FI Joint Venture Pty. Ltd.

Yogi - Magnetite Project
Fauna Assessment

February 2020

Executive summary

Introduction

FI Joint Venture (FIJV) proposes to construct and operate a magnetite iron ore project (Yogi Mine Project) located approximately 225 km east-northeast of Geraldton and 15 km northeast of Yalgoo in Mid West, Western Australia (Figure 1).

FIJV commissioned GHD to undertake a single dual level 2 fauna survey of the Yogi Mine Project to identify key ecological constraints.

This report is subject to, and must be read in conjunction with, the limitations set out in section 1.6 and the assumptions and qualifications contained throughout the Report.

Key Finding

Six broad fauna habitat types were recorded in the survey area and include Banded Ironstone Formation (BIF) Ridgelines, Riparian/Creek line, Flood Plain, Chenopod Plain, Mixed Acacia Plain and Granitic formations.

The habitats in the survey area were continues in the landscape and extended beyond the survey area. The grazing pressures on the landscape had impacted the Chenopod Plain which was in poor to good condition depending on position in the landscape and water points within the area. The remainder of the survey area was in good to very good condition.

The August (Level 1), and the 2 phase level 2 fauna surveys conducted in October 2018 and January 2020 recorded 153 vertebrate fauna species utilising the survey area, including 27 mammals, 83 birds, 39 reptiles and four amphibians.

Of the species recorded, two species of conservation significance were recorded. The Western Spiny-tailed Skink (*Egernia stokesii badia*). This species is listed as an endangered species under the EPBC Act 1999 and Vulnerable under the BC Act. The Long-tailed Dunnart (*Sminthopsis longicaudata*) – listed as Priority 4 by the DBCA was also recorded.

Two other species are likely to be present in the survey area based on previous records in the region and habitat present, these species are:

- Peregrine Falcon (*Falco peregrinus*) – Other special Protection under the BC Act.
- Gilled Slender Bluetongue (*Cyclodomorphis branchialis*) – Vulnerable under the BC Act.

Two other species were assessed as likely to be present in the survey area:

- Peregrine Falcon (*Falco peregrinus*) – Other special Protection under the BC Act
- Gilled Slender Bluetongue (*Cyclodomorphus branchialis*) – Vulnerable under the BC Act

Of the conservation significant species identified above, the Western Spiny-tailed Skink is the only species known to have specialised habitat requirements with populations that would rely on the rocky resources to persist within the survey area. However, this species is primarily reliant on granite and quartz outcrops, rather than banded ironstone formations within the survey area, therefore these local BIF formations may not be classified as high significance to this species.

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1. Introduction

1.1 Project background

FI Joint Venture (FIJV) proposes to construct and operate a magnetite iron ore project (Yogi Mine Project) located approximately 225 km east-northeast of Geraldton and 15 km northeast of Yalgoo in Mid West, Western Australia (Figure 1).

FIJV commissioned GHD to undertake a dualseason level 2 fauna survey of the Yogi Mine Project to identify key ecological constraints.

1.2 Purpose of this report

This report details the fauna survey assessment of the Yogi Mine Project. The purpose of the survey was to identify key ecological constraints within the tenement area and support future approvals documentation.

1.3 Project location

1.3.1 Survey area

The survey area includes mining tenements M59/740, M59/637, P59/2133 and L59/156 (collectively termed the survey area). The total survey area is 8230 hectares (ha). The location of the survey area is mapped in Figure 1, Appendix A.

The study area was defined for the desktop based searches of the survey area and includes a 40 kilometre (km) buffer around the survey area.

1.4 Scope of works

The scope of works, as detailed in the GHD proposal, was to undertake a dual season Level 2 fauna survey of the survey area to provide:

- Description and mapping of fauna habitat types
- Inventory of vertebrate fauna taxa
- Identification of any conservation significant fauna and habitats
- Identification of any pest species present
- Preparation of the Fauna Assessment Report (this report).

1.5 Relevant legislation, conservation codes and background information

In WA some ecological communities, flora and fauna are protected under both Australian Government and State Government legislation. In addition, regulatory authorities also provide a range of guidance and information on expected standards and protocols for environmental surveys.

An overview of key legislation and guidelines, conservation codes and background information relevant to this biological survey is provided in Appendix B.

1.6 Limitations and assumptions

This report: has been prepared by GHD for FI Joint Venture Pty. Ltd. and may only be used and relied on by FI Joint Venture Pty. Ltd. for the purpose agreed between GHD and the FI Joint Venture Pty. Ltd. as set out in section 1.2 of this report.

GHD otherwise disclaims responsibility to any person other than FI Joint Venture Pty. Ltd. arising in connection with this report. GHD also excludes implied warranties and conditions, to the extent legally permissible.

The services undertaken by GHD in connection with preparing this report were limited to those specifically detailed in the report and are subject to the scope limitations set out in the report.

The opinions, conclusions and any recommendations in this report are based on conditions encountered and information reviewed at the date of preparation of the report. GHD has no responsibility or obligation to update this report to account for events or changes occurring subsequent to the date that the report was prepared.

The opinions, conclusions and recommendations in this report are based on assumptions made by GHD described in this report (In Section 5). GHD disclaims liability arising from any of the assumptions being incorrect.

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The opinions, conclusions and any recommendations in this report are based on information obtained from, and testing undertaken at or in connection with, specific sample points. Site conditions at other parts of the site may be different from the site conditions found at the specific sample points.

Investigations undertaken in respect of this report are constrained by the particular site conditions, such as the location of buildings, services and vegetation. As a result, not all relevant site features and conditions may have been identified in this report.

Site conditions (including the presence of hazardous substances and/or site contamination) may change after the date of this Report. GHD does not accept responsibility arising from, or in connection with, any change to the site conditions. GHD is also not responsible for updating this report if the site conditions change.

2. Methodology

2.1 Desktop assessment

Prior to the commencement of the field survey a desktop assessment was undertaken to identify relevant environmental information pertaining to the study area and to assist in survey design.

This included a review of:

- The Department of Agriculture Water and Energy (DAWE), formerly Department of the Environment and Energy (DEE) Protected Matters Search Tool (PMST) to identify communities and species listed under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) potentially occurring within the study area (DAWE 2020) (Appendix C)
- The DBCA *NatureMap* database for fauna species previously recorded within the study area (DBCA 2007–) (Appendix C)
- Two previous fauna reports provided by FIJV that cover portions of the study area.
- Existing datasets including previous broad-scale vegetation mapping of the survey area, aerial photography, geology/soils and hydrology information to provide background information on the variability of the environment, likely vegetation units and fauna habitats and to identify areas with the potential to contain Threatened and Priority fauna species.

2.2 Field survey

2.2.1 Survey details and timing

Field surveys consisted of a five day (6th to 10th August 2018) level 1 reconnaissance survey, an11 day (8th to 18th October 2018) level 2 trapping program, and a second phase 11 day level 2 trapping program and target surveys (21st to 31st January 2020). The level 1 survey was undertaken by GHD ecologists Madi Roberts and Steven Petts. The first phase Level 2 survey was conducted by Glen Gaikhorst, Brad Maryan, Madi Roberts and Steven Petts. The second phase level 2 was conducted by Robert Browne-Cooper, Brad Maryan, Grace Formentin, and Will Purser.

2.2.2 Guiding documents

The survey methodology and data collection GHD employed was consistent with:

- EPA Technical Guidance –Terrestrial Fauna Surveys, Perth, Environmental Protection Authority (EPA 2016a)
- EPA Technical Guidance – Sampling methods for terrestrial vertebrate fauna, Perth, Environmental Protection Authority (EPA 2016b).

2.2.3 Permits and ethics

A Regulation 17 Licence to Take Fauna for Scientific Purposes was obtained from DBCA prior to undertaking the first phase fauna survey (Licence Number: 08-002892-1), and second phase fauna survey (Licence Number BA27000198). The fauna survey (specifically trapping and animal handling) was undertaken in accordance with Standard Operating Procedures (SOPs) which were required to be followed under the conditions of GHD's fauna trapping permit. At the time of survey, compliance with these SOPs was accepted by DBCA as evidence of ethical treatment of animals:

2.2.4 Habitat assessment

The survey area was assessed for habitat type, structural complexity, connectivity, disturbance, type and extent of resource availability and value for fauna. Specifically, the assessment included:

- Habitat structure (e.g. vegetation type, presence/absence of overstorey, midstorey, understorey, and ground cover).
- Description of geomorphology, topography and substrate where applicable.
- Presence/absence of refuge including: fallen timber (coarse woody debris), hollow-bearing trees and stags and rocks/breakaways, and the type and extent of each refuge.
- Location of the habitat within the survey area in comparison to the habitat within the surrounding landscape.
- Habitat connectivity and identification of wildlife corridors within and immediately adjacent to the survey area.
- Identification and evaluation of key habitat features and types identified during the desktop assessment relevant to fauna of conservation significance.
- Evaluation of the likelihood of occurrence of conservation significant fauna within the environments present (based on presence of suitable habitats and species recorded)
- A representative photograph of each habitat type.

2.2.5 Fauna identification and nomenclature

Species Identification

Identification of fauna species was made in the field using available field guides and electronic guides (Table 1). Where identification was not possible, photographs of specimens were collected to be later identified.

Table 1 Fauna references

Fauna group	Field guide
Mammals	Menkhorst and Knight (2004), Van Dyck and Strahan (2008)
Bats	Churchill (2008), Menkhorst and Knight (2010)
Birds	Morcombe (2004)
Reptiles	Wilson and Swan (2017), Storr et al. (1999), Storr et. al. (2002)
Amphibians	Tyler and Doughty (2009)

Nomenclature

Nomenclature used in this report follows that used by the WA Museum as reported on *NatureMap*. This nomenclature is deemed the most up-to-date species information for WA fauna, with the exception of birds, which follows Christidis and Boles (2008).

2.2.6 Trapping program

Trapping for terrestrial fauna during both phases used essentially the same sampling techniques and trap layout and involved using a series of standardised systematic trapping quadrat sites comprising pit-fall traps, Elliott box traps, cage traps and funnel traps. Details of each trap type used are provided below. During the first phase, a total of nine quadrats were used throughout the survey area and each quadrat was systematically surveyed (trapped) for seven or eight nights. During the second phase, a total of six quadrats were used throughout the survey area including five quadrates established during phase 1 and one additional quadrat

established within riparian habitat in phase 2. Each phase 2 quadrat was systematically surveyed (trapped) for seven nights.

Pit-trap with drift fence

Seven pit-traps were established at each quadrat within the survey area. Pit-traps comprised of 20 litre (L) plastic buckets (30 cm diameter, 40 cm deep) at each quadrat. A 50 metre (m) long flywire drift fence (30 cm high) bisected the pits; directing fauna into them. Pits were spaced at seven meter intervals along the fence. Soil and an egg carton were placed within each pit to provide shade and protection for captured animals.

Funnel traps

Ten funnel traps were used along each drift fence. Traps were placed such that animals were directed into them from the drift fence in between the pit traps. Funnel traps were covered with insulating materials to minimise heat or cold exposure to animals.

Elliot box traps

Twenty Elliott box traps were used at each quadrat site. Traps were placed approximately ten metres apart and baited with universal bait (a mixture of peanut butter, rolled oats and sardines). Elliott traps were located within shady areas or covered with vegetation to minimise exposure to captured animals. Two lines of 10 Elliott traps were used per site, positioned 50 m on each side of (and parallel to) the drift fence.

Cage traps

Two cage traps were located at each quadrat site. These traps were placed at each end of the line of Elliott traps. Cage traps were baited with universal bait.

Avifauna

Avifauna surveys were undertaken at each of the quadrat sites. Each survey comprised of a 20 minute census of birds within an unbounded 2 ha area, which is the standard method used by Birds Australia for the Bird Atlas project. Birds detected visually (using binoculars) and/or aurally over a 20 minute period were recorded. Numbers of each species observed were also recorded.

All systematic bird surveys were undertaken within four hours of dawn or two hours of dusk, as these are the times of day when birds are most active. In addition to systematic surveys, observations of birds were also made opportunistically.

Camera traps

Remote motion sensor cameras (Reconyx-Hyperfire) were deployed during phase 1 for a period of 42 to 48 nights, and for 21 nights during phase 2. This method was deployed to target the conservation significant Long-tailed Dunnart (P4) and also general fauna (birds, reptiles and mammals). Cameras were set in a range of habitat types, but with focus on rock areas where potential significant species might be recorded i.e. rocky out crops or utilising vehicle access tracks. Cameras were baited with sardines and or universal animal bait to attract fauna species within the survey area. For each camera location the time and date deployed and recovered, and the GPS coordinates were recorded (Table 2). Camera locations are depicted in Figure 3.

Data from the cameras were downloaded to a computer and analysed for the presence of animals following the field survey.

Table 2 Camera trap locations

Camera number	Habitat type	Location		Nights deployed	Phase
		Easting	Northing		
Cam 28	Granitic	482772	6883651	48	
cam 115	Granitic	482774	6883652	48	
Cam 31	Granitic	483127	6883109	47	
Cam 23	BIF	479288	6877354	45	
Cam 15b	BIF	479278	6877346	45	
Cam 1	BIF	479898	6877408	45	
Cam 10	Waterhole	483489	6879648	47	
Cam 7	Waterhole	483472	6879631	47	
Cam 21	Drainage line	482840	6873546	42	
Cam 24	BIF	482197	6874575	42	
Cam 8	BIF	481246	6876066	42	
Cam 19	BIF	480677	6877119	42	Phase 1
Cam GHDb	Mixed Acacia Plain	478648	6880310	42	
Cam 166	Mixed Acacia Plain	478384	6881438	42	
Cam 25	Mixed Acacia Plain	488244	6871074	42	
Cam 2	Granitic	486990	6878382	42	
Cam 16	Mixed Acacia Plain	487059	6878996	42	
Cam 26	Mixed Acacia Plain	488276	6876156	42	
Cam 29	Mixed Acacia Plain	489095	6864788	42	
Cam 12	Drainage line	486684	6881909	42	
Cam 20	Mixed Acacia Plain	481443	6879824	42	
Total				**918**	
Camera number	Habitat type	Easting	Northing	Nights deployed	Phase
Cam 2	Mixed Acacia Plain	481324	6879198	21	
Cam 7	Mixed Acacia Plain	480920	6879230	21	
Cam 24	Mixed Acacia Plain	480527	6879230	21	
Cam 15b	Mixed Acacia Plain	480144	6879296	21	
Cam 27	Mixed Acacia Plain	479755	6879214	21	
Cam 166	Mixed Acacia Plain	479397	6879214	21	
Cam 19	Granite outcrop	486395	6881619	20-	
Cam 3sg	Granite outcrop	486412	6881554	20-	
Cam B	Granite outcrop	486421	6881523	20-	Phase 2
Cam 5sg	Granite outcrop	486416	6881476	20-	
Cam 28	Granite outcrop	486403	6881435	20-	
Cam 2sg	Granite outcrop	486400	6881398	20-	
Cam 26	BIF	481359	6876091	21	
Cam A	BIF	481189	6876349	21	
Cam 12	BIF	481496	6875837	21	
Cam 14	BIF	480540	6877380	21	
Cam 16	BIF	480354	6877648	21	
CAM18	BIF	480105	6877846	21	
Total				**372**	

Bat Surveys

Bat Detectors (SM2 and SM4 Songmeters) were deployed for a period of one to four nights at each survey location during both survey phases. Bat detectors were positioned in areas where

bat species might be recorded i.e. utilising water bodies, fly ways or caves. Bat detectors were set to record from 25 minutes pre-dusk to 25 minutes post-dawn. For each detector the time and date deployed and recovered, and the GPS coordinates were recorded (Table 3). Bat detector locations are depicted in Figure 3.

Data from the bat detectors were downloaded to a computer and analysed for the presence of animals following the field survey. Data from the bat detectors was assessed by Glen Gaikhorst and verified by Craig Grabham for the presence of bat species.

Table 3 Bat Detector locations

Bat detector sites	Habitat type	Location		Nights deployed	
		Easting	Northing	Phase 1	Phase 2
Site 1	Chenopod Plain	484268	6879893	1	2
Site 2	Riparian	486218	6881472	1	2
Site 3	Mulga Plain	480884	6879201	4	2
Site 4	BIF Ridgeline	479853	6878040	1	3
Site 5	Granitic Formations	482684	6883162	1	-
Site 6	Mulga Plain	488283	6873069	3	-
Site 7	Mulga Plain	488267	6868389	1	-
Site 8	BIF Ridgeline	481760	6875389	1	3
Site 9	Granitic Formations	486899	6876046	2	-
Site 11	Riparian	482057	6875450	-	2
Total				15 nights	14 nights

Night Parrot Surveys

Night Parrots were first discovered in Western Australia in 1854 and described thereafter from the holyotype and subsequent paratypes from 13 km southeast of Mt Farmer, west of Lake Austin in Western Australia (Johnstone and Storr 1998). This are is approximately 155 km north east of this study area, however the study area is considered potentially suitable for the species (when in the correct environments/habitats). Acoustic detectors (SM2 and SM4 Songmeter Acoustic recorders) were deployed for a period of up to nine nights at selected survey location. The detectors were placed in areas where Night Parrot might be recorded i.e. utilising water bodies, Chenopod areas or mixed grassland/low herb plains. The detectors were set to record from 25 minutes pre-dusk to 25 minutes post-dawn. For each detector the time and date deployed and recovered, and the GPS coordinates were recorded (Table 4). The acoustic detector locations for both survey phases are depicted in Figure 3.

Data from the SM4 acoustic detectors were downloaded to a computer and analysed for the presence of animals following the field survey. Data from the detectors was analysed by Nigel Jackett, an experienced Zoologist recognised as a specialist in the analysis of Night Parrot call identification.

Table 4 Night Parrot Detector locations

Night Parrot detector number	Habitat type	Location		Nights deployed
		Easting	Northing	
SM4 site 1	Chenopod Plain	484388	6879829	9
SM4 site 2	Chenopod Plain	484174	6879482	9
SM4 site 3	Chenopod Plain with Riparian areas	486279	6881435	9
SM4 site 4	Chenopod Plain at Cattle water point	483490	6879644	9
SM4 site 5	Chenopod	486268	6881516	5
SM4 site 6	Cattle trough/Acacia plain	481728	6879558	5
SM4 site 7	Acacia plain	478921	6879519	2

SM4 site 8	Chenopod plain	485952	6880310	2
SM4 site 9	Acacia plain	480072	6879262	2
SM4 site 10	Chenopod plain	482363	6875510	2
Total				54

Western Spiny-tailed Skink searches

Target searching for Western Spiny-tailed Skink was undertaken within the survey area focussing on rocky areas including BIF, and Granite areas known to be potentially suitable habitat for skink colonies. Based on detailed aerial imagery and habitat mapping, search transect lines were loaded onto field table and GPS units. These transects were used as a guide to traverse selected habitat areas on foot with adequate coverage Figure 3 shows the search transects traversed. Rocky areas of potentially suitable shelter habitat were carefully checked for scat latrines as evidence of skink presence. Crevices and gaps were also checked for skink presence. Where latrines and/or skinks were detected, the location, latrine extent and photo were recorded for each colony. Figure 5 shows the locations of all scat latrines and skinks detected. Several additional rocky areas located in proximity to but beyond the boundary of the survey area were also searched to provide some local and regional context to skink occurrence and to assess these area as potential skink relocation sites. Potential skink relocation sites were assessed based on the presence of potentially suitable granite structure but lack of evidence of existing/resident colonies i.e. no scat latrines and no skinks. Appendix D provides a list of potential relocation sites.

2.2.7 Other Searches

Rare and threatened species may have a patchy, disparate distribution through landscapes. To provide the best opportunity to determine the presence and relative prevalence of these species, this study employed a variety of sampling methods. The systematic sampling was applied throughout the trapping program with additional sampling methods also applied at these sites. Additionally, other areas that were not assessed through the systematic trapping effort were also surveyed using non-systematic techniques and the following provided in the below subsections.

Diurnal searching

Each trapping site was surveyed for amphibians, reptiles, and mammals. Surveys comprised of active searching of potential shelter sites (overturning logs, rocks and leaf litter) and low vegetation (under bark and in tree stumps) and recording all individuals observed. Species presence was also detected and identified via secondary evidence, in the form of scats, tracks, feathers, burrows and skeletal remains. A minimum of one hour was spent at each site including the general area around it.

Nocturnal searching

Spot lighting was undertaken to locate nocturnal species that may otherwise remain undetected using other survey techniques. Hand held or head mounted spotlights were used for a minimum of one hour at each trapping line for each survey phase and within the general area.

Opportunistic observations

Opportunistic observations involve the recording of fauna taxa (physical presence and/or signs of presence) spatially throughout the Survey area. These observations are gathered throughout the survey duration during all in-situ activities including travel, and generally account for a significant proportion of the species assemblage recorded. Opportunistic observations include physical observations (sighting or hearing fauna), and indirect evidence (scats, tracks, diggings, nests, feathers, remains, pellets) which indicate the current or recent activity of a species

present. Wherever possible, numbers of individuals, microhabitat use and other relevant information was recorded. Opportunistic observations were recorded outside of the diurnal, nocturnal or general trap site surveys (for example when driving, walking to a site, checking camera traps and bat detectors).

2.2.8 Survey effort

Survey effort is described as the amount and type of survey that is undertaken during an assessment. Table 5 provides detail on the type and amount of survey time undertaken during both Level 2 survey phases: the spring 2018; and the summer 2020 survey. Each of the trapping sites was sampled for a minimum of 7 consecutive trap-nights including bucket, cage, funnel and Elliott traps. Additionally 1- 4 nights were sampled for bat acoustics, 60 to 120 minutes of night search, 60 to 180 minutes of active search and 80 to 120 minutes of bird assessments undertaken at each site. The total trapping effort across both survey phases consisted of 3957 trap-nights (total trap effort), 1220 minutes of bird assessments, 1350 minutes of active searches, 1100 minutes of night searches, 54 nights of Night Parrot assessment, 29 nights of Bat detection and 1290 camera nights. Table 5 shows the survey effort undertaken for this project.

2.3 Data analysis

2.3.1 Species accumulation

The number and type of species trapped each day was recorded and a species accumulation curve was created for the survey area using PRIMER v6 (Clarke and Gorley 2006). The species accumulation curve represents the successfulness of the trapping program for its duration. Typically, the longer the trapping program the more complete the representation of species sampled per trapping location or habitat type. Accumulation curves should show “levelling” of the groups species counts prior to the completion of the survey. Many limitations can influence the results of a curve and should be observed as a guide to the project’s success. This curve is presented below in Plate 6. Only one curve was created for this survey within the survey area.

The data was run through Primer v6 against 8 existing models, these models are:

- Sobs - Curve of observed species counts
- Chao 1 - Chao's estimator based on number of rare species
- Chao 2 - Chao's estimator using just presence-absence data
- Jacknife 1 - Jacknife estimator based on species that only occur in one sample
- Jacknife 2 - Second order jacknife estimator
- Bootstrap - Bootstrap estimator based on proportion of quadrats containing each species
- MM (Michaelis-Menton) - Curve fitted to observed Sobs curve
- UGE - Calculated species accumulation curve based on (Ugland, Gray and Ellingsen (2003)

2.3.2 Scatter Plots

PRIMER v6 (Clarke and Gorley 2006) was used to examine the similarity between trapping sites using collected data. A matrix was created of all species (based on abundance) recorded at each trap site. The dissimilarity between sites was determined using the Bray-Curtis measure and the Resemblance function in PRIMER. A Cluster analysis (using Agglomerative Hierarchical Clustering technique) based on group average was undertaken using the Bray-Curtis similarity matrix and results presented as a dendrogram. In addition, a nonmetric multi-dimensional

scaling analysis (MDS) was undertaken using the Bray-Curtis similarity matrix and results presented as a two dimensional scatter plot. A factor was added to the output to define trap sites by habitat type.

Table 5 Fauna survey effort

Fauna Tapping sites				Elliot traps		Pit Traps		Cage Traps		Funnel traps		Bat Detector	Birds search	Active search	Night search	Night Parrot
Sites – Phase 1	**Easting**	**Northing**	**nights open**	**traps**	**trap nights**	**traps**	**trap nights**	**traps**	**trap nights**	**traps**	**trap nights**	**trap nights**	**minutes**	**minutes**	**minutes**	**nights**
Trap line 1-Chenopod	484274	6879918	8	20	160	7	56	2	16	10	80	1	120	120	90	27
Trap line 2-Riparian	486206	6881483	8	20	160	7	56	2	16	10	80	1	100	120	60	9
Trap line 3-Mulga Plain	480887	6879188	8	20	160	7	56	2	16	10	80	4	80	60	80	
Trap line 4-BIF Ridge	479862	6878042	8	20	160	7	56	2	16	10	80	1	80	120	60	
Trap line 5-Granite North	482680	6883160	7	20	140	7	49	2	14	10	70	1	80	180	90	
Trap line 6-Mulga Plain NE	488185	6873034	7	20	140	7	49	2	14	10	70	3	80	120	120	
Trap line 7-Mulga Plain E	488049	6868296	7	20	140	7	49	2	14	10	70	1	120	90	120	
Trap line 8-BIF Ridge	481736	6875398	7	20	140	7	49	2	14	10	70	1	60	60	60	
Trap line 9-Granite Central	486892	6876040	7	20	140	7	49	2	14	10	70	2	80	120	60	
Total –Phase 1				180	1340	63	469	18	134	90	670	15	800	990	740	36
Fauna Tapping sites				Elliot traps		Pit Traps		Cage Traps		Funnel traps		Bat Detector	Birds search	Active search	Night search	Night Parrot
Sites – Phase 2	**Easting**	**Northing**	**nights open**	**traps**	**trap nights**	**traps**	**trap nights**	**traps**	**trap nights**	**traps**	**trap nights**	**trap nights**	**minutes**	**minutes**	**minutes**	**nights**
Trap line 1-Chenopod	484274	6879918	7	12	84	6	42	2	14	12	84	2	80	60	60	

Trap line 2-Riparian	486206	6881483	7	12	84	6	42	2	14	12	84	2	80	60	60	
Trap line 3-Mulga Plain	480887	6879188	7	12	84	6	42	2	14	12	84	2	80	60	60	
Trap line 4-BIF Ridge	479862	6878042	7	12	84	6	42	2	14	12	84	3	80	60	60	
Trap line 8 BIF Ridge	481736	6875398	7	12	84	6	42	2	14	12	84	3	80	60	60	
Trap line 10 Riparian	482057	6875540	7	12	84	6	42	2	14	12	84	2	80	60	60	
Total – Phase 2				72	504	36	252	12	84	72	504	14	480	990	360	
Total – Phase 1 and 2 combined					**1844**		**721**		**218**		**1174**		**1220**	**1350**	**1100**	

2.3.3 Fauna survey limitations

Guidance Statement No. 56 (EPA 2004) states that fauna and faunal assemblage survey reports for environmental impact assessment in Western Australia should contain a section describing the limitations of the survey methods used. The limitations and constraints associated with the fauna component of this field survey are discussed in Table 6.

Table 6 Fauna survey limitations

Limitations	Constraints	Impact on Survey outcomes
Scope (what faunal groups were sampled ? and were some sampling methods not able to be employed because of constraints such as weather conditions ?, e.g. pitfall trapping in waterlogged soils or inability to use pitfall traps because of rocky terrain)	Nil	All fauna groups were able to be sampled with no constraints. The survey team was able to sink pit traps at all sites. A cool period with rain was experienced on night during phase one, six which reduced captures as some of the trapping lines had to be closed for a night to avoid fauna death from flooded traps. The phase one survey was extended from 7 to 8 nights of trapping to alleviate any impacts weather conditions had on results. The phase 2 survey was conducted during January 2020 due to client timeline requirements. This season is outside the optimum survey period due to very high day temperature and very dry conditions, therefore Phase 2 is considered sub-optimal survey timing, not withstanding, both conservation significant fauna species were recorded during Phase two.
Proportion of fauna identified, recorded and/or collected	Nil	All fauna was identified and released on site.
Proportion of the task achieved and further work which might be needed.	Moderate	The Level 2 survey was successful in recording a representative sample of the expected fauna assemblages. The survey did identify the Western Spiny-tailed Skink as being present. The species is both state and federally listed as conservation significant. Due to the amount of habitat available to this species, the entire survey area was not traversed. Therefore the species is likely to persist in other localities to those identified and additional work is required to assess usage. One other conservation significant species, Long-tailed Dunnart (P4) was recorded.
Remoteness and/or access problems	Minor	There were no issues with remoteness as the survey area is located within a pastoral and mining lease area. Most areas of the survey area were able to be accessed during the surveys.

3. Desktop assessment

3.1 Previous studies

A review of existing reports that have been undertaken within the survey area is provided in Table 7.

Table 7 Previous studies within Survey area

Project	Location and key findings	Location in relation to this survey area
ATA Environmental (2006) Vertebrate Fauna Assessment, Yalgoo Iron Project	Location: Leases P59/1397, E59/642 and P59/108 ATA conducted a desktop and Level 1 fauna assessment and found: • One habitat type – scattered mulga • Three conservation significant species may visit the project location including Western Spiny-tailed Skink (*Egernia stokesii badia*), Gilled Slender Bluetongue (*Cyclodomorphous branchialis* and Peregrine Falcon (*Falco peregrinus*) • No inventory species records were available in this report	The current survey area cover all of P59/108 and the northern and south most portions of E59/642 which borders the survey area. The survey area is adjacent to, but not overlapping, the southern portion of the development envelope.
Coffey Environments Pty Ltd (2008) Vertebrate Fauna Survey Yalgoo Iron Ore Project	Location: Mining Tenements E59/642, M59/637 and P59/1397. Coffey conducted a level 2 fauna survey that included a trapping program, avifauna, opportunistic survey and bat survey. The key findings include: • Two broad habitat types – Tall Shrubland and Tall Open Scrubland • Degraded habitat due to sheep grazing • The survey recorded 3 amphibians, 29 reptiles, 34 birds, 16 mammals	The current survey area cover all of P59/637 (which is P59/108 for the ATA study) and the northern and south most portions of E59/642 which borders the survey area. The survey area is adjacent to, but not overlapping, the southern portion of the development envelope.

3.2 Climate

The survey area is located within the Yalgoo subregion of Western Australia. The climate of this region is classified as Mediterranean, semi-arid to arid and warm, with two distinct seasons: a hot and dry summer (December to February) and a mild wet winter (June to August) (Payne et al. 1998; Markey and Dillon 2006).

The region is characterised by moderately variable rainfall, with rainfall events being restricted to local areas rather than being widespread (Markey and Dillon 2006). The majority of all rainfall received occurs during winter months and is a result of low pressure system associated with the

westerly wind system. Summer rainfall occurs as a result of thunderstorms and heavy downpours associated with remnant tropical cyclones (Markey and Dillon 2006). The closest current weather station to the site is in Mount Magnet (Station ID: 007600) located approximately 115 km east north-east of Yalgoo town site. Climate data from this station indicate:

- Mean maximum temperature ranges from 18.8 °C in July to 37.9 °C in January
- Mean minimum temperature ranges from 7.0 °C in July to 23.5 °C in February
- Mean annual rainfall is 217.1 mm with average of 56 rain days/year (WeatherZone 2018).

The weather over the survey period is presented below in Table 8. The site conditions were generally dry during the survey however a heavy rainfall event impacted the site on the evening of the 14th October which caused surface water runoff over the site. This event is seen in the daily rainfall data provided in the table.

Table 8 Weather data for survey period (Phase 1 and 2)

Date Phase 1	Min temp (°C)	Max temp (°C)	Rainfall (mm)
09/10/18	17.8	31.9	0.0
10/10/18	17.6	32.3	0.0
11/10/18	14.6	29.3	0.0
12/10/18	15.0	28.1	0.0
13/10/18	15.8	23.2	0.0
14/10/18	12.4	21.9	14.6
15/10/18	9.2	25.4	0.2
16/10/18	13.2	30.7	0.0
17/10/18	18.6	36.2	0.0
18/10/18	15.7	25.4	0.0
19/10/18	9.5	23.0	0.0
Date Phase 2	Min temp (°C)	Max temp (°C)	Rainfall (mm)
21/01/2020	25.1	37.6	0.0
22/01/2020	17.8	33.0	0.0
23/01/2020	20.2	36.4	0.0
24/01/2020	22.5	38.4	0.0
25/01/2020	21.6	40.2	0.0
26/01/2020	23.1	42.0	0.0
27/01/2020	24.5	44.0	0.0
28/01/2020	26.0	44.8	0.0
29/01/2020	27.2	43.7	0.0
30/01/2020	19.9	31.1	0.0
31/01/2020	16.0	31.6	0.0

3.3 Regional biogeography

The study area is situated in the Eremaean Botanical Province, within the Yalgoo bioregion and Tallering sub-region as described by the Interim Biogeographic Regionalisation of Australia (IBRA).

The Yalgoo bioregion represents an interzone between south western bioregions and the Murchison bioregion. The bioregion is characterised by low woodlands to open woodlands of *Eucalyptus*, *Acacia* and *Callitris* on red sandy plains of the Western Yilgarn Craton and Southern Carnarvon Basin. The Western Yilgarn Craton comprises mulga, *Callitris-E. salubris*, and Bowgada open woodlands and scrubs on earth to sandy-earth plains. The Southern Carnarvon Basin has a basement of Phanerozoic sediments. The subregion is particularly rich in ephemerals (Desmond & Chant 2001).

3.4 Geology and soils

3.4.1 Geology

The Australian continent is made up of four continental blocks: the Yilgarn, Pilbara and Gawler Cratons and the Wilyama Block. The survey area is located within the Murchison Province of the Yilgarn Craton. The Yilgarn Craton is comprised of geological formation from the Archaean (2.5 billion years ago) to Cainozoic ages (66 million years ago to present) and bounded by the Murgoo Gneiss Complex of the Western Gneiss Terrane in the west and the Southern Cross Province in the east. The Archaean rocks of the Murchison and Southern Cross Provinces consists of linear to arcuate greenstone belts. The greenstones comprises volcanic rocks, felsic volcanic rocks and metasedimentary rocks including cherts and banded iron formation (BIF). The granitoid rocks contain adamellites, granite, gneiss and migamite (Payne et al. 1998).

3.4.1 Land systems, landforms and soil

The study area is located within the Karrara Hills Plains and Lake, and Yalgoo Plains soil landscape zones in the Murchison Province:

- The Karrara Hills Plains and Lake Zone is described as “Hills and ranges, sandy plains, hardpan wash plains, stony plains and salt lakes (with some mesas and plains) on greenstone and granitic rocks of the Yilgarn Craton. Red shallow loams, Red loam earths, Red deep sands and Salt lake soils with some Red shallow sands, Stony soil and Red shallow sandy duplexes” (Tille 2006)
- The Yalgoo Plain Zone is described as “Hardpan wash plains (with some sandplains, stony plains, mesas and granite outcrops) on granitic rocks (with some greenstone) of the Yilgarn Craton (Murchison Domain). Red loamy earths and Red shallow loams (often with hardpans) with Red deep sands and Red shallow sands and some shallow sandy complexes” (Tille 2006)

The Department of Agriculture and Food Western Australia (DAFWA) completed a survey of the Murchison region (Hennig *et. al.* 1994). The condition and susceptibility report of land systems within the survey area is summarised in Table 9.

Table 9 Land systems within the survey area

Land system	Description	Land type	Area (ha) within survey area
Gabanintha	Ridges, hills and footslopes of various metamorphosed volcanic rocks (greenstones), supporting sparse acacia and other mainly non-halophytic shrublands.	Hills and ranges with acacia shrublands	1,074.6

Land system	Description	Land type	Area (ha) within survey area
Violet	Gently undulating 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.	Stony plains with acacia shrublands and halophytic shrublands	48.5
Tindalarra	Near level hardpan wash plains, narrow drainage lines and moderately saline drainage floors; supporting tall mixed acacia shrublands with wanderrie grasses, also minor saltbush/bluebush low shrublands.	Wash plains on hardpan with mulga shrublands	4,925.2
Challenge	Gently undulating gritty-surfaced plains, occasional granite hills, tors and low breakaways, with acacia shrublands.	Gritty-surfaced plains and granite tors and domes with acacia shrublands	1,596.5
Hamilton	Hardpan plains, stony plains and incised drainage lines supporting mulga shrublands.	Wash plains on hardpan with mulga shrublands	574.7

3.5 Land use

The survey area is located on Carlaminda and Wagga Wagga Pastoral Stations. Both are currently operated as cattle stations.

3.5.1 DBCA managed lands

No DBCA managed lands are located within the survey area or study area.

3.6 Fauna diversity

The *NatureMap* database identified 192 vertebrate fauna taxa previously recorded within 40 km radius of the survey area (DBCA 2007–). This total included eight amphibians, 129 birds, 10 mammals and 46 reptiles. The EPBC Act PMST indicated the potential presence of 28 additional fauna taxa within 40 km of the survey area (DEE 2018).

3.7 Conservation significant fauna

Searches of the EPBC Act PMST (DEE 2018), DBCA Threatened and Priority Fauna database and *NatureMap* database (DBCA 2007–) identified the presence/potential presence of 6 conservation significant fauna species (Appendix C). Species identified by the PMST as marine and migratory marine were excluded from this assessment as no marine habitats were present within or nearby the survey area however species identified by the PMST as migratory terrestrial/wetland were considered as part of this assessment.

4. Results

4.1 Fauna Habitats

There were six broad habitat types recorded in the survey area during the field survey. These different habitat types are closely aligned with the different vegetation types and landforms within the survey area. The habitat types recorded in the survey area are described in Table 10 and mapped in Figure 4, Appendix A. The six broad fauna habitat types are:

- Banded Ironstone Formation (BIF) Ridgelines
- Riparian/Creek line
- Flood Plain
- Chenopod Plain
- Mixed Acacia Plain
- Granitic formations

4.1.1 Fauna Habitat Linkages

The survey area represents a large continuous tract of fauna habitat that retains high connectivity to the habitats directly adjacent. Impacts to all habitat types in the suey area include damage from drought, pastoralism (grazing, trampling of vegetation, soil compaction along cattle trails, small amounts of clearing for tracks and artificial water sources) as well as grazing from feral animals (donkeys, horses, goats) and native kangaroos. While the structural complex of some habitat types show stress signs of grazing and reduced water availability, the majority of the site is uncleared and represents good, intact habitat.

The habitats in the survey area have direct connectivity to surrounding habitats. From what could be observed, no additional obvious habitat types were detected in immediately surrounding lands that are not present on the survey area. Smaller BIF formations appeared to run east and west of the survey area, and a number of riparian channels were spread over the greater landscape which comprises mainly red sand plains and granite outcrops with low to medium shrubs.

Being on pastoral stations, fences and dirt tracks run through some of the survey area reducing habitat linkages. While the vehicle tracks are not considered to present a significant barrier to most fauna species, a small number of kangaroo carcases were detected along fence lines indicating that fences are presenting at least a moderate barrier to movement. However, it should be noted that a majority of the fauna detected on site are relatively small and would not inhibited by fence lines. In one instance, a young kangaroo was found in a dog trap along one of the fence lines so it is noted that human interference may also be causing some level of barrier throughout the landscape, although not directly to most fauna present.

4.1.2 Quality of habitat

The quality of the fauna habitats is currently affected by the impacts described above in section 4.1.1. Whilst the vegetation is mostly intact the impact by grazing in some environments was evident, particularly the Chenopod Plain which is generally poor to good. With this in mind the overall quality of the remainder of the survey area is in good to very good condition.

The survey results (i.e. species recorded) identified that the micro habitats within the environments played a significant part in the species present. The BIF hills have few areas of outcropping, rather are covered in pebbles and small scattered rocks on very hard substrates.

This environmental structure reduced the opportunity for species to hide or create refugia and therefore reducing the species present.

The Granitic areas of the survey area provides high quality resources for a diverse suite of fauna particularly reptiles and small mammals. This environment supports numerous saxicoline species such as Wooley's False Antechinus, Large-spotted Mid-west Rock Gehyra, Southern Rock Ctenotus and Western Spiny-tailed Skink. The Western Spiny-tailed Skink is endemic to the region and solely thigmotactic. The granitic environments provide refuge, breeding, feeding and disbursal for the species.

4.1.3 Habitat Scatter Plot

The similarity between sites based on the GHD trapping data was examined using PRIMER. The cluster analysis and resulting dendrogram as well as the MDS (Plate 1 and Plate 2) showed that according to the species recorded the Chenopod, riparian and Bif site demonstrate uniqueness (could be more or less species) in the species recorded and demonstrate isolating or clustering. The Bif sites lack of species in this case has isolated it apart from the remaining site were as the Chenopod and riparian habitats demonstrated good species richness, unique to those sites. The granitic and plain sites demonstrate species similarities and therefore cluster similarly. The 2D stress value of 0.13 indicates a good fit of data.

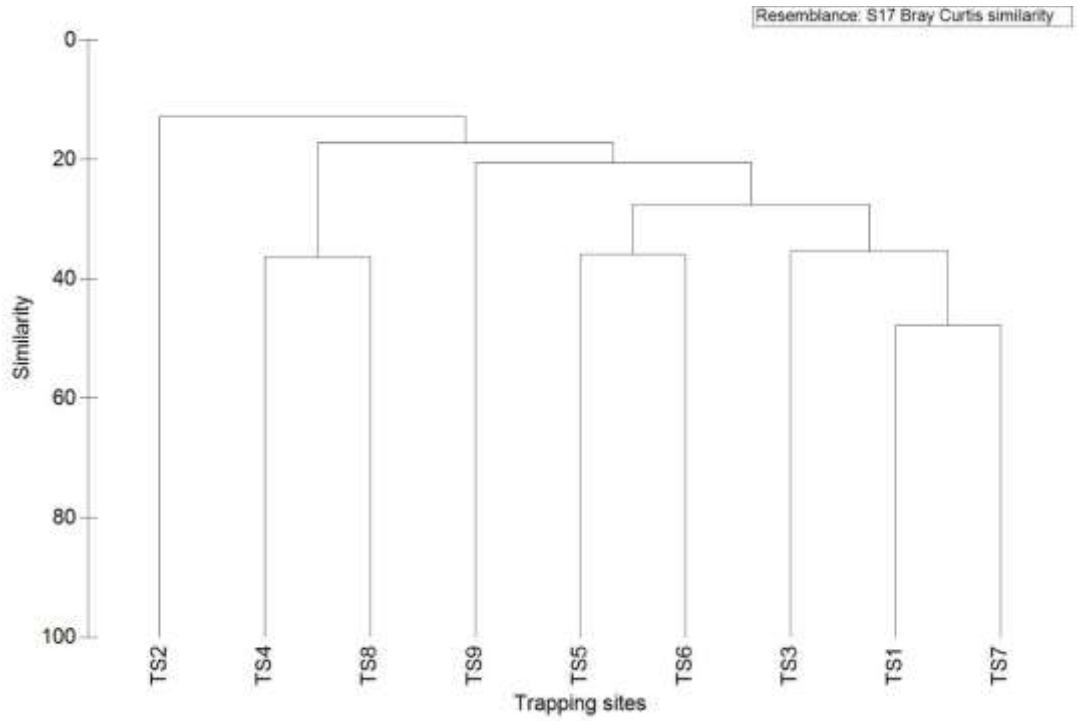

Plate 1 Dendrogram of trapping sites similarities

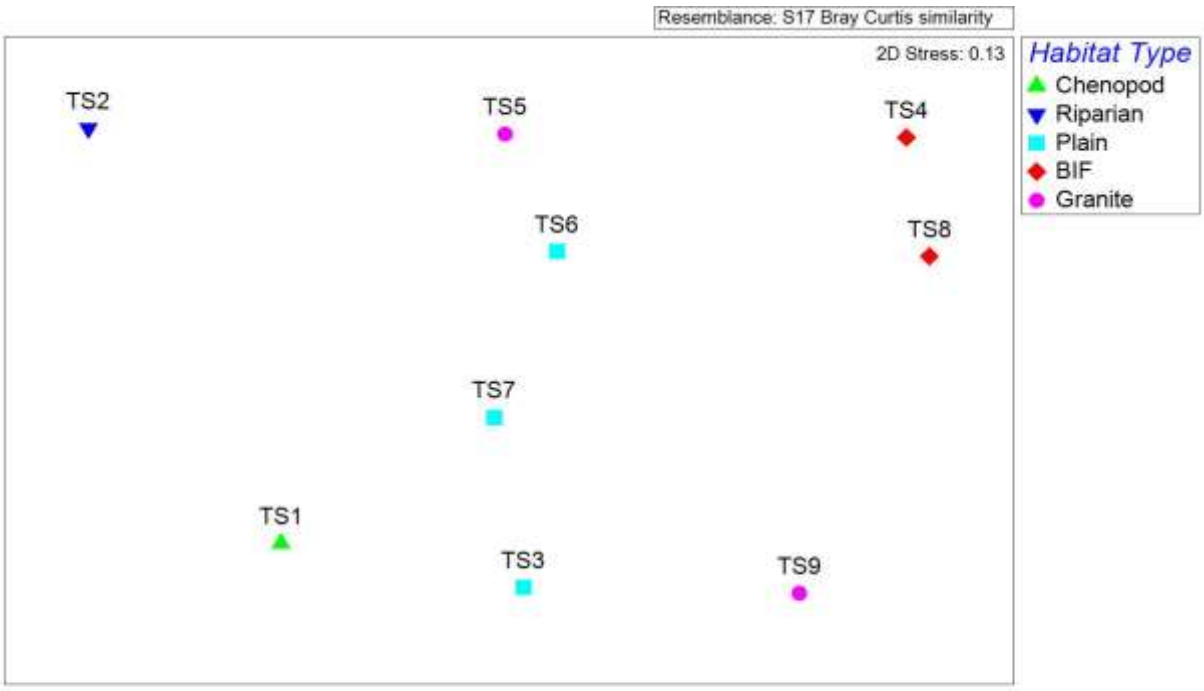

Plate 2 MDS of habitats based on species

Table 10 Major habitat types within the survey area

Description	Extent in the Survey area	Representative Images
BIF Ridgeline **Open shrublands of *Acacia sp*., *Thryptomene sp*., *Eremophila* sp. and *Ptilotus sp*. on low banded ironstone formation ridgelines.** Along the western edge of the survey area is a Banded Ironstone low rocky ridge line and associated rocky slopes. This habitat supports limited vegetation (likely due to shallow soil profiles). However the environment supports scattered mixed shrubs of Acacia, *Thryptomene sp., Eremophila forrestii, E. galeata* and *Ptilotus sp..* The environment had little ground covers, litter, logs or debris. This is possibly due to the lack of vegetative material and/or by grazing from Cattle. There was no evidence of fire in this environment. The low rocky slopes are a mosaic of quartz and iron stone composition with scattered minor outcropping, crevasses, slopes, rock sizes and stability. No typical caves were recorded in outcropping but ground level undermined areas were recorded around some small breakaways. These appeared to be utilised by Euro (*Macropus robustus*), Echidna (*Trachyglossus aculeatus*), Woolleys's Pseudantechinus (*Pseudantechinus woolleyae*) and/or large monitor lizards. Due to the lack of cover and shallow soils (difficulty for species to dig and hide) few specimens were trapped in this environment however Spinifex Hopping Mouse (*Notomys alexis*) appeared to be the most abundant. However this species appeared to be travelling from the plain to feed on the ridgeline. The Chestnut-breasted Quail-thrush (*Cinclosoma castaneothorax*) was the most common bird species recorded in this environment. **Conservation significant fauna** Few fauna species were recorded in this environment however two species are known to persist. The rocky slopes and ridgeline would provide core habitat for the Long-tailed Dunnart (*Sminthopsis longicaudata*) (i.e. denning) and Gilled Slender Bluetongue (*Cyclodomorphis branchialis*), which is known from the region and likely to occur in the survey area. The Western spiny-tailed skink (*Egernia stokesii badia*) was recorded based on a possible scat latrine and may persist in localised areas where small outcropping areas present. Peregrine Falcon (*Falco peregrinus*) may also utilise these areas for foraging. **Moderate value**	1041.09 ha	 

Description	Extent in the Survey area	Representative Images
Riparian/Creek line **Tall shrublands *Callistemon, Eucalyptus, Scaevola* with herbs and grassland along minor creeks and drainage lines** An ephemeral creek/drainage lines runs from the north eastern corner of the survey area south west and along the base of the BIF ridge. The main drainage line follows the gradient of the survey area, generally flowing from east to west. The creek and other small ephemeral creeks supports generally narrow, linear shrublands and open woodlands and was more structurally diverse than the surrounding habitats. The vegetation along these drainage lines is dominated by *Acacia* species with scattered mixed shrubs including *Callistemon, Eucalyptus, Scaevola* with herbs and grassland. In areas this environment was densely vegetated particularly where associated to sandy soils, heavier soils had little vegetation. Areas had good litter and debris present including large branches and logs creating numerous usable habitat options for fauna species. The drainage lines have a mosaic of substrates with a complex and variable mix of rocky, stony and sandy profiles. The substrates would vary and erode in response to rainfall and flooding. There was no evidence of fire in this habitat. These linear patches of habitat provide a corridor for the movement of fauna through the local landscape. Small birds (such as the Splendid Fairy-wren (*Malurus splendens*) and honeyeaters) would utilise this denser vegetation for foraging, movement and nesting. Two species of frog the Central Burrowing frog (*Platyplectrum spenceri*) and Guenther's Toadlet (*Pseudophryne guentheri*) were also recorded in this habitat after a rain event. **Conservation significant fauna** The increased structural diversity and substrate variation in this environment is likely to support a broader suit of fauna species than the surrounding habitat types. Additionally these drainage lines would be utilised as corridors for species. The Gilled Slender Bluetongue may utilise the rocky habitat in portions of the drainage lines while the Peregrine Falcon would utilise these well vegetated corridors for hunting/foraging. **High Value due to relatively high biodiversity occurring in these areas which have relatively high productivity associated with the hydrology and associated habitat productivity.**	215.22 ha	 

Description	Extent in the Survey area	Representative Images
Flood Plain **Mixed Shrublands of *Acacia, Eremophila, Grevillia* and *Hakea* on seasonally inundated floodplain** The floodplains surrounded the ephemeral main Creek line in the survey area. The vegetation consisted of mixed shrublands of *Acacia, Eremophila, Grevillia* and *Hakea*. This habitat was diverse in structure and was evidently sculptured by moving waters. Some areas were deep sands while others loam. There were high points in the environment and areas where water ran or pooled. There was no evidence of fire in this environment. This habitat would provide a variety of habitat resources for fauna species, and patches had a greater structural diversity than the surrounding shrublands. The *Acacia* shrublands that occur on the floodplains surrounding the Creek (and higher sandy areas) would also provide good habitat for burrowing species (such as Jan's Banded Snake (*Simoselaps bertholdi*)) given the looser sandy substrate. **Conservation significant fauna** The increased structural diversity and substrate variation in this environment is likely to support a broader suit of fauna species than the surrounding habitat types. The Peregrine Falcon would utilise these well vegetated corridors for hunting/foraging. **Moderate Value**	252.18 ha	
Chenopod Plain **Low open heathland of *Atriplex, Maireana, Sclerolaena* and scattered Acacia on fine sandy soils.** The Chenopod Plain compiled a relatively small area around the flood Plain and riparian/drainage line areas. The plain comprised fine sands over a layer of heavy loam with an over storey dominated by hardy, low shrub species. The dominant plant species were *Acacia, Atriplex, Maireana,* and *Sclerolaena* with herbs and grasses. The main areas of chenopods were located in the north west of the site and were in close proximity to surface water used as a drinking source for pastoral and native animals. As such bovine grazing (showing signs of heavy grazing, soil compaction and trampling) noticeably impacted the chenopod plains. The Chenopod Plains had high lizard activity particularly skinks and geckos (which is represented in trapping site 1 data) but does not attract large numbers of small mammals which is probably due to the lack of over storey coverage.	391.26 ha	

Description	Extent in the Survey area	Representative Images
Conservation significant fauna The increased structural diversity and sandy substrate in this environment is likely to support a broader suit of fauna species than the surrounding habitat types. Additionally the Chenopod fruits are a well-known food item for native wildlife and thought to be the main reason they are utilise by Night Parrot. The Gilled Slender Bluetongue may utilise this habitat and the Peregrine Falcon would utilise these well vegetated corridors for hunting/foraging. **High Value**		
Mixed Acacia Plain **Shrublands of Mixed Acacia on plain on loam/clay soils** Acacia shrublands are the most dominant habitat type within the survey area, comprising a variety of different vegetation types including open *Acacia* shrublands with grasses and herbs and denser areas of tall *Acacia* shrubland with little understorey. A large proportion of the *Acacia* shrublands has been previously disturbed by cattle grazing, resulting in large areas with very limited understorey or groundcover vegetation. There are also areas with little evidence of disturbance, which retain some structural diversity. The environment had areas of good ground covers, litter, logs or debris. There was no evidence of fire in this habitat. In areas where the shrubland is denser, this vegetation would provide suitable habitat for a variety of fauna species, in particular foraging opportunities, breeding habitat and refugia for bush birds and small mammals. The Kultarr (*Antechinomys laniger*) was recorded within this habitat. Where the shrubland was more open, and on loamy soils, large termitaria were present. Termitaria provide habitat and food source for numerous small reptiles, mammals and invertebrates. **Conservation significant fauna** This habitat is the most homogenic and widespread in the region. Historically numerous species would have persisted but are now locally extinct. The Gilled Slender Bluetongue may utilise this habitat and the Peregrine Falcon would utilise these well vegetated corridors for hunting/foraging. The Long-tailed Dunnart (P4) was recorded in this habitat during the survey. **Moderate Value**	5470.71 ha	

Description	Extent in the Survey area	Representative Images
Granitic formations **Scattered Low Shrublands of *Acacia, Eremophila, Grevillia, Hakea* and *Borya* amongst granite outcropping** Granite outcrops occur over the site and throughout the immediate surrounding area. A greater number of outcrops are present in the north eastern portion of the survey area and situate in raised undulations over the survey area. The granite formations are usually associated with low vegetation types due to the shallow soils and comprise *Acacia, Eremophila, Grevillia, hakea,* and *Borya* and an abundance of grasses and herbs. The environment had areas of good ground covers, litter and debris but lacked logs due to vegetation present. However the outcropping with exfoliating rock, crevices between and under large rocks, and slabbing provides excellent cover for a range of fauna species. There was no evidence of fire in this habitat. False Antechinus appears to be the most common mammal to frequent or reside near this habitat type. Cracks and ledges formed in the granite and its loose stones provide a majority of the habitat for reptiles and small mammals to hide. **Conservation significant fauna** The Western spiny-tailed skink was detected within the survey area. Several colonies of Western Spiny-tailed Skink were found in granite and quartz rock crevices and ledges within the north-east portion of the study area (see Figure 5) during an active search and a number of latrines were located within the survey area suggesting the species is present in other granite habitat nearby. The presence of large and extensive granite outcrops locally and regionally provides broad connectivity of habitat to the north and east. The Long-tailed Dunnart and Gilled Slender Bluetongue are also likely to utilise this habitat. Peregrine Falcon may also utilise these areas for foraging. **High Value**	825.48 ha	 

4.2 Fauna Diversity

The combined fauna surveys: August (Level 1); October 2018 (Level 2-phase 1), and January 2020 (Level 2-phase 2) recorded 153 vertebrate fauna species utilising the survey area, including 27 mammals, 83 birds, 39 reptiles and four amphibians. A breakdown of the fauna assemblage is provided below.

4.2.1 Mammals

The surveys recorded 27 mammal species within the survey area, including seven introduced and 20 native mammals. The composition of native species includes nine bats, two native rodent, two macropod, four small dasyurids, Echidna and seven introduced mammals. The most specious family was the microchiropteran Vespertilion bats (8 species), murids (three species) with macropods, Molossid bats, dasyurids and Bovids each having two species. The remaining families were all singular.

Bats were recorded via echolocation, therefore only presence or absence information could be collected. Some species overlap in call identification and therefore may represent multiple species (such as in the *Nyctophilus* group). In any case in this region there are no species that are of conservation significance. A breakdown of mammal families recorded during the surveys is provided in Table 11.

Table 11 Mammal families recorded during the field surveys

Mammal Family	No. of species
Bovidae (Ruminants)	2
Canidae (Dog)	1
Dasyuridae (Dunnarts)	4
Equidae (Horse)	1
Felidae (Cat)	1
Leporidae (Rabbit)	1
Molossidae (Freetail Bats)	3
Muridae (Rodents)	3
Macropodidae (Kangaroos)	2
Tachyglossidae (Echidna)	1
Vespertilionidae (Bats)	8
Total	**27**

4.2.2 Birds

The bird surveys (from the Level 2) identified 83 bird species from 37 families. The most specious families were the Meliphagidae (nine species), Acanthizidae (eight species), Accipitridae (seven species) and Artamidae (six species. A breakdown of bird families recorded during the survey is provided in Table 12.

The Night Parrot (*Pezoporus occidentalis*) was specifically targeted for assessment utilising SM4 Accoustic Songmeters ® in suspected habitat areas (Chenopod Plain) as shown in Table 4 and Figure 3. The Chenopod plain within the survey area was relatively small and isolated in the environment and despite 4 songmeter units being deployed for a combined total of 54 nights (one site at a water point within the Chenopod) no evidence of Night Parrot was recorded. The songmetres recorded 29 opportunistic bird species. The frequency range and call duration of many of these non-target bird species detected overlaps with the calls of the Night Parrot, and it can therefore be expected that the deployed Song Meter 4 units would have recorded any Night Parrot vocalisations had they occurred within a reasonable distance of a unit.

Table 12 Bird families recorded during the field surveys

Bird Family	No. of species
Accanthizidae (Weebill/Gerygone)	9
Accipitridae (Diurnal birds of prey)	7
Aegothelidae (Owlet Nightjar)	1
Artamidae (Magpie group)	6
Burhinidae (Stone Curlew)	1
Cacatuidae (Cockatoo group)	1
Campephagidae (Cuckoo-shrikes)	2
Casuariidae (Emu)	1
Charadriidae (Plover)	3
Climacteridae (Tree Creeper)	1
Columbidae (Doves)	2
Corvidae (Crow)	2
Cuculidae (Cuckoos)	1
Estrildidae (Finches)	1
Eupetidae (Quail Thrush)	1
Eurostopodidae (Nightjar)	1
Falconidae (Falcons)	2
Halcyonidae (Kingfishers)	2
Hirundinidae (Swallows)	3
Maluridae (Wrens)	2
Meliphagidae (Honeyeaters)	10
Monarchidae (Lark)	1
Motacillidae (Pipit)	1
Nectariniidae (Mistletoebird)	1
Neosittidae (Sittella)	1
Otididae (Bustard)	1
Pachycephalidae (Whistlers)	3
Pardalotidae (Pardalote)	1
Petroicidae (Robin)	2
Podargidae (Tawny Frog-mouth)	1
Pomatostomidae (Babblers)	2
Psittacidae (Parrots)	5
Ptilonorhynchidae (Bowerbird)	1
Rhipiduridae (Fantail)	1
Strigidae (Boobook)	1
Threskiornithidae (Ibis)	1
Tytonidae (Owl)	1
Total	**83**

4.2.3 Reptiles

A total of 39 reptile species were recorded during the field surveys from nine families. The most specious families were the Scincidae (13 species), Agamidae (6 species) and Elapids (6 species). A breakdown of reptile families recorded during the survey is provided in Table 13.

Table 13 Reptile families recorded during the field surveys

Reptile Family	No. of species
Agamidae (Dragons)	6
Boidae (Pythons)	1
Carphodactylidae (Terrestrial Gecko)	1

Reptile Family	No. of species
Diplodactylidae (Geckos)	4
Elapidae (Snakes)	6
Gekkonidae (Geckos)	4
Pygopodidae (Legless Lizards)	2
Scincidae (Skinks)	13
Varanidae (Monitors)	2
Total	**39**

4.2.4 Amphibians

Four amphibian species were recorded in the survey area during the surveys from three families. Myobatrachidae had two species with other frog families having one each. Forty eight amphibian individuals were recorded with Central Burrowing Frog recording 30 individuals (62.5% of total amphibian recordings). The remaining species were Little Red Tree Frog, Guenther's Toadlet and Western Toadlet.

4.2.5 Introduced Species

Mammals comprised the only group in which introduced fauna were recorded. In total seven species were observed and included;

- Cattle (*Bos taurus*)
- Goat (*Capra hircus*)
- Dog (*Canus familiaris*)
- Horse (*Equus caballus*)
- Cat (*Felis catus*)
- European Rabbit (*Oryctolagus cuniculus*)
- House Mouse (*Mus musculus*)

The Cattle and Horses are managed fauna by Carlaminda station, while the Goat are freely managed and utilised by the pastoral industry. The remaining species are considered feral fauna species to the region.

4.3 Conservation Significant Fauna

Two conservation significant fauna species were recorded within the survey area during the field survey. This included:

- Western Spiny-tailed Skink (*Egernia stokesii subsp. badia*) – listed under Schedule 3 (Vulnerable) under the BC Act and Endangered under the EPBC Act. Scat latrines and individual animals were detected at a number of locations both within the survey area and in close proximity outside the survey area indicating the presence of skink colonies. These were located in rocky outcrops, primarily granite and quartz outcrop in the north-eastern portion of the survey area and adjacent areas. Only one scat latrine was found within banded ironstone formation, this was in eastern portion of the survey area. All detected skink locations are presented in Figure 5.
- The Long-tailed Dunnart (*Sminthopsis longicaudata*) – listed as Priority 4 by the DBCA was recorded within mixed Acacia plain in the north-western portion of the study area. It is also likely to occur within rocky and stony areas including granite formations and banded ironstone ridgelines.

Likelihood of occurrence assessment

In addition to the field survey results, an assessment on the likelihood of conservation significant species occurring in the survey area was undertaken. This assessment is based on species' biology, habitat requirements, the quality and availability of suitable habitat as determined during the field survey and records of the species in the survey area and locality. Species-specific searches of the DPaW NatureMap database with a buffer of 40 km were also conducted in order to gather information about the broader regional occurrence of species to further inform the likelihood of occurrence assessment. Some species identified in the Protected Matters Search tool are not realistically considered to occur in the survey area or are not terrestrial vertebrate species and have been excluded from the assessment.

In total, including those recorded at the survey area, one other species is likely to occur in the region. Table 14 summarises the species of conservation significance that are either known or considered likely to occur in the survey area. A brief description of these species and their associated habitat types within the survey area are described below. The parameters of assessment for this likelihood of occurrence assessment and the full likelihood of occurrence assessment are provided in Appendix E.

Table 14 Summary of likelihood of occurrence assessment for conservation significant fauna species deemed known or likely to occur

Species	EPBC Act	BC Act/ DPaW	Assessment outcome
Birds			
Peregrine Falcon (*Falco peregrinus*)	-	S7 (SP)	**Likely.** The species is known from the region, however use would be opportunistic and utilised for foraging purposes only. No breeding habitat is present in the survey area.
Mammals			
Long-tailed dunnart (*Sminthopsis longicaudata*)	-	P4	**Known.** The species was recorded during the Level 2 survey and shown in Figure 5. A single animal was trapped within Acacia (Mulga woodland) plain.
Reptiles			
Western Spiny-tailed Skink (*Egernia stokesii* subsp. *badia*)	En	Vu	**Known.** The species was observed in a number of granite outcrop areas and one BIF location of the survey area. This was based on the sighting of individual animals in rock crevices, and the presence of extensive scat latrines indicating the presents of skink colonies.
Gilled Slender Blue-tongue (*Cyclodomorphus branchialis*)		Vu	**Likely.** The species is known from the region with records present east, west and south of the survey area. No specimens were recorded during the field survey. Granite formations and banded ironstone areas represent potentially suitable habitat.

Key – S7 (SP) = Schedule 7, Special Protection under BC Act, Mi = Migratory under EPBC Act, S5 = Schedule 5, Migratory under international Agreement under BC Act, S3 (Vu) = Schedule 3, Vulnerable under BC Act, P1 = Priority 1 under DPaW, P2 = Priority 2 under DPaW.

Fauna species recorded in the survey area

Western Spiny-tailed skink (*Egernia stokesii badia*)

The Western Spiny-tailed Skink (*Egernia stokesii badia*) is listed as an endangered species under the *Environment Protection and Biodiversity Conservation Act 1999* and Vulnerable under the *Biodiversity Conservation Act 2016*.

Western Spiny-tailed Skinks historically has a patchy distribution which inhabit arid and semi-arid areas of Western Australia. In the northern portion of their range they are found on Dirk Hartog Island and adjacent mainland to the northern Wheatbelt in the areas of Mullewa south to Kellerberrin, Perenjori and Mukinbudin in the south. The sub-species varies in habitat use within their range with a rock dwelling population persisting from about Yalgoo to the Cue area including Woolgorong Rock and Twin Peaks Stations (Storr et al 1999, Pearson 2012). The remainder of the population utilises aged woodlands and shrublands with good ground cover and sufficient hide structures, sheltering in logs and hollow branches (Cogger et al 1993, Pearson 2012).

Surveys conducted by Department of the Environment and Conservation in the Wheatbelt and associated regional reserves recorded one population of skinks in a protected reserve and numerous populations in abandoned farm dwellings in the northern Wheat belt (Pearson 2012).

The species lives in family colonies which comprises of 2-17 individuals in secure environment such as hollow logs or exfoliating rock (Duffield 2002). Occasionally rocky sites are occupied by single animals.

During the field survey four broad locations recorded the Western Spiny-tailed Skink. Three locations were present in granitic and quartz areas with one latrine site identified within the BIF formation. Records included actual individual observations or signs of the species via the presence of latrine sites. All observations have been mapped and are presented in Figure 5, and all observations are shown in Table 15. This species was also recorded in several rocky areas outside, but in close proximity to the survey area representing part of the wider local skink population. It should be noted that mapped skink colony presence was confirmed based on either skinks being detected, or extensive scat latrine present even if no skink was detected.

Observations of animals was between 1 and five skinks seen at each location, with two locations recording juveniles as well as adults. Camera traps recorded activity at the most northern site (along the northern boundary of the survey area) which consisted of basking (adults and juveniles) and mating or territorial male behaviour.

Plate 3 Adult Western Spiny-tailed skink in granitic habitat

Plate 4 Western Spiny-tailed Skink latrine site

Table 15 Western Spiny-tailed Skink locations

Site ID	Skinks observed	Scat latrine notes	Easting	Northing
1	one adult	scats present	482756	6883608
2		fresh scats present	482975	6883339
3		fresh scats present	482975	6883339
4		scats present	483124	6883109
5		scats present	483169	6883002
6		fresh scats present	482597	6883406
7		scats present	479903	6877407
8		fresh scats present	482569	6883529
9	one adult	fresh scats present	486485	6876391
10		scats present	486507	6876377
11	one adult	fresh scats present	486464	6876432
12		scats present	486523	6876385
13	one adult	fresh scats present	486534	6881550
14		scats present	486574	6881547
15		scats present	486576	6881523
16		scats present	486576	6881191
17		scats present	486582	6881192
18	two adults	large scat latrine	485361	6881167

Site ID	Skinks observed	Scat latrine notes	Easting	Northing
19	one skink	large scat latrine	485216	6881633
20	one skink	large scat latrine, found in quartz	485146	6881493
21		large scat latrine	484535	6882370
22		large scat latrine	484422	6882543
23		small scat latrine, small colony or temp shelter	484395	6882660
24		large scat latrine	484661	6882792
25		small latrine, fresh scats, may be lone adult	484736	6882713
26		large scat latrine, found in quartz	485398	6881717
27		scat latrine. mod number scats	485413	6881670
28		fresh scat pile	484693	6881282
29		considerable scat piles	484774	6881310
30		large scat piles, colonial	484388	6881839
31		solitary, small scat pile	484170	6882372
32		extensive quarts boulders, large scat pile	485001	6881415
33		few old scats, possibly solitary individual	485409	6880817
34	three skinks	fresh scat piles, colonial	483347	6883034
35	one skink	large scat pile, colonial	483415	6883022
36		small scat latrine	486748	6878377
37	one skink	large scat latrine, colonial	486706	6878340
38	one skink	scat latrine, colonial	486699	6878328
39		Few old skink scats, potential release site	485382	6881123
40		large scat pile, colonial, outside survey area	489085	6880558
41		large scat pile, colonial, outside survey area	489100	6881037
42	adults and juveniles	large scat pile, colonial, outside survey area black morph	489011	6880939
43		large scat piles in several locations, colonial, outside survey area located	489014	6880865

Fauna species likely to be in the survey area

Long-tailed dunnart (Sminthopsis longicaudata)

The Long-tailed Dunnart is listed as Priority 4 under DBCA managed species list.

The Long-tailed Dunnart is a unique species of Dunnart as it is the only species which has tail length double the length of its body with a terminal tuft (Menkhorst and Knight 2004). The longer tail enables the species to negotiate rapidly around obstacles within a rocky environment. The species utilises rocky ranges, outcrops and breakaways environments within the Pilbara, Gascoyne, Murchison and northern Goldfields (Van Dyck et al. 2013). The records of the Long-tailed Dunnart come from widely scattered localities in the arid zone where it inhabits rugged, rocky areas including scree slopes, boulder and stony plateaus, and adjacent stony plains with shrubs over spinifex grasslands (Van Dyck et al. 2013). The scattered records are possibly an artefact of the environment which it utilises. However the species may be locally common at times and numerous records are represented from some localities. The species is known to feed on arthropods, including mainly beetles and ants, but also spiders, cockroaches, centipedes, grasshoppers, flies and various larvae (Van Dyck et al. 2013).

During the field survey the Long-tailed dunnarts was recorded with a single animal trapped within Acacia (Mulga woodland) plain. This species is likely to occur in other habitat types within the survey area, namely banded ironstone and granitic formations.

Plate 4 Long-tailed Dunnart recorded during survey

Gilled Slender Blue-tongue (*Cyclodomorphus branchialis*)

The Gilled Slender Bluetongue is listed as vulnerable under the WA Biodiversity Conservation Act.

The Gilled Slender Bluetongue is a small distinctly patterned skink up to 16 cm long (Bush et.al 2007). The species is cryptic, and poorly known with relatively few specimens recorded throughout its range. The species is found in the mid-west region of WA between the Murchison and Irwin Rivers and extending inland to Mt Magnet area (Bush et al 2007). It is a ground-dwelling lizard of largely crepuscular and nocturnal habitat, sheltering by day below low vegetation, leaf-litter, and under fallen timber (Cogger 2014) and beneath rocks (Brad Maryan pers.comm).

During the field survey the Gilled Slender Bluetongue was not recorded however the species has been recorded in the region, with the closest record 45 km south and approximately 95 km east of the survey area. Rocky areas, namely banded ironstone and granitic formations represent potentially suitable habitat.

Peregrine Falcon (*Falco peregrinus*)

The Peregrine Falcon is listed as Special Protection under the Wildlife Conservation Act.

The Peregrine Falcon is a large falcon species which predominantly preys aerially on medium sized birds such as Pigeon, Galah and ducks. The species prefers areas with deep gorges or large cliff faces with riparian or plain habitat surrounding. The Peregrine Falcon nests primarily on ledges of cliffs, shallow tree hollows, and ledges of buildings in cities (Morcombe 2004). The Peregrine Falcon is wide ranging, mobile and aerial in nature, and therefore is likely to utilise all of the habitats within the survey area.

No large rocky cliff faces are present within the survey area, however habitat is available to the species in the remainder of the survey area for foraging. There are no suitable nesting areas for this species present within the survey area.

4.3.1 Accumulation curve

An accumulation curve was run for the data collected during the field survey within 8 models in Primer V6 (Plate 5). Chao1, Chao2 and Jacknife2 curves demonstrate poor fit to the data, while the remaining curves reach a curve asymptote (very few new species were recorded) after trap night 10. For Jacknife1, Bootstrap, MM and UGE somewhat model levelling is demonstrated by the end of the survey indicating that of the species active at the time of the survey a majority of them were sampled prior to the end of the project. This is also comparable to the raw data of which the known species in the region (of reptile, small mammal and frogs) approximately 53 could utilise the habitats present in the survey area (based on NatureMap records). This study recorded 40 similar in numbers to the dendrogram.

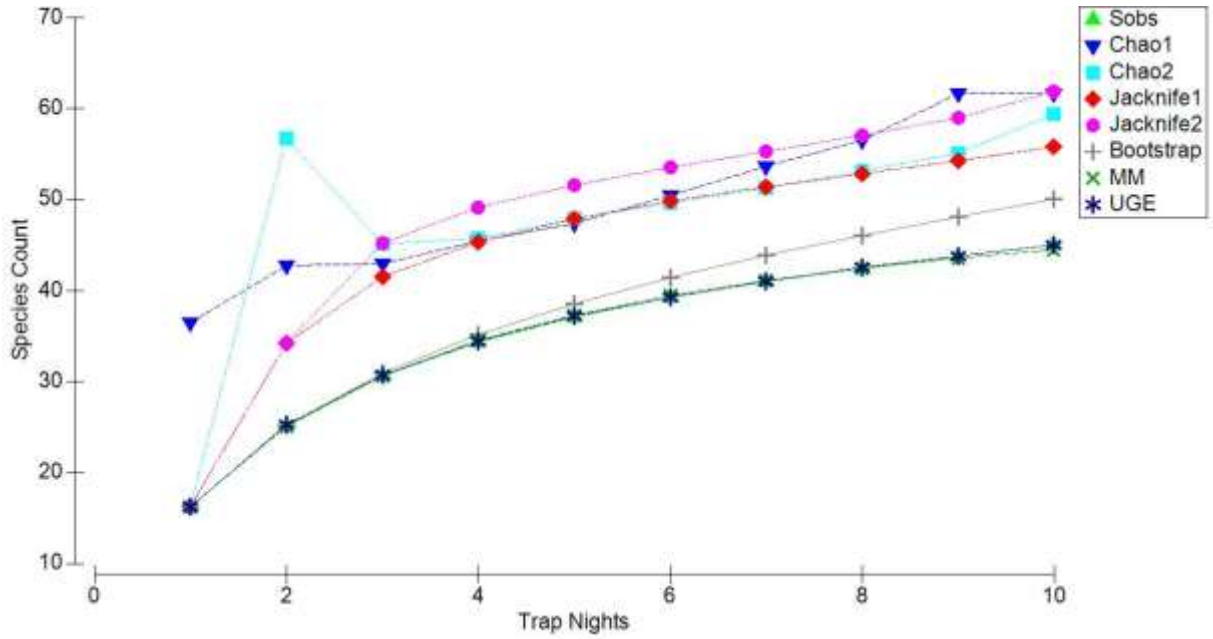

Plate 5 Dendrogram of species accumulation over time

5. Conclusion

The Survey Area consists of six broad fauna habitat types: Banded Ironstone Formation (BIF) Ridgelines, Riparian/Creek line, Flood Plain, Chenopod Plain, Mixed Acacia Plain, Granitic formations.

The conservation value of each habitat type has been rated based on condition, structural complexity, faunal diversity and habitat for conservation significant fauna (i.e. contains essential habitat for breeding and/or feeding). Habitat values for the six types are all considered high to moderate value. A very small amount of the Survey Area is disturbed and comprises existing tracks, old fencing and historical cleared areas for stock water points.

The DBCA NatureMap search identifies that 192 vertebrate fauna taxa previously recorded within 40 km radius of the survey area. This total included eight amphibians, 129 birds, 10 mammals and 46 reptiles.

The trapping program recorded 153 vertebrate fauna species utilising the survey area, including 27 mammals, 83 birds, 39 reptiles and four amphibians. Off these seven introduced species were identified and were all mammals. Based on the database search, the two-phase trapping program produced good diversity of species for the survey area. It is likely that a different suite of faunal groups would be present in other times in the year i.e. amphibians in autumn/winter and seasonally moving species. Additionally, the area has few previous comprehensive or systematic surveys and as such the opportunities to compare results to other studies in the area are limited.

Two conservation significant fauna species were identified as present and a further two potentially occurring in the survey area based on a combination of observations and habitat assessment. Species known the persist in the survey area:

- The Western Spiny-tailed Skink (*Egernia stokesii badia*) is listed as an endangered species under the EPBC Act 1999 and Vulnerable under the BC Act; and
- Long-tailed Dunnart (*Sminthopsis longicaudata*) – Priority 4, DBCA

Species likely to be present in the survey area:

- Peregrine Falcon (*Falco peregrinus*) – Other special Protection under the BC Act
- Gilled Slender Bluetongue (*Cyclodomorphus branchialis*) – Vulnerable under the BC Act

Of the conservation significant species identified above, the Western Spiny-tailed Skink is the only species known to have specialised habitat requirements with populations that would rely on the rocky resources to persist within the survey area. However, this species is primarily reliant on granite and quartz outcrops, rather than banded ironstone formations within the survey area, therefore these local BIF formations may not be classified as high significance to this species.

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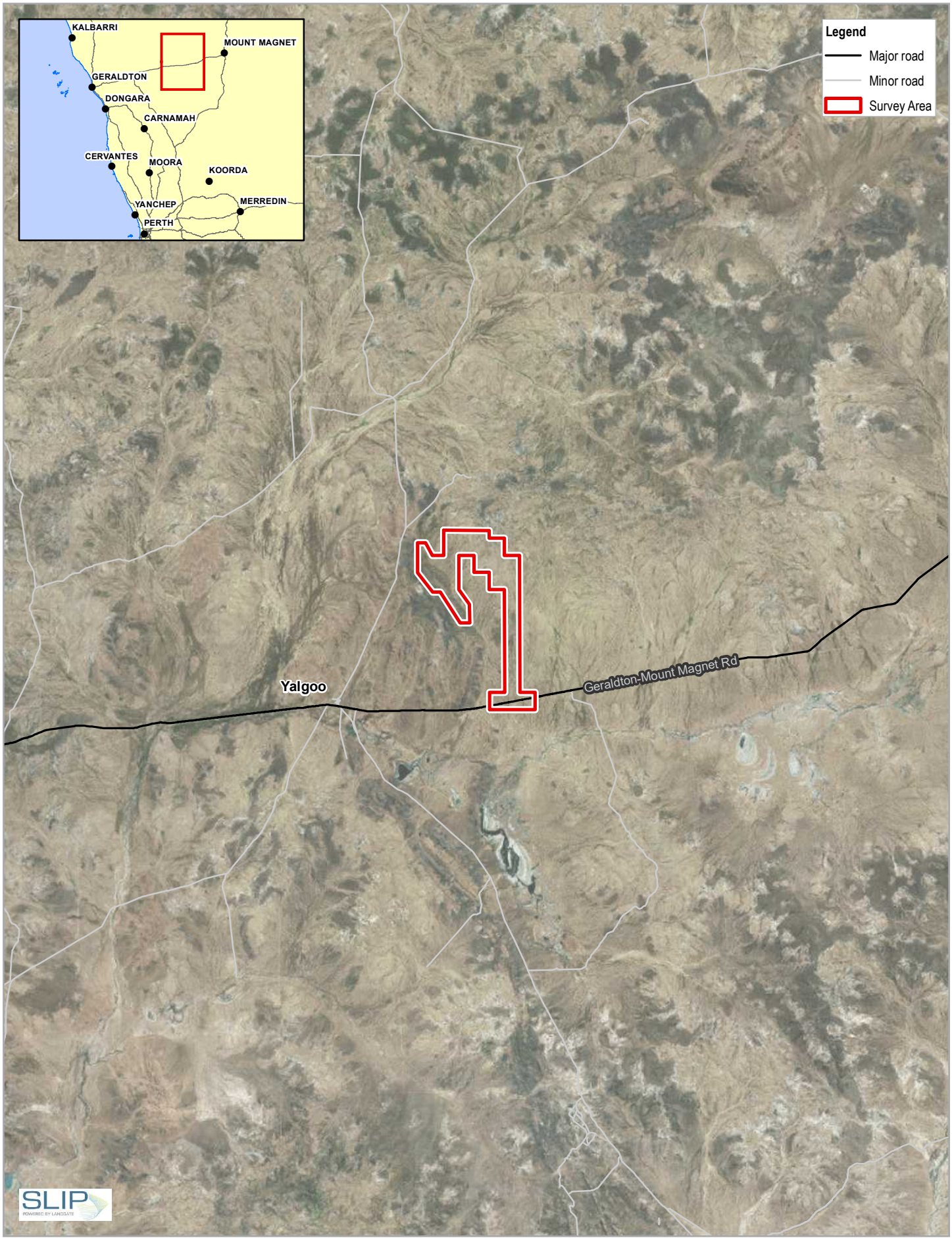
Appendices

Appendix A – Figures



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GHD

FI Joint Venture Pty Ltd
Yogi Fauna Survey

Project Location

Project No. **61-37117**
Revision No. **0**
Date **25 Mar 2019**

FIGURE 1

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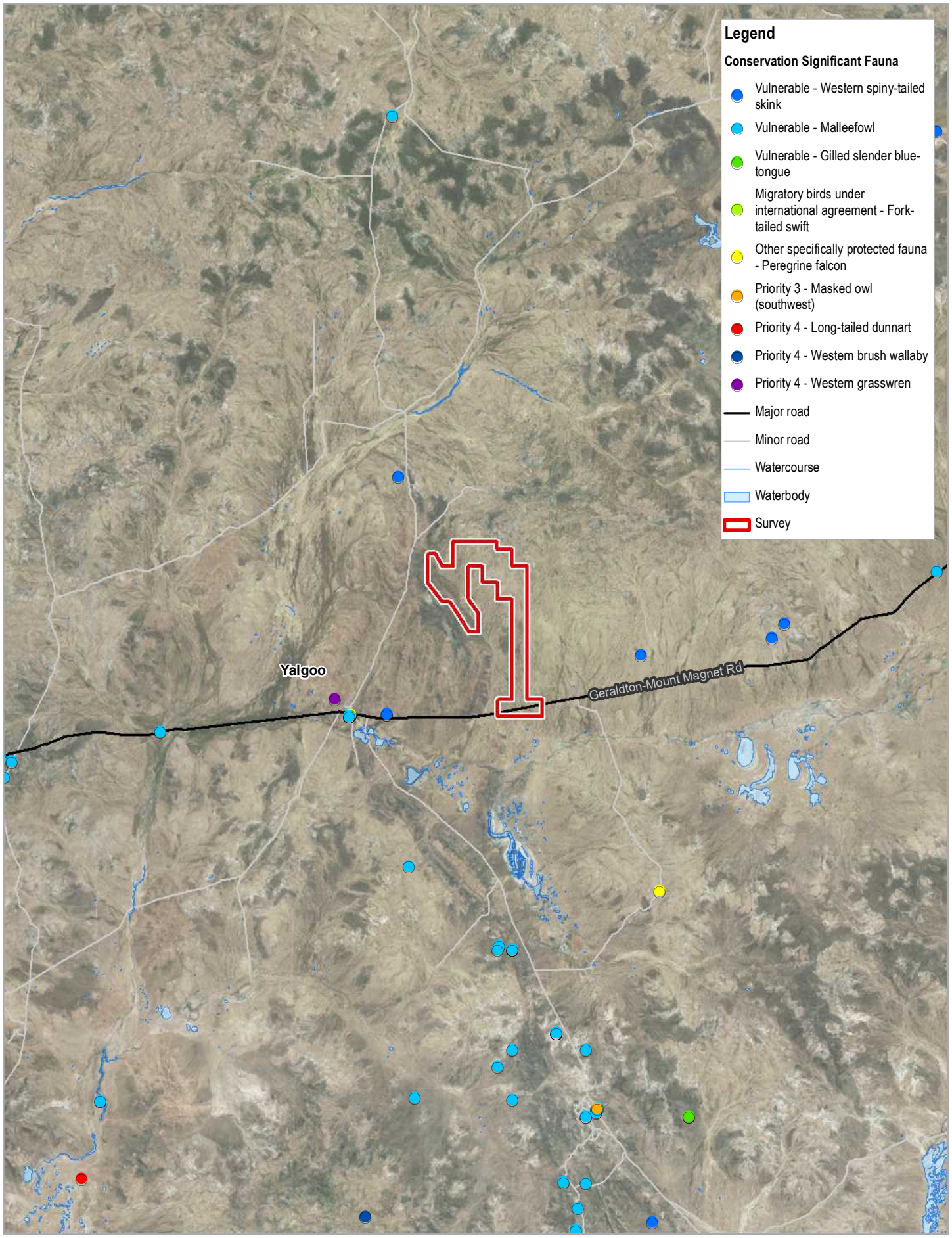

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FI Joint Venture Pty Ltd
Yogi Fauna Survey

Biological Constraints

Project No. **61-37117**
Revision No. **0**
Date **25 Mar 2019**

FIGURE 2

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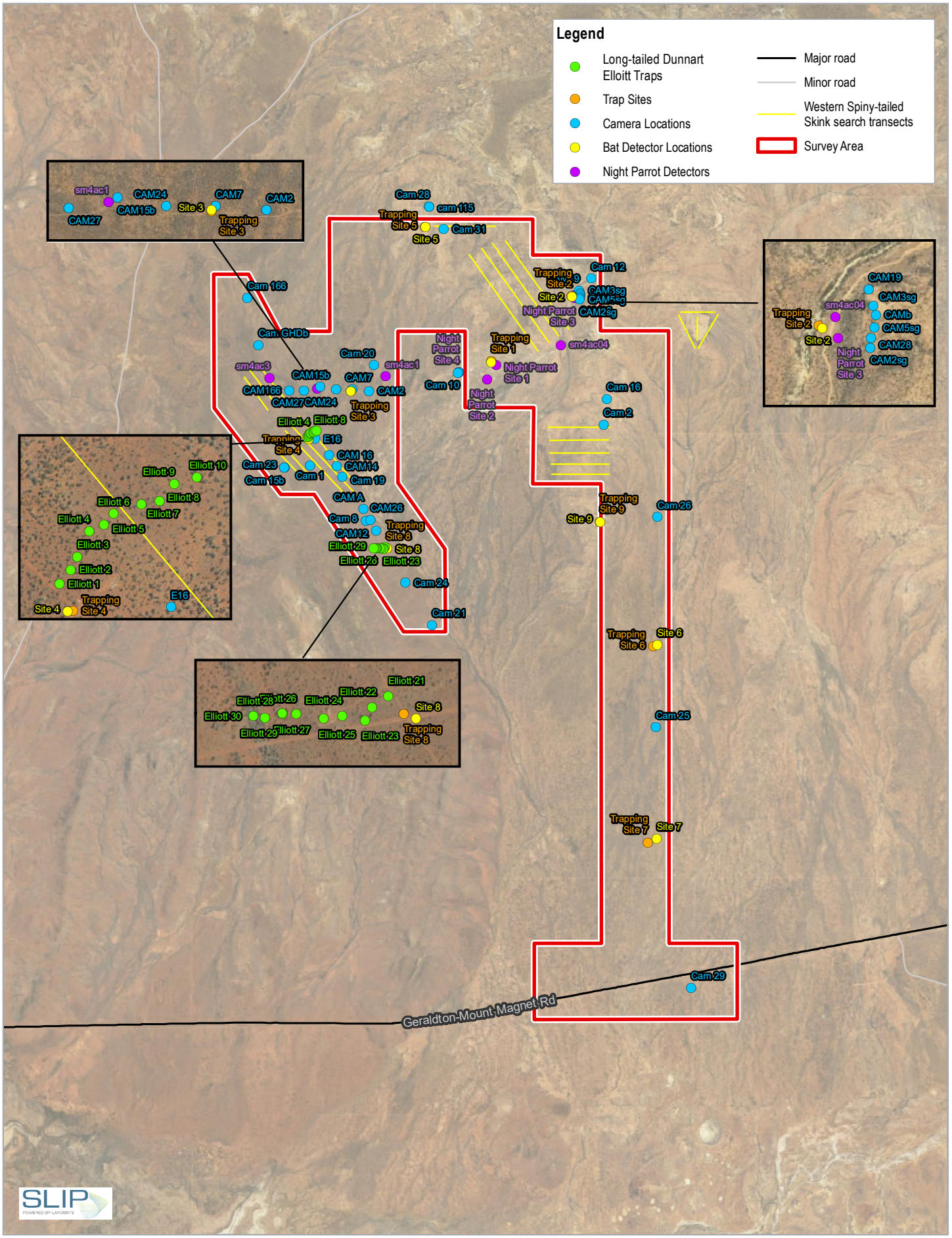

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FI Joint Venture Pty Ltd
Yogi Fauna Survey

Fauna Methods

Project No. **61-37117**
Revision No. **0**
Date **20 Feb 2020**

FIGURE 3

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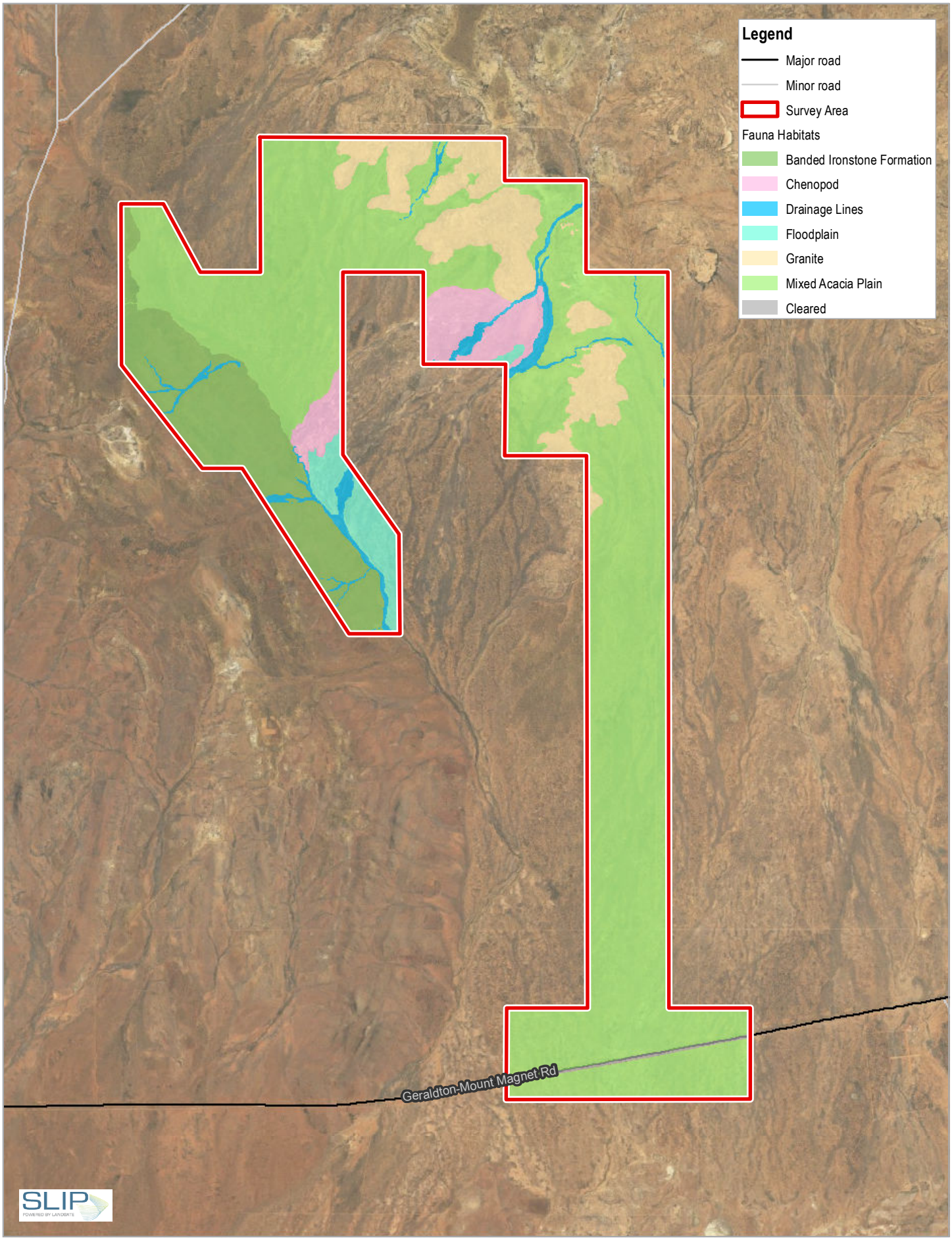

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Kilometres

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FI Joint Venture Pty Ltd
Yogi Fauna Survey

Fauna Habitats

Project No. **61-37117**
Revision No. **0**
Date **14 May 2019**

FIGURE 4

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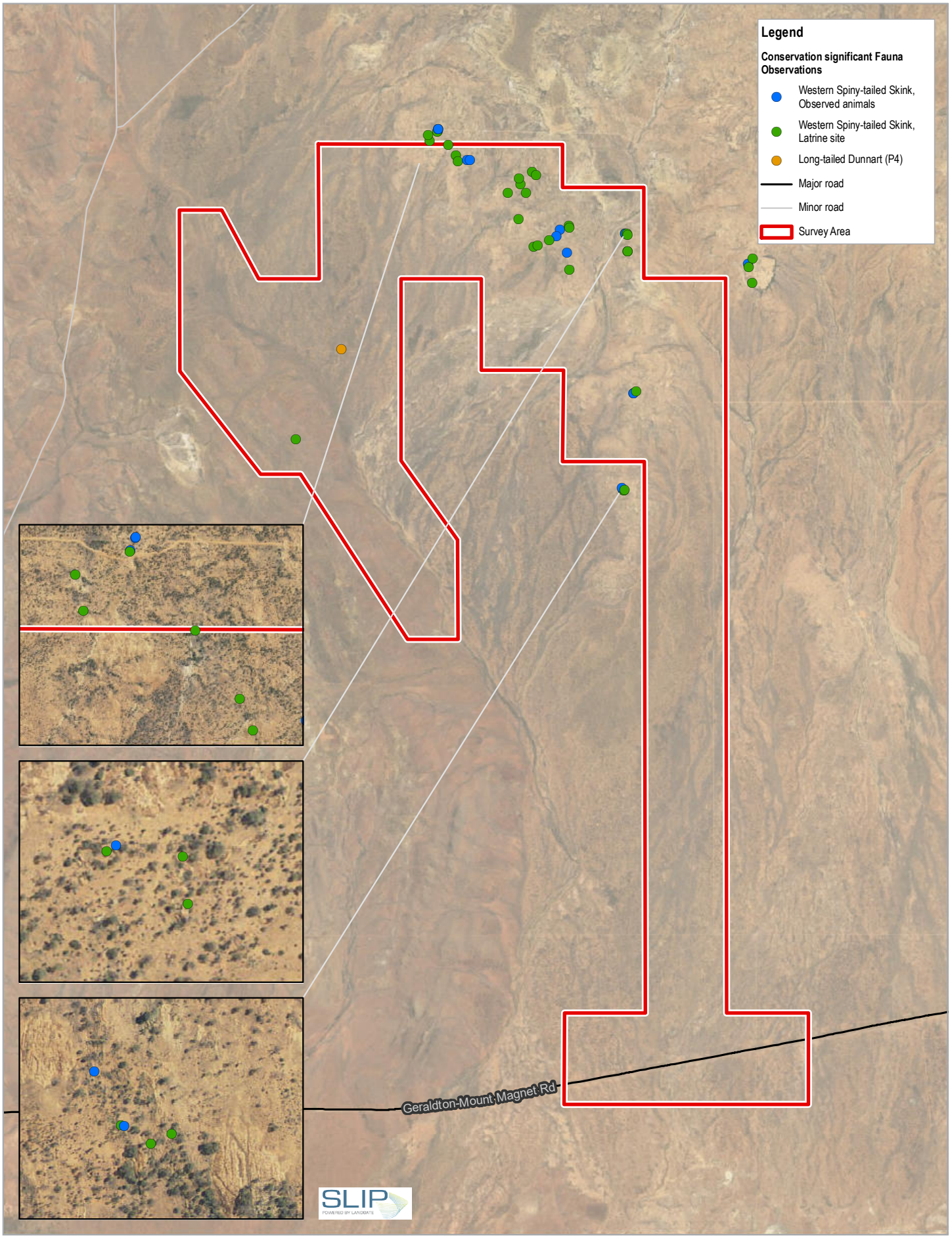

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Kilometres

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FI Joint Venture Pty Ltd
Yogi Fauna Survey

Fauna Results

Project No. **61-37117**
Revision No. **0**
Date **20 Feb 2020**

FIGURE 5

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Appendix B – Relevant legislation, conservation codes and background information

Relevant legislation

Federal *Environment Protection and Biodiversity Conservation Act 1999*

The *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) is the Federal Government's central piece of environmental legislation. It provides a legal framework to protect and manage nationally and internationally important flora, fauna, ecological communities and heritage places, which are defined in the EPBC Act as Matters of National Environmental Significance (MNES).

The biological aspects listed as MNES include:

- Nationally threatened flora and fauna species and ecological communities
- Migratory species

A person must not undertake an action that has, will have, or is likely to have a significant impact (direct or indirect) on MNES, without approval from the Federal Minister for the Environment.

The EPBC Act is administered by the Department of the Environment and Energy (DEE).

State *Environmental Protection Act 1986*

The *Environmental Protection Act 1986* (EP Act) is the primary legislative Act dealing with the protection of the environment in Western Australia. The Act allows the Environmental Protection Authority (EPA), to prevent, control and abate pollution and environmental harm, for the conservation, preservation, protection, enhancement and management of the environment and for matters incidental to or connected with the foregoing. Part IV of the EP Act is administered by the EPA and makes provisions for the EPA to undertake environmental impact assessment of significant proposals, strategic proposals and land use planning schemes.

The Department of Water and Environment Regulation (DWER) is responsible for administering the clearing provisions of the EP Act (Part V). Clearing of native vegetation in Western Australia requires a permit from the DWER, unless exemptions apply. Applications for clearing permits are assessed by the Department and decisions are made to grant or refuse the application in accordance with the Act. When making a decision the assessment considers clearing against the ten clearing principles as specified in Schedule 5 of the EP Act:

Exemptions for clearing include clearing that is a requirement of a written law or authorised under certain statutory processes (listed in Schedule 6 of the EP Act) and exemptions for prescribed low impact day-to-day activities (prescribed in the Environmental Protection (Clearing of Native Vegetation) Regulations 2004); these exemptions do not apply in environmentally sensitive areas (ESAs).

State *Biodiversity and Conservation Act 2016*

The *Biodiversity Conservation Act 2016* (BC Act) provides for the conservation and protection of biodiversity and biodiversity components, as well as the promotion of the ecologically sustainable use of biodiversity components in Western Australia. The BC Act replaces both the repealed *Wildlife Conservation Act 1950* (WC Act) and the *Sandalwood Act 1929* (Sandalwood Act), as well as their associated regulations. To attain the objectives of the BC Act, principles of ecological sustainable development have been established:

- Decision-making processes should effectively integrate both long-term and short-term economic, environmental, social and equitable considerations
- If there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation

- The present generation should ensure that the health, diversity and productivity of the environment is maintained or enhanced for the benefit of future generations
- The conservation of biodiversity and ecological integrity should be a fundamental consideration indecision-making
- Improved valuation, pricing and incentive mechanisms should be promoted.

The BC Act is administered by the Department of Biodiversity Conservation and Attractions (DBCA).

State *Biosecurity and Agriculture Management Act 2007*

The *Biosecurity and Agriculture Management Act 2007* (BAM Act) and associated regulations are administered by the Department of Primary Industries and Regional Development (DPIRD) and replace the repealed *Agriculture and Related Resources Protection Act 1976.* The main purposes of the BAM Act and its regulations are to:

- Prevent new animal and plant pests (vermin and weeds) and diseases from entering WA
- Manage the impact and spread of those pests already present in the state
- Safely manage the use of agricultural and veterinary chemicals
- Increased control over the sale of agricultural products that contain violative chemical residues.

The Western Australian Organism List (WAOL) provides the status of organisms which have been categorised under the BAM Act. A Declared Pest is a prohibited organism or an organism for which a declaration under Section 22(2) of the Act is in force. Declared Pests may be assigned a control category including: C1 (exclusion), C2 (eradication) and C3 (management). The category may apply to the whole of the State, LGAs, districts, individual properties or even paddocks, and all landholders are obliged to comply with the specific category of control. Categories of control are defined below.

DPIRD Categories for Declared Pests under the BAM Act

Control class code	Description
C1 (Exclusion)	Pests will be assigned to this category if they are not established in Western Australia and control measures are to be taken, including border checks, in order to prevent them entering and establishing in the State.
C2 (Eradication)	Pests will be assigned to this category if they are present in Western Australia in low enough numbers or in sufficiently limited areas that their eradication is still a possibility.
C3 (Management)	Pests will be assigned to this category if they are established in Western Australia but it is feasible, or desirable, to manage them in order to limit their damage. Control measures can prevent a C3 pest from increasing in population size or density or moving from an area in which it is established into an area which currently is free of that pest.

Fauna Conservation codes

Conservation significant fauna

The Federal conservation level of fauna species and their significance status is assessed under the EPBC Act. The significance levels for fauna used in the EPBC Act align with the International Union for Conservation of Nature (IUCN) Red List criteria, which are internationally recognised as providing best practice for assigning the conservation status of species. The EPBC Act also protects land and migratory species that are listed under International Agreements. The list of migratory species established under section 209 of the EPBC Act comprises:

- Migratory species which are native to Australia and are included in the appendices to the Bonn Convention (Convention on the Conservation of Migratory Species of Wild Animals Appendices I and II)
- Migratory species included in annexes established under the Japan-Australia Migratory Bird Agreement (JAMBA) and the China–Australia Migratory Bird Agreement (CAMBA)
- Native, migratory species identified in a list established under, or an instrument made under, an international agreement approved by the Minister, such as the republic of Korea–Australia Migratory Bird Agreement (ROKAMBA)

The State conservation level of fauna species and their significance status also follows the IUCN Red List criteria. Under the BC Act fauna can be listed as Threatened, Extinct and as Specially Protected species.

Threatened species are those are species which have been adequately searched for and are deemed to be, in the wild, either rare, under identifiable threat of extinction, or otherwise in need of special protection, and have been gazetted as such. The assessment of the conservation status of Threatened species is based on their national extent and ranked according to their level of threat using IUCN Red List categories and criteria. Specially protected 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. Species that are listed as Threatened or Extinct species under the BC Act cannot also be listed as Specially Protected species.

Possibly threatened species that do not meet survey criteria, or are otherwise data deficient, are added to the Priority Fauna List 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 flora or fauna.

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.

For the purposes of this assessment, all species listed under the EPBC Act, BC Act and DBCA Priority species are considered conservation significant.

Conservation categories and definitions for EPBC Act and BC Act listed fauna species

Conservation category	Definition
Threatened species	
Critically Endangered (CR)	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.
Endangered (EN)	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
Vulnerable (VU)	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.
Extinct species	
Extinct (EX)	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).
Extinct in the Wild (EW)	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).
Specially protected species	
Migratory (MI)	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

Conservation category	Definition
Species of special conservation interest (conservation dependent fauna) (CD)	Fauna of special conservation need being species dependent on ongoing conservation intervention to prevent it becoming eligible for listing as threatened.
Other specially protected fauna (OS)	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).

Conservation codes for DBCA listed Priority fauna

Priority category	Definition
Priority 1	Poorly-known taxa 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.
Priority 2	Poorly-known taxa 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.
Priority 3	Poorly-known taxa 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.
Priority 4	Rare, Near Threatened and other taxa in need of monitoring A. Rare: Taxa 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 taxa are usually represented on conservation lands. B. Near Threatened. Taxa that are considered to have been adequately surveyed and that do not qualify for Conservation Dependent, but that are close to qualifying for Vulnerable. C. Taxa that have been removed from the list of threatened taxa during the past five years for reasons other than taxonomy.

Other significant fauna

Fauna species may be significant for a range of reasons other than those protected by international agreement or treaty, Specially Protected or Priority Fauna. Significant fauna may include short-range endemic species, species that have declining populations or declining distributions, species at the extremes of their range, or isolated outlying populations, or species which may be undescribed (EPA 2010).

Appendix C – Desktop searches

EPBC Act PMST Report (40 km buffer)

NatureMap (40 km buffer)

Appendix D – Fauna data

Fauna species list

Fauna likelihood of occurrence assessment guideline and definitions

Fauna likelihood of occurrence assessment

Species identified from remote camera

Trapping Data

Species recorded from all studies in the region and this survey

Genus	Species	Common Name	Cons. Listing	Nature Maps Data Search	EPBC PMS	Coffey Env. (2008)	Maryan pers comm. (2018)	Level 1 GHD (2018)	Level 2 GHD (2018/ 2020)
Birds									
Acanthiza	*apicalis*	Inland Thornbill		X		X		X	X
Acanthiza	*chrysorrhoa*	Yellow-rumped Thornbill		X					X
Acanthiza	*robustirostris*	Slaty-backed Thornbill		X					X
Acanthiza	*uropygialis*	Chestnut-rumped Thornbill		X		X			X
Aphelocephala	*leucopsis*	Southern Whiteface		X		X		X	X
Sericornis	*frontalis*	White-browed Scrubwren		X					
Smicrornis	*brevirostris*	Weebill							X
Gerygone	*fusca*	Western Gerygone		X					X
Pyrrholaemus	*brunneus*	Redthroat		X					X
Aquila	*audax*	Wedge-tailed Eagle		X		X		X	X
Accipiter	*cirrocephalus*	Collared Sparrowhawk		X					X
Accipiter	*fasciatus*	Brown Goshawk		X					X
Circus	*assimilis*	Spotted Harrier							X
Elanus	*axillaris*	Black-shouldered Kite		X					
Haliastur	*sphenurus*	Whistling Kite		X				X	X
Hamirostra	*melanosternon*	Black-breasted Buzzard							X
Hieraaetus	*morphnoides*	Little Eagle							X
Acrocephalus	*australis*	Australian Reed Warbler		X					
Aegotheles	*cristatus*	Australian Owlet-nightjar		X					X
Anus	*gracilis*	Grey Teal		X					
Anus	*superciliosa*	Pacific Black Duck		X					
Aythya	*australis*	Hardhead		X					
Biziura	*lobata*	Musk Duck		X					
Chenonetta	*jubata*	Wood Duck		X					
Cygnus	*atratus*	Black Swan		X					
Malacorhynchus	*membranaceus*	Pink-eared Duck		X					

Genus	Species	Common Name	Cons. Listing	Nature Maps Data Search	EPBC PMS	Coffey Env. (2008)	Maryan pers comm. (2018)	Level 1 GHD (2018)	Level 2 GHD (2018/ 2020)
Tadoma	*tadornoides*	Mountain Duck		X					
Apus	*pacificus*	Fork-tailed Swift	IA,Ma, Mi	X	X				
Ardea	*pacifica*	White-necked Heron		X					
Egretta	*novaehollandiae*	White-faced Heron		X					
Artamus	*cinereus*	Black-faced Woodswallow		X				X	X
Artamus	*minor*	Little Woodswallow		X					X
Artamus	*personatus*	Masked Woodswallow		X		X			X
Cracticus	*tiibicen*	Australian Magpie		X		X		X	X
Cracticus	*nigrogularis*	Pied Butcherbird		X		X		X	X
Cracticus	*torquatus*	Grey Butcherbird		X					X
Burhinus	*grallarius*	Bush-stone Curlew		X					X
Calyptorhynchus	*banksii samueli*	Red-tailed Black Cockatoo		X					
Eolophus	*roseicapilla*	Pink and Grey Galah		X		X		X	X
Nymphicus	*hollandicus*	Cockatiel		X					
Coracina	*maxima*	Ground Cuckoo-shrike		X					
Coracina	*novaehollandiae*	Black-faced Cuckoo-shrike		X		X		X	X
Lalage	*sueurii*	White-winged Triller		X					X
Dromaius	*novaehollandiae*	Emu		X		X		X	X
Charadrius	*melanops*	Black-fronted Dotterel		X					
Charadrius	*ruficapillus*	Red-capped Plover		X					X
Erythrogonys	*cinctus*	Red-kneed Dotterel		X					
Peltohyas	*australis*	Inland Plover							X
Vanellus	*tricolor*	Banded Lapwing		X				X	X
Climacteris	*affinis*	White-browed Treecreeper		X					X
Geopelia	*cuneatus*	Diamond Dove		X				X	
Ocyphaps	*lophotes*	Crested Pigeon		X		X		X	X
Phaps	*chalcoptera*	Common Bronzewing		X		X		X	X
Streptopelia	*senegalensis*	Laughing Turtle-Dove	int	X					

Genus	Species	Common Name	Cons. Listing	Nature Maps Data Search	EPBC PMS	Coffey Env. (2008)	Maryan pers comm. (2018)	Level 1 GHD (2018)	Level 2 GHD (2018/ 2020)
Corvus	*bennetti*	Little Crow		X		X			
Corvus	*coronoides*	Australian Raven		X					
Corvus	*orru*	Torresian Crow		X		X		X	X
Cacomantis	*pallidus*	Pallid Cuckoo		X					X
Chalcites	*basalis*	Horsefield's Bronze-cuckoo		X				X	
Chalcites	*osculans*	Black-eared Cuckoo		X					
Taeniopygia	*guttata*	Zebra Finch		X		X			X
Cinclosoma	*castaneothorax*	Chestnut-breasted Quail-thrush		X				X	X
Cinclosoma	*marginatum*	Western Quail-thrush		X		X			
Psophodes	*occidentalis*	Chiming Wedgebill		X		X		X	
Eurostopodus	*argus*	Spotted Nightjar		X		X			X
Falco	*berigora*	Brown Falcon		X		X		X	X
Falco	*cenchroides*	Nankeen Kestrel		X		X		X	X
Falco	*longipennis*	Australian Hobby		X				X	
Falco	*peregrinus*	Peregrine Falcon	SP	X					
Todiramphus	*pyrrhopygia*	Red-backed Kingfisher		X					X
Todiramphus	*sanctus*	Sacred Kingfisher		X					X
Cheramoeca	*leucosterna*	White-backed Swallow		X				X	X
Hirundo	*ariel*	Fairy Martin		X					
Hirundo	*neoxena*	Welcome Swallow		X		X		X	X
Petrochelidon	*nigricans*	Tree Martin		X		X			X
Amytornis	*textilis textilis*	Thick-billed Grasswren	P4	X					
Malurus	*lamberti*	Variegated Fairy-wren		X		X			
Malurus	*leucopterus*	White-winged Fairy-wren		X					X
Malurus	*splendens*	Splendid Fairy-wren		X					X
Leipoa	*ocellata*	Malleefowl	Vu, Vu	X	X				
Acanthagenys	*rufogularis*	Spiny-cheeked Honeyeater		X		X		X	X
Certhionyx	*niger*	Black Honeyeater							X
Certhionyx	*variegatus*	Pied Honeyeater		X				X	X

Genus	Species	Common Name	Cons. Listing	Nature Maps Data Search	EPBC PMS	Coffey Env. (2008)	Maryan pers comm. (2018)	Level 1 GHD (2018)	Level 2 GHD (2018/ 2020)
Epthianura	*tricolor*	Crimson Chat		X					X
Epthianura	*albifrons*	White-fronted Chat		X					
Lacustroica	*whitei*	Grey Honeyeater		X					
Lichenostomus	*plumulus*	Grey-fronted Honeyeater							X
Lichenostomus	*virescens*	Singing Honeyeater		X		X		X	X
Lichenostomus	*pedunculatus*	White-plumed Honeyeater		X					X
Lichmera	*indistincta*	Brown Honeyeater		X				X	X
Manorina	*flavigula*	Yellow-throated Miner		X		X			X
Phylidonyris	*albifrons*	White-fronted Honeyeater		X					X
Merops	*ornatus*	Rainbow Bee-eater				X			
Grallina	*cyanoleuca*	Magpie-lark		X				X	X
Anthus	*novaeseelandiae*	Australian Pipit						X	X
Motacilla	*cinerea*	Grey Wagtail	IA, Ma, Mi		X				
Dicaeum	*hirundinaceum*	Mistletoebird		X					X
Daphoenositta	*chrysoptera*	Varied Sittella		X					X
Ardeotis	*australis*	Australian Bustard		X				X	X
Colluricincla	*harmonica*	Grey Shrike-thrush		X		X		X	X
Oreoica	*gutturalis*	Crested Bellbird		X		X			X
Pachycephala	*inornata*	Gilbert's Whistler		X					
Pachycephala	*rufiventris*	Rufous Whistler		X		X			X
Pardalotus	*striatus*	Striated Pardalote		X					X
Drymodes	*brunneopygia*	Southern Scrub-robin				X			
Melanodryas	*cucullata*	Hooded Robin		X					X
Microeca	*fascinan*	Jacky Winter						X	
Petroica	*goodenovii*	Red-capped Robin		X		X		X	X
Phalacrocorax	*varius*	Pied Cormorant		X					
Podargus	*strigoides*	Tawny Frogmouth		X					X
Poliocephalus	*poliocephalus*	Hoary-headed Grebe		X					

Genus	Species	Common Name	Cons. Listing	Nature Maps Data Search	EPBC PMS	Coffey Env. (2008)	Maryan pers comm. (2018)	Level 1 GHD (2018)	Level 2 GHD (2018/ 2020)
Tachybaptus	*novarhollandiae*	Australasian Grebe		X					
Podiceps	*cristatus*	Great-crested Grebe		X					
Pomatostomus	*superciliosus*	White-browed Babbler		X		X		X	X
Pomatostomus	*temporalis*	Grey-crowned Babbler		X					X
Barnardius	*zonarius*	Port Lincoln Parrot				X		X	X
Melopsittacus	*undulatus*	Budgerigar		X					X
Neopsephotus	*bourkii*	Bourke's Parrot		X					X
Pezoporus	*occidentalis*	Night Parrot	En, En		X				
Polytelis	*anthopeplus anthopeplus*	Regent Parrot							X
Psephotus	*varius*	Mulga Parrot		X		X		X	X
Ptilonorhynchus	*guttatus*	Western Bowerbird							X
Fulica	*atra*	Eurasian Coot		X					
Porzana	*fluminea*	Australian Spotted Crake		X					
Gallinula	*ventralis*	Black-tailed Native-hen		X					
Cladorhynchus	*leucocephalus*	Banded Stilt		X					
Himantopus	*himantopus*	Black-winged Stilt		X					
Recurvirostra	*novaehollandiae*	Red-necked Avocet		X					
Rhipidura	*albicauda*	Grey Fantail		X					
Rhipidura	*leucophrys*	Willie Wagtail		X		X		X	X
Actitis	*hypoleucos*	Common Sandpiper	IA, Ma, Mi		X				
Calidris	*acuminata*	Sharp-tailed Sandpiper	IA, Ma, Mi		X				
Calidris	*ferruginea*	Curlew Sandpiper	IA, Vu, Cr		X				
Calidris	*melanotos*	Pectoral Sandpiper	IA, Ma, Mi		X				
Tringa	*nebularia*	Common Greenshank	IA, Ma, Mi		X				
Ninox	*novaeseelandiae*	Southern Boobook							X

Genus	Species	Common Name	Cons. Listing	Nature Maps Data Search	EPBC PMS	Coffey Env. (2008)	Maryan pers comm. (2018)	Level 1 GHD (2018)	Level 2 GHD (2018/ 2020)
Threskiornis	*spinicollis*	Straw-necked Ibis		X					X
Tyto	*alba*	Eastern Barn Owl							X
Zosterops	*lateralis gouldi*	Silvereye		X					
Reptiles									
Gowidon	*longirostris*	Long-snouted Water Dragon							X
Ctenophorus	*cristatus*	Crested Dragon				X			
Ctenophorus	*maculatus*	Military Dragon				X			
Ctenophorus	*nuchalis*	Central Netted Dragon		X					X
Ctenophorus	*ornatus*	Ornate Rock Dragon		X			X		
Ctenophorus	*reticulatus*	Western Netted Dragon		X		X		X	X
Ctenophorus	*salinarum*	Salt Pan Dragon		X					
Ctenophorus	*scutulatus*	Lozenge-marked Dragon		X		X			X
Diporiphora	*amphiboluroides*	Mulga Dragon							X
Pogona	*minor minor*	Western Bearded Dragon		X		X			X
Tympanocryptis	*cephalus* pseudosephos*	Pebble Dragon		X			X		
Antarsia	*perthensis*	Pygmy Python							X
Antarsia	*stimsoni stimsoni*	Stimson's Python					X		
Morelia	*spilota imbricata*	Carpet Python		X			X		
Nephrurus	*vertebralis*	Striped Knob-tailed Gecko		X					X
Chelodina	*steindachneri*	Flat-shelled Turtle				X			
Diplodactylus	*pulcher*	Ground Stone Gecko				X			X
Lucasium	*squarrosum*	Mottled Ground Gecko		X		X			X
Strophurus	*assimilis*	Thorn-tailed Gecko		X			X		
Strophurus	*strophurus*	Western Spiny-tailed Gecko		X		X			X
Rhynchoedura	*ornata*	Western Beaked Gecko		X		X			X
Brachyurophis	*approximans*	Northwest Shovel-nosed Snake		X		X	X		
Brachyurophis	*semifasciatus*	Southern Shovel-nosed Snake		X					
Demansia	*psammophis reticulata*	Reticulated Whipsnake		X			X		
Furina	*ornata*	Moon Snake		X		X	X		

Genus	Species	Common Name	Cons. Listing	Nature Maps Data Search	EPBC PMS	Coffey Env. (2008)	Maryan pers comm. (2018)	Level 1 GHD (2018)	Level 2 GHD (2018/ 2020)
Parasuta	*monarchus*	Monk Snake		X		X			X
Pseudechis	*australis*	Mulga Snake				X			
Pseudechis	*butleri*	Spotted Mulga Snake		X					X
Pseudonaja	*modesta*	Five-ringed Brown Snake		X					X
Pseudonaja	*mengdeni*	Gwardar		X					X
Simoselaps	*bertheldi*	Jans Banded Snake		X		X			X
Suta	*fasciata*	Rosen's Snake		X		X	X		X
Gehyra	*punctata* finipunctata/polka*	Rock Dtella		X					
Gehyra	*finipunctata*	Small-spotted Midwest Rock Gehyra							X
Gehyra	*polka*	Large-spotted Midwest Rock Gehyra							X
Gehyra	*variegata*	Tree Dtella		X		X		X	X
Heteronotia	*binoei*	Binoe's Gecko		X					X
Oedura	*fimbria*	Western Marbled Velvet Gecko		X			X		
Delma	*australis*	Marbled Faced Delma							X
Delma	*tincta*	Tincta's Legless-lizard		X			X		
Pygopus	*nigriceps*	Hooded Scaly-foot		X		X			X
Ctenotus	*mimetes*	Checker-sided Ctenotus				X			X
Ctenotus	*schomburgkii*	Schombergk's Ctenotus		X		X			X
Ctenotus	*severus*	Southern Rock Ctenotus		X		X			X
Ctenotus	*leonhardii*	Leonhard's Ctenotus		X					X
Ctenotus	*uber uber*	Spotted Ctenotus		X		X			X
Cyclodomorphus	*branchialis*	Gilled Slender Blue-tongue	Vu				X		
Egernia	*depressa*	Pygmy Spiny-tailed Skink		X					X
Egernia	*formosa*	Woodland Skink		X			X		
Egernia	*stokesii badia*	Western Spiny-tailed Skink	Vu, En	X	X				X
Eremiascincus	*richardsonii*	Narrow-banded Sand-swimmer		X		X	X		X
Lerista	*gerrardii*	Bold-striped Robust slider		X					X
Lerista	*muelleri* timida*	Mueller's skink				X			X
Lerista	*nichollsi*	Nicholl's Lerista		X		X			X

Genus	Species	Common Name	Cons. Listing	Nature Maps Data Search	EPBC PMS	Coffey Env. (2008)	Maryan pers comm. (2018)	Level 1 GHD (2018)	Level 2 GHD (2018/ 2020)
Menetia	*greyii*	Common Dwarf Skink		X		X			X
Morethia	*butleri*	Woodland Dark-flecked Morethia		X					X
Anilios	*waitii*	Southern Beaked Blind Snake					X		
Varanus	*caudolineatus*	Pygmy Striped-tailed Monitor		X		X			X
Varanus	*gigantius*	Perentie		X			X		
Varanus	*gouldii gouldii*	Gould's Monitor		X		X			
Varanus	*panoptes rubidus*	Yellow-spotted Monitor		X		X		X	X
Amphibians									
Cyclorana	*platycephala*	Water-holding Frog		X			X		
Litoria	*rubella*	Little Red Tree Frog				X	X		X
Platyplectrum	*spenceri*	Central Burrowing Frog		X					X
Neobatrachus	*kunapalari*	Kunapulari Frog		X			X		
Neobatrachus	*pelabatoides*	Humming Frog		X					
Neobatrachus	*sutor*	Shoemaker's Frog		X		X	X		
Neobatrachus	*wilsmorei*	Plonking Frog		X		X	X		
Pseudophryne	*guentheri*	Guenther's Toadlet		X			X		X
Pseudophryne	*occidentalis*	Western Toadlet		X			X		X
Mammals									
Bos	*taurus*	Cow	int					X	X
Capra	*hircus*	Goat	int		X	X			X
Ovis	*aries*	Sheep	int			X			
Canus	*lupis dingo*	Dingo				X			
Canus	*familiaris*	Dog	int		X	X		X	X
Vulpes	*vulpes*	Fox	int		X	X			
Dasyurus	*geoffroii*	Chuditch	Vu, Vu		X				
Pseudantechinus	*woolleyae*	Woolley's False Antechinus		X					X
Sminthopsis	*crassicaudata*	Fat-tailed dunnart		X					
Sminthopsis	*dolichura*	Little Long-tailed Dunnart		X		X			X

Genus	Species	Common Name	Cons. Listing	Nature Maps Data Search	EPBC PMS	Coffey Env. (2008)	Maryan pers comm. (2018)	Level 1 GHD (2018)	Level 2 GHD (2018/ 2020)
Sminthopsis	*macroura*	Stripe-faced Dunnart				X			X
Sminthopsis	*longicaudata*	Long-tailed Dunnart		X					X
Taphozous	*hilli*	Hill's Sheathtail Bat		X					
Equus	*caballus*	Horse	int			X		X	X
Felis	*catus*	Cat	int		X	X			X
Oryctolagus	*cuniculus*	European Rabbit	int		X			X	X
Macropus	*robustus erubescens*	Euro		X		X		X	X
Macropus	*rufus*	Red Kangaroo		X		X		X	X
Mormopterus	*ozimops (petersi (sp. 3))*	Inland Freetail Bat							X
Austronomus	*australis*	White-striped Freetail Bat							X
Mus	*musculus*	House Mouse	int			X			X
Notomys	*alexis*	Spinifex Hopping Mouse				X			X
Pseudomys	*hermannsburgensis*	Sandy Inland Mouse				X			X
Trichosurus	*vulpecula vulpecula*	Common Brushtail Possum		X					
Tachyglossus	*aculeatus*	Echidna							X
Chalinolobus	*gouldii*	Gould's Wattle Bat		X					X
Chalinolobus	*morio*	Chocolate Wattle Bat		X		X			Pr
Nyctophilus	*geoffroyi*	Lesser Long-eared Bat							?
Nyctophilus	*timoriensis*	Greater Long-eared Bat							?
Nyctophilus	*sp. (species calls overlap)*	Long-eared Bat				X			X
Scotorepens	*balstoni*	Inland Broad-nosed Bat				X			X
Scotorepens	*greyii*	Little Broad-nosed Bat							Pr
Taphazois	*hilli*	Hill's Sheathtail Bat		X					X
Vespadelus	*finlaysoni*	Inland Cave Bat		X					X
Vespadelus	*baverstocki*	Inland Forest Bat							Pr

Key; X- recorded species, Pr- Probable recorded of species via bat detection or calls overlap with another species, ?- Nyctophilus sp. Recorded and could be either or both species, int- Introduced species, Vu- Vulnerable listed under either/or both EPBC or BC Acts, En- Endangered listed under either/or both EPBC

or BC Acts, Cr- Critically Endangered listed under either/or both EPBC or BC Acts, IA- International Agreement listed under BC Act, Ma, Mi- Marine/Migratory listed under EPBC Act, SP- Special Protection listed under BC Act.

Fauna likelihood of occurrence assessment guidelines

Assessment outcome	Description
Present	Species recorded during the field survey or from recent, reliable records from within or close proximity to the survey area.
Likely	Species are **likely** to occur in the survey area where there is suitable habitat within the survey area and there are recent records of occurrence of the species in close proximity to the survey area. OR Species known distribution overlaps with the survey area and there is suitable habitat within the survey area.
Unlikely	Species assessed as **unlikely** include those species previously recorded within 10 km of the survey area however: • There is limited (i.e. the type, quality and quantity of the habitat is generally poor or restricted) habitat in the survey area. • The suitable habitat within the survey area is isolated from other areas of suitable habitat and the species has no capacity to migrate into the survey area. OR Those species that have a known distribution overlapping with the survey area however: • There is limited habitat in the survey area (i.e. the type, quality and quantity of the habitat is generally poor or restricted). • The suitable habitat within the survey area is isolated from other areas of suitable habitat and the species has no capacity to migrate into the survey area.
Highly unlikely	Species that are considered **highly unlikely** to occur in the survey area include: • Those species that have no suitable habitat within the survey area. • Those species that have become locally extinct, or are not known to have ever been present in the region of the survey area.

Source information - desktop searches

NM – DBCA *NatureMap* (accessed July 2018)

PMST – DEE Protected Matters Search Tool (PMST) to identify fauna listed under the EPBC Act potentially occurring within the study area (accessed July 2018)

Definitions

Term	Description
study area	a 40 km buffer around the survey area
survey area	the area subject to the current survey
region	the area within an approximate 40 km radius of the survey area
Cr	Critically endangered
En	Endangered
Vu	Vulnerable
IA	International agreement
Mi, Ma	Migratory, Marine
CD	Conservation dependent
OS	Other specially protected fauna
P1 – P4	Priority 1 – Priority 4

Fauna Likelihood of Occurrence Assessment

Taxonomy	Common Name	Status		Likelihood of Occurrence		Source
		EPBC Act	BC Act/DBCA			
Birds						
Apus pacificus	Fork-tailed Swift	Mi	IA	The fork-tailed Swift is a migratory species that follows large storm fronts and are almost exclusively areal species. In Western Australia, there are sparsely scattered records of the Fork-tailed Swift along the south coast, ranging from near the Eyre Bird Observatory and west to Denmark, in coastal and subcoastal areas between Augusta and Carnarvon, including some on nearshore and offshore islands. Scattered records are present in the Midwest region. Records are scattered throughout WA including the Pilbara, Kimberley, Wheatbelt, Gascoyne and deserts (Higgins 1999).	**Unlikely.** Although this species may periodically occur in the region but the species is exclusively areal in nature and irregularly utilises terrestrial habitats.	DBCA, EPBC
Tyto novaehollandiae novaehollandiae	Masked Owl (SW ssp)		P3	There is very little published information available for the subspecies, most of which is limited to the distribution of the species within the south-west of WA. Johnstone and Storr (2004) provide the following distribution and habitat description for the sub species The Masked Owl in south-west WA, is distributed from north to Yanchep and east to Yealering, Gnowangerup and Albany; rarely further north including Carnarvon, Yandil, Geraldton. Probably breeds in forested, deep south-west with some autumn winter wandering northwards and north-eastwards; locally common in deep south-west but generally uncommon. Nests in tree hollows.	**Unlikely.** Although this species is wide spread, populations are patchily disbursed and require woodlands to persist. No habitat is considered suitable for this species in the survey area.	
Amytornis textillis subsp. textilis	Western Grasswren		P4	The western subspecies of the Thick-billed Grasswren occurs in four types of semi-arid shrubland: (1) Acacia shrublands on coastal dunes, coastal plains and red sandplains, dominated by Acacia ligulata, A. tetragonophylla, A. ramulosa and A. sclerosperma, with chenopods such as Rhagodia spp. and Threlkeldia diffusa, other species of shrubs 1-3 m tall with a recumbent growth form that support twining species, and an extensive ground-cover of low	**Unlikely.** The species is not known to persist in the region with the only known population present in the Shark Bay area.	EPBC

Taxonomy	Common Name	Status		Likelihood of Occurrence		Source
		EPBC Act	BC Act/DBCA			
				shrubs, grasses and herbs. (2) Fire-affected shrublands dominated by Ptilotus obovatus and Solanum orbiculatum, which have replaced burnt-out Horse Mulga shrublands for at least 40 years following uncontrolled fires. (3) Low (< 1.5 m high) shrublands on calcareous sandplains, (4) Dense thickets of riparian vegetation growing in drainage lines (DotE 2016). The species is currently known only from the Shark Bay region (TSSC 2006)	Chenopod habitat is present in the survey area, however no Grasswren were recorded during the field survey.	
Leipoa ocellata	Malleefowl	Vu	Vu	The Malleefowl generally occurs in semi-arid areas of Western Australia, from Carnarvon to south east of the Eyre Bird Observatory (south-east Western Australia). The Malleefowl is associated with long unburnt thick vegetation and occupies shrublands and low woodlands that are dominated by mallee vegetation, native pine Callitris woodlands, Acacia shrublands, Broombush vegetation or coastal heathlands. The breeding habitat is characterised by light soil and an abundant leaf litter, which is used in the construction of nesting mounds (Frith 1959; Marchant & Higgins 1993 in DotE 2015). The nest is a conspicuous large mound of sand or soil and organic matter (Jones and Goth 2008 in DotE 2015, Morcombe 2004).	**Unlikely.** Although this species is wide spread, populations are patchily disbursed and in this region persist in dense low shrubland of Mallee and Acacia. No habitat was considered suitable for this species and no evidence of the species was recorded.	DBCA, EPBC
Falco peregrinus	Peregrine Falcon		OS	The Peregrine Falcon is seen occasionally anywhere in the south-west of WA. It is found everywhere from woodlands to open grasslands and coastal cliffs - though less frequently in desert regions. The species nests primarily on ledges of cliffs, shallow tree hollows, and ledges of building in cities. (Morcombe, 2004).	**Likely.** Species is known from the region, however use would be opportunistic and utilised for foraging purposes only. No breeding habitat was present.	DBCA

Taxonomy	Common Name	Status		Likelihood of Occurrence		Source
		EPBC Act	BC Act/DBCA			
Pezoporus occidentalis	Night Parrot	Cr	En	The Night Parrot inhabits arid and semi-arid areas that are characterized by having dense, low vegetation. Based on accepted and recent records, the habitat of the Night Parrot consists of Triodia grasslands in stony or sandy environments and of samphire and chenopod shrublands, on floodplains and claypans, and on the margins of salt lakes, creeks or other sources of water. The distribution of the Night Parrot is very poorly understood however recent observations have recorded the species near to Lorna Glen (East of Wiluna), Pilbara and southern Kimberley.	**Unlikely.** The species is not known to persist in the region. Chenopod habitat is present in the survey area and the species was assessed, however no evidence was recorded.	DBCA
Motacilla cinerea	Grey Wagtail	Mi	IA	The Grey Wagtail is an opportunistic migrant to Australia. The species typically migrates to Indonesia occasionally landing in Australia. Most records for the species are from Northern Australia and South Australia (Morcombe 2004). The non-breeding habitat only of the Grey Wagtail has a strong association with water, particularly rocky substrates along water courses but also lakes and marshes (DotE 2016). It can be found mainly in banks and rocks in fast-running freshwater habitats: rivers, creeks, streams, and around waterfalls, both in forest and open country; but occurs almost anywhere during migration (Johnstone & Storr 2004).	**Unlikely.** Although this species may rarely periodically occur in the region but the species would not rely on any of the habitat present to persist.	EPBC
Reptiles						
Egernia stokesii subsp. badia	Western Spiny-tailed Skink	En	Vu	The Western Spiny-tailed Skink (black form) was originally known from a limited number of sites on Austin Downs Station, east of Cue (e.g. Walga, Wurrah and Woolgerong Rocks). They were restricted to massive granite exposures ('whalebacks') with a variable cover of loose boulders and pockets of soil and low shrubland vegetation. These outcrops are separated by open low woodland and shrubland. The skinks live in narrow crevices and boulders and are observed most readily when they bask close to their refugia (DotE	**Known.** The species was observed in Granite areas and one BIF location of the survey area.	DBCA, EPBC

Taxonomy	Common Name	Status		Likelihood of Occurrence		Source
		EPBC Act	BC Act/DBCA			
				2016). Surveys between 2006 and 2009 identified over 70 new locations in the Murchison region (Ecologia Environment 2010).		
Cyclodomorphus branchialis	Gilled Slender Blue-tongue		Vu	The Gilled Slender Bluetongue is found in the lower west coastal regions on WA, between the Murchison and Irwin Rivers. It is a ground-dwelling lizard of largely crepuscular and nocturnal habits. The species has little information available but is thought to sheltering by day in porcupine grass, leaf-litter, and under fallen timber (Cogger 2014). However the author has recorded the species under rocks and in loamy spoil heaps.	**Likely.** The species is known from the region with records present east, west and south of the survey area. No specimens were recorded during the field survey.	Previous surveys
Mammals						
Sminthopsis longicaudata	Long-tailed dunnart		P4	The Long-tailed Dunnart occurs throughout the Gibson Desert, Murchison, southern Canarvon Basin and the Pilbara. Its habitat includes rugged, rocky areas with hummock grasses, shrubs and tall open shrublands and woodlands (Van Dyck & Strahan 2008).	**Known.** The species is known from the region with records present east, west and north of the survey area. A single animal was trapped within Acacia (Mulga woodland) plain during the field survey.	DBCA
Notamacropus irma	Western Brush Wallaby		P4	The Western Brush Wallaby is found primarily in open forest or woodland, particularly favouring open, seasonally-wet flats with low grasses and open scrubby thickets. It is also found in some areas of mallee and heathland, and is uncommon in karri forest (Van Dyck and Strahan 2008).	**Unlikely.** Although this species is wide spread, populations are patchily disbursed. No habitat was considered suitable for this species and no evidence was recorded.	DBCA

Taxonomy	Common Name	Status		Likelihood of Occurrence		Source
		EPBC Act	BC Act/DBCA			
Dasyurus geoffroii	Chuditch	Vu	Vu	The Chuditch inhabits eucalypt forest (especially Jarrah), dry woodland and mallee shrublands of semi arid environs. In the mid west only one population persist and is within the Kalbarri National Park. This population is a translocated and monitored population that primarily persists within the rocky gorges of the Murchison River. Although this species can travel large distances and has a large home range it is highly unlikely to be present in the Yalgoo region.	**Highly unlikely.** The species has not been recorded in the survey area and the species is considered regionally extinct.	EPBC

Species recorded via remote camera.

Common Name	Status	Cam 28	Cam 115	Cam 31	Cam 23	Cam 15b	Cam 1	Cam 10	Cam 7	Cam 21	Cam 24	Cam 8	Cam 19	Cam 19b	Cam 166	Cam 25	Cam 2	Cam 16	Cam 26	Cam 29	Cam 12	Cam 20
Birds																						
Australian Magpie									3													
Pied Butcherbird						1																
Bush-stone Curlew								1	1													
Emu				1				10	24	2											6	
Crested Pigeon							1	38	17	3												
Common Bronzewing									1								2					
Torresian Crow								28	33			2										
Zebra Finch									3													
Chestnut-breasted Quail-thrush				2			9				4	2					2	2				
Crimson Chat								1														
Magpie-lark								3														
Australian Bustard								1	1													
Grey Shrike-thrush				1																		
Crested Bellbird							5								1			1				
Grey-crowned Babbler				4										1								
Bourke's Parrot								1	1													
Western Bowerbird								2														
Willie Wagtail					1	8		1														
Reptiles																						
Central Netted Dragon				7																		
Southern Rock Ctenotus		4			1	6																
Western Spiny-tailed Skink	En, Vu	9	1																			
Yellow-spotted Monitor		1		1	1	1	3	12	9	1	3	5			3	8	2	4			3	
Mammals																						
Cow								80	65			1				1						
Goat																				1		
Dog								2	3													
Woolley's False Antechinus		5	4	11	25	37	7															

Common Name	Status	Cam	Cam	Cam	Cam	Cam	Cam	Cam	Cam	Cam	Cam	Cam	Cam	Cam	Cam	Cam	Cam	Cam	Cam	Cam	Cam
Birds		28	115	31	23	15b	1	10	7	21	24	8	19	b	166	25	2	16	26	29	12	20
Cat			1		1		1									1	3				2	1
European Rabbit		3		4		2	1	3	2			4				1					9	
Euro			6	1		1	2				1	1		1			1	1				
Red Kangaroo			1					30	31			7					3			1		1
Spinifex Hopping Mouse				8											2		7				1	
Sandy Inland Mouse								1?														
Echidna					8	4																

Phase 1 Trapping data of species recorded per site 1 to 5.

Scientific Name	Common Name	Status	Trap Site 1					Trap Site 2					Trap Site 3					Trap Site 4					Trap Site 5				
Birds			Traps	Active search	Bird Cen.	Noct. Search	Bat Cen.	Traps	Active search	Bird Cen.	Noct. Search	Bat Cen.	Traps	Active search	Bird Cen.	Noct. Search	Bat Cen.	Traps	Active search	Bird Cen.	Noct. Search	Bat Cen.	Traps	Active search	Bird Cen.	Noct. Search	Bat Cen.
Acanthiza apicalis	Inland Thornbill														4												
Acanthiza chrysorrhoa	Yellow-rumped Thornbill																										
Acanthiza robustirostris	Slaty-backed Thornbill																										
Acanthiza uropygialis	Chestnut-rumped Thornbill																										
Aphelocephala leucopsis	Southern Whiteface				4										4												
Smicrornis brevirostris	Weebill																										
Gerygone fusca	Western Gerygone																										
Pyrrholaemus brunneus	Redthroat																			1							
Aquila audax	Wedge-tailed Eagle																										
Accipiter cirrocephalus	Collared Sparrowhawk																										
Accipiter fasciatus	Brown Goshawk									1																	
Circus assimilis	Spotted Harrier																										
Haliastur sphenurus	Whistling Kite																										
Hamirostra melanosternon	Black-breasted Buzzard																										
Hieraaetus morphnoides	Little Eagle									1																	
Aegotheles cristatus	Australian Owlet-nightjar																					1					
Artamus cinereus	Black-faced Woodswallow				5										3									2			
Artamus minor	Little Woodswallow																										
Artamus personatus	Masked Woodswallow																										
Cracticus tiibicen dorsalis	Australian Magpie				2										1												
Cracticus nigrogularis	Pied Butcherbird									1														1			
Cracticus torquatus	Grey Butcherbird														2									2			
Burhinus grallarius	Bush-stone Curlew					2																					
Eolophus roseicapilla	Pink and Grey Galah									20					2									2			
Coracina novaehollandiae	Black-faced Cuckoo-shrike									2					2									1			
Lalage sueurii	White-winged Triller				6																			8			
Dromaius novaehollandiae	Emu				2					1														1			
Charadrius ruficapillus	Red-capped Plover																										
Peltohyas australis	Inland Plover				45																						
Vanellus tricolor	Banded Lapwing				6	2																		2			
Climacteris affinis	White-browed Treecreeper														1												
Ocyphaps lophotes	Crested Pigeon				2										4												
Phaps chalcoptera	Common Bronzewing									1																	
Corvus orru	Torresian Crow				6					4					2									1			
Cacomantis pallidus	Pallid Cuckoo				1																						
Taeniopygia guttata	Zebra Finch				18					12					16												
Cinclosoma castaneothorax	Chestnut-breasted Quail-thrush																			10				1			
Eurostopodus argus	Spotted Nightjar																										
Falco berigora	Brown Falcon				1										2					1							
Falco cenchroides s	Nankeen Kestril				1																						
Todiramphus pyrrhopygia	Red-backed Kingfisher									2																	
Todiramphus sanctus	Sacred Kingfisher									2																	
Cheramoeca leucosterna	White-backed Swallow																										
Hirundo neoxena	Welcome Swallow				10																						
Petrochelidon nigricans	Tree Martin				8																						
Malurus leucopterus	White-winged Fairy-wren				4																						
Malurus splendens	Splendid Fairy-wren																										
Acanthagenys rufogularis	Spiny-cheeked Honeyeater									12					2					1				6			
Certhionyx niger	Black Honeyeater																										
Certhionyx variegatus	Pied Honeyeater																										

Scientific Name	Common Name	Status	Trap Site 1					Trap Site 2					Trap Site 3					Trap Site 4					Trap Site 5				
Birds			Traps	Active search	Bird Cen.	Noct. Search	Bat Cen.	Traps	Active search	Bird Cen.	Noct. Search	Bat Cen.	Traps	Active search	Bird Cen.	Noct. Search	Bat Cen.	Traps	Active search	Bird Cen.	Noct. Search	Bat Cen.	Traps	Active search	Bird Cen.	Noct. Search	Bat Cen.
Epthianura tricolor	Crimson Chat				15																						
Lichenostomus plumulus	Grey-fronted Honeyeater																										
Lichenostomus virescens	Singing Honeyeater									7									1					1		
Lichmera indistincta	Brown Honeyeater									2																
Manorina flavigula	Yellow-throated Miner				4																			12		
Phylidonyris albifrons	White-fronted Honeyeater																									
Grallina cyanoleuca	Magpie-lark																									
Anthus novaeseelandiae	Australian Pipit				12																					
Dicaeum hirundinaceum	Mistletoebird									5									2							
Daphoenositta chrysoptera	Varied Sittella														8											
Ardeotis australis	Australian Bustard				1																					
Colluricincla harmonica	Grey Shrike-thrush				1					1														1		
Oreoica gutturalis	Crested Bellbird				5					1					1				2					5		
Pachycephala rufiventris	Rufous Whistler									3					2				2							
Pardalotus striatus	Striated Pardalote																									
Melanodryas cucullata	Hooded Robin				2														4							
Petroica goodenovii	Red-capped Robin									3					2				4					1		
Podargus strigoides	Tawny Frogmouth															1										
Pomatostomus superciliosus	White-browed Babbler				4																			4		
Pomatostomus temporalis	Grey-crowned Babbler				2																			15		
Barnardius zonarius	Port Lincoln Parrot																							6		
Melopsittacus undulatus	Budgerigar																									
Neopsephotus bourkii	Bourke's Parrot														2											
Polytelis anthopeplus	Regent Parrot																									
Psephotus varius	Mulga Parrot														7									8		
Ptilonorhynchus guttatus	Western Bowerbird																							1		
Rhipidura leucophrys	Willie Wagtail				1					1																
Ninox novaeseelandiae	Southern Boobook																								1	
Threskiornis spinicollis	Straw-necked Ibis																									
Tyto alba	Eastern Barn Owl															1										
Reptiles																										
Gowidon longirostris	Long-snouted Water Dragon							4	3																	
Ctenophorus nuchalis	Central Netted Dragon		4	1																						
Ctenophorus reticulatus	Western Netted Dragon			4										1												
Ctenophorus scutulatus	Lozenge-marked Dragon		3	2					3										1				3			
Diporiphora amphiboluroides	Mulga Dragon			1																						
Pogona minor minor	Western Bearded Dragon																									
Antaresia perthensis	Pygmy Python																						1			
Nephrurus vertebralis	Striped Knob-tailed Gecko		2			1										2										
Diplodactylus pulcher	Ground Stone Gecko																					1				
Lucasium squarrosum	Mottled Ground Gecko		13			4																1				
Strophurus strophurus	Western Spiny-tailed Gecko		1										2													
Rhynchoedura ornata	Western Beaked Gecko		3			1										1		1							2	
Parasuta monarchus	Monk Snake												1										skin			
Pseudechis butleri	Spotted Mulga Snake																									
Pseudonaja modesta	Five-ringed Brown Snake													1												
Pseudonaja mengdeni	Gwardar													1												
Simoselaps bertholdi	Jans Banded Snake													1												
Gehyra finipunctata	Small-spotted Mid-west Gehyra																									
Gehyra polka	Large-spotted Mid-west Gehyra																						3		3	
Gehyra variegata	Tree Dtella		5						2		2			1		1		1				1				
Heteronotia binoei	Binoe's Gecko										1		1	5												

Scientific Name	Common Name	Status	Trap Site 1					Trap Site 2					Trap Site 3					Trap Site 4					Trap Site 5				
Birds			Traps	Active search	Bird Cen.	Noct. Search	Bat Cen.	Traps	Active search	Bird Cen.	Noct. Search	Bat Cen.	Traps	Active search	Bird Cen.	Noct. Search	Bat Cen.	Traps	Active search	Bird Cen.	Noct. Search	Bat Cen.	Traps	Active search	Bird Cen.	Noct. Search	Bat Cen.
Delma australis	Marbled Faced Delma							2																			
Pygopus nigriceps	Hooded Scaly-foot												1														
Ctenotus mimetes	Checker-sided Ctenotus																										
Ctenotus schomburgkii	Schomburgk's Ctenotus												2										1				
Ctenotus severus	Southern Rock Ctenotus							9	1					2										5			
Ctenotus leonhardii	Leonhard's Ctenotus		5	1					1																		
Ctenotus uber uber	Spotted Ctenotus																										
Egernia depressa	Pygmy Spiny-tailed Skink																						1				
Egernia stokesii badia	Western Spiny-tailed Skink	Vu, En																						scat		3	
Lerista gerrardii	Bold-striped Robust slider							1	1																		
Lerista muelleri* timida	Mueller's skink												2														
Lerista nicholsi	Nicholl's Lerista		6	6									3	10													
Menetia greyii	Common Dwarf Skink		1										3										3				
Morethia butleri	Woodland Dark-flecked Morethia																						1	1			
Varanus caudolineatus	Pygmy Striped-tailed Monitor																										
Varanus panoptes rubidus	Yellow-spotted Monitor		1	1										4													
Amphibia																											
Litoria rubella	Little Red Tree Frog																										
Platyplectrum spenceri	Central Burrowing Frog							30																			
Pseudophryne guentheri	Guenther's Toadlet		3					6	2																		
Pseudophryne occidentalis	Western Toadlet																						1	1			
Mammals																											
Bos taurus	Cow	int																						scat			
Capra hircus	Goat	int																						scat			
Canis familiaris	Dog	int																									
Pseudantechinus woolleyae	Woolley's False Antechinus																							scat		scat	
Sminthopsis macroura	Stripe-faced Dunnart							2															1				
Equus caballus	Horse	int																									
Felis catus	Cat	int																									
Oryctolagus cuniculus	European Rabbit	int		3		14										3										1	
Macropus robustus	Euro																									3	
Macropus rufus	Red Kangaroo			10		2			5		2																
Mormopterus petersi	Inland Freetail Bat																										
Austronomus australis	White-striped Freetail Bat											1					1					1					
Mus musculus	House Mouse	int																					1				
Notomys alexis	Spinifex Hopping Mouse		1										1					3					1				
Pseudomys hermannsburgensis	Sandy Inland Mouse		2					6															1				
Tachyglossus aculeatus	Echidna																							scat			
Chalinolobus gouldii	Gould's Wattle Bat											10					21										
Chalinolobus morio	Chocolate Wattle Bat											2					13					1					
Nyctophilus sp.	Long-eared Bat						3					4					26					3					3
Scotorepens balstoni	Inland Broad-nosed Bat						2					14					65					1					
Scotorepens greyii	Little Broad-nosed Bat																										
Vespadelus finlaysoni	Inland Cave Bat																18					4					
Vespadelus baverstocki	Inland Forest Bat																										

Phase 1 Trapping site data site 6 to 9 and totals

Scientific Name	Common Name	Status	Trap Site 6					Trap Site 7					Trap Site 8					Trap Site 9						
Birds			Traps	Active search	Bird Cen.	Noct. Search	Bat Cen.	Traps	Active search	Bird Cen.	Noct. Search	Bat Cen.	Traps	Active search	Bird Cen.	Noct. Search	Bat Cen.	Traps	Active search	Bird Cen.	Noct. Search	Bat Cen.	Opp.	Totals
Acanthiza apicalis	Inland Thornbill									4													6	34
Acanthiza chrysorrhoa	Yellow-rumped Thornbill								6														4	30
Acanthiza robustirostris	Slaty-backed Thornbill																						4	12
Acanthiza uropygialis	Chestnut-rumped Thornbill				22					8													20	150
Aphelocephala leucopsis	Southern Whiteface				2					6					8								32	152
Smicrornis brevirostris	Weebill				6																		8	42
Gerygone fusca	Western Gerygone																						1	3
Pyrrholaemus brunneus	Redthroat				4					3										2			7	49
Aquila audax	Wedge-tailed Eagle				1															1			4	18
Accipiter cirrocephalus	Collared Sparrowhawk																						1	3
Accipiter fasciatus	Brown Goshawk																							1
Circus assimilis	Spotted Harrier																						1	3
Haliastur sphenurus	Whistling Kite																						8	24
Hamirostra melanosternon	Black-breasted Buzzard																						3	9
Hieraaetus morphnoides	Little Eagle																						1	4
Aegotheles cristatus	Australian Owlet-nightjar					1																	1	7
Artamus cinereus	Black-faced Woodswallow				4																		6	40
Artamus minor	Little Woodswallow																						4	12
Artamus personatus	Masked Woodswallow									1													4	15
Cracticus tiibicen dorsalis	Australian Magpie																			4			4	27
Cracticus nigrogularis	Pied Butcherbird				2															1			2	17
Cracticus torquatus	Grey Butcherbird																						2	10
Burhinus grallarius	Bush-stone Curlew																						3	11
Eolophus roseicapilla	Pink and Grey Galah																						13	63
Coracina novaehollandiae	Black-faced Cuckoo-shrike									1													2	14
Lalage sueurii	White-winged Triller																						17	65
Dromaius novaehollandiae	Emu			prints					prints	feather													25	79
Charadrius ruficapillus	Red-capped Plover									4														12
Peltohyas australis	Inland Plover																							45
Vanellus tricolor	Banded Lapwing																						15	55
Climacteris affinis	White-browed Treecreeper																						1	4
Ocyphaps lophotes	Crested Pigeon				2				2	2													6	42
Phaps chalcoptera	Common Bronzewing																						3	10
Corvus orru	Torresian Crow				2					1					2								20	88
Cacomantis pallidus	Pallid Cuckoo																						1	4
Taeniopygia guttata	Zebra Finch																						20	106
Cinclosoma castaneothorax	Chestnut-breasted Quail-thrush												2		6								20	95
Eurostopodus argus	Spotted Nightjar																						2	6
Falco berigora	Brown Falcon				2																			10
Falco cenchroides s	Nankeen Kestrel																						1	4
Todiramphus pyrrhopygia	Red-backed Kingfisher																						2	8
Todiramphus sanctus	Sacred Kingfisher																						2	8
Cheramoeca leucosterna	White-backed Swallow																						2	6
Hirundo neoxena	Welcome Swallow																							10
Petrochelidon nigricans	Tree Martin																						13	47
Malurus leucopterus	White-winged Fairy-wren																						8	28
Malurus splendens	Splendid Fairy-wren														7								4	33
Acanthagenys rufogularis	Spiny-cheeked Honeyeater				7					2					4					2			20	126
Certhionyx niger	Black Honeyeater																						8	24
Certhionyx variegatus	Pied Honeyeater														2								19	63

Scientific Name	Common Name	Status	Trap Site 6					Trap Site 7					Trap Site 8					Trap Site 9						
Birds			Traps	Active search	Bird Cen.	Noct. Search	Bat Cen.	Traps	Active search	Bird Cen.	Noct. Search	Bat Cen.	Traps	Active search	Bird Cen.	Noct. Search	Bat Cen.	Traps	Active search	Bird Cen.	Noct. Search	Bat Cen.	Opp.	Totals
Epthianura tricolor	Crimson Chat																					37	126
Lichenostomus plumulus	Grey-fronted Honeyeater																					4	12
Lichenostomus virescens	Singing Honeyeater									1					1							2	21
Lichmera indistincta	Brown Honeyeater																					2	8
Manorina flavigula	Yellow-throated Miner																			10		18	100
Phylidonyris albifrons	White-fronted Honeyeater																					6	18
Grallina cyanoleuca	Magpie-lark																			1		2	9
Anthus novaeseelandiae	Australian Pipit																					20	72
Dicaeum hirundinaceum	Mistletoebird				1																	2	16
Daphoenositta chrysoptera	Varied Sittella				4																	6	38
Ardeotis australis	Australian Bustard																					2	7
Colluricincla harmonica	Grey Shrike-thrush																					3	12
Oreoica gutturalis	Crested Bellbird				2					2					2							20	92
Pachycephala rufiventris	Rufous Whistler				1				1	3					1							11	58
Pardalotus striatus	Striated Pardalote																					2	6
Melanodryas cucullata	Hooded Robin														3							20	75
Petroica goodenovii	Red-capped Robin				4					4					3					2		20	109
Podargus strigoides	Tawny Frogmouth																					1	4
Pomatostomus superciliosus	White-browed Babbler				4				4	2													38
Pomatostomus temporalis	Grey-crowned Babbler																			4		8	53
Barnardius zonarius	Port Lincoln Parrot																					12	42
Melopsittacus undulatus	Budgerigar																					8	24
Neopsephotus bourkii	Bourke's Parrot				4				6	6										2		10	86
Polytelis anthopeplus	Regent Parrot																					12	36
Psephotus varius	Mulga Parrot				2										7					4		16	102
Ptilonorhynchus guttatus	Western Bowerbird																			1		1	7
Rhipidura leucophrys	Willie Wagtail				1																	2	11
Ninox novaeseelandiae	Southern Boobook																						1
Threskiornis spinicollis	Straw-necked Ibis																					2	6
Tyto alba	Eastern Barn Owl																					1	4
Reptiles																							
Gowidon longirostris	Long-snouted Water Dragon																						7
Ctenophorus nuchalis	Central Netted Dragon								1									1					11
Ctenophorus reticulatus	Western Netted Dragon		1					2															13
Ctenophorus scutulatus	Lozenge-marked Dragon		3					3	3														36
Diporiphora amphiboluroides	Mulga Dragon																						1
Pogona minor minor	Western Bearded Dragon																		1				3
Antaresia perthensis	Pygmy Python																						1
Nephrurus vertebralis	Striped Knob-tailed Gecko										1												8
Diplodactylus pulcher	Ground Stone Gecko		7			1					2												24
Lucasium squarrosum	Mottled Ground Gecko							4															30
Strophurus strophurus	Western Spiny-tailed Gecko										1												6
Rhynchoedura ornata	Western Beaked Gecko		2			1		1										1					21
Parasuta monarchus	Monk Snake		1																				3
Pseudechis butleri	Spotted Mulga Snake																					2	6
Pseudonaja modesta	Five-ringed Brown Snake																						1
Pseudonaja mengdeni	Gwardar																						1
Simoselaps bertholdi	Jan's Banded Snake																						1
Gehyra finipunctata	Small-spotted Mid-west Gehyra																	1	3			3	21
Gehyra polka	Large-spotted Mid-west Gehyra																					7	27
Gehyra variegata	Tree Dtella			2		1		2			4		2					4	4		2	5	89
Heteronotia binoei	Binoe's Gecko												1						1			1	16

Scientific Name	Common Name	Status	Trap Site 6					Trap Site 7					Trap Site 8					Trap Site 9						
Birds			Traps	Active search	Bird Cen.	Noct. Search	Bat Cen.	Traps	Active search	Bird Cen.	Noct. Search	Bat Cen.	Traps	Active search	Bird Cen.	Noct. Search	Bat Cen.	Traps	Active search	Bird Cen.	Noct. Search	Bat Cen.	Opp.	Totals
Delma australis	Marbled Faced Delma																						2
Pygopus nigriceps	Hooded Scaly-foot																						1
Ctenotus mimetes	Checker-sided Ctenotus		1																				2
Ctenotus schomburgkii	Schomburgk's Ctenotus		2					3															16
Ctenotus severus	Southern Rock Ctenotus																						17
Ctenotus leonhardii	Leonhard's Ctenotus																						7
Ctenotus uber uber	Spotted Ctenotus							1					1										6
Egernia depressa	Pygmy Spiny-tailed Skink																						1
Egernia stokesii badia	Western Spiny-tailed Skink	Vu, En																	4				15
Lerista gerrardii	Bold-striped Robust slider																						2
Lerista muelleri* timida	Mueller's skink		2					2															12
Lerista nicholsi	Nicholl's Lerista							2										2					37
Menetia greyii	Common Dwarf Skink		6					1															22
Morethia butleri	Woodland Dark-flecked Morethia																						2
Varanus caudolineatus	Pygmy Striped-tailed Monitor																					1	3
Varanus panoptes rubidus	Yellow-spotted Monitor		1						3					1								17	71
Amphibia																							
Litoria rubella	Little Red Tree Frog																					5	15
Platyplectrum spenceri	Central Burrowing Frog																						30
Pseudophryne guentheri	Guenther's Toadlet																						11
Pseudophryne occidentalis	Western Toadlet																						2
Mammals																							
Bos taurus	Cow	int							scat										scat			many	many
Capra hircus	Goat	int							10													12	66
Canus familiaris	Dog	int							prints														1
Pseudantechinus woolleyae	Woolley's False Antechinus																		scat				3
Sminthopsis macroura	Stripe-faced Dunnart												1										6
Equus caballus	Horse	int																	scat				1
Felis catus	Cat	int																				prints	1
Oryctolagus cuniculus	European Rabbit	int		2		2			scat		6												49
Macropus robustus	Euro										2								scat			13	48
Macropus rufus	Red Kangaroo								6													many	37
Mormopterus petersi	Inland Freetail Bat																						20
Austronomus australis	White-striped Freetail Bat																						3
Mus musculus	House Mouse	int																					1
Notomys alexis	Spinifex Hopping Mouse		2			1		5			1		9										58
Pseudomys hermannsburgensis	Sandy Inland Mouse												1										12
Tachyglossus aculeatus	Echidna			digs															scat			digs	4
Chalinolobus gouldii	Gould's Wattle Bat						2					2									6		61
Chalinolobus morio	Chocolate Wattle Bat						21														2		Pr
Nyctophilus sp.	Long-eared Bat						7					3					1				4		84
Scotorepens balstoni	Inland Broad-nosed Bat						25														2		163
Scotorepens greyii	Little Broad-nosed Bat																						Pr
Vespadelus finlaysoni	Inland Cave Bat						1										1						28
Vespadelus baverstocki	Inland Forest Bat																						Pr

Phase 2 Trapping site data

Scientific Name	Common Name	Status	Trap Site 1					Trap Site 2					Trap Site 3					Trap Site 4					Trap Site 8					Trap Site 11						
Birds			Traps	Active search	Bird Cen.	Noct. Search	Bat Cen.	Traps	Active search	Bird Cen.	Noct. Search	Bat Cen.	Traps	Active search	Bird Cen.	Noct. Search	Bat Cen.	Traps	Active search	Bird Cen.	Noct. Search	Bat Cen.	Traps	Active search	Bird Cen.	Noct. Search	Bat Cen.	Traps	Active search	Bird Cen.	Noct. Search	Bat Cen.	Opp.	Totals
Acanthiza apicalis	Inland Thornbill																																0
Acanthiza chrysorrhoa	Yellow-rumped Thornbill																															1	1
Acanthiza robustirostris	Slaty-backed Thornbill																																0
Acanthiza uropygialis	Chestnut-rumped Thornbill																							1									1
Aphelocephala leucopsis	Southern Whiteface																			5									5				10
Smicrornis brevirostris	Weebill																																0
Gerygone fusca	Western Gerygone																																0
Pyrrholaemus brunneus	Redthroat																												1				1
Aquila audax	Wedge-tailed Eagle											1																					1
Accipiter cirrocephalus	Collared Sparrowhawk																																0
Accipiter fasciatus	Brown Goshawk																																0
Circus assimilis	Spotted Harrier																															1	1
Haliastur sphenurus	Whistling Kite																															1	1
Hamirostra melanosternon	Black-breasted Buzzard																																0
Hieraaetus morphnoides	Little Eagle																															1	1
Aegotheles cristatus	Australian Owlet-nightjar																															1	1
Artamus cinereus	Black-faced Woodswallow				4																			2								5	11
Artamus minor	Little Woodswallow																																0
Artamus personatus	Masked Woodswallow																																0
Cracticus tiibicen dorsalis	Australian Magpie																															1	1
Cracticus nigrogularis	Pied Butcherbird									1																							1
Cracticus torquatus	Grey Butcherbird				1					1					3																		5
Burhinus grallarius	Bush-stone Curlew																															1	1
Eolophus roseicapilla	Pink and Grey Galah									6					2														6				14
Coracina novaehollandiae	Black-faced Cuckoo-shrike									1																							1
Lalage sueurii	White-winged Triller																																0
Dromaius novaehollandiae	Emu				2																											1	3
Charadrius ruficapillus	Red-capped Plover																																0
Peltohyas australis	Inland Plover																																0
Vanellus tricolor	Banded Lapwing																															2	2
Climacteris affinis	White-browed Treecreeper																																0
Ocyphaps lophotes	Crested Pigeon									6					3					3													12
Phaps chalcoptera	Common Bronzewing				2																			5					1			1	9
Corvus orru	Torresian Crow																															1	1
Corvus Bennetti	Little Crow									1					4														1			1	7
Cacomantis pallidus	Pallid Cuckoo																																0
Taeniopygia guttata	Zebra Finch				5																											6	11
Cinclosoma castaneothorax	Chestnut-breasted Quail-thrush																			1				1									2
Eurostopodus argus	Spotted Nightjar										1																			1		1	3
Falco berigora	Brown Falcon																			1				1								2	4
Falco cenchroides s	Nankeen Kestrel				1																											2	3

Scientific Name	Common Name	Status	Trap Site 1					Trap Site 2					Trap Site 3					Trap Site 4					Trap Site 8					Trap Site 11						
Birds			Traps	Active search	Bird Cen.	Noct. Search	Bat Cen.	Traps	Active search	Bird Cen.	Noct. Search	Bat Cen.	Traps	Active search	Bird Cen.	Noct. Search	Bat Cen.	Traps	Active search	Bird Cen.	Noct. Search	Bat Cen.	Traps	Active search	Bird Cen.	Noct. Search	Bat Cen.	Traps	Active search	Bird Cen.	Noct. Search	Bat Cen.	Opp.	Totals
Todiramphus pyrrhopygia	Red-backed Kingfisher																																0
Todiramphus sanctus	Sacred Kingfisher																																0
Cheramoeca leucosterna	White-backed Swallow																																0
Hirundo neoxena	Welcome Swallow																																0
Petrochelidon nigricans	Tree Martin																															1	1
Malurus leucopterus	White-winged Fairy-wren																							1									1
Sericornis frontalis	Whit-browed Scrubwren									3																							3
Malurus splendens	Splendid Fairy-wren																												2			1	3
Acanthagenys rufogularis	Spiny-cheeked Honeyeater									2					3														1				6
Certhionyx niger	Black Honeyeater																																0
Certhionyx variegatus	Pied Honeyeater																																0
Epthianura tricolor	Crimson Chat																															1	1
Lichenostomus plumulus	Grey-fronted Honeyeater																																0
Lichenostomus virescens	Singing Honeyeater									2					2					2					2								8
Lichmera indistincta	Brown Honeyeater																																0
Lichenostomus pendiculatus	White-plumed Honeyeater																															1	
Manorina flavigula	Yellow-throated Miner														7																		7
Phylidonyris albifrons	White-fronted Honeyeater																																0
Grallina cyanoleuca	Magpie-lark																															1	1
Anthus novaeseelandiae	Australian Pipit				2					1																						3	6
Dicaeum hirundinaceum	Mistletoebird																																0
Daphoenositta chrysoptera	Varied Sittella														5																		5
Ardeotis australis	Australian Bustard																																0
Colluricincla harmonica	Grey Shrike-thrush									2								1															3
Oreoica gutturalis	Crested Bellbird				1																			1								1	3
Pachycephala rufiventris	Rufous Whistler									4					1																		5
Pardalotus striatus	Striated Pardalote																																0
Melanodryas cucullata	Hooded Robin																																0
Petroica goodenovii	Red-capped Robin														1																		1
Podargus strigoides	Tawny Frogmouth																															1	1
Pomatostomus superciliosus	White-browed Babbler														3															10			13
Pomatostomus temporalis	Grey-crowned Babbler				3																												3
Melopsittacus undulatus	Budgerigar																																0
Neopsephotus bourkii	Bourke's Parrot														2									2								4
Polytelis anthopeplus	Regent Parrot																																0
Psephotus varius	Mulga Parrot									1					2					6													9
Ptilonorhynchus guttatus	Western Bowerbird																																0
Rhipidura leucophrys	Willie Wagtail									1					1					1									1				4
Ninox novaeseelandiae	Southern Boobook																																0
Threskiornis spinicollis	Straw-necked Ibis																																0
Merops ornatus	Rainbow Bee Eater									1																							1
Platycercus zonarius	Australian ringneck				6					6					2					4													18
Tyto alba	Eastern Barn Owl																																0

Scientific Name	Common Name	Status	Trap Site 1					Trap Site 2					Trap Site 3					Trap Site 4					Trap Site 8					Trap Site 11						
Birds			Traps	Active search	Bird Cen.	Noct. Search	Bat Cen.	Traps	Active search	Bird Cen.	Noct. Search	Bat Cen.	Traps	Active search	Bird Cen.	Noct. Search	Bat Cen.	Traps	Active search	Bird Cen.	Noct. Search	Bat Cen.	Traps	Active search	Bird Cen.	Noct. Search	Bat Cen.	Traps	Active search	Bird Cen.	Noct. Search	Bat Cen.	Opp.	Totals
Reptiles																																	0
Gowidon longirostris	Long-snouted Water Dragon																																0
Ctenophorus nuchalis	Central Netted Dragon																																0
Ctenophorus reticulatus	Western Netted Dragon		3										1					1	1									1				1	8
Ctenophorus scutulatus	Lozenge-marked Dragon			3									3	1									1					1					9
Diporiphora amphiboluroides	Mulga Dragon																																0
Pogona minor minor	Western Bearded Dragon																	1															1
Antaresia perthensis	Pygmy Python																															1	1
Nephrurus vertebralis	Striped Knob-tailed Gecko					1							1			1																	3
Diplodactylus pulcher	Ground Stone Gecko																																0
Eremiascincus richardsonii	Broad-banded Sand Swimmer		1					4			1												1					4	1		1			13
Lucasium squarrosum	Mottled Ground Gecko					5																	2								1			8
Strophurus strophurus	Western Spiny-tailed Gecko		1			1										6		1					2											11
Rhynchoedura ornata	Western Beaked Gecko		1										1			1																	3
Parasuta monarchus	Monk Snake																																0
Pseudechis butleri	Spotted Mulga Snake																															1	1
Pseudonaja modesta	Five-ringed Brown Snake																																0
Pseudonaja mengdeni	Gwardar																											1					1
Simoselaps bertholdi	Jan's Banded Snake																											1					1
Gehyra finipunctata	Small-spotted Mid-west Gehyra																																0
Gehyra polka	Large-spotted Mid-west Gehyra																																0
Gehyra variegata	Tree Dtella			1		3										2							6					1			10			23
Heteronotia binoei	Binoe's Gecko							1			2																	6						9
Delma australis	Marbled Faced Delma							1																										1
Pygopus nigriceps	Hooded Scaly-foot																																0
Ctenotus mimetes	Checker-sided Ctenotus																																0
Ctenotus schomburgkii	Schomburgk's Ctenotus												2	1																			3
Ctenotus severus	Southern Rock Ctenotus							15	1														1					6	3					26
Ctenotus leonhardii	Leonhard's Ctenotus		1	1																													2
Ctenotus uber uber	Spotted Ctenotus												1										4									1	6
Egernia depressa	Pygmy Spiny-tailed Skink																						2											2
Egernia stokesii badia	Western Spiny-tailed Skink	Vu, En																														1	1
Lerista gerrardii	Bold-striped Robust slider							4	1																			1	1					7
Lerista muelleri* timida	Mueller's skink																															1	1
Lerista nichollsi	Nicholl's Lerista			1																								22	10					33
Menetia greyii	Common Dwarf Skink																						1					2						3
Morethia butleri	Woodland Dark-flecked Skink																																0
Varanus caudolineatus	Pygmy Striped-tailed Monitor												1										1											2

Scientific Name	Common Name	Status	Trap Site 1					Trap Site 2					Trap Site 3					Trap Site 4					Trap Site 8					Trap Site 11						
Birds			Traps	Active search	Bird Cen.	Noct. Search	Bat Cen.	Traps	Active search	Bird Cen.	Noct. Search	Bat Cen.	Traps	Active search	Bird Cen.	Noct. Search	Bat Cen.	Traps	Active search	Bird Cen.	Noct. Search	Bat Cen.	Traps	Active search	Bird Cen.	Noct. Search	Bat Cen.	Traps	Active search	Bird Cen.	Noct. Search	Bat Cen.	Opp.	Totals
Suta fasciata	Rosen's Snake																													1			1
Varanus panoptes rubidus	Yellow-spotted Monitor		1	2					1				1	1				1	1				1				1	3		2			15
Amphibia																																	0
Litoria rubella	Little Red Tree Frog																															1	1
Platyplectrum spenceri	Central Burrowing Frog																																0
Pseudophryne guentheri	Guenther's Toadlet																																0
Pseudophryne occidentalis	Western Toadlet																																0
Mammals																																	0
Bos taurus	Cow	int											8																				8
Capra hircus	Goat	int																														1	1
Canus familiaris	Dog	int																														1	1
Pseudantechinus woolleyae	Woolley's False Antechinus																																0
Sminthopsis macroura	Stripe-faced Dunnart																										3						3
Equus caballus	Horse	int																															0
Felis catus	Cat	int																														1	1
Oryctolagus cuniculus	European Rabbit	int									1																			2			3
Macropus robustus	Euro																															1	1
Macropus rufus	Red Kangaroo																		2													5	7
Mormopterus petersi	Inland Freetail Bat																																0
Austronomus australis	White-striped Freetail Bat																															1	1
Mus musculus	House Mouse	int																															0
Notomys alexis	Spinifex Hopping Mouse													1														1					2
Pseudomys hermannsburgensis	Sandy Inland Mouse		1																														1
Tachyglossus aculeatus	Echidna																															1	1
Chalinolobus gouldii	Gould's Wattle Bat																															1	1
Chalinolobus morio	Chocolate Wattle Bat																															1	1
Nyctophilus sp.	Long-eared Bat																																0
Scotorepens balstoni	Inland Broad-nosed Bat																															1	1
Scotorepens greyii	Little Broad-nosed Bat																															1	1
Taphozous hilli	Hill's Sheathtail Bat																															1	
Vespadelus finlaysoni	Inland Cave Bat																															1	1
Vespadelus baverstocki	Inland Forest Bat																															1	1
Sminthopsis longicaudata	Long-tailed Dunnart	P4											1																				1
Sminthopsis dolichura	Little long-tailed Dunnart																															1	1

Potential relocation sites for Western Spiny-tailed Skink

Site ID	Comments on potential for skink relocation	Easting	Northing
1	Low granite outcrop, potential relocation site, within survey area	485597	6880794
2	Low granite outcrop, potential relocation site, within survey area	485602	6881003
3	Low granite outcrop, potential relocation site, within survey area	486511	6876482
4	Low granite outcrop, potential relocation site, within survey area	483459	6883206
5	Large extensive granite outcrop outside survey area, black form of Western Spiny-tailed Skink observed which may represent distinct genetic population from skinks recorded within survey area, therefore not suitable site for relocation	489483	6880811
6	Large extensive granite outcrop outside survey area, black form of Western Spiny-tailed Skink observed which may represent distinct genetic population from skinks recorded within survey area, therefore not suitable site for relocation	489212	6880474

GHD

Level 10
999 Hay Street
T: 61 8 6222 8222 F: 61 8 6222 8555 E: permail@ghd.com

6137117-84092/https://projects.ghd.com/oc/WesternAustralia1/yogimagnetiteproject/Delivery/Documents/6137117-REP-A_Fauna Assessment.docx

Document Status

Revision	Author	Reviewer		Approved for Issue		
		Name	Signature	Name	Signature	Date
A	G Gaikhorst, R Browne Cooper			M Brook		Feb 2019
B	Robert Browne-Cooper	J Collins		M Brook		27/02/2020

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