



Detailed and Targeted Fauna Survey By-product Storage Site

**Prepared for Lynas Kalgoorlie Pty Ltd
15th February 2021**



Document Status						
Rev No.	Authors	Reviewer/s	Date	Approved for Issue		
				Name	Distributed To	Date
1	D.Brearley, J.Waters, M.Brown	D.Brearley	26/11/20	D.Brearley	P.Jansen	27/11/20
2	D.Brearley	J.Jansen	15/02/21	D.Brearley	P.Jansen	15/02/21



ACN 095 837 120
PO Box 227
YALLINGUP WA 6282
Telephone 0427339842
E-mail: info@onshoreenvironmental.com.au

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EXECUTIVE SUMMARY

Lynas Kalgoorlie Pty Ltd (Lynas) commissioned Onshore Environmental Consultants Pty Ltd (Onshore Environmental) to undertake a detailed fauna survey of the 535 hectare (ha) By-product Disposal Site (herein referred to as the study area), where waste from the nearby rare earth processing plant will be stored. The study area is situated approximately 10 km northeast of Kalgoorlie in the Goldfields region of Western Australia.

The detailed fauna survey was completed by a Principal Zoologist and Senior Ecologist from Onshore Environmental between the 4th and 12th of September 2020.

The desktop study identified a total of 283 vertebrate fauna as potentially occurring within or surrounding the study area, including 5 amphibians, 173 birds, 36 mammals and 69 reptiles.

A total of 71 fauna species were identified during the field survey including 45 birds, 16 reptiles and 10 mammals. Four of the seven mammal species were introduced species.

No evidence of conservation significant fauna species was recorded from the study area.

A total of two fauna habitat types were described and mapped within the study area; *Eucalyptus* Woodland and Shrublands. All fauna habitats were considered to be well represented within the Murchison and Coolgardie bioregions.

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1.0 INTRODUCTION

1.1 Background

Onshore Environmental was commissioned by Lynas to undertake a detailed fauna survey of the proposed By-product Storage Site at Yarri Road, Parkeston, which is a potential long-term storage location for by-products originating from the nearby cracking and leaching plant that will treat rare earth concentrate from the Mt Weld mine near Laverton. The 535 ha study area is located approximately 10 km northeast of Kalgoorlie in the Goldfields region of Western Australia (Figure 1).

1.2 Site Overview

The 535 hectare study area is located approximately 10 km northeast of Kalgoorlie in the Goldfields region of Western Australia (Figure 1). The study area occurs predominantly on Common Reserve 8767 (85%) with the remainder on Unallocated Crown Land Common Reserve (UCL). 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.

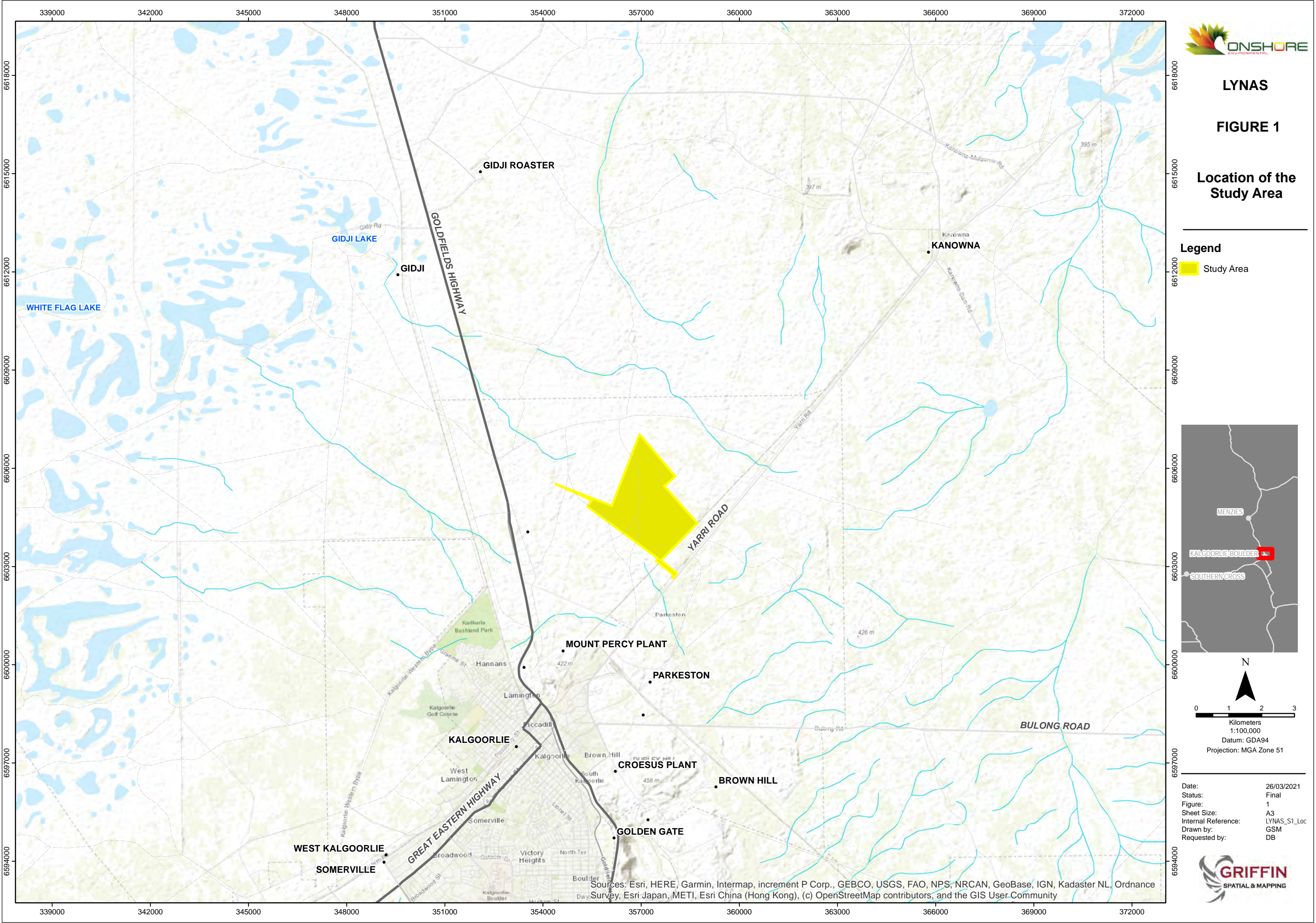
1.3 Biogeographic Regions

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 located on the border between the Murchison and Coolgardie bioregions. There are two subregions that occur within the study area; the Eastern Murchison subregion (MUR01) of the Murchison bioregion, and the Eastern Goldfields subregion (COO003) of the Coolgardie bioregion.

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).

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 graninulites of the Fraser Range. The subregion is rich in endemic *Acacias* (CALM 2002).



1.4 Climate

The Kalgoorlie region has an arid to semi-arid climate. The closest weather station is at the Kalgoorlie-Boulder Airport, approximately 10 km southwest of the study area. Average annual rainfall is 266 mm with a bimodal rainfall pattern (Bureau of Meteorology (BOM) 2020). 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 September 2020 was below average with less than 50 mm recorded in the four months prior to the field survey (Figure 2). No significant rainfall events occurred prior to or during the field survey.

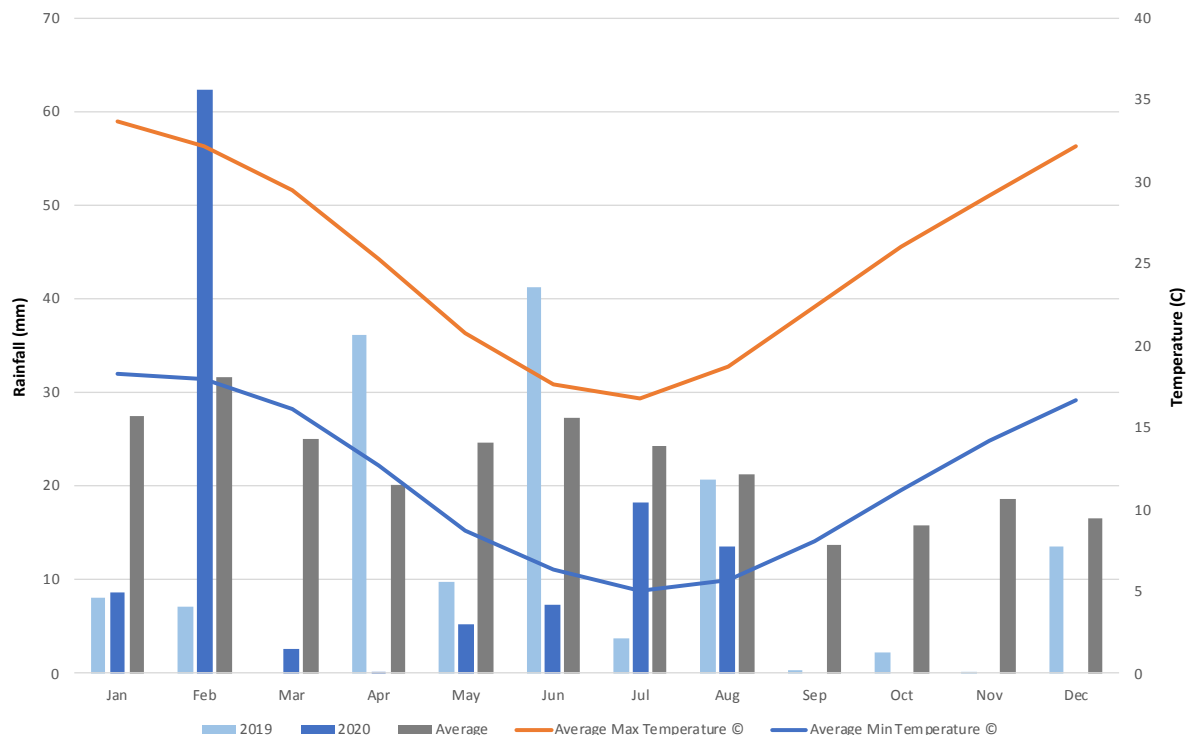


Figure 2 Rainfall data recorded at the Kalgoorlie-Boulder Airport station for 2019 and January to August 2020, with long term average rainfall and temperature data (Bureau of Meteorology 2020).

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 to undulating, set on predominantly orange and yellow sands with the dominant landforms being hardpan plains. There are no significant surface water features within the study area.

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.

The land systems of the Kambalda area were described by Payne *et al* (1998). This land system mapping covers the eastern part of the study area only, with no land system maps available for the western part of the study area. The eastern part of the study area is comprised of the Gumland land system which is described as 'extensive pedepains supporting eucalypt woodlands with halophytic and non-halophytic shrub understoreys' (Payne *et al* 1998).

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 Index of Biodiversity Surveys for Assessment (DWER 2020). No previous fauna surveys were found to have been completed within the study area. However, several surveys had been completed within the wider 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 1). Habitat availability and suitability was assessed based on aerial imagery and previous knowledge of the survey area and surrounds.

Table 1 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 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 Zoologist Mr Michael Brown, and Senior Ecologist Ms Jessica Waters from Onshore Environmental, working over a nine-day field trip from the 4th to the 12th of September 2020.

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 nine 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;
- Anabat recording (to detect bat echolocation calls);

- 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. The habitat assessment and previous knowledge of the study area recorded during the detailed flora and vegetation survey (Onshore Environmental 2020) was used to identify suitable representative trapping sites. A total of two trapping sites within two habitat types was established. Trapping sites were located within the highest quality habitat available within each defined habitat type.

The survey recorded any observations of fauna species made via primary or secondary evidence. 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 opportunity 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

Two trapping sites were established within the study area; one site within each habitat type (Figure 3). Trap location was chosen to target higher quality habitat with consideration of habitat features likely to support a variety of species. Each trapping site consisted of a split trap line comprising two 30 metre drift fences (Plate 1). Trap lines were 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 (20L buckets), six funnel traps, five small Elliot traps and two cage traps. Pit fall traps were located approximately five meters 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 72 traps (20 pit-falls, 24 funnel, 20 small Elliot and 8 cage traps) were deployed for eight nights across the two sites.

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 were cleared within four hours of sunrise.



Plate 1 Trap line with pitfall and funnel traps within *Eucalyptus* Woodland habitat.

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.

Acoustic Bat Surveying

A Bioacoustics Audio Recorder (BAR) was used to record crepuscular audio within the study area. One unit was deployed for one night at each of the two trapping sites. This BAR unit was set up to record for an hour before and after sunrise and sunset.

Avifauna Surveying

Bird censusing was undertaken at the trapping sites on three mornings for a 20-minute interval at each site by two observers simultaneously. A total of four 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.

Malleefowl have previously been recorded within the region and were targeted during this survey by walking transects within potential habitat to search for nesting mounds. Aerial photography was also used to identify potential nest sites which were then visited in the field.

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 habitat types. 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. Vegetation association mapping previously undertaken by Onshore Environmental (2020) was utilised to further aid in characterising the habitat mapping across the full extent of the study area. The suitability of habitat and presence of habitat features for 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 by the Principal Zoologist. 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 2020) for mammals and herpetofauna, and the Australian Faunal Directory for birds (DAWE 2020a).

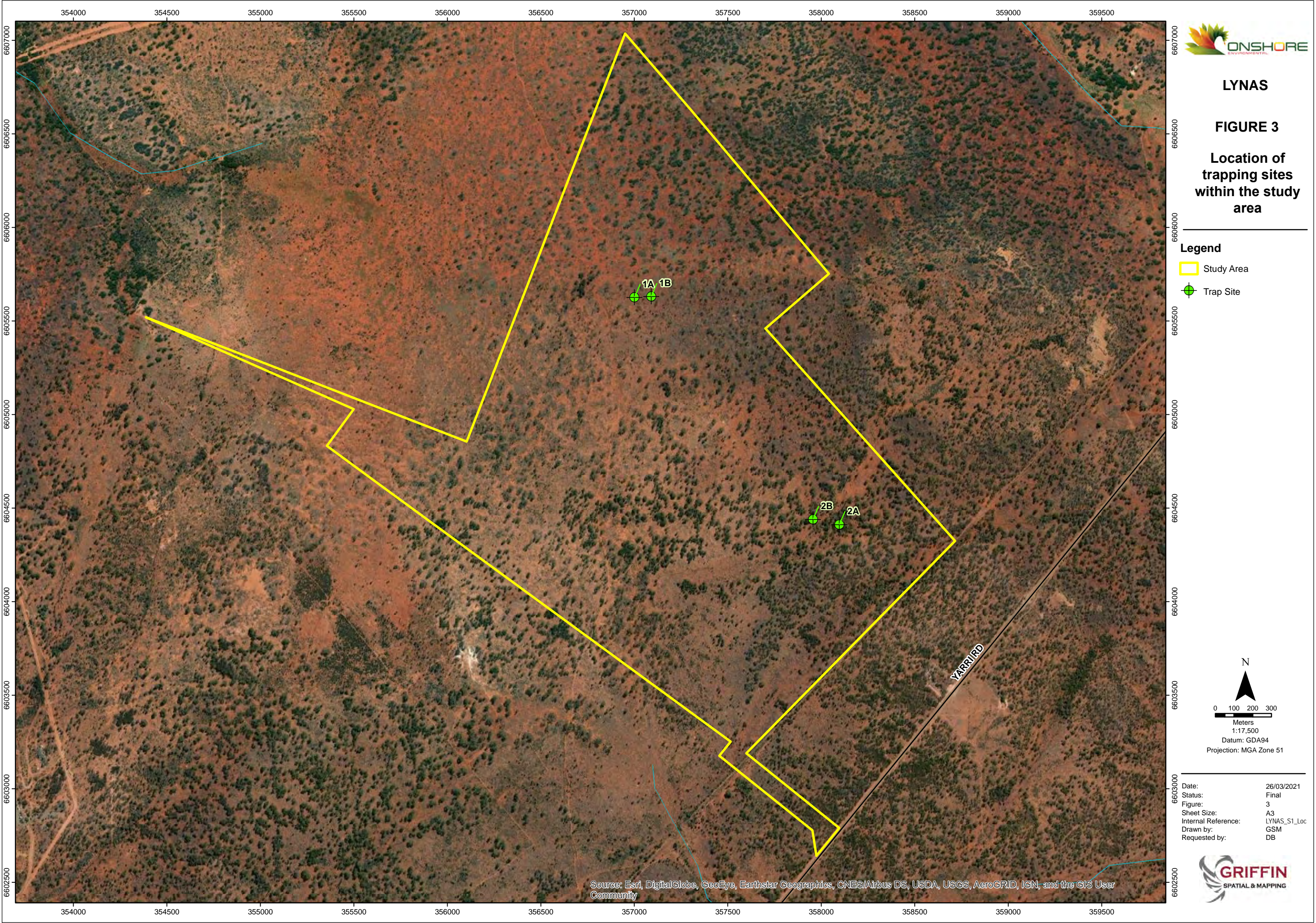
2.3.5 Survey Constraints

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 2. There were no survey-specific limitations for this survey.

Table 2 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 zoologist who executed this survey was a practitioner suitably qualified in their respective field; Mike Brown (Principal Zoologist >14 years' experience) and has conducted numerous surveys in the Goldfields region.
Scope (fauna groups sampled)	All allocated tasks were achieved during the survey, with trapping, acoustic surveys, foraging, bird surveys, targeted searches and nocturnal spotlighting undertaken.
Timing, weather, and season.	The survey was undertaken in early September 2020 and within the recommended survey season for reptile species within this region (EPA 2020b). The weather during the survey and for the three months prior was consistent with the climate data for the region. Rainfall for the Kalgoorlie area was below average for 2020 with only February receiving above average monthly falls. Additional surveys for birds and amphibians following heavy rainfall events (usually occurring in summer or autumn) would likely increase the number of species recorded.

Variable	Impact on Survey Outcomes
Disturbance to site which may affect survey results	Disturbances within the study area included grazing of vegetation, firewood cutting, vehicle tracks and historical exploration drilling. 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 timeframe of the survey and the study area was extensively ground truthed.
Remoteness and/or access	There was no access restriction 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	Discussed in Section 4



3.0 RESULTS

3.1 Desktop Review

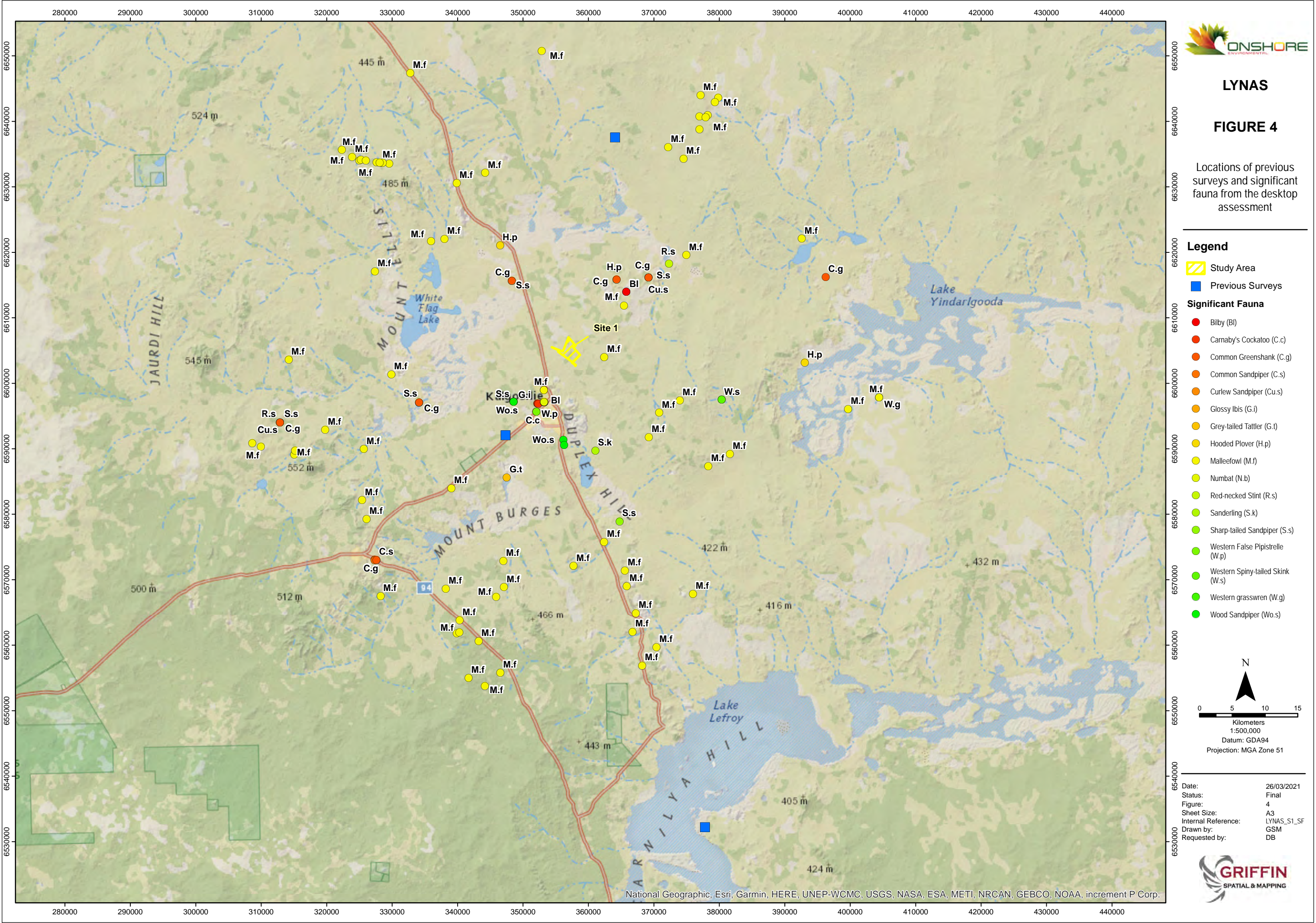
3.1.1 Previous Baseline Fauna Surveys

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 1980s, 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 flora and vegetation survey of the current study area (Onshore Environmental 2020). The flora and vegetation survey informed the fauna survey by providing preliminary habitat information. 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.

3.1.2 Habitat Types

Onshore Environmental (2020) described twelve vegetation associations occurring on two broad landforms within the study area. The majority of the study area was described as hardpan plains with *Maireana* shrublands, *Eucalyptus* Woodlands and *Eucalyptus* Mallee.



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 2020b). The database search listed six 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;
- Hooded Plover (*Thinornis rubricollis*) - listed as Vulnerable and Marine; and
- Malleefowl (*Leipoa ocellata*) - listed as Vulnerable.

The database search also identified ten additional species listed as Migratory or Marine 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;
- Fork-tailed Swift (*Apus pacificus*) - listed as Migratory and Marine;
- Great Egret (*Ardea alba*) - listed as 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;
- 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 2020) identified 13 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; 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 under International Agreements (IA);
- Curlew Sandpiper (*Calidris ferruginea*) - listed Critical and IA;

- Glossy Ibis (*Plegadis falcinellus*) - listed IA;
- Grey-tailed Tattler (*Tringa brevipes*) - listed as IA;
- Malleefowl (*Leipoa ocellata*) - listed as Vulnerable;
- Red-necked Stint (*Calidris ruficollis*) - listed as IA;
- Sanderling (*Calidris alba*) - listed as IA;
- Sharp-tailed Sandpiper (*Calidris acuminata*) - listed as IA; and
- Wood Sandpiper (*Tringa glareola*) - listed as IA.

3.1.4 Priority Fauna recognised by the DBCA

The DBCA rare fauna database search (DBCA 2019) and NatureMap search (DBCA 2020) 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 27 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 1) based on occurrence of habitat and proximity/age of previous records (Table 3). The remaining taxa were considered 'unlikely' to occur within the study area.

Table 3 Conservation significant fauna species identified during the desktop assessment (DBCA 2019, DBCA 2020).

Common Name	Scientific Name	Cons. Code EPBC Act	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 record occurs in the vicinity but is >50km from the study area
Western False Pipistrelle	<i>Falsistrellus 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
Western Grasswren	<i>Amytornis textilis textilis</i>			LC	P4	Semi-arid shrublands on dunes, plains and drainage.	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
Great Egret, White Egret	<i>Ardea alba</i>	Ma				Lakes and wetlands	No	Unlikely	No suitable habitat
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

Common Name	Scientific Name	Cons. Code EPBC Act	BC Act	IUCN	DBCA	Habitat Preference	Suitable Habitat Present	Likelihood in the Study Area	Rationale
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
Carnaby's Cockatoo	<i>Calyptorhynchus 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 prior to and during the survey period was consistent with average weather for September at Kalgoorlie. The average maximum temperature for the Kalgoorlie weather station during September is 22.4°C with an average minimum of 8.1°C (Figure 5). Average rainfall for September is 13.5 mm. September has the lowest average monthly rainfall throughout the year in Kalgoorlie.

The maximum temperature reached during the survey was 32.4°C on the 6th September 2020 while the minimum temperature was 6.3°C on the 4th September 2020 (Figure 5). No rainfall was received during or up to a week prior to the survey.

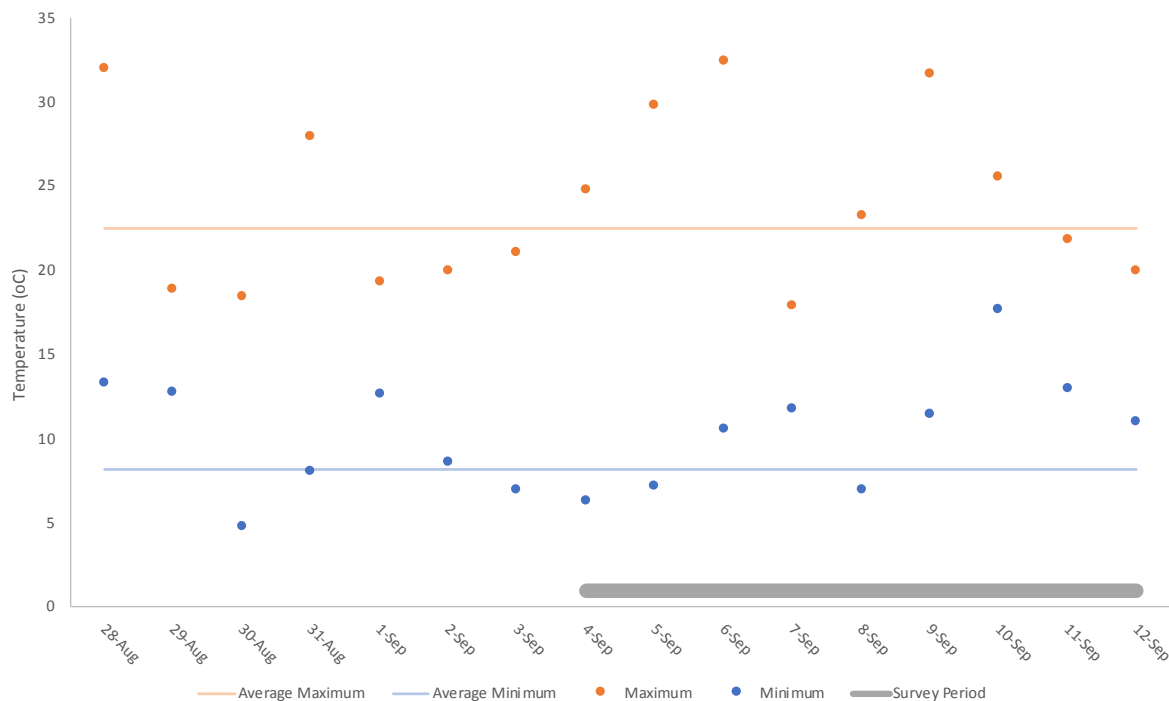


Figure 5 Temperature observations for the Kalgoorlie weather station prior to and during the survey period.

3.2 Fauna Habitats

Two broad fauna habitats were mapped within the study area on the basis of vegetation, landforms and microhabitat availability for fauna species (Figure 6). Each of these habitats is well represented within the Coolgardie and Murchison Bioregions. The characteristics of each fauna habitat are summarised in Tables 4 and 5, and described below.

Shrubland

The Shrubland fauna habitat is characterised by a low shrubland vegetation structure comprising *Maireana*, *Atriplex* and occasionally *Tecticornia* species. This habitat contains scattered larger trees and mallees (Plates 1-3). The understorey vegetation may provide shelter and nesting habitat for ground dwelling birds, including the Malleefowl (*Leipoa ocellata*).

Woodland

The Woodland fauna habitat is characterised by a woodland vegetation structure comprising *Eucalyptus salmonophloia*, *Eucalyptus transcontinentalis* and *Eucalyptus lesouefii* species, with localised areas of mallee dominated by Gimlet (*Eucalyptus salubris*) (Plates 4-7). Woodland habitat has the potential to provide microhabitats like tree hollows and logs, and denser leaf litter cover which can be suitable for species like the Chuditch (*Dasyurus geoffroii*) and Western Spiny-tailed Skink (*Egernia stokesii badia*). However, the Woodland habitat within the study area generally supported an open understorey and no suitable nesting hollows were recorded. Some small areas with dense shrublands occur within this unit, providing habitat for Malleefowl (*Leipoa ocellata*) and other species.

3.2.1 Fauna Habitat Condition

Habitat condition within the study area was rated as 'moderate to good'. The study area is situated in close proximity to Kalgoorlie and has been subjected to multiple disturbances linked to frequent use by humans. The study area is dissected by numerous informal vehicle tracks and situated between two major roads (Yarri Road and Goldfields Highway). A large mineral earth firebreak also lies to the north of the study area. Firewood cutting and historical logging have occurred extensively throughout the study area and has reduced the availability of habitat features such as hollows, dense understorey, large trees, ground logs and litter. Recreational motorbike riding was also observed within the study area. Feral cats were 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 4 Overview of the Shrubland fauna habitat represented in the study area.

Name		Shrublands
Description	Low Shrublands on flat hardpan plains with occasional Salmon Gum (<i>Eucalyptus salmonophloia</i>)	
Trapping Site	Site 2	
Area (ha)	232.21 ha	
Landform	Hardpan Plains	
% Ground Cover	Rock	0
	Soil	50-75
	Leaf Litter	<5
	Vegetation	25-40
Rocks	Type	N/A
	Size (mm)	-
	Abundance (%)	-
	Exposed Bedrock (%)	0
Soil	Type	Clay-Loam
	Colour	Red
Habitat Features	Aspect	Flat
	Slope	0
	Water	None
	Termite Presence	None
	Woody Debris	Low
	Peeling Bark	None
	Rock Crevices	None
	Burrowing Suitability	High
	Tree Hollows (<10cm)	None
	Tree Hollows (>10cm)	None
Condition	Condition	Moderate
	Disturbances	Road/ access tracks, rubbish, logging, mining exploration, rabbits
	Fire Age	>5 years

Vegetation				
Stratum	Form(s)	Height (m)	Cover (%)	Species
Upper	Trees	10-15	<2	<i>Eucalyptus salmonophloia</i>
Middle	Shrubs	1.5	<2	<i>Eremophila scoparia</i>
Lower	Shrubs	<1	30-70	<i>Maireana</i> spp. <i>Atriplex</i> spp.



Plates 1-3 **Representative shrubland fauna habitat within the study area.**

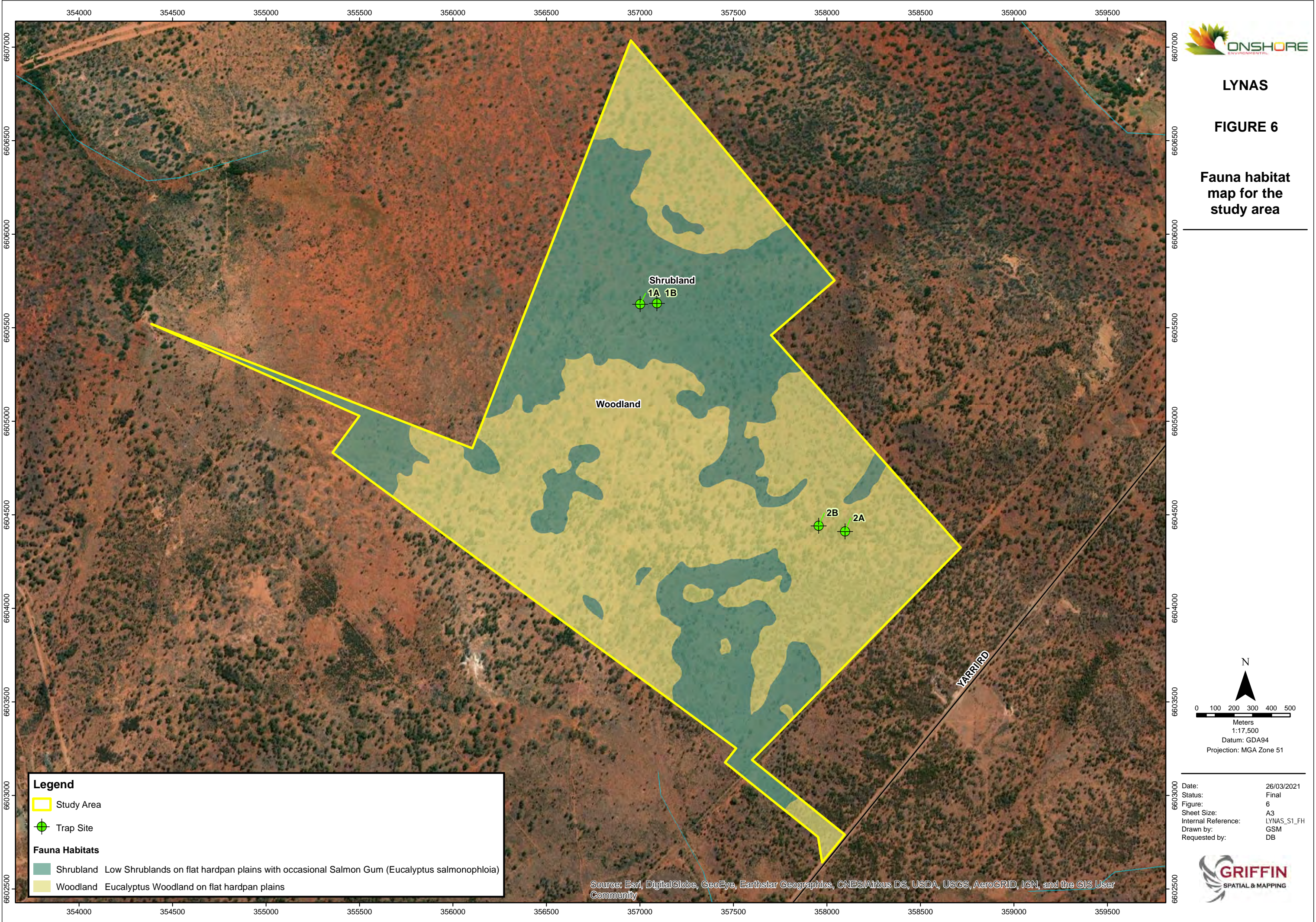
Table 5 Overview of the Woodland fauna habitat represented in the study area.

Name	Description	
Woodlands	<i>Eucalyptus</i> Woodlands on flat hardpan plains	
Trapping Site	Site 1	
Area (ha)	337.82 ha	
Landform	Hardpan Plains	
% Ground Cover	Rock	0
	Soil	25-50
	Leaf Litter	25-50
	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	None
	Termite Presence	Low
	Woody Debris	Moderate
	Peeling Bark	Low
	Rock Crevices	None
	Burrowing Suitability	High
	Tree Hollows (<10cm)	Low
	Tree Hollows (>10cm)	None
Condition	Condition	Good
	Disturbances	Cattle grazing, road/access tracks, rubbish, wood cutting
	Fire Age	>5 years

Vegetation				
Stratum	Form(s)	Height (m)	% Cover	Species
Upper	Trees	10-20	10-30	<i>Eucalyptus salmonophila</i> , <i>E. transcontinentalis</i> , <i>E. lesouefii</i>
Middle	Shrubs	1.5	2-10	<i>Eremophila scoparia</i> , <i>Eremophila interstans</i> , <i>Acacia hemiteles</i> , <i>Acacia acuminata</i> , <i>Acacia tetragonophylla</i>
Lower	Shrubs	<1	2-30	<i>Maireana sedifolia</i> , <i>Lysium australe</i> , <i>Scaevola spinescens</i> , <i>Atriplex nummularia</i>



Plates 4-7 **Representative woodland habitat within the study area.**



LYNAS

FIGURE 6

Fauna habitat
map for the
study area

N

0 100 200 300 400 500

Meters

1:17,500

Datum: GDA94

Projection: MGA Zone 51

3.2 Vertebrate Fauna Assemblage

3.2.1 Fauna Assemblage

The combined desktop searches identified a total of 283 vertebrate fauna taxa including five amphibians, 69 reptiles, 173 birds and 36 mammals. As there were no surface water features present within the study area, amphibians, waterbirds, waders and shorebirds were considered unlikely to occur within the study area and were removed. The resulting fauna list comprised a total of 237 taxa including 132 birds, 69 reptiles and 36 mammals which have the potential to occur within or surrounding the study area (see Appendix 3).

A total of 71 vertebrate fauna species were recorded during the September 2020 field survey, including 16 reptiles, 45 birds and ten 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.

3.2.2 Trapped Fauna Assemblage

The results from the trapping program are presented in the appendices as species by site matrix (Appendix 6) and species by trap type matrix (Appendix 7). A total of 14 species were recorded from the trapping program including 12 reptiles and two mammals. Bucket traps had the highest capture rate, followed by funnel traps and Elliot traps. No captures were made from the cage traps. Reptiles caught in the traps were predominantly geckos and skinks. The House Mouse (*Mus musculus*) was recorded on two occasions at Site 2 and a Western Pygmy Possum (*Cercartetus concinnus*) was recorded at Site 1 on one occasion. The two sites recorded different fauna species with only two species recorded at both sites; the Western Stone Gecko (*Diplodactylus granariensis*) and Bynoe's Gecko (*Heteronotia binoei*). These were also the most commonly trapped species with seven and nine individuals recorded respectively.

3.2.3 Spotlighting

Nocturnal surveys were undertaken on the 6th and 9th of September 2020 which were the warmest days experienced during the survey period (Figure 5). Nocturnal activity was expected to be higher on warmer days. The following species were observed during spotlighting; Bynoe's Gecko (*Heteronotia binoei*), Beaked Blind Snake (*Anilius waitii*), Purplish Dotted Gecko (*Gehyra purpurascens*), Main's Ground Gecko (*Lucasium maini*) and the Western Stone Gecko (*Diplodactylus granariensis*).

3.2.4 Avifauna

Species by site records from the bird census data is provided in Appendix 6. A total of 35 species were recorded from the bird census with an additional ten species recorded from opportunistic observations recorded throughout the study area. The species assemblage recorded from the two sites was different, with only five of the total 35 species present at both sites. The most commonly recorded species were the Weebill (*Smicromis brevirostris*), Australian Ringneck (*Barnardius zonarius*) and the Pied Butcherbird (*Cracticus nigrogularis*).

3.2.5 Bats

Three species of bats were recorded from within the study area using their echolocation calls. The results were analysed using a call library compiled by Mike Brown comprising 28 bat species. The three species recorded were Hill's Sheathtail-bat (*Taphozous hilli*), Southern Forest Bat (*Vespadelus regulus*) and Gould's Wattle Bat (*Chalinolobus gouldii*). All three species were recorded from Site 1, while only the Hill's Sheathtail-bat and Gould's Wattle Bat were recorded from Site 2. Time versus frequency graphs for the calls are presented in Appendix 8. *Taphozous hilli* was distinguished from *Taphozous georgianus* based on distribution (Churchill 2008). There were a total of 204 call trigger events, with 120 events classed as noise.

3.3 Fauna of Conservation Significance

3.3.1 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.

3.3.2 Priority Fauna recognised by the DBCA

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

3.3.3 Introduced Fauna Species

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

3.3.4 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 study area provides suitable habitat for this species and records occur in close proximity. However, the close proximity to town, presence of cats, and the prevalence of tracks, roads and woodcutting activity reduce the likelihood of this species utilising the study area. The entire study area was ground-truthed extensively on foot to search for nesting mounds. The study area was also flown with a drone to provide high quality aerial imagery and elevation data to assist with identifying potential 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. It requires 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 2020). 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 68 out of the 71 taxa recorded identified as potentially occurring from the database searches. The field survey identified 44 out of 132 (33%) potentially occurring bird species, ten of 36 (28%) potentially occurring mammal species, and 14 of 69 (20%) 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 from the database searches:

- the relative uniformity of the study area with consistent habitat types, minor variation in topography, and the relative absence of habitat features;
- the lack of surface water features occurring within or surrounding the study area;
- disturbance factors including numerous tracks, woodcutting activity and rubbish dumping which had reduced the quality and connectivity of the fauna habitat; and
- the close proximity of the study area to Kalgoorlie and adjacent major roads increased 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. 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).

The absence of significant rainfall events prior to the survey further reduced the likelihood of recording higher species diversity. The dry seasonal conditions contributed to reduced flowering and fruiting from vegetation within the study area. Hence, species that depend on these food resources were less likely to be present during the survey period. Additional fauna species would likely be recorded under good seasonal conditions and following significant rainfall events.

Three species that were recorded during the field survey were not identified from the database searches; Grey-headed Honey Eater (*Ptilotula keartlandi*), Central Deserts Robust Slider (*Lerista desertorum*), and Main's Ground Gecko (*Lucasium maini*).

The Grey-headed Honey Eater (*Ptilotula keartlandi*) is commonly recorded within the Pilbara region, with its distribution extending into the Kimberley, Northern Territory and Queensland. The nearest recorded location for this species is 250 km to the north of the study area (ALA 2020). Hence this species is identified as occurring at the edge of its known range within the study area.

Central Deserts Robust Slider (*Lerista desertorum*) is commonly recorded to the north-east of the study area within the Great Victoria Desert, Nullarbor and Murchison bioregions. The

closest location for this species is 170 km north east of the study area. Hence, this species is identified as occurring at the edge of its known range within the study area. Main's Ground Gecko (*Lucasium maini*) occurs within the Murchison, Coolgardie, Avon, Wheatbelt and Mallee bioregions. Despite not being identified from the database searches this species is within its typical distribution with numerous records in the greater Kalgoorlie area.

4.1.2 Species Accumulation Curves

The species accumulation curves for terrestrial fauna at both sites are presented in Appendix 9. Species accumulation curves for both sites have not reached an asymptote. This can be attributed to the small number of records of individuals caught in the traps (<16 captures for each habitat type). The small capture numbers can further be 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.

4.1.3 Comparison of Sites

The variability between the two sites confirmed the classification of two habitat types within the study area, with a different fauna assemblage recorded at both sites. A total of 22 birds and seven reptiles were recorded from Site 1, while 18 birds and seven reptiles were recorded from Site 2. Bird species richness was higher at Site 1 which supported a more complex habitat with *Eucalyptus* Woodland and a denser mid-storey shrub cover. Bird species recorded at both sites included the Weebill, Australian Ringneck, Crested Bellbird, Slender Thornbill and Red Wattlebird. Reptiles recorded at both sites included the Western Stone Gecko and Bynoe's Gecko.

5.0 SUMMARY

The single season detailed fauna survey of the By-product Disposal Site was completed in September 2020 by a Principal Zoologist and Senior Ecologist from Onshore Environmental.

A total of 71 vertebrate fauna species was recorded during the field survey, including 16 reptiles, 45 birds and ten mammals.

No evidence of any conservation significant fauna species was recorded within the study area. Three significant species have the potential to occur within the study area; the Malleefowl, Rainbow Bee-eater and Carnaby's Cockatoo. While suitable habitat exists for the Rainbow Bee-eater and Carnaby's Cockatoo, the study area is not considered suitable breeding habitat for these species. The area was extensively ground truthed for evidence of Malleefowl and no nesting mounds or evidence of this species was recorded.

Two fauna habitat types were described and mapped within the study area; *Eucalyptus* Woodland and Shrubland. Both fauna habitats were 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:

Onshore Environmental Consultants P/L
ABN 41 095 837 120
PO Box 227
YALLINGUP WA 6282
M 0427 339 842
Email info@onshoreenvironmental.com.au

Project Staff

Dr Darren Brearley	PhD	Project Manager and Principal Botanist
Mr Mike Brown	BSc	Principal Zoologist
Ms Jessica Waters	BSc	Senior Ecologist
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
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, 9 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 understory 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. 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> <ul style="list-style-type: none"> 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): <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. 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 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. 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).
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> <ul style="list-style-type: none"> A) The ecological community exists largely as modified occurrences that are likely to be capable of being substantially restored or rehabilitated. 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. 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.

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	Nature Map	Protected Matters	DBCA Database	Birddata	ALA
Bird	Spiny-cheeked Honeyeater	<i>Acanthagenys rufogularis</i>		x			x	x
Bird	Inland Thornbill	<i>Acanthiza apicalis</i>		x			x	x
Bird	Yellow-rumped Thornbill	<i>Acanthiza chrysorrhoa</i>		x			x	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			x	x
Bird	Collared Sparrowhawk	<i>Accipiter cirrocephalus</i>		x				x
Bird	Brown Goshawk	<i>Accipiter fasciatus</i>		x			x	x
Bird	Australian Owlet-nightjar	<i>Aegotheles cristatus</i>		x				
Bird	Dusky Grasswren	<i>Amytornis purnelli</i>						x
Bird	Western Grasswren	<i>Amytornis textilis</i>	P4			x		x
Bird	Grey Teal	<i>Anas gracilis</i>		x			x	x
Bird	Red Wattlebird	<i>Anthochaera carunculata</i>		x			x	x
Bird	Western Wattlebird	<i>Anthochaera lunulata</i>						x
Bird	Australian Pipit	<i>Anthus australis</i>		x			x	x
Bird	Banded Whiteface	<i>Aphelocephala leucopsis</i>		x			x	x
Bird	Fork-tailed Swift	<i>Apus pacificus</i>	IA		x			
Bird	Wedge-tailed Eagle	<i>Aquila audax</i>		x			x	x
Bird	Cattle Egret	<i>Ardea ibis</i>	IA		x			
Bird	Australian Bustard	<i>Ardeotis australis</i>					x	x
Bird	Black-faced Woodswallow	<i>Artamus cinereus</i>		x			x	x
Bird	Dusky Woodswallow	<i>Artamus cyanopterus</i>		x			x	x
Bird	Masked Woodswallow	<i>Artamus personatus</i>		x				x
Bird	Galah	<i>Cacatua roseicapilla</i>		x				
Bird	Little Corella	<i>Cacatua sanguinea</i>		x			x	x
Bird	Pallid Cuckoo	<i>Cacomantis pallidus</i>		x				x
Bird	Carnaby's Cockatoo	<i>Calyptorhynchus latirostris</i>	EN	x		x	x	

Group	Common Name	Taxon	Listing	Nature Map	Protected Matters	DBCA Database	Birddata	ALA
Bird	Pied Honeyeater	<i>Certhionyx variegatus</i>					x	x
Bird	Horsfield's Bronze-Cuckoo	<i>Chalcites basal</i>		x			x	x
Bird	Black-eared Cuckoo	<i>Chalcites osculans</i>			x		x	x
Bird	White-backed Swallow	<i>Cheramoeca leucosterna</i>		x			x	x
Bird	Brown Songlark	<i>Cincloramphus cruralis</i>					x	x
Bird	Rufous Songlark	<i>Cincloramphus mathewsi</i>					x	x
Bird	Chestnut quail-thrush	<i>Cinclosoma castanotum</i>						x
Bird	Copperback quail-thrush	<i>Cinclosoma clarum</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 erythroptis</i>						x
Bird	Rufous Treecreeper	<i>Climacteris rufus</i>					x	x
Bird	Grey Shrike-thrush	<i>Colluricincla harmonica</i>		x			x	x
Bird	Rock Dove	<i>Columba livia</i>	Feral	x	x		x	x
Bird	Ground Cuckoo-shrike	<i>Coracina maxima</i>		x			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	x
Bird	Pied Butcherbird	<i>Cracticus nigrogularis</i>		x			x	x
Bird	Australian Magpie	<i>Cracticus tibicen</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	x
Bird	Emu	<i>Dromaius novaehollandiae</i>		x			x	x
Bird	Black-shouldered Kite	<i>Elanus caeruleus axillaris</i>		x			x	x

Group	Common Name	Taxon	Listing	Nature Map	Protected Matters	DBCA Database	Birddata	ALA
Bird	Galah	<i>Eolophus roseicapilla</i>		x			x	x
Bird	White-fronted Chat	<i>Epthianura albifrons</i>		x			x	x
Bird	Orange Chat	<i>Epthianura aurifrons</i>						x
Bird	Crimson Chat	<i>Epthianura tricolor</i>		x			x	x
Bird	Spotted Nightjar	<i>Eurostopodus argus</i>		x			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>	VU		x			
Bird	Australian Hobby	<i>Falco longipennis</i>		x			x	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			x	x
Bird	Tawny-crowned Honeyeater	<i>Gliciphila melanops</i>						x
Bird	Purple-crowned Lorikeet	<i>Glossopsitta porphyrocephala</i>					x	
Bird	Magpie-lark	<i>Grallina cyanoleuca</i>		x			x	x
Bird	Whistling Kite	<i>Haliastur sphenurus</i>		x			x	x
Bird	Pallid Cuckoo	<i>Heteroscenes pallidus</i>					x	
Bird	Little Eagle	<i>Hieraaetus morphnoides</i>		x			x	
Bird	Welcome Swallow	<i>Hirundo neoxena</i>		x			x	x
Bird	White-winged Triller	<i>Lalage tricolor</i>		x			x	x
Bird	Malleefowl	<i>Leipoa ocellata</i>	VU	x	x	x		
Bird	White-eared Honeyeater	<i>Lichenostomus leucotis subsp. novaenorciae</i>		x				
Bird	Brown Honeyeater	<i>Lichmera indistincta</i>		x			x	x
Bird	Major Mitchell's Cockatoo	<i>Lophochroa leadbeateri</i>						x
Bird	White-winged Fairy-wren	<i>Malurus leucopterus</i>		x			x	x
Bird	Splendid Fairy-wren	<i>Malurus splendens</i>		x			x	x

Group	Common Name	Taxon	Listing	Nature Map	Protected Matters	DBCA Database	Birddata	ALA
Bird	Yellow-throated Miner	<i>Manorina flavigula</i>		x			x	x
Bird	Hooded Robin	<i>Melanodryas cucullata</i>					x	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>	IA	x	x		x	x
Bird	Jacky Winter	<i>Microeca fascians</i>		x			x	x
Bird	Grey Wagtail	<i>Motacilla cinerea</i>	IA		x			
Bird	White-eared Honeyeater	<i>Nesoptilotis leucotis</i>					x	x
Bird	Southern Boobook	<i>Ninox novaeseelandiae</i>						x
Bird	Nankeen night heron	<i>Nycticorax caledonicus</i>						x
Bird	Cockatiel	<i>Nymphicus hollandicus</i>		x				x
Bird	Crested Pigeon	<i>Ocyphaps lophotes</i>		x			x	x
Bird	Crested Bellbird	<i>Oreoica gutturalis</i>		x			x	x
Bird	Gilbert's Whistler	<i>Pachycephala inornata</i>		x			x	x
Bird	Golden Whistler	<i>Pachycephala pectoralis</i>					x	
Bird	Rufous Whistler	<i>Pachycephala rufiventris</i>		x			x	x
Bird	Spotted Pardalote	<i>Pardalotus punctatus</i>		x				
Bird	Striated Pardalote	<i>Pardalotus striatus</i>		x			x	x
Bird	Purple-crowned Lorikeet	<i>Parvipsitta porphyrocephala</i>						x
Bird	Peafowl	<i>Pavo cristatus</i>	Feral					x
Bird	Tree Martin	<i>Petrochelidon nigricans</i>		x			x	x
Bird	Red-capped Robin	<i>Petroica goodenovii</i>		x			x	x
Bird	Night Parrot	<i>Pezoporus occidentalis</i>	EN		x			
Bird	Little pied cormorant	<i>Phalacrocorax melanoleucos</i>						x
Bird	Common Bronzewing	<i>Phaps chalcoptera</i>		x				x

Group	Common Name	Taxon	Listing	Nature Map	Protected Matters	DBCA Database	Birddata	ALA
Bird	White-cheeked Honeyeater	<i>Phylidonyris niger</i>						x
Bird	New Holland Honeyeater	<i>Phylidonyris novaehollandiae</i>						x
Bird	Mulga Parrot	<i>Platycercus varius</i>		x			x	x
Bird	Australian Ringneck	<i>Barnardius zonarius</i>		x			x	x
Bird	Striped Honeyeater	<i>Plectorhyncha lanceolata</i>						x
Bird	Tawny Frogmouth	<i>Podargus strigoides</i>		x			x	x
Bird	Regent Parrot	<i>Polytelis anthopeplus</i>					x	
Bird	White-browed Babbler	<i>Pomatostomus superciliosus</i>		x			x	x
Bird	Western Bowerbird	<i>Ptilonorhynchus guttatus guttatus</i>						x
Bird	Yellow-plumed Honeyeater	<i>Ptilotula ornata</i>					x	x
Bird	Grey-fronted Honeyeater	<i>Ptilotula plumula</i>						x
Bird	White-fronted Honeyeater	<i>Purnella albifrons</i>		x			x	x
Bird	Redthroat	<i>Pyrrholaemus brunneus</i>		x			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>	Feral		x			
Bird	Laughing Dove	<i>Streptopelia senegalensis</i>	Feral	x	x		x	x
Bird	Black Honeyeater	<i>Sugomel niger</i>						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	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

Group	Common Name	Taxon	Listing	Nature Map	Protected Matters	DBCA Database	Birddata	ALA
Bird	Silvereye	<i>Zosterops lateralis</i>		x			x	x
Mammal	European Cattle	<i>Bos taurus</i>	Feral	x				
Mammal	Camel	<i>Camelus dromedarius</i>	Feral		x			
Mammal	Dingo	<i>Canis familiaris</i>						x
Mammal	Domestic Dog	<i>Canis lupus familiaris</i>	Feral		x			
Mammal	Goat	<i>Capra hircus</i>	Feral	x	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 geoffroyi</i>	VU		x			
Mammal	Donkey, Ass	<i>Equus asinus</i>	Feral		x			
Mammal	Horse	<i>Equus caballus</i>	Feral		x			
Mammal	Western False Pipistrelle	<i>Falsistrellus mackenziei</i>	P4			x		
Mammal	Cat	<i>Felis catus</i>	Feral	x	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>	VU	x		x		
Mammal	House Mouse	<i>Mus musculus</i>	Feral	x	x			x
Mammal	Numbat, Walpurti	<i>Myrmecobius fasciatus</i>	EN	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>	Feral	x	x			x
Mammal	Euro, Biggada	<i>Osphranter robustus erubescens</i>		x				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

Group	Common Name	Taxon	Listing	Nature Map	Protected Matters	DBCA Database	Birddata	ALA
Mammal	Inland Broad-nosed Bat	<i>Scotorepens balstoni</i>		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				
Mammal	Southern Forest Bat	<i>Vespadelus regulus</i>		x				
Mammal	Red Fox	<i>Vulpes vulpes</i>	Feral		x			
Reptile	Desert Death Adder	<i>Acanthophis pyrrhus</i>		x				x
Reptile	Southern Blind Snake	<i>Anilius australis</i>						x
Reptile	Dark-spined Blind Snake	<i>Anilius bicolor</i>						x
Reptile	Prong-snouted Blind Snake	<i>Anilius bituberculatus</i>						x
Reptile	Beaked Blind Snake	<i>Anilius waitii</i>						x
Reptile	Sedgeland's Worm-lizard	<i>Aprasia repens</i>						x
Reptile	Narrow-banded Shovel-nosed Snake	<i>Brachyuropsis fasciolatus fasciolatus</i>		x				x
Reptile	Southern Shovel-nosed Snake	<i>Brachyuropsis semifasciatus</i>						x
Reptile	Oblong Turtle	<i>Chelodina (Macrodiemys) colliei</i>						x
Reptile	South-western Snake-necked Turtle	<i>Chelodina colliei</i>		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				
Reptile	Bicycle Dragon	<i>Ctenophorus cristatus</i>		x				x

Group	Common Name	Taxon	Listing	Nature Map	Protected Matters	DBCA Database	Birddata	ALA
Reptile	Central Netted Dragon	<i>Ctenophorus nuchalis</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				x
Reptile		<i>Ctenotus leonhardii</i>		x				
Reptile		<i>Ctenotus schomburgkii</i>		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</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	Western Spiny-tailed Skink, Gidgee Skink	<i>Egernia stokesii badia</i>	VU			x		
Reptile	Broad-banded Sand Swimmer	<i>Eremiascincus richardsonii</i>		x				
Reptile	Orange-naped Snake	<i>Furina ornata</i>		x				x
Reptile		<i>Gehyra purpurascens</i>		x				
Reptile	Tree Dtella	<i>Gehyra variegata</i>		x				x
Reptile	Asian House Gecko	<i>Hemidactylus frenatus</i>	Feral	x	x			x
Reptile	South-western Earless Skink	<i>Hemiergis initialis subsp. initialis</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

Group	Common Name	Taxon	Listing	Nature Map	Protected Matters	DBCA Database	Birddata	ALA
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				x
Reptile	Black-naped Snake	<i>Neelaps bimaculatus</i>		x				x
Reptile	Gould's Hooded Snake	<i>Parasuta gouldii</i>		x				x
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				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				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				x
Reptile	Rosen's Snake	<i>Suta fasciata</i>		x				x
Reptile	Curl Snake	<i>Suta suta</i>						x
Reptile	Western Blue-tongue	<i>Tiliqua occipitalis</i>		x				x
Reptile	Bobtail	<i>Tiliqua rugosa subsp. rugosa</i>		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

Group	Common Name	Taxon	Listing	Nature Map	Protected Matters	DBCA Database	Birddata	ALA
Reptile	Bungarra or Sand Monitor	<i>Varanus gouldii</i>		x				x
Reptile	Racehorse Monitor	<i>Varanus tristis</i>		x				x
Species unlikely to occur due to absence of suitable habitat								
Amphibians	Motorbike Frog	<i>Litoria moorei</i>		x				
Amphibians	Kunapalari Frog	<i>Neobatrachus kunapalari</i>		x				
Amphibians	Shoemaker Frog	<i>Neobatrachus sutor</i>		x				
Amphibians	Plonking Frog	<i>Neobatrachus wilsmorei</i>		x				
Amphibians	Western Toadlet	<i>Pseudophryne occidentalis</i>		x				
Bird	Common Sandpiper	<i>Actitis hypoleucos</i>	IA		x	x		
Bird	Mallard	<i>Anas platyrhynchos</i>						x
Bird	Australasian Shoveler	<i>Anas rhynchotis</i>		x				
Bird	Pacific Black Duck	<i>Anas superciliosa</i>		x			x	x
Bird	Australasian Darter	<i>Anhinga novaehollandiae</i>		x			x	x
Bird	Great Egret, White Egret	<i>Ardea alba</i>	IA		x			
Bird	White-necked Heron	<i>Ardea pacifica</i>		x			x	x
Bird	Hardhead	<i>Aythya australis</i>		x			x	x
Bird	Musk Duck	<i>Biziura lobata</i>		x			x	x
Bird	Sharp-tailed Sandpiper	<i>Calidris acuminata</i>	IA	x	x	x		
Bird	Sanderling	<i>Calidris alba</i>	IA	x		x		
Bird	Curlew sandpiper	<i>Calidris ferruginea</i>	CR & IA	x	x	x		
Bird	Pectoral Sandpiper	<i>Calidris melanotos</i>	IA		x			
Bird	Red-necked stint	<i>Calidris ruficollis</i>	IA			x		
Bird	Red-capped Dotterel	<i>Charadrius ruficapillus</i>		x				x
Bird	Australian Wood Duck	<i>Chenonetta jubata</i>		x			x	x
Bird	Silver Gull	<i>Chroicocephalus novaehollandiae</i>		x			x	
Bird	Banded Stilt	<i>Cladorhynchus leucocephalus</i>		x				

Group	Common Name	Taxon	Listing	Nature Map	Protected Matters	DBCA Database	Birddata	ALA
Bird	Black Swan	<i>Cygnus atratus</i>		x			x	x
Bird	White-faced Heron	<i>Egretta novaehollandiae</i>		x			x	x
Bird	Black-fronted Dotterel	<i>Elseyaornis melanops</i>		x			x	x
Bird	Red-kneed Dotterel	<i>Erythronys cinctus</i>		x			x	
Bird	Eurasian Coot	<i>Fulica atra</i>		x			x	x
Bird	Black-winged Stilt	<i>Himantopus himantopus leucocephalus</i>		x			x	x
Bird	Pink-eared Duck	<i>Malacorhynchus membranaceus</i>		x			x	
Bird	Little Pied Cormorant	<i>Microcarbo melanoleucos</i>		x				x
Bird	Little Black Cormorant	<i>Phalacrocorax sulcirostris</i>		x				x
Bird	Yellow-billed Spoonbill	<i>Platalea flavipes</i>		x				x
Bird	Glossy Ibis	<i>Plegadis falcinellus</i>	IA			x		
Bird	Hoary-headed Grebe	<i>Poliiocephalus poliocephalus</i>		x			x	x
Bird	Red-necked Avocet	<i>Recurvirostra novaehollandiae</i>		x			x	
Bird	Australasian Shoveler	<i>Spatula rhynchotis</i>					x	
Bird	Freckled Duck	<i>Stictonetta naevosa</i>		x				
Bird	Australasian Grebe	<i>Tachybaptus novaehollandiae</i>		x			x	x
Bird	Australian Shelduck	<i>Tadorna tadornoides</i>		x			x	x
Bird	Hooded Plover, Hooded Dotterel	<i>Thinornis rubricollis</i>	P4, VU, IA	x	x	x		
Bird	Straw-necked Ibis	<i>Threskiornis spinicollis</i>		x				x
Bird	Black-tailed Native-hen	<i>Tribonyx ventralis</i>		x				x
Bird	Grey-tailed Tattler	<i>Tringa brevipes</i>	IA			x		
Bird	Wood Sandpiper	<i>Tringa glareola</i>	IA	x		x		
Bird	Common Greenshank	<i>Tringa nebularia</i>	IA	x	x	x		

APPENDIX 4

Vertebrate fauna list from the study area

Group	Genus	Species	Common Name	Introduced
Bird	<i>Acanthagenys</i>	<i>rufogularis</i>	Spiny-cheeked Honeyeater	
Bird	<i>Acanthiza</i>	<i>apicalis</i>	Inland Thornbill	
Bird	<i>Acanthiza</i>	<i>chrysorrhoa</i>	Yellow-rumped Thornbill	
Bird	<i>Acanthiza</i>	<i>inornata</i>	Western Thornbill	
Bird	<i>Acanthiza</i>	<i>iredalei</i>	Slender-billed Thornbill	
Bird	<i>Anthochaera</i>	<i>carunculata</i>	Red Wattlebird	
Bird	<i>Aphelocephala</i>	<i>leucopsis</i>	Banded Whiteface	
Bird	<i>Aquila</i>	<i>audax</i>	Wedge-tailed Eagle	
Bird	<i>Barnardius</i>	<i>zonarius</i>	Australian Ringneck	
Bird	<i>Chalcites</i>	<i>basalis</i>	Horsfield's Bronze Cuckoo	
Bird	<i>Colluricincla</i>	<i>harmonica</i>	Grey Shrike-thrush	
Bird	<i>Coracina</i>	<i>novaehollandiae</i>	Black-faced Cuckoo-shrike	
Bird	<i>Corvus</i>	<i>coronoides</i>	Australian Raven	
Bird	<i>Cracticus</i>	<i>nigrogularis</i>	Pied Butcherbird	
Bird	<i>Cracticus</i>	<i>tibicen</i>	Australian Magpie	
Bird	<i>Cracticus</i>	<i>torquatus</i>	Grey Butcherbird	
Bird	<i>Daphoenositta</i>	<i>chrysoptera</i>	Varied Sittella	
Bird	<i>Dromaius</i>	<i>novaehollandiae</i>	Emu	
Bird	<i>Elseyornis</i>	<i>melanops</i>	Black-fronted Dotterel	
Bird	<i>Eolophus</i>	<i>roseicapilla</i>	Galah	
Bird	<i>Epthianura</i>	<i>albifrons</i>	White-fronted Chat	
Bird	<i>Epthianura</i>	<i>tricolor</i>	Crimson Chat	
Bird	<i>Falco</i>	<i>berigora</i>	Brown Falcon	
Bird	<i>Gavicalis</i>	<i>virescens</i>	Singing Honeyeater	
Bird	<i>Grallina</i>	<i>cyanoleuca</i>	Magpie-lark	
Bird	<i>Lichenostomus</i>	<i>leucotis</i>	White-eared Honeyeater	
Bird	<i>Malurus</i>	<i>leucopterus</i>	White-winged Fairy-wren	
Bird	<i>Malurus</i>	<i>splendens</i>	Splendid Fairy-wren	
Bird	<i>Manorina</i>	<i>flavigula</i>	Yellow-throated Miner	
Bird	<i>Microeca</i>	<i>fascians</i>	Jacky Winter	
Bird	<i>Ocyphaps</i>	<i>lophotes</i>	Crested Pigeon	
Bird	<i>Oreoica</i>	<i>gutturalis</i>	Crested Bellbird	
Bird	<i>Pachycephala</i>	<i>rufiventris</i>	Rufous Whistler	
Bird	<i>Pardalotus</i>	<i>punctatus</i>	Spotted Pardalote	
Bird	<i>Pardalotus</i>	<i>striatus</i>	Striated Pardalote	
Bird	<i>Petroica</i>	<i>goodenovii</i>	Red-capped Robin	
Bird	<i>Phaps</i>	<i>chalcoptera</i>	Common Bronzewing	
Bird	<i>Podargus</i>	<i>strigoides</i>	Tawny Frogmouth	
Bird	<i>Ptilotula</i>	<i>keartlandi</i>	Grey-headed Honeyeater	
Bird	<i>Ptilotula</i>	<i>ornata</i>	Yellow-plumed Honeyeater	
Bird	<i>Purnella</i>	<i>albifrons</i>	White-fronted Honeyeater	
Bird	<i>Pyrrholaemus</i>	<i>brunneus</i>	Redthroat	
Bird	<i>Rhipidura</i>	<i>leucophrys</i>	Willie Wagtail	
Bird	<i>Smicromis</i>	<i>brevirostris</i>	Weebill	
Bird	<i>Strepera</i>	<i>versicolor</i>	Grey Currawong	
Mammal	<i>Bos</i>	<i>taurus</i>	Cattle	Yes
Mammal	<i>Cercartetus</i>	<i>concinnus</i>	Western Pygmy-possum, Mundarda	
Mammal	<i>Chalinolobus</i>	<i>gouldii</i>	Gould's Wattled Bat	
Mammal	<i>Felis</i>	<i>catus</i>	Cat	Yes
Mammal	<i>Macropus</i>	<i>fuliginosus</i>	Western Grey Kangaroo	
Mammal	<i>Mus</i>	<i>musculus</i>	House Mouse	Yes
Mammal	<i>Oryctolagus</i>	<i>cuniculus</i>	Rabbit	Yes
Mammal	<i>Tachyglossus</i>	<i>aculeatus</i>	Short-beaked Echidna	
Mammal	<i>Taphozous</i>	<i>hilli</i>	Hill's Sheathtail-bat	
Mammal	<i>Vespadelus</i>	<i>regulus</i>	Southern Forest Bat	
Reptile	<i>Anilius</i>	<i>waitii</i>	Beaked Blind Snake	
Reptile	<i>Ctenophorus</i>	<i>cristatus</i>	Bicycle Dragon	
Reptile	<i>Diplodactylus</i>	<i>granariensis</i>	Western Stone Gecko	
Reptile	<i>Diplodactylus</i>	<i>pulcher</i>	Fine-faced Gecko	

Group	Genus	Species	Common Name	Introduced
Reptile	<i>Gehyra</i>	<i>purpurascens</i>	Purplish Dtella	
Reptile	<i>Gehyra</i>	<i>variegata</i>	Tree Dtella	
Reptile	<i>Hemiergis</i>	<i>initialis</i>	South-western Earless Skink	
Reptile	<i>Heteronotia</i>	<i>binoei</i>	Bynoe's Gecko	
Reptile	<i>Lerista</i>	<i>desertorum</i>	Central Deserts Robust Slider	
Reptile	<i>Lucasium</i>	<i>maini</i>	Main's Ground Gecko	
Reptile	<i>Menetia</i>	<i>greyii</i>	Common Dwarf Skink	
Reptile	<i>Morethia</i>	<i>adelaiddensis</i>	Saltbush Morethia Skink	
Reptile	<i>Pogona</i>	<i>minor</i>	Western Bearded Dragon	
Reptile	<i>Rhynchoedura</i>	<i>ornata</i>	Western Beaked Gecko	
Reptile	<i>Tiliqua</i>	<i>rugosa</i>	Shingleback	
Reptile	<i>Underwoodisaurus</i>	<i>mili</i>	Southern Barking Gecko	

APPENDIX 5

Species recorded during the desktop assessment and field survey

NB Species highlighted in grey were recorded from the field survey but not the desktop assessment

Group	Common Name	Species	Recorded from Database searches	Recorded from Field Survey
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	x
Bird	Western Thornbill	<i>Acanthiza inornata</i>	x	x
Bird	Slender-billed Thornbill	<i>Acanthiza iredalei</i>	x	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	Australian Owlet-nightjar	<i>Aegotheles cristatus</i>	x	
Bird	Dusky Grasswren	<i>Amytornis purnelli</i>	x	
Bird	Western Grasswren	<i>Amytornis textilis</i>	x	
Bird	Grey Teal	<i>Anas gracilis</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	x
Bird	Fork-tailed Swift	<i>Apus pacificus</i>	x	
Bird	Wedge-tailed Eagle	<i>Aquila audax</i>	x	x
Bird	Cattle Egret	<i>Ardea ibis</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	Masked Woodswallow	<i>Artamus personatus</i>	x	
Bird	Little Corella	<i>Cacatua sanguinea</i>	x	
Bird	Pallid Cuckoo	<i>Cacomantis pallidus</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 basalus</i>	x	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	Copperback quail-thrush	<i>Cinclosoma clarum</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 erythrops</i>	x	
Bird	Rufous Treecreeper	<i>Climacteris rufus</i>	x	
Bird	Grey Shrike-thrush	<i>Colluricincla harmonica</i>	x	x
Bird	Rock Dove	<i>Columba livia</i>	x	
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	Pied Butcherbird	<i>Cracticus nigrogularis</i>	x	x
Bird	Australian Magpie	<i>Cracticus tibicen</i>	x	x
Bird	Grey Butcherbird	<i>Cracticus torquatus</i>	x	x
Bird	Varied Sittella	<i>Daphoenositta chrysoptera</i>	x	x
Bird	Mistletoebird	<i>Dicaeum hirundinaceum</i>	x	
Bird	Emu	<i>Dromaius novaehollandiae</i>	x	x
Bird	Black-shouldered Kite	<i>Elanus caeruleus axillaris</i>	x	
Bird	Black-fronted Dotterel	<i>Elsyornis melanops</i>	x	x
Bird	Galah	<i>Eolophus roseicapilla</i>	x	x
Bird	White-fronted Chat	<i>Epthianura albifrons</i>	x	x
Bird	Orange Chat	<i>Epthianura aurifrons</i>	x	
Bird	Crimson Chat	<i>Epthianura tricolor</i>	x	x
Bird	Spotted Nightjar	<i>Eurostopodus argus</i>	x	

Group	Common Name	Species	Recorded from Database searches	Recorded from Field Survey
Bird	Brown Falcon	<i>Falco berigora</i>	x	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	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	Tawny-crowned Honeyeater	<i>Gliciphila melanops</i>	x	
Bird	Purple-crowned Lorikeet	<i>Glossopsitta porphyrocephala</i>	x	
Bird	Maggie-lark	<i>Grallina cyanoleuca</i>	x	x
Bird	Whistling Kite	<i>Haliastur sphenurus</i>	x	
Bird	Pallid Cuckoo	<i>Heteroscenes pallidus</i>	x	
Bird	Little Eagle	<i>Hieraaetus morphnoides</i>	x	
Bird	Welcome Swallow	<i>Hirundo neoxena</i>	x	
Bird	White-winged Triller	<i>Lalage tricolor</i>	x	
Bird	Malleefowl	<i>Leipoa ocellata</i>	x	
Bird	White-eared Honeyeater	<i>Lichenostomus leucotis</i>	x	x
Bird	Brown Honeyeater	<i>Lichmera indistincta</i>	x	
Bird	Major Mitchell's Cockatoo	<i>Lophochroa leadbeateri</i>	x	
Bird	White-winged Fairy-wren	<i>Malurus leucopterus</i>	x	x
Bird	Splendid Fairy-wren	<i>Malurus splendens</i>	x	x
Bird	Yellow-throated Miner	<i>Manorina flavigula</i>	x	x
Bird	Hooded Robin	<i>Melanodryas cucullata</i>	x	
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	x
Bird	Grey Wagtail	<i>Motacilla cinerea</i>	x	
Bird	White-eared Honeyeater	<i>Nesoptilotis leucotis</i>	x	
Bird	Southern Boobook	<i>Ninox novaeseelandiae</i>	x	
Bird	Nankeen night heron	<i>Nycticorax caledonicus</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	Golden Whistler	<i>Pachycephala pectoralis</i>	x	
Bird	Rufous Whistler	<i>Pachycephala rufiventris</i>	x	x
Bird	Spotted Pardalote	<i>Pardalotus punctatus</i>	x	x
Bird	Striated Pardalote	<i>Pardalotus striatus</i>	x	x
Bird	Purple-crowned Lorikeet	<i>Parvipsitta porphyrocephala</i>	x	
Bird	Peafowl	<i>Pavo cristatus</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	Little pied cormorant	<i>Phalacrocorax melanoleucos</i>	x	
Bird	Common Bronzewing	<i>Phaps chalcoptera</i>	x	x
Bird	White-cheeked Honeyeater	<i>Phylidonyris niger</i>	x	
Bird	New Holland Honeyeater	<i>Phylidonyris novaehollandiae</i>	x	
Bird	Mulga Parrot	<i>Platycercus varius</i>	x	
Bird	Australian Ringneck	<i>Barnardius zonarius</i>	x	x
Bird	Striped Honeyeater	<i>Plectorhyncha lanceolata</i>	x	
Bird	Tawny Frogmouth	<i>Podargus strigoides</i>	x	x
Bird	Regent Parrot	<i>Polytelis anthopeplus</i>	x	
Bird	White-browed Babbler	<i>Pomatostomus superciliosus</i>	x	
Bird	Western Bowerbird	<i>Ptilonorhynchus guttatus guttatus</i>	x	
Bird	Grey-headed Honeyeater	<i>Ptilotula keartlandi</i>		x
Bird	Yellow-plumed Honeyeater	<i>Ptilotula ornata</i>	x	x

Group	Common Name	Species	Recorded from Database searches	Recorded from Field Survey
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	Willie Wagtail	<i>Rhipidura leucophrys</i>	x	x
Bird	Weebill	<i>Smicromis 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	Black Honeyeater	<i>Sugomel niger</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	
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	x
Mammal	Camel	<i>Camelus dromedarius</i>	x	
Mammal	Dingo	<i>Canis familiaris</i>	x	
Mammal	Domestic Dog	<i>Canis lupus 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	x
Mammal	Chocolate Wattled Bat	<i>Chalinolobus morio</i>	x	
Mammal	Chuditch, Western Quoll	<i>Dasyurus geoffroyi</i>	x	
Mammal	Donkey, Ass	<i>Equus asinus</i>	x	
Mammal	Horse	<i>Equus caballus</i>	x	
Mammal	Western False Pipistrelle	<i>Falsistrellus mackenziei</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, Dalgite, 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	x
Mammal	Hill's Sheath-tail-bat	<i>Taphozous hilli</i>	x	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	x
Mammal	Red Fox	<i>Vulpes vulpes</i>	x	
Reptile	Desert Death Adder	<i>Acanthophis pyrrhus</i>	x	
Reptile	Southern Blind Snake	<i>Anilius australis</i>	x	
Reptile	Dark-spined Blind Snake	<i>Anilius bicolor</i>	x	
Reptile	Prong-snouted Blind Snake	<i>Anilius bituberculatus</i>	x	
Reptile	Beaked Blind Snake	<i>Anilius waitii</i>	x	x

Group	Common Name	Species	Recorded from Database searches	Recorded from Field Survey
Reptile	Sedgeland's Worm-lizard	<i>Aprasia repens</i>	x	
Reptile	Narrow-banded Shovel-nosed Snake	<i>Brachyuropsis fasciolatus fasciolatus</i>	x	
Reptile	Southern Shovel-nosed Snake	<i>Brachyuropsis semifasciatus</i>	x	
Reptile	Oblong Turtle	<i>Chelodina colliei</i>	x	
Reptile	Marbled Gecko	<i>Christinus marmoratus</i>	x	
Reptile	Buchanan's Snake-eyed Skink	<i>Cryptoblepharus buchananii</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	x
Reptile	Central Netted Dragon	<i>Ctenophorus nuchalis</i>	x	
Reptile	Western Netted Dragon	<i>Ctenophorus reticulatus</i>	x	
Reptile	Claypan Dragon	<i>Ctenophorus salinarum</i>	x	
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		<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</i>	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	
Reptile	Western Spiny-tailed Skink, Gidgee 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 Dтеля	<i>Gehyra purpurascens</i>	x	x
Reptile	Tree Dтеля	<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	x
Reptile	Bynoe's Gecko	<i>Heteronotia binoei</i>	x	x
Reptile	Pale-flecked Garden Sunskink	<i>Lampropholis guichenoti</i>	x	
Reptile	Central Deserts Robust Slider	<i>Lerista desertorum</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	
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 adelaidensis</i>	x	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</i>	x	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	
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	

Group	Common Name	Species	Recorded from Database searches	Recorded from Field Survey
Reptile	Western Blue-tongue	<i>Tiliqua occipitalis</i>	x	
Reptile	Shingleback	<i>Tiliqua 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 by Site Matrices

Species by site matrix - Avifauna

Common Name	Species	Site1	Site 2
Spiny-cheeked Honeyeater	<i>Acanthagenys rufogularis</i>		x
Inland Thornbill	<i>Acanthiza apicalis</i>	x	
Slender-billed Thornbill	<i>Acanthiza iredalei</i>	x	x
Red Wattlebird	<i>Anthochaera carunculata</i>	x	x
Banded Whiteface	<i>Aphelocephala nigrincta</i>		x
Galah	<i>Cacatua roseicapilla</i>		x
Grey Shrike-thrush	<i>Colluricincla harmonica</i>	x	
Black-faced Cuckoo-shrike	<i>Coracina novaehollandiae</i>	x	
Australian Raven	<i>Corvus coronoides</i>	x	
Pied Butcherbird	<i>Cracticus nigrogularis</i>	x	
Australian Magpie	<i>Cracticus tibicen</i>		x
Grey Butcherbird	<i>Cracticus torquatus</i>	x	
Emu	<i>Dromaius novaehollandiae</i>		x
White-fronted Chat	<i>Epthianura albifrons</i>	x	
Crimson Chat	<i>Epthianura tricolor</i>	x	
Singing Honeyeater	<i>Gavicalis virescens</i>		x
Magpie-lark	<i>Grallina cyanoleuca</i>		x
White-eared Honeyeater	<i>Lichenostomus leucotis</i>	x	
White-winged Fairy-wren	<i>Malurus leucopterus</i>		x
Yellow-throated Miner	<i>Manorina flavigula</i>		x
Jacky Winter	<i>Microeca fascians</i>	x	
Crested Bellbird	<i>Oreoica gutturalis</i>	x	x
Rufous Whistler	<i>Pachycephala rufiventris</i>	x	
Spotted Pardalote	<i>Pardalotus punctatus</i>	x	
Striated Pardalote	<i>Pardalotus striatus</i>		x
Red-capped Robin	<i>Petroica goodenovii</i>	x	
Common Bronzewing	<i>Phaps chalcoptera</i>		x
Australian Ringneck	<i>Barnardius zonarius</i>	x	x
Grey-headed Honeyeater	<i>Ptilotula keartlandi</i>	x	
Yellow-plumed Honeyeater	<i>Ptilotula ornata</i>	x	
White-fronted Honeyeater	<i>Purnella albifrons</i>		x
Redthroat	<i>Pyrrholaemus brunneus</i>	x	
Willie Wagtail	<i>Rhipidura leucophrys</i>	x	
Weebill	<i>Smicromis brevirostris</i>	x	x
Grey Currawong	<i>Strepera versicolor</i>		x
Yellow-rumped Thornbill	<i>Acanthiza chrysorrhoa</i>		
Western Thornbill	<i>Acanthiza inornata</i>		
Wedge-tailed Eagle	<i>Aquila audax</i>		
Horsfield's Bronze Cuckoo	<i>Chrysococcyx basalis</i>		
Varied Sittella	<i>Daphoenositta chrysoptera</i>		
Black-fronted Dotterel	<i>Elsyornis melanops</i>		
Brown Falcon	<i>Falco berigora</i>		
Splendid Fairy-wren	<i>Malurus splendens</i>		
Crested Pigeon	<i>Ocyphaps lophotes</i>		
Tawny Frogmouth	<i>Podargus strigoides</i>		
Total Number of Species		22	18
Species recorded at both sites		5	
Total species recorded from both sites		35	
Total species recorded including opp obs		45	

Species by site matrix - Reptiles

Common Name	Species	Site 1	Site 2
Western Stone Gecko	<i>Diplodactylus granariensis</i>	x	x
Fine-faced gecko	<i>Diplodactylus pulcher</i>		x
Tree Delta	<i>Gehyra variegata</i>	x	
Southwestern Earless Skink	<i>Hemiergis initialis</i>	x	
Bynoe's Gecko	<i>Heteronotia binoei</i>	x	x
Central Deserts Robust Slider	<i>Lerista desertorum</i>	x	
Main's Ground Gecko	<i>Lucasium maini</i>		x
Common Dwarf Skink	<i>Menetia greyii</i>	x	
Saltbush Morethia Skink	<i>Morethia adelaidensis</i>		x
Western Bearded Dragon	<i>Pogona minor</i>		x
Western Beaked Gecko	<i>Rhynchoedura ornata</i>		x
Southern Barking Gecko	<i>Underwoodisaurus milii</i>	x	
No Species		7	7
Total Species Trapped		12	
Species recorded from both sites		2	

Species by site matrix - Mammals

Common Name	Species	Site 1	Site 2
House Mouse			x
Western Pygmy Possum		x	
No Species		1	1
Total Species Trapped		2	
Species recorded from both sites		0	

APPENDIX 7

Species recorded by method

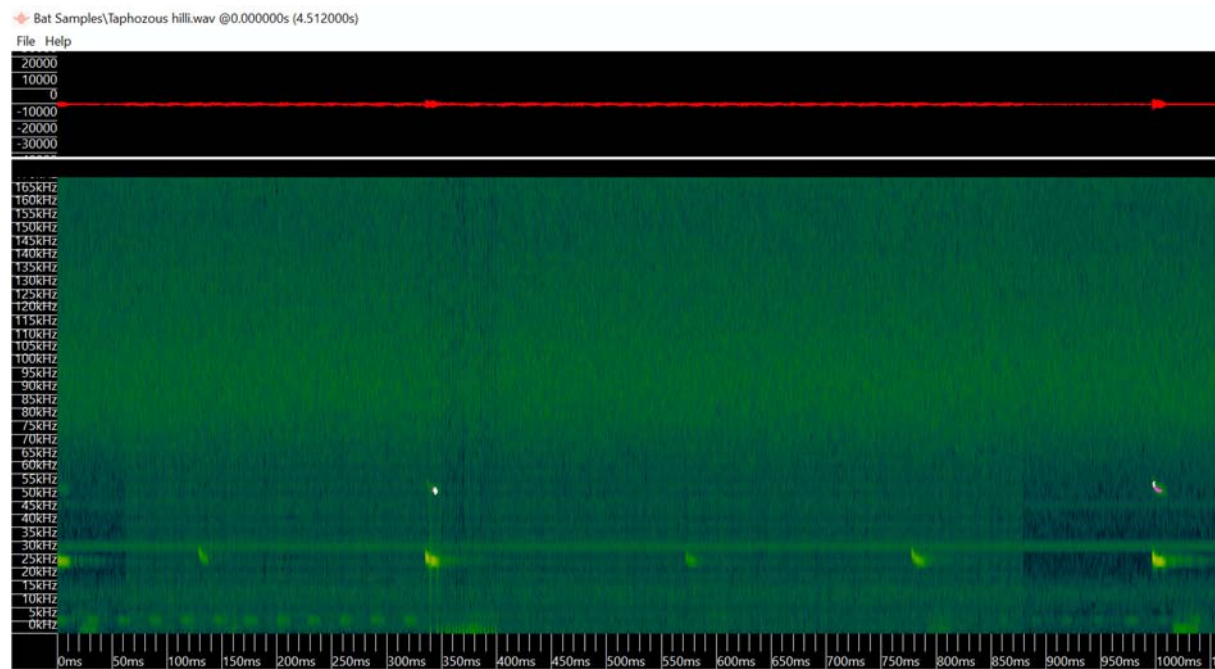
Group	Common Name	Taxon	Pitfall	Funnel	Cage	Eliot	Bird Census	Opportuni- stic	Tracks/ Scats	Nocturnal	Acoustic
Birds	Spiny-cheeked Honeyeater	<i>Acanthagenys rufogularis</i>					x				
Birds	Inland Thornbill	<i>Acanthiza apicalis</i>					x				
Birds	Yellow-rumped Thornbill	<i>Acanthiza chrysorrhoa</i>						x			
Birds	Western Thornbill	<i>Acanthiza inornata</i>						x			
Birds	Slender-billed Thornbill	<i>Acanthiza iredalei</i>					x				
Birds	Red Wattlebird	<i>Anthochaera carunculata</i>					x	x			
Birds	Banded Whiteface	<i>Aphelocephala nigricincta</i>					x				
Birds	Wedge-tailed Eagle	<i>Aquila audax</i>						x			
Birds	Galah	<i>Eolophus roseicapilla</i>					x	x			
Birds	Horsfield's Bronze Cuckoo	<i>Chrysococcyx basalis</i>						x			
Birds	Grey Shrike-thrush	<i>Colluricincla harmonica</i>					x	x			
Birds	Black-faced Cuckoo-shrike	<i>Coracina novaehollandiae</i>					x	x			
Birds	Australian Raven	<i>Corvus coronoides</i>					x	x			
Birds	Pied Butcherbird	<i>Cracticus nigrogularis</i>					x	x			
Birds	Australian Magpie	<i>Cracticus tibicen</i>					x	x			
Birds	Grey Butcherbird	<i>Cracticus torquatus</i>					x				
Birds	Varied Sittella	<i>Daphoenositta chrysoptera</i>						x			
Birds	Emu	<i>Dromaius novaehollandiae</i>							x		
Birds	Black-fronted Dotterel	<i>Euseiornis melanops</i>						x			
Birds	White-fronted Chat	<i>Epthianura albifrons</i>					x				
Birds	Crimson Chat	<i>Epthianura tricolor</i>					x				
Birds	Brown Falcon	<i>Falco berigora</i>						x			
Birds	Singing Honeyeater	<i>Gavicalis virescens</i>					x				
Birds	Magpie-lark	<i>Grallina cyanoleuca</i>					x	x			
Birds	White-eared Honeyeater	<i>Lichenostomus leucotis</i>					x	x			
Birds	White-winged Fairy-wren	<i>Malurus leucopterus</i>					x				
Birds	Splendid Fairy-wren	<i>Malurus splendens</i>						x			
Birds	Yellow-throated Miner	<i>Manorina flavigula</i>					x	x			
Birds	Jacky Winter	<i>Microeca fascinans</i>					x	x			
Birds	Crested Pigeon	<i>Ocyphaps lophotes</i>						x			
Birds	Crested Bellbird	<i>Oreoica gutturalis</i>					x	x			
Birds	Rufous Whistler	<i>Pachycephala rufiventris</i>					x				
Birds	Spotted Pardalote	<i>Pardalotus punctatus</i>					x				
Birds	Striated Pardalote	<i>Pardalotus striatus</i>					x	x			
Birds	Red-capped Robin	<i>Petroica goodenovii</i>					x				
Birds	Common Bronzewing	<i>Phaps chalcoptera</i>					x				
Birds	Australian Ringneck	<i>Barnardius zonarius</i>					x	x			

Group	Common Name	Taxon	Pitfall	Funnel	Cage	Eliot	Bird Census	Opportunistic	Tracks/Scats	Nocturnal	Acoustic
Birds	Tawny Frogmouth	<i>Podargus strigoides</i>						x			
Birds	Grey-headed Honeyeater	<i>Ptilotula keartlandi</i>					x				
Birds	Yellow-plumed Honeyeater	<i>Ptilotula ornata</i>					x				
Birds	White-fronted Honeyeater	<i>Purnella albifrons</i>					x	x			
Birds	Redthroat	<i>Pyrrholaemus brunneus</i>					x				
Birds	Willie Wagtail	<i>Rhipidura leucophrys</i>					x	x			
Birds	Weebill	<i>Smicrornis brevirostris</i>					x	x			
Birds	Grey Currawong	<i>Strepera versicolor</i>					x	x			
Mammals	Cattle	<i>Bos taurus</i>						x	x		
Mammals	Western Pygmy-possum	<i>Cercartetus concinnus</i>	x								
Mammals	Gould's Wattle Bat	<i>Chalinolobus gouldii</i>									x
Mammals	Cat	<i>Felis catus</i>							x		
Mammals	Western Grey Kangaroo	<i>Macropus fuliginosus</i>						x	x		
Mammals	House Mouse	<i>Mus musculus</i>				x					
Mammals	Rabbit	<i>Oryctolagus cuniculus</i>						x	x		
Mammals	Short-beaked Echidna	<i>Tachyglossus aculeatus</i>							x		
Mammals	Hill's Sheathtail-bat	<i>Taphozous hilli</i>									x
Mammals	Southern Forest Bat	<i>Vespadelus regulus</i>									x
Reptiles	Beaked blind snake	<i>Anilius waitii</i>								x	
Reptiles	Bicycle Dragon	<i>Ctenophorus cristatus</i>						x			
Reptiles	Western Stone Gecko	<i>Diplodactylus granariensis</i>	x							x	
Reptiles	Fine-faced Gecko	<i>Diplodactylus pulcher</i>	x								
Reptiles	Purplish Dtella	<i>Gehyra purpurascens</i>								x	
Reptiles	Tree Delta	<i>Gehyra variegata</i>		x							
Reptiles	Southwestern Earless Skink	<i>Hemiergis initialis</i>	x	x							
Reptiles	Bynoe's Gecko	<i>Heteronotia binoei</i>	x	x				x		x	
Reptiles	Central Deserts Robust Slider	<i>Lerista desertorum</i>	x								
Reptiles	Main's Ground Gecko	<i>Lucasium maini</i>	x					x		x	
Reptiles	Common Dwarf Skink	<i>Menetia greyii</i>	x								
Reptiles	Saltbush Morethia Skink	<i>Morethia adelaidensis</i>	x								
Reptiles	Western Bearded Dragon	<i>Pogona minor</i>	x					x			
Reptiles	Western Beaked Gecko	<i>Rhynchoedura ornata</i>	x					x			
Reptiles	Shingleback	<i>Tiliqua rugosa</i>						x			
Reptiles	Southern Barking Gecko	<i>Underwoodisaurus millii</i>	x								

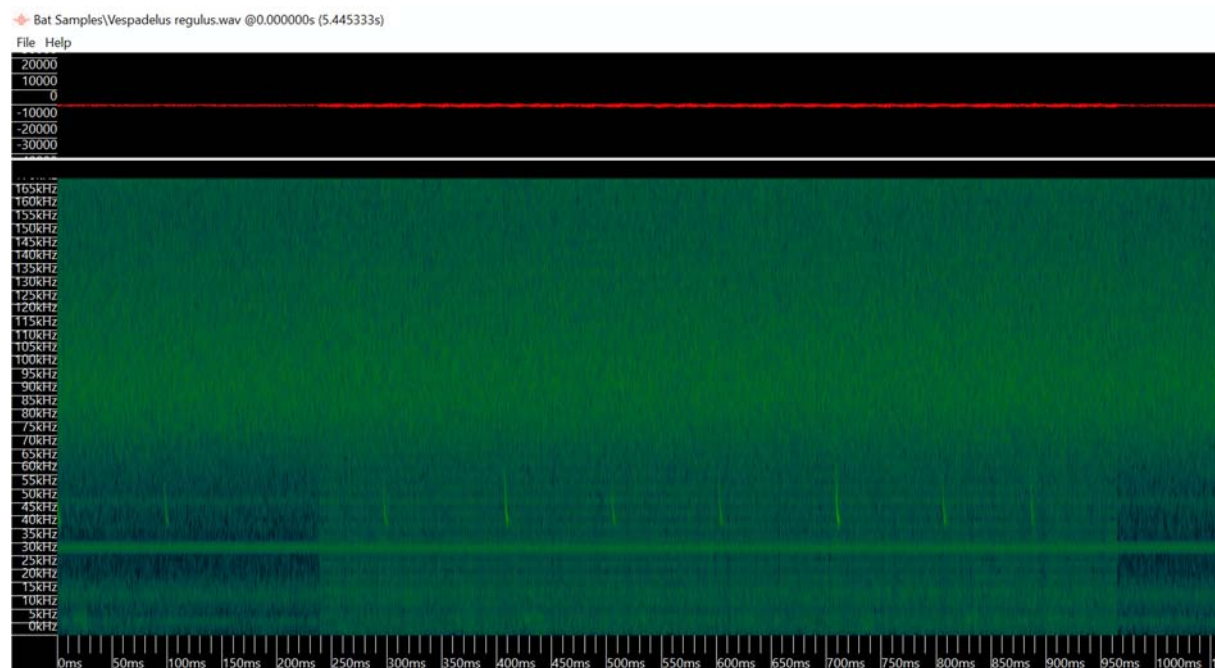
APPENDIX 8

Examples of time vs frequency graphs for the three species of bats recorded
within the study area

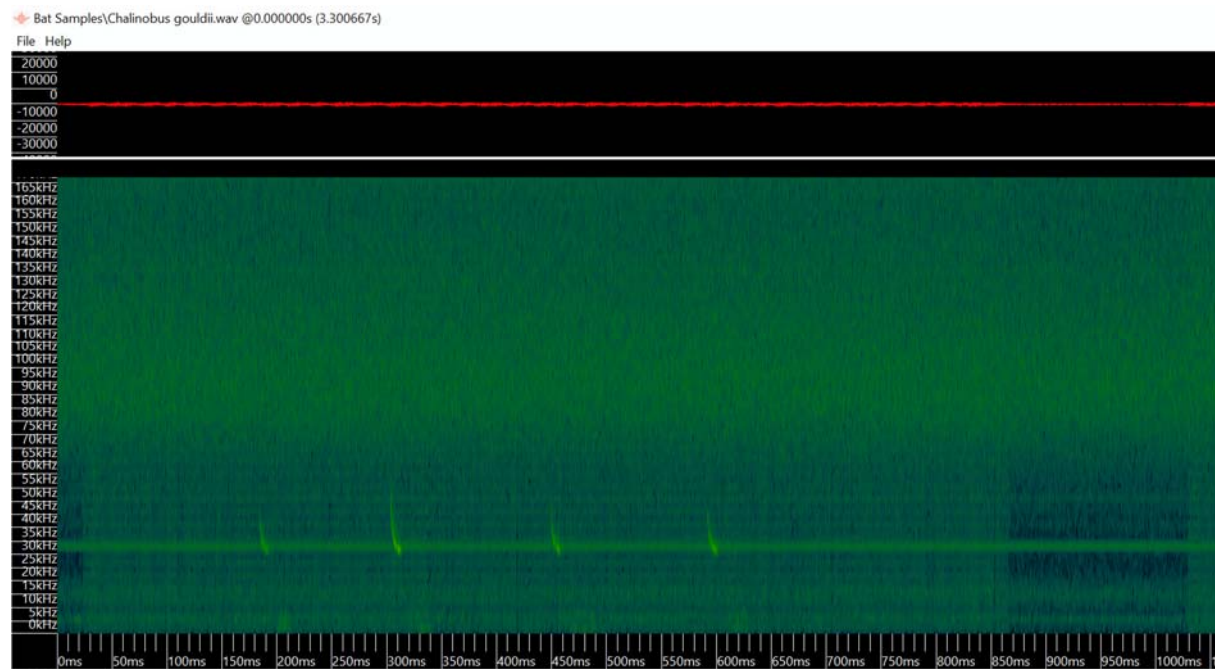
Hill's Sheathtail-bat (*Taphozous hilli*)



Southern Forest Bat (*Vespadelus regulus*)



Gould's Wattle Bat (*Chalinolobus gouldii*)



APPENDIX 9

Species accumulation curve for the two trapping sites within the study area

