SOUTHERN CROSS GOLDFIELDS LTD LEVEL 1 FAUNA ASSESSMENT



August 2014

Level 1 Fauna Assessment
FOR THE MARDA EAST PROJECT
Tenements R 77/1, R 77/2, L 77/261



SXG001 - Southern Cross Goldfields Limited - Level 1 Fauna Assessment of the Marda East Project

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EXECUTIVE SUMMARY

Southern Cross Goldfields Limited is developing the Marda East Project, located approximately 140 km north of Southern Cross. The Project includes two ore deposits, Red Legs and Fiddleback which are approximately 3.5 km apart and joined by a proposed haul route which crosses the Bulfinch-Evanstone Road. These areas are approximately 12 ha and 33 ha in size, respectively, and are located within a Survey area of approximately 245 ha.

Animal Plant Mineral Pty Ltd was engaged in June 2014 to undertake a Level 1 fauna assessment in order to provide sufficient information for SXG to accurately assess the likely impact of mining activities on biodiversity, fauna and habitat values of conservation significance in a local and regional context.

The Survey area is located in a semi-arid Mediterranean climate in the Coolgardie Bioregion and encompasses four land systems; Campsite, Dryandra, Moriarty and Yowie, with the majority of the Survey area falling within the Campsite land system.

The Project resides within the Department of Parks and Wildlife Act Section 5(1)(h) proposed 'Conservation and Mining Reserve' and borders the Mount Manning - Helena and Aurora Ranges Conservation Park at the south eastern corner of the Fiddleback prospect. Additionally, the north western boundary of the Red Legs prospect abuts a proposed 'Class A' Nature Reserve which encompasses the Priority 1 Die Hardy Range Banded Ironstone Formation. The south eastern corner of the Fiddleback prospect borders the Mount Manning - Helena and Aurora Ranges Conservation Park and the Mount Manning Range Nature Reserve and Mount Manning Range Conservation Park are located toward the east and within 20 km.

A desktop survey of the EPBC Act Protected Matters, NatureMap and DPaw databases was conducted to develop a list of conservation significant fauna.

A field survey was conducted to assess fauna habitat and conduct targeted searches for Shield-backed Trapdoor Spiders and Tree-stem Trapdoor Spiders whilst also ground truthing Malleefowl mound activity of mounds located during the flora and vegetation survey conducted in 2012 by Western Botanical.

Based on searches of the Protected Matters and NatureMap databases, 14 species of conservation significance could potentially occur in the Survey area. However, after an analysis of fauna habitats within the Project area it was determined that 4 of the species are unlikely to occur, 3 species have the potential to occur, 6 are likely to occur, and one species (Malleefowl) has been recorded in the Survey area.

The small scale of the Survey area was considered and was allocated six habitat types; Tall Eucalypt Woodland over Halophytic understorey on Alluvial Plain; Low Eucalypt Woodland over Acacia Shrubland on Alluvial Plain; Low Eucalypt Woodland over Acacia on Rocky Rises; Low Eucalypt Woodland over Spinifex on Alluvial Plain; Dense Shrubland on Rocky Rises and Dense Shrubland on Alluvial Plain.

Fauna habitat of greatest value to fauna species occurring within the Survey area was Tall Eucalypt Woodland over Halophytic understorey on Alluvial Plain.

An intensive presence/absence search for the Shield-backed Trapdoor Spider and Tree-stem Trapdoor Spider at 15 sites over five of the six different habitat types did not locate either spider or evidence of trapdoor burrows. It is considered unlikely that these two spider species are using the Survey area.

Malleefowl mounds and tracks have been recorded in the Survey area and this species appears to prefer two particular fauna habitats in the Project area that, together, account for 15.71 ha of the area surveyed. These

habitats were the Dense Shrubland on Alluvial Plain and Dense Shrubland on Rocky Rises. Two of the 11 mounds were classified as active during the 2013 and again during the current survey (site number 1 and site number 11). Remains of a Malleefowl suspected to be predated on by a fox were found at site 11. Nine recommendations for future Malleefowl management have been proposed.

No other species of conservation significance were recorded during the survey however the peregrine Falcon, Australian Bustard, Major Mitchell's Cockatoo, Fork-tailed Swift, Rainbow Bee-eater, Shy Heathwren and the Greater Long-eared Bat have been recorded in the local area and have the potential to occur in the Project area.

APM recommends that, rather than investing resources into another baseline fauna survey of the Project area in Spring 2014, the Client should focus any further survey effort on a subset of the fauna species of conservation significance that may occur, but have not yet been located in the Project area. APM proposes a nest hollow assessment and trapping program be undertaken in Spring 2014 targeting populations of Numbat, Major Mitchell's Cockatoo and the Greater Long-eared Bat.

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LIST OF SYMBOLS AND ABBREVIATIONS

Abbreviation	Meaning
APM	Animal Plant Mineral Proprietary Limited
BIF	Banded Ironstone Formation
ВоМ	Bureau of Meteorology
DoE	Department of the Environment
DPaW	Department of Parks and Wildlife
EPA	Environmental Protection Authority
EPBC Act	Environmental Protection and Biodiversity Conservation Act 1999
MNES	Matters of National Environmental Significance
SEWPaC	Department of Sustainability, Environment, Water, Population and Communities (now the Department of the Environment)
SRE	Short Range Endemic
SXG	Southern Cross Goldfields Limited
WA	Western Australia
WC Act	Wildlife Conservation Act 1950

Symbols and Units	Meaning
°C	Degrees Celsius
cm	Centimetres
ha	Hectares
km	Kilometres
mm	Millimetres

1 INTRODUCTION

1.1 PROJECT AND LOCATION

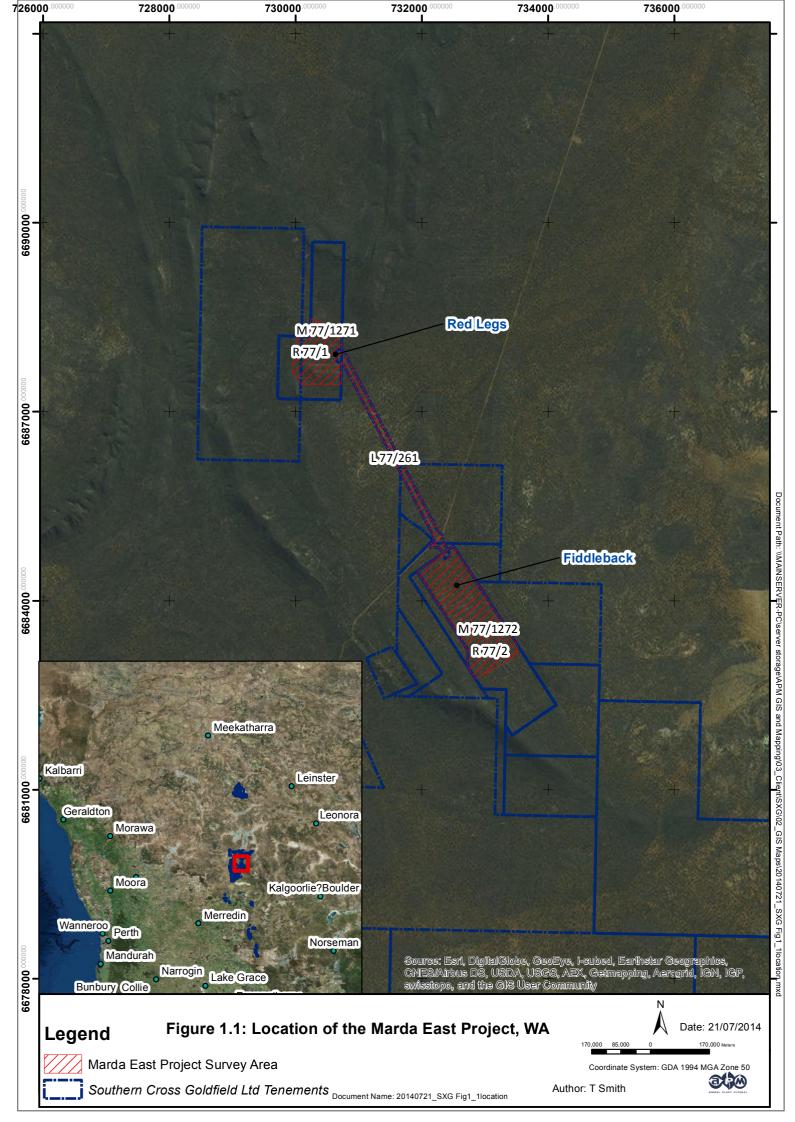
Southern Cross Goldfields Limited (SXG) is an ASX-listed company which is developing a long-term gold business based on a portfolio of production and exploration assets in Western Australia (WA) and New South Wales.

SXG completed a positive Feasibility Study in 2012 on the Marda Project in WA; this was based on the development of a greenfields gold project with open pit mines, processing facility and associated support infrastructure located at Marda Central.

SXG is now looking to progress approvals for the ore bodies 35 km north-east of the Marda Central pits, known as the Marda East Project (the Project), which includes two ore deposits, Red Legs and Fiddleback (previously named Die Hardy). These two deposits are approximately 3.5 km apart and joined by a proposed haul route which crosses the Bulfinch-Evanstone Road. These areas are approximately 12 ha and 33 ha in size, respectively, and are located within a Survey area of approximately 245 ha.

The Project is located approximately 140 km north of Southern Cross (Figure 1-1), comes under the jurisdiction of the Menzies Shire and is part of the Yilgarn Mineral Field. The Project is on the former Diemals Pastoral Station lease that is currently destocked and now a Department of Parks and Wildlife (DPaW) Act Section 5(1)(h) proposed 'Conservation and Mining Reserve'. A proposed 'Class A' Nature Reserve in the Die Hardy Range occurs immediately adjacent to the north-western boundary of the Red Legs prospect. Additionally the project area borders The Mount Manning - Helena and Aurora Ranges Conservation Park at the south eastern corner of the Fiddleback prospect.

The Project is located within 20 km of the Mount Manning Range Nature Reserve and the Mount Manning Range Conservation Park and a portion of the Project is located on the south eastern flanks of the Die Hardy Range, a Banded Ironstone Formation (BIF) and classified as a Priority 1 (P1) Priority Ecological Community (PEC).



1.2 SCOPE OF WORK

Animal Plant Mineral Pty Ltd (APM) was engaged by SXG in June 2014 to undertake a Level 1 fauna assessment in an area of approximately 245 hectares (ha), defined by SXG (Survey area) (Figure 1-1), encompassing the Red Legs and Fiddleback deposits which are located approximately 3.5 km apart and linked by a haul road corridor 100 metres (m) wide.

The assessment was designed in accordance with a Level 1 fauna survey (Reconnaissance survey) as defined in Environmental Protection Authority Position Statement 3 (Environment Protection Authority (EPA) 2002), Guidance Statement 56 (EPA 2004) and Guidance Statement 20 (EPA 2009).

The objectives of the survey were to:

- Enhance the level of knowledge regarding vertebrate fauna and short range endemic invertebrates (SREs) at a local scale and place it in a regional context.
- Provide sufficient information for SXG to accurately assess the likely impact of mining activities on biodiversity, fauna and habitat values of conservation significance in a local and regional context.

2 EXISTING ENVIRONMENT

2.1 PHYSICAL ENVIRONMENT

2.1.1 Climate

The Survey area is located in a semi-arid Mediterranean climate. Temperatures are strongly seasonal with hot summers (December – February) and cooler winters (June – August); rainfall predominantly occurs in late summer, autumn and winter.

Data was sourced from two different locations in order to compile the most relevant climate information for the Survey area. The Bureau of Meteorology (BoM) have been recording rainfall data from the Windarling station (BoM Site Number 012141), approximately 12 km south west of the Survey area, since 2004. Temperature data was sourced from the Southern Cross Airfield station (BoM Site Number 12320; opened in 1996), approximately 140 km south of the Survey area.

Average monthly temperature and rainfall data is presented in Table 2-1. Recorded data suggests that the Survey area is likely to receive approximately 277 mm of rain on an annual basis and experience temperatures ranging between 3 °C and 35 °C. Although rainfall and daily temperatures in the Project area may vary slightly, data from the above mentioned Research Stations provides a good indication of climatic conditions within the region.

Table 2-1: Southern Cross Airfield Station Temperature Data and Windarling Station Rainfall Data

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ост	NOV	DEC	ANNUAL
Mean Max Temp (°C) (Southern Cross Airfield)	34.7	33.7	30.5	26.4	21.5	17.9	16.6	18.5	21.5	26.3	29.9	32.7	25.8
Mean Min Temp (°C) (Southern Cross Airfield)	17.7	17.6	15.0	11.6	7.6	4.6	3.4	3.4	5.1	9.1	12.9	15.3	10.2
Mean Rainfall (mm) (Windarling)	49.9	32.6	24.9	26.1	22.4	22.8	28.8	17.0	19.0	10.7	14.6	12.0	276.5
2014 Rainfall (mm) (Windarling)	162.4	2.5	10.2	60.2	44.0	8.8	Not yet reported by BoM						

Source: http://www.bom.gov.au

2.1.2 Bioregions and Systems

Mapping for the Interim Biogeographic Regionalisation for Australia (IBRA version 6.1) programme placed the Project area in the Southern Cross subregion of the Coolgardie Bioregion (SEWPaC, undated). The subregion and bioregion, respectively, is described in McKenzie et al. 2002 as follows:

"The Southern Cross subregion comprises gently undulating uplands on granite strata and broad valleys with bands of low greenstone hills."

"The Coolgardie Bioregion is within the Yilgarn Craton. Its granite basement includes Archaean Greenstone intrusions in parallel belts. Drainage is occluded. The climate is arid to semi-arid warm Mediterranean with 250-300mm of mainly winter rainfall. Diverse woodlands, rich in endemic eucalypts, occur on low greenstone

hills, on alluvial soils on the valley floors, around the saline playas of the region's occluded drainage system, and on broad plains of calcareous earths.

The granite basement outcrops at mid-level in the landscape. It supports swards of 'granite grass', wattle shrublands and York Gum. The playa lakes support dwarf shrublands of samphire. Sand lunettes are associated with playas along the broad valley floors, and sand sheets surround the granite outcrops.

Upper levels in the landscape are the eroded remnants of a Tertiary lateritic duricrust, with yellow (in the Southern Cross subregion) or red (in the Eastern Goldfields subregion) sandplains, gravel plains and laterite breakaways. These support scrubs and mallees. In the west, these scrubs are rich in endemic Proteaceae; in the east they are rich in endemic acacias."

The Project lies adjacent to the Die Hardy Range, which is one of many Banded Ironstone Formations (BIFs) in the region. These BIF ranges have been recognised for the unique compositions of flora and fauna and for supporting rare and endemic plant species (DEC 2007).

The Priority One (P1) Die Hardy Range / Diemels vegetation complex (banded ironstone formation), Priority Ecological Community (PEC) covers an area of 10,547.54 ha and occurs around the Banded Ironstone Formation geology of the Die Hardy Ranges and the adjacent Yokradine Hills, inclusive of the midslopes, lower slopes and portions of the adjacent plains. The Marda East Project area intersects this PEC with 107.18 ha of the project area mapped by Western Botanical (2014) occurring within the PEC (representing 1.02 % of the total PEC). Ten of the 12 vegetation associations mapped by Western Botanical in the Project area form part of the Priority 1 PEC vegetation complex (banded ironstone formation).

2.1.3 Land Systems Mapping

The Rangeland Land System Mapping for Western Australia dataset (Department of Agriculture and Food, 2009) was consulted to further facilitate a broad assessment of the regional representation of vegetation that occurs in the Survey area. A land system is defined as 'an area or group of areas, throughout which there is a recurring pattern of topography, soils and vegetation'. Four land systems were mapped within the Survey area by Payne *et al.* (1998):

- Campsite: Alluvial plains; very gently inclined plains receiving sheet wash from mafic hills, gently undulating calcareous stony upper plains (erosional) and occasional narrow concentrated drainage tracts. Supports eucalypt woodlands with halophytic understoreys and eucalypt-acacia shrublands.
- Dryandra: Conspicuous banded ironstone and jaspilite ridges and hills with hill slopes of variable country rock, relief up to 150 m or more. Supports dense mixed shrublands with emergent native pines, mallees and casuarinas.
- Moriarty: Low greenstone rises and stony plains, with local pockets of lateritic duricrust on weathered greenstone, very gently undulating plains with stony lag and alluvial plains with texture contrast soils. Supports chenopod, halophytic and acacia shrublands with patchy eucalypt over storeys.
- Yowie: Sandy plains with negligible surface drainage features. Supports shrublands of mulga and bowgada with common mallee eucalypts and patchy wanderrie grasses.

The majority of the Survey area is within the Campsite land system (171.02 ha) followed by the Dryandra land system (61.19 ha); these two land systems represent 94.6% of the Survey area (245 ha).

2.1 Previous Surveys

No fauna surveys have been undertaken in the specific Project area however, previous work has been done at Marda Central:

- Bamford Consulting Ecologists, Level 1 Fauna Assessment of Proposed haul Roads, Camps and Airstrips, 2013.
- Bamford Consulting Ecologists, Targeted Fauna (Malleefowl), Marda Gold Project, 2013.
- Rapallo Environmental, Short Range Endemic Fauna Desktop and Risk Assessment of the Marda Gold Project, 2012.

Additionally biological surveys have been undertaken in nearby areas:

- Ecologia, Terrestrial and Subterranean Fauna Assessment, J4 Mine and Haul Road, 2013.
- Cliffs, Koolyanobbing Iron Ore Project, Biodiversity and Research Management Plan, 2009.
- Ninox Wildlife Consulting, Fauna Survey of the Carina Prospect, 2009.
- Terrestrial Ecosystems, Tree Hollow Assessment for Cockatoos at Battler, King Brown Marda and Golden Orb, 2011.

Level 1 flora and vegetation studies of portions of the Red Legs and Fiddleback deposits have been undertaken for exploration Programme of Work purposes and a Level 2 flora and vegetation survey was completed by Western Botanical in spring 2013 (reported in 2014).

The Western Botanical report provides a detailed summary of previous local and regional botanical surveys in addition to their own comprehensive reporting on the Project area specifically. This report should be considered with reference to the Western Botanical report.

3 METHODOLOGY

3.1 **LEGISLATION**

Species considered to be of national conservation significance (MNES) are protected under the *Environmental Protection and Biodiversity Conservation Act 1999 (EPBC Act*). Under this Act, activities that may have a significant impact on a species of national conservation significance must be referred to the Department of the Environment (DoE), formerly the Department of Sustainability, Environment, Water, Population and Communities (SEWPaC), for assessment.

In WA, all native fauna species are protected under the *Wildlife Conservation Act 1950 (WC Act)*. Fauna species that are considered rare, threatened with extinction or have high conservation value are specially protected by four schedules in this Act (Appendix 1). The DPaW also classifies some other fauna under five different Priority codes (Appendix 1).

In addition, some species of fauna are covered under the 1991 Australian and New Zealand Environment Conservation Council (ANZECC) Convention (Commonwealth (Cth)), while certain birds are listed under the 1974 Japan and Australian Migratory Bird Agreement (JAMBA) (Cth) and the 1986 China and Australian Migratory Bird Agreement (CAMBA) (Cth). More recently Australia and the Republic of Korea agreed to develop a bilateral migratory bird agreement similar to the JAMBA and CAMBA. The Republic of Korea-Australian Migratory Bird Agreement (ROKAMBA) was entered into force in 2007. All migratory bird species listed in the annexes to these bilateral agreements are protected in Australia as MNES under the *EPBC Act*.

3.2 DESKTOP METHODOLOGY

A comprehensive list of conservation significant fauna known to occur in the area was assimilated using online database searches:

- A search of the *EPBC Act* list of protected species was undertaken using the Protected Matters Search Tool to identify fauna considered to be a MNES (Appendix 2). This search was conducted using a polygon that covered the Project area and included a 10 km buffer area. The coordinates for the polygon were as follows: -29.8382E, 118.47619S; -29.8382, 119382202 S; -30.70872E, 119.82202; -30.70872E, 118.47619S; -29.8382 E, 118.47619S.
- A search for fauna previously recorded within 40 km using a centre point at (119°16'50"E, 30°01'00"S) was undertaken using NatureMap (Appendix 3). The records include historical data on specimens held in the WA Museum and the DPaW Fauna Database.
- A request was made for a search of the DPaW databases for threatened and priority fauna. This
 search was conducted using a spot location (119°16'50"E, 30°01'00"S) with a 40km buffer area to
 adequately encompass the Survey area.

3.3 TAXONOMY AND NOMENCLATURE

Taxonomy and nomenclature for fauna species used in this report follow the Western Australian Museum's *Checklist of the Terrestrial Vertebrate Fauna of Western Australia* (2012) with alternative bird taxonomy from Christidis and Boles (2008) given in parentheses. Common names of species were used throughout the text where possible and scientific names were used in the tables and appendices with the corresponding common names.

3.4 FIELDWORK METHODOLOGY

The Level 1 targeted field survey was conducted between June 20th and June 22nd 2014. The survey was designed to assess fauna habitat of the Survey area and the presence of three target species; Malleefowl *Leipoa ocellata* (protected under the *EPBC Act*), Shield-backed Trapdoor Spider *Idiosoma nigrum* (protected under the *EPBC Act*) and Tree-stem Trapdoor Spider *Aganippe castellum* (protected under the *WC Act*). Additionally, opportunistic observations of other species were recorded at all times.

3.4.1 Fauna Habitat

To produce a fauna habitat map of the Survey area, the types of fauna habitat present were assessed and cross-referenced with the vegetation map produced by Western Botanical in 2014.

Vegetation condition is an important aspect of fauna habitat; higher quality of vegetation condition results in higher value fauna habitat. Vegetation condition at the Project was assessed by Western Botanical (2014) and was considered to be in Excellent to Very Good condition. The vegetation structure was considered to be intact with the exception of historic drill lines, drill pads and access tracks previously cleared during exploration drilling; however these areas were observed to be regenerating and recovering well.

The areas and percentages of potential impact on the fauna habitats were calculated using the boundaries and extents of the vegetation associations mapped by Western Botanical (2014). Western Botanical (2014) mapped vegetation over 245.29 ha within the Marda East tenements. Presently the total proposed impact footprint of the Marda East project is expected to be 67.18 ha.

3.4.2 Shield-backed Trapdoor Spider and Tree-stem Trapdoor Spider

Spider search sites were located in different habitats across the Survey area and outside of the defined Survey area; a total of 15 sites were searched, of these 12 were within the Survey area.

Search sites comprised minimum 10 x 10 metre quadrats which were searched for a minimum of 15 minutes each for signs of the spiders' burrows. Any burrows found were to be measured, photographed and logged in the GPS.

3.4.3 Malleefowl

Western Botanical recorded Malleefowl mounds that were opportunistically encountered within the Marda East Project area during their Level 2 Flora and Vegetation Assessment; a total of 11 mounds were recorded. These mounds were revisited and assessed during the current survey; the mounds were re-classified by zoologists as Active or Inactive.

Active mounds would show signs of fresh scratching or loose soil and Malleefowl footprints may be observed; active mounds would likely contain abundant plant material and shell fragments may be evident. Inactive mounds would likely have compacted soil, limited or no plant material and show signs of weathering, erosion and/or colonisation by plants.

3.5 CONTRIBUTING AUTHORS

The strategy for the fauna assessment was developed and managed by APM Principal Biologist Dr Mitch Ladyman.

The field component of this survey was undertaken by Dr Mitch Ladyman and Mr Shane McAdam.

The subsequent reporting was completed by Dr Mitch Ladyman and Mr Shane McAdam with assistance from Ms Corinne Chambers.

4 RESULTS

4.1 DESKTOP SURVEY

Based on searches of the Protected Matters and NatureMap databases, 14 species of conservation significance could potentially occur in the Survey area. These species comprise 10 birds, two mammals and two reptiles (Table 4-1).

A likelihood of occurrence analysis revealed that 4 of the species are unlikely to occur, 6 are likely to occur, 3 species have the potential to occur and one species (Malleefowl) has been recorded in the Survey area. The total list of conservation significant species and the likelihood of their occurrence in the Survey area is presented in Table 4-1.

Table 4-1: List of Conservation Significant Species potentially occurring in the Survey area

	(Conservation Statu	us			
Species	Commonwealth (EPBC Act)			Habitat Description	Likelihood of Occurrence	
BIRDS						
Malleefowl Leipoa ocellata	Vulnerable	Schedule 1 Division 2		Malleefowl occurs in semi-arid and arid zones in temperate Australia. It mainly occupies shrubland and low woodland dominated by multi-stemmed Eucalypt species on sandy or loamy soils with an abundance of leaf litter (DoE SPRAT 2014).	Occurs Active mounds recorded in the Survey area. Abundant suitable habitat in the Survey area. However habitat is not limited to the Survey area and is broadly available locally	
Cattle Egret Ardea ibis	Migratory Wetland Species			The Cattle Egret is classed as a migrant, as it was originally from Asia. The species often feeds with cattle, eating insects disturbed by the cattle as they graze. The Cattle Egret can also be seen feeding in fresh water environments if conditions are favourable and frogs and tadpoles are abundant. This species can be present at all times of the year and roosts in colonies (DoE SPRAT 2014).	Unlikely to occur Suitable habitat is unavailable.	
Great Egret Ardea alba	Migratory Wetland Species			This species is classified as migratory but there is little evidence to support this. The Great Egret is present at all times of year in fresh and saltwater environments. Great Egrets are widespread in Australia. They occur in all states and territories of mainland Australia and in Tasmania. They often occur solitarily, or in small groups when feeding. They roost in large flocks that may consist of hundreds of birds. They live in a wide variety of habitats ranging from inland to coastal. The species usually frequents shallow waters. They mainly forage by wading through water consuming a diet of fish, molluscs, crustaceans, lizards, snakes, frogs and small mammals and birds (DoE SPRAT 2014).	Unlikely to occur Suitable habitat is unavailable.	

	(Conservation Statu	ıs			
Species	Commonwealth State DPaW (EPBC Act) (WC Act) (Priority Status)			Habitat Description	Likelihood of Occurrence	
Peregrine Falcon Falco peregrinus (inc. subsp. macropus)		Schedule 4 Division 2		The Peregrine Falcon is found in most habitats and altitudes throughout Australia. This species requires abundant avian prey and secure nest sites. The Peregrine Falcon prefers coastal and inland cliffs or open woodlands near water, but can even be found nesting on tall city buildings (DoE SPRAT 2014).	Potential to occur This species may nest in the BIF ranges and forage over the Survey area. However it would not be dependent on habitats within the Survey area.	
Australian Bustard Ardeotis australis			Priority 4	Australian Bustards are found in tussock grassland, <i>Triodia</i> hummock grassland, grassy woodland, low shrublands and structurally similar artificial habitats such as croplands and golf-courses. They will also use denser vegetation when this has been opened up by recent burning (Garnett and Crowley 2000).	Likely to occur Species has been recorded in the local area (DPaW 2013). Abundant suitable habitat in the Survey area. However habitat is not limited to the Survey area and is broadly available locally	
Major Mitchell's Cockatoo Cacatua leadbeateri		Schedule 4 Division 2		Major Mitchell's Cockatoos occur in sparsely timbered grasslands, scrublands, stands of Casuarinas along sand ridges and covering rocky outcrops, and mallee. They are always found in the vicinity of water and they require large, old, hollow-bearing Eucalypts for breeding (Johnstone and Storr 1998).	Likely to occur Species has been recorded in the local area (DPaW 2013). Abundant suitable habitat in the Survey area. However habitat is not limited to the Survey area and is broadly available locally	
Fork-tailed Swift Apus pacificus	Migratory Marine Species			The Fork-tailed Swift is a migratory species. Individuals are almost exclusively aerial and feed at high altitudes. During thunderstorms and cyclones birds forage lower to the ground, and emergent termites are one source of food that brings this species down to lower altitudes (DoE SPRAT 2014).	Potential to occur May utilise the local area while hawking for insects. Abundant suitable habitat in the Survey area. However habitat is not limited to the Survey area and is broadly available locally	

	(Conservation Statu	IS			
Species	Commonwealth State DPaW (EPBC Act) (WC Act) (Priority Status)			Habitat Description	Likelihood of Occurrence	
Rainbow Bee-eater Merops ornatus	Migratory Terrestrial Species			This species is moderately common to common in open woodland and near water. Though the Rainbow Bee-eater is classified as a migratory, not all individuals of the species migrate. It is most commonly observed in ones and twos but is occasionally seen in small flocks of up to 100 individuals (DoE SPRAT 2014).	Likely to occur Species has been recorded in the local area (DPaW 2013). Abundant suitable habitat in the Survey area. However habitat is not limited to the Survey area and is broadly available locally	
Hooded (Dotterel) Plover Thinornis (Charadrius) rubricollis			Priority 4	The Hooded Dotterel is medium in size for a plover, stocky, and pale in colour with a distinct black hood, white collar, red bill and red legs. In Western Australia, Hooded Plovers are generally recorded on ocean beaches and salt lakes where they feed on insects, sandhoppers (<i>Orchestia</i> sp.), small bivalves, and soldier crabs (<i>Mictyris platycheles</i>). The species also nests on the beaches or in adjacent dunes.	Unlikely to occur Suitable habitat is unavailable.	
Shy Heathwren Hylacloa cauta subsp. whitlocki			Priority 4	The Shy Heathwren (Grasswren, Hylacola) is a small passerine (perching bird) that inhabits shrublands and eucalypt woodlands, but will also utilise post fire regeneration and uncleared road verges. It prefers stony hills and is distributed across the south west of Western Australia, east and north of the Darling Scarp. Nesting close to the ground or on the ground amongst vegetation this species is especially vulnerable to feral predators.	Likely to Occur Abundant suitable habitat in the Survey area. However habitat is not limited to the Survey area and is broadly available locally.	
MAMMALS						
Numbat Myrmecobius fasciatus	Vulnerable			Falling within the Critical Weight Range (35 – 5500 grms), populations of this small marsupial have been decimated by feral predators across its range. A highly specialised diet of termites also determines that this species has very specific habitat requirements. Eucalypt woodlands are the primary habitat of this species as they provide hollows for refuge and nesting, and an abundance of termites on which to feed.	Potential to Occur There is potential for this species to occur based on the availability of habitat. However, the likelihood of occurrence is low due to the rarity of the species.	

	(Conservation Statu	ıs		
Species			DPaW (Priority Status)	Habitat Description	Likelihood of Occurrence
Greater Long-eared Bat Nyctophilus major			Priority 4	Known to be wide-spread in the arid Coolgardie Bioregions, the taxonomy of this species is presently unclear. It is common but patchily distributed through eucalypt woodlands with well-defined shrub strata. It feeds by gleaning invertebrates from the surfaces of vegetation and can be found feeding from the ground. Secure populations are known to occur in the Mount Manning Nature Reserve.	Likely to Occur Abundant suitable habitat in the Survey area. However habitat is not limited to the Survey area and is broadly available locally.
INVERTEBRATES					
Shield-backed Trapdoor Spider Idiosoma nigrum	Vulnerable	Schedule 1 Division 7		Burrows tend to be located in soil dominated by clay/loam and rock or by sandy clay/loam and rock. This environment is necessary to provide a microhabitat that supports tubular burrows that are 20-30 cm deep with a trapdoor diameter of >2.0 cm (Main 1992) that provide stable temperature and humidity conditions which perpetuate when they close their burrow during the late summer months and aestivate (Main 1985).	Unlikely to occur Though habitat is present the Naturemap search does not indicate the species has been recorded near the Survey area. The larger area of the MNES search indicates a presence regionally.
Tree-stem Trapdoor Spider Aganippe castellium			Priority 4	The Tree-stem Trapdoor inhabits areas that are prone to localised flooding and, as such, construct burrows with elevated palisades around the entrance, comprising leaves and twigs that deflect water. As for most mygalomorph spiders individuals are long lived and invest significant time in burrow construction. Thus, trampling and habitat destruction from fire have a significant impact on local populations. This contributes to the species conservation significance.	Likely to Occur Abundant suitable habitat in the Survey area. However habitat is not limited to the Survey area and is broadly available locally.

4.2 FIELD SURVEY

4.2.1 Fauna Habitat

Fauna assemblages are closely aligned with available habitats. The habitat types chosen represent a scale relevant to the small size of the Survey area in relation to the surrounding landscape and largely reflect landform, soil type and vegetation communities.

The Survey area covers six habitat types (Figure 4-1):

- Tall Eucalypt Woodland over Halophytic understorey on Alluvial Plain.
- Low Eucalypt Woodland over Acacia Shrubland on Alluvial Plain.
- Low Eucalypt Woodland over Acacia on Rocky Rises.
- Low Eucalypt Woodland over Spinifex on Alluvial Plain.
- Dense Shrubland on Rocky Rises.
- Dense Shrubland on Alluvial Plain.

A summary of these six habitats are provided in Table 4-2.

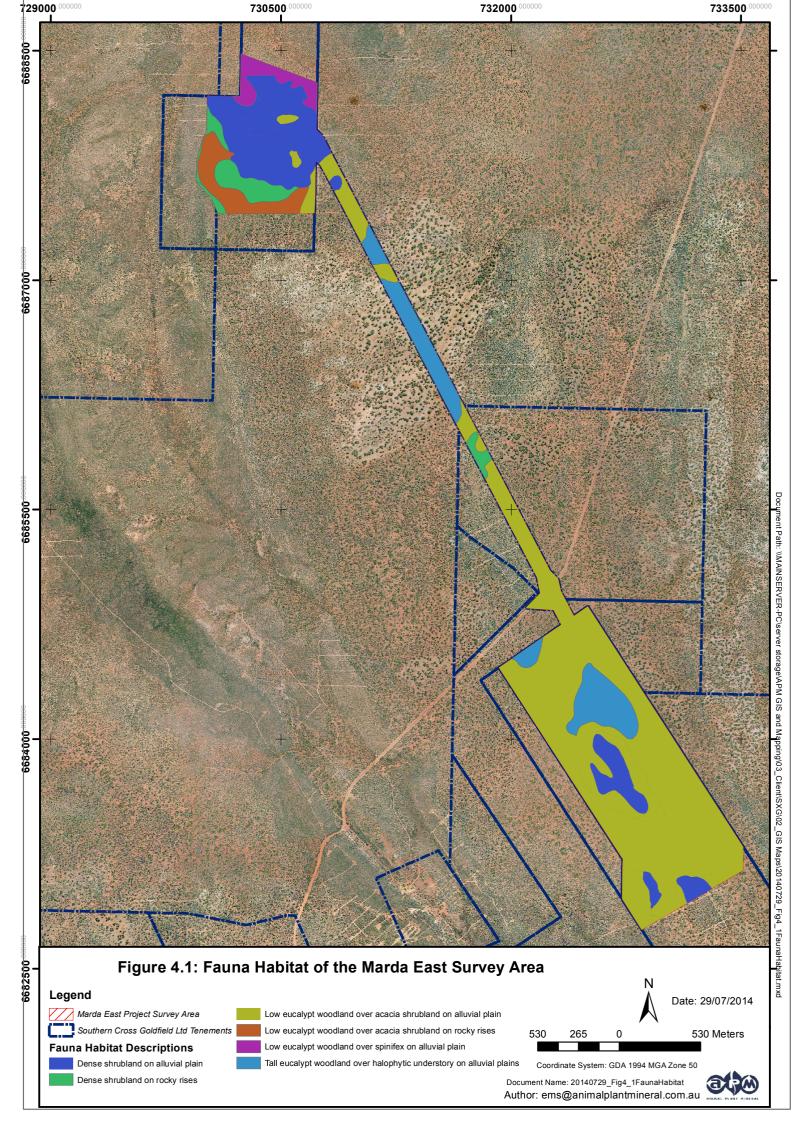


Table 4-2: Summary of Habitat Types identified in the Survey area

Habitat Type	Description of Habitat	Representative Faunal Habitat Attributes	Conservation Significant Species that may Potentially Occur in Habitat
Tall Eucalypt Woodland over Halophytic understorey on Alluvial Plain	Alluvial plain prone to flooding; gravelly clay substrate supporting tall, moderately large, hollow bearing Eucalypts, a variety of mid-level shrubs, surface herbs and low level halophytes.	 Hollow bearing <i>Eucalypts</i> with a range of hollow diameters on living trees and deadfall timber. Exfoliating bark. Detritus around the base of larger trees. Range of vegetation strata suitable to a variety of passerine and non-passerine birds. Relatively dense shrubs providing cover for cryptic small geckonids. Termitaria in standing and fallen dead timber. Ground not especially suited to burrowing species. Halophytes may attract a small subset of the fauna assemblage that may not occur elsewhere in the Survey area. 	 Tree-stem Trapdoor Spider (Priority 4) – patches of substrate suitable for burrow construction. Fork-tailed Swift (International Agreement) – foraging over the canopy. Australian Bustard (Priority 4) – foraging and nesting. Major Mitchell's Cockatoo (Other Specially Protected Fauna) – foraging and nesting where suitable hollows can be sourced. Peregrine Falcon (Other Specially Protected Fauna) – foraging over and roosting within upper vegetation strata. Shy Heathwren (western) (Priority 4) – foraging but not likely nesting. Rainbow Bee-eater (International Agreement) – foraging only. Greater Long-eared Bat (Priority 4) – foraging and roosting in hollows. Numbat (Vulnerable) – foraging and refuging in suitable hollows.

Conservation Significant Species Representative Faunal Habitat Description of Habitat that may Potentially Occur in **Habitat Type Attributes** Habitat Low Eucalypt Gravelly clay loam substrate; this habitat is situated on an alluvial plain however a slight gradient Hollow bearing Eucalypts with a Tree-stem Trapdoor Spider (Priority means the habitat is subject to surface water flow but not flooding. Eucalypt woodland and open Woodland over range of hollow diameters on living 4) – patches of substrate suitable for Acacia shrubland Acacia shrubland. trees and deadfall timber. burrow construction. on Alluvial Plain Exfoliating bark. Fork-tailed Swift (International Agreement) - foraging over the • Detritus around the base of larger canopy. trees. • Australian Bustard (Priority 4) - Range of vegetation strata suitable to foraging and nesting. a variety of passerine and nonpasserine birds. Major Mitchell's Cockatoo (Other Specially Protected Fauna) - Relatively dense shrubs providing foraging and nesting where suitable cover for cryptic small geckonids. hollows can be sourced. · Termitaria in standing and fallen dead Peregrine Falcon (Other Specially timber. Protected Fauna) - foraging over and roosting within upper • Gravelly clay loam ideal for vegetation strata. burrowing. • Shy Heathwren (western) (Priority 4) - foraging but not likely nesting. Rainbow Bee-eater (International Agreement) – foraging only. • Greater Long-eared Bat (Priority 4) foraging and roosting in hollows. Numbat (Vulnerable) – primarily foraging and possible temporary refuge in marginally suitable hollows.

Conservation Significant Species Representative Faunal Habitat Description of Habitat that may Potentially Occur in **Habitat Type Attributes** Habitat Low Eucalypt Similar to the Low Eucalypt Woodland over Acacia shrubland on Alluvial Plain habitat in terms of Fewer and smaller hollow bearing Tree-stem Trapdoor Spider (Priority vegetation and detritus however this habitat comprises steeper slopes with more variable and Eucalypts with a limited diameter 4) – patches of substrate suitable for Woodland over rocky substrate. burrow construction. hollows suitable for bats, some Acacia shrubland reptiles and smaller hollow nesting on Rocky Rises Fork-tailed Swift (International birds. Agreement) - foraging over the • Limited exfoliating bark. canopy. · Limited detritus due to the presence • Australian Bustard (Priority 4) of smaller trees. foraging and nesting. · Limited vegetation strata due to the Major Mitchell's Cockatoo (Other presence of smaller trees. Specially Protected Fauna) foraging and nesting where suitable Relatively dense shrubs providing hollows can be sourced. cover for cryptic small geckonids. Peregrine Falcon (Other Specially · Patches of gravelly loam suitable for Protected Fauna) - foraging over burrowing but dominated by rocky and roosting within upper areas less suitable. vegetation strata. • Shy Heathwren (western) (Priority 4) - foraging but not likely nesting. Rainbow Bee-eater (International Agreement) – foraging only. • Greater Long-eared Bat (Priority 4) foraging and roosting in hollows. Numbat (Vulnerable) – primarily foraging and possible temporary refuge in marginally suitable hollows.

Conservation Significant Species Representative Faunal Habitat Description of Habitat that may Potentially Occur in **Habitat Type Attributes** Habitat Low Eucalypt Similar to Low Eucalypt Woodland habitats in terms of vegetation structure with the addition of · Valuable and less well-represented Swift (International Fork-tailed Triodia hummocks (± 30cm in height). Fallen logs are present however gravel and rocks are habitat. Agreement) - foraging over the Woodland over absent and the alluvial plain substrate consists of sandy loam. canopy. Spinifex on Alluvial A significant number of hollow Plain • Australian Bustard (Priority 4) bearing Eucalypts, both standing and deadfall. foraging. Not likely to nest due to substrate. Exfoliating bark. Major Mitchell's Cockatoo (Other Substrate very well suited to a variety Specially Protected Fauna) of burrowing invertebrates, small foraging, with nesting possible in mammals and reptiles. larger eucalypts. Valuable patches of detritus Peregrine Falcon (Other Specially comprising rotting timber and leaf Protected Fauna) - foraging over litter. canopy and roosting within canopy but not nesting. • Less diverse vegetation strata supporting a less diverse avifauna • Shy Heathwren (western) (Priority 4) assemblage. - potentially foraging but unlikely nesting. • Unique habitat due to the presence of spinifex which, alone, can support Rainbow Bee-eater (International a unique fauna assemblage. Agreement) – foraging and nesting. • Greater Long-eared Bat (Priority 4) foraging and roosting. Numbat (Vulnerable) – foraging only.

Slightly elevated heath land with a stony substrate; subject to dendritic drainage.	Habitat Type	Description of Habitat	Representative Faunal Habitat Attributes	Conservation Significant Species that may Potentially Occur in Habitat
		Slightly elevated heath land with a stony substrate; subject to dendritic drainage.	the landscape that provides some crevice habitat used as refuge by small reptiles. Small rocky breakaways also provide rocks of suitable size for refuge for dragons and geckonids. Dense shrubs provide abundant habitat for small passerine birds. Shrubs also drop significant detritus around the base providing habitat resources for trapdoor spiders. Detritus and soil, combined, provides foraging and nesting habitat	 4) - patchy substrate suitable for burrowing. Fork-tailed Swift (International Agreement) - foraging over the canopy. Australian Bustard (Priority 4) - foraging only. Major Mitchell's Cockatoo (Other Specially Protected Fauna) - foraging only. Peregrine Falcon (Other Specially Protected Fauna) - foraging over the canopy. Shy Heathwren (western) (Priority 4) - foraging and nesting in the low dense shrubland vegetation. Mallefowl (Threatened) - foraging and nesting. Greater Long-eared Bat (Priority 4) -

Habitat Type	Description of Habitat	Representative Faunal Habitat Attributes	Conservation Significant Species that may Potentially Occur in Habitat
Dense Shrubland on Alluvial Plain	Similar to the Dense Shrubland on Rocky Rises habitat in terms of vegetation however this habitat is not elevated and has a less rocky substrate which is more comparable to the Low Eucalypt Woodland on Alluvial Plain habitats.	 Dense shrubs provide abundant habitat for small passerine birds. Shrubs also drop significant detritus around the base providing habitat resources for trapdoor spiders. Detritus and soil, combined, provides foraging and nesting habitat resources for malleefowl. Gravelly clay loam ideal for burrowing. 	 Tree-stem Trapdoor Spider (Priority 4) — suitable for burrow construction. Fork-tailed Swift (International Agreement) — foraging over the canopy. Australian Bustard (Priority 4) — predominantly foraging. Major Mitchell's Cockatoo (Other Specially Protected Fauna) — foraging within shrub strata. Peregrine Falcon (Other Specially Protected Fauna) — foraging over the canopy. Shy Heathwren (western) (Priority 4) — foraging and nesting in the dense base of shrubland vegetation. Mallefowl (Threatened) — foraging and nesting. Greater Long-eared Bat (Priority 4) — foraging only.

4.2.2 Habitat Impact

The potential impact on the habitats considered most valuable to fauna species of conservation significance are outlined in Table 4-3. The total proposed impact footprint of the Marda East project is expected to be 67.18 ha. Western Botanical mapped vegetation associations over 245.29 ha and the boundaries and extents of these vegetation associations have been used to calculate the boundaries and extents of the fauna habitats.

Impacts to integral components of the fauna habitat that are limited in their availability are of most concern. These include nesting hollows or nesting sites for birds and refuge sites for other animals. It is the impacts on these limited resources that have been calculated and presented in Table 4-3.

All of the conservation significant fauna listed in Tables 4-2 and 4-3 are expected to forage broadly across their requisite habitats within and outside of the Project area. Those species that forage widely over all habitat within the project area will lose a total of 67.18 ha of foraging habitat once clearing has been completed. As these species are not specifically dependent on habitats within the Project area for feeding the loss of feeding habitat associated with the development of the Project is insignificant in a Regional context.

Approximately 61 ha of the Dryandra and 171 ha of the Campsite land systems occurs within the Marda East project area. The area of Dryandra and Campsite land systems that intersects or occurs adjacent to the Project area spans some 5387 ha and 1421 ha, respectively. Therefore the impact to areas of these two land systems is insignificant (Table 4-4).

4.2.3 Impact to Banded Iron Formations and Conservation Reserves

The proposed 'Class A' Nature Reserve in the Die Hardy Range occurs immediately adjacent the north-western boundary of the Red Legs prospect. The proposed mine impact footprint for the Red Legs deposit spans two conical hills less than 1km east of the Die Hardy Range ridgeline. Though part of the Banded Ironstone Formation geology of the Die Hardy Ranges and the adjacent Yokradine Hills, which includes midslopes and lower slopes, these conical hills do not support any fauna habitats that are of particular value to fauna species normally associated with banded ironstone formations. For instance, there are no south-facing vertical cliffs that confer the benefits of lower temperatures and higher humidity to many BIF short range endemic invertebrate species. There are also no cliffs to be used by nesting Peregrine Falcons. Disturbance to these conical hills is unlikely to isolate or fragment any populations of fauna inhabiting these slope habitats.

Proximity to the Die Hardy Range also places the Red Legs deposit within, and parts of the Haul Road and Fiddleback deposit partially within the Priority One (P1) Die Hardy Range / Diemels vegetation complex (banded ironstone formation) Priority Ecological Community (PEC). The boundary of this PEC also follows the Banded Ironstone Formation geology of the Die Hardy Ranges and the adjacent Yokradine Hills, inclusive of the mid and low slopes. Western Botanical (2014) report that 107.18 ha of the Marda East Project intersects this PEC and, thus, has the potential to cause impact to 1.02% of the PEC.

However, the fauna habitat of greatest value to fauna species occurring within the Project area was Tall Eucalypt Woodland over Halophytic understorey on Alluvial Plain (mapped as Vegetation Association 2.7 in Western Botanical (2014)) and this vegetation association is not included vegetation of conservation significance associated with this PEC. Therefore, impacts to the PEC are not likely to significantly impact the fauna habitat values of the region.

Table 4-3: List of Conservation Significant Species and the Potential for Impact on Habitat

		Presence/Absence	Resource Specific Dependency	Area Mapped (ha)	Proposed Impact (ha)	% Impact on Total Area Mapped	% of Total Impact Area
Malleefowl	Leipoa ocellata	Occurs	Nesting habitat	59.42	15.71	26.44	23.38
Cattle Egret	Ardea ibis	Not present based on habitat	n/a	n/a	n/a	n/a	n/a
Great Egret	Ardea alba	Not Present based on habitat	n/a	n/a	n/a	n/a	n/a
Peregrine Falcon	Falco peregrinus (inc. subsp. macropus)	Potential	Project area wide foraging only	245.29	67.18	27.39	100.00
Australian Bustard	Ardeotis australis	Likely	Project area wide foraging only	245.29	67.18	27.39	100.00
Major Mitchell's Cockatoo	Cacatua leadbeateri	Likely	Nesting habitat	26.32	7.17	27.24	10.67
Fork-tailed Swift	Apus pacificus	Potential	Project area wide foraging only	245.29	67.18	27.39	100.00
Rainbow Bee-eater	Merops ornatus	Likely	Nesting habitat	26.32	7.17	27.24	10.67
Hooded (Dotterel) Plover	Thinornis (Charadrius) rubricollis	Not Present	n/a	n/a	n/a	n/a	n/a
Shy Heathwren	Hylacloa cauta subsp. whitlocki	Likely	Nesting habitat	22.31	2.83	12.68	4.21
Numbat	Myrmecobius fasciatus	Potential	Denning habitat	26.32	7.17	27.24	10.67
Greater Long-eared Bat	Nyctophilus major	Likely	Roosting habitat	185.87	32.86	17.68	48.91
Shield-backed Trapdoor Spider	Idiosoma nigrum	Not present based on survey	n/a	n/a	n/a	n/a	n/a
Tree-stem Trapdoor Spider	Aganippe castellium	Not present based on survey	n/a	n/a	n/a	n/a	n/a

Table 4-4: Percentage Areas of Impact Relative to Land Systems.

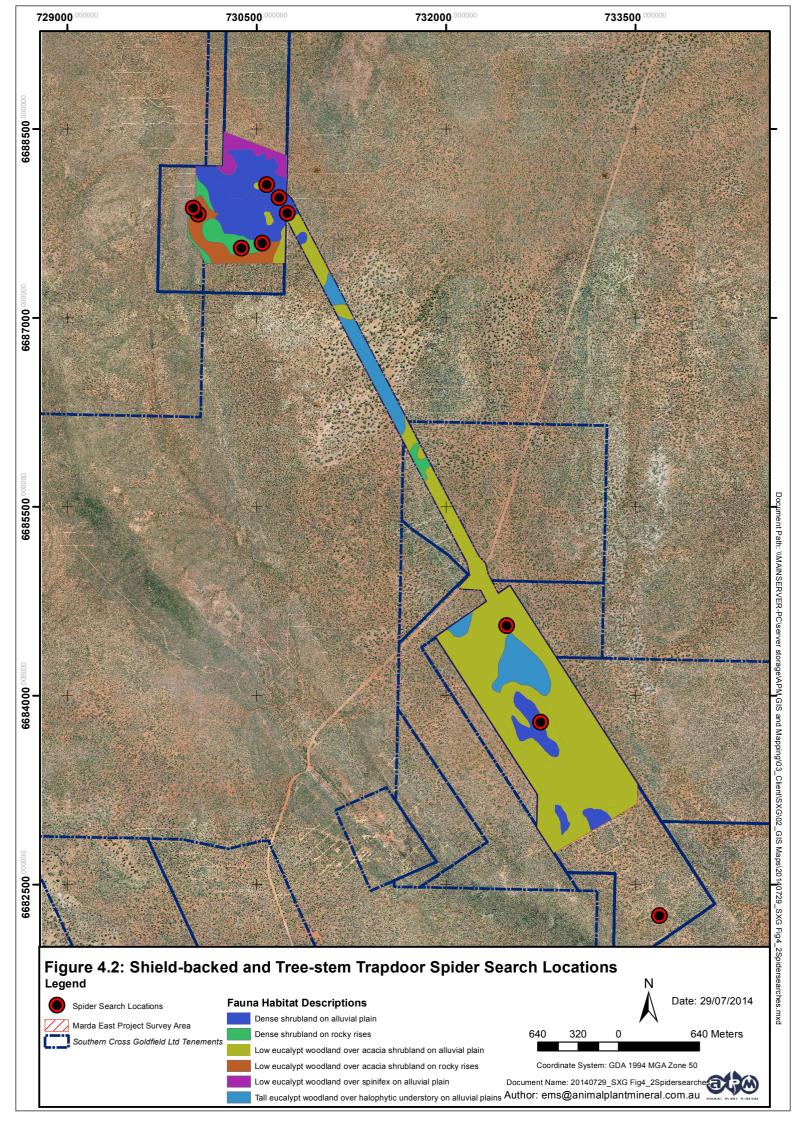
	Area of Land System Within Project Area (ha)	Area of Land System Within or Immediately Adjacent Project Area (ha)	% Impact of Project on Land System Within or Immediately Adjacent Project Area (ha)	Total Area of Land System in the Region	% of Project Area in the Context of Regional Land System
Dryandra	61	5387	1.13	35301	0.1728
Campsite	171	1421	12.03	148931	0.1148
Moriaty	6	93	6.45	259563	0.0023
Yowie	7	2980	0.23	1622816	0.0004

4.2.4 Shield-backed Trapdoor Spider and Tree-stem Trapdoor Spider

An intensive presence/absence search for the Shield-backed Trapdoor Spider and Tree-stem Trapdoor Spider at 15 sites over five of the six different habitat types did not locate either spider or evidence of trapdoor burrows.

The Low Eucalypt Woodland over Spinifex on Alluvial Plain was not searched due to lack of suitable habitat.

The search effort totalled 7 person hours and search locations are presented in Figure 4-2.



4.2.5 Malleefowl

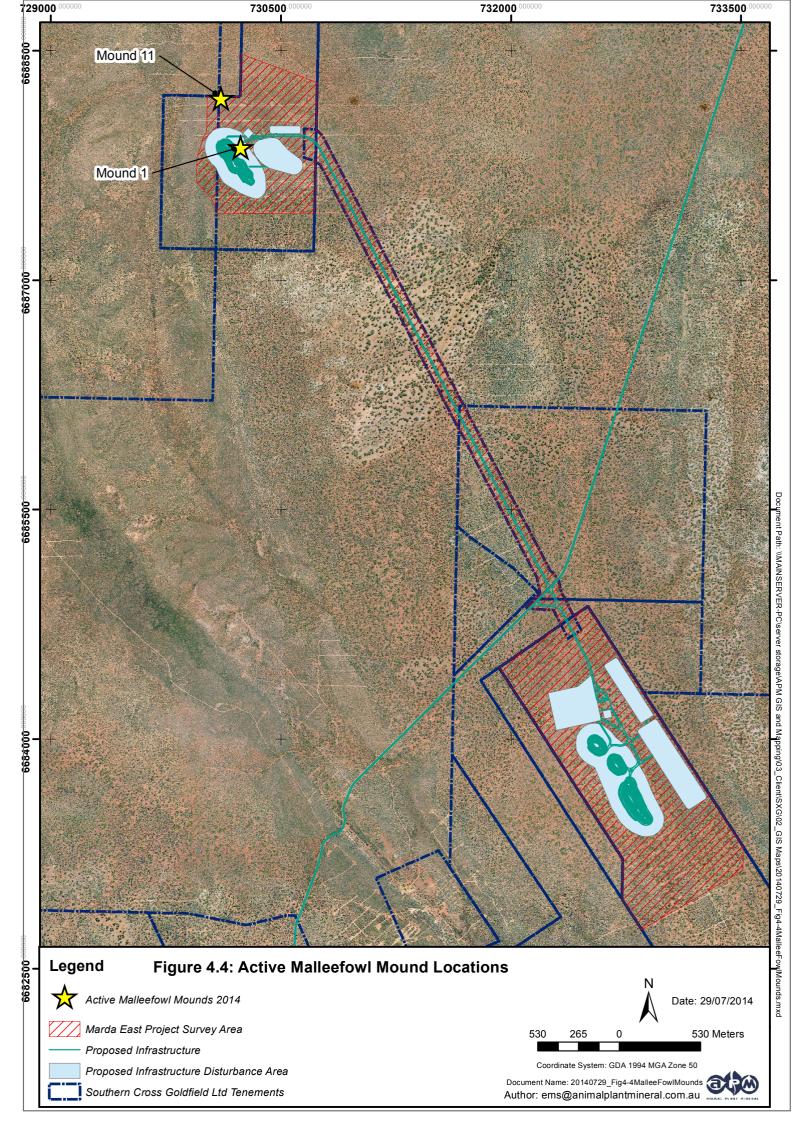
In 2013 Western Botanical searched the Survey area utilising an intensive foot transect methodology intent on visually covering the entire site. During this search they located 11 Malleefowl mounds.

Of the 11 mounds previously recorded eight were within the Red Legs prospect, two within the Haul Road alignment and one at the Fiddleback prospect. Only two of the 11 mounds were classified as active during the 2013 survey; these were at site number 1 and site number 11. The current survey confirmed that only these same two mounds are presently active. Photographs of the active mounds are provided in Figure 4-3 and the locations are provided in Figure 4-4.



Figure 4-3: Active Malleefowl Mounds

The remains of a predated (potentially by a fox) Malleefowl were located in close proximity (approximately 2m away) to the mound at site number 11.



4.2.6 Feral Animals

There were many signs of the presence of rabbits throughout the Survey area and it is suspected that the predated Malleefowl had been killed by a fox. Both of these species are listed as potentially occurring within the area by the Protected Matters search.

5 DISCUSSION

5.1 Previously Recorded Fauna of Conservation Significance

Based on searches of the Protected Matters and NatureMap databases, 14 species of conservation significance had previously been recorded in the search radius around the Project area. Four of these were immediately discounted due to a lack of requisite habitat. Only one species, the Malleefowl, was recorded during the present survey and one species, the Tree-stem Spider, was discounted after intensive searching failed to record any evidence of this species.

Of the remaining eight remaining species, five were determined likely to occur and three have the potential to occur based on the presence of suitable habitat and the frequency at which these species are normally encountered.

Prior to the field survey a formal request was made to DPAW WA for data contained within the Department's Threatened Fauna database, which includes species which are declared as 'Rare or likely to become extinct (Schedule 1)', 'Birds protected under an international agreement (Schedule 3)', and 'Other specially protected fauna (Schedule 4)'. These data are the most accurate and reliable in determining historical presence/absence.

Of the eight remaining species likely to occur or having the potential to occur in the Project area the DPAW WA Threatened Fauna database search revealed the following:

- The Peregrine Falcon was recorded most recently in the Yokradine Hills and Diemels area in 2000.
- The Australian Bustard was observed on the Mount Jackson Road and at the Golden Orb mine site in 2012 and 2011, respectively.
- The Major Mitchell's Cockatoo was recorded at the Golden Orb mine site in 2011.
- The Fork-tailed Swift was recorded over Lake Deborah (46km SSW) in 2012.
- The Rainbow Bee-eater has been formerly reported on 22 occasions within the search radius since 2000.
- The Shy Heathwren was recorded once at Mount Jackson in 2000.
- The Greater Long-eared Bat was recorded on two occasions at Mount Jackson in 2012 and 2013.

The DPAW Threatened Fauna database search returned records of the Priority 4 Crested Bellbird (Southern) *Oreoica gutturalis gutturalis* (Vigors & Horsfield, 1827). These records did not appear on the Naturemap search which returned records only for the Crested Bellbird. The Project area occurs on the boundary of the distribution of the two variants of this species. Therefore, it is likely that the Threatened Fauna data base records, one of which is more southerly in Lake Deborah have detected the Southern variant where the Naturemap record (the lower extent of which was north of Lake Deborah) did not.

The Numbat was not recorded in either the DPAW Threatened Fauna search or the Naturemap search. This species was included in the fauna assessment as it appeared in the broader MNES search. Moreover, suitable habitat for this species was shown to be present within the Project area. It should be clearly stated that this species has not been recorded in the local area around the Marda East project and its consideration in this fauna assessment is purely precautionary as this species is so rarely recorded that exact habitat preferences and extents are not known with certainty.

5.2 Malleefowl

Malleefowl are sedentary and most individuals establish pairs and remain in the same area throughout the year (see Frith, 1962b; Marchant & Higgins, 1993; Benshemesh, 2000; Garnett & Crowley, 2000). Over the course of a year, adult pairs may roam over an area of one to several kilometres. During the breeding season, males remain close to the nest most of the time. Individuals may display local shifts in home range between seasons or years.

Egg-laying usually starts in September until mid- to late-summer or sometimes early autumn. Chicks usually begin hatching and emerging from the mound in November. Most usually emerge before January but in some seasons hatching may continue until March. Young birds disperse long distances after leaving the nest without any assistance or parental care from the adults.

The Malleefowl occupies semi-arid to arid shrublands and low woodlands dominated by mallee and associated habitats, such as broombush Melaleuca uncinata and native pine Callitris spp. scrub (Frith 1962a, b; Marchant & Higgins, 1993; Benshemish, 1999; Garnett & Crowley, 2000). Malleefowl favour mallee that is long unburnt and ungrazed. In the Project area Malleefowl have been recorded in, or are very likely to utilise two of the fauna habitats Dense Shrubland on Alluvial Plain and Dense Shrubland on Rocky Rises. These two fauna habitats are analogous with Vegetation Associations 1.1, 1.2, 1.4, 2.6, 3.1, 3.2 and 3.3 which collectively account for 15.71 ha, or 23.38 % of the total proposed impact footprint (67.18 ha).

The loss of habitat equates to 26.44 % of the total suitable Malleefowl habitat mapped in the Project Area. However, significant areas of suitable Malleefowl habitat occurs outside of proposed disturbance areas within the tenements. Areas of the Dryandra, Yowie and Moriarty land systems that directly intersect or occur adjacent to the Project area cover 4,494 ha and each of these land systems contain vegetation and land form features that provide both feeding and nesting habitat for this species. Therefore, the impact associated with this Project is not considered significant in a local context. Regionally, these land systems cover 2, 031, 310 ha.

The active mound recorded as Site 11 occurs adjacent the boundary of the Red Legs survey area and is approximately 300m away from the proposed Red Legs abandonment bund and any other proposed disturbance. The active mound recorded as Site 1 is located between the abandonment bund and the pit at the Red Legs deposit and will likely be impacted should the Project proceed.

- Recommendation 1 Monitor mound Site 1 quarterly in the 12 months prior to clearing and construction to determine if the mound being used by Malleefowl; and
- Recommendation 2 If evidence of use is observed and disturbance of a Malleefowl mound is unavoidable, undertake development with regard to advice from the Commonwealth Department of Sustainability Environment Water People and Communities and the WA DPaW.

Any other active Mallefowl mounds not presently within the direct impact footprint, or those that may be used in the future, should be buffered and management actions put in place to prevent disturbance where possible.

In order to prevent potential fatalities to Malleefowl the following management strategies are recommended for implementation:

- Recommendation 3 Lower traffic speeds in the vicinity of historic mounds;
- Recommendation 4 Monitoring existing mounds annually for evidence of use;
- Recommendation 5 Avoid disturbance of any actively used mound with a buffer of 250m or as advised under Recommendation 2;

- Recommendation 6 Where practical, avoid disturbance to existing (historical or inactive) mounds with a buffer of 50m;
- Recommendation 7 Include Malleefowl identification training in Site induction;
- Recommendation 8 Ensure all personnel record sightings of Malleefowl and report these to the Manager Environment; and
- Recommendation 9 ensure all personnel record newly discovered Malleefowl mounds and report these to the Manager Environment

5.3 MAJOR MITCHELL'S COCKATOO

Major Mitchell's Cockatoos occur in sparsely timbered grasslands, scrublands, stands of Casuarinas along sand ridges and covering rocky outcrops, and mallee. They are always found in the vicinity of water and they require large, old, hollow-bearing Eucalypts for breeding (Johnstone and Storr 1998). The nesting hollows required for breeding are the major limiting factor in the persistence of this species across its range.

This species is moderately common in in the north-eastern interior and northern wheat belt. Generally rare and patchily distributed flocks of only up to 40 birds are typically recorded. The Major Mitchell's Cockatoo has only been recorded as breeding in the wheat belt and is specifically dependant on the hollows of larger trees. In the Project area valuable habitat for this species would occur in Tall Eucalypt Woodland over Halophytic Understory (mapped as Vegetation Association 2.7 in Western Botanical (2014)).

The current mine and infrastructure plan indicates that only 27.24% of the total of this habitat mapped by Western Botanical (2014) would be disturbed by the Project. The area proposed to be impacted is 10.67% of the total proposed impact area.

Tall Eucalypt Woodland over Halophytic Understory (analogous with Vegetation Association 2.7 (Western Botanical, 2014)) is the key indicator of the Campsite land system. The area of this land system that directly intersects or occurs adjacent to the Project area covers 5,387 ha and provides nesting habitat to local populations of this species. The 7.17 ha proposed to be disturbed represents only 0.013% of this land system locally. Therefore, the impact associated with this Project is not considered significant in a local context. Regionally, this land systems covers 35, 301 ha.

Efforts to reduce the disturbance of this habitat through reduced clearing or consideration to the impact footprint of the haul road would contribute significantly to the conservation of this species. Additionally, fire management and feral predator control would lead to net positive impacts of mining on this species.

- Recommendation 1 Undertake a nest hollow assessment in the Tall Eucalypt Woodland over Halophytic Understory habitat that occurs across the Project area. The methodology should be consistent with that used previously in the Marda Central project;
- Recommendation 2 Where practical, re-align the Haul Road to avoid impact to mature hollowbearing eucalypt species;
- Recommendation 3 Develop and implement a Fire Management Plan for the Marda East Project;
 and
- Recommendation 4 Develop and implement a Feral Fauna Management Plan for the Marda East Project.

5.4 Rainbow Bee-eater

The Rainbow Bee-eater is a migratory species that is common and broadly distributed across Australia. Threats to this species centre around burrow invasion and predation of nestlings, as the species nests in hollows on the ground. Nests are made in vertical banks in loamy plains, and optimal nesting habitat occurs with Tall Eucalypt over Halophytic Understory fauna habitat, due primarily to the dominant alluvial soil profile.

The current mine and infrastructure plan indicates that only 27.24% of the total of this habitat mapped by Western Botanical (2014) would be disturbed by the Project. The area proposed to be impacted is 10.67% of the total proposed impact area.

The Campsite land system soil structure is described as very gently inclined alluvial plains receiving sheet wash from mafic hills, gently undulating calcareous stony upper plains (erosional) and occasional narrow concentrated drainage tracts), all components of which are favoured by the Rainbow Bee-eater for nesting. The area of this land system that directly intersects or occurs adjacent to the Project area covers 5,387 ha and provides nesting habitat to local populations of this species. The 7.17 ha proposed to be disturbed represents only 0.013% of this land system locally. Therefore, the impact associated with this Project is not considered significant in a local context. Regionally, this land systems covers 35, 301 ha.

Mining can actually have a net positive impact on this species as Rainbow bee-eaters often nest in the soft loamy spoil heaps left during road construction (wind rows) (Ladyman pers. obs) or in disused mine pit walls. Feral fauna control can also greatly enhance fledgling success of populations that occur locally around mine sites.

- Recommendation 1 Undertake a nest hollow assessment in the Tall Eucalypt Woodland over Halophytic Understory habitat that occurs across the Project area. The methodology should be consistent with that used previously in the Marda Central project;
- Recommendation 2 Following road construction, schedule road maintenance (grading) during the period between February and July to avoid impacts on breeding birds;
- Recommendation 3 Develop and implement a Fire Management Plan for the Marda East Project;
 and
- Recommendation 4 Develop and implement a Feral Fauna Management Plan for the Marda East Project.

5.5 SHY HEATHWREN

The Shy Heathwren (Grasswren, Hylacola) is a small passerine (perching bird) that inhabits shrublands and eucalypt woodlands, but will also utilise post fire regeneration and uncleared road verges. It prefers stony hills and is distributed across the south west of Western Australia, east and north of the Darling Scarp.

This species is most likely to occur in Dense Shrubland on Rocky Rise and Low Eucalyptus Woodland over Acacia Shrubland on Rocky Rise fauna habitats. These are analogous to Vegetation Associations 1.4, 1.2,2.3 and 3.1 mapped by Western Botanical (2014) which collectively account for 2.83 ha, or 4.21 % of the total proposed impact footprint (67.18 ha).

The loss of habitat equates to 12.68 % of the total suitable Shy Heathwren habitat mapped in the Project Area. However, significant areas of suitable habitat occur outside of proposed disturbance areas within the tenements. Areas of the Dryandra and Moriarty land systems that directly intersect or occur adjacent to the Project area cover 5,480 ha and each of these land systems contain vegetation and land form features that

provide both feeding and nesting habitat for this species. Therefore, the impact associated with this Project is not considered significant in a local context. Regionally, these land systems cover 294,864 ha.

Nesting close to the ground or on the ground amongst vegetation, this species is especially vulnerable to feral predators and fire is a continuous threat to nestlings and also food availability. Common management practices associated with mining, such as fire mitigation and feral control, could positively influence the habitat value and availability of habitat to this species.

- Recommendation 1 Develop and implement a Fire Management Plan for the Marda East Project;
 and
- Recommendation 2 Develop and implement a Feral Fauna Management Plan for the Marda East Project.

5.6 NUMBAT

It is unlikely that this species occurs in the project area. However, as suitable habitat is available and the project area is within the historical range of this species (Van Dyck and Strahan, 2008) its potential presence cannot be ignored. In the Project area valuable habitat for this species would occur in Tall Eucalypt Woodland over Halophytic Understory (mapped as Vegetation Association 2.7 in Western Botanical (2014)).

The current mine and infrastructure plan indicates that only 27.24% of the total of this habitat mapped by Western Botanical (2014) would be disturbed by the Project. The area proposed to be impacted is 10.67% of the total proposed impact area.

As described in Section 5.3 this fauna habitat also defines the major elements of the Campsite land system. Therefore, habitat suitable for refuging Numbats is present locally over an area of 5,387 and 35, 301 ha regionally.

Predation is the single greatest threat to this species as it is able to occupy any and all habitats that have hollows suitable for refuge and termites available for feeding. Wildfires destroy the fallen timber within which the Numbats regularly retreat. In turn, this leaves them far more vulnerable to predation.

If clearing can be minimised in Fauna Habitat Tall eucalypt woodland over halophytic understory then valuable refuge habitat will be immediately preserved. Ongoing fire control and feral management over the life of the project will contribute significantly to the preservation of this species.

- Recommendation 1 Undertake an intensive trapping program in early October to determine if the species is present in the area;
- Recommendation 2 Where practical, re-align the Haul Road to avoid impact to mature hollowbearing eucalypt species;
- Recommendation 3 Develop and implement a Fire Management Plan for the Marda East Project; and
- Recommendation 4 Develop and implement a Feral Fauna Management Plan for the Marda East Project.

5.7 Greater Long-eared Bat

Local populations of Greater Long-eared Bat have the potential to be impacted by the Project. This species can roost in hollow limbs with only a small diameter, making four of the fauna habitats supporting eucalypt woodland available for roosting.

The current mine and infrastructure plan indicates that only 17.68% of the total of this habitat mapped by Western Botanical (2014) would be disturbed by the Project. The area of suitable habitat proposed to be impacted is 48.91% of the total proposed impact area. Therefore, the Project has the potential to have the greatest impact on this species within the actual impact footprint. However, roosting habitat for this species is broadly available; more so than for any of the other species reported. Habitat requirements are met in a range of vegetation associations on a range of land forms across all four of the Land Systems intersected by the project area. Thus there is a total of 9,881 ha of habitat available for this species in the areas of the land systems that intersect or lie adjacent to the Project area and 2,066,611 regionally. Finally, the most secure populations of this species are known to occur within the Mount Manning Nature Reserve.

As described in Section 5.3 this fauna habitat also defines the major elements of the Campsite land system. Therefore, habitat suitable for refuging Numbats is present locally over an area of 5,387 and 35, 301 ha regionally.

- Recommendation 1 Where practical, re-align the Haul Road to avoid impact to mature hollowbearing eucalypt species;
- Recommendation 2 Develop and implement a Fire Management Plan for the Marda East Project;
 and
- Recommendation 3 Develop and implement a Feral Fauna Management Plan for the Marda East Project.

5.8 TREE-STEM TRAPDOOR SPIDER

The Tree-stem Trapdoor Spider has been previously recorded from the lower slopes to the top of the ridges of the Koolyanobbing Range, in a range of vegetation types (Bamford Consulting Ecologists, 2009). They have also been recorded at Mount Jackson, Helena and Aurora Range and the Die Hardy Range (Cliffs Natural Resources 2009). These ranges surround the Survey area in relatively close proximity. However, as landforms, they are very dissimilar to the Survey area. The Threatened Fauna database search returned 48 records in the search area.

This species is able to burrow in gravelly loam and rocky soils and its absence from heavy loam or clay soil supporting eucalypt over saltbush discounts the potential presence from a number of the fauna habitat types.

Where the species was known to occur at Koolyanobbing Range, individuals were estimated at a density of 74 spiders per hectare. As the burrows are elevated from the ground surface and constructed abutting the base of shrubs they are relatively easy to find. Despite vigorous searching not a single individual or burrow was located during the current survey.

Unlike many mygalomorphs, recent work has revealed that broadly disjunct populations of Tree-stem Trapdoor Spiders are not genetically distinct and therefore cannot be defined as Short Range Endemics. Moreover, the Survey area represents common landforms that are broadly distributed in the region with a high degree of connectivity.

The lack of burrows present in the survey area and the connectivity of landforms and habitats ensure that the Project is unlikely to impact this species.

5.9 OTHER PROTECTED SPECIES

The seven remaining protected species have the potential to be present in the Survey area, but are not specifically dependent upon it. Moreover, these species are not actually dependent upon any of the fauna habitats represented within the Survey area.

The Fork-tailed Swift, Peregrine Falcon and Australian Bustard may all be transient visitors to the Survey area but all four species forage over a wide variety of habitats across the landscape. The Fork-tailed Swift is almost exclusively aerial, even roosting on the wing. Thus disturbances associated with mining have little or no impact on this species. The major resource limitation for the Peregrine Falcon is suitable nest sites which are typically on vertical cliffs. Any peregrine falcons observed in future surveys would likely be nesting in the nearby ranges. Thus mining related disturbances will not impact nesting and, as the species feeds predominantly on birds, the potential for mining impacts on prey is reduced. Mining can actually have a net positive impact as Peregrine Falcons are frequently observed nesting in the walls of disused mine pits (Ladyman pers. obs). Australian Bustards are nomadic, wandering broadly across the plains and showing no specific habitat or territory affinities. Destocking, fire management and feral fauna control associated with mining can often lead to better security for local populations of this species.

The Shield-backed Trapdoor Spider is generally found from the lower to upper slopes of ironstone ridges; not on the very low slopes or surrounding plains. Burrows are generally constructed in cobble soils with gravel and loam. There is most often an association with rock outcrops and Acacia shrubs, particularly *Acacia ramulosa*.

In suitable habitat, and where known to be present, Shield-backed Trapdoor Spiders occur at densities of 250 - 300 burrows per hectare or three burrows in a 10×10 m sampling quadrat. Though cryptic, once one burrow is located they become progressively easier to find as local clusters of individuals tend to construct very similar burrows.

Despite the intensive searching, not a single burrow was located in the Survey area. It may be that the topography is too low. Generally this species show a preference for burrowing at the base of south-facing slopes which have a lower average annual temperature and higher humidity which contributes to water conservation. The flatter topography of the Survey area would not confer any such advantages, particularly in comparison to the surrounding ranges where the species is known to occur.

5.10 FERAL ANIMALS

Though the only direct evidence of feral fauna was the ubiquitous presence of rabbit middens across the Project area, secondary evidence of either cats or foxes was present in the form of the predated Malleefowl. There is no question that both of these species would be common to the Project area. Active control of ferals is the best management strategy and, in remote areas such as this, operation mines are able to commit to and undertake such control.

5.11 IMPACT TO BANDED IRON FORMATIONS AND CONSERVATION RESERVES

The conical hills that will be directly impacted by the Red Legs mine occur within the midslopes and lower slopes of the Die Hardy Ranges and the adjacent Yokradine Hills. Outside of the R77/1, these mid slopes and lower slopes are generally considered as landscapes worthy of conservation and, as such, are included in the proposed 'Class A' Nature Reserve. However, these conical hills are outside of the proposed nature reserve and do not support any fauna habitats that are of particular value to fauna species normally associated with banded ironstone formations.

Western Botanical (2014) report that 107.18 ha of the Marda East Project intersects the Priority One (P1) Die Hardy Range / Diemels vegetation complex (banded ironstone formation) Priority Ecological Community (PEC), with potential to cause impact to 1.02% of the PEC.

However, the fauna habitat of greatest value to fauna species occurring within the Project area was Tall Eucalypt Woodland over Halophytic understorey on Alluvial Plain (mapped as Vegetation Association 2.7 in Western Botanical (2014)) and this vegetation association is not included vegetation of conservation significance associated with this PEC. Therefore, impacts to the PEC are not likely to significantly impact the fauna habitat values of the region.

5.12 FURTHER STUDIES

Due to the proximity of the Project area to a number of conservation reserves and proposed nature reserves, and due to the number of proposed and operational mines in the local area the region has been subjected to a number of baseline biological surveys.

With a total disturbance area of only 67.18 ha occurring within vegetation associations, fauna habitats and land forms that are broadly distributed it is unlikely that the Project will have a significant impact on the common fauna assemblages.

APM recommends that, rather than investing resources into another baseline fauna survey of the Project area in Spring 2014, the Client should focus any further survey effort on a subset of the fauna species of conservation significance likely to occur in the Project area.

APM recommends that a nest hollow assessment and trapping program be undertaken in Spring 2014 targeting populations of Numbat, Major Mitchell's Cockatoo and the Greater Long-eared Bat.

6 REFERENCES

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	Appendix 1: Fauna Conservation Codes	

DEFINITIONS OF FAUNA CONSERVATION CODES

Definitions used in the EPBC Act and WC Act.

Extinct: Taxa not definitely located in the wild during the past 50 years.

Extinct in the wild: Taxa known to survive only in captivity.

Critically Endangered: Taxa facing an extremely high risk of extinction in the wild in the immediate future.

Endangered: Taxa facing a very high risk of extinction in the wild in the near future.

Vulnerable: Taxa facing a very high risk of extinction in the wild in the medium-term future.

Near Threatened: Taxa that risk becoming Vulnerable in the wild.

Conservation Dependent: Taxa whose survival depends upon ongoing conservation measures. Without these measures, a conservation dependent taxon would be classed as Vulnerable or more severely threatened.

Data Deficient: Taxa suspected of being Rare, Vulnerable or Endangered, but whose true status cannot be determined without more information.

Least Concern: Taxa that are not Threatened.

Schedules used in the WC Act.

Schedule 1: Fauna that are rare or likely to become extinct.

Schedule 2: Fauna presumed to be extinct.

Schedule 3: Migratory birds that are listed under international treaties.

Schedule 4: Other specially protected fauna.

DEC recognises five levels of priority fauna:

Priority 1: Taxa with few, poorly known populations on threatened lands.

Taxa which are known from few specimens or sight records from one or a few localities on lands not managed for conservation, e.g. agricultural or pastoral lands, urban areas, active mineral leases. The taxon needs urgent survey and evaluation of conservation status before consideration can be given to declaration as threatened fauna.

Priority 2: Taxa with few, poorly known populations on conservation lands.

Taxa which are known from few specimens or sight records from one or a few localities on lands not under immediate threat of habitat destruction or degradation, e.g. national parks, conservation parks, nature reserves, State forest, vacant Crown land, water reserves, etc. The taxon needs urgent survey and evaluation of conservation status before consideration can be given to declaration as threatened fauna.

Priority 3: Taxa with several, poorly known populations, some on conservation lands.

Taxa which are known from few specimens or sight records from several localities, some of which are on lands not under immediate threat of habitat destruction or degradation. The taxon needs urgent survey and evaluation of conservation status before consideration can be given to declaration as threatened fauna.

Priority 4: Taxa in need of monitoring.

Taxa which are considered to have been adequately surveyed, or for which sufficient knowledge is available, and which are considered not currently threatened or in need of special protection, but could be if present circumstances change. These taxa are usually represented on conservation lands.

Priority 5: Taxa in need of monitoring.

Taxa which are not considered threatened but are subject to a specific conservation program, the cessation of which would result in the species becoming threatened within five years.

Southern Cross Goldf	elds Ltd	Appendices
	Appendix 2: Protected Matters Database Search Results	
	Appendix 2. Protected Matters Database Search Results	



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 <u>Environment Assessments</u> and the EPBC Act including significance guidelines, forms and application process details.

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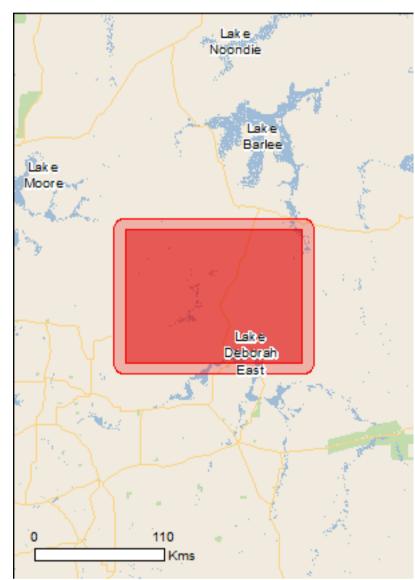
Summary

Details

Matters of NES
Other Matters Protected by the EPBC Act
Extra Information

Caveat

<u>Acknowledgements</u>



This map may contain data which are ©Commonwealth of Australia (Geoscience Australia), ©PSMA 2010

Coordinates
Buffer: 10.0Km



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 <u>Administrative Guidelines on Significance</u>.

World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International Importance:	None
Great Barrier Reef Marine Park:	None
Commonwealth Marine Areas:	None
Listed Threatened Ecological Communities:	None
Listed Threatened Species:	23
Listed Migratory Species:	4

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 and the heritage values of a place on the Register of the National Estate.

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.

A <u>permit</u> 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:	4
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.

Place on the RNE:	3
State and Territory Reserves:	14
Regional Forest Agreements:	None
Invasive Species:	14
Nationally Important Wetlands:	None
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
Mammals		
Myrmecobius fasciatus		
Numbat [294]	Vulnerable	Species or species habitat likely to occur within area
Other		
Idiosoma nigrum		
Shield-backed Trapdoor Spider, Black Rugose Trapdoor Spider [66798]	Vulnerable	Species or species habitat likely to occur within area
Plants		
Acacia denticulosa		
Sandpaper Wattle [20600]	Vulnerable	Species or species habitat likely to occur within area
Acacia lobulata		
Chiddarcooping Wattle [55567]	Endangered	Species or species habitat known to occur within area
Acacia sciophanes		
Wundowlin Wattle, Ghost Wattle [17877]	Endangered	Species or species habitat may occur within area
Boronia adamsiana	Mada a salda	0
Barbalin Boronia [16935]	Vulnerable	Species or species habitat likely to occur within area
Eremophila resinosa		_
Resinous Eremophila [11735]	Endangered	Species or species habitat likely to occur within area
Eremophila virens Compien Framenhila Croon flowered Frau bush	Endongered	Species or appoiss
Campion Eremophila, Green-flowered Emu bush	Endangered	Species or species

Name	Status	Type of Presence
[21433]		habitat known to occur
Eremophila viscida		within area
Varnish Bush [2394]	Endangered	Species or species habitat likely to occur within area
<u>Eucalyptus brevipes</u>		
Mukinbudin Mallee [7495]	Endangered	Species or species habitat likely to occur within area
Eucalyptus recta Silver Mallet [56430]	Endangered	Species or species
Gastrolobium diabolophyllum	Endangered	habitat likely to occur within area
Bodallin Poison [78384]	Critically Endangered	Species or species
	Childany Endangered	habitat likely to occur within area
<u>Grevillea pythara</u> Pythara Grevillea [64525]	Endangered	Species or species
	Endangered	habitat may occur within area
Leucopogon spectabilis	Critically Endangered	Species or appoins
Ironstone Beard-heath [83012]	Critically Endangered	Species or species habitat known to occur within area
Melaleuca sciotostyla Wongan Melaleuca [24324]	Endangered	Species or species
	Litarigerea	habitat known to occur within area
Myriophyllum lapidicola Chiddarcooping myriophyllum [55940]	Endangered	Species or species
Childdarcooping mynophylldin [55940]	Lildangered	habitat known to occur within area
Pityrodia axillaris		
Native Foxglove, Woolly Foxglove [17376]	Critically Endangered	Species or species habitat may occur within area
Ricinocarpos brevis		
[82879]	Endangered	Species or species habitat known to occur within area
Roycea pycnophylloides Saltmat [21161]	Endangered	Species or species
	Lildangered	habitat likely to occur within area
Tetratheca aphylla Bungalbin Tetratheca [2915]	Vulnerable	Species or species
	vuirierable	habitat likely to occur within area
<u>Tetratheca harperi</u> Jackson Tetratheca [6251]	Vulnerable	Species or species
	vuirierable	habitat likely to occur within area
Tetratheca paynterae	Endongorod	Chasias ar angaise
Paynter's Tetratheca [66451]	Endangered	Species or species habitat known to occur within area
Listed Migratory Species		[Resource Information]
* Species is listed under a different scientific name		•
Name Migratory Marine Birds	Threatened	Type of Presence
Apus pacificus		
Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Migratory Terrestrial Species		
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within
Migratory Wetlands Species		area
g, cpoolog		

Name	Threatened	Type of Presence
Ardea alba		
Great Egret, White Egret [59541]		Species or species habitat likely to occur within area
Ardea ibis		Charies ar anasias
Cattle Egret [59542]		Species or species habitat may 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 -

Merops ornatus

Rainbow Bee-eater [670]

Listed Marine Species		[Resource Information
* Species is listed under a different scientific name o	on the EPBC Act - Threat	ened Species list.
Name	Threatened	Type of Presence
Birds		
Apus pacificus		
Fork-tailed Swift [678] Ardea alba		Species or species habitat likely to occur within area
Great Egret, White Egret [59541]		Species or species
Ardea ibis		habitat likely to occur within area
Cattle Egret [59542]		Species or species habitat may occur within

area

area

Species or species

habitat may occur within

Extra Information

Places on the RNE		[Resource Information]
Note that not all Indigenous sites may be listed.		
Name	State	Status
Natural		
<u>Lake Moore Area</u>	WA	Registered
Mount Manning Nature Reserve	WA	Registered
Walyahmoning Rock Nature Reserve	WA	Registered
State and Territory Reserves		[Resource Information]
Name		State
Geeraning		WA
Jouerdine		WA
Karroun Hill		WA
Mount Manning Range		WA
Mount Manning Range		WA
Unnamed WA23991		WA
Unnamed WA32864		WA
Unnamed WA32865		WA
Unnamed WA32993		WA
Unnamed WA36918		WA
Unnamed WA38800		WA
Unnamed WA44446		WA
Walyahmoning		WA
Yanneymooning		WA
Invasive Species		[Resource Information]
Weeds reported here are the 20 species of national signants that are considered by the States and Territorie biodiversity. The following feral animals are reported: and Cane Toad. Maps from Landscape Health Project 2001.	s to pose a particularly signi Goat, Red Fox, Cat, Rabbit,	ficant threat to Pig, Water Buffalo
Name	Status	Type of Presence
Birds		
Columba livia Pack Digger, Rook Days, Demostic Digger [202]		Charles or anadica
Rock Pigeon, Rock Dove, Domestic Pigeon [803] Streptopelia senegalensis		Species or species habitat likely to occur within area
Laughing Turtle-dove, Laughing Dove [781]		Species or species
		habitat likely to occur within area
Mammals		
Camelus dromedarius Dramadari, Camal [7]		Charles or anasias
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 Deplement Acc [4]		Charles or anasias
Donkey, Ass [4] Equus caballus		Species or species habitat likely to occur within area
Horse [5]		Species or species
Felis catus		habitat likely to occur within area
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

Name	Status	Type of Presence
Oryctolagus cuniculus		
Rabbit, European Rabbit [128]		Species or species habitat likely to occur within area
Sus scrofa		
Pig [6]		Species or species habitat likely to occur within area
<u>Vulpes vulpes</u>		
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] Chrysanthemoides monilifera		Species or species habitat may occur within area
Bitou Bush, Boneseed [18983]		Species or species habitat may occur within

area

Coordinates

-29.8382 118.47619,-29.8382 119.82202,-30.70872 119.82202,-30.70872 118.47619,-29.8382 118.47619

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 Heritage and Register of National Estate properties, Wetlands of International 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.

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:

- -Department of Environment, Climate Change and Water, New South Wales
- -Department of Sustainability and Environment, Victoria
- -Department of Primary Industries, Parks, Water and Environment, Tasmania
- -Department of Environment and Natural Resources, South Australia
- -Parks and Wildlife Service NT, NT Dept of Natural Resources, Environment and the Arts
- -Environmental and Resource Management, Queensland
- -Department of Environment and Conservation, Western Australia
- -Department of the Environment, Climate Change, Energy and Water
- -Birds Australia
- -Australian Bird and Bat Banding Scheme
- -Australian National Wildlife Collection
- -Natural history museums of Australia
- -Museum Victoria
- -Australian Museum
- -SA 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
- -State Forests of 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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Southern Cross Goldfield	s Ltd	Appendices
	Appendix 3: NatureMap Database Search Results	
	Appendix 5. Natureway Database Search Results	



NatureMap Species Report

Created By Guest user on 06/05/2014

Current Names Only Yes

Core Datasets Only Yes

Method 'By Circle'

Centre 119°16' 50" E,30°01' 00" S

Group By Kingdom

Kingdom	Species	Records
Animalia Fungi Plantae	271 6 601	3245 8 4212
TOTAL	878	7465

Name ID Species Name Naturalised Conservation Code ¹Endemic To Query Area

Animalia	l	
1.		Acanthagenys rufogularis (Spiny-cheeked Honeyeater)
2.		Acanthiza apicalis (Broad-tailed Thornbill, Inland Thornbill)
3.		Acanthiza chrysorrhoa (Yellow-rumped Thornbill)
4.		Acanthiza robustirostris (Slaty-backed Thornbill)
5.		Acanthiza uropygialis (Chestnut-rumped Thornbill)
6.		Accipiter cirrocephalus (Collared Sparrowhawk)
7.		Accipiter fasciatus (Brown Goshawk)
8.		Aegotheles cristatus (Australian Owlet-nightjar)
9.	33902	Aganippe castellum (Tree-stem Trapdoor Spider) P4
10.		Aname tepperi
11.	25241	Antaresia stimsoni subsp. stimsoni (Stimson's Python)
12.	24561	Anthochaera carunculata (Red Wattlebird)
13.	25670	Anthus australis (Australian Pipit)
14.	25528	Aphelocephala leucopsis (Southern Whiteface)
15.	24266	Aphelocephala leucopsis subsp. castaneiventris (Southern Whiteface)
16.	25554	Apus pacificus (Fork-tailed Swift) IA
17.	24285	Aquila audax (Wedge-tailed Eagle)
18.	24610	Ardeotis australis (Australian Bustard) P4
19.	25566	Artamus cinereus (Black-faced Woodswallow)
20.	24353	Artamus cyanopterus (Dusky Woodswallow)
21.	24355	Artamus minor (Little Woodswallow)
22.	24356	Artamus personatus (Masked Woodswallow)
23.	-1794	Arthrorhabdus paucispinus
24.	-12070	Atelomastix bamfordi
25.	-11973	Badumna insignis
26.	24251	Bos taurus (European Cattle) Y
27.	42381	Brachyurophis semifasciatus (Southern Shovel-nosed Snake)
28.	24722	Cacatua leadbeateri (Major Mitchell's Cockatoo) S
29.	25715	Cacatua roseicapilla (Galah)
30.	42307	Cacomantis pallidus (Pallid Cuckoo)
31.	24269	Calamanthus campestris (Rufous Fieldwren)
32.	25717	Calyptorhynchus banksii (Red-tailed Black-Cockatoo)
33.	24732	Calyptorhynchus banksii subsp. samueli (Red-tailed Black-Cockatoo)
34.	24039	Canis lupus subsp. dingo (Dingo)
35.	24086	Cercartetus concinnus (Western Pygmy-possum, Mundarda)
36.	-12508	Cercophonius michaelseni
37.	24564	Certhionyx variegatus (Pied Honeyeater)
38.	24186	Chalinolobus gouldii (Gould's Wattled Bat)
39.	24187	Chalinolobus morio (Chocolate Wattled Bat)
40.	24376	Charadrius rubricollis (Hooded Plover) P4
41.		Chrysococcyx basalis (Horsfield's Bronze Cuckoo)
42.		Chrysococcyx osculans (Black-eared Cuckoo)
43.	24834	Cincloramphus mathewsi (Rufous Songlark)







	Name ID	Species Name	Naturalised	Conservation Code	¹ Endemic To Que Area
44.		Cinclosoma castaneothorax (Chestnut-breasted Quail-thrush)			
45.		Cinclosoma castanotus (Chestnut Quail-thrush)			
46.		Climacteris affinis (White-browed Treecreeper)			
47.		Climacteris affinis subsp. superciliosa (White-browed Treecreeper)			
48. 49.		Climacteris rufa (Rufous Treecreeper) Colluricincla harmonica (Grey Shrike-thrush)			
50.		Colluricincia harmonica (Grey Shrike-thrush)			
51.		Coracina maxima (Ground Cuckoo-shrike)			
52.		Coracina novaehollandiae (Black-faced Cuckoo-shrike)			
53.		Cormocephalus strigosus			
54.		Cormocephalus turneri			
55.	24416	Corvus bennetti (Little Crow)			
56.	25592	Corvus coronoides (Australian Raven)			
57.	24417	Corvus coronoides subsp. perplexus (Australian Raven)			
58.	25593	Corvus orru (Torresian Crow)			
59.	24420	Cracticus nigrogularis (Pied Butcherbird)			
60.	25595	Cracticus tibicen (Australian Magpie)			
61.	24422	Cracticus tibicen subsp. dorsalis (White-backed Magpie)			
62.	25596	Cracticus torquatus (Grey Butcherbird)			
63.	24424	Cracticus torquatus subsp. torquatus (Grey Butcherbird)			
64.	25456	Crenadactylus ocellatus (Clawless Gecko)			
65.		Crenadactylus ocellatus subsp. ocellatus (Clawless Gecko)			
66.		Cryptoblepharus buchananii			
67.		Cryptoblepharus plagiocephalus			
68.		Ctenophorus cristatus (Bicycle Dragon)			
69.		Ctenophorus fordi (Mallee Sand Dragon)			
70.		Ctenophorus isolepis (Crested Dragon, Military Dragon)			
71.		Ctenophorus maculatus subsp. griseus (Spotted Military Dragon)			
72.		Ctenophorus ornatus (Ornate Crevice-Dragon)			
73.		Ctenophorus reticulatus (Western Netted Dragon)			
74. 75.		Ctenophorus scutulatus (Lozenge-marked Dragon) Ctenotus atlas			
76.		Ctenotus leonhardii			
77.		Ctenotus mimetes			
78.		Ctenotus schomburgkii			
79.		Ctenotus severus			
80.		Ctenotus uber (Spotted Ctenotus)			
81.		Ctenotus uber subsp. uber (Spotted Ctenotus)			
82.	25089	Cyclodomorphus melanops subsp. elongatus (Slender Blue-tongue)			
83.	25673	Daphoenositta chrysoptera (Varied Sittella)			
84.	24606	Daphoenositta chrysoptera subsp. pileata (Varied Sittella, Black-capped Sitella)			
85.	24995	Delma australis			
86.	24997	Delma butleri			
87.	25766	Delma fraseri (Fraser's Legless Lizard)			
88.	25295	Demansia psammophis subsp. cupreiceps (Yellow-faced Whipsnake)			
89.		Demansia psammophis subsp. psammophis (Yellow-faced Whipsnake)			
90.		Dicaeum hirundinaceum (Mistletoebird)			
91.		Dicaeum hirundinaceum subsp. hirundinaceum (Mistletoebird)			
92.		Diplodactylus granariensis			
93.		Diplodactylus granariensis subsp. granariensis			
94.		Diplodactylus pulcher			
95. 96		Dromaius novaehollandiae (Emu)			
96. 97		Drymodes brunneopygia (Southern Scrub-robin) Francia depressa (Southern Bygmy Spiny-tailed Skink)			
97. 98.		Egernia depressa (Southern Pygmy Spiny-tailed Skink) Egernia formosa			
98. 99.		Egernia rormosa Eopsaltria australis subsp. griseogularis (Western Yellow Robin)			
100.		Ephianura albifrons (White-fronted Chat)			
101.		Epthianura tricolor (Crimson Chat)			
101.		Equus caballus (Horse)	Υ		
103.		Eremiascincus richardsonii (Broad-banded Sand Swimmer)			
104.		Ethmostigmus curtipes			
105.		Ethmostigmus rubripes			
106.		Eurostopodus argus (Spotted Nightjar)			
107.		Falco berigora (Brown Falcon)			
108.		Falco berigora subsp. berigora (Brown Falcon)			
		Falco cenchroides (Australian Kestrel)			
109.		Falco cenchroides subsp. cenchroides (Australian Kestrel)			
109. 110.	24472				
		Falco longipennis (Australian Hobby)			
110.	25623			S	







h	Name ID	Species Name	Naturalised	Conservation Code	¹ Endemic To Qu Area
114.	24041	Felis catus (Cat)	Υ		
115.	24957	Gehyra purpurascens			
116.	24959	Gehyra variegata			
117.	-13016	Geogarypus taylori			
118.	25530	Gerygone fusca (Western Gerygone)			
119.	24735	Glossopsitta porphyrocephala (Purple-crowned Lorikeet)			
120.	24443	Grallina cyanoleuca (Magpie-lark)			
121.		Heleioporus albopunctatus (Western Spotted Frog)			
122.		Hemiergis initialis			
123.		Hemiergis initialis subsp. initialis			
124.		Hesperoedura reticulata			
		Heteronotia binoei (Bynoe's Gecko)			
125.		,			
126.		Hirundo neoxena (Welcome Swallow)			
127.		Hirundo nigricans (Tree Martin)			
128.	24492	Hirundo nigricans subsp. nigricans (Tree Martin)			
129.	-12894	Hoggicosa forresti			
130.	-13410	Hoggicosa storri			
131.	-12660	Hogna pexa			
132.	-11716	Holconia westralia			
133.	34001	Hylacola cauta subsp. whitlocki (Shy Heathwren (western))		P4	
134.		Isometroides vescus			
135.		Isopeda magna			
136.		Lalage tricolor (White-winged Triller)			
137.		Leipoa ocellata (Malleefowl)		Т	
137.		Lerista gerrardii			
139.		Lerista gerrardii Lerista kingi			
		-			
140.		Lerista kingi			
141.		Lerista macropisthopus			
142.		Lerista macropisthopus subsp. macropisthopus			
143.	25155	Lerista muelleri			
144.	42411	Lerista timida			
145.	25005	Lialis burtonis			
146.	25659	Lichenostomus leucotis (White-eared Honeyeater)			
147.	24576	Lichenostomus leucotis subsp. novaenorciae (White-eared Honeyeater)			
148.	25661	Lichmera indistincta (Brown Honeyeater)			
149.	24582	Lichmera indistincta subsp. indistincta (Brown Honeyeater)			
150.	41411	Liopholis inornata (Desert Skink)			
151.		Lucasium maini			
152.		Macropus robustus (Euro)			
153.		Macropus robustus subsp. erubescens (Euro, Biggada)			
154.		Macropus rufus (Red Kangaroo, Marlu)			
155.		Mainosa longipes			
156.		Malurus lamberti subsp. assimilis (Variegated Fairy-wren)			
157.		Malurus pulcherrimus (Blue-breasted Fairy-wren)			
158.	25654	Malurus splendens (Splendid Fairy-wren)			
159.	24552	Malurus splendens subsp. splendens (Splendid Fairy-wren)			
160.	24583	Manorina flavigula (Yellow-throated Miner)			
161.	25663	Melithreptus brevirostris (Brown-headed Honeyeater)			
162.	24586	Melithreptus brevirostris subsp. leucogenys (Brown-headed Honeyeater)			
163.	25184	Menetia greyii			
164.		Merops ornatus (Rainbow Bee-eater)		IA	
165.		Microeca fascinans (Jacky Winter)			
166.		Microeca fascinans subsp. assimilis (Jacky Winter)			
167.		Missulena occatoria			
168.		Moloch horridus (Thorny Devil)			
		Morethia butleri			
169.					
170.		Mormopterus planiceps (Southern Freetail-bat)			
171.		Mus musculus (House Mouse)	Y		
172.		Neobatrachus kunapalari (Kunapalari Frog)			
173.		Neobatrachus pelobatoides (Humming Frog)			
174.	24737	Neophema bourkii (Bourke's Parrot)			
175.	24740	Neophema splendida (Scarlet-chested Parrot)			
176.	24094	Ningaui ridei (Wongai Ningaui)			
177.	24096	Ningaui yvonneae (Southern Ningaui)			
178.	25748	Ninox novaeseelandiae (Boobook Owl)			
179.		Notomys alexis (Spinifex Hopping-mouse)			
180.		Notomys mitchellii (Mitchell's Hopping-mouse)			
181.		Notomys sp.			
182.		Nyctophilus geoffroyi (Lesser Long-eared Bat)			
		Nyctophilus major (Greater Long-eared Bat)		P4	
183.					

NatureMap is a collaborative project of the Department of Environment and Conservation, Western Australia, and the Western Australian Museum.







	Name ID	Species Name	Naturalised Con	servation Code	¹ Endemic To Query Area
184.	43367	Nyctophilus major subsp. tor (Southern Long-eared Bat)			
185.	24742	Nymphicus hollandicus (Cockatiel)			
186.		Oreoica gutturalis (Crested Bellbird)			
187.		Oryctolagus cuniculus (Rabbit)	Υ		
188.		Pachycephala inornata (Gilbert's Whistler)			
189.		Pachycephala rufiventris (Rufous Whistler)			
190.		Pachycephala rufiventris subsp. rufiventris (Rufous Whistler)			
191.		Parasuta monachus			
192. 193.		Pardalotus punctatus (Spotted Pardalote) Pardalotus striatus (Striated Pardalote)			
194.		Pardalotus striatus (striated Pardalote) Pardalotus striatus subsp. westraliensis (Striated Pardalote)			
195.		Petroica cucullata (Hooded Robin)			
196.		Petroica goodenovii (Red-capped Robin)			
197.		Phaps chalcoptera (Common Bronzewing)			
198.	-11765	Phryssonotus novaehollandiae			
199.	24748	Platycercus varius (Mulga Parrot)			
200.	25721	Platycercus zonarius (Australian Ringneck, Ring-necked Parrot)			
201.	24750	Platycercus zonarius subsp. semitorquatus (Twenty-eight Parrot)			
202.	24751	Platycercus zonarius subsp. zonarius (Port Lincoln Parrot)			
203.	25703	Podargus strigoides (Tawny Frogmouth)			
204.	24679	Podargus strigoides subsp. brachypterus (Tawny Frogmouth)			
205.		Pogona minor (Dwarf Bearded Dragon)			
206.		Pogona minor subsp. minor (Dwarf Bearded Dragon)			
207.		Polytelis anthopeplus (Regent Parrot)			
208. 209.		Pomatostomus superciliosus (White-browed Babbler) Pseudantechinus woolleyae (Woolley's Pseudantechinus)			
210.		Pseudechis australis (Mulga Snake)			
211.		Pseudomys albocinereus (Ash-grey Mouse)			
212.		Pseudomys bolami (Bolam's Mouse)			
213.		Pseudomys hermannsburgensis (Sandy Inland Mouse)			
214.	25263	Pseudonaja modesta (Ringed Brown Snake)			
215.	25434	Pseudophryne occidentalis (Western Toadlet)			
216.	42340	Ptilotula ornatus (Yellow-plumed Honeyeater)			
217.	42344	Purnella albifrons (White-fronted Honeyeater)			
218.	25008	Pygopus lepidopodus (Common Scaly Foot)			
219.		Pygopus nigriceps			
220.		Pyrrholaemus brunneus (Redthroat)			
221.		Ramphotyphlops australis			
222. 223.		Ramphotyphlops bicolor Ramphotyphlops bituberculatus			
224.		Ramphotyphlops pinguis			
225.		Rhipidura albicauda			
226.	25613	Rhipidura fuliginosa (Grey Fantail)			
227.	24452	Rhipidura fuliginosa subsp. preissi (Grey Fantail)			
228.	25614	Rhipidura leucophrys (Willie Wagtail)			
229.	24454	Rhipidura leucophrys subsp. leucophrys (Willie Wagtail)			
230.	24982	Rhynchoedura ornata (Western Beaked Gecko)			
231.	-1709	Scolopendra laeta			
232.		Scolopendra morsitans			
233.		Scotorepens balstoni (Inland Broad-nosed Bat)			
234.		Selenotholus foelschei			
235. 236.		Simoselaps bertholdi (Jan's Banded Snake) Smicrornis brevirostris (Weebill)			
237.		Sminthopsis crassicaudata (Fat-tailed Dunnart)			
238.		Sminthopsis dolichura (Little long-tailed Dunnart)			
239.		Sminthopsis griseoventer (Grey-bellied Dunnart)			
240.	24114	Sminthopsis hirtipes (Hairy-footed Dunnart)			
241.	24116	Sminthopsis macroura (Stripe-faced Dunnart)			
242.	-18122	Sminthopsis murina			
243.		Strepera versicolor (Grey Currawong)			
244.		Strepera versicolor subsp. plumbea (Grey Currawong)			
245.		Strophurus assimilis (Goldfields Spiny-tailed Gecko)			
246.		Strophurus elderi			
247.		Sugomel niger (Black Honeyeater)			
248.		Suta fasciata (Rosen's Snake) Tachyalossus aculantus (Short booked Echidna)			
249. 250.		Tachyglossus aculeatus (Short-beaked Echidna) Tadarida australis (White-striped Freetail-bat)			
250. 251.		Taeniopygia guttata (Zebra Finch)			
252.		Taeniopygia guttata subsp. castanotis (Zebra Finch)			
253.		Tamopsis transiens			Υ
				Grand December 1	**********







	Name ID	Species Name	Naturalised	Conservation Code	¹ Endemic To Query Area
254.	25203	Tiliqua occipitalis (Western Bluetongue)			
255.	42351	Todiramphus pyrrhopygius (Red-backed Kingfisher)			
256.	25549	Todiramphus sanctus (Sacred Kingfisher)			
257.		Turnix velox (Little Button-quail)			
258.		Tympanocryptis cephalus (Pebble Dragon)			
259.		Underwoodisaurus milii (Barking Gecko)			
260.		Urodacus novaehollandiae			
261.		Urodacus similis			
262. 263.		Vanellus tricolor (Banded Lapwing)			
264.		Varanus caudolineatus Varanus giganteus (Perentie)			
265.		Varanus gouldii (Bungarra or Sand Monitor)			
266.		Varanus panoptes subsp. panoptes			
267.		Varanus tristis (Racehorse Monitor)			
268.		Varanus tristis subsp. tristis (Racehorse Monitor)			
269.	24202	Vespadelus baverstocki (Inland Forest Bat)			
270.	24206	Vespadelus regulus (Southern Forest Bat)			
271.	-12194	Wesmaldra talgomine			
Fungi					
_	42404	Buellia albula			
272. 273.		Diploschistes ocellatus			
274.		Haematomma eremaeum			
275.		Psora crystallifera			
276.		Xanthoparmelia verrucella			
277.		Xanthoparmelia versicolor			
Disertes					
Plantae	4000	Ab eller and a stable			
278. 279.		Abutilon cryptopetalum Abutilon cryptopetalum Abutilon cryptopetalum (Flannel Wood)			
279.		Abutilon oxycarpum (Flannel Weed) Acacia acanthoclada subsp. acanthoclada			
281.		Acacia acanthoclada subsp. dealthoclada Acacia acanthoclada subsp. glaucescens			
282.		Acacia acuaria			
283.		Acacia acuminata (Jam, Mangard)			
284.		Acacia adinophylla		P1	
285.		Acacia andrewsii			
286.	3217	Acacia aneura (Mulga, Wanari)			
287.	3226	Acacia assimilis			
288.	15467	Acacia assimilis subsp. assimilis			
289.	3248	Acacia burkittii (Sandhill Wattle)			
290.	36417	Acacia caesaneura			
291.		Acacia cockertoniana			
292.		Acacia coolgardiensis (Spinifex Wattle)			
293.		Acacia daviesioides			
294. 295.		Acacia dielsii Acacia effusifolia			
295. 296.		Acacia enervia subsp. explicata			
297.		Acacia erinacea			
298.		Acacia hemiteles			
299.		Acacia incurvaneura			
300.	3393	Acacia jennerae			
301.	3395	Acacia jibberdingensis			
302.	3399	Acacia kempeana (Witchetty Bush, Ilykuwara)			
303.	3419	Acacia ligulata (Umbrella Bush, Watarka)			
304.	3426	Acacia longispinea			
305.		Acacia mulganeura			
306.		Acacia neurophylla subsp. erugata			
307.		Acacia prainii (Prain's Wattle)			
308.		Acacia quadrimarginea			
309.		Acacia ramulosa (Horse Mulga)			
310.		Acacia ramulosa var. ramulosa			
311. 312.		Acacia resinimarginea Acacia resinosa			
312.		Acacia sibina			
314.		Acacia sp. Mt Jackson (B. Ryan 176)			
315.		Acacia steedmanii			
316.		Acacia steedmanii subsp. steedmanii			
317.		Acacia tetragonophylla (Kurara, Wakalpuka)			
318.		Actinobole uliginosum (Flannel Cudweed)			
319.	184	Aira caryophyllea (Silvery Hairgrass)	Υ		
320.	1720	Allocasuarina acutivalvis			
				Contract of the contract of th	*********







	Name ID	Species Name	Naturalised	Conservation Code	¹ Endemic To Query Area
321.	13904	Allocasuarina acutivalvis subsp. acutivalvis			
322.	13905	Allocasuarina acutivalvis subsp. prinsepiana			
323.		Allocasuarina campestris			
324.		Allocasuarina corniculata			
325.		Allocasuarina dielsiana (Northern Sheoak)			
326.		Allocasuarina eriochlamys			
327. 328.		Allocasuarina eriochlamys subsp. eriochlamys Allocasuarina helmsii			
329.		Allocasuarina spinosissima			
330.		Allocasuarina tessellata		P1	
331.		Aluta appressa			
332.		Aluta aspera subsp. aspera			
333.		Alyxia buxifolia (Dysentery Bush)			
334.	14636	Alyxia tetanifolia		P3	
335.	12025	Amphipogon caricinus var. caricinus			
336.	199	Amphipogon strictus (Greybeard Grass)			
337.	2369	Amyema benthamii			
338.	13267	Amyema linophylla subsp. linophylla			
339.		Amyema miquelii (Stalked Mistletoe)			
340.		Amyema nestor			
341.		Androcalva luteiflora (Yellow-flowered Rulingia)			
342.		Angianthus tomentosus (Camel-grass)			
343.		Aristida contorta (Bunched Kerosene Grass)			
344.		Aristida holathera			
345. 346.		Arthropodium curvipes Astartea sp. Mt Dimer (C. McChesney TRL4/72)		P1	Υ
340.		Asteridea athrixioides		PT	Y
347.		Asteridea atmixiolaes Asteridea chaetopoda			
349.		Atriplex nummularia (Old Man Saltbush)			
350.		Atriplex nummularia subsp. spathulata (Old Man Saltbush)			
351.		Atriplex paludosa subsp. baudinii			
352.		Atriplex quadrivalvata var. quadrivalvata			
353.		Atriplex vesicaria (Bladder Saltbush)			
354.		Austrostipa blackii		P3	
355.		Austrostipa elegantissima			
356.	17246	Austrostipa nitida			
357.	19588	Austrostipa nodosa			
358.	17247	Austrostipa platychaeta			
359.	17251	Austrostipa scabra			
360.	17255	Austrostipa trichophylla			
361.	5341	Baeckea crispiflora			
362.	5344	Baeckea elderiana			
363.	5356	Baeckea muricata			
364.		Baeckea ochropetala		P1	
365.		Baeckea sp. Bencubbin-Koorda (M.E. Trudgen 5421)			
366.		Baeckea sp. Bungalbin Hill (B.J. Lepschi & L.A. Craven 4586)		P3	
367.		Baeckea sp. Die Hardy Range (E. Mattiske J91)		P1	Y
368.		Baeckea sp. Mt Jackson (G.J. Keighery 4362)		P1	Υ
369. 370.		Baeckea sp. Parker Range (M. Hislop & F. Hort MH 2968) Baeckea sp. Pigeon Rocks (D. Grace D.IP 281)		P3	V
370. 371.		Baeckea sp. Pigeon Rocks (D. Grace DJP 281) Banksia arborea (Yilgarn Dryandra)		P1 P4	Y
371.		Banksia elderiana (Swordfish Banksia)		F *	
373.		Bellida graminea (Rosy Bellida)			
374.		Beyeria rostellata		P1	
375.		Blennospora drummondii			
376.		Boronia coerulescens			
377.		Borya constricta			
378.		Bossiaea sp. Jackson Range (G. Cockerton & S. McNee LCS 13614)		P3	
379.	3722	Bossiaea walkeri			
380.	4999	Brachychiton gregorii (Desert Kurrajong, Ngalta)			
381.	7871	Brachyscome ciliaris			
382.	18431	Brachyscome ciliaris var. ciliaris			
383.	11884	Brachyscome ciliaris var. lanuginosa			
384.	7872	Brachyscome ciliocarpa			
385.		Brachyscome lineariloba			
386.		Brachyscome perpusilla			
387.		Brachyscome pusilla			
388.		Bromus arenarius (Sand Brome)			
389.		Bromus diandrus (Great Brome)	Y		
390.	253	Bromus rubens (Red Brome)	Y		
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	Name ID	Species Name	Naturalised	Conservation Code	¹ Endemic To Query Area
391.		Brunonia australis (Native Cornflower)			
392.		Bursaria occidentalis			
393. 394.		Caladenia hirta subsp. rosea Caladenia incrassata			
395.		Caladenia mesocera			
396.	1614	Caladenia roei (Ant Orchid)			
397.	30797	Caladenia saxicola			
398.		Caladenia sigmoidea			
399.		Caladenia sp. Muddarning Hill (S.D. Hopper 4013)			
400. 401.		Calandrinia eremaea (Twining Purslane) Calandrinia sp. Blackberry (D.M. Porter 171)			
402.		Calandrinia sp. Biackborry (E.M. Forter 1717) Calandrinia sp. Bungalbin (G.J. Keighery & N. Gibson 1656)			
403.		Callitris canescens			
404.	8466	Callitris columellaris (White Cypress Pine)			
405.		Callitris preissii (Rottnest Island Pine, Maro)			
406.		Callitris verrucosa			
407. 408.		Calothamnus gilesii Calothamnus superbus		P1	
409.		Calotis hispidula (Bindy Eye)		F.)	
410.		Calotis multicaulis (Many-stemmed Burr-daisy)			
411.	16492	Calycopeplus paucifolius			
412.	5442	Calytrix birdii			
413.		Calytrix divergens			
414.		Calytrix paucicostata		P2	
415. 416.		Calytrix sp. Paynes Find (F. & J. Hort 1188) Calytrix viscida		P1	Y
417.		Carrichtera annua (Ward's Weed)	Υ	r i	,
418.		Carthamus lanatus (Saffron Thistle)	Υ		
419.	2955	Cassytha nodiflora			
420.		Casuarina pauper (Black Oak)			
421.		Centaurea melitensis (Maltese Cockspur)	Υ		
422. 423.		Cephalipterum drummondii (Pompom Head) Ceratogyne obionoides (Wingwort)			
424.		Chamaexeros fimbriata			
425.	1216	Chamaexeros macranthera			
426.	12796	Cheilanthes adiantoides			
427.		Cheilanthes austrotenuifolia			
428.		Chellanthes brownii			
429. 430.		Cheilanthes lasiophylla (Woolly Cloak Fern) Cheilanthes sieberi subsp. sieberi			
431.		Cheiranthera filifolia			
432.	7933	Chthonocephalus pseudevax (Woolly Groundheads)			
433.	4555	Comesperma integerrimum			
434.		Cotula australis (Common Cotula)			
435.		Crassula colorata (Dense Stonecrop)			
436. 437.		Crassula colorata var. acuminata Crassula colorata var. colorata			
438.		Crassula decumbens var. decumbens			
439.	3139	Crassula exserta			
440.	20268	Crassula tetramera			
441.		Cratystylis subspinescens (Australian Sage, Spiny Grey Bush)			
442. 443.		Cryptandra apetala Cryptandra connata			
443. 444.		Cryptandra connata Cryptandra graniticola			
445.		Cuscuta epithymum (Lesser Dodder, Greater Dodder)	Υ		
446.	15400	Cyanicula amplexans			
447.	6747	Cyanostegia angustifolia (Tinsel-flower)			
448.		Dampiera eriocephala (Woolly-headed Dampiera)			
449. 450		Dampiera roycei Poucus glackidistus (Australian Carret)			
450. 451.		Daucus glochidiatus (Australian Carrot) Daviesia incrassata subsp. incrassata			
451. 452.		Daviesia incrassata subsp. incrassata Daviesia purpurascens (Purple-leaved Daviesia)			
453.		Dianella revoluta (Blueberry Lily)			
454.		Dianella revoluta var. divaricata			
455.		Dicrastylis parvifolia			
456.		Dicrastylis rugosifolia			
457. 459		Diuris porrifolia			
458. 459.		Dodonaea adenophora Dodonaea inaequifolia			
460.		Dodonaea lobulata (Bead Hopbush)			
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	Name ID	Species Name	Naturalised	Conservation Code	¹ Endemic To Query Area
461.	12034	Dodonaea microzyga var. acrolobata			
462.		Dodonaea pinifolia			
463. 464.		Dodonaea rigida Dodonaea stenozyga			
465.		Dodonaea viscosa (Sticky Hopbush)			
466.		Dodonaea viscosa subsp. mucronata			
467.	11202	Dodonaea viscosa subsp. spatulata (Sticky Hop-bush)			
468.	3106	Drosera macrantha (Bridal Rainbow)			
469.		Drosera macrantha subsp. macrantha			
470. 471.		Drosera menziesii (Pink Rainbow)			
471.		Dysphania melanocarpa (Black Crumbweed) Dysphania melanocarpa forma melanocarpa (Black Goosefoot)			
473.		Enchylaena lanata			
474.		Enchylaena tomentosa (Barrier Saltbush)			
475.	12064	Enchylaena tomentosa var. tomentosa (Barrier Saltbush)			
476.		Enneapogon caerulescens (Limestone Grass)			
477.		Entosthodon apophysatus			
478. 479.		Eragrostis dielsii (Mallee Lovegrass) Eremophila alternifolia (Poverty Bush)			
480.		Eremophila caperata			
481.		Eremophila clarkei (Turpentine Bush)			
482.	7193	Eremophila decipiens (Slender Fuchsia)			
483.		Eremophila decipiens subsp. decipiens			
484.		Eremophila eriocalyx (Desert Pride)			
485. 486.		Eremophila falcata Eremophila forrestii (Wilcox Bush)			
487.		Eremophila forrestii subsp. forrestii			
488.		Eremophila georgei			
489.		Eremophila glabra (Tar Bush)			
490.	14340	Eremophila glabra subsp. glabra			
491.		Eremophila glabra subsp. tomentosa			
492.		Eremophila glutinosa			
493. 494.		Eremophila granitica (Thin-leaved Poverty Bush) Eremophila interstans			
495.		Eremophila innartha (Violet-flowered Eremophila)			
496.		Eremophila latrobei (Warty Fuchsia Bush, Mintjingka)			
497.	17576	Eremophila latrobei subsp. latrobei			
498.		Eremophila metallicorum			
499.		Eremophila oldfieldii (Pixie Bush)			
500. 501.		Eremophila oldfieldii subsp. angustifolia Eremophila oppositifolia (Weeooka)			
502.		Eremophila oppositifolia subsp. angustifolia			
503.	7250	Eremophila pantonii			
504.	7267	Eremophila scoparia (Broom Bush ()			
505.		Eremophila serrulata (Serrate-leaved Eremophila)			
506. 507.		Eremophila sp. Mt Jackson (G.J. Keighery 4372) Eriachne pulchella (Pretty Wanderrie)			
507.		Eriachne pulchella subsp. pulchella			
509.		Ericksonella saccharata			
510.	2514	Eriochiton sclerolaenoides (Woolly Bindii)			
511.		Erodium aureum	Υ		
512.		Erodium cicutarium (Common Storksbill)	Y		
513. 514.		Erodium crinitum (Corkscrew) Erodium cygnorum (Blue Heronsbill)			
514.		Erymophyllum ramosum subsp. ramosum			
516.		Eucalyptus aequioperta			
517.	5565	Eucalyptus brachycorys (Cowcowing Mallee)			
518.	12904	Eucalyptus capillosa			
519.		Eucalyptus capillosa subsp. capillosa (Wheatbelt Wandoo)			
520. 521		Eucalyptus clelandii (Cleland's Blackbutt) Eucalyptus comitae vallis (Comet Vale Mallee)			
521. 522.		Eucalyptus comitae-vallis (Comet Vale Mallee) Eucalyptus concinna (Victoria Desert Mallee)			
523.		Eucalyptus cornuta (Yate, Yeid)			
524.		Eucalyptus corrugata (Rough-fruited Mallee)			
525.	5632	Eucalyptus ebbanoensis (Sandplain Mallee)			
526.		Eucalyptus ebbanoensis subsp. ebbanoensis			
527.		Eucalyptus ebbanoensis subsp. glauciramula			
528. 529.		Eucalyptus ewartiana (Ewart's Mallee) Eucalyptus formanii		P4	
530.		Eucalyptus griffithsii (Griffith's Grey Gum)		1 4	
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	Name ID	Species Name	Naturalised	Conservation Code	¹ Endemic To Query Area
531.	5673	Eucalyptus horistes			
532.	19523	Eucalyptus kochii subsp. amaryssia			
533.	15670	Eucalyptus kochii subsp. plenissima			
534.		Eucalyptus leptopoda (Tammin Mallee)			
535.		Eucalyptus leptopoda subsp. leptopoda			
536.		Eucalyptus leptopoda subsp. subluta			
537.		Eucalyptus longissima Function lovenholder (Vorle Cum Divode)			
538. 539.		Eucalyptus loxophleba (York Gum, Dwoda) Eucalyptus loxophleba subsp. lissophloia			
540.		Eucalyptus loxophleba subsp. iissophiola Eucalyptus loxophleba subsp. supralaevis			
541.		Eucalyptus moderata			
542.		Eucalyptus oldfieldii (Oldfield's Mallee)			
543.		Eucalyptus oleosa (Giant Mallee)			
544.	20091	Eucalyptus oleosa subsp. oleosa			
545.	5731	Eucalyptus orbifolia (Round-leaved Mallee)			
546.	5742	Eucalyptus petraea (Granite Rock Box)			
547.	13520	Eucalyptus polita			
548.	12380	Eucalyptus ravida (Silver-topped Gimlet)			
549.	5761	Eucalyptus rigidula (Stiff-leaved Mallee)			
550.		Eucalyptus salmonophloia (Salmon Gum, Wurak)			
551.		Eucalyptus salubris (Gimlet)			
552.		Eucalyptus sheathiana (Ribbon-barked Gum)			
553.		Eucalyptus subangusta subsp. subangusta			
554.		Eucalyptus transcontinentalis (Redwood, Pungul)			
555. 556.		Eucalyptus trichopoda Eucalyptus vilrarpapaia (Varrall)			
557.		Eucalyptus yilgarnensis (Yorrell) Euphorbia australis (Namana)			
558.		Euryomyrtus maidenii			
559.		Euryomyrtus patrickiae			
560.		Eutaxia leptophylla			
561.		Exocarpos aphyllus (Leafless Ballart)			
562.		Frankenia desertorum			
563.	5204	Frankenia interioris			
564.	17348	Galium aparine (Goosegrass)	Υ		
565.	7323	Galium murale (Small Goosegrass)	Υ		
566.	25797	Galium spurium	Υ		
567.		Gilberta tenuifolia			
568.		Gilruthia osbornei			
569.		Glischrocaryon flavescens			
570.		Glossostigma drummondii (Mudmat)			
571. 572.		Glycine peratosa Complesia eraphadaa (Cohwahby baadad Chambada)			
572. 573.		Gnephosis arachnoidea (Cobwebby-headed Gnephosis) Gnephosis intonsa (Shaggy Gnephosis)		P3	
573. 574.		Gnephosis sp. Norseman (K.R. Newbey 8096)		P3	
575.		Gnephosis tenuissima		10	
576.		Gonocarpus nodulosus			
577.		Goodenia berardiana			
578.	7514	Goodenia havilandii			
579.	12523	Goodenia helmsii			
580.	7531	Goodenia occidentalis			
581.	1949	Grevillea acuaria			
582.		Grevillea ceratocarpa			
583.		Grevillea erectiloba		P4	
584.		Grevillea eriobotrya (Woolly Cluster Grevillea)			
585.		Grevillea extorris			
586. 587.		Grevillea georgeana Grevillea gematophylla		P3	
		Grevillea nematophylla			
588. 589.		Grevillea nematophylla subsp. nematophylla Grevillea obliquistigma			
589. 590.		Grevillea obliquistigma subsp. obliquistigma			
591.		Grevillea paradoxa (Bottlebrush Grevillea)			
592.		Grevillea shuttleworthiana subsp. obovata			
593.		Grevillea tetrapleura		P4	
594.		Grevillea zygoloba			
595.		Grimmia laevigata			
596.	2182	Hakea minyma			
597.	17557	Hakea recurva subsp. recurva			
598.	29840	Halgania cyanea var. Allambi Stn (B.W. Strong 676)			
599.		Halgania cyanea var. Charleville (R.W. Purdie +111)			
600.	17491	Halgania cyanea var. cyanea			
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	Name ID	Species Name	Naturalised	Conservation Code	¹ Endemic To Qu Area
601.	6691	Halgania integerrima			
602.	6174	Haloragis gossei			
603.		Haloragis trigonocarpa			
604.		Hannafordia bissillii subsp. latifolia			
605.		Heliophila pusilla	Υ		
606.		Hemigenia brachyphylla			
607. 608.		Hemigenia pedunculata			
		Hibbertia extension			
609. 610.		Hibbertia exasperata Hibbertia rostellata			
611.		Hibbertia rupicola			
612.		Hibbertia spicata			
613.		Homalocalyx thryptomenoides			
614.		Hyalosperma demissum			
615.		Hybanthus floribundus subsp. curvifolius			
616.		Hydrocotyle rugulosa			
617.		Hypochaeris glabra (Smooth Catsear)	Υ		
618.		Isoetes australis	·		
619.	8087	Isoetopsis graminifolia (Cushion Grass)			
620.		Isotoma petraea (Rock Isotome, Tundiwari)			
621.		Jacksonia jackson		P1	Υ
622.		Kennedia prostrata (Scarlet Runner)			
623.		Keraudrenia velutina			
624.		Keraudrenia velutina subsp. velutina			
625.	5840	Kunzea pulchella (Granite Kunzea)			
626.	6779	Lachnostachys coolgardiensis			
627.	13284	Lawrencella rosea			
628.	19726	Leiocarpa semicalva			
629.	19727	Leiocarpa semicalva subsp. semicalva			
630.	12628	Lemooria burkittii			
631.	3033	Lepidium oxytrichum			
632.	31770	Lepidosperma ferricola		P3	
633.	31766	Lepidosperma jacksonense		P1	Υ
634.	29138	Lepidosperma sp. Pigeon Rocks (H. Pringle 30237)		P3	
635.	12687	Leptospermum macgillivrayi		P1	
636.	13260	Leucochrysum fitzgibbonii			
637.	16049	Leucopogon sp. Clyde Hill (M.A. Burgman 1207)			
638.	20371	Leucopogon sp. Salt Lake (G.F. Craig 3069)			
639.	7670	Levenhookia dubia (Hairy Stylewort)			
640.		Levenhookia pusilla (Midget Stylewort)			
641.		Lobelia heterophylla (Wing-seeded Lobelia)			
642.		Maireana amoena			
643.		Maireana carnosa (Cottony Bluebush)			
644.		Maireana eriosphaera			
645.		Maireana georgei (Satiny Bluebush)			
646.		Maireana pentatropis			
647.		Maireana planifolia (Low Bluebush)			
648.		Maireana radiata			
649.		Maireana tomentosa (Felty Bluebush)			
650. 651		Maireana trichentora (Downy Bluchush)			
651. 652		Malicestomon rescus			
652. 653		Malleostemon roseus Malleostemon sp. Adelong (G. I. Keighen, 11825)		DO	
653. 654.		Malleostemon sp. Adelong (G.J. Keighery 11825) Malleostemon tuberculatus		P2	
655.		Marsdenia australis			
656.		Marsilea drummondii (Common Nardoo)			
657.		Medicago minima (Small Burr Medic)	Υ		
658.		Medicago polymorpha (Burr Medic)	Y		
659.		Melaleuca acuminata	1		
660.		Melaleuca atroviridis			
661.		Melaleuca cordata			
662.		Melaleuca eleuterostachya			
663.		Melaleuca fulgens (Scarlet Honeymyrtle)			
664.		Melaleuca hamata			
665.		Melaleuca leiocarpa			
		Melaleuca nematophylla (Wiry Honey-myrtle)			
666.		Melaleuca radula (Graceful Honeymyrtle)			
667.					
		Melichrus sp. Bungalbin Hill (F.H. & M.P. Mollemans 3069)		P3	
667.	41785	Melichrus sp. Bungalbin Hill (F.H. & M.P. Mollemans 3069) Microcorys sp. Mt Gibson (S. Patrick 2098)		P3	







	Name ID	Species Name	Naturalised	Conservation Code	¹ Endemic To Query Area
671.	6000	Micromyrtus racemosa			
672.	8105	Millotia myosotidifolia			
673.		Millotia perpusilla			
674.		Minuria cunninghamii (Bush Minuria)			
675. 676.		Mirbelia depressa Mirbelia ferricola		D2	
676. 677.		Mirbelia nicrophylla		P3	
678.		Monachather paradoxus			
679.		Monoculus monstrosus	Υ		
680.		Neurachne annularis		P3	
681.	6976	Nicotiana occidentalis (Native Tobacco)			
682.	6978	Nicotiana rotundifolia (Round-leaved Tobacco)			
683.	8134	Olearia exiguifolia (Small-leaved Daisy Bush)			
684.	12734	Olearia humilis			
685.		Olearia muelleri (Goldfields Daisy)			
686.		Olearia pimeleoides (Pimelea Daisybush, Burrobunga)			
687.		Olearia stuartii			
688.		Olearia subspicata (Spiked Daisy Bush)			
689. 690.		Parietaria cardiostegia Paspalidium basicladum			
691.		Paspalidium clementii (Clements Paspalidium)			
692.		Persoonia coriacea (Leathery-leaf Persoonia)			
693.		Petalostylis cassioides			
694.		Phebalium canaliculatum			
695.	4500	Phebalium filifolium (Slender Phebalium)			
696.	4504	Phebalium tuberculosum			
697.	18539	Philotheca brucei			
698.	18537	Philotheca brucei subsp. brucei			
699.		Philotheca coateana		P3	
700.		Philotheca coccinea			
701.		Philotheca deserti subsp. brevifolia		P3	
702.		Philotheca deserti subsp. deserti			
703. 704.		Philotheca tomentella Phyllangium paradoxum			
704.		Phyllota luehmannii			
706.		Pimelea forrestiana			
707.		Pimelea microcephala (Shrubby Riceflower, Banjine)			
708.	11185	Pimelea microcephala subsp. microcephala			
709.	12104	Pimelea spiculigera var. thesioides			
710.	19744	Pittosporum angustifolium			
711.		Plantago debilis			
712.		Pleurosorus rutifolius (Blanket Fern)			
713.		Poa drummondiana (Knotted Poa)			
714.		Podolepis canescens (Bright Podolepis, Grey Podolepis)			
715. 716.		Podolepis capillaris (Wiry Podolepis) Podolepis lessonii			
710.		Podolepis tepperi			
717.		Podotheca angustifolia (Sticky Longheads)			
719.		Podotheca gnaphalioides (Golden Long-heads)			
720.		Prostanthera althoferi			
721.		Prostanthera althoferi subsp. althoferi			
722.	6912	Prostanthera campbellii			
723.	6916	Prostanthera grylloana			
724.		Prostanthera magnifica (Magnificent Prostanthera)			
725.		Prostanthera prostantheroides			
726.		Prostanthera semiteres subsp. intricata			
727.		Psammomoya choretroides			
728.		Psammomoya grandiflora			
729. 730.		Psydrax suaveolens Pterostylis picta			
730. 731.		Pterostylis sp. dainty brown (N. Gibson & M. Lyons 3690)			
731.		Pterostylis sp. inland (A.C. Beauglehole 11880)			
732.		Pterostylis spathulata			
734.		Ptilotus aervoides			
735.		Ptilotus carlsonii			
736.	2717	Ptilotus divaricatus (Climbing Mulla Mulla)			
737.	2718	Ptilotus drummondii (Narrowleaf Mulla Mulla)			
738.		Ptilotus exiliflorus			
739.		Ptilotus gaudichaudii			
740.	41506	Ptilotus gaudichaudii subsp. gaudichaudii			
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	Name ID	Species Name	Naturalised	Conservation Code	¹ Endemic To Qu Area
741.		Ptilotus helichrysoides			
742.		Ptilotus holosericeus			
743. 744.		Ptilotus nobilis (Tall Mulla Mulla) Ptilotus obovatus (Cotton Bush)			
744.		Ptilotus schwartzii var. schwartzii			
746.		Ptilotus sp. Goldfields (R. Davis 10796)			
747.		Rhagodia drummondii			
748.		Rhagodia preissii subsp. preissii			
749.		Rhodanthe battii			
750.		Rhodanthe chlorocephala subsp. rosea			
751.		Rhodanthe citrina			
752.	13305	Rhodanthe heterantha			
753.	13294	Rhodanthe laevis			
754.	13234	Rhodanthe manglesii			
755.	13238	Rhodanthe maryonii			
756.	13248	Rhodanthe oppositifolia			
757.	13249	Rhodanthe oppositifolia subsp. oppositifolia			
758.	13296	Rhodanthe polycephala			
759.	13252	Rhodanthe pygmaea			
760.	13253	Rhodanthe rubella			
761.	13254	Rhodanthe stricta			
762.	6599	Rhyncharrhena linearis (Bush Bean, Wintjulanypa)			
763.	14225	Ricinocarpos brevis		Т	
764.	11151	Rostraria pumila	Υ		
765.	30434	Salsola australis			
766.	2356	Santalum acuminatum (Quandong, Warnga)			
767.	2359	Santalum spicatum (Sandalwood, Wilarak)			
768.	13008	Sarcostemma viminale			
769.	7639	Scaevola restiacea			
770.	12586	Scaevola spicigera			
771.	7644	Scaevola spinescens (Currant Bush, Maroon)			
772.	8200	Schoenia cassiniana (Schoenia)			
773.	2606	Sclerolaena cuneata (Yellow Bindii)			
774.	2607	Sclerolaena densiflora			
775.	2609	Sclerolaena diacantha (Grey Copperburr)			
776.	2610	Sclerolaena drummondii			
777.		Sclerolaena fusiformis			
778.	8877	Sclerolaena gardneri			
779.		Sclerolaena lanicuspis (Spinach Burr)			
780.		Sclerolaena patenticuspis (Spear-fruit Saltbush)			
781.		Senecio glomeratus (Cluster-headed Fireweed)			
782.		Senecio glossanthus (Slender Groundsel)			
783.		Senecio lacustrinus			
784.		Senecio pinnatifolius			
785.		Senecio quadridentatus			
786.		Senna artemisioides			
787.		Senna artemisioides subsp. filifolia			
788.		Senna artemisioides subsp. x artemisioides			
789.		Senna pleurocarpa			
790.		Senna pleurocarpa var. angustifolia			
791.		Senna pleurocarpa var. pleurocarpa			
792.		Sida calyxhymenia (Tall Sida)			
793.		Sida ectogama			
794.		Sida sp. Excedentifolia (J.L. Egan 1925)			
795.		Sida sp. Golden calyces glabrous (H.N. Foote 32)			
796.		Sida sp. dark green fruits (S. van Leeuwen 2260)			
797.		Silene gallica (French Catchfly)	Υ		
798.		Solanum hoplopetalum (Thorny Solanum)			
799.		Solanum lasiophyllum (Flannel Bush, Mindjulu)			
800.		Solanum nummularium (Money-leaved Solanum) Solanum orbigulatum (Mild Tomata)			
801.		Solanum orbiculatum (Wild Tomato)			
802.		Solanum petrophilum (Rock Nightshade)			
803.		Solanum terraneum			
804.		Sonchus asper (Rough Sowthistle)	Y		
805.		Sonchus oleraceus (Common Sowthistle)	Y		
806.		Spartothampolla sp. Holona & Aurora Pango (P.G. Armstrong 155-100)		Da	
807.		Spartothamnella sp. Helena & Aurora Range (P.G. Armstrong 155-109)		P3	
808.		Spartothamnella teucriiflora Stackhousia muricata subsp. appual (W.P. Parker 2172)			
809.	19000	Stackhousia muricata subsp. annual (W.R. Barker 2172)			
810.	10514	Stackhousia sp. Hairy fruited (E.N.S. Jackson 1387)			







	Name ID	Species Name	Naturalised	Conservation Code	¹ Endemic To Query Area
811.		Stellaria filiformis (Thread Spurry)			
812.		Stenanthemum newbeyi		P3	
813.		Stenanthemum stipulosum			
814.		Stenopetalum filifolium			
815.		Stenopetalum lineare (Narrow Thread Petal)			
816. 817.		Stenopetalum lineare var. lineare Stenopetalum pedicellare			
818.		Streptoglossa cylindriceps			
819.		Streptoglossa liatroides			
820.		Stylidium dielsianum (Tangle Triggerplant)			
821.		Stylidium ecorne (Foot Triggerplant)			
822.		Stylidium induratum (Desert Triggerplant)			
823.		Stylidium yilgarnense (Yilgarn Triggerplant)			
824.		Styphelia sp. Bullfinch (M. Hislop 3574)		P3	
825.		Swainsona colutoides (Bladder Vetch)			
826.		Swainsona kingii			
827.		Tecticornia doleiformis (Samphire)			
828.	33216	Tecticornia sp. Dennys Crossing (K.A. Shepherd & J. English KS 552)			
829.	31717	Tecticornia undulata			
830.	2822	Tetragonia eremaea			
831.	16287	Tetragonia moorei			
832.	4534	Tetratheca harperi (Jackson Tetratheca)		Т	Υ
833.	13649	Tetratheca paynterae			Υ
834.	23987	Tetratheca paynterae subsp. cremnobata		T	Υ
835.	23988	Tetratheca paynterae subsp. paynterae		T	Υ
836.		Thelymitra petrophila			
837.		Thryptomene australis (Hook-leaf Thryptomene)			
838.		Thryptomene australis subsp. australis			
839.		Thryptomene kochii			
840.		Thryptomene urceolaris			
841.		Thyridolepis mitchelliana (Mulga Grass)			
842.		Thysanotus manglesianus (Fringed Lily)			
843. 844.		Thysanotus patersonii Thysanotus speckii			
845.		Trachymene ceratocarpa			
846.		Trachymene cyanopetala			
847.		Trachymene ornata (Spongefruit)			
848.		Trachymene pilosa (Native Parsnip)			
849.		Trichanthodium skirrophorum			
850.		Triodia rigidissima			
851.		Triodia scariosa			
852.	13041	Triodia tomentosa			
853.	705	Tripogon Ioliiformis (Five Minute Grass)			
854.	8253	Triptilodiscus pygmaeus			
855.	16986	Trymalium myrtillus subsp. myrtillus			
856.	7656	Velleia cycnopotamica			
857.		Velleia hispida (Hispid Velleia)			
858.		Velleia rosea (Pink Velleia)			
859.		Verticordia helmsii			
860.		Vittadinia humerata	.,		
861.		Vulpia muralis	Y		
862. 863		Vulpia myuros (Rat's Tail Fescue) Vulpia myuros forma myuros	Y		
863.			Υ		
864. 865.		Wahlenbergia gracilenta (Annual Bluebell) Wahlenbergia tumidifructa			
866.		Waitzia acuminata (Orange Immortelle)			
867.		Waitzia acuminata var. acuminata			
868.		Westringia cephalantha			
869.		Westringia cephalantha var. cephalantha			
870.		Westringia rigida (Stiff Westringia)			
871.		Wurmbea densiflora			
872.		Xerolirion divaricata (Basil's Asparagus)			
873.		Zygophyllum aurantiacum (Shrubby Twinleaf)			
874.		Zygophyllum eichleri			
875.	4389	Zygophyllum eremaeum			
876.	4390	Zygophyllum fruticulosum (Shrubby Twinleaf)			
877.	4392	Zygophyllum iodocarpum			
878.	4394	Zygophyllum ovatum (Dwarf Twinleaf)			







Name ID Species Name

Naturalised

Conservation Code ¹Endemic To Query Area

Conservation Codes

- Raire of likely to become extinct

- Raire of likely to become extinct

X - Presumed extinct

IA - Protected under international agreement

S - Other specially protected fauna

- Priority

2 - Priority

3 - Priority

4 - Priority

5 - Priority

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.



