National Environmental Significance

National Heritage Places [\[Resource Information \]](#)

Name	State	Legal Status
Historic		
Goldfields Water Supply Scheme, Western Australia	WA	Listed place

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

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

Scientific Name	Threatened Category	Presence Text
-----------------	---------------------	---------------

BIRD

Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat likely to 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
---	------------	---

Pezoporus occidentalis Night Parrot [59350]	Endangered	Species or species habitat may occur within area
--	------------	--

Polytelis alexandrae Princess Parrot, Alexandra's Parrot [758]	Vulnerable	Species or species habitat may occur within area
---	------------	--

INSECT

Ogyris subterrestris petrina Arid Bronze Azure [77743]	Critically Endangered	Species or species habitat may occur within area
---	-----------------------	--

MAMMAL

Scientific Name	Threatened Category	Presence Text
Dasyurus geoffroii Chuditch, Western Quoll [330]	Vulnerable	Species or species habitat known to occur within area
Sminthopsis psammophila Sandhill Dunnart [291]	Endangered	Species or species habitat may occur within area
PLANT		
Eleocharis papillosa Dwarf Desert Spike-rush [2519]	Vulnerable	Species or species habitat known to 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 may occur within area
Tecticornia flabelliformis Bead Glasswort [82664]	Vulnerable	Species or species habitat known to occur within area
Thelymitra stellata Star Sun-orchid [7060]	Endangered	Species or species habitat may occur within area
Listed Migratory Species [Resource Information]		
Scientific Name	Threatened Category	Presence Text
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 known to occur within area

Scientific Name	Threatened Category	Presence Text
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat known to occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat likely to occur within area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area
Tringa nebularia Common Greenshank, Greenshank [832]		Species or species habitat likely to occur within area

Other Matters Protected by the EPBC Act

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

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

Commonwealth Land Name	State
Defence	
Defence - AIRTC KALGOORLIE [50110]	WA
Defence - AIRTC KALGOORLIE [50111]	WA
Defence - KALGOORLIE RIFLE RANGE [50156]	WA
Defence - KALGOORLIE TRAINING DEPOT [50199]	WA
Defence - KALGOORLIE TRAINING DEPOT [50198]	WA
Unknown	
Commonwealth Land - [51951]	WA
Commonwealth Land - [51793]	WA
Commonwealth Land - [52184]	WA
Commonwealth Land - [51957]	WA
Commonwealth Land - [51059]	WA
Commonwealth Land - [51430]	WA

Commonwealth Land Name	State
Commonwealth Land - [51765]	WA
Commonwealth Land - [51766]	WA
Commonwealth Land - [52230]	WA
Commonwealth Land - [51770]	WA
Commonwealth Land - [51758]	WA
Commonwealth Land - [51759]	WA
Commonwealth Land - [51750]	WA
Commonwealth Land - [51955]	WA
Commonwealth Land - [51961]	WA
Commonwealth Land - [51960]	WA
Commonwealth Land - [51963]	WA
Commonwealth Land - [51773]	WA
Commonwealth Land - [51764]	WA
Commonwealth Land - [50310]	WA
Commonwealth Land - [51780]	WA
Commonwealth Land - [51767]	WA
Commonwealth Land - [51760]	WA
Commonwealth Land - [51761]	WA
Commonwealth Land - [51762]	WA
Commonwealth Land - [51763]	WA
Commonwealth Land - [51949]	WA
Commonwealth Land - [51768]	WA
Commonwealth Land - [51769]	WA
Commonwealth Land - [51788]	WA
Commonwealth Land - [51962]	WA
Commonwealth Land - [51789]	WA
Commonwealth Land - [51985]	WA

Commonwealth Land Name	State
Commonwealth Land - [50333]	WA
Commonwealth Land - [51777]	WA
Commonwealth Land - [51787]	WA
Commonwealth Land - [51786]	WA
Commonwealth Land - [51785]	WA
Commonwealth Land - [51784]	WA
Commonwealth Land - [51783]	WA
Commonwealth Land - [51782]	WA
Commonwealth Land - [51781]	WA
Commonwealth Land - [51062]	WA
Commonwealth Land - [51061]	WA
Commonwealth Land - [51958]	WA
Commonwealth Land - [51063]	WA
Commonwealth Land - [51959]	WA
Commonwealth Land - [51771]	WA
Commonwealth Land - [51956]	WA
Commonwealth Land - [51778]	WA
Commonwealth Land - [51950]	WA
Commonwealth Land - [51775]	WA
Commonwealth Land - [51952]	WA
Commonwealth Land - [51953]	WA
Commonwealth Land - [51776]	WA
Commonwealth Land - [51774]	WA
Commonwealth Land - [52211]	WA
Commonwealth Land - [51795]	WA
Commonwealth Land - [51060]	WA
Commonwealth Land - [51791]	WA

Commonwealth Land Name	State
Commonwealth Land - [51794]	WA
Commonwealth Land - [51792]	WA
Commonwealth Land - [51790]	WA
Commonwealth Land - [50331]	WA
Commonwealth Land - [50332]	WA
Commonwealth Land - [51954]	WA
Commonwealth Land - [50329]	WA
Commonwealth Land - [51406]	WA
Commonwealth Land - [51779]	WA
Commonwealth Land - [50335]	WA
Commonwealth Land - [50334]	WA
Commonwealth Land - [50337]	WA
Commonwealth Land - [51772]	WA
Commonwealth Land - [50336]	WA

Listed Marine Species	[Resource Information]
-----------------------	--------------------------

Scientific Name	Threatened Category	Presence Text
Bird		
Actitis hypoleucos		
Common Sandpiper [59309]		Species or species habitat known to occur within area
Apus pacificus		
Fork-tailed Swift [678]		Species or species habitat likely to occur within area overfly marine area
Bubulcus ibis as Ardea ibis		
Cattle Egret [66521]		Species or species habitat may occur within area overfly marine area
Calidris acuminata		
Sharp-tailed Sandpiper [874]		Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat likely to occur within area overfly marine area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area overfly marine area
Chalcites osculans as Chrysococcyx osculans Black-eared Cuckoo [83425]		Species or species habitat known to occur within area overfly marine area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area overfly marine area
Motacilla cinerea Grey Wagtail [642]		Species or species habitat may occur within area overfly marine area
Thinornis cucullatus as Thinornis rubricollis Hooded Dotterel, Hooded Plover [87735]		Species or species habitat known to occur within area overfly marine area
Tringa nebularia Common Greenshank, Greenshank [832]		Species or species habitat likely to occur within area overfly marine area

Extra Information

State and Territory Reserves			[Resource Information]
Protected Area Name	Reserve Type	State	
Bullock Holes Timber Reserve	5(1)(g) Reserve	WA	
Clear And Muddy Lakes	Nature Reserve	WA	
Credo	NRS Addition - Gazettal in Progress	WA	
Goongarrie	National Park	WA	

Protected Area Name	Reserve Type	State
Kalgoorlie Arboretum	5(1)(h) Reserve	WA
Kurrawang	Nature Reserve	WA
Lakeside Timber Reserve	5(1)(g) Reserve	WA
Rowles Lagoon	Conservation Park	WA

Nationally Important Wetlands [\[Resource Information \]](#)

Wetland Name	State
Lake Marmion	WA
Rowles Lagoon System	WA

EPBC Act Referrals [\[Resource Information \]](#)

Title of referral	Reference	Referral Outcome	Assessment Status
Controlled action			
Goldfields Water Supply Scheme Project	2019/8547	Controlled Action	Post-Approval
Nava-1 Cable System	2001/510	Controlled Action	Completed
Not controlled action			
Improving rabbit biocontrol: releasing another strain of RHDV, sthrn two thirds of Australia	2015/7522	Not Controlled Action	Completed
Lynas Kalgoorlie Rare Earths Processing Facility	2020/8719	Not Controlled Action	Completed
Sale of Post Office, Hannan Street	2006/3084	Not Controlled Action	Completed
Ularring Hematite Project, WA	2012/6426	Not Controlled Action	Completed

Caveat

1 PURPOSE

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

The report contains the mapped locations of:

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

2 DISCLAIMER

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

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

3 DATA SOURCES

Threatened ecological communities

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

Threatened, migratory and marine species

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

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

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

4 LIMITATIONS

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

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

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

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

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

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

Acknowledgements

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

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

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

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

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Appendix B. Vertebrate Fauna Recorded in Biological Surveys in the Region

Basic vertebrate fauna risk assessment
Eureka project area



B.1 VERTEBRATE FAUNA ASSESSMENTS

Family	Species	Common Name	Surveys A		B													C													D	E						F			
			Unknown	Site 9	Site 1	Site 10	Site 2	Site 5	Site 6	Site 12	Site 3	Site 8	Site 7	Site 11	Site 13	White Foil	Kurrawang NR	Site 3	Site 9	Site 1	Site 8																				
Fish																																									
Cobitidae	<i>Carassius auratus</i>	Goldfish	X																																						
Terapontidae	<i>Leiopotherapon unicolor</i>	Spangled Perch	X																																						
Amphibians																																									
Hylidae	<i>Litoria moorei</i>	Motorbike Frog	X	1																																					
Limnodynastidae	<i>Neobatrachus kunapalari</i>	Kunapalari Frog	X	10	1	8	1	1	1	1																															
	<i>Neobatrachus pelobatoides</i>	Humming Frog	X	2																																					
	<i>Neobatrachus sutor</i>	Shoemaker Frog	X	1																																					
	<i>Neobatrachus wilsmorei</i>	Goldfields Bullfrog	X	2																																					
Myobatrachidae	<i>Pseudophryne occidentalis</i>	Orange-crowned Toadlet	X	32																																					
Reptiles																																									
Agamidae	<i>Ctenophorus caudicinctus</i>	Ring-tailed Dragon	X																																						
	<i>Ctenophorus cristatus</i>	Crested Dragon	X	16		1	1				1	1	1			1	1																								
	<i>Ctenophorus fordi</i>	Mallee Dragon	X	16													1						7																		
	<i>Ctenophorus isolepis</i>	Crested Dragon	X	8																																					
	<i>Ctenophorus maculatus</i>	Spotted Dragon	X																																						
	<i>Ctenophorus nuchalis</i>	Central Netted Dragon	X																																						
	<i>Ctenophorus pictus</i>	Painted Dragon	X																																						
	<i>Ctenophorus reticulatus</i>	Western Netted Dragon	X	29	1																						1														
	<i>Ctenophorus salinarum</i>	Saltpan Dragon	X	10																																					
	<i>Ctenophorus scutulatus</i>	Lozenge-marked Dragon	X	12												1											4														
	<i>Diporiphora amphibolurooides</i>	Mulga Dragon	X	1																																					
	<i>Moloch horridus</i>	Thorny Devil	X	12		1					1							1					1																		
	<i>Pogona minor</i>	Dwarf Bearded Dragon	X	20												1										2	1														
	<i>Tympanocryptis cephalus</i>	Pebble Dragon	X																																						
<i>Tympanocryptis lineata</i>	Lined Earless Dragon	X	1																																						
Boidae	<i>Morelia spilota imbricata</i>	Carpet Python	X	3																																					
Carphodactylidae	<i>Nephrurus laevisimus</i>	Smooth Knob-tail	X	1																																					
	<i>Nephrurus vertebralis</i>	Midline Knob-tail	X	1																																					

Family	Species	Common Name	Surveys													D						F														
			A	B	C										White Foil	Kurrawang NR	Site 3	Site 9	Site 1	Site 8																
			Unknown	Site 9	Site 1	Site 10	Site 2	Site 5	Site 6	Site 12	Site 3	Site 8	Site 7	Site 11	Site 13																					
	<i>Acanthagenys rufogularis</i>	Spiny-cheeked Honeyeater	X	2		7	1		3	4	5		2	4		1																				
	<i>Anthochaera carunculata</i>	Red Wattlebird	X	4		1			3	8	3	2	14	10		1																				
	<i>Epthianura tricolor</i>	Crimson Chat	X																																	
	<i>Epthianura aurifrons</i>	Orange Chat	X																																	
	<i>Epthianura albifrons</i>	White-fronted Chat	X																																	
	<i>Sugomel niger</i>	Black Honeyeater	X																																	
	<i>Lichmera indistincta</i>	Brown Honeyeater	X	2		1							1	5		1																				
	<i>Phylidonyris niger</i>	White-cheeked Honeyeater	X																																	
	<i>Melithreptus brevirostris</i>	Brown-headed Honeyeater	X			2			1	4	1		5	4																						
Pomatostomidae	<i>Pomatostomus superciliosus</i>	White-browed Babbler	X				6		15							1																				
Psophodidae	<i>Cinlosoma castanotum</i>	Chestnut Quail-thrush	X	1		1			4	1		1					1																			
Neosittidae	<i>Daphoenositta chrysoptera</i>	Varied Sittella	X										7																							
Campephagidae	<i>Coracina maxima</i>	Ground Cuckoo-shrike	X																																	
	<i>Coracina novaehollandiae</i>	Black-faced Cuckoo-shrike	X			3			1		6	7	2	2		1																				
	<i>Lalage sueurii</i>	White-winged Triller	X							1																										
Pachycephalidae	<i>Pachycephala inornata</i>	Gilbert's Whistler	X						1		1																									
	<i>Pachycephala pectoralis</i>	Golden Whistler		1			1																													
	<i>Pachycephala simplex</i>	Grey Whistler		1																																
	<i>Pachycephala rufiventris</i>	Rufous Whistler	X			2																														
	<i>Colluricincla harmonica</i>	Grey Shrike-thrush	X	1		3	3		2	1	1	3	1	1		1																				
	<i>Oreoica gutturalis</i>	Crested Bellbird	X	2		2	2		6	2	5	4	2	2		1																				
Artamidae	<i>Artamus personatus</i>	Masked Woodswallow	X																																	
	<i>Artamus cinereus</i>	Black-faced Woodswallow	X				1			1																										
	<i>Artamus cyanopterus</i>	Dusky Woodswallow	X						2			6																								
	<i>Cracticus torquatus</i>	Grey Butcherbird	X			1			3	2	4	2	3	1		1																				
	<i>Cracticus nigrogularis</i>	Pied Butcherbird	X	1							3	1		1		1																				
	<i>Cracticus tibicen</i>	Australian Magpie	X							2	2	1		1		1																				
	<i>Strepera versicolor</i>	Grey Currawong	X	2		4	1		4	1	2	3	3	5		1	1																			
Rhipiduridae	<i>Rhipidura albiscapa</i>	Grey Fantail	X																																	
	<i>Rhipidura leucophrys</i>	Willie Wagtail	X						1		4					1																				
Corvidae	<i>Corvus coronoides</i>	Australian Raven	X	6		1			4	1	1	8	1	3		1																				
	<i>Corvus bennetti</i>	Little Crow	X				1		1		3	1				1																				
	<i>Corvus orru</i>	Torresian Crow	X																																	

Family	Species	Common Name	Surveys		C													D	E						F								
			A	B	Unknown	Site 9	Site 1	Site 10	Site 2	Site 5	Site 6	Site 12	Site 3	Site 8	Site 7	Site 11	Site 13	White Foil	Kurrawang NR	Site 3	Site 9	Site 1	Site 8										
Monarchidae	<i>Grallina cyanoleuca</i>	Magpie-lark	X														1			1													
Petroicidae	<i>Microeca fascians</i>	Jacky Winter	X								11											1			1								
	<i>Petroica goodenovii</i>	Red-capped Robin	X	8		16								1						1													
	<i>Eopsaltria griseogularis</i>	Western Yellow Robin	X			2																											
	<i>Drymodes brunneopygia</i>	Southern Scrub-robin	X																														
Megaluridae	<i>Cincloramphus mathewsi</i>	Rufous Songlark	X																														
	<i>Cincloramphus cruralis</i>	Brown Songlark																															
Timaliidae	<i>Zosterops lateralis</i>	Mauritius Olive White-eye	X																														
Hirundinidae	<i>Cheramoeca leucosterna</i>	White-backed Swallow	X							1																							
	<i>Hirundo neoxena</i>	Welcome Swallow	X											2																			
	<i>Petrochelidon ariel</i>	Fairy Martin	X																														
	<i>Hirundo nigricans</i>	Tree Martin	X																														
Nectariniidae	<i>Dicaeum hirundinaceum</i>	Mistletoebird	X							1							1																
Estrildidae	<i>Taeniopygia guttata</i>	Zebra Finch	X																														
Motacillidae	<i>Anthus novaeseelandiae</i>	Australasian Pipit	X																		1												
Mammals																																	
Bovidae	<i>Capra hircus</i>	Goat															1																
Bovidae	<i>Ovis aries</i>	Sheep															1																
Canidae	<i>Canis lupus</i>	Dingo	X	3																													
	<i>Vulpes vulpes</i>	Red Fox															1																
Felidae	<i>Felis catus</i>	House Cat	X	1																													
Molossidae	<i>Austronomus australis</i>	White-striped Free-tail Bat	X	6																													
	<i>Mormopterus planiceps</i>	Southern Free-tail Bat	X	18																													
Vespertilionidae	<i>Chalinolobus gouldii</i>	Gould's Wattled Bat	X	17																													
	<i>Chalinolobus morio</i>	Chocolate Wattled Bat	X	35																													
	<i>Nyctophilus geoffroyi</i>	Lesser Long-eared Bat		5																													
	<i>Nyctophilus major</i>	Greater Long-eared Bat		1																													
	<i>Scotorepens balstoni</i>	Inland Broad-nosed Bat	X	4																													
	<i>Vespadelus baverstocki</i>	Inland Forest Bat	X	1																													
	<i>Vespadelus regulus</i>	Southern Forest Bat	X	8																													
Dasyuridae	<i>Antechinomys laniger</i>	Kultarr	X	1																													
	<i>Ningai ridei</i>	Wongai Ningai	X	2						1																2							

Family	Species	Common Name	Surveys													D						E						F								
			A	B	C											White Foil	Kurrawang NR	Site 3	Site 9	Site 1	Site 8															
			Unknown	Site 9	Site 1	Site 10	Site 2	Site 5	Site 6	Site 12	Site 3	Site 8	Site 7	Site 11	Site 13																					
	<i>Ningau yvonneae</i>	Mallee Ningau	X	8																																
	<i>Pseudantechinus woolleyae</i>	Woolley's False Antechinus	X	1																																
	<i>Sminthopsis crassicaudata</i>	Fat-tailed Dunnart	X	58																																
	<i>Sminthopsis dolichura</i>	Little Long-tailed Dunnart	X	30	1	13	4		1			1	15	1																						
	<i>Sminthopsis gilberti</i>	Gilbert's Dunnart	X	2																																
	<i>Sminthopsis murina</i>	Common Dunnart	X																																	
	<i>Sminthopsis ooldea</i>	Ooldea Dunnart	X	1																																
Myrmecobiidae	<i>Myrmecobius fasciatus</i>	Numbat	X	1																																
Burramyidae	<i>Cercartetus concinnus</i>	Southwestern Pygmy Possum	X		1		1	2	1		2	1		4	1	3																				
Macropodidae	<i>Macropus fuliginosus</i>	Western Grey Kangaroo	X	5																																
	<i>Osphranter robustus</i>	Euro	X	1																																
	<i>Osphranter rufus</i>	Red Kangaroo	X																																	
Leporidae	<i>Oryctolagus cuniculus</i>	European Rabbit	X	1																																
Tachyglossidae	<i>Tachyglossus aculeatus</i>	Short-beaked Echidna	X	1																																
Thylacomyidae	<i>Macrotis lagotis</i>	Bilby	X	3																																
Muridae	<i>Mus musculus</i>	House Mouse	X	45					4							9																				
	<i>Notomys alexis</i>	Spinifex Hopping Mouse	X																																	
	<i>Notomys mitchellii</i>	Mitchell's Hopping Mouse	X	2		42	1	29		2																										
	<i>Pseudomys albocinereus</i>	Ash-grey Mouse	X	1																																
	<i>Pseudomys bolami</i>	Bolam's Mouse	X	32																																
	<i>Pseudomys hermannsburgensis</i>	Sandy Inland Mouse	X	41				1				1	13	2																						
	<i>Pseudomys nanus</i>	Western Chestnut Mouse	X																																	

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Family	Species	Common name	Surveys																	B									
			A														B												
			Spinifex	Golden Arrow Trans	Gimlet South	Rose Trans	Salmon Gums	Gimlet South Trans	Palace Rehab	Davyhurst	Golden Arrow	Palace Undist	Security	Crossroads	Gimlet South Rehab	Golden Arrow	Palace Trans	Rose Rehab	Rose Undist	Wendy Gully Rehab	Wendy Gully Trans	Wendy Gully Undist	Floodplains	KK4	KK1	KK2	KK11		
Amphibians																													
Limnodynastidae	<i>Neobatrachus kunapalari</i>	Kunapalari Frog	1	1																									
	<i>Neobatrachus sutor</i>	Shoemaker Frog	9	6	30	5	3	6	5	10	19	25	22	12	7	2	2	1	9						1	8			
	<i>Neobatrachus wilsmorei</i>	Goldfields Bullfrog																						1					
Myobatrachidae	<i>Pseudophryne occidentalis</i>	Orange-crowned Toadlet		5	84		1	147	1	1	1	95		4	158		2		2	2						2			
Reptile																													
Agamidae	<i>Ctenophorus caudicinctus</i>	Ring-tailed Dragon																											
	<i>Ctenophorus cristatus</i>	Crested Dragon	1		5	3	1		3	1	10	1	1			1	2	4		1							3		
	<i>Ctenophorus reticulatus</i>	Western Netted Dragon			13	2	3	1	3	4	19		30	6				12	18	1	1	3	3			5			
	<i>Ctenophorus scutulatus</i>	Lozenge-marked Dragon			2				2	3	2	5						2		1	13	8							
	<i>Diporiphora amphiboluroides</i>	Mulga Dragon											7																
	<i>Moloch horridus</i>	Thorny Devil		1					5											1	1	17	1						
	<i>Pogona minor</i>	Dwarf Bearded Dragon	13	9	3	2	2	4	20	11	14	3	14	21	12	10	8	18	2	14	4	24	2				1		
	<i>Tympanocryptis cephalus</i>	Pebble Dragon			7		1							2			1				1								
Carphodactylidae	<i>Nephrurus laevisissimus</i>	Smooth Knob-tail				1																							
	<i>Nephrurus vertebralis</i>	Midline Knob-tail																					1						
	<i>Underwoodisaurus milii</i>	Barking Gecko	11	75	18	68	31	231	20	16	22	22		2	83	97	47	98	10	37	33	28	10					2	
Diplodactylidae	<i>Amalasia reticulata</i>	Reticulated Velvet Gecko							1									4								1			
	<i>Diplodactylus granariensis</i>	Wheat-belt Stone Gecko	77	6	71	36	18	8	2	74	13	62	8	29	22	2	2	34	68	33	38	76	1		1	2	4		
	<i>Diplodactylus pulcher</i>	Fine-faced Gecko	53	2	21	3	8	1	1	86	78	88	123	80		6	3	4	100	1	3	46	12	1		2			
	<i>Lucasium maini</i>	Main's Ground Gecko	9	1	60		346		1	9	6	39	1	9	2			69		1	1	1				3	5		
	<i>Strophurus assimilis</i>	Goldfields Spiny-tailed Gecko	44	4	7		1	3		1	19	1			3	8	1	1		14	15	112							
Elapidae	<i>Brachyuropsis semifasciata</i>	Half-girdlerd Snake	9		6		7		6	5	2	1																	
	<i>Demansia psammophis</i>	Yellow-faced Whipsnake	1		4		1		1		2	1				1	1					3							
	<i>Parasuta gouldii</i>	Gould's Snake																								1			
	<i>Parasuta monachus</i>	Monk Snake	2		4	2	7		3	9	3	11	4	2		1	3	1	3		1	6			1				
	<i>Pseudechis australis</i>	Mulga Snake				2	1		2	2	1		1		1			1	1										
	<i>Pseudonaja mengdeni</i>	Gwardar	1												1						1	1						1	
	<i>Pseudonaja modesta</i>	Ringed Brown Snake	1						1	2								2			1					1			
	<i>Simoselaps bertholdi</i>	Jan's Banded Snake			2		4		8		2		1					1			2		1						
	<i>Suta fasciata</i>	Rosen's Snake			3		2						1								1								

Family	Species	Common name	Surveys																												
			A															B													
			Spinifex	Golden Arrow Trans	Gimlet South	Rose Trans	Salmon Gums	Gimlet South Trans	Palace Rehab	Davyhurst	Golden Arrow	Palace Undist	Security	Crossroads	Gimlet South Rehab	Golden Arrow	Palace Trans	Rose Rehab	Rose Undist	Wendy Gully Rehab	Wendy Gully Trans	Wendy Gully Undist	Floodplains	KK4	KK1	KK2	KK11				
Gekkonidae	<i>Gehyra purpurascens</i>	Purplish Dtella	1	1	1				1	1	9		6						6												
	<i>Gehyra variegata</i>	Tree Dtella	23	37	13	14	27	2	38	28	45	39	6	18	1	1	3	37	3	1	12	2	1		3	2					
	<i>Heteronotia binoei</i>	Bynoe's Prickly Gecko	24	53	9	27	10	21	19	16	12	28	25	1	29	43	42	34	13	42	27	8		1	2	6	6				
	<i>Rhynchoedura ornata</i>	Western Beaked Gecko	4			3				5	23	20		41				1	106				9								
Pygopodidae	<i>Delma australis</i>	Marble-faced Delma	8	3	1				4	2	9				1				2			6					1				
	<i>Delma butleri</i>	Unbanded Delma	4											2								2									
	<i>Delma fraseri</i>	Fraser's Delma	1											1																	
	<i>Lialis burtonis</i>	Burton's Snake-lizard	5		2																		3	2							
	<i>Pygopus lepidopodus</i>	Common Scaly-foot	2	2		3			2														1								
	<i>Pygopus nigriceps</i>	Western Hooded Scaly-foot																													
Scincidae	<i>Cryptoblepharus buchanani</i>	Buchanan's Snake-eyed Skink			12		3			10	1	5	3				1		7					4							
	<i>Ctenotus atlas</i>	Southern Mallee Ctenotus	16									1	1								2	104		6							
	<i>Ctenotus schomburgkii</i>	Schomburgk's Ctenotus	2																			2		1							
	<i>Ctenotus uber</i>	Spotted Ctenotus	46	2	13		6		29	48	5	44	27		1				3	2	1	25									
	<i>Cyclodomorphus melanops</i>	Spinifex Slender Bluetongue																						1							
	<i>Cyclodomorphus melanops</i>	Spinifex Slender Bluetongue	24		2	2		1		1	6	2									2	2	24								
	<i>Egernia depressa</i>	Southern Pygmy Spiny-tailed Skink	15		68	1		3	1	57	2	3	27		3		2	2	3												
	<i>Egernia formosa</i>	Goldfields Crevice-skink	1				4			8		2	8	1						14								1			
	<i>Eremiascincus richardsonii</i>	Broad-banded Sand Swimmer	3		4		6	2	1	5	4		6	2	1						1		1								
	<i>Hemiergis initialis</i>	South-western Earless Skink	12		5		1			4						1															
	<i>Lerista picturata</i>	Southern Robust Slider	14		18		20			18	17	5		1						5			20				2	1			
	<i>Liopholis inornata</i>	Desert Skink					4						8	2						71			2		1	1	1				
	<i>Liopholis striata</i>	Nocturnal Desert Skink					2							9									1								
	<i>Menetia greyii</i>	Common Dwarf Skink	6		3	11	3		4	19	6	23	17	4	2		4	12	18				1						1		
	<i>Morethia adelaidensis</i>	Saltbush Morethia Skink																										1			
<i>Morethia butleri</i>	Woodland Morethia Skink	4		1	4	7	3		14		6	4							17		1								2		
<i>Morethia obscura</i>	Shrubland Morethia Skink																														
<i>Tiliqua occipitalis</i>	Western Blue-tongued Lizard	5							1	2		3										4									
<i>Tiliqua rugosa</i>	Bobtail	2	3	1	1				3			2	1		1		3	2				1	1	3		2	7				
Typhlopidae	<i>Anilius australis</i>	Austral Blind Snake	14		14		7		2	8		7		7	1		3	1	2		1	6									
	<i>Anilius bicolor</i>	Dark-spined Blind Snake	1		1																	1									

Family	Species	Common name	Surveys																	B								
			A														B											
			Spinifex	Golden Arrow Trans	Gimlet South	Rose Trans	Salmon Gums	Gimlet South Trans	Palace Rehab	Davyhurst	Golden Arrow	Palace Undist	Security	Crossroads	Gimlet South Rehab	Golden Arrow	Palace Trans	Rose Rehab	Rose Undist	Wendy Gully Rehab	Wendy Gully Trans	Wendy Gully Undist	Floodplains	KK4	KK1	KK2	KK11	
	<i>Anilius bituberculatus</i>	Prong-snouted Blind Snake	1	2	2				2	2	2	2	1		1			1	1									
	<i>Anilius hamatus</i>	Pale-headed Blind Snake	9	5	24	2	10	2	2	10	18	7	2	13		4	1		6	1	1	9						
Varanidae	<i>Varanus caudolineatus</i>	Stripe-tailed Monitor	1		15		11			11	1		17	9				2	1		9			1				
	<i>Varanus gouldii</i>	Gould's Goanna	6	2	9	3	8	1	3	10	9	3	2	2	1	4	1	3	7	2	1		1	1		2		
	<i>Varanus tristis</i>	Black-headed Monitor	3		1	1	3			5																		
Birds																												
Casuariidae	<i>Dromaius novaehollandiae</i>	Emu																						14		11		
Anatidae	<i>Anas gracilis</i>	Grey Teal																								10		
Columbidae	<i>Phaps chalcoptera</i>	Common Bronzewing																								4	3	
	<i>Ocyphaps lophotes</i>	Crested Pigeon																								2		
Podargidae	<i>Podargus strigoides</i>	Tawny Frogmouth																						1				
Accipitridae	<i>Aquila audax</i>	Wedge-tailed Eagle																									2	
Falconidae	<i>Falco berigora</i>	Brown Falcon																								1		
Cacatuidae	<i>Eolophus roseicapillus</i>	Galah																								10		
	<i>Nymphicus hollandicus</i>	Cockatiel																								15		
Psittacidae	<i>Glossopsitta porphyrocephala</i>	Purple-crowned Lorikeet																								3	6	
	<i>Barnardius zonarius</i>	Australian Ringneck																						11		63	16	
	<i>Psephotus varius</i>	Mulga Parrot																						7		1		
Cuculidae	<i>Chalcites basalis</i>	Horsfield's Bronze-cuckoo																						1		2	1	
	<i>Cacomantis pallidus</i>	Pallid Cuckoo																						1		4	1	
Strigidae	<i>Ninox novaeseelandiae</i>	Southern Boobook																									1	
Halcyonidae	<i>Todiramphus pyrrhopygius</i>	Red-backed Kingfisher																									2	
Meropidae	<i>Merops ornatus</i>	Rainbow Bee-eater																								19	10	
Climacteridae	<i>Climacteris rufa</i>	Rufous Treecreeper																								4		
Maluridae	<i>Malurus leucopterus</i>	White-winged Fairy-wren																								10		
Acanthizidae	<i>Pyrrholaemus brunneus</i>	Redthroat																						2			1	
	<i>Smicromnis brevirostris</i>	Weebill																1						12		155	77	
	<i>Acanthiza chrysorrhoa</i>	Yellow-rumped Thornbill																									4	
	<i>Acanthiza uropygialis</i>	Chestnut-rumped Thornbill																						33		2	25	
	<i>Acanthiza apicalis</i>	Inland Thornbill																									14	
Pardalotidae	<i>Pardalotus striatus</i>	Striated Pardalote																								56	9	

Family	Species	Common name	Surveys																	B								
			A														B											
			Spinifex	Golden Arrow Trans	Gimlet South	Rose Trans	Salmon Gums	Gimlet South Trans	Palace Rehab	Davyhurst	Golden Arrow	Palace Undist	Security	Crossroads	Gimlet South Rehab	Golden Arrow	Palace Trans	Rose Rehab	Rose Undist	Wendy Gully Rehab	Wendy Gully Trans	Wendy Gully Undist	Floodplains	KK4	KK1	KK2	KK11	
Meliphagidae	<i>Lichenostomus virescens</i>	Singing Honeyeater																						9			15	
	<i>Lichenostomus leucotis</i>	White-eared Honeyeater																								3		
	<i>Lichenostomus ornatus</i>	Yellow-plumed Honeyeater																								30	8	
	<i>Purnella albifrons</i>	White-fronted Honeyeater																						17	11	19		
	<i>Manorina flavigula</i>	Yellow-throated Miner																						52	86	36		
	<i>Acanthagenys rufogularis</i>	Spiny-cheeked Honeyeater																						20	10	14		
	<i>Anthochaera carunculata</i>	Red Wattlebird																								31		
	<i>Lichmera indistincta</i>	Brown Honeyeater																									30	
	<i>Melithreptus brevirostris</i>	Brown-headed Honeyeater																									5	
Pomatostomidae	<i>Pomatostomus superciliosus</i>	White-browed Babbler																						1	5	28		
Neosittidae	<i>Daphoenositta chrysoptera</i>	Varied Sittella																								15		
Campephagidae	<i>Coracina maxima</i>	Ground Cuckoo-shrike																								4		
	<i>Coracina novaehollandiae</i>	Black-faced Cuckoo-shrike																						6	13	9		
	<i>Lalage sueurii</i>	White-winged Triller																						2				
Pachycephalidae	<i>Colluricincla harmonica</i>	Grey Shrike-thrush																									1	1
	<i>Oreoica gutturalis</i>	Crested Bellbird																						5	5			
Artamidae	<i>Artamus cinereus</i>	Black-faced Woodswallow																									1	7
	<i>Artamus cyanopterus</i>	Dusky Woodswallow																								3		
	<i>Cracticus torquatus</i>	Grey Butcherbird																						5	3			
	<i>Cracticus nigrogularis</i>	Pied Butcherbird																								9	2	
	<i>Cracticus tibicen</i>	Australian Magpie																								30	4	
	<i>Strepera versicolor</i>	Grey Currawong																						2	7	7		
Rhipiduridae	<i>Rhipidura leucophrys</i>	Willie Wagtail																									1	2
Monarchidae	<i>Grallina cyanoleuca</i>	Magpie-lark																									6	
Petroicidae	<i>Microeca fascians</i>	Jacky Winter																						1	11	6		
	<i>Petroica goodenovii</i>	Red-capped Robin																						5	5	6		
	<i>Melanodryas cucullata</i>	Hooded Robin																									1	
Hirundinidae	<i>Hirundo neoxena</i>	Welcome Swallow																						4				
	<i>Hirundo nigricans</i>	Tree Martin																									4	
Motacillidae	<i>Anthus novaeseelandiae</i>	Australasian Pipit	1					1	4														4			1		
Mammals																												

Family	Species	Common name	Surveys																	B								
			A																	KK4	KK1	KK2	KK11					
			Spinifex	Golden Arrow Trans	Gimlet South	Rose Trans	Salmon Gums	Gimlet South Trans	Palace Rehab	Davyhurst	Golden Arrow	Palace Undist	Security	Crossroads	Gimlet South Rehab	Golden Arrow	Palace Trans	Rose Rehab	Rose Undist	Wendy Gully Rehab	Wendy Gully Trans	Wendy Gully Undist	Floodplains					
Canidae	<i>Vulpes vulpes</i>	Red Fox																										1
Molossidae	<i>Austronomus australis</i>	White-striped Free-tail Bat																								5	17	1
	<i>Mormopterus planiceps</i>	Southern Free-tail Bat																								11	8	
Vespertilionidae	<i>Chalinolobus morio</i>	Chocolate Wattled Bat																								1	3	
	<i>Nyctophilus geoffroyi</i>	Lesser Long-eared Bat																								1	2	
	<i>Nyctophilus gouldi</i>	Gould's Long-eared Bat																								10	42	
	<i>Nyctophilus major</i>	Greater Long-eared Bat					1																					
	<i>Scotorepens balstoni</i>	Inland Broad-nosed Bat																								2	11	
	<i>Vespadelus regulus</i>	Southern Forest Bat																							1	5		
Dasyuridae	<i>Antechinomys laniger</i>	Kultarr				1	1													1								
	<i>Ningauai ridei</i>	Wongai Ningauai	1																			2						
	<i>Ningauai sp.</i>	Ningauai sp.	35	3		2		2	22						1		4		2	17								
	<i>Ningauai yvonneae</i>	Mallee Ningauai	1																									
	<i>Pseudantechinus woolleyae</i>	Woolley's False Antechinus																					1					
	<i>Sminthopsis crassicaudata</i>	Fat-tailed Dunnart	2	11	2	63	5	14	67		15	12	4	26	32	27	57	143	28	121	100	24	108	1	2	5	1	
	<i>Sminthopsis crassicaudata</i>	Fat-tailed Dunnart																										
	<i>Sminthopsis dolichura</i>	Little Long-tailed Dunnart	63	16	15	5	34	4	2	47	25	36	46	11	2	17	4	2	28	7	4	32	2	7	1	3	4	
	<i>Sminthopsis sp.</i>	Dunnart sp.									2																	
Burramyidae	<i>Cercartetus concinnus</i>	Southwestern Pygmy Possum	23	11	62	11	15	23	9	37	32	20	8	17	27	3	8	20	22	9	6	16		2		8	1	
Macropodidae	<i>Macropus fuliginosus</i>	Western Grey Kangaroo																						8		2	6	
	<i>Osphranter robustus</i>	Euro																										2
	<i>Osphranter rufus</i>	Red Kangaroo																							1	15	8	
Leporidae	<i>Oryctolagus cuniculus</i>	European Rabbit			1			1					1				1											
Muridae	<i>Mus musculus</i>	House Mouse	26	36	25	33	6	62	49	19	2	24	10	18	128	24	47	56	22	181	88	13	31	1		13	4	
	<i>Notomys mitchellii</i>	Mitchell's Hopping Mouse							1						1													
	<i>Pseudomys albocinereus</i>	Ash-grey Mouse																		1								
	<i>Pseudomys bolami</i>	Bolam's Mouse	9	39	13	19	30	11	49	3	13	1	8	20	35	4	25	24			5	4	9	2				
	<i>Pseudomys hermannsburgensis</i>	Sandy Inland Mouse	8	9	5		9	3	9	3	4		2	5	7			14	2	1	5	2						

A Thompson, S.A. (2004) *Mine site rehabilitation index using reptile assemblage as a bio-indicator*, PhD thesis, Edith Cowan University, Perth.

B McKenzie, N.L. and Hall, B. (1992) The Biological Survey of the Eastern Goldfields of Western Australia. Part 8. Kurnalpi-Kalgoorlie Study Area, *Records of the Western Australian Museum*, Supplement No. 41, 37 – 63.

Appendix C. Definitions of Significant Fauna under the WA Biodiversity Conservation Act 2016 and Priority Species

**Basic vertebrate fauna risk assessment
Eureka project area**



ATTACHMENT C

DEFINITIONS OF SIGNIFICANT FAUNA UNDER THE WA BIODIVERSITY CONSERVATION ACT 2016

Threatened, Extinct and Specially Protected fauna or flora¹ are species² which have been adequately searched for and are deemed to be, in the wild, threatened, extinct or in need of special protection, and have been gazetted as such. The *Wildlife Conservation (Specially Protected Fauna) Notice 2018* and the *Wildlife Conservation (Rare Flora) Notice 2018* have been transitioned under regulations 170, 171 and 172 of the *Biodiversity Conservation Regulations 2018* to be the lists of Threatened, Extinct and Specially Protected species under Part 2 of the *Biodiversity Conservation Act 2016*. Categories of Threatened, Extinct and Specially Protected fauna and flora are:

T Threatened Species

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).

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.

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.

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.

CR Critically endangered species

Threatened species considered to be "*facing an extremely high risk of extinction in the wild in the immediate future, as determined in accordance with criteria set out in the ministerial guidelines*".

Listed as critically endangered under section 19(1)(a) of the BC Act in accordance with the criteria set out in section 20 and the ministerial guidelines. Published under schedule 1 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.

¹ The definition of flora includes algae, fungi and lichens

² Species includes all taxa (plural of taxon - a classificatory group of any taxonomic rank, e.g. a family, genus, species or any infraspecific category i.e. subspecies or variety, or a distinct population).

EN Endangered species

Threatened species considered to be *"facing a very high risk of extinction in the wild in the near future, as determined in accordance with criteria set out in the ministerial guidelines"*.

Listed as endangered under section 19(1)(b) of the BC Act in accordance with the criteria set out in section 21 and the ministerial guidelines. Published under schedule 2 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018* for endangered fauna or the *Wildlife Conservation (Rare Flora) Notice 2018* for endangered flora.

VU Vulnerable species

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.

Extinct Species

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

EX Extinct species

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).

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.

EW Extinct in the wild species

Species that *"is known only to survive in cultivation, in captivity or as a naturalised population well outside its past range; and it has not been recorded in its known habitat or expected habitat, at appropriate seasons, anywhere in its past range, despite surveys over a time frame appropriate to its life cycle and form"*, and listing is otherwise in accordance with the ministerial guidelines (section 25 of the BC Act).

Currently there are no threatened 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.

Specially Protected Species

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.

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.

MI Migratory birds protected under an international agreement

Fauna that periodically or occasionally visit Australia or an external Territory or the exclusive economic zone; or the species is subject of an international agreement that relates to the protection of migratory species and that binds the Commonwealth; and listing is otherwise in accordance with the ministerial guidelines (section 15 of the BC Act).

Includes birds that are subject to an agreement between the government of Australia and the 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.

Published as migratory birds protected under an international agreement under schedule 5 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018*.

CD Species of special conservation interest (conservation dependant fauna)

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).

Published as conservation dependent fauna under schedule 6 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018*.

OS Other specially protected species

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).

Published as other specially protected fauna under schedule 7 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018*.

P Priority species

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

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

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

P1 Priority 1: Poorly-known species

Species that are known from one or a few locations (generally five or less) which are potentially at risk. All occurrences are either: very small; or on lands not managed for conservation, e.g. agricultural or pastoral lands, urban areas, road and rail reserves, gravel reserves and active mineral leases; or otherwise under threat of habitat destruction or degradation. Species may be included if they are comparatively well known from one or more locations but do not meet adequacy of survey requirements and appear to be under immediate threat from known threatening processes. Such species are in urgent need of further survey.

P2 Priority 2: Poorly-known species

Species that are known from one or a few locations (generally five or less), some of which are on lands managed primarily for nature conservation, e.g. national parks, conservation parks, nature reserves and other lands with secure tenure being managed for conservation. Species may 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.

P3 Priority 3: Poorly-known species

Species that are known from several locations, and the species does not appear to be under imminent threat, or from few but widespread locations with either large population size or significant remaining areas of apparently suitable habitat, much of it not under imminent threat. Species may be included if they are comparatively well known from several locations but do not meet adequacy of survey requirements and known threatening processes exist that could affect them. Such species are in need of further survey.

P4 Priority 4: Rare, Near Threatened and other species in need of monitoring

(a) Rare. Species that are considered to have been adequately surveyed, or for which sufficient knowledge is available, and that are considered not currently threatened or in need of special protection but could be if present circumstances change. These species are usually represented on conservation lands.

(b) Near Threatened. Species that are considered to have been adequately surveyed and that are close to qualifying for vulnerable but are not listed as Conservation Dependent.

(c) Species that have been removed from the list of threatened species during the past five years for reasons other than taxonomy.

Appendix D.

Rapid habitat assessment results

Basic vertebrate fauna risk assessment
Eureka project area



Date: 10/05/2022

Habitat Assessment #: 1

Observer: Scott Thompson

Zone: 51

Easting: 331606 mE

Northing: 6646020 mN

Fire History: <5 years

Landform: Plain

Soil Type: Red sand

Habitat Structure: Mixed shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 10/05/2022

Habitat Assessment #: 2

Observer: Scott Thompson

Zone: 51

Easting: 331615 mE

Northing: 6645801 mN

Fire History: <5 years

Landform: Plain

Soil Type: Red sand

Habitat Structure: Eucalypt woodland over shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 10/05/2022

Habitat Assessment #: 3

Observer: Scott Thompson

Zone: 51

Easting: 331612 mE

Northing: 6645576 mN

Fire History: <5 years

Landform: Plain

Soil Type: Red sand

Habitat Structure: Eucalypt woodland over shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 10/05/2022

Habitat Assessment #: 4

Observer: Scott Thompson

Zone: 51

Easting: 331603 mE

Northing: 6645410 mN

Fire History: <5 years

Landform: Plain

Soil Type: Red sand

Habitat Structure: Eucalypt woodland over shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 10/05/2022

Habitat Assessment #: 5

Observer: Scott Thompson

Zone: 51

Easting: 331606 mE

Northing: 6645198 mN

Fire History: <5 years

Landform: Plain

Soil Type: Red sand

Habitat Structure: Mixed shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 10/05/2022

Habitat Assessment #: 6

Observer: Scott Thompson

Zone: 51

Easting: 331619 mE

Northing: 6644937 mN

Fire History: <5 years

Landform: Plain

Soil Type: Red sand

Habitat Structure: Eucalypt woodland over shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 10/05/2022

Habitat Assessment #: 7

Observer: Scott Thompson

Zone: 51

Easting: 331600 mE

Northing: 6644783 mN

Fire History: <5 years

Landform: Plain

Soil Type: Red sand

Habitat Structure: Mixed shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 10/05/2022

Habitat Assessment #: 8

Observer: Scott Thompson

Zone: 51

Easting: 331599 mE

Northing: 6644591 mN

Fire History: <5 years

Landform: Plain

Soil Type: Red sand

Habitat Structure: Mixed shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 10/05/2022

Habitat Assessment #: 9

Observer: Scott Thompson

Zone: 51

Easting: 331606 mE

Northing: 6644377 mN

Fire History: <5 years

Landform: Plain

Soil Type: Red sand

Habitat Structure: Eucalypt woodland over shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 10/05/2022

Habitat Assessment #: 10

Observer: Scott Thompson

Zone: 51

Easting: 331612 mE

Northing: 6644084 mN

Fire History: <5 years

Landform: Plain

Soil Type: Red sand

Habitat Structure: Mixed shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 10/05/2022

Habitat Assessment #: 11

Observer: Scott Thompson

Zone: 51

Easting: 331645 mE

Northing: 6643769 mN

Fire History: <5 years

Landform: Plain

Soil Type: Red sand

Habitat Structure: Mixed shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 10/05/2022

Habitat Assessment #: 12

Observer: Scott Thompson

Zone: 51

Easting: 331641 mE

Northing: 6643541 mN

Fire History: <5 years

Landform: Plain

Soil Type: Red sand

Habitat Structure: Mixed shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 10/05/2022

Habitat Assessment #: 13

Observer: Scott Thompson

Zone: 51

Easting: 331664 mE

Northing: 6643366 mN

Fire History: <5 years

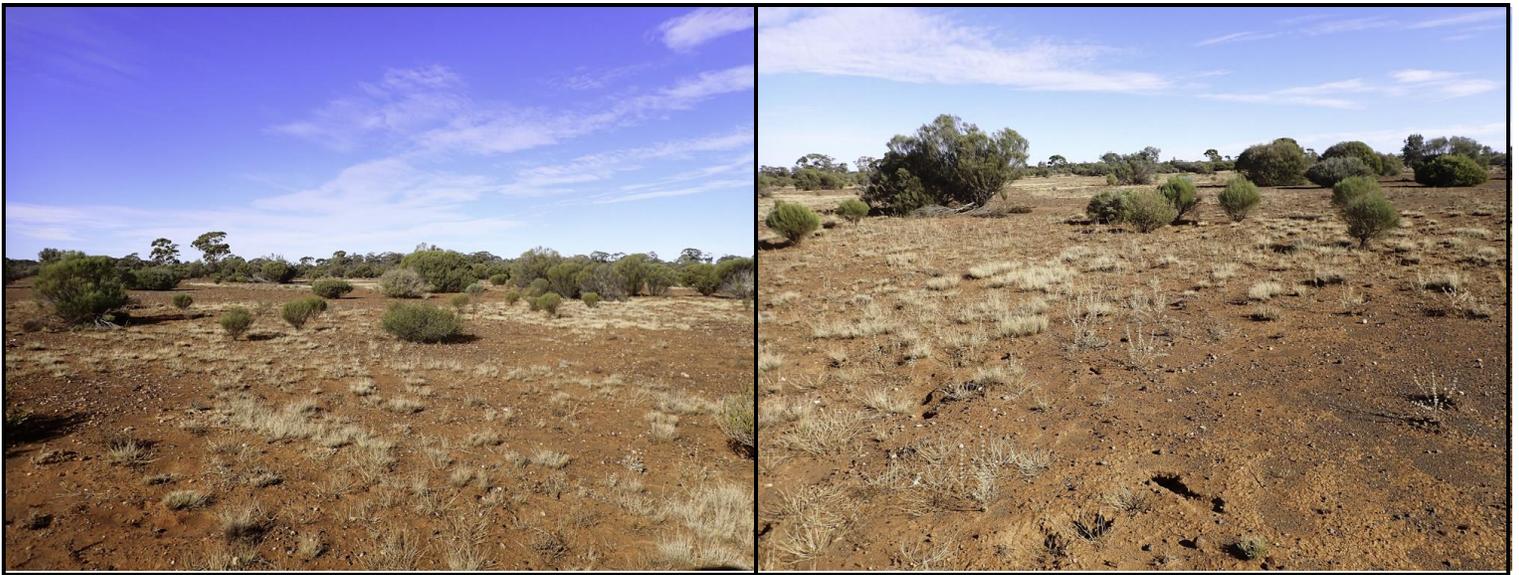
Landform: Ephemeral
creekline

Soil Type: Red sand

Habitat Structure: Mixed shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 10/05/2022

Habitat Assessment #: 14

Observer: Scott Thompson

Zone: 51

Easting: 331689 mE

Northing: 6643241 mN

Fire History: <5 years

Landform: Plain

Soil Type: Red sand

Habitat Structure: Mixed shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 10/05/2022

Habitat Assessment #: 15

Observer: Scott Thompson

Zone: 51

Easting: 331681 mE

Northing: 6643058 mN

Fire History: <5 years

Landform: Ephemeral
creekline

Soil Type: Red sand

Habitat Structure: Mixed shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 10/05/2022

Habitat Assessment #: 16

Observer: Scott Thompson

Zone: 51

Easting: 331763 mE

Northing: 6643172 mN

Fire History: <5 years

Landform: Plain

Soil Type: Red sand

Habitat Structure: Mixed shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 10/05/2022

Habitat Assessment #: 17

Observer: Scott Thompson

Zone: 51

Easting: 331772 mE

Northing: 6643427 mN

Fire History: <5 years

Landform: Plain

Soil Type: Red sand

Habitat Structure: Mixed shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 10/05/2022

Habitat Assessment #: 18

Observer: Scott Thompson

Zone: 51

Easting: 331782 mE

Northing: 6643584 mN

Fire History: <5 years

Landform: Plain

Soil Type: Red sand

Habitat Structure: Mixed shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 10/05/2022

Habitat Assessment #: 19

Observer: Scott Thompson

Zone: 51

Easting: 331770 mE

Northing: 6643749 mN

Fire History: <5 years

Landform: Plain

Soil Type: Red sand

Habitat Structure: Mixed shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 10/05/2022

Habitat Assessment #: 20

Observer: Scott Thompson

Zone: 51

Easting: 331780 mE

Northing: 6643907 mN

Fire History: <5 years

Landform: Plain

Soil Type: Red sand

Habitat Structure: Mixed shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 10/05/2022

Habitat Assessment #: 21

Observer: Scott Thompson

Zone: 51

Easting: 331795 mE

Northing: 6644145 mN

Fire History: <5 years

Landform: Plain

Soil Type: Red sand

Habitat Structure: Mixed shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 10/05/2022

Habitat Assessment #: 22

Observer: Scott Thompson

Zone: 51

Easting: 331781 mE

Northing: 6644356 mN

Fire History: <5 years

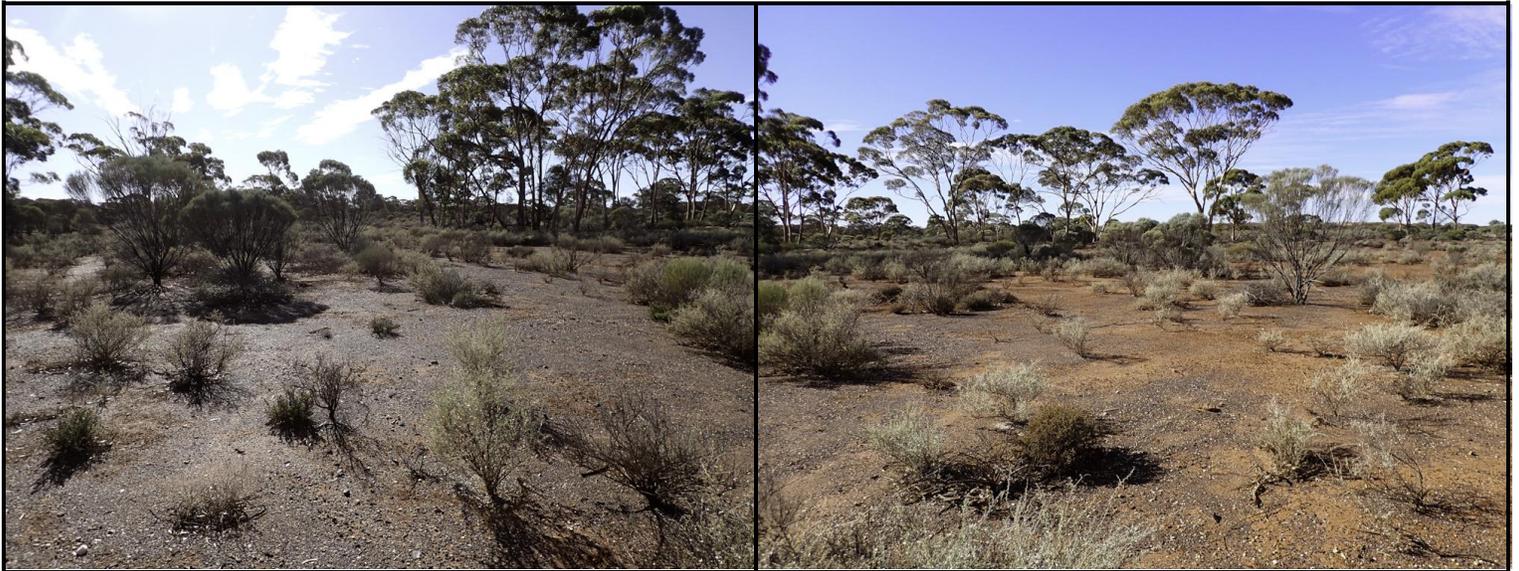
Landform: Plain

Soil Type: Red sand

Habitat Structure: Mixed shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 10/05/2022

Habitat Assessment #: 23

Observer: Scott Thompson

Zone: 51

Easting: 331778 mE

Northing: 6644635 mN

Fire History: <5 years

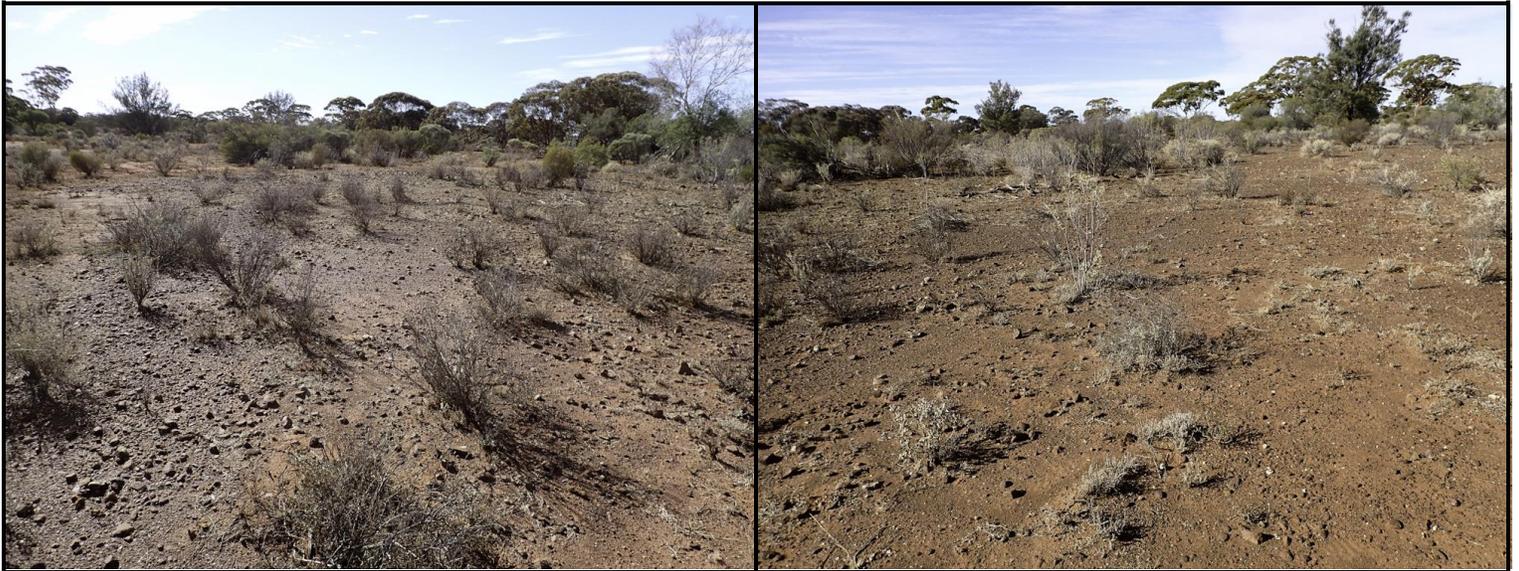
Landform: Plain

Soil Type: Red sand

Habitat Structure: Mixed shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 10/05/2022

Habitat Assessment #: 24

Observer: Scott Thompson

Zone: 51

Easting: 331758 mE

Northing: 6644815 mN

Fire History: <5 years

Landform: Plain

Soil Type: Red sand

Habitat Structure: Eucalypt woodland over shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 10/05/2022

Habitat Assessment #: 25

Observer: Scott Thompson

Zone: 51

Easting: 331771 mE

Northing: 6644998 mN

Fire History: <5 years

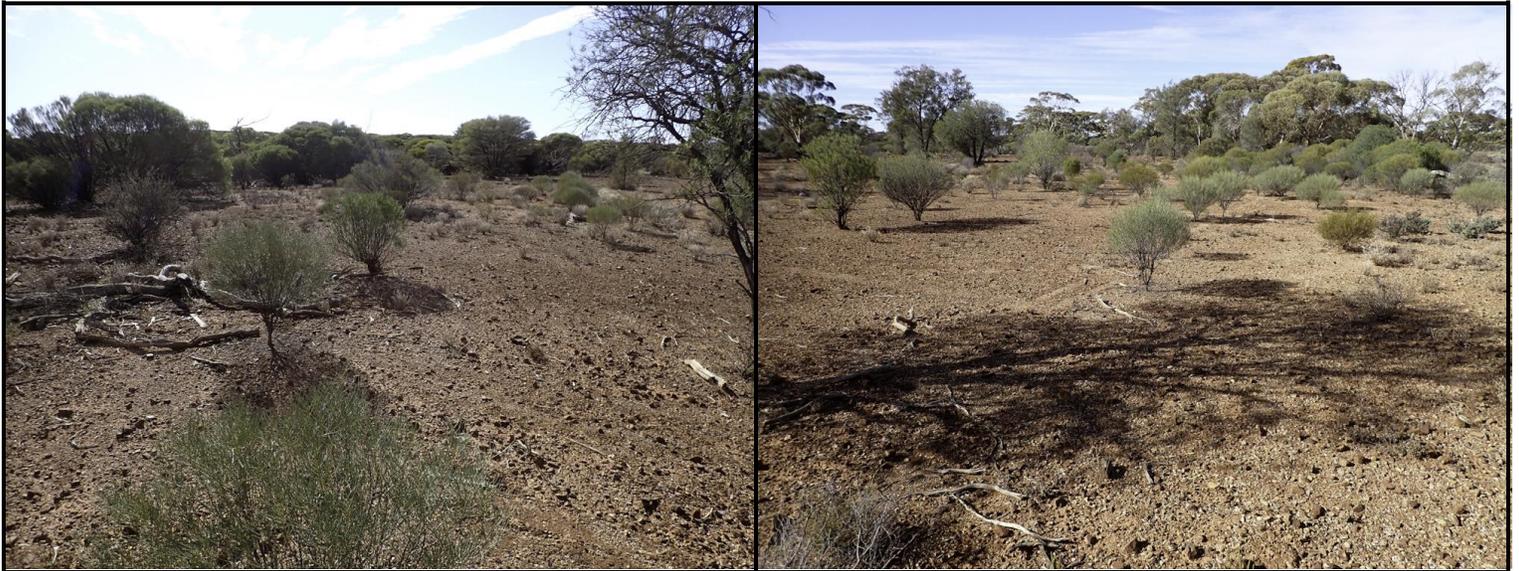
Landform: Plain

Soil Type: Red sand

Habitat Structure: Mixed shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 10/05/2022

Habitat Assessment #: 26

Observer: Scott Thompson

Zone: 51

Easting: 331750 mE

Northing: 6645180 mN

Fire History: <5 years

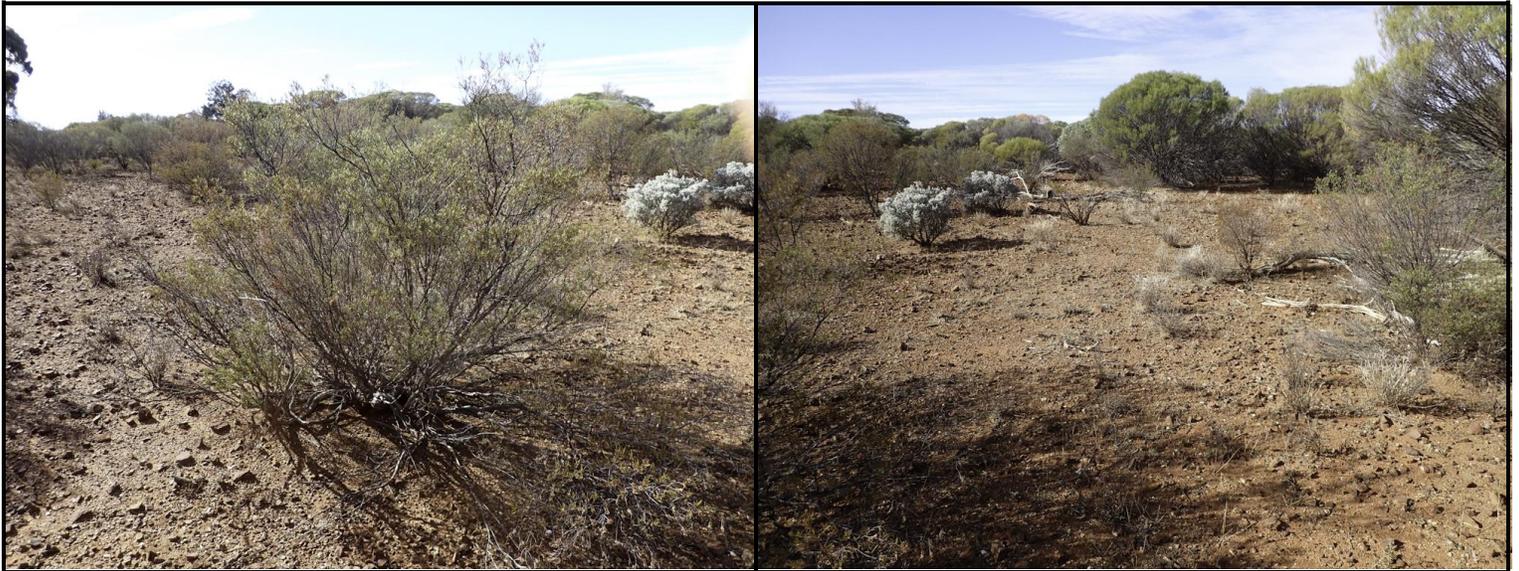
Landform: Plain

Soil Type: Red sand

Habitat Structure: Mixed shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 10/05/2022

Habitat Assessment #: 27

Observer: Scott Thompson

Zone: 51

Easting: 331777 mE

Northing: 6645292 mN

Fire History: <5 years

Landform: Plain

Soil Type: Red sand

Habitat Structure: Mixed shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 10/05/2022

Habitat Assessment #: 28

Observer: Scott Thompson

Zone: 51

Easting: 331788 mE

Northing: 6645422 mN

Fire History: <5 years

Landform: Plain

Soil Type: Red sand

Habitat Structure: Mixed shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 10/05/2022

Habitat Assessment #: 29

Observer: Scott Thompson

Zone: 51

Easting: 331921 mE

Northing: 6645238 mN

Fire History: <5 years

Landform: Plain

Soil Type: Red sand

Habitat Structure: Mixed shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 10/05/2022

Habitat Assessment #: 30

Observer: Scott Thompson

Zone: 51

Easting: 331905 mE

Northing: 6645061 mN

Fire History: <5 years

Landform: Plain

Soil Type: Red sand

Habitat Structure: Eucalypt woodland over shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 10/05/2022

Habitat Assessment #: 31

Observer: Scott Thompson

Zone: 51

Easting: 331996 mE

Northing: 6644966 mN

Fire History: <5 years

Landform: Plain

Soil Type: Red sand

Habitat Structure: Eucalypt woodland over shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 10/05/2022

Habitat Assessment #: 32

Observer: Scott Thompson

Zone: 51

Easting: 332011 mE

Northing: 6644723 mN

Fire History: <5 years

Landform: Plain

Soil Type: Red sand

Habitat Structure: Eucalypt woodland over shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 10/05/2022

Habitat Assessment #: 33

Observer: Scott Thompson

Zone: 51

Easting: 332004 mE

Northing: 6644568 mN

Fire History: <5 years

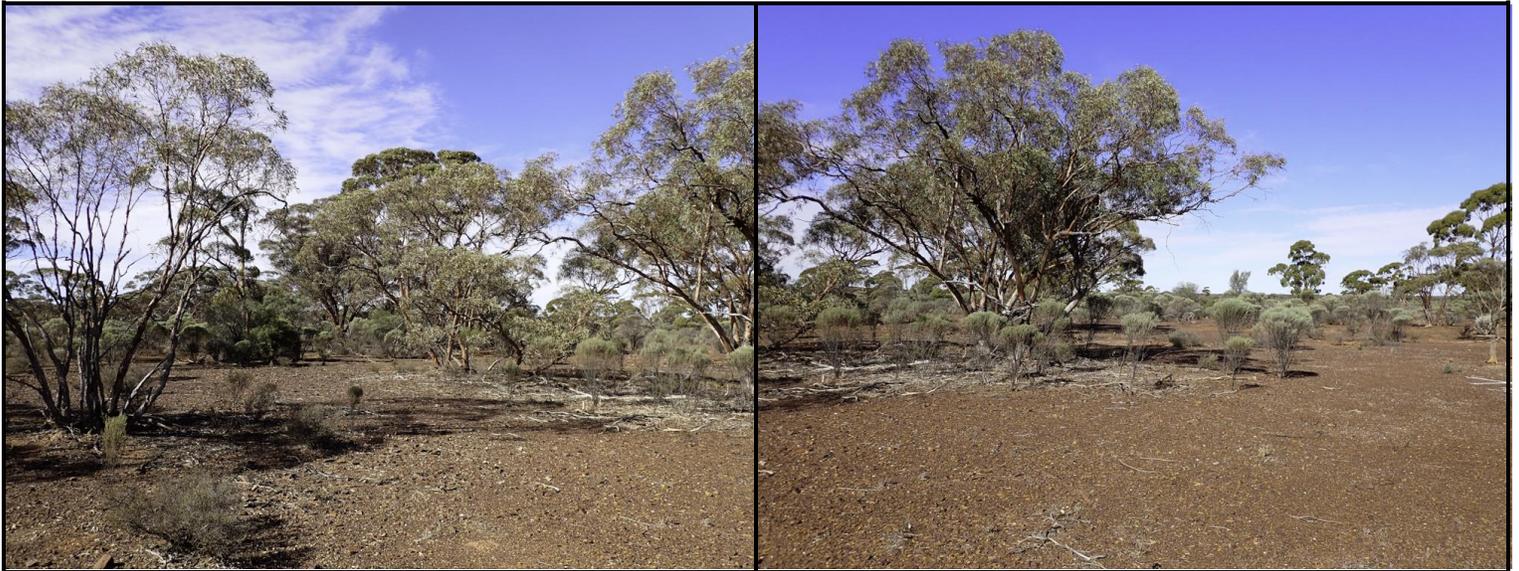
Landform: Plain

Soil Type: Red sand

Habitat Structure: Mixed shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 10/05/2022

Habitat Assessment #: 34

Observer: Scott Thompson

Zone: 51

Easting: 331981 mE

Northing: 6644418 mN

Fire History: <5 years

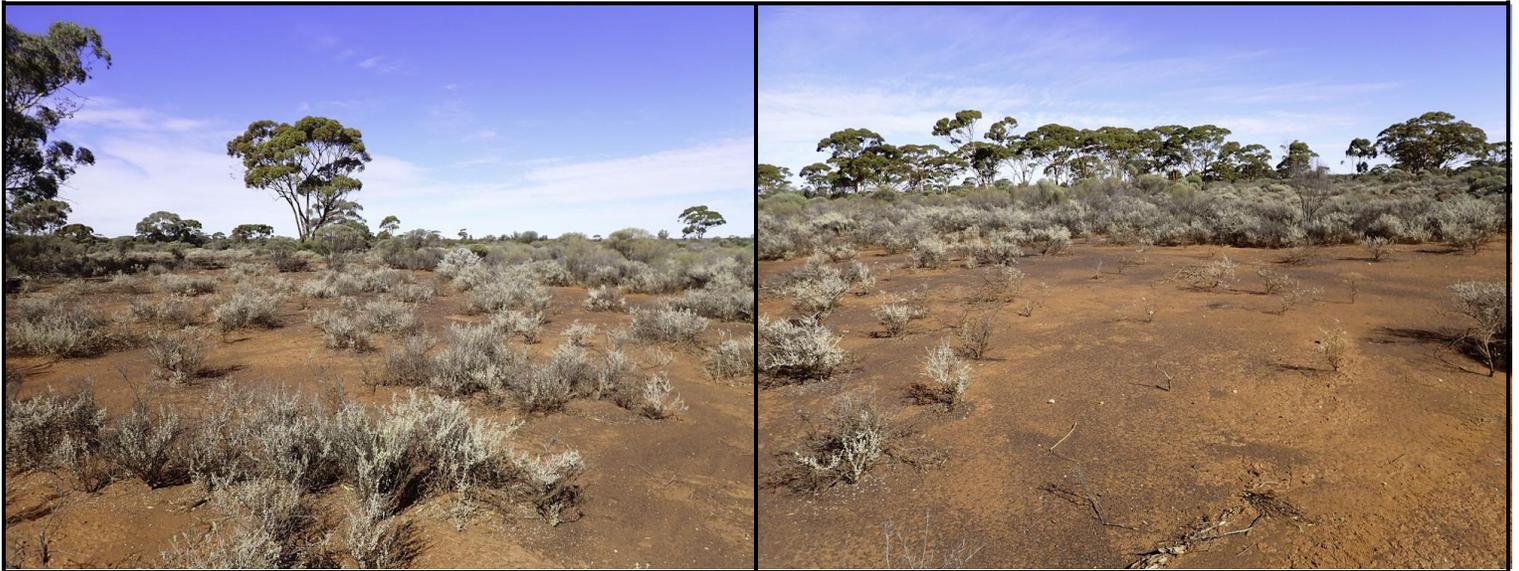
Landform: Plain

Soil Type: Red sand

Habitat Structure: Mixed shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 10/05/2022

Habitat Assessment #: 35

Observer: Scott Thompson

Zone: 51

Easting: 332002 mE

Northing: 6644192 mN

Fire History: <5 years

Landform: Plain

Soil Type: Red sand

Habitat Structure: Mixed shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 10/05/2022

Habitat Assessment #: 36

Observer: Scott Thompson

Zone: 51

Easting: 332020 mE

Northing: 6644036 mN

Fire History: <5 years

Landform: Plain

Soil Type: Red sand

Habitat Structure: Mixed shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 10/05/2022

Habitat Assessment #: 37

Observer: Scott Thompson

Zone: 51

Easting: 331993 mE

Northing: 6643865 mN

Fire History: <5 years

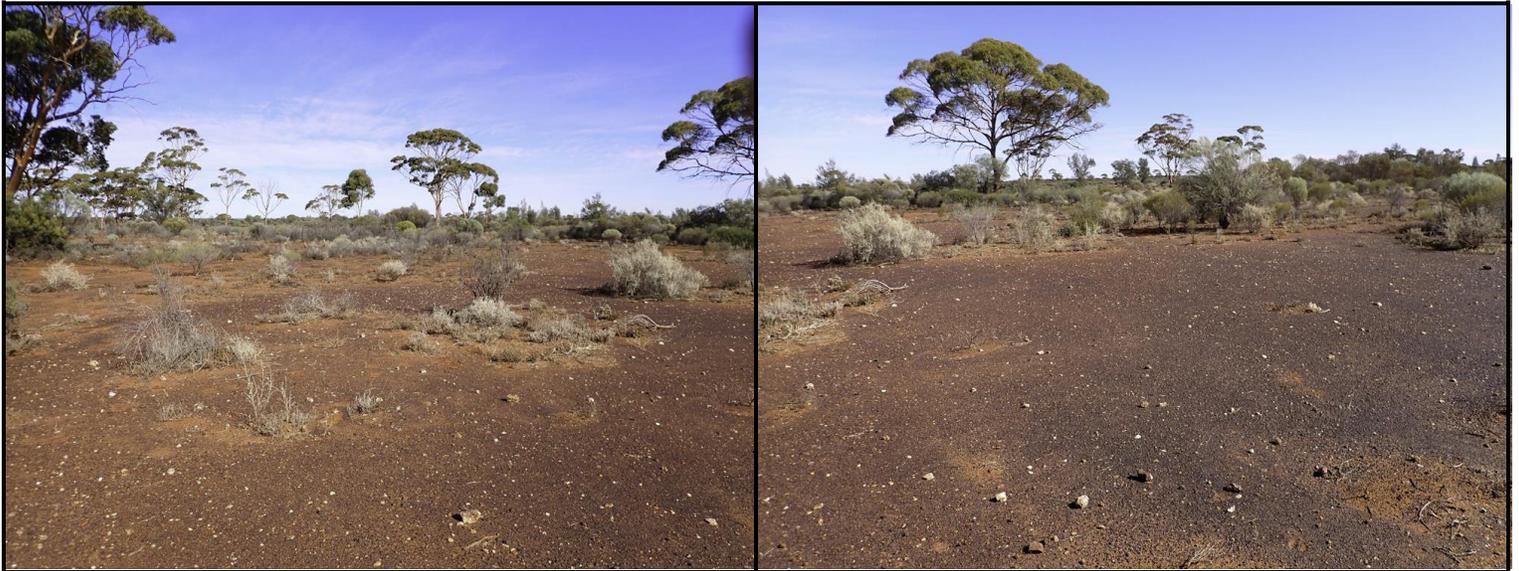
Landform: Plain

Soil Type: Red sand

Habitat Structure: Mixed shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 10/05/2022

Habitat Assessment #: 38

Observer: Scott Thompson

Zone: 51

Easting: 331995 mE

Northing: 6643720 mN

Fire History: <5 years

Landform: Plain

Soil Type: Red sand

Habitat Structure: Eucalypt woodland over shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 10/05/2022

Habitat Assessment #: 39

Observer: Scott Thompson

Zone: 51

Easting: 331990 mE

Northing: 6643473 mN

Fire History: <5 years

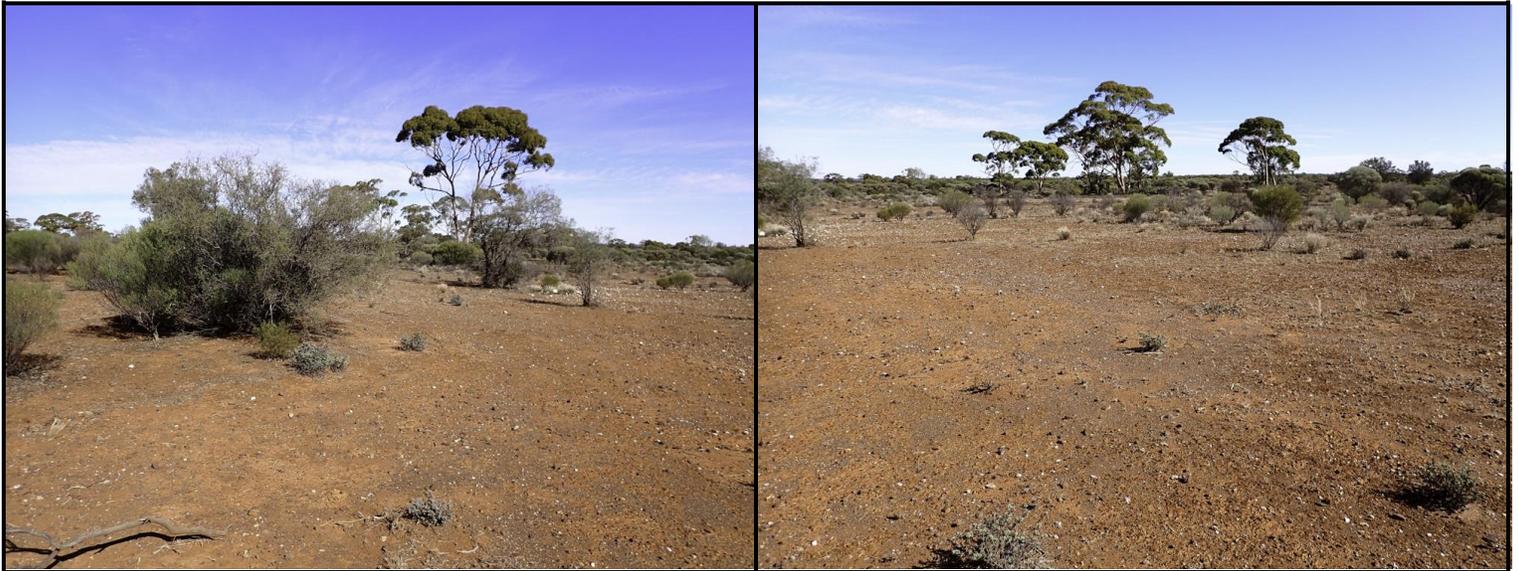
Landform: Plain

Soil Type: Red sand

Habitat Structure: Mixed shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 10/05/2022

Habitat Assessment #: 40

Observer: Scott Thompson

Zone: 51

Easting: 331989 mE

Northing: 6643255 mN

Fire History: <5 years

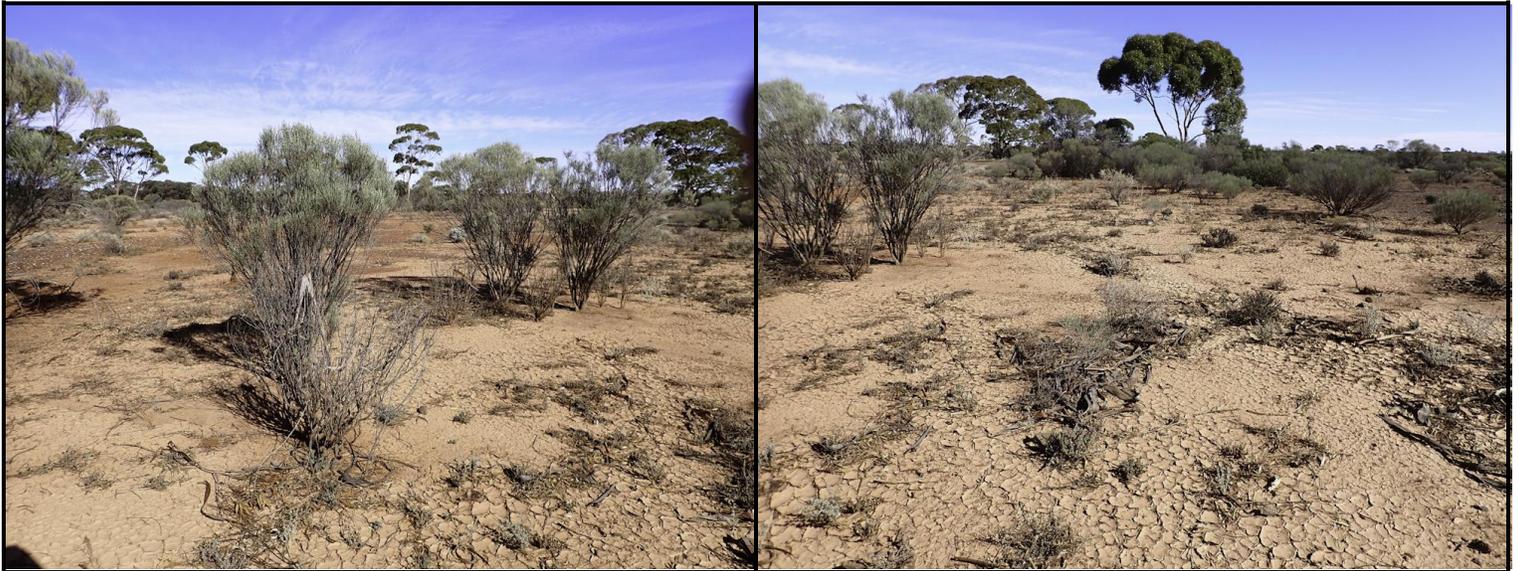
Landform: Plain

Soil Type: Red sand

Habitat Structure: Mixed shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 10/05/2022

Habitat Assessment #: 41

Observer: Scott Thompson

Zone: 51

Easting: 331989 mE

Northing: 6643116 mN

Fire History: <5 years

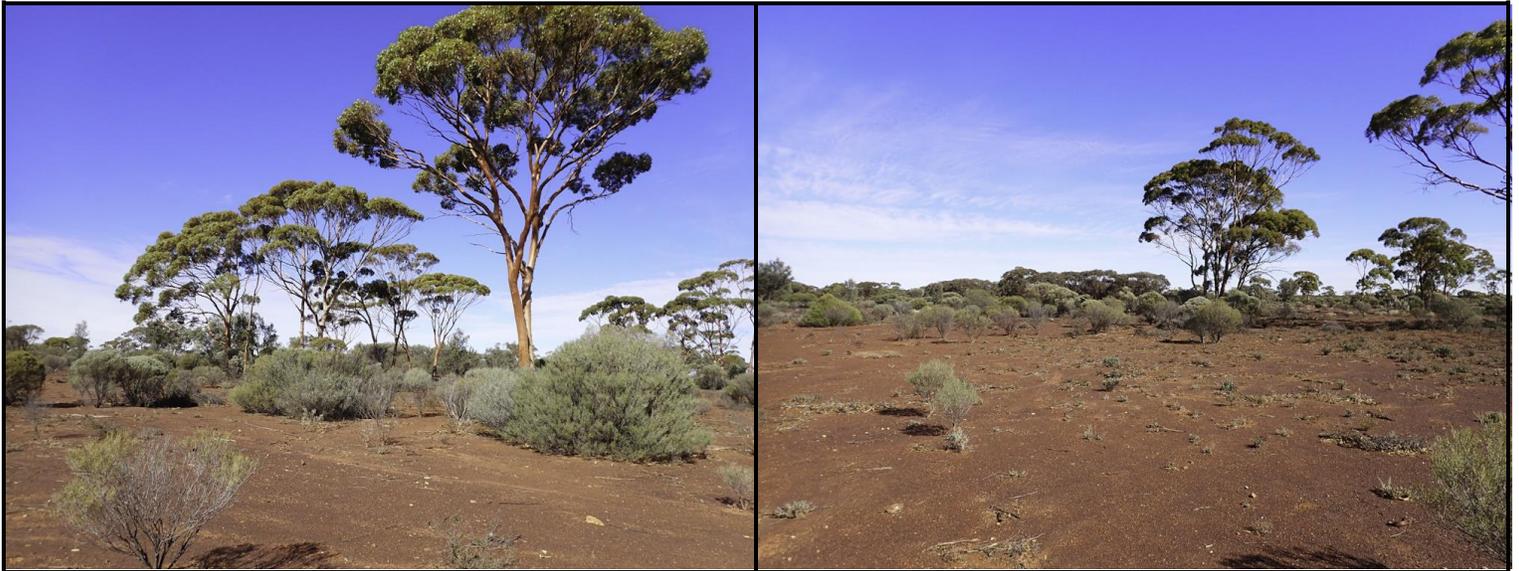
Landform: Plain

Soil Type: Red sand

Habitat Structure: Eucalypt woodland over shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 10/05/2022

Habitat Assessment #: 42

Observer: Scott Thompson

Zone: 51

Easting: 332139 mE

Northing: 6643111 mN

Fire History: <5 years

Landform: Plain

Soil Type: Red sand

Habitat Structure: Eucalypt woodland over shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 10/05/2022

Habitat Assessment #: 43

Observer: Scott Thompson

Zone: 51

Easting: 332176 mE

Northing: 6643218 mN

Fire History: <5 years

Landform: Ephemeral
creekline

Soil Type: Red sand

Habitat Structure: Eucalypt woodland over shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 10/05/2022

Habitat Assessment #: 44

Observer: Scott Thompson

Zone: 51

Easting: 332185 mE

Northing: 6643325 mN

Fire History: <5 years

Landform: Plain

Soil Type: Red sand

Habitat Structure: Mixed shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 10/05/2022

Habitat Assessment #: 45

Observer: Scott Thompson

Zone: 51

Easting: 332210 mE

Northing: 6643518 mN

Fire History: <5 years

Landform: Plain

Soil Type: Red sand

Habitat Structure: Mixed shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 10/05/2022

Habitat Assessment #: 46

Observer: Scott Thompson

Zone: 51

Easting: 332187 mE

Northing: 6643639 mN

Fire History: <5 years

Landform: Plain

Soil Type: Red sand

Habitat Structure: Eucalypt woodland over shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 10/05/2022

Habitat Assessment #: 47

Observer: Scott Thompson

Zone: 51

Easting: 332183 mE

Northing: 6643803 mN

Fire History: <5 years

Landform: Plain

Soil Type: Red sand

Habitat Structure: Eucalypt woodland over shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 10/05/2022

Habitat Assessment #: 48

Observer: Scott Thompson

Zone: 51

Easting: 332185 mE

Northing: 6643972 mN

Fire History: <5 years

Landform: Plain

Soil Type: Red sand

Habitat Structure: Eucalypt woodland over shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 10/05/2022

Habitat Assessment #: 49

Observer: Scott Thompson

Zone: 51

Easting: 332201 mE

Northing: 6644199 mN

Fire History: <5 years

Landform: Plain

Soil Type: Red sand

Habitat Structure: Eucalypt woodland over shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 10/05/2022

Habitat Assessment #: 50

Observer: Scott Thompson

Zone: 51

Easting: 332194 mE

Northing: 6644372 mN

Fire History: <5 years

Landform: Plain

Soil Type: Red sand

Habitat Structure: Eucalypt woodland over shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 10/05/2022

Habitat Assessment #: 51

Observer: Scott Thompson

Zone: 51

Easting: 332188 mE

Northing: 6644579 mN

Fire History: <5 years

Landform: Plain

Soil Type: Red sand

Habitat Structure: Eucalypt woodland over shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 10/05/2022

Habitat Assessment #: 52

Observer: Scott Thompson

Zone: 51

Easting: 332282 mE

Northing: 6644667 mN

Fire History: <5 years

Landform: Plain

Soil Type: Red sand

Habitat Structure: Mixed shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 10/05/2022

Habitat Assessment #: 53

Observer: Scott Thompson

Zone: 51

Easting: 332428 mE

Northing: 6644709 mN

Fire History: <5 years

Landform: Slope

Soil Type: Red sand

Habitat Structure: Mixed shrubland

Habitat Quality: Good

Surface: Stony



Date: 10/05/2022

Habitat Assessment #: 54

Observer: Scott Thompson

Zone: 51

Easting: 332372 mE

Northing: 6644555 mN

Fire History: <5 years

Landform: Plain

Soil Type: Red sand

Habitat Structure: Eucalypt woodland over shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 10/05/2022

Habitat Assessment #: 55

Observer: Scott Thompson

Zone: 51

Easting: 332371 mE

Northing: 6644379 mN

Fire History: <5 years

Landform: Plain

Soil Type: Red sand

Habitat Structure: Eucalypt woodland over shrubland

Habitat Quality: Disturbed

Surface: Sand with pebbles



Date: 10/05/2022

Habitat Assessment #: 56

Observer: Scott Thompson

Zone: 51

Easting: 332397 mE

Northing: 6644290 mN

Fire History: <5 years

Landform: Plain

Soil Type: Red sand

Habitat Structure: Eucalypt woodland over shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 10/05/2022

Habitat Assessment #: 57

Observer: Scott Thompson

Zone: 51

Easting: 332383 mE

Northing: 6644121 mN

Fire History: <5 years

Landform: Plain

Soil Type: Red sand

Habitat Structure: Eucalypt woodland over shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 10/05/2022

Habitat Assessment #: 58

Observer: Scott Thompson

Zone: 51

Easting: 332407 mE

Northing: 6644045 mN

Fire History: <5 years

Landform: Plain

Soil Type: Red sand

Habitat Structure: Eucalypt woodland over shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 10/05/2022

Habitat Assessment #: 59

Observer: Scott Thompson

Zone: 51

Easting: 332386 mE

Northing: 6643905 mN

Fire History: <5 years

Landform: Plain

Soil Type: Red sand

Habitat Structure: Eucalypt woodland over shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 10/05/2022

Habitat Assessment #: 60

Observer: Scott Thompson

Zone: 51

Easting: 332357 mE

Northing: 6643743 mN

Fire History: <5 years

Landform: Plain

Soil Type: Red sand

Habitat Structure: Eucalypt woodland over shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 10/05/2022

Habitat Assessment #: 61

Observer: Scott Thompson

Zone: 51

Easting: 332360 mE

Northing: 6643612 mN

Fire History: <5 years

Landform: Ephemeral
creekline

Soil Type: Red sand

Habitat Structure: Eucalypt woodland over shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 10/05/2022

Habitat Assessment #: 62

Observer: Scott Thompson

Zone: 51

Easting: 332349 mE

Northing: 6643493 mN

Fire History: <5 years

Landform: Plain

Soil Type: Red sand

Habitat Structure: Eucalypt woodland over shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 10/05/2022

Habitat Assessment #: 63

Observer: Scott Thompson

Zone: 51

Easting: 332337 mE

Northing: 6643395 mN

Fire History: <5 years

Landform: Plain

Soil Type: Red sand

Habitat Structure: Eucalypt woodland over shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 10/05/2022

Habitat Assessment #: 64

Observer: Scott Thompson

Zone: 51

Easting: 332351 mE

Northing: 6643238 mN

Fire History: <5 years

Landform: Plain

Soil Type: Red sand

Habitat Structure: Eucalypt woodland over shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 10/05/2022

Habitat Assessment #: 65

Observer: Scott Thompson

Zone: 51

Easting: 332614 mE

Northing: 6643991 mN

Fire History: <5 years

Landform: Plain

Soil Type: Red sand

Habitat Structure: Eucalypt woodland over shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 10/05/2022

Habitat Assessment #: 66

Observer: Scott Thompson

Zone: 51

Easting: 332605 mE

Northing: 6644135 mN

Fire History: <5 years

Landform: Plain

Soil Type: Red sand

Habitat Structure: Eucalypt woodland over shrubland

Habitat Quality: Disturbed

Surface: Sand with pebbles



Date: 10/05/2022

Habitat Assessment #: 67

Observer: Scott Thompson

Zone: 51

Easting: 332594 mE

Northing: 6644265 mN

Fire History: <5 years

Landform: Plain

Soil Type: Red sand

Habitat Structure: Eucalypt woodland over shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 10/05/2022

Habitat Assessment #: 68

Observer: Scott Thompson

Zone: 51

Easting: 332620 mE

Northing: 6644457 mN

Fire History: <5 years

Landform: Plain

Soil Type: Red sand

Habitat Structure: Eucalypt woodland over shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 10/05/2022

Habitat Assessment #: 69

Observer: Scott Thompson

Zone: 51

Easting: 332610 mE

Northing: 6644591 mN

Fire History: <5 years

Landform: Plain

Soil Type: Red sand

Habitat Structure: Mixed shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 10/05/2022

Habitat Assessment #: 70

Observer: Scott Thompson

Zone: 51

Easting: 332623 mE

Northing: 6644761 mN

Fire History: <5 years

Landform: Plain

Soil Type: Red sand

Habitat Structure: Eucalypt woodland over shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 10/05/2022

Habitat Assessment #: 71

Observer: Scott Thompson

Zone: 51

Easting: 332816 mE

Northing: 6645113 mN

Fire History: <5 years

Landform: Plain

Soil Type: Red sand

Habitat Structure: Eucalypt woodland over shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 10/05/2022

Habitat Assessment #: 72

Observer: Scott Thompson

Zone: 51

Easting: 332886 mE

Northing: 6644886 mN

Fire History: <5 years

Landform: Plain

Soil Type: Red sand

Habitat Structure: Eucalypt woodland over shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 10/05/2022

Habitat Assessment #: 73

Observer: Scott Thompson

Zone: 51

Easting: 332819 mE

Northing: 6644636 mN

Fire History: <5 years

Landform: Plain

Soil Type: Red sand

Habitat Structure: Eucalypt woodland over shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 10/05/2022

Habitat Assessment #: 74

Observer: Scott Thompson

Zone: 51

Easting: 332784 mE

Northing: 6644379 mN

Fire History: <5 years

Landform: Plain

Soil Type: Red sand

Habitat Structure: Eucalypt woodland over shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 10/05/2022

Habitat Assessment #: 75

Observer: Scott Thompson

Zone: 51

Easting: 332813 mE

Northing: 6644214 mN

Fire History: <5 years

Landform: Plain

Soil Type: Red sand

Habitat Structure: Eucalypt woodland over shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 10/05/2022

Habitat Assessment #: 76

Observer: Scott Thompson

Zone: 51

Easting: 332778 mE

Northing: 6643985 mN

Fire History: <5 years

Landform: Plain

Soil Type: Red sand

Habitat Structure: Eucalypt woodland over shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 10/05/2022

Habitat Assessment #: 77

Observer: Scott Thompson

Zone: 51

Easting: 332824 mE

Northing: 6643844 mN

Fire History: <5 years

Landform: Plain

Soil Type: Red sand

Habitat Structure: Eucalypt woodland over shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 10/05/2022

Habitat Assessment #: 78

Observer: Scott Thompson

Zone: 51

Easting: 332978 mE

Northing: 6643872 mN

Fire History: <5 years

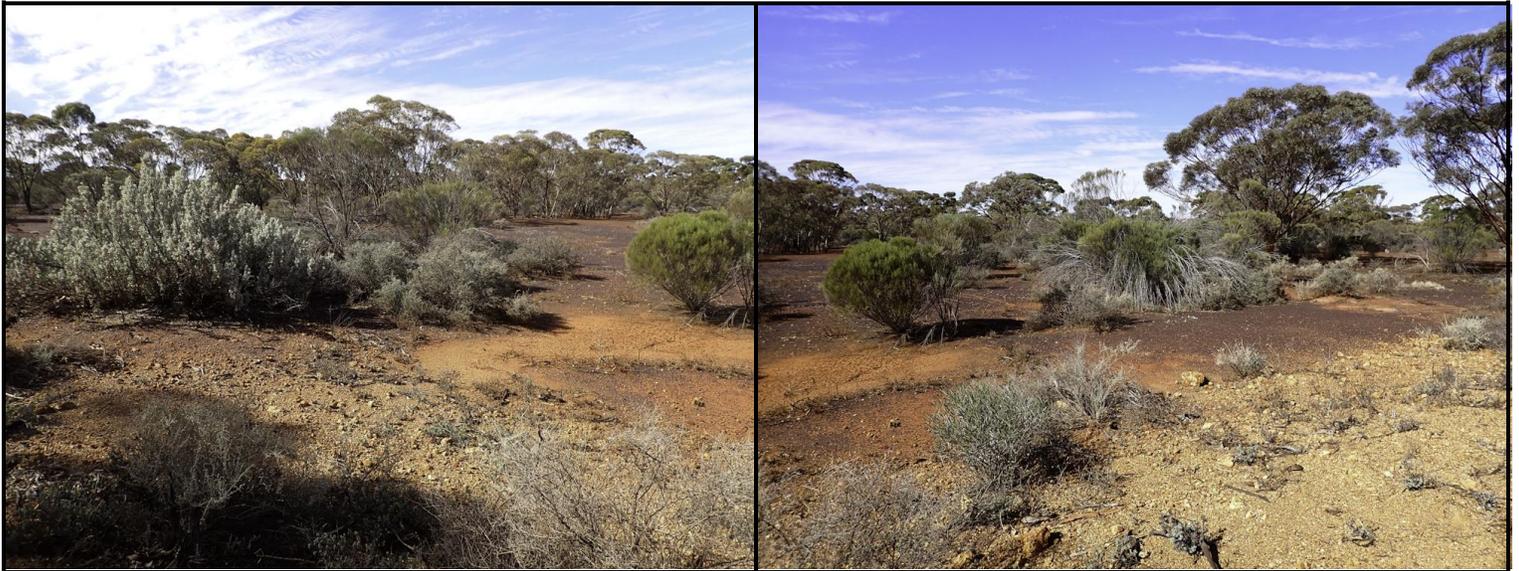
Landform: Plain

Soil Type: Red sand

Habitat Structure: Eucalypt woodland over shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 10/05/2022

Habitat Assessment #: 79

Observer: Scott Thompson

Zone: 51

Easting: 333008 mE

Northing: 6644066 mN

Fire History: <5 years

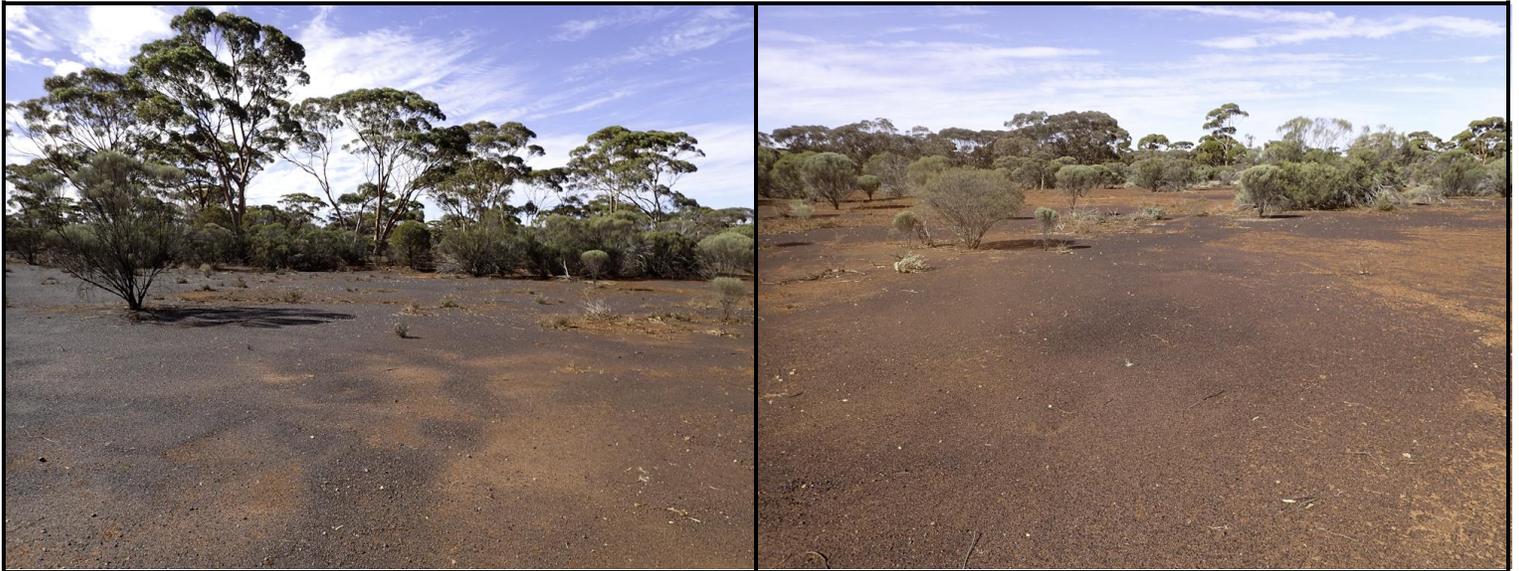
Landform: Plain

Soil Type: Red sand

Habitat Structure: Eucalypt woodland over shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 10/05/2022

Habitat Assessment #: 80

Observer: Scott Thompson

Zone: 51

Easting: 332999 mE

Northing: 6644251 mN

Fire History: <5 years

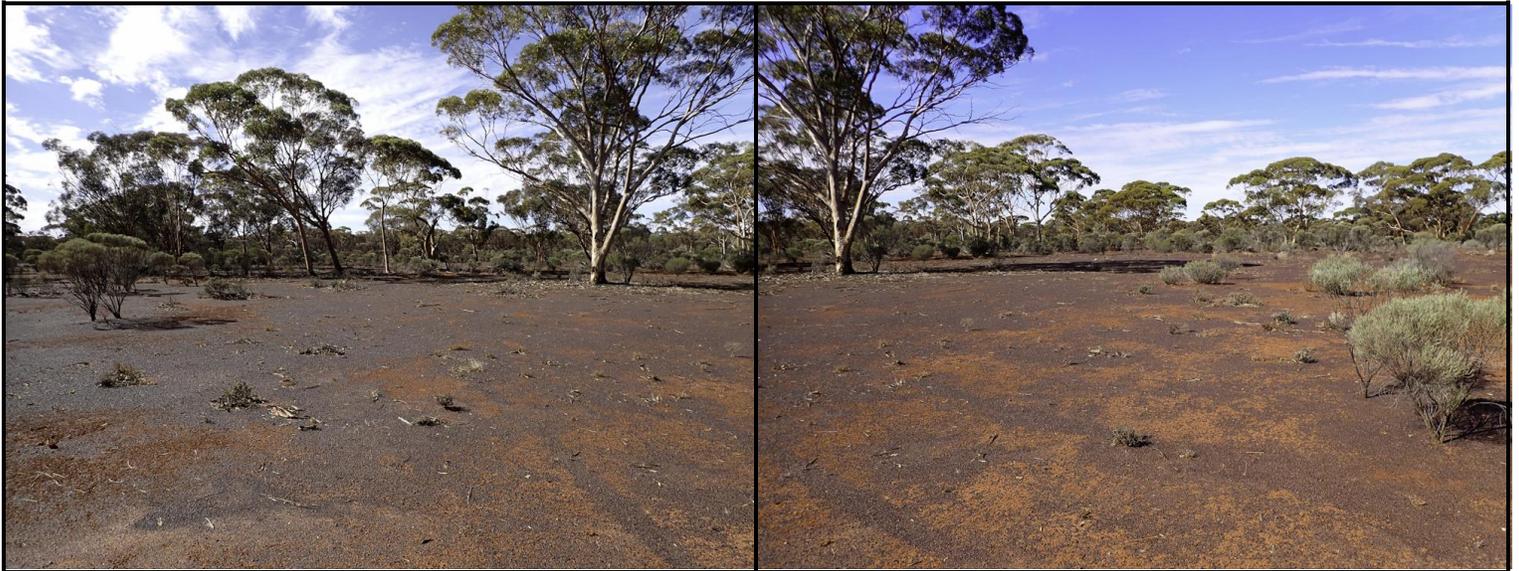
Landform: Plain

Soil Type: Red sand

Habitat Structure: Eucalypt woodland over shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 10/05/2022

Habitat Assessment #: 81

Observer: Scott Thompson

Zone: 51

Easting: 333003 mE

Northing: 6644441 mN

Fire History: <5 years

Landform: Plain

Soil Type: Red sand

Habitat Structure: Eucalypt woodland over shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 10/05/2022

Habitat Assessment #: 82

Observer: Scott Thompson

Zone: 51

Easting: 333008 mE

Northing: 6644605 mN

Fire History: <5 years

Landform: Plain

Soil Type: Red sand

Habitat Structure: Eucalypt woodland over shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 10/05/2022

Habitat Assessment #: 83

Observer: Scott Thompson

Zone: 51

Easting: 332994 mE

Northing: 6644879 mN

Fire History: <5 years

Landform: Plain

Soil Type: Red sand

Habitat Structure: Eucalypt woodland over shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 10/05/2022

Habitat Assessment #: 84

Observer: Scott Thompson

Zone: 51

Easting: 333020 mE

Northing: 6645033 mN

Fire History: <5 years

Landform: Ephemeral
creekline

Soil Type: Red sand

Habitat Structure: Eucalypt woodland over shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 10/05/2022

Habitat Assessment #: 85

Observer: Scott Thompson

Zone: 51

Easting: 333165 mE

Northing: 6645194 mN

Fire History: <5 years

Landform: Plain

Soil Type: Red sand

Habitat Structure: Eucalypt woodland over shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 10/05/2022

Habitat Assessment #: 86

Observer: Scott Thompson

Zone: 51

Easting: 333207 mE

Northing: 6645006 mN

Fire History: <5 years

Landform: Plain

Soil Type: Red sand

Habitat Structure: Eucalypt woodland over shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 10/05/2022

Habitat Assessment #: 87

Observer: Scott Thompson

Zone: 51

Easting: 333217 mE

Northing: 6644780 mN

Fire History: <5 years

Landform: Plain

Soil Type: Red sand

Habitat Structure: Eucalypt woodland over shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 10/05/2022

Habitat Assessment #: 88

Observer: Scott Thompson

Zone: 51

Easting: 333196 mE

Northing: 6644579 mN

Fire History: <5 years

Landform: Plain

Soil Type: Red sand

Habitat Structure: Eucalypt woodland over shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 10/05/2022

Habitat Assessment #: 89

Observer: Scott Thompson

Zone: 51

Easting: 333230 mE

Northing: 6644345 mN

Fire History: <5 years

Landform: Plain

Soil Type: Red sand

Habitat Structure: Eucalypt woodland over shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 10/05/2022

Habitat Assessment #: 90

Observer: Scott Thompson

Zone: 51

Easting: 333200 mE

Northing: 6644142 mN

Fire History: <5 years

Landform: Plain

Soil Type: Red sand

Habitat Structure: Mixed shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 10/05/2022

Habitat Assessment #: 91

Observer: Scott Thompson

Zone: 51

Easting: 333210 mE

Northing: 6643889 mN

Fire History: <5 years

Landform: Plain

Soil Type: Red sand

Habitat Structure: Eucalypt woodland over shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 10/05/2022

Habitat Assessment #: 92

Observer: Scott Thompson

Zone: 51

Easting: 333198 mE

Northing: 6643725 mN

Fire History: <5 years

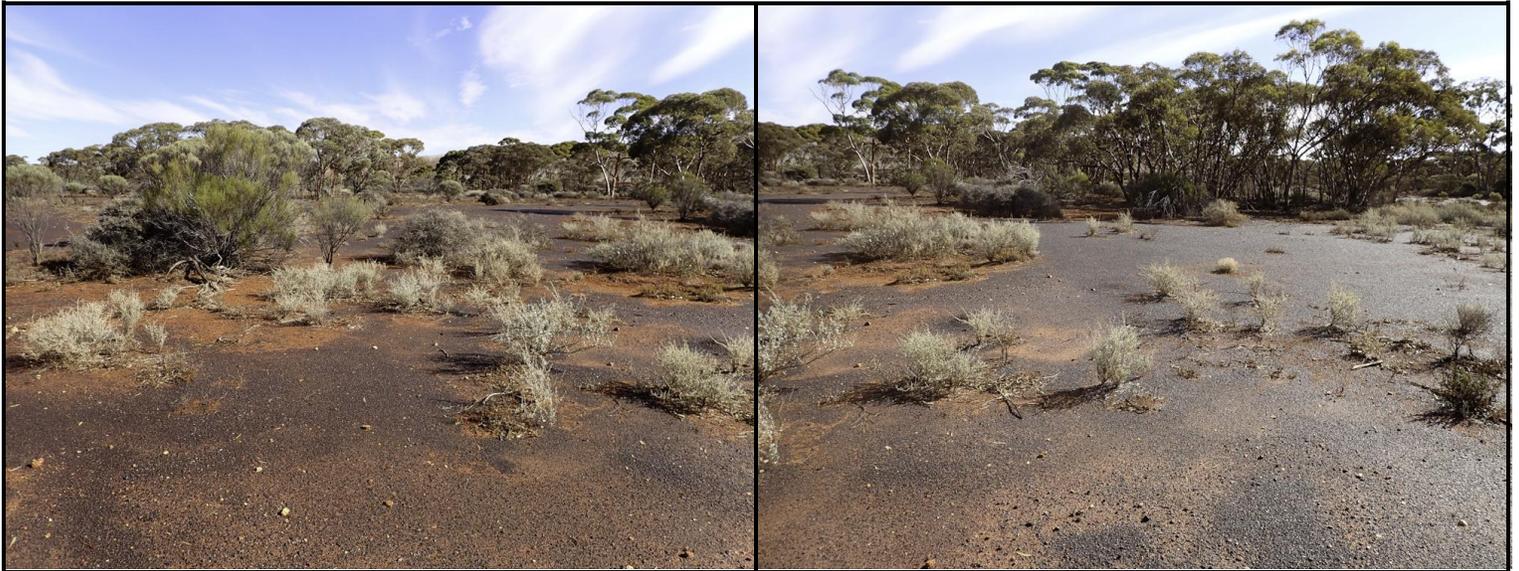
Landform: Plain

Soil Type: Red sand

Habitat Structure: Eucalypt woodland over shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 10/05/2022

Habitat Assessment #: 93

Observer: Scott Thompson

Zone: 51

Easting: 333217 mE

Northing: 6643658 mN

Fire History: <5 years

Landform: Plain

Soil Type: Red sand

Habitat Structure: Mixed shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 10/05/2022

Habitat Assessment #: 94

Observer: Scott Thompson

Zone: 51

Easting: 333225 mE

Northing: 6643518 mN

Fire History: <5 years

Landform: Plain

Soil Type: Red sand

Habitat Structure: Eucalypt woodland over shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 10/05/2022

Habitat Assessment #: 95

Observer: Scott Thompson

Zone: 51

Easting: 333222 mE

Northing: 6643263 mN

Fire History: <5 years

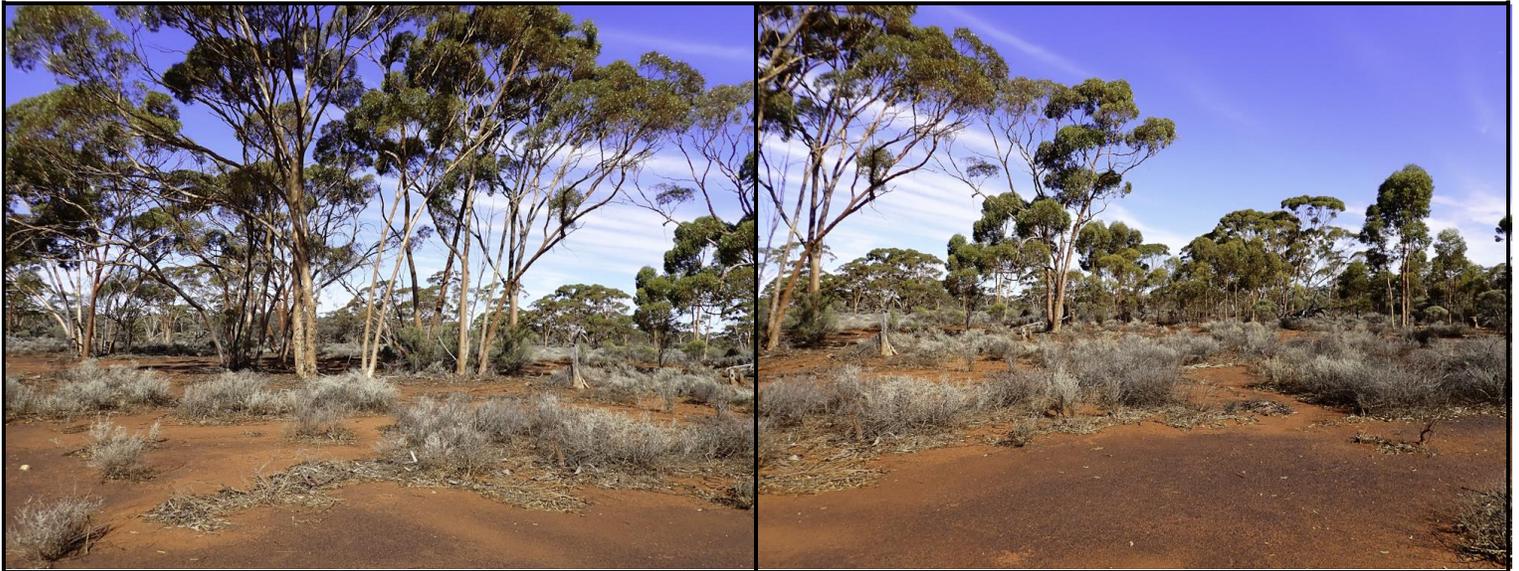
Landform: Plain

Soil Type: Red sand

Habitat Structure: Eucalypt woodland over shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 10/05/2022

Habitat Assessment #: 96

Observer: Scott Thompson

Zone: 51

Easting: 333161 mE

Northing: 6643061 mN

Fire History: <5 years

Landform: Plain

Soil Type: Red sand

Habitat Structure: Eucalypt woodland over shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 10/05/2022

Habitat Assessment #: 97

Observer: Scott Thompson

Zone: 51

Easting: 333200 mE

Northing: 6642886 mN

Fire History: <5 years

Landform: Plain

Soil Type: Red sand

Habitat Structure: Eucalypt woodland over shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 10/05/2022

Habitat Assessment #: 98

Observer: Scott Thompson

Zone: 51

Easting: 333170 mE

Northing: 6642757 mN

Fire History: <5 years

Landform: Plain

Soil Type: Red sand

Habitat Structure: Eucalypt woodland over shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 10/05/2022

Habitat Assessment #: 99

Observer: Scott Thompson

Zone: 51

Easting: 333210 mE

Northing: 6642596 mN

Fire History: <5 years

Landform: Plain

Soil Type: Red sand

Habitat Structure: Eucalypt woodland over shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 10/05/2022

Habitat Assessment #: 100

Observer: Scott Thompson

Zone: 51

Easting: 333202 mE

Northing: 6642440 mN

Fire History: <5 years

Landform: Plain

Soil Type: Red sand

Habitat Structure: Eucalypt woodland over shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 10/05/2022

Habitat Assessment #: 101

Observer: Scott Thompson

Zone: 51

Easting: 333192 mE

Northing: 6642214 mN

Fire History: <5 years

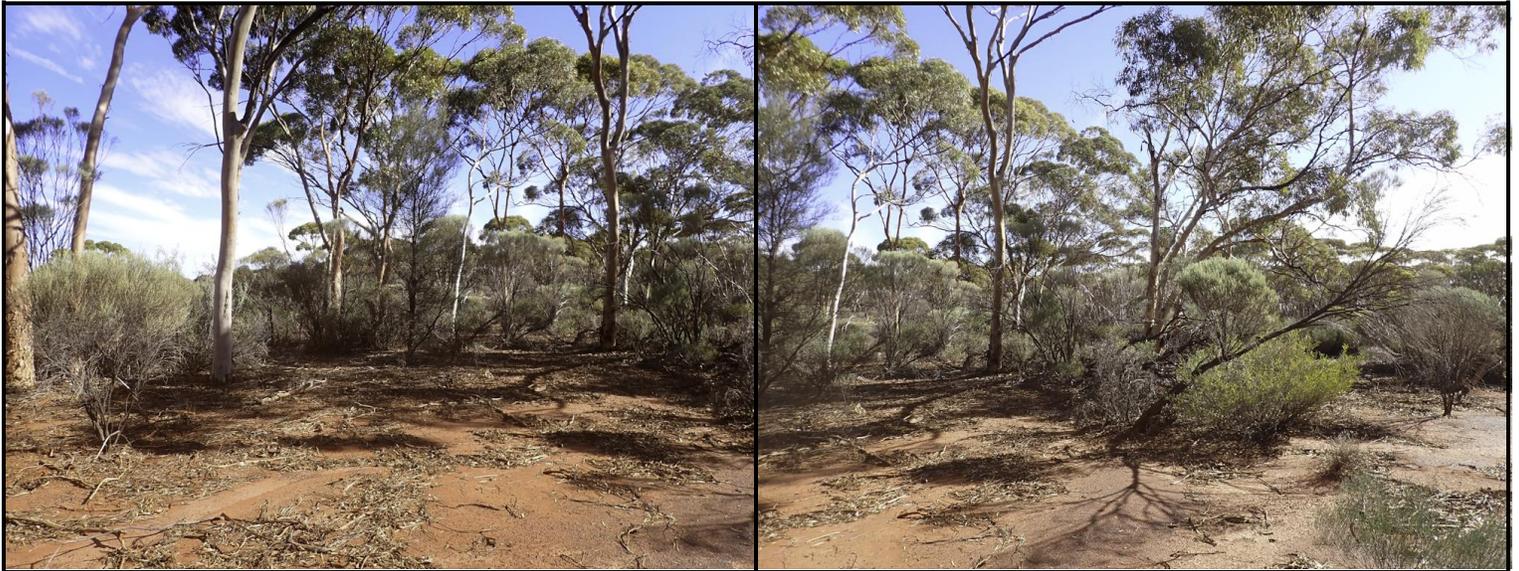
Landform: Plain

Soil Type: Red sand

Habitat Structure: Eucalypt woodland over shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 10/05/2022

Habitat Assessment #: 102

Observer: Scott Thompson

Zone: 51

Easting: 333194 mE

Northing: 6642057 mN

Fire History: <5 years

Landform: Plain

Soil Type: Red sand

Habitat Structure: Eucalypt woodland over shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 10/05/2022

Habitat Assessment #: 103

Observer: Scott Thompson

Zone: 51

Easting: 333164 mE

Northing: 6641867 mN

Fire History: <5 years

Landform: Plain

Soil Type: Red sand

Habitat Structure: Eucalypt woodland over shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 10/05/2022

Habitat Assessment #: 104

Observer: Scott Thompson

Zone: 51

Easting: 333199 mE

Northing: 6641699 mN

Fire History: <5 years

Landform: Plain

Soil Type: Red sand

Habitat Structure: Eucalypt woodland over shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 10/05/2022

Habitat Assessment #: 105

Observer: Scott Thompson

Zone: 51

Easting: 333162 mE

Northing: 6641550 mN

Fire History: <5 years

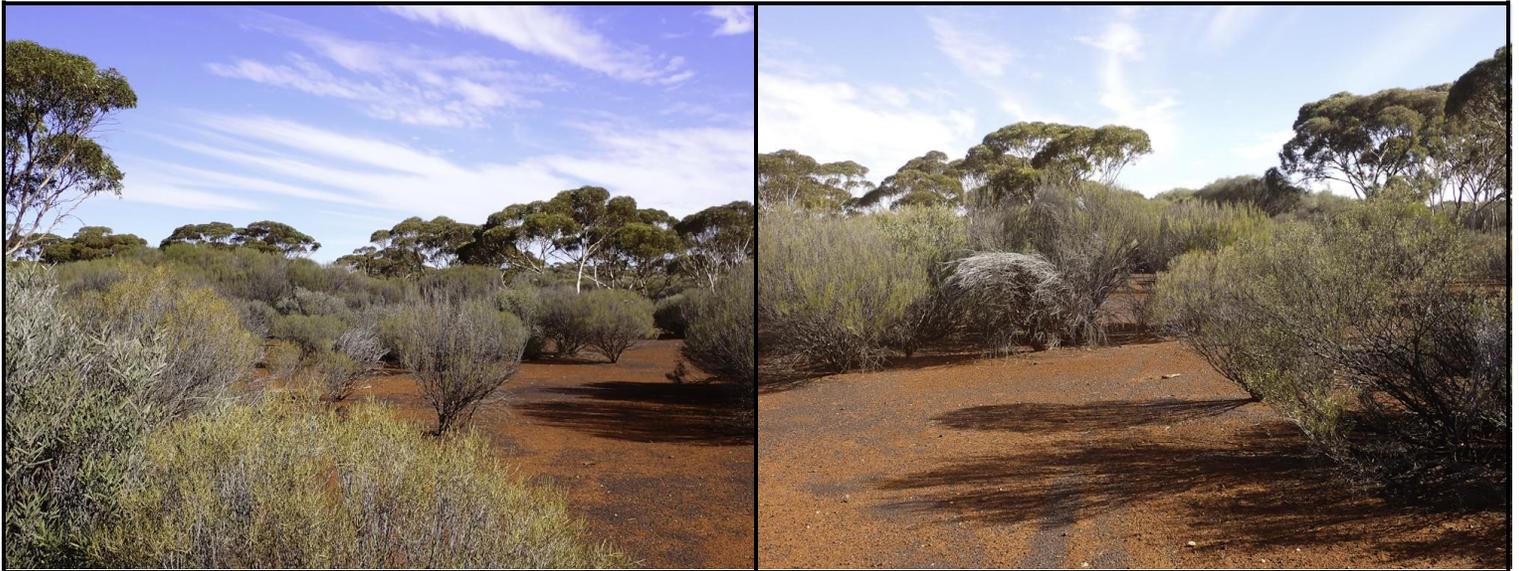
Landform: Plain

Soil Type: Red sand

Habitat Structure: Eucalypt woodland over shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 10/05/2022

Habitat Assessment #: 106

Observer: Scott Thompson

Zone: 51

Easting: 333181 mE

Northing: 6641355 mN

Fire History: <5 years

Landform: Plain

Soil Type: Red sand

Habitat Structure: Eucalypt woodland over shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 10/05/2022

Habitat Assessment #: 107

Observer: Scott Thompson

Zone: 51

Easting: 333206 mE

Northing: 6641244 mN

Fire History: <5 years

Landform: Plain

Soil Type: Red sand

Habitat Structure: Eucalypt woodland over shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 10/05/2022

Habitat Assessment #: 108

Observer: Scott Thompson

Zone: 51

Easting: 333186 mE

Northing: 6641065 mN

Fire History: <5 years

Landform: Plain

Soil Type: Red sand

Habitat Structure: Eucalypt woodland over shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 10/05/2022

Habitat Assessment #: 109

Observer: Scott Thompson

Zone: 51

Easting: 333185 mE

Northing: 6640858 mN

Fire History: <5 years

Landform: Plain

Soil Type: Red sand

Habitat Structure: Eucalypt woodland over shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 10/05/2022

Habitat Assessment #: 110

Observer: Scott Thompson

Zone: 51

Easting: 333013 mE

Northing: 6641357 mN

Fire History: <5 years

Landform: Plain

Soil Type: Red sand

Habitat Structure: Eucalypt woodland over shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 10/05/2022

Habitat Assessment #: 111

Observer: Scott Thompson

Zone: 51

Easting: 332994 mE

Northing: 6641562 mN

Fire History: <5 years

Landform: Plain

Soil Type: Red sand

Habitat Structure: Eucalypt woodland over shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 10/05/2022

Habitat Assessment #: 112

Observer: Scott Thompson

Zone: 51

Easting: 332884 mE

Northing: 6641735 mN

Fire History: <5 years

Landform: Plain

Soil Type: Red sand

Habitat Structure: Eucalypt woodland over shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 10/05/2022

Habitat Assessment #: 113

Observer: Scott Thompson

Zone: 51

Easting: 332909 mE

Northing: 6641858 mN

Fire History: <5 years

Landform: Plain

Soil Type: Red sand

Habitat Structure: Eucalypt woodland over shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 10/05/2022

Habitat Assessment #: 114

Observer: Scott Thompson

Zone: 51

Easting: 333017 mE

Northing: 6641867 mN

Fire History: <5 years

Landform: Plain

Soil Type: Red sand

Habitat Structure: Eucalypt woodland over shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 10/05/2022

Habitat Assessment #: 115

Observer: Scott Thompson

Zone: 51

Easting: 332984 mE

Northing: 6642034 mN

Fire History: <5 years

Landform: Plain

Soil Type: Red sand

Habitat Structure: Eucalypt woodland over shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 10/05/2022

Habitat Assessment #: 116

Observer: Scott Thompson

Zone: 51

Easting: 332969 mE

Northing: 6642193 mN

Fire History: <5 years

Landform: Plain

Soil Type: Red sand

Habitat Structure: Eucalypt woodland over shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 10/05/2022

Habitat Assessment #: 117

Observer: Scott Thompson

Zone: 51

Easting: 332974 mE

Northing: 6642351 mN

Fire History: <5 years

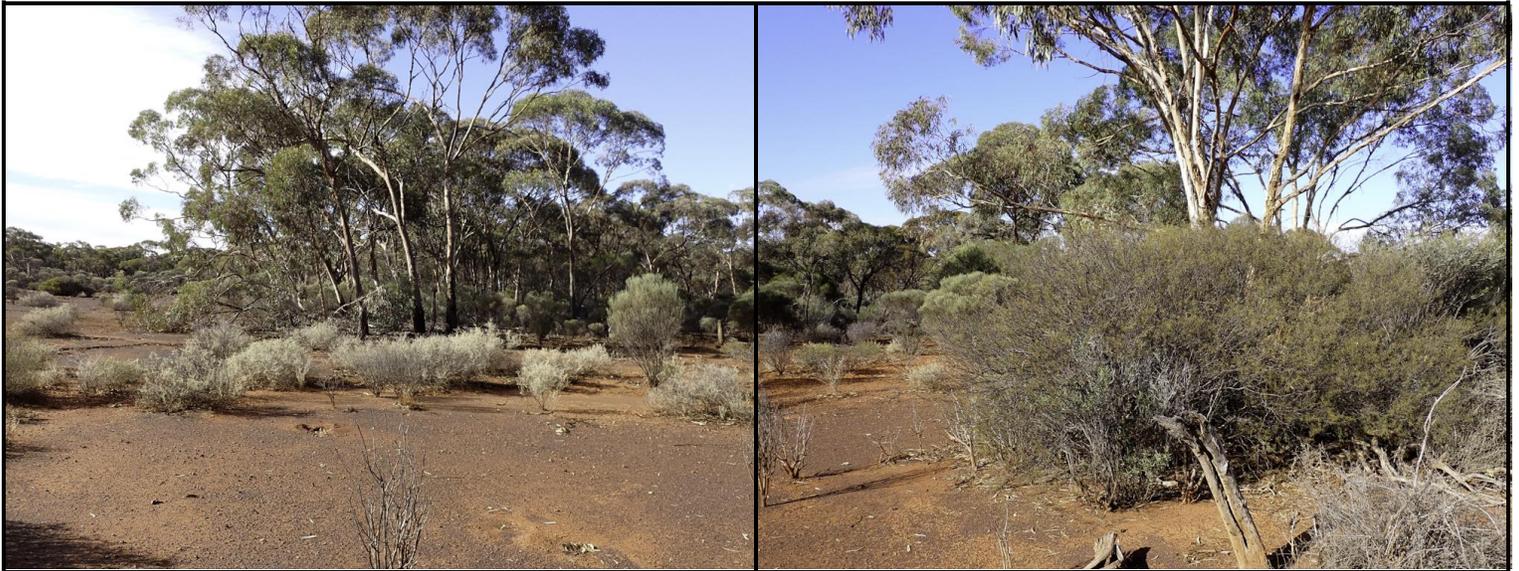
Landform: Plain

Soil Type: Red sand

Habitat Structure: Eucalypt woodland over shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 10/05/2022

Habitat Assessment #: 118

Observer: Scott Thompson

Zone: 51

Easting: 333010 mE

Northing: 6642522 mN

Fire History: <5 years

Landform: Plain

Soil Type: Red sand

Habitat Structure: Eucalypt woodland over shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 10/05/2022

Habitat Assessment #: 119

Observer: Scott Thompson

Zone: 51

Easting: 332970 mE

Northing: 6642703 mN

Fire History: <5 years

Landform: Plain

Soil Type: Red sand

Habitat Structure: Eucalypt woodland over shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 10/05/2022

Habitat Assessment #: 120

Observer: Scott Thompson

Zone: 51

Easting: 332982 mE

Northing: 6642823 mN

Fire History: <5 years

Landform: Plain

Soil Type: Red sand

Habitat Structure: Mixed shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 10/05/2022

Habitat Assessment #: 121

Observer: Scott Thompson

Zone: 51

Easting: 332972 mE

Northing: 6642930 mN

Fire History: <5 years

Landform: Plain

Soil Type: Red sand

Habitat Structure: Eucalypt woodland over shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 10/05/2022

Habitat Assessment #: 122

Observer: Scott Thompson

Zone: 51

Easting: 332934 mE

Northing: 6643036 mN

Fire History: <5 years

Landform: Plain

Soil Type: Red sand

Habitat Structure: Eucalypt woodland over shrubland

Habitat Quality: Disturbed

Surface: Sand with pebbles



Date: 10/05/2022

Habitat Assessment #: 123

Observer: Scott Thompson

Zone: 51

Easting: 332677 mE

Northing: 6643017 mN

Fire History: <5 years

Landform: Plain

Soil Type: Red sand

Habitat Structure: Eucalypt woodland over shrubland

Habitat Quality: Disturbed

Surface: Sand with pebbles



Date: 10/05/2022

Habitat Assessment #: 124

Observer: Scott Thompson

Zone: 51

Easting: 332576 mE

Northing: 6642873 mN

Fire History: <5 years

Landform: Plain

Soil Type: Red sand

Habitat Structure: Eucalypt woodland over shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 10/05/2022

Habitat Assessment #: 125

Observer: Scott Thompson

Zone: 51

Easting: 332641 mE

Northing: 6642775 mN

Fire History: <5 years

Landform: Plain

Soil Type: Red sand

Habitat Structure: Eucalypt woodland over shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 10/05/2022

Habitat Assessment #: 126

Observer: Scott Thompson

Zone: 51

Easting: 332690 mE

Northing: 6642570 mN

Fire History: <5 years

Landform: Plain

Soil Type: Red sand

Habitat Structure: Eucalypt woodland over shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 10/05/2022

Habitat Assessment #: 127

Observer: Scott Thompson

Zone: 51

Easting: 332737 mE

Northing: 6642369 mN

Fire History: <5 years

Landform: Plain

Soil Type: Red sand

Habitat Structure: Eucalypt woodland over shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 10/05/2022

Habitat Assessment #: 128

Observer: Scott Thompson

Zone: 51

Easting: 332801 mE

Northing: 6642403 mN

Fire History: <5 years

Landform: Plain

Soil Type: Red sand

Habitat Structure: Eucalypt woodland over shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 10/05/2022

Habitat Assessment #: 129

Observer: Scott Thompson

Zone: 51

Easting: 332828 mE

Northing: 6642541 mN

Fire History: <5 years

Landform: Plain

Soil Type: Red sand

Habitat Structure: Eucalypt woodland over shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 10/05/2022

Habitat Assessment #: 130

Observer: Scott Thompson

Zone: 51

Easting: 332816 mE

Northing: 6642654 mN

Fire History: <5 years

Landform: Plain

Soil Type: Red sand

Habitat Structure: Eucalypt woodland over shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 10/05/2022

Habitat Assessment #: 131

Observer: Scott Thompson

Zone: 51

Easting: 332808 mE

Northing: 6642908 mN

Fire History: <5 years

Landform: Plain

Soil Type: Red sand

Habitat Structure: Eucalypt woodland over shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 10/05/2022

Habitat Assessment #: 132

Observer: Scott Thompson

Zone: 51

Easting: 332949 mE

Northing: 6643137 mN

Fire History: <5 years

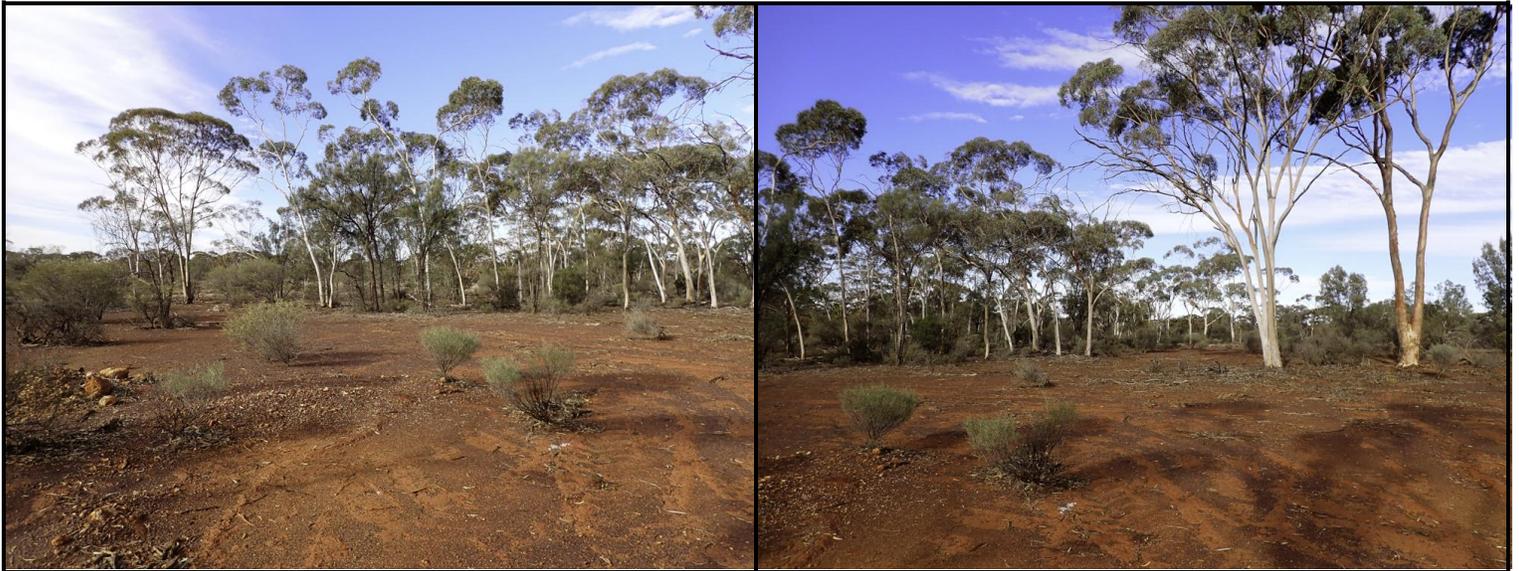
Landform: Plain

Soil Type: Red sand

Habitat Structure: Eucalypt woodland over shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 10/05/2022

Habitat Assessment #: 133

Observer: Scott Thompson

Zone: 51

Easting: 332957 mE

Northing: 6643340 mN

Fire History: <5 years

Landform: Plain

Soil Type: Red sand

Habitat Structure: Disturbed

Habitat Quality: Disturbed

Surface: Sand with pebbles



Date: 10/05/2022

Habitat Assessment #: 134

Observer: Scott Thompson

Zone: 51

Easting: 332963 mE

Northing: 6643537 mN

Fire History: <5 years

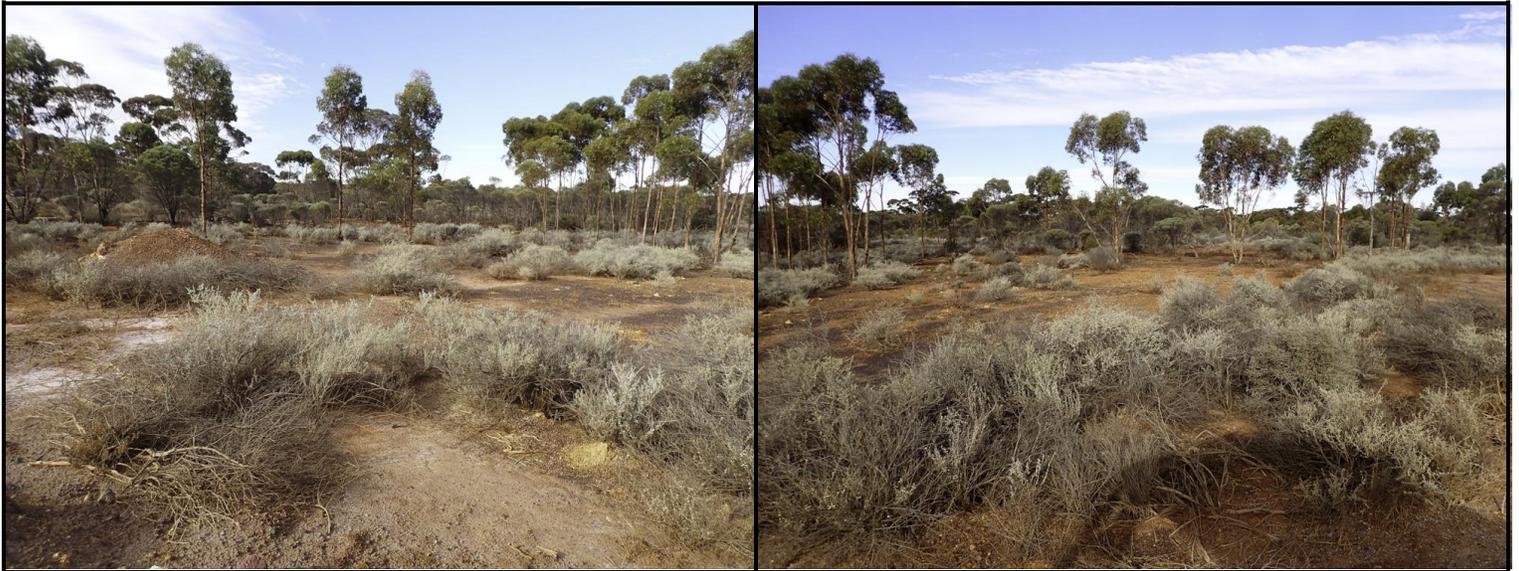
Landform: Plain

Soil Type: Red sand

Habitat Structure: Eucalypt woodland over shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 10/05/2022

Habitat Assessment #: 135

Observer: Scott Thompson

Zone: 51

Easting: 332974 mE

Northing: 6643643 mN

Fire History: <5 years

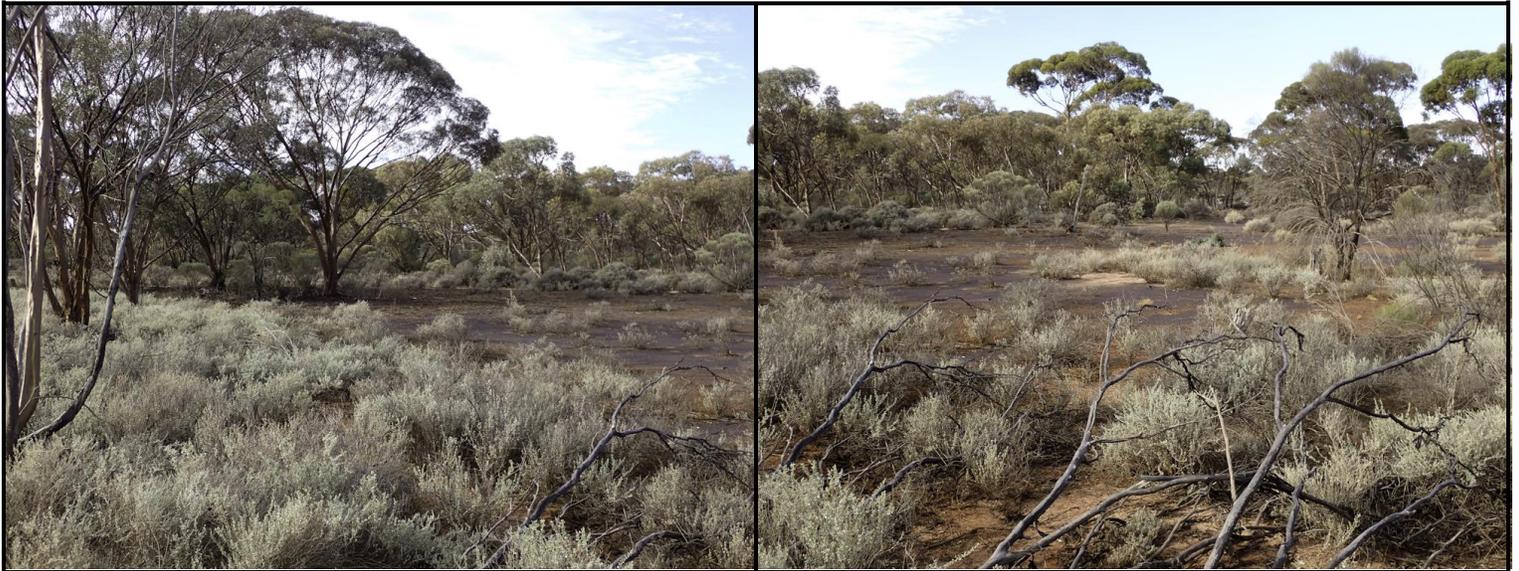
Landform: Plain

Soil Type: Red sand

Habitat Structure: Eucalypt woodland over shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 10/05/2022

Habitat Assessment #: 136

Observer: Scott Thompson

Zone: 51

Easting: 333392 mE

Northing: 6644082 mN

Fire History: <5 years

Landform: Plain

Soil Type: Red sand

Habitat Structure: Eucalypt woodland over shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 11/05/2022

Habitat Assessment #: 137

Observer: Scott Thompson

Zone: 51

Easting: 333392 mE

Northing: 6643897 mN

Fire History: <5 years

Landform: Plain

Soil Type: Red sand

Habitat Structure: Eucalypt woodland over shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 11/05/2022

Habitat Assessment #: 138

Observer: Scott Thompson

Zone: 51

Easting: 333400 mE

Northing: 6643732 mN

Fire History: <5 years

Landform: Plain

Soil Type: Red sand

Habitat Structure: Eucalypt woodland over shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 11/05/2022

Habitat Assessment #: 139

Observer: Scott Thompson

Zone: 51

Easting: 333388 mE

Northing: 6643585 mN

Fire History: <5 years

Landform: Plain

Soil Type: Red sand

Habitat Structure: Eucalypt woodland over shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 11/05/2022

Habitat Assessment #: 140

Observer: Scott Thompson

Zone: 51

Easting: 333391 mE

Northing: 6643373 mN

Fire History: <5 years

Landform: Plain

Soil Type: Red sand

Habitat Structure: Eucalypt woodland over shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 11/05/2022

Habitat Assessment #: 141

Observer: Scott Thompson

Zone: 51

Easting: 333404 mE

Northing: 6643123 mN

Fire History: <5 years

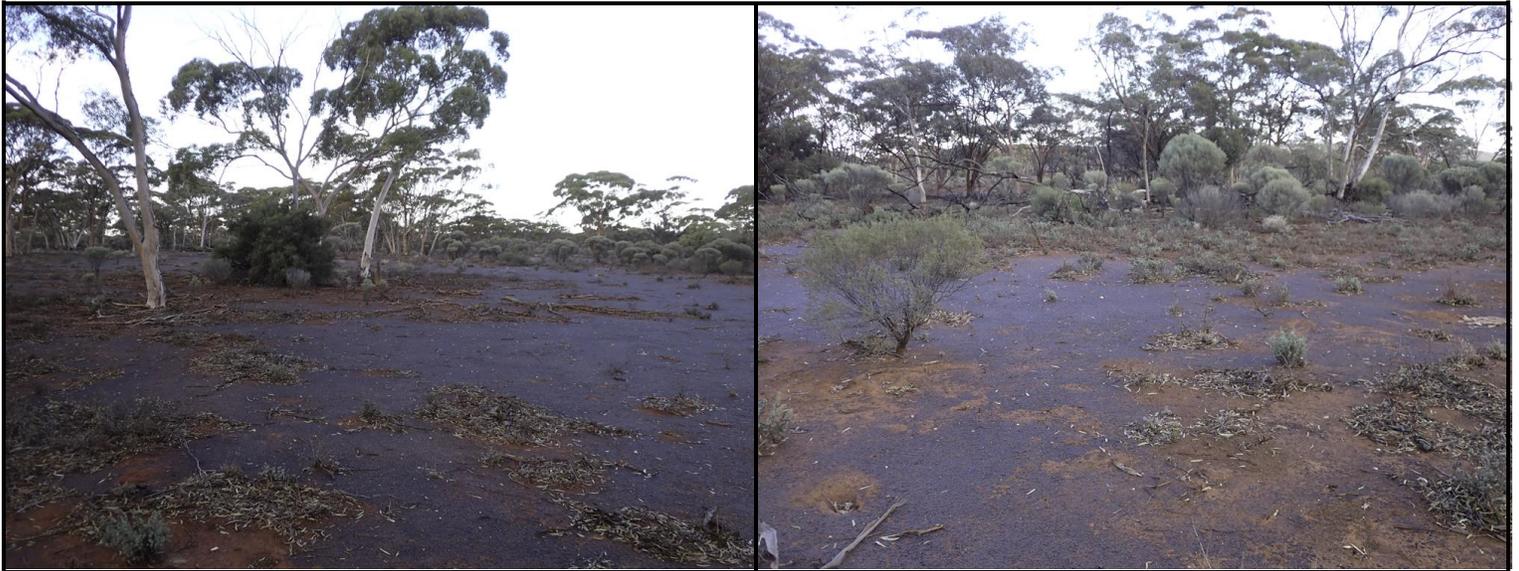
Landform: Plain

Soil Type: Red sand

Habitat Structure: Eucalypt woodland over shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 11/05/2022

Habitat Assessment #: 142

Observer: Scott Thompson

Zone: 51

Easting: 333386 mE

Northing: 6642914 mN

Fire History: <5 years

Landform: Plain

Soil Type: Red sand

Habitat Structure: Eucalypt woodland over shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 11/05/2022

Habitat Assessment #: 143

Observer: Scott Thompson

Zone: 51

Easting: 333397 mE

Northing: 6642705 mN

Fire History: <5 years

Landform: Plain

Soil Type: Red sand

Habitat Structure: Eucalypt woodland over shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 11/05/2022

Habitat Assessment #: 144

Observer: Scott Thompson

Zone: 51

Easting: 333405 mE

Northing: 6642471 mN

Fire History: <5 years

Landform: Plain

Soil Type: Red sand

Habitat Structure: Eucalypt woodland over shrubland

Habitat Quality: Disturbed

Surface: Sand with pebbles



Date: 11/05/2022

Habitat Assessment #: 145

Observer: Scott Thompson

Zone: 51

Easting: 333383 mE

Northing: 6642298 mN

Fire History: <5 years

Landform: Plain

Soil Type: Red sand

Habitat Structure: Eucalypt woodland over shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 11/05/2022

Habitat Assessment #: 146

Observer: Scott Thompson

Zone: 51

Easting: 333411 mE

Northing: 6642137 mN

Fire History: <5 years

Landform: Plain

Soil Type: Red sand

Habitat Structure: Eucalypt woodland over shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 11/05/2022

Habitat Assessment #: 147

Observer: Scott Thompson

Zone: 51

Easting: 333398 mE

Northing: 6641950 mN

Fire History: <5 years

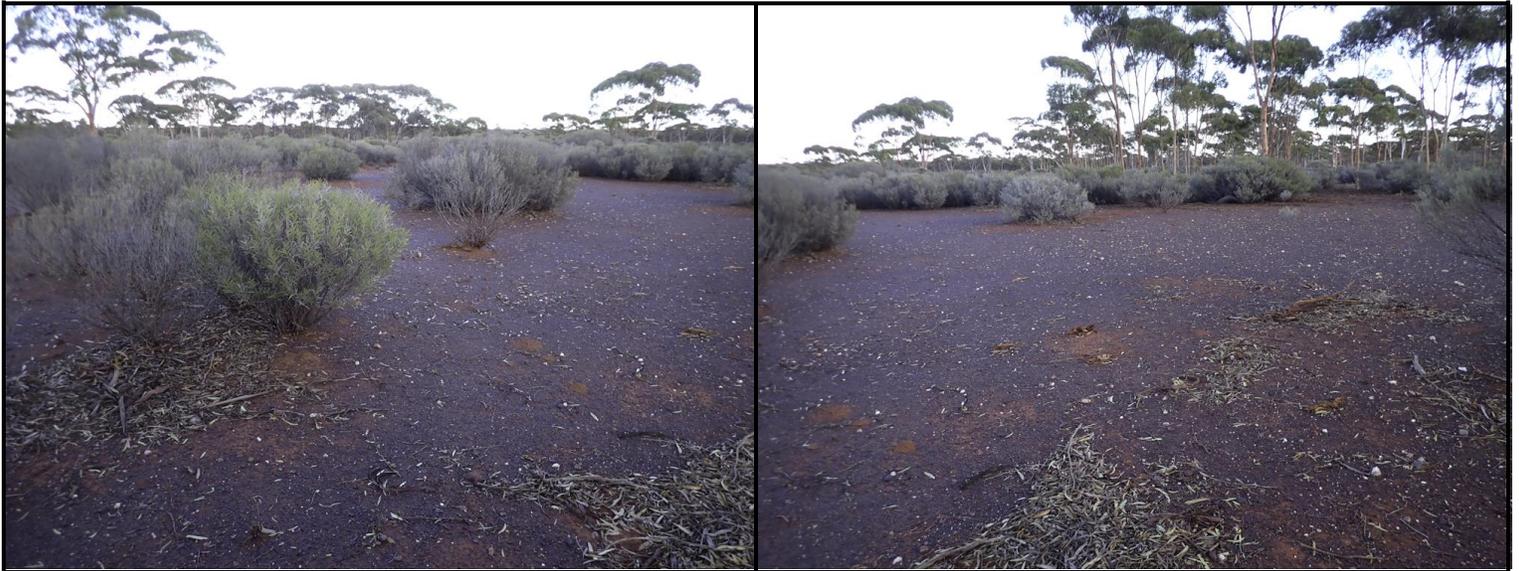
Landform: Plain

Soil Type: Red sand

Habitat Structure: Eucalypt woodland over shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 11/05/2022

Habitat Assessment #: 148

Observer: Scott Thompson

Zone: 51

Easting: 333391 mE

Northing: 6641809 mN

Fire History: <5 years

Landform: Plain

Soil Type: Red sand

Habitat Structure: Eucalypt woodland over shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 11/05/2022

Habitat Assessment #: 149

Observer: Scott Thompson

Zone: 51

Easting: 333376 mE

Northing: 6641588 mN

Fire History: <5 years

Landform: Plain

Soil Type: Red sand

Habitat Structure: Mixed shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 11/05/2022

Habitat Assessment #: 150

Observer: Scott Thompson

Zone: 51

Easting: 333576 mE

Northing: 6641516 mN

Fire History: <5 years

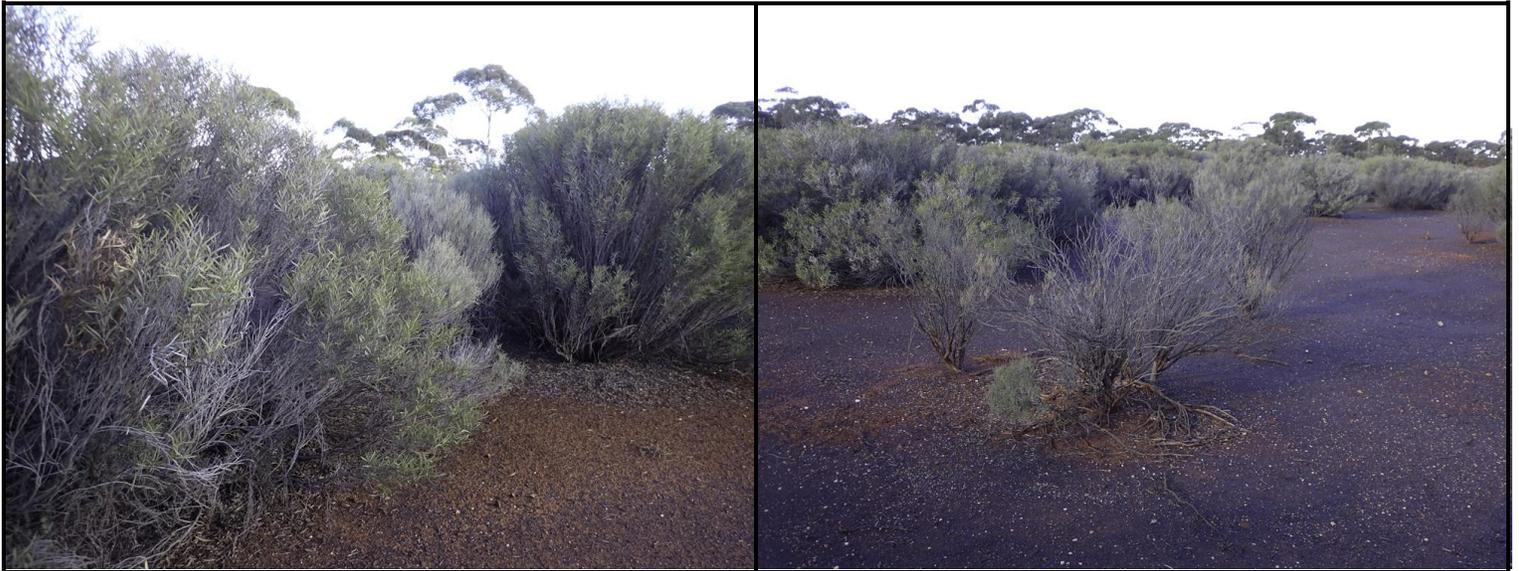
Landform: Plain

Soil Type: Red sand

Habitat Structure: Mixed shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 11/05/2022

Habitat Assessment #: 151

Observer: Scott Thompson

Zone: 51

Easting: 333382 mE

Northing: 6641415 mN

Fire History: <5 years

Landform: Plain

Soil Type: Red sand

Habitat Structure: Mixed shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 11/05/2022

Habitat Assessment #: 152

Observer: Scott Thompson

Zone: 51

Easting: 333394 mE

Northing: 6641313 mN

Fire History: <5 years

Landform: Plain

Soil Type: Red sand

Habitat Structure: Mixed shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 11/05/2022

Habitat Assessment #: 153

Observer: Scott Thompson

Zone: 51

Easting: 333400 mE

Northing: 6641121 mN

Fire History: <5 years

Landform: Plain

Soil Type: Red sand

Habitat Structure: Eucalypt woodland over shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 11/05/2022

Habitat Assessment #: 154

Observer: Scott Thompson

Zone: 51

Easting: 333396 mE

Northing: 6640945 mN

Fire History: <5 years

Landform: Plain

Soil Type: Red sand

Habitat Structure: Eucalypt woodland over shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 11/05/2022

Habitat Assessment #: 155

Observer: Scott Thompson

Zone: 51

Easting: 333380 mE

Northing: 6640669 mN

Fire History: <5 years

Landform: Plain

Soil Type: Red sand

Habitat Structure: Eucalypt woodland over shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 11/05/2022

Habitat Assessment #: 156

Observer: Scott Thompson

Zone: 51

Easting: 333376 mE

Northing: 6640456 mN

Fire History: <5 years

Landform: Plain

Soil Type: Red sand

Habitat Structure: Eucalypt woodland over shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 11/05/2022

Habitat Assessment #: 157

Observer: Scott Thompson

Zone: 51

Easting: 333452 mE

Northing: 6639967 mN

Fire History: <5 years

Landform: Plain

Soil Type: Red sand

Habitat Structure: Eucalypt woodland over shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 11/05/2022

Habitat Assessment #: 158

Observer: Scott Thompson

Zone: 51

Easting: 333477 mE

Northing: 6639820 mN

Fire History: <5 years

Landform: Plain

Soil Type: Red sand

Habitat Structure: Eucalypt woodland over shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 11/05/2022

Habitat Assessment #: 159

Observer: Scott Thompson

Zone: 51

Easting: 333684 mE

Northing: 6639816 mN

Fire History: <5 years

Landform: Plain

Soil Type: Red sand

Habitat Structure: Eucalypt woodland over shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 11/05/2022

Habitat Assessment #: 160

Observer: Scott Thompson

Zone: 51

Easting: 333607 mE

Northing: 6639994 mN

Fire History: <5 years

Landform: Plain

Soil Type: Red sand

Habitat Structure: Eucalypt woodland over shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 11/05/2022

Habitat Assessment #: 161

Observer: Scott Thompson

Zone: 51

Easting: 333589 mE

Northing: 6640286 mN

Fire History: <5 years

Landform: Plain

Soil Type: Red sand

Habitat Structure: Eucalypt woodland over shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 11/05/2022

Habitat Assessment #: 162

Observer: Scott Thompson

Zone: 51

Easting: 333575 mE

Northing: 6640501 mN

Fire History: <5 years

Landform: Plain

Soil Type: Red sand

Habitat Structure: Eucalypt woodland over shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 11/05/2022

Habitat Assessment #: 163

Observer: Scott Thompson

Zone: 51

Easting: 333571 mE

Northing: 6640731 mN

Fire History: <5 years

Landform: Plain

Soil Type: Red sand

Habitat Structure: Eucalypt woodland over shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 11/05/2022

Habitat Assessment #: 164

Observer: Scott Thompson

Zone: 51

Easting: 333593 mE

Northing: 6641014 mN

Fire History: <5 years

Landform: Plain

Soil Type: Red sand

Habitat Structure: Eucalypt woodland over shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 11/05/2022

Habitat Assessment #: 165

Observer: Scott Thompson

Zone: 51

Easting: 333608 mE

Northing: 6641244 mN

Fire History: <5 years

Landform: Plain

Soil Type: Red sand

Habitat Structure: Eucalypt woodland over shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 11/05/2022

Habitat Assessment #: 166

Observer: Scott Thompson

Zone: 51

Easting: 333596 mE

Northing: 6641377 mN

Fire History: <5 years

Landform: Plain

Soil Type: Red sand

Habitat Structure: Eucalypt woodland over shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 11/05/2022

Habitat Assessment #: 167

Observer: Scott Thompson

Zone: 51

Easting: 333601 mE

Northing: 6641664 mN

Fire History: <5 years

Landform: Plain

Soil Type: Red sand

Habitat Structure: Eucalypt woodland over shrubland

Habitat Quality: Disturbed

Surface: Sand with pebbles



Date: 11/05/2022

Habitat Assessment #: 168

Observer: Scott Thompson

Zone: 51

Easting: 333581 mE

Northing: 6641779 mN

Fire History: <5 years

Landform: Plain

Soil Type: Red sand

Habitat Structure: Mixed shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 11/05/2022

Habitat Assessment #: 169

Observer: Scott Thompson

Zone: 51

Easting: 333565 mE

Northing: 6641938 mN

Fire History: <5 years

Landform: Plain

Soil Type: Red sand

Habitat Structure: Eucalypt woodland over shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 11/05/2022

Habitat Assessment #: 170

Observer: Scott Thompson

Zone: 51

Easting: 333607 mE

Northing: 6642098 mN

Fire History: <5 years

Landform: Plain

Soil Type: Red sand

Habitat Structure: Mixed shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 11/05/2022

Habitat Assessment #: 171

Observer: Scott Thompson

Zone: 51

Easting: 333558 mE

Northing: 6642274 mN

Fire History: <5 years

Landform: Plain

Soil Type: Red sand

Habitat Structure: Eucalypt woodland over shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 11/05/2022

Habitat Assessment #: 172

Observer: Scott Thompson

Zone: 51

Easting: 333553 mE

Northing: 6642447 mN

Fire History: <5 years

Landform: Plain

Soil Type: Red sand

Habitat Structure: Eucalypt woodland over shrubland

Habitat Quality: Disturbed

Surface: Sand with pebbles



Date: 11/05/2022

Habitat Assessment #: 173

Observer: Scott Thompson

Zone: 51

Easting: 333621 mE

Northing: 6642629 mN

Fire History: <5 years

Landform: Plain

Soil Type: Red sand

Habitat Structure: Mixed shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 11/05/2022

Habitat Assessment #: 174

Observer: Scott Thompson

Zone: 51

Easting: 333559 mE

Northing: 6642720 mN

Fire History: <5 years

Landform: Plain

Soil Type: Red sand

Habitat Structure: Eucalypt woodland over shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 11/05/2022

Habitat Assessment #: 175

Observer: Scott Thompson

Zone: 51

Easting: 333583 mE

Northing: 6642933 mN

Fire History: <5 years

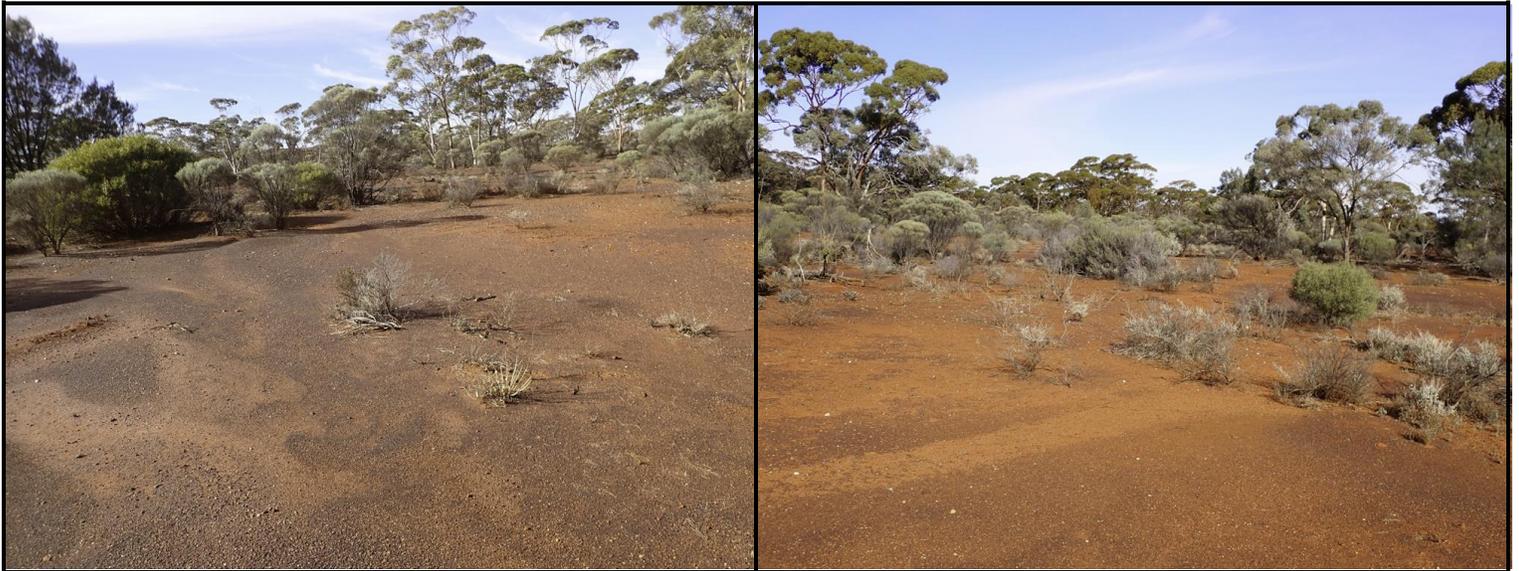
Landform: Plain

Soil Type: Red sand

Habitat Structure: Eucalypt woodland over shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 11/05/2022

Habitat Assessment #: 176

Observer: Scott Thompson

Zone: 51

Easting: 333582 mE

Northing: 6643131 mN

Fire History: <5 years

Landform: Plain

Soil Type: Red sand

Habitat Structure: Eucalypt woodland over shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 11/05/2022

Habitat Assessment #: 177

Observer: Scott Thompson

Zone: 51

Easting: 333771 mE

Northing: 6642370 mN

Fire History: <5 years

Landform: Plain

Soil Type: Red sand

Habitat Structure: Eucalypt woodland over shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 11/05/2022

Habitat Assessment #: 178

Observer: Scott Thompson

Zone: 51

Easting: 333800 mE

Northing: 6642243 mN

Fire History: <5 years

Landform: Plain

Soil Type: Red sand

Habitat Structure: Eucalypt woodland over shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 11/05/2022

Habitat Assessment #: 179

Observer: Scott Thompson

Zone: 51

Easting: 333780 mE

Northing: 6642156 mN

Fire History: <5 years

Landform: Plain

Soil Type: Red sand

Habitat Structure: Mixed shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 11/05/2022

Habitat Assessment #: 180

Observer: Scott Thompson

Zone: 51

Easting: 333778 mE

Northing: 6642003 mN

Fire History: <5 years

Landform: Plain

Soil Type: Red sand

Habitat Structure: Mixed shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 11/05/2022

Habitat Assessment #: 181

Observer: Scott Thompson

Zone: 51

Easting: 333782 mE

Northing: 6641879 mN

Fire History: <5 years

Landform: Plain

Soil Type: Red sand

Habitat Structure: Eucalypt woodland over shrubland

Habitat Quality: Disturbed

Surface: Sand with pebbles



Date: 11/05/2022

Habitat Assessment #: 182

Observer: Scott Thompson

Zone: 51

Easting: 333790 mE

Northing: 6641718 mN

Fire History: <5 years

Landform: Plain

Soil Type: Red sand

Habitat Structure: Disturbed

Habitat Quality: Good

Surface: Sand with pebbles



Date: 11/05/2022

Habitat Assessment #: 183

Observer: Scott Thompson

Zone: 51

Easting: 333819 mE

Northing: 6641532 mN

Fire History: <5 years

Landform: Plain

Soil Type: Red sand

Habitat Structure: Mixed shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 11/05/2022

Habitat Assessment #: 184

Observer: Scott Thompson

Zone: 51

Easting: 333803 mE

Northing: 6641361 mN

Fire History: <5 years

Landform: Plain

Soil Type: Red sand

Habitat Structure: Eucalypt woodland over shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 11/05/2022

Habitat Assessment #: 185

Observer: Scott Thompson

Zone: 51

Easting: 333827 mE

Northing: 6641236 mN

Fire History: <5 years

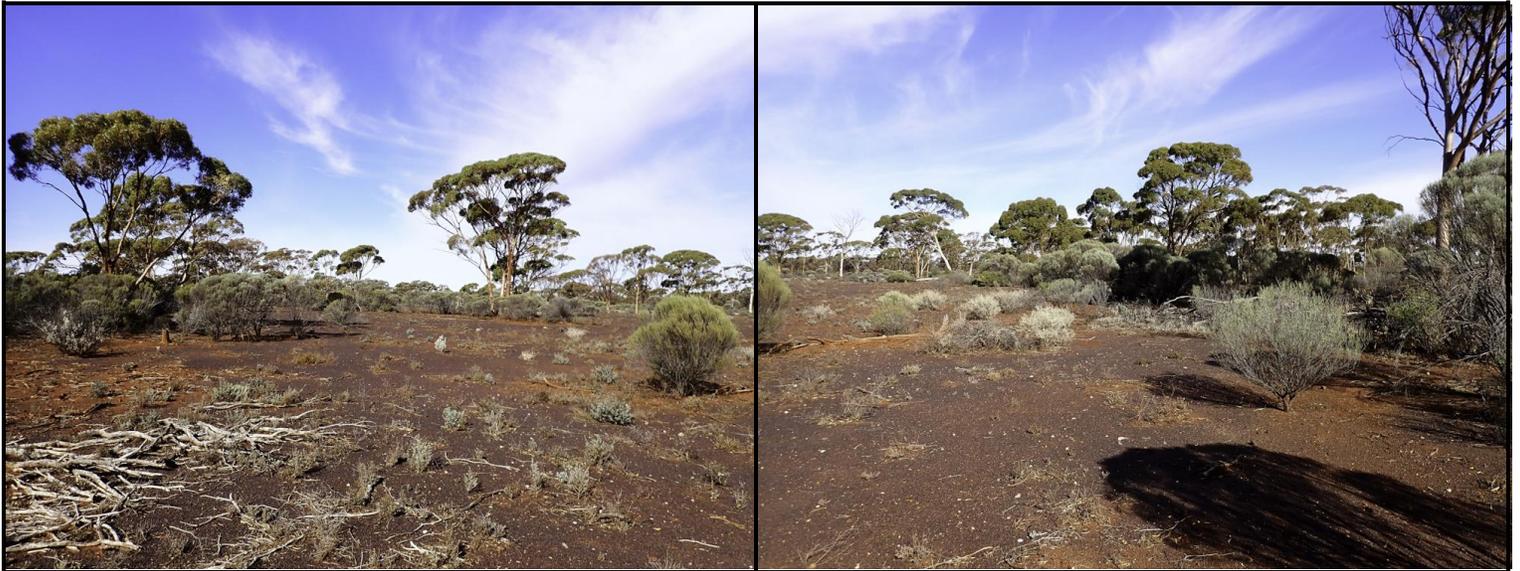
Landform: Plain

Soil Type: Red sand

Habitat Structure: Eucalypt woodland over shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 11/05/2022

Habitat Assessment #: 186

Observer: Scott Thompson

Zone: 51

Easting: 333799 mE

Northing: 6641077 mN

Fire History: <5 years

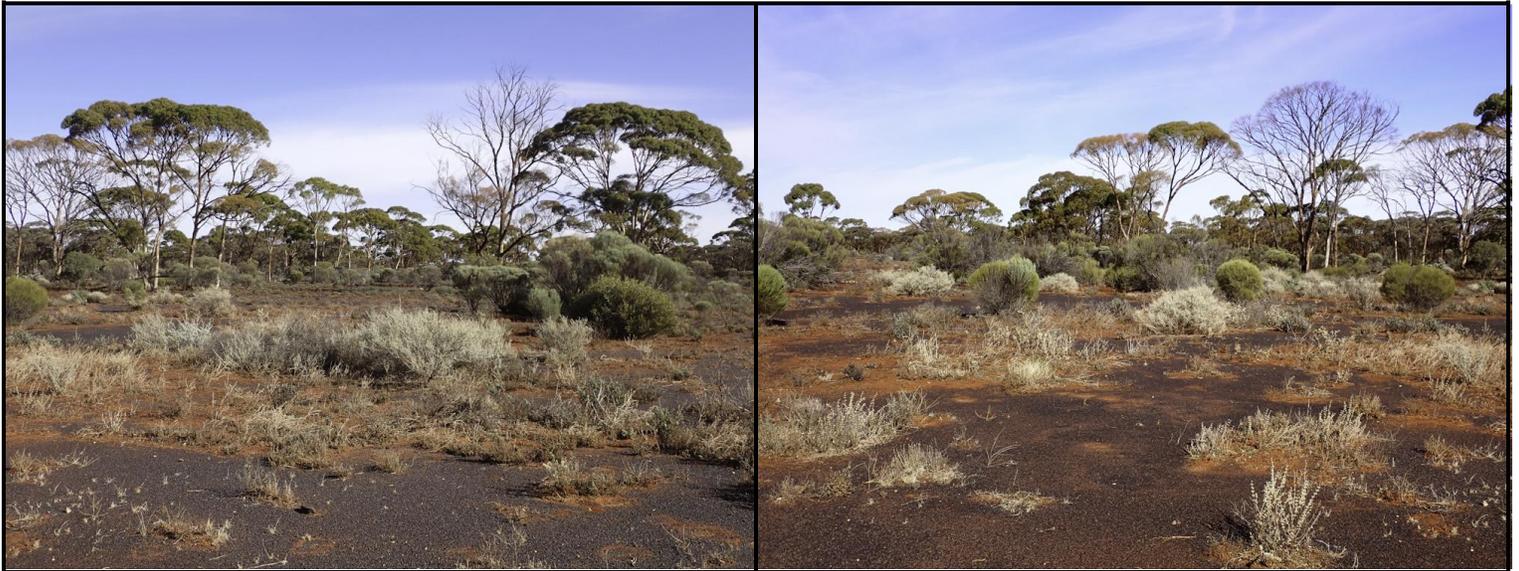
Landform: Plain

Soil Type: Red sand

Habitat Structure: Eucalypt woodland over shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 11/05/2022

Habitat Assessment #: 187

Observer: Scott Thompson

Zone: 51

Easting: 333781 mE

Northing: 6640910 mN

Fire History: <5 years

Landform: Plain

Soil Type: Red sand

Habitat Structure: Eucalypt woodland over shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 11/05/2022

Habitat Assessment #: 188

Observer: Scott Thompson

Zone: 51

Easting: 333801 mE

Northing: 6640726 mN

Fire History: <5 years

Landform: Plain

Soil Type: Red sand

Habitat Structure: Eucalypt woodland over shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 11/05/2022

Habitat Assessment #: 189

Observer: Scott Thompson

Zone: 51

Easting: 333800 mE

Northing: 6640485 mN

Fire History: <5 years

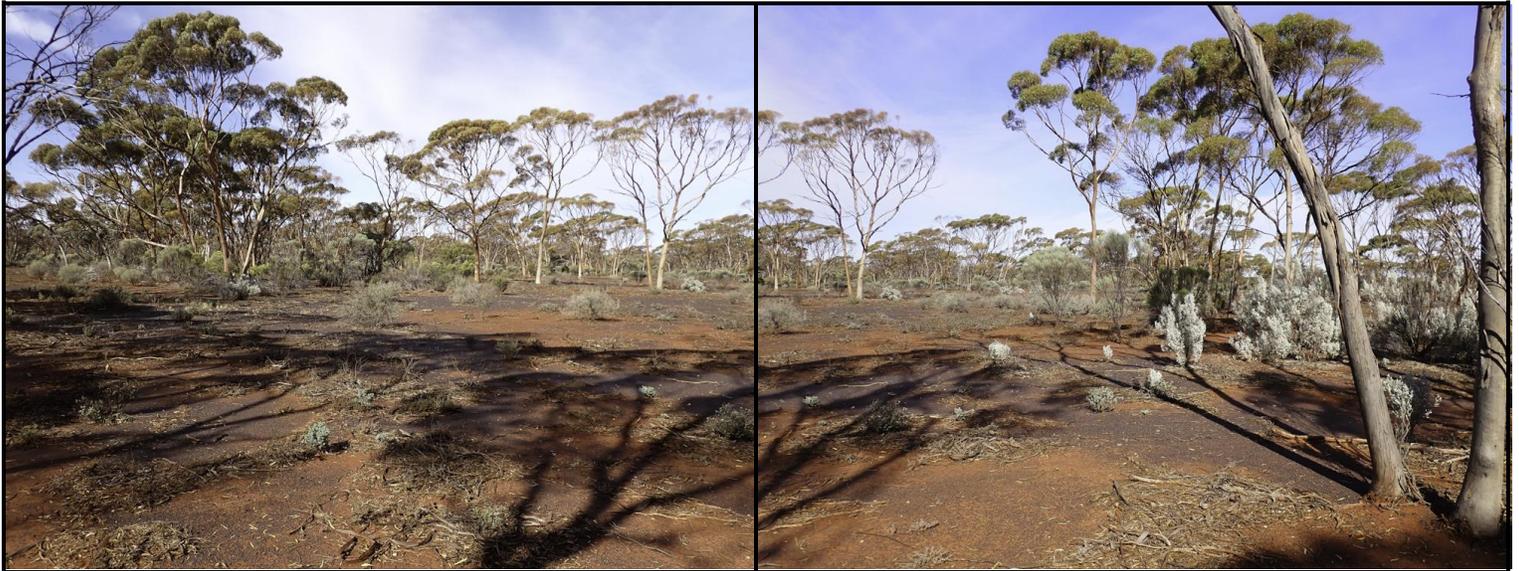
Landform: Plain

Soil Type: Red sand

Habitat Structure: Eucalypt woodland over shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 11/05/2022

Habitat Assessment #: 190

Observer: Scott Thompson

Zone: 51

Easting: 333798 mE

Northing: 6640267 mN

Fire History: <5 years

Landform: Plain

Soil Type: Red sand

Habitat Structure: Eucalypt woodland over shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 11/05/2022

Habitat Assessment #: 191

Observer: Scott Thompson

Zone: 51

Easting: 333808 mE

Northing: 6640051 mN

Fire History: <5 years

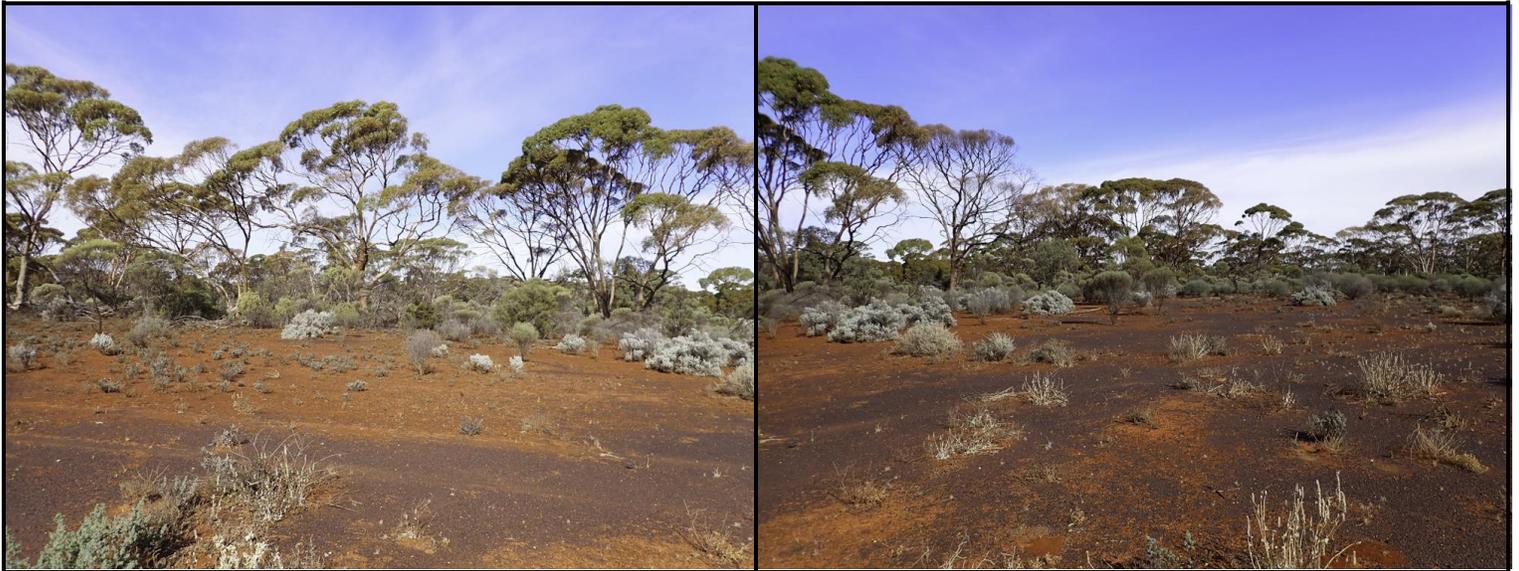
Landform: Plain

Soil Type: Red sand

Habitat Structure: Eucalypt woodland over shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 11/05/2022

Habitat Assessment #: 192

Observer: Scott Thompson

Zone: 51

Easting: 333792 mE

Northing: 6639838 mN

Fire History: <5 years

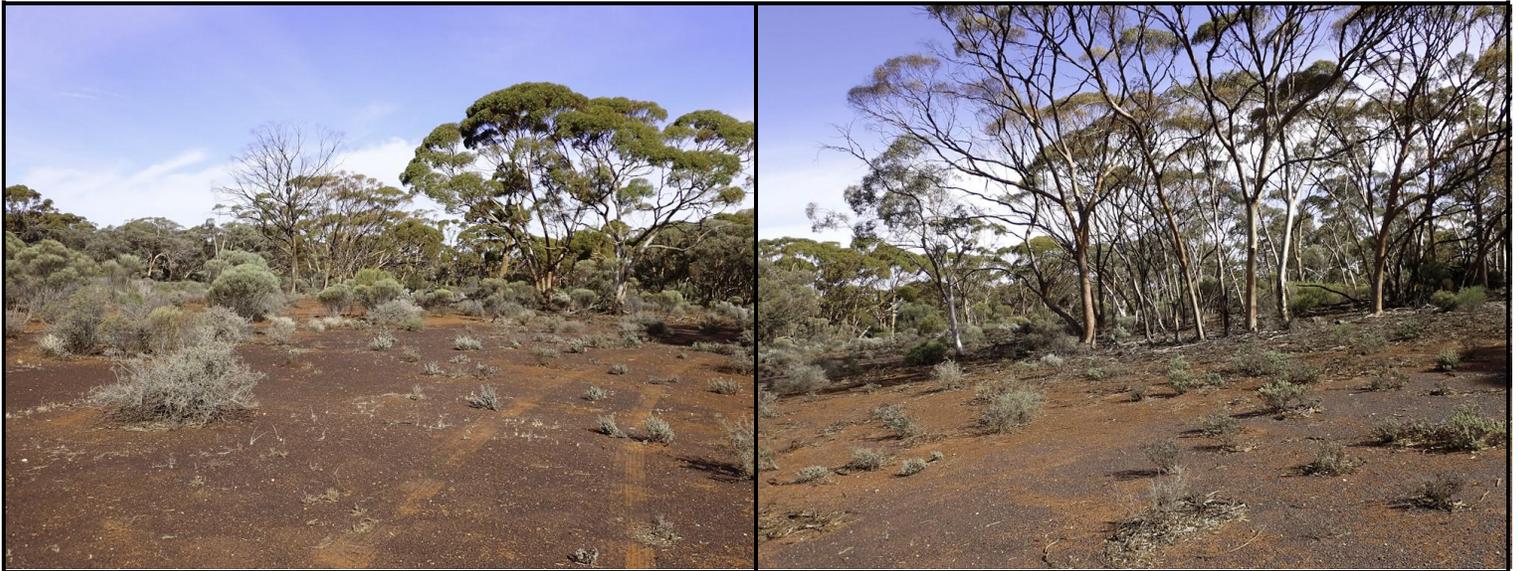
Landform: Plain

Soil Type: Red sand

Habitat Structure: Eucalypt woodland over shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 11/05/2022

Habitat Assessment #: 193

Observer: Scott Thompson

Zone: 51

Easting: 333846 mE

Northing: 6639646 mN

Fire History: <5 years

Landform: Plain

Soil Type: Red sand

Habitat Structure: Eucalypt woodland over shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 11/05/2022

Habitat Assessment #: 194

Observer: Scott Thompson

Zone: 51

Easting: 333848 mE

Northing: 6639480 mN

Fire History: <5 years

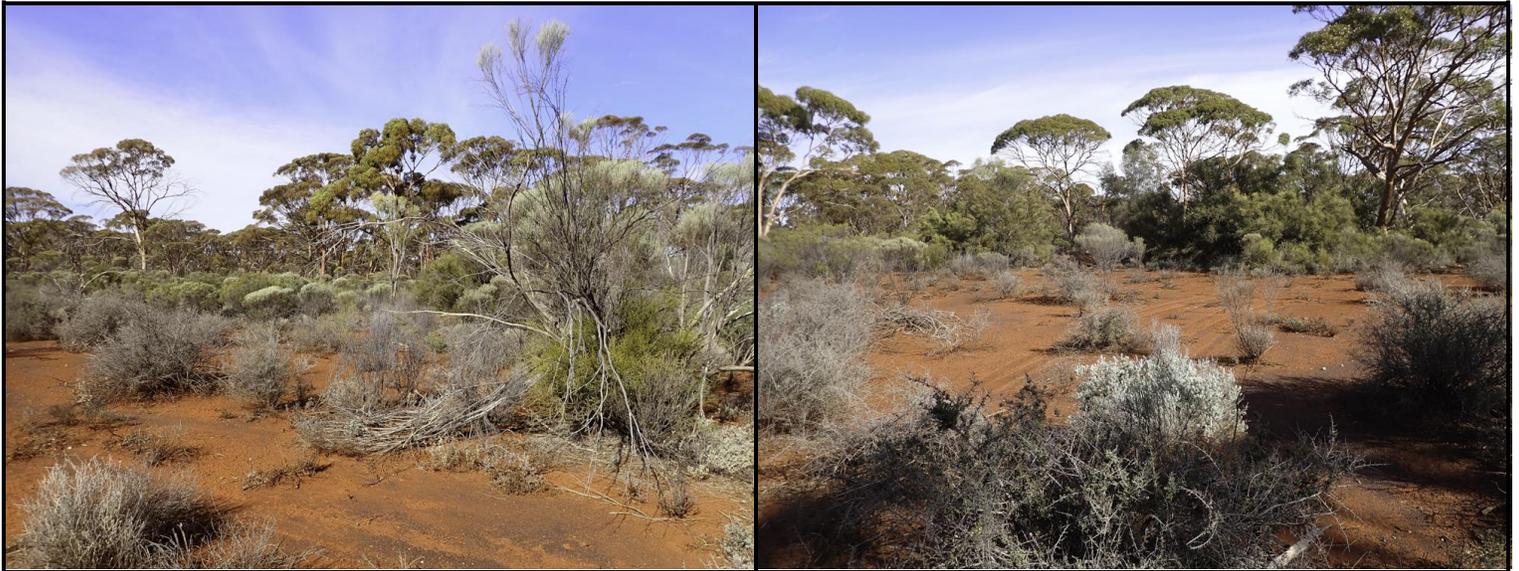
Landform: Plain

Soil Type: Red sand

Habitat Structure: Eucalypt woodland over shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 11/05/2022

Habitat Assessment #: 195

Observer: Scott Thompson

Zone: 51

Easting: 333827 mE

Northing: 6639288 mN

Fire History: <5 years

Landform: Plain

Soil Type: Red sand

Habitat Structure: Eucalypt woodland over shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 11/05/2022

Habitat Assessment #: 196

Observer: Scott Thompson

Zone: 51

Easting: 333761 mE

Northing: 6639286 mN

Fire History: <5 years

Landform: Plain

Soil Type: Red sand

Habitat Structure: Eucalypt woodland over shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 11/05/2022

Habitat Assessment #: 197

Observer: Scott Thompson

Zone: 51

Easting: 333664 mE

Northing: 6639169 mN

Fire History: <5 years

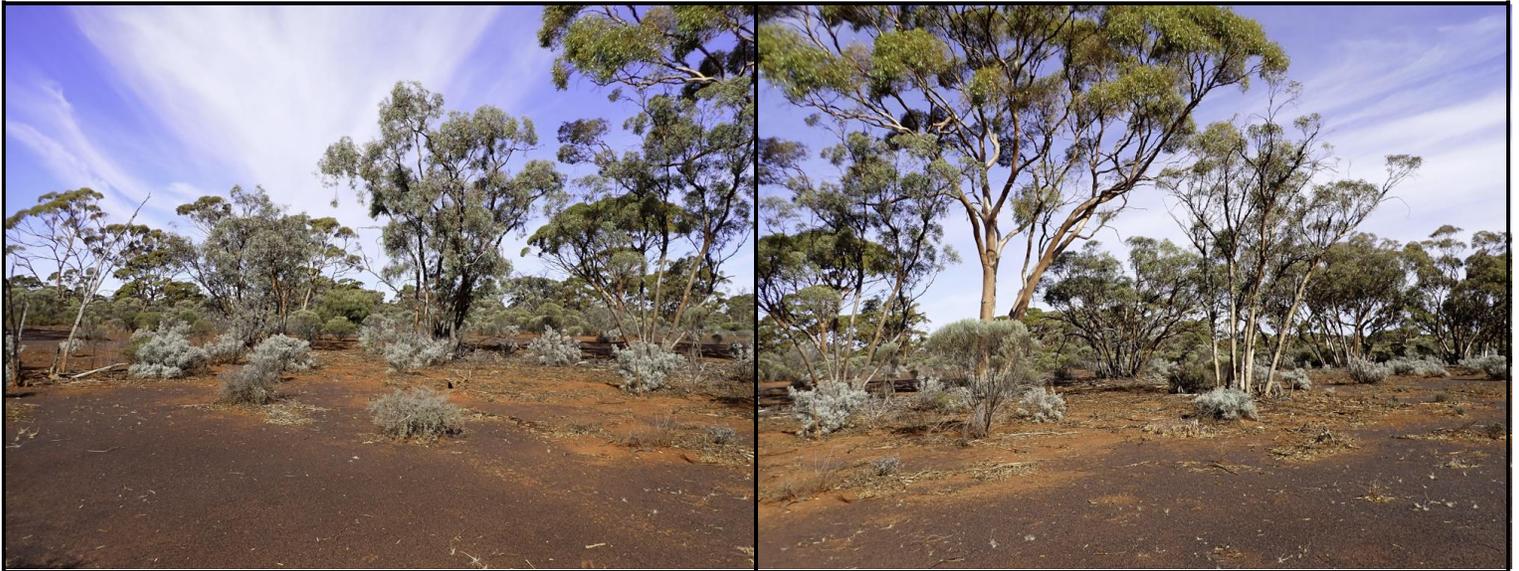
Landform: Plain

Soil Type: Red sand

Habitat Structure: Eucalypt woodland over shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 11/05/2022

Habitat Assessment #: 198

Observer: Scott Thompson

Zone: 51

Easting: 334296 mE

Northing: 6639412 mN

Fire History: <5 years

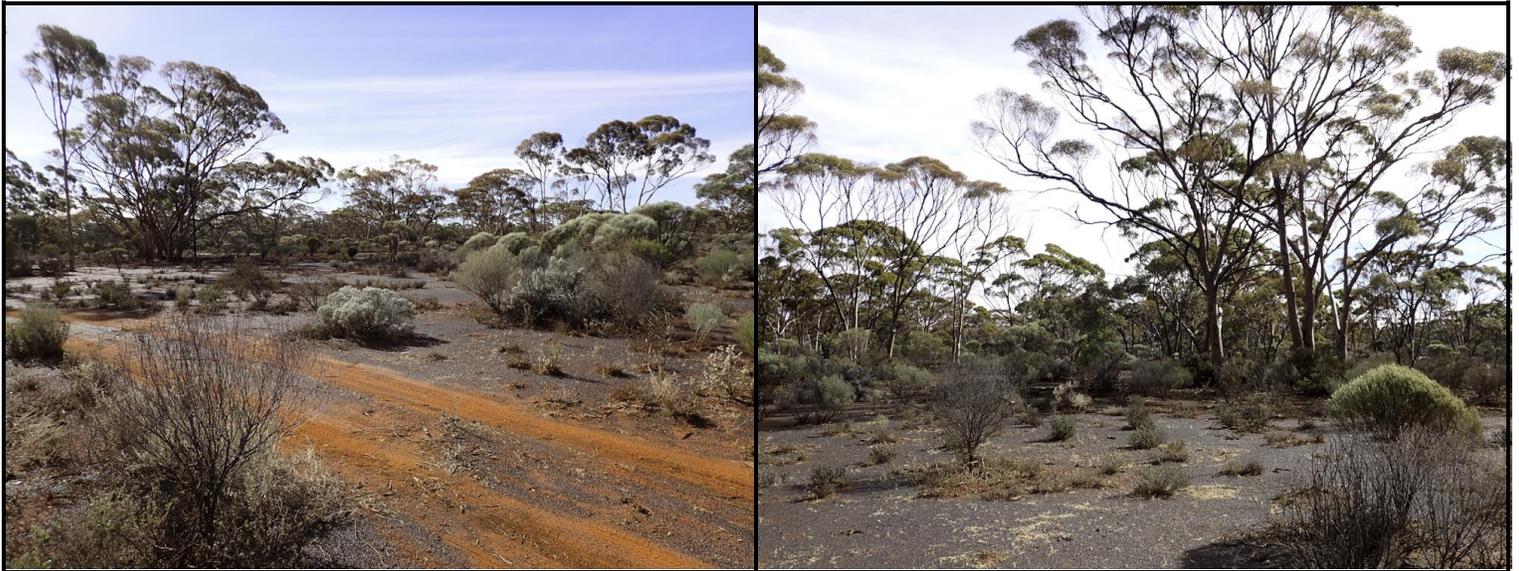
Landform: Plain

Soil Type: Red sand

Habitat Structure: Eucalypt woodland over shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 11/05/2022

Habitat Assessment #: 199

Observer: Scott Thompson

Zone: 51

Easting: 334211 mE

Northing: 6639714 mN

Fire History: <5 years

Landform: Plain

Soil Type: Red sand

Habitat Structure: Eucalypt woodland over shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 11/05/2022

Habitat Assessment #: 200

Observer: Scott Thompson

Zone: 51

Easting: 334189 mE

Northing: 6639513 mN

Fire History: <5 years

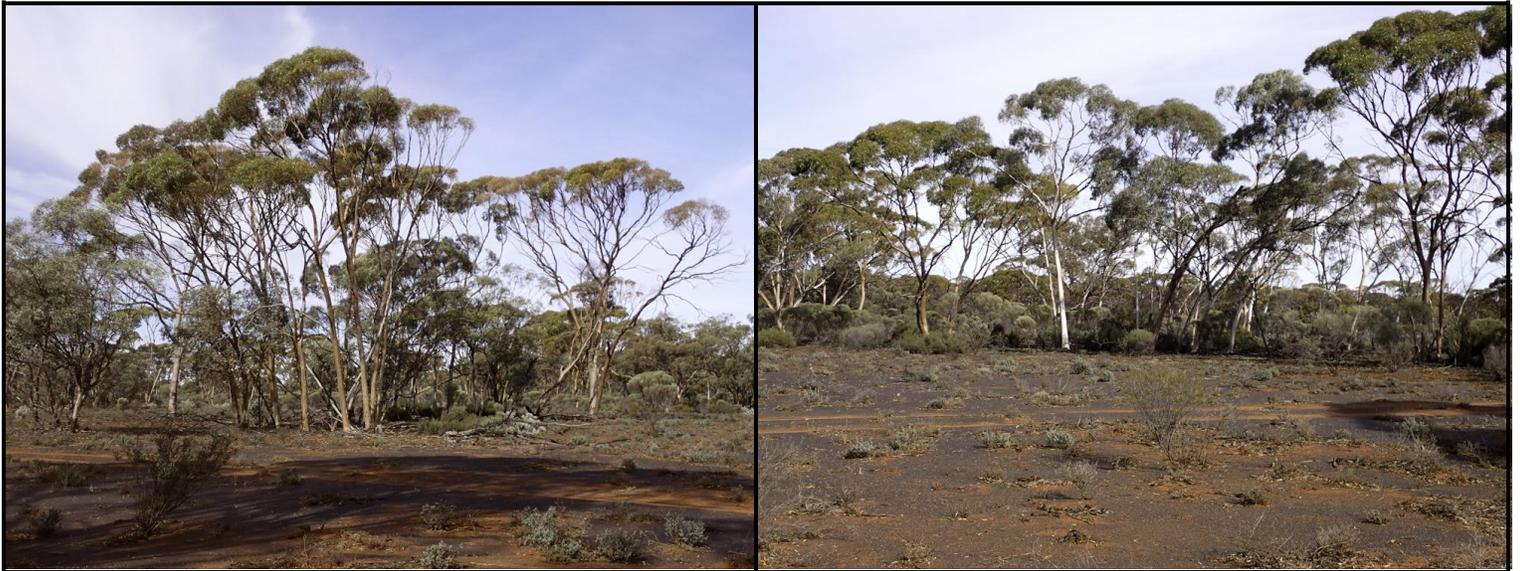
Landform: Plain

Soil Type: Red sand

Habitat Structure: Eucalypt woodland over shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 11/05/2022

Habitat Assessment #: 201

Observer: Scott Thompson

Zone: 51

Easting: 334013 mE

Northing: 6639311 mN

Fire History: <5 years

Landform: Plain

Soil Type: Red sand

Habitat Structure: Eucalypt woodland over shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 11/05/2022

Habitat Assessment #: 202

Observer: Scott Thompson

Zone: 51

Easting: 334028 mE

Northing: 6639484 mN

Fire History: <5 years

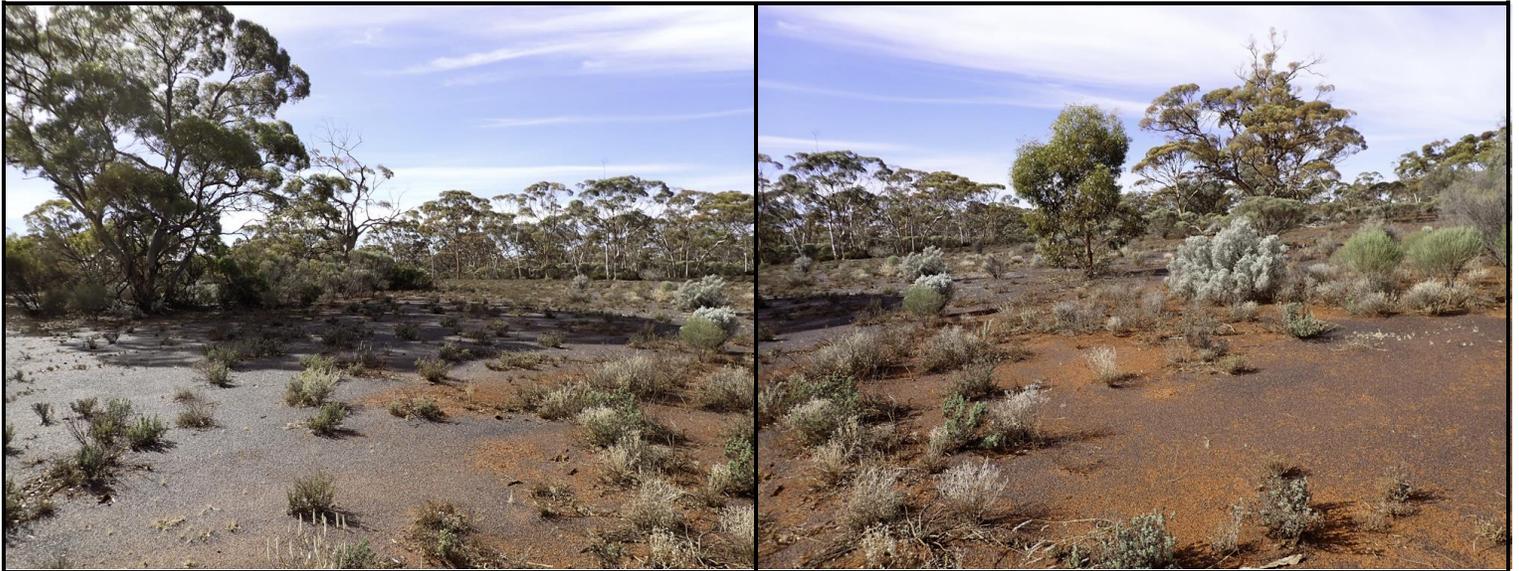
Landform: Plain

Soil Type: Red sand

Habitat Structure: Eucalypt woodland over shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 11/05/2022

Habitat Assessment #: 203

Observer: Scott Thompson

Zone: 51

Easting: 333999 mE

Northing: 6639821 mN

Fire History: <5 years

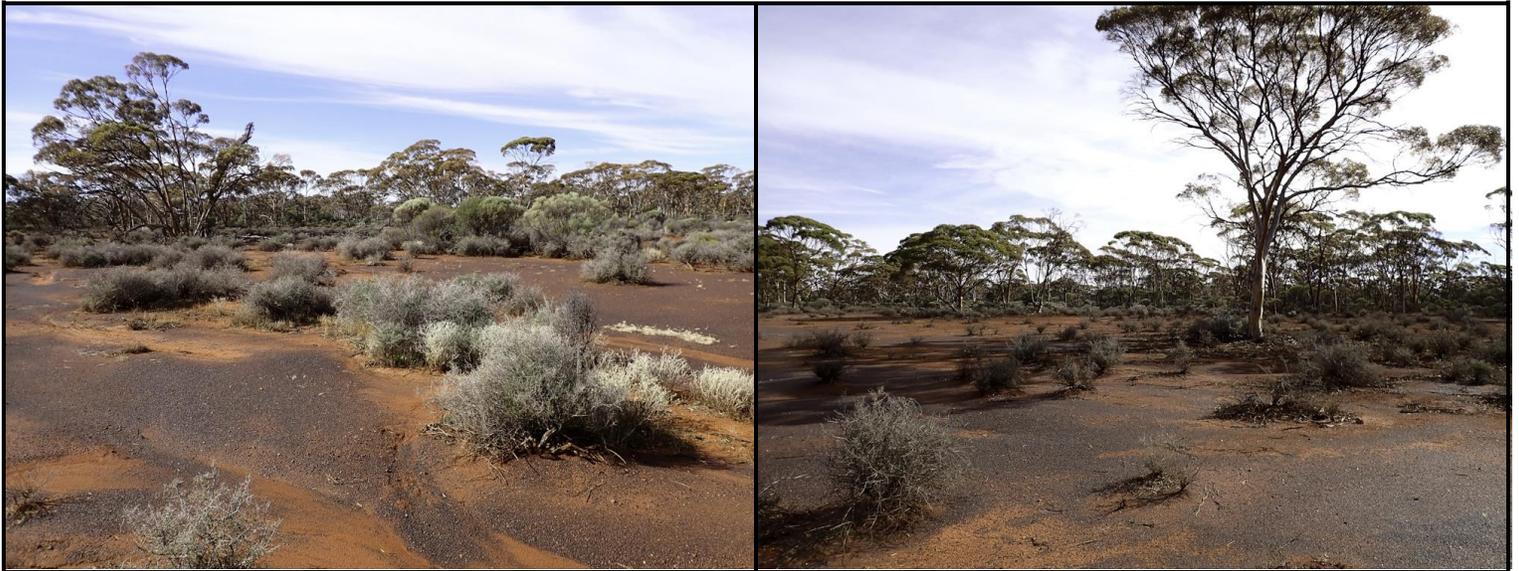
Landform: Plain

Soil Type: Red sand

Habitat Structure: Eucalypt woodland over shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 11/05/2022

Habitat Assessment #: 204

Observer: Scott Thompson

Zone: 51

Easting: 333974 mE

Northing: 6640044 mN

Fire History: <5 years

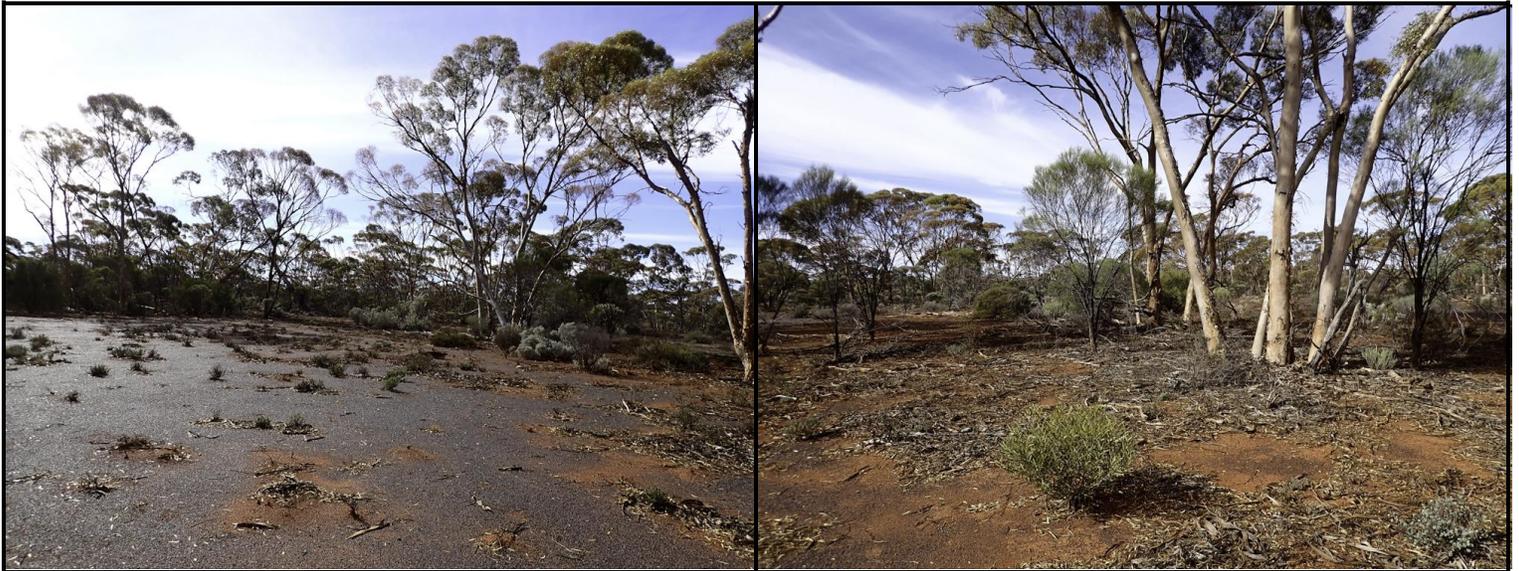
Landform: Plain

Soil Type: Red sand

Habitat Structure: Eucalypt woodland over shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 11/05/2022

Habitat Assessment #: 205

Observer: Scott Thompson

Zone: 51

Easting: 333957 mE

Northing: 6640217 mN

Fire History: <5 years

Landform: Plain

Soil Type: Red sand

Habitat Structure: Eucalypt woodland over shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 11/05/2022

Habitat Assessment #: 206

Observer: Scott Thompson

Zone: 51

Easting: 333996 mE

Northing: 6640396 mN

Fire History: <5 years

Landform: Plain

Soil Type: Red sand

Habitat Structure: Eucalypt woodland over shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 11/05/2022

Habitat Assessment #: 207

Observer: Scott Thompson

Zone: 51

Easting: 334006 mE

Northing: 6640588 mN

Fire History: <5 years

Landform: Plain

Soil Type: Red sand

Habitat Structure: Eucalypt woodland over shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 11/05/2022

Habitat Assessment #: 208

Observer: Scott Thompson

Zone: 51

Easting: 333981 mE

Northing: 6640817 mN

Fire History: <5 years

Landform: Plain

Soil Type: Red sand

Habitat Structure: Eucalypt woodland over shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 11/05/2022

Habitat Assessment #: 209

Observer: Scott Thompson

Zone: 51

Easting: 333972 mE

Northing: 6641006 mN

Fire History: <5 years

Landform: Plain

Soil Type: Red sand

Habitat Structure: Eucalypt woodland over shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 11/05/2022

Habitat Assessment #: 210

Observer: Scott Thompson

Zone: 51

Easting: 333974 mE

Northing: 6641240 mN

Fire History: <5 years

Landform: Plain

Soil Type: Red sand

Habitat Structure: Eucalypt woodland over shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 11/05/2022

Habitat Assessment #: 211

Observer: Scott Thompson

Zone: 51

Easting: 333908 mE

Northing: 6641307 mN

Fire History: <5 years

Landform: Plain

Soil Type: Red sand

Habitat Structure: Eucalypt woodland over shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 11/05/2022

Habitat Assessment #: 212

Observer: Scott Thompson

Zone: 51

Easting: 333966 mE

Northing: 6641396 mN

Fire History: <5 years

Landform: Plain

Soil Type: Red sand

Habitat Structure: Eucalypt woodland over shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 11/05/2022

Habitat Assessment #: 213

Observer: Scott Thompson

Zone: 51

Easting: 333976 mE

Northing: 6641515 mN

Fire History: <5 years

Landform: Plain

Soil Type: Red sand

Habitat Structure: Eucalypt woodland over shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 11/05/2022

Habitat Assessment #: 214

Observer: Scott Thompson

Zone: 51

Easting: 333973 mE

Northing: 6641663 mN

Fire History: <5 years

Landform: Plain

Soil Type: Red sand

Habitat Structure: Eucalypt woodland over shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 11/05/2022

Habitat Assessment #: 215

Observer: Scott Thompson

Zone: 51

Easting: 333928 mE

Northing: 6641839 mN

Fire History: <5 years

Landform: Plain

Soil Type: Red sand

Habitat Structure: Mixed shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 11/05/2022

Habitat Assessment #: 216

Observer: Scott Thompson

Zone: 51

Easting: 333879 mE

Northing: 6641974 mN

Fire History: <5 years

Landform: Ephemeral
creekline

Soil Type: Red sand

Habitat Structure: Eucalypt woodland over shrubland

Habitat Quality: Good

Surface: Sand with pebbles



Date: 11/05/2022

Habitat Assessment #: 217

Observer: Scott Thompson

Zone: 51

Easting: 333859 mE

Northing: 6642196 mN

Fire History: <5 years

Landform: Ephemeral
creekline

Soil Type: Red sand

Habitat Structure: Eucalypt woodland over shrubland

Habitat Quality: Good

Surface: Sand with pebbles

