



Detailed Vertebrate Fauna Survey

Western Power Corridor to Service Cracking and Leaching Plant at Lot 500 Great Eastern Highway, Yilkari

Prepared for Lynas Kalgoorlie Pty Ltd
15th June 2021



Document Status						
Rev No.	Authors	Reviewer/s	Date	Approved for Issue		
				Name	Distributed To	Date
1			14/06/21			15/06/21



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EXECUTIVE SUMMARY

Lynas Kalgoorlie Pty Ltd (Lynas) commissioned Onshore Environmental Consultants Pty Ltd (Onshore Environmental) to undertake a detailed vertebrate fauna survey of a 3.2 kilometre (km) linear infrastructure corridor, herein referred to as the 'study area', that will service the Cracking and Leaching Plant constructed at Lot 500 Great Eastern Highway, Yilkari. The study area is situated to the west of Kalgoorlie in the Goldfields region of Western Australia.

The desktop study identified a total of 237 taxa as potentially occurring within or surrounding the study area including 134 birds, 70 reptiles, 30 mammals and three amphibians.

The detailed vertebrate fauna survey completed between the 6th and 13th of May 202 recorded 39 fauna species including 24 birds, eleven reptiles and four mammals. Three of the four mammal species recorded were introduced species.

There was no evidence of conservation significant fauna species within the study area.

A single fauna habitat type was described and mapped within the study area; *Eucalyptus* Woodland-Mallee. This habitat is considered to be well represented within the Murchison and Coolgardie bioregions. Habitat occurring within the study area has been subject to multiple disturbances over an extended period of time linked to frequent use by humans. The habitat is highly fragmented and altered due to the close proximity of the Great Eastern Highway, arterial roads, and adjacent industrial facilities.

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1.0 INTRODUCTION

1.1 Background

Onshore Environmental was commissioned by Lynas (on behalf of Western Power) to complete a detailed vertebrate fauna survey along a 3.2 km linear infrastructure corridor that will service the Cracking and Leaching Plant proposed for Lot 500 Great Eastern Highway, Yilkari. The total area of the study area is approximately 11 hectares (ha).

1.2 Site Overview

The study area is located on the western outskirts of the Kalgoorlie townsite in the Goldfields region of Western Australia (Figure 1). Kalgoorlie is the main regional urban and industrial centre within the region, with surrounding land uses including grazing of rangelands (pastoral stations), crown reserves and mining. Mining occurs immediately adjacent to the larger regional centres of Kalgoorlie and Coolgardie, along with many other smaller towns in the Goldfields.

1.3 Biogeographic Regions

The latest version of the Interim Biogeographic Regionalisation for Australia (IBRA7) divides Australia into 89 bioregions based on climate, geology, landform, native vegetation and species information. These bioregions are further divided into 419 sub-regions (Department of Environment 2013). The bioregions and sub-regions are the reporting unit for assessing the status of native ecosystems and their level of protection in the National Reserve System.

The study area is within the Eastern Goldfields subregion (COO003) of the Coolgardie bioregion, and close to the southern boundary of the Murchison bioregion. The Eastern Murchison subregion (MUR01) of the Murchison bioregion occurs to the north west of the study area.

The Eastern Goldfields sub-region covers over 5.1 million hectares (CALM 2002). The sub-region comprises vegetation dominated by mallee, *Acacia* thickets and shrub heaths on sandplains, diverse *Eucalyptus* woodlands fringing salt lakes, on ranges and in valleys, while salt lakes support dwarf shrublands of samphire. Woodlands and *Dodonaea* shrubland occur on basic granulites of the Fraser Range. The subregion is rich in endemic *Acacias* (CALM 2002).

The Eastern Murchison subregion is characterised by internal drainage and extensive areas of elevated red desert sandplain with minimal dune development. Broad plains of red-brown soils and breakaway complexes occur as well as red sandplains. Vegetation is dominated by Mulga Woodlands (often rich in ephemerals), hummock grasslands, saltbush shrublands and *Halosarcia* (samphire) shrublands (Cowan 2001).

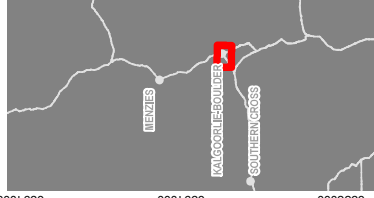
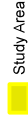


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FIGURE 1

Study Area
Location

Legend



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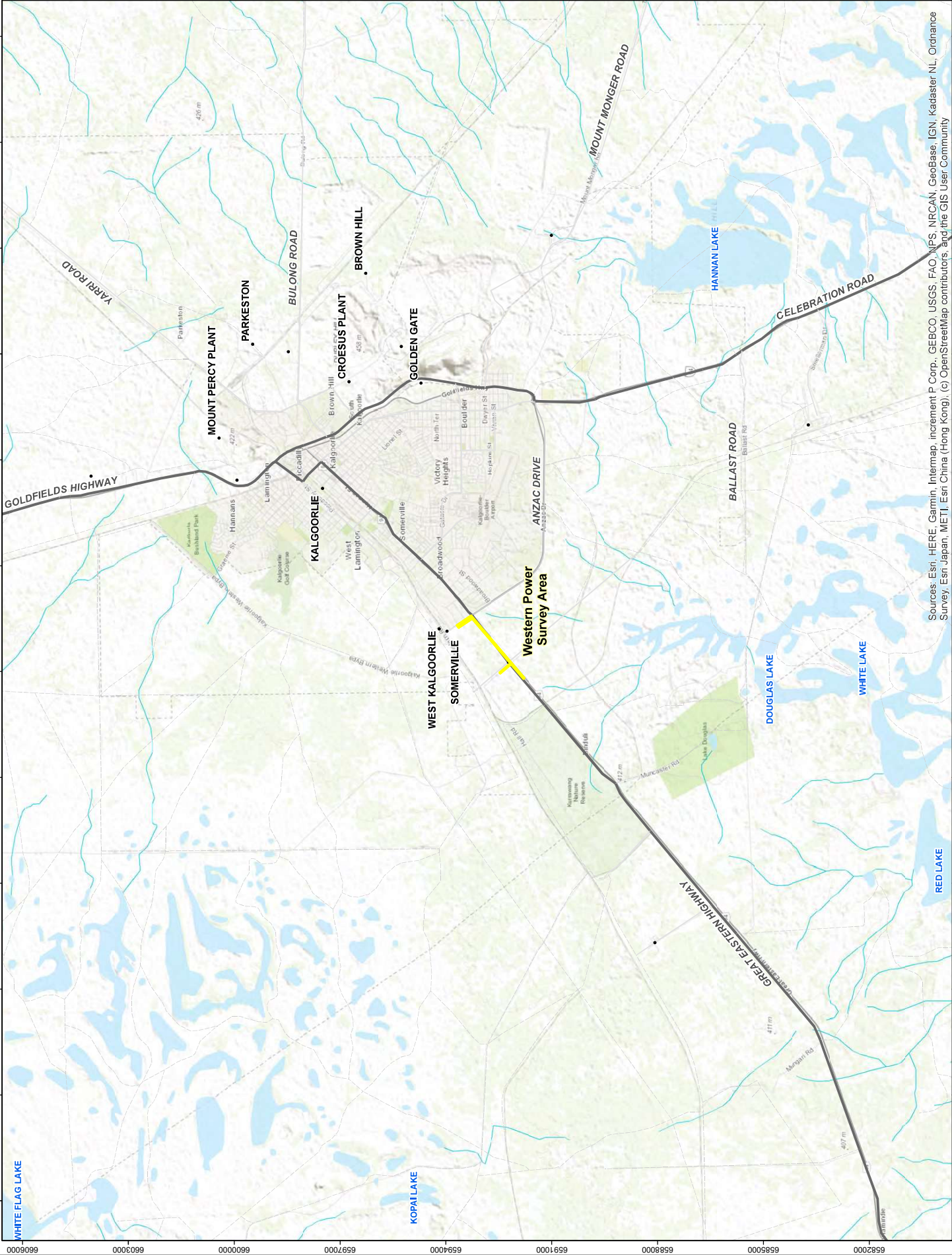


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Projection: MGA Zone 51

Date: 14/06/2021
Scale: 1:100,000
Figure: 1
Sheet Size: A3
Internal Reference: LYNAS_WP_Loc
Drawn by: GSM
Requested by: DB



Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community



1.4 Climate

The Kalgoorlie region has an arid to semi-arid climate. The closest weather station is at the Kalgoorlie-Boulder Airport situated 3 km east of the study area. Average annual rainfall is 265 mm with a bimodal rainfall pattern (Bureau of Meteorology (BOM) 2021). Rainfall peaks in February with another smaller peak in June. Summer rainfall originates from deteriorating tropical cyclones that cross the coast of northern Western Australia and dissipate to the south east. Winter rainfall results from cold fronts crossing the southern coastline and moving inland. Mean maximum summer temperatures reach 33 degrees with mean minimum winter temperatures of 5 degrees.

Rainfall prior to the May 2021 field survey was above average with 139 mm recorded in the four months prior to the field survey (Figure 2). A total of 12.4 mm was received over three days (4th-6th May) at the start of the survey period.

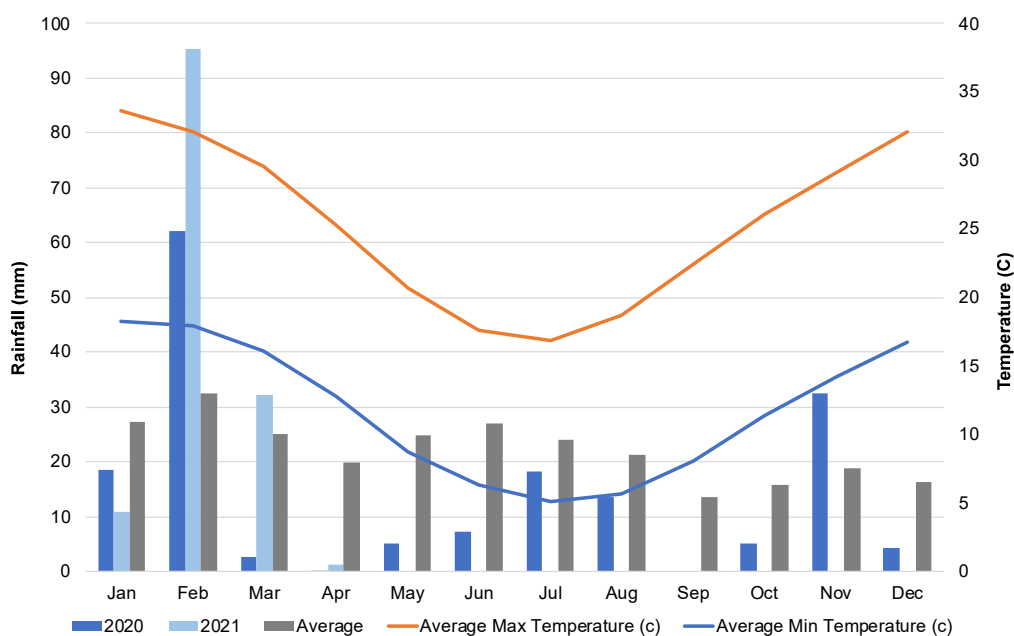


Figure 2 Rainfall data recorded at the Kalgoorlie-Boulder Airport station for 2020 and January to April 2021, with long term average rainfall and temperature data (Bureau of Meteorology 2021).

1.5 Geology

The Kalgoorlie Province is on the central eastern portion of the Yilgarn Craton, mostly overlying Archaean rocks of the Southern Cross Domain and the Eastern Goldfields Superterrane. To the north-west is the Murchison Domain. The basement rocks are a mix of granite, gneiss and greenstone. Even-grained porphyritic granitic rocks (intruded by quartz veins and dolerite dykes) are most common across the north, as well as in the western half and the north-east. The largest areas of migmatite and gneiss are found in the south-west. The greatest concentration of greenstone belts is in the centre of the eastern half, between Norseman and Kalgoorlie. They are also common along the south-western margin and to the

south of Lake Barlee. These greenstone belts contain a mixture of metamorphosed mafic to ultra-mafic volcanic rocks (including basalt, amphibolite, dolerite and gabbro), felsic volcanic rocks, and metasedimentary rocks (including cherts and banded iron formations). Mesoproterozoic rocks of the Albany-Fraser Orogen are found in the south-eastern corner. These include the gneiss of the Biranup Complex and the weakly to strongly deformed granite of the Nornalup Complex. Overlying much of the Albany-Fraser Orogen is a veneer of Eocene sediments belonging to the Balladonia Shelf of the Eucla Basin. To the north-east of Norseman, an outcrop of Mesoproterozoic arenaceous and argillaceous metasedimentary sandstone and shale of the Woodline Formation occurs. The bedrock has been extensively weathered and laterised. Much is obscured by Tertiary and Quaternary alluvial, colluvial and aeolian deposits.

1.6 Soils

Tille (2007) classified the most recent and detailed mapping of Western Australia's rangelands and arid interior into a hierarchy of soil-landscape mapping units. The study area is located within the Kalgoorlie Province, which has been divided into six soil-landscape zones. The study area occurs within the Kambalda Zone.

The Kambalda Zone overlies the greenstone of the Eastern Goldfields and Southern Cross Granite-Greenstone Terrane tectonic units of Tyler and Hocking (2001). It lies within the Salinaland and Coonana-Ragged Plateau Sections of Jennings and Mabbutt (1977), and is differentiated from the Norseman Zone due to the preponderance of the stony plains with acacia shrublands and halophytic shrublands, low hills with eucalypt or acacia woodlands with halophytic undershrubs, stony plains with acacia shrublands and alluvial plains with eucalypt woodlands and halophytic undershrubs rangeland land types (Pringle 1994).

The zone comprises flat to undulating plains (with hills, ranges and some salt lakes and stony plains) on greenstone and granitic rocks of the Yilgarn Craton. Soils include calcareous loamy earths and red loamy earths associated with salt lakes, red brown hardpan shallow loams and red sandy duplexes with mallee blackbutt-salmon gum-gimlet woodlands with mulga and halophytic shrublands (and some spinifex grasslands).

1.7 Landforms

The Kalgoorlie Province consists of an extensive plateau of low relief with flat to undulating plains and small valleys (occasionally broken by low narrow rocky hills, ridges, tors and bosses) most commonly found on granitic terrain. These plains support silcrete duricrust, claypans, salt lakes with dunes and lunettes, gilgai areas, small remnants of sand plain, and small dune tracts. Low breakaways with short saline footslopes are also occasionally present. Below these plains are broad, flat to undulating shallow valley plains formed on Quaternary alluvium and colluvium. These plains show little defined drainage with occasional seasonal lakes and claypans as well as isolated granitic and basic rock outcrops. Slightly lower down in the landscape there are broad, flat valleys with chains of salt lakes. Also present on these valley floors are saline flats, claypans, kopi dunes, sand dunes, and sometimes tors and bosses of outcropping granites (Tille 2007).

Higher up in the landscape gently sloping to gently undulating plateau areas occur on granites and gneisses. These landscapes have long gentle slopes and, in places, abrupt erosional scarps. Some granitic bosses and tors are present. Rocky ranges, hills and ridges have formed on the greenstone, along with some undulating to low hilly country. Associated with this hilly terrain are gently undulating stony plains and low rises on limonite. Level to gently undulating sandplains and gravelly sandplains are mostly found over lateritic residuals and granitic basement. There are also some extensive loamy plains with sandy surfaces (Tille 2007).

The study area is topographically flat, set on predominantly orange and yellow sands with the dominant landform being hardpan plain. The study area is situated on road verges and is dissected by tracks, artificial drains and parking areas, particularly in the north east.

1.8 Land Systems

The Department of Agriculture (now the Department of Primary Industries and Regional Development [DPIRD]) has conducted 14 rangeland surveys since 1972. These inventory and condition surveys used an integrated survey method involving the land system approach to rangeland description and evaluation. The primary objective of the surveys was to provide comprehensive descriptions and mapping of the biophysical resources of the region, as well as an evaluation of the condition of soils and vegetation. The mapping was based on patterns in topography, soils and vegetation.

Two rangeland surveys have been completed in the vicinity of the study area. The land systems of the Kambalda area were described by Payne *et al* (1998) and a survey of the north-eastern Goldfields was undertaken by Pringle *et al* (1994). The mapping from these two surveys covers areas to the east and south of the study area, with no land system maps available for the immediate study area. A total of six land systems occur within a 20 km radius of the study area (Table 1). The Gumland Land System is the most representative of the basis of landforms and vegetation occurring within the study area, and is described as 'extensive pedepains supporting eucalypt woodlands with halophytic and non-halophytic shrub understoreys' (Payne *et al* 1998). Additional land systems occurring in the general area include basalt and greenstone rises, low hills, stony plains, and saline or seasonally inundated lakes (Table 1).

Table 1 Land systems occurring within a 20km radius of the study area.

Land System	Description
Gumland	Extensive pedepains supporting eucalypt woodlands with halophytic and non-halophytic shrub understoreys.
Graves	Basalt and greenstone rises and low hills supporting eucalypt woodlands with prominent saltbush and bluebush understoreys.
Moriarty	Low greenstone rises and stony plains supporting chenopod shrublands with patchy eucalypt overstoreys.
Zed	Low hills, rises and gently undulating stony plains based on metasedimentary rocks supporting acacia shrublands.
Lake Bed	Bare lake beds inundated for short periods after rain.
Lefroy	Salt lakes and fringing saline plains, sandy plains and dunes with halophytic shrublands.

2.0 METHODOLOGY

2.1 Legislation and Guidance Statements

The detailed vertebrate fauna survey was carried out in a manner that was compliant with EPA requirements for the environmental surveying and reporting of vertebrate fauna in Western Australia:

- Statement of Environmental Principles, Factors and Objectives (EPA 2020a);
- Technical Guidance - Terrestrial vertebrate fauna surveys for environmental impact assessment (EPA 2020b); and
- Environmental Factor Guideline Terrestrial Fauna (EPA 2016).

Other guidelines relevant to the survey include:

- National Manual for the Malleefowl Monitoring System (MNMMS) (National Heritage Trust 2016);
- Department of the Environment, Water, Heritage and the Arts (DEWHA) (2010a) Survey Guidelines for Australia's Threatened Bats;
- DEWHA (2010b) Survey Guidelines for Australia's Threatened Birds;
- DEWHA (2010c) Survey Guidelines for Australia's Threatened Frogs;
- Department of Sustainability, Environment, Water, Population and Communities (DSEWPC) (2011a) Survey Guidelines for Australia's Threatened Mammals; and
- DSEWPC (2011b) Survey Guidelines for Australia's Threatened Reptiles.

2.2 Desktop Assessment

2.2.1 Literature Review

Regional scale reports relevant to the study area locality were reviewed, including:

- a summary of bioregional data (Cowan 2001);
- land systems mapping (Pringle *et al* 1994, Curry *et al* 1994, Payne *et al* 1998); and
- Biological Surveys of the Eastern Goldfields (Biological Surveys Committee 1984).

A review of all publicly available literature in close proximity to the study area was undertaken, including a search of the Department of Water and Environmental Regulation's (DWER) Index of Biodiversity Surveys for Assessment (DWER 2021). No previous fauna surveys were found to have been completed within the study area. However, several surveys had been completed within the Kalgoorlie area. The previous survey work is summarised in more detail in Section 3.1 and Appendix 1.

2.2.2 Database Searches

The desktop assessment included searches of several databases relating to significant fauna previously collected or described within, or in close proximity to, the study area. For this report the search was extended beyond the study area to place fauna values into a local and regional context. The following databases were searched:

- NatureMap: This database represents the most comprehensive source of information on the distribution of Western Australia's fauna (20 km radial search conducted);
- Department of Biodiversity, Conservation and Attractions (DBCA) Threatened and Priority Fauna database search (50 km radial search conducted);
- Environment Protection Biodiversity Conservation (EPBC) Act Protected Matters database (50 km radial search conducted);
- BirdLife Australia's Birddata dataset (10 km radial search conducted); and
- Atlas of Living Australia database (10 km radial search conducted).

The results from the above database searches were compiled to provide a list of fauna species that could potentially occur within or surrounding the study area.

2.2.3 Assessment of Likelihood of Occurrence in the Study Area

A list of conservation significant species occurring within a 50 km radius of the study area was compiled from the above database searches. The likelihood of each taxon occurring within the study area was assessed based on habitat availability, the age and proximity of previous records, and regional occurrence of the species (Table 2). Habitat availability and suitability was assessed based on aerial imagery and previous knowledge of the survey area and surrounds.

Table 2 Ranking system used to assign the likelihood that a species would occur in the study area.

Rank	Criteria
Recorded	The species has been recorded in the study area.
Likely to occur	Suitable habitat exists within the study area and the species has been recorded within 20 km in the last 10 years.
Possible to occur	Suitable habitat exists within the study area and the species has been recorded within 50 km in the last 20 years.
Unlikely to occur	No suitable habitat occurs within the study area; and/or there are no previous records within a 50 km radius of the study area and/or previous records are >20 years old.

2.2.4 Assessment of Conservation Significance

The conservation significance of fauna and ecological communities are classified at a Commonwealth, State and Local level on the basis of various Acts and Agreements, including:

International Level:

- IUCN: The IUCN 'Red List' lists species at risk under nine categories (status codes) (Appendix 2); and
- International Conventions: Migratory taxa listed under the Japan-Australia Migratory Bird Agreement (JAMBA), China-Australia Migratory Bird Agreement (CAMBA), Republic of Korea-Australia Migratory Bird Agreement (ROKAMBA), and Convention on the Conservation of Migratory Species of Wild Animals (Bonn Convention).

Commonwealth Level:

- EPBC Act: The Department of Agriculture, Water and the Environment (DAWE) lists Threatened fauna, which are determined by the Threatened Species Scientific Committee according to criteria set out in the Act. The Act lists fauna that are considered to be of conservation significance under one of six categories (Appendix 2).

State Level:

- Biodiversity Conservation (BC) Act: At a State level, native fauna species are protected under the BC Act - Wildlife Conservation Notice. A number of species are assigned an additional level of conservation significance based on a limited number of known populations and the perceived threats to these locations (Appendix 2); and
- DBCA Priority list: DBCA produces a list of Priority species that have not been assigned statutory protection under the BC Act. Possibly threatened species that do not meet survey criteria, or are otherwise data deficient, are added under Priorities 1, 2 or 3. Species that are adequately known, are rare but not threatened, or meet criteria for near threatened, or that have been removed from the threatened species list for other taxonomic reasons, are placed in Priority 4. These species require regular monitoring (see Appendix 2).

Local Level:

- Species may be considered of local conservation significance because of their patterns of distribution and abundance. Although not formally protected by legislation, such species are acknowledged to be in decline as a result of threatening processes, primarily habitat loss through land clearing.

2.3 Survey Methodology

2.3.1 Timing and Personnel

A single season detailed vertebrate fauna survey was completed by Senior Ecologist Ms Jessica Waters, assisted by Principal Zoologist Mr Michael Brown and Principal Botanist Dr Jerome Bull, working over an eight-day field trip between the 6th and the 13th of May 2021.

2.3.2 Surveying of Study Area

The fauna survey employed a variety of systematic and opportunistic sampling techniques. Systematic sampling refers to data methodically collected over a fixed time period in a discrete habitat type, using an equal or standardised sampling effort. Opportunistic sampling includes data collected non-systematically within and outside fixed sampling sites.

At all survey sites a combination of systematic and opportunistic sampling was conducted over a seven day period, including a combination of trapping, opportunistic searching, and bird censusing. More specifically, sampling included:

- Pit-trap and drift fence;
- Elliot box traps;
- Funnel traps;
- Cage traps;
- Opportunistic searching; and
- Spotlighting (nocturnal searches).

To supplement the systematic sampling, other techniques employed over the wider study area included:

- Searching for secondary evidence (tracks, scats, diggings, burrows and nests); and
- Opportunistic sightings and call records.

The entire study area was ground truthed and assessed to document habitat characteristics including evaluation of the presence of habitats suitable to support conservation significant fauna. Habitat assessments and previous knowledge of the study area from surveys in close proximity was used to identify suitable representative trapping sites. One trapping site was established within the one habitat defined within the study area.

The survey recorded any observations of fauna species made via primary or secondary evidence within and immediately surrounding the study area. In addition, low intensity sampling was undertaken involving bird census and active foraging. Targeted searches (as detailed below) were also undertaken for conservation significant fauna species identified during the database review.

The following parameters were recorded for all conservation significant fauna:

- Co-ordinate locations;
- Description of habitat in which the species was located; and
- Photograph of the species, evidence of species and/or habitat.

Targeted Fauna Searches

Targeted searches were undertaken for conservation significant fauna species throughout the study area. The study area was traversed on foot, providing an ability to opportunistically record evidence of Threatened and Priority listed fauna and undertake closer examination of specific habitats likely to support conservation significant fauna.

Trapping Program

One trapping site was established within the study area split in to two trap lines (Figure 3). Trap location was chosen to target higher quality habitat with consideration of habitat features likely to support a variety of species. The trap site consisted of a split trap line comprising two 30 metre (m) drift fences (Plate 1). The trap line was split to provide greater spatial representation across the habitat type and to target areas of high-quality microhabitats (i.e. areas with dense vegetation cover and leaf litter cover). Each drift fence comprised five pit fall traps (20 litre buckets), six funnel traps, five small Elliot traps and two cage traps. Pit fall traps were located approximately 5 m apart, with funnels at each end of the drift fence and between the pitfall traps. Cage and small Elliot traps were strategically located at evenly spaced points surrounding the trap line. A total of 36 traps (ten pit-falls, 12 funnel, ten small Elliot and four cage traps) were deployed for seven nights.

Funnel traps were covered with hessian and debris was placed in the bottom of pit fall traps to provide shade for captures. Traps were checked early in the day and in the evening and were cleared within four hours of sunrise.



Plate 1 Trap line with pitfall and funnel traps.

Active Foraging

Active foraging, involving raking litter and turning over rocks, was completed throughout the study area. Records were captured for any fauna species sighted during foraging.

Avifauna Surveying

Bird censusing was undertaken on six mornings for a 30-minute interval at the trap line locations. A total of three person-hours of bird censusing was undertaken across the survey period. Additionally, opportunistic observations of bird sightings and calls were recorded whilst traversing the study area and surrounds.

Malleefowl have previously been recorded within the region and were targeted during this survey by walking transects to search for nesting mounds.

Nocturnal searches

Nocturnal searches were undertaken within the study area on the 7th and 8th of May 2021. Each search period was two hours in duration. The nocturnal searches involved spotlighting trees and undertaking foot transects using a head torch. Additionally, tracks within the study area were driven at low speed and any fauna encountered was recorded.

Opportunistic Recordings

During the survey work non-systematic opportunistic observations and searches were made and recorded. These recordings focused primarily on conservation significant fauna and included secondary evidence such as tracks, scats, diggings and feeding signs.

2.3.3 Fauna Habitat Mapping

Assessment of habitats were undertaken throughout the study area to document habitat characteristics and map the fauna habitats. The fauna habitat mapping utilised high-resolution aerial photography of the study area at a scale of 1:10,000. Ground-truthing of the study area was completed during the survey with habitat characteristics recorded. The suitability of habitat and presence of habitat features that may support species of conservation significance was noted as part of the habitat assessment.

2.3.4 Species Identification and Nomenclature

Vertebrate fauna species were identified at the time of capture/observation in the field. All species were able to be fully identified with no specimens needed to be taken for further examination. Nomenclature and conservation significance rankings used in this report are in accordance with the current listing of WA fauna recognised by the WA Museum (WAM), as listed on the Checklist of the Terrestrial Vertebrae of Western Australia (WAM 2021) for mammals and herpetofauna, and the Australian Faunal Directory for birds (DAWE 2021a).

2.3.5 Survey Constraints

The EPA Technical Guidance (EPA 2020b) list potential limitations that field surveys may encounter. Limitations associated with the detailed vertebrate fauna survey are addressed in Table 3. There were no survey-specific limitations for this survey.

Table 3 Relevance of limitations, as identified by EPA (2016c), to the vertebrate fauna survey.

Variable	Impact on Survey Outcomes
Availability of data and information	The desktop searches provided an extensive species list, background information and regional context for the study area. While no issues with the reliability or accuracy of the desktop searches or previous surveys were identified, it is acknowledged that there may be errors in the data presented from these sources.
Experience levels	The ecologist who executed this survey was a practitioner suitably qualified in their respective field; Jessica Waters (Senior Ecologist ten years' experience) and has conducted numerous surveys in the Goldfields region. The ecologist was assisted by zoologist Michael Brown (Principal Zoologist >14 years' experience), with botanist Jerome Bull providing additional assistance to ensure pitfall traps were promptly installed (Principal Botanist >15 years' experience).
Scope (fauna groups sampled)	All allocated tasks were achieved during the survey, with trapping, foraging, bird surveys, targeted searches and nocturnal spotlighting undertaken.

Variable	Impact on Survey Outcomes
Timing, weather, and season.	<p>The survey was undertaken in early May 2021 which is just outside the recommended survey season for reptile species within this region (EPA 2020b). Temperatures before and during the survey period were generally above average for May.</p> <p>The weather during the survey and for the four months prior to survey was consistent with the climate data for the region. Rainfall for the Kalgoorlie area was above average prior to the survey. The survey was conducted following three days of rainfall (12 mm), and significant rainfall also occurred in February. The timing of the survey is not considered to be a constraint to the survey outcomes.</p>
Disturbance to site which may affect survey results	Disturbances within the study area included tracks and roads, powerlines, an industrial area in close proximity, rubbish and vehicle tracks. None of the disturbances were a constraint to the completeness of the survey.
Adequacy of the survey intensity and proportion of survey achieved	There were no weather, access, or timing issues relating to this survey that affected the outcome, and it is therefore considered to be a complete survey. All tasks from the scope of works were completed within the time frame of the survey and the study area was extensively ground truthed.
Remoteness and/or access	There were no access restrictions experienced during the survey. The study area was accessible by vehicle and on foot.
Proportion of fauna identified, recorded or collected	Discussed in Section 4.
Problems with data and analysis, including sampling biases	No problems with the data recorded or the analysis of the data were identified during the survey.



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FIGURE 3

Location of trapping sites within the study area

Legend



Datum: GDA94
Projection: MGR Zone 51

Date: 14/06/2021
Scale: Full
Figure: 3
Sheet Size: A3
Internal Reference: Lynas_WP TS
Drawn by: GSM
Requested by: DB



3.0 RESULTS

3.1 Desktop Review

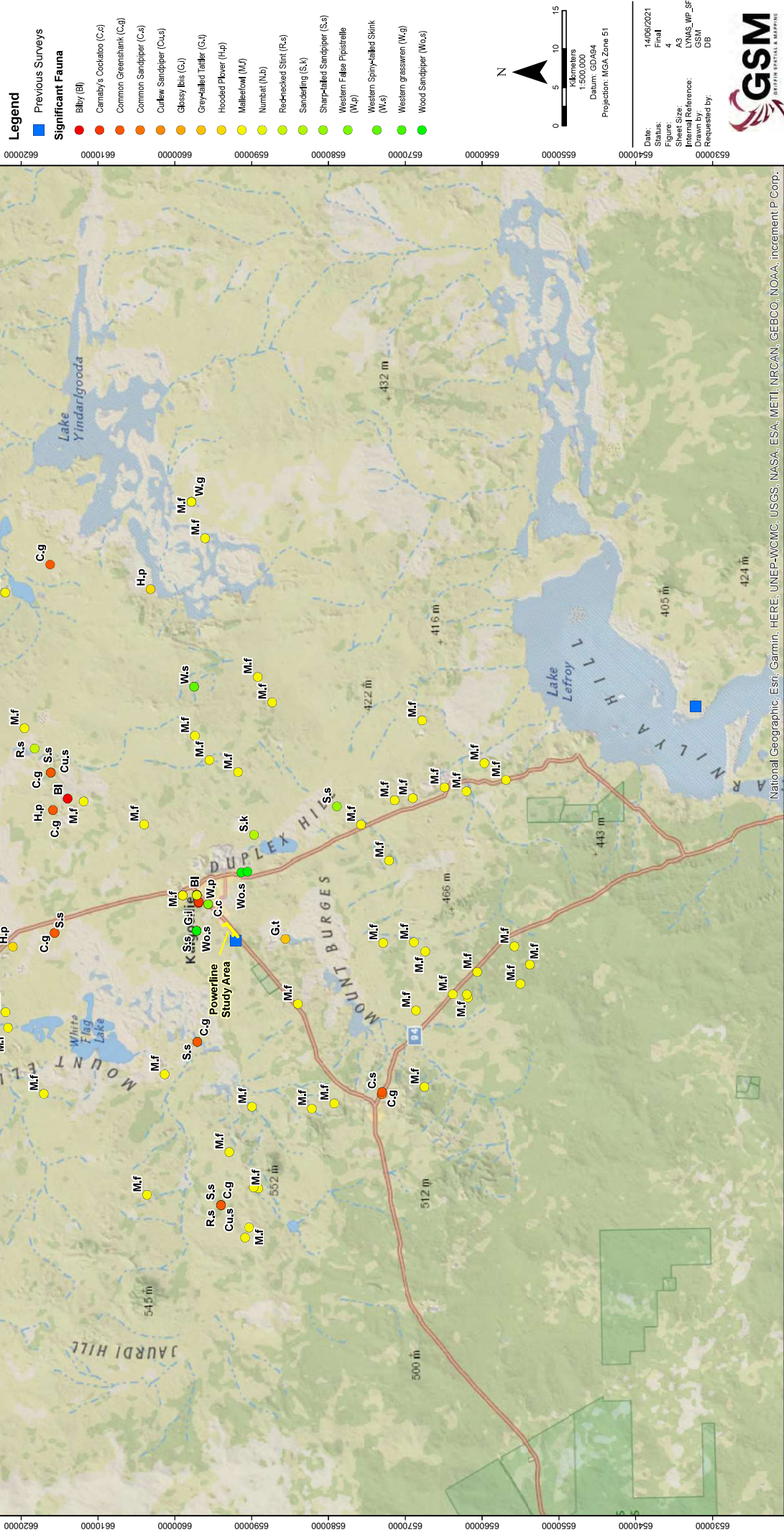
3.1.1 Previous Baseline Fauna Surveys

A series of broad scale biological surveys of the Eastern Goldfield district has been undertaken by the Biological Surveys Committee. The district covers an area of 266,000 km² which has been divided into 12 zones. At the time of this survey work in the early 1980's, no significant biological surveys of the Goldfields had been undertaken (Biological Surveys Committee 1984). The study area lies within the Kurnalpi-Kalgoorlie zone (McKenzie *et al* 1992) surveyed between 1979 and 1981. A total of 20 native mammals, three amphibians, 45 reptiles and 97 bird species were recorded within the zone. Broad landforms were described as breakaways, dune fields, granite exposures, hills, salt lake features, calcareous plains, sandplains, undulating plains and broad valleys (McKenzie *et al* 1992). Broad valleys and undulating plains were the dominant landforms recorded within the zone.

In addition to the larger broad scale surveys, a number of smaller intensive biological surveys have been completed in recent years associated with resource development projects in the vicinity of Kalgoorlie. These surveys have resulted in the collection of site-specific biological survey data, most of which has been undertaken for formal environmental impact assessments. Onshore Environmental has recently completed a detailed vertebrate fauna survey of Lynas' nearby By-product Disposal Site (Onshore Environmental 2021). Four additional surveys have been completed in close proximity. Findings from these surveys are summarised in Appendix 1, including survey timing, survey type, fauna statistics, habitat types, significant fauna records and significant fauna likely to occur. The locations of previous surveys are shown in Figure 4.

FIGURE 4

Locations of previous surveys and significant fauna from the desktop assessment



3.1.2 Threatened Fauna listed under the EPBC Act

A search of the EPBC Act Protected Matters database was undertaken for a 50 km radius around the study area (DAWE 2021b). The database search listed five Threatened fauna species, or species habitat, that may occur in the study area:

Mammals:

- Chuditch (*Dasyurus geoffroii*) - listed as Vulnerable.

Birds:

- Curlew Sandpiper (*Calidris ferruginea*) - listed as Critically Endangered, Migratory and Marine;
- Night Parrot (*Pezoporus occidentalis*) - listed as Endangered;
- Grey Falcon (*Falco hypoleucos*) - listed as Vulnerable; and
- Malleefowl (*Leipoa ocellata*) - listed as Vulnerable.

The database search identified eleven additional species listed as Migratory or Marine under the EPBC Act for which the species or species habitat may occur in the study area:

- Common Sandpiper (*Actitis hypoleucos*) - listed as Migratory and Marine;
- Curlew Sandpiper (*Calidris ferruginea*) - listed as Critically Endangered, Migratory and Marine;
- Fork-tailed Swift (*Apus pacificus*) - listed as Migratory and Marine;
- Cattle Egret (*Ardea ibis*) - listed as Marine;
- Sharp-tailed Sandpiper (*Calidris acuminata*) - listed as Migratory and Marine;
- Pectoral Sandpiper (*Calidris melanotos*) - listed as Migratory and Marine;
- Black-eared Cuckoo (*Chrysococcyx osculans*) - listed as Marine;
- Rainbow Bee-eater (*Merops ornatus*) - listed as Marine;
- Hooded Plover (*Thinornis rubricollis*) - listed as Marine;
- Grey Wagtail (*Motacilla cinerea*) - listed as Migratory and Marine; and
- Common Greenshank (*Tringa nebularia*) - listed as Migratory and Marine.

3.1.3 Threatened Fauna listed under the BC Act

The DBCA rare fauna database search (DBCA 2019) and NatureMap search (DBCA 2021) identified 15 species listed as Scheduled species under the BC Act from a 50 km radius around the study area. These species are listed below and the location of the records in relation to the study area is shown in Figure 4:

Mammals:

- Numbat (*Myrmecobius fasciatus*) - listed as Endangered;
- Chuditch (*Dasyurus geoffroii*) - listed as Vulnerable; and
- Greater Bilby (*Macrotis lagotis*) - listed as Vulnerable.

Reptiles:

- Western Spiny-tailed Skink (*Egernia stokesii badia*) - listed as Vulnerable.

Birds:

- Carnaby's Cockatoo (*Calyptorhynchus latirostris*) - listed as Endangered;
- Common Greenshank (*Tringa nebularia*) - listed as Migratory and Marine;

- Curlew Sandpiper (*Calidris ferruginea*) - listed as Critically Endangered, Migratory and Marine;
- Glossy Ibis (*Plegadis falcinellus*) - listed as Marine;
- Grey-tailed Tattler (*Tringa brevipes*) - listed as Migratory and Marine;
- Malleefowl (*Leipoa ocellata*) - listed as Vulnerable;
- Red-necked Stint (*Calidris ruficollis*) - listed as Migratory and Marine;
- Sanderling (*Calidris alba*) - listed as Migratory and Marine;
- Sharp-tailed Sandpiper (*Calidris acuminata*) - listed as Migratory and Marine;
- Common Sandpiper (*Actitis hypoleucos*); - listed as Migratory and Marine; and
- Wood Sandpiper (*Tringa glareola*) - listed as Migratory and Marine.

3.1.4 Priority Fauna recognised by the DBCA

The DBCA rare fauna database search (DBCA 2019) and NatureMap search (DBCA 2021) identified four Priority fauna species as potentially occurring within a 50 km radius of the study area. These species are listed below and the location of the records in relation to the study area is shown in Figure 4:

Mammal:

- Western False Pipistrelle (*Falsistrellus mackenziei*) - listed as Priority 4.

Birds:

- Hooded Plover (*Thinornis rubricollis*) - listed as Priority 4;
- Western Grasswren (*Amytornis textilis textilis*) - listed as Priority 4; and
- Grey-tailed Tattler (*Tringa brevipes*) - listed as Priority 4.

3.1.5 Assessment of Likelihood to Occur within the Study Area

A total of 25 conservation significant fauna species were identified during the desktop assessment. Three of these taxa were considered 'likely' to occur within the study area (as per criteria set out in Table 2) based on occurrence of habitat and proximity/age of previous records (Table 4). The remaining taxa were considered 'unlikely' to occur within the study area.

Table 4 Conservation significant fauna species identified during the desktop assessment (DBCA 2019, DBCA 2021).

Common Name	Scientific Name	EPBC Act	Cons. Code BC Act	IUCN	DBCA	Habitat Preference	Suitable Habitat Present	Likelihood in the Study Area	Rationale
Mammals									
Numbat, Walpurti	<i>Myrmecobius fasciatus</i>	EN	EN, S2	EN		Eucalyptus woodland and forests	Yes	Unlikely	A single historical record exists within the town of Kalgoorlie. No additional records within close proximity. Nearest known population is over 400km south east.
Bilby, Dalgyte,	<i>Macrotis lagotis</i>	VU	VU, S3	VU		Open tussock grassland, mulga woodland/shrubland on ridges and rises and hummock grassland on sandplains	No	Unlikely	No suitable habitat
Chuditch, Western Quoll	<i>Dasyurus geoffroii</i>	VU	VU, S3	VU		Traditionally occupied a wide range of habitat, but today survives in <i>Eucalyptus</i> forest	Yes	Unlikely	A single historical record occurs in the vicinity but is 50km from the study area.
Western False Pipistrelle	<i>Falstrellus mackenziei</i>			NT	P4	Wet sclerophyll forests of Karri, Jarrah and Tuart eucalypts	No	Unlikely	No suitable habitat
Reptiles									
Western Spiny-tailed Skink	<i>Egernia stokesii badia</i>	EN	VU, S3	EN		York gum, and Salmon Gum woodland with an abundance of hollow logs	Yes	Unlikely	A single historical record within 20km
Birds									
Common Sandpiper	<i>Actitis hypoleucos</i>	Mi	S5	LC		Lakes and wetlands	No	Unlikely	No suitable habitat
Fork-tailed Swift	<i>Apus pacificus</i>	Mi	S5			Aerial, inland plains but sometimes above foothills or in coastal areas	Yes	Unlikely	Not recorded within 50km
Cattle Egret	<i>Ardea ibis</i>	Ma				Grasslands, woodlands and wetlands, not common in arid areas	No	Unlikely	No suitable habitat
Sharp-tailed Sandpiper	<i>Calidris acuminata</i>	Mi	S5	LC		Lakes and wetlands	No	Unlikely	No suitable habitat
Sanderling	<i>Calidris alba</i>	Mi	S5	LC		Lakes and wetlands	No	Unlikely	No suitable habitat
Curlew Sandpiper	<i>Calidris ferruginea</i>	CR	CR, S1	NT		Intertidal mudflats and ephemeral and permanent lakes	No	Unlikely	No suitable habitat
Pectoral Sandpiper	<i>Calidris melanotos</i>	Mi				Shallow fresh to saline wetlands	No	Unlikely	No suitable habitat
Red-necked Stint	<i>Calidris ruficollis</i>	Mi	S5	LC		Lakes and wetlands	No	Unlikely	No suitable habitat

Common Name	Scientific Name	EPBC Act	Cons. Code BC Act	IUCN	DBCA	Habitat Preference	Suitable Habitat Present	Likelihood in the Study Area	Rationale
Camaby's Cockatoo	<i>Calyptrorhynchus latirostris</i>	EN	EN, S2	EN		Native woodland dominated by large trees like Eucalyptus and Wandoo, as well as nearby heathland	No	Likely	Recent records within the town of Kalgoorlie
Black-eared Cuckoo	<i>Chrysococcyx osculans</i>	Ma				Dry open forests, scrublands, mallee, mulga, lignum, saltbush and riverside thickets	Yes	Unlikely	Not recorded within 50km
Grey Falcon	<i>Falco hypoleucos</i>		VU			Low plains with watercourses, also grassland and sand dune habitats	No	Unlikely	No suitable habitat
Malleefowl	<i>Leipoa ocellata</i>	VU	VU, S3	VU		Scrubland and woodland dominated by mallee and wattle species	Yes	Likely	Several recent records within 20km
Rainbow Bee-eater	<i>Merops ornatus</i>	Ma				Open forests, woodlands and shrublands, and cleared areas, usually near water	Yes	Likely	Recorded within 20km
Grey Wagtail	<i>Motacilla cinerea</i>	Mi				Associated with water	No	Unlikely	No suitable habitat
Night Parrot	<i>Pezoporus occidentalis</i>	EN	CR	EN		Triodia (Spinifex) grasslands and/or chenopod shrublands in the arid and semi-arid zones	No	Unlikely	No suitable habitat
Glossy Ibis	<i>Plegadis falcinellus</i>	Mi	S5	LC		Lakes and wetlands	No	Unlikely	No suitable habitat
Hooded Plover, Hooded Dotterel	<i>Thinornis rubricollis</i>			LC	P4	Lakes and wetlands	No	Unlikely	No suitable habitat
Grey-tailed Tattler	<i>Tringa brevipes</i>	Mi	S5	LC		Lakes and wetlands	No	Unlikely	No suitable habitat
Wood Sandpiper	<i>Tringa glareola</i>	Mi	S5	LC		Lakes and wetlands	No	Unlikely	No suitable habitat
Common Greenshank, Greenshank	<i>Tringa nebularia</i>	Mi	S5	LC		Intertidal mudflats and ephemeral and permanent lakes	No	Unlikely	No suitable habitat

3.2 Weather

Weather experienced prior to and during the field survey period was consistent with long term average weather conditions recorded for the month of May at Kalgoorlie. The average maximum temperature for the Kalgoorlie weather station during May is 20.7°C with an average minimum of 8.7°C (Figure 5). Average rainfall for May is 24.8 mm.

The maximum temperature reached during the survey was 27.8°C on the 12th of May 2021 while the minimum temperature was 7.4°C on the 9th of May 2021 (Figure 5). A total of 12 mm of rainfall was received over three days prior to and during the survey.

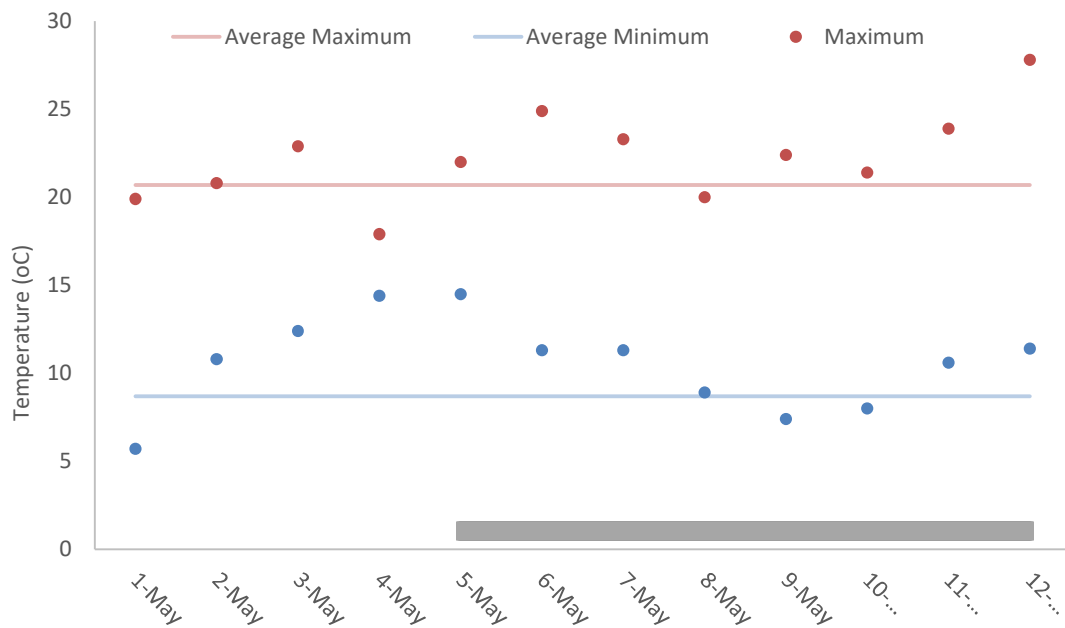


Figure 5 Temperature observations for the Kalgoorlie weather station prior to and during the survey period.

3.3 Fauna Habitats

3.3.1 Fauna Habitat Type

One broad fauna habitat was mapped within the study area on the basis of vegetation, landforms and microhabitat availability for fauna species (Figure 6). This habitat is well represented within the Coolgardie and Murchison Bioregions. The habitat characteristics are summarised in Table 5 and described below.

Eucalyptus Woodland-Mallee

The Woodland-Mallee fauna habitat is characterised by a woodland vegetation structure comprising *Eucalyptus salmonophloia*, *Eucalyptus transcontinentalis* and *Eucalyptus lesouefii*, with areas of mallee dominated by Gimlet (*Eucalyptus salubris*) and other mallees (*Eucalyptus griffithsii*, *Eucalyptus oleosa* and *Eucalyptus yilgarnensis*) (Plates 2-5). This habitat type has the potential to provide microhabitats such as tree hollows, logs, and dense leaf litter cover. The habitat within the study area has been subjected to multiple disturbances, and was generally degraded with an open understorey stratum. The disturbances recorded within the study area and the close proximity to town reduce the likelihood of species of conservation significance utilising the habitat within the study area.

3.3.2 Fauna Habitat Condition

Habitat condition within the study area was rated as poor to degraded. The study area is situated in close proximity to Kalgoorlie and has been subjected to multiple disturbances linked to frequent use by humans. The habitat is highly fragmented and altered due to the close proximity of the highway, arterial roads and industrial facilities. The study area is dissected by numerous informal vehicle tracks, powerlines, parking areas, fences and artificial drainages. Parts of the study area, particularly close to town, are impacted by rubbish, weeds, clearing and ground disturbance. Evidence of feral cats was also recorded from the study area, and other feral predators such as dogs are likely to occur due to the close proximity to town.

Table 5 Overview of the Woodland-Mallee fauna habitat represented in the study area.

Name	Description	
Woodlands	<i>Eucalyptus</i> Woodlands/Mallee on flat hardpan plains	
Trapping Site	Site 1	
Area (ha)	11	
Landform	Hardpan Plains	
% Ground Cover	Rock	0
	Soil	30-60
	Leaf Litter	10-50
	Vegetation	50-75
Rocks	Type	N/A
	Size (mm)	-
	Abundance (%)	-
	Exposed Bedrock (%)	0
Soil	Type	Sandy-Loam
	Colour	Red
Habitat Features	Aspect	Flat
	Slope	0°
	Water	Two artificial drains within the study area were holding water at the time of the survey. No permanent water
	Termite Presence	Low
	Woody Debris	Moderate
	Peeling Bark	Low
	Rock Crevices	None
	Burrowing Suitability	Moderate
	Tree Hollows (<10cm)	Low
	Tree Hollows (>10cm)	None
Condition	Condition	Moderate- Degraded
	Disturbances	Road/access tracks, fencelines, industrial facilities in close proximity, rubbish, wood cutting, ground disturbance/clearing
	Fire Age	>5 years

Vegetation				
Stratum	Form(s)	Height (m)	% Cover	Species
Upper	Trees	10-20	10-30	<i>Eucalyptus salmonophloia</i> , <i>E. transcontinentalis</i> , <i>E. lesouefii</i>
	Mallee	5-10	10-30	<i>Eucalyptus salubris</i> , <i>Eucalyptus griffithsii</i> , <i>Eucalyptus oleosa</i> , <i>Eucalyptus yilgarnensis</i>
Middle	Shrubs	1.5	2-10	<i>Eremophila scoparia</i> , <i>Acacia hemiteles</i> , <i>Eremophila oldfieldii</i>
Lower	Shrubs	<1	2-30	<i>Scaevola spinescens</i> , <i>Ptilotus obovatus</i> , <i>Maireana sedifolia</i> , <i>Senna artemisioides</i> subsp. <i>filifolia</i> , <i>Maireana triptera</i>

Plates 2-5 **Representative woodland-mallee habitat within the study area.**





FIGURE 6

Fauna habitat map
for the study area

Legend

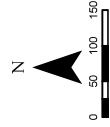


Study Area

Habitat Type



Eucalyptus Woodland-Mallee



Datum: GDA94
Scale: 1:7,500
Projection: MGR Zone 51

Date: 14/06/2021
Scale: Full
Figure: 6
Sheet Size: A3
Internal Reference: Lynne WPT S
Drawn by: GSM
Requested by: DB



3.4 Vertebrate Fauna Assemblage

3.4.1 Fauna Assemblage

The combined desktop searches identified a total of 284 vertebrate fauna taxa including four amphibians, 71 reptiles, 178 birds and 31 mammals. As there were no permanent surface water features present within the study area, some species of amphibians, waterbirds, waders and shorebirds were considered unlikely to occur within the study area and were removed from the list. The resulting fauna list comprised a total of 237 taxa including 134 birds, 70 reptiles, 30 mammals and three amphibians which have the potential to occur within or surrounding the study area (see Appendix 3).

A total of 39 vertebrate fauna species were recorded during the May 2021 field survey, including eleven reptiles, 24 birds and four mammals. A list of all vertebrate fauna species recorded during the field survey is provided in Appendix 4. A comparison of the species recorded from the desktop searches and those recorded within the study area is presented in Appendix 5.

3.4.2 Trapped Fauna Assemblage

A total of four species were recorded from the trapping program including three reptiles and one mammal. Bucket traps had the highest capture rate, followed by funnel traps and Elliot traps. No captures were made from the cage traps. The House Mouse (*Mus musculus*) was recorded on three occasions. The reptile species recorded were Wood Mulch Slider (*Lerista timida*), Yellow-faced Whipsnake (*Demansia psammophis reticulata*) and Tree Dtella (*Gehyra variegata*).

3.4.3 Spotlighting

Nocturnal surveys were undertaken on the 7th and 8th of May 2021. Temperatures on both nights were equal to or above the average temperatures for May (Figure 5). The following species were observed during spotlighting; Bynoe's Gecko (*Heteronotia binoei*), Purplish Dtella (*Gehyra purpurascens*), Tree Dtella (*Gehyra variegata*), Main's Ground Gecko (*Lucasium maini*), Western Beaked Gecko (*Rhynchoedura ornata*), and the Western Stone Gecko (*Diplodactylus granariensis granariensis*).

3.4.4 Avifauna

A total of 16 species were recorded from the bird censuses with an additional eight species recorded from opportunistic observations throughout the study area and immediate surrounds. The most commonly recorded species were the Red Wattlebird (*Anthochaera carunculata*), Yellow-throated Minor (*Manorina flavigula*), Yellow-plumed Honey-eater (*Ptilotula ornata*), Pied Butcherbird (*Cracticus nigrogularis*) and Weebills (*Smicrornis brevirostris*).

3.5 Fauna of Conservation Significance

3.5.1 Threatened Fauna listed under the BC Act and EPBC Act

No vertebrate fauna species listed under the EPBC Act or Scheduled under the BC Act were recorded from the study area.

3.5.2 Priority Fauna recognised by the DBCA

No Priority fauna species, as recognised by the DBCA, were recorded from the study area.

3.5.3 Introduced Fauna Species

Three introduced fauna species (feral animals) were identified (through primary or secondary evidence) as occurring within the study area; Cat (*Felis catus*), House Mouse (*Mus musculus*) and Rabbit (*Oryctolagus cuniculus*).

3.5.4 Threatened and Priority Fauna Potentially Occurring

Three significant species identified from the database searches, have the potential to occur within the study area; Malleefowl, Rainbow Bee-eater and Carnaby's Cockatoo. The suitability of habitat occurring within the study area for these species is discussed below.

Malleefowl

The Malleefowl is listed as a Vulnerable species under the EPBC Act and IUCN, and as a Schedule 3 species under the BC Act. Malleefowl are large, ground-dwelling birds approximately the size of a domestic chicken, with adults weighing between 1.5 and 2.5 kg. They are found in arid and semi-arid areas dominated by mallee eucalypts on sandy soils. They are also known to occur in Mulga (*Acacia aneura*), Broombush (*Melaleuca uncinata*), Scrub Pine (*Callitris verrucosa*), *Eucalyptus* woodlands, and coastal heathlands (DPaW 2016). Malleefowl require abundant leaf litter and a sandy substrate for the successful construction of nest mounds. Nests are comprised of a large mound of soil covering a central core of leaf litter that can span up to 5 m in diameter and 1 m in height.

In Western Australia, Malleefowl are most commonly seen within and around the Wheatbelt region, and more recently have been recorded from the Goldfields region. In proximity to the study area, the Malleefowl is known from the Mount Manning Range Nature Reserve and several records around Kalgoorlie. Historically, Malleefowl occurred more widely including the south-west of Western Australia, however the species range has been highly fragmented due to land clearing (DPaW 2016).

The habitat within the study area provides suitable habitat for this species and records occur in close proximity. However, due to the close proximity of the Great Eastern Highway, presence of cats, and multiple other disturbances, it is unlikely that Malleefowl would utilise habitat within the study area. The entire study area was ground-truthed extensively on foot to search for nesting mounds, however, no sightings or evidence of Malleefowl were recorded within the study area during the survey.

Rainbow Bee-eater

The Rainbow Bee-eater occurs through the majority of Australia with the exception of desert areas. This species occurs in a variety of habitats that are generally near water including open forests, woodlands, shrublands and cleared areas. They require open areas with loamy or sandy soil suitable for tunnelling for nesting.

The study area provides suitable habitat for this species and it may occasionally fly over and forage within the study area. However, preferred habitat for breeding for this species does not occur within the study area.

Carnaby's Cockatoo

Carnaby's Cockatoo is endemic to the south-west of Western Australia with a distribution extending from Kalbarri to Esperance and inland to Merredin. However, there are occasional records from the Kalgoorlie area as identified from the database searches (DBCA 2021). The Carnaby's Cockatoo nests in tree hollows of *Eucalyptus* species, typically Salmon Gum or Wandoo. While Carnaby's Cockatoos may occasionally utilise habitats within the study area, no suitable habitat for breeding was recorded due to the absence of large trees with suitable hollows.

4.0 DISCUSSION

4.1.1 Regional Context

The vertebrate fauna assemblage recorded from the study area is considered typical of the bioregion with all of the taxa recorded identified as potentially occurring from the database searches. The field survey identified 24 out of 134 (18%) potentially occurring bird species, four of 30 (13%) potentially occurring mammal species, and 11 of 70 (16%) potentially occurring reptile species.

A number of factors must be considered when interpreting the proportion of expected species recorded within the study area. The following points were determined to contribute to the relatively low proportion of species recorded from the study area, compared to the species list compiled from database searches:

- the small size of the study area (11 ha);
- disturbance factors including numerous tracks, powerlines, fences, close proximity to the highway, and rubbish dumping has reduced the quality and connectivity of the fauna habitat;
- the relative uniformity of the study area with consistent habitat type, minor variation in topography, and the relative absence of any unique or restricted habitat features;
- the lack of permanent surface water features occurring within or surrounding the study area; and
- the close proximity of the study area to the City of Kalgoorlie and adjacent major roads increases predation pressures by feral cats and roaming dogs (Bengsen, *et al* 2014), potential for road kill, and human activity / interaction.

The combination of these factors reduced the suitability of the habitat to support a more diverse assemblage of fauna species. Additionally, many of the species recorded from the database searches have specific habitat requirements that, while present in the region, were not represented within the study area (e.g. species restricted to salt lakes and granite outcrops).

4.1.2 Species Accumulation Curve

The species accumulation curve for terrestrial fauna is presented in Appendix 6.

The species accumulation curve did reach an asymptote, noting that the relatively small number of individuals caught in the traps. The small capture numbers was attributed to the poor quality of the habitat and disturbance factors as described above. The species accumulation curves refer to only the trappable portion of fauna. Fauna may not be trappable due to size, absence (i.e. migratory or nomadic species), or inactivity (i.e. species that are weather dependent).

While further trapping may increase the number of species recorded it is not considered to be time efficient given the poor quality of the habitat. The trapped fauna is considered to be an adequate representation of the species present within the study area.

5.0 SUMMARY

The single season detailed vertebrate fauna survey of the Western Power corridor proposed to service Lynas' Cracking and Leaching Plant was completed between the 6th and 13th of May 2021. A total of 39 vertebrate fauna species were recorded including eleven reptiles, 24 birds and four mammals.

No evidence of any conservation significant fauna species was recorded within the study area. The database searches identified three significant fauna species as likely to occur within the study area; the Malleefowl, Rainbow Bee-eater and Carnaby's Cockatoo. The Rainbow Bee-eater and Carnaby's Cockatoo may utilise habitat within the study area occasionally, however the study area is not considered suitable breeding habitat for these species. Due to the presence of multiple disturbance factors, habitat within the study area is considered unlikely to support Malleefowl. The area was extensively ground truthed for evidence of Malleefowl and no nesting mounds or evidence of this species was recorded.

One fauna habitat was described and mapped within the study area; *Eucalyptus* Woodland - Mallee. Habitat present within the study area is considered to be well represented in the Murchison and Coolgardie bioregions.

6.0 STUDY TEAM

The detailed fauna survey was planned, co-ordinated and executed by the following personnel:

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YALLINGUP WA 6282
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Project Staff

Dr Darren Brearley	PhD	Project Manager and Principal Botanist
Mr Michael Brown	BSc	Principal Zoologist
Ms Jessica Waters	BSc	Senior Ecologist
Dr Jerome Bull	PhD	Principal Botanist
Mr Todd Griffin		GIS Specialist

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APPENDIX 1

Summary of results from previous biological surveys within or in close proximity to
the study area

Report	Location	Survey Timing & Intensity	Habitats	Fauna Recorded	Significant Fauna Recorded	Significant Fauna likely to occur
Detailed and Targeted Fauna Survey By-product Disposal Site (Onshore Environmental 2021)	10 km north-east of Kalgoorlie	4-12 September 2020	Two fauna habitats: <i>Eucalyptus</i> Woodland and Shrublands	71 vertebrate species, 45 birds, 16 reptiles and 10 mammals	None	3 species of conservation significance
Terrestrial fauna survey for the St Ives Gold Mine Beyond 2018 Project (Phoenix Environmental Sciences 2018)	50 km south of Kalgoorlie	19–22 October 2016	Three fauna habitats described as: Salt-lake playa and riparian zone, Woodland on plains and Shrubland on dunes	33 vertebrate species, 19 reptiles, 19 birds and 5 mammals	Malleefowl (<i>Leipoa ocellata</i>) (Vulnerable under the EPBC Act and WC Act), Rainbow Bee-eater (<i>Merops ornatus</i>) (Migratory under the EPBC Act and WC Act), Fork-tailed Swift (<i>Apus pacificus</i>) (Migratory under the EPBC Act and WC Act)	16 species of conservation significance
Level 1 Vertebrate Fauna Risk Assessment for Lot 500 Kalgoorlie West (Terrestrial Ecosystems 2018)	8 km west of Kalgoorlie	Level 1 Survey - desktop review and site visit	One fauna habitat described as: Open eucalypt woodland with a mixed understorey of scattered shrubs and chenopods	Not recorded	None recorded	3 species of conservation significance listed as potentially occurring within the study area
Vertebrate Fauna Assessment Review - Lot 500 Great Eastern Highway, Yilkari (Onshore Environmental 2020)	8 km west of Kalgoorlie	Desktop assessment	NA	NA	From desktop assessment: 19 Threatened or Migratory fauna species listed under the EPBC Act (Federal); 14 Threatened or Migratory fauna species listed under the BC Act (State); and four Priority species that have the potential to occur in the study area	3 species of conservation significance listed as potentially occurring within the study area
Biological Survey East Samson Dam Project (Onshore Environmental 2019)	53 km north-east of Kalgoorlie	21 st and 24 th of October 2019 Level 1 Fauna	Three fauna habitat described as: open woodland, mallee, and shrubland	NA	Malleefowl (<i>Leipoa ocellata</i>) (Vulnerable under the EPBC Act and WC Act)	1 species of conservation significance identified as possibly occurring

APPENDIX 2

Conservation codes for species and communities of conservation significance

Categories used under the EPBC Act		
Status	Code	Description
Critically Endangered	Cr	Taxa considered to be facing an extremely high risk of extinction in the wild in the immediate future
Endangered	En	Taxa considered to be facing a very high risk of extinction in the wild in the near future
Vulnerable	Vu	Taxa considered to be facing a high risk of extinction in the wild in the medium-term future
Migratory	Mi	Species that migrate to, over and within Australia and its external territories

Conservation Codes used under the BC Act		
Status	Code	Description
Critically Endangered	CR	Taxa rare or likely to become extinct, as critically endangered taxa
Endangered	EN	Taxa rare or likely to become extinct, as endangered taxa
Vulnerable	VU	Taxa rare or likely to become extinct, as vulnerable taxa
Presumed Extinct	EX	Taxa presumed to be extinct
Migratory	IA	Birds subject to international agreements relating to the protection of migratory birds
Conservation Dependent	CD	Taxa of special conservation need, being species dependent on ongoing conservation intervention
Special Protection	OS	Taxa in need of special protection

Priority Flora and Fauna Under the BC Act		
Status	Code	Description
Priority 1: Poorly-known Species	P1	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 Species	P2	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 Species	P3	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 species in need of monitoring	P4	<p>(a) Rare. Species that are considered to have been adequately surveyed, or for which sufficient knowledge is available, and that are considered not currently threatened or in need of special protection, but could be if present circumstances change. These species are usually represented on conservation lands.</p> <p>(b) Near Threatened. Species that are considered to have been adequately surveyed and that are close to qualifying for Vulnerable, but are not listed as Conservation Dependent.</p> <p>(c) Species that have been removed from the list of threatened species during the past five years for reasons other than taxonomy.</p>

Definitions, Categories and Criteria for Threatened and Priority Ecological Communities	
General Definitions	
Ecological Community	A naturally occurring biological assemblage that occurs in a particular type of habitat. Note: The scale at which ecological communities are defined will often depend on the level of detail in the information source, therefore no particular scale is specified.
Threatened Ecological Community (TEC)	A threatened ecological community (TEC) is one which is found to fit into one of the following categories; "presumed totally destroyed", "critically endangered", "endangered" or "vulnerable". Possible threatened ecological communities that do not meet survey criteria are added to DEC's Priority Ecological Community (PEC) Lists under Priorities 1, 2 and 3. Ecological Communities that are adequately known, are rare but not threatened, or meet criteria for Near Threatened, or that have been recently removed from the threatened list, are placed in Priority 4. These ecological communities require regular monitoring. Conservation Dependent ecological communities are placed in Priority 5.
Assemblage	An assemblage is a defined group of biological entities.
Habitat	Habitat is defined as the areas in which an organism and/or assemblage of organisms lives. It includes the abiotic factors (e.g. substrate and topography), and the biotic factors.
Occurrence	A discrete example of an ecological community, separated from other examples of the same community by more than 20 meters of a different ecological community, an artificial surface or a totally destroyed community. By ensuring that every discrete occurrence is recognised and recorded future changes in status can be readily monitored.
Adequately Surveyed	An ecological community that has been searched for thoroughly in most likely habitats, by relevant experts.
Community structure	The spatial organisation, construction and arrangement of the biological elements comprising a biological assemblage (e.g. <i>Eucalyptus salmonophloia</i> woodland over scattered small shrubs over dense herbs; structure in a faunal assemblage could refer to trophic structure, e.g. dominance by feeders on detritus as distinct from feeders on live plants).

Definitions and Criteria for Presumed Totally Destroyed, Critically Endangered, Endangered and Vulnerable Ecological Communities	
Presumed Totally Destroyed (PD)	<p>An ecological community that has been adequately searched for but for which no representative occurrences have been located. The community has been found to be totally destroyed or so extensively modified throughout its range that no occurrence of it is likely to recover its species composition and/or structure in the foreseeable future.</p> <p>An ecological community will be listed as presumed totally destroyed if there are no recent records of the community being extant and either of the following applies (A or B):</p> <ul style="list-style-type: none"> A) Records within the last 50 years have not been confirmed despite thorough searches of known or likely habitats or B) All occurrences recorded within the last 50 years have since been destroyed
Critically Endangered (CR)	<p>An ecological community that has been adequately surveyed and found to have been subject to a major contraction in area and/or that was originally of limited distribution and is facing severe modification or destruction throughout its range in the immediate future, or is already severely degraded throughout its range but capable of being substantially restored or rehabilitated.</p> <p>An ecological community will be listed as Critically Endangered when it has been adequately surveyed and is found to be facing an extremely high risk of total destruction in the immediate future. This will be determined on the basis of the best available information, by it meeting any one or more of the following criteria (A, B or C):</p> <ul style="list-style-type: none"> A) The estimated geographic range, and/or total area occupied, and/or number of discrete occurrences since European settlement have been reduced by at least 90% and either or both of the following apply (i or ii): <ul style="list-style-type: none"> i) geographic range, and/or total area occupied and/or number of discrete occurrences are continuing to decline such that total destruction of the community is imminent (within approximately 10 years); ii) modification throughout its range is continuing such that in the immediate future (within approximately 10 years) the community is unlikely to be capable of being substantially rehabilitated. B) Current distribution is limited, and one or more of the following apply (i, ii, iii) <ul style="list-style-type: none"> i) geographic range and/or number of discrete occurrences, and/or area occupied is highly restricted and the community is currently subject to known threatening processes which are likely to result in total destruction throughout its range in the immediate future (within approximately 10 years); ii) there are few occurrences, each of which is small and/or isolated and extremely vulnerable to known threatening processes; iii) there may be many occurrences but total area is very small and each occurrence is small and/or isolated and extremely vulnerable to known threatening processes. C) The ecological community exists only as highly modified occurrences that may be capable of being rehabilitated if such work begins in the immediate future (within approximately 10 years).

Definitions and Criteria for Presumed Totally Destroyed, Critically Endangered, Endangered and Vulnerable Ecological Communities	
Endangered (EN)	<p>An ecological community that has been adequately surveyed and found to have been subject to a major contraction in an area and/or was originally of limited distribution and is in danger of significant modification throughout its range or severe modification or destruction over most of its range in the near future</p> <p>An ecological community will be listed as Endangered when it has been adequately surveyed and is not Critically Endangered but is facing a very high risk of total destruction in the near future. This will be determined on the basis of the best available information by it meeting any one or more of the following criteria (A, B, or C):</p> <p>A) Geographic range, and/or total area occupied, and/or number of discrete occurrences have been reduced by at least 70% since European settlement and either or both of the following apply (i or ii):</p> <ul style="list-style-type: none"> i) the estimated geographic range, and/or total area occupied and/or number of discrete occurrences are continuing to decline such that total destruction of the community is likely in the short term future (within approximately 20 years); ii) modification throughout its range is continuing such that in the short term future (within approximately 20 years) the community is unlikely to be capable of being substantially restored or rehabilitated. <p>B) Current distribution is limited, and one or more of the following apply (i, ii, iii)</p> <ul style="list-style-type: none"> i) geographic range and/or number of discrete occurrences, and/or area occupied is highly restricted and the community is currently subject to known threatening processes which are likely to result in total destruction throughout its range in the short term future (within approximately 20 years); ii) There are few occurrences, each of which is small and/or isolated and all or most occurrences are very vulnerable to known threatening processes; iii) There may be many occurrences but total area is small and all or most occurrences are small and/or isolated and very vulnerable to known threatening processes. <p>C) The ecological community exists only as very modified occurrences that may be capable of being substantially restored or rehabilitated if such work begins in the short-term future (within approximately 20 years).</p>
Vulnerable (VU)	<p>An ecological community that has been adequately surveyed and is found to be declining and/or has declined in distribution and/or condition and whose ultimate security has not yet been assured and/or a community that is still widespread but is believed likely to move into a category of higher threat in the near future if threatening processes continue or begin operating throughout its range.</p> <p>An ecological community will be listed as Vulnerable when it has been adequately surveyed and is not Critically Endangered or Endangered but is facing a high risk of total destruction or significant modification in the medium (within approximately 50 years) to long-term future. This will be determined on the basis of the best available information by it meeting any one or more of the following criteria (A, B or C):</p> <p>A) The ecological community exists largely as modified occurrences that are likely to be capable of being substantially restored or rehabilitated.</p> <p>B) The ecological community may already be modified and would be vulnerable to threatening processes, is restricted in area and/or range and/or is only found at a few locations.</p> <p>C) The ecological community may be still widespread but is believed likely to move into a category of higher threat in the medium to long-term future because of existing or impending threatening processes.</p>

Definitions and Criteria for Priority Ecological Communities	
Possible threatened ecological communities that do not meet survey criteria or that are not adequately defined are added to the Priority Ecological Community List under priorities 1, 2 and 3. These three categories are ranked in order of priority for survey and/or definition of the community. Ecological communities that are adequately known, and are rare but not threatened or meet criteria for Near Threatened, or that have been recently removed from the threatened list, are placed in Priority 4. These ecological communities require regular monitoring. Conservation Dependent ecological communities are placed in Priority 5.	
Priority 1 Poorly-known ecological communities	Ecological communities that are known from very few occurrences with a very restricted distribution (generally ≤ 5 occurrences or a total area of ≤ 100 ha). Occurrences are believed to be under threat either due to limited extent, or being on lands under immediate threat (e.g. within agricultural or pastoral lands, urban areas, active mineral leases) or for which current threats exist. May include communities with occurrences on protected lands. Communities may be included if they are comparatively well-known from one or more localities but do not meet adequacy of survey requirements, and/or are not well defined, and appear to be under immediate threat from known threatening processes across their range.
Priority 2 Poorly-known ecological communities	Communities that are known from few occurrences with a restricted distribution (generally ≤ 10 occurrences or a total area of ≤ 200 ha). At least some occurrences are not believed to be under immediate threat (within approximately 10 years) of destruction or degradation. Communities may be included if they are comparatively well known from one or more localities but do not meet adequacy of survey requirements, and/or are not well defined, and appear to be under threat from known threatening processes.
Priority 3 Poorly-known ecological communities	<ul style="list-style-type: none"> i) Communities that are known from several to many occurrences, a significant number or area of which are not under threat or habitat destruction or degradation ii) communities known from a few widespread occurrences, which are either large or within significant remaining areas of habitat in which other occurrences may occur, much of it not under imminent threat, or; iii) communities made up of large, and/or widespread occurrences, that may or not be represented in the reserve system but are under threat of modification across much of their range from processes such as grazing by domestic and/or feral stock, and inappropriate fire regimes <p>Communities may be included if they are comparatively well known from several localities but do not meet adequacy of survey requirements and/or are not well defined, and known threatening processes exist that could affect them</p>
Priority 4 Ecological communities that are adequately known, rare but not threatened or meet criteria for Near Threatened, or that have been recently removed from the threatened list. These communities require regular monitoring	<ul style="list-style-type: none"> a) Rare. Ecological communities known from few occurrences 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 communities are usually represented on conservation lands. b) Near Threatened. Ecological communities 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) Ecological communities that have been removed from the list of threatened communities during the past five years
Priority 5 Conservation Dependent ecological communities	Ecological communities that are not threatened but are subject to a specific conservation program, the cessation of which would result in the community becoming threatened within five years

APPENDIX 3

List of fauna species potentially within and surrounding the study area. Database search results from the following databases; NatureMap, Protected Matters Search Tool, DBCA fauna database search, Birddata database and Atlas of Living Australia

Group	Common Name	Taxon	Listing	EPBC	DBCA	Nature Map	Birddata	ALA
Amphibians	Kunapalari Frog	Neobatrachus kunapalari				X		X
Amphibians	Shoemaker Frog	Neobatrachus sutor				X		X
Amphibians	Western Toadlet	Pseudophryne occidentalis				X		X
Bird	Spiny-cheeked Honeyeater	Acanthagenys rufogularis				X	X	X
Bird	Inland Thornbill	Acanthiza apicalis				X	X	X
Bird	Yellow-rumped Thornbill	Acanthiza chrysorrhoa				X	X	X
Bird	Western Thornbill	Acanthiza inornata						X
Bird	Slender-billed Thornbill	Acanthiza iredalei						X
Bird	Chestnut-rumped Thornbill	Acanthiza uropygialis				X	X	X
Bird	Collared Sparrowhawk	Accipiter cirrocephalus				X	X	X
Bird	Brown Goshawk	Accipiter fasciatus				X	X	X
Bird	Dusky Grasswren	Amytornis purnelli						X
Bird	Western Grasswren	Amytornis textilis	P4					X
Bird	Red Wattlebird	Anthochaera carunculata				X	X	X
Bird	Western Wattlebird	Anthochaera lunulata						X
Bird	Australian Pipit	Anthus australis				X	X	X
Bird	Banded Whiteface	Apeloecephala leucopsis				X		X
Bird	Fork-tailed Swift	Apus pacificus	MG	X				
Bird	Wedge-tailed Eagle	Aquila audax				X	X	X
Bird	White-necked Heron	Ardea pacifica				X		X
Bird	Australian Bustard	Ardeotis australis						X
Bird	Black-faced Woodswallow	Artamus cinereus				X	X	X
Bird	Dusky Woodswallow	Artamus cyanopterus				X	X	X
Bird	Little Woodswallow	Artamus minor						X
Bird	Masked Woodswallow	Artamus personatus				X		X
Bird	Australian Ringneck	Barnardius zonarius				X	X	X
Bird	Little Corella	Cacatua sanguinea				X	X	X
Bird	Pallid Cuckoo	Cacomantis pallidus				X	X	X
Bird	Rufous Fieldwren	Calamanthus campestris						X
Bird	Shy Heathwren	Calamanthus cautus						X
Bird	Red-tailed Black-Cockatoo	Calyptorhynchus banksii					X	
Bird	Carnaby's Cockatoo	Calyptorhynchus latirostris	T		X	X	X	
Bird	Pied Honeyeater	Certhionyx variegatus						X
Bird	Horsfield's Bronze-Cuckoo	Chalcites basalis				X	X	X
Bird	Black-eared Cuckoo	Chalcites osculans				X	X	X
Bird	White-backed Swallow	Cheramoeca leucosterna				X	X	X

Group	Common Name	Taxon	Listing	EPBC	DBCA	Nature Map	Birddata	ALA
Bird	Brown Songlark	<i>Cincloramphus cruralis</i>					X	X
Bird	Rufous Songlark	<i>Cincloramphus mathewsi</i>						X
Bird	Chestnut quail-thrush	<i>Cinclosoma castanotum</i>					X	X
Bird	Spotted Harrier	<i>Circus assimilis</i>						X
Bird	White-browed Treecreeper	<i>Climacteris affinis</i>						X
Bird	Red-browed Treecreeper	<i>Climacteris erythrops</i>						X
Bird	Rufous Treecreeper	<i>Climacteris rufus</i>						X
Bird	Grey Shrike-thrush	<i>Colluricincla harmonica</i>				X	X	X
Bird	Rock Dove	<i>Columba livia</i>				X	X	X
Bird	Ground Cuckoo-shrike	<i>Coracina maxima</i>				X		X
Bird	Black-faced Cuckoo-shrike	<i>Coracina novaehollandiae</i>				X	X	X
Bird	Little Crow	<i>Corvus bennetti</i>				X	X	X
Bird	Australian Raven	<i>Corvus coronoides</i>				X	X	X
Bird	Torresian Crow	<i>Corvus orru</i>				X		X
Bird	Stubble Quail	<i>Coturnix pectoralis</i>						X
Bird	Pied Butcherbird	<i>Cracticus nigrogularis</i>				X	X	X
Bird	Grey Butcherbird	<i>Cracticus torquatus</i>				X	X	X
Bird	Varied Sittella	<i>Daphoenositta chrysoptera</i>				X		X
Bird	Mistletoebird	<i>Dicaeum hirundinaceum</i>				X		X
Bird	Emu	<i>Dromaius novaehollandiae</i>				X	X	X
Bird	White-faced Heron	<i>Egretta novaehollandiae</i>				X	X	X
Bird	Black-shouldered Kite	<i>Elanus caeruleus axillaris</i>				X	X	X
Bird	Galah	<i>Eolophus roseicapilla</i>				X	X	X
Bird	Western Yellow Robin	<i>Eopsaltria griseogularis</i>						X
Bird	White-fronted Chat	<i>Ephianura albifrons</i>				X	X	X
Bird	Orange Chat	<i>Ephianura aurifrons</i>						X
Bird	Crimson Chat	<i>Ephianura tricolor</i>				X		X
Bird	Spotted Nightjar	<i>Eurostopodus argus</i>				X		X
Bird	Brown Falcon	<i>Falco berigora</i>				X	X	X
Bird	Nankeen Kestrel	<i>Falco cenchroides</i>				X	X	X
Bird	Grey Falcon	<i>Falco hypoleucos</i>	V	X				X
Bird	Australian Hobby	<i>Falco longipennis</i>				X	X	X
Bird	Peregrine Falcon	<i>Falco peregrinus</i>	OS					X
Bird	Western Shrike-tit	<i>Falcunculus frontatus leucogaster</i>						X
Bird	Singing Honeyeater	<i>Gavicalis virens</i>					X	X
Bird	Western Gerygone	<i>Gerygone fusca</i>				X	X	X

Group	Common Name	Taxon	Listing	EPBC	DBCA	Nature Map	Birddata	ALA
Bird	Magpie-lark	<i>Grallina cyanoleuca</i>				X	X	X
Bird	Australian Magpie	<i>Gymnorhina tibicen dorsalis</i>				X	X	X
Bird	Whistling Kite	<i>Haliastur sphenurus</i>				X	X	X
Bird	Black-Breasted Buzzard	<i>Hamirostra melanosternon</i>						X
Bird	Little Eagle	<i>Hieraaetus morphnoides</i>				X	X	X
Bird	Welcome Swallow	<i>Hirundo neoxena</i>				X	X	X
Bird	Shy Groundwren	<i>Hylacola cauta subsp. whitlocki</i>				X		
Bird	White-winged Triller	<i>Lalage tricolor</i>				X	X	X
Bird	Malleefowl	<i>Leipoa ocellata</i>	V, T	X	X	X	X	X
Bird	Purple-Gaped Honeyeater	<i>Lichenostomus cratitius</i>						X
Bird	Brown Honeyeater	<i>Lichmera indistincta</i>				X	X	X
Bird	Major Mitchell's Cockatoo	<i>Lophochroa leadbeateri</i>						X
Bird	Square-Tailed Kite	<i>Lophoictinia isura</i>						X
Bird	White-winged Fairy-wren	<i>Malurus leucopterus</i>				X	X	X
Bird	Blue-Breasted Fairy-Wren	<i>Malurus pulcherrimus</i>						X
Bird	Splendid Fairy-wren	<i>Malurus splendens</i>				X	X	X
Bird	Yellow-throated Miner	<i>Manorina flavigula</i>				X	X	X
Bird	Hooded Robin	<i>Melanodryas cucullata</i>						X
Bird	White-Throated Honeyeater	<i>Melithreptus albobularis</i>						X
Bird	Brown-headed Honeyeater	<i>Melithreptus brevirostris</i>				X	X	X
Bird	White-naped Honeyeater	<i>Melithreptus lunatus</i>						X
Bird	Budgerigar	<i>Melopsittacus undulatus</i>				X	X	X
Bird	Rainbow Bee-eater	<i>Merops ornatus</i>				X	X	X
Bird	Jacky Winter	<i>Microeca fascians</i>				X	X	X
Bird	Grey Wagtail	<i>Motacilla cinerea</i>	MG	X				
Bird	White-eared Honeyeater	<i>Nesoptilotis leucotis novaenoriciae</i>				X	X	X
Bird	Cockatiel	<i>Nymphicus hollandicus</i>				X		X
Bird	Crested Pigeon	<i>Ocyphaps lophotes</i>				X	X	X
Bird	Crested Bellbird	<i>Oreocia gutturalis</i>				X	X	X
Bird	Gilbert's Whistler	<i>Pachycephala inornata</i>				X		X
Bird	Rufous Whistler	<i>Pachycephala rufiventris</i>				X	X	X
Bird	Spotted Pardalote	<i>Pardalotus punctatus</i>				X	X	X
Bird	Striated Pardalote	<i>Pardalotus striatus</i>				X	X	X
Bird	Purple-crowned Lorikeet	<i>Parvipsitta porphyrocephala</i>					X	X
Bird	Fairy Martin	<i>Petrochelidon ariel</i>						X
Bird	Tree Martin	<i>Petrochelidon nigricans</i>				X	X	X

Group	Common Name	Taxon	Listing	EPBC	DBCA	Nature Map	Birddata	ALA
Bird	Red-capped Robin	<i>Petroica goodenovii</i>				X	X	X
Bird	Night Parrot	<i>Pezoporus occidentalis</i>	EN	X				
Bird	Common Bronzewing	<i>Phaps chalcoptera</i>				X		X
Bird	New Holland Honeyeater	<i>Phylidonyris novaehollandiae</i>						X
Bird	Western Rosella	<i>Platycercus icterotis</i>						X
Bird	Mulga Parrot	<i>Platycercus varius</i>				X		X
Bird	Striped Honeyeater	<i>Plectorhyncha lanceolata</i>						X
Bird	Tawny Frogmouth	<i>Podargus strigoides</i>				X		X
Bird	White-browed Babbler	<i>Pomatostomus superciliosus</i>				X	X	X
Bird	Yellow-plumed Honeyeater	<i>Ptilotula ornata</i>					X	X
Bird	White-Plumed Honeyeater	<i>Ptilotula penicillata</i>						X
Bird	Grey-fronted Honeyeater	<i>Ptilotula plumula</i>					X	X
Bird	White-fronted Honeyeater	<i>Purnella albifrons</i>				X	X	X
Bird	Redthroat	<i>Pyrrholaemus brunneus</i>				X	X	X
Bird	Grey Fantail	<i>Rhipidura albiscapa</i>				X		X
Bird	Willie Wagtail	<i>Rhipidura leucophrys</i>				X	X	X
Bird	Weebill	<i>Smicromis brevirostris</i>				X	X	X
Bird	Grey Currawong	<i>Strepera versicolor</i>				X	X	X
Bird	Spotted Turtle-Dove	<i>Streptopelia chinensis</i>						X
Bird	Laughing Dove	<i>Streptopelia senegalensis</i>				X	X	X
Bird	Zebra Finch	<i>Taeniopygia guttata</i>				X	X	X
Bird	Australian White Ibis	<i>Threskiornis moluccus</i>						X
Bird	Red-backed Kingfisher	<i>Todiramphus pyrrhopygius</i>				X	X	X
Bird	Sacred Kingfisher	<i>Todiramphus sanctus</i>				X		X
Bird	Little Button-quail	<i>Turnix velox</i>						X
Bird	Barn Owl	<i>Tyto alba delicatula</i>				X	X	X
Bird	Eastern Barn Owl	<i>Tyto javanica</i>						X
Bird	Banded Lapwing	<i>Vanellus tricolor</i>				X	X	X
Bird	Silvereye	<i>Zosterops lateralis</i>				X	X	X
Mammal	European Cattle	<i>Bos taurus</i>				X		
Mammal	Dingo	<i>Canis familiaris</i>						X
Mammal	Goat	<i>Capra hircus</i>				X		
Mammal	Western Pygmy-possum	<i>Cercartetus concinnus</i>				X		X
Mammal	Gould's Wattled Bat	<i>Chalinolobus gouldii</i>				X		
Mammal	Chocolate Wattled Bat	<i>Chalinolobus morio</i>				X		X
Mammal	Chuditch, Western Quoll	<i>Dasyurus geoffroii</i>	V	X				

Group	Common Name	Taxon	Listing	EPBC	DBCA	Nature Map	Birddata	ALA
Mammal	Cat	<i>Felis catus</i>				X		X
Mammal	Western Grey Kangaroo	<i>Macropus fuliginosus</i>				X		X
Mammal	Red Kangaroo, Marlu	<i>Macropus rufus</i>				X		
Mammal	Bilby, Dalgyle, Ninu	<i>Macrotis lagotis</i>	V, T		X	X		X
Mammal	House Mouse	<i>Mus musculus</i>				X		
Mammal	Numbat, Walpurti	<i>Myrmecobius fasciatus</i>	EN, T		X	X		X
Mammal	Southern Ningau	<i>Ningau yvonneae</i>				X		X
Mammal	Lesser Long-eared Bat	<i>Nyctophilus geoffroyi</i>				X		X
Mammal	Rabbit, European Rabbit	<i>Oryctolagus cuniculus</i>				X		X
Mammal	Euro, Biggada	<i>Osphranter robustus erubescens</i>				X		
Mammal	Sheep	<i>Ovis aries</i>				X		
Mammal	Bolam's Mouse	<i>Pseudomys bolami</i>				X		
Mammal	Sandy Inland Mouse	<i>Pseudomys hermannsburgensis</i>				X		X
Mammal	Inland Broad-nosed Bat	<i>Scotorepens balstoni</i>				X		X
Mammal	Fat-tailed Dunnart	<i>Sminthopsis crassicaudata</i>				X		X
Mammal	Little Long-tailed Dunnart	<i>Sminthopsis dolichura</i>				X		X
Mammal	Gilbert's Dunnart	<i>Sminthopsis gilberti</i>				X		X
Mammal	Ooldea Dunnart	<i>Sminthopsis ooldea</i>				X		
Mammal	Short-beaked Echidna	<i>Tachyglossus aculeatus</i>				X		X
Mammal	Hill's Sheath-tail-bat	<i>Taphozous hilli</i>				X		
Mammal	Inland Forest Bat	<i>Vespadelus baverstocki</i>				X		
Mammal	Finlayson's Cave Bat	<i>Vespadelus finlaysoni</i>				X		X
Mammal	Southern Forest Bat	<i>Vespadelus regulus</i>				X		
Reptile	Desert Death Adder	<i>Acanthophis pyrrhus</i>				X		
Reptile	Southern Blind Snake	<i>Anilius australis</i>						X
Reptile	Prong-snouted Blind Snake	<i>Anilius bituberculatus</i>						X
Reptile	Pale-Headed Blind Snake	<i>Anilius hamatus</i>						X
Reptile	Sedgeland's Worm-lizard	<i>Aprasia repens</i>						X
Reptile	Narrow-banded Shovel-nosed Snake	<i>Brachyuropsis fasciolatus subsp. fasciolatus</i>				X		
Reptile	Southern Shovel-nosed Snake	<i>Brachyuropsis semifasciatus</i>				X		X
Reptile	Marbled Gecko	<i>Christinus marmoratus</i>						X
Reptile	Buchanan's Snake-eyed Skink	<i>Cryptoblepharus buchananii</i>				X		X
Reptile	Peron's Snake-eyed Skink	<i>Cryptoblepharus plagiocephalus</i>				X		X
Reptile	Ring-tailed Dragon	<i>Ctenophorus caudicinctus</i>				X		X
Reptile	Bicycle Dragon	<i>Ctenophorus cristatus</i>				X		X
Reptile	Central Netted Dragon	<i>Ctenophorus nuchalis</i>						X

Group	Common Name	Taxon	Listing	EPBC	DBCA	Nature Map	BirdData	ALA
Reptile	Painted Dragon	<i>Ctenophorus pictus</i>						x
Reptile	Western Netted Dragon	<i>Ctenophorus reticulatus</i>				x		x
Reptile	Claypan Dragon	<i>Ctenophorus salinarum</i>				x		x
Reptile	Lozenge-marked Dragon	<i>Ctenophorus scutulatus</i>				x		x
Reptile	Southern Mallee Ctenotus	<i>Ctenotus atlas</i>				x		
Reptile		<i>Ctenotus leonhardii</i>				x		
Reptile	Barred Wedgesnout Ctenotus	<i>Ctenotus schomburgkii</i>				x		x
Reptile	Spotted Ctenotus	<i>Ctenotus uber</i>				x		
Reptile	Marble-faced Delma	<i>Delma australis</i>				x		x
Reptile	Yellow-faced Whip Snake	<i>Demansia psammophis</i>				x		x
Reptile	Fat-tailed Diplodactylus	<i>Diplodactylus conspicillatus</i>						x
Reptile	Western Stone Gecko	<i>Diplodactylus granariensis granariensis</i>				x		x
Reptile	Fine-faced Gecko	<i>Diplodactylus pulcher</i>				x		x
Reptile	Pygmy Spiny-tailed Skink	<i>Egernia depressa</i>				x		x
Reptile	Goldfields Crevice-Skink	<i>Egernia formosa</i>						x
Reptile	Western Spiny-tailed Skink	<i>Egernia stokesii badia</i>	VU		x			
Reptile	Broad-banded Sand Swimmer	<i>Eremiascincus richardsonii</i>				x		x
Reptile	Orange-naped Snake	<i>Furina ornata</i>				x		x
Reptile	Purplish Dtella	<i>Gehyra purpurascens</i>				x		
Reptile	Tree Dtella	<i>Gehyra variegata</i>				x		x
Reptile	Asian House Gecko	<i>Hemidactylus frenatus</i>				x		x
Reptile	South-western Earless Skink	<i>Hemiergis initialis subsp. initialis</i>				x		
Reptile	Reticulated Velvet Gecko	<i>Hesperoedura reticulata</i>						x
Reptile	Bynoe's Gecko	<i>Heteronotia binoei</i>				x		x
Reptile	Pale-flecked Garden Sunskink	<i>Lampropholis guichenoti</i>						x
Reptile	Southern Robust Slider	<i>Lerista picturata</i>				x		x
Reptile		<i>Lerista stictopleura</i>				x		
Reptile	Timid Slider	<i>Lerista timida</i>				x		x
Reptile	Burton's Snake-Lizard	<i>Lialis burtonis</i>						x
Reptile	Desert Skink	<i>Liopholis inornata</i>						x
Reptile	Common Dwarf Skink	<i>Menetia greyii</i>				x		x
Reptile	Thorny Devil	<i>Moloch horridus</i>				x		x
Reptile	Western Australian Carpet Python	<i>Morelia spilota imbricata</i>				x		x
Reptile	Saltbush Morethia Skink	<i>Morethia adelaidensis</i>				x		
Reptile	Black-naped Snake	<i>Neelaps bimaculatus</i>				x		x
Reptile	Gould's Hooded Snake	<i>Parasuta gouldii</i>				x		x

Group	Common Name	Taxon	Listing	EPBC	DBCA	Nature Map	Birddata	ALA
Reptile	Monk Snake	<i>Parasuta monachus</i>				X		X
Reptile	Dwarf Bearded Dragon	<i>Pogona minor subsp. minor</i>				X		X
Reptile	King Brown Snake	<i>Pseudechis australis</i>				X		
Reptile	Western Brown Snake	<i>Pseudonaja mengdeni</i>				X		X
Reptile	Ringed Brown Snake	<i>Pseudonaja modesta</i>				X		X
Reptile	Gwardar, Northern Brown Snake	<i>Pseudonaja nuchalis</i>				X		
Reptile	Common Scaly-foot	<i>Pygopus lepidopodus</i>				X		X
Reptile	Hooded Scaly-foot	<i>Pygopus nigriceps</i>				X		
Reptile	Western Beaked Gecko	<i>Rhynchoedura ornata</i>				X		
Reptile	Jan's Banded Snake	<i>Simoselaps bertholdi</i>				X		X
Reptile	Goldfields Spiny-tailed Gecko	<i>Strophurus assimilis</i>				X		
Reptile	Rosen's Snake	<i>Suta fasciata</i>				X		
Reptile	Curl Snake	<i>Suta suta</i>						X
Reptile	Western Blue-tongue	<i>Tiliqua occipitalis</i>				X		
Reptile	Bobtail	<i>Tiliqua rugosa subsp. rugosa</i>				X		X
Reptile	Pebble Dragon	<i>Tympanocryptis cephalus</i>				X		X
Reptile	Goldfields Pebble-mimic Dragon	<i>Tympanocryptis pseudopsephos</i>						X
Reptile	Barking Gecko	<i>Underwoodisaurus milii</i>				X		X
Reptile	Stripe-tailed Monitor	<i>Varanus caudolineatus</i>				X		X
Reptile	Bungarra or Sand Monitor	<i>Varanus gouldii</i>				X		X
Reptile	Racehorse Monitor	<i>Varanus tristis</i>				X		X

APPENDIX 4

Vertebrate fauna list from the study area

Common Name	Genus	Species	Group	Introduced
Spiney-cheeked Honeyeater	<i>Acanthagenys</i>	<i>rufogularis</i>	Bird	
Inland Thornbill	<i>Acanthiza</i>	<i>apicalis</i>	Bird	
Red Wattlebird	<i>Anthochaera</i>	<i>carunculata</i>	Bird	
Port Lincon Parrot	<i>Barnardius</i>	<i>zonarius zonarius</i>	Bird	
Black-faced Cuckoo-shrike	<i>Coracina</i>	<i>novaehollandiae</i>	Bird	
Australian Raven	<i>Corvus</i>	<i>coronoides</i>	Bird	
Pied Butcherbird	<i>Cracticus</i>	<i>nigrogularis</i>	Bird	
Australian Magpie	<i>Gymnorhina</i>	<i>tibicen dorsalis</i>	Bird	
Emu	<i>Dromaius</i>	<i>novaehollandiae</i>	Bird	
Singing Honeyeater	<i>Gavicalis</i>	<i>virescens</i>	Bird	
Magpie-lark	<i>Grallina</i>	<i>cyanoleuca</i>	Bird	
Purple-Gaped Honeyeater	<i>Lichenostomus</i>	<i>cratitius</i>	Bird	
Yellow-throated Miner	<i>Manorina</i>	<i>flavigula</i>	Bird	
Crested Pigeon	<i>Ocyphaps</i>	<i>lophotes</i>	Bird	
Crested Bellbird	<i>Oreoica</i>	<i>gutturalis</i>	Bird	
Striated Pardalote	<i>Pardalotus</i>	<i>striatus</i>	Bird	
Red-capped Robin	<i>Petroica</i>	<i>goodenovii</i>	Bird	
Yellow-plumed Honeyeater	<i>Ptilotula</i>	<i>ornata</i>	Bird	
White-fronted Honeyeater	<i>Purnella</i>	<i>albifrons</i>	Bird	
Redthroat	<i>Pyrrholaemus</i>	<i>brunneus</i>	Bird	
Willie Wagtail	<i>Rhipidura</i>	<i>leucophrys</i>	Bird	
Weebill	<i>Smicornis</i>	<i>brevirostris</i>	Bird	
Grey Currawong	<i>Strepera</i>	<i>versicolor</i>	Bird	
Red-backed Kingfisher	<i>Todiramphus</i>	<i>pyrrhopygius</i>	Bird	
Cat	<i>Felis</i>	<i>catus</i>	Mammal	Yes
Western Grey Kangaroo	<i>Macropus</i>	<i>fuliginosus</i>	Mammal	
House Mouse	<i>Mus</i>	<i>musculus</i>	Mammal	Yes
Rabbit	<i>Oryctolagus</i>	<i>cuniculus</i>	Mammal	Yes
Reticulated Whipsnake	<i>Demansia</i>	<i>psammophis cupreiceps</i>	Reptile	
	<i>Diplodactylus</i>	<i>granariensis granariensis</i>	Reptile	
	<i>Gehyra</i>	<i>variegata</i>	Reptile	
Purplish Dtella	<i>Gehyra</i>	<i>purpurascens</i>	Reptile	
Bynoe's Gecko	<i>Heteronotia</i>	<i>binoei</i>	Reptile	
Timid Slider	<i>Lerista</i>	<i>timida</i>	Reptile	
Main's Ground Gecko	<i>Lucasium</i>	<i>maini</i>	Reptile	
	<i>Menetia</i>	<i>greyii</i>	Reptile	
Western Beaked Gecko	<i>Rhynchoedura</i>	<i>ornata</i>	Reptile	
Bobtail	<i>Tiliqua</i>	<i>rugosa subsp. rugosa</i>	Reptile	
Barking Gecko	<i>Underwoodisaurus</i>	<i>milii</i>	Reptile	

APPENDIX 5

Species recorded during the desktop assessment and field survey

Group	Common Name	Taxon	Recorded from Database	Recorded from field survey
Amphibians	Kunapalari Frog	<i>Neobatrachus kunapalari</i>	x	
Amphibians	Shoemaker Frog	<i>Neobatrachus sutor</i>	x	
Amphibians	Western Toadlet	<i>Pseudophryne occidentalis</i>	x	
Bird	Spiny-cheeked Honeyeater	<i>Acanthagenys rufogularis</i>	x	x
Bird	Inland Thornbill	<i>Acanthiza apicalis</i>	x	x
Bird	Yellow-rumped Thornbill	<i>Acanthiza chrysorrhoa</i>	x	
Bird	Western Thornbill	<i>Acanthiza inornata</i>	x	
Bird	Slender-billed Thornbill	<i>Acanthiza iredalei</i>	x	
Bird	Chestnut-rumped Thornbill	<i>Acanthiza uropygialis</i>	x	
Bird	Collared Sparrowhawk	<i>Accipiter cirrocephalus</i>	x	
Bird	Brown Goshawk	<i>Accipiter fasciatus</i>	x	
Bird	Dusky Grasswren	<i>Amytornis purnelli</i>	x	
Bird	Western Grasswren	<i>Amytornis textilis</i>	x	
Bird	Red Wattlebird	<i>Anthochaera carunculata</i>	x	x
Bird	Western Wattlebird	<i>Anthochaera lunulata</i>	x	
Bird	Australian Pipit	<i>Anthus australis</i>	x	
Bird	Banded Whiteface	<i>Aphelocephala leucopsis</i>	x	
Bird	Fork-tailed Swift	<i>Apus pacificus</i>	x	
Bird	Wedge-tailed Eagle	<i>Aquila audax</i>	x	
Bird	White-necked Heron	<i>Ardea pacifica</i>	x	
Bird	Australian Bustard	<i>Ardeotis australis</i>	x	
Bird	Black-faced Woodswallow	<i>Artamus cinereus</i>	x	
Bird	Dusky Woodswallow	<i>Artamus cyanopterus</i>	x	
Bird	Little Woodswallow	<i>Artamus minor</i>	x	
Bird	Masked Woodswallow	<i>Artamus personatus</i>	x	
Bird	Australian Ringneck	<i>Barnardius zonarius</i>	x	x
Bird	Little Corella	<i>Cacatua sanguinea</i>	x	
Bird	Pallid Cuckoo	<i>Cacomantis pallidus</i>	x	
Bird	Rufous Fieldwren	<i>Calamanthus campestris</i>	x	
Bird	Shy Heathwren	<i>Calamanthus cautus</i>	x	
Bird	Red-tailed Black-Cockatoo	<i>Calyptorhynchus banksii</i>	x	
Bird	Carnaby's Cockatoo	<i>Calyptorhynchus latirostris</i>	x	
Bird	Pied Honeyeater	<i>Certhionyx variegatus</i>	x	
Bird	Horsfield's Bronze-Cuckoo	<i>Chalcites basalis</i>	x	
Bird	Black-eared Cuckoo	<i>Chalcites osculans</i>	x	
Bird	White-backed Swallow	<i>Cheramoeca leucosterna</i>	x	
Bird	Brown Songlark	<i>Cincloramphus cruralis</i>	x	
Bird	Rufous Songlark	<i>Cincloramphus mathewsi</i>	x	
Bird	Chestnut quail-thrush	<i>Cinclosoma castanotum</i>	x	
Bird	Spotted Harrier	<i>Circus assimilis</i>	x	
Bird	White-browed Treecreeper	<i>Climacteris affinis</i>	x	
Bird	Red-browed Treecreeper	<i>Climacteris erythroptus</i>	x	
Bird	Rufous Treecreeper	<i>Climacteris rufus</i>	x	
Bird	Grey Shrike-thrush	<i>Colluricincla harmonica</i>	x	
Bird	Rock Dove	<i>Columba livia</i>	x	

Group	Common Name	Taxon	Recorded from Database	Recorded from field survey
Bird	Ground Cuckoo-shrike	<i>Coracina maxima</i>	x	
Bird	Black-faced Cuckoo-shrike	<i>Coracina novaehollandiae</i>	x	x
Bird	Little Crow	<i>Corvus bennetti</i>	x	
Bird	Australian Raven	<i>Corvus coronoides</i>	x	x
Bird	Torresian Crow	<i>Corvus orru</i>	x	
Bird	Stubble Quail	<i>Coturnix pectoralis</i>	x	
Bird	Pied Butcherbird	<i>Cracticus nigrogularis</i>	x	x
Bird	Grey Butcherbird	<i>Cracticus torquatus</i>	x	
Bird	Varied Sittella	<i>Daphoenositta chrysoptera</i>	x	
Bird	Mistletoebird	<i>Dicaeum hirundinaceum</i>	x	
Bird	Emu	<i>Dromaius novaehollandiae</i>	x	x
Bird	White-faced Heron	<i>Egretta novaehollandiae</i>	x	
Bird	Black-shouldered Kite	<i>Elanus caeruleus axillaris</i>	x	
Bird	Galah	<i>Eolophus roseicapilla</i>	x	
Bird	Western Yellow Robin	<i>Eopsaltria griseogularis</i>	x	
Bird	White-fronted Chat	<i>Epthianura albifrons</i>	x	
Bird	Orange Chat	<i>Epthianura aurifrons</i>	x	
Bird	Crimson Chat	<i>Epthianura tricolor</i>	x	
Bird	Spotted Nightjar	<i>Eurostopodus argus</i>	x	
Bird	Brown Falcon	<i>Falco berigora</i>	x	
Bird	Nankeen Kestrel	<i>Falco cenchroides</i>	x	
Bird	Grey Falcon	<i>Falco hypoleucos</i>	x	
Bird	Australian Hobby	<i>Falco longipennis</i>	x	
Bird	Peregrine Falcon	<i>Falco peregrinus</i>	x	
Bird	Western Shrike-tit	<i>Falcunculus frontatus leucogaster</i>	x	
Bird	Singing Honeyeater	<i>Gavicalis virescens</i>	x	x
Bird	Western Gerygone	<i>Gerygone fusca</i>	x	
Bird	Magpie-lark	<i>Grallina cyanoleuca</i>	x	x
Bird	Australian Magpie	<i>Gymnorhina tibicen dorsalis</i>	x	x
Bird	Whistling Kite	<i>Haliastur sphenurus</i>	x	
Bird	Black-Breasted Buzzard	<i>Hamirostra melanosternon</i>	x	
Bird	Little Eagle	<i>Hieraaetus morphnoides</i>	x	
Bird	Welcome Swallow	<i>Hirundo neoxena</i>	x	
Bird	Shy Groundwren	<i>Hylacola cauta subsp. whitlocki</i>	x	
Bird	White-winged Triller	<i>Lalage tricolor</i>	x	
Bird	Malleefowl	<i>Leipoa ocellata</i>	x	
Bird	Purple-Gaped Honeyeater	<i>Lichenostomus cratitius</i>	x	x
Bird	Brown Honeyeater	<i>Lichmera indistincta</i>	x	
Bird	Major Mitchell's Cockatoo	<i>Lophochroa leadbeateri</i>	x	
Bird	Square-Tailed Kite	<i>Lophoictinia isura</i>	x	
Bird	White-winged Fairy-wren	<i>Malurus leucopterus</i>	x	
Bird	Blue-Breasted Fairy-Wren	<i>Malurus pulcherrimus</i>	x	
Bird	Splendid Fairy-wren	<i>Malurus splendens</i>	x	
Bird	Yellow-throated Miner	<i>Manorina flavigula</i>	x	x
Bird	Hooded Robin	<i>Melanodryas cucullata</i>	x	
Bird	White-Throated Honeyeater	<i>Melithreptus albogularis</i>	x	

Group	Common Name	Taxon	Recorded from Database	Recorded from field survey
Bird	Brown-headed Honeyeater	<i>Melithreptus brevirostris</i>	x	
Bird	White-naped Honeyeater	<i>Melithreptus lunatus</i>	x	
Bird	Budgerigar	<i>Melopsittacus undulatus</i>	x	
Bird	Rainbow Bee-eater	<i>Merops ornatus</i>	x	
Bird	Jacky Winter	<i>Microeca fascians</i>	x	
Bird	Grey Wagtail	<i>Motacilla cinerea</i>	x	
Bird	White-eared Honeyeater	<i>Nesoptilotis leucotis novaenorcae</i>	x	
Bird	Cockatiel	<i>Nymphicus hollandicus</i>	x	
Bird	Crested Pigeon	<i>Ocyphaps lophotes</i>	x	x
Bird	Crested Bellbird	<i>Oreoica gutturalis</i>	x	x
Bird	Gilbert's Whistler	<i>Pachycephala inornata</i>	x	
Bird	Rufous Whistler	<i>Pachycephala rufiventris</i>	x	
Bird	Spotted Pardalote	<i>Pardalotus punctatus</i>	x	
Bird	Striated Pardalote	<i>Pardalotus striatus</i>	x	x
Bird	Purple-crowned Lorikeet	<i>Parvipsitta porphyrocephala</i>	x	
Bird	Fairy Martin	<i>Petrochelidon ariel</i>	x	
Bird	Tree Martin	<i>Petrochelidon nigricans</i>	x	
Bird	Red-capped Robin	<i>Petroica goodenovii</i>	x	x
Bird	Night Parrot	<i>Pezoporus occidentalis</i>	x	
Bird	Common Bronzewing	<i>Phaps chalcoptera</i>	x	
Bird	New Holland Honeyeater	<i>Phylidonyris novaehollandiae</i>	x	
Bird	Western Rosella	<i>Platycercus icterotis</i>	x	
Bird	Mulga Parrot	<i>Platycercus varius</i>	x	
Bird	Striped Honeyeater	<i>Plectorhyncha lanceolata</i>	x	
Bird	Tawny Frogmouth	<i>Podargus strigoides</i>	x	
Bird	White-browed Babbler	<i>Pomatostomus superciliosus</i>	x	
Bird	Yellow-plumed Honeyeater	<i>Ptilotula ornata</i>	x	x
Bird	White-Plumed Honeyeater	<i>Ptilotula penicillata</i>	x	
Bird	Grey-fronted Honeyeater	<i>Ptilotula plumula</i>	x	
Bird	White-fronted Honeyeater	<i>Purnella albifrons</i>	x	x
Bird	Redthroat	<i>Pyrrholaemus brunneus</i>	x	x
Bird	Grey Fantail	<i>Rhipidura albiscapa</i>	x	
Bird	Willie Wagtail	<i>Rhipidura leucophrys</i>	x	x
Bird	Weebill	<i>Smicronis brevirostris</i>	x	x
Bird	Grey Currawong	<i>Strepera versicolor</i>	x	x
Bird	Spotted Turtle-Dove	<i>Streptopelia chinensis</i>	x	
Bird	Laughing Dove	<i>Streptopelia senegalensis</i>	x	
Bird	Zebra Finch	<i>Taeniopygia guttata</i>	x	
Bird	Australian White Ibis	<i>Threskiornis moluccus</i>	x	
Bird	Red-backed Kingfisher	<i>Todiramphus pyrrhopygius</i>	x	x
Bird	Sacred Kingfisher	<i>Todiramphus sanctus</i>	x	
Bird	Little Button-quail	<i>Turnix velox</i>	x	
Bird	Barn Owl	<i>Tyto alba delicatula</i>	x	
Bird	Eastern Barn Owl	<i>Tyto javanica</i>	x	
Bird	Banded Lapwing	<i>Vanellus tricolor</i>	x	
Bird	Silvereye	<i>Zosterops lateralis</i>	x	
Mammal	European Cattle	<i>Bos taurus</i>	x	

Group	Common Name	Taxon	Recorded from Database	Recorded from field survey
Mammal	Dingo	<i>Canis familiaris</i>	x	
Mammal	Goat	<i>Capra hircus</i>	x	
Mammal	Western Pygmy-possum	<i>Cercartetus concinnus</i>	x	
Mammal	Gould's Wattled Bat	<i>Chalinolobus gouldii</i>	x	
Mammal	Chocolate Wattled Bat	<i>Chalinolobus morio</i>	x	
Mammal	Chuditch, Western Quoll	<i>Dasyurus geoffroii</i>	x	
Mammal	Cat	<i>Felis catus</i>	x	x
Mammal	Western Grey Kangaroo	<i>Macropus fuliginosus</i>	x	x
Mammal	Red Kangaroo, Marlu	<i>Macropus rufus</i>	x	
Mammal	Bilby, Dalgyte, Ninu	<i>Macrotis lagotis</i>	x	
Mammal	House Mouse	<i>Mus musculus</i>	x	x
Mammal	Numbat, Walpurti	<i>Myrmecobius fasciatus</i>	x	
Mammal	Southern Ningau	<i>Ningau yvonneae</i>	x	
Mammal	Lesser Long-eared Bat	<i>Nyctophilus geoffroyi</i>	x	
Mammal	Rabbit, European Rabbit	<i>Oryctolagus cuniculus</i>	x	x
Mammal	Euro, Biggada	<i>Osphranter robustus erubescens</i>	x	
Mammal	Sheep	<i>Ovis aries</i>	x	
Mammal	Bolam's Mouse	<i>Pseudomys bolami</i>	x	
Mammal	Sandy Inland Mouse	<i>Pseudomys hermannsburgensis</i>	x	
Mammal	Inland Broad-nosed Bat	<i>Scotorepens balstoni</i>	x	
Mammal	Fat-tailed Dunnart	<i>Sminthopsis crassicaudata</i>	x	
Mammal	Little Long-tailed Dunnart	<i>Sminthopsis dolichura</i>	x	
Mammal	Gilbert's Dunnart	<i>Sminthopsis gilberti</i>	x	
Mammal	Ooldea Dunnart	<i>Sminthopsis ooldea</i>	x	
Mammal	Short-beaked Echidna	<i>Tachyglossus aculeatus</i>	x	
Mammal	Hill's Sheath-tail-bat	<i>Taphozous hilli</i>	x	
Mammal	Inland Forest Bat	<i>Vespadelus baverstocki</i>	x	
Mammal	Finlayson's Cave Bat	<i>Vespadelus finlaysoni</i>	x	
Mammal	Southern Forest Bat	<i>Vespadelus regulus</i>	x	
Reptile	Desert Death Adder	<i>Acanthophis pyrrhus</i>	x	
Reptile	Southern Blind Snake	<i>Anilius australis</i>	x	
Reptile	Prong-snouted Blind Snake	<i>Anilius bituberculatus</i>	x	
Reptile	Pale-Headed Blind Snake	<i>Anilius hamatus</i>	x	
Reptile	Sedgeland's Worm-lizard	<i>Aprasia repens</i>	x	
Reptile	Narrow-banded Shovel-nosed Snake	<i>Brachyuropsis fasciolatus subsp. fasciolatus</i>	x	
Reptile	Southern Shovel-nosed Snake	<i>Brachyuropsis semifasciatus</i>	x	
Reptile	Marbled Gecko	<i>Christinus marmoratus</i>	x	
Reptile	Buchanan's Snake-eyed Skink	<i>Cryptoblepharus buchanani</i>	x	
Reptile	Peron's Snake-eyed Skink	<i>Cryptoblepharus plagiocephalus</i>	x	
Reptile	Ring-tailed Dragon	<i>Ctenophorus caudicinctus</i>	x	
Reptile	Bicycle Dragon	<i>Ctenophorus cristatus</i>	x	
Reptile	Central Netted Dragon	<i>Ctenophorus nuchalis</i>	x	
Reptile	Painted Dragon	<i>Ctenophorus pictus</i>	x	
Reptile	Western Netted Dragon	<i>Ctenophorus reticulatus</i>	x	
Reptile	Claypan Dragon	<i>Ctenophorus salinarum</i>	x	

Group	Common Name	Taxon	Recorded from Database	Recorded from field survey
Reptile	Lozenge-marked Dragon	<i>Ctenophorus scutulatus</i>	x	
Reptile	Southern Mallee Ctenotus	<i>Ctenotus atlas</i>	x	
Reptile		<i>Ctenotus leonhardii</i>	x	
Reptile	Barred Wedgesnout Ctenotus	<i>Ctenotus schomburgkii</i>	x	
Reptile	Spotted Ctenotus	<i>Ctenotus uber</i>	x	
Reptile	Marble-faced Delma	<i>Delma australis</i>	x	
Reptile	Yellow-faced Whip Snake	<i>Demansia psammophis cupreiceps</i>	x	x
Reptile	Fat-tailed Diplodactylus	<i>Diplodactylus conspicillatus</i>	x	
Reptile	Western Stone Gecko	<i>Diplodactylus granariensis granariensis</i>	x	x
Reptile	Fine-faced Gecko	<i>Diplodactylus pulcher</i>	x	
Reptile	Pygmy Spiny-tailed Skink	<i>Egernia depressa</i>	x	
Reptile	Goldfields Crevice-Skink	<i>Egernia formosa</i>	x	
Reptile	Western Spiny-tailed Skink	<i>Egernia stokesii badia</i>	x	
Reptile	Broad-banded Sand Swimmer	<i>Eremiascincus richardsonii</i>	x	
Reptile	Orange-naped Snake	<i>Furina ornata</i>	x	
Reptile	Purplish Dtella	<i>Gehyra purpurascens</i>	x	x
Reptile	Tree Dtella	<i>Gehyra variegata</i>	x	x
Reptile	Asian House Gecko	<i>Hemidactylus frenatus</i>	x	
Reptile	South-western Earless Skink	<i>Hemiergis initialis subsp. initialis</i>	x	
Reptile	Reticulated Velvet Gecko	<i>Hesperoedura reticulata</i>	x	
Reptile	Bynoe's Gecko	<i>Heteronotia binoei</i>	x	x
Reptile	Pale-flecked Garden Sunskink	<i>Lampropholis guichenoti</i>	x	
Reptile	Southern Robust Slider	<i>Lerista picturata</i>	x	
Reptile		<i>Lerista stictopleura</i>	x	
Reptile	Timid Slider	<i>Lerista timida</i>	x	x
Reptile	Burton's Snake-Lizard	<i>Lialis burtonis</i>	x	
Reptile	Desert Skink	<i>Liopholis inornata</i>	x	
Reptile	Main's Ground Gecko	<i>Lucasium maini</i>		x
Reptile	Common Dwarf Skink	<i>Menetia greyii</i>	x	x
Reptile	Thorny Devil	<i>Moloch horridus</i>	x	
Reptile	Western Australian Carpet Python	<i>Morelia spilota imbricata</i>	x	
Reptile	Saltbush Morethia Skink	<i>Morethia adalaidensis</i>	x	
Reptile	Black-naped Snake	<i>Neelaps bimaculatus</i>	x	
Reptile	Gould's Hooded Snake	<i>Parasuta gouldii</i>	x	
Reptile	Monk Snake	<i>Parasuta monachus</i>	x	
Reptile	Dwarf Bearded Dragon	<i>Pogona minor subsp. minor</i>	x	
Reptile	King Brown Snake	<i>Pseudechis australis</i>	x	
Reptile	Western Brown Snake	<i>Pseudonaja mengdeni</i>	x	
Reptile	Ringed Brown Snake	<i>Pseudonaja modesta</i>	x	
Reptile	Gwardar, Northern Brown Snake	<i>Pseudonaja nuchalis</i>	x	
Reptile	Common Scaly-foot	<i>Pygopus lepidopodus</i>	x	
Reptile	Hooded Scaly-foot	<i>Pygopus nigriceps</i>	x	
Reptile	Western Beaked Gecko	<i>Rhynchoedura ornata</i>	x	x
Reptile	Jan's Banded Snake	<i>Simoselaps bertholdi</i>	x	

Group	Common Name	Taxon	Recorded from Database	Recorded from field survey
Reptile	Goldfields Spiny-tailed Gecko	<i>Strophurus assimilis</i>	x	
Reptile	Rosen's Snake	<i>Suta fasciata</i>	x	
Reptile	Curl Snake	<i>Suta suta</i>	x	
Reptile	Western Blue-tongue	<i>Tiliqua occipitalis</i>	x	
Reptile	Bobtail	<i>Tiliqua rugosa subsp. rugosa</i>	x	x
Reptile	Pebble Dragon	<i>Tympanocryptis cephalus</i>	x	
Reptile	Goldfields Pebble-mimic Dragon	<i>Tympanocryptis pseudopsephos</i>	x	
Reptile	Barking Gecko	<i>Underwoodisaurus milii</i>	x	x
Reptile	Stripe-tailed Monitor	<i>Varanus caudolineatus</i>	x	
Reptile	Bungarra or Sand Monitor	<i>Varanus gouldii</i>	x	
Reptile	Racehorse Monitor	<i>Varanus tristis</i>	x	

APPENDIX 6

Species accumulation curve for the trapping site within the study area

