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## **Technical Review - Mt Weld Rare Earth Project Level 2 and Targeted Terrestrial Fauna Survey**

### **Introduction**

Onshore Environmental Consultants Pty Ltd (Onshore Environmental) was engaged by KASA Consulting to review the terrestrial fauna assessment for the Mt Weld Rare Earth Project (referred to as the project area) by Stantec Australia Pty Ltd (Stantec).

This review comprised:

- A database and literature review of information relating to the broader area surrounding the project area;
- A review of previous work specific to the project area;
- Update of any taxonomic/status changes to vertebrate fauna species listed in the report with a focus on fauna species protected under Federal and State Acts (conservation significant fauna);
- Determination of the adequacy of data in relation to the current set of survey and referral guideline for threatened species; and
- An assessment of efficacy of previous fauna survey work and gap analysis that may require any further investigation.

The focus of this assessment is on threatened and priority fauna species, particularly species that are federally listed under the EPBC Act 1999, as these represent the group most likely to result in a referral of the project under Federal legislation.

The project area is located 31 kilometres (km) south-east of Laverton and consists of two areas of land with a combined size of 3,255 hectares (ha). It is within the Murchison Interim Biogeographic Region of Australia (IBRA) with the subregion being the Eastern Murchison (Department of Environment, 2012).

Data searches were undertaken for:

- Department of Agriculture, Water, and the Environment's (DAWE) Environment Protection and Biodiversity Conservation (EPBC) Protected Matters Search Tool (Department of Agriculture Water and the Environment, 2020b);
- Western Australian Department of Biodiversity, Conservation and Attractions (DBCA) NatureMap (Department of Biodiversity, Conservation and Attractions, 2020); and
- Atlas of Living Australia (ALA) database (Atlas of Living Australia, n.d.).

The database searches coordinates used were S28.78420° E122.59784° with a 50 km buffer. This was done to replicate the results from searches completed by Stantec Australia Pty Ltd (Stantec, 2020).

Taxonomic status and nomenclature of species were standardised using the Western Australian Museum's (WAM) Checklist of the Terrestrial Vertebrate Fauna of Western Australia (Western Australian Museum, 2020) and the DBCA's Threatened and Priority Fauna List (Department of Biodiversity Conservation and Attractions, 2020).

## **Desktop Survey**

### Fauna Species of Conservation Significance

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

International Level:

- International Conventions: Migratory taxa listed under the Japan-Australia Migratory Bird Agreement (JAMBA), China-Australia Migratory Bird Agreement (CAMBA), Republic of Korea-Australia Migratory Bird Agreement (ROKAMBA), and Convention on the Conservation of Migratory Species of Wild Animals (Bonn Convention).

Commonwealth Level:

- EPBC Act: The DAWA lists Threatened flora, fauna and ecological communities, which are determined by the Threatened Species Scientific Committee according to criteria set out in the Act. The Act lists fauna that are considered to be of conservation significance under one of six categories (Appendix 1).

State Level:

- BC Act: At a State level, native flora and fauna species are protected under the *Biodiversity Conservation Act 2016*. A number of species are assigned an additional level of conservation significance based on a limited number of known populations and the perceived threats to these locations (Appendix 2).
- DBCA Priority list: DBCA produces a list of Priority species and ecological communities that have not been assigned statutory protection under the BC Act. Possibly threatened species that do not meet survey criteria, or are otherwise data deficient, are added under Priorities 1, 2 or 3. Species that are adequately known, are rare but not threatened, or meet criteria for near threatened, or that have been removed from the threatened species list for other taxonomic reasons, are placed in Priority 4. These species require regular monitoring (see Appendix 2).

## Database Searches

A search of the EPBC Act Protected Matters database, the DBCA's NatureMap and the Atlas of Living Australia was undertaken for a 50 km buffer around the study. The database searches listed 22 Threatened or Migratory fauna species under the EPBC Act (Federal); 21 Threatened or Migratory fauna species under the BC Act (State); and three Priority species.

### Threatened and Migratory Fauna listed under the EPBC Act

- Numbat (*Myrmecobius fasciatus*) - listed as Endangered
- Bilby (*Macrotis lagotis*) - listed as Vulnerable
- Banded Hare-wallaby (*Lagostrophus fasciatus fasciatus*) - listed as Vulnerable
- Chuditch (*Dasyurus geoffroii*) - listed as Vulnerable
- Night Parrot (*Pezoporus occidentalis*) - listed as Endangered
- Malleefowl (*Leipoa ocellata*) - listed as Vulnerable
- Princess Parrot (*Polytelis alexandrae*) - listed as Vulnerable; and
- Great Desert Skink (*Liopholis kintorei*) - listed as Vulnerable.

The database search listed the following Migratory fauna species, or species habitat, that may occur in the study area:

- Fork-tailed Swift (*Apus pacificus*);
- Common Sandpiper (*Actitis hypoleucos*);
- Red-necked Stint (*Calidris ruficollis*);
- Gull-billed Tern (*Gelochelidon nilotica*);
- Glossy Ibis (*Plegadis falcinellus*);
- Eastern Great Egret (*Ardea modesta*);
- Oriental Plover (*Charadrius veredus*);
- Hooded Plover (*Thinornis cucullatus*);
- Wood Sandpiper (*Tringa glareola*);
- Common Greenshank (*Tringa nebularia*);
- Sharp-tailed Sandpiper (*Calidris acuminata*);
- Pectoral Sandpiper (*Calidris melanotos*);
- Yellow Wagtail (*Motacilla flava*); and
- Grey Wagtail (*Motacilla cinerea*).

### Fauna listed under the BC Act

- Numbat (*Myrmecobius fasciatus*) – listed as Endangered;
- Bilby (*Macrotis lagotis*) – listed as Vulnerable;
- Banded Hare-wallaby (*Lagostrophus fasciatus fasciatus*) – listed as Vulnerable;
- Chuditch (*Dasyurus geoffroii*) – listed as Vulnerable;
- Night Parrot (*Pezoporus occidentalis*) – listed as Critically Endangered;
- Malleefowl (*Leipoa ocellata*) – listed as Vulnerable;
- Fork-tailed Swift (*Apus pacificus*) – listed as Migratory;
- Common Sandpiper (*Actitis hypoleucos*) – listed as Migratory;
- Red-necked Stint (*Calidris ruficollis*) – listed as Migratory;

- Gull-billed Tern (*Gelochelidon nilotica*) – listed as Migratory;
- Glossy Ibis (*Plegadis falcinellus*) – listed as Migratory;
- Eastern Great Egret (*Ardea modesta*) – listed as Migratory;
- Oriental Plover (*Charadrius veredus*) – listed as Migratory;
- Hooded Plover (*Thinornis cucullatus*) – listed as Migratory;
- Wood Sandpiper (*Tringa glareola*) – listed as Migratory;
- Common Greenshank (*Tringa nebularia*) – listed as Migratory;
- Sharp-tailed Sandpiper (*Calidris acuminata*) – listed as Migratory;
- Pectoral Sandpiper (*Calidris melanotos*) – listed as Migratory;
- Yellow Wagtail (*Motacilla flava*) – listed as Migratory;
- Grey Wagtail (*Motacilla cinerea*) – listed as Migratory;
- Peregrine Falcon (*Falco peregrinus*) – listed as Other specially protected fauna; and
- Great Desert Skink (*Liopholis kintorei*) – listed as Vulnerable.

### Fauna listed as Priority

In addition to the fauna protected by the Federal and State legislations, the DBCA recognises fauna that is possibly threatened but do not meet survey criteria or are otherwise data deficient. This fauna is classified as Priority by the DBCA. The search of the NatureMap database identified three species as Priority fauna species. These were:

- Long-tailed Dunnart (*Sminthopsis longicaudata*);
- Brush-tailed Mulgara (*Dasycercus blythi*); and
- Princess Parrot (*Polytelis alexandrae*).

### Previously Identified Conservation Significant Fauna

The Mt Weld Rare Earth Project Level 2 and Targeted Terrestrial Fauna Survey (Stantec, 2020) identified a total of 25 conservation significant fauna species that could occur in the region. Of these species, 22 were protected under Federal legislation, 22 were protected under State legislation, and the remaining three were identified as Priority species by the DBCA. This fauna can be found in Table 1.

Of the fauna species identified as 'conservation significant', all were suitably addressed within the Mt Weld Rare Earth Project Level2 and Targeted Terrestrial Fauna Survey report (Stantec 2020).

**Table 1: Conservation significant fauna that could occur in the bioregion.**

Common Name	Scientific Name	Status under BC Act 2016 and within the DBCA	EPBC Listing
<b>Mammals</b>			
Numbat	<i>Myrmecobius fasciatus</i>	Endangered	Endangered
Bilby	<i>Macrotis lagotis</i>	Vulnerable	Vulnerable
Banded Hare-wallaby	<i>Lagostrophus fasciatus fasciatus</i>	Vulnerable	Vulnerable
Chuditch	<i>Dasyurus geoffroii</i>	Vulnerable	Vulnerable
Long-tailed Dunnart	<i>Sminthopsis longicaudata</i>	Priority 4	
Brush-tailed Mulgara	<i>Dasyercus blythi</i>	Priority 4	
<b>Birds</b>			
Night Parrot	<i>Pezoporus occidentalis</i>	Critically Endangered	Endangered
Malleefowl	<i>Leipoa ocellata</i>	Vulnerable	Vulnerable
Princess Parrot	<i>Polytelis alexandrae</i>	Priority 4	Vulnerable
Fork-tailed Swift	<i>Apus pacificus</i>	Migratory	Migratory
Common Sandpiper	<i>Actitis hypoleucos</i>	Migratory	Migratory
Red-necked Stint	<i>Calidris ruficollis</i>	Migratory	Migratory
Gull-billed Tern	<i>Gelochelidon nilotica</i>	Migratory	Migratory
Glossy Ibis	<i>Plegadis falcinellus</i>	Migratory	Migratory
Eastern Great Egret	<i>Ardea modesta</i>	Migratory	Migratory
Oriental Plover	<i>Charadrius veredus</i>	Migratory	Migratory
Hooded Plover	<i>Thinornis cucullatus</i>	Migratory	Migratory
Wood Sandpiper	<i>Tringa glareola</i>	Migratory	Migratory
Common Greenshank	<i>Tringa nebularia</i>	Migratory	Migratory
Sharp-tailed Sandpiper	<i>Calidris acuminata</i>	Migratory	Migratory
Pectoral Sandpiper	<i>Calidris melanotos</i>	Migratory	Migratory
Yellow Wagtail	<i>Motacilla flava</i>	Migratory	Migratory
Grey Wagtail	<i>Motacilla cinerea</i>	Migratory	Migratory
Peregrine Falcon	<i>Falco peregrinus</i>	Other specially protected fauna	
<b>Reptile</b>			
Great Desert Skink	<i>Liopholis kintorei</i>	Vulnerable	Vulnerable

## **Field Survey**

### Survey Team

The survey team undertaking the 2020 field surveys comprised two zoologists, one with 11 years of experience and the other with two years of experience. As outlined in the Environmental Protection Agency's Technical Guidance (Environmental Protection Authority, 2020), the more experienced zoologist appropriately took the role of technical lead for both phases of the fauna survey as well as being involved with production of the report (Stantec, 2020).

### Sampling Techniques

The fauna survey consisted of a detailed survey with a combination of systematic and non-systematic survey techniques. These systematic techniques included trapping, avifauna census, searches, spotlighting, motion-sensor cameras, bat echolocation recorders, bird acoustic recorders, and transects. The survey techniques were also used in a targeted manner for conservation significant fauna as well as being supported by opportunistic observations.

The systematic fauna trapping used a combination of 20 litre pit falls, PVC pipes, funnel traps, Elliot traps, and cage traps. These traps were deployed in a manner consistent with trapping techniques outlined in the EPA's Terrestrial Guidelines (Environmental Protection Authority, 2020) and are suitable for sampling the expected fauna types within the survey area.

Targeted survey techniques were used to focus additional effort on potential conservation significant fauna. This included techniques like camera traps for Long-tailed Dunnarts, transects for Malleefowl, avifauna census and bird acoustic recordings for Night Parrots.

## **Reporting**

### Mapping

A comprehensive suite of maps was provided with the report. These maps included the study area location, land systems, surface geology, survey effort, regional conservation reserves and wetlands, habitat mapping, conservation significant fauna records, and potential short-range endemic records. All maps were suitably titled and legible.

### Taxonomic Changes

A review of taxonomic changes and conservation status was undertaken using the most recent Vertebrate Fauna Checklist from the Western Australian Museum (Western Australian Museum, 2020) as well as the DBCA's Threatened and Priority Fauna List (Department of Biodiversity Conservation and Attractions, 2020). No taxonomic or conservation status changes have been made to fauna species for the region that affects the species identified in the current report as protected under State and Federal legislation.

### Reporting and Data Analysis

The report was structured in line with the technical guidelines (EPA 2020) and included the relevant headings and content with appropriate appendices. It is recommended that reference to the "Level 2" survey be updated to "Detailed" survey within the title and throughout the report to prevent any confusion with reference to the most recent EPA guidelines.

The analysis of the systematic sampling of the fauna assemblage indicated that between 70% and 100% of the fauna were captured during the survey. The data from the avifauna census indicates that more survey effort is likely to record additional bird species; however, this analysis

does not take into consideration the non-systematic survey techniques like targeted and opportunistic recordings which provided additional data. When comparing the results of the current survey with data from previous surveys for the region, the current survey recorded a greater number of species and it is unlikely that additional systematic sampling of bird species would increase the general knowledge for the area.

## References

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Regards



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Principal Zoologist

# APPENDIX 1

Conservation categories for species listed under the EPBC Act



<b>Category</b>	<b>Description</b>
Extinct	A species is extinct if there is no reasonable doubt that the last member of the species has died.
Extinct in the Wild	A species is categorised as extinct in the wild if it is only known to survive in cultivations, in captivity, or as a naturalised population well outside its past range; or if it has not been recorded in its known/expected habitat, at appropriate seasons, anywhere in its past range, despite exhaustive surveys over a time frame appropriate to its life cycle and form.
Critically Endangered	The species is facing an extremely high risk of extinction in the wild and in the immediate future.
Endangered	The species is likely to become extinct unless the circumstances and factors threatening its abundance, survival, or evolutionary development cease to operate; or its numbers have been reduced to such a critical level, or its habitats have been so drastically reduced, that it is in immediate danger of extinction.
Vulnerable	Within the next 25 years, the species is likely to become endangered unless the circumstances and factors threatening its abundance, survival or evolutionary development cease to operate.
Conservation Dependent	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.

# APPENDIX 2

Conservation codes for Western Australian flora and fauna

The Wildlife Conservation (Specially Protected Fauna) Notice 2018 and the Wildlife Conservation (Rare Flora) Notice 2018 have been transitioned under regulations 170, 171 and 172 of the Biodiversity Conservation Regulations 2018 to be the lists of Threatened, Extinct and Specially Protected species under Part 2 of the Biodiversity Conservation Act 2016.

<p><b>Threatened Species</b></p> <p>Listed by order of the Minister as Threatened in the category of critically endangered, endangered or vulnerable under section 19(1), or is a rediscovered species to be regarded as threatened species under section 26(2) of the Biodiversity Conservation Act 2016 (BC Act). Threatened fauna is that subset of 'Specially Protected Fauna' listed under schedules 1 to 3 of the Wildlife Conservation (Specially Protected Fauna) Notice 2018 for Threatened Fauna. Threatened flora is that subset of 'Rare Flora' listed under schedules 1 to 3 of the Wildlife Conservation (Rare Flora) Notice 2018 for Threatened Flora. The assessment of the conservation status of these species is based on their national extent and ranked according to their level of threat using IUCN Red List categories and criteria as detailed below.</p>
<p><b>Priority One: Poorly-known species</b></p> <p>Species that are known from one or a few locations (generally five or less) which are potentially at risk. All occurrences are either: very small; or on lands not managed for conservation, e.g. agricultural or pastoral lands, urban areas, road and rail reserves, gravel reserves and active mineral leases; or otherwise under threat of habitat destruction or degradation. Species may be included if they are comparatively well known from one or more locations but do not meet adequacy of survey requirements and appear to be under immediate threat from known threatening processes. Such species are in urgent need of further survey.</p>
<p><b>Priority Two: Poorly-known species</b></p> <p>Species that are known from one or a few locations (generally five or less), some of which are on lands managed primarily for nature conservation, e.g. national parks, conservation parks, nature reserves and other lands with secure tenure being managed for conservation. Species may be included if they are comparatively well known from one or more locations but do not meet adequacy of survey requirements and appear to be under threat from known threatening processes. Such species are in urgent need of further survey.</p>
<p><b>Priority Three: Poorly-known species</b></p> <p>Species that are known from several locations, and the species does not appear to be under imminent threat, or from few but widespread locations with either large population size or significant remaining areas of apparently suitable habitat, much of it not under imminent threat. Species may be included if they are comparatively well known from several locations but do not meet adequacy of survey requirements and known threatening processes exist that could affect them. Such species are in need of further survey.</p>
<p><b>Priority Four: Rare, Near Threatened and other species in need of monitoring</b></p> <p><b>(a) Rare.</b> Species that are considered to have been adequately surveyed, or for which sufficient knowledge is available, and that are considered not currently threatened or in need of special protection but could be if present circumstances change. These species are usually represented on conservation lands.</p> <p><b>(b) Near Threatened.</b> Species that are considered to have been adequately surveyed and that are close to qualifying for vulnerable but are not listed as Conservation Dependent.</p> <p><b>(c)</b> Species that have been removed from the list of threatened species during the past five years for reasons other than taxonomy.</p>

Conservation Codes For Western Australian Flora and Fauna (Department of Biodiversity Conservation and Attractions, 2019)