

# Basic and Targeted Vertebrate Fauna Survey and Assessment

## Reedy Gold Project

---

Prepared for: Valiant Gold

Version 1. July, 2026



## RECORD OF DISTRIBUTION

| No. of copies | Report File Name    | Report Status | Date         | Prepared for: | Initials |
|---------------|---------------------|---------------|--------------|---------------|----------|
| Electronic    | 2026-0112-002-GT V1 | DRAFT         | 20 July 2026 | Valiant Gold  | GT       |
| Electronic    | 2026-0112-002-GT V1 | FINAL         | 31 July 2026 | Valiant Gold  | ST       |
|               |                     |               |              |               |          |
|               |                     |               |              |               |          |
|               |                     |               |              |               |          |
|               |                     |               |              |               |          |

**Suggested Citation:** Terrestrial Ecosystems (2026) *Basic and Targeted Vertebrate Fauna Survey and Assessment for the Reedy Gold Project*, Unpublished report for Valiant Gold, Perth.

**Prepared For:** Valiant Gold  
Ground Floor  
34 Colin Street  
West Perth WA 6005

**Prepared By:** Terrestrial Ecosystems  
23 Strickland Street  
Mt Claremont WA 6010  
Phone: 0407 385 289  
Website: [www.terrestrialecosystems.com](http://www.terrestrialecosystems.com)  
ABN: 40921131346

### DISCLAIMER

This document is prepared in accordance with and subject to an agreement between G & S Thompson Pty Ltd as Trustee for the Thompson Family Trust trading as Terrestrial Ecosystems and the client, Valiant Gold. It has been prepared and is restricted to those issues that have been raised by the client in its engagement of Terrestrial Ecosystems and prepared using the standard of skill and care ordinarily exercised by environmental scientists in the preparation of such reports.

Persons or agencies that rely on or use this document for purposes or reasons other than those agreed by Terrestrial Ecosystems and its client without first obtaining prior consent, do so at their own risk and Terrestrial Ecosystems denies all liability in tort, contract or otherwise for any loss, damage or injury of any kind whatsoever (whether in negligence or otherwise) that may be suffered as a consequence.

## REPORT CONTENTS

### EXECUTIVE SUMMARY

|           |                                                                                            |           |
|-----------|--------------------------------------------------------------------------------------------|-----------|
| <b>1.</b> | <b>INTRODUCTION .....</b>                                                                  | <b>1</b>  |
| 1.1       | Background .....                                                                           | 1         |
| 1.2       | Project objectives and scope of works .....                                                | 1         |
| <b>2.</b> | <b>EXISTING ENVIRONMENT .....</b>                                                          | <b>2</b>  |
| 2.1       | Location of project area .....                                                             | 2         |
| 2.2       | Land use history .....                                                                     | 2         |
| 2.3       | Climate .....                                                                              | 2         |
| 2.4       | Regional biological fauna context of the project area .....                                | 3         |
| 2.5       | Fauna species at risk .....                                                                | 3         |
| <b>3.</b> | <b>METHODOLOGY .....</b>                                                                   | <b>4</b>  |
| 3.1       | Database searches .....                                                                    | 4         |
| 3.2       | Site survey .....                                                                          | 4         |
| 3.3       | Fauna habitat assessment .....                                                             | 4         |
| 3.4       | Survey and reporting staff .....                                                           | 6         |
| 3.5       | Taxonomy and nomenclature .....                                                            | 7         |
| 3.6       | Limitations .....                                                                          | 7         |
| <b>4.</b> | <b>RESULTS .....</b>                                                                       | <b>9</b>  |
| 4.1       | Past disturbance .....                                                                     | 9         |
| 4.2       | Fauna habitat .....                                                                        | 9         |
| 4.3       | Malleefowl .....                                                                           | 12        |
| 4.4       | Southern Whiteface .....                                                                   | 12        |
| 4.5       | West Coast Mulga Slider .....                                                              | 13        |
| 4.6       | Western Spiny-tailed Skink .....                                                           | 13        |
| 4.7       | Bioregional vertebrate fauna assemblage .....                                              | 13        |
| 4.8       | Fauna of conservation significance .....                                                   | 16        |
| <b>5.</b> | <b>DISCUSSION .....</b>                                                                    | <b>20</b> |
| 5.1       | Adequacy of the fauna survey data for fauna habitats represented in the project area ..... | 20        |
| 5.1.1     | Amphibians .....                                                                           | 21        |
| 5.1.2     | Reptiles .....                                                                             | 21        |
| 5.1.3     | Birds .....                                                                                | 21        |
| 5.1.4     | Mammals .....                                                                              | 22        |
| 5.2       | Biodiversity value .....                                                                   | 22        |
| 5.2.1     | Ecological functional value at the ecosystem level .....                                   | 22        |
| 5.2.2     | Maintenance of a threatened ecological community .....                                     | 22        |
| 5.2.3     | Condition of fauna habitat .....                                                           | 22        |
| 5.2.4     | Ecological linkages .....                                                                  | 22        |
| 5.2.5     | Size and scale of the proposed disturbance .....                                           | 23        |
| 5.2.6     | Abundance and distribution of similar habitats in the adjacent areas .....                 | 23        |
| 5.2.7     | Potential impacts on ecosystem function .....                                              | 23        |

|           |                                                                                                                 |           |
|-----------|-----------------------------------------------------------------------------------------------------------------|-----------|
| <b>6.</b> | <b>POTENTIAL IMPACTS .....</b>                                                                                  | <b>24</b> |
| 6.1       | Potential impacts on fauna .....                                                                                | 24        |
| 6.1.1     | Animal deaths during the clearing process and displacement of fauna .....                                       | 24        |
| 6.1.2     | Habitat fragmentation .....                                                                                     | 24        |
| 6.1.3     | Introduced fauna and weeds .....                                                                                | 24        |
| 6.1.4     | Road fauna deaths .....                                                                                         | 25        |
| 6.1.5     | Anthropogenic activity .....                                                                                    | 25        |
| 6.1.6     | Dust .....                                                                                                      | 25        |
| <b>7.</b> | <b>VERTEBRATE FAUNA RISK ASSESSMENT .....</b>                                                                   | <b>26</b> |
| 7.1       | Risk assessment.....                                                                                            | 26        |
| 7.2       | Native vegetation clearing principles as they pertain to vertebrate fauna .....                                 | 30        |
| 7.3       | Impacts on species of conservation significance .....                                                           | 30        |
| 7.3.1     | Critical habitat – Southern Whiteface.....                                                                      | 31        |
| 7.3.2     | Threats to Southern Whiteface .....                                                                             | 31        |
| 7.3.3     | DCCEEW MNES Significant Impact Guidelines .....                                                                 | 32        |
| 7.3.4     | Is clearing vegetation in the project area likely to result in a significant impact on Southern Whiteface?..... | 35        |
| 7.3.5     | <i>Lerista eupoda</i> (West Coast Mulga Slider) .....                                                           | 35        |
| 7.4       | Referral under the <i>EPBC Act</i> .....                                                                        | 36        |
| <b>8.</b> | <b>SUMMARY .....</b>                                                                                            | <b>37</b> |
| <b>9.</b> | <b>REFERENCES .....</b>                                                                                         | <b>38</b> |

## LIST OF CHARTS

|                                                  |   |
|--------------------------------------------------|---|
| Chart 1. Climatic averages for Meekatharra ..... | 2 |
|--------------------------------------------------|---|

## LIST OF PLATES

|                                                                                            |    |
|--------------------------------------------------------------------------------------------|----|
| Plate 1. Mulga woodland on clay .....                                                      | 9  |
| Plate 2. Mulga woodland on clay .....                                                      | 9  |
| Plate 3. Mulga woodland on drainage line .....                                             | 10 |
| Plate 4. Mulga woodland on drainage line .....                                             | 10 |
| Plate 5. Mulga woodland on rocky ridge .....                                               | 10 |
| Plate 6. Mulga woodland on rocky ridge .....                                               | 10 |
| Plate 7. Mulga woodland over mixed shrubs .....                                            | 10 |
| Plate 8. Mulga woodland over mixed shrubs .....                                            | 10 |
| Plate 9. Rocky outcrop .....                                                               | 11 |
| Plate 10. Disturbance .....                                                                | 11 |
| Plate 11. Disturbance .....                                                                | 11 |
| Plate 12. Disturbance .....                                                                | 11 |
| Plate 13. Uncapped drill hole .....                                                        | 11 |
| Plate 14. Uncapped drill hole .....                                                        | 11 |
| Plate 15. Weeds .....                                                                      | 12 |
| Plate 16. Rubbish .....                                                                    | 12 |
| Plate 17. Goats .....                                                                      | 12 |
| Plate 18. Kangaroo scats and rabbit diggings .....                                         | 12 |
| Plate 19. Search area for West Coast Slider .....                                          | 13 |
| Plate 20. Search area for West Coast Slider .....                                          | 13 |
| Plate 21. Southern Whiteface records in Terrestrial Ecosystems fauna survey database ..... | 33 |
| Plate 22. West Coast Mulga Slider records and the project area .....                       | 35 |

## LIST OF TABLES

|                                                                                                                         |    |
|-------------------------------------------------------------------------------------------------------------------------|----|
| Table 1. Variables assessed during the rapid habitat assessment .....                                                   | 5  |
| Table 2. Project personnel and their qualifications .....                                                               | 7  |
| Table 3. Fauna survey limitations and constraints .....                                                                 | 8  |
| Table 4. Terrestrial vertebrates recorded in the search for the West Coast Slider .....                                 | 13 |
| Table 5. Birds that are potentially in the region .....                                                                 | 14 |
| Table 6. Amphibians that are potentially in the region .....                                                            | 14 |
| Table 7. Reptiles that are potentially in the region .....                                                              | 14 |
| Table 8. Mammals that are potentially in the region .....                                                               | 16 |
| Table 9. Assessment of the potential presence of a fauna species of conservation significance in the project area ..... | 17 |
| Table 10. Criteria for determining survey requirements .....                                                            | 20 |
| Table 11. Fauna impact risk assessment descriptors .....                                                                | 26 |
| Table 12. Levels of acceptable risk .....                                                                               | 27 |

|                                                                                                                               |    |
|-------------------------------------------------------------------------------------------------------------------------------|----|
| Table 13. A risk assessment of the impact of ground disturbance activity on fauna .....                                       | 28 |
| Table 14. Assessment of impact using the native vegetation clearing principles .....                                          | 30 |
| Table 15. Criteria for assessing the potential impacts on Southern Whiteface .....                                            | 32 |
| Table 16. Threats to Southern Whiteface as described in the Conservation Advice to the Commonwealth Government Minister ..... | 35 |

## LIST OF FIGURES

|                                                                                    |    |
|------------------------------------------------------------------------------------|----|
| Figure 1. Regional location .....                                                  | 42 |
| Figure 2. Fauna habitat types, fauna habitats and fauna assessment locations ..... | 42 |
| Figure 3. West Coast Slider search locations .....                                 | 42 |

## LIST OF APPENDICES

|                                                                                                                          |
|--------------------------------------------------------------------------------------------------------------------------|
| Appendix A. Results of the <i>EPBC Act</i> Protected Matters Search                                                      |
| Appendix B. Vertebrate Fauna Recorded in Biological Surveys in the Region                                                |
| Appendix C. Definitions of Significant Fauna under the <i>WA Biodiversity Conservation Act 2016</i> and Priority Species |
| Appendix D. Fauna habitat assessment results                                                                             |
| Appendix E. Descriptions of vertebrate fauna of conservation significance                                                |

## EXECUTIVE SUMMARY

Valiant Gold has acquired the Reedy Gold Project from Westgold (Big Bell Gold Operations), located ~30km south of the Meekatharra townsite. Valiant Gold is planning a restart of mining operations and commissioned Terrestrial Ecosystems to undertake a Basic and Targeted vertebrate fauna survey and assessment of the 1,298ha project area.

The project area is approximately 30km south of Meekatharra, 10km east of the Great Northern Highway, and 15km south of Lake Anneen and Porlell Lake.

The substrate is red sandy-clay with pebbles, cobbles, and stones. The project area is highly disturbed with five mining pits, waste dumps, TSF, and multiple tracks and haul roads. The following five broad fauna habitats are in the project area:

- Mulga woodland on clay;
- Mulga woodland on drainage line;
- Mulga woodland on rocky ridge;
- Mulga woodland over mixed shrubs; and
- Rocky outcrop.

The Southern Whiteface, listed as Vulnerable under State and Commonwealth Government legislation, was not recorded in the site survey, but is likely to be present in adjacent areas. The West Coast Mulga Slider, was not recorded by MWH (2015) nor during our site survey and targeted searches. The surrounding areas are similar habitat, so even if the skink was present in very low abundance, any loss would not be of conservation significance.

Clearing vegetation and activities associated with exploration and mining will result in the loss of some small fauna that retreat to burrows, such as reptiles and mammals. Nocturnal species are unlikely to be active during most land-clearing and construction work, which may result in these individuals being adversely affected as they attempt to escape. This loss of vegetation is unlikely to have a significant impact when considered in a bioregional context. Larger terrestrial animals and avian species will most often move to adjacent areas. These species will need to establish new activity areas and home ranges, potentially temporarily displacing resident species.

Increased road fauna deaths are likely to occur when new roads and tracks are constructed or upgraded, affecting kangaroos, nocturnal birds, and ground-dwelling large carnivorous predators. Species such as goannas and raptors are attracted to carrion on road verges and therefore have a greater likelihood of being killed by vehicles. Given the small size of the project area and the likely low level of additional vehicle movements, the impact of roadkill is likely to be low once the area becomes operational.

Dust generated from shifting topsoil and spoil and vehicle traffic can degrade surrounding vegetation, reducing its ability to absorb sunlight and influencing photosynthetic rates. Degradation of these areas may potentially render the habitat unsuitable for fauna. Dust suppression and management programs are essential to minimising impacts on fauna in areas adjacent to the mine. An effective dust management and monitoring program is required.

## 1. INTRODUCTION

### 1.1 BACKGROUND

Valiant Gold has acquired the Reedy Gold Project from Westgold (Big Bell Gold Operations). The Reedy Project is a large, brownfields gold asset located in the heart of the Murchison. It has a mining history dating back to the early 1900s and has produced more than 820,000 ounces of gold from a combination of open pit and underground operations. It is approximately 30km south of Meekatharra, 10km east of the Great Northern Highway, and 15km south of Lake Anneen and Porlell Lake (Figure 1).

Valiant Gold is planning a restart of mining operations and commissioned Terrestrial Ecosystems to undertake a Basic and Targeted vertebrate fauna survey and assessment of the 1,297.8ha project area.

The project area has been previously assessed by MWH (2015) and there is Level 1 fauna assessment for the Culculli and Paddy Italiano operations 6km to the east of the project area (MWH, 2016).

### 1.2 PROJECT OBJECTIVES AND SCOPE OF WORKS

Valiant Gold commissioned Terrestrial Ecosystems to undertake a Basic and targeted vertebrate fauna survey of the project area (i.e. 1,298ha). This survey and assessment aimed to inform the proponent of the potential impacts of vegetation clearing and mining activity on the vertebrate fauna assemblage in the project area. The methodology broadly follows that described in the Environmental Protection Authority (2020) *Technical Guidance - Terrestrial Vertebrate Fauna Surveys for Environmental Impact Assessment*.

This Basic vertebrate fauna survey and risk assessment involved a desktop review and on-site assessment with the objectives to:

- indicate the vertebrate fauna assemblage (reptiles, amphibians, mammals, and birds) on and near the project area so that potential impacts on the fauna and fauna assemblage might be adequately assessed;
- identify the presence and/or potential risk of impacts on species of conservation significance that are present or likely to be present in the project area;
- assess the impact and environmental risks associated with the proposed development on the vertebrate fauna assemblage;
- determine if any additional surveys are required to assess the potential impact on vertebrate fauna assemblage in the project area, including impacts on species of conservation significance; and
- make recommendations to avoid, mitigate, or minimise potential impacts on resident fauna.

To achieve these objectives, Terrestrial Ecosystems:

- reviewed Terrestrial Ecosystems' database [includes Atlas of Living Australia] to identify potential vertebrate fauna within the area;
- searched the Commonwealth Government database of fauna of national environmental significance to identify species potentially occurring within the area that are protected under the Commonwealth *Environment Protection and Biodiversity Conservation (EPBC) Act 1999* or international migratory bird agreements (JAMBA/CAMBA);
- completed a field survey and site assessment;
- reviewed previous fauna surveys conducted near the project area and in similar habitats;
- assessed the potential risks to the fauna associated with clearing additional areas of native vegetation;
- discussed the likelihood of *EPBC Act 1999* and the Western Australian *Biodiversity Conservation Act 2016 (BC Act 2016)* listed species being present in the project area; and
- provided management recommendations to avoid, mitigate and minimise potential impacts on the fauna in the project area.

## 2. EXISTING ENVIRONMENT

### 2.1 LOCATION OF PROJECT AREA

The project area is approximately 10km east of the Great Northern Highway in the Goldfields of Western Australia, and approximately 30km south of Meekatharra, and 15km south of Lake Anneen and Porlell Lake. The mining tenements are in the Murchison 1 (MUR1 - East Murchison subregion) IBRA bioregion. Cowan (2001) described the subregion having internal drainage on broad plains of red-brown soils and breakaway complexes and red sandplains, with the vegetation dominated by Mulga woodlands that are often rich in ephemerals and hummock grasslands, saltbush shrublands and Halosarcia shrublands.

### 2.2 LAND USE HISTORY

The dominant land uses for the bioregion are native pasture to support grazing and crown land reserves, unallocated Crown Land, and, to a lesser extent, mining and exploration. The subregion has many operational and non-operational mines.

### 2.3 CLIMATE

The weather in the project area is characterised as semi-arid. Meekatharra has an annual rainfall of approximately 232mm, although this varies considerably from year to year. The highest mean maximum and minimum temperatures in Meekatharra are in January, with an average of 38.4°C and 24.5°C, respectively (Bureau of Meteorology, 2026). The lowest mean daily maximum and minimum temperatures occur in July (Chart 1). Average monthly rainfall is heaviest in January-March and June.

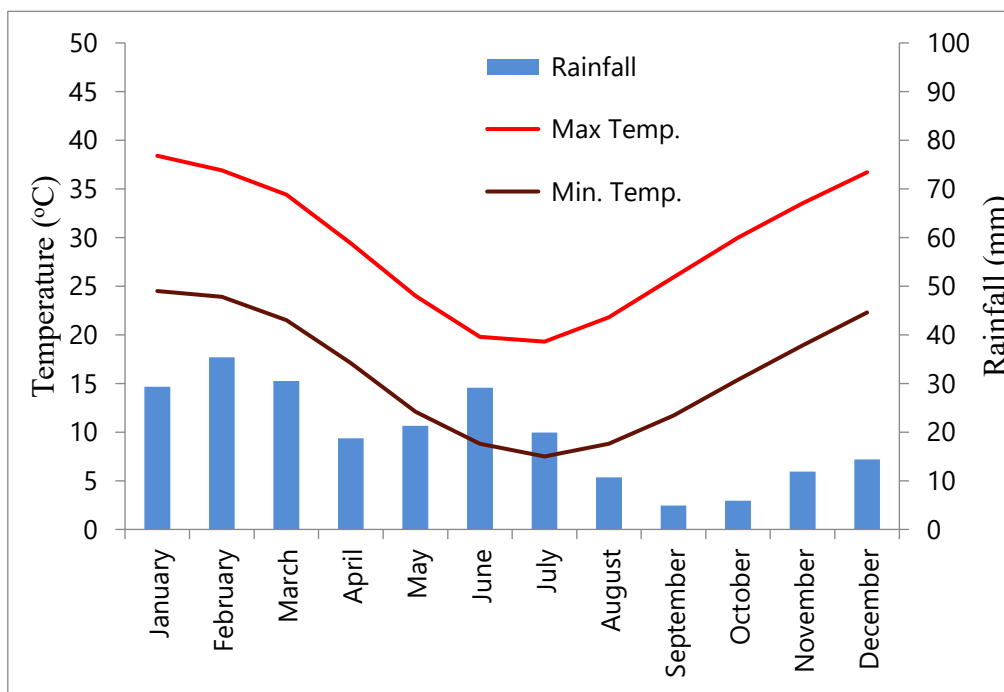


**Chart 1. Climatic averages for Meekatharra**

## 2.4 REGIONAL BIOLOGICAL FAUNA CONTEXT OF THE PROJECT AREA

The frogs, reptiles, mammals, and birds near the project area have been surveyed for other environmental assessments and are therefore known. The following fauna surveys and assessments have been reviewed for this assessment:

- Biologic (2018) *Gabanimtha Vanadium Project: Targeted Vertebrate Fauna & SRE Assessment*. Unpublished report for Technology Metals Australia Limited, Perth.
- Biologic (2020) *Australian Vanadium Project Level 2 Vertebrate and SRE Invertebrate Fauna Survey*. Unpublished report for Australian Vanadium Ltd, Perth.
- Ecologia Environment (2009) *Weld Range Vertebrate Fauna Assessment*. Unpublished report for Sinosteel Midwest Corporation Pty Ltd, Perth.
- Ecologia Environment (2012) *Karbar Station Solar Energy Project: Vertebrate Fauna Assessment*. Unpublished report for Hyperion Energy, Perth.
- Integrate Sustainability Pty Ltd (2021) *Biological Survey Report Yarrabubba Iron Vanadium Project*. Unpublished report for Technology Metals Australia Ltd, Perth.
- Terrestrial Ecosystems (2024) *Phase 1 of a Detailed Fauna Survey and Assessment for the Yarrabubba Project Area*. Unpublished report for KOP Ventures Pty Ltd, Perth

In addition, individual records for fauna contained in the DBCA threatened species database, the Atlas of Living Australia, and the Western Australian Museum collection have also been accessed.

## 2.5 FAUNA SPECIES AT RISK

Cowan (2001) reported the fauna species at risk in the East Murchison subregion as Bilby (*Macrotis lagotis*), Southern Marsupial Mole (*Notoryctes typhlops*), Princess Parrot (*Polytelis alexandrae*), Malleefowl (*Leipoa ocellata*), Slender-billed Thornbill (*Acanthiza iredalei iredalei*), Great Desert Skink (*Egernia kintorei*) and the Peregrine Falcon (*Falco peregrinus*). This report assesses the potential impact that exploration or mining activity might have on these species and other significant conservation fauna. Since 2001, the Night Parrot (*Pezoporus occidentalis*) has been rediscovered in Western Australia and is also considered a species at risk in the region, along with the Southern Whiteface (*Aphelocephala leucopsis*), which is now listed as Vulnerable under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) and the WA *Biodiversity Conservation Act (BC Act) 2016*.

### **3. METHODOLOGY**

#### **3.1 DATABASE SEARCHES**

A review of the *EPBC Act 1999* list of protected species was undertaken to identify species of conservation interest to the Commonwealth Government (Appendix A). In addition, a desktop search of Terrestrial Ecosystems' fauna survey database was used to develop an appreciation of the vertebrate fauna assemblages in relevant sections of the bioregion near the project area.

Other more general texts, including Tyler et al. (2000) for frogs, Storr et al. (1983; 1990, 1999, 2002) and Thompson and Thompson (2006) for reptiles, Johnstone and Storr (1998, 2004) for birds, and Van Dyck and Strahan (2008) and Batmap for mammals were also used to provide supplementary information on vertebrates in the bioregion.

Collectively, these sources of information were used to create lists of species that were expected to utilise the project area and the broader bioregion. It should be noted that these lists will include species recorded in the area around the project areas that are vagrants and will not generally be found in the project areas due to a lack of suitable habitat. Vagrants can be recorded almost anywhere. Many of the records in these databases are historical, and the species is no longer present in the area (e.g. Burrowing Bettong, Bilby). Many bird, mammal, reptile, and amphibian species have specific habitat requirements that may be present in the general area but not in the project area, so they are unlikely to be present. Also, the ecology of many of these species is often poorly understood, and it can be challenging to identify species whose specific habitat requirements are absent in the project area. Therefore, many species will be included in the lists produced from database searches but will not be present in the actual project area.

#### **3.2 SITE SURVEY**

The project area was searched on foot and by utility all-terrain vehicle (UTV) for species of conservation significance between 29 June and 5 July 2026. This included a targeted search for *Lerista eupoda*, *Aphelocephala leucopsis*, *Egernia stokesii badia* and *Leipoa ocellata*. The site survey was also used to record fauna habitat types in the project area. Habitat data were collected at 212 points, including habitat types and photographs.

#### **3.3 FAUNA HABITAT ASSESSMENT**

The fauna habitat assessment had two foci:

- assess fauna habitat types and their condition; and
- to assess the possible presence of and record evidence of species of conservation significance so that mitigation and management strategies might be implemented to reduce potential impacts.

The zoologists stopped at 212 locations within the project area and recorded various factors about the fauna habitat and its condition. This information included a description of the habitat structure, habitat condition, landform, soils, vegetation and time since the last fire (Table 1).

**Table 1. Variables assessed during the rapid habitat assessment**

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                    |  |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------|--|
| <b>Observer's Name:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                    |  |
| <b>Coordinates of the location as UTM (GDA94):</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                    |  |
| <b>Fire history – options</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                    |  |
| <input type="checkbox"/> > 5 years                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                    |  |
| <input type="checkbox"/> 1-5 years                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                    |  |
| <input type="checkbox"/> < 1 year                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                    |  |
| <b>Landform – options</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                    |  |
| <input type="checkbox"/> Beach                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | <input type="checkbox"/> Lower slope               |  |
| <input type="checkbox"/> Clay plain                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | <input type="checkbox"/> Mid slope                 |  |
| <input type="checkbox"/> Cliff                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | <input type="checkbox"/> Ridge                     |  |
| <input type="checkbox"/> Creek line                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | <input type="checkbox"/> River                     |  |
| <input type="checkbox"/> Dam                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | <input type="checkbox"/> Rocky outcrop / breakaway |  |
| <input type="checkbox"/> Drainage line                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | <input type="checkbox"/> Salt lake                 |  |
| <input type="checkbox"/> Dune crest                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | <input type="checkbox"/> Sand dune                 |  |
| <input type="checkbox"/> Dune slope                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | <input type="checkbox"/> Sand plain                |  |
| <input type="checkbox"/> Dune swale                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | <input type="checkbox"/> Stony plain               |  |
| <input type="checkbox"/> Escarpment                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | <input type="checkbox"/> Swamp                     |  |
| <input type="checkbox"/> Flat                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | <input type="checkbox"/> Undulating                |  |
| <input type="checkbox"/> Gorge                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | <input type="checkbox"/> Upper slope               |  |
| <input type="checkbox"/> Gully                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | <input type="checkbox"/> Wetland                   |  |
| <input type="checkbox"/> Intertidal / mangrove                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | <input type="checkbox"/> Water hole                |  |
| <input type="checkbox"/> Lake / lake edge                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                    |  |
| <b>Habitat quality – options</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                    |  |
| <input type="checkbox"/> <i>High-quality fauna habitat</i> —These areas closely approximate the vegetation mix and quality that would have been in the area before any disturbance. The habitat is connected to other habitats and likely contains the most natural vertebrate fauna assemblage.                                                                                                                                                                                                                                                                                |                                                    |  |
| <input type="checkbox"/> <i>Very good fauna habitat</i> —These areas show minimal signs of disturbance (e.g., grazing, clearing, fragmentation, weeds) and generally retain many of the characteristics of the habitat if it had not been disturbed. The habitat is connected to other habitats, and fauna assemblages in these areas will likely be minimally affected by disturbance.                                                                                                                                                                                         |                                                    |  |
| <input type="checkbox"/> <i>Good fauna habitat</i> —These areas showed signs of disturbance (e.g., grazing, clearing, fragmentation, weeds) but generally retained many of the characteristics of the habitat if it had not been disturbed. The habitat has connectivity with other habitats, and fauna assemblages in these areas are likely to be affected by disturbance.                                                                                                                                                                                                    |                                                    |  |
| <input type="checkbox"/> <i>Disturbed fauna habitat</i> — These areas showed signs of significant disturbance. Many of the trees, shrubs, and undergrowth have been cleared. These areas may be in the early succession and regeneration stages. Areas may show signs of significant grazing, containing weeds or damaged by vehicles or machinery. Habitats are fragmented or have limited connectivity with other fauna habitats. Fauna assemblages in these areas will likely differ significantly from what might be expected in the area had the disturbance not occurred. |                                                    |  |
| <input type="checkbox"/> <i>Highly degraded fauna habitat</i> – These areas often have a significant loss of vegetation, an abundance of weeds, and many vehicle tracks or are completely cleared. Limited or no fauna habitat connectivity. Fauna assemblages in these areas will likely significantly differ from what might have been in the pre-disturbance area.                                                                                                                                                                                                           |                                                    |  |

| Habitat structure                           |                                               |
|---------------------------------------------|-----------------------------------------------|
| <input type="checkbox"/> Tall open woodland | <input type="checkbox"/> Scattered tall trees |
| <input type="checkbox"/> Tall woodland      | <input type="checkbox"/> Scattered trees      |
| <input type="checkbox"/> Open woodland      | <input type="checkbox"/> Scattered low trees  |
| <input type="checkbox"/> Woodland           | <input type="checkbox"/> Low closed forest    |
| <input type="checkbox"/> Open forest        | <input type="checkbox"/> Low open forest      |
| <input type="checkbox"/> Closed forest      | <input type="checkbox"/> Low woodland         |
| <input type="checkbox"/> Tall closed forest | <input type="checkbox"/> Low open woodland    |
| <input type="checkbox"/> Tall open forest   |                                               |
| Soil Type – options                         |                                               |
| <input type="checkbox"/> Sand               | <input type="checkbox"/> Silty loam           |
| <input type="checkbox"/> Loamy sand         | <input type="checkbox"/> Sand clay loam       |
| <input type="checkbox"/> Clayey sand        | <input type="checkbox"/> Clay                 |
| <input type="checkbox"/> Clay loam          | <input type="checkbox"/> Peat / organic       |
| <input type="checkbox"/> Silty clay loam    | <input type="checkbox"/> Stony                |
| <input type="checkbox"/> Sandy loam         |                                               |
| Soil colour - options                       |                                               |
| <input type="checkbox"/> Black              | <input type="checkbox"/> Red                  |
| <input type="checkbox"/> Brown              | <input type="checkbox"/> White                |
| <input type="checkbox"/> Grey               | <input type="checkbox"/> Yellow               |
| <input type="checkbox"/> Orange             |                                               |
| Surface stones – options                    |                                               |
| <input type="checkbox"/> None               | <input type="checkbox"/> Boulders (>250mm)    |
| <input type="checkbox"/> Pebbles (0-50mm)   | <input type="checkbox"/> Rocks                |
| <input type="checkbox"/> Cobbles (51-250)   |                                               |

### 3.4 SURVEY AND REPORTING STAFF

Tom Raymond and Monica Randall undertook the site survey and fauna habitat assessment. Tom Raymond completed fauna habitat mapping, and Dr Graham Thompson drafted this report. Dr Scott Thompson reviewed the report before it was sent to the client.

The senior scientists have appropriate, relevant post-graduate qualifications, extensive experience in conducting vertebrate fauna surveys and assessments, have published research articles on biodiversity, fauna assemblages, species of conservation significance, trapping techniques, and temporal variations in trapped fauna assemblages and are therefore appropriately trained and experienced to undertake the survey and prepare the assessment.

Dr Scott Thompson is the only environmental practitioner in Western Australia with independent specialist certification (CEnvP - Ecology Specialist) combined with postgraduate tertiary qualifications and is a licensed pest management technician (LPMT). This unique set of skills and qualifications ensures that Scott undertakes

fauna surveys, assessments, and control programs to the highest standard and with the highest quality assurance.

All staff involved in this assessment have undertaken multiple assessments in the goldfields, mid-west and Murchison and are familiar with the habitat in the project and surrounding areas. The qualifications and experience of the survey and reporting personnel are shown in Table 2.

**Table 2. Project personnel and their qualifications**

| Name               | Qualifications                                                                                                                      | Experience | Role                                 |
|--------------------|-------------------------------------------------------------------------------------------------------------------------------------|------------|--------------------------------------|
| Dr Scott Thompson  | BSc. (Env. Sc.), MSc. (Env. Mngt.), PhD (Env. Sc./Mngt), Cert III (Vertebrate Pest Mngt), Cert IV (WHS). CEnvP (Ecology Specialist) | > 20 years | Principal zoologist; report review.  |
| Dr Graham Thompson | PhD (Zoology); Post Grad. Dip. (Zool); Cert III (Vertebrate Pest Mngt)                                                              | > 20 years | Principal zoologist; report drafting |
| Tom Raymond        | BSc (Hons) (Zool), Cert III (Rural Env Pest Mgt)                                                                                    | > 3 years  | Fieldwork and habitat mapping        |
| Monica Randall     | MSc (Cons Biol)                                                                                                                     | > 2 years  | Fieldwork                            |

### 3.5 TAXONOMY AND NOMENCLATURE

Taxonomy and nomenclature for fauna species used in this report are generally based on the WA Museum (WAM) species lists. Terrestrial Ecosystems has presumed that the fauna identifications in the appendices or reports used to provide local and regional contextual data were correct, and we have corrected only obvious records where the nomenclature was known to be incorrect.

### 3.6 LIMITATIONS

This Basic vertebrate fauna survey and risk assessment is based on information in the Commonwealth Government database and other published and unpublished fauna survey data for the bioregion and a site visit. It is acknowledged that multiple surveys conducted in different seasons, repeated over several years, are necessary to fully appreciate the fauna assemblage in the project area.

Lists of species potentially in and around the project area have been compiled from the Western Australian Museum (WAM) records, the Atlas of Living Australia, and reports of fauna surveys undertaken nearby. Some of these records are very old, and the species they list are no longer present in the area. Terrestrial Ecosystems has not been able to verify the primary data and, therefore, cannot vouch for the accuracy of these records. All these data sources are known to contain errors, which should be considered when reading this assessment. These errors occur due to misidentification of individuals, taxonomic name changes, and incorrect coordinates entered into the database.

The *EPBC Act* online matters of national environmental significance (MNES) database for terrestrial fauna, includes historical records. It places a wide buffer around previously known locations of threatened species in its database. A search of this database will invariably include species that are either locally extinct or were never present in parts of the search area.

The EPA's (2020) *Technical Guidance - Terrestrial vertebrate fauna surveys for environmental impact assessment* suggested that many variables may limit fauna surveys. Limitations associated with each of these variables are assessed in Table 3.

**Table 3. Fauna survey limitations and constraints**

| Limitation and constraint                                                                                          | Possible limitations | Constraint (yes/no); significant, moderate, or negligible                                                                                                                                                                                                                                                                                   |
|--------------------------------------------------------------------------------------------------------------------|----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Availability of data and information                                                                               | No                   | Vertebrate fauna survey and assessment reports are available for similar habitats near the project areas.                                                                                                                                                                                                                                   |
| Competency/experience of the survey team, including experience in the bioregion surveyed                           | No                   | The authors of this report have appropriate post-graduate qualifications, have undertaken multiple surveys and assessments in the Goldfields, have published a book and multiple refereed journal articles based on fauna surveys in the region, and are familiar with the vertebrate fauna in semi-arid Western Australian fauna habitats. |
| Scope of the survey, e.g. where faunal groups were excluded from the survey                                        | No                   | The targeted searches were undertaken for <i>Leipoa ocellata</i> and their mounds, <i>Lerista eupoda</i> , and <i>Aphelocephala leucopsis</i> . These searches were sufficient to detect recently active breeding mounds and any Malleefowl tracks in the project area.                                                                     |
| Timing, weather, and season                                                                                        | No                   | The weather was suitable for a site visit.                                                                                                                                                                                                                                                                                                  |
| Disturbance that may have affected results, e.g. fire, flood                                                       | No                   | The project area is highly disturbed by past mining activity. Disturbances in the project area have been factored into this assessment.                                                                                                                                                                                                     |
| The proportion of fauna identified, recorded, or collected                                                         | N/A                  |                                                                                                                                                                                                                                                                                                                                             |
| Adequacy of the survey intensity and proportion of survey achieved, e.g. the extent to which the area was surveyed | No                   | The survey intensity was adequate for its intended purpose, and the Basic vertebrate fauna survey requirements were met.                                                                                                                                                                                                                    |
| Access problems                                                                                                    | No                   | Most of the relevant sections of the site were accessible to UTV.                                                                                                                                                                                                                                                                           |
| Problems with data and analysis, including sampling biases                                                         | No                   | This report collated and commented on data from other reports.                                                                                                                                                                                                                                                                              |

N/A = not applicable, Significant = major impact on the outcome of the assessment; Moderate = impacted parts of the assessment; Negligible = almost no effect on the assessment

## 4. RESULTS

### 4.1 PAST DISTURBANCE

The project area is highly disturbed and contains five mining pits, waste dumps, and tailings storage facilities (TSF). The Cullculli Road runs east-west through the project area. This is a public road that goes to the neighbouring Cullculli mine. There are tracks, and haul roads in the project area, but most of the built infrastructure from previous mining activity has been removed.

### 4.2 FAUNA HABITAT

Terrestrial Ecosystems undertook 212 habitat assessments across the project area (Appendix D). Plates 1 to 12 provide representative images of the fauna habitat types. These habitats varied, and many areas lacked vegetation or were sparsely vegetated. This lack of vegetation is due mostly to previous vegetation clearing, historical exploration and mining activities and disturbances, and hard substrate with very little surface soil that is not conducive to plant growth. The quality of fauna habitats ranges from good to highly degraded, with the more degraded areas primarily resulting from exploration and mining activities. The substrate in the project area is sandy clay, with many areas having pebbles, cobbles, and stones. The following five broad fauna habitats are in the project area:

- Mulga woodland on clay;
- Mulga woodland on drainage line;
- Mulga woodland on rocky ridge;
- Mulga woodland over mixed shrubs; and
- Rocky outcrop.

The results of the rapid habitat assessment are provided in Appendix D. Images of the habitats at each assessment point provide a more comprehensive overview of the habitats in the project area.



**Plate 1. Mulga woodland on clay**



**Plate 2. Mulga woodland on clay**



**Plate 3. Mulga woodland on drainage line**



**Plate 4. Mulga woodland on drainage line**



**Plate 5. Mulga woodland on rocky ridge**



**Plate 6. Mulga woodland on rocky ridge**



**Plate 7. Mulga woodland over mixed shrubs**



**Plate 8. Mulga woodland over mixed shrubs**



**Plate 9. Rocky outcrop**



**Plate 10. Disturbance**



**Plate 11. Disturbance**



**Plate 12. Disturbance**



**Plate 13. Uncapped drill hole**

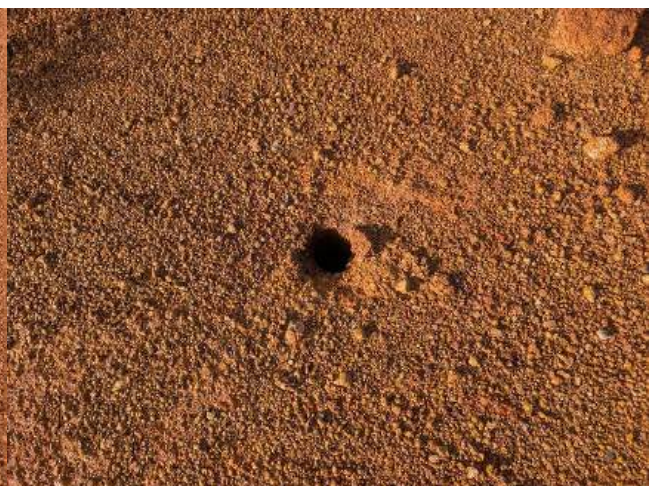


**Plate 14. Uncapped drill hole**



**Plate 15. Weeds**



**Plate 16. Rubbish**



**Plate 17. Goats**



**Plate 18. Kangaroo scats and rabbit diggings**

Goats were present in the project area (Plate 17) and scats of kangaroos and rabbit diggings were recorded at a multiple locations (Plate 18). Numerous drill holes were not properly capped or have broken off (Plate 13), the PVC pipe had been removed from some holes (Plate 14) and weeds were present in some areas (Plate 15).

#### **4.3 MALLEEFOWL**

The project area was searched for Malleefowl, their mounds and tracks. Malleefowl are predominantly ground-dwelling species that walk considerable distances daily to forage for insects and seeds. Their tracks are distinctive, and their presence is easily detected in soft sand or on sand tracks. To avoid predators, they prefer densely vegetated areas. No Malleefowl, or their mounds or tracks, were observed during the site visit. The fauna habitats are mostly sparsely vegetated and much too open to support Malleefowl.

#### **4.4 SOUTHERN WHITEFACE**

There are small groves of mulga and shrubs that could provide foraging habitat for Southern Whiteface, but overall, the project area is too sparsely vegetated to attract Southern Whiteface to the area.

## 4.5 WEST COAST MULGA SLIDER

Twenty-six areas were searched for approximately 20 minutes for West Coast Sliders. A pronged rake was used to rake the surface soils or the leaf litter looking for these fossorial skinks. No West Coast Sliders were recorded. There was very little loose surface soil in the project area, and leaf litter was sparse.



**Plate 19. Search area for West Coast Slider**

**Plate 20. Search area for West Coast Slider**

Other terrestrial fauna recorded during the search for West Coast Mulga Slider are shown in Table 4.

**Table 4. Terrestrial vertebrates recorded in the search for the West Coast Slider**

| Species                   | Site | Date      |
|---------------------------|------|-----------|
| <i>Heteronotia binoei</i> | LE5  | 1/07/2026 |
| <i>Gehyra variegata</i>   | LE9  | 1/07/2026 |
| <i>Heteronotia binoei</i> | LE18 | 2/07/2026 |
| <i>Heteronotia binoei</i> | LE19 | 2/07/2026 |
| <i>Menetia greyi</i>      | LE23 | 2/07/2026 |
| <i>Heteronotia binoei</i> | LE26 | 3/07/2026 |

## 4.6 WESTERN SPINY-TAILED SKINK

No Western Spiny-tailed Skinks were recorded in the project area, and there was no suitable habitat for these skinks.

## 4.7 BIOREGIONAL VERTEBRATE FAUNA ASSEMBLAGE

Appendix B provides a summary of the fauna survey data available near the project area. There are appreciable differences in the recorded fauna assemblages within and among the fauna surveys shown in Appendix B. These differences are partially due to the low survey effort in some surveys. They also reflect variations in soil and vegetation, and temporal variations in the faunal assemblages.

Tables 5-8 provide a list of vertebrate species potentially found near the project areas that have been compiled based on the fauna survey report results shown in Appendix B.

**Table 5. Birds that are potentially in the region**

| Family           | Species                              | Common Name                 |
|------------------|--------------------------------------|-----------------------------|
| Casuariidae      | <i>Dromaius novaehollandiae</i>      | Emu                         |
| Anatidae         | <i>Chenonetta jubata</i>             | Australian Wood Duck        |
|                  | <i>Anas gracilis</i>                 | Grey Teal                   |
|                  | <i>Malacorhynchus membranaceus</i>   | Pink-eared Duck             |
|                  | <i>Oxyura australis</i>              | Blue-billed Duck            |
| Megapodiidae     | <i>Leipoa ocellata</i>               | Malleefowl                  |
| Phasianidae      | <i>Coturnix pectoralis</i>           | Stubble Quail               |
| Podicipedidae    | <i>Tachybaptus novaehollandiae</i>   | Australasian Grebe          |
| Columbidae       | <i>Phaps chalcoptera</i>             | Common Bronzewing           |
|                  | <i>Ocyphaps lophotes</i>             | Crested Pigeon              |
|                  | <i>Geopelia cuneata</i>              | Diamond Dove                |
| Cuculidae        | <i>Chrysococcyx basalís</i>          | Horsfield's Bronze-Cuckoo   |
|                  | <i>Chrysococcyx osculans</i>         | Black-eared Cuckoo          |
|                  | <i>Cacomantis pallidus</i>           | Pallid Cuckoo               |
| Aegothelidae     | <i>Aegotheles cristatus</i>          | Australian Owlet-nightjar   |
| Podargidae       | <i>Podargus strigoides</i>           | Tawny Frogmouth             |
| Caprimulgidae    | <i>Eurostopodus argus</i>            | Spotted Nightjar            |
| Apodidae         | <i>Apus pacificus</i>                | Pacific Swift               |
| Rallidae         | <i>Tribonyx ventralis</i>            | Black-tailed Nativehen      |
| Burhinidae       | <i>Burhinus grallarius</i>           | Bush Stone-curlew           |
| Recurvirostridae | <i>Himantopus himantopus</i>         | Black-winged Stilt          |
| Recurvirostridae | <i>Recurvirostra novaehollandiae</i> | Red-necked Avocet           |
| Charadriidae     | <i>Vanellus tricolor</i>             | Banded Lapwing              |
|                  | <i>Charadrius ruficapillus</i>       | Red-capped Plover           |
|                  | <i>Erythronyx cinctus</i>            | Red-kneed Dotterel          |
|                  | <i>Thinornis cucullatus</i>          | Hooded Plover               |
|                  | <i>Eseyornis melanops</i>            | Black-fronted Dotterel      |
|                  | <i>Peltohyas australis</i>           | Inland Dotterel             |
| Scolopacidae     | <i>Limosa lapponica</i>              | Bar-tailed Godwit           |
|                  | <i>Calidris acuminata</i>            | Sharp-tailed Sandpiper      |
|                  | <i>Calidris ferruginea</i>           | Curlew Sandpiper            |
|                  | <i>Calidris ruficollis</i>           | Red-necked Stint            |
|                  | <i>Calidris melanotos</i>            | Pectoral Sandpiper          |
|                  | <i>Actitis hypoleucos</i>            | Common Sandpiper            |
|                  | <i>Tringa nebularia</i>              | Common Greenshank           |
|                  | <i>Tringa stagnatilis</i>            | Marsh Sandpiper             |
|                  | <i>Tringa glareola</i>               | Wood Sandpiper              |
| Turnicidae       | <i>Turnix castanotus</i>             | Chestnut-backed Buttonquail |
|                  | <i>Turnix velox</i>                  | Little Buttonquail          |

| Family            | Species                         | Common Name              |
|-------------------|---------------------------------|--------------------------|
| Glareolidae       | <i>Glareola maldivarum</i>      | Oriental Pratincole      |
| Laridae           | <i>Gelochelidon nilotica</i>    | Gull-billed Tern         |
|                   | <i>Hydroprogne caspia</i>       | Caspian Tern             |
|                   | <i>Chlidonias leucopterus</i>   | White-winged Tern        |
|                   | <i>Ardeotis australis</i>       | Australian Bustard       |
| Ardeidae          | <i>Ardea pacifica</i>           | White-necked Heron       |
| Threskiornithidae | <i>Plegadis falcinellus</i>     | Glossy Ibis              |
| Threskiornithidae | <i>Platalea flavipes</i>        | Yellow-billed Spoonbill  |
| Accipitridae      | <i>Hamirostra melanosternon</i> | Black-breasted Buzzard   |
|                   | <i>Hieraaetus morphnoides</i>   | Little Eagle             |
|                   | <i>Aquila audax</i>             | Wedge-tailed Eagle       |
|                   | <i>Circus assimilis</i>         | Spotted Harrier          |
|                   | <i>Accipiter fasciatus</i>      | Brown Goshawk            |
|                   | <i>Accipiter cirrocephalus</i>  | Collared Sparrowhawk     |
|                   | <i>Haliastur sphenurus</i>      | Whistling Kite           |
| Cuculidae         | <i>Heteroscenes pallidus</i>    | Pallid Cuckoo            |
| Strigidae         | <i>Ninox boobook</i>            | Southern Boobook         |
| Alcedinidae       | <i>Todiramphus pyrrhopygius</i> | Red-backed Kingfisher    |
| Meropidae         | <i>Merops ornatus</i>           | Rainbow Bee-eater        |
| Falconidae        | <i>Falco cenchroides</i>        | Nankeen Kestrel          |
|                   | <i>Falco longipennis</i>        | Australian Hobby         |
|                   | <i>Falco berigora</i>           | Brown Falcon             |
|                   | <i>Falco hypoleucos</i>         | Grey Falcon              |
|                   | <i>Falco peregrinus</i>         | Peregrine Falcon         |
| Meliphagidae      | <i>Lacustroica whitei</i>       | Grey Honeyeater          |
| Cacatuidae        | <i>Eolophus roseicapilla</i>    | Galah                    |
|                   | <i>Nymphicus hollandicus</i>    | Cockatiel                |
| Psittaculidae     | <i>Neopsephotus bourkii</i>     | Bourke's Parrot          |
|                   | <i>Neophema elegans</i>         | Elegant Parrot           |
|                   | <i>Barnardius zonarius</i>      | Australian Ringneck      |
|                   | <i>Psephotus varius</i>         | Mulga Parrot             |
|                   | <i>Melopsittacus undulatus</i>  | Budgerigar               |
| Ptilonorhynchidae | <i>Chlamydera guttata</i>       | Western Bowerbird        |
|                   | <i>Ptilonorhynchus maculata</i> | Spotted Bowerbird        |
| Climacteridae     | <i>Climacteris affinis</i>      | White-browed Treecreeper |
| Maluridae         | <i>Amytornis textilis</i>       | Western Grasswren        |
|                   | <i>Malurus assimilis</i>        | Purple-backed Fairywren  |
|                   | <i>Malurus lamberti</i>         | Variegated Fairywren     |
|                   | <i>Malurus splendens</i>        | Splendid Fairywren       |
|                   | <i>Malurus leucopterus</i>      | White-winged Fairywren   |
| Meliphagidae      | <i>Certhionyx variegatus</i>    | Pied Honeyeater          |

| Family          | Species                           | Common Name                    |
|-----------------|-----------------------------------|--------------------------------|
|                 | <i>Purnella albifrons</i>         | White-fronted Honeyeater       |
|                 | <i>Manorina flavigula</i>         | Yellow-throated Miner          |
|                 | <i>Acanthagenys rufogularis</i>   | Spiny-cheeked Honeyeater       |
|                 | <i>Gavialis virescens</i>         | Singing Honeyeater             |
|                 | <i>Ptilotula penicillata</i>      | White-plumed Honeyeater        |
|                 | <i>Ptilotula keartlandi</i>       | Grey-headed Honeyeater         |
|                 | <i>Conopophila whitei</i>         | Grey Honeyeater                |
|                 | <i>Epthianura tricolor</i>        | Crimson Chat                   |
|                 | <i>Epthianura aurifrons</i>       | Orange Chat                    |
|                 | <i>Epthianura albifrons</i>       | White-fronted Chat             |
|                 | <i>Lichmera indistincta</i>       | Brown Honeyeater               |
| Pardalotidae    | <i>Pardalotus striatus</i>        | Striated Pardalote             |
| Acanthizidae    | <i>Pyrrholaemus brunneus</i>      | Redthroat                      |
|                 | <i>Acanthiza iredalei</i>         | Slender-billed Thornbill       |
|                 | <i>Acanthiza apicalis</i>         | Inland Thornbill               |
|                 | <i>Acanthiza chrysorrhoa</i>      | Yellow-rumped Thornbill        |
|                 | <i>Acanthiza uropygialis</i>      | Chestnut-rumped Thornbill      |
|                 | <i>Acanthiza robustirostris</i>   | Slaty-backed Thornbill         |
|                 | <i>Smicrornis brevirostris</i>    | Weebill                        |
|                 | <i>Gerygone fusca</i>             | Western Gerygone               |
|                 | <i>Aphelocephala leucopsis</i>    | Southern Whiteface             |
|                 | <i>Aphelocephala nigrincta</i>    | Banded Whiteface               |
| Pomatostomidae  | <i>Pomatostomus temporalis</i>    | Grey-crowned Babbler           |
|                 | <i>Pomatostomus superciliosus</i> | White-browed Babbler           |
| Cinclosomatidae | <i>Cinclosoma clarum</i>          | Copperback Quail-thrush        |
|                 | <i>Cinclosoma castaneothorax</i>  | Chestnut-breasted Quail-thrush |
|                 | <i>Cinclosoma marginatum</i>      | Western Quail-thrush           |
| Campephagidae   | <i>Coracina maxima</i>            | Ground Cuckooshrike            |
|                 | <i>Coracina novaehollandiae</i>   | Black-faced Cuckooshrike       |
|                 | <i>Lalage tricolor</i>            | White-winged Triller           |

| Family          | Species                          | Common Name              |
|-----------------|----------------------------------|--------------------------|
| Neosittidae     | <i>Daphoenositta chrysoptera</i> | Varied Sittella          |
| Psophodidae     | <i>Psophodes occidentalis</i>    | Chiming Wedgebill        |
| Oreocidae       | <i>Oreoica gutturalis</i>        | Crested Bellbird         |
| Pachycephalidae | <i>Colluricincla harmonica</i>   | Grey Shrikethrush        |
|                 | <i>Pachycephala rufiventris</i>  | Rufous Whistler          |
| Artamidae       | <i>Artamus personatus</i>        | Masked Woodswallow       |
| Artamidae       | <i>Artamus superciliosus</i>     | White-browed Woodswallow |
|                 | <i>Artamus cinereus</i>          | Black-faced Woodswallow  |
|                 | <i>Artamus cyanopterus</i>       | Dusky Woodswallow        |
|                 | <i>Artamus minor</i>             | Little Woodswallow       |
|                 | <i>Cracticus torquatus</i>       | Grey Butcherbird         |
|                 | <i>Cracticus nigrogularis</i>    | Pied Butcherbird         |
|                 | <i>Gymnorhina tibicen</i>        | Australian Magpie        |
| Rhipiduridae    | <i>Rhipidura leucophrys</i>      | Willie Wagtail           |
|                 | <i>Rhipidura albiscapa</i>       | Grey Fantail             |
| Monarchidae     | <i>Grallina cyanoleuca</i>       | Magpie-lark              |
| Corvidae        | <i>Corvus orru</i>               | Torresian Crow           |
|                 | <i>Corvus bennetti</i>           | Little Crow              |
|                 | <i>Corvus coronoides</i>         | Australian Raven         |
| Petroicidae     | <i>Microeca fascians</i>         | Jacky Winter             |
|                 | <i>Petroica goodenovii</i>       | Red-capped Robin         |
|                 | <i>Melanodryas cucullata</i>     | Hooded Robin             |
| Locustellidae   | <i>Cincloramphus cruralis</i>    | Brown Songlark           |
|                 | <i>Cincloramphus mathewsi</i>    | Rufous Songlark          |
| Hirundinidae    | <i>Hirundo neoxena</i>           | Welcome Swallow          |
|                 | <i>Petrochelidon ariel</i>       | Fairy Martin             |
|                 | <i>Petrochelidon nigricans</i>   | Tree Martin              |
|                 | <i>Cheramoeca leucosterna</i>    | White-backed Swallow     |
| Dicaeidae       | <i>Dicaeum hirundinaceum</i>     | Mistletoebird            |
| Estrildidae     | <i>Taeniopygia guttata</i>       | Zebra Finch              |
| Motacillidae    | <i>Anthus novaeseelandiae</i>    | Australasian Pipit       |

**Table 6. Amphibians that are potentially in the region**

| Family          | Species                          | Common name     |
|-----------------|----------------------------------|-----------------|
| Limnodynastidae | <i>Neobatrachus sutor</i>        | Shoemaker Frog  |
| Myobatrachidae  | <i>Pseudophryne occidentalis</i> | Western Toadlet |
| Pelodyadidae    | <i>Cyclorana maini</i>           | Main's Frog     |

| Family | Species                       | Common name                |
|--------|-------------------------------|----------------------------|
|        | <i>Cyclorana occidentalis</i> | Western Water-holding Frog |
|        | <i>Litoria rubella</i>        | Desert Tree Frog           |

**Table 7. Reptiles that are potentially in the region**

| Family           | Species                            | Common name                       |
|------------------|------------------------------------|-----------------------------------|
| Agamidae         | <i>Ctenophorus caudicinctus</i>    | Ring-tailed Dragon                |
|                  | <i>Ctenophorus graafi</i>          | Ring-tailed Dragon                |
|                  | <i>Ctenophorus isolepis</i>        | Central Military Dragon           |
|                  | <i>Ctenophorus nuchalis</i>        | Central Netted Dragon             |
|                  | <i>Ctenophorus ornatus</i>         | Ornate Crevice Dragon             |
|                  | <i>Ctenophorus pictus</i>          | Painted Dragon                    |
|                  | <i>Ctenophorus reticulatus</i>     | Western Netted Dragon             |
|                  | <i>Ctenophorus salinarum</i>       | Saltpan Dragon                    |
|                  | <i>Ctenophorus scutulatus</i>      | Lozenge-marked Dragon             |
|                  | <i>Ctenophorus sp.</i>             |                                   |
|                  | <i>Diporiphora amphiboluroides</i> | Mulga Dragon                      |
|                  | <i>Gowidon longirostris</i>        | Long-nosed Dragon                 |
|                  | <i>Moloch horridus</i>             | Thorny Devil                      |
| Carphodactylidae | <i>Pogona minor</i>                | Western Bearded Dragon            |
|                  | <i>Tympanocryptis cephalus</i>     | Pebble Dragon                     |
|                  | <i>Nephurus vertebralis</i>        | Midline Knob-tail                 |
|                  | <i>Nephurus wheeleri</i>           | Banded Knob-tail                  |
| Diplodactylidae  | <i>Diplodactylus pulcher</i>       | Beautiful Gecko                   |
|                  | <i>Lucasium squarrosum</i>         | Mottled Ground Gecko              |
|                  | <i>Oedura marmorata</i>            | Marbled Velvet Gecko              |
|                  | <i>Rhynchoedura ornata</i>         | Beaked Gecko                      |
|                  | <i>Strophurus ciliaris</i>         | Spiny-tailed Gecko                |
|                  | <i>Strophurus strophurus</i>       | Western Spiny-tailed Gecko        |
|                  | <i>Strophurus wellingtonae</i>     | Western Shield Spiny-tailed Gecko |
| Elapidae         | <i>Brachyuropsis approximans</i>   | North-western Shovel-nosed Snake  |
|                  | <i>Furina ornata</i>               | Orange-naped Snake                |
|                  | <i>Suta monachus</i>               | Hooded Snake                      |
|                  | <i>Pseudechis butleri</i>          | Spotted Mulga Snake               |
|                  | <i>Pseudonaja mengdeni</i>         | Western Brown Snake               |
|                  | <i>Pseudonaja modesta</i>          | Ringed Brown Snake                |
|                  | <i>Simoselaps bertholdi</i>        | Jan's Banded Snake                |
|                  | <i>Suta fasciata</i>               | Rosen's Snake                     |
| Gekkonidae       | <i>Gehyra australis</i>            | Northern Dtella                   |
|                  | <i>Gehyra punctata</i>             | Spotted Dtella                    |
|                  | <i>Gehyra variegata</i>            | Variegated Gehyra                 |

| Family      | Species                               | Common name                       |
|-------------|---------------------------------------|-----------------------------------|
|             | <i>Heteronotia binoei</i>             | Bynoe's Gecko                     |
| Pygopodidae | <i>Delma australis</i>                | Marble-faced Delma                |
|             | <i>Lialis burtonis</i>                | Burton's Legless Lizard           |
|             | <i>Pygopus nigriceps</i>              | Western Hooded Scaly-foot         |
| Pythonidae  | <i>Antaresia perthensis</i>           | Pygmy Python                      |
|             | <i>Antaresia stimsoni</i>             | Stimson's Python                  |
| Scincidae   | <i>Cryptoblepharus buehneri</i>       | Buehner's Snake-eyed Skink        |
|             | <i>Cryptoblepharus plagiocephalus</i> | Peron's Snake-eyed Skink          |
|             | <i>Ctenotus atlas</i>                 | Southern Mallee Ctenotus          |
|             | <i>Ctenotus helenae</i>               | Clay-soil Ctenotus                |
|             | <i>Ctenotus leonhardii</i>            | Leonhardi's Ctenotus              |
|             | <i>Ctenotus schomburgkii</i>          | Barred Wedgesnout Ctenotus        |
|             | <i>Ctenotus severus</i>               | Stern Ctenotus                    |
|             | <i>Ctenotus uber</i>                  | Spotted Ctenotus                  |
|             | <i>Egernia depressa</i>               | Southern Pygmy Spiny-tailed Skink |
|             | <i>Eremiascincus richardsonii</i>     | Broad-banded Sand-swimmer         |
|             | <i>Lerista bipes</i>                  | North-western Sandslider          |
|             | <i>Lerista eupoda</i>                 | West Coast Mulga Slider           |
|             | <i>Lerista macropisthopus</i>         | Unpatterned Robust Slider         |
|             | <i>Lerista muelleri</i>               | Wood Mulch-slider                 |
|             | <i>Lerista nicholli</i>               | Inland Broad-blazed Slider        |
|             | <i>Lerista rhodonoides</i>            | Timid Slider                      |
|             | <i>Lerista timida</i>                 | Timid Slider                      |
|             | <i>Menetia greyii</i>                 | Common Dwarf Skink                |
| Typhlopidae | <i>Anilius hamatus</i>                | Pale-headed Blind Snake           |
| Varanidae   | <i>Varanus caudolineatus</i>          | Stripe-tailed Monitor             |
|             | <i>Varanus giganteus</i>              | Perentie                          |
|             | <i>Varanus gouldii</i>                | Gould's Goanna                    |
|             | <i>Varanus panoptes</i>               | Yellow-spotted Monitor            |
|             | <i>Varanus tristis</i>                | Black-headed Monitor              |

**Table 8. Mammals that are potentially in the region**

| Family           | Species                       | Common Name                |
|------------------|-------------------------------|----------------------------|
| Tachyglossidae   | <i>Tachyglossus aculeatus</i> | Short-beaked Echidna       |
| Bovidae          | <i>Bos taurus</i>             | Cow                        |
|                  | <i>Capra hircus</i>           | Goat                       |
| Canidae          | <i>Canis lupus</i>            | Dingo                      |
|                  | <i>Vulpes vulpes</i>          | Red Fox                    |
| Felidae          | <i>Felis catus</i>            | Cat                        |
| Emballonuridae   | <i>Taphozous georgianus</i>   | Common Sheathtail Bat      |
|                  | <i>Taphozous hilli</i>        | Hill's Sheathtail Bat      |
| Megadermatidae   | <i>Macroderma gigas</i>       | Ghost Bat                  |
| Molossidae       | <i>Austronomus australis</i>  | White-striped Freetail Bat |
|                  | <i>Ozimops petersi</i>        | Inland Free-tailed Bat     |
| Vespertilionidae | <i>Chalinolobus gouldii</i>   | Gould's Wattled Bat        |
|                  | <i>Nyctophilus geoffroyi</i>  | Lesser Long-eared Bat      |
|                  | <i>Scotorepens balstoni</i>   | Inland Broad-nosed Bat     |
|                  | <i>Vespadelus baverstocki</i> | Inland Forest Bat          |
|                  | <i>Vespadelus caurinus</i>    | Northern Cave Bat          |
|                  | <i>Vespadelus finlaysoni</i>  | Finlayson's Cave Bat       |
| Dasyuridae       | <i>Antechinomys laniger</i>   | Kultarr                    |

| Family       | Species                            | Common Name                |
|--------------|------------------------------------|----------------------------|
|              | <i>Antechinomys longicaudatus</i>  | Long-tailed Dunnart        |
|              | <i>Dasycercus blythi</i>           | Brush-tailed Mulgara       |
|              | <i>Pseudantechinus woolleyae</i>   | Woolley's False Antechinus |
|              | <i>Sminthopsis crassicaudata</i>   | Fat-tailed Dunnart         |
|              | <i>Sminthopsis dolichura</i>       | Little Long-tailed Dunnart |
|              | <i>Sminthopsis macroura</i>        | Stripe-faced Dunnart       |
|              | <i>Sminthopsis ooldea</i>          | Ooldea Dunnart             |
| Macropodidae | <i>Lagorchestes hirsutus</i>       | Rufous Hare-wallaby        |
|              | <i>Osphranter robustus</i>         | Euro                       |
|              | <i>Osphranter rufus</i>            | Red Kangaroo               |
|              | <i>Petrogale lateralis</i>         | Black-flanked Rock-wallaby |
| Leporidae    | <i>Oryctolagus cuniculus</i>       | Rabbit                     |
| Muridae      | <i>Mus musculus</i>                | House Mouse                |
|              | <i>Notomys alexis</i>              | Spinifex Hopping Mouse     |
|              | <i>Pseudomys desertor</i>          | Desert Mouse               |
|              | <i>Pseudomys hermannsburgensis</i> | Sandy Inland Mouse         |

## 4.8 FAUNA OF CONSERVATION SIGNIFICANCE

Fauna species of conservation significance are protected by the *EPBC Act 1999*, and this list includes species covered by international treaties such as the Japan-Australia Migratory Bird Agreement (JAMBA) and China-Australia Migratory Bird Agreement (CAMBA) and the Western Australia (WA) *Biodiversity Conservation (BC) Act 2016*. The *BC Act 2016* provides for the publication of the *Wildlife Conservation (Specially Protected Fauna) Notice*, which lists species under multiple categories. In addition, the DBCA maintains a list of fauna that require monitoring, prioritised according to current knowledge of their distribution, abundance, and threatening processes. The *EPBC Act 1999* and *BC Act 2016* imply legislative requirements for managing anthropogenic impacts to minimise the effects of disturbances on species and their habitats. Priority species lack statutory protection, but the DBCA wishes to monitor potential impacts on them. Environmental consultants and proponents of developments are encouraged to avoid and minimise impacts on these species. Definitions of the significant fauna under the *BC Act 2016* are provided in Appendix C.

Table 9 is an assessment of the likelihood of each species being found in the project area. A brief description of the biology and ecology of each of these species is provided in Appendix E.

**Table 9. Assessment of the potential presence of a fauna species of conservation significance in the project area**

| Species                                                            | DBCA<br>Schedule /<br>Priority | Status under<br>Commonwealth<br>EPBC Act | Comment on the potential presence of a species                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|--------------------------------------------------------------------|--------------------------------|------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Night Parrot</b><br><i>Pezoporus occidentalis</i>               | Critically<br>Endangered       | Critically<br>Endangered                 | Night Parrots inhabit mature spinifex ( <i>Triodia</i> spp.) grasslands, often in stony or sandy terrain. Roosting and nesting sites are typically in long-unburnt, dense spinifex hummocks. They may also use chenopod shrublands, samphire flats, and mallee woodlands. In western Queensland, they appear to prefer roosting sites in mature ringed spinifex hummocks. Roosting site proximity to water and foraging grounds is important (Department of Biodiversity Conservation and Attractions, 2024). This habitat is not present in the project area, so it is highly unlikely that Night Parrots are present. It will therefore not be discussed further in this report.                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Western Spiny-tailed Skink</b><br><i>Egernia stokesii badia</i> | Endangered                     | Endangered                               | Western Spiny-tailed Skink inhabits open eucalypt woodlands and Acacia-dominated shrublands (Department of Environment and Conservation, 2012; How et al., 2003). Most common woodland types include York Gum ( <i>Eucalyptus loxophleba</i> ), Gimlet ( <i>E. salubris</i> ) and Salmon Gum ( <i>E. salmonophloia</i> ) (Department of Environment and Conservation, 2012; How et al., 2003). It utilises logs over 25cm in diameter, cavities in exfoliating rocks, and even old corrugated iron, houses and ruins for shelter, but it prefers log piles where several overlapping hollow logs provide numerous openings and retreat sites (Department of Environment and Conservation, 2012; How et al., 2003). A search of the project area found no suitable habitat and no Western Spiny-tailed Skinks, so it is highly unlikely that they are present. It will therefore not be discussed further in this report.                                                                                                                                                                                            |
| <b>Grey Falcon</b> <i>Falco hypoleucos</i>                         | Vulnerable                     | Vulnerable                               | The Grey Falcon is a wide-roaming raptor commonly recorded in drainages, along watercourses, or anywhere where there is permanent water throughout arid and semi-arid regions of Western Australia. This raptor was not seen during the site survey. It will readily move if disturbed, so vegetation clearing and mining activity are unlikely to be a significant impact, as long as an active nest is not disturbed. It will therefore not be discussed further in this report.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Malleefowl</b> <i>Leipoa ocellata</i>                           | Vulnerable                     | Vulnerable                               | Malleefowl, as their name suggests, are most commonly found in mallee shrubland and woodlands (Department of Parks and Wildlife, 2016). Other vegetation types they have been frequently found in include Mulga ( <i>Acacia aneura</i> ), Broombush ( <i>Melaleuca uncinata</i> ), Scrub Pine ( <i>Callitris verrucosa</i> ), Eucalyptus woodlands and coastal heathlands (Department of Parks and Wildlife, 2016). For habitats with the vegetation types listed above to be suitable, they require sandy soils and plenty of leaf litter to build their nest mounds (Department of Parks and Wildlife, 2016). Malleefowl are known for building large mounds on the ground to make their nests during the breeding season. Malleefowl mounds can consist of sand, rock and/or pebbles, and can be between three-five metres in diameter (Sackmann & Jamieson, 2018) and up to one metre in height (Parvin et al., 2021). A search of the project area found no Malleefowl, tracks or recently active mounds, so it is not present in the project area. It will therefore not be discussed further in this report. |

| Species                                                     | DBCA<br>Schedule /<br>Priority | Status under<br>Commonwealth<br>EPBC Act | Comment on the potential presence of a species                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|-------------------------------------------------------------|--------------------------------|------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Southern Whiteface</b><br><i>Aphelocephala leucopsis</i> | Vulnerable                     | Vulnerable                               | Southern Whiteface geographic distribution includes a wide range of habitat types. Acacias and Eucalypts usually dominate these habitats, forming open woodlands and shrublands on ranges, foothills, lowlands, and plains (Higgins & Peter, 2002). Critical habitat for this species is considered to be relatively undisturbed open woodlands and shrublands with an understorey of grass or shrubs near areas of low tree densities with a herbaceous understorey for foraging habitat, and living and dead trees with hollows and crevices, which are needed for roosting and nesting (Department of Climate Change Energy the Environment and Water, 2023). This habitat occurs patchily in the project area, so Southern Whiteface may be present, as it has been recorded in adjacent areas. It was not observed during the site survey, and most vegetation in most of the project area was too sparse to attract this small bush bird. Its presence is discussed further below. |
| <b>Fork-tailed Swift</b><br><i>Apus pacificus</i>           | Migratory                      | Migratory                                | In Australia, it is mostly recorded over inland plains but sometimes above foothills or in coastal areas, but also over cliffs and beaches, islands, and sometimes it is seen well out to sea (BirdLife Australia, 2023a). It feeds and roosts aerially, so it is unlikely to be impacted by exploration and mining activity in the project area. It will therefore not be discussed further in this report.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Grey Wagtail</b><br><i>Motacilla cinerea</i>             | Migratory                      | Migratory                                | In Australia, it is associated with water, especially creeks, rivers and waterfalls; and is often seen at the edge of running water, among rocks or boulders, or on banks of gravel or coarse sand (BirdLife Australia, 2023b). This habitat is not present in the project area, so it is unlikely to occur. It will therefore not be discussed further in this report.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Yellow Wagtail</b><br><i>Motacilla flava</i>             | Migratory                      | Migratory                                | The Yellow Wagtail is found in a wide range of habitats in the non-breeding period, such as open areas with low vegetation, especially short grass or areas under cultivation, pastures, fallow or stubble-fields, cereal crops, sports fields, lawns and parkland, and airstrips; also in clearings in forests (Birdlife Australia, 2023d). In Western Australia, it is a vagrant, and it has not been recorded nearby, so it is very unlikely to be present in the project area. It will therefore not be discussed further in this report.                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Peregrine Falcon</b><br><i>Falco peregrinus</i>          | OS                             |                                          | Peregrine Falcons have highly varied habitat usage, even thriving under extreme anthropogenic conditions by choosing to nest in active construction sites and on buildings in built-up areas (Clayton et al., 1988). However, all their habitats require secure nesting sites and an abundance of food (Morcombe, 2017). The Peregrine Falcon has been recorded in the northern Goldfields, so it could be an infrequent visitor to the area. However, it has a very large home range (Verdejo & Lopez-Lopez, 2008) and will readily move if disturbed, so it is unlikely to be significantly impacted by vegetation clearing and mining activities. It will therefore not be discussed further in this report.                                                                                                                                                                                                                                                                          |
| <b>West Coast Mulga Slider</b><br><i>Lerista eupoda</i>     | P1                             |                                          | <i>Lerista eupoda</i> is found in open mulga woodlands on red and sandy loam soils (Smith, 1996). It was not recorded in previous fauna surveys of the Reedy and Culculli mining areas, nor during the site survey and targeted searches. There was very little loose surface soil or patches of dense leaf litter in the project area, with large areas on hard                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |

| Species                                                         | DBCA<br>Schedule /<br>Priority | Status under<br>Commonwealth<br>EPBC Act | Comment on the potential presence of a species                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|-----------------------------------------------------------------|--------------------------------|------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                 |                                |                                          | clayey substrate with little vegetation cover, which is not habitat conducive to finding this fossorial skink. So, it is highly unlikely that it is present in the project area. It will therefore not be discussed further in this report.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Long-tailed Dunnart</b><br><i>Antechinomys longicaudatus</i> | P4                             |                                          | Habitat types typically used by the Long-tailed Dunnart include rocky outcrops, scree slopes, and stony plateaus with shrubs over spinifex hummock grasslands (Gynther et al., 2013). During the day, Long-tailed Dunnarts take refuge in rock crevices, under fallen logs, or abandoned burrows to avoid predators and extreme temperatures. There are no moderately large breakaways or rocky outcrops in the project area that could sustain Long-tailed Dunnarts, so it is unlikely that it is present in the project area. It will therefore not be discussed further in this report.                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Oriental Plover</b><br><i>Charadrius veredus</i>             | Migratory                      | Migratory                                | The Oriental Plover is a migratory species that comes to Australia during the summer months (December-February). This usually coincides with increased food sources, such as grasshoppers, and wet weather (Eberhart-Hertel, 2019). It is insectivorous, mainly observed foraging for insects, while in Australia (Ozerskaya & Zabelin, 2006). Ideal habitat for this species is open, short-grass plains, as these are ideal for insect foraging (Ozerskaya & Zabelin, 2006). Oriental Plovers can be found in inland and coastal habitats such as semi-arid or overgrazed plains, paddocks, airfields and playing fields, as well as salt marshes, mudflats and beaches (Gynther et al., 1995; Ozerskaya & Zabelin, 2006). The sparsely vegetated areas such as the project area are not its preferred habitat. It has not been recorded in the vicinity of the project area and will readily move if disturbed. So, it is unlikely to be present in the project area. It will therefore not be discussed further in this report. |
| <b>Oriental Pratincole</b><br><i>Glareola maldivarum</i>        | Migratory                      | Migratory                                | Oriental Pratincole is a migratory species that moves between areas in response to food availability and seasonal changes. Spending the winter months in the northern hemisphere and summers in Australia, where it is warmer (BirdLife Australia, 2023c). Oriental Pratincoles occupy plains, floodplains, grasslands and agricultural lands near terrestrial wetlands formed by rain or can occur near larger water bodies such as billabongs, lakes, creeks and beaches (BirdLife Australia, 2023c). It has not been recently recorded near the project area, and the habitat in the project area is not preferred. So, it is unlikely to be present in the project area. It will therefore not be discussed further in this report.                                                                                                                                                                                                                                                                                             |

OS – Other Specially protected fauna

## 5. DISCUSSION

### 5.1 ADEQUACY OF THE FAUNA SURVEY DATA FOR FAUNA HABITATS REPRESENTED IN THE PROJECT AREA

The EPA's (2020) Technical Guidance on terrestrial fauna surveys indicated that the type of survey should be determined based on:

- level of existing regional knowledge;
- type and comprehensiveness of recent local surveys;
- degree of existing disturbance or fragmentation at the regional scale;
- extent, distribution, and significance of habitats;
- significance of species likely to be present;
- sensitivity of the environment to the proposed activities; and
- scale and nature of impact.

Knowledge of the vertebrate fauna in the bioregion is fair, although little is known about the vertebrate fauna near the project area due to a lack of detailed surveys. However, the existing data, when supplemented with data from the Atlas of Living Australia, provide a near-complete list of vertebrate fauna species potentially in the project area. Additional surveys are unlikely to alter the results of an environmental impact assessment.

The EPA's (2020) *Technical Guidance – Terrestrial vertebrate fauna surveys for environmental impact assessment* is not specific about when a Detailed or Targeted vertebrate fauna survey is required. Rather, it has indicated that the level of survey effort should be determined after consideration of the criteria in Table 10.

**Table 10. Criteria for determining survey requirements**

| Criteria                                                                     | Response                                                                                                                                                                                                                                                                                                                                                                                                       |
|------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Level of existing regional knowledge</b>                                  | Multiple surveys have been conducted in the bioregion, and similar habitat types exist in adjacent areas. The local vertebrate fauna is well known, and even though there are no recent trapping surveys nearby, additional trapping effort is unlikely to add new species to the existing knowledge.                                                                                                          |
| <b>Type and comprehensiveness of recent local surveys</b>                    | Multiple surveys are available for the region, but none locally. These surveys provide contextual information for the project area and have been used to compile species lists.                                                                                                                                                                                                                                |
| <b>Degree of existing disturbance or fragmentation at the regional scale</b> | Large sections of the project area have been mined since the early 1900s. There are multiple mining pits, TSF, waste dumps, tracks and roads in the project area.                                                                                                                                                                                                                                              |
| <b>Extent, distribution, and significance of habitats</b>                    | The available fauna habitats are not unique and are widely represented in the bioregion.                                                                                                                                                                                                                                                                                                                       |
| <b>Significance of species likely to be present</b>                          | The Southern Whiteface (Vulnerable) may be present in the project area and is widespread across the Midwest, Goldfields and sandy desert regions. Additional surveys are unlikely to provide new information that would alter the environmental assessment. The West Coast Mulga Slider has not been recorded in the project area, and there is a very low possibility that it has been missed in the surveys. |
| <b>Sensitivity of the environment to the proposed activities</b>             | There was no evidence to suggest that the project area has a unique vertebrate fauna habitat that is environmentally sensitive from a vertebrate fauna perspective.                                                                                                                                                                                                                                            |
| <b>Scale and nature of impact</b>                                            | The project's scale is small relative to the availability of similar fauna habitats in adjacent areas, as a large section has been previously disturbed.                                                                                                                                                                                                                                                       |

### 5.1.1 Amphibians

Frogs are usually only detected immediately after rainfall or around semi-permanent pools. There was some evidence of long-standing drainage channels filled with water in the project area, a habitat that would support arid-adapted frogs. *Cyclorana maini*, *C. occidentalis*, *Pseudophryne occidentalis*, and *Litoria rubella* could be recorded near the project area. *Cyclorana* sp. and *Neobatrachus* sp. burrow into the ground and aestivate between rainfall events. *Pseudophryne occidentalis* and *L. rubella* seek shelter under rocks and in crevices during dry periods and enter temporary ponds to breed after major rainfall events. All species have a widespread distribution and are abundant. Restarting the mine is unlikely to impact these species significantly when assessed in a regional context.

### 5.1.2 Reptiles

Typically, between 25 and 35 species of reptiles are caught in mixed shrubland and open Mulga woodland. There is very little understorey or leaf litter in much of the project area, and a proportion of the area is disturbed. Hence, the abundance of individuals and species is likely much lower than in more heterogeneous areas with abundant leaf litter.

Based on records in the Atlas of Living Australia, the West Coast Mulga Slider is potentially in the project area, however, it was not recorded in a previous survey (MWH, 2015) nor in the current survey or targeted searches. If it was present, it is likely to occur at similar densities in neighbouring areas containing similar habitats. If present, this small fossorial skink will be lost during vegetation clearing, but this is unlikely to be of conservation significance, given the abundance of this habitat in adjacent areas.

The re-opening of the mine is unlikely to significantly impact the reptile fauna in a bioregional context.

### 5.1.3 Birds

The number of birds and bird species in the Goldfields and Murchison fluctuates seasonally and is based on recent rainfall (Craig & Chapman, 2003). Semi-arid and arid areas of inland Australia support a diverse range of transient and nomadic species that move through large areas in search of available resources. Heavy rain, followed by flowering and seeding of many plant species, is often sufficient to draw many nomadic species to the general area. These species move on to other areas once the resource is depleted or better resources are available in adjacent areas.

When Lake Austin is full of water, it will attract shore and wetland birds to feed on the abundant macroinvertebrates that will be temporarily present in the lake. Lake Austin is large, and when full of water, there will be many places for birds to forage. There is no data to suggest that Lake Austin is an important breeding location for shore or wetland birds. When lakes Austin, Anneen, and Porlell are full of water, shorebirds and waders will forage in these lakes, but mining in the project area will not impact these avian species.

The Southern Whiteface (listed as Vulnerable under the *EPBC Act* and *BC Act*) is potentially present, and Peregrine Falcon (Specially protected under the *BC Act*) could be present in adjacent areas. Southern Whiteface move around in arid areas and will readily move if disturbed. The Peregrine Falcon will generally have an extensive home range (Verdejo & Lopez-Lopez, 2008), of which the project area is a very small part.

The proposed mining activity is unlikely to significantly impact the bioregion's avian fauna.

#### **5.1.4 Mammals**

The diversity of small terrestrial mammals potentially caught in the project area would be low due to the sparsely vegetated habitats and feral and pest fauna.

Batmap indicates that *Austronomus australis*, *Chalinolobus gouldii*, *Nyctophilus geoffroyi*, *Saccolaimus flaviventris*, *Scotorepens balstoni*, *Taphozous hilli* and *Vespadelus finlaysoni* are potentially in the project area. Other than *Nyctophilus geoffroyi* and *Taphozous hilli*, these bat species roost in tree hollows and under bark and given the lack of trees with peeling bark in most of the project area, the bat fauna is likely to be very sparse.

There are no other mammals of conservation significance likely to be in the project area.

### **5.2 BIODIVERSITY VALUE**

An ecological assessment of a site should consider its biodiversity value at the genetic, species, and ecosystem levels and its ecological functional value at the ecosystem level. Inadequate data exist to assess the ecological value at the genetic level.

Fauna habitat types represented in the project area are abundant and similar in adjacent areas. Feral cats are likely to be present, and this species will, over many years, have significantly impacted the native vertebrate fauna. The habitat types identified in the project area are also abundant in adjacent areas, so the vertebrate fauna in the project area will be present in neighbouring areas.

#### **5.2.1 Ecological functional value at the ecosystem level**

Vertebrate species potentially in the project area are wide-ranging and have been recorded in various other fauna surveys in the bioregion (Appendix B). The project area will likely have a relatively low abundance of reptiles and mammals due to sparse vegetation, previous disturbance from exploration and mining, the lack of leaf litter in many areas, and degradation by cattle and feral fauna.

#### **5.2.2 Maintenance of a threatened ecological community**

There are no threatened fauna ecological communities in the project area.

The Southern Whiteface, Peregrine Falcon and possibly the West Coast Mulga Slider were the only threatened fauna species identified as potentially being in the project area. The Southern Whiteface and Peregrine Falcon are present across the bioregion and will move to adjacent areas if the project area is cleared. Searches for the West Coast Slider in the project area have been unsuccessful, so it is unlikely to be present.

#### **5.2.3 Condition of fauna habitat**

The undisturbed fauna habitat is like many square kilometres of adjacent habitat and is generally in poor condition.

#### **5.2.4 Ecological linkages**

The project area does not provide an important ecological linkage or a fauna movement corridor.

### **5.2.5 Size and scale of the proposed disturbance**

The project area's undisturbed fauna habitats represent a small proportion of similar fauna habitats in the adjacent and regional areas.

### **5.2.6 Abundance and distribution of similar habitats in the adjacent areas**

Fauna habitats present in the project area are abundant in adjacent areas. The fauna assemblage will therefore be similar to that of the many square kilometres of similar habitat in adjoining areas and the bioregion.

### **5.2.7 Potential impacts on ecosystem function**

Clearing native vegetation will likely result in the loss of small vertebrate fauna that cannot move away during the clearing process. The few larger animals, such as kangaroos, large goannas, snakes, and most birds, will move into adjacent areas once the clearing commences. There will be a small loss of native fauna from vehicle strikes on access tracks and haul roads, but the impact will be low. Shifting animals into adjacent areas may increase pressure on resources there, and there may be short-term disruption to ecosystems until a balance is restored.

The impacts associated with development on the vertebrate fauna in a local, landscape, and bioregional context are likely to be low as the area is degraded and there are vast tracts of similar habitat in adjacent areas.

## **6. POTENTIAL IMPACTS**

### **6.1 POTENTIAL IMPACTS ON FAUNA**

Clearing vegetation will potentially affect vertebrate fauna in numerous ways, including death/injury of fauna during clearing, grading, impacts on vehicles, and loss of habitat.

#### **6.1.1 Animal deaths during the clearing process and displacement of fauna**

Clearing vegetation and activities associated with exploration and mining will result in the loss of some small fauna that retreat to burrows, such as reptiles and mammals. Nocturnal species are unlikely to be active during most land-clearing and construction work, which may result in these individuals being adversely affected as they attempt to escape. This loss of vegetation is unlikely to have a significant impact when considered in a bioregional context. Larger terrestrial animals and avian species will most often move to adjacent areas. These species will need to establish new activity areas and home ranges, potentially temporarily displacing resident species.

Clearing large areas increases the habitat edges for fauna. Small mammals can respond both positively and negatively to edges depending on their ecological traits (Goosem, 2000; Goosem & Marsh, 1997; Laurance, 1991, 1994). Edge and disturbance effects can lead to altered and, most often, higher levels of predation, restricting or increasing fauna movements and altering assemblage structure (Baker et al., 1998; Goosem et al., 2001; Luck et al., 1999; Oxley et al., 1974; Paton, 1994; Temple, 1998). Goldingay and Whelan (1997) and Clarke and Oldland (2007) reported that edge effects can extend up to 150-200m from the edge for some species, meaning the impact area on vertebrate fauna is likely larger than the cleared footprint.

However, the sparseness of vegetation in the project area would indicate that there are unlikely to be edge effects associated with vegetation clearing.

#### **6.1.2 Habitat fragmentation**

Cleared linear tracks of land are 'unnatural' in much of the habitat. These linear structures partition existing activity areas, isolate sections of established communities and may alter long- and medium-term movement patterns around established home ranges, particularly for small mammals and reptiles. A reduction in the population in a bioregional context, due to vegetation clearing for mining, would be difficult to detect, given our current knowledge of the spatial ecology of most small terrestrial fauna in the area, as the project area contains sparse vegetation and many existing vehicle tracks. The impacts of habitat fragmentation due to additional vehicle tracks and haul roads would be very low.

#### **6.1.3 Introduced fauna and weeds**

An increase in human activity is often associated with an increase in the abundance of introduced species, such as the house mouse (*Mus musculus*), fox (*Vulpes vulpes*), cat (*Felis catus*) and wild dogs (*Canis lupus*). This increase may be due to declining habitat health, increased roadkill, and poor waste disposal.

House mice, foxes, cats and wild dogs are known to be established in the area. In many situations, they have become a 'naturalised' species in the Australian bush. Increases in fox, dog, or cat numbers can harm native fauna by preying on and competing with native species, severely disrupting the natural balance. Increases in fox, dog, or cat numbers can harm native fauna by preying on and competing with native species, severely disrupting the natural balance. The feral cat is a particularly damaging predator of native fauna, and any increase in their numbers could have a detrimental effect on local native fauna (Bamford, 1995; Kinnear, 1993;

Murphy et al., 2019; Woinarski et al., 2017; Woinarski et al., 2018). Hence, it is important to control feral predator populations, such as cats.

Infrastructure that supports feral species, such as rubbish disposal sites and bins, should be managed to minimise increases in these populations.

Introduced plant species can successfully and rapidly invade areas of cleared native vegetation or otherwise disturbed by humans. Introduced plant species may replace native species that provide shelter or foraging areas for native fauna. Significant changes to vegetation structure will alter the habitat of fauna and consequently may influence the composition of fauna species. Preparing and implementing a weed management plan will reduce the threat to native fauna species.

#### **6.1.4 Road fauna deaths**

Increased road fauna deaths are likely to occur when new roads and tracks are constructed or upgraded, affecting kangaroos, nocturnal birds, and ground-dwelling large carnivorous predators. Species such as goannas and raptors are attracted to carrion on road verges and therefore have a greater likelihood of being killed by vehicles. Given the small size of the project area and the likely low level of additional vehicle movements, the impact of roadkill is likely to be low once the area becomes operational.

#### **6.1.5 Anthropogenic activity**

Unnatural noises, vibrations, artificial light sources, and vehicle and human movement in an area may be sufficient to force individuals or fauna species to move from adjacent areas or alter their activity periods. This disturbance will likely occur during the vegetation clearing and when mining activity commences. The overall impact is likely confined to a relatively small area and is unlikely to be significant.

#### **6.1.6 Dust**

Dust generated from shifting topsoil and spoil and vehicle traffic can degrade surrounding vegetation, reducing its ability to absorb sunlight and influencing photosynthetic rates. Degradation of these areas may potentially render the habitat unsuitable for fauna. Dust suppression and management programs are essential to minimising impacts on fauna in areas adjacent to the mine. An effective dust management and monitoring program is required.

## 7. VERTEBRATE FAUNA RISK ASSESSMENT

### 7.1 RISK ASSESSMENT

Fauna surveys to support Environmental Impact Assessments (EIA) are part of the environmental risk assessment undertaken to consider what potential impacts a development might have on the biodiversity of a particular area and region. Potential impacts on fauna from the proposed development are identified and briefly described above. Tables 11, 12, and 13 summarise the risk assessment associated with this project.

Any risk assessment is a product of the likelihood of an impact occurring and the consequences of that impact. Likelihood and consequences are categorised and described below. The assessed risk level (likelihood x consequences) is then calculated as the overall risk for the development. This is followed by an assessment of the acceptability of the risks associated with each impact. Disturbances and vegetation clearing impact the fauna at multiple scales – site, local, landscape, and regional. Each of these is considered in the risk assessment. This assessment should be considered in the context of the summary in Table 13.

**Table 11. Fauna impact risk assessment descriptors**

| Likelihood            |                                                                                                                                                                                                                                    |                                                                                                                                                                                                                             |
|-----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Level                 | Description                                                                                                                                                                                                                        | Criteria                                                                                                                                                                                                                    |
| <b>A</b>              | Rare                                                                                                                                                                                                                               | The environmental event may occur, or one or more fauna species of conservation significance may be present in exceptional circumstances.                                                                                   |
| <b>B</b>              | Unlikely                                                                                                                                                                                                                           | The environmental event could occur, or one or more fauna species of conservation significance could be present at some time.                                                                                               |
| <b>C</b>              | Moderate                                                                                                                                                                                                                           | The environmental event should occur, or one or more fauna species of conservation significance should be present at some time.                                                                                             |
| <b>D</b>              | Likely                                                                                                                                                                                                                             | The environmental event will probably occur, or one or more fauna species of conservation significance will be present in most circumstances.                                                                               |
| <b>E</b>              | Almost certain                                                                                                                                                                                                                     | The environmental event is expected to occur, or one or more fauna species of conservation significance are expected to be present in most circumstances.                                                                   |
| Consequences          |                                                                                                                                                                                                                                    |                                                                                                                                                                                                                             |
| Level                 | Description                                                                                                                                                                                                                        | Criteria                                                                                                                                                                                                                    |
| <b>1</b>              | Insignificant                                                                                                                                                                                                                      | Insignificant impact on fauna of conservation significance or regional biodiversity and the loss of individuals will be insignificant in the context of the availability of similar fauna or fauna assemblages in the area. |
| <b>2</b>              | Minor                                                                                                                                                                                                                              | Impact on fauna localised and no significant impact on species of conservation significance in the study area. Loss of species at the local scale.                                                                          |
| <b>3</b>              | Moderate                                                                                                                                                                                                                           | An appreciable loss of fauna in a regional context or a limited impact on species of conservation significance in the study area.                                                                                           |
| <b>4</b>              | Major                                                                                                                                                                                                                              | Significant impact on species of conservation significance or their habitat in the study area and/or regional biodiversity and/or a significant loss in the biodiversity at the landscape scale.                            |
| <b>5</b>              | Catastrophic                                                                                                                                                                                                                       | Loss of species at the regional scale and/or a significant loss of species categorised as 'vulnerable' or 'endangered' under the <i>EPBC Act 1999</i> at a regional scale.                                                  |
| Acceptability of Risk |                                                                                                                                                                                                                                    |                                                                                                                                                                                                                             |
| Level of risk         | Management Action Required                                                                                                                                                                                                         |                                                                                                                                                                                                                             |
| Low                   | No action is required.                                                                                                                                                                                                             |                                                                                                                                                                                                                             |
| Moderate              | Avoid if possible. This will require routine management with internal audits and a review of monitoring results annually.                                                                                                          |                                                                                                                                                                                                                             |
| High                  | Externally approved management plan to reduce risks, monitor major risks annually with external audit and review of management plan outcomes annually. May require a referral to the Commonwealth under the <i>EPBC Act 1999</i> . |                                                                                                                                                                                                                             |
| Extreme               | Unacceptable and the project should be redesigned or not proceed.                                                                                                                                                                  |                                                                                                                                                                                                                             |

**Table 12. Levels of acceptable risk**

|             |                   | Likelihood           |                     |              |            |                    |
|-------------|-------------------|----------------------|---------------------|--------------|------------|--------------------|
|             |                   | Rare or very low (A) | Unlikely or low (B) | Moderate (C) | Likely (D) | Almost certain (E) |
| Consequence | Insignificant (1) | Low                  | Low                 | Low          | Low        | Low                |
|             | Minor (2)         | Low                  | Low                 | Low          | Moderate   | Moderate           |
|             | Moderate (3)      | Low                  | Moderate            | Moderate     | High       | High               |
|             | Major (4)         | Moderate             | Moderate            | High         | High       | Extreme            |
|             | Catastrophic (5)  | Moderate             | High                | High         | Extreme    | Extreme            |

**Table 13. A risk assessment of the impact of ground disturbance activity on fauna**

|                                                             |                                                       |                                                                                                                                            | Before management |             |              |                                             | With management |             |              |
|-------------------------------------------------------------|-------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|-------------------|-------------|--------------|---------------------------------------------|-----------------|-------------|--------------|
|                                                             | Potential impacts                                     |                                                                                                                                            | Inherent risk     |             |              | Risk controls                               | Residual risk   |             |              |
| Factor                                                      |                                                       |                                                                                                                                            | Likelihood        | Consequence | Significance |                                             | Likelihood      | Consequence | Significance |
| Fauna survey data                                           | Inadequate survey data to adequately assess the risks | Unknown loss of fauna, fauna of conservation significance, and fauna assemblages, and an incomplete fauna assessment.                      | C                 | 2           | Low          |                                             |                 |             |              |
|                                                             | Inadequacy of comparative data                        | Limits on the availability of comparative data reduced the capacity to assess the uniqueness of the fauna assemblages in the project area. | C                 | 2           | Low          |                                             |                 |             |              |
| Clearing vegetation                                         | Loss of fauna habitat – local scale                   | Loss of terrestrial fauna in the project area.                                                                                             | E                 | 2           | Mod          |                                             |                 |             |              |
|                                                             | Loss of fauna habitat – landscape scale               | Loss of some fauna during vegetation clearing.                                                                                             | B                 | 1           | Low          |                                             |                 |             |              |
|                                                             | Loss of fauna habitat – regional scale                | There is a slight loss of some fauna from the region.                                                                                      | A                 | 1           | Low          |                                             |                 |             |              |
|                                                             | Loss of a threatened ecological fauna community       | Loss of an undetected threatened ecological fauna community.                                                                               | A                 | 3           | Low          |                                             |                 |             |              |
|                                                             | Habitat fragmentation                                 | Fauna movement is restricted, resulting in fauna death and biodiversity loss.                                                              | A                 | 2           | Low          |                                             |                 |             |              |
| Death or loss of fauna species of conservation significance | Loss of a unique terrestrial fauna ecosystem          | Loss of an ecosystem containing fauna with high species richness, abundance, and numerous top-of-the-food-chain predators.                 | A                 | 2           | Low          |                                             |                 |             |              |
|                                                             | Night Parrot                                          | Loss of a Night Parrot or a small population of Night Parrots.                                                                             | A                 | 3           | Low          |                                             |                 |             |              |
|                                                             | Western Spiny-tailed Skink                            | Loss of a Western Spiny-tailed Skink or a small population of Western Spiny-tailed Skinks.                                                 | A                 | 3           | Low          |                                             |                 |             |              |
|                                                             | Southern Whiteface                                    | Loss of a Southern Whiteface or a small population of Southern Whiteface.                                                                  | B                 | 2           | Low          | Clearing vegetation outside of the breeding | A               | 2           | Low          |

|                      |                                                               |                                                                                      | Before management |   |      |                                                                                                                                                        | With management |   |     |
|----------------------|---------------------------------------------------------------|--------------------------------------------------------------------------------------|-------------------|---|------|--------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|---|-----|
|                      |                                                               |                                                                                      |                   |   |      | season or having a zoologist search for Southern Whiteface nests immediately before vegetation clearing, and placing a buffer around any active nests. |                 |   |     |
|                      | Malleefowl                                                    | Loss of a Malleefowl or a small population of Malleefowl.                            | A                 | 3 | Low  |                                                                                                                                                        |                 |   |     |
|                      | Princess Parrot                                               | Loss of a Princess Parrot or a small population of Princess Parrot.                  | A                 | 2 | Low  |                                                                                                                                                        |                 |   |     |
|                      | Fork-tailed Swift                                             | Loss of a Fork-tailed Swift or a small population of Fork-tailed Swifts.             | A                 | 2 | Low  |                                                                                                                                                        |                 |   |     |
|                      | Grey Wagtail                                                  | Loss of a Grey Wagtail or a small population of Grey Wagtails.                       | A                 | 2 | Low  |                                                                                                                                                        |                 |   |     |
|                      | Yellow Wagtail                                                | Loss of a Yellow Wagtail or a small population of Yellow Wagtails.                   | A                 | 2 | Low  |                                                                                                                                                        |                 |   |     |
|                      | Peregrine Falcon                                              | Loss of a Peregrine Falcon or a small population of Peregrine Falcons.               | A                 | 2 | Low  |                                                                                                                                                        |                 |   |     |
|                      | West Coast Mulga Slider                                       | Loss of a West Coast Mulga Slider or a small population of West Coast Mulga Sliders. | B                 | 2 | Low  |                                                                                                                                                        |                 |   |     |
| <b>Human impacts</b> | Increase or spread of weeds                                   | Changed vegetation and a resulting loss of habitat for fauna.                        | E                 | 2 | Mod. | Implementation of a weed management plan.                                                                                                              | D               | 2 | Low |
|                      | Road kills                                                    | Animals are being killed by vehicles as they cross roads.                            | E                 | 1 | Low  | Limiting speeds.                                                                                                                                       | E               | 1 | Low |
|                      | Increase in feral mammals, specifically the goat, dog and cat | Increased predation on the native fauna.                                             | B                 | 1 | Low  |                                                                                                                                                        |                 |   |     |
|                      | Dust                                                          | Increased potential for dust                                                         | E                 | 2 | Mod  | Implementation of a dust management plan.                                                                                                              | C               | 2 | Low |

## 7.2 NATIVE VEGETATION CLEARING PRINCIPLES AS THEY PERTAIN TO VERTEBRATE FAUNA

The *Environmental Protection Act (1986)* provides criteria for assessing the potential impact of development on native vegetation, flora, and fauna. These criteria have been listed below with a response to indicate how clearing the vegetation in the project area might be judged against these principles as they relate to fauna and fauna assemblages (Table 14). Where possible, native vegetation should not be cleared if the following principles are compromised.

**Table 14. Assessment of impact using the native vegetation clearing principles**

| Principle                                                                                                                                     | Response                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|-----------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| It comprises a high level of biological diversity.                                                                                            | Clearing vegetation will not compromise a high level of biodiversity. There is a low possibility that Southern Whiteface is present in the mulga woodland areas but will readily move if disturbed. There is a low possibility the West Coast Mulga Slider is also potentially present in the project area, and will be lost during vegetation clearing, but given the abundance of similar habitat in the adjacent area, this loss is unlikely to have conservation significance. |
| It comprises the whole or a part of, or is necessary for the maintenance of, a significant habitat for fauna Indigenous to Western Australia. | Clearing the vegetation will not result in losing a significant habitat for indigenous fauna.                                                                                                                                                                                                                                                                                                                                                                                      |
| It includes, or is necessary for the continued existence or, rare flora.                                                                      | N/A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| It comprises the whole or a part of, or is necessary for the maintenance of, a threatened ecological community.                               | The area does not contain a threatened ecological fauna community.                                                                                                                                                                                                                                                                                                                                                                                                                 |
| It is significant as a remnant of native vegetation in an area that has been extensively cleared.                                             | The area is not a remnant.                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| It is growing in, or in association with, an environment associated with a watercourses or wetland.                                           | Some of the mining pits contain water, but these are artificial waterbodies with very little aquatic life, so any birds attracted to the water will not stay to forage for very long.                                                                                                                                                                                                                                                                                              |
| The clearing of the vegetation is likely to cause appreciable land degradation.                                                               | N/A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| The clearing of the vegetation is likely to have an impact on the environmental values of any adjacent or nearby conservation area.           | Clearing vegetation is unlikely to impact the environmental values of the bioregion.                                                                                                                                                                                                                                                                                                                                                                                               |
| The clearing of the vegetation is likely to cause deterioration in the quality of surface or underground water.                               | N/A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| The clearing of the vegetation is likely to cause, or exacerbate the incidence of flooding.                                                   | N/A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |

## 7.3 IMPACTS ON SPECIES OF CONSERVATION SIGNIFICANCE

There is a single avifauna species in the project area that is potentially impacted by vegetation clearing, exploration and mining activities (i.e. Southern Whiteface). Potential impacts on this species are assessed below.

### 7.3.1 Critical habitat – Southern Whiteface

Department of Climate Change, Energy, the Environment and Water (2023) defined critical habitat for Southern Whiteface as:

- relatively undisturbed open woodlands and shrublands with an understorey of grasses or shrubs, or both;
- habitat with low tree densities and an herbaceous understorey litter cover, which provides an essential foraging habitat; and
- living and dead trees with hollows and crevices, which are essential for roosting and nesting.

The Valiant project area includes limited Southern Whiteface critical habitat (i.e. open woodlands with an understorey of grasses and shrubs, low tree density, living and dead trees with hollows and crevices). However, that habitat is also abundant across thousands of square kilometres in the Goldfields, Midwest, Murchison, and the semi-arid interior of southern Western Australia. There was no apparent difference between the project habitat and the surrounding areas.

### 7.3.2 Threats to Southern Whiteface

Department of Climate Change, Energy, the Environment and Water (2023) defined threats to Southern Whiteface as:

- habitat loss caused by clearing for agriculture;
- habitat degradation caused by domestic livestock grazing;
- increased frequency or length of droughts; and
- increased likelihood of extreme events (i.e., wildfire, drought, and heatwaves).

#### 7.3.2.1 Habitat loss caused by clearing for agriculture

The proposed vegetation clearing is for mining activity, and not broad-scale clearing for agriculture.

#### 7.3.2.2 Habitat degradation caused by domestic livestock grazing

The proposed disturbance is for exploration and mining operations. Popelle Station has been used in the past for cattle grazing, which would have affected the vegetation and potentially Southern Whiteface. It is currently destocked.

#### 7.3.2.3 Increased frequency or length of droughts and increased likelihood of extreme events

The proposed Valiant mining operations are unlikely to significantly contribute to droughts or other extreme events any more than any other mining operations in the interior of Western Australia. So, based on the nominated major threats (Department of Climate Change Energy the Environment and Water, 2023), the proposed Valiant exploration and mining operations are unlikely to impact Southern Whiteface significantly.

Clearing vegetation in the project area will reduce foraging opportunities and breeding habitat for Southern Whiteface. However, it is likely that the proposed exploration and mining envelope is minuscule relative to the available similar habitat in surrounding areas. Therefore, the loss of this habitat is unlikely to significantly affect the long-term survival of the Southern Whiteface.

It is acknowledged that the clearing of vegetation in the project area could result in the displacement of a small number of Southern Whiteface into surrounding areas at the time of vegetation clearing. The available data indicate that over a couple of months, these birds are mobile and can shift their foraging areas. Their abundance is also variable, so any impacts associated with forced displacement into the surrounding area,

where the habitat is very similar, are unlikely to be significant. This shift in the foraging area is likely a natural process, so forced translocations are likely to have a minimal impact, unless pairs are displaced during breeding.

As with all other mining operations in the Murchison, their impact on climate change is small and limited. However, Valiant, like other mining operations, will continue to look to implement initiatives to reduce its carbon footprint.

### 7.3.3 DCCEW MNES Significant Impact Guidelines

The Commonwealth Government's (Department of the Environment, 2013) criteria for assessing potential impacts on a species of conservation significance are contained in Table 15 and the potential impact of the Valiant proposed action is assessed against those criteria.

**Table 15. Criteria for assessing the potential impacts on Southern Whiteface**

(taken from: Department of the Environment, 2013)

| An action is likely to have a significant impact on a vulnerable species if there is a real chance or possibility that it will:              | Southern Whiteface |
|----------------------------------------------------------------------------------------------------------------------------------------------|--------------------|
| 1. lead to a long-term decrease in the size of an important population of a species                                                          | No                 |
| 2. reduce the area of occupancy of an important population                                                                                   | No                 |
| 3. fragment an existing important population into two or more populations                                                                    | No                 |
| 4. adversely affect habitat critical to the survival of a species                                                                            | No                 |
| 5. disrupt the breeding cycle of an important population                                                                                     | No                 |
| 6. modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline | No                 |
| 7. result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat               | No                 |
| 8. introduce disease that may cause the species to decline, or                                                                               | No                 |
| 9. interfere substantially with the recovery of the species.                                                                                 | No                 |

An important population is defined (Department of the Environment, 2013) as:

- key source populations either for breeding or dispersal;
- populations that are necessary for maintaining genetic diversity; and/or
- populations that are near the limit of the species range.

#### 7.3.3.1 Southern Whiteface - important population

The project area is central to the geographical distribution of Southern Whiteface in WA. A small population of Southern Whiteface may exist in or near the project area. There are recent records of this species from near the west coast in the Murchison, inland Murchison, southern Pilbara, Midwest, Goldfields and sandy desert regions (Plate 21), so any Southern Whiteface in or near the project area are no more important than those elsewhere in WA. The answer to Criteria 1 is 'No' for Southern Whiteface.

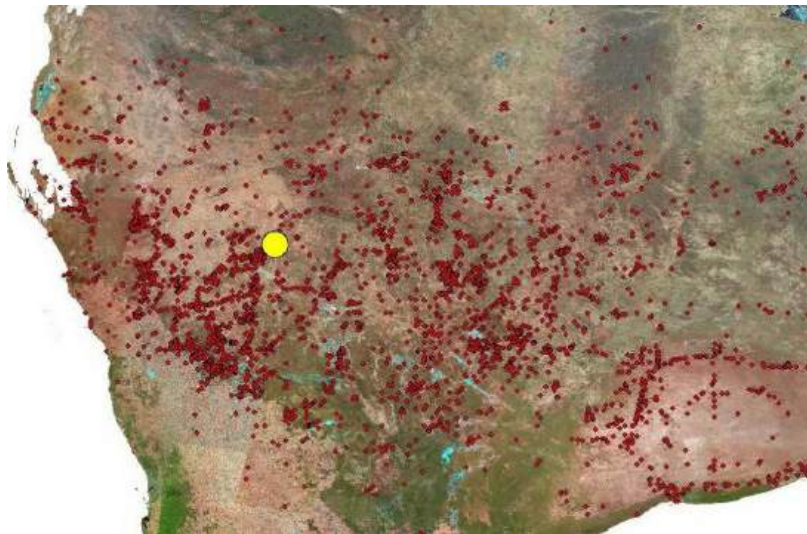


**Plate 21. Southern Whiteface records in Terrestrial Ecosystems fauna survey database**

#### 7.3.3.2 Southern Whiteface - area of occupancy

The mapped data of Southern Whiteface records indicate that this small bush bird is widespread in the bioregion (Plate 21). Had the Southern Whiteface's occupancy area in Western Australia been randomly surveyed rather than survey sites selected (i.e., mining locations and places with vehicle access), it would have been evident that this bird is widely distributed in Western Australia and present in many non-mining areas. There is no evidence to suggest that the Southern Whiteface population in and around the project area is significant, or that its loss would result in a contraction of its geographical range. Therefore, the loss of a small quantity of vegetation in the project area will not reduce its area of occupancy or displace an important population. The answer to Criteria 2 is 'No' for Southern Whiteface.

#### 7.3.3.3 Southern Whiteface - fragment an existing important population

As can be seen in Plate 21, the Southern Whiteface's geographic distribution includes the entire width of southern Western Australia, excluding the southwest, and it extends into South Australia and the Northern Territory. The Southern Whiteface is a mobile, semi-arid species with a shifting activity area and will readily move if disturbed. Therefore, vegetation clearing in the project area will not fragment populations or isolate a small part of the population. There is no evidence that the very small number of Southern Whiteface recorded in and around the project area represents an important population or is important for maintaining genetic diversity. The answer to Criteria 3 is 'No' for Southern Whiteface.

#### 7.3.3.4 Southern Whiteface - habitat critical to the survival

Habitat critical to the survival of Southern Whiteface is described above. This critical habitat description is very vague and applies to thousands of square kilometres of inland Western Australia, including the Midwest, Murchison, and Goldfields, as well as other areas. The loss of a very small part of these many thousands of square kilometres of similar habitat, particularly when the bird is mobile, has a shifting activity area, and will readily move if disturbed, will not adversely affect habitat critical to the survival of the species to the extent of adversely impacting the survival of the species. The answer to Criteria 4 is 'No' for Southern Whiteface.

#### 7.3.3.5 Southern Whiteface - disrupt the breeding cycle

Johnstone and Storr (2004) reported that the Southern Whiteface builds a dome-shaped nest with a side entrance, mainly in a hollow branch, a tree trunk, the crevice between branches, a stump, a fence post, or a recumbent log, with the entrance through a knot hole or crack. Nests are made with grass, bark, rootlets, feathers, and wool and lined with feathers, wool, fur, and soft plants and down (Johnstone & Storr, 2004). Such habitats and materials are widely available in the Midwest, Murchison, and the Goldfields of Western Australia, and further afield. There is no evidence to suggest that the project area contains an important nesting habitat not available in neighbouring areas. The answer to Criteria 5 is 'No' for Southern Whiteface.

#### 7.3.3.6 Southern Whiteface - isolate or decrease the availability or quality of habitat

Quality habitat is not defined for the Southern Whiteface, but presumably, it is areas that exhibit a high abundance of this species concentrated in a particular area. Even the defined 'habitat critical to its survival' (Department of Climate Change Energy the Environment and Water, 2023) is very widely available in the Midwest, Goldfields, and Murchison of Western Australia. The project area represents a minuscule amount of the available suitable habitat for Southern Whiteface. There is no evidence to suggest that the project area is a 'quality habitat', and it does not differ appreciably from the habitat in the many square kilometres of surrounding habitat where the Southern Whiteface has been recorded. The answer to Criteria 6 is 'No' for Southern Whiteface.

#### 7.3.3.7 Southern Whiteface – harmful invasive species

The proposed action will not increase invasive species harmful to the Southern Whiteface (e.g. cats) becoming established in the project area. If Valiant establishes a mining operation in the project area, it intends to undertake feral cat reduction programs to keep cat numbers at levels consistent with those present before the mine was developed. The answer to Criteria 7 is 'No' for Southern Whiteface.

#### 7.3.3.8 Southern Whiteface - introduce disease

There is no suggestion or evidence to indicate that the proposed action will introduce disease into the Southern Whiteface habitats, adversely impacting these bush birds. The answer to Criteria 8 is 'No' for this species.

#### 7.3.3.9 Southern Whiteface – recovery plan

There is no recovery plan for Southern Whiteface, and it is highly improbable that the proposed action will significantly and detrimentally impact the overall Southern Whiteface population or the bioregional Southern Whiteface population. The answer to Criteria 9 is 'No' for Southern Whiteface.

The Department of Climate Change, Energy, the Environment and Water's (2023) conservation advice listed the issues shown in Table 16 as threats to the Southern Whiteface. For each threat, there is a comment on whether the proposed Valiant action will significantly increase this threat.

**Table 16. Threats to Southern Whiteface as described in the Conservation Advice to the Commonwealth Government Minister**

| Threat                                                                            | Response                                                                                                                                                     |
|-----------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. Habitat loss caused by clearing for agriculture                                | The proposed action is not clearing land for agriculture.                                                                                                    |
| 2. Habitat degradation caused by domestic livestock grazing                       | Popelle Station may restock at some stage in the future. Mining operations tend to operate concurrently with station operations, if they are on the station. |
| 3. Increased frequency or length of droughts                                      | The mine cannot influence the frequency or length of droughts in the Midwest, Murchison or Goldfields.                                                       |
| 4. Increased likelihood of extreme events (i.e., wildfire, drought and heatwaves) | The mine has minimal capacity to influence the likelihood of extreme events in the Midwest, Murchison or Goldfields.                                         |

### 7.3.4 Is clearing vegetation in the project area likely to result in a significant impact on Southern Whiteface?

The conclusions drawn from the available data are that the Southern Whiteface is geographically widespread in the Goldfields, Murchison, and Midwest of Western Australia. There is little or no evidence to indicate a significant recent decline in their abundance or geographical distribution in Western Australia, they are mobile with shifting activity/foraging areas, typically breed between April and October, and have a dome-shaped nest with a side entrance in a hollow branch, tree trunk, crevice between branches, a stump, and a fence post, etc.

Clearing vegetation will remove habitat that may have been and could in the future be used by Southern Whiteface, and any of these birds present during vegetation clearing will be displaced to surrounding areas. These factors are not considered to result in a significant impact on this avifauna species.

### 7.3.5 *Lerista eupoda* (West Coast Mulga Slider)

The West Coast Mulga Slider is listed with DBCA as a Priority 1 species (i.e. Species that are known from one or a few locations (generally five or less) which are potentially at risk). This is a range-restricted species found south of Meekatharra, around the Valiant project area (Plate 22).

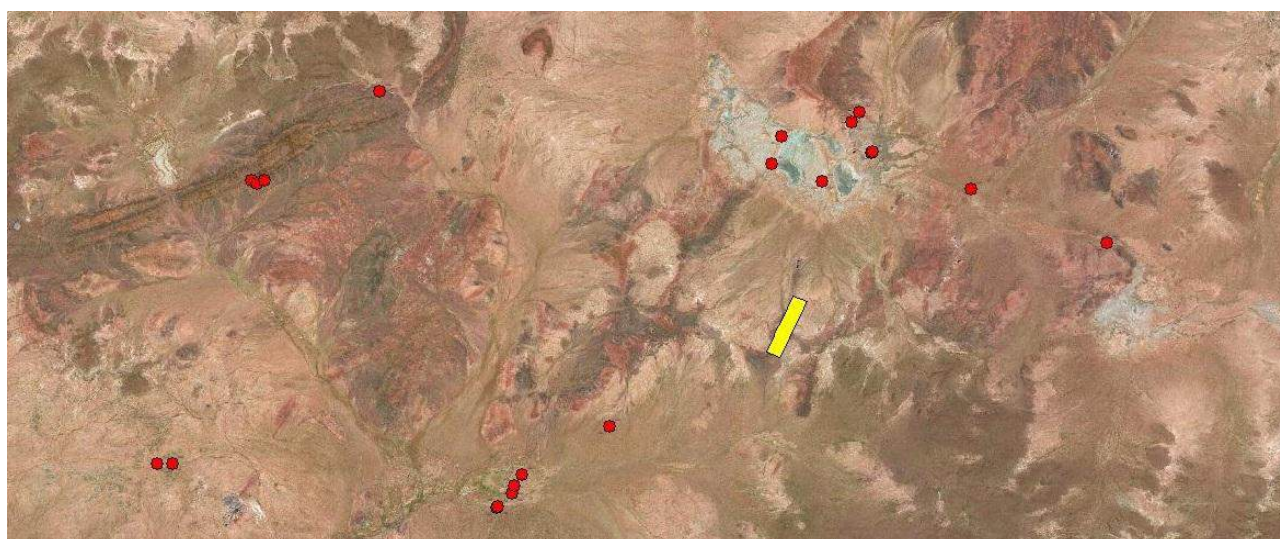


**Plate 22. West Coast Mulga Slider records and the project area**

It is a small fossorial skink, 40-87mm long (SVL) with small, very reduced limbs and movable eyelids (Smith, 1996). They are pale brown with broad, dark brownish-black vertebral and upper lateral stripes. (Cogger, 2021).

*Lerista eupoda* is found in open mulga woodlands on red and sandy loam soils (Smith, 1996). It was not recorded by MWH (2015) in its search of the project area nor in our site survey or targeted searches; it is either not present or is present in very low abundance.

#### **7.4 REFERRAL UNDER THE *EPBC ACT***

A referral is only necessary if the proposed vegetation clearing, exploration, and intended mining operations are potentially going to have a significant impact on a species. Commitment to implementing mitigation actions will partially reduce threats to Southern Whiteface.

If the recommended mitigation actions are implemented, then a referral under the *EPBC Act* is not recommended.

## 8. SUMMARY

Valiant Gold has acquired the Reedy Gold Project from Westgold (Big Bell Gold Operations), located ~30km south of the Meekatharra townsite. Valiant Gold is planning a restart of mining operations and commissioned Terrestrial Ecosystems to undertake a Basic and Targeted vertebrate fauna survey and assessment of the 1,298ha project area.

The project area is approximately 30km south of Meekatharra, 10km east of the Great Northern Highway, and 15km south of Lake Anneen and Porlell Lake.

The substrate is red sandy-clay with pebbles, cobbles, and stones. The project area is highly disturbed with five mining pits, waste dumps, TSF, and multiple tracks and haul roads. The following five broad fauna habitats are in the project area:

- Mulga woodland on clay;
- Mulga woodland on drainage line;
- Mulga woodland on rocky ridge;
- Mulga woodland over mixed shrubs; and
- Rocky outcrop.

The Southern Whiteface, listed as Vulnerable under State and Commonwealth Government legislation, was not recorded in the site survey, but is likely to be present in adjacent areas. The West Coast Mulga Slider, was not recorded by MWH (2015) nor during our site survey and targeted searches. The surrounding areas are similar habitat, so even if the skink was present in very low abundance, any loss would not be of conservation significance.

Clearing vegetation and activities associated with exploration and mining will result in the loss of some small fauna that retreat to burrows, such as reptiles and mammals. Nocturnal species are unlikely to be active during most land-clearing and construction work, which may result in these individuals being adversely affected as they attempt to escape. This loss of vegetation is unlikely to have a significant impact when considered in a bioregional context. Larger terrestrial animals and avian species will most often move to adjacent areas. These species will need to establish new activity areas and home ranges, potentially temporarily displacing resident species.

Increased road fauna deaths are likely to occur when new roads and tracks are constructed or upgraded, affecting kangaroos, nocturnal birds, and ground-dwelling large carnivorous predators. Species such as goannas and raptors are attracted to carrion on road verges and therefore have a greater likelihood of being killed by vehicles. Given the small size of the project area and the likely low level of additional vehicle movements, the impact of roadkill is likely to be low once the area becomes operational.

Dust generated from shifting topsoil and spoil and vehicle traffic can degrade surrounding vegetation, reducing its ability to absorb sunlight and influencing photosynthetic rates. Degradation of these areas may potentially render the habitat unsuitable for fauna. Dust suppression and management programs are essential to minimising impacts on fauna in areas adjacent to the mine. An effective dust management and monitoring program is required.

## 9. REFERENCES

- Baker, J., Goldingay, R. L., & Whelan, R. J. (1998). Powerline easement through forests: a case study of impacts on avifauna. *Pacific Conservation Biology*, 4, 79–89.
- Bamford, M. J. (1995). Predation by feral cats upon lizards. *The Western Australian Naturalist*, 20, 191–196.
- Biologic. (2018). *Gabanintha Vanadium Project Targeted Vertebrate Fauna and SRE Assessment*, . Unpublished report for Technology Metals Australia Limited.
- Biologic. (2020). *Australian Vanadium Project Level 2 Vertebrate and SRE Invertebrate Fauna Survey*. Unpublished report for Australian Vanadium Limited.
- BirdLife Australia. (2023a). Fork-tailed Swift. In S. Marchant & P. J. Higgins (Eds.), *Handbook of Australian, New Zealand and Antarctic Birds. Volume 1 to 7*. Birdlife Australia.
- BirdLife Australia. (2023b). Grey Wagtail. In S. Marchant & P. J. Higgins (Eds.), *Handbook of Australian, New Zealand and Antarctic Birds. Volume 1 to 7*. Birdlife Australia,.
- BirdLife Australia. (2023c). Oriental Pratincole. In BirdLife Australia (Ed.), *Handbook of Australian, New Zealand and Antarctic Birds* (Vol. 1-7). BirdLife Australia.
- Birdlife Australia. (2023d). Yellow Wagtail. In S. Marchant & D. Higgins (Eds.), *Handbook of Australian, New Zealand and Antarctic Birds. Volume 1 to 7*. Birdlife Australia,.
- Chapman, A. (1991). *An Assessment of the Threat to Vertebrate Fauna of Un-capped Drill Holes in the Ravensthorpe Range*. Unpublished report for The Mines Department of Western Australia.
- Clarke, M. F., & Oldland, J. M. (2007). Penetration of remnant edges by noisy miners (*Manorina melanocphala*) and implications for habitat restoration. *Wildlife Research*, 34, 253–261.
- Clayton, M. W., William, B. E., & William, M. B. (1988). Atypical Nesting Habitat of the Peregrine Falcon (*Falco peregrinus*) in Victoria, Australia. *Journal of Raptor Research*, 22(2).
- Cogger, H. G. (2021). *Reptiles & Amphibians of Australia* (7 ed.). CSIRO.
- Cowan, M. (2001). Murchison 1 (MUR1 - East Murchison subregion). In N. L. McKenzie, J. E. May, & S. McKenna (Eds.), *A Biodiversity Audit of Western Australia's 53 Biogeographical Subregions in 2002* (pp. 466–479). Department of Conservation and Land Management.
- Craig, M. D., & Chapman, A. (2003). Effects of short-term drought on the avifauna of Wanjarri Nature Reserve: What do they tell us about drought refugia? *Journal of the Royal Society of Western Australia*, 86, 133–137.
- Department of Biodiversity Conservation and Attractions. (2024). *Guidelines for determining the likely presence and habitat usage of night parrot (Pezoporus occidentalis) in Western Australia*. Department of Biodiversity Conservation and Attractions.
- Department of Climate Change Energy the Environment and Water. (2023). *Conservation Advice for Aphelocephala leucopsis (southern whiteface)*. Department of Climate Change Energy the Environment and Water.
- Department of Environment and Conservation. (2012). *Western Spiny-tailed Skink (Egernia stokesii) Recovery Plan*. Unpublished report by the Department of Environment and Conservation.
- Department of Parks and Wildlife. (2016). *Fauna profile Malleefowl Leipoa ocellata*. Department of Parks and Wildlife.
- Department of the Environment. (2013). *Matters of National Environmental Significance Significant impact guidelines 1.1 Environment Protection and Biodiversity Conservation Act 1999*. Department of the Environment.
- Eberhart-Hertel, L. (2019). Plover Breeding Systems: Diversity and Evolutionary Origins. In (pp. 65–88). <https://doi.org/10.1201/9781315152882-4>
- Ecologia Environment. (2009). *Weld Range: Vertebrate Fauna Assessment*. Unpublished report for Sinosteel Midwest Corporation Pty Ltd.
- ecologia Environment. (2012). *Karbar Station Solar Energy Project: Flora and Vegetation Survey*. Unpublished report for Hyperion Energy.

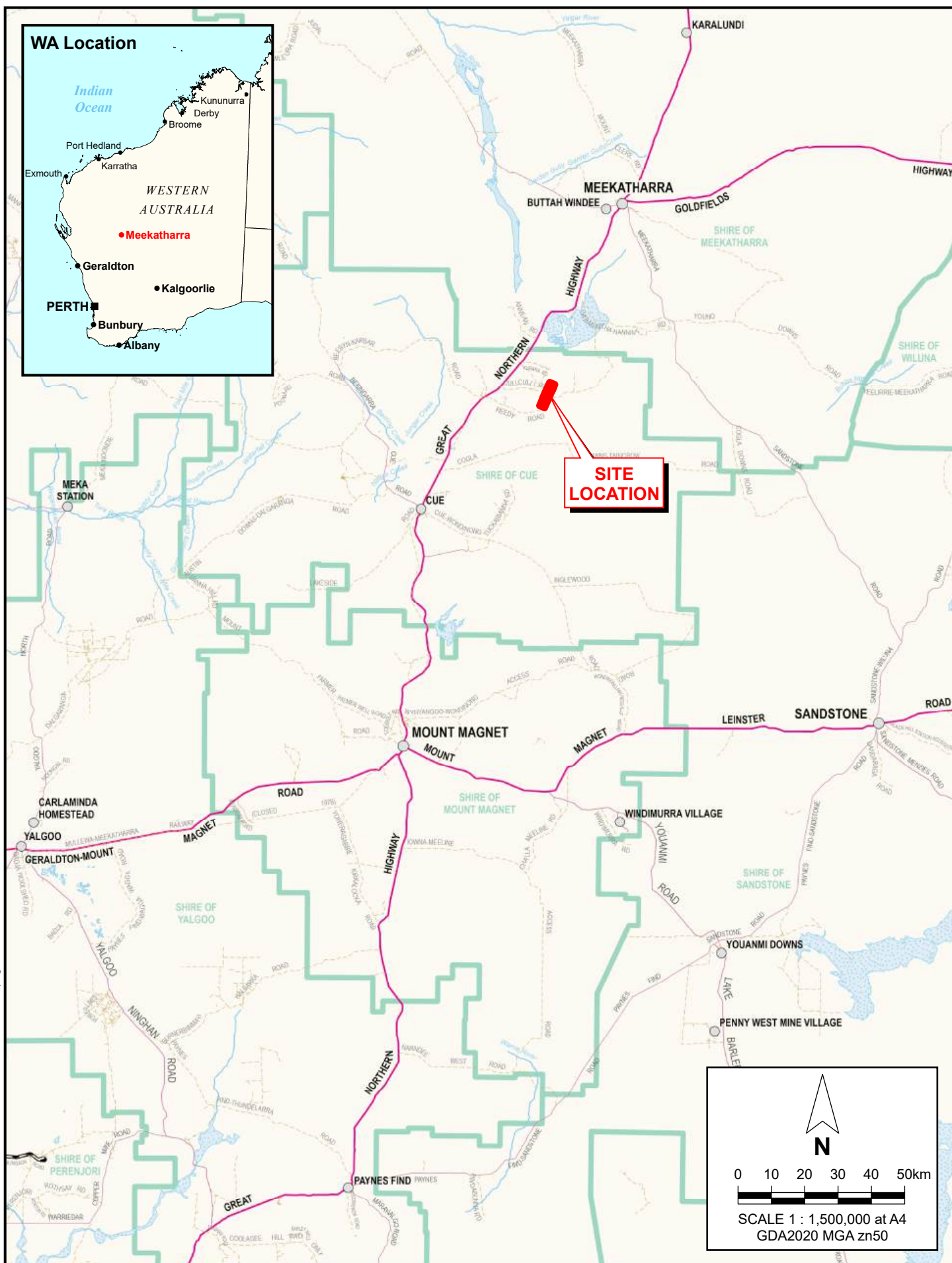
- Environmental Protection Authority. (2020). *Technical Guidance – Terrestrial vertebrate fauna surveys for environmental impact assessment*. EPA. <https://www.epa.wa.gov.au/policies-guidance/technical-guidance-terrestrial-vertebrate-fauna-surveys-environmental-impact>
- Goldingay, R. L., & Whelan, R. J. (1997). Powerline easements: do they promote edge effects in eucalypt forest for small mammals? *Wildlife Research*, 24, 737–744.
- Goosem, M. (2000). Effects of tropical rainforest roads on small mammals: Edge changes in community composition. *Wildlife Research*, 27, 151–163.
- Goosem, M., Izumi, Y., & Turton, S. (2001). Efforts to restore habitat connectivity for an upland tropical rainforest fauna: A trial of underpasses below roads. *Ecological Management and Restoration*, 2(3), 196–202.
- Goosem, M. W., & Marsh, H. (1997). Fragmentation of small mammal community by a powerline corridor through tropical rainforest. *Wildlife Research*, 24, 613–629.
- Gynther, I., Baker, A., & Van Dyck, S. (2013). *Field companion to the mammals of Australia*. New Holland.
- Gynther, I., Stewart, D., & Tarrant, T. (1995). A flock of Oriental Plovers “*Charadrius veredus*” in south-east Queensland [Journal Article]. *The Sunbird: Journal of the Queensland Ornithological Society*, 25(4), 93–96. <https://doi.org/https://search.informit.org/doi/pdf/10.3316/informit.209368307262145>
- Higgins, P. J., & Peter, J. M. (2002). *Handbook of Australian, New Zealand and Antarctic Birds*. Oxford University Press.
- How, R. A., Dell, J., & Robinson, D. J. (2003). The Western Spiny-Tailed Skink, *Egernia stokesii badia*: Declining distribution in a habitat specialist. *The Western Australian Naturalist*, 24(2), 138–146.
- Integrate Sustainability. (2021). *Biological Survey Report Yarrabubba Iron Vanadium Project*. Unpublished report for Technology Metals Australia Ltd.
- Johnstone, R. E., & Storr, G. M. (1998). *Handbook of Western Australian Birds. Volume I - Non-Passerines (Emu to Dollarbird)*. Western Australian Museum.
- Johnstone, R. E., & Storr, G. M. (2004). *Handbook of Western Australian Birds. Volume II - Passerines (Blue-winged Pitta to Goldfinch)*. Western Australian Museum.
- Kinnear, J. (1993). Masterly marauders: The cat and the fox. *Landscape*, 8, 20–28.
- Laurance, W. F. (1991). Edge effects in tropical forest fragments: application of a model for design of nature reserves. *Biological Conservation*, 57, 205–219.
- Laurance, W. F. (1994). Rainforest fragmentation and the structure of small mammal communities in tropical Queensland. *Biological Conservation*, 69, 23–32.
- Luck, G. W., Possingham, H. P., & Paton, D. C. (1999). Bird responses at inherent and induced edges in the Murray Mallee, South Australia. 1. Differences in abundance and diversity. *Emu*, 99, 157–169.
- Malnic, J. (1997). Uncapped drill holes are silent killers. *Australia's Mining Monthly*, March, 16.
- Morcombe, M. (2017). *Pocket Field Guide to Birdlife of Western Australia* (V. B. Lee Curtis, Ed.). Lynn Dickinson.
- Murphy, B. P., Woolley, L.-A., Geyle, H. M., Legge, S. M., Palmer, R., Dickman, C. R., Augusteyn, J., Brown, S. C., Comer, S., Doherty, T. S., Eager, C., Edwards, G., Fordham, D. A., Harley, D., McDonald, P. J., McGregor, H., Moseby, K. E., Myers, C., Read, J.,...Woinarski, J. C. Z. (2019). Introduced cats (*Felis catus*) eating a continental fauna: The number of mammals killed in Australia. *Biological Conservation*, 237, 28–40. <https://doi.org/10.1016/j.biocon.2019.06.013>
- MWH. (2015). *CMGP Reedy Project Dewatering Program - Level 1 Flora and Fauna Survey*. U. r. f. M. X. Group.
- MWH. (2016). *Culculli and Paddy Italiano Level 1 Flora, Vegetation and Fauna Assessment*. U. r. f. M. X. Ltd.
- Oxley, D. J., Fenton, M. B., & Carmody, G. R. (1974). The effects of roads on populations of small mammals. *Journal of Applied Ecology*, 11, 51–59.
- Ozerskaya, T., & Zabelin, V. (2006). Breeding of the Oriental Plover *Charadrius veredus* in Southern Tuva, Russia. *Wader Study Group Bulletin*, 110.
- Parvin, N., Awrangjeb, M., Irvin, M., Florentine, S., Murshed, M., & Lu, G. (2021). *Detection of Malleefowl Mounds from Point Cloud Data 2021 Digital Image Computing: Techniques and Applications (DICTA)*,

- Paton, P. W. C. (1994). The effect of edge on avian nest success: How strong is the evidence? *Conservation Biology*, 8, 17–26.
- Sackmann, J., & Jamieson, P. (2018, 17–20 August 2018). Comparative assessment of Malleefowl mound search techniques. National Malleefowl Forum 2018, Mildura, Victoria.
- Smith, L. A. (1996). A new species of *Lerista* (Lacertilia: Scincidae) from Western Australia, *Lerista eupoda*. *Journal of the Royal Society of Western Australia*, 79, 161–164.
- Storr, G. M., & Johnstone, R. E. (1983). Part VI Amphibians and Reptiles. In N. L. McKenzie (Ed.), *Wildlife of the Dampier Peninsula, south-west Kimberley, Western Australia* (Vol. 11, pp. 70–74). Western Australian Wildlife Research Centre, Department of Fisheries and Wildlife.
- Storr, G. M., Smith, L. A., & Johnstone, R. E. (1990). *Lizards of Western Australia. III: Geckos and Pygopods*. Western Australian Museum.
- Storr, G. M., Smith, L. A., & Johnstone, R. E. (1999). *Lizards of Western Australia. I: Skinks*. Western Australian Museum.
- Storr, G. M., Smith, L. A., & Johnstone, R. E. (2002). *Snakes of Western Australia*. Western Australian Museum.
- Temple, S. A. (1998). The edge of the cut: implications for wildlife populations. *Journal of Forestry*, 96, 22–26.
- Terrestrial Ecosystems. (2024). *Vertebrate Fauna Survey and Assessment for the Yarrabubba Area - Phase 1 -2023*. Unpublished report for Australian Vanadium Ltd.
- Thompson, S. A., & Thompson, G. G. (2006). *Reptiles of the Western Australian Goldfields*. Goldfields Environmental Management Group.
- Tyler, M. J., Smith, L. A., & Johnstone, R. E. (2000). *Frogs of Western Australia*. Western Australian Museum.
- Van Dyck, S., & Strahan, R. (2008). *The Mammals of Australia*. Reed New Holland.
- Verdejo, J., & Lopez-Lopez, P. (2008). Long-term monitoring of a Peregrine Falcon population: size, breeding performance and nest-site characteristics. *Ardeola*, 55(1), 87–96.
- Woinarski, J. C. Z., Murphy, B. P., Legge, S. M., Garnett, S. T., Lawes, M. J., Comer, S., Dickman, C. R., Doherty, T. S., Edwards, G., Nankivell, A., Paton, D., Palmer, R., & Woolley, L. A. (2017). How many birds are killed by cats in Australia? *Biological Conservation*, 214, 76–87. <https://doi.org/10.1016/j.biocon.2017.08.006>
- Woinarski, J. C. Z., Murphy, B. P., Palmer, R., Legge, S. M., Dickman, C. R., Doherty, T. S., Edwards, G., Nankivell, A., Read, J. L., & Stokeld, D. (2018). How many reptiles are killed by cats in Australia? *Wildlife Research*, 45(3), 247–266. <https://doi.org/10.1071/wr17160>

# Figures

**Basic and Targeted Vertebrate Fauna Survey and Assessment  
Reedy Gold Project**





Drawn: G. Thompson

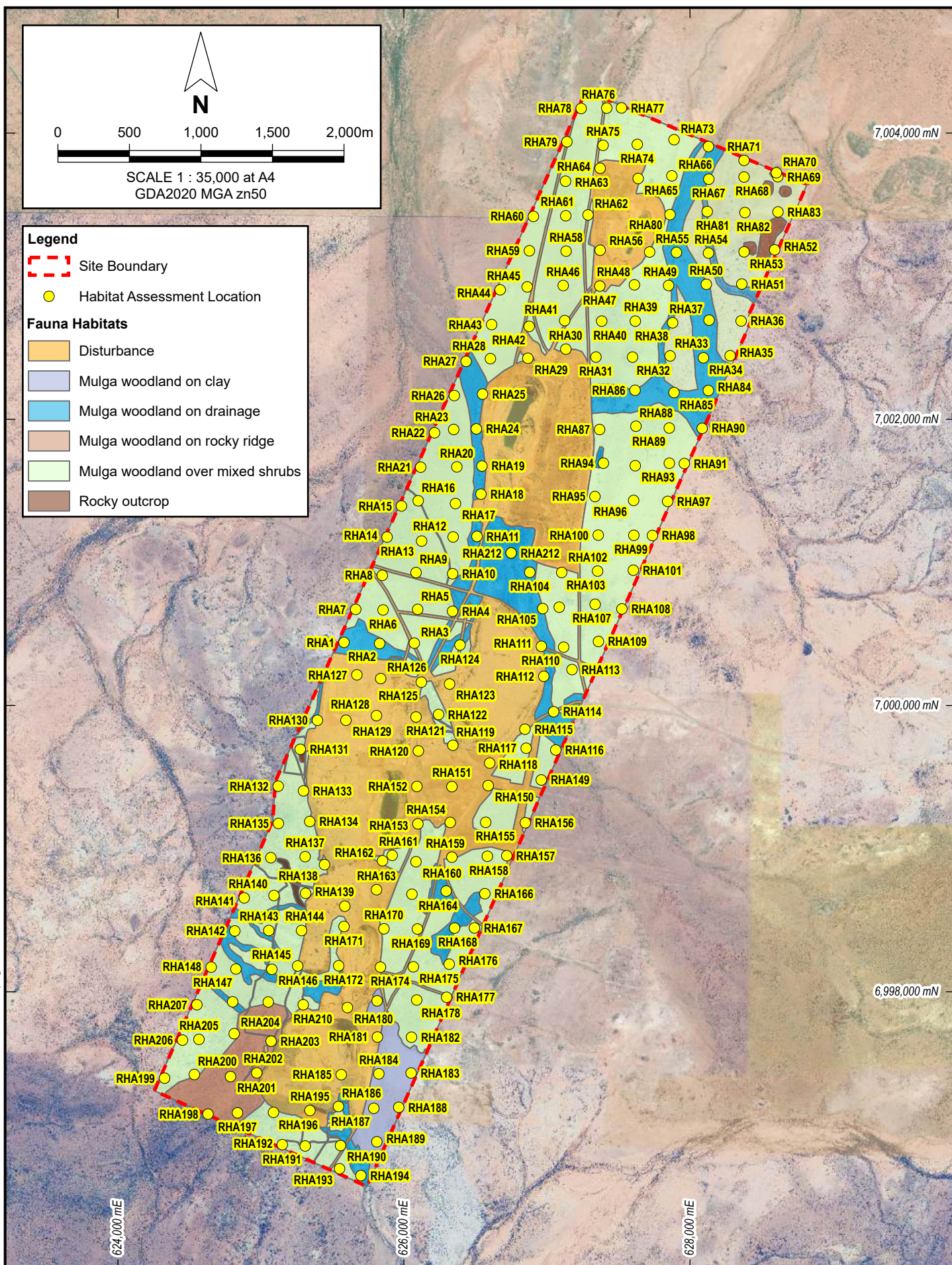
Date: 7 Aug 2026

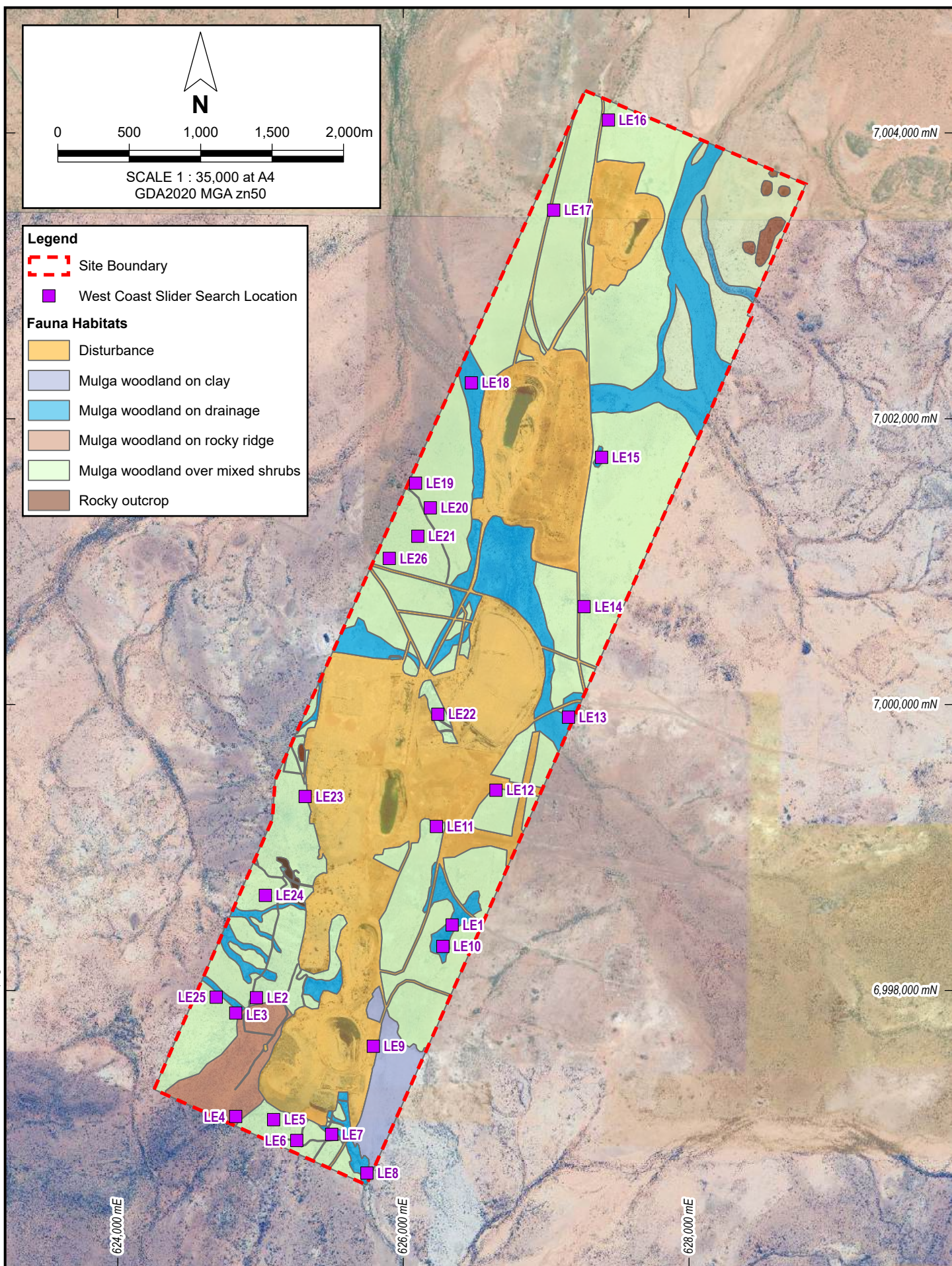
Valiant Gold  
BASIC AND TARGETED VERTEBRATE FAUNA SURVEY AND ASSESSMENT  
REEDY GOLD PROJECT

## REGIONAL LOCATION

**Figure 1**

Job: 2026-0112





# Appendix A.

## Results of the *EPBC Act* Protected Matters Search

Basic and Targeted Vertebrate Fauna Survey and Assessment  
Reedy Gold Project





# 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. Please see the caveat for interpretation of information provided here.

Report created: 29-Jun-2026

[Summary](#)

[Details](#)

[Matters of NES](#)

[Other Matters Protected by the EPBC Act](#)

[Extra Information](#)

[Caveat](#)

[Acknowledgements](#)

# Summary

## Matters of National Environment Significance

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

|                                                              |      |
|--------------------------------------------------------------|------|
| <a href="#">World Heritage Properties:</a>                   | None |
| <a href="#">National Heritage Places:</a>                    | None |
| <a href="#">Wetlands of International Importance (Ramsar</a> | None |
| <a href="#">Great Barrier Reef Marine Park:</a>              | None |
| <a href="#">Commonwealth Marine Area:</a>                    | None |
| <a href="#">Listed Threatened Ecological Communities:</a>    | None |
| <a href="#">Listed Threatened Species:</a>                   | 9    |
| <a href="#">Listed Migratory Species:</a>                    | 8    |

## Other Matters Protected by the EPBC Act

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

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

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

|                                                                     |      |
|---------------------------------------------------------------------|------|
| <a href="#">Commonwealth Lands:</a>                                 | None |
| <a href="#">Commonwealth Heritage Places:</a>                       | None |
| <a href="#">Listed Marine Species:</a>                              | 10   |
| <a href="#">Whales and Other Cetaceans:</a>                         | None |
| <a href="#">Critical Habitats:</a>                                  | None |
| <a href="#">Commonwealth Reserves Terrestrial:</a>                  | None |
| <a href="#">Australian Marine Parks:</a>                            | None |
| <a href="#">Habitat Critical to the Survival of Marine Turtles:</a> | None |

## Extra Information

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

|                                                         |      |
|---------------------------------------------------------|------|
| <a href="#">State and Territory Reserves:</a>           | None |
| <a href="#">Regional Forest Agreements:</a>             | None |
| <a href="#">Nationally Important Wetlands:</a>          | None |
| <a href="#">EPBC Act Referrals:</a>                     | 1    |
| <a href="#">Key Ecological Features (Marine):</a>       | None |
| <a href="#">Biologically Important Areas:</a>           | None |
| <a href="#">Bioregional Assessments:</a>                | None |
| <a href="#">Geological and Bioregional Assessments:</a> | None |

# Details

## Matters of National Environmental Significance

Listed Threatened Species

[ Resource Information ]

Status of Conservation Dependent and Extinct are not MNES under the EPBC Act.  
Number is the current name ID.

| Scientific Name                                                                                                | Threatened Category   | Presence Text                                          | Buffer Status       |
|----------------------------------------------------------------------------------------------------------------|-----------------------|--------------------------------------------------------|---------------------|
| BIRD                                                                                                           |                       |                                                        |                     |
| <a href="#">Aphelocephala leucopsis</a><br>Southern Whiteface [529]                                            | Vulnerable            | Species or species habitat likely to occur within area | In feature area     |
| <a href="#">Calidris acuminata</a><br>Sharp-tailed Sandpiper [874]                                             | Vulnerable            | Species or species habitat may occur within area       | In feature area     |
| <a href="#">Calidris ferruginea</a><br>Curlew Sandpiper [856]                                                  | Critically Endangered | Species or species habitat likely to occur within area | In feature area     |
| <a href="#">Falco hypoleucos</a><br>Grey Falcon [929]                                                          | Vulnerable            | Species or species habitat may occur within area       | In feature area     |
| <a href="#">Leipoa ocellata</a><br>Malleefowl [934]                                                            | Vulnerable            | Species or species habitat likely to occur within area | In feature area     |
| <a href="#">Pezoporus occidentalis</a><br>Night Parrot [59350]                                                 | Critically Endangered | Species or species habitat may occur within area       | In feature area     |
| <a href="#">Tringa nebularia</a><br>Common Greenshank, Greenshank [832]                                        | Endangered            | Species or species habitat may occur within area       | In buffer area only |
| REPTILE                                                                                                        |                       |                                                        |                     |
| <a href="#">Egernia stokesii badia</a><br>Western Spiny-tailed Skink, Baudin Island Spiny-tailed Skink [64483] | Endangered            | Species or species habitat may occur within area       | In buffer area only |

| Scientific Name                                                                                           | Threatened Category | Presence Text                                                | Buffer Status   |
|-----------------------------------------------------------------------------------------------------------|---------------------|--------------------------------------------------------------|-----------------|
| SPIDER                                                                                                    |                     |                                                              |                 |
| <a href="#">Idiosoma nigrum</a><br>Shield-backed Trapdoor Spider, Black<br>Rugose Trapdoor Spider [66798] | Vulnerable          | Species or species<br>habitat likely to occur<br>within area | In feature area |

| Listed Migratory Species                                  |                     | <a href="#">[ Resource Information ]</a>                     |                 |
|-----------------------------------------------------------|---------------------|--------------------------------------------------------------|-----------------|
| Scientific Name                                           | Threatened Category | Presence Text                                                | Buffer Status   |
| Migratory Marine Birds                                    |                     |                                                              |                 |
| <a href="#">Apus pacificus</a><br>Fork-tailed Swift [678] |                     | Species or species<br>habitat likely to occur<br>within area | In feature area |

|                                                         |  |                                                        |                 |
|---------------------------------------------------------|--|--------------------------------------------------------|-----------------|
| Migratory Terrestrial Species                           |  |                                                        |                 |
| <a href="#">Motacilla cinerea</a><br>Grey Wagtail [642] |  | Species or species<br>habitat may occur<br>within area | In feature area |
| <a href="#">Motacilla flava</a><br>Yellow Wagtail [644] |  | Species or species<br>habitat may occur<br>within area | In feature area |

|                                                                            |                       |                                                              |                     |
|----------------------------------------------------------------------------|-----------------------|--------------------------------------------------------------|---------------------|
| Migratory Wetlands Species                                                 |                       |                                                              |                     |
| <a href="#">Actitis hypoleucos</a><br>Common Sandpiper [59309]             |                       | Species or species<br>habitat may occur<br>within area       | In feature area     |
| <a href="#">Calidris acuminata</a><br>Sharp-tailed Sandpiper [874]         | Vulnerable            | Species or species<br>habitat may occur<br>within area       | In feature area     |
| <a href="#">Calidris ferruginea</a><br>Curlew Sandpiper [856]              | Critically Endangered | Species or species<br>habitat likely to occur<br>within area | In feature area     |
| <a href="#">Calidris melanotos</a><br>Pectoral Sandpiper [858]             |                       | Species or species<br>habitat may occur<br>within area       | In feature area     |
| <a href="#">Tringa nebularia</a><br>Common Greenshank, Greenshank<br>[832] | Endangered            | Species or species<br>habitat may occur<br>within area       | In buffer area only |

Other Matters Protected by the EPBC Act

| Listed Marine Species                                                                     |                       | [ Resource Information ]                                                   |                 |
|-------------------------------------------------------------------------------------------|-----------------------|----------------------------------------------------------------------------|-----------------|
| Scientific Name                                                                           | Threatened Category   | Presence Text                                                              | Buffer Status   |
| Bird                                                                                      |                       |                                                                            |                 |
| <a href="#">Actitis hypoleucos</a><br>Common Sandpiper [59309]                            |                       | Species or species habitat may occur within area                           | In feature area |
| <a href="#">Apus pacificus</a><br>Fork-tailed Swift [678]                                 |                       | Species or species habitat likely to occur within area overfly marine area | In feature area |
| <a href="#">Calidris acuminata</a><br>Sharp-tailed Sandpiper [874]                        | Vulnerable            | Species or species habitat may occur within area                           | In feature area |
| <a href="#">Calidris ferruginea</a><br>Curlew Sandpiper [856]                             | Critically Endangered | Species or species habitat likely to occur within area overfly marine area | In feature area |
| <a href="#">Calidris melanotos</a><br>Pectoral Sandpiper [858]                            |                       | Species or species habitat may occur within area overfly marine area       | In feature area |
| <a href="#">Chalcites osculans as Chrysococcyx osculans</a><br>Black-eared Cuckoo [83425] |                       | Species or species habitat likely to occur within area overfly marine area | In feature area |
| <a href="#">Merops ornatus</a><br>Rainbow Bee-eater [670]                                 |                       | Species or species habitat may occur within area overfly marine area       | In feature area |
| <a href="#">Motacilla cinerea</a><br>Grey Wagtail [642]                                   |                       | Species or species habitat may occur within area overfly marine area       | In feature area |

| Scientific Name                                                         | Threatened Category | Presence Text                                                        | Buffer Status       |
|-------------------------------------------------------------------------|---------------------|----------------------------------------------------------------------|---------------------|
| <a href="#">Motacilla flava</a><br>Yellow Wagtail [644]                 |                     | Species or species habitat may occur within area overfly marine area | In feature area     |
| <a href="#">Tringa nebularia</a><br>Common Greenshank, Greenshank [832] | Endangered          | Species or species habitat may occur within area overfly marine area | In buffer area only |

### Extra Information

| EPBC Act Referrals                                                                                           |           |                       | [ Resource Information ] |                 |
|--------------------------------------------------------------------------------------------------------------|-----------|-----------------------|--------------------------|-----------------|
| Title of referral                                                                                            | Reference | Referral Outcome      | Assessment Status        | Buffer Status   |
| Not controlled action                                                                                        |           |                       |                          |                 |
| <a href="#">Improving rabbit biocontrol: releasing another strain of RHDV, sthrn two thirds of Australia</a> | 2015/7522 | Not Controlled Action | Completed                | In feature area |

# Caveat

## 1 PURPOSE

This report is designed to assist in identifying the location of matters of national environmental significance (MNES) and other matters protected by the Environment Protection and Biodiversity Conservation Act 1999 (Cth) (EPBC Act) which may be relevant in determining obligations and requirements under the EPBC Act.

The report contains the mapped locations of:

- World and National Heritage properties;
- Wetlands of International and National Importance;
- Commonwealth and State/Territory reserves;
- distribution of listed threatened, migratory and marine species;
- listed threatened ecological communities; and
- other information that may be useful as an indicator of potential habitat value.

## 2 DISCLAIMER

This report is not intended to be exhaustive and should only be relied upon as a general guide as mapped data is not available for all species or ecological communities listed under the EPBC Act (see below). Persons seeking to use the information contained in this report to inform the referral of a proposed action under the EPBC Act should consider the limitations noted below and whether additional information is required to determine the existence and location of MNES and other protected matters.

Where data is available to inform the mapping of protected species, the presence type (e.g. known, likely or may occur) that can be determined from the data is indicated in general terms. It is the responsibility of any person using or relying on the information in this report to ensure that it is suitable for the circumstances of any proposed use. The Commonwealth cannot accept responsibility for the consequences of any use of the report or any part thereof. To the maximum extent allowed under governing law, the Commonwealth will not be liable for any loss or damage that may be occasioned directly or indirectly through the use of, or reliance on the contents of this report.

## 3 DATA SOURCES

### Threatened ecological communities

For threatened ecological communities where the distribution is well known, maps are generated based on information contained in recovery plans, State vegetation maps and 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.

### Threatened, migratory and marine species

Threatened, migratory and marine species distributions have been discerned through a variety of methods. Where distributions are well known and if time permits, distributions are inferred from either thematic spatial data (i.e. vegetation, soils, geology, elevation, aspect, terrain, etc.) together with point locations and described habitat; or modelled (MAXENT or BIOCLIM habitat modelling) using point locations and environmental data layers.

Where little information is available for a species or large number of maps are required in a short time-frame, maps are derived either from 0.04 or 0.02 decimal degree cells; by an automated process using polygon capture techniques (static two kilometre grid cells, alpha-hull and convex hull); or captured manually or by using topographic features (national park boundaries, islands, etc.).

In the early stages of the distribution mapping process (1999-early 2000s) distributions were defined by degree blocks, 100K or 250K map sheets to rapidly create distribution maps. More detailed distribution mapping methods are used to update these distributions when time permits.

## 4 LIMITATIONS

The following species and ecological communities have not been mapped and do not appear in this report:

- threatened species listed as extinct or considered vagrants;
- some recently listed species and ecological communities;
- some listed migratory and listed marine species, which are not listed as threatened species; and
- migratory species that are very widespread, vagrant, or only occur in Australia in small numbers.

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

- listed migratory and/or listed marine seabirds, which are not listed as threatened, have only been mapped for recorded breeding sites; and
- seals which have only been mapped for breeding sites near the Australian continent

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

Refer to the metadata for the feature group (using the Resource Information link) for the currency of the information.

# Acknowledgements

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

- [-Office of Environment and Heritage, New South Wales](#)
- [-Department of Environment and Primary Industries, Victoria](#)
- [-Department of Primary Industries, Parks, Water and Environment, Tasmania](#)
- [-Department of Environment, Water and Natural Resources, South Australia](#)
- [-Department of Land and Resource Management, Northern Territory](#)
- [-Department of Environmental and Heritage Protection, Queensland](#)
- [-Department of Parks and Wildlife, Western Australia](#)
- [-Environment and Planning Directorate, ACT](#)
- [-Birdlife Australia](#)
- [-Australian Bird and Bat Banding Scheme](#)
- [-Australian National Wildlife Collection](#)
- [-Natural history museums of Australia](#)
- [-Museum Victoria](#)
- [-Australian Museum](#)
- [-South Australian Museum](#)
- [-Queensland Museum](#)
- [-Online Zoological Collections of Australian Museums](#)
- [-Queensland Herbarium](#)
- [-National Herbarium of NSW](#)
- [-Royal Botanic Gardens and National Herbarium of Victoria](#)
- [-Tasmanian Herbarium](#)
- [-State Herbarium of South Australia](#)
- [-Northern Territory Herbarium](#)
- [-Western Australian Herbarium](#)
- [-Australian National Herbarium, Canberra](#)
- [-University of New England](#)
- [-Ocean Biogeographic Information System](#)
- [-Australian Government, Department of Defence](#)
- [Forestry Corporation, NSW](#)
- [-Geoscience Australia](#)
- [-CSIRO](#)
- [-Australian Tropical Herbarium, Cairns](#)
- [-eBird Australia](#)
- [-Australian Government – Australian Antarctic Data Centre](#)
- [-Museum and Art Gallery of the Northern Territory](#)
- [-Australian Government National Environmental Science Program](#)
- [-Australian Institute of Marine Science](#)
- [-Reef Life Survey Australia](#)
- [-American Museum of Natural History](#)
- [-Queen Victoria Museum and Art Gallery, Inveresk, Tasmania](#)
- [-Tasmanian Museum and Art Gallery, Hobart, Tasmania](#)
- [-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.

[© Commonwealth of Australia](#)

Department of Climate Change, Energy, the Environment and Water

GPO Box 3090

Canberra ACT 2601 Australia

+61 2 6274 1111

# **Appendix B.**

## **Vertebrate Fauna Recorded in Biological Surveys in the Region**

**Basic and Targeted Vertebrate Fauna Survey and Assessment  
Reedy Gold Project**



## B.1 VERTEBRATE FAUNA ASSESSMENTS

|                  |                                     | Surveys                           | A | B | C      |        |        |        |        | D             |         |         |        |        |         |        |         |        |         |         |         |         |        |        | E          | F   |         |         |
|------------------|-------------------------------------|-----------------------------------|---|---|--------|--------|--------|--------|--------|---------------|---------|---------|--------|--------|---------|--------|---------|--------|---------|---------|---------|---------|--------|--------|------------|-----|---------|---------|
|                  |                                     |                                   |   |   | Site 5 | Site 1 | Site 3 | Site 6 | Site 4 | Opportunistic | Site 12 | Site 14 | Site 5 | Site 6 | Site 16 | Site 4 | Site 10 | Site 8 | Site 13 | Site 15 | Site 11 | Site 17 | Site 7 | Site 9 | Wilgie Mia | WR3 | Unknown | Unknown |
| Family           | Species                             | Common name                       |   |   |        |        |        |        |        |               |         |         |        |        |         |        |         |        |         |         |         |         |        |        |            |     |         |         |
| Amphibians       |                                     |                                   |   |   |        |        |        |        |        |               |         |         |        |        |         |        |         |        |         |         |         |         |        |        |            |     |         |         |
| Limnodynastidae  | <i>Neobatrachus sutor</i>           | Shoemaker Frog                    | X |   |        |        |        |        |        |               |         |         |        |        |         |        |         |        |         |         |         |         |        |        |            |     |         |         |
| Myobatrachidae   | <i>Pseudophryne occidentalis</i>    | Western Toadlet                   | X |   |        |        |        |        |        |               |         |         |        |        |         |        |         |        |         |         |         |         |        |        |            |     |         |         |
| Pelodryadidae    | <i>Cyclorana maini</i>              | Main's Frog                       | X |   |        |        |        |        |        |               |         |         |        |        |         |        |         |        |         |         |         |         |        |        |            |     |         |         |
|                  | <i>Cyclorana occidentalis</i>       | Western Water-holding Frog        | X |   | 2      | 1      |        |        |        |               |         |         |        |        |         |        |         |        |         |         |         |         |        |        |            |     |         |         |
|                  | <i>Litoria rubella</i>              | Desert Tree Frog                  | X |   |        |        |        |        |        | 15            |         |         |        |        |         |        |         |        |         |         |         |         |        |        |            |     | X       |         |
| Reptiles         |                                     |                                   |   |   |        |        |        |        |        |               |         |         |        |        |         |        |         |        |         |         |         |         |        |        |            |     |         |         |
| Agamidae         | <i>Ctenophorus caudicinctus</i>     | Ring-tailed Dragon                | X |   |        |        |        |        |        | 6             | 2       | 2       | 1      | 2      | 2       | 1      | 2       |        |         |         |         |         |        |        |            |     | X       | 4       |
|                  | <i>Ctenophorus graafi</i>           | Ring-tailed Dragon                | X |   |        |        |        |        |        |               |         |         |        |        |         |        |         |        |         |         |         |         |        |        |            |     |         |         |
|                  | <i>Ctenophorus isolepis</i>         | Central Military Dragon           | X |   |        |        |        |        |        |               |         |         |        |        |         |        |         |        |         |         |         |         |        |        |            |     |         | 1       |
|                  | <i>Ctenophorus nuchalis</i>         | Central Netted Dragon             | X |   |        |        |        |        |        |               |         |         | 7      | 5      |         | 2      |         | 1      |         |         |         |         |        |        |            |     |         |         |
|                  | <i>Ctenophorus ornatus</i>          | Ornate Crevice Dragon             | X |   |        |        |        |        |        |               |         |         |        |        |         |        |         |        |         |         |         |         |        |        |            |     |         |         |
|                  | <i>Ctenophorus pictus</i>           | Painted Dragon                    | X |   |        |        |        |        |        |               |         |         |        |        |         |        |         |        |         |         |         |         |        |        |            |     |         |         |
|                  | <i>Ctenophorus reticulatus</i>      | Western Netted Dragon             | X |   | 2      | 2      | 2      | 13     | 4      | 5             |         | 1       |        |        |         |        |         | 1      | 3       | 2       | 1       |         |        |        |            | X   |         |         |
|                  | <i>Ctenophorus salinarum</i>        | Saltpan Dragon                    | X |   |        |        |        |        |        |               |         |         |        |        |         |        |         |        |         |         |         |         |        |        |            |     |         |         |
|                  | <i>Ctenophorus scutulatus</i>       | Lozenge-marked Dragon             |   |   | 1      | 10     |        | 5      | 1      | 14            | 1       | 2       | 4      |        |         |        | 1       |        |         | 12      | 2       | 13      |        |        |            |     |         | 1       |
|                  | <i>Diporiphora amphiboluiroides</i> | Mulga Dragon                      | X |   |        | 3      |        |        | 7      | 1             |         |         |        |        |         |        |         |        |         |         |         |         |        |        |            |     |         |         |
|                  | <i>Gowidon longirostris</i>         | Long-nosed Dragon                 |   |   |        |        |        |        |        |               |         |         |        |        |         |        |         | 1      |         |         |         |         |        |        |            |     |         |         |
|                  | <i>Moloch horridus</i>              | Thorny Devil                      | X |   |        |        |        |        |        | 1             |         |         |        |        |         |        |         |        |         |         | 2       |         |        |        |            |     |         |         |
|                  | <i>Pogona minor</i>                 | Western Bearded Dragon            | X |   |        |        |        | 1      |        |               |         |         |        | 4      |         | 1      |         |        |         |         |         |         | 1      | 1      |            |     |         |         |
|                  | <i>Tympanocryptis cephalus</i>      | Pebble Dragon                     | X |   |        |        |        |        |        |               |         | 1       | 1      |        |         |        |         |        |         |         |         |         |        |        |            |     |         |         |
| Carphodactylidae | <i>Nephurus vertebralis</i>         | Midline Knob-tail                 |   |   |        |        |        |        |        |               |         |         |        |        |         |        |         |        | 1       |         |         |         |        |        |            |     |         |         |
|                  | <i>Nephurus wheeleri</i>            | Banded Knob-tail                  | X |   |        |        |        |        |        |               |         |         |        |        |         |        |         |        |         |         |         |         |        |        |            |     |         |         |
| Diplodactylidae  | <i>Diplodactylus pulcher</i>        | Beautiful Gecko                   | X |   |        | 5      |        |        |        |               | 1       |         |        |        |         |        |         |        | 2       |         |         |         | 1      | 1      |            |     |         |         |
|                  | <i>Lucasium squarrosus</i>          | Mottled Ground Gecko              | X |   |        | 4      |        |        | 2      |               |         |         |        |        |         |        |         |        |         |         |         |         | 6      | 1      |            |     |         |         |
|                  | <i>Oedura marmorata</i>             | Marbled Velvet Gecko              | X |   |        |        |        |        |        |               |         |         |        |        | 7       |        | 4       |        |         |         | 1       |         |        |        |            |     |         |         |
|                  | <i>Rhynchoedura ornata</i>          | Beaked Gecko                      | X |   |        | 1      |        |        | 3      |               |         |         |        |        |         |        |         |        |         |         |         |         |        |        |            |     |         |         |
|                  | <i>Strophurus ciliaris</i>          | Spiny-tailed Gecko                | X |   |        |        |        |        |        |               |         |         |        |        |         |        |         |        |         |         |         |         |        |        |            |     |         |         |
|                  | <i>Strophurus strophurus</i>        | Western Spiny-tailed Gecko        | X |   |        |        |        |        |        |               |         |         |        |        |         |        |         |        |         |         |         |         |        |        |            |     |         |         |
|                  | <i>Strophurus wellingtonae</i>      | Western Shield Spiny-tailed Gecko | X |   |        |        | 2      |        |        |               |         |         |        | 1      |         |        |         |        | 2       |         |         |         | 2      |        |            |     | X       |         |
| Elapidae         | <i>Brachyuropsis approximans</i>    | North-western Shovel-nosed Snake  | X |   |        |        |        |        |        |               |         |         |        |        |         |        |         |        |         |         |         |         |        |        |            |     |         |         |
|                  | <i>Furina ornata</i>                | Orange-naped Snake                |   |   |        |        |        |        |        |               |         |         |        |        |         | 1      |         |        |         |         |         |         |        |        |            |     |         |         |
|                  | <i>Suta monachus</i>                | Hooded Snake                      | X |   |        |        |        |        | 1      |               | 2       |         | 1      |        |         |        |         |        |         |         |         | 1       | 1      |        |            |     |         |         |
|                  | <i>Pseudechis butleri</i>           | Spotted Mulga Snake               | X |   |        |        |        |        |        |               |         |         | 1      |        | 1       |        |         | 1      |         |         |         |         |        |        |            |     |         |         |
|                  | <i>Pseudonaja menadeni</i>          | Western Brown Snake               | X |   |        |        |        |        |        |               |         |         |        |        |         |        |         |        |         |         |         |         |        |        |            |     |         |         |

|             |                                       | Surveys                           | A | B  | C | D | E  | F |
|-------------|---------------------------------------|-----------------------------------|---|----|---|---|----|---|
|             |                                       |                                   |   |    |   |   |    |   |
| Family      | Species                               | Common name                       |   |    |   |   |    |   |
|             | <i>Pseudonaja modesta</i>             | Ringed Brown Snake                | X |    |   |   |    |   |
|             | <i>Simoselaps bertholdi</i>           | Jan's Banded Snake                | X |    |   |   |    |   |
|             | <i>Suta fasciata</i>                  | Rosen's Snake                     | X |    |   |   |    |   |
| Gekkonidae  | <i>Gehyra australis</i>               | Northern Dtella                   | X |    |   |   |    |   |
|             | <i>Gehyra punctata</i>                | Spotted Dtella                    | X |    |   |   |    |   |
|             | <i>Gehyra variegata</i>               | Variegated Gehyra                 | X |    | 6 | 1 | 1  |   |
|             | <i>Heteronotia binoei</i>             | Bynoe's Gecko                     | X |    |   |   |    |   |
| Pygopodidae | <i>Delma australis</i>                | Marble-faced Delma                | X |    |   |   |    |   |
|             | <i>Pygopus nigriceps</i>              | Western Hooded Scaly-foot         | X |    | 1 |   | 1  |   |
| Pythonidae  | <i>Antaresia perthensis</i>           | Pygmy Python                      |   |    |   |   | X  |   |
|             | <i>Antaresia stimsoni</i>             | Stimson's Python                  | X |    |   |   |    |   |
| Scincidae   | <i>Cryptoblepharus buchananii</i>     | Buchanan's Snake-eyed Skink       |   |    |   |   |    |   |
|             | <i>Cryptoblepharus plagiocephalus</i> | Peron's Snake-eyed Skink          | X |    |   |   |    |   |
|             | <i>Ctenotus atlas</i>                 | Southern Mallee Ctenotus          | X |    |   |   |    |   |
|             | <i>Ctenotus helenae</i>               | Clay-soil Ctenotus                | X |    |   |   |    |   |
|             | <i>Ctenotus leonhardii</i>            | Leonhardi's Ctenotus              | X |    | 2 |   |    |   |
|             | <i>Ctenotus schomburgkii</i>          | Barred Wedgesnout Ctenotus        | X |    | 1 |   |    |   |
|             | <i>Ctenotus severus</i>               | Stern Ctenotus                    | X |    |   |   |    |   |
|             | <i>Ctenotus uber</i>                  | Spotted Ctenotus                  | X | 17 | 4 |   | 14 | 5 |
|             | <i>Egernia depressa</i>               | Southern Pygmy Spiny-tailed Skink | X |    |   |   | 7  |   |
|             | <i>Eremiascincus richardsonii</i>     | Broad-banded Sand-swimmer         | X |    |   | 4 |    | 3 |
|             | <i>Lerista bipes</i>                  | North-western Sandslider          | X |    |   |   |    |   |
|             | <i>Lerista eupoda</i>                 | West Coast Mulga Slider           | X |    |   |   | 3  |   |
|             | <i>Lerista macropisthopus</i>         | Unpatterned Robust Slider         | X |    |   |   |    |   |
|             | <i>Lerista muelleri</i>               | Wood Mulch-slider                 | X |    |   |   |    |   |
|             | <i>Lerista nichollsi</i>              | Inland Broad-blazed Slider        | X |    |   |   |    |   |
|             | <i>Lerista rhodonoides</i>            | Timid Slider                      |   |    |   |   |    |   |
|             | <i>Lerista timida</i>                 | Timid Slider                      | X |    | 3 |   | 1  | 5 |
|             | <i>Menetia greyii</i>                 | Common Dwarf Skink                | X |    | 3 | 4 | 3  | 4 |
| Typhlopidae | <i>Aniliios hamatus</i>               | Pale-headed Blind Snake           |   |    |   |   |    |   |
| Varanidae   | <i>Varanus caudolineatus</i>          | Stripe-tailed Monitor             | X |    | 1 |   | 1  | 4 |
|             | <i>Varanus giganteus</i>              | Perentie                          |   |    |   |   |    |   |
|             | <i>Varanus gouldii</i>                | Gould's Goanna                    |   |    |   |   |    |   |
|             | <i>Varanus panoptes</i>               | Yellow-spotted Monitor            | X |    | 1 |   | 1  |   |
|             | <i>Varanus tristis</i>                | Black-headed Monitor              |   |    |   |   |    |   |
| Birds       |                                       |                                   |   |    |   |   |    |   |
| Casuariidae | <i>Dromaius novaehollandiae</i>       | Emu                               |   |    | 5 |   |    |   |
| Anatidae    | <i>Chenonetta jubata</i>              | Australian Wood Duck              |   |    |   |   |    |   |

|                   |                                      | Surveys                   | A | B | C      |        |        |        |        | D             |         |         |        |        |         |        |         |        |         |         |         |         |        |        | E          | F   |         |         |
|-------------------|--------------------------------------|---------------------------|---|---|--------|--------|--------|--------|--------|---------------|---------|---------|--------|--------|---------|--------|---------|--------|---------|---------|---------|---------|--------|--------|------------|-----|---------|---------|
|                   |                                      |                           |   |   | Site 5 | Site 1 | Site 3 | Site 6 | Site 4 | Opportunistic | Site 12 | Site 14 | Site 5 | Site 6 | Site 16 | Site 4 | Site 10 | Site 8 | Site 13 | Site 15 | Site 11 | Site 17 | Site 7 | Site 9 | Wilgie Mia | WR3 | Unknown | Unknown |
| Family            | Species                              | Common name               |   |   |        |        |        |        |        |               |         |         |        |        |         |        |         |        |         |         |         |         |        |        |            |     |         |         |
| Phasianidae       | <i>Coturnix pectoralis</i>           | Stubble Quail             |   |   |        |        |        | 2      |        |               |         |         |        |        |         |        |         |        |         |         |         |         |        |        |            |     |         |         |
| Columbidae        | <i>Phaps chalcoptera</i>             | Common Bronzewing         |   |   | 10     | 1      |        | 6      | 1      |               |         |         | 3      | 1      | 8       | 2      |         | 25     | 2       | 4       |         | 6       |        |        |            |     | X       | 1       |
|                   | <i>Ocyphaps lophotes</i>             | Crested Pigeon            |   |   | 9      | 39     |        |        |        |               |         |         | 4      |        | 36      | 1      |         | 39     | 21      | 19      |         | 9       |        |        |            |     | X       | 2       |
|                   | <i>Geopelia cuneata</i>              | Diamond Dove              |   |   | 139    | 327    | 7      | 27     | 27     | 2             | 4       |         | 1      | 4      |         |        |         | 24     |         |         |         |         |        |        |            |     | X       |         |
| Cuculidae         | <i>Chrysococcyx basalis</i>          | Horsfield's Bronze-Cuckoo |   |   |        |        |        | 1      |        |               |         |         |        |        |         |        |         |        |         |         |         |         | 1      |        |            |     |         |         |
|                   | <i>Chrysococcyx osculans</i>         | Black-eared Cuckoo        |   |   |        |        |        |        |        |               |         |         | 1      | 2      |         |        |         |        |         |         |         |         | 1      |        |            |     |         |         |
| Aegothelidae      | <i>Aegotheles cristatus</i>          | Australian Owlet-nightjar |   |   |        |        |        |        |        |               | 1       | 2       |        |        |         | 1      |         |        | 1       |         |         | 3       |        | 1      |            |     | X       |         |
| Podargidae        | <i>Podargus strigoides</i>           | Tawny Frogmouth           |   |   |        |        |        |        |        | 4             |         | 1       |        |        |         |        |         |        |         | 2       |         |         |        |        |            |     | X       |         |
| Caprimulgidae     | <i>Eurostopodus argus</i>            | Spotted Nightjar          |   |   |        |        |        |        |        | 3             |         |         |        | 1      |         |        |         | 3      |         |         |         | 2       |        | 1      |            |     |         |         |
| Burhinidae        | <i>Burhinus grallarius</i>           | Bush Stone-curlew         |   |   |        |        |        |        |        | 1             |         |         |        |        |         |        |         |        |         | 4       |         |         |        | 1      |            |     |         |         |
| Recurvirostridae  | <i>Recurvirostra novaehollandiae</i> | Red-necked Avocet         |   |   |        |        |        |        |        |               |         |         |        |        |         |        |         |        |         |         |         |         |        |        |            |     |         | 1       |
| Turnicidae        | <i>Turnix velox</i>                  | Little Buttonquail        |   |   | 1      |        |        | 2      | 3      | 1             |         |         |        |        |         |        |         | 4      | 1       |         |         |         |        |        |            |     |         |         |
| Threskiornithidae | <i>Platalea flavipes</i>             | Yellow-billed Spoonbill   |   |   |        |        |        |        |        | 1             |         |         |        |        |         |        |         |        |         |         |         |         |        |        |            |     |         |         |
| Accipitridae      | <i>Hamirostra melanosternon</i>      | Black-breasted Buzzard    |   |   |        |        |        |        |        |               |         |         |        |        |         |        |         |        |         | 1       |         |         |        |        |            |     |         |         |
|                   | <i>Aquila audax</i>                  | Wedge-tailed Eagle        |   |   | 2      |        | 3      |        | 1      | 1             | 1       | 3       |        |        | 3       | 3      |         | 2      | 1       | 3       |         | 2       | 2      |        |            |     | X       | 1       |
|                   | <i>Accipiter fasciatus</i>           | Brown Goshawk             |   |   | 7      |        |        |        |        |               |         | 1       | 1      |        |         |        |         | 3      | 1       |         |         |         |        |        |            |     | X       |         |
|                   | <i>Accipiter cirrocephalus</i>       | Collared Sparrowhawk      |   |   |        |        |        |        |        | 1             |         | 1       |        | 1      |         |        |         |        |         |         |         | 2       |        |        |            |     |         |         |
|                   | <i>Haliastur sphegnus</i>            | Whistling Kite            |   |   |        | 1      |        |        |        | 1             |         | 1       |        |        |         |        |         |        |         |         |         |         |        |        |            |     |         |         |
| Cuculidae         | <i>Heteroscenes pallidus</i>         | Pallid Cuckoo             |   |   |        |        |        |        |        |               |         |         | 1      |        |         |        |         | 5      |         |         |         |         |        |        |            |     |         |         |
| Strigidae         | <i>Ninox boobook</i>                 | Southern Boobook          |   |   |        |        |        |        |        | 1             |         |         |        |        |         |        |         |        |         |         |         |         |        |        |            |     |         |         |
| Alcedinidae       | <i>Todiramphus pyrrhopygius</i>      | Red-backed Kingfisher     |   |   |        |        |        |        |        |               |         |         |        |        |         |        |         |        |         |         |         |         |        |        |            |     | X       |         |
| Falconidae        | <i>Falco cenchroides</i>             | Nankeen Kestrel           |   |   |        | 3      | 8      |        |        | 1             |         | 1       |        |        | 4       |        |         |        | 1       | 2       |         |         |        |        |            |     | X       |         |
|                   | <i>Falco longipennis</i>             | Australian Hobby          |   |   |        |        |        |        |        | 2             |         |         |        |        |         |        |         |        |         | 1       | 1       |         |        |        |            |     | X       |         |
|                   | <i>Falco berigora</i>                | Brown Falcon              |   |   |        | 2      |        |        |        | 1             |         |         |        | 1      |         |        |         | 1      | 3       |         |         | 6       |        |        |            |     | X       |         |
|                   | <i>Falco peregrinus</i>              | Peregrine Falcon          |   |   |        |        |        |        |        | 1             |         |         |        |        |         |        |         |        |         |         |         |         |        |        |            |     |         |         |
| Cacatuidae        | <i>Eolophus roseicapilla</i>         | Galah                     |   |   | 2      | 4      |        |        |        | 3             |         | 7       | 2      |        | 3       |        |         | 12     | 53      | 10      |         | 1       | 6      |        |            |     | X       |         |
|                   | <i>Nymphicus hollandicus</i>         | Cockatiel                 |   |   |        | 28     | 9      |        | 8      |               |         |         | 3      | 3      | 5       | 4      |         | 37     |         |         |         |         | 14     |        |            |     | X       |         |
| Psittaculidae     | <i>Neopsephotus bourkii</i>          | Bourke's Parrot           |   |   | 3      | 8      |        |        |        | 4             |         | 57      |        | 6      | 2       |        |         | 9      |         |         |         |         |        |        |            |     | X       | 25      |
|                   | <i>Neophema elegans</i>              | Elegant Parrot            |   |   |        |        |        |        |        | 1             |         |         |        |        |         |        |         |        |         |         |         |         |        |        |            |     |         |         |
|                   | <i>Barnardius zonarius</i>           | Australian Ringneck       |   |   |        |        |        |        |        |               |         |         | 2      | 4      |         |        |         | 7      | 1       | 4       |         | 33      |        |        |            |     | X       |         |
|                   | <i>Psephotus varius</i>              | Mulga Parrot              |   |   |        | 6      | 3      |        | 2      | 6             | 24      | 15      | 4      | 18     | 51      |        |         | 8      | 35      | 21      | 1       | 40      | 2      |        |            |     | X       |         |
|                   | <i>Melopsittacus undulatus</i>       | Budgerigar                |   |   | 55     | 59     | 62     | 78     | 66     |               |         |         | 17     | 77     |         | 12     |         | 285    |         |         |         |         | 58     |        |            |     | X       |         |
| Ptilonorhynchidae | <i>Chlamydera guttata</i>            | Western Bowerbird         | X |   |        |        |        |        |        | 1             | 3       |         | 7      | 11     | 3       | 10     |         | 12     | 1       |         |         | 1       | 1      |        |            |     | X       |         |
|                   | <i>Ptilonorhynchus maculata</i>      | Spotted Bowerbird         |   |   |        |        |        |        |        |               |         |         |        |        |         |        |         |        |         |         |         |         |        |        |            |     |         | 1       |
| Climacteridae     | <i>Climacteris affinis</i>           | White-browed Treecreeper  | X |   |        |        |        |        |        |               |         |         |        |        |         |        |         |        |         |         |         |         |        |        |            |     |         |         |
| Maluridae         | <i>Malurus assimilis</i>             | Purple-backed Fairywren   |   |   |        | 5      |        |        |        |               |         |         |        |        |         |        |         |        |         |         |         |         |        |        |            |     | X       |         |
|                   | <i>Malurus lamberti</i>              | Variegated Fairywren      | X |   |        |        |        |        |        |               | 4       |         |        |        |         |        |         |        | 16      | 6       |         | 5       |        |        |            |     |         |         |
|                   | <i>Malurus splendens</i>             | Splendid Fairywren        | X |   |        |        |        | 13     | 10     |               |         |         | 19     | 33     |         | 2      |         |        | 4       | 12      |         | 51      | 21     | 2      |            |     |         |         |

|                 |                                   |                                | Surveys     |   | A  | B      | C      |        |        |        |               | D       |         |        |        |         |        |         |        |         |         |         |         |        |        |            |     | E       | F       |  |
|-----------------|-----------------------------------|--------------------------------|-------------|---|----|--------|--------|--------|--------|--------|---------------|---------|---------|--------|--------|---------|--------|---------|--------|---------|---------|---------|---------|--------|--------|------------|-----|---------|---------|--|
| Family          | Species                           | Common name                    |             |   |    | Site 5 | Site 1 | Site 3 | Site 6 | Site 4 | Opportunistic | Site 12 | Site 14 | Site 5 | Site 6 | Site 16 | Site 4 | Site 10 | Site 8 | Site 13 | Site 15 | Site 11 | Site 17 | Site 7 | Site 9 | Wilgie Mia | WR3 | Unknown | Unknown |  |
|                 | <i>Malurus leucopterus</i>        | White-winged Fairywren         | X           |   |    |        |        |        |        |        |               |         |         |        |        |         |        |         |        | 4       |         |         |         |        |        |            |     |         |         |  |
| Meliphagidae    | <i>Certhionyx variegatus</i>      | Pied Honeyeater                | X           |   |    |        |        |        |        |        |               |         |         |        |        |         |        |         |        |         |         |         |         |        |        |            |     |         |         |  |
|                 | <i>Purnella albifrons</i>         | White-fronted Honeyeater       | X           |   |    |        |        |        |        |        |               |         |         |        |        |         |        |         |        |         |         |         |         |        |        |            |     |         |         |  |
|                 | <i>Manorina flavigula</i>         | Yellow-throated Miner          | X           |   |    | 2      |        |        |        |        |               | 1       | 17      | 39     | 8      | 15      | 2      |         | 29     | 39      | 16      |         | 4       | 4      |        |            |     | X       |         |  |
|                 | <i>Acanthagenys rufogularis</i>   | Spiny-cheeked Honeyeater       | X           |   |    | 1      |        | 1      | 1      |        |               | 11      | 5       | 42     | 3      | 1       | 2      |         | 67     | 6       | 4       |         | 16      | 18     |        |            |     | X       |         |  |
|                 | <i>Gavicalis virescens</i>        | Singing Honeyeater             | X           |   | 5  | 7      | 10     | 9      |        |        |               | 34      | 35      | 23     | 1      | 22      | 1      |         | 13     | 59      | 15      |         | 16      | 9      |        |            |     | X       |         |  |
|                 | <i>Ptilotula penicillata</i>      | White-plumed Honeyeater        | X           |   |    |        |        |        |        |        | 2             | 1       |         |        |        |         |        |         | 70     | 4       |         | 2       | 16      |        |        |            |     | X       |         |  |
|                 | <i>Ptilotula keartlandi</i>       | Grey-headed Honeyeater         | X           |   |    |        |        |        |        |        |               |         |         |        |        |         |        |         |        |         |         |         |         |        |        |            |     |         |         |  |
|                 | <i>Conopophila whitei</i>         | Grey Honeyeater                | X           |   |    |        |        |        |        |        |               |         |         |        |        |         |        |         |        |         |         | 1       |         |        |        |            |     |         |         |  |
|                 | <i>Epthianura tricolor</i>        | Crimson Chat                   | X           |   |    |        | 76     |        |        |        |               |         | 6       |        |        | 3       |        |         | 3      | 5       | 2       |         | 1       |        |        |            |     |         |         |  |
|                 |                                   | <i>Epthianura aurifrons</i>    | Orange Chat | X |    |        |        |        |        |        |               | 1       |         |        |        |         |        |         |        |         |         |         |         |        |        |            |     |         |         |  |
|                 | <i>Epthianura albifrons</i>       | White-fronted Chat             | X           |   |    |        |        |        |        |        |               |         |         |        |        |         |        |         |        |         |         |         |         |        |        |            |     |         |         |  |
|                 | <i>Lichmera indistincta</i>       | Brown Honeyeater               | X           |   |    |        |        |        |        |        |               |         |         |        |        |         |        |         |        |         |         |         |         |        |        |            |     |         |         |  |
| Pardalotidae    | <i>Pardalotus striatus</i>        | Striated Pardalote             | X           |   |    |        |        |        |        |        |               |         |         |        |        | 1       |        |         |        |         |         |         | 18      |        |        |            |     |         |         |  |
| Acanthizidae    | <i>Pyrrholaemus brunneus</i>      | Redthroat                      | X           |   |    |        |        |        |        |        |               | 2       |         | 5      | 5      | 2       | 3      |         |        | 8       | 18      | 2       | 13      | 6      | 1      |            |     |         |         |  |
|                 | <i>Acanthiza iredalei</i>         | Slender-billed Thornbill       | X           |   |    |        |        |        |        |        | 1             |         |         |        |        |         |        |         |        |         |         |         |         |        |        |            |     |         |         |  |
|                 | <i>Acanthiza apicalis</i>         | Inland Thornbill               | X           |   | 10 |        |        | 1      | 1      |        |               |         |         | 8      | 25     | 6       | 10     |         | 30     |         | 10      |         | 39      | 9      | 4      |            |     | X       |         |  |
|                 | <i>Acanthiza chrysorrhoa</i>      | Yellow-rumped Thornbill        | X           |   | 1  |        |        | 8      | 4      |        |               | 34      | 33      | 5      | 1      | 14      | 3      |         |        | 4       | 6       |         | 13      | 9      |        |            |     | X       |         |  |
|                 | <i>Acanthiza uropygialis</i>      | Chestnut-rumped Thornbill      | X           |   | 2  | 1      |        | 1      | 4      |        |               | 16      | 9       | 31     | 23     | 14      | 7      |         | 2      | 19      | 26      |         | 22      | 20     | 2      |            |     | X       |         |  |
|                 | <i>Acanthiza robustirostris</i>   | Slaty-backed Thornbill         | X           |   | 5  |        |        | 2      | 7      |        |               | 29      | 11      | 5      |        | 12      |        |         |        | 22      | 26      | 2       | 28      |        |        |            |     |         |         |  |
|                 | <i>Smicronis brevirostris</i>     | Weebill                        | X           |   |    |        |        |        |        |        |               |         |         |        |        |         |        |         |        |         |         |         | 11      |        |        |            |     |         |         |  |
|                 | <i>Gerygone fusca</i>             | Western Gerygone               | X           |   | 4  |        |        | 9      | 1      |        |               |         |         | 1      | 1      | 1       |        |         |        |         | 5       |         | 16      |        |        |            |     | X       |         |  |
|                 | <i>Aphelocephala leucopsis</i>    | Southern Whiteface             | X           |   | 3  | 5      | 2      | 6      | 13     |        |               | 27      | 22      | 7      |        | 6       | 2      |         | 3      | 21      | 18      |         | 25      | 10     |        |            |     |         |         |  |
|                 | <i>Aphelocephala nigrincta</i>    | Banded Whiteface               | X           |   |    |        |        |        |        |        |               |         |         |        |        |         |        |         |        |         |         |         |         |        |        |            |     |         |         |  |
| Pomatostomidae  | <i>Pomatostomus temporalis</i>    | Grey-crowned Babbler           | X           |   |    | 2      |        |        |        |        |               | 26      | 33      | 6      | 3      | 49      | 3      |         | 31     | 68      | 10      | 3       | 15      | 10     | 2      |            |     | X       |         |  |
|                 | <i>Pomatostomus superciliosus</i> | White-browed Babbler           | X           |   | 7  | 1      | 4      | 8      |        |        |               | 37      |         | 2      | 6      | 2       | 4      |         |        |         | 5       |         | 36      |        |        |            |     |         |         |  |
| Cinclosomatidae | <i>Cinclosoma clarum</i>          | Copperback Quail-thrush        |             |   |    |        |        |        |        |        |               |         |         |        |        |         |        |         |        |         |         |         |         |        |        |            |     | X       |         |  |
|                 | <i>Cinclosoma castaneothorax</i>  | Chestnut-breasted Quail-thrush | X           |   |    |        |        |        |        |        |               | 9       | 3       | 4      | 4      | 2       | 3      |         |        | 4       | 3       |         | 3       | 8      | 2      |            |     |         |         |  |
|                 | <i>Cinclosoma marginatum</i>      | Western Quail-thrush           | X           |   |    |        |        |        |        | 1      |               |         |         |        |        |         |        |         |        |         |         |         |         |        |        |            |     |         |         |  |
| Campephagidae   | <i>Coracina maxima</i>            | Ground Cuckooshrike            | X           |   |    |        |        |        |        |        |               |         |         |        |        |         |        |         |        |         |         |         |         | 3      |        |            |     |         |         |  |
|                 | <i>Coracina novaehollandiae</i>   | Black-faced Cuckooshrike       | X           |   |    |        |        |        |        |        |               |         |         | 2      |        |         |        |         | 9      | 2       |         |         | 12      | 1      |        |            |     | X       |         |  |
|                 | <i>Lalage tricolor</i>            | White-winged Triller           | X           |   | 2  | 5      |        | 3      | 4      |        |               |         |         |        |        |         |        |         |        | 1       |         |         | 1       |        |        |            |     | X       |         |  |
| Neosittidae     | <i>Daphoenositta chrysoptera</i>  | Varied Sittella                | X           |   |    |        |        |        |        |        |               |         |         |        |        |         |        |         |        |         |         |         |         |        |        |            |     | X       |         |  |
| Psophodidae     | <i>Psophodes occidentalis</i>     | Chiming Wedgebill              | X           |   |    |        |        |        |        |        |               |         |         |        |        |         |        |         |        |         |         |         |         |        |        |            |     |         |         |  |
| Oreoicidae      | <i>Oreoica gutturalis</i>         | Crested Bellbird               | X           |   | 7  | 6      | 3      | 12     | 5      |        |               | 14      | 20      | 7      | 5      | 14      | 2      |         | 6      | 28      | 14      |         | 9       | 1      |        |            |     | X       | 1       |  |
| Pachycephalidae | <i>Colluricincla harmonica</i>    | Grey Shrikethrush              | X           |   | 2  |        |        | 2      |        | 1      |               | 6       | 7       | 12     | 9      | 5       | 10     |         | 5      | 6       | 7       | 1       | 6       | 6      |        |            |     | X       | 1       |  |
|                 | <i>Pachycephala rufiventris</i>   | Rufous Whistler                | X           |   | 7  | 5      |        | 10     | 8      |        |               | 16      | 3       | 3      | 16     | 4       | 1      |         | 4      | 20      | 7       | 1       | 12      | 14     | 1      |            |     | X       |         |  |
| Artamidae       | <i>Artamus personatus</i>         | Masked Woodswallow             | X           |   |    |        | 67     | 154    | 40     | 15     |               |         |         |        | 4      |         |        |         |        |         |         |         | 1       |        |        |            |     | X       |         |  |

|                  |                                |                            | Surveys |  | A  | B  | C      |        |        |        |        | D             |         |         |        |        |         |        |         |        |         |         |         |         |        |        | E          | F   |         |         |
|------------------|--------------------------------|----------------------------|---------|--|----|----|--------|--------|--------|--------|--------|---------------|---------|---------|--------|--------|---------|--------|---------|--------|---------|---------|---------|---------|--------|--------|------------|-----|---------|---------|
|                  |                                |                            |         |  |    |    | Site 5 | Site 1 | Site 3 | Site 6 | Site 4 | Opportunistic | Site 12 | Site 14 | Site 5 | Site 6 | Site 16 | Site 4 | Site 10 | Site 8 | Site 13 | Site 15 | Site 11 | Site 17 | Site 7 | Site 9 | Wilgie Mia | WR3 | Unknown | Unknown |
| Family           | Species                        | Common name                |         |  |    |    |        |        |        |        |        |               |         |         |        |        |         |        |         |        |         |         |         |         |        |        |            |     |         |         |
|                  | <i>Artamus superciliosus</i>   | White-browed Woodswallow   | X       |  |    |    |        |        |        |        |        |               |         |         |        |        |         |        |         |        |         |         |         |         |        |        |            |     |         |         |
|                  | <i>Artamus cinereus</i>        | Black-faced Woodswallow    | X       |  | 2  |    |        | 12     |        |        |        |               | 22      | 36      | 2      |        | 52      |        |         | 2      | 74      | 25      |         | 25      | 10     |        |            |     | X       |         |
|                  | <i>Artamus cyanopterus</i>     | Dusky Woodswallow          | X       |  |    |    |        |        |        |        |        |               |         |         |        |        |         |        |         |        |         |         |         |         |        |        |            |     |         |         |
|                  | <i>Artamus minor</i>           | Little Woodswallow         | X       |  |    |    |        |        |        |        |        |               |         |         |        | 8      |         |        |         |        |         | 3       |         |         |        |        |            |     |         |         |
|                  | <i>Cracticus torquatus</i>     | Grey Butcherbird           | X       |  |    |    |        |        |        |        |        | 1             | 3       | 7       | 9      | 7      | 6       | 10     |         | 4      | 9       | 13      |         | 15      | 8      |        |            |     |         | 1       |
|                  | <i>Cracticus nigrogularis</i>  | Pied Butcherbird           | X       |  |    |    |        |        |        |        |        |               |         | 8       | 1      |        | 3       | 1      |         | 6      | 2       | 9       |         | 13      |        |        |            |     | X       |         |
|                  | <i>Gymnorhina tibicen</i>      | Australian Magpie          | X       |  |    | 4  |        | 4      |        |        |        |               |         |         |        | 1      |         |        |         | 1      |         | 7       | 8       |         |        |        |            |     | X       |         |
| Rhipiduridae     | <i>Rhipidura leucophrys</i>    | Willie Wagtail             | X       |  | 6  | 5  | 2      | 2      | 1      | 1      | 15     | 17            | 3       | 11      | 17     | 5      |         |        | 7       | 14     | 6       | 1       | 12      | 4       |        |        |            |     | X       | 1       |
|                  | <i>Rhipidura albiscapa</i>     | Grey Fantail               | X       |  |    |    |        |        |        |        |        |               |         |         |        |        |         |        |         |        | 3       |         | 3       |         |        |        |            |     |         |         |
| Monarchidae      | <i>Grallina cyanoleuca</i>     | Magpie-lark                | X       |  |    | 8  |        |        |        |        |        |               | 2       |         |        | 4      |         |        | 5       | 8      |         |         | 2       | 1       |        |        |            |     | X       | 19      |
| Corvidae         | <i>Corvus orru</i>             | Torresian Crow             | X       |  |    | 2  | 4      | 3      | 3      |        |        |               | 2       |         |        | 1      |         |        |         |        | 13      | 1       |         | 7       |        |        |            |     |         |         |
|                  | <i>Corvus bennetti</i>         | Little Crow                | X       |  |    |    |        |        |        |        | 2      |               | 78      |         | 5      | 6      | 2       |        | 3       |        | 4       |         | 3       | 3       |        |        |            |     | X       | 83      |
|                  | <i>Corvus coronoides</i>       | Australian Raven           | X       |  |    |    |        |        |        |        |        |               |         |         |        |        |         |        |         |        |         |         |         |         |        |        |            |     |         |         |
| Petroicidae      | <i>Microeca fascians</i>       | Jacky Winter               | X       |  |    |    |        |        |        |        |        |               |         |         |        |        |         |        |         |        |         |         |         |         |        |        |            |     |         |         |
|                  | <i>Petroica goodenovii</i>     | Red-capped Robin           | X       |  | 11 | 4  | 2      | 9      | 10     |        |        |               | 1       | 4       | 16     |        | 2       |        |         |        | 6       | 4       |         | 1       |        |        |            |     | X       |         |
|                  | <i>Melanodryas cucullata</i>   | Hooded Robin               | X       |  |    |    | 2      | 1      |        |        |        | 13            | 4       |         | 1      | 5      |         |        |         | 5      |         |         |         |         |        |        |            |     | X       |         |
| Locustellidae    | <i>Cincloramphus cruralis</i>  | Brown Songlark             | X       |  |    |    |        |        |        |        |        |               |         |         |        |        |         |        |         |        |         |         |         |         |        |        |            |     |         |         |
|                  | <i>Cincloramphus mathewsi</i>  | Rufous Songlark            | X       |  |    |    | 1      |        |        |        |        |               |         |         |        |        |         |        | 2       |        |         |         |         |         |        |        |            |     |         |         |
| Hirundinidae     | <i>Hirundo neoxena</i>         | Welcome Swallow            | X       |  | 10 | 6  |        |        | 4      | 2      | 3      |               |         |         |        |        |         |        |         | 2      |         |         |         | 2       |        |        |            |     |         |         |
|                  | <i>Petrochelidon ariel</i>     | Fairy Martin               | X       |  |    |    |        |        |        | 8      |        |               |         |         |        |        |         |        |         | 1      |         |         |         |         |        |        |            |     |         |         |
|                  | <i>Petrochelidon nigricans</i> | Tree Martin                | X       |  |    |    |        |        |        |        |        |               |         |         |        |        |         |        |         |        |         |         |         |         |        |        |            |     |         |         |
|                  | <i>Cheramoeca leucosterna</i>  | White-backed Swallow       | X       |  |    |    |        |        |        |        |        |               |         |         |        | 2      |         |        |         |        |         |         | 2       |         |        |        |            |     |         |         |
| Dicaeidae        | <i>Dicaeum hirundinaceum</i>   | Mistletoebird              | X       |  |    |    |        |        |        |        |        |               |         |         |        |        |         |        |         |        |         |         | 1       |         |        |        |            |     |         |         |
| Estrildidae      | <i>Taeniopygia guttata</i>     | Zebra Finch                | X       |  | 16 | 20 | 2      | 4      | 24     | 2      | 154    | 12            | 20      | 19      | 73     | 2      |         |        | 86      | 119    | 72      |         | 105     | 19      |        |        |            | X   | 100     |         |
| Motacillidae     | <i>Anthus novaeseelandiae</i>  | Australasian Pipit         | X       |  |    |    | 1      |        |        |        |        |               | 3       | 1       |        | 8      |         |        | 1       | 1      |         |         | 1       |         |        |        |            |     | X       |         |
| Mammals          |                                |                            |         |  |    |    |        |        |        |        |        |               |         |         |        |        |         |        |         |        |         |         |         |         |        |        |            |     |         |         |
| Tachyglossidae   | <i>Tachyglossus aculeatus</i>  | Short-beaked Echidna       | X       |  |    |    |        |        |        |        |        |               |         |         |        | 1      |         |        | 1       |        | 1       |         |         |         |        |        |            |     | X       |         |
| Bovidae          | <i>Bos taurus</i>              | Cow                        |         |  |    |    |        |        |        |        |        |               |         |         | 1      | 1      | 1       |        |         | 1      | 1       | 1       |         |         | 1      |        |            |     | X       | 48      |
|                  | <i>Capra hircus</i>            | Goat                       |         |  |    |    |        |        |        |        |        |               |         | 1       | 1      |        | 1       | 1      | 1       |        |         |         | 1       | 1       | 1      |        |            |     | X       | 1       |
| Canidae          | <i>Canis lupus</i>             | Dingo                      |         |  |    |    |        |        |        |        | 1      |               |         |         |        |        |         |        | 1       |        |         | 1       |         |         |        |        |            |     | X       |         |
|                  | <i>Vulpes vulpes</i>           | Red Fox                    | X       |  |    |    |        |        |        |        |        |               |         |         |        |        |         |        |         |        | 1       |         |         | 1       |        | 1      |            |     |         |         |
| Felidae          | <i>Felis catus</i>             | Cat                        |         |  |    |    |        |        |        |        |        |               |         |         |        |        |         |        |         |        | 1       |         |         | 1       | 1      |        |            |     |         |         |
| Emballonuridae   | <i>Taphozous georgianus</i>    | Common Sheath-tail Bat     | X       |  |    |    |        |        |        |        |        |               |         |         |        |        |         |        |         |        |         |         |         |         |        |        |            |     |         |         |
|                  | <i>Taphozous hilli</i>         | Hill's Sheath-tail Bat     | X       |  |    |    |        |        |        |        |        |               |         |         | 1      |        | 1       |        |         | 1      |         |         |         |         | 1      |        | 1          | 1   |         | 1       |
| Molossidae       | <i>Austronomus australis</i>   | White-striped Freetail Bat | X       |  |    |    |        |        |        |        |        |               |         |         |        |        |         |        |         | 1      |         |         |         |         |        |        |            |     | X       |         |
|                  | <i>Ozimops petersi</i>         | Inland Free-tailed Bat     |         |  |    |    |        |        |        |        |        |               |         |         |        |        |         |        |         |        |         |         |         |         |        |        |            |     |         | 1       |
| Vespertilionidae | <i>Chalinolobus gouldii</i>    | Gould's Wattled Bat        |         |  |    | X  |        |        |        |        |        |               |         |         |        |        | 1       |        |         | 1      |         |         |         |         |        |        |            |     | X       | 1       |
|                  | <i>Nyctophilus geoffroyi</i>   | Lesser Long-eared Bat      | X       |  |    | X  | X      |        |        |        |        |               |         |         |        |        |         |        |         | 1      |         |         |         |         |        |        |            |     | X       | 1       |

|               |                                    | Surveys                    | A | B | C      |        |        |        |        | D             |         |         |        |        |         |        |         |        |         |         |         |         |        |        | E          | F   |         |         |
|---------------|------------------------------------|----------------------------|---|---|--------|--------|--------|--------|--------|---------------|---------|---------|--------|--------|---------|--------|---------|--------|---------|---------|---------|---------|--------|--------|------------|-----|---------|---------|
|               |                                    |                            |   |   | Site 5 | Site 1 | Site 3 | Site 6 | Site 4 | Opportunistic | Site 12 | Site 14 | Site 5 | Site 6 | Site 16 | Site 4 | Site 10 | Site 8 | Site 13 | Site 15 | Site 11 | Site 17 | Site 7 | Site 9 | Wilgie Mia | WR3 | Unknown | Unknown |
|               | <i>Scotorepens balstoni</i>        | Inland Broad-nosed Bat     |   |   |        | X      | X      |        |        |               |         |         |        |        |         | 1      |         | 1      |         |         |         |         |        |        |            |     | X       | 1       |
|               | <i>Vespadelus caurinus</i>         | Northern Cave Bat          | X |   |        |        |        |        |        |               |         |         |        |        |         |        |         |        |         |         |         |         |        |        |            |     |         |         |
|               | <i>Vespadelus finlaysoni</i>       | Finlayson's Cave Bat       | X |   |        | X      | X      |        |        |               |         |         |        | 1      |         |        |         | 1      |         |         |         |         | 1      |        | 1          |     | X       |         |
| Dasyuridae    | <i>Antechinomys laniger</i>        | Kultarr                    | X |   |        |        |        |        | 1      | 1             |         |         |        |        |         |        |         | 1      |         |         |         |         |        |        |            |     |         |         |
|               | <i>Antechinomys longicaudatus</i>  | Long-tailed Dunnart        |   | 1 |        |        |        |        |        |               |         |         | 4      | 1      |         | 2      |         |        |         |         |         |         | 1      |        |            |     |         |         |
|               | <i>Pseudantechinus woolleyae</i>   | Woolley's False Antechinus |   |   |        |        |        |        |        | 2             | 5       | 1       |        |        |         | 7      | 4       |        |         |         |         | 1       |        |        | 25         |     | X       | 35      |
|               | <i>Sminthopsis crassicaudata</i>   | Fat-tailed Dunnart         | X |   |        |        |        |        |        |               |         |         |        |        |         |        |         |        |         |         |         |         |        |        |            |     |         |         |
|               | <i>Sminthopsis dolichura</i>       | Little Long-tailed Dunnart |   |   |        |        | 1      |        |        |               |         | 1       |        |        |         |        |         |        |         |         |         |         | 1      |        |            |     |         |         |
|               | <i>Sminthopsis macroura</i>        | Stripe-faced Dunnart       |   |   | 12     | 10     | 1      |        | 5      |               |         | 10      |        |        |         |        | 1       | 1      | 2       | 5       |         |         |        |        |            |     |         |         |
| Macropodidae  | <i>Osphranter robustus</i>         | Euro                       | X |   |        |        |        |        |        | 1             | 1       |         | 6      | 1      | 7       | 7      | 2       | 2      |         | 1       | 2       |         |        | 1      |            |     | X       |         |
|               | <i>Osphranter rufus</i>            | Red Kangaroo               | X |   |        |        | 1      |        | 9      |               |         |         |        |        | 2       |        |         | 1      |         |         |         |         |        | 1      |            |     | X       | 44      |
| Phalangeridae | <i>Trichosurus vulpecula</i>       | Common Brushtail Possum    | X |   |        |        |        |        |        |               |         |         |        |        |         |        |         |        |         |         |         |         |        |        |            |     |         |         |
| Leporidae     | <i>Oryctolagus cuniculus</i>       | Rabbit                     |   |   |        |        |        |        |        |               |         |         |        |        | 1       |        | 1       | 1      |         |         |         | 1       |        |        |            |     | X       | 2       |
| Thylacomyidae | <i>Macrotis lagotis</i>            | Bilby                      | X |   |        |        |        |        |        |               |         |         |        |        |         |        |         |        |         |         |         |         |        |        |            |     |         |         |
| Muridae       | <i>Mus musculus</i>                | House Mouse                |   |   |        |        |        |        | 1      | 9             |         |         | 5      | 14     | 2       | 5      | 3       | 51     |         |         | 1       |         | 13     |        |            |     |         |         |
|               | <i>Notomys alexis</i>              | Spinifex Hopping Mouse     | X |   |        |        |        |        |        |               |         |         |        |        | 2       |        |         |        | 3       | 12      |         | 2       |        |        |            |     |         |         |
|               | <i>Pseudomys hermannsburgensis</i> | Sandy Inland Mouse         | X |   |        |        |        |        |        |               |         | 3       | 4      | 7      |         | 6      |         |        | 3       |         |         |         | 12     |        |            |     |         |         |

A Atlas of Living Australia

B DBCA's threatened species database

C Ecologia Environment (2012) Karbar Station Solar Energy Project: Vertebrate Fauna Assessment, Unpublished report for Hyperion Energy, Perth.

D Ecologia Environment (2009) Weld Range Vertebrate Fauna Assessment. Unpublished report for Sinosteel Midwest Corporation Pty Ltd, Perth.

E Biologic (2018) Gabanintha Vanadium Project: Targeted Vertebrate Fauna & SRE Assessment. Unpublished report for Technology Metals Australia Limited, Perth.

F Integrate Sustainability Pty Ltd (2021) Biological Survey Report Yarrabubba Iron Vanadium Project, Unpublished report for Technology Metals Australia Ltd, Perth.

|                  |                                    |                                   | Surveys |         |        |        |        |        |         |         |        |         |        |         |        |        |        |         | A        |         |  |  |  |  |  |  |  |  |  |  |  |  |  |  | B |
|------------------|------------------------------------|-----------------------------------|---------|---------|--------|--------|--------|--------|---------|---------|--------|---------|--------|---------|--------|--------|--------|---------|----------|---------|--|--|--|--|--|--|--|--|--|--|--|--|--|--|---|
|                  |                                    |                                   | Site 12 | Site 10 | Site 8 | Site 9 | Site 4 | Site 1 | Site 13 | Site 11 | Site 2 | Site 15 | Site 5 | Site 14 | Site 7 | Site 6 | Site 3 | Site 16 | Avifauna | Unknown |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   |
| Family           | Species                            | Common names                      |         |         |        |        |        |        |         |         |        |         |        |         |        |        |        |         |          |         |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   |
| Reptiles         |                                    |                                   |         |         |        |        |        |        |         |         |        |         |        |         |        |        |        |         |          |         |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   |
| Agamidae         | <i>Ctenophorus caudicinctus</i>    | Ring-tailed Dragon                | 1       |         |        |        |        |        |         |         |        |         |        |         |        |        |        |         |          |         |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   |
|                  | <i>Ctenophorus reticulatus</i>     | Western Netted Dragon             |         | 2       | 1      | 1      | 4      | 1      | 1       | 5       | 3      | 3       |        |         |        |        |        |         |          |         |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   |
|                  | <i>Ctenophorus scutulatus</i>      | Lozenge-marked Dragon             | 3       | 3       |        |        | 1      | 2      | 1       | 3       | 2      |         | 1      | 3       |        |        |        |         |          |         |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   |
|                  | <i>Diporiphora amphiboluroides</i> | Mulga Dragon                      |         |         |        |        |        |        |         |         |        |         |        |         |        |        |        |         |          |         |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   |
|                  | <i>Pogona minor</i>                | Western Bearded Dragon            |         |         |        |        |        |        |         |         |        |         |        |         |        |        |        |         |          |         |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   |
|                  | <i>Tympanocryptis cephalus</i>     | Pebble Dragon                     |         |         |        |        |        |        |         |         |        |         |        |         |        |        |        |         |          |         |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   |
| Carphodactylidae | <i>Nephrurus vertebralis</i>       | Midline Knob-tail                 |         | 1       | 1      |        |        | 2      | 2       |         |        | 2       | 4      | 3       | 3      | 1      |        |         |          |         |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   |
|                  | <i>Nephrurus wheeleri</i>          | Banded Knob-tail                  |         |         |        |        | 1      |        |         |         |        |         | 1      |         |        |        |        |         |          |         |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   |
| Diplodactylidae  | <i>Diplodactylus pulcher</i>       | Beautiful Gecko                   | 5       | 4       |        | 6      | 4      | 1      | 1       | 4       | 3      |         | 4      | 3       |        | 5      | 2      |         |          |         |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   |
|                  | <i>Lucasium squarrosum</i>         | Mottled Ground Gecko              |         |         |        |        |        | 1      |         |         |        |         |        |         |        |        |        |         |          |         |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   |
|                  | <i>Rhynchoedura ornata</i>         | Beaked Gecko                      | 1       | 1       | 13     | 2      |        | 2      | 2       | 4       |        | 11      | 1      | 4       | 2      | 1      |        |         |          |         |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   |
|                  | <i>Strophurus strophurus</i>       | Western Spiny-tailed Gecko        |         |         |        |        |        |        | 1       |         |        |         |        | 1       |        |        |        |         |          |         |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   |
|                  | <i>Strophurus wellingtonae</i>     | Western Shield Spiny-tailed Gecko | 1       |         |        |        |        |        |         | 2       |        |         | 1      |         |        | 1      |        |         |          |         |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   |
| Elapidae         | <i>Suta monachus</i>               | Hooded Snake                      |         |         |        |        |        |        |         |         |        |         |        |         |        |        |        |         |          |         |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   |
| Gekkonidae       | <i>Gehyra punctata</i>             | Spotted Dtella                    |         |         |        |        |        |        |         |         |        |         |        |         |        |        |        |         |          |         |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   |
|                  | <i>Gehyra variegata</i>            | Variegated Gehyra                 | 3       | 3       | 3      | 2      | 5      | 5      | 1       |         |        | 3       | 4      |         | 1      |        | 5      |         |          |         |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   |
|                  | <i>Heteronotia binoei</i>          | Bynoe's Gecko                     | 3       | 6       | 7      | 3      | 3      |        | 4       | 9       |        | 2       | 3      | 5       | 3      | 2      | 1      |         |          |         |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   |
| Pygopodidae      | <i>Lialis burtonis</i>             | Burton's Legless Lizard           |         |         |        |        |        |        |         |         |        |         |        |         |        |        |        |         |          |         |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   |
|                  | <i>Pygopus nigriceps</i>           | Western Hooded Scaly-foot         |         |         | 1      |        |        |        |         |         |        |         |        |         |        |        |        |         |          |         |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   |
| Pythonidae       | <i>Antaresia perthensis</i>        | Pygmy Python                      |         |         |        |        |        |        |         |         |        |         |        |         |        |        |        |         |          |         |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   |
| Scincidae        | <i>Ctenotus leonhardii</i>         | Leonhardi's Ctenotus              |         | 1       |        | 1      |        |        |         | 1       |        |         |        |         |        |        |        |         |          |         |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   |
|                  | <i>Ctenotus schomburgkii</i>       | Barred Wedgesnout Ctenotus        |         | 2       | 1      |        |        |        |         | 4       |        | 2       |        | 6       |        | 2      |        |         |          |         |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   |
|                  | <i>Ctenotus severus</i>            | Stern Ctenotus                    |         |         |        |        |        |        |         |         |        |         |        |         |        |        |        |         |          |         |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   |
|                  | <i>Ctenotus uber</i>               | Spotted Ctenotus                  |         |         | 1      | 2      |        | 1      |         |         | 3      | 1       |        |         |        | 1      | 1      |         |          |         |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   |
|                  | <i>Egernia depressa</i>            | Southern Pygmy Spiny-tailed Skink |         |         |        |        |        | 1      |         |         |        |         | 2      |         | 3      |        | 2      |         |          |         |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   |
|                  | <i>Eremiascincus richardsonii</i>  | Broad-banded Sand-swimmer         |         |         | 1      |        |        | 2      | 2       |         | 1      |         |        |         |        |        |        |         |          |         |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   |
|                  | <i>Lerista eupoda</i>              | West Coast Mulga Slider           |         |         |        |        |        |        |         |         |        |         |        |         |        |        |        |         |          |         |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   |
|                  | <i>Lerista macropisthopus</i>      | Unpatterned Robust Slider         |         |         |        |        |        |        |         |         |        |         |        |         |        |        |        |         |          |         |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   |
|                  | <i>Lerista nichollsi</i>           | Inland Broad-blazed Slider        |         |         |        |        |        |        |         |         |        |         |        |         |        |        |        |         |          |         |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   |
|                  | <i>Lerista timida</i>              | Timid Slider                      |         |         |        | 2      |        |        |         |         |        |         |        | 1       |        |        |        |         |          |         |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   |
|                  | <i>Menetia greyii</i>              | Common Dwarf Skink                |         |         |        | 1      | 3      |        |         |         | 1      | 1       |        |         |        | 2      | 1      |         |          |         |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   |
| Varanidae        | <i>Varanus caudolineatus</i>       | Stripe-tailed Monitor             | 1       |         |        | 1      |        |        |         |         |        |         |        | 1       | 1      |        | 1      |         |          |         |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   |
|                  | <i>Varanus panoptes</i>            | Yellow-spotted Monitor            |         |         |        |        |        |        |         |         |        |         |        |         |        |        |        | 7       |          |         |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   |
| Birds            |                                    |                                   |         |         |        |        |        |        |         |         |        |         |        |         |        |        |        |         |          |         |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   |
| Casuariidae      | <i>Dromaius novaehollandiae</i>    | Emu                               |         |         |        |        |        |        |         |         |        |         |        |         |        |        |        | 2       |          | X       |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   |
| Anatidae         | <i>Chenonetta jubata</i>           | Australian Wood Duck              |         |         |        |        |        |        |         |         |        |         |        |         |        |        |        |         | 1        | X       |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   |

[illegible]

|                   |                                   |                                |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   |   |  |   |     |    |   |
|-------------------|-----------------------------------|--------------------------------|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|---|---|--|---|-----|----|---|
|                   | <i>Psephotus varius</i>           | Mulga Parrot                   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   |   |  |   | 23  | X  |   |
|                   | <i>Melopsittacus undulatus</i>    | Budgerigar                     |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   |   |  |   | 285 | X  |   |
| Ptilonorhynchidae | <i>Chlamydera guttata</i>         | Western Bowerbird              |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   |   |  |   | 3   | X  |   |
| Climacteridae     | <i>Climacteris affinis</i>        | White-browed Treecreeper       |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   |   |  |   | 4   |    |   |
| Maluridae         | <i>Malurus assimilis</i>          | Purple-backed Fairywren        |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   |   |  |   | 7   |    |   |
|                   | <i>Malurus lamberti</i>           | Variiegated Fairywren          |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   |   |  |   |     | X  |   |
|                   | <i>Malurus splendens</i>          | Splendid Fairywren             |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   |   |  |   | 17  | X  |   |
|                   | <i>Malurus leucopterus</i>        | White-winged Fairywren         |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   |   |  |   |     | X  |   |
| Meliphagidae      | <i>Purnella albifrons</i>         | White-fronted Honeyeater       |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   |   |  |   |     |    |   |
|                   | <i>Manorina flavigula</i>         | Yellow-throated Miner          |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   |   |  |   | 3   | X  |   |
|                   | <i>Acanthagenys rufogularis</i>   | Spiny-cheeked Honeyeater       |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   |   |  |   | 33  | X  |   |
|                   | <i>Gavicalis virescens</i>        | Singing Honeyeater             |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   | 1 |  |   | 23  | X  |   |
|                   | <i>Ptilotula penicillata</i>      | White-plumed Honeyeater        |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   |   |  |   |     | X  |   |
|                   | <i>Epthianura tricolor</i>        | Crimson Chat                   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   |   |  |   | 2   | X  |   |
|                   | <i>Lichmera indistincta</i>       | Brown Honeyeater               |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   |   |  |   |     | X  |   |
| Acanthizidae      | <i>Pyrrholaemus brunneus</i>      | Redthroat                      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   |   |  |   | 5   | X  |   |
|                   | <i>Acanthiza apicalis</i>         | Inland Thornbill               |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   |   |  |   | 5   | X  |   |
|                   | <i>Acanthiza chrysorrhoa</i>      | Yellow-rumped Thornbill        |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   |   |  |   |     | X  |   |
|                   | <i>Acanthiza uropygialis</i>      | Chestnut-rumped Thornbill      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   |   |  |   | 47  | X  |   |
|                   | <i>Acanthiza robustirostris</i>   | Slaty-backed Thornbill         |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   |   |  |   | 46  | X  |   |
|                   | <i>Gerygone fusca</i>             | Western Gerygone               |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   |   |  |   |     | X  |   |
|                   | <i>Aphelocephala leucopsis</i>    | Southern Whiteface             |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   |   |  |   | 4   | X  |   |
|                   | <i>Aphelocephala nigricincta</i>  | Banded Whiteface               |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   |   |  |   |     | X  |   |
| Pomatostomidae    | <i>Pomatostomus temporalis</i>    | Grey-crowned Babbler           |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   |   |  |   | 18  | X  |   |
|                   | <i>Pomatostomus superciliosus</i> | White-browed Babbler           |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 1 |   |  | 2 | 42  | X  |   |
| Cinclosomatidae   | <i>Cinclosoma clarum</i>          | Copperback Quail-thrush        |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   |   |  |   |     | 2  |   |
|                   | <i>Cinclosoma castaneothorax</i>  | Chestnut-breasted Quail-thrush |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   |   |  |   |     | X  |   |
|                   | <i>Cinclosoma marginatum</i>      | Western Quail-thrush           |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   |   |  | 4 |     | X  |   |
| Campephagidae     | <i>Coracina maxima</i>            | Ground Cuckooshrike            |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   |   |  |   |     | X  |   |
|                   | <i>Coracina novaehollandiae</i>   | Black-faced Cuckooshrike       |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   |   |  |   |     | X  |   |
|                   | <i>Lalage tricolor</i>            | White-winged Triller           |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   |   |  |   |     | X  |   |
| Neosittidae       | <i>Daphoenositta chrysoptera</i>  | Varied Sittella                |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   |   |  |   |     | X  |   |
| Oreoicidae        | <i>Oreica gutturalis</i>          | Crested Bellbird               |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   |   |  | 6 | 46  | X  |   |
| Pachycephalidae   | <i>Colluricincla harmonica</i>    | Grey Shrikethrush              |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   |   |  |   | 23  | X  |   |
|                   | <i>Pachycephala rufiventris</i>   | Rufous Whistler                |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   |   |  |   | 55  | X  |   |
| Artamidae         | <i>Artamus personatus</i>         | Masked Woodswallow             |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   |   |  |   | 7   | X  |   |
|                   | <i>Artamus superciliosus</i>      | White-browed Woodswallow       |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   |   |  |   |     |    |   |
|                   | <i>Artamus cinereus</i>           | Black-faced Woodswallow        |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   |   |  | 3 | 3   | X  |   |
|                   | <i>Artamus minor</i>              | Little Woodswallow             |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   |   |  |   |     | X  |   |
|                   | <i>Cracticus torquatus</i>        | Grey Butcherbird               |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   |   |  | 1 | 4   | X  |   |
|                   | <i>Cracticus nigrogularis</i>     | Pied Butcherbird               |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   |   |  |   | 1   | X  |   |
|                   | <i>Gymnorhina tibicen</i>         | Australian Magpie              |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   |   |  | 1 |     | X  |   |
| Rhipiduridae      | <i>Rhipidura leucophrys</i>       | Willie Wagtail                 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   |   |  | 4 | 16  | X  |   |
| Monarchidae       | <i>Grallina cyanoleuca</i>        | Magpie-lark                    |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   |   |  |   | 1   | X  |   |
| Corvidae          | <i>Corvus orru</i>                | Torresian Crow                 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   |   |  |   | 64  | 23 | X |

|                  |                                    |                            |   |   |   |   |   |   |   |   |  |   |   |  |   |   |   |     |   |
|------------------|------------------------------------|----------------------------|---|---|---|---|---|---|---|---|--|---|---|--|---|---|---|-----|---|
|                  | <i>Corvus bennetti</i>             | Little Crow                |   |   |   |   |   |   |   |   |  |   |   |  |   |   |   |     | X |
| Petroicidae      | <i>Microeca fascians</i>           | Jacky Winter               |   |   |   |   |   |   |   |   |  |   |   |  |   |   |   |     | X |
|                  | <i>Petroica goodenovii</i>         | Red-capped Robin           |   |   |   |   |   |   |   |   |  |   |   |  |   |   | 6 | 47  | X |
|                  | <i>Melanodryas cucullata</i>       | Hooded Robin               |   |   |   |   |   |   |   |   |  |   |   |  |   |   |   | 3   | X |
| Locustellidae    | <i>Cincloramphus mathewsi</i>      | Rufous Songlark            |   |   |   |   |   |   |   |   |  |   |   |  |   |   |   |     | X |
| Hirundinidae     | <i>Hirundo neoxena</i>             | Welcome Swallow            |   |   |   |   |   |   |   |   |  |   |   |  |   |   |   |     | X |
|                  | <i>Petrochelidon nigricans</i>     | Tree Martin                |   |   |   |   |   |   |   |   |  |   |   |  |   |   |   | 2   |   |
| Dicaeidae        | <i>Dicaeum hirundinaceum</i>       | Mistletoebird              |   |   |   |   |   |   |   |   |  |   |   |  |   |   |   |     | X |
| Estrildidae      | <i>Taeniopygia guttata</i>         | Zebra Finch                |   |   |   |   |   |   |   |   |  |   |   |  |   |   |   | 261 | X |
| Motacillidae     | <i>Anthus novaeseelandiae</i>      | Australasian Pipit         |   |   |   |   |   |   |   |   |  |   |   |  |   |   |   |     | X |
| Mammals          |                                    |                            |   |   |   |   |   |   |   |   |  |   |   |  |   |   |   |     |   |
| Tachyglossidae   | <i>Tachyglossus aculeatus</i>      | Short-beaked Echidna       |   |   |   |   |   |   |   |   |  |   |   |  |   |   |   | 5   | X |
| Bovidae          | <i>Bos taurus</i>                  | Cow                        |   |   |   |   |   |   |   |   |  |   |   |  |   |   |   |     | X |
|                  | <i>Capra hircus</i>                | Goat                       |   |   |   |   |   |   |   |   |  |   |   |  |   |   |   |     | X |
| Canidae          | <i>Canis lupus</i>                 | Dingo                      |   |   |   |   |   |   |   |   |  |   |   |  |   |   |   | 3   |   |
|                  | <i>Vulpes vulpes</i>               | Red Fox                    |   |   |   |   |   |   |   |   |  |   |   |  |   |   |   |     | X |
| Felidae          | <i>Felis catus</i>                 | Cat                        |   |   |   |   |   |   |   |   |  |   |   |  |   |   |   | 10  | X |
| Emballonuridae   | <i>Taphozous hilli</i>             | Hill's Sheath-tail Bat     |   |   |   |   |   |   |   |   |  |   |   |  |   |   |   | X   | X |
| Molossidae       | <i>Austronomus australis</i>       | White-striped Freetail Bat |   |   |   |   |   |   |   |   |  |   |   |  |   |   |   | X   | X |
|                  | <i>Ozimops petersi</i>             | Inland Free-tailed Bat     |   |   |   |   |   |   |   |   |  |   |   |  |   |   |   | X   | X |
| Vespertilionidae | <i>Chalinolobus gouldii</i>        | Gould's Wattled Bat        |   |   |   |   |   |   |   |   |  |   |   |  |   |   |   | X   | X |
|                  | <i>Nyctophilus geoffroyi</i>       | Lesser Long-eared Bat      |   |   |   |   |   |   |   |   |  |   |   |  |   |   |   | X   | X |
|                  | <i>Scotorepens balstoni</i>        | Inland Broad-nosed Bat     |   |   |   |   |   |   |   |   |  |   |   |  |   |   |   | X   | X |
|                  | <i>Vespadelus baverstocki</i>      | Inland Forest Bat          |   |   |   |   |   |   |   |   |  |   |   |  |   |   |   | X   |   |
|                  | <i>Vespadelus finlaysoni</i>       | Finlayson's Cave Bat       |   |   |   |   |   |   |   |   |  |   |   |  |   |   |   | X   | X |
| Dasyuridae       | <i>Antechinomys laniger</i>        | Kultarr                    |   |   |   |   |   |   |   |   |  |   |   |  |   |   |   |     |   |
|                  | <i>Antechinomys longicaudatus</i>  | Long-tailed Dunnart        |   |   |   |   |   |   |   |   |  |   |   |  |   |   |   |     | X |
|                  | <i>Pseudantechinus woolleyae</i>   | Woolley's False Antechinus |   |   |   |   |   |   |   |   |  |   |   |  |   |   |   | 1   | X |
|                  | <i>Sminthopsis dolichura</i>       | Little Long-tailed Dunnart |   |   |   |   |   |   |   |   |  |   |   |  |   |   |   |     |   |
|                  | <i>Sminthopsis macroura</i>        | Stripe-faced Dunnart       |   |   | 1 | 1 |   | 1 | 1 |   |  | 6 |   |  | 1 |   | 2 |     | X |
|                  | <i>Sminthopsis ooldea</i>          | Ooldea Dunnart             | 2 |   |   |   | 1 |   |   |   |  | 1 |   |  | 1 |   |   |     |   |
| Macropodidae     | <i>Osphranter robustus</i>         | Euro                       |   |   |   |   |   |   |   |   |  |   |   |  |   |   |   | 12  | X |
|                  | <i>Osphranter rufus</i>            | Red Kangaroo               |   |   |   |   |   |   |   |   |  |   |   |  |   |   |   | 45  | X |
| Leporidae        | <i>Oryctolagus cuniculus</i>       | Rabbit                     |   |   |   |   |   |   |   |   |  |   |   |  |   |   |   | 7   | X |
| Muridae          | <i>Mus musculus</i>                | House Mouse                |   |   |   |   |   |   |   |   |  |   |   |  |   |   |   |     |   |
|                  | <i>Notomys alexis</i>              | Spinifex Hopping Mouse     |   | 6 | 1 |   |   | 3 |   |   |  | 8 | 2 |  |   | 1 |   | 1   | X |
|                  | <i>Pseudomys desertor</i>          | Desert Mouse               |   |   |   |   |   |   |   |   |  |   |   |  |   |   |   |     | X |
|                  | <i>Pseudomys hermannsburgensis</i> | Sandy Inland Mouse         |   |   | 1 |   |   |   | 3 | 3 |  |   | 1 |  | 1 |   |   |     | X |

A Terrestrial Ecosystems (2024) Phase 1 of a Detailed Fauna Survey and Assessment for the Yarrabubba Project Area, Unpublished report for KOP Ventures Pty Ltd, Perth

B Biologic (2020) Australian Vanadium Project Level 2 Vertebrate and SRE Invertebrate Fauna Survey. Unpublished report for Australian Vanadium Ltd, Perth.

# **Appendix C.**

## **Definitions of Significant Fauna under the *WA Biodiversity Conservation Act 2016* and Priority Species**

Basic and Targeted Vertebrate Fauna Survey and Assessment  
Reedy Gold Project



## C.1 DEFINITIONS OF SIGNIFICANT FAUNA UNDER THE WA BIODIVERSITY CONSERVATION ACT 2016

Threatened, Extinct and Specially Protected fauna or flora<sup>1</sup> are species<sup>2</sup> which have been adequately searched for and are deemed to be, in the wild, threatened, extinct or in need of special protection, and have been gazetted as such. The *Wildlife Conservation (Specially Protected Fauna) Notice 2018* and the *Wildlife Conservation (Rare Flora) Notice 2018* have been transitioned under regulations 170, 171 and 172 of the *Biodiversity Conservation Regulations 2018* to be the lists of Threatened, Extinct and Specially Protected species under Part 2 of the *Biodiversity Conservation Act 2016*. Categories of Threatened, Extinct and Specially Protected fauna and flora are:

### **T Threatened Species**

Listed by order of the Minister as Threatened in the category of critically endangered, endangered or vulnerable under section 19(1), or is a rediscovered species to be regarded as threatened species under section 26(2) of the *Biodiversity Conservation Act 2016* (BC Act).

**Threatened fauna** is that subset of 'Specially Protected Fauna' listed under schedules 1 to 3 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018* for Threatened Fauna.

**Threatened flora** is that subset of 'Rare Flora' listed under schedules 1 to 3 of the *Wildlife Conservation (Rare Flora) Notice 2018* for Threatened Flora.

The assessment of the conservation status of these species is based on their national extent and ranked according to their level of threat using IUCN Red List categories and criteria as detailed below.

### **CR Critically endangered species**

Threatened species considered to be "*facing an extremely high risk of extinction in the wild in the immediate future, as determined in accordance with criteria set out in the ministerial guidelines*".

Listed as critically endangered under section 19(1)(a) of the BC Act in accordance with the criteria set out in section 20 and the ministerial guidelines. Published under schedule 1 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018* for critically endangered fauna or the *Wildlife Conservation (Rare Flora) Notice 2018* for critically endangered flora.

---

<sup>1</sup> The definition of flora includes algae, fungi and lichens

<sup>2</sup> Species includes all taxa (plural of taxon - a classificatory group of any taxonomic rank, e.g. a family, genus, species or any infraspecific category i.e. subspecies or variety, or a distinct population).

## **EN    Endangered species**

Threatened species considered to be *"facing a very high risk of extinction in the wild in the near future, as determined in accordance with criteria set out in the ministerial guidelines"*.

Listed as endangered under section 19(1)(b) of the BC Act in accordance with the criteria set out in section 21 and the ministerial guidelines. Published under schedule 2 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018* for endangered fauna or the *Wildlife Conservation (Rare Flora) Notice 2018* for endangered flora.

## **VU    Vulnerable species**

Threatened species considered to be *"facing a high risk of extinction in the wild in the medium-term future, as determined in accordance with criteria set out in the ministerial guidelines"*.

Listed as vulnerable under section 19(1)(c) of the BC Act in accordance with the criteria set out in section 22 and the ministerial guidelines. Published under schedule 3 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018* for vulnerable fauna or the *Wildlife Conservation (Rare Flora) Notice 2018* for vulnerable flora.

## **Extinct Species**

Listed by order of the Minister as extinct under section 23(1) of the BC Act as extinct or extinct in the wild.

## **EX    Extinct species**

Species where *"there is no reasonable doubt that the last member of the species has died"*, and listing is otherwise in accordance with the ministerial guidelines (section 24 of the BC Act).

Published as presumed extinct under schedule 4 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018* for extinct fauna or the *Wildlife Conservation (Rare Flora) Notice 2018* for extinct flora.

## **EW    Extinct in the wild species**

Species that *"is known only to survive in cultivation, in captivity or as a naturalised population well outside its past range; and it has not been recorded in its known habitat or expected habitat, at appropriate seasons, anywhere in its past range, despite surveys over a time frame appropriate to its life cycle and form"*, and listing is otherwise in accordance with the ministerial guidelines (section 25 of the BC Act).

Currently there are no threatened fauna or threatened flora species listed as extinct in the pwild. If listing of a species as extinct in the wild occurs, then a schedule will be added to the applicable notice.

## **Specially Protected Species**

Listed by order of the Minister as specially protected under section 13(1) of the BC Act. Meeting one or more of the following categories: species of special conservation interest; migratory species; cetaceans; species subject to international agreement; or species otherwise in need of special protection.

Species that are listed as threatened species (critically endangered, endangered or vulnerable) or extinct species under the BC Act cannot also be listed as Specially Protected species.

## **MI Migratory birds protected under an international agreement**

Fauna that periodically or occasionally visit Australia or an external Territory or the exclusive economic zone; or the species is subject of an international agreement that relates to the protection of migratory species and that binds the Commonwealth; and listing is otherwise in accordance with the ministerial guidelines (section 15 of the BC Act).

Includes birds that are subject to an agreement between the government of Australia and the governments of Japan (JAMBA), China (CAMBA) and The Republic of Korea (ROKAMBA), and fauna subject to the *Convention on the Conservation of Migratory Species of Wild Animals* (Bonn Convention), an environmental treaty under the United Nations Environment Program. Migratory species listed under the BC Act are a subset of the migratory animals, that are known to visit Western Australia, protected under the international agreements or treaties, excluding species that are listed as Threatened species.

Published as migratory birds protected under an international agreement under schedule 5 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018*.

## **CD Species of special conservation interest (conservation dependant fauna)**

Fauna of special conservation need being species dependent on ongoing conservation intervention to prevent it becoming eligible for listing as threatened, and listing is otherwise in accordance with the ministerial guidelines (section 14 of the BC Act).

Published as conservation dependent fauna under schedule 6 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018*.

## **OS Other specially protected species**

Fauna otherwise in need of special protection to ensure their conservation, and listing is otherwise in accordance with the ministerial guidelines (section 18 of the BC Act).

Published as other specially protected fauna under schedule 7 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018*.

## **P Priority species**

Possibly threatened species that do not meet survey criteria, or are otherwise data deficient, are added to the Priority Fauna or Priority Flora Lists under Priorities 1, 2 or 3. These three categories are ranked in order of priority for survey and evaluation of conservation status so that consideration can be given to their declaration as threatened fauna or flora.

Species that are adequately known, are rare but not threatened, or meet criteria for near threatened, or that have been recently removed from the threatened species or other specially protected fauna lists for other than taxonomic reasons, are placed in Priority 4. These species require regular monitoring.

Assessment of Priority codes is based on the Western Australian distribution of the species, unless the distribution in WA is part of a contiguous population extending into adjacent States, as defined by the known spread of locations

#### **P1 Priority 1: Poorly-known species**

Species that are known from one or a few locations (generally five or less) which are potentially at risk. All occurrences are either: very small; or on lands not managed for conservation, e.g. agricultural or pastoral lands, urban areas, road and rail reserves, gravel reserves and active mineral leases; or otherwise under threat of habitat destruction or degradation. Species may be included if they are comparatively well known from one or more locations but do not meet adequacy of survey requirements and appear to be under immediate threat from known threatening processes. Such species are in urgent need of further survey.

#### **P2 Priority 2: Poorly-known species**

Species that are known from one or a few locations (generally five or less), some of which are on lands managed primarily for nature conservation, e.g. national parks, conservation parks, nature reserves and other lands with secure tenure being managed for conservation. Species may be included if they are comparatively well known from one or more locations but do not meet adequacy of survey requirements and appear to be under threat from known threatening processes. Such species are in urgent need of further survey.

#### **P3 Priority 3: Poorly-known species**

Species that are known from several locations, and the species does not appear to be under imminent threat, or from few but widespread locations with either large population size or significant remaining areas of apparently suitable habitat, much of it not under imminent threat. Species may be included if they are comparatively well known from several locations but do not meet adequacy of survey requirements and known threatening processes exist that could affect them. Such species are in need of further survey.

#### **P4 Priority 4: Rare, Near Threatened and other species in need of monitoring**

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

(b) Near Threatened. Species that are considered to have been adequately surveyed and that are close to qualifying for vulnerable but are not listed as Conservation Dependent.

(c) Species that have been removed from the list of threatened species during the past five years for reasons other than taxonomy.

# Appendix D.

## Fauna habitat assessment results

Basic and Targeted Vertebrate Fauna Survey and Assessment  
Reedy Gold Project



Date: 30/06/2024

Habitat Assessment #: 1

Observer: Tom Raymond

GDA94 ; 625581 mE 7000442 mN

Fire History: >5 years

Landform: Drainage

Soil Type: Sandy clay

Habitat Quality: Disturbed

Surface: Pebbles, Cobbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 30/06/2024

Habitat Assessment #: 2

Observer: Tom Raymond

GDA94 ; 625830 mE 7000434 mN

Fire History: >5 years

Landform: Flat plain

Soil Type: Sandy clay

Habitat Quality: Disturbed

Surface: Pebbles, Cobbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 30/06/2024

Habitat Assessment #: 3

Observer: Tom Raymond

GDA94 ; 626073 mE 7000436 mN

Fire History: >5 years

Landform: Flat plain

Soil Type: Sandy clay

Habitat Quality: Disturbed

Surface: Pebbles, Cobbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 30/06/2024

Habitat Assessment #: 4

Observer: Tom Raymond

GDA94 ; 626340 mE 7000659 mN

Fire History: >5 years

Landform: Flat plain

Soil Type: Sandy clay

Habitat Quality: Disturbed

Surface: Sand, Pebbles, Cobbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 30/06/2024

Habitat Assessment #: 5

Observer: Tom Raymond

GDA94 ; 626096 mE 7000672 mN

Fire History: >5 years

Landform: Flat plain

Soil Type: Sandy clay

Habitat Quality: Disturbed

Surface: Pebbles, Cobbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 30/06/2024

Habitat Assessment #: 6

Observer: Tom Raymond

GDA94 ; 625854 mE 7000668 mN

Fire History: >5 years

Landform: Flat plain

Soil Type: Sandy clay

Habitat Quality: Disturbed

Surface: Pebbles, Cobbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 30/06/2024

Habitat Assessment #: 7

Observer: Tom Raymond

GDA94 ; 625663 mE 7000672 mN

Fire History: >5 years

Landform: Slope

Soil Type: Sandy clay

Habitat Quality: Good

Surface: Pebbles, Cobbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 30/06/2024

Habitat Assessment #: 8

Observer: Tom Raymond

GDA94 ; 625849 mE 7000910 mN

Fire History: >5 years

Landform: Slope

Soil Type: Sandy clay

Habitat Quality: Disturbed

Surface: Sand, Pebbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 30/06/2024

Habitat Assessment #: 9

Observer: Tom Raymond

GDA94 ; 626085 mE 7000929 mN

Fire History: >5 years

Landform: Flat plain

Soil Type: Sandy clay

Habitat Quality: Disturbed

Surface: Sand, Pebbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 30/06/2024

Habitat Assessment #: 10

Observer: Tom Raymond

GDA94 ; 626340 mE 7000921 mN

Fire History: >5 years

Landform: Flat plain

Soil Type: Sandy clay

Habitat Quality: Disturbed

Surface: Sand, Pebbles, Cobbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 30/06/2024

Habitat Assessment #: 11

Observer: Tom Raymond

GDA94 ; 626511 mE 7001182 mN

Fire History: >5 years

Landform: Flat plain

Soil Type: Sandy clay

Habitat Quality: Disturbed

Surface: Sand, Pebbles, Cobbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 30/06/2024

Habitat Assessment #: 12

Observer: Tom Raymond

GDA94 ; 626344 mE 7001178 mN

Fire History: >5 years

Landform: Flat plain

Soil Type: Sandy clay

Habitat Quality: Disturbed

Surface: Sand, Pebbles, Cobbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 30/06/2024

Habitat Assessment #: 13

Observer: Tom Raymond

GDA94 ; 626124 mE 7001150 mN

Fire History: >5 years

Landform: Flat plain

Soil Type: Sandy clay

Habitat Quality: Good

Surface: Sand, Pebbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 30/06/2024

Habitat Assessment #: 14

Observer: Tom Raymond

GDA94 ; 625882 mE 7001177 mN

Fire History: >5 years

Landform: Flat plain

Soil Type: Sandy clay

Habitat Quality: Good

Surface: Sand, Pebbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 30/06/2024

Habitat Assessment #: 15

Observer: Tom Raymond

GDA94 ; 625982 mE 7001395 mN

Fire History: >5 years

Landform: Flat plain

Soil Type: Sandy clay

Habitat Quality: Good

Surface: Sand, Pebbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 30/06/2024

Habitat Assessment #: 16

Observer: Tom Raymond

GDA94 ; 626100 mE 7001431 mN

Fire History: >5 years

Landform: Flat plain

Soil Type: Sandy clay

Habitat Quality: Good

Surface: Sand, Pebbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 30/06/2024

Habitat Assessment #: 17

Observer: Tom Raymond

GDA94 ; 626360 mE 7001412 mN

Fire History: >5 years

Landform: Flat plain

Soil Type: Sandy clay

Habitat Quality: Good

Surface: Sand, Pebbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 30/06/2024

Habitat Assessment #: 18

Observer: Tom Raymond

GDA94 ; 626538 mE 7001478 mN

Fire History: >5 years

Landform: Flat plain

Soil Type: Sandy clay

Habitat Quality: Disturbed

Surface: Sand, Pebbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 30/06/2024

Habitat Assessment #: 19

Observer: Tom Raymond

GDA94 ; 626545 mE 7001674 mN

Fire History: >5 years

Landform: Drainage

Soil Type: Sandy clay

Habitat Quality: Disturbed

Surface: Sand, Pebbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 30/06/2024

Habitat Assessment #: 20

Observer: Tom Raymond

GDA94 ; 626370 mE 7001668 mN

Fire History: >5 years

Landform: Slope

Soil Type: Sandy clay

Habitat Quality: Disturbed

Surface: Pebbles, Cobbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 30/06/2024

Habitat Assessment #: 21

Observer: Tom Raymond

GDA94 ; 626117 mE 7001666 mN

Fire History: >5 years

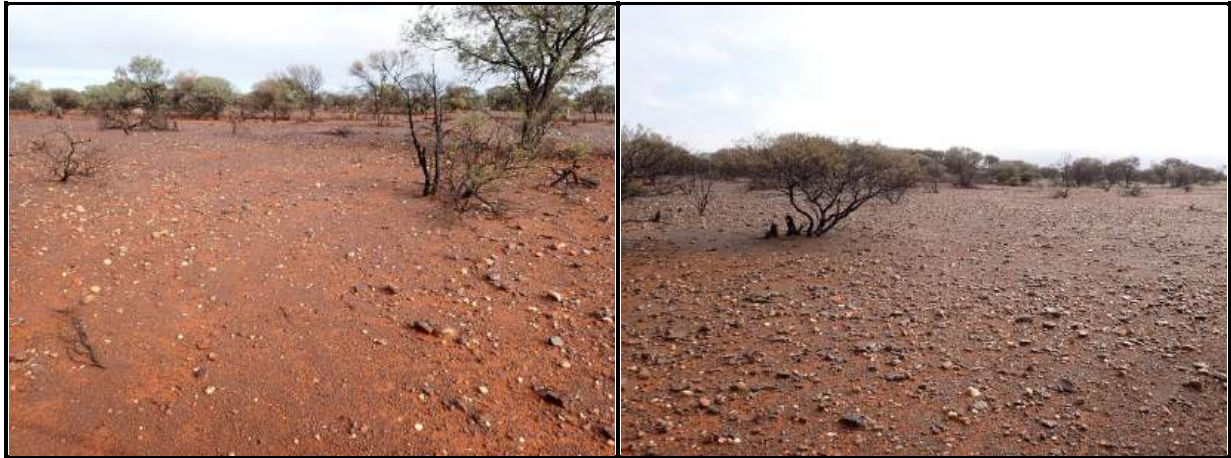
Landform: Flat Plain

Soil Type: Sandy clay

Habitat Quality: Good

Surface: Pebbles, Cobbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 30/06/2024

Habitat Assessment #: 22

Observer: Tom Raymond

GDA94 ; 626214 mE 7001906 mN

Fire History: >5 years

Landform: Flat Plain

Soil Type: Sandy clay

Habitat Quality: Disturbed

Surface: Sand, Pebbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 30/06/2024

Habitat Assessment #: 23

Observer: Tom Raymond

GDA94 ; 626348 mE 7001929 mN

Fire History: >5 years

Landform: Flat Plain

Soil Type: Sandy clay

Habitat Quality: Disturbed

Surface: Sand, Pebbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 30/06/2024

Habitat Assessment #: 24

Observer: Tom Raymond

GDA94 ; 626506 mE 7001933 mN

Fire History: >5 years

Landform: Flat Plain

Soil Type: Sandy clay

Habitat Quality: Disturbed

Surface: Sand, Pebbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 30/06/2024

Habitat Assessment #: 25

Observer: Tom Raymond

GDA94 ; 626549 mE 7002177 mN

Fire History: >5 years

Landform: Drainage

Soil Type: Sandy clay

Habitat Quality: Disturbed

Surface: Sand, Pebbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 30/06/2024

Habitat Assessment #: 26

Observer: Tom Raymond

GDA94 ; 626352 mE 7002166 mN

Fire History: >5 years

Landform: Drainage

Soil Type: Sandy clay

Habitat Quality: Disturbed

Surface: Sand, Pebbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 30/06/2024

Habitat Assessment #: 27

Observer: Tom Raymond

GDA94 ; 626435 mE 7002405 mN

Fire History: >5 years

Landform: Drainage

Soil Type: Sandy clay

Habitat Quality: Good

Surface: Sand, Pebbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 30/06/2024

Habitat Assessment #: 28

Observer: Tom Raymond

GDA94 ; 626605 mE 7002424 mN

Fire History: >5 years

Landform: Flat plain

Soil Type: Sandy clay

Habitat Quality: Disturbed

Surface: Sand, Pebbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 30/06/2024

Habitat Assessment #: 29

Observer: Tom Raymond

GDA94 ; 626866 mE 7002427 mN

Fire History: >5 years

Landform: Drainage

Soil Type: Sandy clay

Habitat Quality: Disturbed

Surface: Sand, Pebbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 30/06/2024

Habitat Assessment #: 30

Observer: Tom Raymond

GDA94 ; 627132 mE 7002491 mN

Fire History: >5 years

Landform: Drainage

Soil Type: Sandy clay

Habitat Quality: Disturbed

Surface: Sand, Pebbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 30/06/2024

Habitat Assessment #: 31

Observer: Tom Raymond

GDA94 ; 627342 mE 7002435 mN

Fire History: >5 years

Landform: Flat plain

Soil Type: Sandy clay

Habitat Quality: Disturbed

Surface: Sand, Pebbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 30/06/2024

Habitat Assessment #: 32

Observer: Tom Raymond

GDA94 ; 627598 mE 7002435 mN

Fire History: >5 years

Landform: Flat plain

Soil Type: Sandy clay

Habitat Quality: Disturbed

Surface: Sand, Pebbles, Cobbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 30/06/2024

Habitat Assessment #: 33

Observer: Tom Raymond

GDA94 ; 627861 mE 7002443 mN

Fire History: >5 years

Landform: Flat plain

Soil Type: Sandy clay

Habitat Quality: Disturbed

Surface: Pebbles, Cobbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 30/06/2024

Habitat Assessment #: 34

Observer: Tom Raymond

GDA94 ; 628094 mE 7002430 mN

Fire History: >5 years

Landform: Drainage

Soil Type: Sandy clay

Habitat Quality: Disturbed

Surface: Sand

Habitat Type: Mulga woodland over mixed shrubs



Date: 30/06/2024

Habitat Assessment #: 35

Observer: Tom Raymond

GDA94 ; 628280 mE 7002445 mN

Fire History: >5 years

Landform: Flat plain

Soil Type: Sandy clay

Habitat Quality: Good

Surface: Pebbles, Cobbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 30/06/2024

Habitat Assessment #: 36

Observer: Tom Raymond

GDA94 ; 628357 mE 7002688 mN

Fire History: >5 years

Landform: Flat plain

Soil Type: Sandy clay

Habitat Quality: Good

Surface: Pebbles, Cobbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 30/06/2024

Habitat Assessment #: 37

Observer: Tom Raymond

GDA94 ; 628133 mE 7002693 mN

Fire History: >5 years

Landform: Drainage

Soil Type: Sandy clay

Habitat Quality: Good

Surface: Sand

Habitat Type: Mulga woodland over mixed shrubs



Date: 30/06/2024

Habitat Assessment #: 38

Observer: Tom Raymond

GDA94 ; 627878 mE 7002675 mN

Fire History: >5 years

Landform: Drainage

Soil Type: Sandy clay

Habitat Quality: Good

Surface: Sand, Pebbles, Cobbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 30/06/2024

Habitat Assessment #: 39

Observer: Tom Raymond

GDA94 ; 627618 mE 7002686 mN

Fire History: >5 years

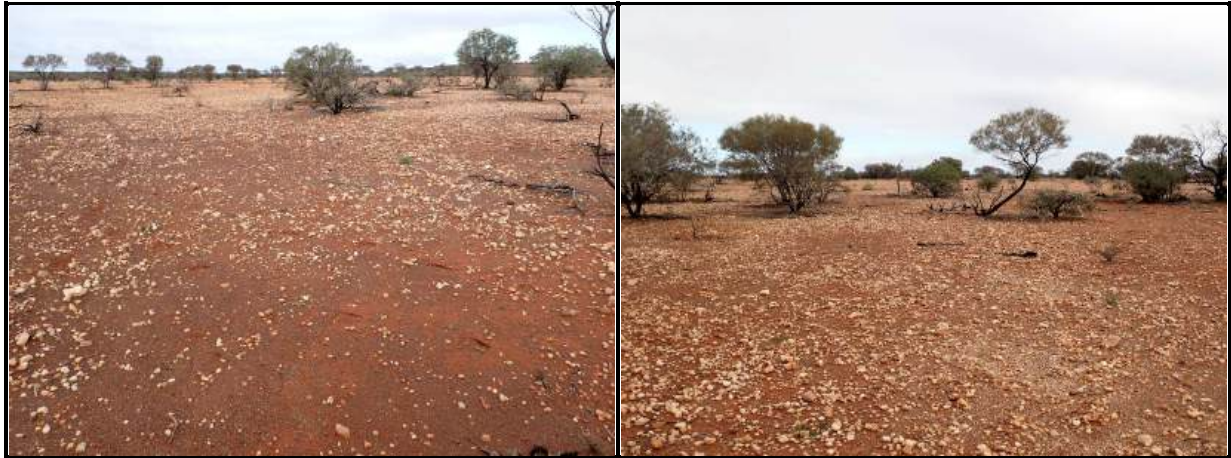
Landform: Flat plain

Soil Type: Sandy clay

Habitat Quality: Good

Surface: Sand, Pebbles, Cobbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 30/06/2024

Habitat Assessment #: 40

Observer: Tom Raymond

GDA94 ; 627383 mE 7002687 mN

Fire History: >5 years

Landform: Flat plain

Soil Type: Sandy clay

Habitat Quality: Good

Surface: Sand, Pebbles, Cobbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 30/06/2024

Habitat Assessment #: 41

Observer: Tom Raymond

GDA94 ; 627124 mE 7002690 mN

Fire History: >5 years

Landform: Flat plain

Soil Type: Sandy clay

Habitat Quality: Disturbed

Surface: Sand, Pebbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 30/06/2024

Habitat Assessment #: 42

Observer: Tom Raymond

GDA94 ; 626876 mE 7002650 mN

Fire History: >5 years

Landform: Flat plain

Soil Type: Sandy clay

Habitat Quality: Disturbed

Surface: Sand, Pebbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 30/06/2024

Habitat Assessment #: 43

Observer: Tom Raymond

GDA94 ; 626613 mE 7002662 mN

Fire History: >5 years

Landform: Flat plain

Soil Type: Sandy clay

Habitat Quality: Disturbed

Surface: Sand, Pebbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 30/06/2024

Habitat Assessment #: 44

Observer: Tom Raymond

GDA94 ; 626673 mE 7002905 mN

Fire History: >5 years

Landform: Flat plain

Soil Type: Sandy clay

Habitat Quality: Disturbed

Surface: Pebbles, Cobbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 30/06/2024

Habitat Assessment #: 45

Observer: Tom Raymond

GDA94 ; 626861 mE 7002926 mN

Fire History: >5 years

Landform: Flat plain

Soil Type: Sandy clay

Habitat Quality: Disturbed

Surface: Pebbles, Cobbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 30/06/2024

Habitat Assessment #: 46

Observer: Tom Raymond

GDA94 ; 627113 mE 7002935 mN

Fire History: >5 years

Landform: Flat plain

Soil Type: Sandy clay

Habitat Quality: Disturbed

Surface: Sand, Pebbles, Cobbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 30/06/2024

Habitat Assessment #: 47

Observer: Tom Raymond

GDA94 ; 627369 mE 7002932 mN

Fire History: >5 years

Landform: Flat plain

Soil Type: Sandy clay

Habitat Quality: Disturbed

Surface: Sand, Pebbles, Cobbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 30/06/2024

Habitat Assessment #: 48

Observer: Tom Raymond

GDA94 ; 627611 mE 7002940 mN

Fire History: >5 years

Landform: Flat plain

Soil Type: Sandy clay

Habitat Quality: Disturbed

Surface: Sand, Pebbles, Cobbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 30/06/2024

Habitat Assessment #: 49

Observer: Tom Raymond

GDA94 ; 627850 mE 7002936 mN

Fire History: >5 years

Landform: Drainage

Soil Type: Sandy clay

Habitat Quality: Good

Surface: Sand, Pebbles, Cobbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 30/06/2024

Habitat Assessment #: 50

Observer: Tom Raymond

GDA94 ; 628114 mE 7002944 mN

Fire History: >5 years

Landform: Drainage

Soil Type: Sandy clay

Habitat Quality: Good

Surface: Sand, Cobbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 30/06/2024

Habitat Assessment #: 51

Observer: Tom Raymond

GDA94 ; 628362 mE 7002946 mN

Fire History: >5 years

Landform: Flat plain

Soil Type: Sandy clay

Habitat Quality: Good

Surface: Pebbles, Cobbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 30/06/2024

Habitat Assessment #: 52

Observer: Tom Raymond

GDA94 ; 628592 mE 7003185 mN

Fire History: >5 years

Landform: Flat plain

Soil Type: Sandy clay

Habitat Quality: Good

Surface: Sand, Pebbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 30/06/2024

Habitat Assessment #: 53

Observer: Tom Raymond

GDA94 ; 628378 mE 7003170 mN

Fire History: >5 years

Landform: Flat plain

Soil Type: Sandy clay

Habitat Quality: Good

Surface: Sand, Pebbles, Cobbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 30/06/2024

Habitat Assessment #: 54

Observer: Tom Raymond

GDA94 ; 628129 mE 7003162 mN

Fire History: >5 years

Landform: Flat plain

Soil Type: Sandy clay

Habitat Quality: Good

Surface: Sand, Pebbles, Cobbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 30/06/2024

Habitat Assessment #: 55

Observer: Tom Raymond

GDA94 ; 627905 mE 7003167 mN

Fire History: >5 years

Landform: Flat plain

Soil Type: Sandy clay

Habitat Quality: Good

Surface: Sand

Habitat Type: Mulga woodland over mixed shrubs



Date: 30/06/2024

Habitat Assessment #: 56

Observer: Tom Raymond

GDA94 ; 627718 mE 7003170 mN

Fire History: >5 years

Landform: Flat plain

Soil Type: Sandy clay

Habitat Quality: Disturbed

Surface: Pebbles, Cobbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 30/06/2024

Habitat Assessment #: 57

Observer: Tom Raymond

GDA94 ; 627372 mE 7003182 mN

Fire History: >5 years

Landform: Flat plain

Soil Type: Sandy clay

Habitat Quality: Highly degraded

Surface: Sand, Pebbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 30/06/2024

Habitat Assessment #: 58

Observer: Tom Raymond

GDA94 ; 627134 mE 7003175 mN

Fire History: >5 years

Landform: Flat plain

Soil Type: Sandy clay

Habitat Quality: Disturbed

Surface: Sand, Pebbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 30/06/2024

Habitat Assessment #: 59

Observer: Tom Raymond

GDA94 ; 626877 mE 7003178 mN

Fire History: >5 years

Landform: Flat plain

Soil Type: Sandy clay

Habitat Quality: Disturbed

Surface: Pebbles, Cobbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 30/06/2024

Habitat Assessment #: 60

Observer: Tom Raymond

GDA94 ; 626905 mE 7003418 mN

Fire History: >5 years

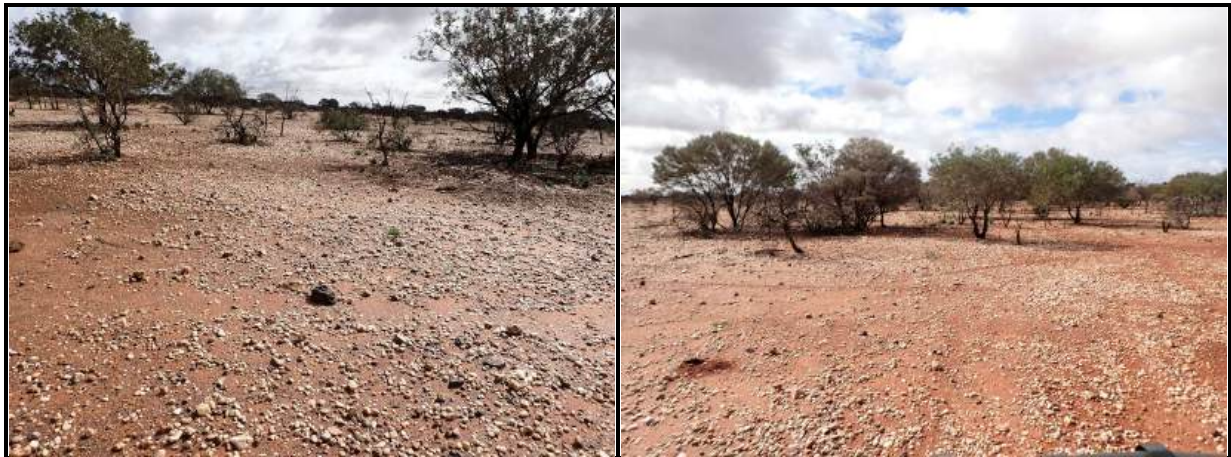
Landform: Flat plain

Soil Type: Sandy clay

Habitat Quality: Good

Surface: Pebbles, Cobbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 30/06/2024

Habitat Assessment #: 61

Observer: Tom Raymond

GDA94 ; 627131 mE 7003423 mN

Fire History: >5 years

Landform: Flat plain

Soil Type: Sandy clay

Habitat Quality: Good

Surface: Pebbles, Cobbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 30/06/2024

Habitat Assessment #: 62

Observer: Tom Raymond

GDA94 ; 627287 mE 7003429 mN

Fire History: >5 years

Landform: Flat plain

Soil Type: Sandy clay

Habitat Quality: Disturbed

Surface: Sand, Pebbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 30/06/2024

Habitat Assessment #: 63

Observer: Tom Raymond

GDA94 ; 627130 mE 7003664 mN

Fire History: >5 years

Landform: Flat plain

Soil Type: Sandy clay

Habitat Quality: Disturbed

Surface: Sand, Pebbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 30/06/2024

Habitat Assessment #: 64

Observer: Tom Raymond

GDA94 ; 627372 mE 7003755 mN

Fire History: >5 years

Landform: Flat plain

Soil Type: Sandy clay

Habitat Quality: Disturbed

Surface: Sand, Pebbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 30/06/2024

Habitat Assessment #: 65

Observer: Tom Raymond

GDA94 ; 627638 mE 7003683 mN

Fire History: >5 years

Landform: Drainage

Soil Type: Sandy clay

Habitat Quality: Disturbed

Surface: Sand, Pebbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 30/06/2024

Habitat Assessment #: 66

Observer: Tom Raymond

GDA94 ; 627873 mE 7003702 mN

Fire History: >5 years

Landform: Drainage

Soil Type: Sandy clay

Habitat Quality: Good

Surface: Sand

Habitat Type: Mulga woodland over mixed shrubs



Date: 30/06/2024

Habitat Assessment #: 67

Observer: Tom Raymond

GDA94 ; 628132 mE 7003678 mN

Fire History: >5 years

Landform: Drainage

Soil Type: Sandy clay

Habitat Quality: Good

Surface: Sand, Pebbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 30/06/2024

Habitat Assessment #: 68

Observer: Tom Raymond

GDA94 ; 628378 mE 7003693 mN

Fire History: >5 years

Landform: Flat plain

Soil Type: Sandy clay

Habitat Quality: Good

Surface: Sand, Pebbles, Cobbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 30/06/2024

Habitat Assessment #: 69

Observer: Tom Raymond

GDA94 ; 628614 mE 7003695 mN

Fire History: >5 years

Landform: Flat plain

Soil Type: Sandy clay

Habitat Quality: Good

Surface: Pebbles, Cobbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 30/06/2024

Habitat Assessment #: 70

Observer: Tom Raymond

GDA94 ; 628604 mE 7003723 mN

Fire History: >5 years

Landform: Undulating plain

Soil Type: Sandy clay

Habitat Quality: Good

Surface: Pebbles, Cobbles

Habitat Type: Rocky Outcrop



Date: 30/06/2024

Habitat Assessment #: 71

Observer: Tom Raymond

GDA94 ; 628378 mE 7003810 mN

Fire History: >5 years

Landform: Flat plain

Soil Type: Sandy clay

Habitat Quality: Good

Surface: Pebbles, Cobbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 30/06/2024

Habitat Assessment #: 72

Observer: Tom Raymond

GDA94 ; 628129 mE 7003906 mN

Fire History: >5 years

Landform: Drainage

Soil Type: Sandy clay

Habitat Quality: Good

Surface: Sand

Habitat Type: Mulga woodland over mixed shrubs



Date: 30/06/2024

Habitat Assessment #: 73

Observer: Tom Raymond

GDA94 ; 627888 mE 7003954 mN

Fire History: >5 years

Landform: Flat plain

Soil Type: Sandy clay

Habitat Quality: Good

Surface: Sand, Pebbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 30/06/2024

Habitat Assessment #: 74

Observer: Tom Raymond

GDA94 ; 627631 mE 7003922 mN

Fire History: >5 years

Landform: Flat plain

Soil Type: Sandy clay

Habitat Quality: Good

Surface: Pebbles, Cobbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 30/06/2024

Habitat Assessment #: 75

Observer: Tom Raymond

GDA94 ; 627392 mE 7003915 mN

Fire History: >5 years

Landform: Flat plain

Soil Type: Sandy clay

Habitat Quality: Good

Surface: Sand, Pebbles, Cobbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 30/06/2024

Habitat Assessment #: 76

Observer: Tom Raymond

GDA94 ; 627418 mE 7004175 mN

Fire History: >5 years

Landform: Flat plain

Soil Type: Sandy clay

Habitat Quality: Disturbed

Surface: Sand, Pebbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 30/06/2024

Habitat Assessment #: 77

Observer: Tom Raymond

GDA94 ; 627521 mE 7004176 mN

Fire History: >5 years

Landform: Flat plain

Soil Type: Sandy clay

Habitat Quality: Good

Surface: Sand, Pebbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 30/06/2024

Habitat Assessment #: 78

Observer: Tom Raymond

GDA94 ; 627239 mE 7004173 mN

Fire History: >5 years

Landform: Flat plain

Soil Type: Sandy clay

Habitat Quality: Disturbed

Surface: Pebbles, Cobbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 30/06/2024

Habitat Assessment #: 79

Observer: Tom Raymond

GDA94 ; 627140 mE 7003940 mN

Fire History: >5 years

Landform: Flat plain

Soil Type: Sandy clay

Habitat Quality: Highly degraded

Surface: Sand, Pebbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 30/06/2024

Habitat Assessment #: 80

Observer: Tom Raymond

GDA94 ; 627860 mE 7003431 mN

Fire History: >5 years

Landform: Drainage

Soil Type: Sandy clay

Habitat Quality: Good

Surface: Sand, Pebbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 30/06/2024

Habitat Assessment #: 81

Observer: Tom Raymond

GDA94 ; 628120 mE 7003452 mN

Fire History: >5 years

Landform: Drainage

Soil Type: Sandy clay

Habitat Quality: Good

Surface: Sand, Pebbles, Cobbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 30/06/2024

Habitat Assessment #: 82

Observer: Tom Raymond

GDA94 ; 628384 mE 7003445 mN

Fire History: >5 years

Landform: Flat plain

Soil Type: Sandy clay

Habitat Quality: Good

Surface: Sand, Pebbles, Cobbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 30/06/2024

Habitat Assessment #: 83

Observer: Tom Raymond

GDA94 ; 628615 mE 7003449 mN

Fire History: >5 years

Landform: Flat plain

Soil Type: Sandy clay

Habitat Quality: Good

Surface: Sand, Pebbles, Cobbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 30/06/2024

Habitat Assessment #: 84

Observer: Tom Raymond

GDA94 ; 628128 mE 7002201 mN

Fire History: >5 years

Landform: Drainage

Soil Type: Sandy clay

Habitat Quality: Good

Surface: Sand

Habitat Type: Mulga woodland over mixed shrubs



Date: 30/06/2024

Habitat Assessment #: 85

Observer: Tom Raymond

GDA94 ; 627888 mE 7002187 mN

Fire History: >5 years

Landform: Drainage

Soil Type: Sandy clay

Habitat Quality: Good

Surface: Sand

Habitat Type: Mulga woodland over mixed shrubs



Date: 30/06/2024

Habitat Assessment #: 86

Observer: Tom Raymond

GDA94 ; 627616 mE 7002203 mN

Fire History: >5 years

Landform: Flat plain

Soil Type: Sandy clay

Habitat Quality: Good

Surface: Sand, Pebbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 30/06/2024

Habitat Assessment #: 87

Observer: Tom Raymond

GDA94 ; 627368 mE 7001929 mN

Fire History: >5 years

Landform: Flat plain

Soil Type: Sandy clay

Habitat Quality: Good

Surface: Sand, Pebbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 30/06/2024

Habitat Assessment #: 88

Observer: Tom Raymond

GDA94 ; 627622 mE 7001952 mN

Fire History: >5 years

Landform: Flat plain

Soil Type: Sandy clay

Habitat Quality: Disturbed

Surface: Sand, Pebbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 30/06/2024

Habitat Assessment #: 89

Observer: Tom Raymond

GDA94 ; 627855 mE 7001940 mN

Fire History: >5 years

Landform: Flat plain

Soil Type: Sandy clay

Habitat Quality: Good

Surface: Pebbles, Cobbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 30/06/2024

Habitat Assessment #: 90

Observer: Tom Raymond

GDA94 ; 628085 mE 7001937 mN

Fire History: >5 years

Landform: Drainage

Soil Type: Sandy clay

Habitat Quality: Disturbed

Surface: Sand

Habitat Type: Mulga woodland over mixed shrubs



Date: 30/06/2024

Habitat Assessment #: 91

Observer: Tom Raymond

GDA94 ; 627960 mE 7001691 mN

Fire History: >5 years

Landform: Flat plain

Soil Type: Sandy clay

Habitat Quality: Disturbed

Surface: Sand, Pebbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 30/06/2024

Habitat Assessment #: 92

Observer: Tom Raymond

GDA94 ; 627855 mE 7001693 mN

Fire History: >5 years

Landform: Flat plain

Soil Type: Sandy clay

Habitat Quality: Disturbed

Surface: Sand, Pebbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 30/06/2024

Habitat Assessment #: 93

Observer: Tom Raymond

GDA94 ; 627617 mE 7001676 mN

Fire History: >5 years

Landform: Flat plain

Soil Type: Sandy clay

Habitat Quality: Disturbed

Surface: Sand, Pebbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 30/06/2024

Habitat Assessment #: 94

Observer: Tom Raymond

GDA94 ; 627394 mE 7001694 mN

Fire History: >5 years

Landform: Flat plain

Soil Type: Sandy clay

Habitat Quality: Good

Surface: Sand, Pebbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 30/06/2024

Habitat Assessment #: 95

Observer: Tom Raymond

GDA94 ; 627335 mE 7001461 mN

Fire History: >5 years

Landform: Flat plain

Soil Type: Sandy clay

Habitat Quality: Good

Surface: Sand, Pebbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 30/06/2024

Habitat Assessment #: 96

Observer: Tom Raymond

GDA94 ; 627606 mE 7001434 mN

Fire History: >5 years

Landform: Flat plain

Soil Type: Sandy clay

Habitat Quality: Disturbed

Surface: Sand, Pebbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 30/06/2024

Habitat Assessment #: 97

Observer: Tom Raymond

GDA94 ; 627844 mE 7001427 mN

Fire History: >5 years

Landform: Flat plain

Soil Type: Sandy clay

Habitat Quality: Good

Surface: Sand, Pebbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 30/06/2024

Habitat Assessment #: 98

Observer: Tom Raymond

GDA94 ; 627737 mE 7001188 mN

Fire History: >5 years

Landform: Flat plain

Soil Type: Sandy clay

Habitat Quality: Disturbed

Surface: Sand, Pebbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 30/06/2024

Habitat Assessment #: 99

Observer: Tom Raymond

GDA94 ; 627607 mE 7001190 mN

Fire History: >5 years

Landform: Flat plain

Soil Type: Sandy clay

Habitat Quality: Disturbed

Surface: Sand, Pebbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 30/06/2024

Habitat Assessment #: 100

Observer: Tom Raymond

GDA94 ; 627358 mE 7001191 mN

Fire History: >5 years

Landform: Flat plain

Soil Type: Sandy clay

Habitat Quality: Disturbed

Surface: Sand, Pebbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 30/06/2024

Habitat Assessment #: 101

Observer: Tom Raymond

GDA94 ; 627604 mE 7000946 mN

Fire History: >5 years

Landform: Flat plain

Soil Type: Sandy clay

Habitat Quality: Good

Surface: Sand, Pebbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 30/06/2024

Habitat Assessment #: 102

Observer: Tom Raymond

GDA94 ; 627354 mE 7000940 mN

Fire History: >5 years

Landform: Flat plain

Soil Type: Sandy clay

Habitat Quality: Good

Surface: Sand, Pebbles, Cobbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 30/06/2024

Habitat Assessment #: 103

Observer: Tom Raymond

GDA94 ; 627103 mE 7000930 mN

Fire History: >5 years

Landform: Flat plain

Soil Type: Sandy clay

Habitat Quality: Disturbed

Surface: Sand, Pebbles, Cobbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 30/06/2024

Habitat Assessment #: 104

Observer: Tom Raymond

GDA94 ; 626880 mE 7000931 mN

Fire History: >5 years

Landform: Flat plain

Soil Type: Sandy clay

Habitat Quality: Good

Surface: Sand, Pebbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 30/06/2024

Habitat Assessment #: 105

Observer: Tom Raymond

GDA94 ; 626970 mE 7000678 mN

Fire History: >5 years

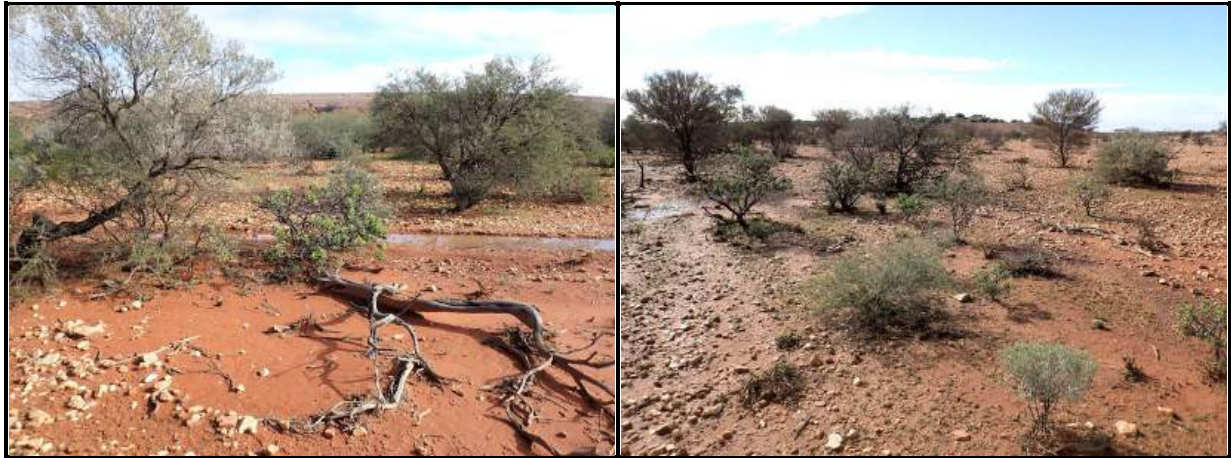
Landform: Flat plain

Soil Type: Sandy clay

Habitat Quality: Good

Surface: Sand, Pebbles, Cobbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 30/06/2024

Habitat Assessment #: 106

Observer: Tom Raymond

GDA94 ; 627086 mE 7000688 mN

Fire History: >5 years

Landform: Flat plain

Soil Type: Sandy clay

Habitat Quality: Good

Surface: Sand, Pebbles, Cobbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 30/06/2024

Habitat Assessment #: 107

Observer: Tom Raymond

GDA94 ; 627337 mE 7000707 mN

Fire History: >5 years

Landform: Flat plain

Soil Type: Sandy clay

Habitat Quality: Good

Surface: Sand, Pebbles, Cobbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 30/06/2024

Habitat Assessment #: 108

Observer: Tom Raymond

GDA94 ; 627524 mE 7000676 mN

Fire History: >5 years

Landform: Flat plain

Soil Type: Sandy clay

Habitat Quality: Disturbed

Surface: Sand, Pebbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 30/06/2024

Habitat Assessment #: 109

Observer: Tom Raymond

GDA94 ; 627360 mE 7000448 mN

Fire History: >5 years

Landform: Flat plain

Soil Type: Sandy clay

Habitat Quality: Good

Surface: Pebbles, Cobbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 30/06/2024

Habitat Assessment #: 110

Observer: Tom Raymond

GDA94 ; 627116 mE 7000408 mN

Fire History: >5 years

Landform: Flat plain

Soil Type: Sandy clay

Habitat Quality: Disturbed

Surface: Sand, Pebbles, Cobbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 30/06/2024

Habitat Assessment #: 111

Observer: Tom Raymond

GDA94 ; 626961 mE 7000414 mN

Fire History: >5 years

Landform: Flat plain

Soil Type: Sandy clay

Habitat Quality: Highly degraded

Surface: Sand, Pebbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 30/06/2024

Habitat Assessment #: 112

Observer: Tom Raymond

GDA94 ; 626978 mE 7000205 mN

Fire History: >5 years

Landform: Flat plain

Soil Type: Sandy clay

Habitat Quality: Highly degraded

Surface: Sand, Pebbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 30/06/2024

Habitat Assessment #: 113

Observer: Tom Raymond

GDA94 ; 627175 mE 7000251 mN

Fire History: >5 years

Landform: Flat plain

Soil Type: Sandy clay

Habitat Quality: Disturbed

Surface: Sand, Pebbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 30/06/2024

Habitat Assessment #: 114

Observer: Tom Raymond

GDA94 ; 627046 mE 6999957 mN

Fire History: >5 years

Landform: Flat plain

Soil Type: Sandy clay

Habitat Quality: Highly degraded

Surface: Sand, Pebbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 30/06/2024

Habitat Assessment #: 115

Observer: Tom Raymond

GDA94 ; 626846 mE 6999835 mN

Fire History: >5 years

Landform: Flat plain

Soil Type: Sandy clay

Habitat Quality: Highly degraded

Surface: Sand, Pebbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 30/06/2024

Habitat Assessment #: 116

Observer: Tom Raymond

GDA94 ; 627062 mE 6999690 mN

Fire History: >5 years

Landform: Flat plain

Soil Type: Sandy clay

Habitat Quality: Disturbed

Surface: Sand, Pebbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 30/06/2024

Habitat Assessment #: 117

Observer: Tom Raymond

GDA94 ; 626854 mE 6999702 mN

Fire History: >5 years

Landform: Flat plain

Soil Type: Sandy clay

Habitat Quality: Disturbed

Surface: Sand, Pebbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 30/06/2024

Habitat Assessment #: 118

Observer: Tom Raymond

GDA94 ; 626600 mE 6999598 mN

Fire History: >5 years

Landform: Flat plain

Soil Type: Sandy clay

Habitat Quality: Disturbed

Surface: Sand, Pebbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 30/06/2024

Habitat Assessment #: 119

Observer: Tom Raymond

GDA94 ; 626342 mE 6999722 mN

Fire History: >5 years

Landform: Undulating plain

Soil Type: Sandy clay

Habitat Quality: Highly degraded

Surface: Sand, Pebbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 30/06/2024

Habitat Assessment #: 120

Observer: Tom Raymond

GDA94 ; 626101 mE 6999683 mN

Fire History: >5 years

Landform: Undulating plain

Soil Type: Sandy clay

Habitat Quality: Highly degraded

Surface: Sand, Pebbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 30/06/2024

Habitat Assessment #: 121

Observer: Tom Raymond

GDA94 ; 626084 mE 6999920 mN

Fire History: >5 years

Landform: Flat plain

Soil Type: Sandy clay

Habitat Quality: Highly degraded

Surface: Sand, Pebbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 30/06/2024

Habitat Assessment #: 122

Observer: Tom Raymond

GDA94 ; 626242 mE 6999937 mN

Fire History: >5 years

Landform: Flat plain

Soil Type: Sandy clay

Habitat Quality: Disturbed

Surface: Sand, Pebbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 30/06/2024

Habitat Assessment #: 123

Observer: Tom Raymond

GDA94 ; 626319 mE 7000150 mN

Fire History: >5 years

Landform: Flat plain

Soil Type: Sandy clay

Habitat Quality: Disturbed

Surface: Sand, Pebbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 30/06/2024

Habitat Assessment #: 124

Observer: Tom Raymond

GDA94 ; 626392 mE 7000423 mN

Fire History: >5 years

Landform: Flat plain

Soil Type: Sandy clay

Habitat Quality: Disturbed

Surface: Sand, Pebbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 30/06/2024

Habitat Assessment #: 125

Observer: Tom Raymond

GDA94 ; 626122 mE 7000164 mN

Fire History: >5 years

Landform: Flat plain

Soil Type: Sandy clay

Habitat Quality: Highly degraded

Surface: Sand, Pebbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 30/06/2024

Habitat Assessment #: 126

Observer: Tom Raymond

GDA94 ; 625837 mE 7000189 mN

Fire History: >5 years

Landform: Flat plain

Soil Type: Sandy clay

Habitat Quality: Disturbed

Surface: Sand, Pebbles

Habitat Type: Chenopod shrubs



Date: 30/06/2024

Habitat Assessment #: 127

Observer: Tom Raymond

GDA94 ; 625671 mE 7000215 mN

Fire History: >5 years

Landform: Flat plain

Soil Type: Sandy clay

Habitat Quality: Disturbed

Surface: Sand, Pebbles

Habitat Type: Chenopod shrubs



Date: 30/06/2024

Habitat Assessment #: 128

Observer: Tom Raymond

GDA94 ; 625808 mE 6999930 mN

Fire History: >5 years

Landform: Flat plain

Soil Type: Sandy clay

Habitat Quality: Disturbed

Surface: Sand, Pebbles

Habitat Type: Chenopod shrubs



Date: 30/06/2024

Habitat Assessment #: 129

Observer: Tom Raymond

GDA94 ; 625594 mE 6999897 mN

Fire History: >5 years

Landform: Flat plain

Soil Type: Sandy clay

Habitat Quality: Disturbed

Surface: Sand, Pebbles

Habitat Type: Chenopod shrubs



Date: 30/06/2024

Habitat Assessment #: 130

Observer: Tom Raymond

GDA94 ; 625395 mE 6999897 mN

Fire History: >5 years

Landform: Undulating plain

Soil Type: Sandy clay

Habitat Quality: Disturbed

Surface: Sand, Pebbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 30/06/2024

Habitat Assessment #: 131

Observer: Tom Raymond

GDA94 ; 625275 mE 6999694 mN

Fire History: >5 years

Landform: Undulating plain

Soil Type: Sandy clay

Habitat Quality: Good

Surface: Pebbles, Cobbles

Habitat Type: Rocky Outcrop



Date: 30/06/2024

Habitat Assessment #: 132

Observer: Tom Raymond

GDA94 ; 625121 mE 6999437 mN

Fire History: >5 years

Landform: Undulating plain

Soil Type: Sandy clay

Habitat Quality: Good

Surface: Pebbles, Cobbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 30/06/2024

Habitat Assessment #: 133

Observer: Tom Raymond

GDA94 ; 625298 mE 6999404 mN

Fire History: >5 years

Landform: Undulating plain

Soil Type: Sandy clay

Habitat Quality: Good

Surface: Pebbles, Cobbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 30/06/2024

Habitat Assessment #: 134

Observer: Tom Raymond

GDA94 ; 625341 mE 6999190 mN

Fire History: >5 years

Landform: Drainage

Soil Type: Sandy clay

Habitat Quality: Good

Surface: Pebbles, Cobbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 30/06/2024

Habitat Assessment #: 135

Observer: Tom Raymond

GDA94 ; 625122 mE 6999176 mN

Fire History: >5 years

Landform: Slope

Soil Type: Sandy clay

Habitat Quality: Good

Surface: Pebbles, Cobbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 30/06/2024

Habitat Assessment #: 136

Observer: Tom Raymond

GDA94 ; 625069 mE 6998937 mN

Fire History: >5 years

Landform: Slope

Soil Type: Sandy clay

Habitat Quality: Good

Surface: Pebbles, Cobbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 30/06/2024

Habitat Assessment #: 137

Observer: Tom Raymond

GDA94 ; 625309 mE 6998944 mN

Fire History: >5 years

Landform: Undulating plain

Soil Type: Sandy clay

Habitat Quality: Good

Surface: Pebbles, Cobbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 30/06/2024

Habitat Assessment #: 138

Observer: Tom Raymond

GDA94 ; 625444 mE 6998889 mN

Fire History: >5 years

Landform: Drainage

Soil Type: Sandy clay

Habitat Quality: Good

Surface: Pebbles, Cobbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 30/06/2024

Habitat Assessment #: 139

Observer: Tom Raymond

GDA94 ; 625313 mE 6998688 mN

Fire History: >5 years

Landform: Undulating plain

Soil Type: Sandy clay

Habitat Quality: Good

Surface: Pebbles, Cobbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 30/06/2024

Habitat Assessment #: 140

Observer: Tom Raymond

GDA94 ; 625091 mE 6998673 mN

Fire History: >5 years

Landform: Slope

Soil Type: Sandy clay

Habitat Quality: Good

Surface: Pebbles, Cobbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 30/06/2024

Habitat Assessment #: 141

Observer: Tom Raymond

GDA94 ; 624883 mE 6998656 mN

Fire History: >5 years

Landform: Flat plain

Soil Type: Sandy clay

Habitat Quality: Good

Surface: Pebbles, Cobbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 30/06/2024

Habitat Assessment #: 142

Observer: Tom Raymond

GDA94 ; 624817 mE 6998425 mN

Fire History: >5 years

Landform: Flat plain

Soil Type: Sandy clay

Habitat Quality: Good

Surface: Pebbles, Cobbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 30/06/2024

Habitat Assessment #: 143

Observer: Tom Raymond

GDA94 ; 625055 mE 6998428 mN

Fire History: >5 years

Landform: Slope

Soil Type: Sandy clay

Habitat Quality: Good

Surface: Pebbles, Cobbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 30/06/2024

Habitat Assessment #: 144

Observer: Tom Raymond

GDA94 ; 625284 mE 6998428 mN

Fire History: >5 years

Landform: Slope

Soil Type: Sandy clay

Habitat Quality: Good

Surface: Pebbles, Cobbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 30/06/2024

Habitat Assessment #: 145

Observer: Tom Raymond

GDA94 ; 625257 mE 6998180 mN

Fire History: >5 years

Landform: Undulating plain

Soil Type: Sandy clay

Habitat Quality: Disturbed

Surface: Pebbles, Cobbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 30/06/2024

Habitat Assessment #: 146

Observer: Tom Raymond

GDA94 ; 625076 mE 6998157 mN

Fire History: >5 years

Landform: Slope

Soil Type: Sandy clay

Habitat Quality: Good

Surface: Pebbles, Cobbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 30/06/2024

Habitat Assessment #: 147

Observer: Tom Raymond

GDA94 ; 624826 mE 6998159 mN

Fire History: >5 years

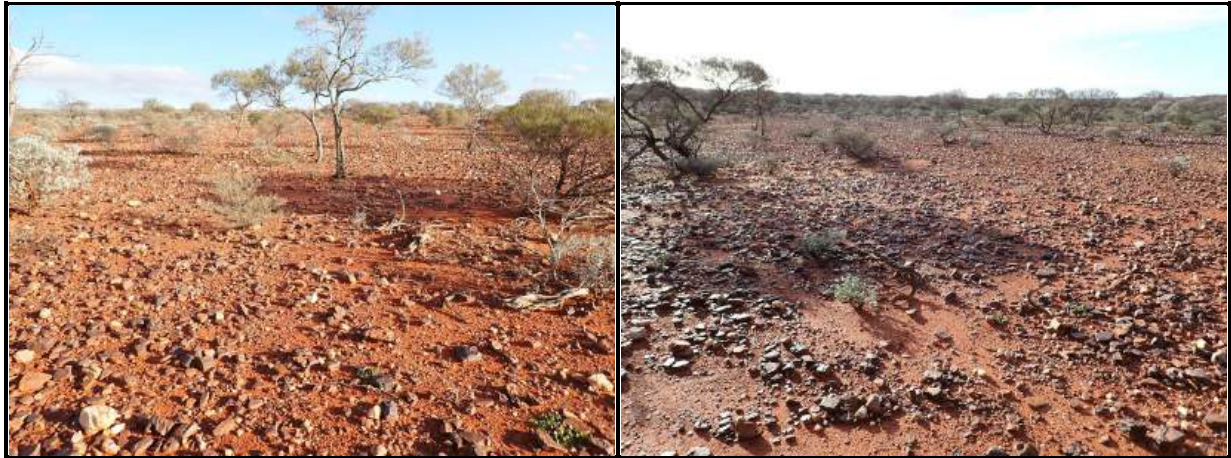
Landform: Slope

Soil Type: Sandy clay

Habitat Quality: Good

Surface: Pebbles, Cobbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 30/06/2024

Habitat Assessment #: 148

Observer: Tom Raymond

GDA94 ; 624652 mE 6998172 mN

Fire History: >5 years

Landform: Flat plain

Soil Type: Sandy clay

Habitat Quality: Disturbed

Surface: Pebbles, Cobbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 1/07/2024

Habitat Assessment #: 149

Observer: Tom Raymond

GDA94 ; 626960 mE 6999480 mN

Fire History: >5 years

Landform: Flat plain

Soil Type: Sandy clay

Habitat Quality: Disturbed

Surface: Sand, Pebbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 1/07/2024

Habitat Assessment #: 150

Observer: Tom Raymond

GDA94 ; 626589 mE 6999441 mN

Fire History: >5 years

Landform: Flat plain

Soil Type: Sandy clay

Habitat Quality: Disturbed

Surface: Sand, Pebbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 1/07/2024

Habitat Assessment #: 151

Observer: Tom Raymond

GDA94 ; 626335 mE 6999434 mN

Fire History: >5 years

Landform: Drainage

Soil Type: Sandy clay

Habitat Quality: Disturbed

Surface: Sand, Pebbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 1/07/2024

Habitat Assessment #: 152

Observer: Tom Raymond

GDA94 ; 626090 mE 6999435 mN

Fire History: >5 years

Landform: Flat plain

Soil Type: Sandy clay

Habitat Quality: Highly degraded

Surface: Sand, Pebbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 1/07/2024

Habitat Assessment #: 153

Observer: Tom Raymond

GDA94 ; 626098 mE 6999173 mN

Fire History: >5 years

Landform: Flat plain

Soil Type: Sandy clay

Habitat Quality: Highly degraded

Surface: Sand, Pebbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 1/07/2024

Habitat Assessment #: 154

Observer: Tom Raymond

GDA94 ; 626324 mE 6999183 mN

Fire History: >5 years

Landform: Flat plain

Soil Type: Sandy clay

Habitat Quality: Highly degraded

Surface: Sand, Pebbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 1/07/2024

Habitat Assessment #: 155

Observer: Tom Raymond

GDA94 ; 626572 mE 6999184 mN

Fire History: >5 years

Landform: Flat plain

Soil Type: Sandy clay

Habitat Quality: Disturbed

Surface: Sand, Pebbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 1/07/2024

Habitat Assessment #: 156

Observer: Tom Raymond

GDA94 ; 626849 mE 6999181 mN

Fire History: >5 years

Landform: Flat plain

Soil Type: Sandy clay

Habitat Quality: Disturbed

Surface: Sand, Pebbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 1/07/2024

Habitat Assessment #: 157

Observer: Tom Raymond

GDA94 ; 626719 mE 6998951 mN

Fire History: >5 years

Landform: Flat plain

Soil Type: Sandy clay

Habitat Quality: Disturbed

Surface: Sand, Pebbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 1/07/2024

Habitat Assessment #: 158

Observer: Tom Raymond

GDA94 ; 626583 mE 6998947 mN

Fire History: >5 years

Landform: Flat plain

Soil Type: Sandy clay

Habitat Quality: Disturbed

Surface: Sand, Pebbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 1/07/2024

Habitat Assessment #: 159

Observer: Tom Raymond

GDA94 ; 626335 mE 6998940 mN

Fire History: >5 years

Landform: Flat plain

Soil Type: Sandy clay

Habitat Quality: Disturbed

Surface: Sand, Pebbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 1/07/2024

Habitat Assessment #: 160

Observer: Tom Raymond

GDA94 ; 626084 mE 6998909 mN

Fire History: >5 years

Landform: Flat plain

Soil Type: Sandy clay

Habitat Quality: Highly degraded

Surface: Sand, Pebbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 1/07/2024

Habitat Assessment #: 161

Observer: Tom Raymond

GDA94 ; 625918 mE 6998954 mN

Fire History: >5 years

Landform: Flat plain

Soil Type: Sandy clay

Habitat Quality: Disturbed

Surface: Sand, Pebbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 1/07/2024

Habitat Assessment #: 162

Observer: Tom Raymond

GDA94 ; 625850 mE 6998915 mN

Fire History: >5 years

Landform: Flat plain

Soil Type: Sandy clay

Habitat Quality: Disturbed

Surface: Sand, Pebbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 1/07/2024

Habitat Assessment #: 163

Observer: Tom Raymond

GDA94 ; 625808 mE 6998713 mN

Fire History: >5 years

Landform: Undulating plain

Soil Type: Sandy clay

Habitat Quality: Disturbed

Surface: Sand, Pebbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 1/07/2024

Habitat Assessment #: 164

Observer: Tom Raymond

GDA94 ; 626056 mE 6998682 mN

Fire History: >5 years

Landform: Flat plain

Soil Type: Sandy clay

Habitat Quality: Disturbed

Surface: Sand, Pebbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 1/07/2024

Habitat Assessment #: 165

Observer: Tom Raymond

GDA94 ; 626295 mE 6998704 mN

Fire History: >5 years

Landform: Flat plain

Soil Type: Sandy clay

Habitat Quality: Good

Surface: Sand, Pebbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 1/07/2024

Habitat Assessment #: 166

Observer: Tom Raymond

GDA94 ; 626566 mE 6998685 mN

Fire History: >5 years

Landform: Drainage

Soil Type: Sandy clay

Habitat Quality: Disturbed

Surface: Sand, Pebbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 1/07/2024

Habitat Assessment #: 167

Observer: Tom Raymond

GDA94 ; 626493 mE 6998446 mN

Fire History: >5 years

Landform: Flat plain

Soil Type: Sandy clay

Habitat Quality: Good

Surface: Sand, Pebbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 1/07/2024

Habitat Assessment #: 168

Observer: Tom Raymond

GDA94 ; 626354 mE 6998445 mN

Fire History: >5 years

Landform: Drainage

Soil Type: Sandy clay

Habitat Quality: Good

Surface: Sand, Pebbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 1/07/2024

Habitat Assessment #: 169

Observer: Tom Raymond

GDA94 ; 626094 mE 6998439 mN

Fire History: >5 years

Landform: Flat plain

Soil Type: Sandy clay

Habitat Quality: Disturbed

Surface: Sand, Pebbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 1/07/2024

Habitat Assessment #: 170

Observer: Tom Raymond

GDA94 ; 625860 mE 6998440 mN

Fire History: >5 years

Landform: Flat plain

Soil Type: Sandy clay

Habitat Quality: Disturbed

Surface: Sand, Pebbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 1/07/2024

Habitat Assessment #: 171

Observer: Tom Raymond

GDA94 ; 625581 mE 6998456 mN

Fire History: >5 years

Landform: Undulating plain

Soil Type: Sandy clay

Habitat Quality: Disturbed

Surface: Sand, Pebbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 1/07/2024

Habitat Assessment #: 172

Observer: Tom Raymond

GDA94 ; 625543 mE 6998182 mN

Fire History: >5 years

Landform: Flat plain

Soil Type: Sandy clay

Habitat Quality: Disturbed

Surface: Sand, Pebbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 1/07/2024

Habitat Assessment #: 173

Observer: Tom Raymond

GDA94 ; 625586 mE 6998598 mN

Fire History: >5 years

Landform: Slope

Soil Type: Sandy clay

Habitat Quality: Disturbed

Surface: Sand, Pebbles, Cobbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 1/07/2024

Habitat Assessment #: 174

Observer: Tom Raymond

GDA94 ; 625836 mE 6998172 mN

Fire History: >5 years

Landform: Flat plain

Soil Type: Sandy clay

Habitat Quality: Disturbed

Surface: Sand, Pebbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 1/07/2024

Habitat Assessment #: 175

Observer: Tom Raymond

GDA94 ; 626066 mE 6998174 mN

Fire History: >5 years

Landform: Flat plain

Soil Type: Sandy clay

Habitat Quality: Disturbed

Surface: Sand, Pebbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 1/07/2024

Habitat Assessment #: 176

Observer: Tom Raymond

GDA94 ; 626317 mE 6998193 mN

Fire History: >5 years

Landform: Flat plain

Soil Type: Sandy clay

Habitat Quality: Disturbed

Surface: Sand, Pebbles, Cobbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 1/07/2024

Habitat Assessment #: 177

Observer: Tom Raymond

GDA94 ; 626298 mE 6997962 mN

Fire History: >5 years

Landform: Flat plain

Soil Type: Sandy clay

Habitat Quality: Disturbed

Surface: Sand, Pebbles, Cobbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 1/07/2024

Habitat Assessment #: 178

Observer: Tom Raymond

GDA94 ; 626089 mE 6997942 mN

Fire History: >5 years

Landform: Flat plain

Soil Type: Sandy clay

Habitat Quality: Disturbed

Surface: Sand, Pebbles, Cobbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 1/07/2024

Habitat Assessment #: 179

Observer: Tom Raymond

GDA94 ; 625813 mE 6997936 mN

Fire History: >5 years

Landform: Undulating plain

Soil Type: Sandy clay

Habitat Quality: Disturbed

Surface: Sand, Pebbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 1/07/2024

Habitat Assessment #: 180

Observer: Tom Raymond

GDA94 ; 625605 mE 6997890 mN

Fire History: >5 years

Landform: Undulating plain

Soil Type: Sandy clay

Habitat Quality: Disturbed

Surface: Sand, Pebbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 1/07/2024

Habitat Assessment #: 181

Observer: Tom Raymond

GDA94 ; 625815 mE 6997684 mN

Fire History: >5 years

Landform: Flat plain

Soil Type: Sandy clay

Habitat Quality: Disturbed

Surface: Sand, Pebbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 1/07/2024

Habitat Assessment #: 182

Observer: Tom Raymond

GDA94 ; 626053 mE 6997682 mN

Fire History: >5 years

Landform: Flat plain

Soil Type: Sandy clay

Habitat Quality: Disturbed

Surface: Sand, Pebbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 1/07/2024

Habitat Assessment #: 183

Observer: Tom Raymond

GDA94 ; 626050 mE 6997432 mN

Fire History: >5 years

Landform: Drainage

Soil Type: Clay

Habitat Quality: Disturbed

Surface: Clay

Habitat Type: Mulga woodland over mixed shrubs



Date: 1/07/2024

Habitat Assessment #: 184

Observer: Tom Raymond

GDA94 ; 625824 mE 6997427 mN

Fire History: >5 years

Landform: Flat plain

Soil Type: Clay

Habitat Quality: Disturbed

Surface: Clay

Habitat Type: Mulga woodland over mixed shrubs



Date: 1/07/2024

Habitat Assessment #: 185

Observer: Tom Raymond

GDA94 ; 625562 mE 6997420 mN

Fire History: >5 years

Landform: Undulating plain

Soil Type: Sandy clay

Habitat Quality: Highly degraded

Surface: Sand, Pebbles

Habitat Type: Chenopod shrubs



Date: 1/07/2024

Habitat Assessment #: 186

Observer: Tom Raymond

GDA94 ; 625542 mE 6997198 mN

Fire History: >5 years

Landform: Flat plain

Soil Type: Sandy clay

Habitat Quality: Disturbed

Surface: Pebbles, Cobbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 1/07/2024

Habitat Assessment #: 187

Observer: Tom Raymond

GDA94 ; 625789 mE 6997185 mN

Fire History: >5 years

Landform: Flat plain

Soil Type: Clay

Habitat Quality: Highly degraded

Surface: Clay

Habitat Type: Chenopod shrubs



Date: 1/07/2024

Habitat Assessment #: 188

Observer: Tom Raymond

GDA94 ; 625964 mE 6997193 mN

Fire History: >5 years

Landform: Flat plain

Soil Type: Clay

Habitat Quality: Highly degraded

Surface: Clay

Habitat Type: Mulga woodland over mixed shrubs



Date: 1/07/2024

Habitat Assessment #: 189

Observer: Tom Raymond

GDA94 ; 625811 mE 6996952 mN

Fire History: >5 years

Landform: Flat plain

Soil Type: Sandy clay

Habitat Quality: Disturbed

Surface: Pebbles, Cobbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 1/07/2024

Habitat Assessment #: 190

Observer: Tom Raymond

GDA94 ; 625557 mE 6996925 mN

Fire History: >5 years

Landform: Flat plain

Soil Type: Sandy clay

Habitat Quality: Disturbed

Surface: Pebbles, Cobbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 1/07/2024

Habitat Assessment #: 191

Observer: Tom Raymond

GDA94 ; 625310 mE 6996922 mN

Fire History: >5 years

Landform: Flat plain

Soil Type: Sandy clay

Habitat Quality: Disturbed

Surface: Pebbles, Cobbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 1/07/2024

Habitat Assessment #: 192

Observer: Tom Raymond

GDA94 ; 625149 mE 6996932 mN

Fire History: >5 years

Landform: Flat plain

Soil Type: Sandy clay

Habitat Quality: Disturbed

Surface: Pebbles, Cobbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 1/07/2024

Habitat Assessment #: 193

Observer: Tom Raymond

GDA94 ; 625550 mE 6996764 mN

Fire History: >5 years

Landform: Flat plain

Soil Type: Sandy clay

Habitat Quality: Disturbed

Surface: Pebbles, Cobbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 1/07/2024

Habitat Assessment #: 194

Observer: Tom Raymond

GDA94 ; 625699 mE 6996716 mN

Fire History: >5 years

Landform: Drainage

Soil Type: Sandy clay

Habitat Quality: Good

Surface: Sand, Pebbles, Cobbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 1/07/2024

Habitat Assessment #: 195

Observer: Tom Raymond

GDA94 ; 625343 mE 6997170 mN

Fire History: >5 years

Landform: Flat plain

Soil Type: Sandy clay

Habitat Quality: Highly degraded

Surface: Sand, Pebbles, Cobbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 1/07/2024

Habitat Assessment #: 196

Observer: Tom Raymond

GDA94 ; 625088 mE 6997157 mN

Fire History: >5 years

Landform: Flat plain

Soil Type: Sandy clay

Habitat Quality: Disturbed

Surface: Pebbles, Cobbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 1/07/2024

Habitat Assessment #: 197

Observer: Tom Raymond

GDA94 ; 624836 mE 6997154 mN

Fire History: >5 years

Landform: Slope

Soil Type: Sandy clay

Habitat Quality: Good

Surface: Pebbles, Cobbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 1/07/2024

Habitat Assessment #: 198

Observer: Tom Raymond

GDA94 ; 624630 mE 6997145 mN

Fire History: >5 years

Landform: Slope

Soil Type: Sandy clay

Habitat Quality: Good

Surface: Pebbles, Cobbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 1/07/2024

Habitat Assessment #: 199

Observer: Tom Raymond

GDA94 ; 624326 mE 6997396 mN

Fire History: >5 years

Landform: Undulating plain

Soil Type: Sandy clay

Habitat Quality: Good

Surface: Pebbles, Cobbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 1/07/2024

Habitat Assessment #: 200

Observer: Tom Raymond

GDA94 ; 624535 mE 6997422 mN

Fire History: >5 years

Landform: Drainage

Soil Type: Sandy clay

Habitat Quality: Good

Surface: Pebbles, Cobbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 1/07/2024

Habitat Assessment #: 201

Observer: Tom Raymond

GDA94 ; 624787 mE 6997407 mN

Fire History: >5 years

Landform: Slope

Soil Type: Sandy clay

Habitat Quality: Good

Surface: Pebbles, Cobbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 1/07/2024

Habitat Assessment #: 202

Observer: Tom Raymond

GDA94 ; 624971 mE 6997433 mN

Fire History: >5 years

Landform: Slope

Soil Type: Sandy clay

Habitat Quality: Good

Surface: Pebbles, Cobbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 1/07/2024

Habitat Assessment #: 203

Observer: Tom Raymond

GDA94 ; 625071 mE 6997655 mN

Fire History: >5 years

Landform: Slope

Soil Type: Sandy clay

Habitat Quality: Good

Surface: Pebbles, Cobbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 1/07/2024

Habitat Assessment #: 204

Observer: Tom Raymond

GDA94 ; 624813 mE 6997707 mN

Fire History: >5 years

Landform: Slope

Soil Type: Sandy clay

Habitat Quality: Good

Surface: Pebbles, Cobbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 1/07/2024

Habitat Assessment #: 205

Observer: Tom Raymond

GDA94 ; 624567 mE 6997668 mN

Fire History: >5 years

Landform: Slope

Soil Type: Sandy clay

Habitat Quality: Good

Surface: Pebbles, Cobbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 1/07/2024

Habitat Assessment #: 206

Observer: Tom Raymond

GDA94 ; 624452 mE 6997662 mN

Fire History: >5 years

Landform: Slope

Soil Type: Sandy clay

Habitat Quality: Good

Surface: Pebbles, Cobbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 1/07/2024

Habitat Assessment #: 207

Observer: Tom Raymond

GDA94 ; 624552 mE 6997909 mN

Fire History: >5 years

Landform: Slope

Soil Type: Sandy clay

Habitat Quality: Good

Surface: Pebbles, Cobbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 1/07/2024

Habitat Assessment #: 208

Observer: Tom Raymond

GDA94 ; 624802 mE 6997930 mN

Fire History: >5 years

Landform: Slope

Soil Type: Sandy clay

Habitat Quality: Good

Surface: Pebbles, Cobbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 1/07/2024

Habitat Assessment #: 209

Observer: Tom Raymond

GDA94 ; 625051 mE 6997929 mN

Fire History: >5 years

Landform: Slope

Soil Type: Sandy clay

Habitat Quality: Good

Surface: Pebbles, Cobbles

Habitat Type: Mulga woodland over mixed shrubs



Date: 1/07/2024

Habitat Assessment #: 210

Observer: Tom Raymond

GDA94 ; 625296 mE 6997910 mN

Fire History: >5 years

Landform: Slope

Soil Type: Sandy clay

Habitat Quality: Good

Surface: Pebbles, Cobbles

Habitat Type: Mulga woodland over mixed shrubs



# **Appendix E.**

## **Descriptions of vertebrate fauna of conservation significance**

**Basic and Targeted Vertebrate Fauna Survey and Assessment  
Reedy Gold Project**



## **E.1 NIGHT PARROT**

| Night Parrot          |                                      | <i>Pezoporus occidentalis</i> |
|-----------------------|--------------------------------------|-------------------------------|
| EPBC Act status       | Biodiversity Conservation Act status | DBCA Priority species status  |
| Critically Endangered | Critically endangered                |                               |

### DESCRIPTION

The Night Parrot is a small, arid-adapted, nocturnal, ground-feeding parrot (Blyth, 1996; Johnstone & Storr, 1998; Threatened Species Scientific Committee, 2016). Its length is 22-25cm, with a body mass of approximately 104g (Threatened Species Scientific Committee, 2016). Although it was suggested that they were semi-nomadic, the Night Parrots in south-western Queensland appear to be sedentary (Murphy, 2015). Adults are bright green with black and yellow markings, including streaks, spots, and bars, and a bright yellow belly.

The Night Parrot was probably distributed initially over much of semi-arid and arid Australia (Garnett et al., 1993; Olsen, 2018; Threatened Species Scientific Committee, 2016). Records in north-west and western Queensland in the early 1990s-2000s were in a broad cross-section of the habitats available (Boles et al., 2016; Cupitt & Cupitt, 2008; Garnett et al., 1993). There have been recent sightings in the Pilbara in 1980, 2005 and 2017, central WA in 1979, north-eastern South Australia in 1979, western Queensland (including Pullen-Pullen-Mt Windsor-Diamantina population) in 1980, 1990, 1993, 2006 and 2013-17 (AG staff, 2017, 2018; Charalambous, 2016; Davis & Metcalf, 2008; Garnett et al., 2011; Jones, 2017; Palaszczuk & Miles, 2017; Pickrell, 2016; Rykers, 2017) and the northern Goldfields (Jackett et al., 2017). Garnett *et al.* (2011) suggested that there were between 50-250 mature individuals in less than 5% of its previous range. More recently, the Kiwirrkurra Rangers have reported Night Parrot calls in their IPA (Ngururrpa Rangers et al., 2024; Yeap et al., 2025) but they haven't disclosed the exact locations.

Some of the Night Parrot calls include a "ding-ding" sound, a frog like "grieeet" and some other three and four-note calls (Threatened Species Scientific Committee, 2016).

### DISTRIBUTION

The extant geographic distribution of Night Parrots is unknown. Long-term records suggest they were widespread and occurred across a range of habitats (Yeap et al., 2025). Figure 1 shows possible long-term records of Night Parrots.

### MOVEMENT

Night Parrots are nocturnal and highly cryptic, roosting in dense vegetation during the day and becoming active at dusk. They are nomadic, moving in response to the availability of food and water. While generally sedentary, individuals have been recorded travelling up to 41km in a single night (Queensland Government, 2024).

### HABITAT AND FORAGING

Wilson's (1937) early summary of observations provided information on the early records of Night Parrots' preferred habitat and breeding sites. Most direct observations indicated that it roosts in tunnels or burrows during the day under clumps of spinifex (i.e. porcupine grass) or samphire bushes (Blyth, 1996; Olsen, 2018). Recent information indicates its preferred habitat appears to be in *Triodia* grasslands, chenopod shrublands, shrubby samphire and floristically diverse habitats dominated by large-seeded species (Blyth, 1996; McCarthy, 2017; Murphy, Silcock, et al., 2017; Threatened Species Scientific Committee, 2016).

Night Parrots inhabit mature spinifex (*Triodia* spp.) grasslands, often in stony or sandy terrain. Roosting and nesting sites are typically in long-unburnt, dense spinifex hummocks. They may also use chenopod shrublands, samphire flats, and mallee woodlands. Proximity to water and foraging grounds is important (Department of Biodiversity Conservation and Attractions, 2024).

Night Parrots are granivorous, feeding primarily on seeds of grasses and herbs, especially *Triodia* species. Foraging occurs at night in floodplains and low-lying areas rich in forbs and grasses. They may travel several kilometres from roost sites to feed (Department of Biodiversity Conservation and Attractions, 2024; Threatened Species Scientific Committee, 2016).

Both roosting and foraging habitats are typically on flat or gently sloping ground, with few trees or shrubs associated with paleodrainages or eroded rocky areas (Department of Biodiversity Conservation and Attractions, 2024). Contemporary information suggests that Night Parrots establish long-term stable roost sites in long unburnt *Triodia* sp., but historically, they have also used chenopods, such as samphire and *Sclerolaena*, and in some cases lignum. These sites typically support a pair or small group of Night Parrots, with individual roosts spread across an area up to several hectares (Adaptive NRM, 2021). These roost sites are in open landscapes (Jackett et al., 2017; Murphy, Austin, et al., 2017) with some scattered shrubs or isolated trees, although they are predominantly treeless. Night Parrot's perceived lower visual acuity may compromise its capacity to fly in treed areas, so it seems to select sites to reduce potential collisions when flying (Iwaniuk et al., 2020). The Department of Biodiversity Conservation and Attractions (2024) described localised Night Parrot habitat as long unburnt *Triodia* hummocks, especially ring-forming species (e.g. *Triodia longiceps*) in a structurally diverse area with a mix of hummock sizes, but including hummocks exceeding 40cm in height.

Night Parrots forage on seeds in areas of higher productivity in paleodrainages, including salt lake edges and nearby interdunal claypans, although chenopod-dominated areas are also considered potential foraging habitat (Department of Biodiversity Conservation and Attractions, 2024). Murphy et al. (2017) placed a GPS tag on two Night Parrots and reported that the birds called at dusk from their diurnal roosts among spinifex hummocks and then flew to more floristically diverse habitats dominated by large-seeded, prolifically seeding species to feed. Night Parrots are feeding in floodplains and run-on areas rich in forbs, grasses and grass-like plants (Department of Biodiversity Conservation and Attractions, 2024; Olsen, 2018). Olsen (2018) provides multiple examples of Night Parrots being recorded in the vicinity of breakaways and coming into isolated pools of water to drink. Water management modelling (Kearney et al., 2016) suggested that Night Parrots may require access to freshwater or succulent plants such as *Sclerolaena* in hot conditions.

'Flyways' connect areas between where Night Parrots forage and roost and could include areas of low mixed grassland, shrubs, herbs and chenopods with bare gibber (Boles et al., 2016; Cupitt & Cupitt, 2008). Murphy et al. (2017) reported Night Parrots flying tens of kilometres when moving between foraging and perhaps drinking water, and probably traverse a variety of habitat types.

## BREEDING

At Pullen Pullen Reserve it nests in large, more or less ring-shaped *Triodia*, and the nest consists of a tunnel (25-30° and 0° to the ground; 20-33cm long) through an apron of dead spinifex leaves that leads to a chamber under a live hummock, with a shallow-rudimentary depression (3-4cm) excavated into the gravelly/sandy soil (Murphy, Austin, et al., 2017). In the northern Goldfields, the nest was again in a spinifex hummock; it was circular, with an excavated depression (~1.5-2.0cm) in sandy substrate (Hamilton et al., 2017; Jackett et al., 2017). The entrance tunnel was 62cm long and was downward sloping (27°) with the entrance 28cm above the ground (Hamilton et al., 2017). It has clutches of typically four (but could be 2-6) sub-elliptical, white eggs with a lustrous appearance (Andrews, 1883; Murphy, Austin, et al., 2017; Keartland in North, 1898; Olsen, 2018; Bourgoign in Wilson, 1937). Breeding followed significant rains in March for the observations in Pullen-Pullen Reserve and in April in the northern Goldfields (Hamilton et al., 2017; Murphy, Austin, et al., 2017), but it is thought that breeding generally occurs between April and October (Murphy, Austin, et al., 2017). Breeding is opportunistic, often triggered by significant rainfall. Nests are built on the ground within spinifex clumps or under chenopod shrubs. Clutches typically contain 2-4 eggs. Juveniles have been observed in August, but

breeding may occur year-round if conditions are favourable (NSW Government- Office of Environment & Heritage, 2017).

## THREATS

Main threats to Night Parrots include predation by feral predators, habitat/vegetation destruction by livestock, inappropriate fire regimes, disease, illegal collection and habitat loss (Threatened Species Scientific Committee, 2016).

## SURVEY AND MONITORING

The most effective survey method is passive acoustic monitoring, using autonomous recording units (ARUs) to detect vocalisations near roost sites. Calls are most frequent at dusk and dawn. Habitat assessments and camera traps may also be used, but visual detection is extremely rare (Department of Biodiversity Conservation and Attractions, 2024).

Current monitoring efforts are focused on mapping Night Parrot habitat, securing these sites, mitigating risks to these habitats (fire and ferals) and ongoing ecological monitoring (Bush Heritage Australia, 2025).

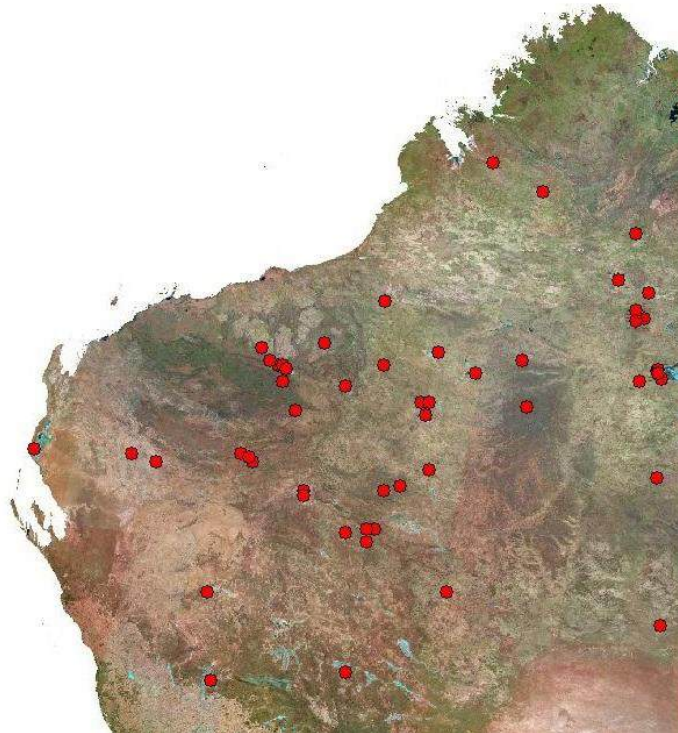


**Figure 1. *Pezoporus occidentalis* locations**

## REFERENCES

- Adaptive NRM. (2021). *West Musgrave Copper and Nickel Project: Night Parrot Desktop Habitat Analysis*. Unpublished report for OZ Minerals Ltd.
- AG staff. (2017). Night parrot feather discovered in South Australia gives hope to ecologists. *Australian Geographic*, September. <http://www.australiangeographic.com.au/news/2017/09/night-parrot-feather-discovered-in-south-australia-gives-hope-to-ecologists>
- AG staff. (2018). Critically endangered night parrot fledgling photographed on Queensland reserve. *Australian Geographic*, February. <http://www.australiangeographic.com.au/news/2018/02/baby-night-parrot-photographed-on-queensland-reserve>
- Andrews, F. W. (1883). Notes on the Night Parrot. *Transactions and Proceedings and Report of the Royal Society of South aUSTRALIA*, 29-30.
- Blyth, J. (1996). *Night Parrot (Pezoporus occidentalis) Interim Recovery Plan for Western Australia*. Unpublished report for the Department of Conservation and Land Management.

- Boles, W. E., Longmore, N. W., & Thompson, M. C. (2016). A Recent Specimen of the Night Parrot *Geopsittacus occidentalis*. *Emu*, 94(1), 37-40. <https://doi.org/10.1071/mu9940037>
- Bush Heritage Australia. (2025). *Night Parrots*. Bush Heritage Australia,. Retrieved 26 June from
- Charalambous, S. (2016). First night parrot fledgling spotted in 100 years spotted in western Queensland. *Australian Geographic*, November. <http://www.australiangeographic.com.au/news/2016/11/first-night-parrot-fledgling-spotted-in-100-years>
- Cupitt, R., & Cupitt, S. (2008). Another recent specimen of the Night Parrot *Pezoporus occidentalis* from Western Queensland. *Australian Field Ornithology*, 25, 69-75.
- Davis, R. A., & Metcalf, B. M. (2008). The Night Parrot (*Pezoporus occidentalis*) in northern Western Australia: a recent sighting from the Pilbara region. *Emu*, 108, 233-236.
- Department of Biodiversity Conservation and Attractions. (2024). *Guidelines for determining the likely presence and habitat usage of night parrot (Pezoporus occidentalis) in Western Australia*. Department of Biodiversity Conservation and Attractions.
- Garnett, S., Crowley, G., Duncan, R., Baker, N., & Doherty, P. (1993). Notes on live Night Parrot sightings in north-western Queensland. *Emu*, 93, 292-296.
- Garnett, S. T., Szabo, J. K., & Dutson, G. (2011). *The Action Plan for Australian Birds 2010*. CSIRO.
- Hamilton, N., Burbidge, A., Douglas, T., & Gilbert, L. (2017). Piecing the puzzle together: the fate of the Night Parrot nest found in Western Australia by Jackett et al. (2017). *Australian Field Ornithology*, 34, 151-154. <https://doi.org/10.20938/afo34151154>
- Iwaniuk, A. N., Keirnan, A. R., Janetzki, H., Mardon, K., Murphy, S., Leseberg, N. P., & Weisbecker, V. (2020). The endocast of the Night Parrot (*Pezoporus occidentalis*) reveals insights into its sensory ecology and the evolution of nocturnality in birds. *Sci Rep*, 10(1), 9258. <https://doi.org/10.1038/s41598-020-65156-0>
- Jackett, N., Greatwich, B., Swann, G., & Boyle, A. (2017). A nesting record and vocalisations of the Night Parrot *Pezoporus occidentalis* from the East Murchison, Western Australia. *Australian Field Ornithology*, 34, 144-150. <https://doi.org/10.20938/afo34144150>
- Johnstone, R. E., & Storr, G. M. (1998). *Handbook of Western Australian Birds. Volume I - Non-Passerines (Emu to Dollarbird)*. Western Australian Museum.
- Jones, A. (2017). *Night parrot sighting in Western Australia shocks birdwatching world*. ABC News. <http://www.abc.net.au/news/2017-03-23/night-parrot-sighting-in-wa-shocks-birdwatching-world/8377624>
- Kearney, M. R., Porter, W. P., & Murphy, S. A. (2016). An estimate of the water budget for the endangered night parrot of Australia under recent and future climates. *Climate Change Responses*, 3(1). <https://doi.org/10.1186/s40665-016-0027-y>
- McCarthy, M. (2017). *Night parrot feather discovery proves Australia's most elusive bird is alive in South Australia*. ABC News. Retrieved 6/11/2017 from <http://www.abc.net.au/news/2017-09-14/night-parrot-south-australia-wildlife-researchers-discover-proof/8942462>
- Murphy, S. (2015). Shining a light: The research unlocking the secrets of the mysterious Night Parrot. *Australian Birdlife*, 4, 30-35.
- Murphy, S. A., Austin, J. J., Murphy, R. K., Silcock, J., Joseph, L., Garnett, S. T., Leseberg, N. P., Watson, J. E. M., & Burbidge, A. H. (2017). Observations on breeding Night Parrots (*Pezoporus occidentalis*) in western Queensland. *Emu*, 117(2), 107-113. <https://doi.org/10.1080/01584197.2017.1292404>
- Murphy, S. A., Silcock, J., Murphy, R., Reid, J., & Austin, J. J. (2017). Movements and habitat use of the night parrot *Pezoporus occidentalis* in south-western Queensland. *Austral Ecology*. <https://doi.org/10.1111/aec.12508>
- Ngururra Rangers, Sunfly, C., Schubert, A., Reid, A. M., Leseberg, N., Parker, L., Paltridge, R., & Hutton, M. (2024). Potential threats and habitat of the night parrot on the Ngururra Indigenous Protected Area. *Wildlife Research*, 51(10). <https://doi.org/10.1071/wr24083>
- North, A. J. (1898). List of birds collected by the Calvert Exploring Expedition in Western Australia. *Transactions of the Royal Society of South Australia*, 22, 125-192.
- NSW Government- Office of Environment & Heritage. (2017). *Night Parrot-profile*. NSW Government. Retrieved 26 June from
- Olsen, P. (2018). *Night Parrot Australia's Most Elusive Bird*. CSIRO.
- Palaszczuk, A., & Miles, S. (2017). *New night parrot community discovered in central west Queensland* <http://statements.qld.gov.au/Statement/2017/3/22/new-night-parrot-community-discovered-in-central-west-queensland>
- Pickrell, J. (2016). The night parrot's secret sanctuary. *Australian Geographic*, August. <http://www.australiangeographic.com.au/topics/wildlife/2016/08/the-night-parrots-secret-sanctuary>
- Queensland Government. (2024). *Night Parrot*. Retrieved 26 June from <https://www.qld.gov.au/environment/plants-animals/conservation/threatened-species/featured-projects/night-parrot>
- Rykers, E. (2017). Night parrot call recordings released online for first time. *Australian Geographic*, February. <http://www.australiangeographic.com.au/news/2017/02/night-parrot-recordings-released-online-for-the-first-time>

- Threatened Species Scientific Committee. (2016). *Conservation Advice Pezoporus occidentalis Night Parrot*. Department of Environment and Energy.
- Wilson, H. (1937). Notes on the Night Parrot, with references to recent occurrences. *Emu*, 37, 79-87.
- Yeap, H. L., Pandey, G., Austin, J. J., Oakeshott, J. G., Hardy, C. M., Murphy, S. A., Leseberg, N. P., Burbidge, A. H., Travouillon, K. J., Joseph, L., & Kearns, A. M. (2025). Museomics and Salvaged Feathers Piece Together the Evolutionary History and Conservation Genomics of the Elusive, Critically Endangered Night Parrot (*Pezoporus occidentalis*). *Molecular Ecology*, e70055. <https://doi.org/10.1111/mec.70055>

## **E.2 WESTERN SPINY-TAILED SKINK**

| Western Spiny-tailed Skink |                                      | <i>Egernia stokesii badia</i> |
|----------------------------|--------------------------------------|-------------------------------|
| EPBC Act status            | Biodiversity Conservation Act status | DBCA Priority species status  |
| Endangered                 | Endangered                           |                               |

### DESCRIPTION

*Egernia stokesii badia* is a stout skink species with a SVL of approximately 194mm and is reddish brown with pale blotches in irregular bands (Wilson and Swan 2021). As with other *E. stokesii* subspecies, *E. s. badia* has two spines on each dorsal scale that become large spines on its short, flat tails (Wilson and Swan 2021).



**Plate 1. *Egernia stokesii badia***

### DISTRIBUTION

The subspecies *E. s. badia* is found in the northern and central wheatbelt from Kellerberrin north to Carnarvon and as far east as Mukinbudin and Perenjori in Western Australia (How et al. 2003, Department of Environment and Conservation 2012).

### MOVEMENT

*Egernia stokesii* species are known for living in small groups of related individuals numbering up to 17 and staying together for up to five years. These families have small home ranges of up to 1.5ha (Department of Environment and Conservation 2012).

### HABITAT AND FORAGING

Western Spiny-tailed Skinks inhabit open eucalypt woodlands and Acacia-dominated shrublands (How et al. 2003, Department of Environment and Conservation 2012). Most common woodland types include York Gum (*Eucalyptus loxophleba*), Gimlet (*E. salubris*) and Salmon Gum (*E. salmonophloia*) (How et al. 2003, Department of Environment and Conservation 2012). It utilises logs over 25cm in diameter, cavities, tree trunks, branches and shrubs and even old corrugated iron, houses and ruins for shelter, but has a preference for log piles where several overlapping hollow logs provide numerous openings and retreat sites (How et al. 2003, Department of Environment and Conservation 2012).

The diet of the Western Spiny-tailed skinks is mostly insects, with some plant material (Department of Environment and Conservation 2012).

## BREEDING

*Egernia s. badia* are viviparous, breeding in late September or early November, and young are born between February and March (Department of Environment and Conservation 2012).

## THREATS

Currently known threats to the Western Spiny-tailed Skink include habitat loss due to clearing, degradation and unregulated modifications, collecting firewood and the removal of alternative refugia (e.g. old infrastructures and anthropogenic environments; Department of Environment and Conservation 2012). Other potential threats include invasive predators, wildfires, illegal collecting of wild specimens and climate change (Department of Environment and Conservation 2012).

## SURVEY AND MONITORING

This species is best located by searching for suitable habitats for its latrine sites, which are typically near hollow logs, tree trunks, branches, and shrubs (Plate 2).



**Plate 2. *Egernia stokesii badia* latrine site**

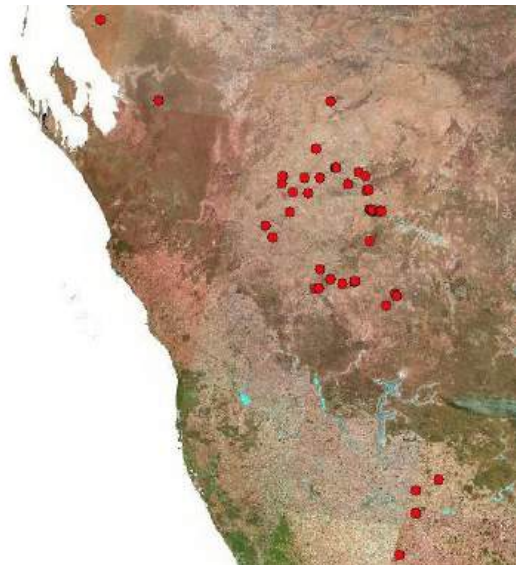


**Figure 1. Geographic distribution of *Egernia stokesii badia***

## REFERENCES

- Department of Environment and Conservation. 2012. Western Spiny-tailed Skink (*Egernia stokesii*) Recovery Plan.
- How, R. A., J. Dell, and D. J. Robinson. 2003. The Western Spiny-Tailed Skink, *Egernia stokesii badia*: Declining distribution in a habitat specialist. *The Western Australian Naturalist* **24**:138-146.
- Wilson, S., and G. Swan. 2021. *A Complete Guide to Reptiles of Australia*. 6 edition. New Holland, Sydney.

### **E.3 GREY FALCON**

| Grey Falcon     |                                      | <i>Falco hypoleucos</i>      |
|-----------------|--------------------------------------|------------------------------|
| EPBC Act status | Biodiversity Conservation Act status | DBCA Priority species status |
| Vulnerable      | Vulnerable                           |                              |

## DESCRIPTION

The Grey Falcon has an estimated wild population of <1000 (Threatened Species Scientific Committee, 2020) and is the rarest member of the *Falco* genus in Australia, and in the top five rarest Falcon species in the world (Schoenjahn et al., 2019).

The Grey Falcon is a medium-sized falcon that has a pale-grey underbody with a medium-grey back, black outer wings, and off-white underwings (Mullin et al., 2019). Compared to other falcons, its lighter plumage stands out (Mullin et al., 2019). They stand at about 30-45cm tall, with wingspans ranging from 85-95cm (Morcombe, 2017). Males have an average body mass of 390g, while females have an average 560g, displaying reverse sexual dimorphism (Schoenjahn et al., 2019). Grey Falcons are usually a quiet species, but during their breeding season, will make loud, slow “kek-kek-kek” or “kak-ak-ak-ak”, which sounds similar to the call of a Peregrine Falcon but is slower, deeper, and harsher (Morcombe, 2017).

## DISTRIBUTION

This species is sparsely recorded throughout much of arid, semi-arid Australia and inland Australia. Their range has been reduced to northern WA, with only rare occurrences south of 26°S (Schoenjahn et al. 2019). When sighted, Grey Falcons have been observed in areas with annual rainfall less than 500mm, except during wet years followed by drought, which can cause the species to become marginally more widespread (Threatened Species Scientific Committee 2020). They have also been sighted outside of breeding season in Derby, Western Australia (Schoenjahn et al. 2019). There have been sightings further south, however, many Grey Falcon sightings are believed to be misidentifications (Schoenjahn et al. 2019).

## MOVEMENT

The Grey Falcon is a wide-roaming bird commonly recorded in drainages, along watercourses, or anywhere where there is permanent water throughout arid and semi-arid regions of Western Australia. There is a suggestion that their movements are seasonal, tending to move within rainfall areas of 150 or 250mm on the middle latitudes of Australia in the spring, and moving towards the coast while avoiding the north in the rainy seasons (Olsen & Olsen, 1986). During autumn and winter, Grey Falcons may move further north, where it is drier (Olsen & Olsen, 1986) and are commonly referred to as being nomadic due to a lack of substantial studies on their movements (Schoenjahn et al., 2019). When recorded, they have been found as individuals or in pairs. In times of severe drought, groups of up to six falcons have been spotted around the junction of the Murray and Darling rivers in the eastern states of Australia (Olsen & Olsen, 1986), but there is no information regarding whether anything similar occurs in Western Australia.

## HABITAT AND FORAGING

The Grey Falcon is most likely to inhabit the timbered country in stony plains, shrublands (especially *Acacia*), grasslands (i.e. spinifex and tussock), and wooded areas of arid/semi-arid regions (Olsen & Olsen, 1986). They can also inhabit open coastal woodlands, but this is primarily during seasons of drought (Olsen & Olsen, 1986). It has been noted that in winter, Grey Falcons are more likely to be found in tussock grassland and open woodland.

Grey Falcons have been observed hunting in treeless areas and are known for having large foraging ranges. Their prey predominantly consists of birds, but they also hunt small mammals, reptiles, and insects (Olsen & Olsen, 1986). Grey Falcons prefer ground-feeding and flocking birds, including parrots, pigeons, and wrens

(Olsen & Olsen, 1986). Their diet becomes more avian-based during the breeding season. While they are said to hunt in treeless areas, most accounts of their feeding have involved them feeding on the ground, especially near outback verges and tracks (Schoenjahn, 2018).

## **BREEDING**

Breeding habitat appears to be localised in zones with the highest annual average temperatures and in areas with persistently dry and winter-drought climatic conditions. The breeding season for grey falcons is reported to be from mid-late winter to the end of spring (June to November). During the breeding season, they nest in tall trees on watercourses and occasionally on man-made structures such as transmission line towers. Grey Falcons are said to be opportunistic and frequently use already existing structures from other bird species, typically corvids and other raptors, with rare reports indicating that they will make their nests (Schoenjahn, 2018). Grey Falcons will lay clutches of one to four eggs (Threatened Species Scientific Committee, 2020). Eggs take 35 days to incubate and another 49–52 days before they fledge (Schoenjahn, 2018).

## **THREATS**

Even though multiple reports have recorded threats to the Grey Falcon, none of these have been substantiated and are often considered to be speculative (Schoenjahn, 2018; Threatened Species Scientific Committee, 2020). These are:

- Predation by cats;
- Increased temperatures in arid and semi-arid Australia;
- Small population size;
- Grazing by exotic herbivores;
- Nest shortage;
- Birdwatchers and photographers;
- Collision with traffic;
- Collision with fences and powerlines;
- Egg collecting; and
- Falconry.

Predation by cats has been listed as the highest priority, as Grey Falcons roost on the bare ground and have been previously found in the stomach contents of feral cats (Threatened Species Scientific Committee, 2020). A small population size means that the Grey Falcon is susceptible to demographic and genetic stochastic events, which could impact the long-term survival of the species, making it a very high threat (Threatened Species Scientific Committee, 2020). Threats 2, 4, and 5 are also listed as very high priority, but there is no evidence that these have impacted Grey Falcons (Threatened Species Scientific Committee, 2020). Disturbance by birdwatchers and photographers is a moderate threat to Grey falcons, as they may interrupt breeding success with repeated visits to known breeding sites (Threatened Species Scientific Committee, 2020). Direct mortality from traffic, fences, and powerlines is also considered a moderate threat; however, unlike birdwatchers, there is substantial evidence for this threat (Threatened Species Scientific Committee, 2020). Egg collecting and falconry are the least impactful of these threats because they are least likely to occur.

## **SURVEY AND MONITORING**

The standard 20-minute 2ha search by an ornithologist is an appropriate survey method for Grey Falcons, as they are a large and visible bird.

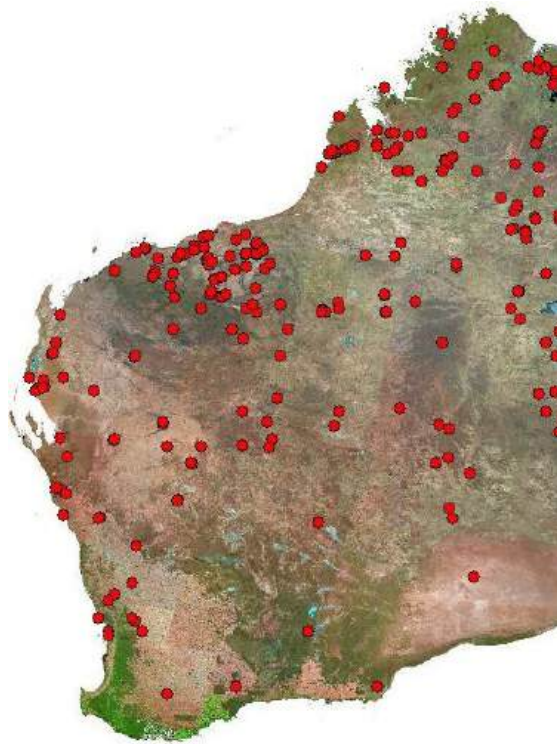


**Figure 1. *Falco hypoleucos* locations**

## REFERENCES

- Morcombe, M. (2017). *Pocket Field Guide to Birdlife of Western Australia* (V. B. Lee Curtis, Ed.). Lynn Dickinson.
- Mullin, D. W., McCulloch, G. A., Schoenjahn, J., & Walter, G. H. (2019). Coping with heat in the arid interior – what can feather structure reveal about the ecology of Australia's desert-living Grey Falcon *Falco hypoleucos*? *Emu - Austral Ornithology*, 120(1), 83-89. <https://doi.org/10.1080/01584197.2019.1698301>
- Olsen, P. D., & Olsen, J. (1986). Distribution, status, movements and breeding of the Grey Falcon *Falco hypoleucos*. *Emu*(1), 47-51.
- Schoenjahn, J. (2018). *Adaptations of the rare endemic Grey Falcon Falco hypoleucos that enable its permanent residence in the arid zone of Australia* [PhD, University of Queensland School of Biological Sciences]. Brisbane.
- Schoenjahn, J., Pavey, C. R., & Walter, G. H. (2019). Ecology of the Grey Falcon *Falco hypoleucos* – current and required knowledge. *Emu - Austral Ornithology*, 120(1), 74-82. <https://doi.org/10.1080/01584197.2019.1654393>
- Threatened Species Scientific Committee. (2020). *Conservation Advice Falco hypoleucos Grey Falcon*. Commonwealth of Australia.

## **E.4     MALLEEFOWL**

| Malleefowl      |                                      | <i>Leipoa ocellata</i>       |
|-----------------|--------------------------------------|------------------------------|
| EPBC Act status | Biodiversity Conservation Act status | DBCA Priority species status |
| Vulnerable      | Vulnerable                           |                              |

## DESCRIPTION

Malleefowl are a medium sized, predominantly ground dwelling bird that is comparable in size to that of a large domestic fowl. Adults' range between 1.5 and 2.5kg with males being slightly larger. They can be difficult to find in the wild because of how well they camouflage, although they are commonly seen near their large distinctive breeding mounds.

Appearance-wise, they have a distinctive grey, black and white banding across their bodies and wings, while their neck and head are greyish with a white stripe under their eye, and their belly and breast are a cream-white in appearance (Department of Parks and Wildlife, 2016b).

From the front of the crown to their nape, Malleefowl have a dark crest that will raise when the bird is alarmed (Department of Parks and Wildlife, 2016b).

Malleefowl is not sexually monomorphic but the sexes do have differing calling patterns. Males will make either deep two-toned bellowing or booming calls or loud clucks, while females will make high-pitched crowing, soft crooning, or low grunting calls (Department of Parks and Wildlife, 2016b).



**Plate 1. Malleefowl on its mound**

## DISTRIBUTION

Historically, the range of the Malleefowl in Western Australia spans from north of Carnarvon to east of Esperance, and they have also been recorded over the majority of southern WA (Parsons et al., 2008; Figure 1). With colonisation, the natural geographical range of the Malleefowl has contracted and this contraction is predicted to continue (Parsons et al., 2008). This contraction is primarily attributed to the use of land for grazing and predation by feral and pest fauna (e.g. foxes: Benshemesh, 2007; Parsons et al., 2008).

## MOVEMENT

The Malleefowl is a sedentary, ground-dwelling bird that can wander up to several kilometres from their normal activity area (Department of Parks and Wildlife, 2016b). They do not defend a territory, and their home ranges will often overlap with those of other individuals (Department of Parks and Wildlife, 2016b). These birds will move throughout their home range predominantly on foot, but they can fly (Benshemesh, 2007). They mostly fly to a nocturnal roosting site, which provides some protection against terrestrial predators.

## HABITAT AND FORAGING

Malleefowl, as their name suggests, are most commonly found in mallee shrubland and woodlands (Department of Parks and Wildlife, 2016b). Other vegetation types they have been frequently found in include Mulga (*Acacia aneura*), Broombush (*Melaleuca uncinata*), Scrub Pine (*Callitris verrucosa*), Eucalyptus woodlands and coastal heathlands (Department of Parks and Wildlife, 2016b). For habitats with the vegetation types listed above to be suitable, they require sandy soils and plenty of leaf litter to build their nest mounds (Department of Parks and Wildlife, 2016b).

Malleefowl is an opportunistic forager whose diet is affected by seasonal availability, but it mainly consists of a mixture of plant and insect materials (Animal Plant Mineral, 2012).



**Plate 2. Malleefowl on its mound**

## BREEDING

Malleefowl are known for building large mounds on the ground to make their nests during the breeding season. To successfully incubate their eggs, they will add or remove leaf litter and sand to maintain an optimal temperature of between 32-34°C (Hossain et al., 2022). Malleefowl mounds can consist of sand, rock and/or pebble, and can be between three-five metres in diameter (Sackmann & Jamieson, 2018) and up to one meter in height (Parvin et al., 2021).

According to the National Malleefowl Monitoring manual there are 7 profiles for Malleefowl nest mounds (National Malleefowl Recovery Team, 2016). Their descriptions are as follows:



**Plate 3. Newly hatched Malleefowl chick**

1. Typical crater with raised rim. This is the typical shape of an inactive (dormant) mound.
2. Mound fully dug out. The crater slopes down steeply, and at the base the sides drop vertically to form a box-like structure with sides usually 20-30cm deep. Often litter will have been raked into windrows and may have started to enter the mound.
3. Mound with litter. This is the next stage after Profile 2. Litter will have been raked into the mound by Malleefowl, and thick layers of litter are evident on the surface. There may or may not be some sand mixed with the litter at this stage.
4. Mound mounded up (no crater) an active but unopened Malleefowl mound.
5. Mound that has a sandy crater with peak in centre. An active mound which is in the process of being closed by Malleefowl.
6. Mound low and flat without peak or crater. A very long unused mound or a deliberately flattened mound late in a breeding season to capture heat from the sun.
7. Very large flat mound. Very broad and flat and will generally measure more than 10m in diameter. These mounds are thought to have been made by a species of megafauna, a bird similar to Malleefowl but much larger. The mega mound may have a more recent mound on top of it.

After an egg is laid, the female Malleefowl will devote much of her energy and time to foraging to ensure she produces large yolk-rich eggs that are yet to be laid. Meanwhile, the male will tend to the mound and ensure it stays at optimum incubation temperatures (Weathers & Seymour, 1998), however, often both parents will regulate the temperature in the mound. While traditionally thought to be behaviourally monogamous, some studies have shown that they exhibit extra-pair paternity and polygyny (Stenhouse, 2022). Malleefowl has a high fecundity, producing up to 35 eggs per breeding season (Department of Parks and Wildlife, 2016a), but it is generally within the 14-20 range (Priddel & Wheeler, 2005). Higher food availability can lead to increased fecundity (Priddel & Wheeler, 2005).

## **THREATS**

Land clearing and fragmentation are the biggest threats to Malleefowl populations (Benshemesh, 2007). The ideal habitat for Malleefowl also unfortunately has the best soil conditions for wheat and sheep production, which has led to 80% of the wheatbelt in Western Australia and the eastern states being cleared (Benshemesh, 2007). While agriculture is the primary reason for Malleefowl habitat loss, there has also been an increased interest in these areas by mining and waste containment (Benshemesh, 2007). The National Malleefowl Recovery Plan recommends that destructive mining be prohibited in suitable remnant vegetation and Malleefowl-dense areas unless there are clear long-term improvements for Malleefowl populations (Benshemesh, 2007). Consequently, this clearing has also had the run-off effect of fragmenting any remaining suitable Malleefowl habitat (Benshemesh, 2007).

Increased agricultural activity throughout Australia has led to a surge in sheep and other grazing animals in the wheatbelt. This increased grazing has been shown to reduce the breeding densities of Malleefowl by between 85-90% (Benshemesh, 2007). These grazing animals have also led to decreased food supplies and decreased vegetation cover for the Malleefowl, making them more vulnerable to predation and reducing their chances of survival due to being outcompeted for food resources (Benshemesh, 2007). Introduced predators like foxes and cats have also heightened the risk of predation for the Malleefowl, drastically impacting chick survival rates and adult mortality rates (Benshemesh, 2007). Foxes in particular are a significant threat because they will prey on Malleefowl during all life stages and are the only documented predators to target Malleefowl eggs, other than humans (Benshemesh, 2007).

There are also some threats outlined in the National Recovery Plan for Malleefowl that have yet to have any proof of direct impact on Malleefowl populations but are included because they are highly likely to impact their populations in the future or will affect efforts to monitor/conservate existing populations. These include changing fire regimes, disease, inbreeding, chemical exposure and climate change (Benshemesh, 2007).

## **SURVEY AND MONITORING**

To locate Malleefowl populations, various survey methods have been employed. These can be separated into manual and semi-automated methods (Hossain et al., 2022). The manual methods involve walking transects on foot in suspected suitable habitats, by observing the suspected habitats from a helicopter that is flying at slow speeds and low altitudes (Hossain et al., 2022), or it can be performed using all-terrain vehicles to survey the area (Terrestrial Ecosystems, 2018). Semi-automated methods consist of using high-definition digital imaging of survey areas to try to determine the locations of Malleefowl mounds (Thompson et al., 2015). Another example of a remote sensing technology that has been used for detecting Malleefowl mounds is LiDAR (Hossain et al., 2022). High-definition digital imaging of the survey area is more accurate than LiDAR in detecting mounds (Hossain et al., 2022; Parvin et al., 2021; Terrestrial Ecosystems, 2018).

All mounds located by high-definition digital imaging or LiDAR must be ground-truthed, and details about each mound must be recorded per the National Malleefowl Monitoring Program (National Malleefowl Recovery Team, 2016).

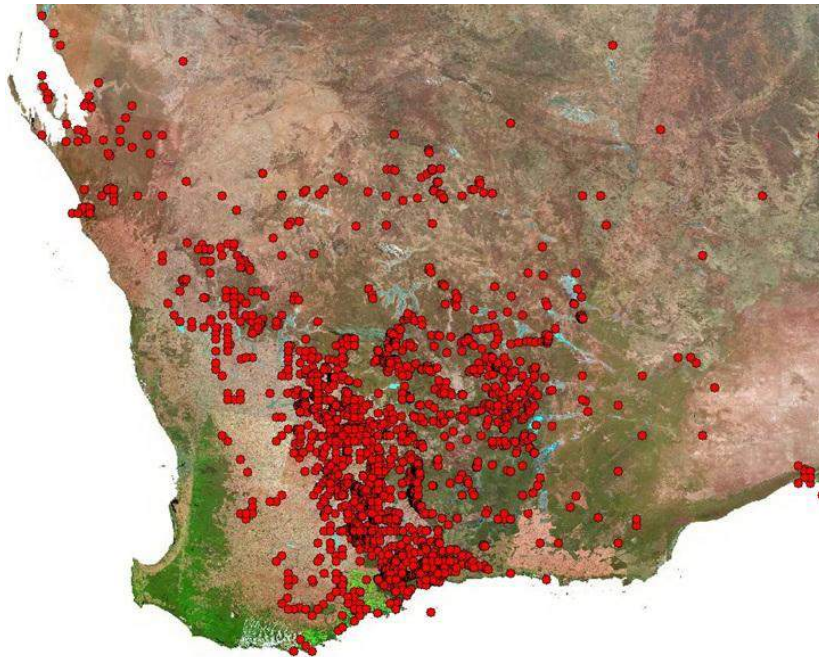


**Figure 1. *Leipoa ocellata* locations**

## REFERENCES

- Animal Plant Mineral. (2012). *Distribution of Malleefowl Mounds Across the Minjar Project Area - Map with the referral* 2012/6646.
- Benshemesh, J. (2007). *National Recovery Plan for Malleefowl*. Department for Environment and Heritage.
- Department of Parks and Wildlife. (2016a). *Fauna facts Malleefowl*. Department of Parks and Wildlife.
- Department of Parks and Wildlife. (2016b). *Fauna profile Malleefowl *Leipoa ocellata**. Department of Parks and Wildlife.
- Hossain, N., Murshed, M., Lu, G., Awrangjeb, M., Florentine, S. K., Irvin, M., & Teng, S. W. (2022). *Automatic Malleefowl Mound Detection using Robust LiDAR-based Features and Classification* 2022 International Conference on Digital Image Computing: Techniques and Applications (DICTA),
- National Malleefowl Recovery Team. (2016). *National Malleefowl Monitoring Manual*. National Malleefowl Recovery Group.
- Parsons, B. C., Short, J. C., & Roberts, J. D. (2008). Contraction in the range of Malleefowl (*Leipoa ocellata*) in Western Australia: a comparative assessment using presence-only and presence-absence datasets. *Emu*, 108, 221-231.
- Parvin, N., Awrangjeb, M., Irvin, M., Florentine, S., Murshed, M., & Lu, G. (2021). *Detection of Malleefowl Mounds from Point Cloud Data* 2021 Digital Image Computing: Techniques and Applications (DICTA),
- Priddel, D., & Wheeler, R. (2005). Fecundity, egg size and the influence of rainfall in an isolated population of malleefowl (*Leipoa ocellata*). *Wildlife Research*, 32, 639-648.
- Sackmann, J., & Jamieson, P. (2018, 17-20 August 2018). Comparative assessment of Malleefowl mound search techniques. National Malleefowl Forum 2018, Mildura, Victoria.
- Stenhouse, P. (2022). *Malleefowl and anthropogenic change: an integrated analysis of population trends, landscape genetics and movement ecology* University of Adelaide]. Adelaide.
- Terrestrial Ecosystems. (2018). *Annual Malleefowl Survey - Enterprise, Mulgarrie and north of Federal*. U. I. r. f. N. G. Fields.
- Thompson, S., Thompson, G., Sackmann, J., Spark, J., & Brown, T. (2015). Using high-definition aerial photography to search in 3D for malleefowl mounds is a cost-effective alternative to ground searches. *Pacific Conservation Biology*, 21(3), 208-213. <https://doi.org/10.1071/pc14919>
- Weathers, D. L., & Seymour, R. S. (1998). Behaviour and time-activity budgets of malleefowl *Leipoa ocellata* in South Australia. *Emu*, 98, 288-296.

## **E.5 SOUTHERN WHITEFACE**

| Southern Whiteface |                                      | <i>Aphelocephala leucopsis</i> |
|--------------------|--------------------------------------|--------------------------------|
| EPBC Act status    | Biodiversity Conservation Act status | DBCA Priority species status   |
| Vulnerable         | Vulnerable                           |                                |

### DESCRIPTION

The Southern Whiteface is a small, distinctive bird with a thornbill-like appearance, measuring ~11.5cm in length. It has a dark crown, extending from the forehead to the nape, and a white face. The upperparts are predominantly brownish-grey, and the underparts are white. Its short, pointed bill is finch like in appearance and adapted for feeding on seeds and insects (Nevill, 2018). Some individuals have a distinct chestnut flank. The tail is black with a narrow white tip. It has a cream-coloured eye and grey legs. Adults are sexually monomorphic while juveniles lack a black rear band on the face (Schodde & Mason, 1999).



**Plate 1. Southern Whiteface**

There are two recognised subspecies of Southern Whiteface *A. l. leucopsis* (south-eastern southern whiteface) which is found throughout south-eastern and central Australia and *A. l. castaneiventris* (south-west southern whiteface) found in central and southern regions of Western Australia (Department of Climate Change Energy the Environment and Water, 2023). The subspecies have overlapping ranges and hybridize in overlapping areas.

### DISTRIBUTION

The Southern Whiteface's geographic distribution has declined substantially over the last 24 years with an estimated reduction in population of 30-50% every 10 years (Department of Climate Change Energy the Environment and Water, 2023). The population of *A. l. leucopsis* is estimated at between 36,000 and 134,000 while the population of *A. l. castaneiventris* is estimated at between 236,000 and 954,000 (Department of Climate Change Energy the Environment and Water, 2023).

The Southern Whiteface occurs across an area of over 4,910,000km<sup>2</sup> across Australia. However, within this area, its area of occupancy is estimated to be 34,400-140,000km<sup>2</sup> (Ehmke et al., 2021). In Western Australia, it can be found as far north as Carnarvon and from the WA west coast near Hamelin Bay through the Great Victoria Desert into the arid areas of South Australia (Figure 1).

In WA, the Southern Whiteface has been found in numerous IBRA's during surveys, including but not exclusive to the Pilbara, Carnarvon, Gascoyne, Yalgoo, Murchison, Coolgardie, Little Sandy Desert, Gibson Desert, Great Victoria Desert, Central Ranges, Geraldton Sand Plains, Avon Wheatbelt, Nullarbor, and Mallee.

### MOVEMENT

The movements, home range, and social structure of Southern Whiteface are poorly understood. Some consider it sedentary, however, records indicate that birds will move locally to new areas, particularly in drought years (Higgins & Peter, 2002). Craig and Moore (2020) recorded this bird being present and absent during surveys near Bungalbin in Western Australia, suggesting it was mobile, probably with a shifting activity area. In

multiple Terrestrial Ecosystems surveys near the Mt Weld mining area, near Laverton in the Goldfields, there was evidence of shifts in its activity area (Terrestrial Ecosystems, 2024).

## **HABITAT AND FORAGING**

Its geographic distribution covers a wide range of habitat types. Acacias and Eucalypts usually dominate these habitats and consist of open woodlands and shrublands on ranges, foothills, lowlands, and plains (Higgins & Peter, 2002). Critical habitat for this species is considered to be relatively undisturbed open woodlands and shrublands with an understorey of grass or shrubs near areas of low tree densities with a herbaceous understorey for foraging habitat, and living and dead trees with hollows and crevices, which are needed for roosting and nesting (Department of Climate Change Energy the Environment and Water, 2023).

It forages on the ground, feeding on insects, spiders, and seeds found on bare ground or in leaf litter (Antos & Bennet, 2006; Higgins & Peter, 2002). These birds will generally forage in small groups of 2-8, however, they have been known to congregate in larger groups up to 70 birds and mixed flocks, particularly with other whiteface and thornbill species, and during the non-breeding season (Higgins & Peter, 2002).

## **BREEDING**

Southern Whiteface generally breeds between July and October, however, in arid regions, rainfall can affect breeding (Higgins & Peter, 2002; Terrestrial Ecosystems, 2024). Birds nest in a variety of locations from hollows and crevices to low bushes and construct a large bulky domed nest of grass, bark, and roots (Higgins & Peter, 2002). Clutches consist of 3-4 eggs. The incubation period is unknown, but young fledge between 14-19 days. Birds generally nest in pairs but examples of cooperative breeding have been observed (Higgins & Peter, 2002). The generational length is estimated at 2.8 years (Bird et al., 2020).

## **THREATS**

The conservation advice for the Southern Whiteface lists habitat loss as one of the major threats to the species, particularly on the east coast of Australia (Department of Climate Change Energy the Environment and Water, 2023).

Across much of the Southern Whiteface's range in WA, the threat to the species is a combination of secondary effects from overgrazing affecting understorey habitat, feral species predation, extreme climate events such as drought and climate change.

## **SURVEY AND MONITORING**

The preferred method for monitoring and detecting Southern Whiteface is to conduct the 2ha-20min searches.



**Plate 2. Southern Whiteface nest**

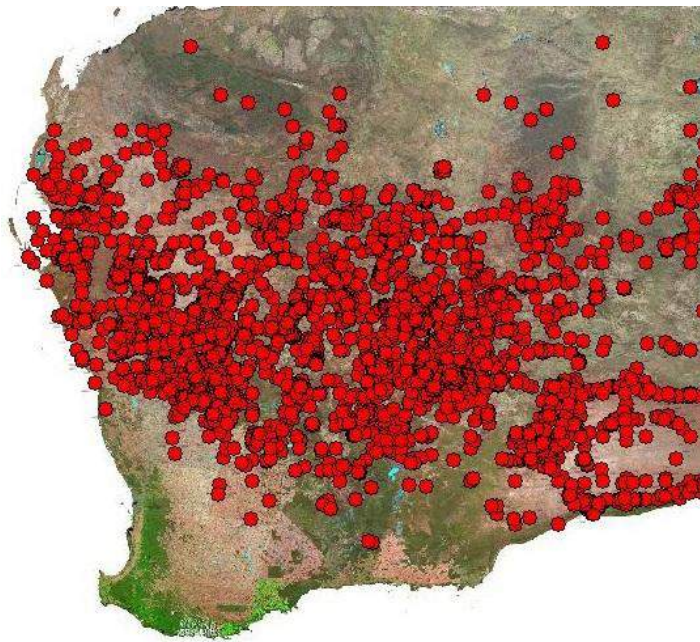


**Figure 1. *Aphelocephala leucopsis* locations**

## REFERENCES

- Antos, M. J., & Bennet, A. F. (2006). Foraging ecology of ground-feeding woodland birds in temperate woodlands of southern Australia. *Emu*(106), 29-40.
- Bird, J. P., Martin, R., Akcakaya, H. R., Gilroy, J., Burfield, I. J., Garnett, S. T., Symes, A., Taylor, J., Sekercioglu, C. H., & Butchart, S. H. M. (2020). Generation lengths of the world's birds and their implications for extinction risk. *Conservation Biology*. <https://doi.org/10.1111/cobi.13486>
- Craig, M. D., & Moore, G. I. (2020). The avifauna of Bungalbin, Western Australia – an arid region with minimal human impact. *Australian Field Ornithology*, 37, 1-14. <https://doi.org/10.20938/afo37001014>
- Department of Climate Change Energy the Environment and Water. (2023). *Conservation Advice for *Aphelocephala leucopsis* (southern whiteface)*. Department of Climate Change Energy the Environment and Water.
- Ehmke, G., Antos, M. J., H.A., F., Barnes, M. D., Tulloch, A. I. T., Loyn, R. H., & Garnett, S. T. (2021). South-west Southern Whiteface *Aphelocephala leucopsis castaneiventris* and South-eastern A. l. *leucopsis*. In S. T. Garnett & G. B. Baker (Eds.), *The Action Plan for Australian Birds 2020*. CSIRO.
- Higgins, P. J., & Peter, J. M. (2002). *Handbook of Australian, New Zealand and Antarctic Birds*. Oxford University Press.
- Nevill, S. J. (2018). *Birds of Western Australia: The Field Guide*. Woodslane Press Pty Ltd.
- Schodde, R., & Mason, I. J. (1999). *The Directory of Australian Birds: Passerines*. CSIRO Publishing.
- Terrestrial Ecosystems. (2024). *Southern Whiteface assessment for the Mt Weld Rare Earths Project in 2024*. Unpublished report for Mt Weld Mining Pty Ltd.

## **E.6 FORK-TAILED SWIFT**

| Fork-tailed Swift |                                      | <i>Apus pacificus</i>        |
|-------------------|--------------------------------------|------------------------------|
| EPBC Act status   | Biodiversity Conservation Act status | DBCA Priority species status |
| Migratory         | Migratory                            |                              |

## DESCRIPTION

The Fork-tailed Swift is known by other names, including Pacific Swift, White-belted Swift, White-rumped Swift, Siberian White-rumped Swift, Rainbird, and New Holland Swift. It is a small bird (18-21cm length, a wingspan of 40-42cm, and a body mass of 30-40g). A medium-large, elegant swift with a slim body, long scythe-shaped wings that taper to finely pointed tips, and a rather long, deeply forked tail (BirdLife Australia 2023).

## DISTRIBUTION

In Australia, it is a non-breeding visitor that is widespread. In Western Australia, it has been reported from near Eyre Bird Observatory, Denmark, and Augusta to Carnarvon, including some nearshore and offshore islands, and scattered along the coast from Pilbara to the Kimberley, near Wyndham (BirdLife Australia 2023).

## MOVEMENT

Almost exclusively aerial (BirdLife Australia 2023).

## HABITAT AND FORAGING

In Australia, mostly recorded over inland plains but sometimes above foothills or in coastal areas, but also over cliffs and beaches, islands, and sometimes seen well out to sea (BirdLife Australia 2023).

Feeds and roosts aerially, and it will forage up to hundreds of metres above ground, but also < 1 m above open areas or over water (BirdLife Australia 2023). It arrives in Australia in October or November, and leaves in April.

## BREEDING

The Fork-tailed Swift breeds in Asia, from southern Siberia around the Altai Mountains, near the Arctic Circle, the Sea of Okhotsk, Kamchatka, China, the Korean Peninsula, Japan, Taiwan, the Himalayas, Burma, Thailand and central Vietnam; possibly also in the Philippines.

## THREATS

Some birds die in cyclonic winds, and they are taken by raptors.

## SURVEY AND MONITORING

Seen in normal 20-minute 2ha avifauna surveys.

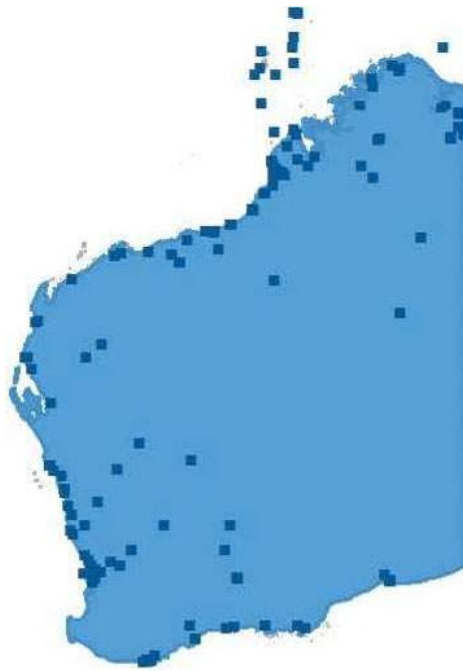


**Figure 1. *Apus pacificus* locations**

Taken from: [dcceew.gov.au/sites/default/files/documents/migratory-birds-map-fork-tailed-swift.pdf](https://dcceew.gov.au/sites/default/files/documents/migratory-birds-map-fork-tailed-swift.pdf)

## REFERENCES

BirdLife Australia. 2023. Fork-tailed Swift. *in* S. Marchant and P. J. Higgins, editors. Handbook of Australian, New Zealand and Antarctic Birds. Volume 1 to 7. Birdlife Australia, Online.

## **E.7 GREY WAGTAIL**

| Grey Wagtail    |                                      | <i>Motacilla cinerea</i>     |
|-----------------|--------------------------------------|------------------------------|
| EPBC Act status | Biodiversity Conservation Act status | DBCA Priority species status |
| Migratory       | Migratory                            |                              |

**DESCRIPTION**

The Grey Wagtail has a body length of 18-19cm, wingspan of 25-27cm and a body mass of 16.5g. Distinctive wagtail with a characteristic slim, attenuated, graceful appearance, mainly owing to proportionately longer tail and shorter legs, and generally more horizontal stance than other wagtails (BirdLife Australia 2023).

**DISTRIBUTION**

Mostly, breeds across a wide range of places in the Palaearctic, including Europe, Britain, the Iberian Peninsula, Scandinavia, Poland, Ukraine, Romania, Bulgaria and Greece.

In Western Australia, there are only scattered, isolated records.

**MOVEMENT**

This is a migratory species breeding in the northern part of the Northern Hemisphere and is seen in the austral area in late spring until autumn.

**HABITAT AND FORAGING**

In Australia, it is associated with water, especially creeks, rivers and waterfalls; and often seen at the edge of running water, among rocks or boulders, or on banks of gravel or coarse sand (BirdLife Australia 2023).

**BREEDING**

The Grey Wagtail breeds in the Northern Hemisphere in the Australian winter.

**THREATS**

Threats are unknown.

**SURVEY AND MONITORING**

Confirmed observations are rare, but they would be recorded in the 20-minute 2-ha avifauna surveys.



**Figure 1. *Motacilla cinerea* locations**

## REFERENCES

BirdLife Australia. 2023. Grey Wagtail.*in* S. Marchant and P. J. Higgins, editors. Handbook of Australian, New Zealand and Antarctic Birds. Volume 1 to 7. Birdlife Australia,, Online.

## **E.8     YELLOW WAGTAIL**

| Yellow Wagtail  |                                      | <i>Motacilla flava</i>       |
|-----------------|--------------------------------------|------------------------------|
| EPBC Act status | Biodiversity Conservation Act status | DBCA Priority species status |
| Migratory       | Migratory                            |                              |

**DESCRIPTION**

The Yellow Wagtail has many other names and multiple subspecies that are typically defined by the location (Birdlife Australia 2023). It has a length of 17cm, wingspan 23-27cm and a body mass of 21g (Birdlife Australia 2023).

**DISTRIBUTION**

It is widespread in the Northern Hemisphere, including much of Asia, Europe, southern Africa, the Indian subcontinent and the Indonesian islands. In Western Australia, it is a vagrant.

**MOVEMENT**

It breeds in the Northern Hemisphere and is a spring-summer migrant in Australia.

**HABITAT AND FORAGING**

The Yellow Wagtail is found in a wide range of habitats in the non-breeding range, such as open areas with low vegetation, especially short grass or areas under cultivation, pastures, fallow or stubble-fields, cereal crops, sports fields, lawns and parkland, and airstrips; also found in clearings in forest (Birdlife Australia 2023).

**BREEDING**

It breeds in many countries in the Northern Hemisphere during the Australian winter.

**THREATS**

Threats are unknown.

**SURVEY AND MONITORING**

It is rarely seen but would be recorded in the 20-minute 2ha avifauna surveys.

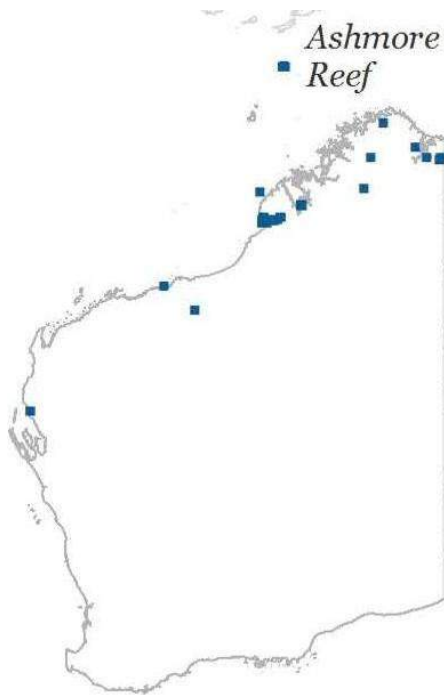


**Figure 1. *Motacilla flava* locations**

## REFERENCES

Birdlife Australia. 2023. Yellow Wagtail. in S. Marchant and D. Higgins, editors. *Handbook of Australian, New Zealand and Antarctic Birds*. Volume 1 to 7. Birdlife Australia, Online.

## **E.9 PEREGRINE FALCON**

| Peregrine Falcon |                                                                             | <i>Falco peregrinus</i>      |
|------------------|-----------------------------------------------------------------------------|------------------------------|
| EPBC Act status  | Biodiversity Conservation Act status                                        | DBCA Priority species status |
|                  | Species otherwise in need of special protection (other specially protected) |                              |

### DESCRIPTION

The Peregrine Falcon stands between 35 and 50cm tall, with females approximately 15% larger than males (Kinross, 2023). Amongst Australian falcons, they are considered on the larger side with a powerfully built body and are identified by their black hood, deep white to brown (SW buff fronted form) chest with dark barring below the chest (Morcombe, 2017). As they mature, Peregrine Falcons possess bright yellow cere and eye rings, and their beaks are dark grey (Morcombe, 2017). When in flight, their tail is square-tipped, and their flight wings have rounded to blunt tips, with the wingspan of a Peregrine Falcon ranging from 85-100cm (Morcombe, 2017).



**Plate 1. Peregrine Falcon**

### DISTRIBUTION

The Peregrine Falcon is a widespread species found on almost every continent except Antarctica (Altwegg et al., 2013). In Western Australia, this species is considered uncommon to rare. This means they live in many habitats, ranging from rainforests to arid scrublands and coastal heath to alpine areas (Morcombe, 2017).

### MOVEMENT

The Peregrine Falcon is the fastest flying bird and can reach speeds of 300km/hr whilst hunting (Australian Geographic, n.d). In Australia, it will stay in the same territory for feeding and nesting (Australian Geographic, n.d).

### HABITAT AND FORAGING

Peregrine Falcons have highly varied habitat usage, even thriving under extreme anthropogenic conditions by choosing to nest in active construction sites (Clayton et al., 1988). However, all their habitats require secure nesting sites and abundant food (Morcombe, 2017).

The diet of a Peregrine Falcon is highly variable, consisting of many species, but the most consistent prey items are birds, although insects and mammals are also common in their diet (Olsen et al., 2004). Peregrine Falcons found in the goldfields of Western Australia have been observed eating mostly parrot species, such as the Purple-crowned Lorikeet, but will also eat microbats and small rodents (Palmer et al., 2019). Mammalian prey appears to make up a tiny portion of their diet, and may be a more opportunistic prey item (Palmer et al., 2019). In eastern Australia, populations of Peregrine Falcons may also prey on Silver Gulls and corvid species (Olsen et al., 2004).

## BREEDING

In Australia, Peregrine Falcons will build their nests in a variety of habitats (Olsen et al., 2004). Critical features for suitable nesting sites consist of adequate protection from weather and predators, an appropriate substrate for creating scrapes to lay eggs, and suitable directional exposure for temperature control (Gahbauer et al., 2015). When this species experiences population pressure, younger mating pairs have been seen using nesting sites that older, more experienced pairs would pass over (Clayton et al., 1988).

Clutch size has been shown to vary based on location. For example, in France, clutch size averaged at four eggs, while in Australia, it is estimated to range between 2-3 eggs per clutch (Kinross, 2023). Both male and female brood the eggs over the 29-35 day incubation period (Kinross, 2023). Incubation times may be longer in cooler temperatures (Kinross, 2023).

## THREATS

The main threat to the Peregrine Falcon in Australia is the use of pesticides. Before 1970, there was a severe decline in populations due to the use of DDT (dichloro-diphenyl-trichloroethane) by farmers (Mundy, 2018). Most modern pesticides and rodenticides can be accumulated in predator species. This poses a threat to predatory species (Melbourne's Wild Heart, n.d.). Because of how fast these birds can fly, they are also at risk of fatalities when they collide with structures (BirdLife Australia, 2017).

## SURVEY AND MONITORING

Peregrine Falcons are readily identified in the standard 20-minute 2ha searches.

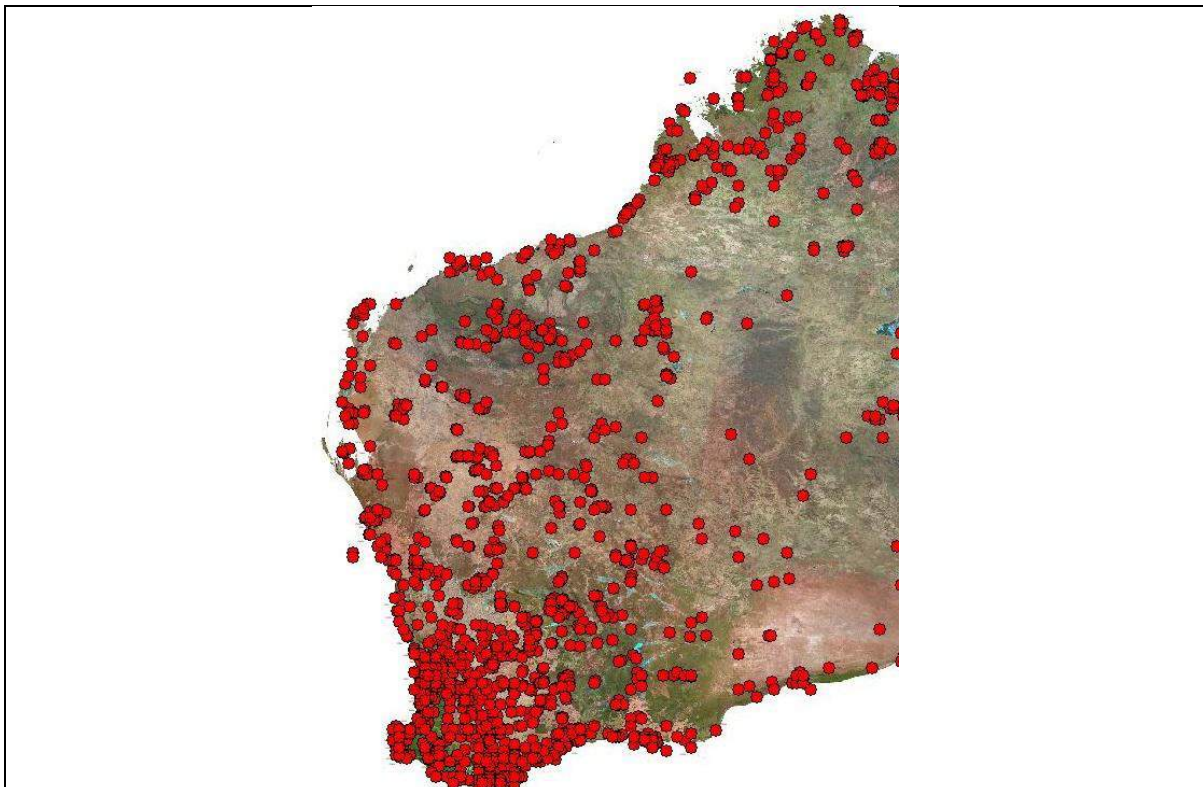


**Figure 1. *Falco peregrinus* locations**

## REFERENCES

Altwegg, R., Jenkins, A., Abadi, F., & Robinson, R. (2013). Nestboxes and immigration drive the growth of an urban Peregrine Falcon *Falco peregrinus* population. *Ibis*, 156(1), 107-115. <https://doi.org/10.1111/ibi.12125>

- Australian Geographic. (n.d.). *Fact File: Peregrine falcon (Falco peregrinus)*. Retrieved 22/08/2024 from <https://www.australiangeographic.com.au/fact-file/fact-file-peregrine-falcon-falco-peregrinus/>
- BirdLife Australia. (2017). *Peregrine Falcon*. BirdLife Australia. Retrieved 22/08/2024 from <https://birdlife.org.au/bird-profiles/peregrine-falcon/>
- Clayton, M. W., William, B. E., & William, M. B. (1988). Atypical Nesting Habitat of the Peregrine Falcon (*Falco peregrinus*) in Victoria, Australia. *Journal of Raptor Research*, 22(2). <http://elibrary.unm.edu/sora/jrr/v022n02/p00037-p00043.pdf>
- Gahbauer, M. A., Bird, D. M., Clark, K. E., French, T., Brauning, D. W., & McMorris, F. A. (2015). Productivity, mortality, and management of urban peregrine falcons in northeastern North America. *The Journal of Wildlife Management*, 79(1), 10-19. <https://doi.org/10.1002/jwmg.803>
- Kinross, C. (2023). Observations of the use of a nest box by Peregrine Falcons *Falco peregrinus macropus*: Breeding behaviour and parental contribution. *Corella*, 47, 77-87.
- Melbourne's Wild Heart. (n.d.). *Peregrine Falcon*. Remember the Wild. Retrieved 22/08/2024 from <https://www.rememberthewild.org.au/our-citys-wild-heart-peregrine/>
- Morcombe, M. (2017). *Pocket Field Guide to Birdlife of Western Australia* (V. B. Lee Curtis, Ed.). Lynn Dickinson.
- Mundy, G. (2018, 28/10/2018). *Rare peregrine falcon pair choose Perth apartment as new breeding ground*. ABC News. Retrieved 22/08/2024 from <https://www.abc.net.au/news/2018-10-28/rare-peregrine-falcons-use-perth-apartment-as-breeding-ground/10433550>
- Olsen, J., Debus, S., & Rose, A. B. (2004). Breeding success, cliff characteristics and diet of Peregrine Falcons at high altitude in the Australian Capital Territory. *Corella*, 28, 33-37.
- Palmer, R., Rose, A., & Debus, S. (2019). Diet of the Peregrine Falcon *Falco peregrinus* in inland south-western Australia. *Australian Field Ornithology*, 36, 36-39. <https://doi.org/10.20938/afo36036039>

## **E.10 WEST COAST MULGA SLIDER**

| West Coast Mulga Slider |                                      | <i>Lerista eupoda</i>        |
|-------------------------|--------------------------------------|------------------------------|
| EPBC Act status         | Biodiversity Conservation Act status | DBCA Priority species status |
|                         |                                      | P1                           |

### DESCRIPTION

The West Coast Mulga Skink (*Lerista eupoda*) is a small fossorial skink species found within Western Australia. It is 40-87mm long (SVL) with small limbs and movable eyelids (Smith, 1996). They are similar to *Lerista gerradii* but are distinguished by having two fingers and three toes compared to *L. gerradii*'s one finger and two toes. (Smith, 1996). They are pale brown with broad, dark brownish-black vertebral and upper lateral stripes. (Cogger, 2021).

### DISTRIBUTION

*Lerista eupoda* has only been recorded in the arid interior Murchison region of Western Australia between Cue and Meekatharra (Smith, 1996).

### HABITAT AND FORAGING

*Lerista eupoda* is found in open mulga woodlands on red and sandy loam soils (Smith, 1996).

### THREATS

This species has a small home range, and it is unclear whether its population has faced any prominent threats. However, like other *Lerista* species, it could be affected by habitat loss, predation, and changes in fire regimes.

### SURVEY AND MONITORING

Similar to other small fossorial species, it can be caught in pit and funnel traps or by active search in the leaf litter, under logs and rocks, etc.



**Figure 1. *Lerista eupoda* locations**

### REFERENCES

- Cogger, H. G. (2021). *Reptiles & Amphibians of Australia* (7 ed.). CSIRO.
- Smith, L. A. (1996). A new species of *Lerista* (Lacertilia: Scincidae) from Western Australia, *Lerista eupoda*. *Journal of the Royal Society of Western Australia*, 79, 161-164.

## **E.11 LONG-TAILED DUNNART**

| Long-tailed Dunnart |                                      | <i>Antechinomys longicaudatus</i> |
|---------------------|--------------------------------------|-----------------------------------|
| EPBC Act status     | Biodiversity Conservation Act status | DBCA Priority species status      |
|                     |                                      | P4                                |

### DESCRIPTION

The Long-tailed Dunnart is a small, nocturnal marsupial belonging to the Dasyuridae family. Its most notable feature is the elongated tail, which is twice the length of its head-body length (Gynther et al., 2013). The tail is scaly with short, fine hairs and a fine, brushy tip (Gynther et al., 2013). Long-tailed Dunnarts have a grey body and a pale cream-white underbelly with white legs and feet (Gynther et al., 2013). Head-to-body length is around 80-100mm for males and 80-90mm for females, and they weigh between 15-25g (Gynther et al., 2013).

### DISTRIBUTION

Its geographic distribution includes arid and semi-arid regions of Western Australia, South Australia, Northern Territory, and Queensland. In Western Australia, it is found in the areas between the Pilbara, the northeastern Goldfields and the sandy deserts (Menkhorst & Knight, 2018).

### MOVEMENT

The Long-tailed Dunnart is agile, moving quickly to evade predators and hunt for prey. It is an excellent climber, utilising its strong hind legs and long tail to navigate rocky terrains and vegetation. It is most often observed darting between rocks and shrubs during the night.

### HABITAT

Habitat types used by the Long-tailed Dunnart include rocky outcrops, scree slopes, stony plateaus with shrubs over spinifex hummock grasslands (Gynther et al., 2013). During the day, Long-tailed Dunnarts take refuge in rock crevices, under fallen logs, or abandoned burrows to avoid predators and extreme temperatures.

### FORAGING AND DIET

Long-tailed Dunnarts are insectivorous, primarily feeding on insects and other small invertebrates. Its diet includes beetles, ants, spiders, and occasionally small vertebrates. It hunts at night, using its keen sense of hearing and smell to locate prey. The species is known for its high metabolism, which requires it to consume a substantial amount of food relative to its body size.

### BREEDING

Woolley and Valente (1986) reported that under laboratory conditions, the Long-tailed Dunnart is polyoestrous and in breeding condition from late winter to early summer (August-December). Females give birth to litters of up to eight young after a short gestation period of around 13 to 16 days, and both males and females can breed multiple times in a season (Woolley & Valente, 1986). More recent information indicates that mating occurs during October-November and will produce up to 6 young (Menkhorst & Knight, 2018).

## THREATS

The Long-tailed Dunnart faces several threats, including habitat destruction, predation by introduced species such as cats and foxes, and the impacts of climate change. Habitat destruction, resulting from land clearing for agriculture, mining, and urban development, reduces the species' available shelter and food sources. Introduced predators pose a significant risk, as they prey on small marsupials, further decreasing their populations.

## SURVEY AND MONITORING

The Long-tailed Dunnart is readily captured in baited aluminium box traps and occasionally pitfall traps (Terrestrial Ecosystems, 2011). It can also be recorded using camera traps, eDNA and faecal samples.

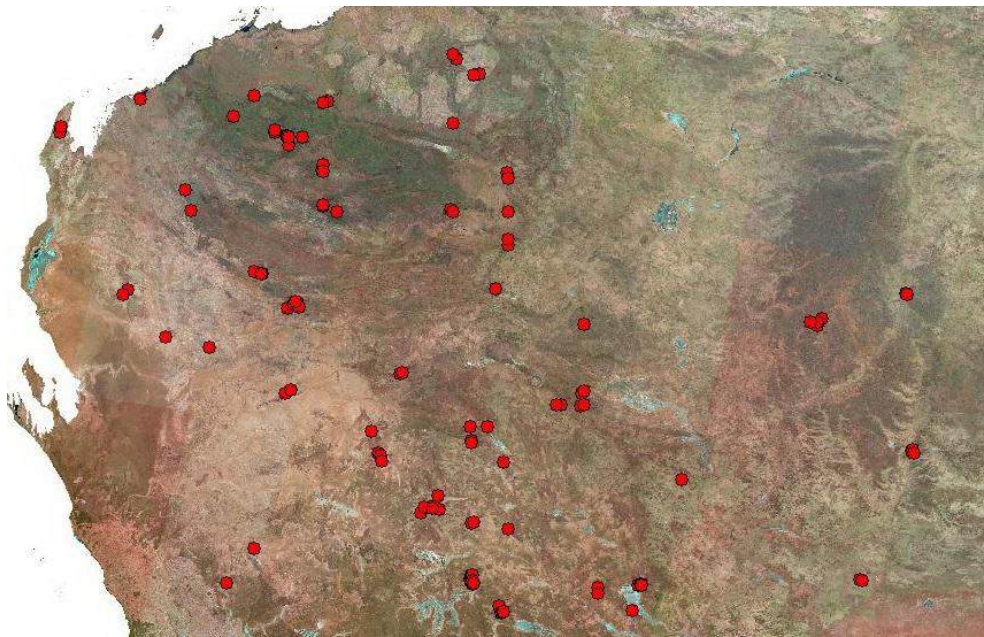


**Figure 1. Geographic distribution of *Antechinomys longicaudatus***

## REFERENCES

- Gynther, I., Baker, A., & Van Dyck, S. (2013). *Field companion to the mammals of Australia*. New Holland.
- Menkhorst, P., & Knight, F. (2018). *A Field Guide to the Mammals of Australia* (Third ed.). Oxford University Press.
- Terrestrial Ecosystems. (2011). *Targeted Survey for Long-tailed Dunnarts for the Granny Deeps Project Area*. Unpublished report for Barrick Gold Corporation.
- Woolley, P. A., & Valente, A. (1986). Reproduction in *Sminthopsis longicaudata* (Marsupialia, Dasyuridae) - Laboratory Observations. *Wildlife Research*, 13(1), 7-12. <https://doi.org/https://doi.org/10.1071/WR9860007>

## **E.12    ORIENTAL PLOVER**

| Oriental Plover |                                      | <i>Charadius veredus</i>     |
|-----------------|--------------------------------------|------------------------------|
| EPBC Act status | Biodiversity Conservation Act status | DBCA Priority species status |
| Migratory       | Migratory                            |                              |

## DESCRIPTION

Oriental plovers are a medium-sized plover, standing approximately 25cm tall. They have yellow legs, and in non-breeding plumage, they have grey backs with a light brown front and white underside (BirdLife Australia, 2020). During breeding season, they gain an orange and black band across their fronts (BirdLife Australia, 2020).

## DISTRIBUTION

During the Northern Hemisphere winter months, Oriental Plovers can be found throughout parts of Indonesia and Northern Australia (Branson & Minton, 2006). While during the rest of the year, it is found in Mongolia and North-East China (Branson & Minton, 2006). On rare occasions, small groups of Oriental Plovers can travel to South Australia, Victoria and Tasmania (Gynther et al., 1995).

## MOVEMENT

Oriental Plovers are a migratory species that comes to Australia during the summer months (December-February). This usually coincides with increased food sources, such as grasshoppers, and wet weather (Eberhart-Hertel, 2019).

## HABITAT AND FORAGING

Oriental Plovers are insectivorous, mainly observed foraging for insects, while in Australia (Ozerskaya & Zabelin, 2006). Ideal habitat for Oriental Plovers has been described as open short-grass plains, as these are ideal for insect foraging (Ozerskaya & Zabelin, 2006). Oriental Plovers can be found in inland and coastal habitats such as semi-arid or overgrazed plains, paddocks, airfields and playing fields, as well as salt marshes, mudflats and beaches (Gynther et al., 1995; Ozerskaya & Zabelin, 2006).

## BREEDING

Oriental Plovers breed overseas in Central Asia (Ozerskaya & Zabelin, 2006). Males will perform display flights to attract a female's attention. These displays show them flying in zig-zag patterns with wings fully extended (Ozerskaya & Zabelin, 2006). Breeding begins in May, with pairs laying clutches of three to four eggs, which hatch in June (Ozerskaya & Zabelin, 2006). The young are fully fledged and flying by July, with the young staying close to their parents' territories until they are fully matured (Ozerskaya & Zabelin, 2006).

## THREATS

There are no recorded threats to this species, however, as it is only found in Australia for a limited period, it is considered a protected species.

## SURVEY AND MONITORING

The best survey methods for the Oriental Plover are: surveying known habitat at peak times, transect surveys by boat around offshore islands, lake shores, coastlines and rivers and aerial surveys of foraging habitat in large or remote study areas at the appropriate period of the tidal cycle (Department of the Environment Water Heritage and the Arts, 2010).

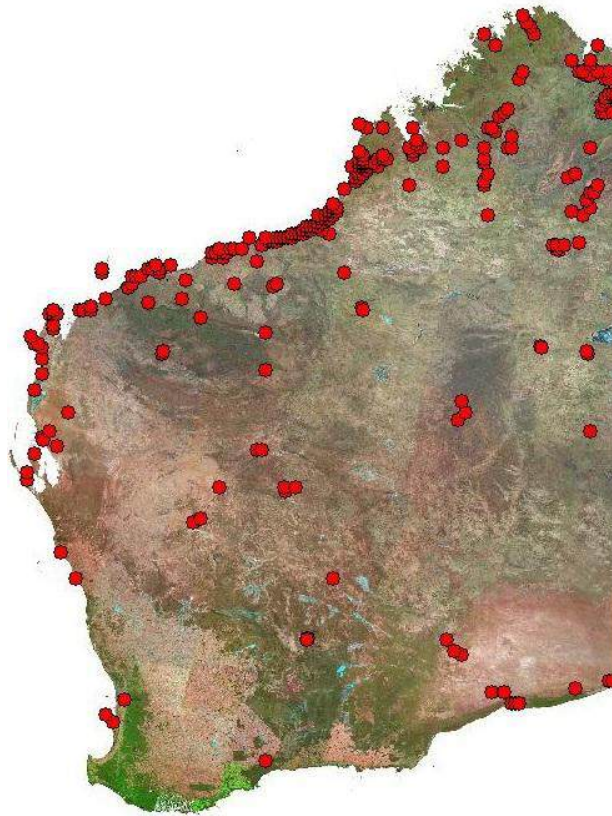


**Figure 1. *Charadrius veredus* locations**

## REFERENCES

- BirdLife Australia. (2020). Shorebirds Identification booklet. In. Victoria: Birdlife Australia,.
- Branson, N. J. B. A., & Minton, C. D. T. (2006). Measurements and Primary Wing Moults of Oriental Plover from North-West Australia. *Stilt*, 50, 235–241.
- Department of the Environment Water Heritage and the Arts. (2010). *Survey Guidelines for Australia's Threatened Birds*. W. Department of the Environment, Heritage and the Arts,.
- Eberhart-Hertel, L. (2019). Plover Breeding Systems: Diversity and Evolutionary Origins. In (pp. 65–88). <https://doi.org/10.1201/9781315152882-4>
- Gynther, I., Stewart, D., & Tarrant, T. (1995). A flock of Oriental Plovers "*Charadrius veredus*" in south-east Queensland [Journal Article]. *The Sunbird: Journal of the Queensland Ornithological Society*, 25(4), 93–96. <https://doi.org/https://search.informit.org/doi/pdf/10.3316/informit.209368307262145>
- Ozerskaya, T., & Zabelin, V. (2006). Breeding of the Oriental Plover *Charadrius veredus* in Southern Tuva, Russia. *Wader Study Group Bulletin*, 110.

## **E.13 ORIENTAL PRATINCOLE**

| Oriental Pratincole |                                      | <i>Glareola maldivarum</i>   |
|---------------------|--------------------------------------|------------------------------|
| EPBC Act status     | Biodiversity Conservation Act status | DBCA Priority species status |
| Migratory           | Migratory                            |                              |

### DESCRIPTION

Oriental Pratincoles are medium-sized, tern-like waders with long pointed wings, a forked tail, short legs, and a curved beak (BirdLife Australia, 2023). Males and females look alike. Outside breeding season, they have brown upperparts, black flight feathers, a faint dark neck collar encircling a pale buff ring, white belly, and chestnut underwings (BirdLife Australia, 2023). During breeding, the collar darkens and becomes more distinct, with the buff ring turning darker and rimmed in white (BirdLife Australia, 2023). Juveniles resemble non-breeding adults, but with mottled plumage (BirdLife Australia, 2023).

### DISTRIBUTION

During non-breeding seasons (winter Northern hemisphere, summer southern hemisphere), Oriental Pratincoles can be found in areas of northern Australia, including Western Australia, Queensland and the Northern Territory (BirdLife Australia, 2023). During breeding season, they are found throughout southeast Asia, frequenting Pakistan, India, Myanmar, Thailand, Vietnam, China, Japan and the Philippines (BirdLife Australia, 2023).

### MOVEMENT

Oriental Pratincoles are migratory species that move between areas in response to food availability and seasonal changes. Spending the winter months of the northern hemisphere in the southern hemisphere, where it is warmer (BirdLife Australia, 2023). While migrating, they travel in large flocks and are rarely seen individually.

### HABITAT AND FORAGING

Oriental Pratincoles occupy plains, floodplains, grasslands and agricultural lands near terrestrial wetlands formed by rain or can occur near larger water bodies such as billabongs, lakes, creeks and beaches (BirdLife Australia, 2023).

Oriental Pratincoles are insectivores and will hunt for insects both in the air and on the ground (BirdLife Australia, 2023).

### BREEDING

Oriental Pratincoles breed in colonies in Asia, ranging from Pakistan to north-east China (Melville, 2013). They nest on the bare ground in open areas and lay two to three eggs per clutch (Melville, 2013).

### THREATS

There are no current threats to Oriental Pratincoles, but as they are a migratory species, they are classed as protected.

## SURVEY AND MONITORING

The most common survey methods for pratincole species include observations overlooking suitable foraging or roosting habitats, transect surveys by boat around offshore islands, lake shores, coastlines and rivers and aerial surveys of foraging habitat (Department of the Environment Water Heritage and the Arts, 2010).

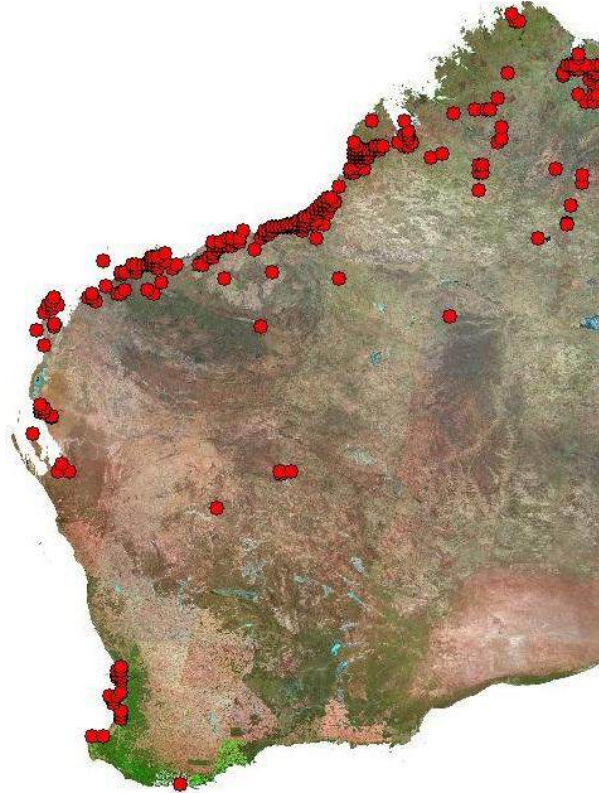


**Figure 1. *Glareola maldivarum* locations**

## REFERENCES

- BirdLife Australia. (2023). Oriental Pratincole. In BirdLife Australia (Ed.), *Handbook of Australian, New Zealand and Antarctic Birds* (Vol. 1-7). BirdLife Australia.
- Department of the Environment Water Heritage and the Arts. (2010). *Survey Guidelines for Australia's Threatened Birds*. W. Department of the Environment, Heritage and the Arts.
- Melville, D. S. (2013, 2017). *Oriental Pratincole*. Retrieved 22 October from <https://www.nzbirdsonline.org.nz/species/oriental-pratincole>

