Accelerator and Indicator Mining Areas

Reconnaissance Flora and Vegetation Survey and Basic Terrestrial Fauna Survey

Final Report

Prepared for Westgold Resources Limited

January 2021

Limitations

Scope of services

This report ("the report") has been prepared by Western Ecological Pty Ltd (WE) in accordance with the scope of services set out in the contract, or as otherwise agreed, between the Client and WE. In some circumstances, a range of factors such as time, budget, access and/or site disturbance constraints may have limited the scope of services. This report is strictly limited to the matters stated in it and is not to be read as extending, by implication, to any other matter in connection with the matters addressed in it.

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Report Version	Revision No.	Purpose	Author/reviewer	Submitted to Client	
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Draft Report	1	For client review	Western Ecological / Westgold Resources	Electronic	31/12/2020
Final Report	2	Client submission	Western Ecological / Westgold Resources	Electronic	21/01/2021

Executive Summary

Westgold Resources commissioned Western Ecological (WE) to undertake a Reconnaissance Flora and Vegetation Survey and Basic Terrestrial Fauna Survey for the Accelerator and Indicator mining areas (survey area) in late 2020.

The survey area is located on Mining Lease (M) 20/98 and M20/197, which is approximately 30 km northwest of Cue, Western Australia (WA). The survey area is approximately 360 ha in total, consisting of the two mining areas called Accelerator and Indicator.

The Reconnaissance Vegetation Survey and Basic Terrestrial Fauna Survey was requested to provide supporting information for the submission of Native Vegetation Clearing Permit and Mining Proposal applications.

The flora desktop assessment involved searches of NatureMap (30 km), Department of Biodiversity Conservation and Attractions (DBCA) Priority and Threatened Flora Database (50 km) and vegetation and flora survey reports from nearby mining projects. The results of the database searches listed 443 taxa from 57 families, with Asteraceae, Chenopodiaceae, Fabaceae, Poaceae and Scrophulariaceae being the most well represented. The climate had been quite dry, and forbs (Asteraceae) and grasses (Poaceae) were poorly represented in the survey area. Fifty-nine conservation significant flora were recorded in the DBCA database search, including two threatened species, one of which is very restricted, and the other is a recently renamed species which has a wide distribution and is common.

A total of 69 vascular taxa from 18 families and 32 genera were recorded within the survey area. This included 3 priority taxa – Acacia speckii P4, Dodonaea amplisemina P4 and *Sauropus* sp. Woolgorong P3. *Acacia speckii* and *Dodonaea amplisemina* were expected due to the presence of basaltic substrate in the west and south of the survey area. The overall condition of the vegetation was degraded to good due to historic pastoral and mining activities. Vegetation in the best condition was present mainly along drainage lines and in small patches associated with outcropping quartz. The vegetation north of the Cue – Berringarra Road was generally less disturbed.

Nine vegetation types were described from the field results (37 relevés) based on floristics and structure. Impacts from grazing have probably resulted in a loss of species and structure within vegetation in the southern area. No vegetation type was representative of priority or threatened ecological communities.

The fauna desktop assessment involved searches of NatureMap, the Environmental Protection and Biodiversity Conservation (Act 1999) Protected Matters Search Tool (EPBC PMST) and DBCA Threatened Fauna Database. The DBCA Threatened Fauna Database and EPBC PMST both has a search radius of 50 km applied and NatureMap had a 40 km radius applied (maximum possible).

Results of the databases searches outlined a total of 265 vertebrate species from 80 families. These were comprised of six amphibian species from four families, 50 reptile species from eight families, 171 bird species from 53 families, and 38 mammal species from 15 families. A total of 37 conservation significant vertebrate species (including Priority species) from 19 families were identified during the desktop review of the database searches. These were comprised of two reptile species from one family, 27 bird species from 13 families and eight mammal species from five families.

The DBCA Threatened Fauna Database returned a total of 126 conservation significant fauna records from within a 50 km radius of the survey area. No conservation significant fauna were recorded in the survey area and the closest records to the survey area is the Peregrine Falcon (*Falco peregrinus)* which was recorded 15 km to the south-west of the survey area.

A total of 33 fauna species, from 23 families were recorded during the field survey. No species of conservation significance were recorded during the field survey and all fauna species recorded are considered relatively common and widespread.

Two conservation significant species were given particular consideration during the field survey, the Malleefowl (*Leipoa ocellata*) and the Night Parrot (*Pezoporus occidentalis*). The survey area is considered unsuitable for both species, due to a lack of suitable habitat.

With reference to the Malleefowl, the drainage areas and drainage lines, contained denser vegetation in the way of mixed acacia woodland and mulga shrubland, however it was considered to be too sparse for Malleefowl mound construction. In addition, Malleefowl are unlikely to build mounds in areas of drainage due to the possibility of flooding. No Malleefowl were sighted, nor were their mounds or tracks, when assessing habitat (primarily areas of the mulga shrubland) in the survey area.

With reference to the Night Parrot, the survey area does not contain spinifex, which is required for the species to roost and nest in.

A total of 22 habitat assessments were undertaken during the field survey and four fauna habitats types were recorded, these were Stony Plains and Rises, Acacia Shrubland, Drainage Area and Drainage Line. The most widespread was Stony Plains and Rises. All the fauna habitats represented in the survey area are also represented in the wider region as can be seen in the 5 km study area and also in the broader region context.

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1 Introduction

1.1 Background

Westgold Resources Limited (Westgold) commissioned Western Ecological to undertake a Reconnaissance Flora and Vegetation Survey and Basic Terrestrial Fauna Survey for the Accelerator and Indicator mining areas (survey area) as described in the Scope of Works (SoW) sent to Western Ecological.

The survey area is located on Mining Lease (M) 20/98 and M20/197, which is approximately 30 km northwest of Cue, Western Australia (WA). The survey area is approximately 364 ha in total, consisting of the two mining areas (Accelerator and Indicator) (Figure 1).

It is understood the Reconnaissance Vegetation Survey and Basic Terrestrial Fauna Survey is required for supporting information in the submission of a Native Vegetation Clearing Permit and Mining Proposal applications.

1.2 Scope

The scope of work (SoW) to be undertaken is understood to be as follows:

- Reconnaissance Flora and Vegetation Survey
- Basic (formerly Level 1) Fauna Survey
- Document the above in a concise report.

1.3 Objective

The objectives of the survey were to define the flora, vegetation and fauna values in the survey area, to support future project planning, and inform environmental approvals.

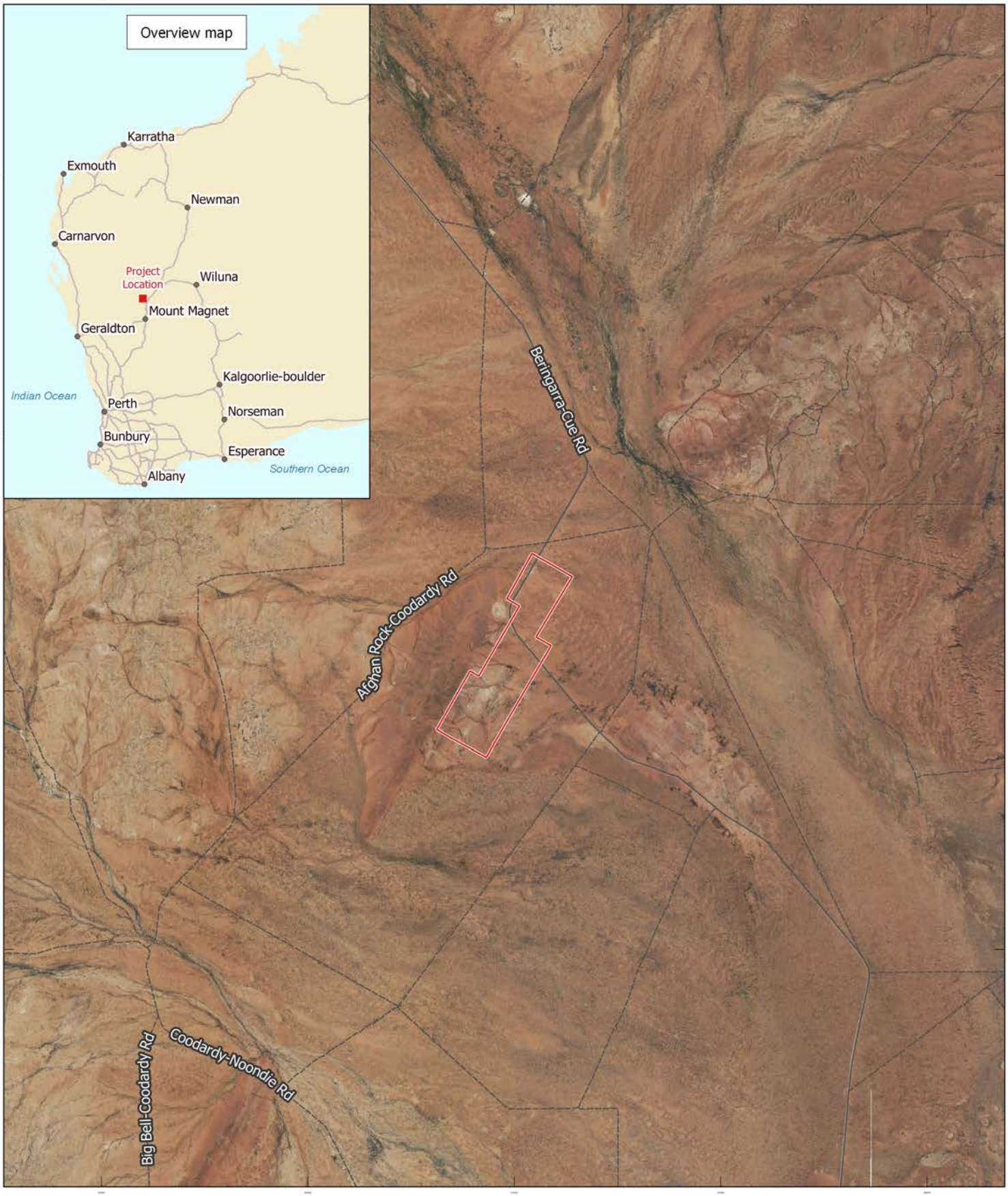


Figure 1: Site Location

0 1,000 2,000 3,000 m

Scale 1:100,000
GDA94 - MGA Zone 50

Legend

Survey Area

Ref: 085_G010_RevA.qgz

1.4 Legislative Context

Flora, fauna and ecological communities are protected formally and informally by various legislative and non-legislative measures, which are outlined below:

- Legislative Protection:
    - *Commonwealth Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act)
    - *Western Australia* (WA*) Biodiversity Conservation Act* (2016) (BC Act)
    - *WA Environmental Protection Act* 1986 (EP Act).
- Non-Legislative Protection:
    - WA Department of Biodiversity, Conservation and Attractions (DBCA) Priority lists.
    - Recognition of locally significant populations by DBCA.

A short description of each is given below. Other definitions, including species conservation categories, are provided in Appendix 1.

EPBC Act

The *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) aims to protect matters of national environmental significance, which are detailed in Appendix 1. Under the EPBC Act, the Commonwealth Department of Agriculture, Water and the Environment (DAWE) lists protected species and Threatened Ecological Communities (TECs) by criteria set out in the Act. Species are conservation significant if they are listed as Threatened (i.e., Critically Endangered, Endangered and Vulnerable) or Migratory.

Bird species protected as Migratory under the EPBC Act include those listed under international migratory bird agreements relating to the protection of birds, which migrate between Australia and other countries, for which Australia has agreed. This includes the Japan-Australia Migratory Bird Agreement (JAMBA), the China-Australia Migratory Bird Agreement (CAMBA), the Republic of Korea-Australia Migratory Bird Agreement (ROKAMBA) and the Convention on the Conservation of Migratory Species of Wild Animals (Bonn Convention).

Some marine fauna or terrestrial fauna that use marine habitats are listed as Marine under the EPBC Act. These species are only considered conservation significant when a proposed development occurs in a Commonwealth marine area (i.e., any Commonwealth Waters or Commonwealth Marine Protected Area). Outside of such areas, the EPBC Act does not consider these species to be matters of national environmental significance, so are not protected under the Act.

BC Act

The *Biodiversity Conservation Act 2016* (BC Act) replaced both the *Wildlife Conservation Act 1950* and the *Sandalwood Act 1929* and came into effect on 1 January 2019. The aim of the new Act is to conserve and protect biodiversity and to promote the ecologically sustainable use of biodiversity components in the State, and will bring more activities within the scope of biodiversity laws.

Taxa listed as Threatened in the category of critically endangered, endangered or vulnerable under section 19(1a, 1b, and 1c), or is a rediscovered species to be regarded as threatened species under section 26(2) of the BC Act. Other categories include extinct or extinct in the wild and they are listed under section 23 (1) of the BC Act (Appendix 1).

If species meet 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, they are covered under section 13(1) of the BC Act and are called specially protected species. Species that are listed as threatened species (critically endangered, endangered or vulnerable) or extinct species under the BC Act can't also be listed as Specially Protected species (see Appendix 1 for a more detailed description of each threat category).

Threatened Ecological Communities (TECs) are also covered under the BC Act and are placed into three categories of critically endangered, endangered or vulnerable under section 27(1a, 1b, and 1c) of the BC Act depending on their threat status.

DBCA Priority Species and Communities

DBCA lists species that are possibly threatened but that do not meet criteria for listing under the BC Act, or are otherwise data deficient, and adds them 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. Consideration 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 (see Appendix 1 for more detail of the priority codes).

The DBCA also has a list of Priority Ecological Communities (PECs) that have scant information available to be considered a TEC, or which are rare but not currently threatened. Ecological communities that do not meet survey criteria or that are not sufficiently defined are added to the PEC list under priorities 1, 2 and 3. These three categories are ranked in order of priority for survey and/or definition of the community, and evaluation of conservation status, so that consideration can be given to their declaration as a TEC. Ecological communities that are adequately known, and are rare but not threatened or meet criteria for near threatened, or that have been recently removed from the threatened list, are placed in priority 4. These ecological communities require regular monitoring. Conservation dependent ecological communities are placed in priority 5.

Informal Recognition of Threatened Fauna

Certain populations or communities of fauna may be of local significance or interest because of their patterns of distribution and abundance. For example, fauna may be locally significant because they are range extensions to the previously known distribution or are newly discovered species (and have the potential to be of conservation significance). In addition, many species are in decline as a result of threatening processes (land clearing, grazing, and changed fire regimes) and relict populations of such species assume local importance for DBCA. It is not uncommon for DBCA to make comment on these species of interest.

1.5 Environmental Setting

1.5.1 Climate

The survey area is located within the semi-arid zone. The closest meteorological recording station is at Cue (Bureau of Meteorology Station [BoM] 7017), 28 km to the south east, with a mean annual rainfall of 233 mm (rainfall records are from 1894 – 2020). Rainfall was below average in 2019 (126.6 mm), average for 2018 (236.3 mm) and below average in 2017 (136.6 mm). Rainfall recorded in 2020 up to the time of survey (3rd and 4th November) was 156.4 mm, 100.6 mm of which was recorded in January 2020. Falls have been below average for the remainder of the year with the exception of August, with 16.8 mm received (mean 16.7 mm) (Table 1, Figure 2).

No long-term temperature data is available from Cue, therefore Mount Magnet is the closest station for temperature records. Mean monthly minima and maxima temperatures recorded at Mount Magnet (BOM Station 7600; temperature records are from 1995 – 2020), 95 km south of the survey area, are presented in Table 2 and Figure 3.

Table 1: **Monthly rainfall totals (mm) recorded at Cue.**

Statistic	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Mean	27.9	29.3	24.3	18.8	24.1	27.9	25	16.7	6.6	6.5	9.4	15	233
2017	27.1	59.4	4.7	7.2	0	0.4	2.4	15	13	0	6.2	1.2	136.6
2018	29.2	27.9	16.2	2.5	4.1	24.9	16.6	13.9	2	10.9	88.1	0	236.3
2019	0	12	4.6	42.7	0	40.9	6.4	1.6	0	0	0	18.4	126.6
2020	100.6	18	7.8	0.4	0.6	1.3	6.2	16.8	0	3.2	1.5*		

* rainfall received up to the time of survey

Table 2: Mean monthly minimum and maximum temperatures recorded at Mount Magnet.

Statistic	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Mean Max	38	37	33.3	29	23.9	20	19.1	21.3	24.9	29.7	32.9	36
2020 Max	37.6	37.5	32.9	30.7	23.8	22.9	22.7	22	26.9	31.5		
2020 Min	22.4	24	20.5	18.1	9.7	9.2	7.3	9.8	12.1	15.9		
Mean Min	23.5	23.3	20.4	16.4	11.5	8.3	7.1	8.1	10.5	14.6	18.1	21.3

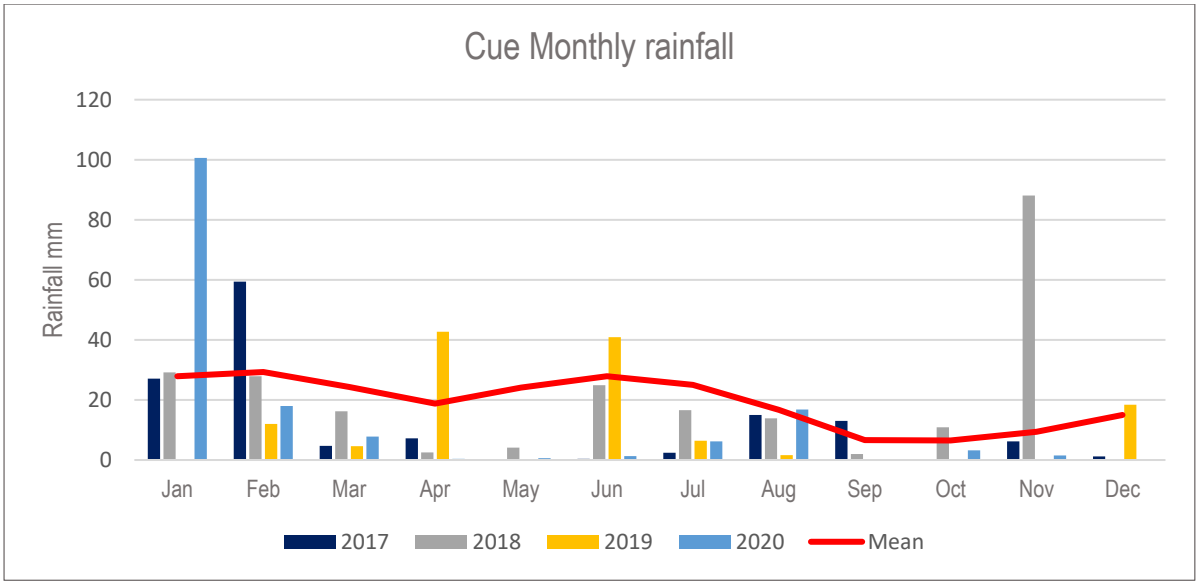


Figure 2: Monthly rainfall received at Cue with the long-term mean.

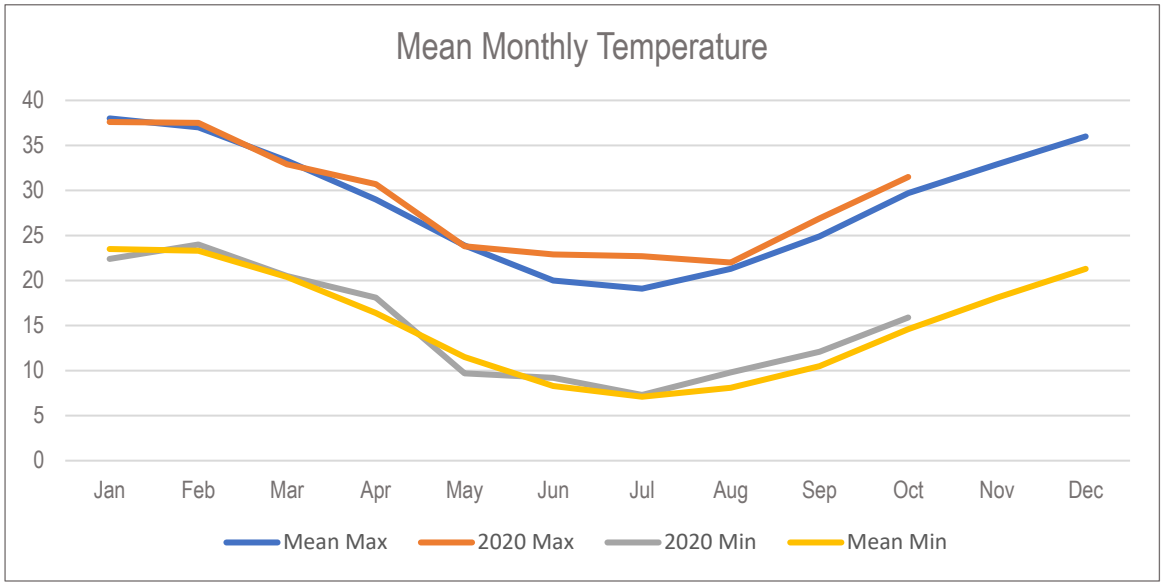


Figure 3: Mean monthly maximum and minimum temperatures recorded at Mount Magnet.

Temperatures recorded at Mount Magnet show a slightly cooler than average January, average February – March, followed by mainly above average minima and maxima from autumn to spring.

The drier and warmer conditions over most of the year have resulted in much of the vegetation being in a stressed condition, particularly on mid slopes and on the stony plains. Herbs and grasses were absent in much of the area. The area may have received some rainfall a few weeks prior to the survey as there were many small grass tussocks present (1 – 2cm high; resprouts from grazed tussocks) near depressions on the plains. Most of these had no reproductive structures present so were difficult to identify. Pools of water were present at a few locations on the plain in deeper creek channels.

Fruiting structures were present on some of the *Eremophila* species which assisted with identification. Immature buds were noted on *Eremophila exilifolia*. The *Acacia aneura* group (Mulga) were identified based on phyllode and habit characteristics. Some plants had new growth which is useful in identification. *Acacia synchronicia* was in bud.

1.5.2 Geology

The survey area is located on the eastern slopes of a low greenstone hill, on outwash colluvium and surrounding plain. A map of the geology of the survey area was provided by Westgold (Figure 4) prior to the survey. The site is underlain by a greenstone belt, felsic schist and Monzogranite with colluvium and sheetwash present on the slopes and surrounding plains. The presence of metabasalt and amphibolite indicated that some priority species including *Acacia speckii (*P4), *Dodonaea amplisemina* (P4) and *Grevillea inconspicua* (P4) recorded on basalts in previous surveys at Weld Range (28 km NW) (Borger 2019, 2020; Markey and Dillon 2008) and the Big Bell Mine (~ 7km south of the survey area) (Maia 2017) would be highly likely to occur at this location.

The vegetation patterns present on the aerial imagery appear to reflect the underlying geology quite clearly, and the basaltic areas on rocky hills were targeted during the survey to search for conservation significant flora. Numerous small quartz outcrops were present within the survey area, south of the Berringarra-Cue Road. Small outcrops of metabasalt and schists were present on the slopes.

1.5.3 Land systems

The survey area is located within three land systems described and mapped from surveys undertaken by the Department of Agriculture in the Sandstone – Yalgoo area and are summarised in Table 3 and mapped in Figure 5 (Payne *et al* 1998).

Table 3: Land systems mapped for the survey area.

Condition recorded during the 1992 – 93 surveys shows there were significant levels of impacts from pastoral activities. No excellent or very good condition ratings were recorded within any of the land systems mapped for the site.

Land System	Description	Survey Area (ha)	Extent (ha)
Gabanintha (Gab)	Ridges, hills and footslopes of various metamorphosed volcanic rocks (greenstones), supporting sparse *Acacia umbraculiformis* or *A. aneura* group and other mainly non-halophytic shrublands; mapped as occurring on the western side of the survey area Condition 1992/3: Good (32%), fair (54%)	32.954	1,145,000
Violet (Vio)	Gently undulating stony and gravelly plains on greenstone, laterite and hardpan, with low stony rises and minor saline plains; supporting groved mulga and bowgada shrublands and patchy halophytic shrublands Condition 1992/3: Good (37%), fair (29 %), poor (27 %)	229.344	882,000
Yanganoo (Yng)	Almost flat hardpan plains and sandy tracts, with or without small wanderrie banks and weak groving; supporting mulga shrublands and wanderrie grasses on banks, mapped as occurring on the northern section of the survey area Condition 1992/3: Good (29%), fair (28%), poor (37%)	101.547	3,276,000

1.5.4 Vegetation

The survey area is in the semi-arid Eremaean Botanical Province, within the Murchison Interim Biogeographic Regionalisation for Australia (IBRA) Region and Eastern Murchison IBRA subregion MUR02. The boundary of the MUR01 (Western Murchison) sub-IBRA region is located 12 km west of the survey area. IBRA mapping is based on the original work of Thackway and Cresswell (1995). The latest version is IBRA7 published in 2017 (Department of the Environment and Energy [DEE]).

The survey area (Approximately 364 ha) is mapped as one vegetation association under Beard's pre-European mapping (DAFWA 2012) – BVA Willuna-18 - Low woodland; mulga (*Acacia aneura*), with BVA 2081 - Shrublands; bowgada and associated species scrub occurring west of the survey area. The pre-European mapping is presented in Figure 6. BVA Willuna-18 has a recorded extent of 4,307,945 ha of which 4,290,204 ha (99.59 %) remains. 45,030 ha are protected within conservation estate (1.05 %) (DBCA Vegetation Statistics Statewide 2019).

1.5.5 Conservation significant flora

A desktop survey was undertaken prior to the field survey from which fifty-nine taxa were recorded within 50 km (FloraBase, NatureMap [DBCA2020] and DBCA threatened flora database search 06-1120FL). These are presented in Table 4, with a description of habitat, and potential to occur within the survey area. Mapped locations of conservation significant flora (CSF) previously recorded, within 25 km of the survey area are presented in Figure 7 (DBCA 2020). Two threatened species (T) are listed and further described (Table 5). Other reports are listed in Table 6. A description of conservation codes is presented in Appendix 1. The potential of each species to occur in the survey area is based on the following criteria:

- Likely:
  - Nearby or previous record at site
  - Suitable landform / geology
- Unlikely:
  - No suitable mapped habitat, but occurs in broader local area
  - Annual: wrong time of year
  - Habitat is seasonal wetland; conditions not suitable

Table 4: Conservation significant flora recorded within 50 km (sourced from FloraBase, NatureMap and DBCA database search 2020).

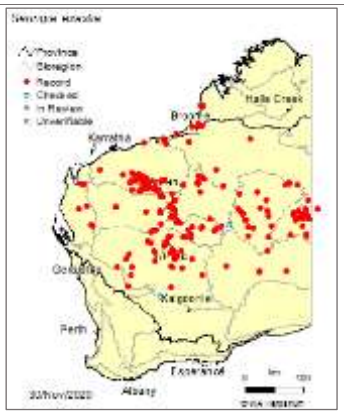
Scientific Name	DBCA Priority Code	Habitat	Likely to occur *
Acacia burrowsiana	3	Red-brown loams with ironstone rubble on surface, calcrete soils, laterite, quartz. Flats adjacent to watercourses, crests of low rises, breakaways.	Yes
Acacia dilloniorum	1	Red clay-loam or red-brown silty clay-loam on the middle and upper slopes and crests of low ranges mostly associated with outcropping basalt, but some plants occur on Banded Iron Formation.	Yes
Acacia lapidosa	1	Skeletal soils on rocky hills and plains in open Acacia-dominated shrubland.	Yes
Acacia sclerosperma subsp. *glaucescens*	3	Sand, sandy loam, stony soils.	Yes
Acacia speckii	4	Rocky soils over granite, basalt or dolerite. Rocky hills or rises.	Yes
Acacia subsessilis	3	Red sand or stony gravel over ironstone. Rocky hills.	Yes
Alyxia tetanifolia	3	Sandy clay, loam, concretionary gravel. Drainage lines, near lakes.	Unlikely
Angianthus microcephalus	2	Herb; Sandy or clayey soils. Salt swamps & pans.	No
Angianthus uniflorus	1	Herb; Margin of calcrete rise near gypseous salt lake.	No
Atriplex lindleyi subsp. *conduplicata*	3	Crabhole plains.	Possible
Bergia auriculata	2	Clay soils. Mud flats.	Possible
Calotis sp. Perrinvale Station (R.J. Cranfield 7096)	1	Banded Ironstone Formation	No
Calytrix verruculosa	3	Shallow rocky soils of hills and plains, creeks	Yes
Dicrastylis sp. Cue (A.A. Mitchell 764)	1	Drainage area, near granite	Unlikely
Dodonaea amplisemina	4	rocky hills in red-brown sandy clay on basalt and gabbro, on banded ironstone or on dolerite and quartzite	Yes
Drosera eremaea	1	Herb;	
Drummondita miniata	3	Laterite. Breakaways.	Unlikely
Eremophila fasciata	3	Summit and rocky slopes of hills	Unlikely
Eremophila glabra subsp. Lake Austin (P.J. Curry & P. Hennig 367)	1	Surrounds of Lake Austin	Unlikely
Eremophila muelleriana	3	Red brown clayey-sand in Mulga shrubland	Possible
Eremophila obliquisepala	3	mulga shrubland on ridges and hard pan plains	Yes
Eremophila rostrata subsp. *rostrata*	T	Saline quartzite loams. Hills and flats	No
Eremophila shonae subsp. *diffusa*	3	mulga woodland or open shrub on stony or shaly red brown clay loams	Yes
Eremophila simulans subsp. *megacalyx*	3	Rocky and sandy-clay soils with Acacia aneura and Eremophila species	Possible
Euryomyrtus recurva	3	Yellow/red sand, brown/yellow sandy clay; Gravel pits, catchment slopes.	Unlikely
Frankenia confusa	4	Wet pale brown sand, brown clay, grey soil. Banks of rivers & waterholes, river floodplains.	Possible
Goodenia berringbinensis	4	Herb; Red sandy loam. Along watercourses.	Possible
Grevillea inconspicua	4	Drainage lines, on rocky outcrops, creeklines; often associated with basalt	Yes
Hemigenia exilis	4	Laterite. Breakaways, slopes.	Unlikely
Hemigenia tysonii	3	red sand, sandy clay, and lateritic sand on flats, sand dunes and hills	Possible

Scientific Name	DBCA Priority Code	Habitat	Likely to occur *
Hemigenia virescens	3	red sands and laterite	Possible
Hibiscus krichauffianus	3	Red sandy soils.	Yes
Hibiscus sp. Nookawarra Station (S.J.J. Davies s.n. 1/3/1960)	1		
Homalocalyx echinulatus	3	Laterite, breakaways and sandstone hills	Unlikely
Jacksonia lanicarpa	1	Red sand	Unlikely
Lepidium scandens	3	Herb; Red sand, clay.	Possible
Maireana prosthecochaeta	3	Shrubland dominated by *Acacia* and *Eremophila* in brown to red sands, or rocky to gravelly soils, on plains or rocky hills	Yes
Micromyrtus placoides	3	Rocky hillslopes and footslopes; common on schist at Weld Range	Possible
Millotia depauperata	1	Herb; granite outcrops	No
Minuria tridens	1	Roadsides (dolomite, limestone and calcrete impregnated sandstone hills, rises and ranges Northern Territory habitat description)	Unlikely
Petrophile pauciflora	3	Decaying & dissected granite breakaways.	No
Petrophile vana	1	shallow, white, gritty clay-soil pockets, laterite. Breakaways.	No
Phyllanthus baeckeoides	3	Red lateritic & sandy clay soils. Granite outcrops.	No
Prostanthera ferricola	3	Sparse *Acacia aneura* shrublands on gently inclined upper slopes and crests of laterite, basalt and banded ironstone formations. It is occasionally found in gullies or on quartz.	Possible
Prostanthera petrophila	3	Banded ironstone formation; lateritic soils	No
Psammomoya grandiflora	2	Red loam, sand, jasperlite. Sandplains, rocky country.	Possible
Ptilotus beardii	3	Clayey soils, saline flats and low breakaways	Possible
Ptilotus lazaridis	3	Clay loam; floodplains	Possible
Ptilotus luteolus	3	Red sandy soils, stony hills and screes	Yes
Ptilotus sp. Cue (P. Armstrong PA 16/362)	1		Possible
Sauropus sp. Woolgorong (M. Officer s.n. 10/8/94)	3	Typically on red sand plains, but also on moderately rocky hill crests and slopes	Yes
Seringia exastia	T	(Keraudrenia exastia) Relict desert dune swale in red sand (pindan). The current distribution on FloraBase shows it is widely distributed and probably common	Possible
Sida picklesiana	3	BIF and granite breakaways, stony plains and near creeklines	Possible
Stenanthemum mediale	1	red clayey sand, minor gully, mid and upper slopes of banded ironstone.	No
Stenanthemum patens	1	Rocky hillsides.	Yes
Tecticornia cymbiformis	3	Saline soils, along edges of creeklines	No
Tecticornia fimbriata	3	Margins of salt and gypsum lakes	No
Verticordia jamiesonii	3	Sandy clay soils on lateritic breakaways	No
Wurmbea murchisoniana	4	Herb; Seasonally inundated clay hollows, rock pools; clay, sandy clay, loam	Yes

*

- Yes: suitable habitat; nearby records
- Possible: potentially suitable habitat; recorded in broader areas
- Unlikely: suitable habitat not likely to be present
- No: no suitable habitat; no records nearby or in broader areas

Table 5: Notes on Threatened flora recorded within the region.

Seringia exastia (T: Threatened under the EPBC and BC Acts) - A molecular study of the group suggested that *S. elliptica* was conspecific with *S. exastia* and because the latter is the older name, all specimens previously assigned to *S. elliptica* have been transferred to *S. exastia*. The species is no longer considered threatened; however, the status has not been updated.	 Current distribution of *Seringia exastia*	 *Seringia exastia*
Eremophila rostrata subsp. *rostrata* (T: Threatened under the EPBC and BC Acts) This species has a very restricted range and occurs near Cue. Plants were viewed prior to the survey. Due to timing and climatic conditions the shrubs were not in flower, however images were taken of the leaves and habit to assist with identifying any potential plants within the survey area. They are present on stony buff coloured saline clays near the base of quartzite hills. No habitat of this description was present within the survey area.		 *Eremophila rostrata* foliage

1.6 Summary of Previous Surveys

There have been seven relatively recent botanical surveys undertaken within 50km of the survey area**.** The CSF recorded in these seven reports (Maia [2017 and 2019], Outback Ecology [2012], JBBC [2019 and 2020], Ecologia [2020] and Markey and Dillon [2008]) is summarised below (see Table 6). These previous surveys provide context and on ground observations of CSF in the vicinity of the survey area.

Table 6: Desktop survey – summary of previous surveys.

Botanical Surveys within 50 km	
Maia Environmental Consultancy 2017	Big Bell Haul Road (Tenements L20/76 & L20/77) Level 1 Reconnaissance and Targeted Flora Survey, November 2017. Priority flora recorded: • *Hibiscus krichauffianus* • *Prostanthera ferricola* • *Ptilotus beardii* • *Ptilotus luteolus* • *Sauropus* sp. Woolgorong • *Acacia speckii* • *Dodonaea amplisemina* • *Grevillea inconspicua*
Outback Ecology Services Westgold Resources 2012 Limited: Central Murchison Gold Project	Level 1 Vegetation, Flora and Fauna Assessment – Big Bell, City of Chester, Cuddingwarra Main, Day Dawn Priority flora recorded: No conservation significant flora were recorded

Jenny Borger Botanical Consulting (JBBC) 2020 Weld Range - Sinosteel Midwest Corporation Ltd	Targeted flora survey of proposed exploration disturbance to support Programs of Work applications PoW Reg. ID 84789, 64035 & 79321 Priority flora recorded: • *Acacia dilloniorum* P1 • *Stenanthemum patens* P1 • *Prostanthera ferricola* P3 • *Tribulus adelacanthus* P3 • *Acacia speckii* P4 • *Dodonaea amplisemina* P4 • *Grevillea inconspicua* P4
Ecologia Environment 2020 For Fenix (Iron Ridge Project) Weld Range	Targeted survey for *Micromyrtus placoides* P3 (JBBC sub-contracted to Ecologia Environment) • *Micromyrtus placoides* P3
JBBC 2019 Weld Range - Sinosteel Midwest Corporation Ltd	Targeted flora survey of proposed exploration disturbance to support Programs of Work applications Priority flora recorded • *Acacia dilloniorum* P1 • *Stenanthemum mediale* P1 • *Stenanthemum patens* P1 • *Eremophila obliquisepala* P3 • *Hemigenia virescens* P3 • *Dodonaea amplisemina* P4
Maia Environmental Consultancy 2019 Westgold Resources Limited	Crème d'Or, Racecourse and Mt Fingall Project Areas Reconnaissance and Targeted Flora Survey, September 2019 Priority species recorded: • *Dodonaea amplisemina* P4
Markey and Dillon (2008) Department of Environment and Conservation	Flora and Vegetation of the banded ironstone formations of the Yilgarn Craton: Weld Range Priority flora recorded: • *Acacia dilloniorum* P1 • *Stenanthemum mediale* P1 • *Stenanthemum patens* P1 • *Phyllanthus baeckeoides* P3 • *Sauropus sp. Woolgorong* P3 • *Micromyrtus placoides* P3 • *Prostanthera ferricola* P3 • *Prostanthera petrophila* P3 • *Dodonaea amplisemina P4* • *Acacia speckii* P4

1.7 Threatened and priority ecological communities

No threatened ecological communities (TEC) or priority ecological communities (PEC) are mapped as occurring within the survey area. Three PEC's are located in the broader area – 1) Priority 1 Lake Austin calcrete groundwater assemblage type on Murchison palaeodrainage on Austin Downs Station (16 km SSE); 2) Priority 1 Taincrow calcrete groundwater assemblage type on Murchison palaeodrainage on Taincrow Station (10 km SE), and 3) Priority 1 Weld Range vegetation complexes (banded ironstone formation) (26 km NW). No landforms supporting calcrete groundwater assemblages (1 & 2) are present within the survey area. There is potential for vegetation communities which may be representative of the Weld Range PEC to be present and vegetation descriptions from this survey will be compared with the six community types described by Markey and Dillon (2008) from the Flora and Vegetation of the banded ironstone formations of the Yilgarn Craton: Weld Range survey.

1.8 Disturbance history

The dominant land use within the Murchison Bioregion is grazing of sheep and cattle on native pastures, and also mining . Many pastoral leases were established towards the end of the 19th century. The survey area is located within Coodardy Station, with Austin Downs to the east. Gold prospecting and mining also started in the region in the late 1800's. Vegetation clearing has occurred over more than century to support mining and pastoral activities and to harvest sandalwood (*Santalum spicatum*). Continual impacts on the environment through grazing, clearing, trampling, changes to fire regimes and the introduction of weeds, has resulted in loss of structure and species, loss of seed banks and erosion. Erosion can be exhibited through the accumulation of wind-blown soil around plant bases (hummocking), breaking of the surface crust with erosion faces, pedestalling with plant bases elevated above the surrounding land surface, rilling and gullying, and erosion of creek banks and deposition of sediments in other areas. Examples of most of these processes and features were noted in several locations within the survey area and used to determine the condition of the vegetation and surrounding area. The levels of disturbance influenced the vegetation mapping of the site, where, due to likely loss of species and structure, vegetation which may have been significantly different prior to European impacts now support very similar vegetation on different substrates, with dominant species being those which are least palatable to stock.

2 Methods

2.1 Requirements for Flora, Vegetation and Fauna Surveys

The flora, vegetation and fauna survey was completed in accordance with the following Environmental Protection Authority (EPA) and DAWE requirements for the environmental surveying and reporting of fauna surveys in WA, where relevant and practical, and as documented in:

- EPA Statement of Environmental Principles, Factors and Objectives (EPA 2018)
- EPA Technical Guidance: Terrestrial Flora and Vegetation Surveys for Environmental Impact Assessment (EPA 2016).
- EPA Technical Guidance: Terrestrial Vertebrate Fauna Surveys for Environmental Impact Assessment (EPA 2020)
- Survey Guidelines for Australia's Threatened Birds. EPBC Act survey guidelines 6.2 (2010) (DSEWPaC)
- Survey Guidelines for Australia's Threatened Mammals. EPBC Act survey guidelines 6.5 (2011) (DSEWPaC)
- Survey Guidelines for Australia's Threatened Reptiles. EPBC Act survey guidelines 6.6 (2011) (DSEWPaC)
- Interim Guideline for preliminary surveys of Night Parrot (*Pezoporus occidentalis*) in Western Australia (WA Department of Parks and Wildlife [DPaW] 2017).
- National Recovery Plan for Malleefowl *Leipoa ocellata* Department for Environment and Heritage (J. Benshemesh 2007).

2.2 Flora and Vegetation Desktop Assessment

Familiarisation of the survey area through geology, aerial imagery, land system, pre-European vegetation mapping, and database searches for CSF was undertaken prior to the survey. Through this assessment, potential conservation significant flora and communities, which may occur in the area were identified, as well as a range of habitat types (Sections 1.5 and 1.6).

2.3 Flora and Vegetation Field Survey

Westgold requested a reconnaissance flora and vegetation survey of the area. A reconnaissance survey is undertaken to provide context and gather broad information about a survey area. The reconnaissance survey should clarify whether the area may support any significant flora or vegetation. If significant flora or vegetation is located or considered likely to be present during a reconnaissance survey, a targeted or detailed survey may be required (EPA 2018).

The vegetation and flora survey was conducted over two days (3rd and 4th November) by one botanist. A range of habitats were identified from the desktop study including the presence of basaltic landforms which were likely to support a range of CSF. Due to time constraints and the level of survey requested, the basaltic landforms were targeted for a more intense survey, and representative sites chosen in other areas. The final locations of relevés were chosen in the field. The following parameters were recorded at relevé sites:

- GPS location (GDA94)
- Landform, soil type, surface rock type and cover
- Photograph
- Vegetation description – dominant species in each stratum, percentage cover and height
- Condition
- Disturbance/s

The locations and number of conservation significant flora were recorded by GPS. Where CSF were located near the boundary, those which were just outside were also recorded. Opportunistic sites were also recorded where there were other species present which were not present at the relevé sites. Most of the quartz outcrops were small and were recorded as an opportunistic site.

Vegetation condition rating is based on the descriptions for Eremaea Botanical Provinces in the EPA Technical Guidance – flora and vegetation surveys for Environmental Impact Assessment (Table 7). The condition ratings of poor and degraded were treated as one description (degraded) during the survey.

Table 7: Vegetation Condition Scale (EPA 2016).

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

Flora were identified in the field or collected and/ or photographed for confirmation from taxonomic keys and comparison against specimens at the WA Herbarium.

2.4 Fauna Desktop Assessment

Searches of the DBCA Threatened Fauna Database, NatureMap and the EPBC Protected Matters Search Tool (EPBC PMST) were undertaken to identify fauna species of conservation significance potentially occurring in the survey area (DBCA 2020b, DBCA 2020c, DAWE 2020) (Appendix 4). These searches were centred on the following co-ordinates:

- 27° 12' 16.51" S and 117° 43' 30.40" E

The DBCA Threatened Fauna Database and EPBC PMST both has a search radius of 50 km applied and NatureMap had a 40 km radius applied (maximum possible).

2.5 Fauna Field Survey

A basic (level 1) field survey was undertaken over two days (excluding travel) on 3rd and 4th November 2020 by one qualified Zoologist (Laura Stevens). As per the scope and proposal, the field survey consisted of habitat assessments, opportunistic fauna observations, searches and a targeted assessment of potential Malleefowl and Night Parrot habitat, in order to define the fauna values of the survey area.

2.5.1 Habitat Assessment

Habitat assessments were undertaken throughout the survey area. The fauna habitats were assessed for their potential to support species of conservation significance and the quality of habitat they provide to a wider suite of fauna. Fauna habitat assessments were undertaken to define and delineate the main broad fauna habitat types present. The habitat assessments were documented systematically for each habitat type on standardised field sheets. The habitat assessments consisted of the following:

- location of the broad habitat type within the survey area (GPS co-ordinate) and its relative percentage
- habitat condition was assessed at each assessment site as 'completely degraded' through to 'pristine', based on the scale given in Keighery (1994)
- landscape position
- dominant vegetation and structure (e.g., number of vegetation strata)
- hollow-bearing trees and dead stags (e.g., average size and abundance of hollows)
- description of any rock and rocky outcrops
- logs (e.g., abundance and size)
- substrate (e.g., leaf litter)
- wetlands, creeks, rivers, dams and other water bodies
- description of any observed nests and roosts (if present)
- subterranean roosts (e.g., caves, disused mineshafts and/or adits)
- associated fauna species observed using the habitat
- disturbance (e.g., cattle grazing, fire)
- photo showing a typical example of the broad habitat type.

Using the above information, fauna habitat in the survey area was mapped. As per the scope, fauna habitat with a 5 km buffer around the survey area (referred to as the study area) was requested. The study area fauna habitat was mapped at a broader scale, utilising the mapping from the fauna survey and also regional data.

2.5.2 Opportunistic Searches

Fauna were recorded opportunistically during the survey. The survey included looking through leaf litter, overturning rocks, and looking under decorticating bark (where present). Other recordings included visual sightings of active fauna such as reptiles and birds, signs of species presence such as burrows and scats of mammals and reptiles, and aural observations of amphibian (unlikely in this survey area) and bird species. Observation (visual or heard) of species considered of conservation significance were recorded by means of a hand-held GPS if present.

2.5.3 Conservation Significant Fauna Assessment

Two species of conservation significance were considered during the fauna field survey:

Malleefowl (*Leipoa ocellata)*

Areas with suitable habitat were assessed for evidence of Malleefowl activity, recorded as:

- Malleefowl tracks
- Malleefowl nesting mounds including status (inactive/ active) and activity according to the following criteria:
  - Nest in preparation – eggs not laid (evidence of litter trail)
  - Mound is in progress/ maintenance – eggs assumed to be laid
  - Evidence of chicks leaving nest – chicks fledging site / shell fragments
  - Decommissioned – spreading and returning of mound soil
- Malleefowl individual sightings and assessment of age (chick/ adult)
- Opportunistic observations of Malleefowl evidence (tracks, mounds and or individual sightings) within the survey area.

Night Parrot *(Pezoporus occidentalis)*

DBCA recommends that Night Parrot surveys should be undertaken if there is suitable Night Parrot habitat present in an area proposed to be disturbed. The survey area is close to the boundary that the DBCA considers a medium to high priority area for the species (DPaW 2017). However, based on our experience in the local region, it was highly unlikely that Night Parrot habitat (areas of old and unburnt spinifex) would occur in the survey area.

When traversing the survey area and undertaking habitat assessments suitable habitat in the way of old and unburnt spinifex was looked for and assessed if present.

2.5.4 Taxonomy

For species identified in the desktop assessment, where there is doubt to their true taxonomy (through subsequent name changes or taxonomic reviews), an effort was made to determine the current scientific name for each taxon. In some cases, old scientific names were presented where correct nomenclature could not be determined due to name changes. Some taxon names may be followed by 'sp.', meaning that the species name was not given in the data source or the identification is in doubt. Where there are previously recorded taxa such as this that have the potential to be a conservation significant species, they are discussed specifically in the results and discussion sections.

Taxonomy and nomenclature in this report follows the accepted listing of published terrestrial vertebrate species, primarily the West Australian (WA) Museum (2020). In addition, the following are also considered; the listing for amphibians and reptiles is consistent with Wilson & Swan (2017) and (to a lesser extent) Cogger (2014); bird listings are consistent with Christidis & Boles (2008) and mammal listings are consistent with Woinarski *et. al*. (2014).

3 Results

3.1 Survey Limitations

Survey constraints are often difficult to predict, as is the extent to which they influence survey effort. Survey limitations and constraints of the flora and fauna survey are outlined below in Table 8.

Table 8: Limitations and constraints associated with the survey.

Variable	Impact on Survey Outcome
Availability of contextual information at a local and regional scale	Information on a regional scale was readily available through Land Systems Mapping and supporting Technical Bulletin No. 90 (DAWA 1998, DAFWA 2018) and Pre-European vegetation mapping (DAFWA 2018). Local information was sourced from vegetation and flora surveys undertaken at nearby mine sites, including Big Bell which is located 7 km south of the survey area (Maia 2019, OEC 2012) and Weld Range (28 km west) (Borger 2019, 2020; Markey and Dillon 2008). Searches of DBCA Threatened and Priority flora and Threatened fauna were undertaken, as well as DBCA NatureMap search and EPBC PMST
Access	The survey area was accessible and traversed by vehicle and foot.
Experience	The personnel who undertook the survey were practitioners suitably qualified in their respective fields with relevant experience as specified by: • EPA Technical Guidance: Terrestrial Flora and Vegetation Surveys for Environmental Impact Assessment (EPA 2016). • EPA Technical Guidance: Terrestrial Vertebrate Fauna Surveys for Environmental Impact Assessment (EPA 2020). The personnel were as follows: • Jenny Borger (Principal Botanist) • Laura Stevens (Principal Zoologist).
Timing, weather, season	**Flora and Vegetation Survey** The survey was conducted towards the end of spring (November 3rd/ 4th) following a very dry autumn, winter and spring. The only significant rainfall occurred in January 2020. Maximum and minimum temperatures were also warmer than usual during winter and spring, which, when combined with below average rainfall, has resulted in vegetation in a very stressed condition, as well as a lack of forbs and grasses. **Fauna Survey** The fauna survey was conducted as a Basic survey and therefore primarily about defining and describing habitats present, therefore timing, weather and season are not deemed a prime consideration. The fauna survey was undertaken over two days (excluding travel) on 3rd and 4th November 2020. There were therefore no limitations to the fauna survey due to timing, weather or season.
Scope	The SoW to be undertaken was as follows: • Reconnaissance Flora and Vegetation Survey • Basic (formerly Level 1) Fauna Survey

Proportion of flora recorded and/or collected; identification issues	Most vascular flora was identified in the field or was collected/ photographed for later identification and confirmation. Assistance was asked for confirmation on some *Eremophila* species from Dr. Andrew Brown *(Eremophila* specialist; ex-WA Herbarium research scientist), and confirmation of the *Sauropus* sp. Woolgorong (M. Officer s.n. 10/8/94) by Michael Hislop at the WA Herbarium (Identification Botanist). These plants were present mostly as recently sprouted new shoots. Some older material was found with dried sepals. No specimens have been lodged with the WA Herbarium due to poor condition of material and the number of collections from the area already at the herbarium. There were some identification issues due to lack of reproductive structures due to a combination of climatic conditions, time of year and grazing impacts. Most grasses were heavily grazed, and present as small tussocks, with some plants with new shoots 1 – 2 cm long. *Cymbopogon ambiguus* was present as fully grown tussocks with old fruiting stalks, mainly in drainage lines and within some quartz rock outcrops. *C. ambiguus* has a lower palatability than most other grasses in the area. Very few forbs were present, with large areas of the survey area having no groundcover species present.
Completeness	**Flora Survey:** A flora and vegetation reconnaissance survey and partial targeted flora survey was conducted over the Survey Area by one botanist over two days in November 2020. Approximately 40 % of the area was covered which is very good for a reconnaissance survey. Plants of known and suspected conservation significance were counted and their locations recorded by GPS. There is potential for more *Sauropus* sp. Woolgorong to be present which may have sprouted after the survey or were missed due to areas of drainage line not covered. **Fauna Survey:** A Basic fauna survey was conducted over the survey area by one Zoologist over two days in November 2020. • 22 habitat assessment were undertaken • Approximately 364 ha was assessed for fauna habitat • 43 fauna species were recorded in the survey area • No conservation significant fauna were recorded during the survey
Disturbance	The site has been subjected to multiple disturbances over many decades. It is likely that some species are absent from the area due mainly to pastoral impacts and feral grazing.

3.2 Flora Results

3.2.1 Summary

A total of sixty-nine vascular taxa from eighteen families and thirty-two genera were recorded within the survey area (Appendix 2). The best represented families were Fabaceae (19 taxa including 11 *Acacia* and 6 *Senna*); Chenopodiaceae (12 species from 7 genera); and Scrophulariaceae (9 *Eremophila* species). Much of the area had moderate to high level of impacts from pastoral activities, as well as the effects of the long dry period. Vegetation condition was mapped for the survey area (Figure 10). Most of the survey area was in a degraded to good condition. Historic mining activities have also been undertaken in the area which has resulted in some clearing and disturbance to the land surface. Recent rainfall has resulted in a few of the *Eremophila* species coming into bud, *Acacia synchronicia* in bud, resprouting grasses and small dense patches of liverworts along creek banks. These areas were still wet. *Sauropus* sp. Woolgorong P3 was recorded mainly within the drainage lines and often occurred as new sprouts from old rootstock up to 30 cm high. It is possible that more may sprout in the weeks following the survey. No weeds were recorded in the area.

3.2.2 Conservation Significant Flora

Three conservation significant taxa were recorded during the field survey – *Dodonaea amplisemina* P4, *Acacia speckii* P4, and *Sauropus* sp. Woolgorong P3. Sandalwood (*Santalum spicatum*), a registered species, were present within the drainage lines on mid slopes (Tables 9 & 10). The GPS locations of CSF recorded during in the survey area are presented in Appendix 2 and mapped in Figure 8. Most occurrences of *Dodonaea amplisemina* and *Acacia speckii* were close to the south western boundaries, with a continuation of populations outside of the area.

Table 9: Conservation significant flora counts.

Scientific Name	No. within survey area	No. outside survey area
Acacia speckii P4	6	1
Dodonaea amplisemina P4	4	48
Sauropus sp. Woolgorong P3	10	1
Santalum spicatum R	8	1

3.2.3 Vegetation Types

Nine vegetation types were described from the field results, based on structural and floristic results and are described in Table 11. Vegetation mapping for the survey area is presented in Figure 9. Relevé descriptions and observation sites are presented in Appendix 3, and locations presented in Figure 9.

Table 10: Conservation significant flora recorded in the survey area

Species description and habitat		
Acacia speckii P4 Fabaceae Bushy shrub or tree to 3 m tall; branchlets grey, terete and smooth; phyllodes erect to shallowly incurved; often bent at the gland; terete; mostly 8 – 12 cm long; 1 – 1.5 mm diameter; +/- pungent; rigid with 8 distinct nerves; recorded on rocky soils over granite, basalt or dolerite on rocky hills or rises Survey area: Recorded on metabasalt, on low ridges, drainage line and stony rises (likely over basalt) VT5, 7	 Acacia speckii healthy shrub in a drainage line	 A. speckii growing on shallow soils with outcropping metabasalt was becoming senescent.
Dodonaea amplisemina P4 Sapindaceae Dioecious multi-stemmed spreading low shrubs to 1 m high. Recorded form red-brown sandy clay on basalt and gabbro and banded ironstone or on dolerite and quartzite. Rocky hills. Survey area: Recorded mostly associated with metabasalt, and on quartz outcrops on midslopes; becoming more common upslope and south of the survey area. Most plants were in poor condition with much foliage loss due to dry conditions. VT5, 6		

Sauropus sp. Woolgorong (M. Officer s.n. 10/8/94) P3 Phyllanthaceae Shrub, 0.3-1 m high. Fl. yellow, Jun. Survey area: Recorded mostly in creeklines/ depressions on the plain, but also at one quartz outcrop on the plain. VT2, 7		

Table 11: Vegetation type (VT) descriptions

VT	Description		Image
1 77.686 ha	Land surface and landform Floodplain; yellowish red sandy clay loam or washed sand over red hard pan clay loam; surface rock < 1 %	Condition Mostly degraded – moderate to high levels of impact, clearing, grazing, erosion, pedestalling Relevés R28, 30, 32	
	Vegetation description *Acacia aptaneura, A. pruinocarpa* isolated low trees over *Eremophila galeata, E. forrestii* subsp. *forrestii, Acacia craspedocarpa, Ptilotus obovata* low isolated to sparse shrubland	Associated species Other species: *Eremophila latrobei subsp. latrobei, E. macmillaniana, Acacia tetragonophylla, Maireana sp., Solanum lasiophyllum, Rhagodia drummondii, Senna artemisioides subsp. helmsii, Ptilotus rotundifolius*	
2 84.438 ha	Land surface and landform Plain 5YR5/8 yellowish red sandy clay loam; surface rock < 1%; low sand dune formations in some areas	Condition Good to very good; some hummocking Relevés R29, 31, 33	
	Vegetation description *Acacia pruinocarpa* emergent trees over *Acacia fuscaneura, A. caesaneura* open woodland/ tall open shrubland over *Eremophila forrestii* subsp. *forrestii, Acacia tetragonophylla, A. ramulosa* var. *ramulosa, A. craspedocarpa, A. fuscaneura* open shrubland over *Ptilotus obovatus* low sparse shrubland	Associated species Other species: *Acacia tetragonophylla, Eremophila galeata, A. ramulosa var. ramulosa, Hibiscus burtonii* (tent; recent germination/ resprout), *Senna artemisioides* subsp. *helmsii, Eremophila latrobei* subsp. *latrobei, Rhagodia drummondii, Dianella revoluta* var. *divaricata, Sauropus* sp. Woolgorong P3, *Senna* sp. Meekatharra, *Monachather paradoxus*	

VT	Description		Image
3 78.031 ha	Land surface and landform Stony plains and low rises	Condition Mostly degraded; high levels of pastoral impacts; several deaths (dry conditions/ old plants); very low recruitment Relevés R6, 8, 15, 20, 23, 26	
	Vegetation description *Acacia aptaneura* or *A. pteraneura* very isolated tall shrubs over *Ptilotus rotundifolius, Eremophila galeata, Ptilotus rotundifolius, Eremophila macmillaniana* sparse to isolated shrubs over *Ptilotus obovatus, Maireana triptera* low sparse shrubland	Associated species *Acacia craspedocarpa, A. fuscaneura, Senna artemisioides* subsp. *helmsii, Senna* sp. Meekatharra, *Senna artemisioides* subsp. *oligophylla, Solanum lasiophyllum, Eremophila glutinosa* (R6), *E. exilis* (R6)	
4 39.299 ha	Land surface and landform low stony rises/ outwash slopes; colluvium	Condition Degraded to good – historic mining and pastoral impacts Relevés R1, 13, 25	
	Vegetation description *Acacia aptaneura* or *A. pteraneura* low open woodland over *Eremophila macmillaniana, E. galeata, Senna* sp. Meekatharra isolated shrubs over *Maireana triptera, Ptilotus obovatus* low isolated shrubs over grass tussocks (grazed/ recent resprout) low isolated.	Associated species Other species: *Acacia pachycarpa, A. synchronicia, A. craspedocarpa, E. latrobei* subsp. *latrobei, Senna artemisioides* subsp. *helmsii, A. tetragonophylla, Senna glutinosa* subsp. *pruinosa, Senna artemisioides* subsp. x *artemisioides*	

VT	Description		Image
5 8.33 ha	Land surface and landform metabasalt ridges with outcrops	Condition Good; some impacts; old drill lines and clearing; pastoral Relevés R3, R4, R7, R10, R12	
	Vegetation description *Acacia aptaneura, Acacia synchronicia* tall shrubs over *Eremophila macmillaniana, A. tetragonophylla, E. glutinosa, Ptilotus rotundifolius, Acacia speckii, A. ramulosa* var. *ramulosa* open shrubland over *Dodonaea amplisemina, Maireana triptera* low open shrubland	Associated species *Eremophila exilis, E. galeata, E. latrobei* subsp. *latrobei, Sida calyxhymenia, Indigofera monophylla, Psydrax latifolia, Santalum spicatum, Ptilotus obovatus, Senna artemisioides* subsp. *helmsii, Senna artemisioides* x subsp. *artemisioides*	
6 0.334 ha	Land surface and landform Shallow yellowish red sandy loam to sandy clay loam over quartz boulders The Quartz outcrops were generally small areas within VTs 3, 4 and 6 which were too small to map individually	Condition Mostly very good; rocky habitat provides some protection; moisture storage Relevés R8; R21; Q 1 – 7	
	Vegetation description *Acacia aptaneura* or *A. fuscaneura* low trees/ tall shrubs over *Eremophila macmillaniana, Acacia tetragonophylla* open shrubland over *Ptilotus rotundifolius* or *P. obovatus* low open to low sparse shrubland	Associated species *Eremophila galeata, Acacia pteraneura, Senna* sp. Billabong, *Eremophila longifolia, E. glutinosa, Dodonaea amplisemina, Scaevola spinescens, Maireana triptera, Eremophila latrobei* subsp. *latrobei, Senna artemisioides* subsp. *helmsii, S. artemisioides* subsp. x *artemisioides, Austrostipa elegantissima, Abutilon ?cryptopetalum* (sterile) *Sauropus* sp. Woolgorong P3, *Acacia synchronicia, Hakea preissii*	

VT	Description		Image
7 29.842 ha	Land surface and landform drainage lines on lower to midslopes	Condition Good to very good; some pastoral impacts; stands of denser vegetation separated by almost cleared creek channels Relevés R2, R5, R9, R11, R16, R24, R19, R22	
	Vegetation description *Acacia caesaneura, Acacia fuscaneura* open woodland to woodland over *Acacia aptaneura* tall sparse shrubland/ low open woodland over *Eremophila galeata, E. macmillaniana, Acacia tetragonophylla, A. aptaneura, Senna artemisioides* subsp. x *artemisioides* open shrubland over *Cymbopogon ambiguus* and *Ptilotus obovatus* sparse grass tussocks and low shrubs	Associated species *Senna artemisioides* subsp. *helmsii, Ptilotus obovatus, Acacia sclerosperma* subsp. *sclerosperma, Santalum spicatum Eremophila exilis, Ptilotus rotundifolius, Santalum spicatum, Psydrax suaveolens, Cheilanthes sieberi, Senna* sp. Billabong, *Acacia speckii, Hakea preissii, H. lorea*	
8 35.249 ha	Land surface and landform Lower slope – change to plain	Condition Good to very good; some denser areas of vegetation; many shrubs grazed Relevés R14, R27	
	Vegetation description *Acacia craspedocarpa, A. aptaneura, A. synchronicia* tall open shrubland *over Eremophila galeata, Ptilotus obovatus* low open shrubland *Acacia synchronicia, Hakea preissii* tall open shrubland over *Eremophila youngii* subsp. *youngii, Senna artemisioides* subsp. *oligophylla* open shrubland over *Ptilotus obovatus, Senna* sp. Billabong, *Atriplex vesicaria* low open shrubland	Associated species *Acacia tetragonophylla, A. pruinocarpa, A. pachycarpa* (several grazed), *A. sclerosperma* subsp. *sclerosperma, Atriplex vesicaria, Dissocarpus paradoxus, Eremophila exilis, E. longifolia, Maireana triptera, Ptilotus rotundifolius, Rhagodia drummondii, Salsola australis, Santalum lanceolatum*	

VT	Description		Image
9 6.849 ha	Land surface and landform Floodplain; billabongs and wet areas; cracking clays	Condition Degraded to good; some areas with high impacts from stock; much of the understorey is absent Relevés R17, 18	
	Vegetation description *Pittosporum angustifolium, Hakea preissii, Eremophila longifolia, Acacia synchronicia* low woodland over *Ptilotus divaricatus, P. obovatus, Enchylaena tomentosa, Rhagodia drummondii*, shrubland over *Dissocarpus paradoxus, Sclerolaena cuneata, Atriplex codonocarpa, Maireana pyramidata*, resprouting grasses low open shrubland	Associated species *Atriplex vesicaria*, dried grasses (trampled), *Psydrax suaveolens, Senna artemisioides* subsp. *helmsii, Santalum spicatum, Cymbopogon ambiguus, Ptilotus exaltatus*	

3.3 Fauna Results

3.3.1 Fauna Database results

Results of the databases searches outlined a total of 265 vertebrate species from 80 families (Appendix 4). These were comprised of six amphibian species from four families, 50 reptile species from eight families, 171 bird species from 53 families, and 38 mammal species from 15 families.

A total of 37 conservation significant vertebrate species (including Priority species) from 19 families were identified during the desktop review of the database searches (Appendix 4). These were comprised of two reptile species from one family, 27 bird species from 13 families and eight mammal species from five families.

The DBCA Threatened Fauna Database returned a total of 126 conservation significant fauna records from within a 50 km radius of the survey area. The results of this database search can be seen in Figure 11. No Conservation Significant fauna were recorded in the survey area and the closest records to the survey area is the Peregrine Falcon (*Falco peregrinus)* which was recorded 15 km to the south-west of the survey area.

Shorebirds, Migratory Marine birds and Waterbirds

A total of 20 waterbird species were returned in the databases. These were a combination of waders/shorebirds, migratory marine birds and waterbirds. These wetland avifauna such as wading birds, including Plovers and Sandpipers inhabit estuaries, mudflats, saltmarshes, sandflats and beaches, with shallow water edges, where they feed on invertebrates such as worms, molluscs, insects and crustaceans (Garnett *et al.* 2011). Migratory marine birds such as Terns frequent freshwater waterways (Slater *et. al* 2009). Waterbirds such as various Duck and Teal species are waterbirds that feed on the surface of the water, taking mainly seeds and insects as well as floating vegetation from on or just below the surface of the water (Slater *et. al* 2009). The vast majority of these DBCA records are from Nallan Lake (and the vicinity), which is approximately 25 km to the east of the survey area. Suitable habitat for these shorebird, migratory marine birds and waterbird species is not present in the survey area, therefore they have been omitted from any further discussion.

Now regionally extinct

A number of species in the database searches were also known to be historical records of extinct and locally extinct species. For example the Pig-footed Bandicoot (*Chaeropus ecaudatus*), Rufous Hare-wallaby (south-western) (*Lagorchestes hirsutus hirsutus*) and Lesser Stick-nest Rat (*Leporillus apicalis*) which were returned from the NatureMap search, all of which are extinct. The Greater Bilby (*Macrotis lagotis*) and Greater Stick-nest rat (*Leporillus conditor*), were also returned and are locally extinct. These species have therefore been omitted from any further discussion. In addition, those species with less than five records and those older than 1970 have also been omitted from further discussion with a few exceptions (Appendix 4).

Database errors and anomalies

Occasionally there are errors and/or anomalies in the database searches that are sourced from the various government departments, for example, the Grey Wagtail (*Motacilla cinerea*), which is a rare visitor (Johnstone & Storr 1998). These species have been omitted from any further discussion.

It is important to note, that the EPBC PMST is not entirely based on point records, but also on broader information, including bioclimatic distribution models, whereas the DBCA threatened fauna database and NatureMap are. Consequently, the results of the EPBC PMST are in some cases less accurate, particularly at a local scale (e.g., the Grey Falcon [*Falco hypoleucos*]). As a result, the EPBC PMST can include species that do not occur in the survey area because, for example, there is no habitat available or they are now known to be locally extinct. These species have therefore been omitted from any further discussion.

In addition, many fauna are not distributed evenly across the landscape, are more abundant in some places than others, and consequently more detectable (Currie 2007). Furthermore, some small, common ground-dwelling reptile and mammal species tend to be habitat specific, and many bird species can occur as regular migrants, occasional visitors or vagrants. Therefore, all these species have been excluded from any further discussion.

Conservation Significant Fauna

With the aforementioned shorebirds, migratory marine birds, waterbirds, locally/regionally extinct and database errors species removed, a total of five conservation significant species retrieved from the database searches are considered as either likely, possibly or unlikely to occur. Of these five conservation significant species, no species were recorded during the assessment, two are considered Possible and three are considered Unlikely to occur in the survey area (Table 12). All species will be discussed in section 4.2 of the discussion below.

The Likelihood of each species is based on the following criteria:

- Recorded: Recorded during the field survey or site reconnaissance
- Likely: Suitable habitat is present in the survey area and the survey area is in the species' known distribution
- Possible: Limited or no suitable habitat is present in survey area, but is nearby. The species has good dispersal abilities and is known from the general area
- Unlikely: No suitable habitat is present in survey area but is nearby, the species has poor dispersal abilities, but is known from the general area; or suitable habitat is present, however the survey area is outside of the species' known distribution.

Table 12: Conservation significant fauna potentially occurring in the survey area.
CR = Critically Endangered under the EBPC Act, EN = Listed as Endangered under the EBPC Act, VU = Listed as Vulnerable under the EBPC Act, MI = Listed as Migratory under the EBPC Act, CD = Conservation Dependent under the EBPC Act, OS = Other specially protected species under the EBPC Act, IA = Migratory birds protected under an International Agreement, IUCN Threat categories (BC Act). P = Listed as Priority by the DBCA.

Common name	Species name	Conservation Status (EPBC Act)	Conservation Status (WA BC Act)	Likelihood
Reptiles				
West Coast Mulga Slider	*Lerista eupoda*		P1	Possible
Western Spiny-tailed Skink	*Egernia stokesii badia*	EN	VU	Possible
Birds				
Malleefowl	*Leipoa ocellata*	VU	VU	Unlikely
Peregrine Falcon	*Falco peregrinus*		OS	Unlikely
Night Parrot	*Pezoporus occidentalis*	EN	CR	Unlikely

3.3.2 Field Assessment Results

Amphibians

From the database searches, six amphibian species from four families have been recorded in the surrounding area (Appendix 4). Wetland habitat was present in the survey area in the way of drainage lines and drainage areas, some of which had water present. During the survey, however, no amphibian species were recorded (Appendix 5).

Reptiles

From the database searches, a total of 50 reptile species from eight families have been previously recorded in the surrounding area (Appendix 4). During the field survey, four reptile species were recorded, Tree Dtella (*Gehyra variegata*), Lozenge-marked Dragon (*Ctenophorus scutulatus*), Dwarf Bearded Dragon (*Pogona minor*) and Gould's Sand Monitor (*Varanus gouldii*) (Appendix 5).

Birds

From the database searches, a total of 171 bird species from 53 families have been previously recorded in the surrounding area (including earlier dismissed species) (Appendix 4). During the field survey, 26 bird species from 18 families were recorded (Appendix 5).

Mammals

From the database searches, a total of 38 mammal species from 14 families have been previously recorded in the surrounding area (including earlier dismissed species). During the field survey three mammal species were recorded, the Euro (*Osphranter robustus*), the Red Kangaroo (*Osphranter rufus*) and introduced European Cattle (*Bos taurus*) (Appendix 5).

3.4 Fauna Habitat

3.4.1 Fauna Habitat – survey area

A total of 22 habitat assessments were undertaken during the field survey, the details of which can be seen in Table 13, Figure 12, Appendix 6.

Table 13: Habitat Assessment Locations.

Habitat Assessment	Easting	Northing
1	570961	6989218
2	570873	6989729
3	570971	6989927
4	571050	6990097
5	571280	6989977
6	571303	6989630
7	571395	6989490
8	571172	6988954
9	571065	6988973
10	571448	6989371
11	571587	6989666
12	571807	6990085
13	572103	6990010
14	571942	6990449
15	571563	6990421
16	572395	6990495
17	572031	6990968
18	572008	6991953
19	572314	6992425
20	572908	6991887
21	572395	6991728
22	572444	6991447

A total of four fauna habitat types were recorded in the survey area. Fauna habitat type and size in the survey area can be seen in Table 14 and Figure 12. Examples of the fauna habitat types can be seen in Plates 1 – 4.

Table 14: Fauna habitat type and size in the survey area.

Fauna Habitat	Size (Ha)	% of the Survey Area (%)
Stony Plains and Rises	161	45
Acacia Shrubland	84	23
Drainage Area	78	21
Drainage Line	37	10
Cleared	4	1
Total	364	100

Plate 1: Stony Plains and Rises.

Mixed *Acacia* isolated low shrubs, over isolated *Eremophila, Ptilotus* and *Senna* low shrubs on stony plains.

Plate 2: Acacia Shrubland.

Acacia pruinocarpa emergent trees over mixed *Acacia* open woodland/ tall open shrubland over mixed Acacia low sparse shrubland.

Plate 3: Drainage Area Habitat.

Mixed *Acacia* tall open shrubland, over *Hakea, Eremophila, Ptilotus* and *Senna* shrubland.

Plate 4: Drainage Line Habitat.

Mixed *Acacia caesaneura* open woodland over mixed *Acacia* low open woodland over *Eremophila* and *Senna* shrubland over sparse grass tussocks and low shrubs.

3.4.2 Fauna Habitat – study area

The fauna habitat types recorded in the survey area are generally considered common and widespread in the surrounding area, and more importantly in the wider region. This can be seen from Figure 13, in which the wider fauna habitat has been mapped with a 5 km buffer (study area).

A number of the fauna habitats mapped in the study area consist of various stony areas including basalt hills, granite hills, quartz hills and stony plains and rises (Figure 13). These areas are represented in the survey area by the stony hills and plains fauna habitat type (Figure 12). As is the case in the survey area, these areas will likely have limited vegetation structure and so value to fauna species will also be limited. There is approximately 2,457 ha of stony hills and rises habitat in the study area.

The fauna habitat mapped in the study area as drainage areas (Figure 13) is represented by the drainage lines and drainage areas mapped in the survey area (Figure 12). These areas have an overstory of various mixed acacia trees and shrubs, over a mid-storey of mixed shrubs including Acacia and Hakea and a ground story of low shrubs including Eremophila and Senna. The vegetation structure is sparse, often with limited mid-storey in the drainage areas and denser and in better condition in the drainage lines. During the survey most of the fauna that was recorded, was recorded in the drainage line habitat type. There is approximately 7,974 ha of drainage area habitat in the study area.

The fauna habitat mapped in the study area as Mulga woodland (Figure 13) is represented by the Acacia shrubland habitat mapped in the survey area (Figure 12). This habitat type consisted of an overstorey of emergent Acacia trees and tall Acacia shrubs. The vegetation was sparse with limited strata in some areas, but contained larger trees and tall shrubs in other areas. The vegetation and structure provided shelter for fauna species in the denser areas. There is approximately 2,225 ha of Mulga woodland habitat in the study area.

3.5 Malleefowl Assessment

The survey area was assessed for suitable Malleefowl habitat. The survey area was traversed by foot and by vehicle and is considered unsuitable for the species. The drainage areas and drainage lines, contained denser vegetation in the way of mixed acacia woodland and mulga shrubland, however it was considered to be too spare for Malleefowl mound construction. In addition, Malleefowl are unlikely to build mounds in areas of drainage due to the possibility of flooding.

No Malleefowl were sighted, nor were their mounds or tracks, when assessing habitat (primarily areas of the mulga shrubland) in the survey area. Further to this no Malleefowl or their mounds were seen while driving along tracks.

3.6 Night Parrot Assessment

The survey area was assessed for suitable Night Parrot habitat. The survey area was traversed by foot and by vehicle and is considered unsuitable for the species. The survey area does not contain spinifex, which is required for the species to roost and nest in.

4 Discussion

4.1 Flora

Westgold requested a reconnaissance vegetation and flora survey of the survey area. A desktop survey was undertaken prior to the survey and it was concluded that there was potential for priority flora to be present on basaltic landforms. These were then targeted during the field survey. Three priority flora – *Acacia speckii* P4, *Dodonaea amplisemina* P4 and *Sauropus* sp. Woolgorong (M. Officer s.n. 10/8/94) P3 were recorded. *Acacia speckii* and *Dodonaea amplisemina* were located mostly on landforms underlain by metabasalt in the south-western section of the survey area and extended to the south and west outside the survey area. *Sauropus* sp. Woolgorong occurred on the plains mostly within drainage lines and depressions, and one record within a quartz outcrop on the plain.

The condition of the vegetation was mostly degraded to good with moderate to high levels of historic pastoral and mining impacts (Figure 10). Climatic effects (warmer and drier than average) over the last two years have also had an impact through (assumed) low germination rates of forbs and grasses. No weeds were recorded; however, this could be due to dry conditions. Recruitment of most species was low or absent in much of the area south of the Berringarra-Cue Road. Larger areas of vegetation in very good condition were present north of the road (VT2). Recruitment of some species (e.g., *Eremophila forrestii* subsp. *forrestii)* was noted in these areas.

Nine vegetation communities were mapped based on floristics and structure. VT5 (*Acacia aptaneura, Acacia synchronicia* tall shrubs over *Eremophila macmillaniana, A. tetragonophylla, E. glutinosa, Ptilotus rotundifolius, Acacia speckii, A. ramulosa* var. *ramulosa* open shrubland *over Dodonaea amplisemina, Maireana triptera* low open shrubland), which was present on basaltic landforms, had the potential to be representative of vegetation community type 6 associated with dolerite substrates described for the Weld Range vegetation complexes (banded ironstone formation) - sparse – open shrubland of *Acacia* sp. Weld Range (A. Markey & S. Dillon 2994), *Acacia aneura* and *Acacia speckii* over sparse mid-stratum of *Eremophila macmillaniana, Eremophila mackinlayi* subsp. *spathulata* and *Senna* spp. Significant indicator species include *Senna glaucifolia, Sida* sp. dark green fruits, *Maireana georgei, Eremophila mackinlayi* subsp. *spathulata* and *Heliotropium ovalifolium*. The absence of significant indicator species does not support VT5 being representative of the Weld Range PEC communities.

The results of the DBCA database search show a record of *Ptilotus beardii* P3 within 5 km of the survey area in a broad regional drainage line (Figure 7). This species is recorded on saline flats and low breakaways. It is unlikely that suitable habitat is present within the survey area.

The vegetation types mapped for the survey area align with some vegetation types mapped for the Big Bell Mine area (Table 15) (Maia 2017). Vegetation condition recorded in the Maia survey was generally better than the Westgold survey area.

Table 15: A comparison of similar vegetation types described in the Maia Big Bell area with vegetation types recorded within the Westgold survey area.

Maia Big Bell Haul Road Survey 2017	Westgold Survey Area 2020
ApAsSL Slopes and crest of low schist and basalt hill (approx. 17 km east of Cue). Sparse Tall Shrubland of *Acacia pteraneura* and *A. speckii* (P4) with a Sparse Low Shrubland of *Calytrix erosipetala, Eremophila macmillaniana* and *E. exilifolia* and Isolated Low Trees of *Acacia pteraneura* *Ptilotus luteolus* (P3) also recorded	VT5 Slopes of metabasalt hills *Calytrix erosipetala* was absent from this survey area. No *Ptilotus luteolus* were present. *Acacia speckii, A. pteraneura, Eremophila macmillaniana* and *E. exilifolia* in common.
DpMgSL Quartz outcrop Sparse Low Shrubland of *Dodonaea petiolaris* and *Marsdenia graniticola* with Isolated Low Trees of *Acacia pteraneura* Assoc spp: *Acacia ramulosa* var. *linophylla, A. tetragonophylla, Cymbopogon ambiguus, Enneapogon caerulescens, Enteropogon ramosus, Eremophila latrobei* subsp. *latrobei, Euphorbia tannensis* subsp. *eremophila*	VT6 Quartz outcrop Neither *Dodonaea petiolaris* or *Marsdenia graniticola* were present; the landforms were very similar. Common species include *Acacia tetragonophylla, Cymbopogon ambiguus, Eremophila latrobei* subsp. *latrobei*
MSL (1) Stony undulating plains, low hills and minor drainage channels.	VT4 Stony plains and low hills

Mixed Tall Shrubland mainly of *Acacia tetragonophylla, Hakea preissii* and / or *Acacia eremaea* with a Sparse Low Shrubland of *Ptilotus obovatus* and *Solanum lasiophyllum* and Isolated Low Trees of *Acacia pteraneura* Assoc spp: *Acacia fuscaneura, Enchylaena tomentosa* var. *tomentosa, Eremophila lachnocalyx, E. macmillaniana, Frankenia setosa, Maireana triptera, M. villosa, Sclerolaena cuneata, Senna* sp. Billabong	Mainly tall sparse shrubland or low open woodland of *Acacia aptaneura* or *A. pteraneura* over *Eremophila macmillaniana, E. galeata, E. latrobei* subsp. *latrobei* and *Senna* spp. sparse shrubland over *Maireana triptera, Ptilotus obovatus* low open shrubland
ApWL Sandy and loamy plains. Open Woodland of *Acacia pteraneura* with a Sparse Tall Shrubland of *Eremophila forrestii* subsp. *forrestii* with a Sparse Tussock Grassland of *Eragrostis eriopoda* and / or *Aristida contorta* Assoc spp: *Acacia fuscaneura, Enchylaena tomentosa* var. *tomentosa, Maireana trichoptera, Ptilotus obovatus, Solanum lasiophyllum*	VT2 Plain with low dune formations *Acacia pteraneura* and *A. fuscaneura* in the upper stratum over *Eremophila forrestii* subsp. *forrestii* in the midstratum
MASL Minor depressions and broad drainage channels. Sparse to Open Tall mixed *Acacia* Shrubland mainly *Acacia craspedocarpa, A. tetragonophylla* and *A. fuscaneura* with a Sparse Mid Shrubland of *Eremophila galeata* and / or *E. latrobei* subsp. *latrobei* with a Sparse Low Shrubland of *Ptilotus obovatus* Assoc spp: *Acacia craspedocarpa* (hybrid), *A. pteraneura, A. victoriae, Centipeda thespidioides, Ptilotus schwartzii*	VT8 Depressions, flood plain *Acacia craspedocarpa* and *A. tetragonophylla* were dominant in the upper stratum in some areas, and *Ptilotus obovatus* dominant in the lower stratum

Vegetation communities occurring on basalt on quartz outcrops are more restricted in the region than the other vegetation types which occur on several landforms and are more common and extensive. The species recorded during this survey were expected, and no range extensions or new finds were recorded.

4.2 Fauna of Conservation Significance

A total of five conservation significant species (and relevant Listed species) retrieved from the database searches are considered as either Likely, Possibly or Unlikely to occur in the survey area. These species and their likelihood to occur in the survey area are discussed below and in section 4.4.

4.2.1 Conservation Significant Fauna Recorded

No conservation significant species were recorded in the survey area.

4.2.2 Conservation Significant Fauna Considered Likely to Occur

No conservation significant species are considered Likely to occur in the survey area.

4.2.3 Conservation Significant Fauna Considered as Possibly Occurring

West Coast Mulga Slider (Lerista eupoda)

The West Coast Mulga Slider (*Lerista eupoda*) is listed as Priority 1 under the DBCA priority list and was returned from NatureMap and the DBCA threatened fauna database. A total of 21 records were returned, eight of which were from 2009 - 2011.

Most Lerista species are burrowing species, which are usually found in the loose soil or sand beneath stones, logs, termite mounds etc., where they feed on ants, termites and other small insects. At night they emerge to feed at the surface, immediately diving into the loose sandy substrate when disturbed (Cogger 2014). The West Coast Mulga Slider inhabits open Mulga areas on loamy soils in the arid southern interior of WA, between Meekatharra and Cue (Chapple *et. al* 2019).

Suitable habitat in the way of open Mulga areas on loamy soils was present throughout the survey area, which potentially provides shelter and substrate for the species to burrow in. In addition, the DBCA threatened fauna database returned 21 records in the vicinity of the survey area and as such this species is considered as Possibly occurring in the survey area.

Western Spiny-tailed Skink (Egernia stokesii badia)

The Western Spiny-tailed Skink (*Egernia stokesii badia*) is listed (at subspecies level) as Endangered under the EPBC Act and Vulnerable under the BC Act. The Western Spiny-tailed Skink was returned in all three database results, however the most recent record returned from the DBCA threatened fauna database was 2010 (a single record).

The population has suffered significant historical declines from land-clearing and it currently occurs in isolated, small subpopulations (Chapple 2019). The species is distributed along the coast of WA through the arid interior and is found among rocky outcrops, stony hills and mountain ranges, where it shelters in deep crevices or under large boulders (Cogger 2014). The species adapts quite well to human disturbances, in log piles, under rubbish etc. Current threats include land-clearing, habitat degradation by feral grazing, salination and changes to fire regimes (Pearson 2012).

Although deep crevices are not present in the survey area, some areas containing smaller rocks and boulders as well as stony hills and some log piles are present. As such the Western Spiny-tailed Skink is considered as Possibly occurring in the survey area.

4.2.4 Conservation Significant Fauna Considered as Unlikely to Occur

Malleefowl (Leipoa ocellata)

The Malleefowl (*Leipoa ocellata)* will be discussed in section 4.4 below as part of the Malleefowl assessment.

Peregrine Falcon (*Falco peregrinus*)

The Peregrine Falcon (*Falco peregrinus*) is listed as Specially Protected under the BC Act and it was present in the NatureMap database and the DBCA threatened fauna database. It is an uncommon but wide-ranging bird across Australia (Barrett *et al*. 2003). It occurs mainly along rivers and ranges as well as wooded watercourses and lakes and nests primarily on cliffs, granite outcrops and quarries. The diet of the Peregrine Falcon has been well studied and primarily includes flocking species such as Parrots, Pigeons and on the east coast European Starlings (*Sturnus vulgaris*) (Olsen & Fuentes 2008).

The DBCA threatened fauna database returned ten records of the Peregrine Falcon, seven of which are from 2004 and older. The remaining three results - two are from 2013 and one is from 2017 all of which are from Lake Nallan.

The survey area lacks suitable cliff, rock outcrop habitat and rivers (the drainage lines are likely too small and occasionally inundated) and so lacks any suitable nesting and foraging habitat. The Peregrine Falcon is therefore considered Unlikely to occur in the survey area.

Night Parrot (*Pezoporus occidentalis)*

Night Parrot (*Pezoporus occidentalis)* will be discussed in section 4.4 below as part of the Night Parrot assessment.

4.3 Fauna Habitat

During the fauna survey four different broad fauna habitat types were identified in the survey area, with this based on vegetation structure (primarily the extent of vegetation cover in the various strata) and species composition (Figure 12).

Stony Plains and Rises

Stony Plain habitat consisted of 161 ha (45%) of the survey area. This habitat type consisted of an overstorey of mixed Acacia, including *Acacia aptaneura*, A. apteraneura, A. *synchronicia and A. fuscaneura* very isolated shrubs over a mid-storey of A. *speckii*, *Ptilotus rotundifolius*, *Eremophila galeata*, *E. glutinosa, E. macmillaniana* sparse to isolated shrubs over *P. obovatus* and *Maireana triptera* low sparse shrubland, on stony plains and rises.

The vegetation was very sparse in all strata, with particularly limited overstorey and near absent ground layer. The lack of vegetation and structure provided very limited shelter sites for fauna species, while the stoney substrate provided a lack of habitat to burrowing species. Some of the areas with larger rocks may provide some habitat for reptile species, however none were recorded in this habitat (even when many rocks were overturned).

Evidence of disturbance by goats and previous clearing was recorded in many locations.

Acacia Shrubland

Acacia Shrubland habitat consisted of 84 ha (23%) of the survey area. This habitat type consisted of an overstorey of *A. pruinocarpa* emergent trees and *A. fuscaneura, A. caesaneura* tall open shrubland over *E. forrestii A. tetragonophylla, A. ramulosa, A. craspedocarpa, A. fuscaneura* open shrubland over *P. obovatus* low sparse shrubland.

The vegetation was sparse with limited midstorey and absent ground layer in some areas. In other areas vegetation was in better condition, and this habitat type contained larger trees and tall shrubs. The vegetation and structure provided some shelter for fauna species, such as Chestnut-rumped Thornbills, which were recorded in this habitat. The sandy substrate provided habitat for burrowing reptile species, while areas of woody debris provided shelter for dragon species including the Lozenge-marked Dragon and Dwarf Bearded Dragon, both of which were recorded in piles of wood.

Drainage Area

Drainage Area habitat consisted of 78 ha (21%) of the survey area. This habitat type consisted of an overstorey of mixed Acacia, including *A. aptaneura, A. pruinocarpa, A. craspedocarpa* and A. *synchronicia* isolated trees and tall open shrubland. The midstorey consisted of *Hakea preissii* tall open shrubland over *E. youngii*. *E. galeata*, and *E. forrestii, Senna artemisioides*. *P. obovatus* and *Atriplex vesicaria* low open shrubland.

Drainage Area habitat did contain vegetation in a number of strata, however in some areas midstorey vegetation was often limited. The tall Acacia trees provided habitat to fauna, for example bird species including Yellow-throated Miners and Striated Pardalotes. Sandy substrate was present in many areas, which provided habitat for burrowing animals. This was evidenced by burrows of dragon species and tracks of *Varanus sp.*, throughout this habitat type. Some areas contained stoney substrate which contained a lack of shelter and so provided less value to fauna species. Evidence of recent sitting water was recorded in some areas.

Drainage Line

Drainage Line habitat consisted of 37 ha (10%) of the survey area. This habitat type consisted of a tall open woodland of mixed Aacia trees, including *A. caesaneura*, *A. fuscaneura*, *A. aptaneura* over a midstorey of *Pittosporum angustifolium*, H. *preissii, E. longifolia, A. synchronicia, E. galeata, E. macmillaniana, A. tetragonophylla, A. aptaneura, S. artemisioides* open shrubland over *Cymbopogon ambiguus* and *P. obovatus* sparse grass tussocks and low shrubs.

Relatively thicker vegetation with a more intact structure, provided habitat and shelter for fauna species, with the Drainage Line habitat being where the majority of fauna species were recorded. Some areas contained leaf litter (albeit limited) which may provide shelter to some fauna species such as small skinks.

More bird species were recorded in this habitat type than the other three habitat types, including the Red-capped Robin, Hooded Robin, Rufous Whistler and Grey-shrike Thrush and numerous bird nests were recorded here, particularly those of the White-browed Babbler. The sandy substrate provided habitat for burrowing animals, which was evidenced by burrows of dragon species and tracks of *Varanus sp.* throughout this habitat type. *Varanus gouldii* was also observed in this habitat type walking along a drainage line. In some areas water was present, which will attract fauna and evidence of Kangaroo and Cattle was recorded.

4.4 Malleefowl Assessment

In the past century, the range of the Malleefowl has contracted, particularly in arid areas and at the periphery of its former range (Benshemesh 2007). In Australia, clearing for Agriculture has eliminated and fragmented much of the Malleefowl habitat, resulting in localised extinctions and fragmented populations (Garnett *et al*. 2011). In WA since 1981, the range of the Malleefowl has been estimated to have contracted by between 28 and 30% (Benshemesh 2007; Parsons *et al*. 2008).

Historically, the species was originally common and widespread in semiarid zones, mainly in scrubs of Mallee and other low Eucalypts on sandy and lateritic soils; also, Acacia scrubs on heavy red soils, especially north and east of the mulga-eucalypt line. The Malleefowl is now generally rare to uncommon and patchily distributed due to habitat loss.

Malleefowl prefer habitat with a dense canopy and an open ground layer in which they can construct their mounds (Benshemesh 2007). Benshemesh (1992) also found that dense canopy cover was the most important feature associated with high breeding densities at sites in Victoria. Fire history is also important with Malleefowl birds preferring old growth (i.e., long unburnt) mallee. Fire has a major influence on the structure and floristic composition of habitats that Malleefowl occupy.

Habitat in the way of Acacia scrubs on sandy soil is present in the survey area, however it is considered to be too open (vegetation density and cover are very sparse) to be suitable for Malleefowl, in addition, the denser Acacia is mainly present in areas of drainage lines, where Malleefowl are unlikely to build mounds due the potential risk of flooding. In the Acacia shrubland habitat, vegetation is too sparse, with a lack of leaf litter which is required for cover in mounds.

The stony plains and rises habitat mapped during this assessment are unsuitable for Malleefowl to construct their mounds because the canopy cover is too sparse or is absent and the substrate is too rocky.

The DBCA threatened fauna database returned four records of the Malleefowl in the vicinity of the survey area, two of which were undated and two were from 1980.

During the Malleefowl assessment, no suitable habitat was recorded and no Malleefowl, mounds or tracks were recorded. In addition, a lack of database records results in the Malleefowl being considered Unlikely to occur in the survey area.

4.5 Night Parrot Assessment

The Night Parrot is an enigmatic species thought possibly to be extinct until the recent recoveries of two dead specimens from Queensland (and new locations more recently). The type specimen and many early sightings, however, came from WA (Johnstone *et al.* 2013). Night Parrots are cryptic, nocturnal and endemic to Australia's arid interior. Until the late 19th century, they were widespread and relatively easily found at least at some locations. For instance, 14 of the 25 museum specimens in existence came from the Gawler Ranges in South Australia between 1871 and 1881 (Murphy *et al*. 2017). The last Night Parrot collected intentionally was in Western Australia in 1912 (Wilson 1937). Then followed 78 years of unconfirmed reports spanning all mainland states and the Northern Territory, until in 1990 a desiccated bird was found by a roadside in western Queensland (Boles et al. 1994, Murphy *et al.* 2017).

In 2006, another dead bird was discovered by a Ranger 200 km to the south-east of the 1990 specimen (McDougall et al. 2009, Murphy et al. 2017). In 2013, the first photographs of a living night parrot were captured close to the site of the 2006 specimen (Dooley 2013, Murphy et al. 2017). Their cryptic nature, remote distribution and apparently rapid decline means that there is scant ecological information about night parrots.

A more recent sighting of the Night Parrot in WA comes from the Pilbara (12 April 2005) at a well near the Fortescue Marshes (Davis & Metcalf 2008). There was also a sighting near Matuwa (Lorna Glen), which is about 400 km north-east of the survey area, in 2009 (Hamilton *et al.* 2017).

There is very limited ecological information available for this species such as its preferred habitat (only very broad information). However, with increasing conservation focus being given to this species, more information is likely to become available, e.g., the discovery of Night Parrot nests in large Spinifex hummocks in Queensland (Murphy *et al*. 2017) which is a common and widespread habitat type throughout much of south-east Queensland and WA.

The survey area lacks spinifex and so contains no suitable habitat for the Night Parrott. In addition, a lack of records (despite relatively limited survey effort in the local region) results in the likelihood of the Night Parrot nesting or roosting in the survey area being highly unlikely.

5 Conclusions

The dominant land use within the Murchison Bioregion is grazing of sheep and cattle on native pastures, with mining also important. Many pastoral leases were established towards the end of the 19th century and gold prospecting/mining started in the region in the late 1800's. These activities have therefore had an impact on the flora and fauna at a local and regional context for over 125 years. The main threats to the vegetation in the local area are from stock and feral grazers, evidence of which was found throughout the survey area.

Continual impacts through grazing, clearing, trampling, changes to fire regimes and the introduction of weeds, has resulted in loss of vegetation structure and species, loss of seed banks and erosion. Little flora recruitment has occurred and impacts have occurred to all strata, particularly south of the Berringarra-Cue Road. This lack of vegetation structure has had an impact on the suite of fauna species that would have originally occurred in the region. Erosion is active in much of the survey area which has resulted in loss of topsoil, seed banks and litter (for fauna to shelter in).

The high levels of disturbance in the local and regional area result in a loss of flora species and structure and the remaining vegetation is likely to be significantly different to those present prior to European impacts, which now support very similar vegetation on different substrates, with dominant species being those which are least palatable to stock.

5.1 Flora and Vegetation Summary

A reconnaissance flora and vegetation survey was undertaken at Accelerator and Indicator mining areas to provide context and gather broad information about the survey area. Generally, a reconnaissance survey is required where flora and vegetation values are well defined, the area is not likely to support significant flora or vegetation and the scale and nature of potential impacts are not likely to be significant. This is, in general, the case with the Accelerator and Indicator mining areas.

The general condition of the vegetation within the survey area is degraded (94.43 ha) to good (240.26 ha) (combined degraded to good accounts for 92 % of the survey area) with limited areas meeting conditions for "Very Good" (25.39 ha [approximately 8%]). A total of 3.76 ha were mapped as cleared. The proposed area of clearing is unknown, so no conclusions can be made as to the number of CSF which will be impacted. Most of the *Dodonaea amplisemina* P4 recorded during the survey occur outside the survey area (92 %). It is possible that some plants may have been missed due to the overall poor condition (senescent with sparse foliage) and a targeted survey may be required if works are to be undertaken in vegetation associated with metabasalt. *Acacia speckii* P4 occurred as isolated plants in the south west of the survey area in varying condition. These are also associated with metabasalt.

Sauropus sp. Woolgorong P3 were mainly recorded in drainage lines. There is potential for more of these to be present in the area, particularly within VT2 north of Berringarra-Cue Road in poorly defined drainage lines. This taxon has a wide distribution and is likely to be fairly common at a local and regional level. It appears to die back during dry periods and resprout when conditions improve, as was observed within the drainage line at Relevé 24.

There is no habitat present which is representative of described habitat for *Eremophila rostrata* subsp. *rostrata* (T).

5.2 Fauna Summary

Results of the fauna databases searches outlined a total of 265 vertebrate species from 80 families and a total of 37 conservation significant vertebrate species (including Priority species) from 19 families in the vicinity of the survey area. A total of 126 conservation significant fauna records from within a 50 km radius of the survey area were returned from the DBCA threatened fauna database, however no conservation significant fauna were recorded in the survey area and the closest records to the survey area is the Peregrine Falcon (*Falco peregrinus)* which was recorded 15 km to the south-west of the survey area.

A total of 33 fauna species, from 23 families were recorded during the field survey. No species of conservation significance were recorded during the field survey and all fauna species recorded are considered relatively common and widespread.

Two conservation significant species were given particular consideration during the field survey, the Malleefowl (*Leipoa ocellata*) and the Night Parrot (*Pezoporus occidentalis*). The survey area is considered unsuitable for both species, due to a lack of suitable habitat.

A total of four fauna habitats types were recorded in the survey area, these were Stony Plains and Rises, Acacia Shrubland, Drainage Area and Drainage Line. The most widespread was Stony Plains and Rises. The fauna habitat present in the survey area is well represented in the wider region, as can be seen in the study area (Figure 13). It can be seen that that flora species, vegetation types and fauna habitats are not restricted to the survey area, but are widespread in the region (particularly the mulga woodland drainage areas, which are well represented in the survey area and broader study area. It is likely these habitat are also well represented in a wider regional context.

In general, impacts from the proposed disturbance at Indicator and Accelerator mining areas are relatively low and therefore unlikely to result in significant impacts, at a local or regional level area.

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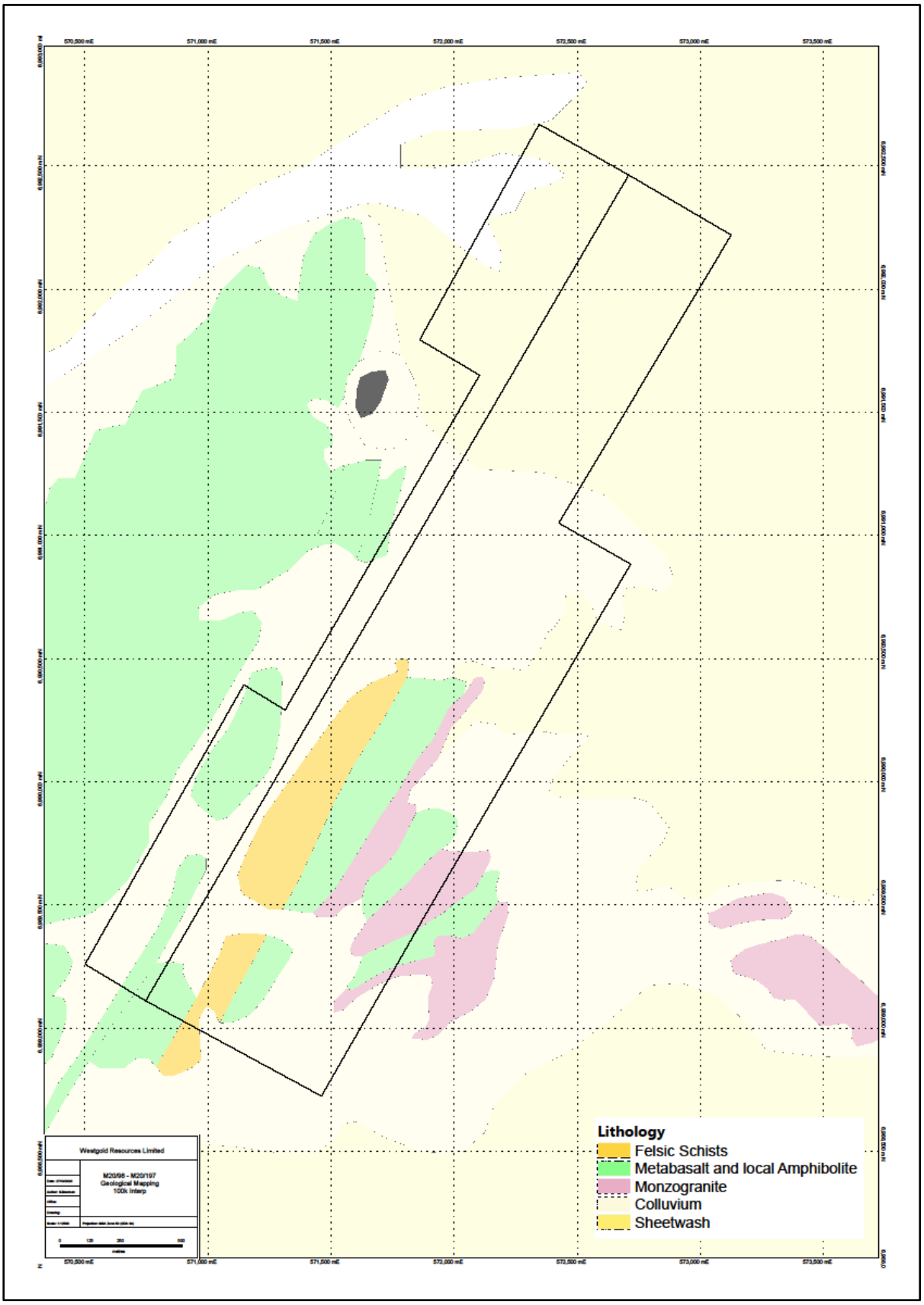
Figures

Figure 4: Geological units mapped for the survey area (Westgold Resources)



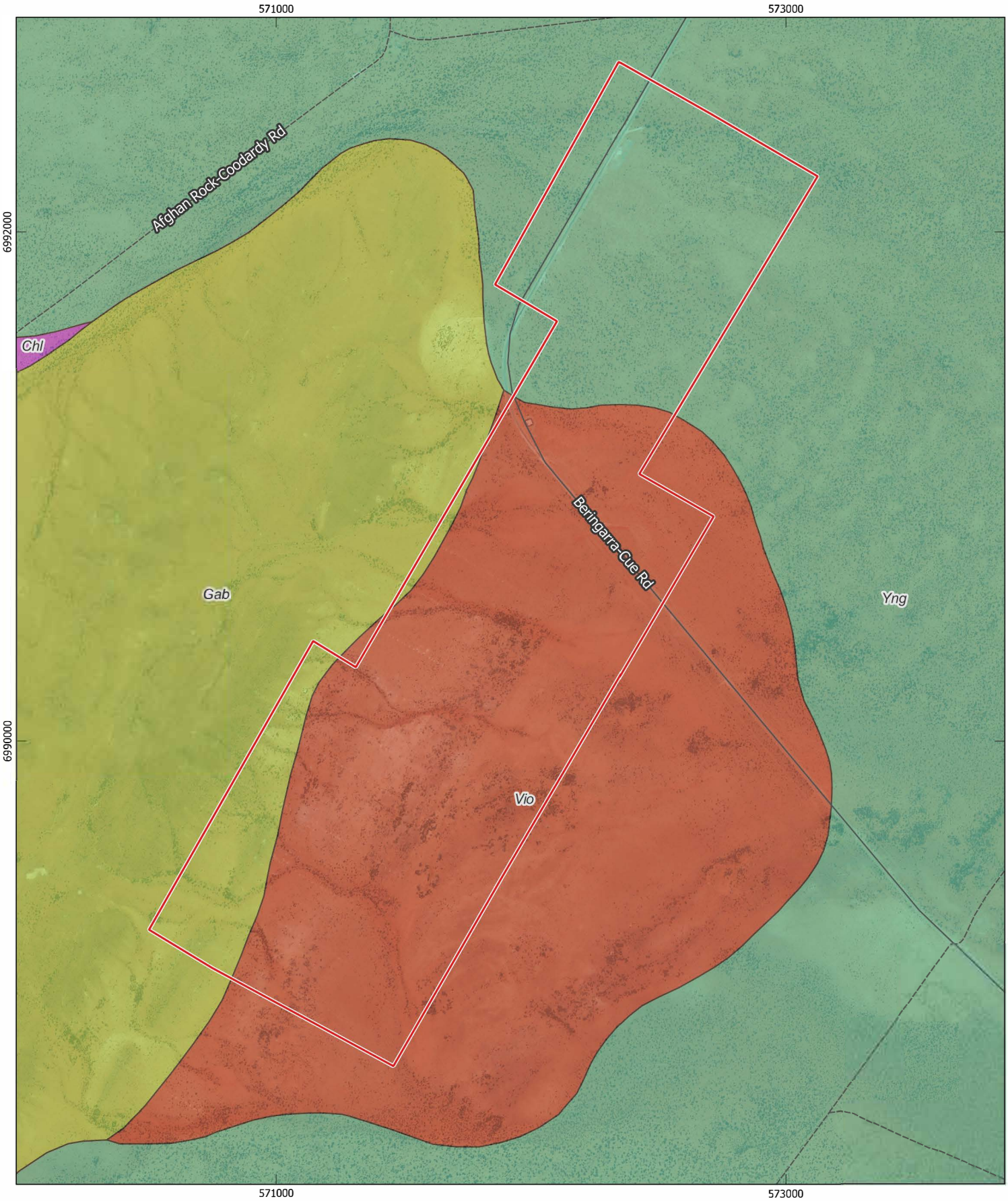


Figure 5: Land Systems

Legend

Survey Area

Land System

Gritty-surfaced plains and granite tors and domes; Acacia shrublands

Hills and ranges; Acacia shrublands

Stony plains; Acacia shrublands and halophytic shrublands

Wash plains and sandy banks on hardpan; Mulga shrublands and wanderrie grasses or spinifex

0 200 400 600 m

Scale 1:20,000
GDA94 - MGA Zone 50

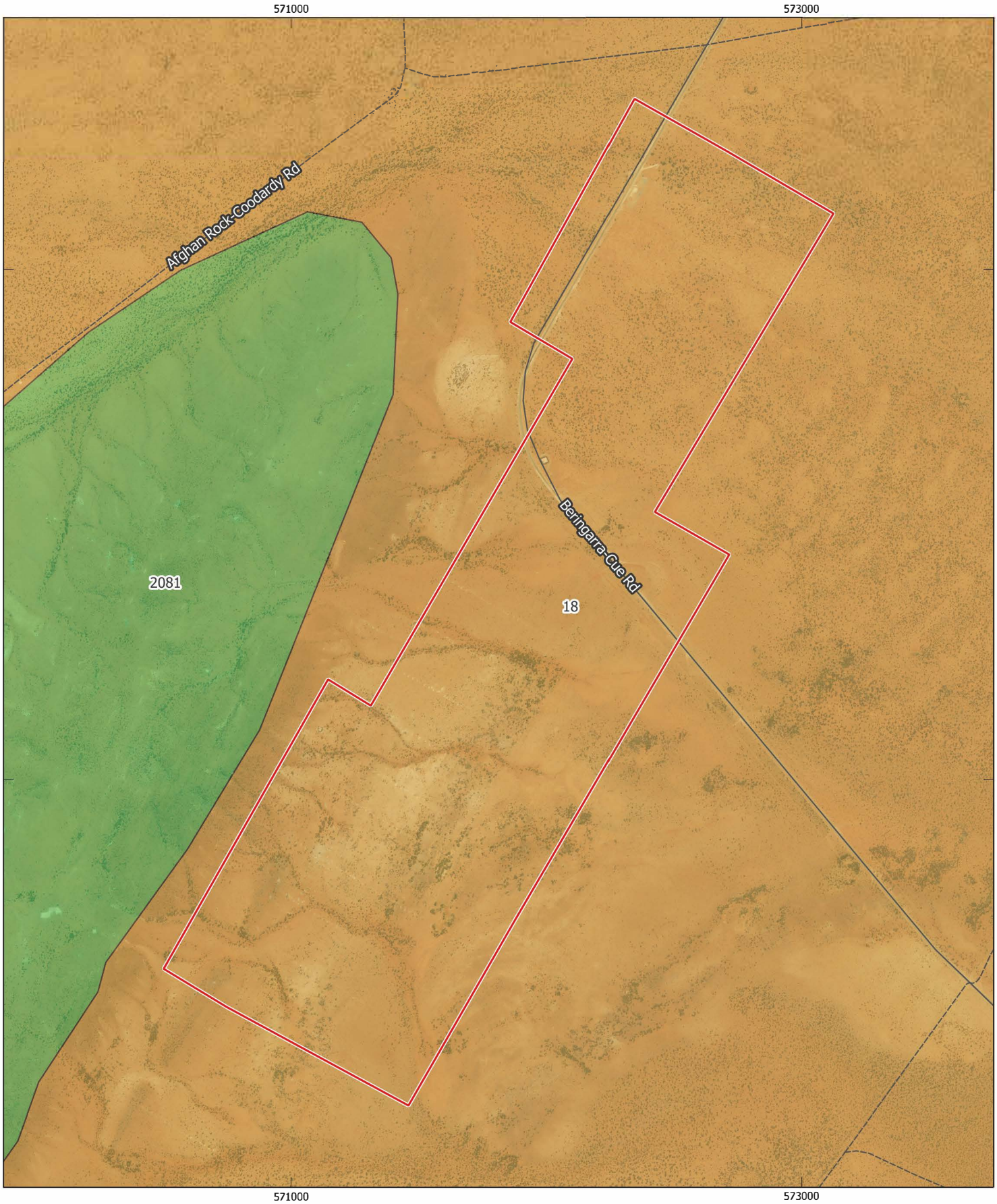


Figure 6: Pre-European Vegetation

0 200 400 600 m

Scale 1:20,000
GDA94 - MGA Zone 50

Legend

Survey Area

System Association

Wiluna-18

Wiluna-2081

Ref: 085_G011_RevA.qgz

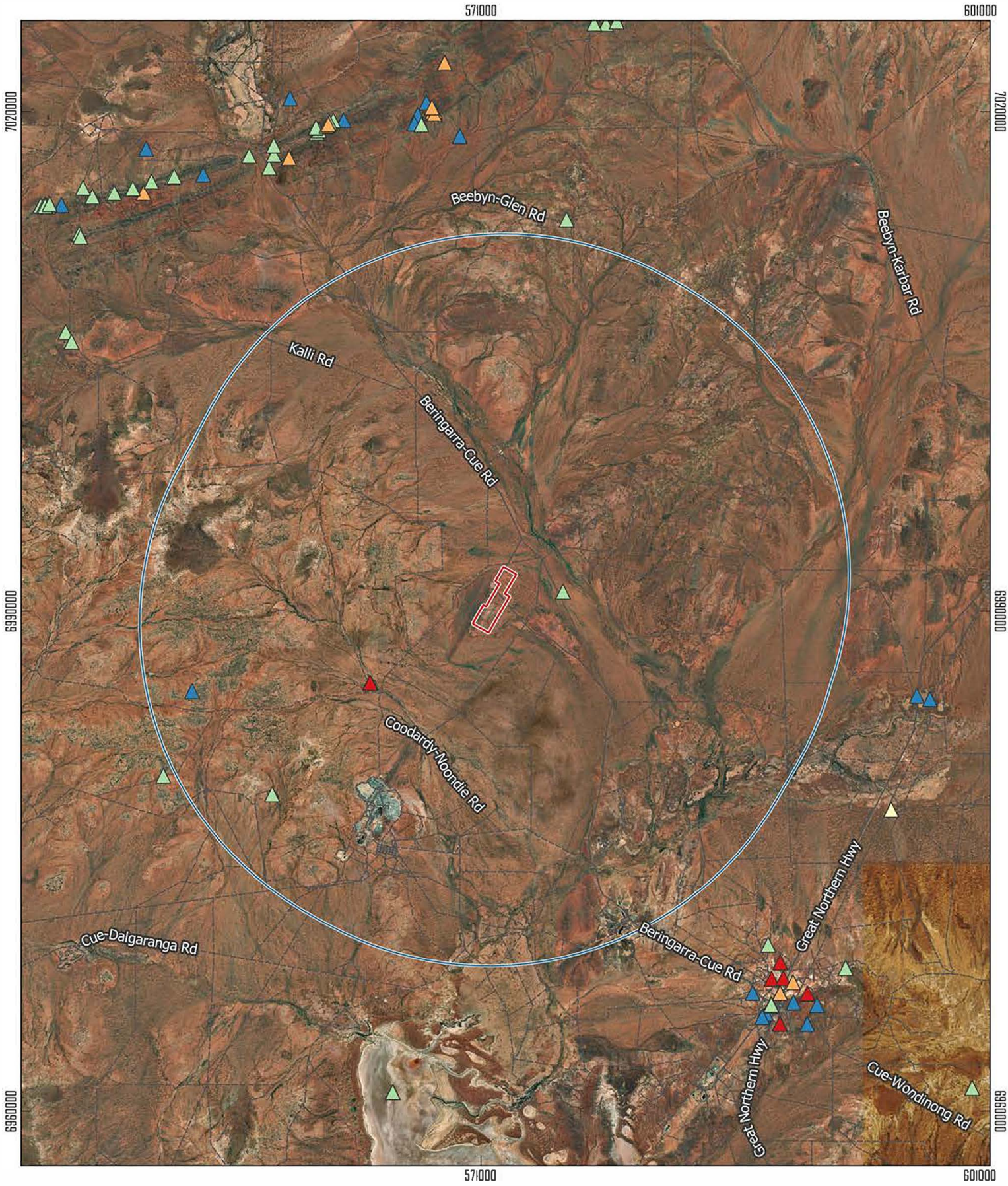


Figure 7: DBCA Threatened and Priority Flora Records

Legend

Survey Area

Threatened and Priority Flora

Threatened

Priority 1

Priority 2

Priority 3

Priority 4

0 5 10 km

Scale 1:300,000
GDA94 - MGA Zone 50

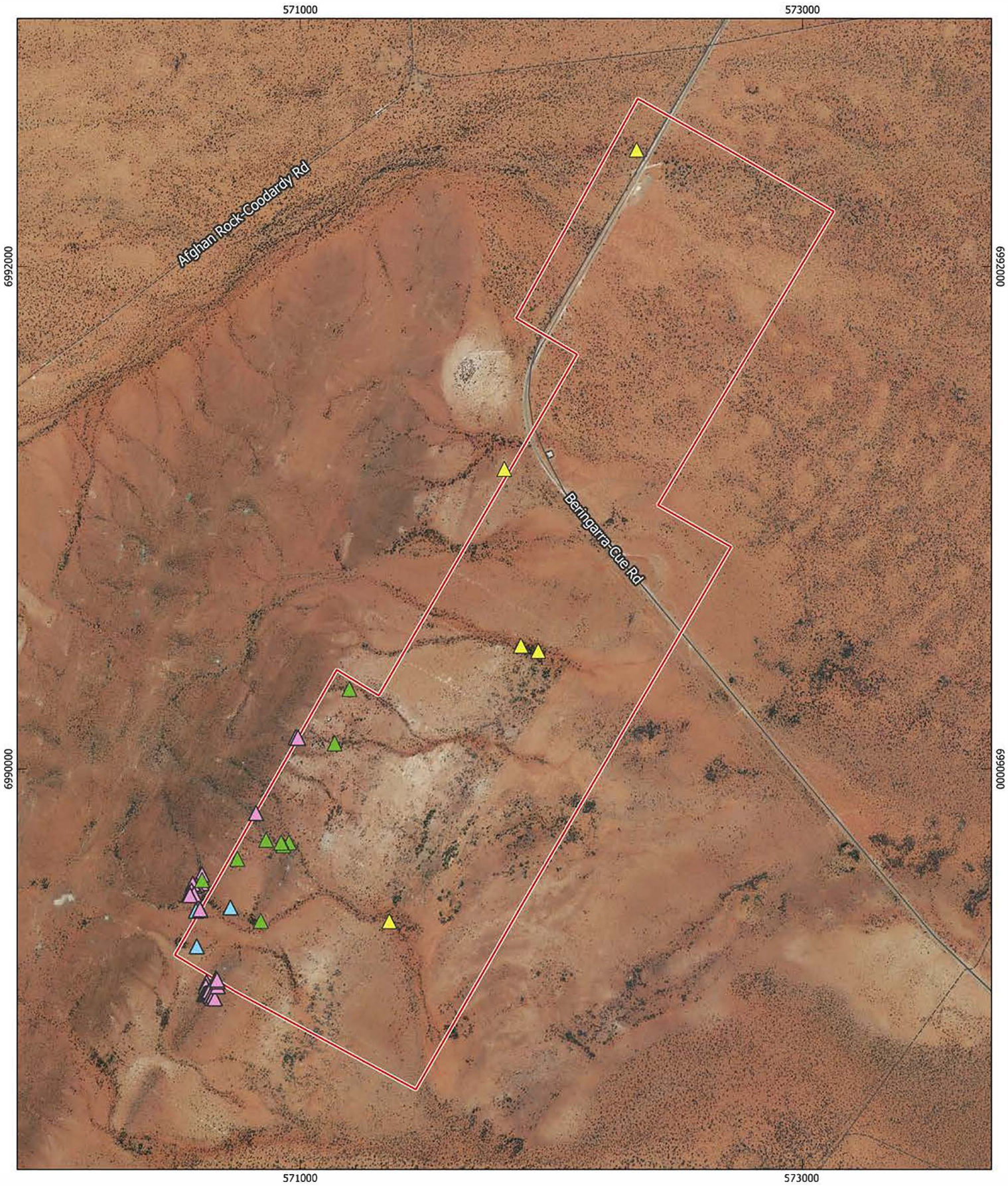


Figure 8: Conservation Significant Flora (Field Survey)

Legend

Significant Flora

- Santalum spicatum
- Sauropus sp. Woolgorong
- Acacia speckii
- Dodonaea amplisemina
- Survey Area

0 200 400 600 m

Scale 1:20,000
GDA94 - MGA Zone 50

Ref: 085_G016_RevB.qgz

Figure 9: Vegetation Association

0 200 400 600 m

Scale 1:20,000
GDA94 - MGA Zone 50

Legend

- Quartz
- Releve
- Survey Area

Vegetation Association

- VT1
- VT2
- VT3
- VT4
- VT5
- VT6
- VT7
- VT8
- VT9
- Road

Ref: 085_G014_RevB.qgz

Figure 10: Vegetation Condition

0 200 400 600 m

Scale 1:20,000
GDA94 - MGA Zone 50

Legend

Survey Area

Vegetation Condition

Very Good

Good

Degraded

Cleared

Ref: 085_G013_RevA.qgz

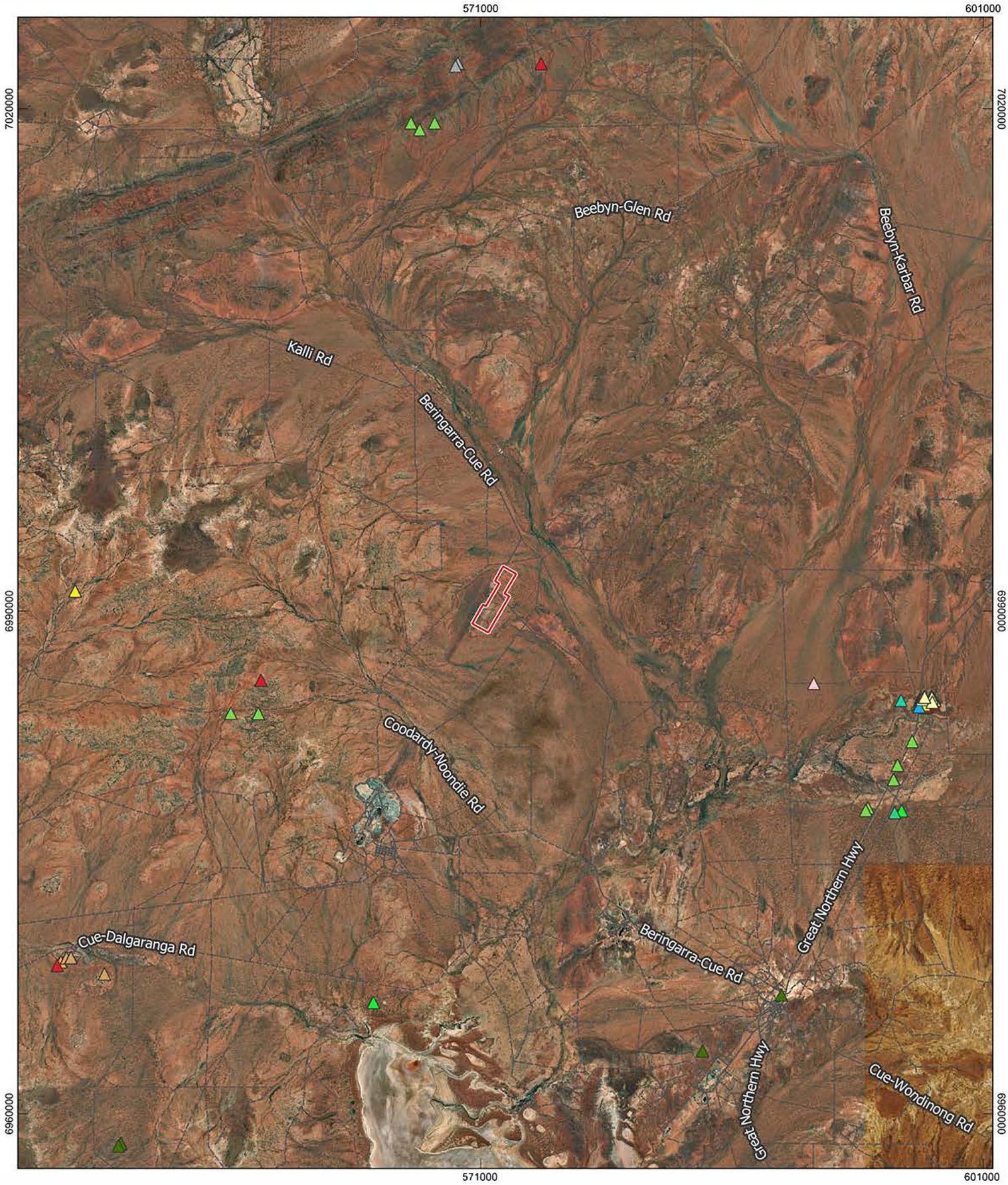


Figure 11: Conservation Significant Fauna

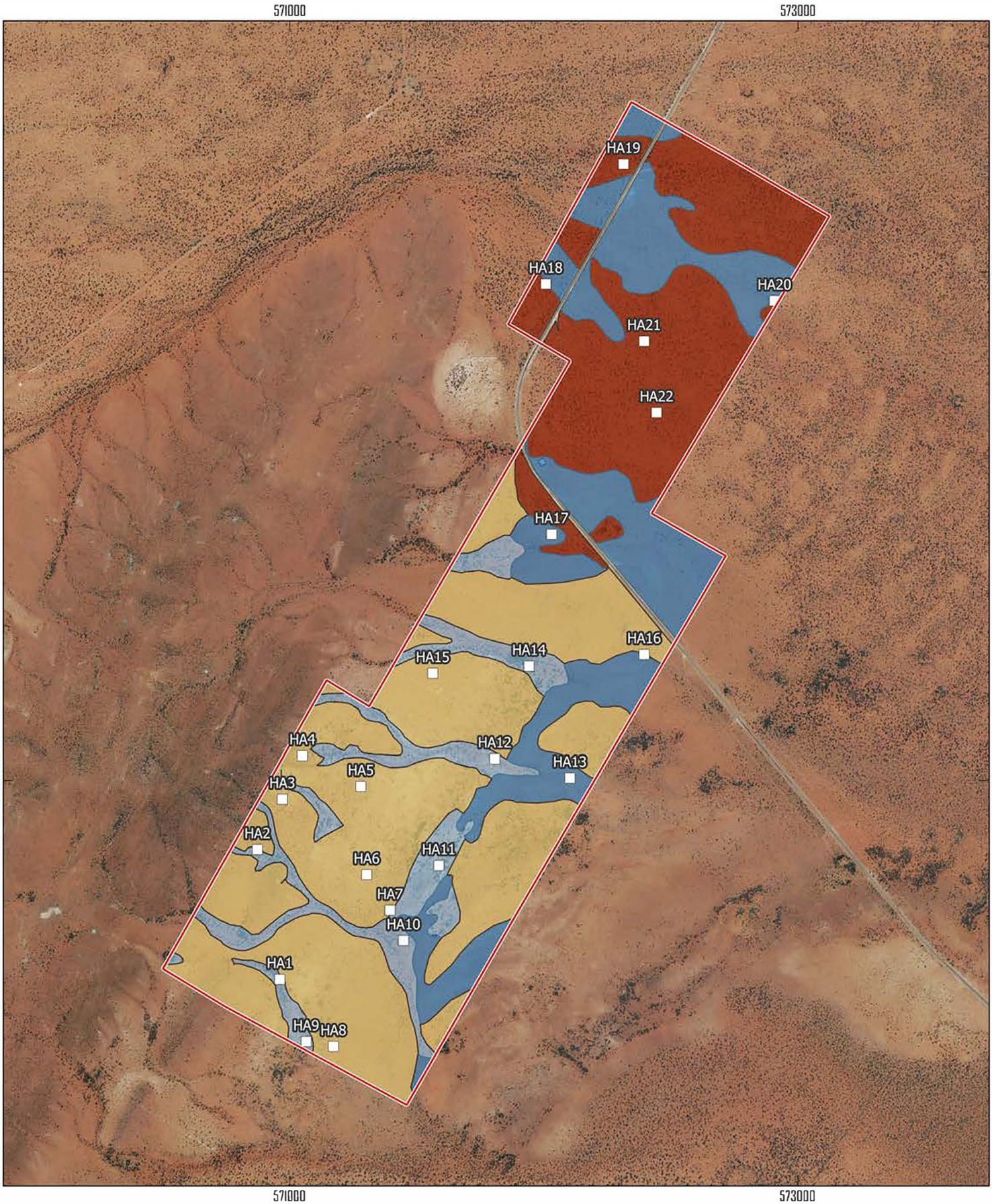


Figure 12: Fauna Habitat (Survey Area)

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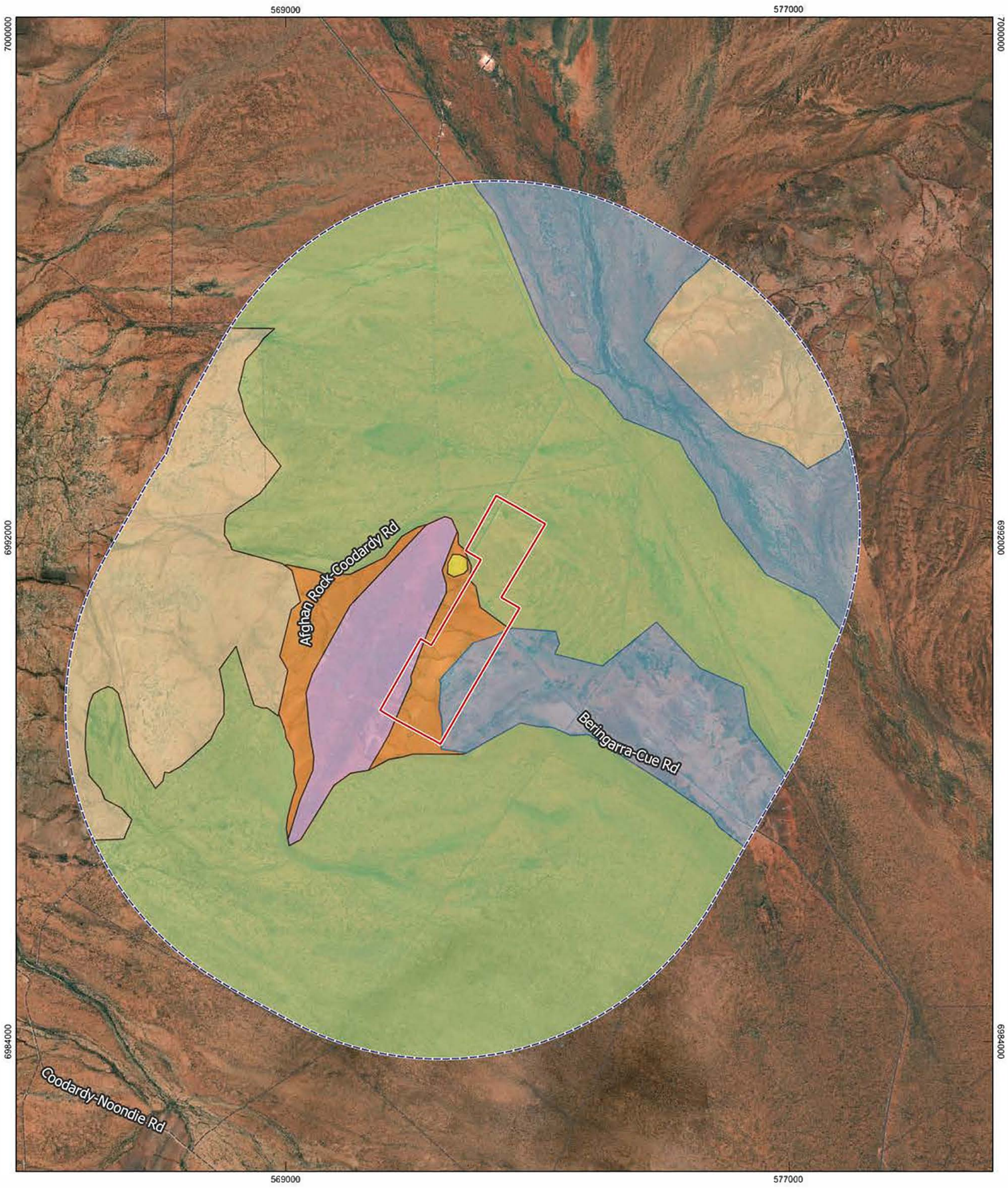


Figure 13: Fauna Habitat (Study Area)

Appendices

Appendix 1: Conservation Categories

Categories of Threatened Flora and Fauna Species under the EPBC Act

Conservation Code	Description
Ex	Extinct Taxa which at a particular time if, at the time, there is no reasonable doubt that the last member of the species has died.
ExW	Extinct in the Wild Taxa which is known only to survive in cultivation, in captivity or as a naturalised population well outside its past range; or it has not been recorded in its known and/or expected habitat, at appropriate seasons, anywhere in its past range, despite exhaustive surveys over a time frame appropriate to its life cycle and form.
CE	Critically Endangered Taxa which at a particular time, it is facing an extremely high risk of extinction in the wild in the immediate future, as determined in accordance with the prescribed criteria.
En	Endangered Taxa which is not critically endangered and it is facing a very high risk of extinction in the wild in the medium-term future, as determined in accordance with the prescribed criteria.
Vu	Vulnerable Taxa which is not critically endangered or endangered and is facing a high risk of extinction in the wild in the medium-term future, as determined in accordance with the prescribed criteria.

Source: Environment Protection and Biodiversity Conservation Act 1999.

Categories of Threatened Flora and Fauna Species under the BC Act

Department of **Biodiversity, Conservation and Attractions**

GOVERNMENT OF WESTERN AUSTRALIA

CONSERVATION CODES

For Western Australian Flora and Fauna

Threatened, Extinct and Specially Protected fauna or flora[1] are species[2] 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.

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 species**

Fauna that periodically or occasionally visit Australia or an external Territory or the exclusive economic zone; or the species is subject of an international agreement that relates to the protection of migratory species and that binds the Commonwealth; 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 dependent 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*.

Conservation codes for Western Australian flora and fauna

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.

1 **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.

2 **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.

3 **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.

4 **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.

[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).

Last updated 3 January 2019

Appendix 2: Vascular Flora List

Family	Scientific Name	Code	Fl/Fr
Amaranthaceae	*Ptilotus divaricatus*		Fl/Fr
Amaranthaceae	*Ptilotus exaltatus*		
Amaranthaceae	*Ptilotus obovatus*		Fl/Fr
Amaranthaceae	*Ptilotus rotundifolius*		Fl/Fr
Asteraceae	*Chthonocephalus pseudevax* (dried)		
Chenopodiaceae	*Atriplex codonocarpa*		Fr
Chenopodiaceae	*Atriplex semilunaris*		Fr
Chenopodiaceae	*Atriplex vesicaria*		
Chenopodiaceae	*Dissocarpus paradoxus*		Fr
Chenopodiaceae	*Enchylaena tomentosa*		Fr
Chenopodiaceae	*Maireana pyramidata*		Fr
Chenopodiaceae	*Maireana triptera*		
Chenopodiaceae	*Rhagodia drummondii*		Fr
Chenopodiaceae	*Rhagodia eremaea*		
Chenopodiaceae	*Salsola australis*		
Chenopodiaceae	*Sclerolaena cuneata*		Fr
Chenopodiaceae	*Sclerolaena fusiformis*		Fr
Euphorbiaceae	*Euphorbia drummondii*		
Fabaceae	*Acacia aptaneura*		
Fabaceae	*Acacia caesaneura*		
Fabaceae	*Acacia craspedocarpa*		
Fabaceae	*Acacia fuscaneura*		
Fabaceae	*Acacia pteraneura*		
Fabaceae	*Acacia pachycarpa*		
Fabaceae	*Acacia pruinocarpa*		
Fabaceae	*Acacia ramulosa* var. *ramulosa*		
Fabaceae	*Acacia sclerosperma* subsp. *sclerosperma*		
Fabaceae	*Acacia speckii*	P4	
Fabaceae	*Acacia synchronicia*		Bud
Fabaceae	*Acacia tetragonophylla*		
Fabaceae	*Indigofera monophylla*		
Fabaceae	*Senna artemisioides* subsp. *oligophylla*		
Fabaceae	*Senna artemisioides* subsp. *helmsii*		
Fabaceae	*Senna artemisioides* subsp. x *artemisioides*		
Fabaceae	*Senna glutinosa* subsp. *pruinosa*		
Fabaceae	*Senna* sp. Billabong		
Fabaceae	*Senna* sp. Meekatharra		
Hemerocallidaceae	*Dianella divaricata* var. *revoluta*		
Loranthaceae	*Amyema nestor*		

Family	Scientific Name	Code	Fl/Fr
Malvaceae	*Abutilon cryptopetalum* (tentative)		
Malvaceae	*Abutilon oxycarpum*		
Malvaceae	*Hibiscus burtonii*		
Malvaceae	*Sida* sp. Excedentifolia (J.L. Egan 1925) (tentative)		
Malvaceae	*Sida calyxhymenia*		
Phyllanthaceae	*Sauropus* sp. Woolgorong (M. Officer s.n. 10/8/94)	P3	Old Fr
Pittosporaceae	*Pittosporum angustifolium*		
Poaceae	*Austrostipa elegantissima*		
Poaceae	*Cymbopogon ambiguus*		Fr
Poaceae	*Eragrostis xerophila*		Fr
Poaceae	*Eriachne pulchella*		Old Fr
Poaceae	*Monachather paradoxus*		Fr
Proteaceae	*Hakea preissii*		Fr
Proteaceae	*Hakea lorea*		Fr
Pteridaceae	*Cheilanthes sieberi* subsp. *sieberi*		
Rubiaceae	*Psydrax latifolia*		Fr
Rubiaceae	*Psydrax rigidula*		
Santalaceae	*Santalum spicatum*	R	Fr
Santalaceae	*Santalum lanceolatum*		
Sapindaceae	*Dodonaea amplisemina*	P4	
Scrophulariaceae	*Eremophila exilifolia*		Bud
Scrophulariaceae	*Eremophila galeata*		Fr
Scrophulariaceae	*Eremophila glutinosa*		Bud
Scrophulariaceae	*Eremophila latrobei* subsp. *latrobei*		
Scrophulariaceae	*Eremophila longifolia*		
Scrophulariaceae	*Eremophila macmillaniana*		
Scrophulariaceae	*Eremophila oppositifolia* subsp. *angustifolia*		
Scrophulariaceae	*Eremophila platycalyx* subsp. *platycalyx*		
Scrophulariaceae	*Eremophila youngii subsp. youngii*		
Solanaceae	*Solanum lasiophyllum*		

Appendix 2A: GPS locations of conservation significant flora – Dodonaea amplisemina P4

Scientific Name	Code	Date	Easting	Northing	No.
Dodonaea amplisemina	P4	3/11/2020	570627	6989150	5
Dodonaea amplisemina	P4	3/11/2020	570624	6989135	1
Dodonaea amplisemina	P4	3/11/2020	570617	6989103	1
Dodonaea amplisemina	P4	3/11/2020	570623	6989107	1
Dodonaea amplisemina	P4	3/11/2020	570629	6989108	1
Dodonaea amplisemina	P4	3/11/2020	570637	6989112	3
Dodonaea amplisemina	P4	3/11/2020	570639	6989117	1
Dodonaea amplisemina	P4	3/11/2020	570643	6989097	4
Dodonaea amplisemina	P4	3/11/2020	570648	6989089	2
Dodonaea amplisemina	P4	3/11/2020	570654	6989097	1
Dodonaea amplisemina	P4	3/11/2020	570660	6989086	1
Dodonaea amplisemina	P4	3/11/2020	570671	6989135	2
Dodonaea amplisemina	P4	3/11/2020	570671	6989154	1
Dodonaea amplisemina	P4	3/11/2020	570669	6989161	1
Dodonaea amplisemina	P4	3/11/2020	570609	6989581	1
Dodonaea amplisemina	P4	3/11/2020	570607	6989546	1
Dodonaea amplisemina	P4	3/11/2020	570587	6989538	1
Dodonaea amplisemina	P4	3/11/2020	570579	6989536	1
Dodonaea amplisemina	P4	3/11/2020	570572	6989543	2
Dodonaea amplisemina	P4	3/11/2020	570560	6989508	3
Dodonaea amplisemina	P4	3/11/2020	570567	6989516	1
Dodonaea amplisemina	P4	3/11/2020	570577	6989502	1
Dodonaea amplisemina	P4	3/11/2020	570561	6989498	4
Dodonaea amplisemina	P4	3/11/2020	570601	6989441	2
Dodonaea amplisemina	P4	3/11/2020	570983	6990126	5
Dodonaea amplisemina	P4	3/11/2020	570991	6990124	2
Dodonaea amplisemina	P4	3/11/2020	570824	6989825	3
					52

Appendix 2B: Acacia speckii locations

Scientific Name	Code	Date	Easting	Northing	
Acacia speckii	P4	3/11/2020	570665	6989166	2
Acacia speckii	P4	3/11/2020	570585	6989436	1
Acacia speckii	P4	3/11/2020	570603	6989438	2
Acacia speckii	P4	3/11/2020	570588	6989294	1
Acacia speckii	P4	3/11/2020	570722	6989449	1
					7

Appendix 2C: Sauropus sp. Woolgorong locations

Scientific Name	Code	Date	Easting	Northing	No.
Sauropus sp. Woolgorong	P3	3/11/2020	571355	6989394	1
Sauropus sp. Woolgorong	P3	4/11/2020	571813	6991194	1
Sauropus sp. Woolgorong	P3	4/11/2020	571879	6990490	2
Sauropus sp. Woolgorong	P3	4/11/2020	571948	6990469	1
Sauropus sp. Woolgorong	P3	4/11/2020	572340	6992466	6
					11

Appendix 2D: Santalum spicatum locations

Scientific Name	Code	Date	Easting	Northing	No.
Santalum spicatum	R	3/11/2020	570843	6989395	1
Santalum spicatum	R	3/11/2020	570955	6989708	1
Santalum spicatum	R	3/11/2020	570933	6989696	1
Santalum spicatum	R	3/11/2020	570924	6989707	1
Santalum spicatum	R	3/11/2020	570864	6989718	1
Santalum spicatum	R	3/11/2020	570750	6989642	1
Santalum spicatum	R	3/11/2020	570609	6989558	1
Santalum spicatum	R	3/11/2020	571196	6990317	1
Santalum spicatum	R	3/11/2020	571137	6990102	1
					9

Appendix 3: Relevé Descriptions

Relevé descriptions

Relevé	Description	GPS & Condition	Image
R01 VT4	Outwash slope; stony quartz; yellowish red (5YR 5/8) clay loam; SR – Quartz 50 – 60 %; litter < 1 %; FT < 1 % Acacia aptaneura/ pteraneura low isolated trees to low open woodland over Eremophila galeata, E. macmillaniana, Ptilotus obovatus, Acacia aptaneura low sparse shrubland to low isolated shrubs over isolated grass tussocks Other species: Senna glutinosa subsp. pruinosa, Senna artemisioides subsp. x artemisioides	GPS: 571101 E/ 6989707 N Good	
R02 VT7	Drainage line; washed sand/ SCL, rocks; out cropping metabasalt on banks Acacia fuscaneura open woodland to woodland over Acacia aptaneura tall sparse shrubland/ low open woodland over Eremophila galeata, E. macmillaniana, Acacia tetragonophylla, A. incurvaneura, Senna artemisioides subsp. x artemisioides open shrubland Other species: Senna artemisioides subsp. helmsii, Ptilotus obovatus, Acacia sclerosperma subsp. sclerosperma, Santalum spicatum	GPS: 570998 E/ 6989684 N Good to very good	

Relevé	Description	GPS & Condition	Image
R03 VT5 Basalt	Low rise with metabasalt outcropping, quartz; red-brown fine sandy clay loam Acacia aptaneura, A. ramulosa var. ramulosa, A. synchronicia, Hakea preissii isolated low trees/ tall shrubs over Senna sp. Meekatharra, Eremophila macmillaniana, Senna artemisioides subsp. artemisioides, S. artemisioides subsp. helmsii, Ptilotus rotundifolius open shrubland over Maireana triptera isolated low shrubs Other species: Acacia synchronicia	GPS: 570954 E/ 6989645 N Good	
			

Relevé	Description	GPS & Condition	Image
R04 VT5	Lower slope of rise; north of drainage line; metabasalt, quartz vein; yellowish red clay loam Small dense stand of tall shrubs Acacia aptaneura tall shrubs over Eremophila macmillaniana, Acacia tetragonophylla, Eremophila glutinosa, E. exilis, E. galeata, Ptilotus rotundifolius shrubland over Sida calyxhymenia, Indigofera monophylla, Psydrax latifolia, Acacia aptaneura low open shrubland	GPS: 570847 E/ 6989488 N Minor patch in very good condition	
R05 VT7	Creek; defined channels; quartz outcrop Acacia caesaneura, A. aptaneura, A. aneura low woodland over Eremophila macmillaniana, E. galeata, Acacia aneura, Eremophila exilis, Ptilotus rotundifolius open shrubland to sparse shrubs over Cymbopogon ambiguus and Ptilotus obovatus sparse grass tussocks and low shrubs Other species: Santalum spicatum, Psydrax suaveolens, Cheilanthes sieberi	GPS: 570843 E/ 6989391 N Good; moderate to high level of disturbance in understorey	

Relevé	Description	GPS & Condition	Image
R06 VT3	Low rise with metabasalt outcropping; quartz field Between drainage lines *Acacia aptaneura* isolated tall shrubs over *Eremophila macmillaniana, Ptilotus rotundifolia, Acacia aptaneura, Senna* sp. Meekatharra sparse shrubland to open shrubland over *Senna* sp. Meekatharra, *Maireana triptera, Ptilotus rotundifolia* low sparse shrubland Other species: *Senna artemisioides* subsp. *helmsii, Eremophila longifolia, E. galeata, Ptilotus obovatus, Senna artemisioides* subsp. *oligophylla, Solanum lasiophyllum, Eremophila glutinosa, E. exilis*	GPS: 570788 E/ 6989340 N Degraded – high level of pastoral impacts	
R07 VT5	Low rise; surface rock metabasalt 60 – 70 %; reddish brown fine sandy clay loam; litter < 5 %; fallen timber < 1 % *Dodonaea amplisemina* P4 starts at 570627/ 6989150 + *Eremophila latrobei* subsp. *latrobei, Acacia speckii* P4	GPS: 570627 E/ 6989150 N Good	

Relevé	Description	GPS & Condition	Image
R08 VT3	Stony plain; yellowish red (5YR 5/6) fine sandy clay loam; surface rock 30 – 40 %; litter < 2 %; fallen timber < 2 % *Eremophila galeata, Ptilotus rotundifolius, P. obovatus* isolated shrubs	GPS: 570911 E/ 6989363 N Degraded – high level of pastoral impacts	
R09 DL VT7	Drainage line. Washed sand over red hardpan *Acacia fuscaneura* low woodland *Santalum spicatum, Psydrax suaveolens, Acacia aptaneura*	GPS: 570955 E/ 6989708 N Good	
R10 VT5	Low rise; metabasalt outcropping; reddish brown clay loam; surface rock 30 – 40 % *Acacia aptaneura* tall sparse shrubland to isolated tall shrubs over *Eremophila macmillaniana, Dodonaea amplisemina, Ptilotus rotundifolius, Acacia aptaneura* sparse to open shrubland Other species: *Acacia speckii, Santalum spicatum, Ptilotus obovatus, Senna artemisioides* subsp. *helmsii,* isolated grass tussocks	GPS: 570609 E/ 6989581 N Degraded to good; high impacts from pastoral activities	

Relevé	Description	GPS & Condition	Image

R11 VT7	Drainage line; midslope Thick patch of vegetation *Acacia fuscaneura, A. aptaneura, A. caesaneura, A. sclerosperma* subsp. *sclerosperma* low woodland over Senna sp. Billabong, Eremophila macmillaniana, Acacia aptaneura, A. fuscaneura tall open shrubland over Eremophila exilis, E. macmillaniana, Ptilotus obovatus low sparse shrubland Other species: Ptilotus rotundifolius (o/s); Acacia speckii (creek); Hakea preissii (creek)	GPS: 570517 E/ 6989321 N Good – upper stratum mostly intact; lack of recruitment and isolated ground cover	
R12 VT5	Lower outwash slopes; dark reddish-brown patch *Acacia aptaneura* tall sparse shrubland over *Eremophila macmillaniana* open to sparse shrubland	GPS: 570910 E/ 6989964 N Good	

Relevé	Description	GPS & Condition	Image
R13 VT4	Lower mid slope of hill; surface rock metabasalt, quartz 60 – 70 %; fallen timber 2 – 3 %; litter 2 – 5 % *Acacia aptaneura* low isolated trees to low open woodland over *Eremophila macmillaniana, Senna* sp. Meekatharra, *Ptilotus rotundifolius* open shrubland over *Ptilotus obovatus, Maireana triptera, Sida calyxhymenia* low isolated shrubs Germination of grasses	GPS: 571194 E/ 6990194 N Good	
R14 VT8	Plain/ floodplain; yellowish red silty clay loam Surface rock 10 – 20 %; fallen timber 2 – 3 %; litter 5 – 10 % *Acacia craspedocarpa, A. aptaneura, A. synchronicia* tall open shrubland over *Eremophila galeata, Ptilotus obovatus* low open shrubland Other species: *Ptilotus rotundifolius, Eremophila exilis, Maireana triptera, Acacia tetragonophylla, Eremophila longifolia, Acacia pruinocarpa*	GPS: 571145 E/ 6988986 N Good	

Relevé	Description	GPS & Condition	Image
R15 VT3	Stony plain; sheet erosion; degraded Surface rock: 50 – 60 % *Ptilotus rotundifolius, Eremophila galeata, Ptilotus obovatus* low sparse shrubland with isolated *Acacia aptaneura* tall shrubs	GPS: 571229 E/ 6988941 N Mostly degraded	
R16 VT7	Drainage line; plain Yellowish red clay loam with areas of washed fine sand Several monitor lizard tracks *Acacia fuscaneura, A. synchronicia, A. craspedocarpa, A. aptaneura, Hakea lorea* low open woodland patches over *Acacia ramulosa* var. *ramulosa, A. tetragonophylla, Senna* sp. Billabong isolated to sparse shrubs over *Cymbopogon ambiguus, Maireana triptera, Enchylaena tomentosa, Ptilotus divaricatus, Sauropus* sp. Woolgorong P3, *Solanum lasiophyllum, Atriplex vesicaria* low isolated shrubs and grass tussocks over *Sclerolaena fusiformis* isolated chenopod herbs	GPS: 571436 E/ 6989344 N Good; high levels of impact along creek banks – pastoral	

Relevé	Description	GPS & Condition	Image
R17 VT9	Billabong; flood plain; cracking clay soils Monitor lizard observed; went into hole *Pittosporum angustifolium* low trees over *Pittosporum angustifolium, Psydrax suaveolens, Senna artemisioides* subsp. *helmsii, Santalum spicatum* isolated shrubs over *Cymbopogon ambiguus, Atriplex vesicaria, Sclerolaena cuneata* grass tussocks and low shrubs. Good cover of dried grasses (70 – 80 %)	GPS: 571591 E/ 6989516 N Good; extensive pastoral impacts around area	
R18 VT9	Floodplain; billabong; cracking clay soils Patch of denser vegetation around waterholes *Pittosporum angustifolium, Hakea preissii, Eremophila longifolia, Acacia synchronicia* low woodland over *Ptilotus divaricatus, P. obovatus, Enchylaena tomentosa, Rhagodia drummondii* shrubland over *Dissocarpus paradoxus, Sclerolaena cuneata, Atriplex codonocarpa, Maireana pyramidata*, resprouting grasses low open shrubland Other species: *Ptilotus exaltatus*	GPS: 571586 E/ 6989655 N Good; patches of very good High level of trampling around edges of water hole	

Relevé	Description	GPS & Condition	Image
R19 VT7 4/11/20 571881 6991311	Drainage line; plain Reddish yellow clay loam with washed sand on surface; surface rock < 10% Acacia aptaneura, A. craspedocarpa low woodland over Acacia craspedocarpa, A. aptaneura, Eremophila galeata open shrubland over Ptilotus obovatus, A. craspedocarpa low sparse shrubland over sparse grazed grass tussocks Other species: Eremophila macmillaniana, Senna sp. Billabong	Good; grazing, trampling impacts	
R20 (21) VT3 571840 6991210 4/11/20	Plain, slight rise, stony plain Surface rock 40 – 50 %, basalt, quartz; washed sand over clay loam Acacia aptaneura isolated to sparse tall shrubs over Eremophila galeata, Ptilotus rotundifolius, Eremophila macmillaniana sparse shrubland over Ptilotus obovatus, Maireana triptera, Senna artemisioides subsp. helmsii isolated low shrubs		

Q1	Quartz outcrop Shallow yellowish red sandy loam Small pocket of denser vegetation *Acacia aptaneura* tall shrubs over *Eremophila macmillaniana, Senna* sp. Billabong, *Eremophila longifolia, E. glutinosa*	GPS: 570963 E/ 6989496 N Good; erosion evident in area; deposited sandy loam against rock on upper surface	
Q2 VT6	Quartz outcrop; shallow yellowish red sandy loam *Dodonaea amplisemina* P4 *Acacia aptaneura* tall shrubs over *Eremophila macmillaniana*	GPS: 570977 E/ 6990113 N Good; wind erosion and deposition	

Q3 VT6	Quartz outcrop *Acacia aptaneura* tall shrubs over *Eremophila macmillaniana* and *Ptilotus rotundifolius* Several monitor lizard tracks and burrows	GPS: 571110 E/ 6990192 N Good	
Q4	Quartz outcrop *Eremophila longifolia, Hakea preissii, Acacia tetragonophylla* shrubs over *Maireana triptera, Ptilotus obovatus, Senna* sp. Meekatharra, *Rhagodia drummondii* low shrubs Plain to east: *Acacia synchronicia, Atriplex semilunaris, A. vesicaria, Eremophila macmillaniana, Sclerolaena cuneata*	GPS: 571693 E/ 6989935 N Good	

R21 VT6	Quartz outcrop – minor outcrops within stony plain Surface rock 50 – 80 % Acacia fuscaneura low trees/ tall shrubs over Acacia fuscaneura, A. tetragonophylla, Eremophila macmillaniana, E. fraseri subsp. fraseri, Acacia pteraneura open shrubland over Ptilotus obovatus, Scaevola spinescens, Maireana triptera sparse low shrubland Eremophila latrobei subsp. latrobei, Ptilotus rotundifolius, Senna artemisioides subsp. helmsii, S. artemisioides subsp. x artemisioides shrubland over Austrostipa elegantissima, Abutilon ?cryptopetalum (sterile) Other species: Sauropus sp. Woolgorong P3, Eremophila glutinosa, Ptilotus rotundifolius, Acacia synchronicia, Hakea preissii	GPS: R21: 571732 E/6990980 N Q5 571818 6991202 Q6 571821 6991129 Q7 571745 6991072 Degraded to good	
R22 VT7	Drainage line; defined channels and banks; moderate to severe erosion *Acacia fuscaneura, A. aptaneura* tall open shrubland over *Acacia craspedocarpa, A. tetragonophylla, A. pachycarpa* open shrubland over Eremophila macmillaniana, Senna spp. Liverworts present in patches on channel banks	GPS: 571765 E/ 6990901 N Degraded to good	
R23 VT3	Stony plain Degraded, old tracks, pastoral impacts; erosion – sheet wash *Acacia aptaneura/ pteraneura, A. fuscaneura* very isolated tall shrubs *over Eremophila fraseri* subsp. *fraseri, Ptilotus rotundifolius* isolated shrubs over *Ptilotus obovatus* low isolated shrubs	GPS: 571809 E/ 6990696 N Degraded	

R24 VT7	Drainage line; defined channels and banks; litter 5 – 30 %; fallen timber 1 – 2 %; surface rock < 2 % *Acacia fuscaneura, A. aptaneura* tall shrubland/ low woodland (4 – 7 m) over *Eremophila galeata, E. macmillaniana, Senna* sp. Billabong, *Eremophila longifolia* sparse shrubland over *Senna* sp. Meekatharra, *Sauropus* sp. Woolgorong, *Senna* sp. Meekatharra low isolated shrubs Other species*: Senna artemisioides* subsp. *helmsii, Ptilotus obovatus, Acacia craspedocarpa, Cymbopogon ambiguus, Ptilotus rotundifolius, Indigofera monophylla*, grasses – *Eriachne pulchella, Atriplex vesicaria*	GPS: 571870 E/ 6990490 N Condition: Good to very good Erosion, grazing, debris dams	
R25 VT4	Low stony rise Yellowish red FSCL; surface rock – quartz, metabasalt 40 – 50 (60) % A. *Acacia aptaneura* low open woodland over *Eremophila macmillaniana, Senna* sp. Meekatharra isolated shrubs over *Maireana triptera, Ptilotus obovatus* low isolated shrubs over grass tussocks (grazed/ recent resprout) low isolated Other species: *Acacia pachycarpa, A. synchronicia, A. craspedocarpa, Senna artemisioides subsp. helmsii, A. tetragonophylla*	GPS: A. 571855 E/ 6990429 N Good	

Relevé	Description	GPS & Condition	Image
R25 (cont.) VT4	B. *Acacia craspedocarpa* tall open shrubland over open to sparse shrubland *Eremophila latrobei* subsp. *latrobei, Maireana triptera, A. synchronicia, A. tetragonophylla, Senna artemisioides* subsp. *helmsii*	B. 571670 E/ 6990301 N Good	
R26 VT3	Stony plain/ low rise – extends west from R25; surface rock 70 – 80 % Outwash slope *Ptilotus rotundifolius, Eremophila galeata, Acacia craspedocarpa, Ptilotus obovatus, Eremophila macmillaniana* sparse to isolated shrubs or low shrubs	GPS: 571629 E/ 6990437 N Degraded Old termite mounds – inactive	

Relevé	Description	GPS & Condition	Image
R27 VT8	Plain; lower outwash slopes Lower slope – depression *Acacia synchronicia, Hakea preissii* tall open shrubland over *Eremophila youngii* subsp. *youngii, Senna artemisioides* subsp. *oligophylla* open shrubland over *Ptilotus obovatus, Senna* sp. Billabong, *Atriplex vesicaria* sparse low shrubland Other species: *Acacia sclerosperma* subsp. *sclerosperma, Rhagodia drummondii, Salsola australis, Dissocarpus paradoxus, Atriplex vesicaria, Eremophila longifolia, Santalum lanceolatum, Acacia pachycarpa* (several grazed), *Maireana triptera*	GPS: 571768 E/ 6990273 N Very good – small pockets	
R28 (29) VT1	Floodplain; minor drainage lines Acacia aptaneura isolated low trees over Eremophila fraseri subsp. fraseri, Acacia craspedocarpa, Rhagodia drummondii, Ptilotus rotundifolia, Ptilotus obovatus, Solanum lasiophyllum isolated to sparse shrubs Several dead shrubs in area; high level of impacts	GPS: 572400 E/ 6990446 N Degraded; small patches of good condition near fenceline	

Relevé	Description	GPS & Condition	Image
R29 VT2	Plain 5YR5/8 yellowish red sandy clay loam; surface rock < 1% *Acacia fuscaneura, A. aptaneura* tall open shrubland over *Acacia aptaneura, Senna* sp. Meekatharra, *Eremophila forrestii* subsp. *forrestii, E. galeata* sparse shrubland over *Ptilotus obovatus* low isolated shrubs	GPS: 572009 E/ 6991958 N Good; small patches very good	
R30 VT1	Plain yellowish red sandy clay loam; surface rock < 1 % Wind erosion – low dune formation; sheet erosion (^ 20 cm) *Acacia pruinocarpa, A. aptaneura* low isolated trees over *Eremophila forrestii* subsp. *forrestii, Ptilotus obovatus, Solanum lasiophyllum* low sparse shrubland	GPS: 572066 E/ 6992040 N Good	

Relevé	Description	GPS & Condition	Image
R31 VT2	Plain; Yellowish red sandy loam over sandy clay loam; litter 10 – 20 %; fallen timber (some from clearing for track) 2 – 4 % *Acacia fuscaneura, A. caesaneura* open woodland over *Acacia tetragonophylla, A. ramulosa* var. *ramulosa, A. craspedocarpa, A. fuscaneura, Eremophila forrestii* subsp. *forrestii, Senna artemisioides* subsp. *helmsii, Eremophila latrobei* subsp. *latrobei, Rhagodia drummondii* open shrubland over *Monachather paradoxus, Sauropus* sp. Woolgorong P3, *Dianella revoluta* var. *divaricata* open tussock grassland Several monitor lizard tracks and burrows Areas of *Eremophila forrestii* subsp. *forrestii* open shrubland over *Monachather paradoxus* open tussock grassland	GPS: 572340 E/ 6992466 N Very good; much lower impacts than other areas Wind erosion; tracks; fenceline Grasses in fruit	

Relevé	Description	GPS & Condition	Image
R32 VT1	Plain; red hard pan clay loam; sheet erosion – removal of topsoil; fallen timber 1 – 2 %; litter < 5 % (most under shrubs) *Acacia aptaneura* low isolated trees (4 – 6 m) over *Acacia craspedocarpa, A. aptaneura, Eremophila galeata, E. macmillaniana, Senna artemisioides* subsp. *helmsii* sparse shrubland to isolated shrubs over *Eremophila galeata, Senna artemisioides* subsp. *helmsii, Ptilotus obovatus, Solanum lasiophyllum* low isolated shrubs over isolated low grass tussocks (1 – 2cm) recent regrowth Other species: *Eremophila latrobei* subsp. *latrobei, Acacia tetragonophylla, Maireana* sp.	GPS: 572894 E/ 6991902 N Degraded Lot of deaths	
R33 VT2	Plain; yellowish red sandy loam over red sandy clay loam; litter 2 – 10 %, some good patches under *Acacia* spp.; fallen timber < 1 % *Acacia pruinocarpa* low emergent trees (9 – 10m) to trees (17m) over *Acacia caesaneura, A. aptaneura, a. fuscaneura* tall open to sparse shrubland over *Eremophila forrestii* subsp. *forrestii* open shrubland over *Eremophila forrestii* subsp. *forrestii, Monachather paradoxus* low sparse shrubland and tussock grasses Other species: *Acacia tetragonophylla, Eremophila galeata, A. ramulosa* var. *ramulosa, Hibiscus burtonii* (tent; recent germination)	GPS: 572390 E/ 6991728 N Very good Historic mining – old drill pads and tracks; pastoral impacts	

Appendix 4: Fauna Database Results

DBCA Threatened Fauna Database

COM_NAME	SCI_NAME	CLASS	WA status	EPBC status	Date	SOURCE_ID	SOURCE	CERTAINTY	OBS_METHOD	OBS_TYPE	COUNT	SITE	ACCURACY M	FAMILY	GENUS	SPECIES	SUBSPECIES
Bar-tailed godwit	Limosa lapponica	BIRD	MI	MI	22/09/1999	32613|153	BIRDATLAS2					Claypan, Austin Downs Station	100	Scolopacidae	Limosa	lapponica	
Blue-billed duck	Oxyura australis	BIRD	P4		23/06/2000	127704|216	BIRDATLAS2					Nallan Dam	100	Anatidae	Oxyura	australis	
Brush-tailed mulgara	Dasycercus blythi	MAMMAL	P4			8437	TFAUNA	Certain	Historical (written)	Fossil		Wilgie Mia aboriginal ocre mine, about 5 km SSW of Gnanagooragoo Peak in the Weld Range	1000	Dasyuridae	Dasycercus	blythi	
Caspian Tern	Hydroprogne caspia	BIRD	MI	MI	24/01/2013	1275641|112	BIRDATA					Lake Nallan	0	Laridae	Hydroprogne	caspia	
Common greenshank	Tringa nebularia	BIRD	MI	MI	9/05/2011	1206807|158	BIRDATA					Lake Austin - Lakeside Rd	0	Scolopacidae	Tringa	nebularia	
Common greenshank	Tringa nebularia	BIRD	MI	MI	14/02/2013	1275642|158	BIRDATA					Lake Nallan	0	Scolopacidae	Tringa	nebularia	
Common greenshank	Tringa nebularia	BIRD	MI	MI	27/03/2012	1492222|158	BIRDATA					Nallan Lake	0	Scolopacidae	Tringa	nebularia	
Common greenshank	Tringa nebularia	BIRD	MI	MI	24/08/1980	90012|158	BIRDATLAS1					REEDY	18000	Scolopacidae	Tringa	nebularia	
Common greenshank	Tringa nebularia	BIRD	MI	MI	21/09/2001	187212|158	BIRDATLAS2					Lake Nallan, Great Northern Hwy	100	Scolopacidae	Tringa	nebularia	
Common greenshank	Tringa nebularia	BIRD	MI	MI	23/08/2003	297318|158	BIRDATLAS2					Nallan Lake	100	Scolopacidae	Tringa	nebularia	
Common greenshank	Tringa nebularia	BIRD	MI	MI	22/09/1999	32613|158	BIRDATLAS2					Claypan, Austin Downs Station	100	Scolopacidae	Tringa	nebularia	
Common greenshank	Tringa nebularia	BIRD	MI	MI	9/11/2003	415699|158	BIRDATLAS2					Nallan Lake	100	Scolopacidae	Tringa	nebularia	
Common greenshank	Tringa nebularia	BIRD	MI	MI	17/01/2004	425193|158	BIRDATLAS2					Nallon Lake	100	Scolopacidae	Tringa	nebularia	
Common greenshank	Tringa nebularia	BIRD	MI	MI	18/09/2004	432016|158	BIRDATLAS2					Nallan Dam	100	Scolopacidae	Tringa	nebularia	
Common greenshank	Tringa nebularia	BIRD	MI	MI	25/03/2005	451729|158	BIRDATLAS2					Nallan Lake	100	Scolopacidae	Tringa	nebularia	
Common greenshank	Tringa nebularia	BIRD	MI	MI	28/07/2005	453321|158	BIRDATLAS2					Hallan Dam	100	Scolopacidae	Tringa	nebularia	
Common greenshank	Tringa nebularia	BIRD	MI	MI	11/06/2005	453909|158	BIRDATLAS2					Nallan Dam	100	Scolopacidae	Tringa	nebularia	
Common greenshank	Tringa nebularia	BIRD	MI	MI	22/08/2005	453940|158	BIRDATLAS2					Nallan Dam	100	Scolopacidae	Tringa	nebularia	
Common greenshank	Tringa nebularia	BIRD	MI	MI	5/11/2005	468425|158	BIRDATLAS2					Small Lake	100	Scolopacidae	Tringa	nebularia	
Common greenshank	Tringa nebularia	BIRD	MI	MI	6/11/2005	468430|158	BIRDATLAS2					Nallan Lake	100	Scolopacidae	Tringa	nebularia	
Common greenshank	Tringa nebularia	BIRD	MI	MI	27/10/1999	47625|158	BIRDATLAS2					Nallan Lake	100	Scolopacidae	Tringa	nebularia	
Common greenshank	Tringa nebularia	BIRD	MI	MI	2/06/2009	5057458|158	BIRDATLAS2					Nallan Station	100	Scolopacidae	Tringa	nebularia	
Common greenshank	Tringa nebularia	BIRD	MI	MI	9/05/2011	5083187|158	BIRDATLAS2					Lake Austin - Lakeside Rd	0	Scolopacidae	Tringa	nebularia	
Common greenshank	Tringa nebularia	BIRD	MI	MI	14/02/2013	5120771|158	BIRDATLAS2					Lake Nallan	100	Scolopacidae	Tringa	nebularia	
Common greenshank	Tringa nebularia	BIRD	MI	MI	29/12/1999	73009|158	BIRDATLAS2					Nallan Lake	500	Scolopacidae	Tringa	nebularia	
Common greenshank	Tringa nebularia	BIRD	MI	MI	28/03/2012	511577	FAUNASURVEY	Certain	Survey	Unknown	45	Cue, Lake Austin	3000	Scolopacidae	Tringa	nebularia	
Common Sandpiper	Actitis hypoleucos	BIRD	MI	MI	22/07/2015	991901|157	BIRDATA					Nallan Lake	0	Scolopacidae	Actitis	hypoleucos	
Common Sandpiper	Actitis hypoleucos	BIRD	MI	MI	15/09/2001	187532|157	BIRDATLAS2					Nallan Lake, Great Northern Hwy	100	Scolopacidae	Actitis	hypoleucos	
Common Sandpiper	Actitis hypoleucos	BIRD	MI	MI	22/08/2005	453940|157	BIRDATLAS2					Nallan Dam	100	Scolopacidae	Actitis	hypoleucos	
Curlew sandpiper	Calidris ferruginea	BIRD	CR	CR	5/11/2005	468425|161	BIRDATLAS2					Small Lake	100	Scolopacidae	Calidris	ferruginea	
Fork-tailed swift	Apus pacificus	BIRD	MI	MI	11/09/2001	187523|335	BIRDATLAS2					Walga Rock	100	Apodidae	Apus	pacificus	
Ghost bat	Macroderma gigas	MAMMAL	VU	VU		8440	TFAUNA	Certain	Historical (written)	Secondary sign		Wilgie Mia aboriginal ocre mine, about 5 km SSW of Gnanagooragoo Peak in the Weld Range	1000	Megadermatidae	Macroderma	gigas	
Ghost bat	Macroderma gigas	MAMMAL	VU	VU		17819	WAM_PALAEOFOSSILS	WAM Vouchered	Collection	Specimen	1	Wilgie Mia Ochre Mine: small chamber off top of entrance chamber	1800	Megadermatidae	Macroderma	gigas	
Glossy ibis	Plegadis falcinellus	BIRD	MI	MI	18/09/2004	432016|178	BIRDATLAS2					Nallan Dam	100	Threskiornithidae	Plegadis	falcinellus	
Glossy ibis	Plegadis falcinellus	BIRD	MI	MI	19/10/2005	434877|178	BIRDATLAS2					Lake Nallan	100	Threskiornithidae	Plegadis	falcinellus	
Glossy ibis	Plegadis falcinellus	BIRD	MI	MI	27/10/1999	47625|178	BIRDATLAS2					Nallan Lake	100	Threskiornithidae	Plegadis	falcinellus	
Glossy ibis	Plegadis falcinellus	BIRD	MI	MI	14/10/1999	56744|178	BIRDATLAS2					Nallan Lake	100	Threskiornithidae	Plegadis	falcinellus	
Gull-billed tern	Gelochelidon nilotica	BIRD	MI	MI	2/09/1980	107504|111	BIRDATLAS1						18000	Sturnidae	Gelochelidon	nilotica	
Gull-billed tern	Gelochelidon nilotica	BIRD	MI	MI	24/08/1980	107507|111	BIRDATLAS1						18000	Sturnidae	Gelochelidon	nilotica	
Gull-billed tern	Gelochelidon nilotica	BIRD	MI	MI	24/08/1980	107508|111	BIRDATLAS1						18000	Sturnidae	Gelochelidon	nilotica	
Gull-billed tern	Gelochelidon nilotica	BIRD	MI	MI	24/08/1980	8519|111	BIRDATLAS1						108000	Sturnidae	Gelochelidon	nilotica	
Gull-billed tern	Gelochelidon nilotica	BIRD	MI	MI	24/08/1980	90003|111	BIRDATLAS1						18000	Sturnidae	Gelochelidon	nilotica	
Gull-billed tern	Gelochelidon nilotica	BIRD	MI	MI	2/09/1980	90004|111	BIRDATLAS1						108000	Sturnidae	Gelochelidon	nilotica	
Gull-billed tern	Gelochelidon nilotica	BIRD	MI	MI	17/09/1980	90005|111	BIRDATLAS1						108000	Sturnidae	Gelochelidon	nilotica	
Gull-billed tern	Gelochelidon nilotica	BIRD	MI	MI	5/09/1980	90008|111	BIRDATLAS1						18000	Sturnidae	Gelochelidon	nilotica	
Gull-billed tern	Gelochelidon nilotica	BIRD	MI	MI	4/08/2000	107239|111	BIRDATLAS2					Lake Nallan	100	Sturnidae	Gelochelidon	nilotica	
Gull-billed tern	Gelochelidon nilotica	BIRD	MI	MI	24/07/2001	166883|111	BIRDATLAS2					Nallan Lakes	100	Sturnidae	Gelochelidon	nilotica	
Gull-billed tern	Gelochelidon nilotica	BIRD	MI	MI	5/06/2006	476234|111	BIRDATLAS2					Lake Austin	100	Sturnidae	Gelochelidon	nilotica	
Gull-billed tern	Gelochelidon nilotica	BIRD	MI	MI	29/12/1999	73009|111	BIRDATLAS2					Nallan Lake	500	Sturnidae	Gelochelidon	nilotica	
Hooded plover	Thinornis rubricollis	BIRD	P4		17/09/2015	1326918|138	BIRDATA					Lake Nallan	0	Charadriidae	Thinornis	rubricollis	
Hooded plover	Thinornis rubricollis	BIRD	P4		21/09/2000	253993|138	BIRDATLAS2					Cue South	500	Charadriidae	Thinornis	rubricollis	
Hooded plover	Thinornis rubricollis	BIRD	P4		28/03/2012	511579	FAUNASURVEY	Certain	Survey	Unknown	500	Cue, Lake Austin	3000	Charadriidae	Thinornis	rubricollis	
Hooded plover	Thinornis rubricollis	BIRD	P4		1/09/2000	11192	TFAUNA	Certain	Community survey	Day sighting	2	Lake Austin complex, just south of Cue	50000	Charadriidae	Thinornis	rubricollis	
Hooded plover	Thinornis rubricollis	BIRD	P4		21/09/2000	13581	TFAUNA	Certain	Community survey	Day sighting	2	Small lake west side of Great Northern Highway, 18.9km South of Cue	1000	Charadriidae	Thinornis	rubricollis	
Malleefowl	Leipoa ocellata	BIRD	VU	VU	31/10/1980	107505|7	BIRDATLAS1					LAKE AUSTIN	108000	Megapodiidae	Leipoa	ocellata	
Malleefowl	Leipoa ocellata	BIRD	VU	VU		90401	TFAUNA	Moderately certain	Opportunistic sighting	Secondary sign	1	Between Cue and Separation Well	50000	Megapodiidae	Leipoa	ocellata	
Malleefowl	Leipoa ocellata	BIRD	VU	VU	1/01/1980	91959	TFAUNA	Moderately certain	Opportunistic sighting	Sighting	1		50000	Megapodiidae	Leipoa	ocellata	
Malleefowl	Leipoa ocellata	BIRD	VU	VU		97366	TFAUNA	Certain	Historical (written)	Secondary sign		Between Cue and Seperation Well	1000	Megapodiidae	Leipoa	ocellata	
Little greenshank	Tringa stagnatilis	BIRD	MI	MI	11/01/2013	1275640|159	BIRDATA					Lake Nallan	0	Scolopacidae	Tringa	stagnatilis	
Little greenshank	Tringa stagnatilis	BIRD	MI	MI	17/01/2004	425193|159	BIRDATLAS2					Nallon Lake	100	Scolopacidae	Tringa	stagnatilis	
Little greenshank	Tringa stagnatilis	BIRD	MI	MI	11/01/2013	5119213|159	BIRDATLAS2					Lake Nallan	100	Scolopacidae	Tringa	stagnatilis	
Little greenshank	Tringa stagnatilis	BIRD	MI	MI	29/12/1999	73009|159	BIRDATLAS2					Nallan Lake	500	Scolopacidae	Tringa	stagnatilis	
Peregrine falcon	Falco peregrinus	BIRD	OS		14/02/2013	1275642|237	BIRDATA					Lake Nallan	0	Falconidae	Falco	peregrinus	
Peregrine falcon	Falco peregrinus	BIRD	OS		1/08/2017	1928295|237	BIRDATA					Nallan Lake	0	Falconidae	Falco	peregrinus	
Peregrine falcon	Falco peregrinus	BIRD	OS		5/09/1980	107514|237	BIRDATLAS1					WELD RANGE	18000	Falconidae	Falco	peregrinus	
Peregrine falcon	Falco peregrinus	BIRD	OS		15/08/1979	66190|237	BIRDATLAS1					WELD RANGE	18000	Falconidae	Falco	peregrinus	
Peregrine falcon	Falco peregrinus	BIRD	OS		8/04/2001	151575|237	BIRDATLAS2					Walga Rock	500	Falconidae	Falco	peregrinus	
Peregrine falcon	Falco peregrinus	BIRD	OS		8/08/2001	182085|237	BIRDATLAS2					Claypan, The Glen Station	500	Falconidae	Falco	peregrinus	
Peregrine falcon	Falco peregrinus	BIRD	OS		7/07/2004	431982|237	BIRDATLAS2					Nallan Dam	100	Falconidae	Falco	peregrinus	
Peregrine falcon	Falco peregrinus	BIRD	OS		15/05/2003	451171|237	BIRDATLAS2					Nallan Railway dam	100	Falconidae	Falco	peregrinus	
Peregrine falcon	Falco peregrinus	BIRD	OS		14/02/2013	5120771|237	BIRDATLAS2					Lake Nallan	100	Falconidae	Falco	peregrinus	
Peregrine falcon	Falco peregrinus	BIRD	OS		31/12/1999	63341|237	BIRDATLAS2					Nallan Lake	500	Falconidae	Falco	peregrinus	
Red-necked stint	Calidris ruficollis	BIRD	MI	MI	4/09/2003	415461|162	BIRDATLAS2					Lake Nallan	100	Scolopacidae	Calidris	ruficollis	
Red-necked stint	Calidris ruficollis	BIRD	MI	MI	25/03/2005	451729|162	BIRDATLAS2					Nallan Lake	100	Scolopacidae	Calidris	ruficollis	
Red-necked stint	Calidris ruficollis	BIRD	MI	MI	28/03/2012	511581	FAUNASURVEY	Certain	Survey	Unknown	2	Cue, Lake Austin	3000	Scolopacidae	Calidris	ruficollis	
Sharp-tailed sandpiper	Calidris acuminata	BIRD	MI	MI	27/04/2011	1205112|163	BIRDATA					Lake Austin	0	Scolopacidae	Calidris	acuminata	
Sharp-tailed sandpiper	Calidris acuminata	BIRD	MI	MI	16/10/2007	1411318|163	BIRDATA					Nallan Station	100	Scolopacidae	Calidris	acuminata	
Sharp-tailed sandpiper	Calidris acuminata	BIRD	MI	MI	7/04/2011	1468529|163	BIRDATA					Lake Austin	0	Scolopacidae	Calidris	acuminata	
Sharp-tailed sandpiper	Calidris acuminata	BIRD	MI	MI	17/01/2004	425191|163	BIRDATLAS2					Wetland Great Northern Hwy	100	Scolopacidae	Calidris	acuminata	
Sharp-tailed sandpiper	Calidris acuminata	BIRD	MI	MI	5/11/2005	468425|163	BIRDATLAS2					Small Lake	100	Scolopacidae	Calidris	acuminata	
Sharp-tailed sandpiper	Calidris acuminata	BIRD	MI	MI	27/04/2011	5081422|163	BIRDATLAS2					Lake Austin	100	Scolopacidae	Calidris	acuminata	
West Coast mulga slider	Lerista eupoda	REPTILE	P1		25/09/2011	301353	FAUNASURVEY	Certain	Survey	Unknown	1	Murchison, Weld Range	100	Scincidae	Lerista	eupoda	
West Coast mulga slider	Lerista eupoda	REPTILE	P1		25/09/2011	301354	FAUNASURVEY	Certain	Survey	Unknown	1	Murchison, Weld Range	100	Scincidae	Lerista	eupoda	
West Coast mulga slider	Lerista eupoda	REPTILE	P1		25/09/2011	301355	FAUNASURVEY	Certain	Survey	Unknown	1	Murchison, Weld Range	100	Scincidae	Lerista	eupoda	
West Coast mulga slider	Lerista eupoda	REPTILE	P1		5/04/2011	856622	FAUNASURVEY	Certain	Survey	Unknown	1	Cue area, Opp	10000	Scincidae	Lerista	eupoda	
West Coast mulga slider	Lerista eupoda	REPTILE	P1		5/04/2011	858233	FAUNASURVEY	Certain	Survey	Unknown	1	Cue area, Opp	10000	Scincidae	Lerista	eupoda	
West Coast mulga slider	Lerista eupoda	REPTILE	P1		5/08/2014	1021814	FAUNASURVEY	Certain	Survey	Unknown	3	20 km North Cue,	100	Scincidae	Lerista	eupoda	

West Coast mulga slider	Lerista eupoda	REPTILE	P1		15/02/1990	1657	TFAUNA	Certain	Survey	Caught or trapped	1	14km NNE of Cue	10000	Scincidae	Lerista	eupoda	
West Coast mulga slider	Lerista eupoda	REPTILE	P1			6514	TFAUNA	Certain	Historical (written)	Caught or trapped	1	Telegootherra Hill	10000	Scincidae	Lerista	eupoda	
West Coast mulga slider	Lerista eupoda	REPTILE	P1		1/01/1995	6515	TFAUNA	Certain	Survey	Caught or trapped	1	16km NNE of Cue	10000	Scincidae	Lerista	eupoda	
West Coast mulga slider	Lerista eupoda	REPTILE	P1		15/02/1990	REPT:R103943	WAM_REPTILES	WAM Vouchered	Collection	Specimen	1	CUE	10000	Scincidae	Lerista	eupoda	
West Coast mulga slider	Lerista eupoda	REPTILE	P1		15/02/1990	REPT:R103944	WAM_REPTILES	WAM Vouchered	Collection	Specimen	1	CUE	10000	Scincidae	Lerista	eupoda	
West Coast mulga slider	Lerista eupoda	REPTILE	P1		18/08/1998	REPT:R135101	WAM_REPTILES	WAM Vouchered	Collection	Specimen	1	CUE	10000	Scincidae	Lerista	eupoda	
West Coast mulga slider	Lerista eupoda	REPTILE	P1		18/08/1998	REPT:R135102	WAM_REPTILES	WAM Vouchered	Collection	Specimen	1	CUE	10000	Scincidae	Lerista	eupoda	
West Coast mulga slider	Lerista eupoda	REPTILE	P1		17/05/2009	REPT:R168608	WAM_REPTILES	WAM Vouchered	Collection	Specimen	1	WELD RANGE	200000	Scincidae	Lerista	eupoda	
West Coast mulga slider	Lerista eupoda	REPTILE	P1		13/07/1984	REPT:R87814	WAM_REPTILES	WAM Vouchered	Collection	Specimen	1	COODARDY HS	10000	Scincidae	Lerista	eupoda	
West Coast mulga slider	Lerista eupoda	REPTILE	P1		15/02/1990	urn:lsid:taxonomy.org.au:REPT:R103943	WAM_REPTILES	WAM Vouchered	Collection	Specimen	1	CUE	10000	Scincidae	Lerista	eupoda	
West Coast mulga slider	Lerista eupoda	REPTILE	P1		15/02/1990	urn:lsid:taxonomy.org.au:REPT:R103944	WAM_REPTILES	WAM Vouchered	Collection	Specimen	1	CUE	10000	Scincidae	Lerista	eupoda	
West Coast mulga slider	Lerista eupoda	REPTILE	P1		18/08/1998	urn:lsid:taxonomy.org.au:REPT:R135101	WAM_REPTILES	WAM Vouchered	Collection	Specimen	1	CUE	10000	Scincidae	Lerista	eupoda	
West Coast mulga slider	Lerista eupoda	REPTILE	P1		18/08/1998	urn:lsid:taxonomy.org.au:REPT:R135102	WAM_REPTILES	WAM Vouchered	Collection	Specimen	1	CUE	10000	Scincidae	Lerista	eupoda	
West Coast mulga slider	Lerista eupoda	REPTILE	P1		17/05/2009	urn:lsid:taxonomy.org.au:REPT:R168608	WAM_REPTILES	WAM Vouchered	Collection	Specimen	1	WELD RANGE	200000	Scincidae	Lerista	eupoda	
West Coast mulga slider	Lerista eupoda	REPTILE	P1		13/07/1984	urn:lsid:taxonomy.org.au:REPT:R87814	WAM_REPTILES	WAM Vouchered	Collection	Specimen	1	COODARDY HS	10000	Scincidae	Lerista	eupoda	
Western spiny-tailed skink	Egernia stokesii badia	REPTILE	VU	EN	29/04/2010	110126	FAUNASURVEY	Certain	Survey	Unknown	1	SA3, SA3 29-5	100	Scincidae	Egernia	stokesii	badia
western spiny-tailed skink	Egernia stokesii badia	REPTILE	VU	EN	31/05/1998	4980	TFAUNA	Certain	Survey	Caught or trapped	1	WOOLGERONG ROCK	10000	Scincidae	Egernia	stokesii	badia
western spiny-tailed skink	Egernia stokesii badia	REPTILE	VU	EN	1/01/1998	4981	TFAUNA	Certain	Survey	Caught or trapped	1	WALGANNA ROCK (WALGA ROCK)	10000	Scincidae	Egernia	stokesii	badia
western spiny-tailed skink	Egernia stokesii badia	REPTILE	VU	EN	14/08/2003	8696	TFAUNA	Certain	Survey	Caught or trapped	3	Walga Rock	1000	Scincidae	Egernia	stokesii	badia
western spiny-tailed skink	Egernia stokesii badia	REPTILE	VU	EN	21/06/1998	8697	TFAUNA	Not sure	Survey	Caught or trapped	1	Wurrah Rocks	1000	Scincidae	Egernia	stokesii	badia
western spiny-tailed skink	Egernia stokesii badia	REPTILE	VU	EN	1/10/2006	12394	TFAUNA	Certain	Targeted survey	Day sighting	1	Meka-Noondie Rd STOKE1	1000	Scincidae	Egernia	stokesii	badia
western spiny-tailed skink	Egernia stokesii badia	REPTILE	VU	EN	1/10/2006	12396	TFAUNA	Certain	Targeted survey	Day sighting	1	Meka-Noondie Rd STOKE3	1000	Scincidae	Egernia	stokesii	badia
western spiny-tailed skink	Egernia stokesii badia	REPTILE	VU	EN	3/08/1986	14878	TFAUNA	Certain	Survey	Caught or trapped	1	Woolgerong Rock	1000	Scincidae	Egernia	stokesii	badia
western spiny-tailed skink	Egernia stokesii badia	REPTILE	VU	EN	13/08/2003	14879	TFAUNA	Certain	Survey	Caught or trapped	1	Walga Rock	1000	Scincidae	Egernia	stokesii	badia
western spiny-tailed skink	Egernia stokesii badia	REPTILE	VU	EN	1/01/1998	14905	TFAUNA	Certain	Targeted survey	Day sighting	2	Woolgerong Rock, Austin Downs	1000	Scincidae	Egernia	stokesii	badia
western spiny-tailed skink	Egernia stokesii badia	REPTILE	VU	EN	1/01/1998	14906	TFAUNA	Certain	Targeted survey	Day sighting	2	Wurrah Rocks, Austin Downs	1000	Scincidae	Egernia	stokesii	badia
Western spiny-tailed skink	Egernia stokesii badia	REPTILE	VU	EN	21/06/1998	REPT:R132751	WAM_REPTILES	WAM Vouchered	Collection	Specimen	1	WURRAH ROCK	10000	Scincidae	Egernia	stokesii	badia
Western spiny-tailed skink	Egernia stokesii badia	REPTILE	VU	EN	31/05/1998	REPT:R140952	WAM_REPTILES	WAM Vouchered	Collection	Specimen	1	WOOLGERONG ROCK	10000	Scincidae	Egernia	stokesii	badia
Western spiny-tailed skink	Egernia stokesii badia	REPTILE	VU	EN	14/08/2003	REPT:R152997	WAM_REPTILES	WAM Vouchered	Collection	Specimen	1	WALGA ROCK	200000	Scincidae	Egernia	stokesii	badia
Western spiny-tailed skink	Egernia stokesii badia	REPTILE	VU	EN	13/08/2003	REPT:R152998	WAM_REPTILES	WAM Vouchered	Collection	Specimen	1	WALGA ROCK	200000	Scincidae	Egernia	stokesii	badia
Western spiny-tailed skink	Egernia stokesii badia	REPTILE	VU	EN	3/08/1986	REPT:R97011	WAM_REPTILES	WAM Vouchered	Collection	Specimen	1	WOOLGERONG ROCK	10000	Scincidae	Egernia	stokesii	badia
White-winged black tern	Chlidonias leucopterus	BIRD	MI	MI	20/07/2015	1571750|109	BIRDATA					Lake Austin, Lakeside Rd causeway	0	Laridae	Chlidonias	leucopterus	
White-winged black tern	Chlidonias leucopterus	BIRD	MI	MI	31/08/2015	991902|109	BIRDATA					Nallan Lake	0	Laridae	Chlidonias	leucopterus	
White-winged black tern	Chlidonias leucopterus	BIRD	MI	MI	29/12/1999	73009|109	BIRDATLAS2					Nallan Lake	500	Laridae	Chlidonias	leucopterus	
Wood sandpiper	Tringa glareola	BIRD	MI	MI	30/09/1999	38505|154	BIRDATLAS2					Nallan Station	100	Scolopacidae	Tringa	glareola	
Wood sandpiper	Tringa glareola	BIRD	MI	MI	9/11/2003	415699|154	BIRDATLAS2					Nallan Lake	100	Scolopacidae	Tringa	glareola	
Wood sandpiper	Tringa glareola	BIRD	MI	MI	5/11/2005	468425|154	BIRDATLAS2					Small Lake	100	Scolopacidae	Tringa	glareola	
Wood sandpiper	Tringa glareola	BIRD	MI	MI	6/11/2005	468430|154	BIRDATLAS2					Nallan Lake	100	Scolopacidae	Tringa	glareola	
Wood sandpiper	Tringa glareola	BIRD	MI	MI	29/12/1999	73009|154	BIRDATLAS2					Nallan Lake	500	Scolopacidae	Tringa	glareola	

NatureMap
Mapping Western Australia's biodiversity

NatureMap Species Report

Created By Guest user on 02/12/2020

Kingdom Animalia
Current Names Only Yes
Core Datasets Only Yes
Method 'By Circle'
Centre 117° 43' 30" E,27° 12' 17" S
Buffer 40km
Group By Family

Family	Species	Records
Acanthizidae	15	685
Accipitridae	10	295
Aegothelidae	2	17
Agamidae	10	109
Anatidae	12	487
Anhingidae	1	9
Apodidae	1	1
Ardeidae	3	143
Artamidae	6	233
Atherinidae	1	3
Boidae	1	5
Bothriuridae	1	1
Bovidae	3	12
Branchipodidae	1	2
Burhinidae	1	22
Cacatuidae	1	99
Campephagidae	3	96
Canidae	1	1
Caprimulgidae	1	6
Carphodactylidae	2	9
Casuariidae	1	104
Charadriidae	6	164
Cheluidae	1	1
Chthoniidae	1	1
Cinclosomatidae	3	92
Climacteridae	1	4
Columbidae	7	419
Corinnidae	1	2
Corvidae	3	204
Cracticidae	4	334
Cuculidae	3	22
Dasyuridae	6	57
Desidae	1	5
Dicaeidae	1	20
Dicruridae	4	544
Diplodactylidae	5	33
Elapidae	8	19
Emballonuridae	2	26
Equidae	1	1
Estrilidae	2	287
Falconidae	6	178
Felidae	1	1
Gekkonidae	3	101
Halcyonidae	2	40
Hirundinidae	4	281
Hylidae	2	28
Idiopidae	2	1555
Laridae	4	10
Leporidae	1	10
Limnodynastidae	2	3
Lycosidae	1	1
Macropodidae	4	20
Maluridae	6	260
Megadermatidae	1	1
Megapodiidae	1	2
Meliphagidae	10	597
Meropidae	1	8
Motacillidae	2	7
Muridae	7	12
Myobatrachidae	1	1
Neosittidae	2	19
Olpiidae	1	1
Otididae	1	1
Pachycephalidae	6	577
Parastacidae	1	1
Pardalotidae	1	7
Pelecanidae	1	16
Peramelidae	1	1
Petroicidae	3	263
Phalacrocoracidae	3	44
Phalangeridae	1	2
Phasianidae	2	10
Podargidae	2	5
Podicipedidae	3	138
Pomatostomidae	3	206

Prodidomidae	2	2
Psittacidae	11	243
Ptilonorhynchidae	2	82
Pygopodidae	4	10
Rallidae	3	94
Recurvirostridae	4	93
Scincidae	22	335
Scolopacidae	7	33
Scolopendridae	3	4
Sparassidae	1	1
Strigidae	1	1
Sturnidae	1	3
Tachyglossidae	1	5
Terapontidae	1	1
Thamnocephalidae	1	1
Theridiidae	1	1
Threskiornithidae	4	106
Thylacomyidae	1	4
Trochanteriidae	1	1
Turnicidae	1	29
Urodacidae	3	10
Varanidae	3	23
Vespertilionidae	4	96
Zodariidae	1	4
Zosteropidae	1	1
TOTAL	**313**	**10164**

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
Acanthizidae					
1.	24260	*Acanthiza apicalis (Broad-tailed Thornbill, Inland Thornbill)*			
2.	24261	*Acanthiza chrysorrhoa (Yellow-rumped Thornbill)*			
3.	25527	*Acanthiza iredalei (Samphire Thornbill, Slender-billed Thornbill)*			
4.	24263	*Acanthiza iredalei subsp. iredalei (Samphire Thornbill, Slender-billed Thornbill)*			
5.	24264	*Acanthiza robustirostris (Slaty-backed Thornbill)*			
6.	24265	*Acanthiza uropygialis (Chestnut-rumped Thornbill)*			
7.	25528	*Aphelocephala leucopsis (Southern Whiteface)*			
8.	24266	*Aphelocephala leucopsis subsp. castaneiventris (Southern Whiteface)*			
9.	24268	*Aphelocephala nigricincta (Banded Whiteface)*			
10.	24269	*Calamanthus campestris (Rufous Fieldwren)*			
11.	34000	*Calamanthus campestris subsp. montanellus (Rufous Fieldwren, Western Fieldwren (western wheatbelt))*			
12.	25530	*Gerygone fusca (Western Gerygone)*			
13.	24271	*Gerygone fusca subsp. fusca (Western Gerygone)*			
14.	24278	*Pyrrholaemus brunneus (Redthroat)*			
15.	30948	*Smicrornis brevirostris (Weebill)*			
Accipitridae					
16.	25535	*Accipiter cirrocephalus (Collared Sparrowhawk)*			
17.	25536	*Accipiter fasciatus (Brown Goshawk)*			
18.	24285	*Aquila audax (Wedge-tailed Eagle)*			
19.	24288	*Circus approximans (Swamp Harrier)*			
20.	24289	*Circus assimilis (Spotted Harrier)*			
21.		*Elanus axillaris*			
22.	24295	*Haliastur sphenurus (Whistling Kite)*			
23.	24297	*Hamirostra melanosternon (Black-breasted Buzzard)*			
24.	47965	*Hieraaetus morphnoides (Little Eagle)*			
25.	25542	*Milvus migrans (Black Kite)*			
Aegothelidae					
26.	25544	*Aegotheles cristatus (Australian Owlet-nightjar)*			
27.	24301	*Aegotheles cristatus subsp. cristatus (Australian Owlet-nightjar)*			
Agamidae					
28.	25458	*Ctenophorus caudicinctus (Ring-tailed Dragon)*			
29.	24869	*Ctenophorus caudicinctus subsp. mensarum (Ring-tailed Dragon)*			
30.	24882	*Ctenophorus nuchalis (Central Netted Dragon)*			
31.	24886	*Ctenophorus reticulatus (Western Netted Dragon)*			
32.	24888	*Ctenophorus salinarum (Salt Pan Dragon)*			
33.	24889	*Ctenophorus scutulatus (Lozenge-marked Dragon)*			
34.	24904	*Moloch horridus (Thorny Devil)*			
35.	25510	*Pogona minor (Dwarf Bearded Dragon)*			
36.	24907	*Pogona minor subsp. minor (Dwarf Bearded Dragon)*			
37.	30814	*Tympanocryptis cephalus (Pebble Dragon)*			
Anatidae					
38.	24310	*Anas castanea (Chestnut Teal)*			
39.	24312	*Anas gracilis (Grey Teal)*			
40.	24315	*Anas rhynchotis (Australasian Shoveler)*			
41.	24316	*Anas superciliosa (Pacific Black Duck)*			
42.	24318	*Aythya australis (Hardhead)*			
43.	24319	*Biziura lobata (Musk Duck)*			
44.	24321	*Chenonetta jubata (Australian Wood Duck, Wood Duck)*			
45.	24322	*Cygnus atratus (Black Swan)*			
46.	24326	*Malacorhynchus membranaceus (Pink-eared Duck)*			
47.	24328	*Oxyura australis (Blue-billed Duck)*		P4	
48.	24329	*Stictonetta naevosa (Freckled Duck)*			
49.	24331	*Tadorna tadornoides (Australian Shelduck, Mountain Duck)*			
Anhingidae					
50.	47414	*Anhinga novaehollandiae (Australasian Darter)*			
Apodidae					
51.	25554	*Apus pacificus (Fork-tailed Swift, Pacific Swift)*		IA	
Ardeidae					
52.	41324	*Ardea modesta (great egret, white egret)*			
53.	24341	*Ardea pacifica (White-necked Heron)*			
54.		*Egretta novaehollandiae*			

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
Artamidae					
55.	25566	*Artamus cinereus (Black-faced Woodswallow)*			
56.	24352	*Artamus cinereus subsp. melanops (Black-faced Woodswallow)*			
57.	24353	*Artamus cyanopterus (Dusky Woodswallow)*			
58.	24355	*Artamus minor (Little Woodswallow)*			
59.	24356	*Artamus personatus (Masked Woodswallow)*			
60.	24357	*Artamus superciliosus (White-browed Woodswallow)*			
Atherinidae					
61.		*Craterocephalus cuneiceps*			
Boidae					
62.	25318	*Antaresia perthensis (Pygmy Python)*			
Bothriuridae					
63.		*Cercophonius granulosus*			
Bovidae					
64.	24251	*Bos taurus (European Cattle)*	Y		
65.	24253	*Capra hircus (Goat)*	Y		
66.	34016	*Ovis aries (Sheep)*			
Branchipodidae					
67.		*Parartemia sp.*			
Burhinidae					
68.	24359	*Burhinus grallarius (Bush Stone-curlew)*			
Cacatuidae					
69.		*Eolophus roseicapillus*			
Campephagidae					
70.	24361	*Coracina maxima (Ground Cuckoo-shrike)*			
71.	25568	*Coracina novaehollandiae (Black-faced Cuckoo-shrike)*			
72.	24367	*Lalage tricolor (White-winged Triller)*			
Canidae					
73.	24040	*Vulpes vulpes (Red Fox)*	Y		
Caprimulgidae					
74.	24368	*Eurostopodus argus (Spotted Nightjar)*			
Carphodactylidae					
75.	24971	*Nephrurus vertebralis*			
76.	24973	*Nephrurus wheeleri subsp. wheeleri*			
Casuariidae					
77.	24470	*Dromaius novaehollandiae (Emu)*			
Charadriidae					
78.	24377	*Charadrius ruficapillus (Red-capped Plover)*			
79.	47937	*Elseyornis melanops (Black-fronted Dotterel)*			
80.	24379	*Erythrogonys cinctus (Red-kneed Dotterel)*			
81.	24380	*Peltohyas australis (Inland Dotterel)*			
82.	48135	*Thinornis rubricollis (Hooded Plover, Hooded Dotterel)*		P4	
83.	24386	*Vanellus tricolor (Banded Lapwing)*			
Cheluidae					
84.	25339	*Chelodina steindachneri (Flat-shelled Turtle)*			
Chthoniidae					
85.		*Tyrannochthonius souchomalus*			Y
Cinclosomatidae					
86.	25580	*Cinclosoma castaneothorax (Chestnut-breasted Quail-thrush)*			
87.	42311	*Cinclosoma marginatum (Western Quail-thrush)*			
88.	24390	*Psophodes occidentalis (Western Wedgebill, Chiming Wedgebill)*			
Climacteridae					
89.	25581	*Climacteris affinis (White-browed Treecreeper)*			
Columbidae					
90.	24399	*Columba livia (Domestic Pigeon)*	Y		
91.	24401	*Geopelia cuneata (Diamond Dove)*			
92.	25585	*Geopelia striata (Zebra Dove)*			
93.	24404	*Geophaps plumifera (Spinifex Pigeon)*			
94.	24407	*Ocyphaps lophotes (Crested Pigeon)*			
95.	24409	*Phaps chalcoptera (Common Bronzewing)*			
96.	25590	*Streptopelia senegalensis (Laughing Turtle-Dove)*	Y		

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
Corinnidae					
97.		*Supunna picta*			
Corvidae					
98.	24416	*Corvus bennetti (Little Crow)*			
99.	25592	*Corvus coronoides (Australian Raven)*			
100.	25593	*Corvus orru (Torresian Crow)*			
Cracticidae					
101.	24420	*Cracticus nigrogularis (Pied Butcherbird)*			
102.	25595	*Cracticus tibicen (Australian Magpie)*			
103.	25596	*Cracticus torquatus (Grey Butcherbird)*			
104.	25597	*Strepera versicolor (Grey Currawong)*			
Cuculidae					
105.	42307	*Cacomantis pallidus (Pallid Cuckoo)*			
106.	24431	*Chrysococcyx basalis (Horsfield's Bronze Cuckoo)*			
107.	24434	*Chrysococcyx osculans (Black-eared Cuckoo)*			
Dasyuridae					
108.	24087	*Antechinomys laniger (Kultarr)*			
109.	30903	*Dasycercus blythi (Brush-tailed Mulgara, Ampurta)*		P4	
110.	24106	*Pseudantechinus woolleyae (Woolley's Pseudantechinus)*			
111.	24108	*Sminthopsis crassicaudata (Fat-tailed Dunnart)*			
112.	24109	*Sminthopsis dolichura (Little long-tailed Dunnart)*			
113.	24116	*Sminthopsis macroura (Stripe-faced Dunnart)*			
Desidae					
114.		*Phryganoporus candidus*			
Dicaeidae					
115.	25607	*Dicaeum hirundinaceum (Mistletoebird)*			
Dicruridae					
116.	24443	*Grallina cyanoleuca (Magpie-lark)*			
117.	48096	*Rhipidura albiscapa (Grey Fantail)*			
118.	25614	*Rhipidura leucophrys (Willie Wagtail)*			
119.	24454	*Rhipidura leucophrys subsp. leucophrys (Willie Wagtail)*			
Diplodactylidae					
120.	25456	*Crenadactylus ocellatus (Clawless Gecko)*			
121.	24976	*Oedura marmorata (Marbled Velvet Gecko)*			
122.	24982	*Rhynchoedura ornata (Western Beaked Gecko)*			
123.	24946	*Strophurus strophurus*			
124.	24949	*Strophurus wellingtonae*			
Elapidae					
125.	25331	*Brachyurophis approximans (North-western Shovel-nosed Snake)*			
126.	25254	*Parasuta monachus*			
127.	25261	*Pseudechis australis (Mulga Snake)*			
128.	42416	*Pseudonaja mengdeni (Western Brown Snake)*			
129.	25263	*Pseudonaja modesta (Ringed Brown Snake)*			
130.	25264	*Pseudonaja nuchalis (Gwardar, Northern Brown Snake)*			
131.	25266	*Simoselaps bertholdi (Jan's Banded Snake)*			
132.	25269	*Suta fasciata (Rosen's Snake)*			
Emballonuridae					
133.	24175	*Taphozous georgianus (Common Sheath-tailed Bat)*			
134.	24176	*Taphozous hilli (Hill's Sheathtail-bat)*			
Equidae					
135.	24258	*Equus caballus (Horse)*	Y		
Estrilidae					
136.	30870	*Taeniopygia guttata (Zebra Finch)*			
137.	30871	*Taeniopygia guttata subsp. castanotis (Zebra Finch)*			
Falconidae					
138.	25621	*Falco berigora (Brown Falcon)*			
139.	24471	*Falco berigora subsp. berigora (Brown Falcon)*			
140.	25622	*Falco cenchroides (Australian Kestrel, Nankeen Kestrel)*			
141.	25623	*Falco longipennis (Australian Hobby)*			
142.	25624	*Falco peregrinus (Peregrine Falcon)*		S	
143.	24476	*Falco subniger (Black Falcon)*			
Felidae					
144.	24041	*Felis catus (Cat)*			

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
			Y		
Gekkonidae					
145.	24958	*Gehyra punctata*			
146.	24959	*Gehyra variegata*			
147.	24961	*Heteronotia binoei (Bynoe's Gecko)*			
Halcyonidae					
148.	42351	*Todiramphus pyrrhopygius (Red-backed Kingfisher)*			
149.	25549	*Todiramphus sanctus (Sacred Kingfisher)*			
Hirundinidae					
150.	47909	*Cheramoeca leucosterna (White-backed Swallow)*			
151.	24491	*Hirundo neoxena (Welcome Swallow)*			
152.	48060	*Petrochelidon ariel (Fairy Martin)*			
153.	48061	*Petrochelidon nigricans (Tree Martin)*			
Hylidae					
154.	25376	*Cyclorana platycephala (Water-holding Frog)*			
155.	25392	*Litoria rubella (Little Red Tree Frog)*			
Idiopidae					
156.		*Anidiops villosus*			
157.	33917	*Idiosoma nigrum (Shield-backed Trapdoor Spider)*		T	
Laridae					
158.	41332	*Chlidonias leucopterus (White-winged Black Tern, white-winged tern)*		IA	
159.		*Chroicocephalus novaehollandiae*			
160.	48587	*Hydroprogne caspia (Caspian Tern)*		IA	
161.	25637	*Larus novaehollandiae (Silver Gull)*			
Leporidae					
162.	24085	*Oryctolagus cuniculus (Rabbit)*	Y		
Limnodynastidae					
163.	25427	*Neobatrachus sutor (Shoemaker Frog)*			
164.	25428	*Neobatrachus wilsmorei (Plonking Frog)*			
Lycosidae					
165.		*Dingosa simsoni*			
Macropodidae					
166.	24125	*Lagorchestes hirsutus subsp. hirsutus (Rufous Hare-wallaby (south-western))*		X	
167.	24135	*Macropus robustus subsp. erubescens (Euro, Biggada)*			
168.	24136	*Macropus rufus (Red Kangaroo, Marlu)*			
169.	24142	*Petrogale lateralis subsp. lateralis (Black-flanked Rock-wallaby, Black-footed Rock-wallaby)*		T	
Maluridae					
170.	24541	*Amytornis textilis subsp. textilis (Western Grasswren, Thick-billed Grasswren (western))*		P4	
171.	25651	*Malurus lamberti (Variegated Fairy-wren)*			
172.	24544	*Malurus lamberti subsp. assimilis (Variegated Fairy-wren)*			
173.	25652	*Malurus leucopterus (White-winged Fairy-wren)*			
174.	24549	*Malurus leucopterus subsp. leuconotus (White-winged Fairy-wren)*			
175.	25654	*Malurus splendens (Splendid Fairy-wren)*			
Megadermatidae					
176.	24180	*Macroderma gigas (Ghost Bat)*		T	
Megapodiidae					
177.	24557	*Leipoa ocellata (Malleefowl)*		T	
Meliphagidae					
178.	24559	*Acanthagenys rufogularis (Spiny-cheeked Honeyeater)*			
179.	24564	*Certhionyx variegatus (Pied Honeyeater)*			
180.	24567	*Epthianura albifrons (White-fronted Chat)*			
181.	24568	*Epthianura aurifrons (Orange Chat)*			
182.	24570	*Epthianura tricolor (Crimson Chat)*			
183.	42314	*Gavicalis virescens (Singing Honeyeater)*			
184.	24572	*Lacustroica whitei (Grey Honeyeater)*			
185.	25661	*Lichmera indistincta (Brown Honeyeater)*			
186.	24583	*Manorina flavigula (Yellow-throated Miner)*			
187.	42344	*Purnella albifrons (White-fronted Honeyeater)*			
Meropidae					
188.	24598	*Merops ornatus (Rainbow Bee-eater)*			

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
Motacillidae					
189.	25670	*Anthus australis (Australian Pipit)*			
190.	24599	*Anthus australis subsp. australis (Australian Pipit)*			
Muridae					
191.	24218	*Leporillus apicalis (Lesser Stick-nest Rat)*		X	
192.	24219	*Leporillus conditor (Greater Stick-nest Rat, Wopilkara)*		S	
193.	24223	*Mus musculus (House Mouse)*	Y		
194.	24224	*Notomys alexis (Spinifex Hopping-mouse)*			
195.	24227	*Notomys longicaudatus (Long-tailed Hopping-mouse, koolawa)*		X	
196.	24236	*Pseudomys fieldi (Shark Bay Mouse, Djoongari)*		T	
197.	24237	*Pseudomys hermannsburgensis (Sandy Inland Mouse)*			
Myobatrachidae					
198.	25434	*Pseudophryne occidentalis (Western Toadlet)*			
Neosittidae					
199.	25673	*Daphoenositta chrysoptera (Varied Sittella)*			
200.	24606	*Daphoenositta chrysoptera subsp. pileata (Varied Sittella, Black-capped Sitella)*			
Olpiidae					
201.		*Indolpium sp.*			
Otididae					
202.	24610	*Ardeotis australis (Australian Bustard)*			
Pachycephalidae					
203.	25675	*Colluricincla harmonica (Grey Shrike-thrush)*			
204.	24613	*Colluricincla harmonica subsp. rufiventris (Grey Shrike-thrush)*			
205.	24618	*Oreoica gutturalis (Crested Bellbird)*			
206.	34011	*Oreoica gutturalis subsp. gutturalis (Crested Bellbird (southern))*			
207.	34012	*Oreoica gutturalis subsp. pallescens (Crested Bellbird, central)*			
208.	25680	*Pachycephala rufiventris (Rufous Whistler)*			
Parastacidae					
209.		*Cherax destructor*			
Pardalotidae					
210.	25682	*Pardalotus striatus (Striated Pardalote)*			
Pelecanidae					
211.	24648	*Pelecanus conspicillatus (Australian Pelican)*			
Peramelidae					
212.	24149	*Chaeropus ecaudatus (Pig-footed Bandicoot, kantjilpa)*		X	
Petroicidae					
213.	47997	*Melanodryas cucullata (Hooded Robin)*			
214.	25693	*Microeca fascinans (Jacky Winter)*			
215.	24659	*Petroica goodenovii (Red-capped Robin)*			
Phalacrocoracidae					
216.		*Microcarbo melanoleucos*			
217.	25697	*Phalacrocorax carbo (Great Cormorant)*			
218.	24667	*Phalacrocorax sulcirostris (Little Black Cormorant)*			
Phalangeridae					
219.	24158	*Trichosurus vulpecula subsp. vulpecula (Common Brushtail Possum)*			
Phasianidae					
220.	24671	*Coturnix pectoralis (Stubble Quail)*			
221.	25701	*Coturnix ypsilophora (Brown Quail)*			
Podargidae					
222.	25703	*Podargus strigoides (Tawny Frogmouth)*			
223.	24679	*Podargus strigoides subsp. brachypterus (Tawny Frogmouth)*			
Podicipedidae					
224.	25704	*Podiceps cristatus (Great Crested Grebe)*			
225.	24681	*Poliocephalus poliocephalus (Hoary-headed Grebe)*			
226.	25705	*Tachybaptus novaehollandiae (Australasian Grebe, Black-throated Grebe)*			
Pomatostomidae					
227.	24683	*Pomatostomus superciliosus (White-browed Babbler)*			
228.	34013	*Pomatostomus superciliosus subsp. ashbyi (White-browed Babbler (western wheatbelt))*			
229.	25706	*Pomatostomus temporalis (Grey-crowned Babbler)*			
Prodidomidae					

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
230.		*Nomindra leeuweni*			
231.		*Wesmaldra waldockae*			
Psittacidae					
232.		*Barnardius zonarius*			
233.	25715	*Cacatua roseicapilla (Galah)*			
234.	25716	*Cacatua sanguinea (Little Corella)*			
235.	24736	*Melopsittacus undulatus (Budgerigar)*			
236.	24737	*Neophema bourkii (Bourke's Parrot)*			
237.	24738	*Neophema elegans (Elegant Parrot)*			
238.		*Neopsephotus bourkii*			
239.	24742	*Nymphicus hollandicus (Cockatiel)*			
240.	24748	*Platycercus varius (Mulga Parrot)*			
241.	25721	*Platycercus zonarius (Australian Ringneck, Ring-necked Parrot)*			
242.	24751	*Platycercus zonarius subsp. zonarius (Port Lincoln Parrot)*			
Ptilonorhynchidae					
243.		*Ptilonorhynchus guttatus*			
244.	24757	*Ptilonorhynchus maculatus subsp. guttatus (Western Bowerbird)*			
Pygopodidae					
245.	24995	*Delma australis*			
246.	25004	*Delma tincta*			
247.	25005	*Lialis burtonis*			
248.	25009	*Pygopus nigriceps*			
Rallidae					
249.	25727	*Fulica atra (Eurasian Coot)*			
250.	24769	*Porzana fluminea (Australian Spotted Crake)*			
251.	48141	*Tribonyx ventralis (Black-tailed Native-hen)*			
Recurvirostridae					
252.	24774	*Cladorhynchus leucocephalus (Banded Stilt)*			
253.	25734	*Himantopus himantopus (Black-winged Stilt)*			
254.	24775	*Himantopus himantopus subsp. leucocephalus (Black-winged Stilt)*			
255.	24776	*Recurvirostra novaehollandiae (Red-necked Avocet)*			
Scincidae					
256.	25020	*Cryptoblepharus plagiocephalus*			
257.	25052	*Ctenotus leonhardii*			
258.	25054	*Ctenotus mimetes*			
259.	25057	*Ctenotus nasutus*			
260.	25074	*Ctenotus schomburgkii*			
261.	25075	*Ctenotus severus*			
262.	25465	*Ctenotus uber (Spotted Ctenotus)*			
263.	25080	*Ctenotus uber subsp. uber (Spotted Ctenotus)*			
264.	25092	*Egernia depressa (Southern Pygmy Spiny-tailed Skink)*			
265.	25472	*Egernia stokesii (Spiny-tailed Skink, Gidgee Skink)*			
266.	25107	*Egernia stokesii subsp. badia (Western Spiny-tailed Skink, Gidgee Skink)*		T	
267.	25109	*Eremiascincus richardsonii (Broad-banded Sand Swimmer)*			
268.	25125	*Lerista bipes*			
269.	25134	*Lerista eupoda (West Coast mulga slider, Good-legged Lerista)*		P1	
270.	25137	*Lerista gerrardii*			
271.	25482	*Lerista macropisthopus*			
272.	25151	*Lerista macropisthopus subsp. fusciceps*			
273.	25152	*Lerista macropisthopus subsp. galea*			
274.	25155	*Lerista muelleri*			
275.	25157	*Lerista nicholsi*			
276.	42411	*Lerista timida*			
277.	25184	*Menetia greyii*			
Scolopacidae					
278.	41323	*Actitis hypoleucos (Common Sandpiper)*		IA	
279.	24779	*Calidris acuminata (Sharp-tailed Sandpiper)*		IA	
280.	24788	*Calidris ruficollis (Red-necked Stint)*		IA	
281.	30932	*Limosa lapponica (Bar-tailed Godwit)*		IA	
282.	24806	*Tringa glareola (Wood Sandpiper)*		IA	
283.	24808	*Tringa nebularia (Common Greenshank, greenshank)*		IA	
284.	24809	*Tringa stagnatilis (Marsh Sandpiper, little greenshank)*		IA	
Scolopendridae					
285.		*Cormocephalus turneri*			
286.		*Scolopendra laeta*			
287.		*Scolopendra morsitans*			

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
Sparassidae					
288.		*Pediana tenuis*			
Strigidae					
289.	25747	*Ninox connivens (Barking Owl)*			
Sturnidae					
290.	47954	*Gelochelidon nilotica (Gull-billed Tern)*		IA	
Tachyglossidae					
291.	24207	*Tachyglossus aculeatus (Short-beaked Echidna)*			
Terapontidae					
292.		*Leiopotherapon unicolor*			
Thamnocephalidae					
293.		*Branchinella longirostris*			
Theridiidae					
294.		*Latrodectus hasseltii*			
Threskiornithidae					
295.	24841	*Platalea flavipes (Yellow-billed Spoonbill)*			
296.	24842	*Platalea regia (Royal Spoonbill)*			
297.	24843	*Plegadis falcinellus (Glossy Ibis)*		IA	
298.	24845	*Threskiornis spinicollis (Straw-necked Ibis)*			
Thylacomyidae					
299.	24168	*Macrotis lagotis (Bilby, Dalgyte, Ninu)*		T	
Trochanteriidae					
300.		*Corimaethes campestrus*			
Turnicidae					
301.	24851	*Turnix velox (Little Button-quail)*			
Urodacidae					
302.		*Urodacus armatus*			
303.		*Urodacus hoplurus*			
304.		*Urodacus novaehollandiae*			
Varanidae					
305.	25211	*Varanus caudolineatus*			
306.	25524	*Varanus panoptes (Yellow-spotted Monitor)*			
307.	25223	*Varanus panoptes subsp. rubidus*			
Vespertilionidae					
308.	24186	*Chalinolobus gouldii (Gould's Wattled Bat)*			
309.	24194	*Nyctophilus geoffroyi (Lesser Long-eared Bat)*			
310.	24195	*Nyctophilus gouldi (Gould's Long-eared Bat)*			
311.	24205	*Vespadelus finlaysoni (Finlayson's Cave Bat)*			
Zodariidae					
312.		*Storena sinuosa*			
Zosteropidae					
313.	25765	*Zosterops lateralis (Grey-breasted White-eye, Silvereye)*			

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

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

Australian Government

Department of Agriculture, Water and the Environment

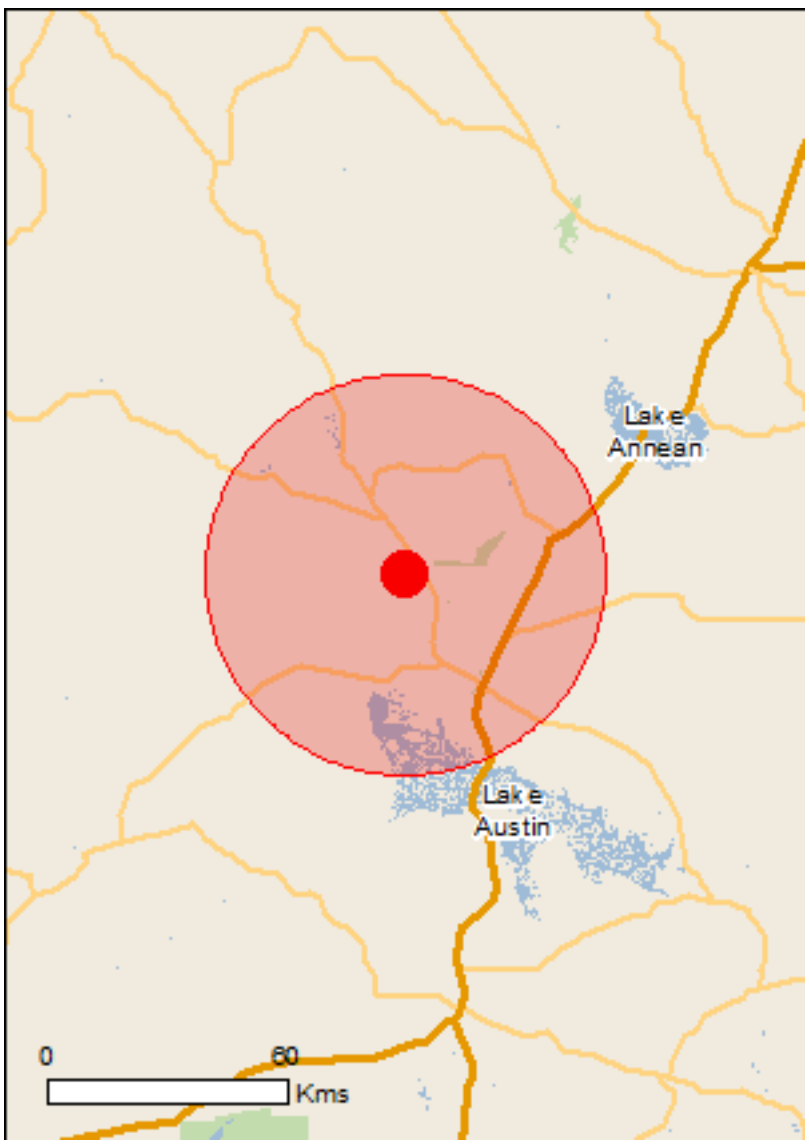
EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected.

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

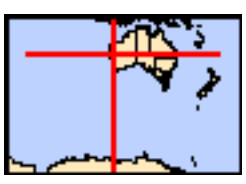
Information is available about Environment Assessments and the EPBC Act including significance guidelines, forms and application process details.

Report created: 02/12/20 18:38:47



Coordinates

Buffer: 50.0Km



Summary

Matters of National Environmental Significance

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

World Heritage Properties:	None
National Heritage Places:	1
Wetlands of International Importance:	None
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	None
Listed Threatened Species:	10
Listed Migratory Species:	8

Other Matters Protected by the EPBC Act

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

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

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

Commonwealth Land:	1
Commonwealth Heritage Places:	None
Listed Marine Species:	13
Whales and Other Cetaceans:	None
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	None

Extra Information

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

State and Territory Reserves:	1
Regional Forest Agreements:	None
Invasive Species:	10
Nationally Important Wetlands:	None
Key Ecological Features (Marine)	None

Details

Matters of National Environmental Significance

National Heritage Properties		[Resource Information]
Name	State	Status
Indigenous		
Wilgie Mia Aboriginal Ochre Mine	WA	Listed place

Listed Threatened Species		[Resource Information]
Name	Status	Type of Presence
Birds		
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known 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
Rostratula australis Australian Painted Snipe [77037]	Endangered	Species or species habitat may occur within area
Mammals		
Leporillus conditor Wopilkara, Greater Stick-nest Rat [137]	Vulnerable	Species or species habitat may occur within area
Other		
Idiosoma nigrum Shield-backed Trapdoor Spider, Black Rugose Trapdoor Spider [66798]	Vulnerable	Species or species habitat known to occur within area
Plants		
Eremophila rostrata Beaked Eremophila [65124]	Critically Endangered	Species or species habitat known to occur within area
Minuria tridens Minnie Daisy [13753]	Vulnerable	Species or species habitat may occur within area
Reptiles		
Egernia stokesii badia Western Spiny-tailed Skink, Baudin Island Spiny-tailed Skink [64483]	Endangered	Species or species habitat known to occur within area

Listed Migratory Species		[Resource Information]
* Species is listed under a different scientific name on the EPBC Act - Threatened Species list.		
Name	Threatened	Type of Presence
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
Motacilla flava Yellow Wagtail [644]		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
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 known 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 Land	[Resource Information]

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

Name
Commonwealth Land -

Listed Marine Species	[Resource Information]
* Species is listed under a different scientific name on the EPBC Act - Threatened Species list.	

Name	Threatened	Type of Presence
Birds		
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat known to occur within area
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Ardea alba Great Egret, White Egret [59541]		Species or species habitat known to occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat known to occur within area

Name	Threatened	Type of Presence
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area
Chrysococcyx osculans Black-eared Cuckoo [705]		Species or species habitat known to occur within area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area
Motacilla cinerea Grey Wagtail [642]		Species or species habitat may occur within area
Motacilla flava Yellow Wagtail [644]		Species or species habitat may occur within area
Rostratula benghalensis (sensu lato) Painted Snipe [889]	Endangered*	Species or species habitat may occur within area
Thinornis rubricollis Hooded Plover [59510]		Species or species habitat known to occur within area
Tringa nebularia Common Greenshank, Greenshank [832]		Species or species habitat likely to occur within area

Extra Information

State and Territory Reserves	[Resource Information]
Name	State
Lakeside Pastoral Lease	WA

Invasive Species	[Resource Information]

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

Name	Status	Type of Presence
Birds		
Columba livia Rock Pigeon, Rock Dove, Domestic Pigeon [803]		Species or species habitat likely to occur within area
Streptopelia senegalensis Laughing Turtle-dove, Laughing Dove [781]		Species or species habitat likely to occur within area
Mammals		

Name	Status	Type of Presence
Canis lupus familiaris Domestic Dog [82654]		Species or species habitat likely to occur within area
Capra hircus Goat [2]		Species or species habitat likely to occur within area
Equus asinus Donkey, Ass [4]		Species or species habitat likely to occur within area
Felis catus Cat, House Cat, Domestic Cat [19]		Species or species habitat likely to occur within area
Oryctolagus cuniculus Rabbit, European Rabbit [128]		Species or species habitat likely to occur within area
Vulpes vulpes Red Fox, Fox [18]		Species or species habitat likely to occur within area
Plants		
Carrichtera annua Ward's Weed [9511]		Species or species habitat may occur within area
Cenchrus ciliaris Buffel-grass, Black Buffel-grass [20213]		Species or species habitat likely to occur within area

Caveat

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

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

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

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

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

Where very little information is available for species or large number of maps are required in a short time-frame, maps are derived either from 0.04 or 0.02 decimal degree cells; by an automated process using polygon capture techniques (static two kilometre grid cells, alpha-hull and convex hull); or captured manually or by using topographic features (national park boundaries, islands, etc). In the early stages of the distribution mapping process (1999-early 2000s) distributions were defined by degree blocks, 100K or 250K map sheets to rapidly create distribution maps. More reliable distribution mapping methods are used to update these distributions as time permits.

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

- migratory and
- marine

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

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

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

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

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

Coordinates

-27.20433 117.72536

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 5: Fauna Species List

Key: EPBC = Environmental Protection and Biodiversity Conservation Act 1999, BC = Biodiversity Conservation Act 2016 (IUCN Threat categories), DBCA = Department of Biodiversity, Conservation and Attractions Priority Code, A = EPBC Protected Matters search, B = Listed in Naturemap, C = DBCA Threatened Fauna Database, D = Current Field Survey

Note: For Definitions of Conservation Codes see Appendix 1.

AMPHIBIANS		**Conservation Codes**			**A**	**B**	**C**	**D**
Scientific Name	**Common Name**	**EPBC**	**BC**	**DBCA**				
LIMNODYNASTIDAE								
Neobatrachus sutor	Shoemaker Frog					X		
Neobatrachus wilsmorei	Plonking Frog					X		
MYOBATRACHIDAE								
Pseudophryne occidentalis	Western Toadlet					X		
HYLIDAE								
Cyclorana platycephala	Water-holding Frog					X		
Litoria rubella	Little Red Tree Frog					X		

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Note: For Definitions of Conservation Codes see Appendix 1.

REPTILES		Conservation Codes			A	B	C	D
Scientific Name	**Common Name**	**EPBC**	**BC**	**DBCA**				
CHELUIDAE								
Chelodina steindachneri	Flat-shelled Turtle					X		
CARPHADACTYLIDAE								
Nephrurus vertebralis	Mid-line Knob-tailed Gecko					X		
Nephrurus wheeleri	Banded Knob-tailed Gecko					X		
DIPLODACTYLIDAE								
Crenadactylus ocellatus	Clawless Gecko					X		
Oedura marmorata	Marbled Velvet Gecko					X		
Rhynchoedura ornata	Western Beaked Gecko					X		
Strophurus strophurus	Western Spiny-tailed Gecko					X		
Strophurus wellingtonae	Western-shield Spiny-tailed Gecko					X		
GEKKONIDAE								
Gehyra punctata	Spotted Rock Dtella					X		
Gehyra variegata	Tree Dtella					X		X
Heteronotia benoei	Bynoe's Gecko					X		
PYGOPODIDAE								
Delma australis	Marble-faced Gecko					X		
Delma tincta	Black-necked Delma					X		
Lialis burtonis	Burtons Snake-lizard					X		
Pygopus nigriceps	Western Hooded Scaly-foot					X		
SCINCIDAE								
Cryptoblepharus plagiocephalus	Peron's Snake-eyed Skink					X		
Ctenotus leonhardii	Common Desert Ctenotus					X		
Ctenotus mimetes	Checker-sided Ctenotus					X		
Ctenotus nasutus	Long-snouted Ctenotus					X		
Ctenotus schomburgkii	Barred Wedge-snouted Ctenotus					X		
Ctenotus severus	Stern Rock Ctenotus					X		
Ctenotus uber	Spotted Ctenotus					X		
Egernia depressa	Southern Pygmy Spiny-tailed Skink					X		

REPTILES		Conservation Codes			A	B	C	D
Scientific Name	**Common Name**	**EPBC**	**BC**	**DBCA**				
Egernia stokesii badia	Western Spiny-tailed Skink	En	Vu		X	X	X	
Eremiascincus richardsonii	Broad-banded Sand Swimmer					X		
Lerista bipes	Western Two-toed Slider					X		
Lerista eupoda	West Coast Mulga Slider			P1		X	X	
Lerista gerrardii	Bold-striped Robust Slider					X		
Lerista macropisthopus	Unpatterned Robust Slider					X		
Lerista muelleri	Muellers Three-toed Slider					X		
Lerista timida	warf Three-toed Slider					X		
Menetia greyii	Common Dwarf Skink					X		
AGAMIDAE								
Ctenophorus caudicinctus	Ring-tailed Dragon					X		
Ctenophorus nuchalis	Central Netted Dragon					X		
Ctenophorus reticulatus	Western Netted Dragon					X		
Ctenophorus salinarum	Salt Pan Dragon					X		
Ctenophorus scutulatus	Lozenge-marked Dragon					X		X
Pogona minor	Dwarf Bearded Dragon					X		X
Moloch horridus	Thorny Devil					X		
Tympanocryptis cephalus	Pebble Dragon					X		
VARANIDAE								
Varanus caudolineatus	Stripe-tailed Monitor					X		
Varanus gouldii	Goulds Sand Monitor							X
Varanus panoptes	Yellow-spotted Monitor					X		
ELAPIDAE								
Antaresia perthensis	Pygmy Python					X		
Brachyurophis approximans	North-western Shovel-nosed Snake					X		
Parasuta monachus	Monk Snake					X		
Pseudechis australis	Mulga Snake					X		
Pseudonaja mengdeni	Western Brown Snake					X		
Pseudonaja modesta	Ringed Brown Snake					X		
Pseudonaja nuchalis	Gwardar					X		
Simoselaps bertholdi	Jan's Banded Snake					X		
Suta fasciata	Rosen's Snake					X		

[X] fauna species recorded.
[*] denotes introduced species.

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Note: For Definitions of Conservation Codes see Appendix 1.

BIRDS		Conservation Codes			A	B	C	D
Scientific Name	**Common Name**	**EPBC**	**BC**	**DBCA**				
MEGAPODIIDAE								
Leipoa ocellata	Malleefowl	Vu	Vu		X	X	X	
CASUARIIDAE								
Dromaius novaehollandiae	Emu					X		X
ANATIDAE								
Anas castanea	Chestnut Teal					X		
Anas gracilis	Grey Teal					X		
Anas rhynchotis	Australasian Shoveler					X		
Anas superciliosa	Pacific Black Duck					X		
Aythya australis	Hardhead					X		
Biziura lobata	Musk Duck					X		
Chenonetta jubata	Australian Wood Duck					X		
Cygnus atratus	Black Swan					X		
Malacorhynchus membranaceus	Pink-eared Duck					X		
Oxyura australis	Blue-billed Duck			P4		X	X	
Stictonetta naevosa	Freckled Duck					X		
Tadorna tadornoides	Australian Shelduck					X		
COLUMBIDAE								
Columba livia	Rock Pigeon				X	X		
Geopelia cuneata	Diamond Dove					X		X
Geopelia striata	Zebra Dove					X		
Geophaps plumifera	Spinifex Pigeon					X		
Ocyphaps lophotes	Crested Pigeon					X		X
Phaps chalcoptera	Common Bronzewing					X		
Streptopelia senegalensis	Laughing Turtle-Dove				X	X		
PODICIPEDIDAE								
Podiceps cristatus	Great Crested Grebe					X		
Poliocephalus poliocephalus	Hoary-headed Grebe					X		
Tachybaptus novaehollandiae	Australasian Grebe					X		
STRIGIDAE								
Ninox connivens	Barking Owl					X		

BIRDS		Conservation Codes			A	B	C	D
Scientific Name	Common Name	EPBC	BC	DBCA				
PODARGIDAE								
Podargus strigoides	Tawny Frogmouth					X		
CAPRIMULGIDAE								
Eurostopodus argus	Spotted Nightjar					X		
AEGOTHELIDAE								
Aegotheles cristatus	Australian Owlet-nightjar					X		
APODIDAE								
Apus pacificus	Fork-tailed Swift	Mi	Mi		X	X	X	
PHALACROCORACIDAE								
Phalacrocorax melanoleucos	Little Pied Cormorant					X		
Phalacrocorax carbo	Great Cormorant					X		
Phalacrocorax sulcirostris	Little Black Cormorant					X		
ANHINGIDAE								
Anhinga novaehollandiae	Australasian Darter					X		
PELECANIDAE								
Pelecanus conspicillatus	Australian Pelican					X		
ARDEIDAE								
Ardea modesta	Great Egret	Mi		Al	X	X		
Ardea pacifica	White-necked Heron					X		
Egretta novaehollandiae	White-faced Heron					X		
THRESKIORNITHIDAE								
Platalea flavipes	Yellow-billed Spoonbill					X		
Platalea regia	Royal Spoonbill					X		
Plegadis falcinellus	Glossy Ibis	Mi	Mi	Al		X	X	
Threskiornis spinicollis	Straw-necked Ibis					X		
ACCIPITRIDAE								
Elanus axillaris	Black-shouldered Kite					X		
Hamirostra melanosternon	Black-breasted Buzzard					X		
Haliastur sphenurus	Whistling Kite					X		
Hieraaetus morphnoides	Little Eagle					X		
Milvus migrans	Black Kite					X		
Aquila audax	Wedge-tailed Eagle					X		
Accipiter cirrocephalus	Collared Sparrowhawk					X		
Accipiter fasciatus	Brown Goshawk					X		
Circus assimilis	Spotted Harrier					X		
Circus approximans	Swamp Harrier					X		
FALCONIDAE								
Falco berigora	Brown Falcon					X		X

BIRDS		Conservation Codes			A	B	C	D
Scientific Name	Common Name	EPBC	BC	DBCA				
Falco cenchroides	Nankeen Kestrel					X		X
Falco hypoleucos	Grey Falcon	Vu			X			
Falco longipennis	Australian Hobby					X		
Falco peregrinus	Peregrine Falcon		OS			X	X	
Falco subniger	Black Falcon					X		
RALLIDAE								
Fulica atra	Eurasian Coot					X		
Porzana fluminea	Australian Spotted Crake					X		
Tribonyx ventralis	Black-tailed Native-hen					X		
OTDIDDAE								
Ardeotis australis	Australian Bustard					X		
RECURVIROSTRIDAE								
Cladorhynchus leucocephalus	Banded Stilt					X		
Himantopus himantopus	Black-winged Stilt					X		
Recurvirostra novaehollandiae	Red-necked Avocet					X		
CHARADRIIDAE								
Charadrius ruficapillus	Red-capped Plover	Mi	Mi			X		
Peltohyas australis	Inland Dotterel					X		
Thinornis rubricollis	Hooded Plover	Mi	Mi	P4	X	X	X	
Elseyornis melanops	Black-fronted Dotterel					X		
Erythrogonys cinctus	Red-kneed Dotterel					X		
Vanellus tricolor	Banded Lapwing					X		
ROSTRATULIDAE								
Rostratula australis	Australian Painted Snipe	En			X			
PHASIANIDAE								
Coturnix pectoralis	Stubble Quail					X		
Coturnix ypsilophora	Brown Quail					X		
LARIDAE								
Chroicocephalus novaehollandiae	Silver Gull					X		
Sterna nilotica	Gull-billed Tern	Mi	Mi			X	X	
Hydroprogne caspia	Caspian Tern	Mi	Mi			X	X	
Sterna leucoptera	White-winged Black Tern	Mi	Mi			X	X	
SCOLOPACIDAE								
Actitis hypoleucos	Common Sandpiper	Mi	Mi		X	X		
Calidris acuminata	Sharp-tailed Sandpiper	Mi	Mi		X	X	X	
Calidris ferruginea	Curlew Sandpiper	CR	Mi		X		X	
Calidris melanotos	Pectoral Sandpiper	Mi	Mi		X			
Caliris ruficollis	Red-necked Stint	Mi	Mi			X	X	

BIRDS		Conservation Codes			A	B	C	D
Scientific Name	Common Name	EPBC	BC	DBCA				
Limosa lapponica	Bar-tailed Godwit	Mi	Mi			X	X	
Tringa glareola	Wood Sandpiper	Mi	Mi			X	X	
Tringa nebularia	Common Greenshank	Mi	Mi		X	X	X	
Tringa stagnatilis	Little Greenshank	Mi	Mi			X	X	
TURNICADAE								
Turnix velox	Little Button-quail					X		X
BURHINIDAE								
Burhinus grallarius	Bush Stone-curlew					X		
PSITTACIDAE								
Platycercus zonarius	Australian Ringneck					X		
Eolophus roseicapillus	Galah					X		
Cacatua sanguinea	Little Corella					X		
Melopsittacus undulatus	Budgerigar					X		
Neophema bourkii	Bourke's Parrot					X		
Neophema elegans	Elegant Parrot					X		
Nymphicus hollandicus	Cockatiel					X		
Platycercus varius	Mulga Parrot					X		
Pezoporus occidentalis	Night Parrot	En	CR		X			
CUCULIDAE								
Cacomantis pallidus	Pallid Cuckoo					X		
Chalcites osculans	Black-eared Cuckoo				X	X		X
Chrysococcyx basalis	Horsfield's Bronze Cuckoo					X		
HALCYONIDAE								
Todiramphus pyrrhopygius	Red-backed Kingfisher					X		
Todiramphus sanctus	Sacred Kingfisher					X		
MEROPIDAE								
Merops ornatus	Rainbow Bee-eater	Ma			X	X		X
PTILONORHYNCHIDAE								
Ptilonorhynchus guttatus	Western Bowerbird					X		
COLUMBIDAE								
Climacteris affinis	White-browed Treecreeper					X		
MALURIDAE								
Amytornis modestus	Thick-billed Grasswren			P4		X		
Amytornis textilis	Western Grasswren			P4		X		
Malurus lamberti	Variegated Fairy-wren					X		
Malurus leucopterus	White-winged Fairy-wren					X		X
Malurus splendens	Splendid Fairy-wren					X		
MELIPHAGIDAE								

BIRDS		Conservation Codes			A	B	C	D
Scientific Name	Common Name	EPBC	BC	DBCA				
Acanthagenys rufogularis	Spiny-cheeked Honeyeater					X		
Certhionyx variegatus	Pied Honeyeater					X		
Epthianura albifrons	White-fronted Chat					X		
Epthianura aurifrons	Orange Chat					X		
Epthianura tricolor	Crimson Chat					X		
Gavicalis virescens	Singing Honeyeater					X		X
Lacustroica whitei	Grey Honeyeater					X		
Lichmera indistincta	Brown Honeyeater					X		
Manorina flavigula	Yellow-throated Miner					X		X
Purnella albifrons	White-fronted Honeyeater					X		X
PARDALOTIDAE								
Pardalotus striatus	Striated Pardalote					X		X
ACANTHIZIDAE								
Acanthiza apicalis	Inland Thornbill					X		
Acanthiza chrysorrhoa	Yellow-rumped Thornbill					X		
Acanthiza iredalei	Slender-billed Thornbill					X		
Acanthiza robustirostris	Slaty-backed Thornbill					X		X
Acanthiza uropygialis	Chestnut-rumped Thornbill					X		X
Aphelocephala leucopsis	Southern Whiteface					X		
Aphelocephala nigricincta	Banded White-face					X		
Calamanthus campestris	Rufous Fieldwren					X		
Gerygone fusca	Western Gerygone					X		
Pyrrholaemus brunneus	Redthroat					X		
Smicrornis brevirostris	Weebill					X		
POMATOSTOMIDAE								
Pomatostomus superciliosus	White-browed Babbler					X		X
Pomatostomus temporalis	Grey-crowned Babbler					X		
PAOPHODIDAE								
Cinclosoma castaneothorax	Chestnut-breasted Quail-thrush					X		
Cinclosoma marginatum	Western Quail-thrush					X		
Psophodes occidentalis	Chiming Wedgebill					X		
CAMPEPHAGIDAE								
Coracina novaehollandiae	Black-faced Cuckoo-shrike					X		
Lalage tricolor	White-winged Triller					X		
NEOSITTIDAE								
Daphoenositta chrysoptera	Varied Sittella					X		
PACHYCEPHALIDAE								
Colluricincla harmonica	Grey Shrike-thrush					X		X

BIRDS		Conservation Codes			A	B	C	D
Scientific Name	Common Name	EPBC	BC	DBCA				
Oreoica gutturalis	Crested Bellbird					X		X
Pachycephala rufiventris	Rufous Whistler					X		X
CRACTICIDAE								
Cracticus nigrogularis	Pied Butcherbird					X		
Cracticus tibicen	Australian Magpie					X		
Cracticus torquatus	Grey Butcherbird					X		
Strepera versicolor	Grey Currawong					X		
RHIPIDURIDAE								
Rhipidura albiscapa	Grey Fantail					X		
Rhipidura leucophrys	Willie Wagtail					X		X
MONARCHIDAE								
Grallina cyanoleuca	Magpie-Lark					X		
CORVIDAE								
Corvus bennetti	Little Crow					X		
Corvus coronoides	Australian Raven					X		X
Corvus orru	Torresian Crow					X		
PETROICIDAE								
Melanodryas cucullata	Hooded Robin					X		X
Microeca fascinans	Jacky Winter					X		
Petroica goodenovii	Red-capped Robin					X		X
TIMALIIDAE								
Zosterops lateralis	Silvereye					X		
ARTAMIDAE								
Artamus cinereus	Black-faced Woodswallow					X		X
Artamus cyanopterus	Dusky Woodswallow					X		
Artamus minor	Little Woodswallow					X		
Artamus personatus	Masked Woodswallow					X		
Artamus superciliosus	White-browed Woodswallow					X		
HIRUNDINIDAE								
Cheramoeca leucosterna	White-backed Swallow					X		
Hirundo neoxena	Welcome Swallow					X		
Petrochelidon ariel	Fairy Martin					X		X
Petrochelidon nigricans	Tree Martin					X		
DICAEIDAE								
Dicaeum hirundinaceum	Mistletoebird					X		
ESTRILDIDAE								
Taeniopygia guttata	Zebra Finch					X		X
MOTACILLIDAE								

BIRDS		Conservation Codes			A	B	C	D
Scientific Name	Common Name	EPBC	BC	DBCA				
Anthus novaeseelandiae	Australasian Pipit					X		
Motacilla cinerea	Grey Wagtail	Mi	Mi		X			
Motacilla flava	Yellow Wagtail	Mi	Mi		X			

[X] fauna species recorded.
[*] denotes introduced species.

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MAMMALS		Conservation Codes						
Scientific Name	**Common Name**	**EPBC**	**BC**	**DBCA**	**A**	**B**	**C**	**D**
TACHYGLOSSIDAE								
Tachyglossus aculeatus	Short-beaked Echidna					X		
DASYURIDAE								
Dasycercus blythi	Brush-tailed Mulgara			P4		X	X	
Pseudantechinus woolleyae	Woolley's Pseudantechinus					X		
Antechinomys laniger	Kultarr					X		
Sminthopsis crassicaudata	Fat-tailed Dunnart					X		
Sminthopsis dolichura	Little long-tailed Dunnart					X		
Sminthopsis longicaudata	Long-tailed Dunnart			P4			X	
Sminthopsis macroura	Stripe-faced Dunnart					X		
CHAEROPODIDAE								
Chaeropus ecaudatus	Pig-footed Bandicoot	Ex				X		
THYLACOMYIDAE								
Macrotis lagotis	Bilby	Vu	Vu			X		
PHALANGEROIDAE								
Trichosurus vulpecula	Common Brushtail Possum					X		
MACROPODIDAE								
Lagorchestes hirsutus hirsutus	Rufous Hare-wallaby (south-western)	Ex				X		
Osphranter robustus	Euro					X		X
Osphranter rufus	Red Kangaroo					X		X
Petrogale lateralis lateralis	Black-flanked Rock-wallaby	Vu	Vu			X		
MEGADERMATIDAE								
Macroderma gigas	Ghost Bat	Vu	Vu			X	X	
EMBALLONURIDAE								
Taphozous georgianus	Common Sheath-tailed Bat						X	
Taphozous hilli	Hill's Sheathtail-bat						X	
VESPERTILIONIDAE								
Chalinolobus gouldii	Gould's Wattled Bat					X		
Nyctophilus geoffroyi	Lesser Long-eared Bat					X		
Nyctophilus gouldi	Gould's Long-eared Bat					X		
Vespadelus finlaysoni	Finlayson's Cave Bat					X		

MAMMALS		Conservation Codes						
Scientific Name	**Common Name**	**EPBC**	**BC**	**DBCA**	**A**	**B**	**C**	**D**
MURIDAE								
Leporillus apicalis	Lesser Stick-nest Rat	Ex				X		
Leporillus conditor	Greater Stick-nest Rat	Vu	Vu		X	X		
Notomys alexis	Spinifex Hopping-mouse					X		
Notomys longicaudatus	Long-tailed Hopping-mouse					X		
Pseudomys hermannsburgensis	Sandy Inland Mouse					X		
Pseudomys fieldi	Shark Bay Mouse					X		
**Mus musculus*	House Mouse					X		
CANIDAE								
Canis lupus familiaris	Domestic Dog				X			
**Vulpes vulpes*	Red Fox				X	X		
FELIDAE								
**Felis catus*	Feral Cat				X			
LEPORIDAE								
**Oryctolagus cuniculus*	European Rabbit				X	X		
EQUIDAE								
**Equus asinus*	Donkey				X			
**Equus caballus*	Horse					X		
BOVIDAE								
**Bos taurus*	European Cattle					X		X
**Capra hircus*	Goat				X	X		
**Ovis aries*	Sheep					X		

[X] fauna species recorded.
[*] denotes introduced species.

Appendix 6: Fauna Habitat Assessments

Appendix 3: Relevé Descriptions

FAUNA HABITAT ASSESSMENT SHEET

(Mid-West)

Location: Cue - Accelerator & Indicator		**Site Number: HA 1**				
Project Number: GWR 001		**Aspect**	N	NE	NW	
Date: 3 November 2020	**Easting: 0570961**		S	SE	SW	
Quadrat Size: 50 x 50	**Northing: 6989218**		E	W	**N/A**	

Soil Texture	**sand**	sandy-loam	loam	cracking clay	clay

VEGETATION

Vegetation				**Average Height (M)**	**Cover**				
	Hummock Grassland	Other: Drainage Line							
	Acacia Shrubland	**Stratum**			**Scattered Plants**	**Sparse**	**Moderate**	**Thick**	
	Riverine Woodland	**Overstorey**	*A.caesaneura, A.fuscaneura, A.aptaneura*	5	0 <5%	**1 <20%**	2 20-60%	3 60-100%	
	Other Grassland	**Midstorey**	*E.galeata, E.macmillaniana, A.tetragonophylla, A.aptaneura, S.artemisioides*	<1	0 <5%	**1 <20%**	2 20-60%	3 60-100%	
	Euc Woodland	**Ground Cover**	*Cymbopogon ambiguus, P. obovatus*	<0.5	**0 <5%**	1 <20%	2 20-60%	3 60-100%	

CONDITION						**LAST FIRE**				
5 Pristine	4 Excellent	3 Very Good	**2 Good**	1 Degraded		0 Completely Degraded	0 <1 year	1 1 -3 Yr	2 4-5 Yr	**3 >5 Yr**

Notes	**Notes**

(general) DISTURBANCE (cattle)

	0 heavy	1 medium	**2** **mild**	3 none		0 heavy	**1** **medium**	2 mild	3 none	
Notes					**Notes**					
Exploration tracks					**Cattle tracks and scats, grazing**					
GROUND COVER										
Bare Ground	0 <5%	1 <20%	**2** **20-60%**	3 60-100%	**Hummock Grass**	**0** **<5%**	1 <20%	2 20-60%	3 60-100%	
Rock	**0** **<5%**	1 <20%	2 20-60%	3 60-100%	**Other Grass**	**0** **<5%**	1 <20%	2 20-60%	3 60-100% *	
Leaf Litter	**0** **<5%**	1 <20%	2 20-60%	3 60-100%	**Herbs**	**0** **<5%**	1 <20%	2 20-60%	3 60-100%	
Logs >10cm	**0** **<5%**	1 <20%	2 20-60%	3 60-100%						
MICROHABITATS										
Burrowing Suitability		0 Rock	1 Stony	2 Sandy Loam	**3 Sand**	**Peeling Bark**	**0** **none**	1 rare	2 moderate	3 common
Pebbles Stones		0 none	1 0-30%	**2** **30-70%**	3 70-100%	**Large Hollows**	**0** **none**	1 rare	2 moderate	3 common
Exfoliating Slabs		**0** **none**	1 0-30%	2 30-70%	3 70-100%	**Small Hollows**	**0** **none**	1 rare	2 moderate	3 common
Rock Crevices		**0** **none**	1 0-30%	2 30-70%	3 70-100%	**Water Prescence**	**0** **none**	1 rare	2 moderate	3 common
Boulders		**0** **none**	1 0-30%	2 30-70%	3 70-100%	**Distance to Water**	0 >5km	1 2-5km	2 500m - 2km	**3** **<500m**
Suitability for Bats		YES		**NO**		**Termite Mounds**	**0** **none**	1 rare	2 moderate	3 common
Caves		**Absent**	Present			**Woody Debris**	0 none	1 rare	**2** **moderate**	3 common

CONSERVATION SIGNIFICANT FAUNA	
Species	**Notes**

FAUNA RECORDED		
Birds	**Mammals**	**Reptiles**
Grey Shrike-thrush	Cattle tracks and scats	
Yellow-throated Miner	Kangaroo tracks and scats	

FAUNA HABITAT ASSESSMENT SHEET									
(Mid-West)									
Location: Cue - Accelerator & Indicator				Site Number: HA 2					
Project Number: GWR 001				Aspect	N	NE	NW		
Date: 3 November 2020	Easting: 570876				S	SE	**SW**		
Quadrat Size: 50 x 50	Northing: 6989734				E	W	N/A		

Soil Texture	**sand**	sandy-loam	loam	cracking clay	clay

VEGETATION									
Vegetation	Hummock Grassland	Other: Drainage Line		Average Height (M)	Cover				
	Acacia Shrubland	**Stratum**			**Scattered Plants**	**Sparse**	**Moderate**	**Thick**	
	Riverine Woodland	**Overstorey**	*A.caesaneura, A.fuscaneura,*	5	0 <5%	1 <20%	**2 20-60%**	3 60-100%	
	Other Grassland	**Midstorey**	*E.galeata, E.macmillaniana, A.tetragonophylla, A.aptaneura, S.artemisioides*	<1	0 <5%	**1 <20%**	2 20-60%	3 60-100%	
	Euc Woodland	**Ground Cover**	*C. ambiguus, P.obovatus*	<0.5	**0 <5%**	1 <20%	2 20-60%	3 60-100%	

CONDITION						LAST FIRE				
5 Pristine	4 Excellent	**3 Very Good**	2 Good	1 Degraded		0 Completely Degraded	0 <1 year	1 1 -3 Yr	2 4-5 Yr	**3 >5 Yr**
Notes					**Notes**					

(general)					**DISTURBANCE**					**(cattle)**
	0 heavy	1 medium	**2** **mild**	3 none		0 heavy	**1** **medium**	2 mild	3 none	
Notes					**Notes**					
Exploration tracks					**Cattle tracks and scats, grazing**					
GROUND COVER										
Bare Ground	0 <5%	1 <20%	**2** **20-60%**	3 60-100%	**Hummock Grass**	**0** **<5%**	1 <20%	2 20-60%	3 60-100%	
Rock	**0** **<5%**	1 <20%	2 20-60%	3 60-100%	**Other Grass**	**0** **<5%**	1 <20%	2 20-60%	3 60-100% *	
Leaf Litter	**0** **<5%**	1 <20%	2 20-60%	3 60-100%	**Herbs**	**0** **<5%**	1 <20%	2 20-60%	3 60-100%	
Logs >10cm	**0** **<5%**	1 <20%	2 20-60%	3 60-100%						
MICROHABITATS										
Burrowing Suitability	0 Rock	1 Stony	2 Sandy Loam	**3 Sand**	**Peeling Bark**	**0** **none**	1 rare	2 moderate	3 common	
Pebbles Stones	0 none	1 0-30%	**2** **30-70%**	3 70-100%	**Large Hollows**	**0** **none**	1 rare	2 moderate	3 common	
Exfoliating Slabs	**0** **none**	1 0-30%	2 30-70%	3 70-100%	**Small Hollows**	**0** **none**	1 rare	2 moderate	3 common	
Rock Crevices	**0** **none**	1 0-30%	2 30-70%	3 70-100%	**Water Prescence**	**0** **none**	1 rare	2 moderate	3 common	
Boulders	**0** **none**	1 0-30%	2 30-70%	3 70-100%	**Distance to Water**	0 >5km	1 2-5km	2 500m - 2km	**3** **<500m**	
Suitability for Bats	YES		**NO**		**Termite Mounds**	**0** **none**	1 rare	2 moderate	3 common	
Caves	**Absent**	Present			**Woody Debris**	0 none	1 rare	**2** **moderate**	3 common	

CONSERVATION SIGNIFICANT FAUNA	
Species	**Notes**

FAUNA RECORDED		
Birds	**Mammals**	**Reptiles**
Grey Shrike-thrush	Kangaroo tracks and scats	
Yellow-throated Miner		

FAUNA HABITAT ASSESSMENT SHEET						
(Mid-West)						
Location: Cue - Accelerator & Indicator		**Site Number: HA 3**				
Project Number: GWR 001		**Aspect**	N	NE	NW	
Date: 3 November 2020	**Easting: 570971**		S	SE	**SW**	
Quadrat Size: 50 x 50	**Northing: 6989927**		E	W	N/A	

Soil Texture	**sand**	sandy-loam	loam	cracking clay	clay

VEGETATION

Vegetation				**Average Height (M)**	**Cover**				
	Hummock Grassland	Other: Stoney plain							
	Acacia Shrubland	**Stratum**			**Scattered Plants**	**Sparse**	**Moderate**	**Thick**	
	Riverine Woodland	**Overstorey**	*A. aptaneura*		**0 <5%**	1 <20%	2 20-60%	3 60-100%	
	Other Grassland	**Midstorey**			0 <5%	1 <20%	2 20-60%	3 60-100%	
	Euc Woodland	**Ground Cover**	*M. triptera, P. obovatus*	0.5	0 <5%	**1 <20%**	2 20-60%	3 60-100%	

CONDITION						**LAST FIRE**				
5 Pristine	4 Excellent	3 Very Good	**2 Good**	1 Degraded		0 Completely Degraded	0 <1 year	1 1 -3 Yr	2 4-5 Yr	**3 >5 Yr**
Notes						**Notes**				

(general) DISTURBANCE (cattle)

	0 heavy	1 medium	2 mild	**3** **none**		0 heavy	1 medium	2 mild	**3** **none**	
Notes					**Notes**					
GROUND COVER										
Bare Ground	0 <5%	1 <20%	2 20-60%	**3** **60-100%**	**Hummock Grass**	**0** **<5%**	1 <20%	2 20-60%	3 60-100%	
Rock	**0** **<5%**	**1** **<20%**	2 20-60%	3 60-100%	**Other Grass**	**0** **<5%**	1 <20%	2 20-60%	3 60-100% *	
Leaf Litter	0 <5%	1 <20%	2 20-60%	3 60-100%	**Herbs**	**0** **<5%**	1 <20%	2 20-60%	3 60-100%	
Logs >10cm	**0** **<5%**	1 <20%	2 20-60%	3 60-100%						
MICROHABITATS										
Burrowing Suitability	0 Rock	1 Stony	2 Sandy Loam	**3 Sand**	**Peeling Bark**	**0** **none**	1 rare	2 moderate	3 common	
Pebbles Stones	0 none	1 0-30%	2 30-70%	**3** **70-100%**	**Large Hollows**	**0** **none**	1 rare	2 moderate	3 common	
Exfoliating Slabs	**0** **none**	1 0-30%	2 30-70%	3 70-100%	**Small Hollows**	**0** **none**	1 rare	2 moderate	3 common	
Rock Crevices	**0** **none**	1 0-30%	2 30-70%	3 70-100%	**Water Prescence**	**0** **none**	1 rare	2 moderate	3 common	
Boulders	**0** **none**	1 0-30%	2 30-70%	3 70-100%	**Distance to Water**	0 >5km	1 2-5km	2 500m - 2km	**3** **<500m**	
Suitability for Bats	YES		**NO**		**Termite Mounds**	**0** **none**	1 rare	2 moderate	3 common	
Caves	**Absent**	Present			**Woody Debris**	0 none	1 rare	**2** **moderate**	3 common	

CONSERVATION SIGNIFICANT FAUNA	
Species	**Notes**

FAUNA RECORDED		
Birds	**Mammals**	**Reptiles**

FAUNA HABITAT ASSESSMENT SHEET						
(Mid-West)						
Location: Cue - Accelerator & Indicator		**Site Number: HA 4**				
Project Number: GWR 001		**Aspect**	N	NE	NW	
Date: 3 November 2020	**Easting: 571073**		S	SE	**SW**	
Quadrat Size: 50 x 50	**Northing: 6990100**		E	W	N/A	

Soil Texture	**sand**	sandy-loam	loam	cracking clay	clay

VEGETATION									
Vegetation	Hummock Grassland	Other: Stoney Rise		**Average Height (M)**	**Cover**				
	Acacia Shrubland	**Stratum**			**Scattered Plants**	**Sparse**	**Moderate**	**Thick**	
	Riverine Woodland	**Overstorey**	*A. aptaneura*	5	**0 <5%**	1 <20%	2 20-60%	3 60-100%	
	Other Grassland	**Midstorey**	*E. macmillaniana, E.galeata, Senna sp.*	<1	**0 <5%**	1 <20%	2 20-60%	3 60-100%	
	Euc Woodland	**Ground Cover**	*M. triptera, P. obovatus*	<0.5	**0 <5%**	1 <20%	2 20-60%	3 60-100%	

CONDITION						**LAST FIRE**				
5 Pristine	4 Excellent	**3 Very Good**	**2 Good**	1 Degraded		0 Completely Degraded	0 <1 year	1 1 -3 Yr	2 4-5 Yr	**3 >5 Yr**

Notes	**Notes**

(general)	**DISTURBANCE**	**(cattle)**

	0 heavy	1 medium	**2** **mild**	3 none		0 heavy	**1** **medium**	2 mild	3 none	
Notes					**Notes**					
					Cattle tracks and scats					
GROUND COVER										
Bare Ground	0 <5%	1 <20%	**2** **20-60%**	3 60-100%	**Hummock Grass**	**0** **<5%**	1 <20%	2 20-60%	3 60-100%	
Rock	**0** **<5%**	1 <20%	2 20-60%	3 60-100%	**Other Grass**	**0** **<5%**	1 <20%	2 20-60%	3 60-100% *	
Leaf Litter	**0** **<5%**	1 <20%	2 20-60%	3 60-100%	**Herbs**	**0** **<5%**	1 <20%	2 20-60%	3 60-100%	
Logs >10cm	**0** **<5%**	1 <20%	2 20-60%	3 60-100%						
MICROHABITATS										
Burrowing Suitability	0 Rock	1 Stony	2 Sandy Loam	**3 Sand**	**Peeling Bark**	**0** **none**	1 rare	2 moderate	3 common	
Pebbles Stones	0 none	1 0-30%	**2** **30-70%**	3 70-100%	**Large Hollows**	**0** **none**	1 rare	2 moderate	3 common	
Exfoliating Slabs	**0** **none**	1 0-30%	2 30-70%	3 70-100%	**Small Hollows**	**0** **none**	1 rare	2 moderate	3 common	
Rock Crevices	**0** **none**	1 0-30%	2 30-70%	3 70-100%	**Water Prescence**	**0** **none**	1 rare	2 moderate	3 common	
Boulders	**0** **none**	1 0-30%	2 30-70%	3 70-100%	**Distance to Water**	0 >5km	1 2-5km	2 500m - 2km	**3** **<500m**	
Suitability for Bats	YES		**NO**		**Termite Mounds**	**0** **none**	1 rare	2 moderate	3 common	
Caves	**Absent**	Present			**Woody Debris**	0 none	1 rare	**2** **moderate**	3 common	

CONSERVATION SIGNIFICANT FAUNA	
Species	**Notes**

FAUNA RECORDED		
Birds	**Mammals**	**Reptiles**
Rufous Whistler	Kangaroo tracks and scats	Goanna diggings

FAUNA HABITAT ASSESSMENT SHEET						
(Mid-West)						
Location: Cue - Accelerator & Indicator		Site Number: HA 5				
Project Number: GWR 001		Aspect	N	NE	NW	
Date: 3 November 2020	Easting: 571223		S	SE	SW	
Quadrat Size: 50 x 50	Northing: 6990011		E	W	**N/A**	

Soil Texture	**sand**	sandy-loam	loam	cracking clay	clay

VEGETATION									
Vegetation	Hummock Grassland	Other: Stoney Plain		Average Height (M)	Cover				
	Acacia Shrubland	**Stratum**			**Scattered Plants**	**Sparse**	**Moderate**	**Thick**	
	Riverine Woodland	**Overstorey**			0 <5%	1 <20%	2 20-60%	3 60-100%	
	Other Grassland	**Midstorey**			0 <5%	1 <20%	2 20-60%	3 60-100%	
	Euc Woodland	**Ground Cover**	*M. triptera, P. obovatus*	0.5	0 <5%	**1 <20%**	2 20-60%	3 60-100%	

CONDITION						LAST FIRE				
5 Pristine	4 Excellent	3 Very Good	**2 Good**	1 Degraded		0 Completely Degraded	0 <1 year	1 1 -3 Yr	2 4-5 Yr	**3 >5 Yr**

Notes	Notes

(general)	DISTURBANCE	(cattle)

	0 heavy	1 medium	2 mild	**3** **none**		0 heavy	1 medium	2 mild	**3** **none**	
Notes					**Notes**					
GROUND COVER										
Bare Ground	0 <5%	1 <20%	2 20-60%	**3** **60-100%**	**Hummock Grass**	**0** **<5%**	1 <20%	2 20-60%	3 60-100%	
Rock	**0** **<5%**	**1** **<20%**	2 20-60%	3 60-100%	**Other Grass**	**0** **<5%**	1 <20%	2 20-60%	3 60-100% *	
Leaf Litter	**0** **<5%**	1 <20%	2 20-60%	3 60-100%	**Herbs**	**0** **<5%**	1 <20%	2 20-60%	3 60-100%	
Logs >10cm	**0** **<5%**	1 <20%	2 20-60%	3 60-100%						
MICROHABITATS										
Burrowing Suitability	0 Rock	1 Stony	2 Sandy Loam	**3 Sand**	**Peeling Bark**	**0** **none**	1 rare	2 moderate	3 common	
Pebbles Stones	0 none	1 0-30%	2 30-70%	**3** **70-100%**	**Large Hollows**	**0** **none**	1 rare	2 moderate	3 common	
Exfoliating Slabs	**0** **none**	1 0-30%	2 30-70%	3 70-100%	**Small Hollows**	**0** **none**	1 rare	2 moderate	3 common	
Rock Crevices	**0** **none**	1 0-30%	2 30-70%	3 70-100%	**Water Prescence**	**0** **none**	1 rare	2 moderate	3 common	
Boulders	**0** **none**	1 0-30%	2 30-70%	3 70-100%	**Distance to Water**	0 >5km	1 2-5km	2 500m - 2km	**3** **<500m**	
Suitability for Bats	YES		**NO**		**Termite Mounds**	**0** **none**	1 rare	2 moderate	3 common	
Caves	**Absent**	Present			**Woody Debris**	0 none	1 rare	**2** **moderate**	3 common	

CONSERVATION SIGNIFICANT FAUNA	
Species	**Notes**

FAUNA RECORDED		
Birds	**Mammals**	**Reptiles**
Black-eared Cuckoo		

FAUNA HABITAT ASSESSMENT SHEET						
(Mid-West)						
Location: Cue - Accelerator & Indicator		**Site Number: HA 6**				
Project Number: GWR 001		**Aspect**	N	NE	NW	
Date: 3 November 2020	**Easting: 571308**		S	SE	SW	
Quadrat Size: 50 x 50	**Northing: 6989592**		E	W	N/A	

Soil Texture	**sand**	sandy-loam	loam	cracking clay	clay

VEGETATION									
Vegetation	Hummock Grassland	Other: Stoney plain		**Average Height (M)**	**Cover**				
	Acacia Shrubland	**Stratum**			**Scattered Plants**	**Sparse**	**Moderate**	**Thick**	
	Riverine Woodland	**Overstorey**			0 <5%	1 <20%	2 20-60%	3 60-100%	
	Other Grassland	**Midstorey**			0 <5%	1 <20%	2 20-60%	3 60-100%	
	Euc Woodland	**Ground Cover**	*M. triptera, P. obovatus*	0.5	0 <5%	**1 <20%**	2 20-60%	3 60-100%	

CONDITION						LAST FIRE				
5 Pristine	4 Excellent	3 Very Good	**2 Good**	1 Degraded		0 Completely Degraded	0 <1 year	1 1 -3 Yr	2 4-5 Yr	**3 >5 Yr**

Notes	Notes

(general)	DISTURBANCE	(cattle)

	0 heavy	1 medium	**2** **mild**	3 none		0 heavy	1 medium	2 mild	**3** **none**	
Notes					**Notes**					
Exploration tracks										
GROUND COVER										
Bare Ground	0 <5%	1 <20%	2 20-60%	**3** **60-100%**	**Hummock Grass**	**0** **<5%**	1 <20%	2 20-60%	3 60-100%	
Rock	**0** **<5%**	**1** **<20%**	2 20-60%	3 60-100%	**Other Grass**	**0** **<5%**	1 <20%	2 20-60%	3 60-100% *	
Leaf Litter	0 <5%	1 <20%	2 20-60%	3 60-100%	**Herbs**	**0** **<5%**	1 <20%	2 20-60%	3 60-100%	
Logs >10cm	**0** **<5%**	1 <20%	2 20-60%	3 60-100%						
MICROHABITATS										
Burrowing Suitability	0 Rock	1 Stony	2 Sandy Loam	**3 Sand**	**Peeling Bark**	**0** **none**	1 rare	2 moderate	3 common	
Pebbles Stones	0 none	1 0-30%	2 30-70%	**3** **70-100%**	**Large Hollows**	**0** **none**	1 rare	2 moderate	3 common	
Exfoliating Slabs	**0** **none**	1 0-30%	2 30-70%	3 70-100%	**Small Hollows**	**0** **none**	1 rare	2 moderate	3 common	
Rock Crevices	**0** **none**	1 0-30%	2 30-70%	3 70-100%	**Water Prescence**	**0** **none**	1 rare	2 moderate	3 common	
Boulders	**0** **none**	1 0-30%	2 30-70%	3 70-100%	**Distance to Water**	0 >5km	1 2-5km	2 500m - 2km	**3** **<500m**	
Suitability for Bats	YES		**NO**		**Termite Mounds**	**0** **none**	1 rare	2 moderate	3 common	
Caves	**Absent**	Present			**Woody Debris**	0 none	1 rare	**2** **moderate**	3 common	

CONSERVATION SIGNIFICANT FAUNA	
Species	**Notes**

FAUNA RECORDED		
Birds	**Mammals**	**Reptiles**
Fairy Martin		

FAUNA HABITAT ASSESSMENT SHEET						
(Mid-West)						
Location: Cue - Accelerator & Indicator		**Site Number: HA 7**				
Project Number: GWR 001		**Aspect**	N	NE	NW	
Date: 3 November 2020	**Easting: 0571395**		S	SE	SW	
Quadrat Size: 50 x 50	**Northing: 6989490**		E	W	**N/A**	

Soil Texture	**sand**	sandy-loam	loam	cracking clay	clay

VEGETATION

Vegetation						**Cover**				
	Hummock Grassland	Other: Drainage Line		**Average Height (M)**						
	Acacia Shrubland	**Stratum**				**Scattered Plants**	**Sparse**	**Moderate**	**Thick**	
	Riverine Woodland	**Overstorey**	*P.angustifolium, H.preissii, E.longifolia, A.synchronicia*	5		0 <5%	**1 <20%**	2 20-60%	3 60-100%	
	Other Grassland	**Midstorey**	*P.divaricatus, P.obovatus, E.tomentosa, R.drummondii*	<1		0 <5%	**1 <20%**	2 20-60%	3 60-100%	
	Euc Woodland	**Ground Cover**	*S.cuneata, A.codonocarpa,*	<0.5		**0 <5%**	1 <20%	2 20-60%	3 60-100%	

CONDITION						**LAST FIRE**				
5 Pristine	4 Excellent	3 Very Good	**2 Good**	1 Degraded		0 Completely Degraded	0 <1 year	1 1 -3 Yr	2 4-5 Yr	**3 >5 Yr**

Notes					Notes					
(general)				DISTURBANCE					(cattle)	
	0 heavy	1 medium	**2** **mild**	3 none		0 heavy	**1** **medium**	2 mild	3 none	
Notes					Notes					
					Cattle tracks and scats					
GROUND COVER										
Bare Ground	0 <5%	1 <20%	2 20-60%	**3** **60-100%**	**Hummock Grass**	**0** **<5%**	1 <20%	2 20-60%	3 60-100%	
Rock	**0** **<5%**	1 <20%	2 20-60%	3 60-100%	**Other Grass**	**0** **<5%**	1 <20%	2 20-60%	3 60-100% *	
Leaf Litter	**0** **<5%**	1 <20%	2 20-60%	3 60-100%	**Herbs**	**0** **<5%**	1 <20%	2 20-60%	3 60-100%	
Logs >10cm	**0** **<5%**	1 <20%	2 20-60%	3 60-100%						
MICROHABITATS										
Burrowing Suitability	0 Rock	1 Stony	2 Sandy Loam	**3 Sand**	**Peeling Bark**	**0** **none**	1 rare	2 moderate	3 common	
Pebbles Stones	**0** **none**	1 0-30%	2 30-70%	3 70-100%	**Large Hollows**	**0** **none**	1 rare	2 moderate	3 common	
Exfoliating Slabs	**0** **none**	1 0-30%	2 30-70%	3 70-100%	**Small Hollows**	**0** **none**	1 rare	2 moderate	3 common	
Rock Crevices	**0** **none**	1 0-30%	2 30-70%	3 70-100%	**Water Prescence**	0 none	**1** **rare**	2 moderate	3 common	
Boulders	**0** **none**	1 0-30%	2 30-70%	3 70-100%	**Distance to Water**	0 >5km	1 2-5km	2 500m - 2km	**3** **<500m**	
Suitability for Bats	YES		**NO**		**Termite Mounds**	**0** **none**	1 rare	2 moderate	3 common	
Caves	**Absent**	Present			**Woody Debris**	0 none	1 rare	**2** **moderate**	3 common	

CONSERVATION SIGNIFICANT FAUNA	
Species	**Notes**

FAUNA RECORDED		
Birds	**Mammals**	**Reptiles**
	Cattle tracks and scats	
	Kangaroo tracks and scats	

FAUNA HABITAT ASSESSMENT SHEET									
(Mid-West)									
Location: Cue - Accelerator & Indicator					**Site Number: HA 8**				
Project Number: GWR 001					**Aspect**	N	NE	NW	
Date: 3 November 2020	**Easting: 571172**					S	SE	SW	
Quadrat Size: 50 x 50	**Northing: 6988984**					E	W	**N/A**	

Soil Texture	**sand**	sandy-loam	loam	cracking clay	clay

VEGETATION									
Vegetation	Hummock Grassland	Other: Stoney Plain		**Average Height (M)**	**Cover**				
	Acacia Shrubland	**Stratum**			**Scattered Plants**	**Sparse**	**Moderate**	**Thick**	
	Riverine Woodland	**Overstorey**			0 <5%	1 <20%	2 20-60%	3 60-100%	
	Other Grassland	**Midstorey**			0 <5%	1 <20%	2 20-60%	3 60-100%	
	Euc Woodland	**Ground Cover**	*M. triptera, P. obovatus*	0.5	0 <5%	**1 <20%**	2 20-60%	3 60-100%	

CONDITION						LAST FIRE				
5 Pristine	4 Excellent	3 Very Good	2 Good	**1 Degraded**		0 Completely Degraded	0 <1 year	1 1 -3 Yr	2 4-5 Yr	3 >5 Yr

Notes	Notes

(general)	DISTURBANCE	(cattle)

	0 heavy	**1** **medium**	2 mild	3 none		0 heavy	1 medium	**2** **mild**	**3** **none**	
Notes					**Notes**					
GROUND COVER										
Bare Ground	0 <5%	1 <20%	2 20-60%	**3** **60-100%**	**Hummock Grass**	**0** **<5%**	1 <20%	2 20-60%	3 60-100%	
Rock	**0** **<5%**	**1** **<20%**	2 20-60%	3 60-100%	**Other Grass**	**0** **<5%**	1 <20%	2 20-60%	3 60-100% *	
Leaf Litter	**0** **<5%**	1 <20%	2 20-60%	3 60-100%	**Herbs**	**0** **<5%**	1 <20%	2 20-60%	3 60-100%	
Logs >10cm	**0** **<5%**	1 <20%	2 20-60%	3 60-100%						
MICROHABITATS										
Burrowing Suitability		0 Rock	1 Stony	2 Sandy Loam	**3 Sand**	**Peeling Bark**	**0** **none**	1 rare	2 moderate	3 common
Pebbles Stones		0 none	1 0-30%	2 30-70%	**3** **70-100%**	**Large Hollows**	**0** **none**	1 rare	2 moderate	3 common
Exfoliating Slabs		**0** **none**	1 0-30%	2 30-70%	3 70-100%	**Small Hollows**	**0** **none**	1 rare	2 moderate	3 common
Rock Crevices		**0** **none**	1 0-30%	2 30-70%	3 70-100%	**Water Prescence**	**0** **none**	1 rare	2 moderate	3 common
Boulders		**0** **none**	1 0-30%	2 30-70%	3 70-100%	**Distance to Water**	0 >5km	1 2-5km	2 500m - 2km	**3** **<500m**
Suitability for Bats		YES		**NO**		**Termite Mounds**	0 none	**1** **rare**	2 moderate	3 common
Caves		**Absent**	Present			**Woody Debris**	0 none	1 rare	**2** **moderate**	3 common

CONSERVATION SIGNIFICANT FAUNA	
Species	**Notes**

FAUNA RECORDED		
Birds	**Mammals**	**Reptiles**
		Goanna tracks

FAUNA HABITAT ASSESSMENT SHEET										
(Mid-West)										
Location: Cue - Accelerator & Indicator					**Site Number: HA 9**					
Project Number: GWR 001					**Aspect**	N	NE	NW		
Date: 3 November 2020	**Easting: 571065**					S	SE	SW		
Quadrat Size: 50 x 50	**Northing: 6988973**					E	W	**N/A**		

Soil Texture	**sand**	sandy-loam	loam	cracking clay	clay

VEGETATION									
Vegetation	Hummock Grassland	Other: Drainage Line		**Average Height (M)**	**Cover**				
	Acacia Shrubland	**Stratum**			**Scattered Plants**	**Sparse**	**Moderate**	**Thick**	
	Riverine Woodland	**Overstorey**	*A.caesaneura, A.fuscaneura, A.aptaneura*	5	0 <5%	**1 <20%**	2 20-60%	3 60-100%	
	Other Grassland	**Midstorey**	*E.galeata, E.macmillaniana, A.tetragonophylla, A.aptaneura, S.artemisioides*	<1	0 <5%	**1 <20%**	2 20-60%	3 60-100%	
	Euc Woodland	**Ground Cover**	*C. ambiguus, P.obovatus*	<0.5	**0 <5%**	1 <20%	2 20-60%	3 60-100%	

CONDITION						**LAST FIRE**				
5 Pristine	4 Excellent	3 Very Good	**2 Good**	1 Degraded		0 Completely Degraded	0 <1 year	1 1 -3 Yr	2 4-5 Yr	**3 >5 Yr**

Notes					Notes					
(general)				DISTURBANCE					(cattle)	
	0 heavy	1 medium	**2** **mild**	3 none		0 heavy	**1** **medium**	2 mild	3 none	
Notes					Notes					
Exploration tracks					**Cattle tracks and scats, grazing**					
GROUND COVER										
Bare Ground	0 <5%	1 <20%	**2** **20-60%**	3 60-100%	**Hummock Grass**	**0** **<5%**	1 <20%	2 20-60%	3 60-100%	
Rock	**0** **<5%**	1 <20%	2 20-60%	3 60-100%	**Other Grass**	**0** **<5%**	1 <20%	2 20-60%	3 60-100% *	
Leaf Litter	**0** **<5%**	1 <20%	2 20-60%	3 60-100%	**Herbs**	**0** **<5%**	1 <20%	2 20-60%	3 60-100%	
Logs >10cm	**0** **<5%**	1 <20%	2 20-60%	3 60-100%						
MICROHABITATS										
Burrowing Suitability	0 Rock	1 Stony	2 Sandy Loam	**3 Sand**	**Peeling Bark**	**0** **none**	1 rare	2 moderate	3 common	
Pebbles Stones	0 none	1 0-30%	**2** **30-70%**	3 70-100%	**Large Hollows**	**0** **none**	1 rare	2 moderate	3 common	
Exfoliating Slabs	**0** **none**	1 0-30%	2 30-70%	3 70-100%	**Small Hollows**	**0** **none**	1 rare	2 moderate	3 common	
Rock Crevices	**0** **none**	1 0-30%	2 30-70%	3 70-100%	**Water Prescence**	**0** **none**	1 rare	2 moderate	3 common	
Boulders	**0** **none**	1 0-30%	2 30-70%	3 70-100%	**Distance to Water**	0 >5km	1 2-5km	2 500m - 2km	**3** **<500m**	
Suitability for Bats	YES		**NO**		**Termite Mounds**	**0** **none**	1 rare	2 moderate	3 common	
Caves	**Absent**	Present			**Woody Debris**	0 none	1 rare	**2** **moderate**	3 common	

CONSERVATION SIGNIFICANT FAUNA	
Species	**Notes**

FAUNA RECORDED		
Birds	**Mammals**	**Reptiles**
	Cattle scats	

FAUNA HABITAT ASSESSMENT SHEET									
(Mid-West)									
Location: Cue - Accelerator & Indicator					**Site Number: HA 10**				
Project Number: GWR 001				**Aspect**	N	NE	NW		
Date: 3 November 2020	**Easting: 571448**				S	SE	SW		
Quadrat Size: 50 x 50	**Northing: 6989371**				E	W	**N/A**		

Soil Texture	**sand**	sandy-loam	loam	cracking clay	clay

VEGETATION									
Vegetation	Hummock Grassland	Other: Drainage Line		**Average Height (M)**	**Cover**				
	Acacia Shrubland	**Stratum**			**Scattered Plants**	**Sparse**	**Moderate**	**Thick**	
	Riverine Woodland	**Overstorey**	*A.caesaneura, A.fuscaneura, A.aptaneura*	5	0 <5%	**1 <20%**	2 20-60%	3 60-100%	
	Other Grassland	**Midstorey**	*E.galeata, E.macmillaniana, A.tetragonophylla, A.aptaneura, S.artemisioides*	<1	0 <5%	**1 <20%**	2 20-60%	3 60-100%	
	Euc Woodland	**Ground Cover**	*C. ambiguus, P.obovatus*	<0.5	**0 <5%**	1 <20%	2 20-60%	3 60-100%	

CONDITION						LAST FIRE				
5 Pristine	4 Excellent	**3 Very Good**	2 Good	1 Degraded		0 Completely Degraded	0 <1 year	1 1 -3 Yr	2 4-5 Yr	**3 >5 Yr**

Notes					Notes					
(general)			DISTURBANCE					(cattle)		
	0 heavy	1 medium	**2** **mild**	3 none		0 heavy	**1** **medium**	2 mild	3 none	
Notes					Notes					
Exploration track					**Cattle tracks and scats, grazing**					
GROUND COVER										
Bare Ground	0 <5%	1 <20%	**2** **20-60%**	3 60-100%	**Hummock Grass**	**0** **<5%**	1 <20%	2 20-60%	3 60-100%	
Rock	**0** **<5%**	1 <20%	2 20-60%	3 60-100%	**Other Grass**	**0** **<5%**	1 <20%	2 20-60%	3 60-100% *	
Leaf Litter	**0** **<5%**	1 <20%	2 20-60%	3 60-100%	**Herbs**	**0** **<5%**	1 <20%	2 20-60%	3 60-100%	
Logs >10cm	**0** **<5%**	1 <20%	2 20-60%	3 60-100%						
MICROHABITATS										
Burrowing Suitability	0 Rock	1 Stony	2 Sandy Loam	**3 Sand**	**Peeling Bark**	**0** **none**	1 rare	2 moderate	3 common	
Pebbles Stones	**0** **none**	1 0-30%	2 30-70%	3 70-100%	**Large Hollows**	**0** **none**	1 rare	2 moderate	3 common	
Exfoliating Slabs	**0** **none**	1 0-30%	2 30-70%	3 70-100%	**Small Hollows**	**0** **none**	1 rare	2 moderate	3 common	
Rock Crevices	**0** **none**	1 0-30%	2 30-70%	3 70-100%	**Water Prescence**	**0** **none**	1 rare	2 moderate	3 common	
Boulders	**0** **none**	1 0-30%	2 30-70%	3 70-100%	**Distance to Water**	0 >5km	1 2-5km	2 500m - 2km	**3** **<500m**	
Suitability for Bats	YES		**NO**		**Termite Mounds**	**0** **none**	1 rare	2 moderate	3 common	
Caves	**Absent**	Present			**Woody Debris**	0 none	1 rare	**2** **moderate**	3 common	

CONSERVATION SIGNIFICANT FAUNA	
Species	**Notes**

FAUNA RECORDED		
Birds	**Mammals**	**Reptiles**
White-fronted Honeyeater	Cattle scats	goanna tracks and burrows
Babbler nest	Kangaroo tracks	

FAUNA HABITAT ASSESSMENT SHEET							
(Mid-West)							
Location: Cue - Accelerator & Indicator			**Site Number: HA 1**				
Project Number: GWR 001		**Aspect**	N	NE	NW		
Date: 3 November 2020	**Easting: 0571587**		S	SE	SW		
Quadrat Size: 50 x 50	**Northing: 6989666**		E	W	**N/A**		

Soil Texture	**sand**	sandy-loam	loam	cracking clay	clay

VEGETATION

Vegetation									
	Hummock Grassland	Other: Drainage Line		**Average Height (M)**	**Cover**				
	Acacia Shrubland	**Stratum**			**Scattered Plants**	**Sparse**	**Moderate**	**Thick**	
	Riverine Woodland	**Overstorey**	*P.angustifolium, H.preissii, E.longifolia, A.synchronicia*	6	0 <5%	**1 <20%**	2 20-60%	3 60-100%	
	Other Grassland	**Midstorey**	*P.divaricatus, P.obovatus, E.tomentosa, R.drummondii*	<1	0 <5%	**1 <20%**	2 20-60%	3 60-100%	
	Euc Woodland	**Ground Cover**	*S.cuneata, A.codonocarpa, M.pyramidata*	<0.5	**0 <5%**	1 <20%	2 20-60%	3 60-100%	

CONDITION		**LAST FIRE**

5 Pristine	4 Excellent	3 Very Good	**2 Good**	1 Degraded		0 Completely Degraded	0 <1 year	1 1 -3 Yr	2 4-5 Yr	**3 >5 Yr**
Notes						**Notes**				
(general)			**DISTURBANCE**						**(cattle)**	
	0 heavy	1 medium	**2 mild**	3 none		0 heavy	**1 medium**	2 mild	3 none	
Notes						**Notes**				
Exploration tracks						**Cattle tracks and scats**				
GROUND COVER										
Bare Ground	0 <5%	1 <20%	**2 20-60%**	3 60-100%	**Hummock Grass**	**0 <5%**	1 <20%	2 20-60%	3 60-100%	
Rock	**0 <5%**	1 <20%	2 20-60%	3 60-100%	**Other Grass**	**0 <5%**	1 <20%	2 20-60%	3 60-100% *	
Leaf Litter	**0 <5%**	1 <20%	2 20-60%	3 60-100%	**Herbs**	**0 <5%**	1 <20%	2 20-60%	3 60-100%	
Logs >10cm	**0 <5%**	1 <20%	2 20-60%	3 60-100%						
MICROHABITATS										
Burrowing Suitability	0 Rock	1 Stony	**2 Sandy Loam**	3 Sand	**Peeling Bark**	**0 none**	1 rare	2 moderate	3 common	
Pebbles Stones	0 none	1 0-30%	**2 30-70%**	3 70-100%	**Large Hollows**	**0 none**	1 rare	2 moderate	3 common	
Exfoliating Slabs	**0 none**	1 0-30%	2 30-70%	3 70-100%	**Small Hollows**	**0 none**	1 rare	2 moderate	3 common	
Rock Crevices	**0 none**	1 0-30%	2 30-70%	3 70-100%	**Water Prescence**	0 none	**1 rare**	2 moderate	3 common	
Boulders	**0 none**	1 0-30%	2 30-70%	3 70-100%	**Distance to Water**	0 >5km	1 2-5km	2 500m - 2km	**3 <500m**	
Suitability for Bats	YES		**NO**		**Termite Mounds**	**0 none**	1 rare	2 moderate	3 common	
Caves	**Absent**	Present			**Woody Debris**	0 none	1 rare	**2 moderate**	3 common	

CONSERVATION SIGNIFICANT FAUNA	
Species	**Notes**

FAUNA RECORDED		
Birds	**Mammals**	**Reptiles**
Grey Shrike-thrush	Cattle tracks and scats	
Fairy Martin		
White-fronted Honeyeater		

FAUNA HABITAT ASSESSMENT SHEET						
(Mid-West)						
Location: Cue - Accelerator & Indicator			**Site Number: HA 12**			
Project Number: GWR 001		**Aspect**	N	NE	NW	
Date: 4 November 2020	**Easting: 057**		S	SE	SW	
Quadrat Size: 50 x 50	**Northing: 698**		E	W	**N/A**	

Soil Texture	**sand**	sandy-loam	loam	cracking clay	clay

VEGETATION									
Vegetation	Hummock Grassland	Other: Drainage Line		**Average Height (M)**	**Cover**				
	Acacia Shrubland	**Stratum**			**Scattered Plants**	**Sparse**	**Moderate**	**Thick**	
	Riverine Woodland	**Overstorey**	*A.caesaneura, A.fuscaneura, A.aptaneura*	5	0 <5%	**1 <20%**	2 20-60%	3 60-100%	
	Other Grassland	**Midstorey**	*E.galeata, E.macmillaniana, A.tetragonophylla, A.aptaneura, S.artemisioides*	<1	0 <5%	**1 <20%**	2 20-60%	3 60-100%	
	Euc Woodland	**Ground Cover**	*C. ambiguus, P.obovatus*	<0.5	**0 <5%**	1 <20%	2 20-60%	3 60-100%	
CONDITION					**LAST FIRE**				

5 Pristine	4 Excellent	**3 Very Good**	2 Good	1 Degraded		0 Completely Degraded	0 <1 year	1 1 -3 Yr	2 4-5 Yr	**3 >5 Yr**
Notes						**Notes**				
(general)			**DISTURBANCE**						**(cattle)**	
	0 heavy	1 medium	**2 mild**	3 none		0 heavy	**1 medium**	2 mild	3 none	
Notes						**Notes**				
						Cattle tracks and scats, grazing				
GROUND COVER										
Bare Ground	0 <5%	1 <20%	**2 20-60%**	3 60-100%	**Hummock Grass**	**0 <5%**	1 <20%	2 20-60%	3 60-100%	
Rock	**0 <5%**	1 <20%	2 20-60%	3 60-100%	**Other Grass**	**0 <5%**	1 <20%	2 20-60%	3 60-100% *	
Leaf Litter	**0 <5%**	1 <20%	2 20-60%	3 60-100%	**Herbs**	**0 <5%**	1 <20%	2 20-60%	3 60-100%	
Logs >10cm	**0 <5%**	1 <20%	2 20-60%	3 60-100%						
MICROHABITATS										
Burrowing Suitability	0 Rock	1 Stony	2 Sandy Loam	**3 Sand**	**Peeling Bark**	**0 none**	1 rare	2 moderate	3 common	
Pebbles Stones	0 none	**1 0-30%**	2 30-70%	3 70-100%	**Large Hollows**	**0 none**	1 rare	2 moderate	3 common	
Exfoliating Slabs	**0 none**	1 0-30%	2 30-70%	3 70-100%	**Small Hollows**	**0 none**	1 rare	2 moderate	3 common	
Rock Crevices	**0 none**	1 0-30%	2 30-70%	3 70-100%	**Water Prescence**	**0 none**	1 rare	2 moderate	3 common	
Boulders	**0 none**	1 0-30%	2 30-70%	3 70-100%	**Distance to Water**	0 >5km	1 2-5km	2 500m - 2km	**3 <500m**	
Suitability for Bats	YES		**NO**		**Termite Mounds**	**0 none**	1 rare	2 moderate	3 common	
Caves	**Absent**	Present			**Woody Debris**	0 none	**1 rare**	2 moderate	3 common	

CONSERVATION SIGNIFICANT FAUNA	
Species	**Notes**

FAUNA RECORDED		
Birds	**Mammals**	**Reptiles**
Fairy Martin	Cattle tracks and scats	
Chestnut-rumped Thornbill		

FAUNA HABITAT ASSESSMENT SHEET									
(Mid-West)									
Location: Cue - Accelerator & Indicator					**Site Number: HA 13**				
Project Number: GWR 001					**Aspect**	N	NE	NW	
Date: 4 November 2020	**Easting: 572103**					S	SE	**SW**	
Quadrat Size: 50 x 50	**Northing: 6990010**					E	W	N/A	

Soil Texture	**sand**	sandy-loam	loam	cracking clay	clay

VEGETATION									
Vegetation	Hummock Grassland	Other: Stoney Plain		**Average Height (M)**	**Cover**				
	Acacia Shrubland	**Stratum**			**Scattered Plants**	**Sparse**	**Moderate**	**Thick**	
	Riverine Woodland	**Overstorey**			0 <5%	1 <20%	2 20-60%	3 60-100%	
	Other Grassland	**Midstorey**			0 <5%	1 <20%	2 20-60%	3 60-100%	
	Euc Woodland	**Ground Cover**	*A. craspedocarpa, P. obovata*	0.5	**0 <5%**	1 <20%	2 20-60%	3 60-100%	

CONDITION						LAST FIRE				
5 Pristine	4 Excellent	3 Very Good	2 Good	**1 Degraded**		0 Completely Degraded	0 <1 year	1 1 -3 Yr	2 4-5 Yr	**3 >5 Yr**

Notes	Notes

(general)	DISTURBANCE	(cattle)

	0 heavy	**1** **medium**	2 mild	3 none		0 heavy	1 medium	2 mild	**3** **none**	
Notes					**Notes**					
GROUND COVER										
Bare Ground	0 <5%	1 <20%	2 20-60%	**3** **60-100%**	**Hummock Grass**	**0** **<5%**	1 <20%	2 20-60%	3 60-100%	
Rock	**0** **<5%**	1 <20%	2 20-60%	3 60-100%	**Other Grass**	**0** **<5%**	1 <20%	2 20-60%	3 60-100% *	
Leaf Litter	**0** **<5%**	1 <20%	2 20-60%	3 60-100%	**Herbs**	**0** **<5%**	1 <20%	2 20-60%	3 60-100%	
Logs >10cm	**0** **<5%**	1 <20%	2 20-60%	3 60-100%						
MICROHABITATS										
Burrowing Suitability		0 Rock	**1 Stony**	2 Sandy Loam	3 Sand	**Peeling Bark**	**0** **none**	1 rare	2 moderate	3 common
Pebbles Stones		0 none	1 0-30%	2 30-70%	**3** **70-100%**	**Large Hollows**	**0** **none**	1 rare	2 moderate	3 common
Exfoliating Slabs		**0** **none**	1 0-30%	2 30-70%	3 70-100%	**Small Hollows**	**0** **none**	1 rare	2 moderate	3 common
Rock Crevices		**0** **none**	1 0-30%	2 30-70%	3 70-100%	**Water Prescence**	**0** **none**	1 rare	2 moderate	3 common
Boulders		**0** **none**	1 0-30%	2 30-70%	3 70-100%	**Distance to Water**	0 >5km	1 2-5km	**2** **500m - 2km**	3 <500m
Suitability for Bats		YES		**NO**		**Termite Mounds**	**0** **none**	1 rare	2 moderate	3 common
Caves		**Absent**	Present			**Woody Debris**	**0** **none**	1 rare	2 moderate	3 common

CONSERVATION SIGNIFICANT FAUNA	
Species	**Notes**

FAUNA RECORDED		
Birds	**Mammals**	**Reptiles**
Grey Shtike-thrush		
Black-faced Woodswallow		

FAUNA HABITAT ASSESSMENT SHEET						
(Mid-West)						
Location: Cue - Accelerator & Indicator			**Site Number: HA 14**			
Project Number: GWR 001		**Aspect**	N	NE	NW	
Date: 4 November 2020	**Easting: 057**		S	SE	SW	
Quadrat Size: 50 x 50	**Northing: 69**		E	W	**N/A**	

Soil Texture	**sand**	sandy-loam	loam	cracking clay	clay

VEGETATION

Vegetation					**Cover**				
	Hummock Grassland	Other: Drainage Line		**Average Height (M)**					
	Acacia Shrubland	**Stratum**			**Scattered Plants**	**Sparse**	**Moderate**	**Thick**	
	Riverine Woodland	**Overstorey**	*A.caesaneura, A.fuscaneura, A.aptaneura*	5	0 <5%	**1 <20%**	2 20-60%	3 60-100%	
	Other Grassland	**Midstorey**	*E.galeata, E.macmillaniana, A.tetragonophylla, A.aptaneura, S.artemisioides*	<1	0 <5%	**1 <20%**	2 20-60%	3 60-100%	
	Euc Woodland	**Ground Cover**	*C. ambiguus, P.obovatus*	<0.5	**0 <5%**	1 <20%	2 20-60%	3 60-100%	

CONDITION		**LAST FIRE**

5 Pristine	4 Excellent	**3 Very Good**	2 Good	1 Degraded		0 Completely Degraded	0 <1 year	1 1 -3 Yr	2 4-5 Yr	**3 >5 Yr**
Notes						**Notes**				
(general)			**DISTURBANCE**						**(cattle)**	
	0 heavy	1 medium	**2 mild**	3 none		0 heavy	**1 medium**	2 mild	3 none	
Notes						**Notes**				
						Cattle tracks and scats				
GROUND COVER										
Bare Ground	0 <5%	1 <20%	**2 20-60%**	3 60-100%	**Hummock Grass**	**0 <5%**	1 <20%	2 20-60%	3 60-100%	
Rock	**0 <5%**	1 <20%	2 20-60%	3 60-100%	**Other Grass**	**0 <5%**	1 <20%	2 20-60%	3 60-100% *	
Leaf Litter	0 <5%	**1 <20%**	2 20-60%	3 60-100%	**Herbs**	**0 <5%**	1 <20%	2 20-60%	3 60-100%	
Logs >10cm	**0 <5%**	1 <20%	2 20-60%	3 60-100%						
MICROHABITATS										
Burrowing Suitability	0 Rock	1 Stony	2 Sandy Loam	**3 Sand**	**Peeling Bark**	**0 none**	1 rare	2 moderate	3 common	
Pebbles Stones	0 none	**1 0-30%**	2 30-70%	3 70-100%	**Large Hollows**	**0 none**	1 rare	2 moderate	3 common	
Exfoliating Slabs	**0 none**	1 0-30%	2 30-70%	3 70-100%	**Small Hollows**	**0 none**	1 rare	2 moderate	3 common	
Rock Crevices	**0 none**	1 0-30%	2 30-70%	3 70-100%	**Water Prescence**	**0 none**	1 rare	2 moderate	3 common	
Boulders	**0 none**	1 0-30%	2 30-70%	3 70-100%	**Distance to Water**	0 >5km	1 2-5km	**2 500m - 2km**	3 <500m	
Suitability for Bats	YES		**NO**		**Termite Mounds**	**0 none**	1 rare	2 moderate	3 common	
Caves	**Absent**	Present			**Woody Debris**	0 none	1 rare	**2 moderate**	3 common	

CONSERVATION SIGNIFICANT FAUNA	
Species	**Notes**

FAUNA RECORDED		
Birds	**Mammals**	**Reptiles**
Singing Honeyeater	Cattle tracks and scats	Goanna tracks and burrows
Yellow-throated Miner	Kangaroo tracks and scats	
Red-capped Robin		

FAUNA HABITAT ASSESSMENT SHEET						
(Mid-West)						
Location: Cue - Accelerator & Indicator		**Site Number: HA 15**				
Project Number: GWR 001		**Aspect**	N	NE	NW	
Date: 4 November 2020	**Easting: 571563**		S	SE	**SW**	
Quadrat Size: 50 x 50	**Northing: 6990421**		E	W	N/A	

Soil Texture	**sand**	sandy-loam	loam	cracking clay	clay

VEGETATION									
Vegetation	Hummock Grassland	Other: Stoney Plain		**Average Height (M)**	**Cover**				
	Acacia Shrubland	**Stratum**			**Scattered Plants**	**Sparse**	**Moderate**	**Thick**	
	Riverine Woodland	**Overstorey**			0 <5%	1 <20%	2 20-60%	3 60-100%	
	Other Grassland	**Midstorey**	*P.rotundifolius, E.galeata, E.macmillaniana*	<1	**0 <5%**	1 <20%	2 20-60%	3 60-100%	
	Euc Woodland	**Ground Cover**	*P.obovatus, M.triptera*	0.5	**0 <5%**	1 <20%	2 20-60%	3 60-100%	

CONDITION						LAST FIRE				
5 Pristine	4 Excellent	3 Very Good	**2 Good**	1 Degraded		0 Completely Degraded	0 <1 year	1 1 -3 Yr	2 4-5 Yr	**3 >5 Yr**
Notes						**Notes**				

(general)					DISTURBANCE					(cattle)
	0 heavy	1 medium	**2 mild**	3 none		0 heavy	1 medium	2 mild	**3 none**	
Notes					**Notes**					
GROUND COVER										
Bare Ground	0 <5%	1 <20%	2 20-60%	**3 60-100%**	**Hummock Grass**	**0 <5%**	1 <20%	2 20-60%	3 60-100%	
Rock	0 <5%	**1 <20%**	2 20-60%	3 60-100%	**Other Grass**	**0 <5%**	1 <20%	2 20-60%	3 60-100% *	
Leaf Litter	**0 <5%**	1 <20%	2 20-60%	3 60-100%	**Herbs**	**0 <5%**	1 <20%	2 20-60%	3 60-100%	
Logs >10cm	**0 <5%**	1 <20%	2 20-60%	3 60-100%						

MICROHABITATS									
Burrowing Suitability	0 Rock	**1 Stony**	2 Sandy Loam	3 Sand	**Peeling Bark**	**0 none**	1 rare	2 moderate	3 common
Pebbles Stones	0 none	1 0-30%	2 30-70%	**3 70-100%**	**Large Hollows**	**0 none**	1 rare	2 moderate	3 common
Exfoliating Slabs	**0 none**	1 0-30%	2 30-70%	3 70-100%	**Small Hollows**	**0 none**	1 rare	2 moderate	3 common
Rock Crevices	**0 none**	1 0-30%	2 30-70%	3 70-100%	**Water Prescence**	**0 none**	1 rare	2 moderate	3 common
Boulders	**0 none**	1 0-30%	2 30-70%	3 70-100%	**Distance to Water**	0 >5km	1 2-5km	**2 500m - 2km**	3 <500m
Suitability for Bats	YES		**NO**		**Termite Mounds**	0 none	**1 rare**	2 moderate	3 common
Caves	**Absent**	Present			**Woody Debris**	**0 none**	1 rare	2 moderate	3 common

CONSERVATION SIGNIFICANT FAUNA	
Species	**Notes**

FAUNA RECORDED		
Birds	**Mammals**	**Reptiles**

FAUNA HABITAT ASSESSMENT SHEET						
(Mid-West)						
Location: Cue - Accelerator & Indicator			**Site Number: HA16**			
Project Number: GWR 001		**Aspect**	N	NE	NW	
Date: 4 November 2020	**Easting: 572395**		S	SE	**SW**	
Quadrat Size: 50 x 50	**Northing: 6990495**		E	W	N/A	

Soil Texture	**sand**	sandy-loam	loam	cracking clay	clay

VEGETATION									
Vegetation	Hummock Grassland	Other: Stoney Plain		**Average Height (M)**	**Cover**				
	Acacia Shrubland	**Stratum**			**Scattered Plants**	**Sparse**	**Moderate**	**Thick**	
	Riverine Woodland	**Overstorey**			0 <5%	1 <20%	2 20-60%	3 60-100%	
	Other Grassland	**Midstorey**			0 <5%	1 <20%	2 20-60%	3 60-100%	
	Euc Woodland	**Ground Cover**	*A. craspedocarpa, P.obovata*	0.5	**0 <5%**	1 <20%	2 20-60%	3 60-100%	

CONDITION						LAST FIRE				
5 Pristine	4 Excellent	3 Very Good	2 Good	**1 Degraded**		0 Completely Degraded	0 <1 year	1 1 -3 Yr	2 4-5 Yr	**3 >5 Yr**

Notes	Notes

(general)	DISTURBANCE	(cattle)

	0 heavy	1 medium	2 mild	3 none		**0 heavy**	1 medium	2 mild	3 none	
Notes					**Notes**					
GROUND COVER										
Bare Ground	0 <5%	1 <20%	2 20-60%	**3 60-100%**	**Hummock Grass**	**0 <5%**	1 <20%	2 20-60%	3 60-100%	
Rock	**0 <5%**	1 <20%	2 20-60%	3 60-100%	**Other Grass**	**0 <5%**	1 <20%	2 20-60%	3 60-100% *	
Leaf Litter	0 <5%	1 <20%	2 20-60%	3 60-100%	**Herbs**	**0 <5%**	1 <20%	2 20-60%	3 60-100%	
Logs >10cm	**0 <5%**	1 <20%	2 20-60%	3 60-100%						

MICROHABITATS									
Burrowing Suitability	0 Rock	**1 Stony**	2 Sandy Loam	3 Sand	**Peeling Bark**	**0 none**	1 rare	2 moderate	3 common
Pebbles Stones	0 none	1 0-30%	2 30-70%	**3 70-100%**	**Large Hollows**	**0 none**	1 rare	2 moderate	3 common
Exfoliating Slabs	**0 none**	1 0-30%	2 30-70%	3 70-100%	**Small Hollows**	**0 none**	1 rare	2 moderate	3 common
Rock Crevices	**0 none**	1 0-30%	2 30-70%	3 70-100%	**Water Prescence**	**0 none**	1 rare	2 moderate	3 common
Boulders	**0 none**	1 0-30%	2 30-70%	3 70-100%	**Distance to Water**	0 >5km	**1 2-5km**	2 500m - 2km	3 <500m
Suitability for Bats	YES		**NO**		**Termite Mounds**	0 none	**1 rare**	2 moderate	3 common
Caves	**Absent**	Present			**Woody Debris**	**0 none**	1 rare	2 moderate	3 common

CONSERVATION SIGNIFICANT FAUNA	
Species	**Notes**

FAUNA RECORDED		
Birds	**Mammals**	**Reptiles**
	Kangaroo scats	
	Cattle track & scats	

FAUNA HABITAT ASSESSMENT SHEET						
(Mid-West)						
Location: Cue - Accelerator & Indicator		**Site Number: HA17**				
Project Number: GWR 001		**Aspect**	N	NE	NW	
Date: 4 November 2020	**Easting: 572031**		S	SE	**SW**	
Quadrat Size: 50 x 50	**Northing: 6990968**		E	W	N/A	

Soil Texture	**sand**	sandy-loam	loam	cracking clay	clay

VEGETATION

Vegetation				**Average Height (M)**	**Cover**				
	Hummock Grassland	Other: Drainage Area							
	Acacia Shrubland	**Stratum**			**Scattered Plants**	**Sparse**	**Moderate**	**Thick**	
	Riverine Woodland	**Overstorey**	*A.caesaneura, A.fuscaneura, A.aptaneura*	5	0 <5%	**1 <20%**	2 20-60%	3 60-100%	
	Other Grassland	**Midstorey**	*E.galeata, E.macmillaniana, A.tetragonophylla, A.aptaneura, S.artemisioides*	<1	0 <5%	**1 <20%**	2 20-60%	3 60-100%	
	Euc Woodland	**Ground Cover**	*C. ambiguus, P.obovatus*	<0.5	**0 <5%**	1 <20%	2 20-60%	3 60-100%	

CONDITION						**LAST FIRE**				
5 Pristine	4 Excellent	3 Very Good	**2 Good**	1 Degraded		0 Completely Degraded	0 <1 year	1 1 -3 Yr	2 4-5 Yr	**3 >5 Yr**

Notes					Notes					
(general)				DISTURBANCE					(cattle)	
	0 heavy	1 medium	2 mild	3 none		0 heavy	**1 medium**	2 mild	3 none	
Notes					Notes					
GROUND COVER										
Bare Ground	0 <5%	1 <20%	2 20-60%	**3 60-100%**	**Hummock Grass**	**0 <5%**	1 <20%	2 20-60%	3 60-100%	
Rock	**0 <5%**	1 <20%	2 20-60%	3 60-100%	**Other Grass**	**0 <5%**	1 <20%	2 20-60%	3 60-100% *	
Leaf Litter	**0 <5%**	1 <20%	2 20-60%	3 60-100%	**Herbs**	**0 <5%**	1 <20%	2 20-60%	3 60-100%	
Logs >10cm	**0 <5%**	1 <20%	2 20-60%	3 60-100%						
MICROHABITATS										
Burrowing Suitability	0 Rock	**1 Stony**	2 Sandy Loam	3 Sand	**Peeling Bark**	**0 none**	1 rare	2 moderate	3 common	
Pebbles Stones	0 none	1 0-30%	2 30-70%	**3 70-100%**	**Large Hollows**	**0 none**	1 rare	2 moderate	3 common	
Exfoliating Slabs	**0 none**	1 0-30%	2 30-70%	3 70-100%	**Small Hollows**	**0 none**	1 rare	2 moderate	3 common	
Rock Crevices	**0 none**	1 0-30%	2 30-70%	3 70-100%	**Water Prescence**	**0 none**	1 rare	2 moderate	3 common	
Boulders	**0 none**	1 0-30%	2 30-70%	3 70-100%	**Distance to Water**	0 >5km	**1 2-5km**	2 500m - 2km	3 <500m	
Suitability for Bats	YES		**NO**		**Termite Mounds**	0 none	**1 rare**	2 moderate	3 common	
Caves	**Absent**	Present			**Woody Debris**	**0 none**	1 rare	2 moderate	3 common	

CONSERVATION SIGNIFICANT FAUNA	
Species	**Notes**

FAUNA RECORDED		
Birds	**Mammals**	**Reptiles**
	Kangaroo scats	
	Cattle track & scats	

FAUNA HABITAT ASSESSMENT SHEET						
(Mid-West)						
Location: Cue - Accelerator & Indicator			**Site Number: HA 1**			
Project Number: GWR 001		**Aspect**	N	NE	NW	
Date: 4 November 2020	**Easting: 0572008**		S	SE	SW	
Quadrat Size: 50 x 50	**Northing: 6991953**		E	W	**N/A**	

Soil Texture	**sand**	sandy-loam	loam	cracking clay	clay

VEGETATION									
Vegetation	Hummock Grassland	Other:		**Average Height (M)**	**Cover**				
	Acacia Shrubland	**Stratum**			**Scattered Plants**	**Sparse**	**Moderate**	**Thick**	
	Riverine Woodland	**Overstorey**	*A.pruinocarpa, A.fuscaneura, A.caesaneura*	5	0 <5%	**1 <20%**	2 20-60%	3 60-100%	
	Other Grassland	**Midstorey**	*E.forrestii, A.tetragonophylla, A.ramulosa, A.craspedocarpa*	<1	0 <5%	**1 <20%**	2 20-60%	3 60-100%	
	Euc Woodland	**Ground Cover**	*P. obovatus*	<0.5	**0 <5%**	1 <20%	2 20-60%	3 60-100%	

CONDITION						**LAST FIRE**				
5 Pristine	4 Excellent	3 Very Good	**2 Good**	1 Degraded		0 Completely Degraded	0 <1 year	1 1 -3 Yr	2 4-5 Yr	**3 >5 Yr**
Notes						**Notes**				

(general)					**DISTURBANCE**					**(cattle)**
	0 heavy	**1** **medium**	2 mild	3 none		0 heavy	**1** **medium**	2 mild	3 none	
Notes					**Notes**					
Exploration tracks					**Cattle tracks and scats, grazing**					
GROUND COVER										
Bare Ground	0 <5%	1 <20%	2 20-60%	**3** **60-100%**	**Hummock Grass**	**0** **<5%**	1 <20%	2 20-60%	3 60-100%	
Rock	**0** **<5%**	1 <20%	2 20-60%	3 60-100%	**Other Grass**	**0** **<5%**	1 <20%	2 20-60%	3 60-100% *	
Leaf Litter	**0** **<5%**	1 <20%	2 20-60%	3 60-100%	**Herbs**	**0** **<5%**	1 <20%	2 20-60%	3 60-100%	
Logs >10cm	**0** **<5%**	1 <20%	2 20-60%	3 60-100%						
MICROHABITATS										
Burrowing Suitability	0 Rock	1 Stony	2 Sandy Loam	**3 Sand**		**Peeling Bark**	**0** **none**	1 rare	2 moderate	3 common
Pebbles Stones	0 none	**1** **0-30%**	2 30-70%	3 70-100%		**Large Hollows**	**0** **none**	1 rare	2 moderate	3 common
Exfoliating Slabs	**0** **none**	1 0-30%	2 30-70%	3 70-100%		**Small Hollows**	**0** **none**	1 rare	2 moderate	3 common
Rock Crevices	**0** **none**	1 0-30%	2 30-70%	3 70-100%		**Water Prescence**	**0** **none**	1 rare	2 moderate	3 common
Boulders	**0** **none**	1 0-30%	2 30-70%	3 70-100%		**Distance to Water**	0 >5km	1 2-5km	**2** **500m - 2km**	3 <500m
Suitability for Bats	YES		**NO**			**Termite Mounds**	0 none	**1** **rare**	2 moderate	3 common
Caves	**Absent**	Present				**Woody Debris**	**0** **none**	1 rare	2 moderate	3 common

CONSERVATION SIGNIFICANT FAUNA	
Species	**Notes**

FAUNA RECORDED		
Birds	**Mammals**	**Reptiles**
Crested Pigeon	Cattle tracks and scats	Goanna tracks and burrows
	Kangaroo tracks and scats	

FAUNA HABITAT ASSESSMENT SHEET									
(Mid-West)									
Location: Cue - Accelerator & Indicator					**Site Number: HA 19**				
Project Number: GWR 001				**Aspect**	N	NE	NW		
Date: 4 November 2020	**Easting: 0572314**				S	SE	SW		
Quadrat Size: 50 x 50	**Northing: 6992425**				E	W	**N/A**		

Soil Texture	**sand**	sandy-loam	loam	cracking clay	clay

VEGETATION									
Vegetation	Hummock Grassland	Other:		**Average Height (M)**	**Cover**				
	Acacia Shrubland	**Stratum**			**Scattered Plants**	**Sparse**	**Moderate**	**Thick**	
	Riverine Woodland	**Overstorey**	*A.pruinocarpa, A.fuscaneura,*	5	0 <5%	**1 <20%**	2 20-60%	3 60-100%	
	Other Grassland	**Midstorey**	*E.forrestii, A.tetragonophylla,*	<1	0 <5%	**1 <20%**	2 20-60%	3 60-100%	
	Euc Woodland	**Ground Cover**	*P. obovatus*	<0.5	**0 <5%**	1 <20%	2 20-60%	3 60-100%	

CONDITION						LAST FIRE				
5 Pristine	4 Excellent	**3 Very Good**	2 Good	1 Degraded		0 Completely Degraded	0 <1 year	1 1 -3 Yr	2 4-5 Yr	**3 >5 Yr**

Notes	Notes

(general)	DISTURBANCE	(cattle)

	0 heavy	**1** **medium**	2 mild	3 none		0 heavy	**1** **medium**	2 mild	3 none	
Notes					**Notes**					
Exploration tracks					**Cattle tracks and scats, grazing**					
GROUND COVER										
Bare Ground	0 <5%	1 <20%	2 20-60%	**3** **60-100%**	**Hummock Grass**	**0** **<5%**	1 <20%	2 20-60%	3 60-100%	
Rock	**0** **<5%**	1 <20%	2 20-60%	3 60-100%	**Other Grass**	**0** **<5%**	1 <20%	2 20-60%	3 60-100% *	
Leaf Litter	**0** **<5%**	1 <20%	2 20-60%	3 60-100%	**Herbs**	**0** **<5%**	1 <20%	2 20-60%	3 60-100%	
Logs >10cm	**0** **<5%**	1 <20%	2 20-60%	3 60-100%						
MICROHABITATS										
Burrowing Suitability	0 Rock	1 Stony	2 Sandy Loam	**3 Sand**	**Peeling Bark**	**0** **none**	1 rare	2 moderate	3 common	
Pebbles Stones	0 none	**1** **0-30%**	2 30-70%	3 70-100%	**Large Hollows**	**0** **none**	1 rare	2 moderate	3 common	
Exfoliating Slabs	**0** **none**	1 0-30%	2 30-70%	3 70-100%	**Small Hollows**	**0** **none**	1 rare	2 moderate	3 common	
Rock Crevices	**0** **none**	1 0-30%	2 30-70%	3 70-100%	**Water Prescence**	**0** **none**	1 rare	2 moderate	3 common	
Boulders	**0** **none**	1 0-30%	2 30-70%	3 70-100%	**Distance to Water**	0 >5km	1 2-5km	**2** **500m - 2km**	3 <500m	
Suitability for Bats	YES		**NO**		**Termite Mounds**	0 none	**1** **rare**	2 moderate	3 common	
Caves	**Absent**	Present			**Woody Debris**	0 none	1 rare	**2** **moderate**	3 common	

CONSERVATION SIGNIFICANT FAUNA	
Species	**Notes**

FAUNA RECORDED		
Birds	**Mammals**	**Reptiles**
Crested Pigeon	Cattle tracks and scats	Goanna tracks and burrows
Slaty-backed Thornbill	Kangaroo tracks and scats	Dwarf Bearded Dragon
Raven		Gehyra variegata

FAUNA HABITAT ASSESSMENT SHEET						
(Mid-West)						
Location: Cue - Accelerator & Indicator			**Site Number: HA 20**			
Project Number: GWR 001		**Aspect**	N	NE	NW	
Date: 4 November 2020	**Easting: 0572908**		S	SE	SW	
Quadrat Size: 50 x 50	**Northing: 6991887**		E	W	**N/A**	

Soil Texture	**sand**	sandy-loam	loam	cracking clay	clay

VEGETATION									
Vegetation	Hummock Grassland	Other: Drainage area		**Average Height (M)**	**Cover**				
	Acacia Shrubland	**Stratum**			**Scattered Plants**	**Sparse**	**Moderate**	**Thick**	
	Riverine Woodland	**Overstorey**	*A. aptaneura, A. pruinocarpa*	4	**0 <5%**	1 <20%	2 20-60%	3 60-100%	
	Other Grassland	**Midstorey**	*E. galeata, E. forrestii*	<1	**0 <5%**	1 <20%	2 20-60%	3 60-100%	
	Euc Woodland	**Ground Cover**	*A. craspedocarpa, P. obovata*	<0.5	**0 <5%**	1 <20%	2 20-60%	3 60-100%	

CONDITION						**LAST FIRE**				
5 Pristine	4 Excellent	3 Very Good	2 Good	**1 Degraded**		0 Completely Degraded	0 <1 year	1 1 -3 Yr	2 4-5 Yr	**3 >5 Yr**

Notes	**Notes**

(general)	**DISTURBANCE**	**(cattle)**

	0 heavy	1 medium	2 mild	3 none		**0 heavy**	1 medium	2 mild	3 none	
Notes					**Notes**					
Exploration tracks					**Cattle tracks and scats, grazing**					
GROUND COVER										
Bare Ground	0 <5%	1 <20%	2 20-60%	**3 60-100%**	**Hummock Grass**	**0 <5%**	1 <20%	2 20-60%	3 60-100%	
Rock	**0 <5%**	1 <20%	2 20-60%	3 60-100%	**Other Grass**	**0 <5%**	1 <20%	2 20-60%	3 60-100% *	
Leaf Litter	**0 <5%**	1 <20%	2 20-60%	3 60-100%	**Herbs**	**0 <5%**	1 <20%	2 20-60%	3 60-100%	
Logs >10cm	**0 <5%**	1 <20%	2 20-60%	3 60-100%						

MICROHABITATS									
Burrowing Suitability	0 Rock	1 Stony	2 Sandy Loam	**3 Sand**	**Peeling Bark**	**0 none**	1 rare	2 moderate	3 common
Pebbles Stones	0 none	**1 0-30%**	2 30-70%	3 70-100%	**Large Hollows**	**0 none**	1 rare	2 moderate	3 common
Exfoliating Slabs	**0 none**	1 0-30%	2 30-70%	3 70-100%	**Small Hollows**	**0 none**	1 rare	2 moderate	3 common
Rock Crevices	**0 none**	1 0-30%	2 30-70%	3 70-100%	**Water Prescence**	**0 none**	1 rare	2 moderate	3 common
Boulders	**0 none**	1 0-30%	2 30-70%	3 70-100%	**Distance to Water**	0 >5km	1 2-5km	**2 500m - 2km**	3 <500m
Suitability for Bats	YES		**NO**		**Termite Mounds**	0 none	1 rare	**2 moderate**	3 common
Caves	**Absent**	Present			**Woody Debris**	0 none	1 rare	**2 moderate**	3 common

CONSERVATION SIGNIFICANT FAUNA	
Species	**Notes**

FAUNA RECORDED		
Birds	**Mammals**	**Reptiles**
Grey Shrike-thrush	Cattle tracks and scats	Goanna tracks and burrows
	Kangaroo tracks and scats	

FAUNA HABITAT ASSESSMENT SHEET									
(Mid-West)									
Location: Cue - Accelerator & Indicator					**Site Number: HA 21**				
Project Number: GWR 001				**Aspect**	N	NE	NW		
Date: 4 November 2020	**Easting: 0572395**				S	SE	SW		
Quadrat Size: 50 x 50	**Northing: 6991728**				E	W	**N/A**		

Soil Texture	**sand**	sandy-loam	loam	cracking clay	clay

VEGETATION									
Vegetation	Hummock Grassland	Other: Drainage area		**Average Height (M)**	**Cover**				
	Acacia Shrubland	**Stratum**			**Scattered Plants**	**Sparse**	**Moderate**	**Thick**	
	Riverine Woodland	**Overstorey**	*A.pruinocarpa, A.fuscaneura,*	5	0 <5%	1 <20%	**2 20-60%**	3 60-100%	
	Other Grassland	**Midstorey**	*E.forrestii, A.tetragonophylla,*	<1	0 <5%	1 <20%	**2 20-60%**	3 60-100%	
	Euc Woodland	**Ground Cover**	*P. obovatus*	<0.5	**0 <5%**	1 <20%	2 20-60%	3 60-100%	

CONDITION						**LAST FIRE**				
5 Pristine	4 Excellent	**3 Very Good**	2 Good	1 Degraded		0 Completely Degraded	0 <1 year	1 1 -3 Yr	2 4-5 Yr	**3 >5 Yr**

Notes	**Notes**

(general)	**DISTURBANCE**	**(cattle)**

	0 heavy	**1** **medium**	2 mild	3 none		0 heavy	**1** **medium**	2 mild	3 none	
Notes					**Notes**					
Exploration evidence					**Cattle tracks and scats, grazing**					
GROUND COVER										
Bare Ground	0 <5%	1 <20%	2 20-60%	**3** **60-100%**	**Hummock Grass**	**0** **<5%**	1 <20%	2 20-60%	3 60-100%	
Rock	**0** **<5%**	1 <20%	2 20-60%	3 60-100%	**Other Grass**	**0** **<5%**	1 <20%	2 20-60%	3 60-100% *	
Leaf Litter	**0** **<5%**	1 <20%	2 20-60%	3 60-100%	**Herbs**	**0** **<5%**	1 <20%	2 20-60%	3 60-100%	
Logs >10cm	**0** **<5%**	1 <20%	2 20-60%	3 60-100%						
MICROHABITATS										
Burrowing Suitability	0 Rock	1 Stony	2 Sandy Loam	**3 Sand**	**Peeling Bark**	**0** **none**	1 rare	2 moderate	3 common	
Pebbles Stones	0 none	**1** **0-30%**	2 30-70%	3 70-100%	**Large Hollows**	**0** **none**	1 rare	2 moderate	3 common	
Exfoliating Slabs	**0** **none**	1 0-30%	2 30-70%	3 70-100%	**Small Hollows**	**0** **none**	1 rare	2 moderate	3 common	
Rock Crevices	**0** **none**	1 0-30%	2 30-70%	3 70-100%	**Water Prescence**	**0** **none**	1 rare	2 moderate	3 common	
Boulders	**0** **none**	1 0-30%	2 30-70%	3 70-100%	**Distance to Water**	0 >5km	1 2-5km	**2** **500m - 2km**	3 <500m	
Suitability for Bats	YES		**NO**		**Termite Mounds**	0 none	**1** **rare**	2 moderate	3 common	
Caves	**Absent**	Present			**Woody Debris**	0 none	1 rare	**2** **moderate**	3 common	

CONSERVATION SIGNIFICANT FAUNA	
Species	**Notes**

FAUNA RECORDED		
Birds	**Mammals**	**Reptiles**
Chestnut-rumped Thornbill	Cattle tracks and scats	Goanna tracks and burrows
	Kangaroo tracks and scats	

FAUNA HABITAT ASSESSMENT SHEET									
(Mid-West)									
Location: Cue - Accelerator & Indicator					**Site Number: HA 22**				
Project Number: GWR 001				**Aspect**	N	NE	NW		
Date: 4 November 2020	**Easting: 0572444**				S	SE	SW		
Quadrat Size: 50 x 50	**Northing: 6991447**				E	W	**N/A**		

Soil Texture	**sand**	sandy-loam	loam	cracking clay	clay

VEGETATION									
Vegetation	Hummock Grassland	Other: Drainage area		**Average Height (M)**	**Cover**				
	Acacia Shrubland	**Stratum**			**Scattered Plants**	**Sparse**	**Moderate**	**Thick**	
	Riverine Woodland	**Overstorey**	*A.pruinocarpa, A.fuscaneura,*	5	0 <5%	1 <20%	**2 20-60%**	3 60-100%	
	Other Grassland	**Midstorey**	*E.forrestii, A.tetragonophylla,*	<1	0 <5%	1 <20%	**2 20-60%**	3 60-100%	
	Euc Woodland	**Ground Cover**	*P. obovatus*	<0.5	**0 <5%**	1 <20%	2 20-60%	3 60-100%	

CONDITION						**LAST FIRE**				
5 Pristine	4 Excellent	**3 Very Good**	2 Good	1 Degraded		0 Completely Degraded	0 <1 year	1 1 -3 Yr	2 4-5 Yr	**3 >5 Yr**

Notes	**Notes**

(general)	**DISTURBANCE**	**(cattle)**

	0 heavy	**1** **medium**	2 mild	3 none		0 heavy	**1** **medium**	2 mild	3 none	
Notes					**Notes**					
Exploration evidence					**Cattle tracks and scats, grazing**					
GROUND COVER										
Bare Ground	0 <5%	1 <20%	2 20-60%	**3** **60-100%**	**Hummock Grass**	**0** **<5%**	1 <20%	2 20-60%	3 60-100%	
Rock	**0** **<5%**	1 <20%	2 20-60%	3 60-100%	**Other Grass**	**0** **<5%**	1 <20%	2 20-60%	3 60-100% *	
Leaf Litter	**0** **<5%**	1 <20%	2 20-60%	3 60-100%	**Herbs**	**0** **<5%**	1 <20%	2 20-60%	3 60-100%	
Logs >10cm	**0** **<5%**	1 <20%	2 20-60%	3 60-100%						
MICROHABITATS										
Burrowing Suitability		0 Rock	1 Stony	2 Sandy Loam	**3 Sand**	**Peeling Bark**	**0** **none**	1 rare	2 moderate	3 common
Pebbles Stones		0 none	**1** **0-30%**	2 30-70%	3 70-100%	**Large Hollows**	**0** **none**	1 rare	2 moderate	3 common
Exfoliating Slabs		**0** **none**	1 0-30%	2 30-70%	3 70-100%	**Small Hollows**	**0** **none**	1 rare	2 moderate	3 common
Rock Crevices		**0** **none**	1 0-30%	2 30-70%	3 70-100%	**Water Prescence**	**0** **none**	1 rare	2 moderate	3 common
Boulders		**0** **none**	1 0-30%	2 30-70%	3 70-100%	**Distance to Water**	0 >5km	1 2-5km	**2** **500m - 2km**	3 <500m
Suitability for Bats		YES		**NO**		**Termite Mounds**	0 none	**1** **rare**	2 moderate	3 common
Caves		**Absent**	Present			**Woody Debris**	0 none	1 rare	**2** **moderate**	3 common

CONSERVATION SIGNIFICANT FAUNA	
Species	**Notes**

FAUNA RECORDED		
Birds	**Mammals**	**Reptiles**
Chestnut-rumped Thornbill	Cattle tracks and scats	Goanna tracks and burrows
	Kangaroo tracks and scats	