360 environmental

Aphrodite Gold Deposit

Level 1 Fauna Survey

Prepared for:

Aphrodite Gold Limited

April 2017

people planet professional

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Executive Summary

Aphrodite Gold Limited is exploring a resource at their Aphrodite Gold Project (Survey Area). The Survey Area is located approximately halfway between Kalgoorlie and Menzies or about 65 km north of Kalgoorlie and consists of a number of mining and miscellaneous leases (borefields).

360 Environmental was commissioned by Integrate Sustainability on behalf of Aphrodite Gold Limited to conduct a Level 1 fauna assessment for the Survey Area. The assessment included a desktop review and database searches, level 1 fauna survey, and a targeted Malleefowl survey.

During the field assessment (13-16 September 2016) the minimum temperatures on the four days of the assessment were 3.4°C, 2.6°C, 4.1°C and 8.7°C respectively which is below the mean of 5.7°C on three of the four days. The maximum temperatures on the four days of the assessment were 15.9°C, 15.4°C, 21.4°C and 14.9°C respectively which is below the mean of 20.5°C on three of the four days. Due to these relatively low temperatures an additional supplementary survey was deemed necessary to better assess the fauna. During the supplementary field assessment (8-9 March 2017) the minimum temperature was 21.1°C and 23.5 °C for the two day period which is above the historic average of 17 °C and 16 °C respectively. The maximum temperature was 36.3°C and 33.3 °C for the two day period which is above the historic average of 30 °C for these two days.

A 90 km Department of Parks and Wildlife threatened fauna database radial search and a 70 km Environment Protection and Biodiversity Conservation Act Protected Matters Search Tool (PMST) radial search and a 40 km (maximum available) radial NatureMap search were undertaken from the centre of the Survey Area. The searches were undertaken to identify fauna species of conservation significance potentially occurring in the Survey Area.

Database searches returned 199 vertebrate species from 64 families as potentially occurring in the vicinity of the Survey Area. Of these, four species were amphibians from two families, 70 were reptiles from nine families, 116 were bird species from 40 families and 36 were mammals from 13 families.

A total of 22 conservation significant vertebrate species (including Priority species) from 15 families were identified during the desktop review of the database searches. These were comprised of one reptile species, 18 bird species from 11 families, and three mammals from three families. A total of eight conservation significant species (including Priority species) from the database searches are potentially considered to either be 'Possible' or 'Unlikely' to occur in the Survey Area. These eight species comprise one reptile, five bird and two mammal species. Of these eight conservation significant

species, one was recorded during the field assessment, three species are considered 'Possible' and four species are considered 'Unlikely' to occur within the Survey Area.

During the field assessment, no Malleefowl (*Leipoa ocellata*) were observed directly and no indirect signs of Malleefowl such as tracks or mounds were recorded in the Survey Area. A total of about 27 km of transects were walked looking for mounds and tracks and searches in nine 6.25 ha plots (total of 56.25 ha) also looking for mounds and tracks were carried out.

A total of 21 fauna habitat assessments were undertaken during the survey and four broad fauna habitats were identified and mapped coarsely (Eucalypt Woodland, Shrubland, Casuarina Woodland and Creekline). Given the size of the Survey Area, access, time constraints, and the scale at which the mapping was done (1:20,000) the habitats are broad and variable in their species composition and dominance.

Several general and more specific recommendations are made to minimise impacts associated with potential future mining activities.

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1 Introduction

1.1 The Project

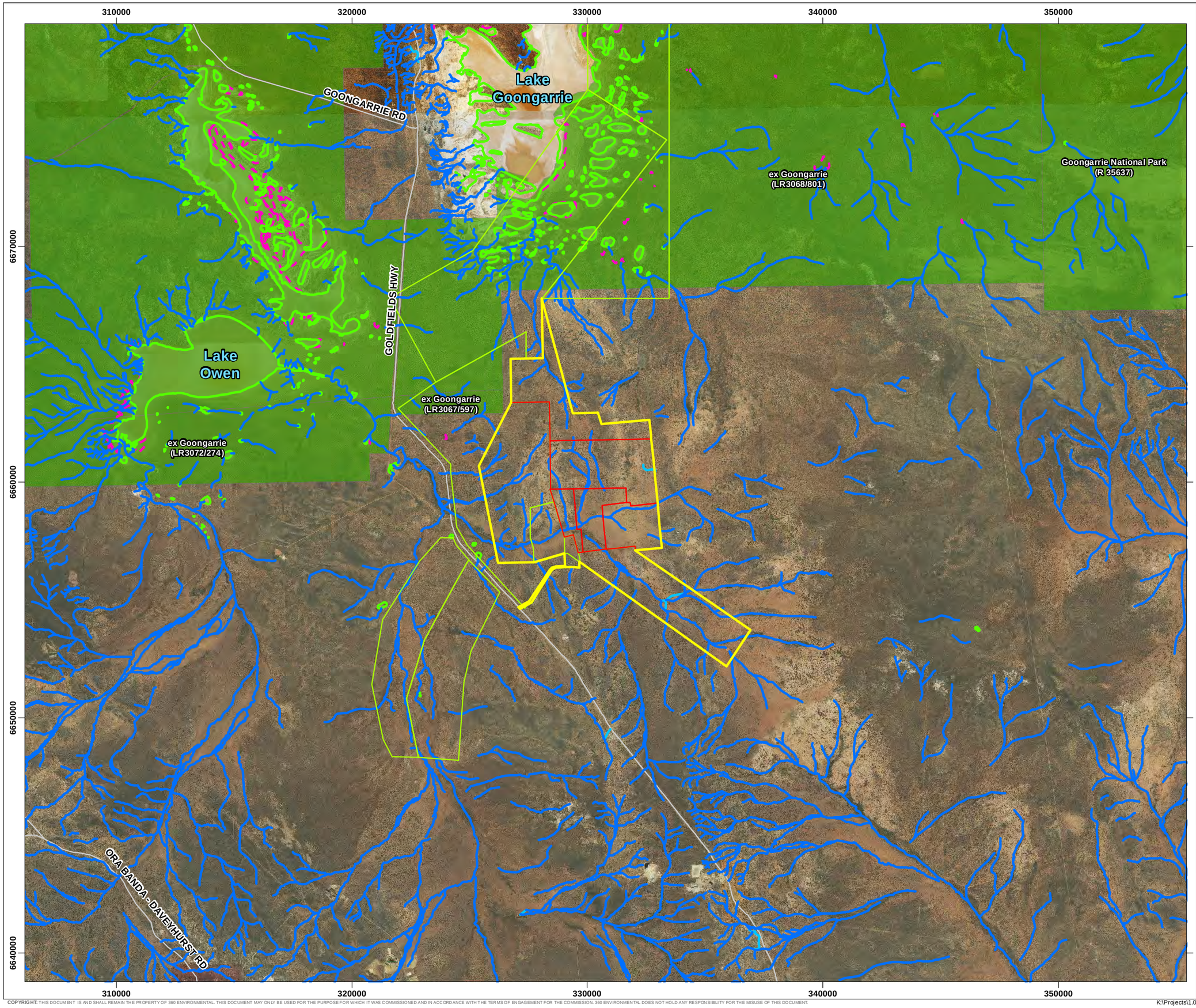
360 Environmental was commissioned by Integrate Sustainability Pty Ltd (Integrate Sustainability) on behalf of Aphrodite Gold Limited (AQQ) to conduct a fauna survey at their Aphrodite Gold Deposit (Survey Area). The Survey Area is located approximately halfway between Kalgoorlie and Menzies or about 65 km north of Kalgoorlie (Figure 1). The Survey Area consists primarily of a number of mining leases (M24/649, M24/662, M24/681, M24/720, and M24/779) and miscellaneous leases (borefield [L24/204] and haul road [L24/217]) and is approximately 6,135 ha. At this point the Aphrodite Gold Deposit is planned to be developed in several stages, only the first stage (17 months) is mentioned here and will include developing a relatively small open cut mine to extract ore from the oxide and transitional material to a depth of about 100 m. And a 1M tonne per annum CIP/CIL (carbon-in-pulp/carbon-in-leach) conventional processing plant will be built.

At this time the location of proposed mine infrastructure (in the mining leases) and water bore points in the bore field is unknown. We also understand that at this point in time an assessment in the mining leases is to be the primary objective and the focus of this report.

1.1.1 Objectives

The objectives of the fauna assessment were to:

- Complete a desktop review;
- Undertake a level 1 fauna survey;
- Carry out a targeted Malleefowl (*Leipoa ocellata*) search;
- Map and identify broad fauna habitats; and
- Prepare a report documenting the results of the desktop review and field assessment to support a clearing permit application and a mining proposal application.



Legend

- Survey Area (6135.67 ha)
- Mining Tenements
- Miscellaneous Tenements
- Roads
- DPaW Managed Lands

Hydrology

- Area Subject to Inundation
- Drain - major
- Lake - non-perennial
- Watercourse - minor, non-perennial

- CADASTRAL BOUNDARY SOURCED FROM LANDGATE 2016
- LOCALITY MAP SOURCED LANDGATE 2006
- AERIAL PHOTOGRAPHY SOURCED LANDGATE 2012
(© Western Australian Land Information Authority 2015)

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- NOTE THAT POSITION ERRORS CAN BE >5M IN SOME AREAS

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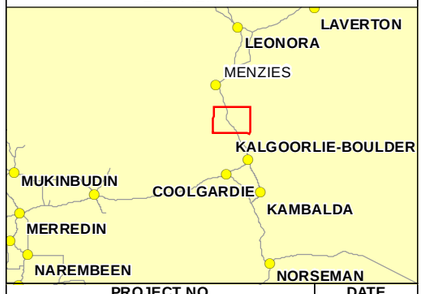
LOCALITY MAP



PROJECT NO	DATE
1673	22/11/2016

HORIZONTAL DATUM AND PROJECTION
GDA 1994 MGA Zone 51

CREATED	CHECKED	APPROVED	REVISION
MH	RF	RF	0

Aphrodite Gold Limited - Aphrodite Gold Deposit

Figure 1 - Site Location

K:\Projects\1.0 EBS\1673 Aphrodite Deposit Fauna Survey\Figures\1673 Figure 1 - Site Location.mxd

1.2 Background to the Protection of Fauna

Western Australian fauna is protected formally and informally by various legislative and non-legislative measures, which are as follows:

Legislative measures:

- Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act);
- Wildlife Conservation Act 1950 (WC Act); and
- Environmental Protection Act 1986 (EP Act).

Non-legislative measures:

- Western Australian Department of Parks and Wildlife (DPaW) Priority lists for fauna; and
- Recognition of locally significant populations by the DPaW.

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

1.2.1 EPBC Act

The EPBC Act aims to protect matters of national environmental significance (MNES). Under the EPBC Act the Commonwealth Department of the Environment and Energy (DEE) (formerly the Commonwealth Department of the Environment [DoE]) lists threatened species and communities in categories determined by criteria set out in the Act (www.environment.gov.au/epbc/index.html) (Appendix A).

The Malleefowl is listed as Vulnerable under the EPBC Act. Projects likely to cause a significant impact on MNES should be referred to the DEE for assessment under the EPBC Act.

1.2.2 WC Act

The WA DPaW lists fauna under the provisions of the WC Act as protected according to their need for protection (Appendix A).

Fauna are classified as Schedule 1 to Schedule 7 according to their need for protection. The Malleefowl is listed as Schedule 3 under the WC Act.

1.2.3 EP Act

The Environmental Protection Act 1986 (EP Act) is the principal legislative Act dealing with the protection of the environment in Western Australia.

1.2.4 DPAW Priority Lists

The DPaW lists 'Priority' fauna that have not been assigned statutory protection under the WC Act, but which are under consideration for 'Scheduled' fauna. Fauna assessed as

Priority 1-3 are considered to be in urgent need of further survey. Priority 4 fauna require monitoring every 5-10 years and Priority 5 fauna are subject to a specific conservation programme (Appendix A).

1.2.5 Informal Recognition of Fauna

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

2 Biophysical Environment

2.1 Climate

The Survey Area is located in the Murchison bioregion of WA. The Murchison has an arid climate that is characterised by cool winters and hot dry summers with primarily winter rainfall of about 200 mm (Cowan 2001).

The nearest public climate data is available from the Bureau of Meteorology (BoM) Kalgoorlie-Boulder Airport weather station located approximately 75 km south of the Survey Area. Long term weather data has been recorded at Kalgoorlie-Boulder Airport weather station since 1939.

The mean annual maximum temperature for Kalgoorlie-Boulder Airport is 25.3°C and the mean annual minimum temperature is 11.7°C (see Figure 2). In summer the hottest month is January with a mean maximum temperature of 33.7°C, and in winter the coldest month is July with a mean minimum temperature of 5.0°C. Kalgoorlie-Boulder Airport receives an average annual rainfall of 266.3 mm (see Figure 2).

During the assessment (13-16 September 2016) the minimum temperatures on the four days of the assessment were 3.4°C, 2.6°C, 4.1°C and 8.7°C respectively which is below the mean of 5.7°C on three of the four days. The maximum temperatures on the four days of the assessment were 15.9°C, 15.4°C, 21.4°C and 14.9°C respectively which is below the mean of 20.5°C on three of the four days.

During the supplementary field assessment (8-9 March 2017) the minimum temperature was 21.1°C and 23.5 °C for the two day period which is above the historic average of 17 °C and 16 °C respectively. The maximum temperature was 36.3°C and 33.3 °C for the two day period which is above the historic average of 30 °C for these two days.

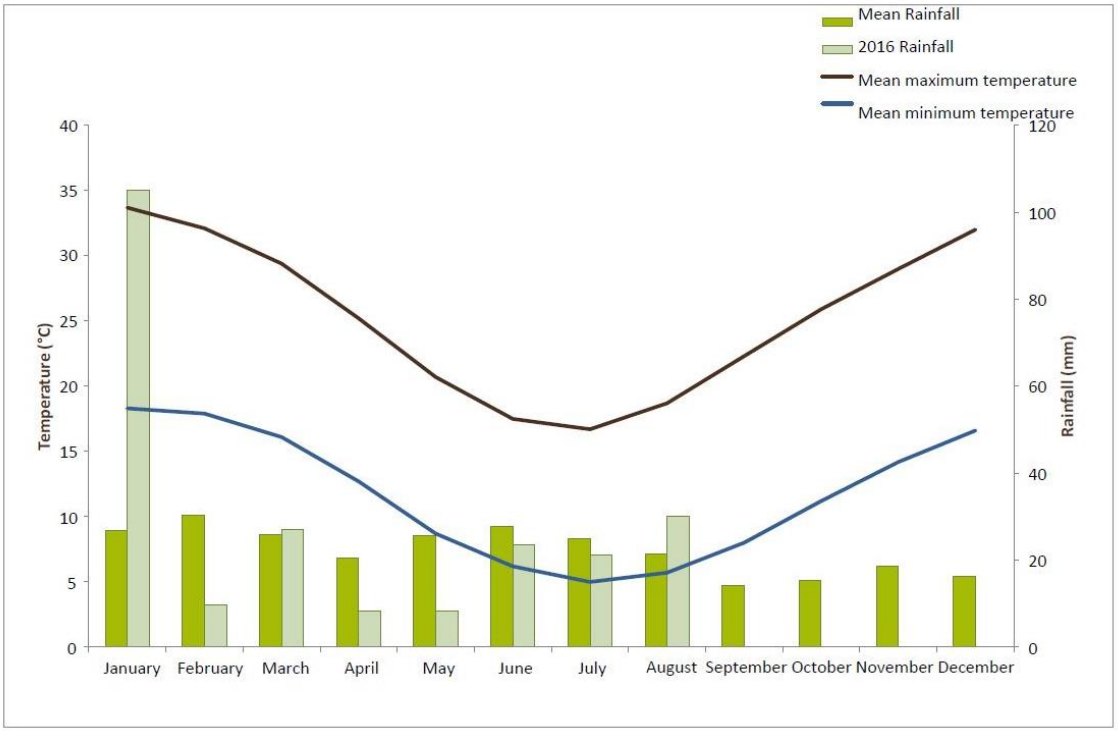


Figure 2: Mean long-term (1939-2016) monthly rainfall and mean maximum and mean minimum monthly temperatures for Kalgoorlie-Boulder Airport prior to the assessment (BoM 2016).

2.2 Biogeographic Regionalisation for Australia

The Interim Biogeographic Regionalisation for Australia (IBRA 7) divides Australia into 89 bioregions based on major biological and geographical/ geological attributes. These bioregions are subdivided into 419 subregions, as part of a refinement of the IBRA framework (DSEWPaC 2012).

The Survey Area is located in the East Murchison subregion (MUR1) of the Murchison bioregion (DSEWPaC 2012). The East Murchison subregion is on the northern parts of the 'Southern Cross' and 'Eastern Goldfields' Terrains of the Yilgarn Craton. This subregion is characterised by its internal drainage, and widespread areas of elevated red desert sandplains with negligible dune development. Salt lake systems associated with the occluded Paleodrainage system. Broad plains of red-brown soils and breakaway complexes as well as red sandplains. Vegetation is dominated by Mulga Wood lands often rich in ephemerals; hummock grasslands, saltbush shrublands and Halosarcia shrublands (Cowan 2001). However, it is important to note that the Survey Area lies close to the Eastern Goldfields subregions (COO3) and therefore may contain some of the broadly defined characteristics that make up this subregion.

2.3 Broad Vegetation

The Survey Area is located within the Coolgardie Botanical District of the South Western Interzone (Beard 1990). This district is comprised primarily of Eucalypt woodlands that become more open with an increase in calcareous soils, and an understorey of bluebush and salt bush becomes more evident. The dominant families and genera include the Mimosaceae (*Acacia spp.*), Myrtaceae (*Eucalyptus spp.*), Chenopodiaceae (*Atriplex spp.* and *Maireana spp.*) and Myoporaceae (*Eremophila spp.*).

2.4 Previous Biological Studies

There have been a number of on ground and desktop assessments of fauna and flora in the Survey Area in the recent past and these have been summarised below in Table 1 as have two surveys from the general area. The assessments include for example a flora and vegetation survey (Botanica Consulting 2008), a fauna survey (Keith Lindbeck and Associates 2008) and a desktop vertebrate fauna assessment and desktop flora and vegetation assessment (Tetra Tech 2013a and b). Given this is a fauna assessment we will only summarise the results of the fauna components of the work undertaken.

Table 1: Summary of previous fauna surveys undertaken in and nearby the Survey Area.

*Conservation significance is based on listing as of submission date on report and includes species listed as Priority species by DPaW, Scheduled under the WC act and threatened under the EPBC Act.

REFERENCE	SURVEY TYPE	SURVEY DATE	PROXIMITY TO SURVEY AREA	METHODS	HABITATS PRESENT	*CONSERVATION SIGNIFICANT SPECIES
Placer Dome Australia Pty Ltd Fauna Assessment at the Natal mine site (ATA Environmental 2006)	Level 1 Fauna Survey – included desktop assessment and reconnaissance survey	10 January 2006	About 50 km south west	○ Desktop assessment (database searches) ○ Reconnaissance survey to look for evidence of conservation significant species	○ Eucalyptus Woodlands with an understorey of chenopods and other small shrubs ○ Eucalyptus Woodlands with a scattered understorey of shrubs on small stony hills	○ No species of conservation significance was recorded during the reconnaissance survey ○ Desktop assessment identified several species as potentially occurring in the Survey Area at the time (the status of some has since changed)
Apex Minerals NL Aphrodite Project Fauna Survey (Keith Lindbeck and Associates 2008)	Level 1 Fauna Survey – included desktop assessment and reconnaissance survey	5 May (4 hour site visit) and 11 August (5 hour site visit) 2008	This survey included a portion of the current Survey Area	○ Verify the broad scale mapping and vegetation condition ○ Inspection of major fauna	○ Transitional Eucalyptus Woodlands ○ Transitional Eucalyptus Creekline	○ No species of conservation significance was recorded during the reconnaissance survey ○ Desktop assessment identified seven species (including one invertebrate) as potentially occurring in the Survey Area at

Reference	Survey Type	Survey date	Proximity to Survey Area	Methods	Habitats present	*Conservation significant species
				habitats ○ Opportunistic observations	○ Acacia Woodland ○ Casuarina Woodland	the time (the status of some has since changed). Only one is listed under the EPBC Act - Malleefowl
Paddington Gold Pty Ltd Flora and Fauna Assessment (GHD 2009)	Level 1 Fauna assessment – included desktop assessment and reconnaissance survey	23-24 September 2009	About 30 km south	○ Desktop assessment (database searches and past reports) ○ Habitat assessments, opportunistic and systematic searches	○ Mixed Woodland over mixed shrubs ○ Acacia dominated shrublands	○ No species of conservation significance was recorded during the assessment ○ Desktop assessment identified several species as potentially occurring in the Survey Area at the time (the status of some has since changed)
Vertebrate Fauna Desktop Assessment for Aphrodite Gold Project (Tetra Tech 2013)	Desktop Assessment	Undertaken in 2013	The Survey Area was the same as this current survey (with two additional miscellaneous leases to the north)	○ Desktop assessment (database searches and review of past reports for the Survey Area)	○ Habitats present are as above in Keith Lindbeck and Associates report (2008)	○ As a result of the desktop assessment it was concluded that the most likely species of conservation significance occurring in the Survey Area was the Malleefowl and Western Quoll

3 Methods

3.1 Background

The fauna survey was compliant with the EPA requirements for the environmental surveying and reporting of fauna in Western Australia, and EPBC Act survey and referral guidelines where practical and relevant, and as set out in the following documents:

- Terrestrial Biological Surveys as an Element of Biodiversity Protection. Position Statement No. 3 (EPA 2002);
- Terrestrial Fauna Surveys for Environmental Impact Assessment in Western Australia. Guidance Statement No. 56 (EPA 2004b);
- Survey Guidelines for Australia's Threatened Birds (EPBC Act survey guidelines 6.2 [2010] [DSEWPaC]). and
- Technical Guide – Terrestrial Vertebrate Fauna Surveys for Environmental Impact Assessment (EPA-DEC 2010).

3.2 Fauna Survey Methods

3.2.1 Fauna Database Review

A 90 km DPaW threatened fauna database radial search and a 70 km EPBC Protected Matters Search Tool (PMST) radial search and a 40 km (maximum available) radial NatureMap search were undertaken from the centre of the Survey Area. The searches were undertaken to identify fauna species of conservation significance potentially occurring in the Survey Area (DPaW 2016a; DEE 2016; DPaW 2016b). Please note that originally a 70 km radial search request was submitted to DPaW for the threatened fauna, however, very few fauna were captured in that search area, consequently DPaW provided data from a 90 km search radius.

Collectively, these sources were used to compile a list of species that have been previously recorded in the vicinity of the Survey Area (Appendix B). This list invariably includes some species that do not occur in the Survey Area, as some fauna have a limited or patchy distribution or a high level of habitat specificity for habitats which are not located in the Survey Area e.g. waders/shorebirds that require coastal shores for habitat. Some fauna may also have become locally extinct or were erroneously identified in previous surveys. These fauna were examined and then excluded from the list where relevant.

3.2.2 Field assessment

The field assessment was undertaken from 13 to 16 September 2016 and the supplementary survey was undertaken on 8 and 9 March 2017 by two Zoologists. The survey was consistent with standard protocols for the region and relevant EPA Guidance Statements and EPBC Act Survey Guidelines as outlined above in section 3.1 (where relevant and practical).

The purpose of the field assessment was to verify the accuracy of the desktop assessment and to further delineate and characterise the fauna assemblages and fauna habitat in the Survey Area.

To verify the accuracy of the background research, the field component of the Level 1 fauna survey incorporated the following tasks:

- The survey utilised passive sampling detection methods which included:
    - hand foraging for inactive and/or cryptic species (raking leaf litter, searching under rocks and logs and under loose litter);
    - looking for scats, pellets, skeletal material, tracks, diggings; and
    - opportunistic observations (visual or heard) of active species, in particular birds.
- Assessment of the habitat (within the Survey Area) to support species protected under State and/or Federal legislation or by the DPaW as a Priority species was undertaken.

Amphibians, reptiles and mammals are mainly recorded through intensive trapping (level 2 type surveys) and are infrequently recorded opportunistically. However, these animals will be noted when active, or by identifiable signs such as scats, tracks and diggings.

The field assessment also included a targeted search for the Malleefowl by looking for birds and signs (see survey methods for this species below).

3.2.3 Camera Traps

Ten camera traps were setup during the field survey, six of which ran for three nights and four of which ran for two nights. Sardines were placed in the field of view for all ten cameras.

3.3 Malleefowl Targeted Search

The survey methods were consistent with the Survey Guidelines for Australia's Threatened Birds (EPBC Act survey guidelines 6.2 [2010] [DSEWPaC]) and the Malleefowl Survey Protocol where relevant and practical (National Heritage Trust 2007).

The Malleefowl targeted search consisted of the following:

- Systematic transects were walked and they were approximately 500 m long and spaced approximately 25 - 50 m apart (depending on vegetation cover) in order to search for signs (primarily nest mounds);
- Incidental searches for signs of the Malleefowl e.g. nest mounds (along with other fauna) were undertaken in 250 x 250 m quadrats (6.25 ha);
- The Malleefowl searches include recording any evidence of Malleefowl activity such as:
    - Malleefowl tracks;
    - Malleefowl nesting mounds including status (inactive/ active) and activity according to the following criteria:
        - Nest in preparation – eggs not laid (evidence of litter trail).
        - Mound is in progress/ maintenance – eggs assumed to be laid.
        - Evidence of chicks leaving nest – chicks fledging site / shell fragments.
        - Decommissioned – spreading and returning of mound soil.
- Malleefowl individual sightings and assessment of age (chick/ adult); and
- Opportunistic observations of Malleefowl evidence (tracks, mounds and or individual sightings) within the Survey Area (also see motion camera section above).

The Malleefowl searches focused on the central section (mining lease areas) of the Survey Area.

3.4 Habitat Assessments

Habitat assessments were undertaken throughout the Survey Area to define and delineate (map habitats) the main habitats present.

Each habitat description will include the following information:

- GPS co-ordinate will be recorded;
- Habitat condition will be assessed as 'completely degraded through to pristine, based on the scale given in Keighery (1994);
- Landscape position;
- Dominant vegetation and structure e.g. number of vegetation strata;
- Hollow-bearing trees and dead stags (e.g. average size and abundance of hollows);
- Description of any rock and rocky outcrops;
- Logs (e.g. abundance and size);
- Substrate (e.g. leaf litter);

- Wetlands, creeks, rivers, dams and other water bodies;
- Description of any observed nests and roosts;
- Subterranean roosts (e.g. caves, disused mineshafts and/or adits);
- Associated fauna species observed using the habitat;
- Disturbance e.g. cattle grazing, fire; and
- Photo showing a typical example of the broad habitat type.

3.4.1 Taxonomy

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

Taxonomy and nomenclature in this report follows the accepted listing of published terrestrial vertebrate species. The listing for amphibians and reptiles follows Cogger (2014), birds follows Christidis & Boles (2008) and mammals Van Dyck & Strahan (2008).

4 Results

4.1 Fauna Survey Limitations and Constraints

It is important to note the specific constraints imposed on surveys and these constraints are often difficult to predict, as is the extent to which they influence survey effort. Survey constraints of the fauna assessment are listed below in Table 1.

Table 2: Limitations and Constraints Associated with the Survey Area.

VARIABLE	IMPACT ON SURVEY OUTCOMES
Access	The Survey Area is large (6,135 ha) and so not all areas were accessed, however, all major habitats that were mapped were sampled.
Experience	The personnel who executed the survey were practitioners suitably qualified in their respective fields: Field Zoologists: Dr Ron Firth (17 years' experience) and Laura Stevens (4 years' experience); Data interpretation and reporting: Laura Stevens Report review: Dr Ron Firth.
Timing, weather, season	The survey was conducted from 13 to 16 September 2016. We sourced minimum and maximum temperatures and rainfall data for these days from the Kalgoorlie-Boulder Airport weather station (BoM 2016). During the assessment (13-16 September 2016) the minimum temperatures on the four days of the assessment were 3.4°C, 2.6°C, 4.1°C and 8.7°C respectively which is below the mean of 5.7°C on three of the four days. The maximum temperatures on the four days of the assessment were 15.9°C, 15.4°C, 21.4°C and 14.9°C respectively which is below the mean of 20.5°C on three of the four days. Rainfall was recorded on only the 13 September (0.2 mm). These cooler than average temperatures most likely impacted on the level of reptile activity seen during the assessment (only two species were recorded). Due to the relatively low temperatures, a supplementary survey was conducted on 8 and 9 March 2017. During the supplementary field assessment (8-9 March 2017) the minimum temperature was 21.1°C and 23.5 °C for the two day period which is above the historic average of 17 °C and 16 °C respectively. The maximum temperature was 36.3°C

	and 33.3 °C for the two day period which is above the historic average of 30 °C for these two days.
Scope: Life forms sampled	The scope of this project was to undertake a Level 1 fauna survey (reconnaissance survey and an assessment of habitats in the Survey Area) and a Malleefowl targeted search. Given the level of survey, many species that occur in the Survey Area would not have been observed, particularly small ground-dwelling fauna that are normally captured by methods such as trapping. All conservation significant species previously recorded in the area have been considered. Based on the habitat present, those species deemed to potentially occur in the Survey Area have been addressed in this report.
Sources of information	The desktop analysis used several sources to produce a list of fauna species previously recorded in the vicinity of the Survey Area. This includes records from DPaW threatened fauna database search (DPaW 2016b), NatureMap (DPaW 2016a), and the EPBC PMST (DEE 2016), as well as past reports, field guides and other scientific literature.
Completeness	A total of 21 fauna habitat assessments were carried out, systematic searches and incidental searches for potential Malleefowl mounds (and other signs such as scats or tracks) in suitable habitat were undertaken.
Disturbances	Parts of the Survey Area are considered to be degraded. This is primarily a result of historic mining activities, access tracks and grazing from cattle.

4.2 Fauna Results

4.2.1 Database Searches

Database searches returned 199 vertebrate species from 64 families as potentially occurring in the vicinity of the Survey Area. Of these, four species were amphibians from two families, 70 were reptiles from nine families, 116 were bird species from 40 families and 36 were mammals from 13 families.

A total of 22 conservation significant vertebrate species (including Priority species) from 15 families were identified during the desktop review of the database searches (Appendix B). These were comprised of one reptile species, 18 bird species from 11 families, and three mammals from three families.

4.2.2 Conservation Significant Fauna

All three database searches (DPaW threatened fauna, NatureMap and EPBC PMST) returned a number of wetland species, in particular birds (i.e. marine birds and waders), that require specific habitats (i.e. oceans, shorelines and wetlands) that are not present in the Survey Area.

There are a number of dams present in the Survey Area, however, they are small and for the most part lack substantial areas of vegetation due to cattle use. While many of the wetland, marine and coastal species in the databases may occur nearby (intermittently when the nearby salt lakes are inundated e.g. Lake Goongarrie); given the absence of suitable habitat in the Survey Area, all marine and wetland species are considered unlikely to occur in the Survey Area itself.

A number of species returned were also known to be historical records of species now extinct in the local area and or more broadly in the region (e.g. Bilby). These species have been omitted from any further discussion.

Occasionally there are inconsistencies in the database searches, for example, the Grey Wagtail has only two confirmed sightings in north-west WA (Johnstone & Storr 2004) yet it was present in the EPBC PMST. This species has been omitted from any further discussion.

It is important to note, that the EPBC PMST is not entirely based on point records, but also on broader information, for example bioclimatic distribution models. Whereas DPaWs threatened fauna database and NatureMap is, consequently, the results of the EPBC PMST are in some cases less accurate, particularly at a local scale. Consequently, the EPBC PMST will include species that do not occur in the search area because for example there is no habitat or they are now known to be locally extinct.

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

With the afore mentioned marine species removed, a total of eight conservation significant species (including Priority species) from the database searches are potentially considered to either be 'Possible' or 'Unlikely' to occur in the Survey Area. These eight species comprise one reptile, five bird and two mammal species.

Of these eight conservation significant species, one species was recorded during the field assessment, no species are considered 'Likely', three species are considered 'Possible' and four species are considered 'Unlikely' to occur within the Survey Area (Table 3).

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

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

Table 3: Conservation significant fauna potentially occurring in the Survey Area.
En = Listed as Endangered under the EBPC Act, Vu = Listed as Vulnerable under the EBPC Act, Mi = Listed as Migratory under the EBPC Act, Ma = Listed as Marine under the EBPC Act, S = Scheduled under the WC Act, and P = Listed as Priority by the DPaW.

SPECIES	CONSERVATION STATUS	LIKELIHOOD
Reptiles		
Woma (southwest subpop.) (*Aspidites ramsayi)*	P1	Possible
Birds		
Malleefowl (*Leipoa ocellata*)	Vu, S1	Possible
Carnaby's Black Cockatoo (*Calyptorhynchus latirostris*)	En, S2	Unlikely
Princess Parrot (*Polytelis alexander*)	P4	Unlikely
Night Parrot (*Pezoporus occidentalis*)	En, S1	Unlikely
Rainbow Bee-eater (*Merops ornatus*)	Ma, S5	Recorded
Mammals		
Western Quoll (*Dasyurus geoffroii*)	Vu, S3	Unlikely
Central Long-eared Bat (*Nyctophilus major tor*)	P4	Possible

4.2.3 Field Assessment Results

During the field assessment 41 species from 26 families were recorded. This consisted of five reptile species from three families, 34 bird species from 22 families and two mammal species from one family (Appendix C).

4.2.3.1 Amphibians

From the database searches, four amphibian species have been previously recorded from the following two families: Limnodynastidae and Myobatrachidae (Appendix C). During the survey, no amphibians were recorded.

4.2.3.2 Reptiles

From the database searches, a total of 70 reptile species have been previously recorded from the following nine families in the surrounding area; Carphodactylidae, Diplodactylidae, Pygopodidae, Gekkonidae, Scincidae, Agamidae, Varanidae, Typhlopidae and Elapidae. During the field assessment five reptile species were recorded; Buchanans Snake-eyed Skink (*Cryptoblepharus buchananii*), the Western Netted Dragon (*Ctenophorus reticulatus*), Lozenge-marked Dragon (*Ctenophorus scutulatus*) the Racehorse Monitor (*Varanus tristis*) and one *Ctenophorus* species that could not be identified to species level as it was seen briefly running into a small hollow log (Appendix C).

4.2.3.3 Birds

From the database searches, a total of 116 bird species from 40 families have been previously recorded in the surrounding area. During the field assessment 34 bird species were recorded from the following 22 families: Casuariidae, Anatidae, Columbidae, Accipitridae, Falconidae, Psittacidae, Cucilidae, Meropidae, Climacteridae, Maluridae, Acanthizidae, Pardalotidae, Meliphagidae, Pomatostomidae, Campephagidae, Pachycephalidae, Artamidae, Dicruridae, Cracticidae, Corvidae, Hirundinidae and Estrildidae (Appendix B).

4.2.3.4 Mammals

From the database searches, a total of 36 mammal species from 13 families have been previously recorded in the surrounding area. During the field assessment two mammal species were recorded; the Red Kangaroo (*Macropus rufus*) and the Western Grey Kangaroo (*Macropus fuliginosus*) (Appendix C).

4.2.4 Camera Traps

The only species recorded on the camera traps was the Torresian Crow.

4.2.5 Malleefowl Targeted Search

During the field assessment, no Malleefowl were observed directly and no indirect signs of Malleefowl such as tracks or mounds were observed. We walked a total of about 27 km of transects looking for mounds and tracks and searched in nine 6.25 ha plots (total of 56.25 ha) also looking for mounds and tracks (see Figure 3).

Please note that on figure 2 the total length of Malleefowl transects walked says 13.35 km – this only represents the one person walking with the GPS and not the other surveyor walking about 50 m apart and approximately parallel to the surveyor with the GPS.

4.2.6 Fauna Habitat

A total of 21 fauna habitat assessments were undertaken during the survey and four broad fauna habitats were identified and mapped coarsely (Appendix D and E) (Figure 2). These broad habitats are described below. Further to this given the size of the Survey Area, access, time constraints, and the scale at which the mapping was done (1:20,000) the habitats are broad and variable in their species composition and dominance (see photos in Appendix E illustrating this variation).

Please note that the flora species for the Survey Area will be identified as part of the flora and vegetation work being undertaken separately by Woodman Environmental Consulting.

Eucalypt Woodland

This habitat was the most widespread in the Survey Area and based on broad mapping represented 4,223 ha or about 68% (Plate 1). The overstorey in this habitat as the name suggests was dominated by Eucalypts (single trunked and Mallee forms) of several species and to varying densities but most likely included (*Eucalyptus salmonophloia* [Salmon Gum], *E. salubris* and *E. celastroides*).

The dominant midstorey species in this habitat varied widely, both in composition and density, but for the most part included *Acacia spp.*, *Casuarina pauper*, *Dodonaea lobulata*, *Senna artemisioides*, and *Maireana sedifolia*).

There was very little groundcover; however, there was a section with some *Triodia sp.* and *Ptilotus sp*. present and occasionally some small herbs.

The Eucalypt trees, particularly Salmon Gum can have relatively large hollows in which birds can breed; however, no large hollows were observed and small hollows were only rarely observed. The other Eucalypts were Mallee and mostly small stemmed and so didn't have hollows of any significance.

The midstorey vegetation when present does provide structure, cover and food resources for birds, small reptiles and small mammals.

For the most part this habitat lacked large hollow logs, which would potentially provide habitat for hollow using species, however, it did have moderate levels of woody debris and relatively large amounts of leaf litter which provide shelter for many small reptile species.

The soil was mostly sandy and there were some small reptile burrows (most likely from Dragons [Agamidae]) and the occasional Goanna burrow (most likely *Varanus gouldii*).

Plate 1: An example of Eucalypt Woodland habitat in the Survey Area.

Shrubland

This habitat was the second most widespread in the Survey Area and based on broad mapping represented 992 ha or about 16% (Plate 2). On the whole this habitat lacked the Eucalypt trees, though there were some present, but they were only scattered and were *E. salmonophloia*. These shrublands were dominated by Chenopods (e.g. *Atriplex spp.* and *Maireana spp.*), but also included *Acacia spp.*, *Eremophila spp.* and *Ptilotus spp.* There was very little to no groundcover present in this habitat (see Appendix D and E).

There were no large hollow logs and relatively very little woody debris and leaf litter. Therefore there were limited shelter sites for small reptiles and mammals. However, there were birds using this habitat and they will be mentioned in the discussion below.

Plate 2: An example of Shrubland habitat in the Survey Area.

Casuarina Woodland

This habitat was the third most widespread in the Survey Area and based on broad mapping represented 882 ha or about 14% (Plate 3). *Casuarina pauper* (Casuarina) is the dominant tree, however, there were Eucalypts scattered throughout. The dominant midstorey species included *Acacia spp.*, *Dodonaea lobulata*, *Eremophila spp.* and *Senna artemisioides*. There was very little groundcover; however, there was *Ptilotus sp*. present and occasionally some small herbs and very little to no grass.

Casuarinas do not tend to form large hollows and the Eucalypts were mostly Mallee (small stemmed) in form, therefore this habitat tends not to provide breeding habitat for hollow nesting birds.

The midstorey vegetation does provide structure, cover and food resources for birds, small reptiles and small mammals.

This habitat lacked large hollow logs, which would potentially provide habitat for hollow using species, however, it did have moderate levels of woody debris and relatively large amounts of leaf litter which provide shelter for many small reptile species.

The soil was mostly sandy and there were some small reptile burrows (most likely from Dragons [Agamidae]) and the occasional Goanna burrow (most likely *Varanus gouldii*).

Plate 3: An example of Casuarina Woodland habitat in the Survey Area.

Creekline

This habitat was the least widespread in the Survey Area and based on broad mapping represented 37 ha or about 0.6% (Plate 4). The overstorey vegetation was dominated by Eucalypts (single trunked and Mallee forms) of several species and to varying densities but most likely included Salmon Gum.

The dominant midstorey species in this habitat varied widely, both in composition and density, but for the most part included *Acacia spp.*, *Dodonaea lobulata* and *Senna artemisioides*) and there was very little (limited herbaceous species) to no groundcover species.

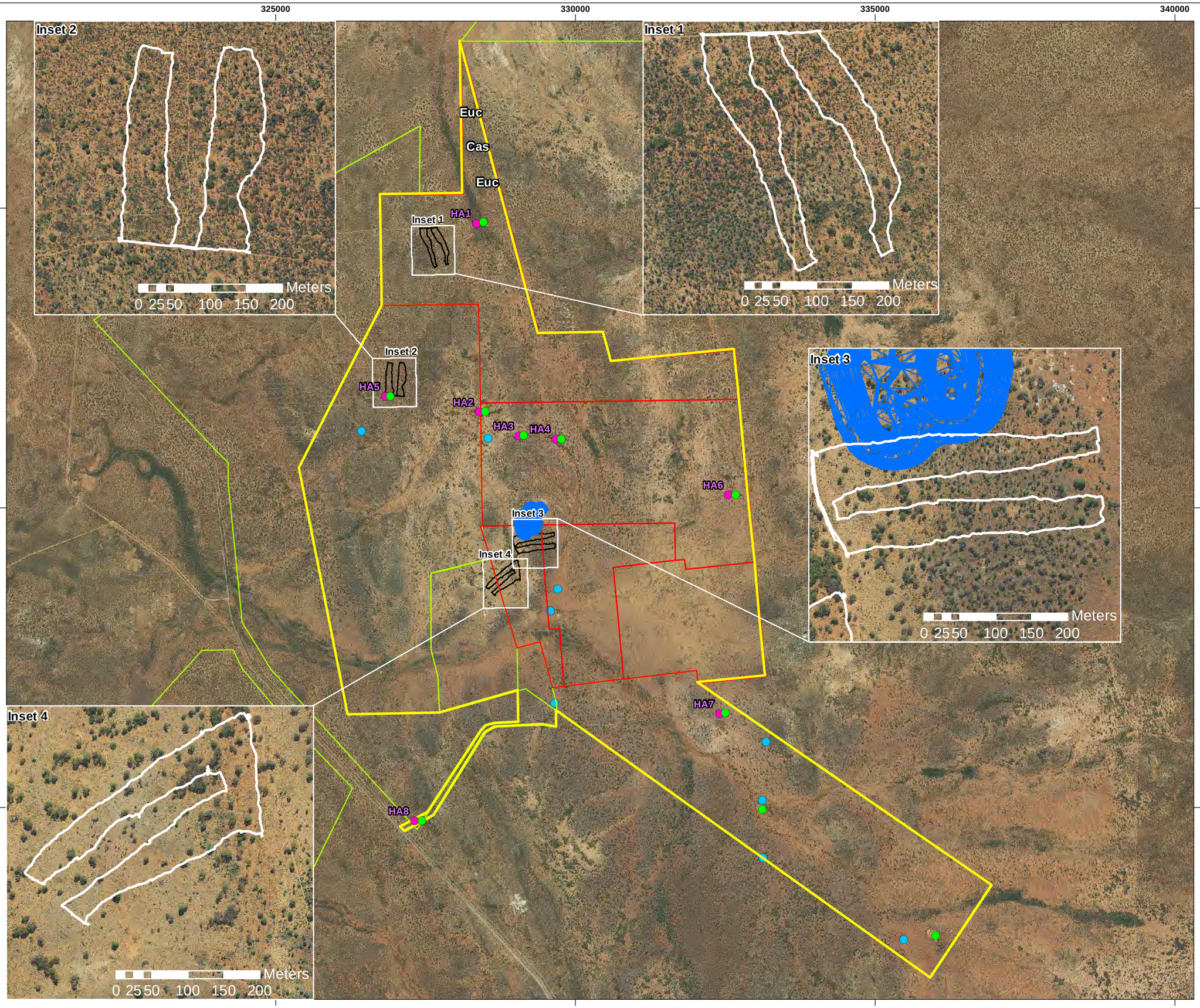
The single stemmed Eucalypts in this habitat such as the Salmon Gums can form relatively large hollows in which birds can nest. During the habitat assessments no large hollows were observed and small hollows were seldom seen.

The midstorey vegetation provides structure, cover and food resources for birds, small reptiles and small mammals.

For the most part this habitat lacked large hollow logs, which would potentially provide habitat for hollow using species, however, it did have moderate levels of woody debris and relatively large amounts of leaf litter which provide shelter for many small reptile species.

The soil was mostly sandy and there were some small reptile burrows (most likely from Dragons [Agamidae]) and the occasional Goanna burrow (most likely *Varanus gouldii*).

Plate 4: An example of Creekline habitat in the Survey Area.



Legend

- Survey Area
- Live Tenements
- Miscellaneous Tenements
- EnTech Pit (2016)
- Incidental Searches
- Camera Traps
- Habitat Assessment
- Malleefowl Transects (13.35 km)

- CADASTRAL BOUNDARY SOURCED FROM LANDGATE 2009
- LOCALITY MAP SOURCED LANDGATE 2006
- AERIAL PHOTOGRAPHY SOURCED LANDGATE 2014
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LOCALITY MAP

PROJECT NO	DATE
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HORIZONTAL DATUM AND PROJECTION
GDA 1994 MGA Zone 51

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Aphrodite Gold Limited - Aphrodite Gold Deposit

Figure 3 - Field Activities

K:\Projects\1.0 EBS\1673 Aphrodite Deposit Fauna Survey\Figures\1673 Figure X - Maleefowl Transects.mxd

325000 330000 335000 340000

6665000

6660000

6655000

Euc
Cas
Euc
Inset 1
Cr
Cas
Euc
Euc
Cas
Euc
Sh
Cas
Sh
Euc
Sh

Legend

Survey Area

Mining Tenements

Miscellaneous Tenements

Fauna Habitat

Euc: Eucalypt Woodland (4223.13 ha)

Cas: Casuarina Woodland (882.61 ha)

Cr: Creekline (37.38 ha)

Sh: Shrubland (992.54 ha)

- CADASTRAL BOUNDARY SOURCED FROM LANDGATE 2009
- LOCALITY MAP SOURCED LANDGATE 2006
- AERIAL PHOTOGRAPHY SOURCED LANDGATE 2014
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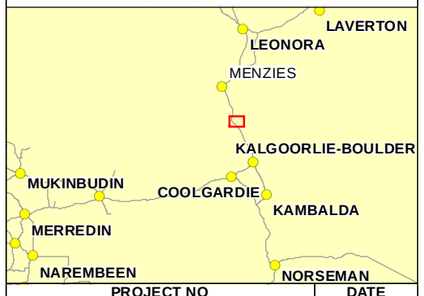

PROJECT NO	DATE
1673	22/11/2016

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Aphrodite Gold Limited - Aphrodite Gold Deposit

Figure 4 - Fauna Habitat

K:\Projects\1.0 EBS\1673 Aphrodite Deposit Fauna Survey\Figures\1673 Figure 2 - Fauna Habitat Map.mxd

5 Discussion

5.1 Fauna of Conservation Significance

5.1.1 Species Recorded

During the field assessment, one conservation significant species was recorded; the Rainbow Bee-eater.

Rainbow Bee-eater

The Rainbow Bee-eater is listed as Marine under the EPBC Act and Schedule 5 under the WC Act. This species is one of the most common and widespread birds in Australia with a distribution that covers the majority of Australia (Barrett *et al.* 2003). It occurs in lightly wooded, often sandy country, preferring areas near water. It feeds on airborne insects, and nests throughout its range in WA in burrows excavated in sandy ground or banks, often at the margins of roads and tracks. In WA this species can occur as a 'resident, breeding visitor, postnuptial nomad, passage migrant and winter visitor' (Johnstone & Storr 2004).

The DPaW threatened fauna database returned just 18 records of the Rainbow Bee-eater from between 1977 to 1981, however, the Survey Area does contain suitable habitat.

The Rainbow Bee-eater was heard and directly observed in a number of locations in the Survey Area.

5.1.2 Species Considered Likely to Occur

During the field assessment, no species of conservation significance were considered Likely to occur.

5.1.3 Species Considered as Possibly Occurring

Three species are considered as Possibly occurring in the Survey Area; the Woma, Central Long-eared Bat and Malleefowl. As a Malleefowl targeted search formed part of the field survey, this species will be discussed in section 5.2.

Woma

The Woma is listed as Priority 1 under the DPaW priority list, due to land clearing and possible predation by feral animals causing serious declines.

The species is restricted to arid and dry inland areas, including desert sandhills of the centre. A nocturnal, terrestrial snake which shelters in hollow logs, animal burrows or dense vegetation, in woodlands, heaths and shrublands, especially spinifex – *Triodia* and *Plectrachne* sp.) during the day, although basking in the early part of the day. The Woma feeds on small mammals, ground birds and reptiles (Cogger 2014).

There was one record of the Woma in the DPaW threatened fauna database from south of Menzies in 1966. The Survey Area does contain suitable habitat in the form of woodlands and shrubland with relatively dense vegetation in some areas, however, hollow logs and particularly *Triodia* are very limited in the Survey Area. As such the species is considered as Possibly occurring in the Survey Area.

Central Long-eared Bat

The Central Long-eared Bat is listed as Priority 4 under the DPaW priority list. The species occurs in south-western and south-eastern WA, in the arid and semi-arid Eyre-Yorke, Hampton, Avon, Gawler and Coolgardie bioregions (Van Dyck & Strahan 2008). The Central Long-eared Bat occurs in woodlands, Mallee and thickets with prominent shrub strata, especially where these occur near granite outcrops and old dams. It roosts in tree crevices, foliage or under loose barks (Van Dyck & Strahan 2008. Little of the ecology of the Long-eared bat is known to be able to identify threats (Duncan *et al.* 1999).

The Survey Area contains old dams and Mallee woodlands with prominent shrub strata; however, the Survey Area lacks granite outcrops. The species was returned from the NatureMap search only, but some suitable habitat is present in the Survey Area, therefore the Central-Long-eared Bat is considered as Possibly occurring.

5.1.4 Species Considered as Unlikely to Occur

A total of four species of conservation significance are considered Unlikely to occur in the Survey Area; Carnaby's Black Cockatoo, the Princess Parrot, Night Parrot and the Western Quoll.

Carnaby's Black Cockatoo

Carnaby's Black Cockatoo is listed as Endangered under the EPBC Act. Carnaby's Black Cockatoo is endemic to south-west WA, and is distributed from the Murchison River to Esperance and inland to Coorow, Kellerberrin and Lake Cronin (Cale 2003). The species was once common, but the population has declined significantly in the last half century, and is now locally extinct in some areas (Johnstone and Storr 1998, Shah 2006). In the last 45 years the species has suffered a 50% reduction in its abundance (Cale 2003). This reduction is due to the clearing of core breeding habitat in the wheatbelt, the deterioration of nesting hollows, and clearing of food resources, particularly on the Swan Coastal Plain (Cale 2003). Results from the 2015 Great Cocky Count (GCC) (Birdlife 2015) recorded 9,082 white-tailed black-cockatoos (Carnaby's and Baudin's Black Cockatoo) across the species range, which is the lowest total number recorded in the last three GCCs (2013-15).

The DPaW threatened fauna database has eight records from 1972 to 1995 (the locality is listed as Menzies with an accuracy of 10,000 m). However, as can be seen from the DoE (now DEE) Carnaby's Black Cockatoo distribution map, the Survey Area is outside

of its current known distribution (Appendix F). Carnaby's Black Cockatoo is therefore considered Unlikely to occur.

Princess Parrot

The Princess Parrot is listed as Priority 4 under the DPaW priority list. The Princess Parrot is confined to arid regions of WA, the Northern Territory, and South Australia (Barrett *et al.* 2003). Preferred habitat includes lightly wooded country of *Casuarina decaisneana*. The species is usually recorded from shrublands and savannah woodlands in swales between sand dunes consisting of open Mallee-spinifex *(Eucalyptus* and *Triodia*) and open marble gum woodland (*E. gongylo*carpa) and a variety of shrubs and scattered emergent trees (Garnett *et al*. 2011). The DPaW threatened fauna database search returned no records of the Princess Parrot despite a wide search area of 90 km. However, it was present in the EPBC PMST. Please see section 4.2.2 paragraph 5 as to the reasons why this is not always an accurate reflection of what species may occur in an area, as is the case with the Princess Parrot.

The Survey Area contains no suitable habitat in the form of shrublands and savannah woodlands in swales between sand dunes. Accordingly the Princess Parrot is considered as Unlikely to occur in the project area.

Night Parrot

The Night Parrot is listed as Vulnerable under the EPBC Act and S1 under the WC Act. It is an enigmatic species thought possibly to be extinct until the recent recoveries of two dead specimens from Queensland. The type specimen and many early sightings, however, came from WA (Johnstone *et al.* 2013). A more recent sighting of the Night Parrot was on 12 April 2005, at a well near the Fortescue Marshes (Davis & Metcalf 2008). The DPaW threatened fauna database has no records of the Night Parrot in the 90 km radial search area. However, it was present in the EPBC PMST. Please see section 4.2.2 paragraph 5 as to the reasons why this is not always an accurate reflection of what species may occur in an area, as is the case with the Night Parrot. There is very limited ecological information such as preferred habitat available for this species, however, given the very limited number of records in the region, the Night Parrot is considered as Unlikely to occur in the project area.

Western Quoll

The Western Quoll is listed as Vulnerable under the EPBC Act and Schedule 1 under the WC Act. Knowledge of the ecology of the Western Quoll is largely restricted to its distribution in mesic jarrah forests. Here, population densities are three times greater than in semi-arid zones where rainfall and consequently productivity are lower than mesic forests and home ranges are larger (Rayner *et al.* 2012).

The Western Quolls diet includes mammals, birds, reptiles, invertebrates, plants and rubbish, which is consistent with it being a generalist predator.

The Western Quoll was formerly distributed over nearly 70% of the continent, occurring in every Mainland State and Territory (Woinarski *et al.* 2012). Since European settlement, its range has contracted dramatically. Historically it was found in the vicinity of the Survey Area, but it is now restricted to the south-west of WA where it has a fragmented distribution. This species is now only found in sclerophyll forest, woodland and Mallee shrubland (Van Dyck & Strahan 2008). It is highly mobile, and appears able to utilise bush remnants and corridors.

This species requires logs with large hollows or large earth burrows in which to den (Van Dyck & Strahan 2008). During this assessment no hollow logs of suitable size or earth burrows considered large enough for Western Quolls to den in were observed. In addition, there was one single record in the DPaW threatened fauna database. This record is from Goongarrie station in 2008 and is based on tracks. The record has a certainty of moderate (Appendix B). Consequently the Western Quoll is considered Unlikely to occur in the Survey Area.

5.2 Malleefowl

The Malleefowl is listed as Vulnerable under the EPBC Act and S1 under the WC Act. It is a member of the Megapodiidae family which consists of a small group of moderately large birds, notable for the fact that the eggs are buried and hatch in the ground or in heaps of soil and rotting vegetation accumulated by the male.

The Malleefowl was originally common and widespread in semi-arid the zone, mainly in scrubs of Mallee and other low Eucalypts on sandy and lateritic soils, also acacia scrubs on heavy red soils, especially north and east of the mulga-eucalypt line. The Malleefowl is now generally rare to uncommon and patchily distributed, owing to clearing of much of its habitat for agriculture (Johnstone & Storr 1998).

The Malleefowl is mainly found in scrubs and thickets of Mallee *Eucalyptus* sp., *Melaleuca lanceolate* and *Acacia linophylla*, and other dense litter-forming shrublands, with sandy substrate and abundant leaf-litter for breeding. Malleefowl are highly productive, but rainfall has an important influence on their fecundity (Benshemesh 2007).

Malleefowl are generalist and opportunistic, feeding on seeds, flowers and fruits of shrubs (especially legumes), herbs, invertebrates, tubers and fungi (Benshemesh 2007).

During the field survey 27 km of systematic transects and nine incidental searches were walked (56.25 ha) searching for any signs of Malleefowl. No Malleefowl were observed directly or indirectly.

The Survey Area does contain suitable habitat in areas which contain Mallee Eucalypts and Acacia shrubs on sandy soils (this includes sections of the Eucalypt Woodland and Casuarina Woodland and the Creekline in the Survey Area). Although no Malleefowl were recorded during the field survey, there are 35 records in the DPaW threatened

fauna database all of which are outside of the Survey Area (see Figure 5). We excluded records from the database that had no year (four records) or that had an accuracy of greater than 1000 m (three records – two with 10,000 m and one with 50,000 m). This left 26 records from between 2009 and 2015, with the closest record being approximately 15 km from the Survey Area (Figure 5).

Given that there is some suitable habitat in the Survey Area and the number of recent records we consider the Malleefowl as possibly occurring.

280000 300000 320000 340000 360000 380000

6680000

6660000

6640000

6620000

MENZIES

Lake Goongarrie

Lake Owen

Carnage Lake

Rowles Lagoon

Brown Lagoon

Lake Cowen

Legend

- Survey Area
- DPaW Malleefowl Records
- Lake - non-perennial
- Mining Tenements
- Miscellaneous Tenements

- CADASTRAL BOUNDARY SOURCED FROM LANDGATE 2009
- LOCALITY MAP SOURCED LANDGATE 2006
- AERIAL PHOTOGRAPHY SOURCED LANDGATE 2014
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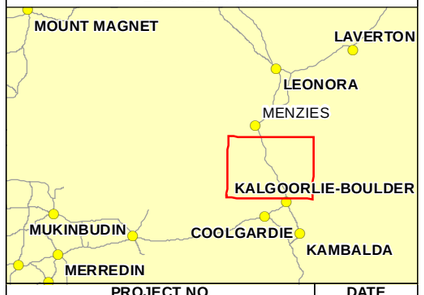

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Figure 5 - DPaW Malleefowl Records

K:\Projects\1.0 EBS\1673 Aphrodite Deposit Fauna Survey\Figures\1673 Figure 3 - DPaW Malleefowl Records.mxd

5.3 Fauna Habitat Types

Four natural habitat types have been identified in the Survey Area; Eucalypt Woodland, Shrubland, Casuarina Woodland and Creekline. These habitats were considered to range from Good to Excellent and are considered widespread and common in the region.

The Survey Area has been disturbed in the past as a result of previous activity i.e. pastoralism, vehicle tracks, some mine workings, exploration activity and rubbish, and some clearing of vegetation, however, this disturbance is not widespread. There were also signs of disturbance associated with cattle i.e. tracks, scats and signs of grazing on the limited grass present and on some shrubs.

Eucalypt Woodland

This habitat was the most widespread in the Survey Area and based on broad mapping represented 4,223 ha or about 68% and was typically in Good to Excellent condition (Figure 4 and Appendix D).

The Eucalypt trees, particularly Salmon Gum can have relatively large hollows in which birds such as Parrots can breed; however, no large hollows were observed and small hollows were only rarely observed. The other Eucalypts were Mallee and mostly small stemmed and so didn't have hollows of any significance.

The midstorey vegetation when present does provide structure, cover and food resources for birds such as Honeyeaters. The leaf litter and woody debris on the ground provides habitat for small reptiles like those found in the *Ctenotus* and *Lerista* Genera. The sandy soil allows reptiles such as those that construct burrows e.g. species in the following Genera: *Ctenophorus* and *Varanus*. This habitat would also be utilised by small mammals in Genera such as *Sminthopsis* and *Pseudomys*.

Some Birds recorded using this habitat included: Crested Pigeon, Common Bronzewing, Brown Falcon, Australian Ringneck, Galah, Mulga Parrot, Black-eared Cuckoo, Rufous Treecreeper, Splendid Fairy-wren, Inland Thornbill, Weebill, Striated Pardalote, Red Wattlebird, Brown Honeyeater, White-browed Babbler, Crested Bellbird, Rufous Whistler and Grey Butcherbird.

The Eucalypt Woodland could also support species of conservation significance such as the Malleefowl, noting, however, that none or their signs were recorded during the assessment.

Shrubland

This habitat was the second most widespread in the Survey Area and based on broad mapping represented 992 ha or about 16% and was typically in Very Good condition (Figure 4 and Appendix D). On the whole this habitat lacked the Eucalypt trees, though there were some present, but they were only scattered and were *E. salmonophloia*. These shrublands were dominated by Chenopods (e.g. *Atriplex spp.* and *Maireana spp.*),

but also included *Acacia spp.*, *Eremophila spp.* and *Ptilotus spp.* There was very little to no groundcover present in this habitat (see Appendix D and E).

There were no large hollow logs and relatively very little woody debris and leaf litter. Therefore there were limited shelter sites for small reptiles and mammals. However, there were a number of birds recorded using this habitat, for example, Crested Pigeon, Common Bronzewing, Brown Falcon, Australian Ringneck, Galah, Mulga Parrot, Splendid Fairy-wren, Inland Thornbill, Welcome Swallow and Tree Martin.

Casuarina Woodland

This habitat was the third most widespread in the Survey Area and based on broad mapping represented 882 ha or about 14% and was typically in Very Good condition (Figure 4 and Appendix D). *Casuarina pauper* (Casuarina) is the dominant tree, however, there were Eucalypts scattered throughout. The dominant midstorey species included *Acacia spp.*, *Dodonaea lobulata*, *Eremophila spp.* and *Senna artemisioides*. There was very little groundcover; however, there was *Ptilotus sp*. present and occasionally some small herbs and very little to no grass.

The Casuarinas don't tend to form large hollows and the Eucalypts were mostly Mallee (small stemmed) in form, therefore this habitat tends not to provide breeding habitat for hollow nesting birds such as the Parrots.

The midstorey vegetation when present does provide structure, cover and food resources for birds. The leaf litter and woody debris on the ground provides habitat for small reptiles like those found in the *Ctenotus* and *Lerista* Genera. The sandy soil allows reptiles such as those that construct burrows e.g. species in the following Genera: *Ctenophorus* and *Varanus*. This habitat would also be utilised by small mammals in Genera such as *Sminthopsis* and *Pseudomys*.

Some Birds recorded using this habitat included: Crested Pigeon, Common Bronzewing, Brown Falcon, Australian Ringneck, Galah, Mulga Parrot, Black-eared Cuckoo, Splendid Fairy-wren, Inland Thornbill, Weebill, Striated Pardalote, Brown Honeyeater, White-browed Babbler, Crested Bellbird, Rufous Whistler, Grey Fantail and Grey Currawong.

The Casuarina Woodland could also support species of conservation significance such as the Malleefowl, noting, however, that none or their signs were recorded during the assessment.

Creekline

This habitat was the least widespread in the Survey Area and based on broad mapping represented 37 ha or about 0.6% % and was typically in Excellent condition (Figure 4 and Appendix D). The overstorey in this habitat was dominated by Eucalypts (single trunked and Mallee forms) of several species and to varying densities (this habitat had the greatest overstorey cover).

The dominant midstorey species in this habitat varied widely, both in composition and density, but for the most part included *Acacia spp.*, *Dodonaea lobulata* and *Senna artemisioides*) and there was very little (limited herbaceous species) to no groundcover species.

The Eucalypt trees, particularly Salmon Gum can have relatively large hollows in which birds can breed; however, no large hollows were observed and small hollows were only rarely observed. The other Eucalypts were Mallee and mostly small stemmed and so didn't have hollows of any significance.

The midstorey vegetation when present does provide structure, cover and food resources for birds. The leaf litter and woody debris on the ground provides habitat for small reptiles like those found in the *Ctenotus* and *Lerista* Genera. The sandy soil allows reptiles such as those that construct burrows e.g. species in the following Genera: *Ctenophorus* and *Varanus*. This habitat would also be utilised by small mammals in Genera such as *Sminthopsis* and *Pseudomys*.

Some Birds recorded using this habitat included: Crested Pigeon, Common Bronzewing, Australian Ringneck, Galah, Mulga Parrot, Black-eared Cuckoo, Splendid Fairy-wren, Rufous Treecreeper, Inland Thornbill, Weebill, Striated Pardalote, Red Wattlebird, Brown Honeyeater, White-browed Babbler, Crested Bellbird, Rufous Whistler, Grey Fantail, Willie Wagtail, Grey Butcherbird and Grey Currawong.

The Creekline could also support species of conservation significance such as the Malleefowl, noting, however, that none or their signs were recorded during the assessment.

5.4 Assessment against the Clearing Principles

At this stage we do not know how much and where vegetation is proposed to be cleared in Survey Area as part of the project. However, we have still assessed the project against one of the ten clearing principles (Principle [b]). We are only assessing this fauna principle as this report is focused on fauna (Appendix G).

6 Recommendations

In order to minimise the impact on vertebrate fauna, several general recommendations are provided below and these apply to exploration and mining activities:

- It is important that all exploration drill holes are located and capped or plugged with reference to all safety procedures for drilling personnel;
- Avoid unnecessary clearing of vegetation beyond that strictly required;
- Windrows of topsoil, woody debris (this includes logs) and leaf litter formed during clearing should be retained, as they create good microhabitat for a large array of fauna, particularly reptiles;
- Rehabilitation of cleared areas such as laydown sites, access tracks and grid lines where these are no longer required; and
- Adequate rubbish disposal should be applied, especially for food refuse, in order to discourage scavenging by animals such as Goannas, Crows and Feral Cats. These animals can have an adverse impact on native fauna.

More specific recommendations for areas that may be cleared of vegetation if mining is undertaken in the Survey Area include:

- A targeted Malleefowl search, particularly in mine infrastructure footprints e.g. Mine Pit, Tailings Dam, Stockpile areas and areas of other significant infrastructure such as Mine Plant.

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8 Limitations

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APPENDIX A

Definition of Threatened Fauna Species Categories

Western Australian Threatened Fauna Categories Wildlife Conservation Act 1950 (WA)

CATEGORY	CODE	DESCRIPTION
Schedule 1	S1	Rare or likely to become extinct as critically endangered fauna.
Schedule 2	S2	Fauna that is rare or is likely to become extinct as endangered fauna.
Schedule 3	S3	Fauna that is rare or is likely to become extinct as vulnerable fauna.
Schedule 4	S4	Fauna presumed to be extinct.
Schedule 5	S5	Migratory birds protected under an international agreement.
Schedule 6	S6	Fauna that is of special conservation need as conservation dependent fauna.
Schedule 7	S7	Other specially protected fauna

Department of Parks and Wildlife Fauna Priority Codes

CATEGORY	CODE	DESCRIPTION
Priority 1	P1	Taxa with few, poorly known populations on threatened lands.
Priority 2	P2	Taxa with few, poorly known populations on conservation lands.
Priority 3	P3	Taxa with several, poorly known populations, some on conservation lands.
Priority 4	P4	Taxa in need of monitoring: not currently threatened or in need of special protection, but could become so. Usually represented on conservation lands.
Priority 5	P5	Taxa in need of monitoring: not considered threatened, but the subject of a specific conservation program, the cessation of which would result in the species becoming threatened within five years.

Categories of Threatened Fauna Species under the EPBC Act

CONSERVATION CODE	DESCRIPTION
Ex	**Extinct** Taxa which at a particular time if, at the time, there is no reasonable doubt that the last member of the species has died.
ExW	**Extinct in the Wild** Taxa which is known only to survive in cultivation, in captivity or as a naturalised population well outside its past range; or it has not been recorded in its known and/or expected habitat, at appropriate seasons, anywhere in its past range, despite exhaustive surveys over a time frame appropriate to its life cycle and form.

CE	**Critically Endangered** Taxa which at a particular time, it is facing an extremely high risk of extinction in the wild in the immediate future, as determined in accordance with the prescribed criteria.
E	**Endangered** Taxa which is not critically endangered and it is facing a very high risk of extinction in the wild in the medium-term future, as determined in accordance with the prescribed criteria.
V	**Vulnerable** Taxa which is not critically endangered or endangered and is facing a high risk of extinction in the wild in the medium-term future, as determined in accordance with the prescribed criteria.
CD	**Conservation Dependent** Taxa which at a particular time if, at that time, the species is the focus of a specific conservation program, the cessation of which would result in the species becoming vulnerable, endangered or critically endangered within a period of 5 years.

Source: *Environment Protection and Biodiversity Conservation Act 1999*

APPENDIX B

Database Search Results

NAME	SOURCE_COD	SOURCE_ID	NAME_ID	FAMILY	GENUS	SPECIES	SUBSPECIES	COMMON_NAM	KINGDOM	CONSV_CODE	CLASS	CERTAINTY	METHOD	COUNT	LOCALITY	SITE_NAME	ACCURACY_M	GDA_LONG	GDA_LAT	DAY	MONTH	YEAR
Macrotis lagotis	WAM_MAMMAL	urn:lsid:taxonom	24168	Thylacomyidae	Macrotis	lagotis		bilby, dalgyte, ninu	Animalia	VU	MAMMAL	WAM Vouchered	Specimen	1	KANOWNA		10000	############	-30.60000000000	0	0	0
Plegadis falcinellu	BIRDATLAS1	142363|178	24843	Threskiornithidae	Plegadis	falcinellus		glossy ibis	Animalia	IA	BIRD	Moderately certai	Observational	1	ORA BANDA		18000	############	-30.41540000000	5	12	1981
Branchinella dent	TFAUNA	6119	33934	Thamnocephalida	Branchinella	denticulata			Animalia	P1	INVERTEBRATE	Very certain	Caught or trappec	0	KANOWNA	Gidji Lake, N of Ka	1000	############	-30.60000000000	1	3	1937
Calidris acuminat	BIRDATLAS2	63956|163	24779	Scolopacidae	Calidris	acuminata		sharp-tailed sandpiper	Animalia	IA	BIRD	Moderately certai	Observational	1	KANOWNA	Kurnalpi Road	100	############	-30.58010000000	21	10	1999
Calidris acuminat	BIRDATLAS1	142381|163	24779	Scolopacidae	Calidris	acuminata		sharp-tailed sandpiper	Animalia	IA	BIRD	Moderately certai	Observational	1	KANOWNA		18000	############	-30.58200000000	29	8	1981
Calidris acuminat	BIRDATLAS2	133620|163	24779	Scolopacidae	Calidris	acuminata		sharp-tailed sandpiper	Animalia	IA	BIRD	Moderately certai	Observational	1	MOUNT BURGES	Kopai Lake	100	############	-30.74780000000	31	1	2001
Calidris acuminat	BIRDATLAS2	133619|163	24779	Scolopacidae	Calidris	acuminata		sharp-tailed sandpiper	Animalia	IA	BIRD	Moderately certai	Observational	1	MOUNT BURGES	Kopai Lake	100	############	-30.74780000000	31	1	2001
Calidris ferruginea	BIRDATLAS2	63956|161	24784	Scolopacidae	Calidris	ferruginea		curlew sandpiper	Animalia	VU & IA	BIRD	Moderately certai	Observational	1	KANOWNA	Kurnalpi Road	100	############	-30.58010000000	21	10	1999
Calidris ruficollis	BIRDATLAS2	142005|162	24788	Scolopacidae	Calidris	ruficollis		red-necked stint	Animalia	IA	BIRD	Moderately certai	Observational	1	KURNALPI	Salt Lake	100	############	-30.56140000000	25	4	2001
Tringa nebularia	BIRDATLAS2	63956|158	24808	Scolopacidae	Tringa	nebularia		common greenshank, greenshank	Animalia	IA	BIRD	Moderately certai	Observational	1	KANOWNA	Kurnalpi Road	100	############	-30.58010000000	21	10	1999
Tringa nebularia	BIRDATLAS2	133619|158	24808	Scolopacidae	Tringa	nebularia		common greenshank, greenshank	Animalia	IA	BIRD	Moderately certai	Observational	1	MOUNT BURGES	Kopai Lake	100	############	-30.74780000000	31	1	2001
Tringa nebularia	BIRDATLAS1	108810|158	24808	Scolopacidae	Tringa	nebularia		common greenshank, greenshank	Animalia	IA	BIRD	Moderately certai	Observational	1	KANOWNA		18000	############	-30.58200000000	7	10	1980
Tringa nebularia	BIRDATLAS1	108803|158	24808	Scolopacidae	Tringa	nebularia		common greenshank, greenshank	Animalia	IA	BIRD	Moderately certai	Observational	1	KANOWNA		18000	############	-30.58200000000	25	11	1980
Calyptorhynchus l	TFAUNA	64242	24734	Psittacidae	Calyptorhynchus	latirostris		Carnaby's cockatoo	Animalia	EN	BIRD	Very certain	Historical record	2	MENZIES	Site details not pr	10000	############	-29.91930000000	18	8	1993
Calyptorhynchus l	TFAUNA	64241	24734	Psittacidae	Calyptorhynchus	latirostris		Carnaby's cockatoo	Animalia	EN	BIRD	Very certain	Historical record	2	MENZIES	Site details not pr	10000	############	-29.91930000000	24	11	1993
Calyptorhynchus l	TFAUNA	64240	24734	Psittacidae	Calyptorhynchus	latirostris		Carnaby's cockatoo	Animalia	EN	BIRD	Very certain	Historical record	4	MENZIES	Site details not pr	10000	############	-29.91930000000	26	8	1993
Calyptorhynchus l	TFAUNA	64212	24734	Psittacidae	Calyptorhynchus	latirostris		Carnaby's cockatoo	Animalia	EN	BIRD	Very certain	Historical record	1	MENZIES	Site details not pr	10000	############	-29.91930000000	1	9	1972
Calyptorhynchus l	TFAUNA	64211	24734	Psittacidae	Calyptorhynchus	latirostris		Carnaby's cockatoo	Animalia	EN	BIRD	Very certain	Historical record	1	MENZIES	Site details not pr	10000	############	-29.91930000000	1	9	1975
Calyptorhynchus l	TFAUNA	64210	24734	Psittacidae	Calyptorhynchus	latirostris		Carnaby's cockatoo	Animalia	EN	BIRD	Very certain	Historical record	1	MENZIES	Site details not pr	10000	############	-29.91930000000	1	9	1972
Calyptorhynchus l	TFAUNA	64203	24734	Psittacidae	Calyptorhynchus	latirostris		Carnaby's cockatoo	Animalia	EN	BIRD	Very certain	Historical record	2	MENZIES	Site details not pr	10000	############	-29.91930000000	22	11	1995
Calyptorhynchus l	TFAUNA	64199	24734	Psittacidae	Calyptorhynchus	latirostris		Carnaby's cockatoo	Animalia	EN	BIRD	Very certain	Historical record	7	MENZIES	Site details not pr	10000	############	-29.91930000000	1	12	1995
Merops ornatus	BIRDATLAS1	83809|329	24598	Meropidae	Merops	ornatus		rainbow bee-eater	Animalia	IA	BIRD	Moderately certai	Observational	1	KANOWNA		108000	############	-30.49870000000	22	2	1980
Merops ornatus	BIRDATLAS2	79622|329	24598	Meropidae	Merops	ornatus		rainbow bee-eater	Animalia	IA	BIRD	Moderately certai	Observational	1	MOUNT BURGES	Carbine Road	100	############	-30.47290000000	21	10	1999
Merops ornatus	BIRDATLAS1	55054|329	24598	Meropidae	Merops	ornatus		rainbow bee-eater	Animalia	IA	BIRD	Moderately certai	Observational	1	KANOWNA		108000	############	-30.49870000000	23	2	1979
Merops ornatus	BIRDATLAS2	41836|329	24598	Meropidae	Merops	ornatus		rainbow bee-eater	Animalia	IA	BIRD	Moderately certai	Observational	1	MENZIES	Coongarie - Davyh	100	############	-30.04180000000	6	10	1999
Merops ornatus	BIRDATLAS1	142403|329	24598	Meropidae	Merops	ornatus		rainbow bee-eater	Animalia	IA	BIRD	Moderately certai	Observational	1	MENZIES		18000	############	-30.08200000000	1	12	1980
Merops ornatus	BIRDATLAS1	142402|329	24598	Meropidae	Merops	ornatus		rainbow bee-eater	Animalia	IA	BIRD	Moderately certai	Observational	1	KANOWNA		18000	############	-30.24870000000	1	12	1980
Merops ornatus	BIRDATLAS1	142401|329	24598	Meropidae	Merops	ornatus		rainbow bee-eater	Animalia	IA	BIRD	Moderately certai	Observational	1	ORA BANDA		18000	############	-30.24870000000	1	11	1980
Merops ornatus	BIRDATLAS1	142369|329	24598	Meropidae	Merops	ornatus		rainbow bee-eater	Animalia	IA	BIRD	Moderately certai	Observational	1	KANOWNA		18000	############	-30.58200000000	24	11	1981
Merops ornatus	BIRDATLAS1	142365|329	24598	Meropidae	Merops	ornatus		rainbow bee-eater	Animalia	IA	BIRD	Moderately certai	Observational	1	KANOWNA		18000	############	-30.58200000000	31	12	1981
Merops ornatus	BIRDATLAS1	1277|329	24598	Meropidae	Merops	ornatus		rainbow bee-eater	Animalia	IA	BIRD	Moderately certai	Observational	1	KANOWNA		108000	############	-30.49870000000	28	2	1977
Merops ornatus	BIRDATLAS1	108809|329	24598	Meropidae	Merops	ornatus		rainbow bee-eater	Animalia	IA	BIRD	Moderately certai	Observational	1	KANOWNA		18000	############	-30.24870000000	2	1	1981
Merops ornatus	BIRDATLAS1	108803|329	24598	Meropidae	Merops	ornatus		rainbow bee-eater	Animalia	IA	BIRD	Moderately certai	Observational	1	KANOWNA		18000	############	-30.58200000000	25	11	1980
Merops ornatus	BIRDATLAS1	108795|329	24598	Meropidae	Merops	ornatus		rainbow bee-eater	Animalia	IA	BIRD	Moderately certai	Observational	1	KANOWNA		108000	############	-30.49870000000	28	11	1980
Merops ornatus	BIRDATLAS1	108785|329	24598	Meropidae	Merops	ornatus		rainbow bee-eater	Animalia	IA	BIRD	Moderately certai	Observational	1	KANOWNA		18000	############	-30.58200000000	22	2	1981
Merops ornatus	BIRDATLAS1	108781|329	24598	Meropidae	Merops	ornatus		rainbow bee-eater	Animalia	IA	BIRD	Moderately certai	Observational	1	ORA BANDA		18000	############	-30.41540000000	21	2	1981
Merops ornatus	BIRDATLAS1	108311|329	24598	Meropidae	Merops	ornatus		rainbow bee-eater	Animalia	IA	BIRD	Moderately certai	Observational	1	MENZIES		18000	############	-29.58200000000	1	12	1980
Merops ornatus	BIRDATLAS1	108310|329	24598	Meropidae	Merops	ornatus		rainbow bee-eater	Animalia	IA	BIRD	Moderately certai	Observational	1	MENZIES		18000	############	-29.74870000000	1	12	1980
Merops ornatus	BIRDATLAS1	108309|329	24598	Meropidae	Merops	ornatus		rainbow bee-eater	Animalia	IA	BIRD	Moderately certai	Observational	1	MENZIES		18000	############	-29.91540000000	1	12	1980
Leipoa ocellata	WAM_BIRDS	urn:lsid:taxonom	24557	Megapodiidae	Leipoa	ocellata		malleefowl	Animalia	VU	BIRD	WAM Vouchered	Specimen	1	ORA BANDA	Ora Banda	10000	############	-30.36670000000	0	0	0
Leipoa ocellata	TFAUNA	81108	24557	Megapodiidae	Leipoa	ocellata		malleefowl	Animalia	VU	BIRD	Very certain	Night sighting	1	KANOWNA	bushland, 50km N	1000	############	-30.26620000000	14	9	2015
Leipoa ocellata	TFAUNA	80518	24557	Megapodiidae	Leipoa	ocellata		malleefowl	Animalia	VU	BIRD	Very certain	Day sighting	1	ORA BANDA	Davyhurst St Ora	1000	############	-30.27470000000	4	5	2015
Leipoa ocellata	TFAUNA	80078	24557	Megapodiidae	Leipoa	ocellata		malleefowl	Animalia	VU	BIRD	Very certain	Day sighting	2	KURNALPI	Yarri Rd intersecti	50	############	-30.35750000000	23	4	2015
Leipoa ocellata	TFAUNA	80016	24557	Megapodiidae	Leipoa	ocellata		malleefowl	Animalia	VU	BIRD	Very certain	Definite signs	0	ORA BANDA	south of the form	1000	############	-30.19430000000	24	1	2014
Leipoa ocellata	TFAUNA	79954	24557	Megapodiidae	Leipoa	ocellata		malleefowl	Animalia	VU	BIRD	Very certain	Definite signs	0	ORA BANDA	North of Siberia B	1000	############	-30.19430000000	21	1	2014
Leipoa ocellata	TFAUNA	79809	24557	Megapodiidae	Leipoa	ocellata		malleefowl	Animalia	VU	BIRD	Very certain	Definite signs	0	KURNALPI		1000	############	-30.40110000000	0	0	0
Leipoa ocellata	TFAUNA	79808	24557	Megapodiidae	Leipoa	ocellata		malleefowl	Animalia	VU	BIRD	Very certain	Definite signs	0	KURNALPI		1000	############	-30.36090000000	0	0	0
Leipoa ocellata	TFAUNA	79807	24557	Megapodiidae	Leipoa	ocellata		malleefowl	Animalia	VU	BIRD	Very certain	Definite signs	0	KURNALPI		1000	############	-30.35930000000	0	0	0
Leipoa ocellata	TFAUNA	25075	24557	Megapodiidae	Leipoa	ocellata		malleefowl	Animalia	VU	BIRD	Very certain	Day sighting	2	MENZIES	Goldfields Highwa	1000	############	-29.86080000000	13	3	2014
Leipoa ocellata	TFAUNA	24839	24557	Megapodiidae	Leipoa	ocellata		malleefowl	Animalia	VU	BIRD	Very certain	Day sighting	1	KANOWNA	3.26km E of Caws	1000	############	-30.41700000000	5	12	2013
Leipoa ocellata	TFAUNA	24838	24557	Megapodiidae	Leipoa	ocellata		malleefowl	Animalia	VU	BIRD	Very certain	Day sighting	1	KANOWNA	~10km W of Men	1000	############	-30.41340000000	15	12	2013
Leipoa ocellata	TFAUNA	24837	24557	Megapodiidae	Leipoa	ocellata		malleefowl	Animalia	VU	BIRD	Very certain	Dead	1	KANOWNA	~100-200m W of	1000	############	-30.41730000000	19	12	2013
Leipoa ocellata	TFAUNA	24798	24557	Megapodiidae	Leipoa	ocellata		malleefowl	Animalia	VU	BIRD	Very certain	Dead	1	KANOWNA	~4.45km east of C	1000	############	-30.41830000000	12	11	2013
Leipoa ocellata	TFAUNA	24779	24557	Megapodiidae	Leipoa	ocellata		malleefowl	Animalia	VU	BIRD	Very certain	Day sighting	1	ORA BANDA	3.2km east of caw	1000	############	-30.41250000000	16	10	2013
Leipoa ocellata	TFAUNA	24778	24557	Megapodiidae	Leipoa	ocellata		malleefowl	Animalia	VU	BIRD	Very certain	Dead	1	KANOWNA	3.1km north of Pa	1000	############	-30.44670000000	16	10	2013
Leipoa ocellata	TFAUNA	24615	24557	Megapodiidae	Leipoa	ocellata		malleefowl	Animalia	VU	BIRD	Very certain	Day sighting	1	KANOWNA	~5km before the I	1000	############	-30.52330000000	17	9	2013
Leipoa ocellata	TFAUNA	24614	24557	Megapodiidae	Leipoa	ocellata		malleefowl	Animalia	VU	BIRD	Very certain	Day sighting	1	ORA BANDA	500m before Caw	1000	############	-30.41330000000	12	9	2013
Leipoa ocellata	TFAUNA	23404	24557	Megapodiidae	Leipoa	ocellata		malleefowl	Animalia	VU	BIRD	Very certain	Day sighting	1	ORA BANDA	Ora Banda area.	1000	############	-30.36950000000	15	10	2012
Leipoa ocellata	TFAUNA	23403	24557	Megapodiidae	Leipoa	ocellata		malleefowl	Animalia	VU	BIRD	Very certain	Day sighting	1	ORA BANDA	Ora Banda area.	1000	############	-30.37010000000	15	10	2012
Leipoa ocellata	TFAUNA	23402	24557	Megapodiidae	Leipoa	ocellata		malleefowl	Animalia	VU	BIRD	Very certain	Day sighting	1	ORA BANDA	Ora Banda area.	1000	############	-30.36940000000	15	10	2012
Leipoa ocellata	TFAUNA	23401	24557	Megapodiidae	Leipoa	ocellata		malleefowl	Animalia	VU	BIRD	Very certain	Day sighting	1	ORA BANDA	Ora Banda area.	1000	############	-30.36330000000	15	10	2012
Leipoa ocellata	TFAUNA	23400	24557	Megapodiidae	Leipoa	ocellata		malleefowl	Animalia	VU	BIRD	Very certain	Day sighting	1	ORA BANDA	Ora Banda area.	1000	############	-30.35550000000	15	10	2012
Leipoa ocellata	TFAUNA	23398	24557	Megapodiidae	Leipoa	ocellata		malleefowl	Animalia	VU	BIRD	Very certain	Day sighting	1	ORA BANDA	Ora Banda area.	1000	############	-30.36670000000	15	10	2012
Leipoa ocellata	TFAUNA	23397	24557	Megapodiidae	Leipoa	ocellata		malleefowl	Animalia	VU	BIRD	Very certain	Day sighting	1	ORA BANDA	Ora Banda area.	1000	############	-30.36350000000	1	5	2012
Leipoa ocellata	TFAUNA	19813	24557	Megapodiidae	Leipoa	ocellata		malleefowl	Animalia	VU	BIRD	Very certain	Caught or trappec	1	KANOWNA	gravel area just of	1000	############	-30.61830000000	10	11	2011
Leipoa ocellata	TFAUNA	19288	24557	Megapodiidae	Leipoa	ocellata		malleefowl	Animalia	VU	BIRD	Very certain	Day sighting	1	MENZIES	1 km NE of campi	1000	############	-30.02570000000	19	10	2009
Leipoa ocellata	TFAUNA	19284	24557	Megapodiidae	Leipoa	ocellata		malleefowl	Animalia	VU	BIRD	Very certain	Day sighting	1	MOUNT BURGES	north of Mt Burge	1000	############	-30.68600000000	10	11	2009
Leipoa ocellata	TFAUNA	19248	24557	Megapodiidae	Leipoa	ocellata		malleefowl	Animalia	VU	BIRD	Very certain	Day sighting	1	MENZIES	Goongarrie Statio	1000	############	-30.02690000000	20	12	2011
Leipoa ocellata	TFAUNA	19178	24557	Megapodiidae	Leipoa	ocellata		malleefowl	Animalia	VU	BIRD	Very certain	Day sighting	1	MOUNT BURGES	VCL mining compa	1000	############	-30.29250000000	5	4	2011
Leipoa ocellata	TFAUNA	18782	24557	Megapodiidae	Leipoa	ocellata		malleefowl	Animalia	VU	BIRD	Very certain	Day sighting	1	MENZIES	Goongarrie Natio	10000	############	-29.95250000000	26	4	2010
Leipoa ocellata	TFAUNA	14448	24557	Megapodiidae	Leipoa	ocellata		malleefowl	Animalia	VU	BIRD	Very certain	Day sighting	1	MENZIES	10km North of pu	50000	############	-29.69280000000	26	10	2007
Leipoa ocellata	TFAUNA	13141	24557	Megapodiidae	Leipoa	ocellata		malleefowl	Animalia	VU	BIRD	Very certain	Day sighting	1	KURNALPI	On the Yarri Rd, 1	1000	############	-30.37670000000	26	8	2007
Leipoa ocellata	TFAUNA	4010	24557	Megapodiidae	Leipoa	ocellata		malleefowl	Animalia	VU	BIRD	Very certain	Day sighting	1	MOUNT BURGES	access road to Ku	500	############	-30.70900000000	15	11	2000
Leipoa ocellata	TFAUNA	1290	24557	Megapodiidae	Leipoa	ocellata		malleefowl	Animalia	VU	BIRD	Very certain	Day sighting	1	MENZIES	On North South fe	1000	############	-30.02090000000	3	7	1996
Jalmenus aridus	BUGBASE	15284	33979	Lycaenidae	Jalmenus	aridus		a butterfly	Animalia	P1	INVERTEBRATE	Moderately certain		1	MENZIES	Lake Douglas, nea	0	############	-29.99870000000	31	10	1997
Dasyurus geoffroi	TFAUNA	15808	24092	Dasyuridae	Dasyurus	geoffroii		chuditch, western quoll	Animalia	VU	MAMMAL	Moderately certai	Tracks	0	MENZIES	Goongarrie Statio	1000	############	-30.01810000000	1	7	2008
Charadrius rubric	TFAUNA	7021	24376	Charadriidae	Charadrius	rubricollis		Hooded Plover	Animalia	P4	BIRD	Very certain		0	KANOWNA	Arrow Lake	50000	############	-30.53330000000	1	1	1992
Charadrius rubric	TFAUNA	3205	24376	Charadriidae	Charadrius	rubricollis		Hooded Plover	Animalia	P4	BIRD	Very certain	Day sighting	2	KOOKYNIE	Goongarrie, on sa	10000	############	-29.83200000000	9	4	1995
Aspidites ramsayi	TFAUNA	12053	0	Boidae	Aspidites	ramsayi	(southwest subpo	Woma (southwest subpop.)	Animalia	P1	REPTILE	Very certain	Dead	1	MENZIES	south of Menzies	1000	############	-29.70000000000	11	2	1966
Apus pacificus pac	BIRDATLAS2	266424|335	24334	Apodidae	Apus	pacificus		fork-tailed Swift	Animalia	IA	BIRD	Moderately certai	Observational	1	MOUNT BURGES	Fence Track	100	############	-30.29140000000	30	3	2002
Oxyura australis	BIRDATLAS2	41839|216	24328	Anatidae	Oxyura	australis		blue-billed duck	Animalia	P4	BIRD	Moderately certai	Observational	1	ORA BANDA	Rowles Lagoon	500	############	-30.43200000000	7	10	1999
Oxyura australis	BIRDATLAS2	32744|216	24328	Anatidae	Oxyura	australis		blue-billed duck	Animalia	P4	BIRD	Moderately certai	Observational	1	ORA BANDA	Carnage Lake	100	############	-30.40090000000	30	8	1999
Oxyura australis	BIRDATLAS2	18148|216	24328	Anatidae	Oxyura	australis		blue-billed duck	Animalia	P4	BIRD	Moderately certai	Observational	1	ORA BANDA	Rowles Lagoon	100	############	-30.42420000000	25	4	1999

NatureMap
Mapping Western Australia's biodiversity

NatureMap Species Report

Created By Guest user on 26/08/2016

Kingdom Animalia
Current Names Only Yes
Core Datasets Only Yes
Method 'By Circle'
Centre 121° 14' 07" E,30° 07' 30" S
Buffer 40km
Group By Family

Family	Species	Records
Acanthizidae	8	331
Accipitridae	6	24
Actinopodidae	1	1
Aegothelidae	1	1
Aeshnidae	2	2
Agamidae	9	547
Anatidae	10	32
Araneidae	4	6
Ardeidae	2	5
Artamidae	2	14
Baetidae	1	1
Barychelidae	2	3
Bovidae	1	2
Buprestidae	3	3
Burramyidae	1	34
Cacatuidae	1	28
Campephagidae	4	37
Canidae	1	1
Caprimulgidae	2	2
Carabidae	1	1
Carphodactylidae	2	133
Casuariidae	1	42
Centropagidae	1	2
Ceratopogonidae	3	5
Charadriidae	1	2
Chironomidae	10	16
Cicadidae	3	4
Cinclosomatidae	1	7
Climacteridae	1	4
Columbidae	2	37
Corduliidae	1	2
Corinnidae	2	2
Corixidae	3	4
Corvidae	4	68
Cracticidae	5	114
Cuculidae	3	19
Curculionidae	3	5
Cypridae	2	3
Cyzicidae	2	3
Dasyuridae	11	314
Dermestidae	3	3
Desidae	2	2
Dicaeidae	2	40
Dicruridae	5	65
Diplodactylidae	10	495
Dytiscidae	5	7
Elapidae	12	76
Estrilidae	1	4
Falconidae	2	24
Formicidae	8	13
Gekkonidae	4	322
Gnaphosidae	1	1
Halcyonidae	1	1
Haliplidae	1	1
Hirundinidae	3	39
Histeridae	1	2
Hydrophilidae	3	4
Idiopidae	1	1
Lamponidae	5	18
Leporidae	1	4
Leptoceridae	1	2
Lestidae	3	5
Libellulidae	2	2
Limnodynastidae	4	33
Lycaenidae	1	4
Lycosidae	14	54
Lyncaeidae	1	1
Macropodidae	2	3
Maluridae	2	45
Megapodiidae	1	24
Meliphagidae	17	400
Meropidae	1	1
Miridae	1	13
Molossidae	2	11
Motacillidae	1	1

Muridae	7	342
Myobatrachidae	1	13
Myrmeleontidae	2	12
Nemesiidae	2	3
Neosittidae	2	26
Nephilidae	1	5
Nicodamidae	1	7
Noctuidae	1	2
Notonectidae	3	4
Oxyopidae	2	3
Pachycephalidae	5	236
Pardalotidae	1	41
Petroicidae	3	47
Physalopteridae	3	3
Podargidae	1	1
Podicipedidae	1	4
Pomatostomidae	1	36
Prodidomidae	2	4
Psittacidae	9	210
Psyllidae	1	2
Pygopodidae	4	31
Rallidae	2	2
Recurvirostridae	3	36
Rhinotermitidae	3	10
Salticidae	2	3
Scarabaeidae	1	1
Scincidae	29	607
Scolopendridae	6	49
Sparassidae	7	22
Strigidae	1	2
Sylviidae	2	10
Tenebrionidae	1	1
Termitidae	14	24
Tettigoniidae	1	3
Thamnocephalidae	1	1
Theridiidae	1	2
Triopsidae	1	1
Trochanteriidae	2	5
Typhlopidae	1	1
Urodacidae	1	15
Varanidae	5	41
Vespertilionidae	6	25
Zodariidae	4	14
TOTAL	**394**	**5489**

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
Acanthizidae					
1.	24260	*Acanthiza apicalis (Broad-tailed Thornbill, Inland Thornbill)*			
2.	24261	*Acanthiza chrysorrhoa (Yellow-rumped Thornbill)*			
3.	24264	*Acanthiza robustirostris (Slaty-backed Thornbill)*			
4.	24265	*Acanthiza uropygialis (Chestnut-rumped Thornbill)*			
5.	25528	*Aphelocephala leucopsis (Southern Whiteface)*			
6.	25530	*Gerygone fusca (Western Gerygone)*			
7.	24278	*Pyrrholaemus brunneus (Redthroat)*			
8.	30948	*Smicrornis brevirostris (Weebill)*			
Accipitridae					
9.	25535	*Accipiter cirrocephalus (Collared Sparrowhawk)*			
10.	25536	*Accipiter fasciatus (Brown Goshawk)*			
11.	24285	*Aquila audax (Wedge-tailed Eagle)*			
12.	24289	*Circus assimilis (Spotted Harrier)*			
13.		*Elanus axillaris*			
14.	24295	*Haliastur sphenurus (Whistling Kite)*			
Actinopodidae					
15.		*Missulena occatoria*			
Aegothelidae					
16.	25544	*Aegotheles cristatus (Australian Owlet-nightjar)*			
Aeshnidae					
17.		*Anax papuensis*			
18.		*Hemianax papuensis*			
Agamidae					
19.	24871	*Ctenophorus cristatus (Bicycle Dragon)*			
20.	24873	*Ctenophorus fordi (Mallee Sand Dragon)*			
21.	24886	*Ctenophorus reticulatus (Western Netted Dragon)*			
22.	24888	*Ctenophorus salinarum (Salt Pan Dragon)*			
23.	24889	*Ctenophorus scutulatus (Lozenge-marked Dragon)*			
24.	30909	*Diporiphora amphiboluroides (Mulga Dragon)*			
25.	24904	*Moloch horridus (Thorny Devil)*			
26.	25510	*Pogona minor (Dwarf Bearded Dragon)*			
27.	24907	*Pogona minor subsp. minor (Dwarf Bearded Dragon)*			
Anatidae					
28.	24312	*Anas gracilis (Grey Teal)*			
29.	24315	*Anas rhynchotis (Australasian Shoveler)*			
30.	24316	*Anas superciliosa (Pacific Black Duck)*			
31.	24318	*Aythya australis (Hardhead)*			
32.	24319	*Biziura lobata (Musk Duck)*			
33.	24321	*Chenonetta jubata (Australian Wood Duck, Wood Duck)*			
34.	24322	*Cygnus atratus (Black Swan)*			
35.	24326	*Malacorhynchus membranaceus (Pink-eared Duck)*			
36.	24329	*Stictonetta naevosa (Freckled Duck)*			
37.	24331	*Tadorna tadornoides (Australian Shelduck, Mountain Duck)*			
Araneidae					
38.		*Argiope protensa*			
39.		*Backobourkia collina*			
40.		*Backobourkia heroine*			
41.		*Cyrtophora parnasia*			
Ardeidae					
42.	24341	*Ardea pacifica (White-necked Heron)*			
43.		*Egretta novaehollandiae*			
Artamidae					
44.	25566	*Artamus cinereus (Black-faced Woodswallow)*			
45.	24356	*Artamus personatus (Masked Woodswallow)*			
Baetidae					
46.		*Cloeon sp.*			
Barychelidae					
47.		*Mandjelia humphreysi*			
48.		*Synothele goongarrie*			Y
Bovidae					

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
49.	24253	*Capra hircus (Goat)*	Y		
Buprestidae					
50.		*Chalcophorotaenia martinii*			
51.		*Chalcophorotaenia sphinx*			
52.		*Temognatha wimmerae*			
Burramyidae					
53.	24086	*Cercartetus concinnus (Western Pygmy-possum, Mundarda)*			
Cacatuidae					
54.		*Eolophus roseicapillus*			
Campephagidae					
55.		*Coracina (Coracina) novaehollandiae*			
56.	24361	*Coracina maxima (Ground Cuckoo-shrike)*			
57.	25568	*Coracina novaehollandiae (Black-faced Cuckoo-shrike)*			
58.	24362	*Coracina novaehollandiae subsp. novaehollandiae (Black-faced Cuckoo-shrike)*			
Canidae					
59.	24040	*Vulpes vulpes (Red Fox)*	Y		
Caprimulgidae					
60.		*Eurostopodus (Eurostopodus) argus*			
61.	24368	*Eurostopodus argus (Spotted Nightjar)*			
Carabidae					
62.		*Neocarenum spenceri*			
Carphodactylidae					
63.	24966	*Nephrurus laevissimus*			
64.	24971	*Nephrurus vertebralis*			
Casuariidae					
65.	24470	*Dromaius novaehollandiae (Emu)*			
Centropagidae					
66.		*Boeckella triarticulata*			
Ceratopogonidae					
67.		*Culicoides sp.*			
68.		*Monohelea sp. 1 (SAP)*			
69.		*Nilobezzia sp. 1 (SAP)*			
Charadriidae					
70.		*Elseyornis melanops*			
Chironomidae					
71.		*Ablabesmyia notabilis*			
72.		*Chironomus tepperi*			
73.		*Cryptochironomus griseidorsum*			
74.		*Dicrotendipes 'CA1' Pilbara type 1 (was lindae) (PSW)*			
75.		*Parachironomus 'K2' (PSW)*			
76.		*Polypedilum nubifer*			
77.		*Procladius DEC sp. P1 (formerly P.paludicola P1 no U-claws)*			
78.		*Procladius paludicola*			
79.		*Tanytarsus fuscithorax/semibarbitarsus*			
80.		*Tanytarsus sp. C (bispinosus) (SAP)*			
Cicadidae					
81.		*Froggattoides pallida*			
82.		*Gudanga aurea*			Y
83.		*Gudanga kalgoorliensis*			Y
Cinclosomatidae					
84.	30956	*Cinclosoma castanotus (Chestnut Quail-thrush)*			
Climacteridae					
85.	25581	*Climacteris affinis (White-browed Treecreeper)*			
Columbidae					
86.	24407	*Ocyphaps lophotes (Crested Pigeon)*			
87.	24409	*Phaps chalcoptera (Common Bronzewing)*			
Corduliidae					
88.		*Hemicordulia tau*			
Corinnidae					
89.		*Poecilipta smaragdinea*			
90.		*Supunna picta*			

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
Corixidae					
91.		*Agraptocorixa parvipunctata*			
92.		*Micronecta gracilis*			
93.		*Micronecta robusta*			
Corvidae					
94.	24416	*Corvus bennetti (Little Crow)*			
95.	25592	*Corvus coronoides (Australian Raven)*			
96.	25593	*Corvus orru (Torresian Crow)*			
97.		*Corvus sp.*			
Cracticidae					
98.	24420	*Cracticus nigrogularis (Pied Butcherbird)*			
99.	25595	*Cracticus tibicen (Australian Magpie)*			
100.	25596	*Cracticus torquatus (Grey Butcherbird)*			
101.	24424	*Cracticus torquatus subsp. torquatus (Grey Butcherbird)*			
102.	25597	*Strepera versicolor (Grey Currawong)*			
Cuculidae					
103.	42307	*Cacomantis pallidus (Pallid Cuckoo)*			
104.	24432	*Chrysococcyx lucidus subsp. plagosus (Shining Bronze Cuckoo)*			
105.	24434	*Chrysococcyx osculans (Black-eared Cuckoo)*			
Curculionidae					
106.		*Cubicorhynchus aureomaculatus*			
107.		*Talaurinus maculipennis*			
108.		*Talaurinus sp.*			
Cyprididae					
109.		*Cyprinotus cingalensis*			
110.		*Repandocypris austinensis*			Y
Cyzicidae					
111.		*Caenestheria sp.*			
112.		*Caenestheriella packardi*			
Dasyuridae					
113.	24087	*Antechinomys laniger (Kultarr)*			
114.	24092	*Dasyurus geoffroii (Chuditch, Western Quoll)*		T	
115.	24094	*Ningaui ridei (Wongai Ningaui)*			
116.	24096	*Ningaui yvonneae (Southern Ningaui)*			
117.	24106	*Pseudantechinus woolleyae (Woolley's Pseudantechinus)*			
118.	24108	*Sminthopsis crassicaudata (Fat-tailed Dunnart)*			
119.	24109	*Sminthopsis dolichura (Little long-tailed Dunnart)*			
120.	24111	*Sminthopsis gilberti (Gilbert's Dunnart)*			
121.	24114	*Sminthopsis hirtipes (Hairy-footed Dunnart)*			
122.	24117	*Sminthopsis ooldea (Ooldea Dunnart)*			
123.		*Sminthopsis sp.*			
Dermestidae					
124.		*Dermestes (Dermestes) ater*			
125.		*Dermestes (Dermestinus) frischii*			
126.		*Dermestes (Dermestinus) maculatus*			
Desidae					
127.		*Phryganoporus candidus*			
128.		*Phryganoporus nigrinus*			
Dicaeidae					
129.	25607	*Dicaeum hirundinaceum (Mistletoebird)*			
130.	24441	*Dicaeum hirundinaceum subsp. hirundinaceum (Mistletoebird)*			
Dicruridae					
131.	24443	*Grallina cyanoleuca (Magpie-lark)*			
132.		*Rhipidura (Rhipidura) albiscapa subsp. albicauda*			
133.		*Rhipidura albicauda*			
134.	24452	*Rhipidura fuliginosa subsp. preissi (Grey Fantail)*			
135.	25614	*Rhipidura leucophrys (Willie Wagtail)*			
Diplodactylidae					
136.	24926	*Diplodactylus conspicillatus (Fat-tailed Gecko)*			
137.	25469	*Diplodactylus granariensis*			
138.	24929	*Diplodactylus granariensis subsp. granariensis*			
139.	24940	*Diplodactylus pulcher*			
140.	30935	*Lucasium maini*			
141.	24982	*Rhynchoedura ornata (Western Beaked Gecko)*			

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
142.	24923	*Strophurus assimilis (Goldfields Spiny-tailed Gecko)*			
143.	24927	*Strophurus elderi*			
144.	24946	*Strophurus strophurus*			
145.	24949	*Strophurus wellingtonae*			
Dytiscidae					
146.		*Allodessus bistrigatus*			
147.		*Antiporus sp.*			
148.		*Eretes australis*			
149.		*Hyphydrus elegans*			
150.		*Megaporus howitti*			
Elapidae					
151.	42373	*Brachyurophis fasciolatus (Narrow-banded Shovel-nosed Snake)*			
152.	42381	*Brachyurophis semifasciatus (Southern Shovel-nosed Snake)*			
153.	25468	*Demansia psammophis (Yellow-faced Whipsnake)*			
154.	25247	*Demansia psammophis subsp. psammophis (Yellow-faced Whipsnake)*			
155.	25254	*Parasuta monachus*			
156.	25261	*Pseudechis australis (Mulga Snake)*			
157.	42416	*Pseudonaja mengdeni (Western Brown Snake)*			
158.	25263	*Pseudonaja modesta (Ringed Brown Snake)*			
159.	25266	*Simoselaps bertholdi (Jan's Banded Snake)*			
160.		*Simoselaps semifasciata*			Y
161.	25269	*Suta fasciata (Rosen's Snake)*			
162.		*Suta monachus*			
Estrilidae					
163.	30870	*Taeniopygia guttata (Zebra Finch)*			
Falconidae					
164.	25621	*Falco berigora (Brown Falcon)*			
165.	25622	*Falco cenchroides (Australian Kestrel)*			
Formicidae					
166.		*Camponotus aurocinctus*			
167.		*Epopostruma lattini*			
168.		*Iridomyrmex hartmeyeri*			
169.		*Iridomyrmex purpureus*			
170.		*Iridomyrmex sp.*			
171.		*Iridomyrmex viridiaeneus*			
172.		*Monomorium whitei*			
173.		*Myrmecia desertorum*			
Gekkonidae					
174.	24957	*Gehyra purpurascens*			
175.	24959	*Gehyra variegata*			
176.	24961	*Heteronotia binoei (Bynoe's Gecko)*			
177.	24983	*Underwoodisaurus milii (Barking Gecko)*			
Gnaphosidae					
178.		*Homoeothele micans*			
Halcyonidae					
179.		*Todiramphus (Cyanalcyon) pyrrhopygius*			
Haliplidae					
180.		*Haliplus sp.*			
Hirundinidae					
181.		*Cheramoeca leucosterna*			
182.	24488	*Cheramoeca leucosternus (White-backed Swallow)*			
183.	24491	*Hirundo neoxena (Welcome Swallow)*			
Histeridae					
184.		*Saprinus (Saprinus) pseudocyaneus*			
Hydrophilidae					
185.		*Berosus (Enoplurus) macumbensis*			
186.		*Berosus sp.*			
187.		*Enochrus elongatulus*			
Idiopidae					
188.		*Anidiops villosus*			
Lamponidae					
189.		*Asadipus banjiwarn*			
190.		*Asadipus phaleratus*			

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
191.		*Asadipus yundamindra*			
192.		*Lampona quinqueplagiata*			
193.		*Lamponina scutata*			
Leporidae					
194.	24085	*Oryctolagus cuniculus (Rabbit)*	Y		
Leptoceridae					
195.		*Oecetis sp.*			
Lestidae					
196.		*Austrolestes analis*			
197.		*Austrolestes annulosus*			
198.		*Austrolestes io*			
Libellulidae					
199.		*Diplacodes bipunctata*			
200.		*Orthetrum caledonicum*			
Limnodynastidae					
201.	25425	*Neobatrachus kunapalari (Kunapalari Frog)*			
202.		*Neobatrachus sp.*			
203.	25427	*Neobatrachus sutor (Shoemaker Frog)*			
204.	25428	*Neobatrachus wilsmorei (Plonking Frog)*			
Lycaenidae					
205.		*Ogyris amaryllis subsp. meridionalis*			
Lycosidae					
206.		*Dingosa humphreysi*			
207.		*Dingosa simsoni*			
208.		*Hoggicosa alfi*			
209.		*Hoggicosa bicolor*			
210.		*Hoggicosa forresti*			
211.		*Hoggicosa storri*			
212.		*Hoggicosa wolodymyri*			
213.		*Hogna crispipes*			
214.		*Hogna pexa*			
215.		*Hogna salifodina*			
216.		*Lycosa australicola*			
217.		*Lycosa godeffroyi*			
218.		*Lycosa sp.*			
219.		*Tasmanicosa leuckartii*			
Lyncaeidae					
220.		*Lynceus sp.*			
Macropodidae					
221.	24135	*Macropus robustus subsp. erubescens (Euro, Biggada)*			
222.		*Macropus robustus subsp. robustus*			
Maluridae					
223.	25652	*Malurus leucopterus (White-winged Fairy-wren)*			
224.	25654	*Malurus splendens (Splendid Fairy-wren)*			
Megapodiidae					
225.	24557	*Leipoa ocellata (Malleefowl)*		T	
Meliphagidae					
226.	24559	*Acanthagenys rufogularis (Spiny-cheeked Honeyeater)*			
227.	24561	*Anthochaera carunculata (Red Wattlebird)*			
228.		*Certhionyx (Certhionyx) variegatus*			
229.	24564	*Certhionyx variegatus (Pied Honeyeater)*			
230.		*Epthianura (Parepthianura) tricolor*			
231.	24567	*Epthianura albifrons (White-fronted Chat)*			
232.	24570	*Epthianura tricolor (Crimson Chat)*			
233.	42314	*Gavicalis virescens (Singing Honeyeater)*			
234.	25659	*Lichenostomus leucotis (White-eared Honeyeater)*			
235.	25661	*Lichmera indistincta (Brown Honeyeater)*			
236.	24582	*Lichmera indistincta subsp. indistincta (Brown Honeyeater)*			
237.	24583	*Manorina flavigula (Yellow-throated Miner)*			
238.	25663	*Melithreptus brevirostris (Brown-headed Honeyeater)*			
239.	24586	*Melithreptus brevirostris subsp. leucogenys (Brown-headed Honeyeater)*			
240.		*Phylidonyris (Meliornis) novaehollandiae*			
241.		*Phylidonyris (Meliornis) novaehollandiae subsp. longirostris*			
242.	42344	*Purnella albifrons (White-fronted Honeyeater)*			

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
Meropidae					
243.	24598	*Merops ornatus (Rainbow Bee-eater)*		IA	
Miridae					
244.		*Rayieria sp.*			
Molossidae					
245.	24184	*Mormopterus planiceps (Southern Freetail-bat)*			
246.	24185	*Tadarida australis (White-striped Freetail-bat)*			
Motacillidae					
247.		*Anthus (Anthus) novaeseelandiae*			
Muridae					
248.	24223	*Mus musculus (House Mouse)*	Y		
249.	24224	*Notomys alexis (Spinifex Hopping-mouse)*			
250.	24229	*Notomys mitchellii (Mitchell's Hopping-mouse)*			
251.		*Notomys sp.*			
252.	24230	*Pseudomys albocinereus (Ash-grey Mouse)*			
253.	24232	*Pseudomys bolami (Bolam's Mouse)*			
254.	24237	*Pseudomys hermannsburgensis (Sandy Inland Mouse)*			
Myobatrachidae					
255.	25434	*Pseudophryne occidentalis (Western Toadlet)*			
Myrmeleontidae					
256.		*Glenoleon brevigonarcus*			
257.		*Glenoleon sp.*			
Nemesiidae					
258.		*Aname tepperi*			
259.		*Kwonkan goongarriensis*			
Neosittidae					
260.	25673	*Daphoenositta chrysoptera (Varied Sittella)*			
261.	24605	*Daphoenositta chrysoptera subsp. leucoptera (Varied Sittella, White-winged Sitella)*			
Nephilidae					
262.		*Nephila edulis*			
Nicodamidae					
263.		*Nicodamus mainae*			
Noctuidae					
264.		*Australothis rubrescens*			
Notonectidae					
265.		*Anisops gratus*			
266.		*Anisops hyperion*			
267.		*Anisops thienemanni*			
Oxyopidae					
268.		*Oxyopes amoenus*			
269.		*Oxyopes dingo*			
Pachycephalidae					
270.	25675	*Colluricincla harmonica (Grey Shrike-thrush)*			
271.	24618	*Oreoica gutturalis (Crested Bellbird)*			
272.	24623	*Pachycephala pectoralis subsp. fuliginosa (Golden Whistler)*			
273.	25680	*Pachycephala rufiventris (Rufous Whistler)*			
274.	24624	*Pachycephala rufiventris subsp. rufiventris (Rufous Whistler)*			
Pardalotidae					
275.	25682	*Pardalotus striatus (Striated Pardalote)*			
Petroicidae					
276.	24650	*Drymodes brunneopygia (Southern Scrub-robin)*			
277.	25693	*Microeca fascinans (Jacky Winter)*			
278.	24659	*Petroica goodenovii (Red-capped Robin)*			
Physalopteridae					
279.		*Abbreviata antarctica*			Y
280.		*Abbreviata hastaspicula*			Y
281.		*Abbreviata tumidocapitis*			Y
Podargidae					
282.	25703	*Podargus strigoides (Tawny Frogmouth)*			
Podicipedidae					

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
283.	24681	*Poliocephalus poliocephalus (Hoary-headed Grebe)*			
Pomatostomidae					
284.	24683	*Pomatostomus superciliosus (White-browed Babbler)*			
Prodidomidae					
285.		*Molycria vokes*			
286.		*Nomindra leeuweni*			
Psittacidae					
287.		*Barnardius zonarius*			
288.	24725	*Cacatua roseicapilla subsp. assimilis (Galah)*			
289.	24734	*Calyptorhynchus latirostris (Carnaby's Cockatoo (short-billed black-cockatoo), Carnaby's Cockatoo)*		T	
290.	24735	*Glossopsitta porphyrocephala (Purple-crowned Lorikeet)*			
291.	24742	*Nymphicus hollandicus (Cockatiel)*			
292.	25721	*Platycercus zonarius (Australian Ringneck, Ring-necked Parrot)*			
293.	24750	*Platycercus zonarius subsp. semitorquatus (Twenty-eight Parrot)*			
294.	24751	*Platycercus zonarius subsp. zonarius (Port Lincoln Parrot)*			
295.	25722	*Polytelis anthopeplus (Regent Parrot)*			
Psyllidae					
296.		*Kenmooreana eudesmiae*			Y
Pygopodidae					
297.	24995	*Delma australis*			
298.	24997	*Delma butleri*			
299.	25005	*Lialis burtonis*			
300.	25009	*Pygopus nigriceps*			
Rallidae					
301.	25727	*Fulica atra (Eurasian Coot)*			
302.		*Tribonyx ventralis*			
Recurvirostridae					
303.	24774	*Cladorhynchus leucocephalus (Banded Stilt)*			
304.	25734	*Himantopus himantopus (Black-winged Stilt)*			
305.	24776	*Recurvirostra novaehollandiae (Red-necked Avocet)*			
Rhinotermitidae					
306.		*Coptotermes acinaciformis*			
307.		*Heterotermes venustus*			
308.		*Schedorhinotermes reticulatus*			
Salticidae					
309.		*Grayenulla australensis*			
310.		*Sandalodes superbus*			
Scarabaeidae					
311.		*Onthophagus pentacanthus*			Y
Scincidae					
312.	30886	*Cryptoblepharus australis*			
313.	30893	*Cryptoblepharus buchananii*			
314.	25020	*Cryptoblepharus plagiocephalus*			
315.		*Cryptoblepharus sp.*			
316.	25026	*Ctenotus atlas*			
317.	25461	*Ctenotus brooksi*			
318.	25052	*Ctenotus leonhardii*			
319.	25064	*Ctenotus pantherinus subsp. ocellifer (Leopard Ctenotus)*			
320.	25074	*Ctenotus schomburgkii*			
321.	25465	*Ctenotus uber (Spotted Ctenotus)*			
322.	25080	*Ctenotus uber subsp. uber (Spotted Ctenotus)*			
323.	25089	*Cyclodomorphus melanops subsp. elongatus (Slender Blue-tongue)*			
324.	25092	*Egernia depressa (Southern Pygmy Spiny-tailed Skink)*			
325.	25094	*Egernia formosa*			
326.	25109	*Eremiascincus richardsonii (Broad-banded Sand Swimmer)*			
327.	25115	*Hemiergis initialis subsp. initialis*			
328.		*Lerista kingi*			
329.	25482	*Lerista macropisthopus*			
330.	25149	*Lerista macropisthopus subsp. macropisthopus*			
331.	25155	*Lerista muelleri*			
332.	25162	*Lerista picturata*			
333.	42411	*Lerista timida*			
334.	41411	*Liopholis inornata (Desert Skink)*			
335.	41417	*Liopholis striata (Night Skink)*			

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
336.	25184	*Menetia greyii*			
337.	25190	*Morethia butleri*			
338.	25203	*Tiliqua occipitalis (Western Bluetongue)*			
339.	25519	*Tiliqua rugosa*			
340.	25204	*Tiliqua rugosa subsp. aspera*			
Scolopendridae					
341.		*Cormocephalus strigosus*			
342.		*Cormocephalus turneri*			
343.		*Ethmostigmus curtipes*			
344.		*Ethmostigmus rubripes*			
345.		*Scolopendra laeta*			
346.		*Scolopendra morsitans*			
Sparassidae					
347.		*Holconia nigrigularis*			
348.		*Holconia westralia*			
349.		*Isopeda magna*			
350.		*Isopedella cana*			
351.		*Isopedella saundersi*			
352.		*Pediana occidentalis*			
353.		*Pediana tenuis*			
Strigidae					
354.	25748	*Ninox novaeseelandiae (Boobook Owl)*			
Sylviidae					
355.	24833	*Cincloramphus cruralis (Brown Songlark)*			
356.	24834	*Cincloramphus mathewsi (Rufous Songlark)*			
Tenebrionidae					
357.		*Adelium cuprescens*			
Termitidae					
358.		*Ahamitermes hillii*			
359.		*Amitermes calabyi*			
360.		*Amitermes neogermanus*			
361.		*Amitermes parvidens*			
362.		*Amitermes procerus*			
363.		*Apsenterotermes iridipennis*			
364.		*Drepanotermes perniger*			
365.		*Drepanotermes rubriceps*			
366.		*Ephelotermes persimilis*			
367.		*Incolitermes pumilus*			
368.		*Microcerotermes cavus*			
369.		*Microcerotermes newmani*			
370.		*Tumulitermes recalvus*			
371.		*Tumulitermes tumuli*			
Tettigoniidae					
372.		*Oligodectes mallee*			
Thamnocephalidae					
373.	33935	*Branchinella simplex (fairy shrimp)*		P1	
Theridiidae					
374.		*Latrodectus hasseltii*			
Triopsidae					
375.		*Triops australiensis australiensis*			
Trochanteriidae					
376.		*Longrita millewa*			
377.		*Trachyspina goongarrie*			Y
Typhlopidae					
378.		*Ramphotyphlops sp.*			
Urodacidae					
379.		*Urodacus similis*			
Varanidae					
380.	25211	*Varanus caudolineatus*			
381.	25216	*Varanus giganteus (Perentie)*			
382.	25218	*Varanus gouldii (Bungarra or Sand Monitor)*			
383.		*Varanus gouldii subsp. gouldii*			
384.	25526	*Varanus tristis (Racehorse Monitor)*			

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
Vespertilionidae					
385.	24186	*Chalinolobus gouldii (Gould's Wattled Bat)*			
386.	24194	*Nyctophilus geoffroyi (Lesser Long-eared Bat)*			
387.	43367	*Nyctophilus major subsp. tor (Central Long-eared Bat)*		P4	
388.	24199	*Scotorepens balstoni (Inland Broad-nosed Bat)*			
389.	24202	*Vespadelus baverstocki (Inland Forest Bat)*			
390.	24206	*Vespadelus regulus (Southern Forest Bat)*			
Zodariidae					
391.		*Cavasteron crassicalcar*			
392.		*Holasteron humphreysi*			
393.		*Masasteron piankai*			
394.		*Storena sinuosa*			

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

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

Australian Government

Department of the Environment

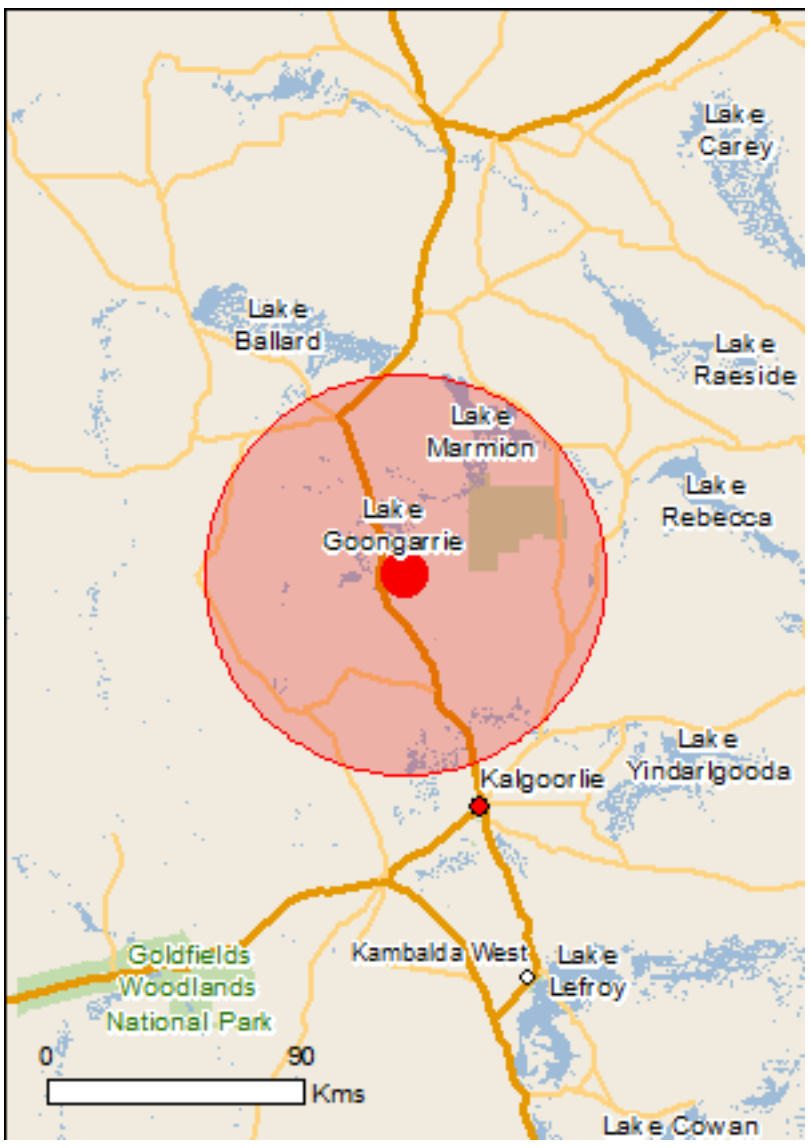
EPBC Act Protected Matters Report

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

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

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

Report created: 26/08/16 13:10:07



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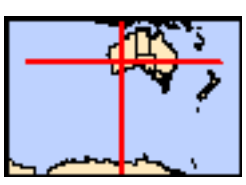
Coordinates

Buffer: 70.0Km



Summary

Matters of National Environmental Significance

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

World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International Importance:	None
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	None
Listed Threatened Species:	7
Listed Migratory Species:	3

Other Matters Protected by the EPBC Act

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

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

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

Commonwealth Land:	1
Commonwealth Heritage Places:	None
Listed Marine Species:	7
Whales and Other Cetaceans:	None
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Commonwealth Reserves Marine:	None

Extra Information

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

State and Territory Reserves:	5
Regional Forest Agreements:	None
Invasive Species:	16
Nationally Important Wetlands:	3
Key Ecological Features (Marine)	None

Details

Matters of National Environmental Significance

Listed Threatened Species		[Resource Information]
Name	Status	Type of Presence
Birds		
Leipoa ocellata Malleefowl [934]	Vulnerable	Species or species habitat known to occur within area
Pezoporus occidentalis Night Parrot [59350]	Endangered	Species or species habitat may occur within area
Polytelis alexandrae Princess Parrot, Alexandra's Parrot [758]	Vulnerable	Species or species habitat may occur within area
Mammals		
Dasyurus geoffroii Chuditch, Western Quoll [330]	Vulnerable	Species or species habitat known to occur within area
Plants		
Eleocharis papillosa Dwarf Desert Spike-rush [2519]	Vulnerable	Species or species habitat known to occur within area
Gastrolobium graniticum Granite Poison [14872]	Endangered	Species or species habitat likely to occur within area
Ricinocarpos brevis [82879]	Endangered	Species or species habitat may occur within area

Listed Migratory Species		[Resource Information]
* Species is listed under a different scientific name on the EPBC Act - Threatened Species list.		
Name	Threatened	Type of Presence
Migratory Marine Birds		
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Migratory Terrestrial Species		
Motacilla cinerea Grey Wagtail [642]		Species or species habitat may occur within area
Migratory Wetlands Species		
Tringa nebularia Common Greenshank, Greenshank [832]		Species or species habitat likely to occur within area

Other Matters Protected by the EPBC Act

Commonwealth Land [Resource Information]

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

Name
Commonwealth Land -

Listed Marine Species [Resource Information]

* Species is listed under a different scientific name on the EPBC Act - Threatened Species list.

Name	Threatened	Type of Presence
Birds		
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Ardea alba Great Egret, White Egret [59541]		Species or species habitat likely to occur within area
Ardea ibis Cattle Egret [59542]		Species or species habitat may occur within area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area
Motacilla cinerea Grey Wagtail [642]		Species or species habitat may occur within area
Thinornis rubricollis Hooded Plover [59510]		Species or species habitat known to occur within area
Tringa nebularia Common Greenshank, Greenshank [832]		Species or species habitat likely to occur within area

Extra Information

State and Territory Reserves [Resource Information]

Name	State
Bullock Holes Timber Reserve	WA
Clear And Muddy Lakes	WA
Credo	WA
Goongarrie	WA
Rowles Lagoon	WA

Invasive Species

[Resource Information]

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

Name	Status	Type of Presence
Birds		
Columba livia Rock Pigeon, Rock Dove, Domestic Pigeon [803]		Species or species habitat likely to occur within area
Streptopelia chinensis Spotted Turtle-Dove [780]		Species or species habitat likely to occur within area
Streptopelia senegalensis Laughing Turtle-dove, Laughing Dove [781]		Species or species habitat likely to occur within area
Mammals		
Camelus dromedarius Dromedary, Camel [7]		Species or species habitat likely to occur within area
Capra hircus Goat [2]		Species or species habitat likely to occur within area
Equus asinus Donkey, Ass [4]		Species or species habitat likely to occur within area
Equus caballus Horse [5]		Species or species habitat likely to occur within area
Felis catus Cat, House Cat, Domestic Cat [19]		Species or species habitat likely to occur within area
Mus musculus House Mouse [120]		Species or species habitat likely to occur within area
Oryctolagus cuniculus Rabbit, European Rabbit [128]		Species or species habitat likely to occur within area
Vulpes vulpes Red Fox, Fox [18]		Species or species habitat likely to occur within area
Plants		
Carrichtera annua Ward's Weed [9511]		Species or species habitat likely to occur within area
Cenchrus ciliaris Buffel-grass, Black Buffel-grass [20213]		Species or species habitat may occur within area
Cylindropuntia spp. Prickly Pears [85131]		Species or species habitat likely to occur within area
Lycium ferocissimum African Boxthorn, Boxthorn [19235]		Species or species habitat likely to occur within area
Reptiles		
Hemidactylus frenatus Asian House Gecko [1708]		Species or species

Name	Status	Type of Presence
		habitat likely to occur within area

Nationally Important Wetlands [Resource Information]

Name	State
Lake Ballard	WA
Lake Marmion	WA
Rowles Lagoon System	WA

Caveat

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

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

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

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

For species where the distributions are well known, maps are digitised from sources such as recovery plans and detailed habitat studies. Where appropriate, core breeding, foraging and roosting areas are indicated under 'type of presence'. For species whose distributions are less well known, point locations are collated from government wildlife authorities, museums, and non-government organisations; bioclimatic distribution models are generated and these validated by experts. In some cases, the distribution maps are based solely on expert knowledge.

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

- migratory and
- marine

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

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

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

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

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

Coordinates

-30.12366 121.23507

Acknowledgements

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

-Office of Environment and Heritage, New South Wales
-Department of Environment and Primary Industries, Victoria
-Department of Primary Industries, Parks, Water and Environment, Tasmania
-Department of Environment, Water and Natural Resources, South Australia
-Parks and Wildlife Commission NT, Northern Territory Government
-Department of Environmental and Heritage Protection, Queensland
-Department of Parks and Wildlife, Western Australia
-Environment and Planning Directorate, ACT
-Birdlife Australia
-Australian Bird and Bat Banding Scheme
-Australian National Wildlife Collection
-Natural history museums of Australia
-Museum Victoria
-Australian Museum
-South Australian Museum
-Queensland Museum
-Online Zoological Collections of Australian Museums
-Queensland Herbarium
-National Herbarium of NSW
-Royal Botanic Gardens and National Herbarium of Victoria
-Tasmanian Herbarium
-State Herbarium of South Australia
-Northern Territory Herbarium
-Western Australian Herbarium
-Australian National Herbarium, Atherton and Canberra
-University of New England
-Ocean Biogeographic Information System
-Australian Government, Department of Defence
Forestry Corporation, NSW
-Geoscience Australia
-CSIRO
-Other groups and individuals

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

Please feel free to provide feedback via the Contact Us page.

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APPENDIX C

Fauna Species List

AMPHIBIAN SPECIES RECORDED IN THE REGION

Key: EPBC = Environmental Protection and Biodiversity Conservation Act 1999, WC = Wildlife Conservation Act 1950, DPaW = Department of Parks and Wildlife Priority Code, A = Listed in Naturemap, B= DPaW Threatened and Priority fauna search, C = EPBC Protected Matters search, D= 2016 Survey, E = 2017 Survey

Note: For Definitions of Conservation Codes see Appendix A.

Scientific Name	Common Name	Conservation Codes							
		EPBC	WC	DPaW	A	B	C	D	E
LIMNODYNASTIDAE									
Neobatrachus kunapalari	Kunapalari From				X				
Neobatrachus sutor	Shoemaker Frog				X				
Neobatrachus wilsmorei	Plonking Frog				X				
MYOBATRACHIDAE									
Pseudophryne guentheri	Western Toadlet				X				

REPTILIAN SPECIES RECORDED IN THE REGION

Key: EPBC = Environmental Protection and Biodiversity Conservation Act 1999, WC = Wildlife Conservation Act 1950, DPaW = Department of Parks and Wildlife Priority Code, A = Listed in Naturemap, B= DPaW Threatened and Priority fauna search, C = EPBC Protected Matters search, D= 2016 Survey, E = 2017 Survey

Note: For Definitions of Conservation Codes see Appendix A.

		Conservation Codes							
Scientific Name	Common Name	EPBC	WC	DPaW	A	B	C	D	E
CARPHODACTYLIDAE									
Nuphurus leavissimus	Smooth Knob-tail				X				
Nuphurus vertebralis	Midline Knob - tail				X				
DIPLODACTYLIDAE									
Diplodactylus conspicillatus	Fat-tailed Gecko				X				
Diplodactylus granariensis	Wheat-belt Stone Gecko				X				
Diplodactylus pulcher	Fine-faced Gecko				X				
Lucasium maini	Mains Ground Gecko				X				
Rhynchoedura ornata	Western Beaked Gecko				X				
Strophurus assimils	Goldfields Spiny-tailed Gecko				X				
Strophurus elderi	Jewelled Gecko				X				
Strophurus Strophurus	Western Spint-tailed Gecko				X				
Strophurus wellingtonae	Western Shield Spint-tailed Gecko				X				
PYGOPODIDAE									
Delma australis					X				
Delma butleri					X				
Lialis burtonis	Burtons Snake Lizard				X				
Pygopus nigriceps					X				
GEKKONIDAE									
Gehyra purpurascens	Purplish Dtella				X				
Gehyra variagata	Tree Dtella				X				
Hemidactylus frenatus	Asian House Gecko						X		
Heteronitia binoei	Bunoes Gecko				X				
Underwoodisaurus milii	Barking Gecko				X				
SCINCIDAE									
Cryptoblepharus australis					X				
Cryptoblepharus buchananii	Buchanans Snake-eyed Skink				X			X	

Scientific Name	Common Name	Conservation Codes							
		EPBC	WC	DPaW	A	B	C	D	E
Cryptoblepharus plagiocephalus	Perons Snake-eyed Skink				X				
Ctenotus atlas					X				
Ctenotus brooksi					X				
Ctenotus leonhardii					X				
Ctenotus pantherinus					X				
Ctenotus schomburgkii	Barred Wedgesnout Ctenotus				X				
Ctenotus uber	Spotted Ctenotus				X				
Cyclodomorphus melanops	Slender Blue-tongue				X				
Egernia depressa	Southern Pygmy Spiny-tailed Skink				X				
Egernia formosa					X				
Eremiascincus richardsonii	Broad-banded Sand Swimmer				X				
Lerista kingi					X				
Lerista macropisthopus					X				
Lerista muelleri					X				
Lerista picturata					X				
Lerista timida					X				
Liopholis inornata	Desert Skink				X				
Liopolis striata	Night Skink				X				
Menetia greyii	Common Dwarf Skink				X				
Morethia butleri					X				
Tiliqua occipitalis	Western Bluetongue				X				
Tiliqua rugosa	Shingleback				X				
AGAMIDAE									
Ctenophorus sp.	*Ctenophorus sp.*							X	
Ctenophorus fordi	Mallee Sand Dragon				X				
Ctenophorus cristatus	Bicycle Dragon				X				
Ctenophorus reticulatus	Western Netted Dragon				X				X
Ctenophorus salinarum	Salt Pan Dragon				X				
Ctenophorus scutulatus	Lozenge-marked Dragon				X				X
Dipirophora amphiboluroides	Mulga Dragon				X				
Moloch horridus	Thorny Devil				X				
Pogona minor	Dwarf Bearded Dragon				X				
VARANIDAE									
Varanus caudolineatus					X				
Varanus giganteus	Perentie				X				
Varanus gouldii	Sand Monitor				X				
Varanus tristis	Racehorse Monitor				X				X

Scientific Name	Common Name	Conservation Codes							
		EPBC	WC	DPaW	A	B	C	D	E
TYPHLOPIDAE									
Ramphotyphlps sp.	Blind Snake				X				
ELAPIDAE									
Aspidites ramsayi	Woma (southwest subpop.)			P1		X			
Brachyurophis fasciolatus	Narrow-banded Shovel-nosed Snake				X				
Brachyurophis semifasciatus	Southern Shovel-nosed Snake				X				
Demansia psammophis reticulata	Yellow-faced Whipsnake				X				
Parasuta monachus	Monk Snake				X				
Pseudechis australis	Mulga Snake				X				
Pseudonaja mengdeni	Western Brown Snake				X				
Pseudonaja modesta	Ringed Brown Snake				X				
Simoselaps bertholdi	Jan's Banded Snake				X				
Simoselaps semifasciata					X				
Suta fasciata	Rosens Snake				X				
Suta monachus					X				

AVIAN SPECIES RECORDED IN THE REGION

Key: EPBC = Environmental Protection and Biodiversity Conservation Act 1999, WC = Wildlife Conservation Act 1950, DPaW = Department of Parks and Wildlife Priority Code, A = Listed in Naturemap, B= DPaW Threatened and Priority fauna search, C= EPBC Protected Matters search, D= 2016 Survey, E = 2017 Survey

Note: For Definitions of Conservation Codes see Appendix A.

Scientific Name	Common Name	Conservation Codes							
		EPBC	WC	DPaW	A	B	C	D	E
CASUARIIDAE									
Dromaius novaehollandia	Emu				X			X	
MEGAPODIIDAE									
Leipoa ocellata	Malleefowl	Vu	S1		X	X	X		
ANATIDAE									
Anas gracillis	Grey Teal				X				
Anas rhynchotis	Australian Shoveler				X				
Anas superciliosa	Pacific Black Duck				X			X	
Aythya australis	Hardhead				X				
Biziura lobata	Musk Duck				X				
Chenonetta jubata	Australian Wood Duck				X			X	
Cygnus atratus	Black Swan				X				
Malacorhynchus membranaceus	Pink-eared Duck				X				
Oxyura australis	Blue-billed Duck			P4		X			
Stictonetta naevosa	Freckled Duck				X				
Tadorna tadornoides	Australian Shelduck				X				
PODICIPEDIDAE									
Poliocephalus poliocephalus	Hoary-headed Greb				X				
ARDEIDAE									
Ardea ibis	Cattle Egret	Mi					X		
Ardea modesta	Great Egret	Mi					X		
Ardea novaehollandiae	White-faced Heron				X				
Ardea pacifica	White-necked Heron				X				
RECURVIROSTRIDAE									
Cladorhynchus leucocephalus	Banded Stilt				X				
Himantopus himantopus	Black-winged Stilt	Ma			X				
Recurvirostra novaehollandiae	Red-necked Avocet	Ma			X				
CHARADRIIDAE									

Scientific Name	Common Name	EPBC	WC	DPaW	A	B	C	D	E
Elseyornis melanops	Black-fronted Dotterel				X				
Thinornis rubricollis	Hooded Plover	Ma				X	X		
SCOLOPACIDAE									
Calidris acuminata	Sharp-tailed Sandpiper	MiMa				X			
Calidris ferruginea	Curlew Sandpiper	MiMa				X			
Calidris ruficollis	Red-necked Stint	MiMa	S3			X			
Tringa nebularia	Common Greenshank	MiMa	S3			X	X		
COLUMBIDAE									
Columba livia	Domestic Pigeon						X		
Ocyphaps lophotes	Crested Pigeon				X			X	
Phaps chalcoptera	Common Bronzewing				X			X	
Streptopelia chinensis	Spotted Turtle-Dove						X		
Streptopelia senegalensis senegalensis	Laughing Dove						X		
PODARGIDAE									
Podargus strigoides	Tawny Frogmouth				X				
EUROSTOPODIDAE									
Eurostopodus argus	Spotted Nightjar				X				
AEGOTHELIDAE									
Aegotheles cristatus	Australian Owlet-nightjar				X				
APODIDAE									
Apus pacificus	Fork-tailed Swift	MiMa				X	X		
THRESKIORNITHIDAE									
Plegadis falcinellus	Glossy Ibis	Al				X			
ACCIPITRIDAE									
Accipiter cirrocephalus cirrocephalus	Collared Sparrowhawk				X				
Accipiter fasciatus didimus	Brown Goshawk				X				
Aquila audax	Wedge-tailed Eagle				X			X	
Circus assimilis	Spotted Harrier				X				
Elanus axillaris	Black Souldered Kite				X				
Haliastur sphenurus	Whistling Kite				X				
FALCONIDAE									
Falco berigora	Brown Falcon				X			X	
Falco cenchroides	Australian Kestrel				X				
RALLIDAE									
Fulica atra	Eurasian Coot				X				
Tribonyx ventralis	Black-tailed Native-hen				X				
PSITTACIDAE									
Barnardius zonarius	Australian Ringneck				X			X	X
Calyptorhynchus latirostris	Carnaby's Black Cockatoo	En	S1		X	X			
Eolophus roseicapilla	Galah				X			X	

Scientific Name	Common Name	EPBC	WC	DPaW	A	B	C	D	E
Glossopsitta porphyrocephala	Purple-crowned Lorikeet				X				
Nymphicus hollandicus	Cockatiel				X				
Polytelis alexandre	Princess Parrot			P4			X		
Polytelis anthopeplus	Regent parrot				X				
Psephotus varius	Mulga Parrot							X	
Pezoporus occidentalis	Night Parrot	En	S1				X		
CUCULIDAE									
Cacomantis pallidus	Pallid Cuckoo				X				
Chrysococcyx OSCULANS	Black-eared Cuckoo				X			X	
Chrysococcyx lucidus plagosus	Shining Bronze Cockoo				X				
HALCYONIDAE									
Todiramphus pyrrhopygius	Red-backed Kingfisher				X				
MEROPIDAE									
Merops ornatus	Rainbow Bee-eater	MiMa			X	X	X		X
CLIMACTERIDAE									
Climacteris affinis	White-browed Treecreeper				X				
Climacteris rufa	Rufous Treecreeper							X	
MALURIDAE									
Malurus leucopterus	White-winged Fairy-wren				X				
Malurus splendens	Splendid Fairy-wren				X			X	
ACANTHIZIDAE									
Acanthiza apicalis	Inland Thornbill				X			X	
Acanthiza chrysorrhoa	Yellow-rumped Thornbill				X				
Acanthiza robustirostris	Slaty-backed Thornbill				X				
Acanthiza uropygialis	Chestnut-rumped Thornbill				X				
Aphelocephala leucopsis castaneiventris	Southern Whiteface				X				
Gerygone fusca	Western Gerygone				X				
Pyrrholaemus brunneus	Redthroat				X				
Sericrornis brevirostris	Weebill				X			X	
PARDALOTIDAE									
Pardalotus striatus	Striated Pardalote				X			X	
MELIPHAGIDAE									
Acanthagenys rufogularis	Spiny-cheeked Honeyeater				X				
Anthochaera carunculata	Red Wattlebird				X			X	
Certhionx variegatus	Pied Honeyeater				X				
Epthianura albifrons	White-fronted Chat				X				
Epthianura tricolour	Crimson Chat				X				
Gavicalis virescens	Singing Honeyeater				X				
Lichmera indistincta	Brown Honeyeater				X			X	
Lichenostomus leucotis	White-eared Honeyeater				X				

Scientific Name	Common Name	EPBC	WC	DPaW	A	B	C	D	E
Manorina flavigula	Yellow-throated Miner				X				X
Melithreptus brevirostris	Brown-headed Honeyeater				X				
Phylidonyris novaehollandiae	New Holland Honeyeater				X				
Purnella albifrons	White-fronted Honeyeater				X				
POMATOSTOMIDAE									
Pomatostomus supercilious	White-browed Babbler				X			X	
CINCLOSOMATIDAE									
Cinclosoma castanotum	Chestnut Quail-thrush				X				
NEOSITTIDAE									
Daphoenositta chyrstoptera	Varied Sittella				X				
CAMPEPHAGIDAE									
Coracina maxima	Ground Cuckoo-shrike				X				
Coracina novaehollandiae	Black-faced Cuckoo-shrike				X			X	
PACHYCEPHALIDAE									
Colluricincla harmonica	Grey Shrike -thrush				X				
Oreoica gutturalis	Crested Bellbird				X			X	X
Pachycephala pectoralis	Golden Whistler				X				
Pachycephala rufiventris	Rufous Whistler				X			X	
ARTAMIDAE									
Artamus personatus	Masked Woodswallow				X			X	
DICRURIDAE									
Grallina cyanoleuca	Magpie-lark				X				
Rhipidura albiscapa	Grey Fantail				X			X	
Rhipidura leucophrys	Willie Wagtail				X			X	
CRACTICIDAE									
Cracticus nigrogularis	Pied Butcherbird				X				
Cracticus tibicen	Australian Magpie				X			X	
Cracticus torquatus	Grey Butcherbird				X			X	
Strepera versicolour	Grey Curranwong				X			X	
CORVIDAE									
Corvus bennetti	Little Crow				X				
Corvus coronoides	Australian Raven				X				
Corvus orru	Toresian Crow				X			X	
PETROICIDAE									
Drymodes brunneopygia	Southern Scrub-robin				X				
Microeca fascinans	Jacky Winter				X				
Petroica goodenovii	Red-capped Robin				X				
DICAEIDAE									
Dicaeum hirundinaceum	Mistletoebird				X				
HIRUNDINIDAE									

Scientific Name	Common Name	EPBC	WC	DPaW	A	B	C	D	E
Cheramoeca leucosterna	White-backed Swallow				X				
Hirundo neoxena	Welcome Swallow				X			X	
Hirundo nigricans	Tree Martin							X	
ESTRILIDIDAE									
Taeniopygia guttata	Zebra Finch				X			X	
MOTACILLIDAE									
Anthus novaeseelandiae	Australian Pipit				X				
Motacilla cinerea	Grey Wagtail	MiMa					X		

MAMMALIAN SPECIES RECORDED IN THE REGION

Key: EPBC = Environmental Protection and Biodiversity Conservation Act 1999, WC = Wildlife Conservation Act 1950, DPaW = Department of Parks and Wildlife Priority Code, A = Listed in Naturemap, B= DPaW Threatened and Priority fauna search, C = EPBC Protected Matters search, D= 2016 Survey, E = 2017 Survey

Note: For Definitions of Conservation Codes see Appendix A.

Scientific Name	Common Name	Conservation Codes							
		EPBC	WC	DPaW	A	B	C	D	E
DASYURIDAE									
Antechinomys laniger	Kultar				X				
Dasyurus geoffroii	Western Quoll	Vu	S3		X	X	X		
Ningaui ridei	Wongai Ningaui				X				
Ningaui yvonneae	Southern Ningaui				X				
Pseudantechinus woolleyae	Woolleys Pseudantechinus				X				
Sminthopsis crassicaudata	Fat-tailed Dunnart				X				
Sminthopsis dolichura	Little long-tailed Dunnart				X				
Sminthopsis gilberti	Gilberts Dunnart				X				
SminthopsiS hirtipes	Hairy-footed Dunnart				X				
Sminthopsis ooldea	Ooldea Dunnart				X				
THYLACOMYIDAE									
Macrotis lagotis	Bilby	Vu	S3			X			
BURRAMYDAE									
Cercartetus concinnus	Western Pygmy-possum				X				
MACROPODIDAE									
Macropus fufus	Red Kangaroo							X	
Macropus fuliginosus	Western Grey Kangaroo								X
Macropus robustus	Euro				X				
MOLOSSIDAE									
Mormopterus planiceps	Southern Freetail Bat				X				
Tadarida australis	White-striped Freetail Bat				X				
VESPERTILIONIDAE									
Chalinolobus gouldii	Goulds Wattled Bat				X				
Nyctophilus geoffroyi	Lesser Long-eared Bat				X				
Nyctophilus majortor	Central Long-eared Bat			P4	X				
Scotorepens balstoni	Inland Broad-nosed Bat				X				

Scientific Name	Common Name	Conservation Codes							
		EPBC	WC	DPaW	A	B	C	D	E
Vespadelus baverstocki	Inland Forest Bat				X				
Vespadelus regulus	Southern Forest Bat				X				
MURIDAE									
Mus musculus	House Mouse				X		X		
Notomys alexis	Spinnifex Hopping-mouse				X				
Notomys mitchelli	Mitchell's Hopping-mouse				X				
Pseudomys albocinereus	Ash-grey Mouse				X				
Pseudomys bolami	Bolams Mouse				X				
Pseudomys hermannsburgensis	Sandy Inland Mouse				X				
CARNIVORA									
Vulpes vulpes	Red Fox				X		X		
FELIDAE									
Felis catus	Cat						X		
LEPORIDAE									
Oryctolagus cuniculus	European Rabbit				X		X	X	X
EQUIDAE									
Equus asinus	Donkey						X		
Equus caballus	Horse						X		
CAMELIDAE									
Camelus dromedarius	Camel						X		
BOVIDAE									
Bos taurus	Cattle							X	
Capra hircus	Goat				X		X		

APPENDIX D

Habitat Assessments

FAUNA HABITAT ASSESSMENT SHEET - 360 ENVIRONMENTAL

Location: Aphrodite - Kalgoorlie			Site Number: Habitat Assessment 1 (Camera 4)			
Project: Aphrodite Gold Deposit (1673)			Field Photo Numbers: 555-569			
Date: 16/09/16	Easting: 0328387	Aspect	N	NE	SW	NW
Quadrat Size: 50 x 50 m	Northing: 6664756		E	SE	W	N/A

Soil Texture	Sand	clay-loam	loam	cracking clay	clay

VEGETATION

Vegetation Description				Vegetation Species	Average Height (m)	Cover				
	Hummock Grassland	Other: Creekline								
	Acacia Shrubland	Stratum				Scattered Plants	Sparse	Moderate	Thick	
	Riverine Woodland	Overstorey	*Eucalyptus spp.*		10	0 <5% COVER	1 <20% COVER	**2 20-60%**	3 60-100%	
	Other Grassland	Midstorey	*Senna artemisioides* and *Acacia sp.*		1.8	0 <5% COVER	1 <20% COVER	**2 20-60%**	3 60-100%	
	Euc Woodland	Ground Cover	Mixed Herbs		0.5	**0 <5% COVER**	1 <20% COVER	2 20-60%	3 60-100%	

CONDITION

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

DISTURBANCE

	(General)						(Cattle)			
	0 heavy	1 medium	2 mild	**3 none**	other	0 heavy	1 medium	**2 mild**	3 none	

GROUND COVER

Bare Ground	0 <5% COVER	1 <20% COVER	**2 20-60%**	3 60-100%	Hummock Grasses	**0 <5% COVER**	1 <20% COVER	2 20-60%	3 60-100%	
Rock	**0 <5% COVER**	1 <20% COVER	2 20-60%	3 60-100%	Other Grasses	**0 <5% COVER**	1 <20% COVER	2 20-60%	3 60-100%	
Leaf Litter	0 <5% COVER	1 <20% COVER	**2 20-60%**	3 60-100%	Herbs	**0 <5% COVER**	1 <20% COVER	2 20-60%	3 60-100%	
Hollow logs >10cm	**0 <5% COVER**	1 <20% COVER	2 20-60%	3 60-100%	Other	**0 <5% COVER**	1 <20% COVER	2 20-60%	3 60-100%	

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

SPECIES		
Birds	Mammals	Reptiles
Rufous whistler		
Brown Honeyeater		
Black-eared Cockoo		

FAUNA HABITAT ASSESSMENT SHEET - 360 ENVIRONMENTAL

Location: Aphrodite - Kalgoorlie		Site Number: Habitat Assessment 2 (Camera 6)			
Project: Aphrodite Gold Deposit (1673)		Field Photo Numbers: 570-577			
Date: 16/09/16	Easting: 0328369	Aspect	N	NE	SW	NW
Quadrat Size: 50 x 50 m	Northing: 6661608		E	SE	W	N/A

Soil Texture	Sand	clay-loam	loam	cracking clay	clay

VEGETATION

Vegetation Description	Stratum	Vegetation Species	Average Height (m)	Cover: Scattered Plants	Sparse	Moderate	Thick	
Hummock Grassland / Acacia Shrubland								
Riverine Woodland	Overstorey	*Eucalyptus spp.*	7	0 <5% COVER	**1 <20% COVER**	2 20-60%	3 60-100%	
Other Grassland	Midstorey	*Maireana sedifolia*	1	0 <5% COVER	**1 <20% COVER**	2 20-60%	3 60-100%	
Euc Woodland	Ground Cover	Mixed Herbs	< 0.5	**0 <5% COVER**	1 <20% COVER	2 20-60%	3 60-100%	

CONDITION

Scale:	5 Pristine	4 Excellent	**3 Very Good**	2 Good	1 Degraded	0 Completely Degraded

LAST FIRE

0 <1 year	1 1 -3 Yr	2 4-5 Yr	**3 >5 Yr**

DISTURBANCE

	0 heavy	1 medium	**2 mild** (some rubbish & chopped trees)	3 none	other

(General) 0 heavy	1 medium	2 mild	**3 none**

(Cattle) 0 heavy	1 medium	2 mild	**3 none**

GROUND COVER

Bare Ground	0 <5% COVER	1 <20% COVER	**2 20-60%**	3 60-100%	Hummock Grasses	**0 <5% COVER**	1 <20% COVER	2 20-60%	3 60-100%
Rock	**0 <5% COVER**	1 <20% COVER	2 20-60%	3 60-100%	Other Grasses	**0 <5% COVER**	1 <20% COVER	2 20-60%	3 60-100%
Leaf Litter	0 <5% COVER	1 <20% COVER	**2 20-60%**	3 60-100%	Herbs	**0 <5% COVER**	1 <20% COVER	2 20-60%	3 60-100%
Hollow logs >10cm	**0 <5% COVER**	1 <20% COVER	2 20-60%	3 60-100%	Other	**0 <5% COVER**	1 <20% COVER	2 20-60%	3 60-100%

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

SPECIES		
Birds	Mammals	Reptiles
Striated Pardalote		
Red Wattlebird		
Weebill		

FAUNA HABITAT ASSESSMENT SHEET - 360 ENVIRONMENTAL

Location: Aphrodite - Kalgoorlie			Site Number: Habitat Assessment 3 (Camera 2)			
Project: Aphrodite Gold Deposit (1673)			Field Photo Numbers: 578-588			
Date: 16/09/16	Easting: 0329032	Aspect	N	NE	SW	NW
Quadrat Size: 50 x 50 m	Northing: 6661207		E	SE	W	N/A

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

VEGETATION

Vegetation Description

Hummock Grassland / Acacia Shrubland / Riverine Woodland / Other Grassland / Euc Woodland	Stratum	Vegetation Species	Average Height (m)	Cover: Scattered Plants	Sparse	Moderate	Thick	
	Overstorey	*Eucalyptus spp.*	7	0 <5% COVER	**1 <20% COVER**	2 20-60%	3 60-100%	
	Midstorey	*Maireana sedifolia*	1	0 <5% COVER	**1 <20% COVER**	2 20-60%	3 60-100%	
	Ground Cover	/	/	**0 <5% COVER**	1 <20% COVER	2 20-60%	3 60-100%	

CONDITION

LAST FIRE

Scale:	5 Pristine	4 Excellent	3 Very Good	**2 Good**	1 Degraded	0 Completely Degraded	0 <1 year	1 1 -3 Yr	2 4-5 Yr	**3 >5 Yr**

DISTURBANCE

	(General)					(Cattle)			
	0 heavy	**1 medium**	2 mild	3 none	other	0 heavy	1 medium	2 mild	**3 none**	

GROUND COVER

Bare Ground	0 <5% COVER	1 <20% COVER	**2 20-60%**	3 60-100%	Hummock Grasses	**0 <5% COVER**	1 <20% COVER	2 20-60%	3 60-100%	
Rock	**0 <5% COVER**	1 <20% COVER	2 20-60%	3 60-100%	Other Grasses	**0 <5% COVER**	1 <20% COVER	2 20-60%	3 60-100%	
Leaf Litter	0 <5% COVER	1 <20% COVER	**2 20-60%**	3 60-100%	Herbs	**0 <5% COVER**	1 <20% COVER	2 20-60%	3 60-100%	
Hollow logs >10cm	**0 <5% COVER**	1 <20% COVER	2 20-60%	3 60-100%	Other	**0 <5% COVER**	1 <20% COVER	2 20-60%	3 60-100%	

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

SPECIES		
Birds	Mammals	Reptiles
Crested Bellbird		
Weebill		
Grey Fantail		

FAUNA HABITAT ASSESSMENT SHEET - 360 ENVIRONMENTAL

Location: Aphrodite - Kalgoorlie			Site Number: Habitat Assessment 4 (Camera 1)			
Project: Aphrodite Gold Deposit (1673)			Field Photo Numbers: 590-599			
Date: 16/09/16	Easting: 0329640	Aspect	N	NE	SW	NW
Quadrat Size: 50 x 50 m	Northing: 6661155		E	SE	W	N/A

Soil Texture	Sand	clay-loam	sandy-loam	cracking clay	clay

VEGETATION

Vegetation Description

Hummock Grassland	(Next to very minor drainage line)		Vegetation Species	Average Height (m)	Cover			
Acacia Shrubland	Stratum				Scattered Plants	Sparse	Moderate	Thick
Riverine Woodland	Overstorey	*Eucalyptus spp.*		7	0 <5% COVER	**1 <20% COVER**	2 20-60%	3 60-100%
Other Grassland	Midstorey	*Senna artemisioides, Acacia sp. ,Maireana sedifolilia* and *Donaea lobulata*		1	0 <5% COVER	**1 <20% COVER**	2 20-60%	3 60-100%
Euc Woodland	Ground Cover	*Ptilotus sp.* and		0.5	**0 <5% COVER**	1 <20% COVER	2 20-60%	3 60-100%

CONDITION

LAST FIRE

Scale:	5 Pristine	**4 Excellent**	3 Very Good	2 Good	1 Degraded	0 Completely Degraded	0 <1 year	1 1 -3 Yr	2 4-5 Yr	**3 >5 Yr**

DISTURBANCE

	(General)					(Cattle)			
	0 heavy	1 medium	2 mild	**3 none**	other	0 heavy	1 medium	**2 mild**	3 none	

GROUND COVER

Bare Ground	0 <5% COVER	1 <20% COVER	**2 20-60%**	3 60-100%	Hummock Grasses	**0 <5% COVER**	1 <20% COVER	2 20-60%	3 60-100%	
Rock	**0 <5% COVER**	1 <20% COVER	2 20-60%	3 60-100%	Other Grasses	**0 <5% COVER**	1 <20% COVER	2 20-60%	3 60-100%	
Leaf Litter	0 <5% COVER	1 <20% COVER	**2 20-60%**	3 60-100%	Herbs	**0 <5% COVER**	1 <20% COVER	2 20-60%	3 60-100%	
Hollow logs >10cm	**0 <5% COVER**	1 <20% COVER	2 20-60%	3 60-100%	Other	**0 <5% COVER**	1 <20% COVER	2 20-60%	3 60-100%	

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

SPECIES		
Birds	Mammals	Reptiles
Crested Bellbird		
Weebill		
Grey Fantail		

FAUNA HABITAT ASSESSMENT SHEET - 360 ENVIRONMENTAL

Location: Aphrodite - Kalgoorlie			Site Number: Habitat Assessment 5 (Camera 3)		
Project: Aphrodite Gold Deposit (1673)			Field Photo Numbers: 643-650		
Date: 16/09/16	Easting: 0326808	Aspect	N	NE	SW	NW
Quadrat Size: 50 x 50 m	Northing: 6661857		E	SE	W	N/A

Soil Texture	Sand	clay-loam	sandy-loam	cracking clay	clay

VEGETATION

Vegetation Description						Cover			
Hummock Grassland	(Mixed Eucalypt woodland with Casuarina)		Vegetation Species	Average Height (m)					
Acacia Shrubland	Stratum				Scattered Plants	Sparse	Moderate	Thick	
Riverine Woodland	Overstorey	*Casuarina pauper* and *Eucalyptus spp.*		10	0 <5% COVER	1 <20% COVER	2 20-60%	3 60-100%	
Other Grassland	Midstorey	*Senna artemisioides, Acacia sp.*		1	0 <5% COVER	1 <20% COVER	2 20-60%	3 60-100%	
Euc Woodland	Ground Cover	/		/	0 <5% COVER	1 <20% COVER	2 20-60%	3 60-100%	

CONDITION

LAST FIRE

Scale:	5 Pristine	4 Excellent	3 Very Good	2 Good	1 Degraded	0 Completely Degraded	0 <1 year	1 1 -3 Yr	2 4-5 Yr	3 >5 Yr

DISTURBANCE

	0 heavy	1 medium	2 mild (General)	3 none	other	0 heavy (Cattle)	1 medium	2 mild	3 none	

GROUND COVER

Bare Ground	0 <5% COVER	1 <20% COVER	2 20-60%	3 60-100%	Hummock Grasses	0 <5% COVER	1 <20% COVER	2 20-60%	3 60-100%	
Rock	0 <5% COVER	1 <20% COVER	2 20-60%	3 60-100%	Other Grasses	0 <5% COVER	1 <20% COVER	2 20-60%	3 60-100%	
Leaf Litter	0 <5% COVER	1 <20% COVER	2 20-60%	3 60-100%	Herbs	0 <5% COVER	1 <20% COVER	2 20-60%	3 60-100%	
Hollow logs >10cm	0 <5% COVER	1 <20% COVER	2 20-60%	3 60-100%	Other	0 <5% COVER	1 <20% COVER	2 20-60%	3 60-100%	

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

SPECIES		
Birds	Mammals	Reptiles
Currawong		
Red Wattlebird		
Black-eared Cuckoo		
Crested Bellbird		

FAUNA HABITAT ASSESSMENT SHEET - 360 ENVIRONMENTAL

Location: Aphrodite - Kalgoorlie			Site Number: Habitat Assessment 6 (Camera 11)		
Project: Aphrodite Gold Deposit (1673)			Field Photo Numbers:		
Date: 16/09/16	Easting: 0332527	Aspect	N	NE	SW	NW
Quadrat Size: 50 x 50 m	Northing: 6660211		E	SE	W	N/A

Soil Texture	Sand	clay-loam	sandy-loam	cracking clay	clay				

VEGETATION

Vegetation Description										
	Hummock Grassland	(Cas dominated shrubland with v isolated Eucalypts)		Vegetation Species	Average Height (m)	Cover				
	Acacia Shrubland	Stratum				Scattered Plants	Sparse	Moderate	Thick	
	Riverine Woodland	Overstorey	*Eucalyptus spp.*		10	0 <5% COVER	1 <20% COVER	2 20-60%	3 60-100%	
	Other Grassland	Midstorey	*Casuarina pauper*		8	0 <5% COVER	1 <20% COVER	2 20-60%	3 60-100%	
	Shrubland	Ground Cover	*Senna artemisioides* and Chenopods		1.5	0 <5% COVER	1 <20% COVER	2 20-60%	3 60-100%	

CONDITION

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

DISTURBANCE

	(General)					(Cattle)			
	0 heavy	1 medium	2 mild	3 none	other	0 heavy	1 medium	2 mild	3 none	

GROUND COVER

Bare Ground	0 <5% COVER	1 <20% COVER	2 20-60%	3 60-100%	Hummock Grasses	0 <5% COVER	1 <20% COVER	2 20-60%	3 60-100%	
Rock	0 <5% COVER	1 <20% COVER	2 20-60%	3 60-100%	Other Grasses	0 <5% COVER	1 <20% COVER	2 20-60%	3 60-100%	
Leaf Litter	0 <5% COVER	1 <20% COVER	2 20-60%	3 60-100%	Herbs	0 <5% COVER	1 <20% COVER	2 20-60%	3 60-100%	
Hollow logs >10cm	0 <5% COVER	1 <20% COVER	2 20-60%	3 60-100%	Other	0 <5% COVER	1 <20% COVER	2 20-60%	3 60-100%	

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

SPECIES		
Birds	Mammals	Reptiles
Pardalote		
Masked Woodswallow		
Crested Bellbird		

FAUNA HABITAT ASSESSMENT SHEET - 360 ENVIRONMENTAL

Location: Aphrodite - Kalgoorlie			Site Number: Habitat Assessment 7 (Camera 8)		
Project: Aphrodite Gold Deposit (1673)			Field Photo Numbers:		
Date: 16/09/16	Easting: 0332452	Aspect	N	NE	SW	NW
Quadrat Size: 50 x 50 m	Northing: 6656549		E	SE	W	N/A

Soil Texture	Sand	clay-loam	sandy-loam	cracking clay	clay

VEGETATION

Vegetation Description										
	Hummock Grassland	(Scattered Euc woodland with Shrubland)		Vegetation Species	Average Height (m)	Cover				
	Acacia Shrubland	Stratum				Scattered Plants	Sparse	Moderate	Thick	
	Riverine Woodland	Overstorey	Euc Shiny (small patches)		12	0 <5% COVER	1 <20% COVER	2 20-60%	3 60-100%	
	Other Grassland	Midstorey	*Acacia sp., Ptilotus sp.* and a mix of*Chenopods*		1.5	0 <5% COVER	1 <20% COVER	2 20-60%	3 60-100%	
	Euc Woodland	Ground Cover	/			0 <5% COVER	1 <20% COVER	2 20-60%	3 60-100%	

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

	(General)			DISTURBANCE		(Cattle)			
	0 heavy	1 medium	2 mild	3 none	other	0 heavy	1 medium	2 mild	3 none	

GROUND COVER

Bare Ground	0 <5% COVER	1 <20% COVER	2 20-60%	3 60-100%	Hummock Grasses	0 <5% COVER	1 <20% COVER	2 20-60%	3 60-100%	
Rock	0 <5% COVER	1 <20% COVER	2 20-60%	3 60-100%	Other Grasses	0 <5% COVER	1 <20% COVER	2 20-60%	3 60-100%	
Leaf Litter	0 <5% COVER	1 <20% COVER	2 20-60%	3 60-100%	Herbs	0 <5% COVER	1 <20% COVER	2 20-60%	3 60-100%	
Hollow logs >10cm	0 <5% COVER	1 <20% COVER	2 20-60%	3 60-100%	Other	0 <5% COVER	1 <20% COVER	2 20-60%	3 60-100%	

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

SPECIES		
Birds	Mammals	Reptiles
Striated Pardalote		Bobtail
Torresian Crow		

FAUNA HABITAT ASSESSMENT SHEET - 360 ENVIRONMENTAL

Location: Aphrodite - Kalgoorlie			Site Number: Habitat Assessment 8 (Camera 12)		
Project: Aphrodite Gold Deposit (1673)			Field Photo Numbers:		
Date: 16/09/16	Easting: 0327393	Aspect	N	NE	SW	NW
Quadrat Size: 50 x 50 m	Northing: 6654779		E	SE	W	N/A

Soil Texture	Sand	clay-loam	sandy-loam	cracking clay	clay

VEGETATION

Vegetation Description: Hummock Grassland / Acacia Shrubland / Riverine Woodland / Other Grassland / Euc Woodland

Stratum	Vegetation Species	Average Height (m)	Cover: Scattered Plants	Sparse	Moderate	Thick	
Overstorey	*Eucalyptus spp.*	10	0 <5% COVER	1 <20% COVER	**2 20-60%**	3 60-100%	
Midstorey	*Senna artemisioides* and *Dodonaea lobulata*	2	0 <5% COVER	1 <20% COVER	**2 20-60%**	3 60-100%	
Ground Cover	*Ptilotus sp.*	1.5	**0 <5% COVER**	1 <20% COVER	2 20-60%	3 60-100%	

CONDITION

Scale:	5 Pristine	**4 Excellent**	3 Very Good	2 Good	1 Degraded	0 Completely Degraded

LAST FIRE

0 <1 year	1 1 -3 Yr	2 4-5 Yr	**3 >5 Yr**

DISTURBANCE

	0 heavy	1 medium	**2 mild (rubbish)**	3 none	other	0 heavy	(Cattle) 1 medium	**2 mild**	3 none	

GROUND COVER

Bare Ground	0 <5% COVER	1 <20% COVER	**2 20-60%**	3 60-100%	Hummock Grasses	**0 <5% COVER**	1 <20% COVER	2 20-60%	3 60-100%	
Rock	**0 <5% COVER**	1 <20% COVER	2 20-60%	3 60-100%	Other Grasses	**0 <5% COVER**	1 <20% COVER	2 20-60%	3 60-100%	
Leaf Litter	0 <5% COVER	1 <20% COVER	2 20-60%	**3 60-100%**	Herbs	**0 <5% COVER**	1 <20% COVER	2 20-60%	3 60-100%	
Hollow logs >10cm	**0 <5% COVER**	1 <20% COVER	2 20-60%	3 60-100%	Other	**0 <5% COVER**	1 <20% COVER	2 20-60%	3 60-100%	

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

SPECIES		
Birds	Mammals	Reptiles
Weebill		

APPENDIX E

Fauna Habitat Photos

Eucalyptus Woodland (high density)

Plate 1

Plate 2

Plate 3

Plate 4

Eucalyptus Woodland (low density)

Plate 5

Plate 6

Plate 7

Plate 8

Casuarina Woodland over Acacia (high density)

Plate 9

Plate 10

Plate 11

Plate 12

Casuarina Woodland over Acacia (low density)

Plate 13

Plate 14

Plate 15

Plate 16

Shrubland

Plate 17

Plate 18

Plate 19

Plate 20

Creekline

Plate 21

Plate 22

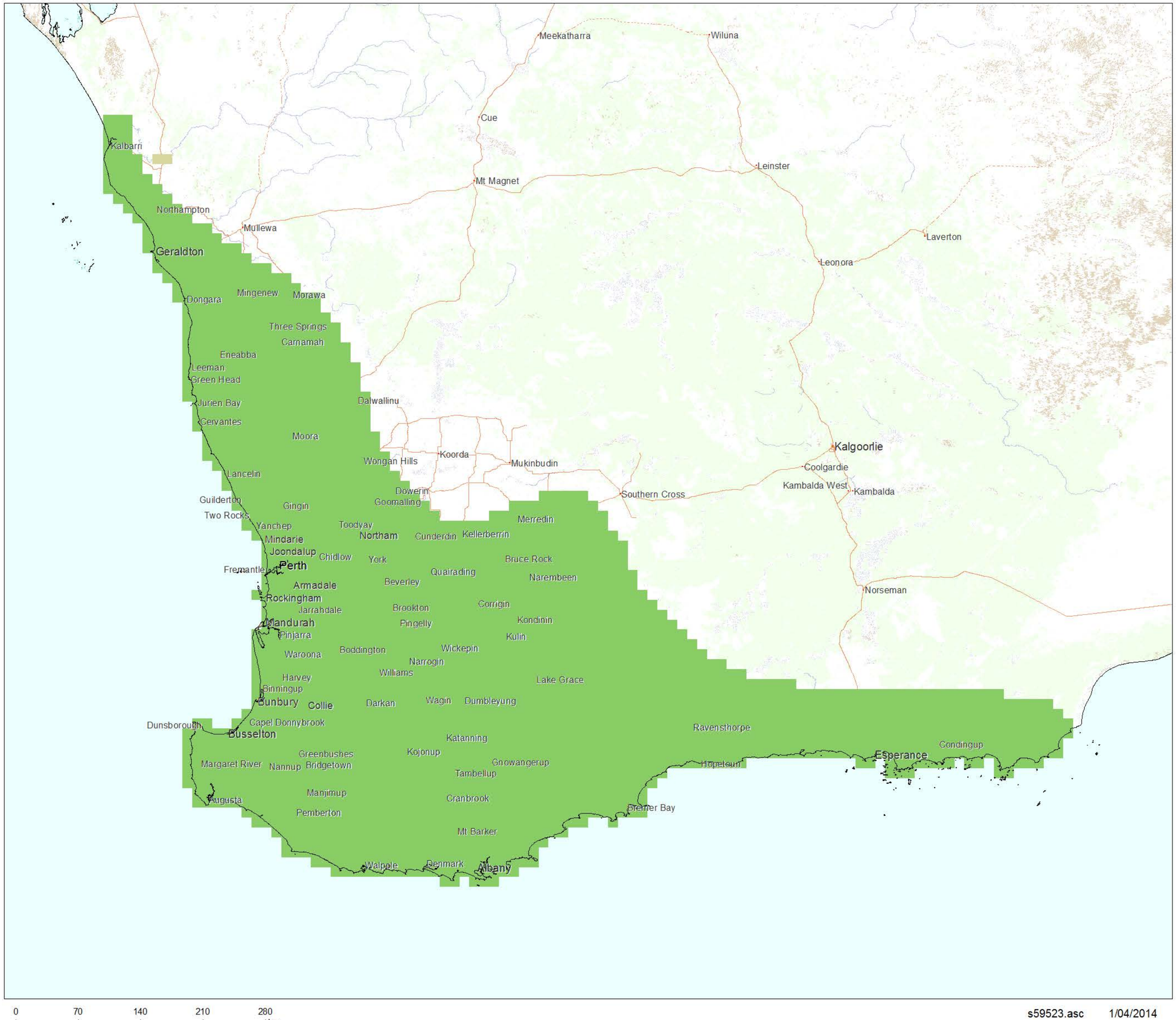
Plate 23

Plate 24

APPENDIX F

Carnaby's Black Cockatoo Distribution Map

Calyptorhynchus latirostris Carnaby's Black-Cockatoo, Short-billed Black-Cockatoo



0 70 140 210 280 km

s59523.asc 1/04/2014

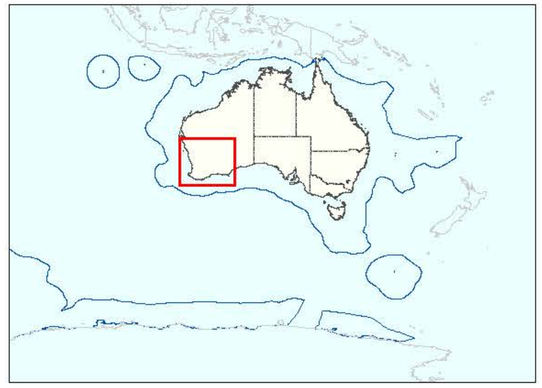
Species of National Environmental Significance, Map Summary Version 1 2014

Distribution

Species or species habitat likely to occur

Species or species habitat may occur

Commonwealth Marine Area



Produced by: Environmental Resources Information Network
Contextual data source: Geoscience Australia (2006), Geodata Topo 250K Topographic Data
Indicative Map Only: This map has been compiled from datasets with a range of geographic scales and quality. Species distributions are indicative only and not to be used for local assessment. Local knowledge and information should be sought to confirm the presence of the species, or its habitat, at the location of interest.

Australian Government

Department of the Environment

APPENDIX G

Assessment against Clearing Principle b

Principle	Assessment
Principle (b) – Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of a significant habitat for fauna indigenous to Western Australia	Please note that in the text below reference is made to tables, figures and appendices – these along with all the references can be found in the corresponding report of which this appendix g is part of. During the field assessment 35 species from 24 families were recorded in the Survey Area. This consisted of two reptile species, 32 bird species from 21 families and one mammal species from one family. Note that the survey was a Level 1 assessment which is primarily an appraisal of habitat, its condition and an evaluation of the likelihood of species being present, particularly species of conservation significance. A 90 km DPaW threatened fauna database radial search and a 70 km EPBC Protected Matters Search Tool (PMST) radial search and a 40 km (maximum available) radial NatureMap search were undertaken from the centre of the Survey Area. The searches were undertaken to identify fauna species of conservation significance potentially occurring in the Survey Area. Please note that originally a 70 km radial search request was submitted to DPaW for the threatened fauna, however, very few fauna were captured in that search area, consequently DPaW provided data from a 90 km search radius. A total of eight conservation significant species (including Priority species) from the database searches are potentially considered to either be likely, possibly or unlikely to occur in the Survey Area (Table 1). These eight species comprise one reptile, five bird and two mammal species. Of these eight conservation significant species, no species were recorded during the field assessment, one species is considered 'Likely', three species are considered 'Possible' and four species are considered 'Unlikely' to occur within the Survey Area. The Likelihood of each species is based on the following criteria: ● Recorded: Recorded during the field assessment; ● Likely: Suitable habitat present in the Survey Area is in the species' known distribution; ● Possible: Limited or no suitable habitat is present in the Survey Area, but is nearby. The species

Principle	Assessment

has good dispersal abilities and is known from the general area; and

- Unlikely: No suitable habitat is present in the Survey Area but is nearby, the species has poor dispersal abilities, but is known from the general area; or suitable habitat is present, however the Survey Area is outside of the species' known distribution.

Table 1: Conservation significant fauna potentially occurring in the Survey Area.

En = Listed as Endangered under the EBPC Act, Vu = Listed as Vulnerable under the EBPC Act, Mi = Listed as Migratory under the EBPC Act, Ma = Listed as Marine under the EBPC Act, S = Scheduled under the WC Act, and P = Listed as Priority by the DPaW.

SPECIES	CONSERVATION STATUS	LIKELIHOOD
Reptiles		
Woma (southwest subpop.) (*Aspidites ramsayi*)	P1	Possible
Birds		
Malleefowl (*Leipoa ocellata*)	Vu, S1	Possible
Carnaby's Black Cockatoo (*Calyptorhynchus latirostris*)	En, S2	Unlikely
Princess Parrot (*Polytelis alexander*)	P4	Unlikely
Night Parrot (*Pezoporus occidentalis*)	En, S1	Unlikely
Rainbow Bee-eater (*Merops ornatus*)	Ma, S5	Likely
Mammals		
Western Quoll (*Dasyurus geoffroii*)	Vu, S3	Unlikely
Central Long-eared Bat (*Nyctophilus major tor*)	P4	Possible

Rainbow Bee-eater

The Rainbow Bee-eater is listed as Marine under the EPBC Act and Schedule 5 under the WC Act. This

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	species is one of the most common and widespread birds in Australia with a distribution that covers the majority of Australia (Barrett *et al.* 2003). It occurs in lightly wooded, often sandy country, preferring areas near water. It feeds on airborne insects, and nests throughout its range in WA in burrows excavated in sandy ground or banks, often at the margins of roads and tracks. In WA this species can occur as a 'resident, breeding visitor, postnuptial nomad, passage migrant and winter visitor' (Johnstone & Storr 2004). The DPaW threatened fauna database returned just 18 records of the Rainbow Bee-eater from between 1977 to 1981, however, the Survey Area does contain suitable habitat and as one of the most widespread birds in Australia, it is considered Likely to occur. **Woma** The Woma is listed as Priority 1 under the DPaW priority list, due to land clearing and possible predation by feral animals causing serious declines. The species is restricted to arid and dry inland areas, including desert sandhills of the centre. A nocturnal, terrestrial snake which shelters in hollow logs, animal burrows or dense vegetation, in woodlands, heaths and shrublands, especially spinifex – Triodia and Plectrachne sp.) during the day, although basking in the early part of the day. The Woma feeds on small mammals, ground birds and reptiles (Cogger 2014). There was one record of the Woma in the DPaW threatened fauna database from south of Menzies in 1966. The Survey Area does contain suitable habitat in the form of woodlands and shrubland with relatively dense vegetation in some areas, however, hollow logs and particularly Triodia are very limited in the Survey Area. As such the species is considered as Possibly occurring in the Survey Area. **Central Long-eared Bat** The Central Long-eared Bat is listed as Priority 4 under the DPaW priority list. The species occurs in south-western and south-eastern WA, in the arid and semi-arid Eyre-Yorke, Hampton, Avon, Gawler and

Principle	Assessment
	Coolgardie bioregions (Van Dyck & Strahan 2008). The Central Long-eared Bat occurs in woodlands, Mallee and thickets with prominent shrub strata, especially where these occur near granite outcrops and old dams. It roosts in tree crevices, foliage or under loose barks (Van Dyck & Strahan 2008. Little of the ecology of the Long-eared bat is known to be able to identify threats (Duncan et al. 1999). The Survey Area contains old dams and Mallee woodlands with prominent shrub strata; however, the Survey Area lacks granite outcrops. The species was returned from the NatureMap search only, but some suitable habitat is present in the Survey Area, therefore the Central-Long-eared Bat is considered as Possibly occurring. **Carnaby's Black Cockatoo** Carnaby's Black Cockatoo is listed as Endangered under the EPBC Act. Carnaby's Black Cockatoo is endemic to south-west WA, and is distributed from the Murchison River to Esperance and inland to Coorow, Kellerberrin and Lake Cronin (Cale 2003). The species was once common, but the population has declined significantly in the last half century, and is now locally extinct in some areas (Johnstone and Storr 1998, Shah 2006). In the last 45 years the species has suffered a 50% reduction in its abundance (Cale 2003). This reduction is due to the clearing of core breeding habitat in the wheatbelt, the deterioration of nesting hollows, and clearing of food resources, particularly on the Swan Coastal Plain (Cale 2003). Results from the 2015 Great Cocky Count (GCC) (Birdlife 2015) recorded 9,082 white-tailed black- cockatoos (Carnaby's and Baudin's Black Cockatoo) across the species range, which is the lowest total number recorded in the last three GCCs (2013- 15). The DPaW threatened fauna database has eight records from 1972 to 1995 (the locality is listed as Menzies with an accuracy of 10,000 m). However, as can be seen from the DoE (now DEE) Carnaby's Black Cockatoo distribution map, the Survey Area is outside of its current known distribution (Appendix F). Carnaby's Black Cockatoo is therefore considered Unlikely to occur. **Princess Parrot** The Princess Parrot is listed as Priority 4 under the DPaW priority list. The Princess Parrot is confined to

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	arid regions of WA, the Northern Territory, and South Australia (Barrett et al. 2003). Preferred habitat includes lightly wooded country of Casuarina decaisneana. The species is usually recorded from shrublands and savannah woodlands in swales between sand dunes consisting of open Mallee-spinifex (Eucalyptus and Triodia) and open marble gum woodland (E. gongylocarpa) and a variety of shrubs and scattered emergent trees (Garnett et al. 2011). The DPaW threatened fauna database search returned no records of the Princess Parrot despite a wide search area of 90 km. However, it was present in the EPBC PMST. Please see section 4.2.2 paragraph 5 as to the reasons why this is not always an accurate reflection of what species may occur in an area, as is the case with the Princess Parrot. The Survey Area contains no suitable habitat in the form of shrublands and savannah woodlands in swales between sand dunes. Accordingly the Princess Parrot is considered as Unlikely to occur in the project area. **Night Parrot** The Night Parrot is listed as Vulnerable under the EPBC Act and S1 under the WC Act. It is an enigmatic species thought possibly to be extinct until the recent recoveries of two dead specimens from Queensland. The type specimen and many early sightings, however, came from WA (Johnstone et al. 2013). A more recent sighting of the Night Parrot was on 12 April 2005, at a well near the Fortescue Marshes (Davis & Metcalf 2008). The DPaW threatened fauna database has no records of the Night Parrot in the 90 km radial search area. However, it was present in the EPBC PMST. Please see section 4.2.2 paragraph 5 as to the reasons why this is not always an accurate reflection of what species may occur in an area, as is the case with the Night Parrot. There is very limited ecological information such as preferred habitat available for this species, however, given the very limited number of records in the region, the Night Parrot is considered as Unlikely to occur in the project area. **Western Quoll** The Western Quoll is listed as Vulnerable under the EPBC Act and Schedule 1 under the WC Act. Knowledge of the ecology of the Western Quoll is largely restricted to its distribution in mesic jarrah

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	forests. Here, population densities are three times greater than in semi-arid zones where rainfall and consequently productivity are lower than mesic forests and home ranges are larger (Rayner et al. 2012). The Western Quolls diet includes mammals, birds, reptiles, invertebrates, plants and rubbish, which is consistent with it being a generalist predator. The Western Quoll was formerly distributed over nearly 70% of the continent, occurring in every Mainland State and Territory (Woinarski *et al.* 2012). Since European settlement, its range has contracted dramatically. Historically it was found in the vicinity of the Survey Area, but it is now restricted to the south-west of WA where it has a fragmented distribution. This species is now only found in sclerophyll forest, woodland and Mallee shrubland (Van Dyck & Strahan 2008). It is highly mobile, and appears able to utilise bush remnants and corridors. This species requires logs with large hollows or large earth burrows in which to den (Van Dyck & Strahan 2008). During this assessment no hollow logs of suitable size or earth burrows considered large enough for Western Quolls to den in were observed. In addition, there was one single record in the DPaW threatened fauna database. This record is from Goongarrie station in 2008 and is based on tracks. The record has a certainty of moderate (Appendix B). Consequently the Western Quoll is considered Unlikely to occur in the Survey Area. **Malleefowl** The Malleefowl is listed as Vulnerable under the EPBC Act and S1 under the WC Act. It is a member of the Megapodiidae family which consists of a small group of moderately large birds, notable for the fact that the eggs are buried and hatch in the ground or in heaps of soil and rotting vegetation accumulated by the male. The Malleefowl was originally common and widespread in semi-arid the zone, mainly in scrubs of Mallee and other low Eucalypts on sandy and lateritic soils, also acacia scrubs on heavy red soils, especially north and east of the mulga-eucalypt line. The Malleefowl is now generally rare to uncommon and

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	patchily distributed, owing to clearing of much of its habitat for agriculture (Johnstone & Storr 1998). The Malleefowl is mainly found in scrubs and thickets of Mallee Eucalyptus sp., Melaleuca lanceolate and Acacia linophylla, and other dense litter-forming shrublands, with sandy substrate and abundant leaf-litter for breeding. Malleefowl are highly productive, but rainfall has an important influence on their fecundity (Benshemesh 2007). Malleefowl are generalist and opportunistic, feeding on seeds, flowers and fruits of shrubs (especially legumes), herbs, invertebrates, tubers and fungi (Benshemesh 2007). During the field survey 27 km of systematic transects and nine incidental searches were walked (56.25 ha) searching for any signs of Malleefowl. No Malleefowl were observed directly or indirectly. The Survey Area does contain suitable habitat in areas which contain Mallee Eucalypts and Acacia shrubs on sandy soils (this includes sections of the Eucalypt Woodland and Casuarina Woodland and the Creekline in the Survey Area). Although no Malleefowl were recorded during the field survey, there are 35 records in the DPaW threatened fauna database all of which are outside of the Survey Area (see Figure 5). We excluded records from the database that had no year (four records) or that had an accuracy of greater than 1000 m (three records – two with 10,000 m and one with 50,000 m). This left 26 records from between 2009 and 2015, with the closest record being approximately 15 km from the Survey Area (Figure 5). Given that there is some suitable habitat in the Survey Area and the number of recent records we consider the Malleefowl as possibly occurring. **Assessed Outcome: Unlikely to be at variance with this principle.**