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## **ATTACHMENT 1**

### **SUPPORTING INFORMATION**





# YOUANMI GOLD PROJECT

## CPS 11201/2 AMENDMENT APPLICATION

### SUPPORTING INFORMATION

Tenements: M57/10, M57/51, M57/109, M57/135,  
M57/160A, M57/165, M57/166

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Prepared by  
Ecotec (WA) Pty Ltd for:

**Rox Resources Ltd**  
Level 2, 87 Colin Street  
West Perth, WA 6005

**Contact:** Ben Sambell

**Email:** [bsambell@roxresources.com.au](mailto:bsambell@roxresources.com.au)

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**Appendix 2:** Detailed Fauna Survey – Western Ecological 2022

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# 1 OVERVIEW

Ecotec WA Pty Ltd (Ecotec) was commissioned by Rox Resources Ltd (Rox Resources) to prepare an application to amend Native Vegetation Clearing Permit (NVCP) CPS 11021 in accordance with the requirements of Part V Division 2 of the *Environmental Protection Act 1986* (EP Act).

## 1.1 Scope and Purpose

Rox Resources is the owner of the Youanmi Gold Project (the project), located approximately 470 km north east of Perth in the Murchison region of Western Australia and within the Shire of Sandstone (Figure 1.1). Previous mining occurred at the project intermittently between 1908 and 2009 when the site entered care and maintenance. As a result, historical disturbance is present and infrastructure remains in the area.

The current project recommenced in 2025 and is expected to mine 5.7 million tonnes (Mt) of ore over an estimated eight year mine life (to December 2034). Project approval has been granted under the *Mining Amendment Act 2022* by the Department of Mines, Petroleum and Exploration (DMPE), under Approval Statement AS-231413 v2.00 (first issued in December 2025 and amended in March 2026).

Rox Resources lodged a Native Vegetation Clearing Permit application in April 2025 and the DMPE subsequently granted CPS 11201/1 in August 2025, allowing for disturbance of up to 122.9 ha of native vegetation within the permit boundary. This amendment application proposes to increase the disturbance to 223 ha (an additional 100.1 ha), allowing for further development of project supporting activities, including solar array, topsoil stockpiles, wastewater treatment plant (WWTP) and infrastructure corridors. Indicative clearing areas are outlined in Figure 1.2.

This supporting document includes an assessment against the ten clearing principles as outlined in the then Department of Environmental Regulation (now DWER) *Guide to Assessment: Clearing of Native Vegetation under the Environmental Protection Act 1986* (DER 2014). It identifies the potential environmental impacts associated with the clearing based on the best available data and defines the Rox Resources approach to managing the impacts of the clearing to as low as reasonably practicable. This NVCP amendment application will be submitted to the DMPE as clearing is to be carried out on *Mining Act 1978* tenure.

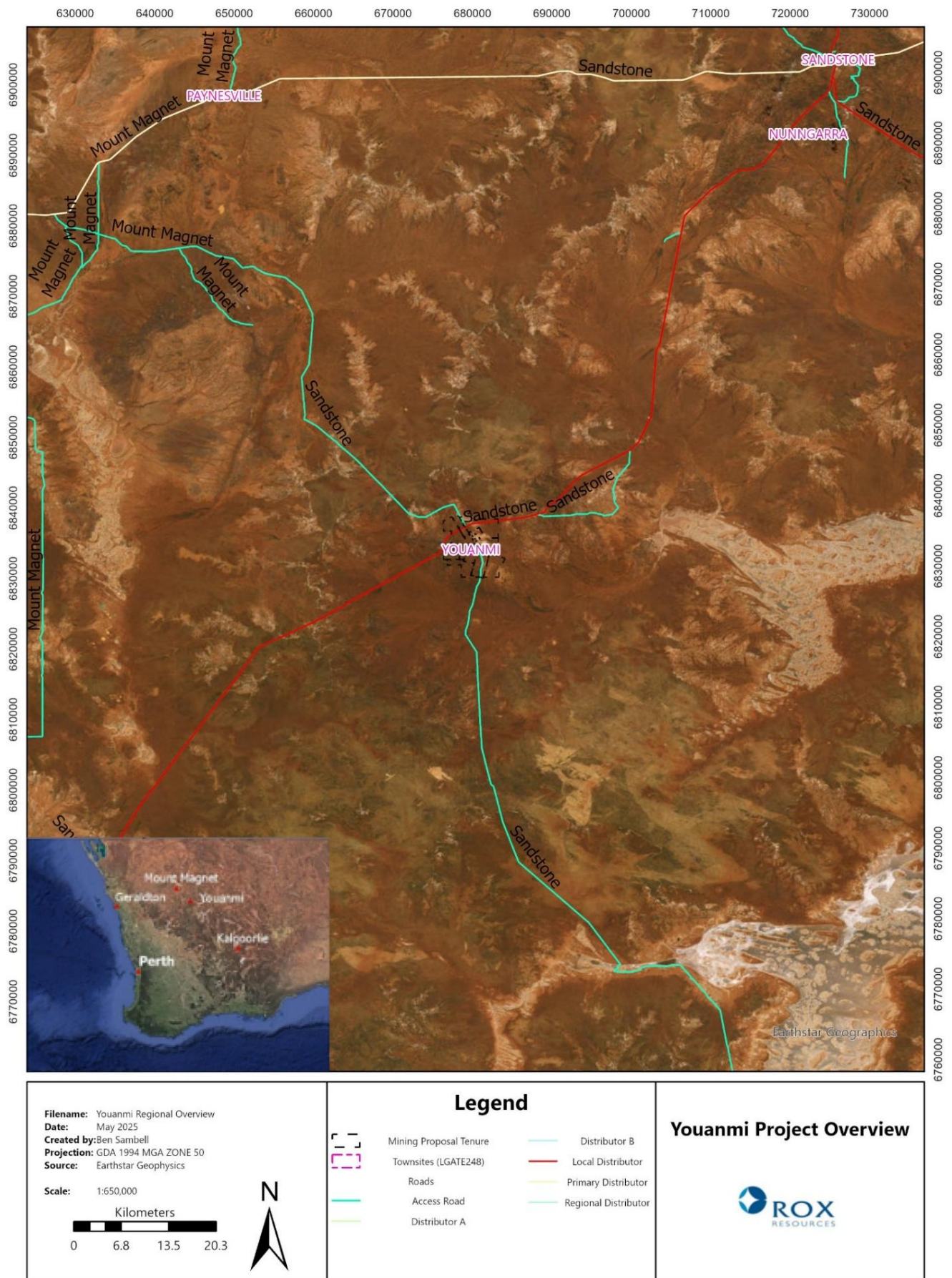


Figure 1.1: Youanmi Project regional location.



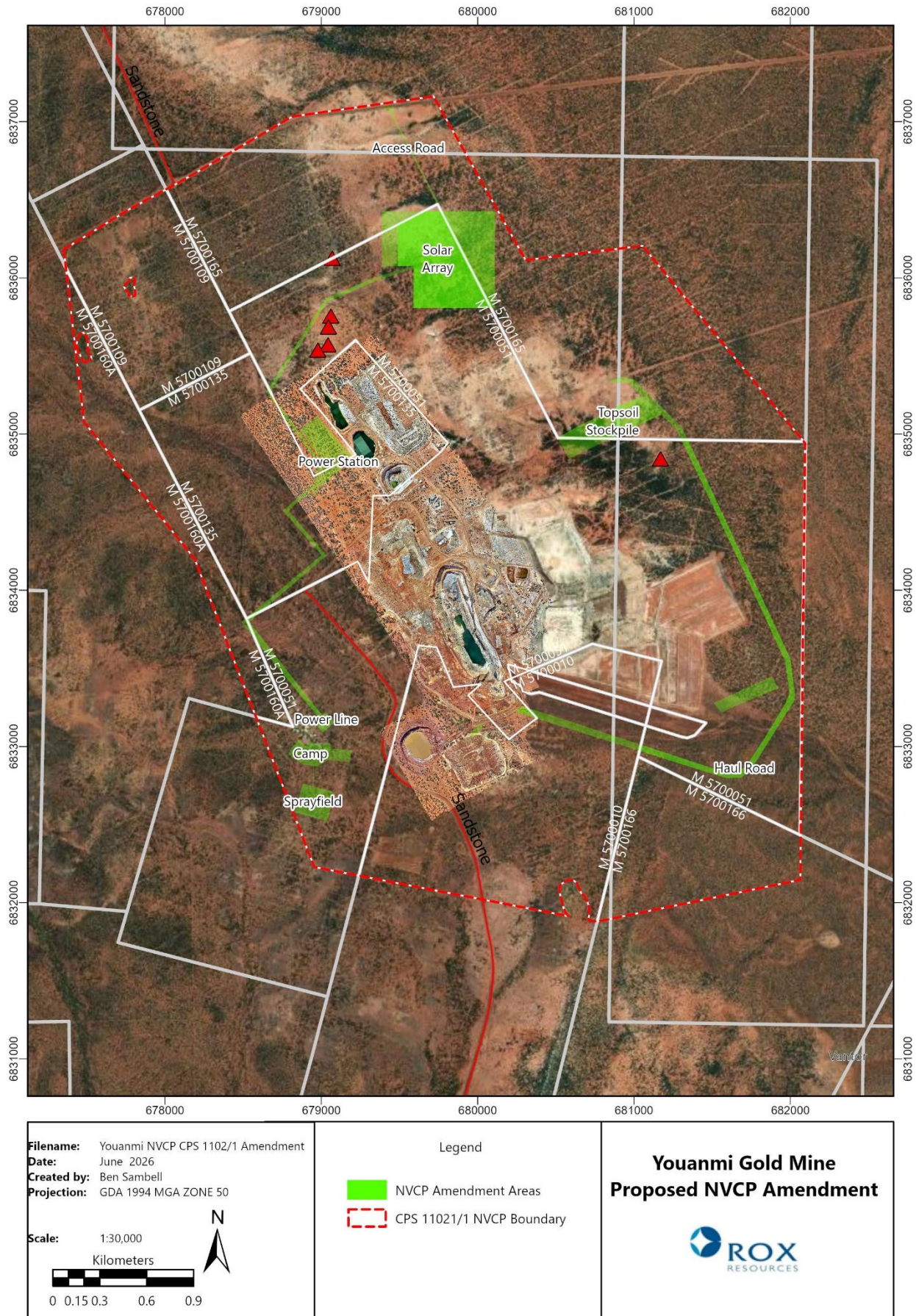


Figure 1.2: Current site layout and indicative proposed clearing.

## 2 BASELINE ENVIRONMENTAL DATA

### 2.1 IBRA 7 Biogeographic subregions

The Interim Biogeographic Regionalisation for Australia (IBRA) classifies the Australian continent into regions or bioregions based on similar geology, landform, vegetation, fauna and climate characteristics. The project area is situated within the Murchison Region according to IBRA 7, which is further divided into two subregions: Eastern Murchison and Western Murchison (DAWE 2019). The study area is situated within the Eastern Murchison subregion (MUR01).

The Eastern Murchison subregion is the northern end of the Yilgarn Craton, which experiences an arid climate with bimodal rainfall that usually falls in the winter months. The Eastern Murchison subregion is characterised by its internal drainage and extensive areas of elevated red desert sandplains with minimal dune development (Cowan 2001).

### 2.2 Flora and vegetation

#### 2.2.1 Flora

Native Vegetation Solutions (NVS) undertook a reconnaissance flora and vegetation survey of the Youanmi project area during Autumn and Spring 2022 (NVS 2023). The survey recorded 176 vascular flora taxa from 38 families and 76 genera within the project area and surrounding region; including six introduced species and one Priority listed flora species. No Threatened species were recorded. The NVS report is included in Appendix 1.

Table 2.1 provides a summary of the conservation significant flora recorded during survey work, as well as those species considered to possibly occur (as determined by database searches within a 10 km radius).

**Table 2.1: Conservation significant flora recorded and potentially occurring in the project area.**

| Species                                              | Conservation Status | Likelihood of occurrence                                                                                                |
|------------------------------------------------------|---------------------|-------------------------------------------------------------------------------------------------------------------------|
| <i>Alyxia tetanifolia</i>                            | P3                  | Possible – suitable habitat exists in the project area, project area extensively searched and species was not recorded. |
| <i>Baeckea</i> sp. London Bridge (M.E. Trudgen 5393) | P3                  | Possible – suitable habitat exists in the project area, project area extensively searched and species was not recorded. |
| <i>Calytrix hislopilii</i>                           | P3                  | Recorded.                                                                                                               |
| <i>Euryomyrtus recurva</i>                           | P3                  | Possible – suitable habitat exists in the project area, project area extensively searched and species was not recorded. |

A total of 139 *Calytrix hislopilii* (P3) individuals were recorded in the project area in six locations (Figure 2.2), with 20 individuals to be impacted by development of TSF3. This equates to 14% of the known species population at the Youanmi project.

Condition 8 of CPS 11021/1 specifies that:

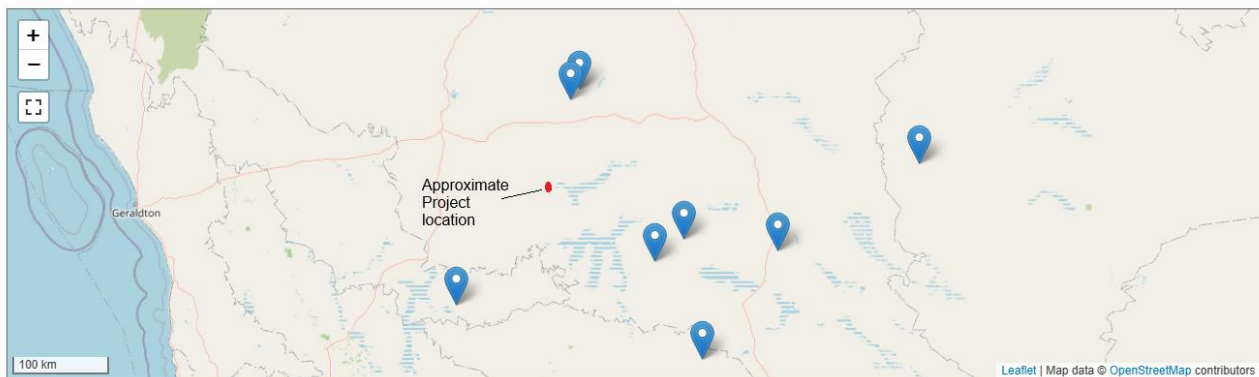
*“Where priority flora species *Calytrix hislopilii* have been identified and their locations provided to the CEO, and retained on the Department of Mines, Petroleum and Exploration file DMS04719/2025 as Doc ID A95678615, the Permit Holder must ensure:*

*(a) no clearing of identified *Calytrix hislopilii* occurs unless first approved by the CEO; and*

*(b) no clearing occurs within 10 metres of identified *Calytrix hislopilii* occurs unless first approved by the CEO.”*

Rox Resources applied to DMPE in January 2026 requesting approval to clear 20 *Calytrix hislopii* individuals, for the purpose of constructing the TSF3. Approval was granted by DMPE in February 2026.

It is proposed within this amendment application to remove Condition 8 from the permit conditions. The current project layout avoids all remaining *Calytrix hislopii* outside TSF3; however, if this were subject to change in the future the project is expected to have minimal impact on the species. It is acknowledged that the entire known, local population is located within the Clearing Permit boundary; however, these records are expected to be a result of current survey effort and the species is expected to occur elsewhere in the region. Within WA, this species is known from eight locations across a range of approximately 550 km (Western Australian Herbarium 1998-) and the species is expected to occur elsewhere within that range. This is supported by the Youanmi Gold project records not representing one of the eight known locations displayed on Florabase (Figure 2.1).



**Figure 2.1: Project location and lodged records of *Calytrix hislopii* (Western Australian Herbarium 1998- ).**



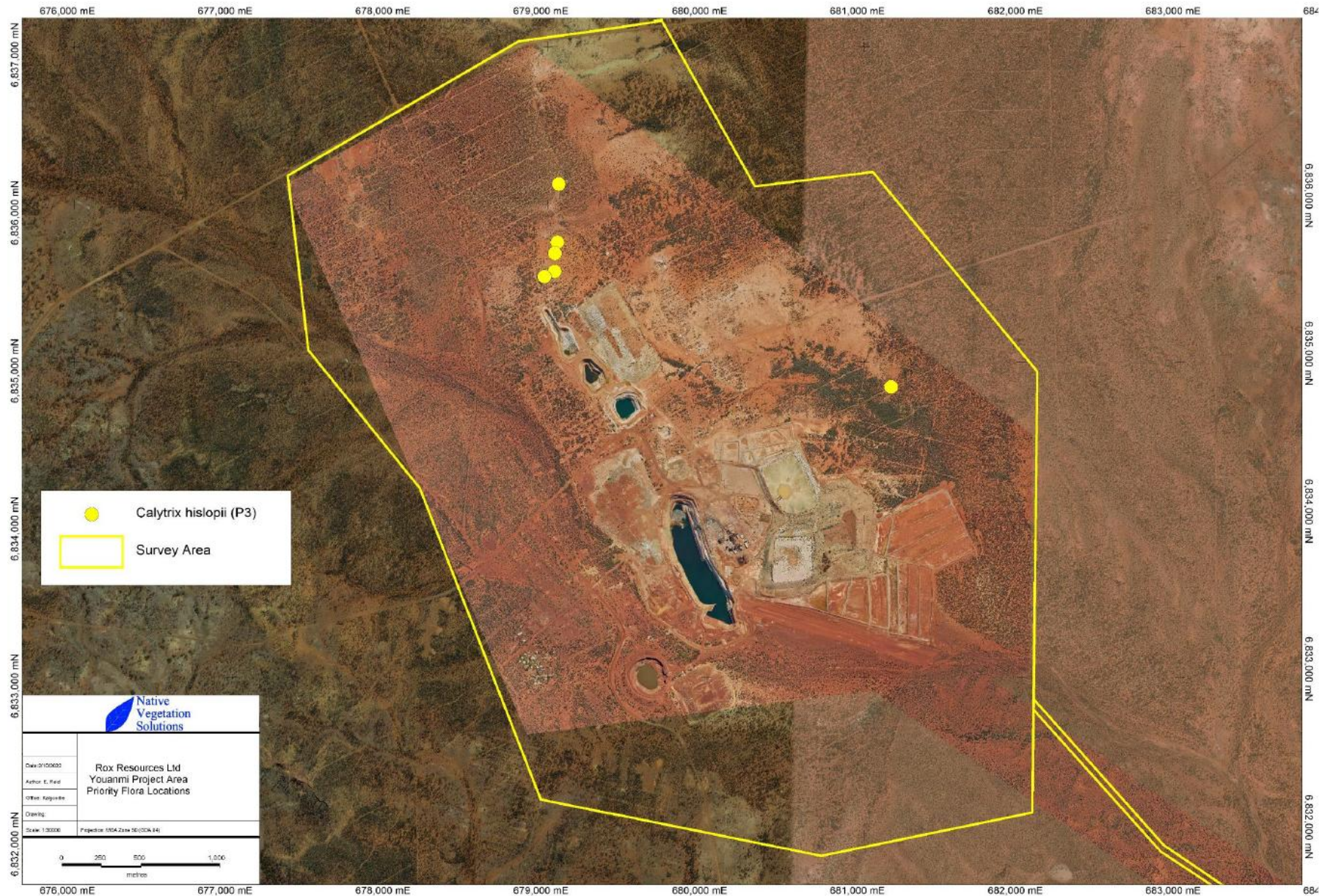


Figure 2.2: Recorded locations of *Calytrix hislopilii*.

### 2.2.2 Introduced flora

NVS (2023) recorded six introduced flora within the project area and surrounds (Table 2.2). None of the weed species are listed as Weeds of National Significance or as a Declared Pest on the Western Australian Organism List (Department of Primary Industries and Regional Development [DPIRD] 2025).

**Table 2.2: Weed species recorded in the project area.**

| Scientific name            | Common name       |
|----------------------------|-------------------|
| <i>Citrullus amarus</i>    | Pie Melon         |
| <i>Lysimachia arvensis</i> | Pimpernel         |
| <i>Nicotiana glauca</i>    | Tree tobacco      |
| <i>Rumex vesicarius</i>    | Ruby dock         |
| <i>Salvia verbenaca</i>    | Wild sage         |
| <i>Sonchus oleraceus</i>   | Common sowthistle |

### 2.2.3 Vegetation

The NVS survey recorded 24 vegetation groups within the project area, described in Table 2.3 and shown in Figure 2.3.

No State (DBCA) or Commonwealth (EPBC Act) listed Threatened Ecological Communities (TECs) occur within the project area, nor do any DBCA listed Priority Ecological Communities (PEC). All vegetation types/communities are common, widespread and well represented in the Eastern Murchison subregion (NVS 2023).

Vegetation condition ranged from 'Very Good' to 'Completely Degraded' (Figure 2.4). Most of the disturbance was a result of historic mining, exploration and existing roads or tracks. Further detail can be found in the NVS report, included in Appendix 1.

**Table 2.3: Vegetation group summary (NVS 2023)**

| Group code | Vegetation Group                                                                                                                                |
|------------|-------------------------------------------------------------------------------------------------------------------------------------------------|
| A          | Mulga shrubland with <i>Eucalyptus kingsmillii</i>                                                                                              |
| B          | <i>Acacia kalgoorliensis</i> shrubland                                                                                                          |
| C          | Mulga over chenopod shrubland                                                                                                                   |
| D          | BIF outcropping, Mulga shrubland and <i>Acacia quadrimarginea</i> over <i>Eremophila georgei</i> and <i>Aluta aspera</i> subsp. <i>hesperia</i> |
| E          | Mulga drainage vegetation                                                                                                                       |
| F          | Mulga over laterite breakaway                                                                                                                   |
| G          | Mulga creekline vegetation                                                                                                                      |
| H          | Mulga over stony rises                                                                                                                          |
| I          | Open mulga shrubland over <i>Ptilotus obovatus</i> and <i>Maireana triptera</i>                                                                 |
| J          | Open Mulga woodland                                                                                                                             |

| Group code | Vegetation Group                                                                                        |
|------------|---------------------------------------------------------------------------------------------------------|
| K          | <i>Acacia acuminata</i> shrubland with emergent Mulga and <i>Casuarina pauper</i>                       |
| L          | <i>Casuarina pauper</i> woodland over <i>Acacia acuminata</i> and <i>Melaleuca xerophila</i>            |
| M          | <i>Casuarina pauper</i> and Mulga over <i>Acacia victoriae</i> and sclerophyll shrubland                |
| N          | <i>Eucalyptus striatocalyx</i> over chenopod and sclerophyll shrubland                                  |
| O          | Mulga over <i>Eremophila miniata</i> , <i>Dodonaea viscosa</i> subsp. <i>angustissima</i> on sand dunes |
| P          | <i>Tecticornia</i> shrubland on red sand                                                                |
| Q          | <i>Tecticornia</i> shrubland over claypan                                                               |
| R          | <i>Duma florulenta</i> shrubland                                                                        |
| S          | <i>Tecticornia</i> shrubland on lake edge                                                               |
| T          | <i>Eucalyptus kochii</i> subsp. <i>plenissima</i> over <i>Triodia basedowii</i>                         |
| U          | <i>Grevillea ptyophylla</i> over <i>Lawrenzia helmsii</i> and <i>Frankenia setosa</i> on kapok dunes    |
| V          | Mulga over <i>Triodia basedowii</i>                                                                     |
| N/A        | Bare Salt Lake                                                                                          |
| N/A        | Existing Disturbance                                                                                    |



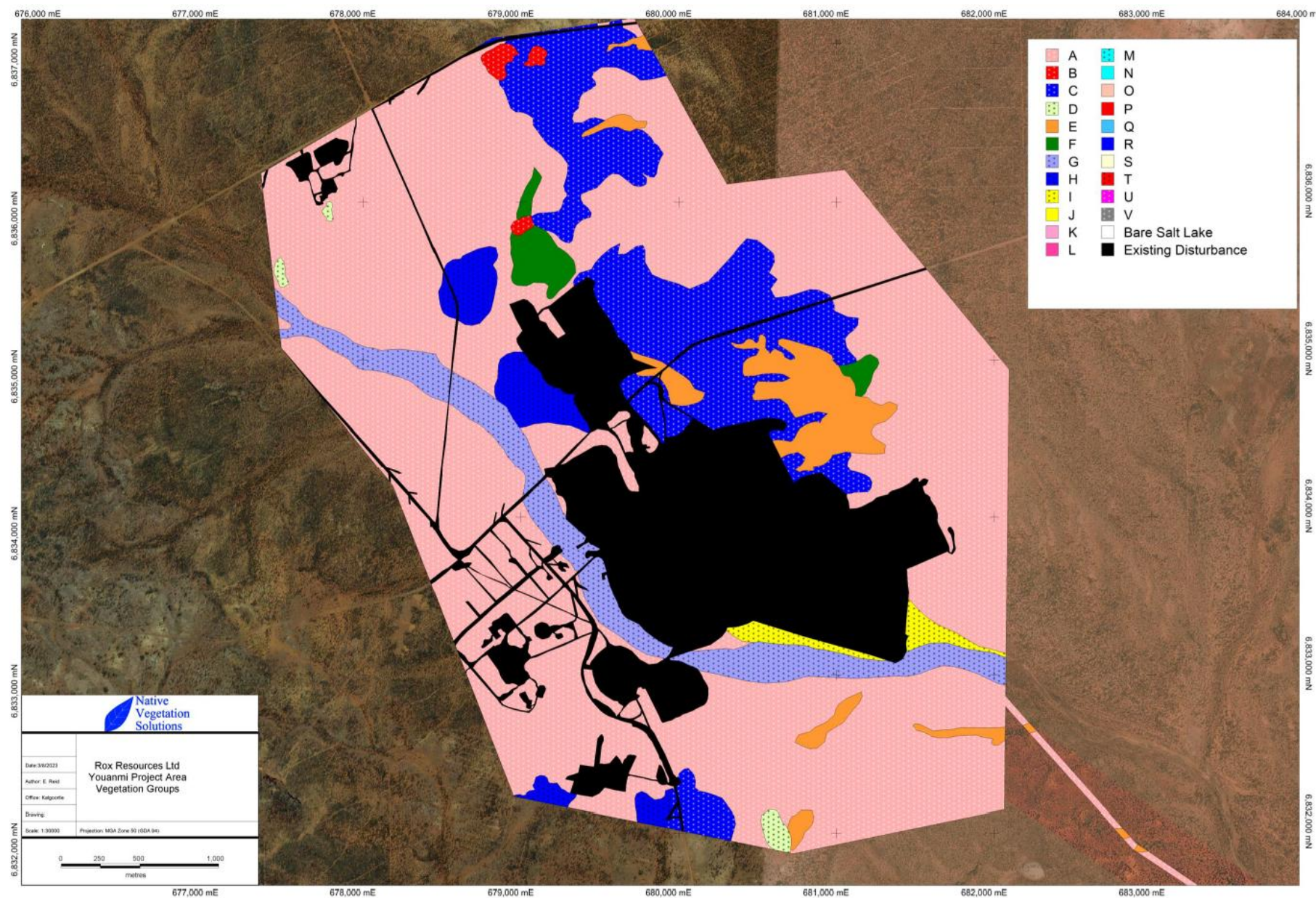


Figure 2.3: Vegetation groups recorded in the project area (NVS 2023).



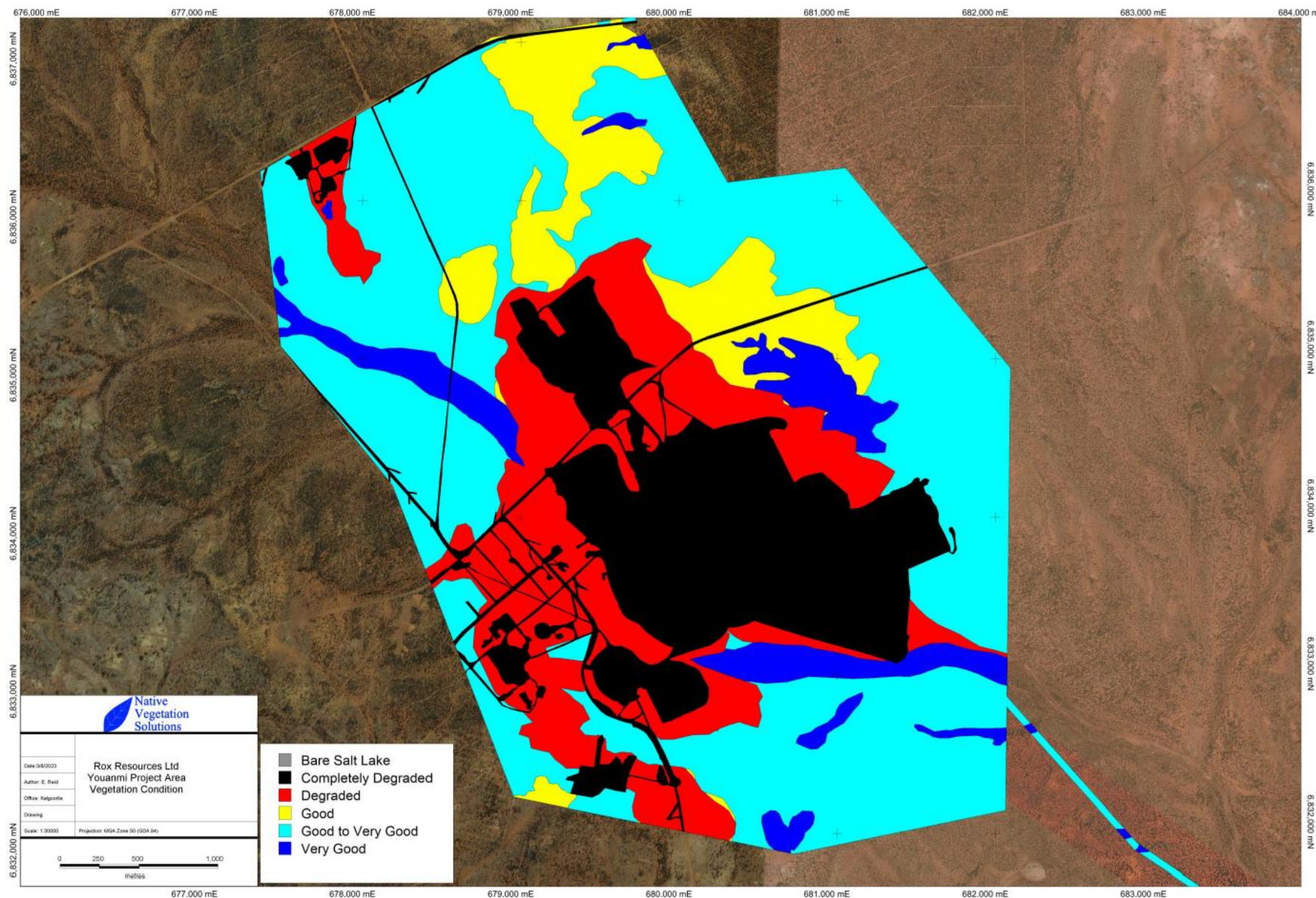


Figure 2.4: Vegetation condition in the project area (NVS 2023).



## 2.3 Fauna and habitat

Western Ecological undertook a single season detailed terrestrial vertebrate survey of the project area and surrounds in October 2022, recording 78 vertebrate species in and around the project area, including 47 bird species, 15 reptiles and 16 mammals (13 native and three introduced).

Twenty five vertebrate fauna species and one invertebrate species of conservation significance (including Priority species) were identified from database searches of a 100 km radius from the survey area including seven mammals, 17 birds and one reptile (Western Ecological 2022). Four of these species are considered possibly or likely to occur in the survey area (Table 2.4).

**Table 2.4: Conservation significant fauna likely or possibly occurring in the project area.**

| Common name         | Scientific name                        | EPBC status | WA status | Comments                                                                                                 | Likelihood of occurrence |
|---------------------|----------------------------------------|-------------|-----------|----------------------------------------------------------------------------------------------------------|--------------------------|
| Forked-tailed Swift | <i>Apus pacificus</i>                  | Mi          | Mi        | Suitable habitat is present in the study area and the study area is in the species' known distribution   | Likely                   |
| Hooded Plover       | <i>Thinornis cucullatus tregallasi</i> |             | P4        | Limited or no suitable habitat is present in study area but is nearby.                                   | Possible                 |
| Malleefowl          | <i>Leipoa ocellata</i>                 | VU          | VU        | Limited or no suitable habitat is present in study area but is nearby. Recorded approximately 7km south. | Possible                 |
| Peregrine Falcon    | <i>Falco peregrinus</i>                |             | OS        | Limited or no suitable habitat is present in study area but is nearby.                                   | Possible                 |

No fauna of conservation significance were recorded in the survey area, however, one Malleefowl sighting was recorded opportunistically 7 km south of the survey area.

No Malleefowl mounds or tracks were recorded in the survey area. Malleefowl prefer habitat with a dense canopy and an open ground layer in which they can construct their mounds. The habitats present in the project area are mostly unsuitable because they don't have a dense canopy cover for Malleefowl to build their mounds under. There are also very few to no shrub species which may provide a food source (Western Ecological 2022).

The Fork-tailed Swift is a non-breeding visitor to all states and territories of Australia, usually during the months of October-April. The species is an aerial species which forages high above the tree canopy and is independent of terrestrial habitats. While the species will not be reliant on the habitats of the project area, it is likely to visit them as part of its larger foraging home range.

The Peregrine Falcon occurs mainly along rivers and ranges as well as wooded watercourses and lakes and nests primarily on cliffs, granite outcrops and quarries. The project area lacks suitable and substantial cliff and rock outcrop habitat, but analogous habitat could be historic mine pits. The project area also lacks potential foraging habitat (Western Ecological 2022).

The Hooded Plover is often found on margins of inland salt lakes even when nesting, and there is suitable habitat to the east of the project area on the edge of Lake Noondie; therefore, the species may be a visitor to the area.

Four broad habitats were recorded in the proposed Clearing Permit area (Table 2.5 and Figure 2.5), all of which are widespread and common in areas adjacent to the project area and more broadly across the region (Western Ecological 2022).

**Table 2.5: Fauna habitat type and extent in the project area.**

| Habitat type         | Extent in survey area (ha) |
|----------------------|----------------------------|
| Mulga Shrubland      | 2,592.3                    |
| Open Mulga Shrubland | 443.1                      |
| Existing Disturbance | 386.3                      |
| Drainage Line        | 40.9                       |

Mulga Shrubland habitat type was widespread across the project area, primarily on flats and lower slopes where there was some surface rock (mostly small pebbles when present). Mulga was the dominant flora species in the canopy and when there was a mid-storey, it was sparse and comprised several different species, but mostly Acacia. There are relatively few hollows of any substantial size in the Mulga and relatively little leaf litter or woody debris. This habitat varied significantly across the project area, particularly with the amount of Mulga cover, this is likely a reflection of the levels of disturbance, substrate and position in the landscape. Most of the disturbance is associated with historic mining activity (including recent exploration activity), grazing (cattle and historically sheep) and introduced pests such as rabbits and goats (Western Ecological 2022).

Open Mulga shrubland habitat type was relatively widespread and primarily occurred on flats and lower slopes, with some surface rock (mostly larger stones). The canopy consisted of a sparse cover of Mulga and a mostly absent midstory. There are relatively few hollows of any substantial size in the Mulga. This habitat varied significantly across the project area, particularly with the amount of Mulga cover, this is likely a reflection of the levels of disturbance, substrate and position in the landscape.

Areas mapped as existing disturbance are predominantly historically cleared areas of mine pits, tailings storage, exploration activities and roads and tracks. There was limited vegetation cover present in these areas (Western Ecological 2022).

Drainage Line habitat type was limited in the project area and occurs in lower lying areas where surface water concentrates and runs through the landscape after periods of rainfall, which in this region is intermittently (Western Ecological 2022). Given this, the vegetation is very similar to that around it, and the canopy consists primarily of Mulga with other Acacia species in the sparse midstory.

The Western Ecological report is included as Appendix 2.

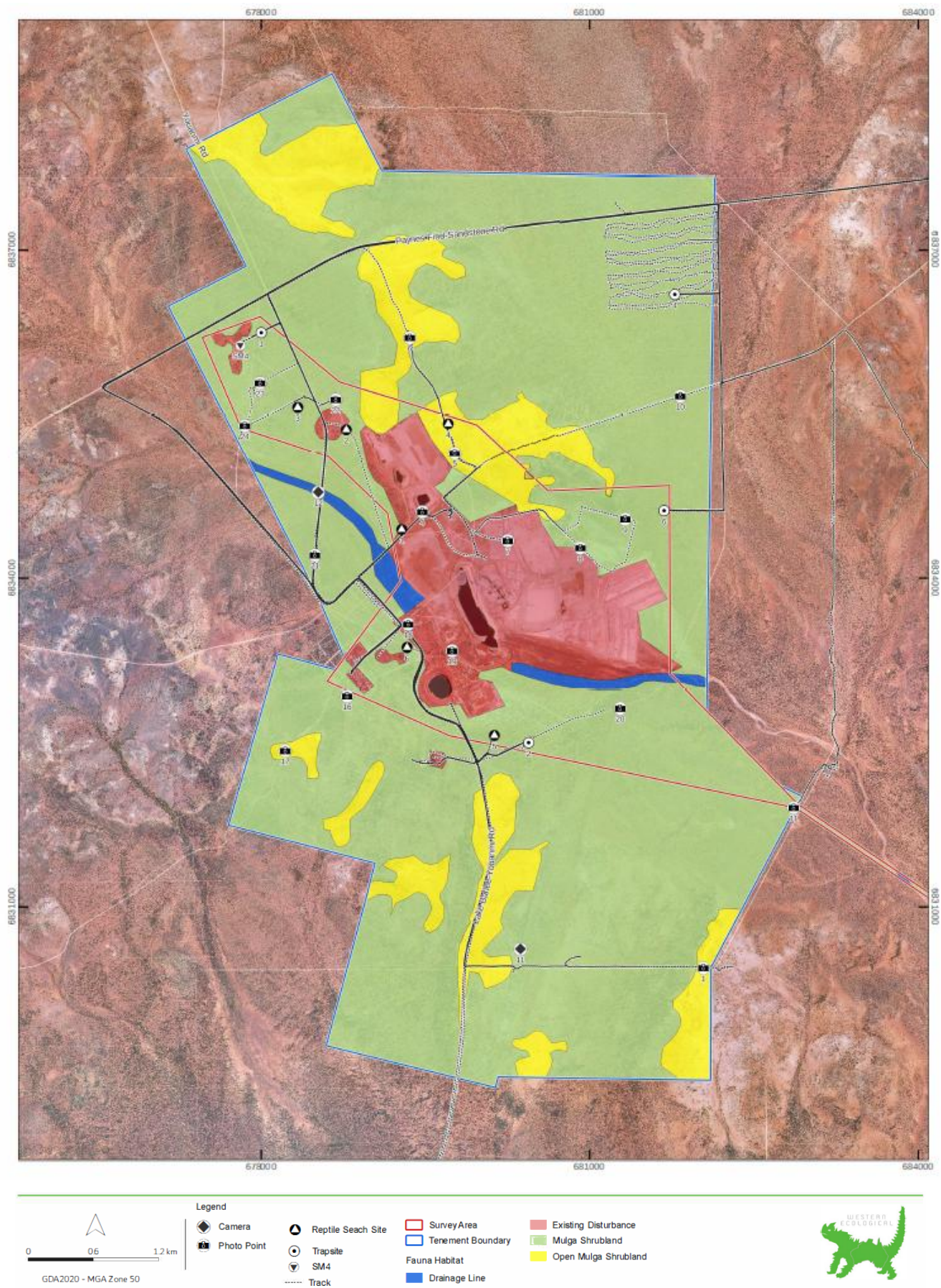


Figure 2.5: Fauna habitat mapping (Western Ecological 2022).



## **2.4 Heritage**

### **2.4.1 Aboriginal Heritage**

A search of the Department of Planning, Lands and Heritage (DPLH) Aboriginal Heritage Inquiry System (AHIS) revealed no known Aboriginal sites in the vicinity of the project. The nearest registered sites are Lake Noondie (19515) and a breakaway bore (4616), located approximately 20 km east and 18 km south east of the project respectively.

An Aboriginal heritage field inspection, undertaken by A J Rayner Consulting, identified two single artefacts. The survey concluded there were no Aboriginal sites (within the definition of section 5 of the *Aboriginal Heritage Act 1972*) and there were no Aboriginal Heritage management considerations that Rox Resources would need to address (A J Rayner Consulting 2022). The survey report is included as Appendix 3.

### **2.4.2 National Heritage**

There are no National Heritage sites within the project area, or that are likely to be impacted by project activities.

### 3 ASSESSMENT AGAINST THE 10 CLEARING PRINCIPLES

**(1) Native vegetation should not be cleared if it comprises a high level of biological diversity.**

The survey of the project area by NVS (2023) recorded 176 vascular plant taxa from 38 families and 76 genera. No State or Commonwealth listed Threatened flora occur in the area, however one DBCA listed Priority flora species (*Calytrix hislopii*, P3) occurs in the project area. A total of 20 individuals will be impacted by the project development, as approved by DMPE in February 2026.

No Priority or Threatened Ecological Communities occur within the area.

Clearing of native vegetation within the area is not considered to be at variance to this principle.

**(2) Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of, a significant habitat for fauna indigenous to Western Australia.**

Western Ecological (2022) recorded 78 vertebrate species in and around the project area, including 47 bird species, 15 reptiles and 16 mammals (13 native and three introduced); none of which are fauna of conservation significance.

Recorded fauna habitats are widespread and common in areas adjacent to the project area and more broadly across the region.

Clearing of native vegetation within the area is not considered to be at variance to this principle.

**(3) Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, rare flora.**

The area does not coincide with any previously recorded Rare flora taxa, and no Rare flora species are listed as potentially occurring in the area. Accordingly, the area is not considered necessary for the continued existence of Rare flora.

One DBCA listed Priority flora species (*Calytrix hislopii*, P3) occurs in the project area and 20 individuals will be impacted by the current project development, as approved by DMPE in February 2026. The current project layout avoids all remaining *Calytrix hislopii* outside TSF3; however, if this were subject to change in the future the project is expected to have minimal impact on the species. It is acknowledged that the entire known, local population is located within the Clearing Permit boundary; however, these records are expected to be a result of current survey effort and the species is expected to occur elsewhere in the region. Within WA, this species is known from eight locations across a range of approximately 550 km (Western Australian Herbarium 1998-) and the species is expected to occur elsewhere within that range. This is supported by the Youanmi Gold project records not representing one of the eight known locations displayed on Florabase (Figure 2.1).

Clearing of native vegetation within the area is not considered to be at variance to this principle.

**(4) Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of, a threatened ecological community.**

The project area does not coincide with any Priority or Threatened Ecological Communities listed under the *Environment Protection and Biodiversity Conservation Act 1999* (C'th) or *Biodiversity Conservation Act 2016* (State). Accordingly, the area is not considered necessary for the maintenance of a Threatened Ecological Community.

Clearing of native vegetation within the area is not considered to be at variance to this principle.

**(5) Native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been extensively cleared.**

The project area supports 24 distinct vegetation types, none of which have been extensively cleared nor can be considered remnant vegetation. All vegetation types are common, widespread and well represented in the Eastern Murchison subregion (NVS 2023).

Clearing of native vegetation within the area is not considered to be at variance to this principle.

**(6) Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland.**

The project area does not contain native vegetation that is within or associated with any significant watercourse or wetland. The nearest major surface water feature is Lake Noondie, approximately 20 km east from the site.

Creekline vegetation/Drainage Line habitat type is limited in the project area and occurs in lower lying areas where surface water concentrates and runs through the landscape after periods of rainfall, which in this region is intermittently (Western Ecological 2022). Given this, the vegetation is very similar to that around it. This vegetation type is common, widespread and well represented in the Eastern Murchison subregion (NVS 2023).

Clearing of native vegetation within the area is not considered to be at variance to this principle.

**(7) Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation.**

None of the vegetation in the area is associated with land that is recognised as being particularly susceptible to land degradation. Appropriate surface water drainage and containment around cleared areas will minimise the potential for surface water erosion. Land degradation resulting from clearing of vegetation is considered unlikely.

Clearing of native vegetation within the area is not considered to be at variance to this principle.

**(8) Native vegetation should not be cleared if the clearing of the vegetation is likely to have an impact on the environmental values of any adjacent or nearby conservation area.**

The Proposal area is not located within or near any Department of Biodiversity Conservation and Attractions managed conservation reserves. The nearest reserves (Karroun Hill Nature Reserve and Mount Manning Range Nature Reserve) are located approximately 110 km southwest and 140 km south east of the project area (respectively).

The area does contain four C Class Reserves (Purpose: Common), which are thought to be remnants from the townsite of Youanmi, which was abandoned in the 1940s (NVS 2023).

Clearing of native vegetation within the area is not considered to be at variance to this principle.

**(9) Native vegetation should not be cleared if the clearing of the vegetation is likely to cause deterioration in the quality of surface or underground water.**

The project has been designed to minimise impact to the small ephemeral drainage line. Drainage and containment structures incorporated into the development areas will ensure surface water runoff is controlled and minimise the potential for contaminants and sediment to enter the surface water system.



The Proposal is located within the *Rights in Water and Irrigation Act 1914* (RIWI Act) East Murchison Groundwater Area however is not located within any surface water proclamation area.

Clearing of vegetation is not anticipated to have any impact on the groundwater system. Clearing of native vegetation within the area is not considered to be at variance to this principle.

**(10) Native vegetation should not be cleared if the clearing of the vegetation is likely to cause, or exacerbate, the incidence or intensity of flooding.**

The Proposal area experiences an average annual rainfall of 234.8 millimetres (mm) and the mean number of days where more than 1 mm of rain is received is 12.3 days per year. Annual evaporation is over 2,400 mm (BoM 2025).

Intermittent and short duration runoff can be expected following large rainfall events. The absence of defined drainage channels in the area indicates sheet flows are the dominant hydrological flow response. High evaporation and low relief play a major role in the local hydrological response, limiting opportunities for the concentration of surface flows. Flooding of the Proposal area is considered very unlikely.

Surface water runoff flowing from cleared areas will be directed toward the perimeter where appropriate drainage and containment structures will be in place.

Clearing of native vegetation within the area is not considered to be at variance to this principle.

## 6.0 REFERENCES

- A J Rayner Consulting. 2022.** *A Report of an Aboriginal Heritage Field Inspection of the Youanmi Gold Project Area*. Unpublished report prepared for Rox Resources Ltd, July 2022.
- Beauru of Meterology (BoM). 2025.** *Climate Data Online Bulga Downs (12239)*. [http://www.bom.gov.au/climate/averages/tables/cw\\_012239.shtml](http://www.bom.gov.au/climate/averages/tables/cw_012239.shtml). [Accessed 24 March 2025].
- Cowan, M. 2001.** *A Biodiversity Audit of Western Australia's 53 Biogeographical Subregions in 2002-Murchison (MUR01 Eastern Murchison subregion)*. Department of Conservation and Land Management, 2002.
- Department of Agriculture, Water and Environment. 2019.** *Rangelands 2008 – Taking the Pulse; Murchison Bioregion*. <https://www.environment.gov.au/system/files/resources/a8015c25-4aa2-4833-ad9c-e98d09e2ab52/files/bioregion-murchison.pdf>
- Department of Environment Regulation. 2014.** *A guide to the assessment of applications to clear native vegetation under Part V Division 2 of the Environmental Protection Act 1986*. Department of Environment Regulation, December 2014.
- Department of Primary Industries and Regional Development. 2025.** *Western Australian Organism List (WAOL)* [online] Available at: <https://www.agric.wa.gov.au/bam/western-australian-organism-list-waol> [Accessed 24 March 2025].
- Native Vegetation Solutions. 2023.** *Reconnaissance Flora and Vegetation Survey of the Youanmi Project Area and Dewatering Pipeline - May and November 2022*. Unpublished report prepared for Rox Resources, August 2023.
- Western Australian Herbarium. 1998-.** *Florabase—the Western Australian flora*. Department of Biodiversity, Conservation and Attractions. [online]. <https://florabase.dbca.wa.gov.au/> [Accessed 9 June 2026].
- Western Ecological. 2022.** *Detailed Fauna Survey – Youanmi Project*. Unpublished report prepared for Rox Resources, December 2022.

## **APPENDIX 1: Reconnaissance Flora and Vegetation Survey - NVS 2023**



**Reconnaissance**  
**Flora and Vegetation Survey of the**  
**Youanmi Project Area and**  
**Dewatering Pipeline – May and**  
**November 2022**

Prepared for



FINAL V2.0  
August 2023

Prepared by:  
**Native Vegetation Solutions**  
PO Box 41  
KALGOORLIE  
Ph: (08) 9021 5818  
Mob: 0407 998 953  
Email: [eren@nativevegsolutions.com.au](mailto:eren@nativevegsolutions.com.au)



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## 1 INTRODUCTION

Rox Resources Ltd (ASX: RXL) is focused on Gold exploration and development in Western Australia, and is the 70% owner of the historic Youanmi Gold Project. Native Vegetation Solutions (NVS) was supplied with a survey area located approximately 112 km Southeast of Mt Magnet, in the Murchison Region (MUR) of Western Australia (Figure 1).

The total survey area received from RXL covers approximately 1,891.14 ha.

The survey area lies within Mining Tenements M57/165, M57/109, M57/160A, M57/135, M 57/51, M57/10 and M57/166, Exploration Tenements E57/985, E57/1023, E57/1103, E57/1129 and E57/1185, Miscellaneous tenements L57/58 and L57/59 and Prospecting tenement P57/1450.

Actual disturbance footprints are not yet defined; however, clearing required within the boundary of the survey area is anticipated to be less than the total survey area. Existing disturbance in the form of open pits, waste landforms, infrastructure and exploration totals approximately 368.80 hectares within the survey area.

This report will encompass results of the reconnaissance flora and vegetation survey within the Youanmi Gold Project area and the associated dewatering pipeline route.

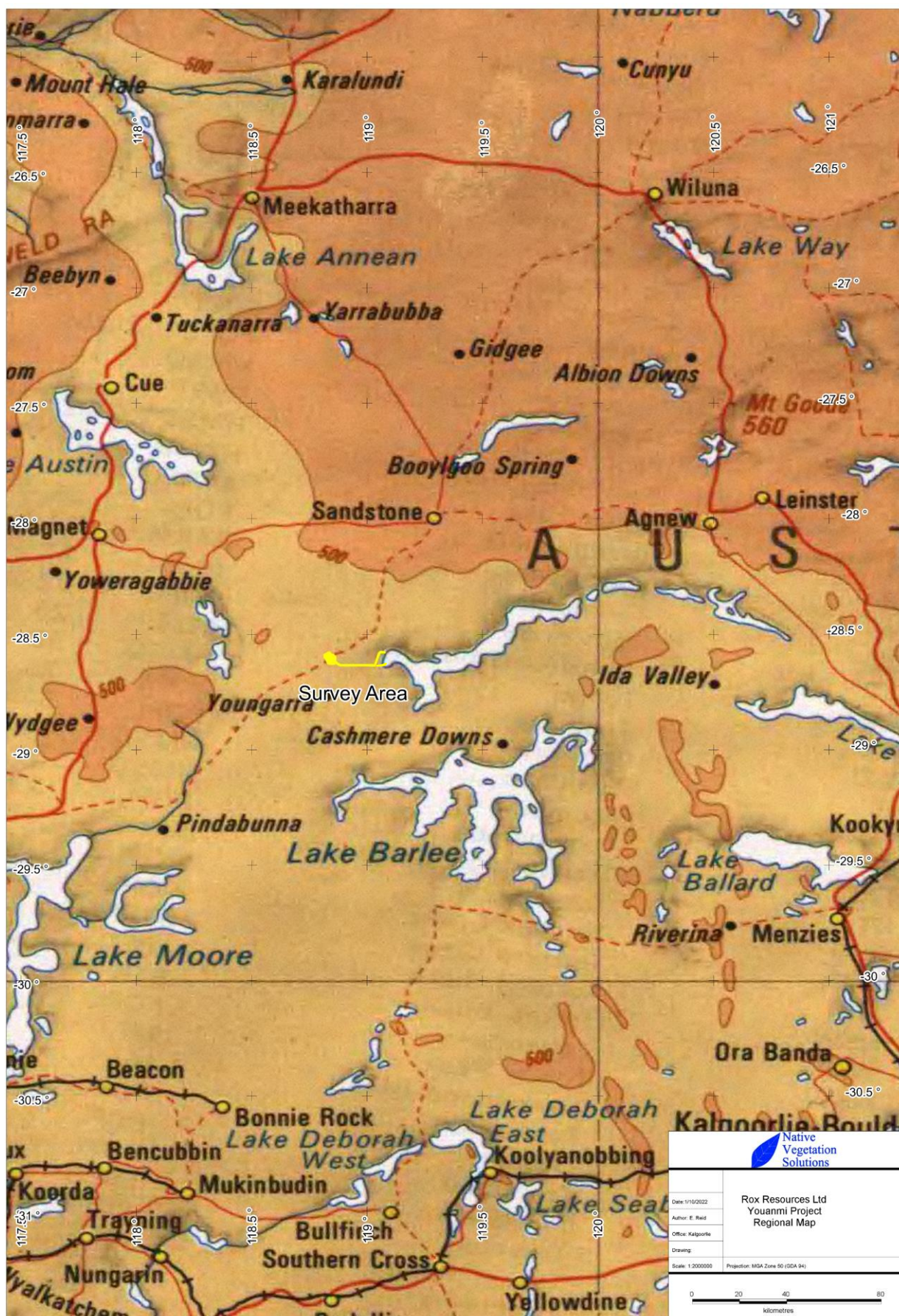


Figure 1: Regional map of the survey location



## 1.1 Objectives

The objective of this report is to document the results of the flora and vegetation component of a reconnaissance assessment conducted in accordance with:

- *Environmental Factor Guideline- Flora and Vegetation* (EPA, 2016); and
- *Technical Guidance- Flora and Vegetation Surveys for Environmental Impact Assessment* (EPA, 2016a).

A reconnaissance assessment has two components:

- 1). Desktop study which includes a literature review and a search of the relevant databases;
- 2). Reconnaissance survey of the survey area to verify the desktop survey, to define vegetation units present in the area, search for species of conservation significance and to determine potential sensitivity to impact.

As part of the reporting for the reconnaissance assessment, NVS has conducted a Flora and Vegetation Survey which includes broad-scale vegetation mapping and vegetation condition mapping of the survey area.

The scope of work for the reconnaissance flora and vegetation survey was to:

- conduct a desktop study that includes a literature review and search of the relevant databases;
- describe the vegetation associations in the survey area;
- prepare an inventory of species occurring in the survey area;
- identify any vegetation communities or flora species of conservation significance;
- Map broad-scale vegetation groups found within the survey area, including vegetation condition; and
- provide recommendations, including the management of perceived impacts to flora and vegetation within the survey area.

## 1.2 Geology and Vegetation

The survey area lies in the Murchison (MUR) bioregion, more specifically the Eastern Murchison (MUR01) subregion. The Eastern Murchison subregion covers over 7 million hectares and contains the northern parts of the 'Southern Cross' and 'Eastern Goldfields' Terrains of the Yilgarn Craton. The landscape is characterised by extensive areas of elevated red desert sandplains with minimal dune development and internal drainage. The occluded Paleodrainage system generates Salt lake systems. Other features include broad plains of red-brown soils, breakaway complexes, and red sandplains. Mulga woodlands often rich in ephemerals; hummock grasslands, saltbush shrublands and *Tecticornia* shrublands dominate the vegetation (CALM, 2002)

## 1.3 Climate

The climate is Arid with 200-300 mm of rainfall, sometimes in summer but usually in winter (CALM, 2002). The nearest official meteorological weather station with the most complete and up to date temperature information is Bulga Downs (station number 012239), which is located approximately 88.6 km east of the survey area.

### 1.3.1 Temperature

Mean annual minimum temperature at Bulga Downs is 13.6°C and mean annual maximum temperature is 29.0°C (BOM, 2022). The coldest temperatures are attained in July (mean minimum temperature 4.8°C), the hottest is January (mean maximum temperature 37.9°C) and diurnal temperature variations are relatively consistent throughout the year (Figure 2).

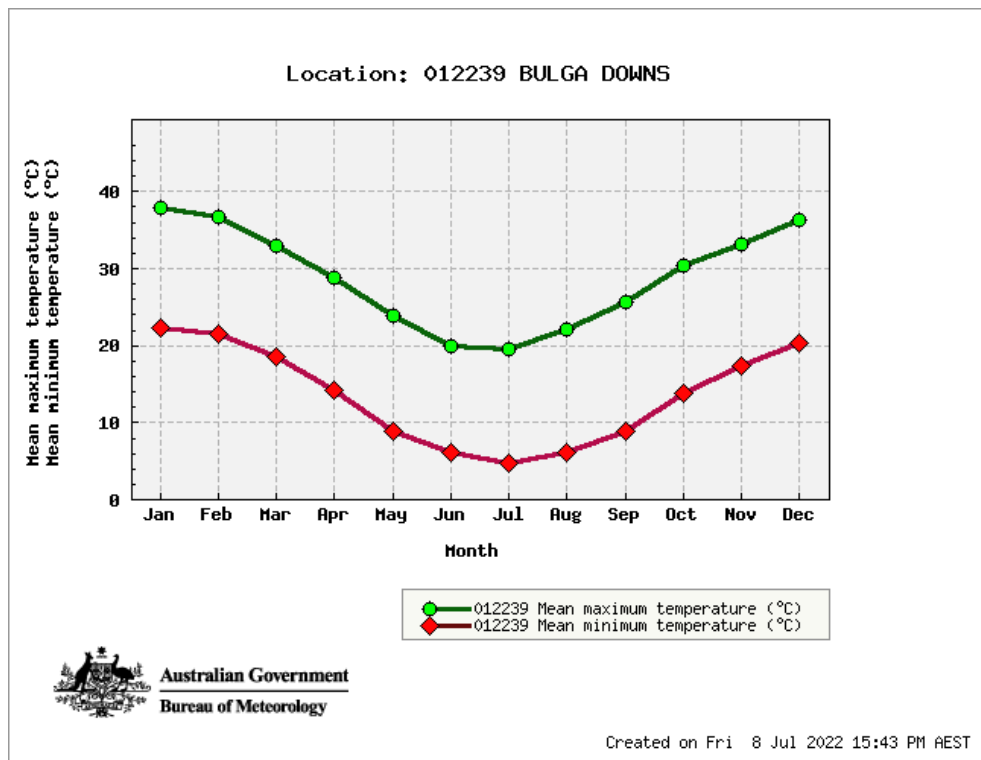


Figure 2: Mean temperature ranges for Bulga Downs weather station

### 1.3.2 Rainfall

The annual average rainfall at Bulga Downs is 236.6 mm, which falls (>1 mm) on an average of 11 rain-days (BOM, 2022). Larger rainfall events occur from January to March and May to July (Figure 3). Prior to the survey in 2022, rainfall in March exceeded monthly averages while rainfall for all other months remained below monthly averages (BOM, 2022).

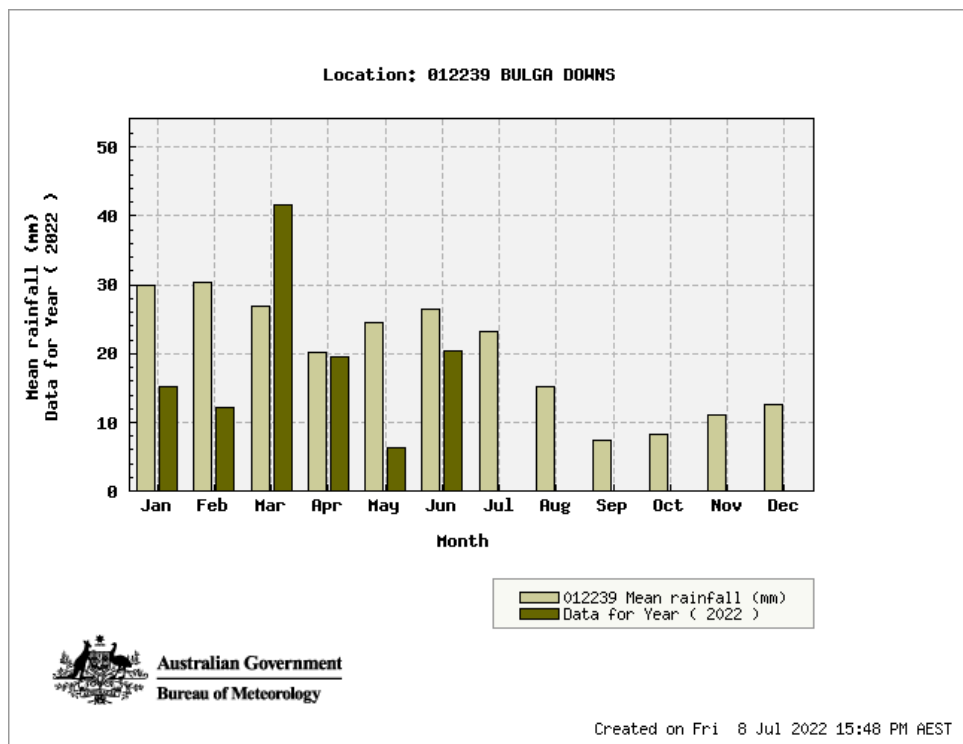


Figure 3: Monthly and mean rainfall for Bulga Downs weather station

## **2. ASSESSMENT METHODOLOGY**

### **2.1 Personnel and Reporting**

The following personnel were involved in the Reconnaissance flora and vegetation survey:

- Mr Eren Reid (*BSc- Biological Science*), Principal Botanist, Native Vegetation Solutions, undertook the survey, vegetation mapping, data collation, field identification of flora, preparation and review of the report.
- Ms Adele Thomasz (*BSc- Conservation and Wildlife Biology*), Native Vegetation Solutions, data collation and preparation of the report; and
- Mr Frank Obbens (*BSc*), Consultant Botanist, Bushtech Consultancy, undertook identification of unknown samples collected in the field.

### **2.2 Preliminary Desktop Study**

A preliminary assessment of the survey area and its potential constraints was undertaken by reviewing relevant government agency managed databases (Sections 2.2.1 to 2.2.6, and Appendices 1 & 2) and consulting with government agencies where necessary. The following sections provide a summary of desktop searches undertaken for the project.

#### **2.2.1 Environment Protection and Biodiversity Conservation Act Protected Matters**

The *Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)* Protected Matters Search tool was utilised to provide results for matters of National Environmental Significance within the survey area using the survey area as the search criteria with a 3 km buffer (DAWE, 2022).

#### **2.2.2 Threatened Flora and Communities**

The Threatened and Priority Flora Database managed by the Department of Biodiversity, Conservation and Attractions (DBCA) was searched for threatened and priority flora within a 10km radial area of the survey area (DBCA, 2022a).

The Threatened and Priority Ecological Communities (TECs and PECs) database was searched to determine the presence of PECs or TECs (DBCA, 2022), with Geographic Information System (GIS) data supplied for assessment, within a 20 km radial area of the survey area.

#### **2.2.3 Environmentally Sensitive Areas (ESAs) and Conservation Reserves**

The Department of Water and Environmental Regulation (DWER, 2022) Clearing Permit System Map Viewer was used to determine the location of any ESAs and Conservation Reserves.

#### **2.2.4 Vegetation Type, Extent and Status**

Vegetation extent and status data was sourced from the Department of Agriculture and Food (DAFWA) report and its associated GIS file (Shepherd *et al*, 2002). This data comprises Beard's Pre-European vegetation groups.

DBCA's Statewide Vegetation Statistics (DBCA, 2019) was also referenced for the current extent of Beard's Vegetation Groups. The purpose of examining this information is to determine if the survey area lies within any vegetation groups defined by Beard that may have been subjected to widescale clearing for European settlement. The national objectives and targets for biodiversity conservation recognise that the retention of 30% or more of the pre-clearing extent of a Beard vegetation association is necessary if Australia's biological diversity is to be protected.

#### **2.2.5 Wetlands**

The potential of wetlands within the project area was determined by examining DWER's Clearing Permit System Map Viewer (DWER, 2022).

### 2.2.6 Dieback

Dieback is only considered a potential issue for any project if both of the below factors are relevant for the project (CALM, 2003):

- the project area lies within the South West Land Division; and
- the mean annual rainfall of the area is greater than 400 mm.

## 2.3 Site Investigation

A site visit of the Youanmi Gold Project survey area was carried out by Botanist Eren Reid from Native Vegetation Solutions (NVS) from the 27<sup>th</sup> to the 31<sup>st</sup> of May 2022 and 1<sup>st</sup> of November 2022 to examine the flora and vegetation groups contained within the survey area. The survey area combines two project areas, the Youanmi Project area covering approximately 1,751 ha, and the Dewatering Pipeline area, covering approximately 142.6ha. A total of 58 hours was spent on site traversing the survey area, by Yamaha Viking and on foot.

The survey was conducted in accordance with relevant Environmental protection Authority's (EPA's) Statements and Guidelines (Section 1.1).

The EPA uses the Interim Biogeographic Regionalisation of Australia (IBRA) as the largest unit for Environmental Impact Assessment decision making in relation to the conservation of biodiversity. Given the scale and nature of the proposed disturbance as well as the existing disturbance, and that the survey area is located within the Murchison (MUR) IBRA region, a reconnaissance flora and vegetation survey was deemed adequate.

### 2.3.1 Licenses

Field work was conducted under Scientific License FB62000171, held by Mr Eren Reid with expiry 08/10/2022.

### 2.3.2 Field Methods

Prior to the field work, the aerial photography was examined and representative sample sites for relevés were chosen to provide coverage over all viable vegetation types.

In the field, 20m x 20m relevé sites were established at these sites, taking into account representation of surrounding vegetation and vegetation boundaries. Relevé sites are represented in Appendix 4.

Each relevé site was captured on a TwoNav Aventura GPS at  $\pm 4$ m accuracy, using Universal Transverse Mercator location on GDA94 datum. Digital photographs were taken of each representative vegetation group present in the survey area.

Data collected at each relevé included:

- Photograph of representative vegetation group:
- GPS Location:
- Species Present;
- Population Count/Estimate of Conservation Significant Flora (if present);
- Disturbance Level; and
- Vegetation Condition

Specimens of taxa not recognised by the Botanists were collected and pressed along with specimens of taxa recognised as, or thought to be, conservation-significant species.

The vegetation structure was assessed using the method developed by Muir (1977). Definitions of the vegetation structure are presented in Appendix 3.



The condition of each relevé was assessed using the method developed by Keighery (1994). Definitions of the condition scale are presented in Appendix 3.

Vegetation groups were mapped (section 2.4.4 below).

Opportunistic sampling of plant taxa and vegetation group mapping was also utilised in the survey area between relevé sampling points, via wandering traverses. Smaller singular relevé sites were also utilised as opportunistic sample sites to collect flora specimens and assist in mapping vegetation groups.

All sample sites and GPS tracks are included in Appendix 4.

### 2.3.3 Post-Field Methods

Unknown specimens collected in the field were identified post field work by Frank Obbens (Bushtech Consultancy) and Eren Reid (NVS) with reference to published keys, WAHERB reference herbarium and information published on Florabase (WAHERB, 2022). Threatened flora range extensions and new locations were submitted to the Western Australian Herbarium (WAHERB) as per the EPA Technical Guidelines (EPA 2016a).

Species information was transferred into Microsoft Excel® worksheets representing presence/absence of species per vegetation group.

### 2.3.4 Mapping

Vegetation mapping was produced via GPS recorded information in the field, cross-referenced with vegetation descriptions made in the field, overlaid on aerial imagery of the survey area. The GPS utilized (TwoNav Aventura GPS) displayed aerial imagery, hence real-time mapping of vegetation groups was available during field work.

Vegetation Health Condition was assessed in the field with reference to Keighery (1994).

GPS tracks and waypoints recorded during field work are presented in Appendix 4.

### 2.3.5 IBSA Data Package

The Environmental Protection Authority (EPA), Department of Water and Environmental Regulation (DWER) and Department of Mines, Industry Regulation and Safety (DMIRS) require Index of Biodiversity Surveys for Assessments (IBSA) Data Packages to be submitted to support assessment and compliance under the *Environmental Protection Act 1986*.

An IBSA data package is a single file in .zip format, containing:

- one **Metadata and Licensing Statement** in .pdf format;
- one **survey report** in .pdf format;
- one **plain-text survey report** in .txt format; and
- a set of electronic data files, comprising:
  - one **survey details** spatial dataset in shapefile (.shp, etc.) or MapInfo (.tab, etc.) format; and
  - one or more **survey data** spatial datasets, as required, in shapefile (.shp, etc.) or MapInfo (.tab, etc.) format.

The IBSA Data package for this survey has been submitted via the DWER IBSA Submission Portal.

## 2.4 Nomenclature And Taxonomy

Nomenclature follows that used by the WAHERB.

The WAHERB has updated its sequence and arrangement of collections to conform to the systematic sequence of the Angiosperm Phylogeny Group (APGIII), with the result that many Families and Genera have been moved or renamed. This report attempts to follow those changes in relation to species recorded during this survey. Definitions of Threatened Flora are also included in Section 6 below.

## 2.5 Limitations

Table 1 lists potential limitations that may have affected the survey.

**Table 1: List of potential survey limitations**

| Potential Limitations                                               | Constraint (Y/N) | Comment                                                                                                                                                                                                                                                                                        |
|---------------------------------------------------------------------|------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Competency and experience of the consultants undertaking the survey | N                | Experienced and competent personnel conducted the survey. Eren Reid has over 18 years' experience in botanical surveys throughout the Murchison Region and over a variety of other environments across Western Australia.                                                                      |
| Scope                                                               | N                | The Scope of work was adequately defined. Vascular flora species were the focus of the survey and were thoroughly sampled.                                                                                                                                                                     |
| Proportion of flora identified during survey                        | N                | As the survey was planned to target species of conservation significance and flora within a defined survey area, a complete census of the species present was attempted (Approx. 95%). Sufficient identifications were made to allow vegetation descriptions to be made.                       |
| Sources of information                                              | N                | Threatened and Priority Flora GIS information was available from DBCA.                                                                                                                                                                                                                         |
| Proportion of the task achieved                                     | N                | All tasks completed.                                                                                                                                                                                                                                                                           |
| Timing/Season                                                       | N                | The reconnaissance flora and vegetation survey was conducted in Autumn and Spring 2022. Flowering annual species were present within the survey area, suggesting recent rainfall was sufficient for the period of survey.                                                                      |
| Disturbance in survey area                                          | N                | Disturbance (historical access tracks and exploration) was observed within the survey area, however, did not compromise the results of the survey as these areas were avoided whilst collecting data.                                                                                          |
| Intensity of survey effort                                          | N                | The survey intensity is considered to have been sufficient for a reconnaissance survey according to EPA (2016) guidelines. Areas most likely to contain threatened and priority species were targeted. Vegetation mapping sites were selected to provide adequate coverage of the survey area. |
| Resources                                                           | N                | Resources, in terms of time, equipment, support and personnel were adequate to undertake and complete the reconnaissance survey.                                                                                                                                                               |
| Access problems                                                     | N                | All the areas in need of survey were easily accessible from existing tracks, or by foot.                                                                                                                                                                                                       |
| Availability of contextual information on the region                | N                | Contextual information regarding vegetation and flora of the Murchison bioregion is readily available. Adequate information was able to be accessed from available databases.                                                                                                                  |

### 3. RESULTS

#### 3.1 Preliminary Desktop Assessment

##### 3.1.1 EPBC Act Protected Matters

Results of the EPBC Protected Matters search tool are included in Appendix 1. The results revealed that the survey area could possibly contain suitable habitat for the weed species *Carrichtera annua* (Ward's Weed) and *Cenchrus ciliaris* (Buffel grass) (DAWE, 2022a).

*Carrichtera annua* was introduced into Australia from the eastern Mediterranean, and is now widespread throughout South Australia, the Interior, and Western Australia (Lamp & Collet, 1989). This species is not listed as a declared plant by DPIRD (2022), however according to the EPBC search tool this invasive weed species is considered a threat to the rangeland biodiversity within the Southern Australian Sheep and Cattle Grazing Land Management Zone (DAWE, 2022a).

*Cenchrus ciliaris* is native to Africa and India, was widely planted in Western Australian pastoral regions as a pasture grass, and has become a widespread weed of roadsides, creeklines, river edges and most vegetation types from Geraldton to the Pilbara, Kimberley and adjacent desert (Hussey, 2007). In the Murchison region it often colonises roadside table drains, excluding native everlastings. It seriously alters the fire characteristics of invaded plant cover by generating highly flammable fuel that is prone to more frequent fires.

The EPBC Protected Matters report indicated no TECs or Commonwealth Reserves within the requested search area.

##### 3.1.2 Threatened Flora and Communities

The DBCA database searches revealed a potential for no Threatened and three Priority Flora species to occur within a 10km radius of the survey area (DBCA, 2022a). One location of Priority Flora *Euryomyrtus recurva* (P3) occurs within the Youanmi Project survey area.

Results of the threatened flora database search are included in Appendix 2, which includes the likelihood of each species to occur within the survey area.

The PEC/TEC search (DBCA, 2022) revealed that no PECs or TECs fall within the survey area.

##### 3.1.3 Environmentally Sensitive Areas and Conservation Reserves

No ESA's are located within the survey area. However, the area does contain four 'C' Class Reserves (Purpose: Common) (DWER, 2022). Reserve details are listed in table 3 below, and displayed in Appendix 1. These reserves may be remnants from the townsite of Youanmi, which was abandoned in the 1940s.

Table 2: Class C reserves occurring within the survey area (DWER, 2022)

| Reserve Number | Class | Purpose            | Responsible Agency                               |
|----------------|-------|--------------------|--------------------------------------------------|
| R 17011        | C     | Common and Grazing | Department of Planning, Lands and Heritage       |
| R 13867        | C     | Explosives         | DMIRS                                            |
| R 21746        | C     | Golf links         | Department of Planning, Lands and Heritage       |
| R 22033        | C     | Waterway           | Department of Water and Environmental regulation |

##### 3.1.4 Land Systems

As part of the Rangeland resource surveys, the Department of Agriculture mapped the Land Systems of Western Australia (DPIRD, 2017). The Land Systems occurring within the survey area are listed in Table 3 below and displayed in Appendix 4.

**Table 3: Land Systems occurring within the survey area (DPIRD, 2017)**

| Land System | Description                                                                                                                                                                                               | Extent of Survey Area (ha) | % Of Survey Area (%) |
|-------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|----------------------|
| Bevon       | Irregular low ironstone hills with stony lower slopes supporting mulga shrublands.                                                                                                                        | 28.45                      | 1.50%                |
| Carnegie    | Salt lakes with fringing saline alluvial plains, kopi dunes and sandy banks, supporting halophytic shrublands and acacia tall shrublands.                                                                 | 30.24                      | 1.60%                |
| Cunyu       | Calcrete platforms, intervening drainage floors and channels and minor alluvial plains, supporting acacia shrublands, occasional casuarina woodlands and minor halophytic shrublands.                     | 28.71                      | 1.52%                |
| Felix       | Gently undulating plains with quartz mantles, supporting acacia-eremophila shrublands locally with wanderrie grasses.                                                                                     | 534.81                     | 28.28%               |
| Gabanintha  | Greenstone ridges, hills and footslopes supporting sparse acacia and other mainly non-halophytic shrublands.                                                                                              | 4.1                        | 0.22%                |
| Gransal     | Stony plains and low rises based on granite supporting mainly halophytic low shrublands.                                                                                                                  | 26.11                      | 1.38%                |
| Jundee      | Hardpan plains with variable gravelly mantles and minor sandy banks supporting weakly groved mulga shrublands.                                                                                            | 488.43                     | 25.83%               |
| Nallex      | Gently undulating stony plains supporting acacia tall shrublands and chenopod low shrublands.                                                                                                             | 1.1                        | 0.06%                |
| Rainbow     | Hardpan plains supporting mulga tall shrublands.                                                                                                                                                          | 290.11                     | 15.34%               |
| Tyrrell     | Sandplain with mallees, wattles, heath and spinifex.                                                                                                                                                      | 13.62                      | 0.72%                |
| Violet      | Gently undulating gravelly plains on greenstone, laterite and hardpan, with low stony rises and minor saline plains; supporting groved mulga and bowgada shrublands and occasionally chenopod shrublands. | 394.35                     | 20.85%               |
| Woodline    | Almost flat sandy-surfaced hardpan wash plains supporting tall shrublands and woodlands of mulga.                                                                                                         | 51.11                      | 2.70%                |

### 3.1.5 Vegetation Type, Extent and Status

Three vegetation units defined by Beard (1990) were identified as part of the desktop assessment. The vegetation units identify the Pre-European extent of vegetation, as mapped by Beard (1990). The national objectives and targets for biodiversity conservation recognise that the retention of 30% or more of the pre-clearing extent of Beard's vegetation associations is necessary if Australia's biological diversity is to be protected.

Information relating to known Beard (1990) vegetation units within the survey area has been summarised in Tables 4 to 7 below. This information has been compiled through both desktop assessments and the site visit.

The extent of the three Beard vegetation units within the survey area is less than 1% of the total area at each scale (Table 4). All scales are above the 30% threshold at a State, bioregional and subregional level (Tables 5 to 7).

**Table 4: Extent of Beard Associations within the survey area**

| Beard Vegetation Association | Extent within survey area (ha) | % of survey area (%) | By Association WA | By Association WA | By IBRA Region (MUR) | By IBRA Sub-region (MUR01) | By Shire (Shire of Sandstone) |
|------------------------------|--------------------------------|----------------------|-------------------|-------------------|----------------------|----------------------------|-------------------------------|
| 18                           | 1229.97                        | 65.04%               | <1%               | <1%               | <1%                  | <1%                        | <1%                           |
| 389                          | 649.11                         | 34.32%               | <1%               | <1%               | <1%                  | <1%                        | <1%                           |
| 676                          | 12.06                          | 0.64%                | <1%               | <1%               | <1%                  | <1%                        | <1%                           |

**Table 5: Summary of information regarding Pre-European and current vegetation extent of Vegetation Association 18 within the survey area**

| Factor                              | Value                                        |                            |                             |                                   |                                      |
|-------------------------------------|----------------------------------------------|----------------------------|-----------------------------|-----------------------------------|--------------------------------------|
| Beard Vegetation Association*       | 18                                           |                            |                             |                                   |                                      |
| Vegetation Association Description* | Low woodland; mulga ( <i>Acacia aneura</i> ) |                            |                             |                                   |                                      |
| Pre-European Extent (ha)            | Scale                                        |                            |                             |                                   |                                      |
|                                     | <b>By Association (WA)</b>                   | <b>By Association (WA)</b> | <b>By IBRA Region (MUR)</b> | <b>By IBRA Sub-region (MUR01)</b> | <b>By Shire (Shire of Sandstone)</b> |
|                                     | 22,029,557*                                  | 19,892,306.46**            | 12,403,172.30**             | 10,269,896.44**                   | 1,737,640.12**                       |
| % Pre-European Extent Remaining     | 100.00%*                                     | 99.75%**                   | 99.68%**                    | 99.66%**                          | 99.87%**                             |
| Surrounding Land Use***             | Mining, Exploration, Pastoral Lease          |                            |                             |                                   |                                      |
| Weed prevalence***                  | Low                                          |                            |                             |                                   |                                      |

\* Source: Shepherd *et al.* (2002) Appendix 2

\*\*Source: DBCA, (2019)

\*\*\*Source: Field Assessment

**Table 6: Summary of information regarding Pre-European and current vegetation extent of Vegetation Association 389 within the survey area**

| Factor                              | Value                                                        |                            |                             |                                   |                                      |
|-------------------------------------|--------------------------------------------------------------|----------------------------|-----------------------------|-----------------------------------|--------------------------------------|
| Beard Vegetation Association*       | 389                                                          |                            |                             |                                   |                                      |
| Vegetation Association Description* | Succulent steppe with open low woodland; mulga over saltbush |                            |                             |                                   |                                      |
| Pre-European Extent (ha)            | Scale                                                        |                            |                             |                                   |                                      |
|                                     | <b>By Association (WA)</b>                                   | <b>By Association (WA)</b> | <b>By IBRA Region (MUR)</b> | <b>By IBRA Sub-region (MUR01)</b> | <b>By Shire (Shire of Sandstone)</b> |
|                                     | 646,554*                                                     | 442,356.85**               | 493,977.54**                | 493,977.54**                      | 91,426.36**                          |
| % Pre-European Extent Remaining     | 100.00%*                                                     | 99.71%**                   | 99.62%**                    | 99.62%**                          | 99.50%**                             |
| Surrounding Land Use***             | Mining, Exploration, Pastoral Lease                          |                            |                             |                                   |                                      |
| Weed prevalence***                  | Low                                                          |                            |                             |                                   |                                      |

\* Source: Shepherd *et al.* (2002) Appendix 2

\*\*Source: DBCA, (2019)

\*\*\*Source: Field Assessment



**Table 7: Summary of information regarding Pre-European and current vegetation extent of Vegetation Association 676 within the survey area**

| Factor                              | Value                               |                            |                             |                                   |                                      |
|-------------------------------------|-------------------------------------|----------------------------|-----------------------------|-----------------------------------|--------------------------------------|
| Beard Vegetation Association*       | 676                                 |                            |                             |                                   |                                      |
| Vegetation Association Description* | Succulent steppe; samphire          |                            |                             |                                   |                                      |
| Pre-European Extent (ha)            | Scale                               |                            |                             |                                   |                                      |
|                                     | <i>By Association (WA)</i>          | <i>By Association (WA)</i> | <i>By IBRA Region (MUR)</i> | <i>By IBRA Sub-region (MUR01)</i> | <i>By Shire (Shire of Sandstone)</i> |
|                                     | 1,907,938*                          | 2,063,413.95**             | 382,818.77**                | 369,324.84**                      | 71,746.75**                          |
| % Pre-European Extent Remaining     | 99.01%*                             | 95.18%**                   | 99.97%**                    | 99.97%**                          | 100.00%**                            |
| Surrounding Land Use***             | Mining, Exploration, Pastoral Lease |                            |                             |                                   |                                      |
| Weed prevalence***                  | Low                                 |                            |                             |                                   |                                      |

\* Source: Shepherd *et al.* (2002) Appendix 2

\*\*Source: DBCA, (2019)

\*\*\*Source: Field Assessment

### 3.1.6 Wetlands

The DWER Clearing Permit System Map Viewer revealed Lake Noondie on the eastern edge of the pipeline route (DWER, 2022). Lake Noondie is a medium sized salt lake, where dewatering discharge is proposed to occur. This lake is not considered a significant wetland.

### 3.1.7 Dieback

The survey area lies south of the 26<sup>th</sup> parallel, however receives average annual rainfall of 236.6 mm. There is no record of *Phytophthora cinnamomi* establishing in natural ecosystems in regions receiving less than 400mm rainfall per annum (CALM, 2003). Therefore, Dieback is not considered an issue for this survey area, however all measures should be taken to prevent any possible soil contamination (seeds of non-native species *etc.*) which poses a risk in the survey area during seasonally favourable conditions.

## 3.2 Field Assessment

### 3.2.1 Threatened Flora

No Threatened Flora were recorded in the survey area.

One Priority Flora species was recorded in the survey area, *Calytrix hislopiae* (P3). Locations of Priority Flora species are included in Appendix 4. Population numbers and GPS locations of Priority Flora recorded by NVS and located inside the survey area are included in Table 8 below.

**Table 8: Priority Flora recorded within the survey area**

| TAXONNAME                      | ABUNDANCE | WACONSTAT | LONGITUDE<br>GDA2020 | LATITUDE<br>GDA2020 |
|--------------------------------|-----------|-----------|----------------------|---------------------|
| <i>Calytrix hislopiae</i> (P3) | 4         | P3        | 118.831143           | -28.589436          |
| <i>Calytrix hislopiae</i> (P3) | 20        | P3        | 118.831113           | -28.592768          |
| <i>Calytrix hislopiae</i> (P3) | 60        | P3        | 118.830965           | -28.593396          |
| <i>Calytrix hislopiae</i> (P3) | 20        | P3        | 118.830960           | -28.594434          |
| <i>Calytrix hislopiae</i> (P3) | 15        | P3        | 118.830297           | -28.594748          |
| <i>Calytrix hislopiae</i> (P3) | 20        | P3        | 118.852812           | -28.600726          |

### 3.2.2 Vegetation Type, Extent and Status

A total of 38 families, 76 genera and 176 species were recorded within the survey area. Nineteen major vegetation groups were recorded in the survey area and range from Degraded to Very Good condition (using the scale of Keighery 1994, see Appendix 3). Existing disturbance within the survey area is comprised of historic mining, exploration, and access roads.

No unique or restricted vegetation communities were identified, and all vegetation types/communities are common, widespread and well represented in the Eastern Murchison subregion.

The summary of vegetation groups contained within the survey area is summarised in

Table 9 below. Maps of the survey area can be seen in Appendix 4.

**Table 9: Vegetation Group Summary**

| Vegetation Group                                                                                                                                | Veg Group Code | Families   | Genera     | Species     | Area (ha) | Percentage of survey area (%) |
|-------------------------------------------------------------------------------------------------------------------------------------------------|----------------|------------|------------|-------------|-----------|-------------------------------|
| Mulga shrubland with <i>Eucalyptus kingsmillii</i>                                                                                              | A              | 23         | 33         | 53          | 1,022.03  | 54.04%                        |
| <i>Acacia kalgoorliensis</i> shrubland                                                                                                          | B              | 12         | 17         | 29          | 5.79      | 0.31%                         |
| Mulga over chenopod shrubland                                                                                                                   | C              | 12         | 20         | 34          | 198.13    | 10.48%                        |
| BIF outcropping, Mulga shrubland and <i>Acacia quadrimarginea</i> over <i>Eremophila georgei</i> and <i>Aluta aspera</i> subsp. <i>hesperia</i> | D              | 9          | 9          | 14          | 5.16      | 0.27%                         |
| Mulga drainage vegetation                                                                                                                       | E              | 17         | 27         | 42          | 67.41     | 3.56%                         |
| Mulga over laterite breakaway                                                                                                                   | F              | 12         | 14         | 23          | 17.81     | 0.94%                         |
| Mulga creekline vegetation                                                                                                                      | G              | 15         | 21         | 35          | 89.84     | 4.75%                         |
| Mulga over stony rises                                                                                                                          | H              | 11         | 14         | 25          | 38.49     | 2.04%                         |
| Open mulga shrubland over <i>Ptilotus obovatus</i> and <i>Maireana triptera</i>                                                                 | I              | 11         | 15         | 28          | 13.11     | 0.69%                         |
| Open Mulga woodland                                                                                                                             | J              | 9          | 14         | 28          | 3.87      | 0.20%                         |
| <i>Acacia acuminata</i> shrubland with emergent Mulga and <i>Casuarina pauper</i>                                                               | K              | 15         | 23         | 45          | 9.52      | 0.50%                         |
| <i>Casuarina pauper</i> woodland over <i>Acacia acuminata</i> and <i>Melaleuca xerophila</i>                                                    | L              | 10         | 12         | 18          | 7.25      | 0.38%                         |
| <i>Casuarina pauper</i> and Mulga over <i>Acacia victoriae</i> and sclerophyll shrubland                                                        | M              | 10         | 11         | 21          | 6.09      | 0.32%                         |
| <i>Eucalyptus striatocalyx</i> over chenopod and sclerophyll shrubland                                                                          | N              | 11         | 17         | 26          | 1.39      | 0.07%                         |
| Mulga over <i>Eremophila miniata</i> , <i>Dodonaea viscosa</i> subsp. <i>angustissima</i> on sand dunes                                         | O              | 14         | 20         | 30          | 14.70     | 0.78%                         |
| <i>Tecticornia</i> shrubland on red sand                                                                                                        | P              | 8          | 13         | 17          | 1.63      | 0.09%                         |
| <i>Tecticornia</i> shrubland over claypan                                                                                                       | Q              | 4          | 6          | 11          | 5.31      | 0.28%                         |
| <i>Duma florulenta</i> shrubland                                                                                                                | R              | 10         | 12         | 12          | 0.43      | 0.02%                         |
| <i>Tecticornia</i> shrubland on lake edge                                                                                                       | S              | 4          | 4          | 6           | 0.14      | 0.01%                         |
| <i>Eucalyptus kochii</i> subsp. <i>plenissima</i> over <i>Triodia basedowii</i>                                                                 | T              | 12         | 16         | 23          | 7.48      | 0.40%                         |
| <i>Grevillea pityophylla</i> over <i>Lawrenia helmsii</i> and <i>Frankenia setosa</i> on kapok dunes                                            | U              | 6          | 7          | 7           | 0.53      | 0.03%                         |
| Mulga over <i>Triodia basedowii</i>                                                                                                             | V              | 16         | 23         | 33          | 2.90      | 0.15%                         |
| Bare Salt Lake                                                                                                                                  | N/A            | N/A        | N/A        | N/A         | 3.35      | 0.18%                         |
| Existing Disturbance                                                                                                                            | N/A            | N/A        | N/A        | N/A         | 368.80    | 19.50%                        |
| <b>Total</b>                                                                                                                                    |                | <b>39*</b> | <b>83*</b> | <b>189*</b> | 1891.14#  | 100.00#                       |

Note: \* Within total survey area (not sum of column)  
# Sum of column

The Youanmi Project vegetation groups are described in more detail below.

### 3.2.2.1 Mulga shrubland with *Eucalyptus kingsmillii* (A)

This Scrub (Muir, 1977) consisted of 23 Families, 33 Genera and 53 Species. The vegetation group was approximately 1,022.03 ha which makes up 54.04% of the survey area.



Figure 4: Vegetation Group A within the survey area

### 3.2.2.2 *Acacia kalgoorliensis* shrubland (B)

This Low Scrub A (Muir, 1977) consisted of 12 Families, 17 Genera and 29 Species. The vegetation group was approximately 5.79 ha which makes up 0.31% of the survey area.



**Figure 5: Vegetation Group B within the survey area**



### 3.2.2.3 Mulga over chenopod shrubland (C)

This Open Scrub (Muir, 1977) consisted of 12 Families, 20 Genera and 34 Species. The vegetation group was approximately 198.13 ha which makes up 10.48% of the survey area.



**Figure 6: Vegetation Group C within the survey area**



#### 3.2.2.4 BIF outcropping, Mulga shrubland and *Acacia quadrimarginea* over *Eremophila georgei* and *Aluta aspera* subsp. *hesperia* (D)

This Thicket (Muir, 1977) consisted of 9 Families, 9 Genera and 14 Species. The vegetation group was approximately 5.16 ha which makes up 0.27% of the survey area.



Figure 7: Vegetation Group D within the survey area



### 3.2.2.5 Mulga drainage vegetation (E)

This Dense Thicket (Muir, 1977) consisted of 17 Families, 27 Genera and 42 Species. The vegetation group was approximately 67.41 ha which makes up 3.56% of the survey area.



Figure 8: Vegetation Group E within the survey area

### 3.2.2.6 Mulga over laterite breakaway (F)

This Open Low Scrub B (Muir, 1977) consisted of 12 Families, 14 Genera and 23 Species. The vegetation group was approximately 17.81 ha which makes up 0.94% of the survey area.



Figure 9: Vegetation Group F within the survey area



### 3.2.2.7 Mulga creekline vegetation (G)

This Thicket (Muir, 1977) consisted of 15 Families, 21 Genera and 35 Species. The vegetation group was approximately 89.84 ha which makes up 4.75% of the survey area.



Figure 10: Vegetation Group G within the survey area



### 3.2.2.8 Mulga over stony rises (*H*)

This Open Scrub (Muir, 1977) consisted of 11 Families, 14 Genera and 25 Species. The vegetation group was approximately 38.49 ha which makes up 2.04% of the survey area.



Figure 11: Vegetation Group H within the survey area

### 3.2.2.9 Open mulga shrubland over *Ptilotus obovatus* and *Maireana triptera* (I)

This Open Low Scrub A (Muir, 1977) consisted of 11 Families, 15 Genera and 28 Species. The vegetation group was approximately 13.11 ha which makes up 0.69% of the survey area.



Figure 12: Vegetation Group I within the survey area



### **3.2.2.10 Open mulga shrubland(J)**

This Open Low Scrub A (Muir, 1977) consisted of 9 Families, 14 Genera and 28 Species. The vegetation group was approximately 3.87 ha which makes up 0.20% of the survey area.



**Figure 13: Vegetation Group J within the survey area**

### **3.2.2.11 *Acacia acuminata* shrubland with emergent Mulga and Casuarina pauper (K)**

This Open Scrub (Muir, 1977) consisted of 15 Families, 23 Genera and 45 Species. The vegetation group was approximately 9.52 ha which makes up 0.50% of the survey area.



**Figure 14: Vegetation Group K within the survey area**



### **3.2.2.12 *Casuarina pauper* woodland over *Acacia acuminata* and *Melaleuca xerophila* (L)**

This Thicket (Muir, 1977) consisted of 10 Families, 12 Genera and 18 Species. The vegetation group was approximately 7.25 ha which makes up 0.38% of the survey area.



**Figure 15: Vegetation Group L within the survey area**

### **3.2.2.13 *Casuarina pauper* and Mulga over *Acacia victoriae* and sclerophyll shrubland (M)**

This Open Scrub (Muir, 1977) consisted of 10 Families, 11 Genera and 21 Species. The vegetation group was approximately 6.09 ha which makes up 0.32% of the survey area.



**Figure 16: Vegetation Group M within the survey area**



#### **3.2.2.14 *Eucalyptus striatocalyx* over chenopod and sclerophyll shrubland (N)**

This Low Woodland A (Muir, 1977) consisted of 11 Families, 17 Genera and 26 Species. The vegetation group was approximately 1.39 ha which makes up 0.07% of the survey area.



**Figure 17: Vegetation Group N within the survey area**

### **3.2.2.15 Mulga over *Eremophila miniata*, *Dodonaea viscosa* subsp. *angustissima* on sand dunes (O)**

This Scrub (Muir, 1977) consisted of 14 Families, 20 Genera and 30 Species. The vegetation group was approximately 14.70 ha which makes up 0.78% of the survey area.



**Figure 18: Vegetation Group O within the survey area**



### 3.2.2.16 *Tecticornia* shrubland on red sand (P)

This Dwarf Scrub C (Muir, 1977) consisted of 8 Families, 13 Genera and 17 Species. The vegetation group was approximately 1.63 ha which makes up 0.09% of the survey area.



Figure 19: Vegetation Group P within the survey area

### 3.2.2.17 *Tecticornia* shrubland over claypans (Q)

This Dwarf Scrub D (Muir, 1977) consisted of 4 Family, 6 Genera and 11 Species. The vegetation group was approximately 5.31 ha which makes up 0.28% of the survey area.



Figure 20: Vegetation Group Q within the survey area

### **3.2.2.18 *Duma florulenta* shrubland (R)**

This Dwarf Scrub C (Muir, 1977) consisted of 10 Families, 12 Genera and 12 Species. The vegetation group was approximately 0.43 ha which makes up 0.02% of the survey area.



**Figure 21: Vegetation Group R within the survey area**



### **3.2.2.19 Tecticornia shrubland on lake edge (S)**

This Open Dwarf Scrub D (Muir, 1977) consisted of 4 Families, 4 Genera and 6 Species. The vegetation group was approximately 0.14 ha which makes up 0.01% of the survey area.



**Figure 22: Vegetation Group S within the survey area**



### 3.2.2.20 *Eucalyptus kochii* subsp. *plenissima* over *Triodia basedowii* (T)

This Low Woodland A (Muir, 1977) consisted of 12 Families, 16 Genera and 23 Species. The vegetation group was approximately 7.48 ha which makes up 0.40% of the survey area.



Figure 23: Vegetation Group T within the survey area

### **3.2.2.21 *Grevillea pityophylla* over *Lawrenzia helmsii* and *Frankenia setosa* on kapok dunes (U)**

This Open Dwarf Scrub C (Muir, 1977) consisted of 6 Families, 7 Genera and 7 Species. The vegetation group was approximately 0.53 ha which makes up 0.03% of the survey area.



**Figure 24: Vegetation Group U within the survey area**



### 3.2.2.22 *Tecticornia* shrubland on lake edge (V)

This Scrub (Muir, 1977) consisted of 16 Families, 23 Genera and 33 Species. The vegetation group was approximately 2.90 ha which makes up 0.15% of the survey area.



**Figure 25: Vegetation Group V within the survey area**

### 3.2.2.23 Bare Salt Lake

The bare salt lake within the survey area was approximately 3.35 ha which makes up 0.18% of the survey area.



**Figure 26: Bare salt lake (to the left) within the survey area**



### 3.2.2.24 Existing Disturbance

Existing disturbance within the survey area consisted of historic mining, exploration clearing and access roads and was approximately 368.80 ha which makes up 19.50% of the survey area.



**Figure 27: Existing disturbance within the survey area**

### 3.2.3 Weeds

Six weed species was recorded within the survey area, *Nicotiana glauca* (Tree Tobacco) *Citrullus amarus* (Pie Melon), *Lysimachia arvensis* (Pimpernel), *Rumex vesicarius* (Ruby Dock), *Salvia verbenaca* (Wild Sage) and *Sonchus oleraceus* (Common Sowthistle). None of these species are considered Declared Pests (DPIRD, 2022).

### 3.2.4 Vegetation Condition

Evidence of historic mining and exploration was observed during the field assessment. A number of access roads and gazetted roads also run through the survey area.

Overall, the condition of the vegetation was determined to range from “Completely Degraded” to “Very Good” with most of the area falling into the “Good” Category. Areas which were affected by historic exploration were deemed in “Degraded” or “Good” condition. A map of the vegetation condition within the survey is depicted in Appendix 4.

#### 4. DISCUSSION

The field assessment established that the condition of the vegetation in the proposed disturbance area ranged from “Completely Degraded” to “Very Good” with most of the area falling into the “Good” Category. Areas which were affected by historic exploration were deemed in “Degraded” or “Good” condition. No areas of vegetation were assessed to be in “Pristine” condition.

Six weed species was recorded within the survey area, *Nicotiana glauca* (Tree Tobacco) *Citrullus amarus* (Pie Melon), *Lysimachia arvensis* (Pimpernel), *Rumex vesicarius* (Ruby Dock), *Salvia verbenaca* (Wild Sage) and *Sonchus oleraceus* (Common Sowthistle). None of these species are considered Declared Pests (DPIRD, 2022).

No Threatened Flora were recorded in the survey area, (DBCA, 2022a).

One Priority Flora species was recorded in the survey area, *Calytrix hislopilii* (P3). Six locations with a total population size of 139 plants were recorded.

No TECs or PECs were recorded in the survey area.

No unique or restricted vegetation communities were identified, and all vegetation types/communities are common, widespread and well represented in the Eastern Murchison subregion.

Any proposed disturbance/clearing of vegetation will result in a loss of species. However, given the size of the area and the extent of the Beard (1990) vegetation association elsewhere, the impact on the vegetation and its component flora will not affect the conservation values of either, or create fragmentation or patches of remnant vegetation.

The following recommendations arise from the reconnaissance flora survey:

- Impact assessment is recommended for Priority Flora in the survey area. This will rely heavily on the actual finalised disturbance footprint;
- Weed control measures should be implemented during and following earthworks; and
- Dust control measures should be implemented during earthworks.



## 5. REFERENCES

- Beard, J.S., (1990), *Plant Life of Western Australia*, Kangaroo Press Pty Ltd, NSW
- BOM, (2022), *Climate Data Online*, Bureau of Meteorology,  
<http://www.bom.gov.au/climate/averages/>  
Accessed: 08/07/2022
- CALM, (2002), *A Biodiversity Audit of Western Australia's 53 Biogeographical Subregions in 2002- Murchison (MUR01 Eastern Murchison synopses)*, Department of Conservation and Land Management
- CALM, (2003), *Phytophthora cinnamomi and Diseases Caused by It, Volume 1-Management Guidelines*, Department of Conservation and Land Management  
<https://library.dbca.wa.gov.au/FullTextFiles/021873.pdf>  
Accessed: 21/05/2022
- DAWE, (2022), *Interim Biogeographic Regionalisation for Australia (IBRA)*, Department of Agriculture, Water and the Environment, Australian Government  
<https://www.environment.gov.au/land/nrs/science/ibra>  
Accessed: 08/07/2022
- DAWE (2022a), *Protected Matters Search Tool*, Department of Agriculture, Water and the Environment, Australian Government  
<http://www.environment.gov.au/epbc/protected-matters-search-tool>  
Accessed: 27/07/2022
- DBCA, (2019), *2018 Statewide Vegetation Statistics incorporating the CAR Reserve Analysis (Full Report)- Current as of March 2019*, WA Department of Biodiversity, Conservation and Attractions, Perth  
<https://catalogue.data.wa.gov.au/dataset/dbca-statewide-vegetation-statistics>  
Accessed: 03/08/2023
- DBCA, (2022), *TEC/PEC Database Results Ref:43\_0522EC*, Department of Biodiversity, Conservation and Attractions
- DBCA, (2022a), *Threatened Flora Database Results Ref: 57\_0522FL*, Department of Biodiversity, Conservation and Attractions
- DPIRD, (2017), *NRInfo Digital Mapping*, Department of Primary Industries and Regional Development  
<https://maps.agric.wa.gov.au/nrm-info/>  
Accessed: 03/08/2023
- DPIRD, (2022), *Declared Plants Database*, Department of Primary Industries and Regional Development, Western Australia  
<https://www.agric.wa.gov.au/pests-weeds-diseases/weeds/declared-plants>  
Accessed: 03/08/2023
- DWER, (2022), *Clearing Permit System Map Viewer*, Department of Water and Environmental Regulation  
<https://cps.dwer.wa.gov.au/main.html>  
Accessed: 27/07/2022
- EPA, (2016), *Environmental Factor Guideline: Flora and Vegetation*, Environmental Protection Authority, Western Australia

EPA, (2016a), *Technical Guidance- Flora and Vegetation Surveys for Environmental Impact Assessment*, Environmental Protection Authority, Western Australia

Hussey, B.M.J., (2007), *Western Weeds- A Guide to the Weeds of Western Australia*, Weeds Society of Western Australia

Keighery, B.J., (1994), *Bushland Plant Survey; A guide to plant community survey for the Community*, Wildflower Society of Western Australia (Inc.) Nedlands

Lamp, C.A. and Collet, F., (1989), *Field Guide to Weeds in Australia*, Inkata Press

Muir, B.G., (1977), *Biological Survey of the Western Australian Wheatbelt. Pt. 2. Vegetation and habitat of the Bendering Reserve*. Records of the Western Australian Museum Supplement 3

Shepherd, D.P., Beeston, G.R. and Hopkins, A.J.M., (2002), *Land-Use and Vegetation in Western Australia- National Land and Water Resources Audit Report*, Technical Report 250, Department of Agriculture Western Australia

WAHERB, (2022), *Florabase- the Western Australian Flora*, Department of Parks and Wildlife  
<http://florabase.dpaw.wa.gov.au/>  
Accessed 03/08/2023

## 6. GLOSSARY

### Acronyms:

|                 |                                                                                                                           |
|-----------------|---------------------------------------------------------------------------------------------------------------------------|
| <b>BOM</b>      | Bureau of Meteorology, Australian Government                                                                              |
| <b>BSc</b>      | Bachelor of Science                                                                                                       |
| <b>CALM</b>     | Department of Conservation and Land Management (now DBCA)                                                                 |
| <b>CPS</b>      | Clearing Permit System (DWER)                                                                                             |
| <b>DBCA</b>     | Department of Biodiversity, Conservation and Attractions, Western Australia                                               |
| <b>DMIRS</b>    | Department of Mines, Industry Regulation and Safety, Western Australia                                                    |
| <b>DOTEE</b>    | Department of the Environment and Energy, Australian Government                                                           |
| <b>DPAW</b>     | Department of Parks and Wildlife, Western Australia (now DBCA)                                                            |
| <b>DPIRD</b>    | Department of Primary Industries and Regional Development, Western Australia                                              |
| <b>DRF</b>      | Declared Rare Flora (now classed as Threatened Flora)                                                                     |
| <b>DWER</b>     | Department of Water and Environmental Regulation, Western Australia                                                       |
| <b>EPA</b>      | Environmental Protection Authority, Western Australia                                                                     |
| <b>EP Act</b>   | <i>Environmental Protection Act 1986</i> , Western Australia                                                              |
| <b>EPBC Act</b> | <i>Environment Protection and Biodiversity Conservation Act 1999</i> (Commonwealth Act)                                   |
| <b>ESA</b>      | Environmentally Sensitive Area                                                                                            |
| <b>GIS</b>      | Geographical Information System                                                                                           |
| <b>ha</b>       | Hectare (10,000 square metres)                                                                                            |
| <b>IBRA</b>     | Interim Biogeographic Regionalisation for Australia, DOTEE                                                                |
| <b>IUCN</b>     | International Union for the Conservation of Nature and Natural Resources – commonly known as the World Conservation Union |
| <b>km</b>       | Kilometres                                                                                                                |
| <b>m</b>        | Metres                                                                                                                    |
| <b>MUR</b>      | Murchison Bioregion (IBRA)                                                                                                |
| <b>MUR01</b>    | Eastern Murchison Subregion (IBRA)                                                                                        |
| <b>NVS</b>      | Native Vegetation Solutions                                                                                               |
| <b>PEC</b>      | Priority Ecological Community, Western Australia                                                                          |
| <b>Ramsar</b>   | A wetland site designated of international importance under the Ramsar Convention (UNESCO)                                |
| <b>TEC</b>      | Threatened Ecological Community                                                                                           |
| <b>UNESCO</b>   | United Nations Educational, Scientific and Cultural Organization                                                          |
| <b>WA</b>       | Western Australia                                                                                                         |
| <b>WAHERB</b>   | Western Australian Herbarium (DBCA)                                                                                       |

### Definitions:

**{DBCA (2019) Conservation Codes for Western Australian Flora and Fauna. Department of Biodiversity, Conservation and Attractions, Western Australia, January 2019}: -**

#### **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.

**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 wild. 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 species**

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 dependent 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.

**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.

**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.

**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.

**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 1**

### **Relevant Government Database Search Results**



## EPBC Act Protected Matters Report

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

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

Information is available about [Environment Assessments](#) and the EPBC Act including significance guidelines, forms and application process details.

Report created: 27/07/22 16:50:49

[Summary](#)

[Details](#)

[Matters of NES](#)

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

[Extra Information](#)

[Caveat](#)

[Acknowledgements](#)

No Image  
Available

This map may contain data which are  
©Commonwealth of Australia  
(Geoscience Australia), ©PSMA 2015

[Coordinates](#)

[Buffer: 3.0Km](#)

No Image  
Available

## Summary

### Matters of National Environmental Significance

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

|                                                           |      |
|-----------------------------------------------------------|------|
| <a href="#">World Heritage Properties:</a>                | None |
| <a href="#">National Heritage Places:</a>                 | None |
| <a href="#">Wetlands of International Importance:</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>                | 4    |
| <a href="#">Listed Migratory Species:</a>                 | 6    |

### Other Matters Protected by the EPBC Act

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

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

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

|                                                    |      |
|----------------------------------------------------|------|
| <a href="#">Commonwealth Land:</a>                 | None |
| <a href="#">Commonwealth Heritage Places:</a>      | None |
| <a href="#">Listed Marine Species:</a>             | 9    |
| <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 |

### Extra Information

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

|                                                  |      |
|--------------------------------------------------|------|
| <a href="#">State and Territory Reserves:</a>    | None |
| <a href="#">Regional Forest Agreements:</a>      | None |
| <a href="#">Invasive Species:</a>                | 8    |
| <a href="#">Nationally Important Wetlands:</a>   | None |
| <a href="#">Key Ecological Features (Marine)</a> | None |



## Details

### Matters of National Environmental Significance

| Listed Threatened Species                                                                        |                       | [ Resource Information ]                               |
|--------------------------------------------------------------------------------------------------|-----------------------|--------------------------------------------------------|
| Name                                                                                             | Status                | Type of Presence                                       |
| <b>Birds</b>                                                                                     |                       |                                                        |
| <a href="#">Calidris ferruginea</a><br>Curlew Sandpiper [856]                                    | Critically Endangered | Species or species habitat may occur within area       |
| <a href="#">Leipoa ocellata</a><br>Malleefowl [934]                                              | Vulnerable            | Species or species habitat likely to occur within area |
| <a href="#">Pezoporus occidentalis</a><br>Night Parrot [59350]                                   | Endangered            | Species or species habitat may occur within area       |
| <b>Mammals</b>                                                                                   |                       |                                                        |
| <a href="#">Dasyurus geoffroii</a><br>Chuditch, Western Quoll [330]                              | Vulnerable            | Species or species habitat may occur within area       |
| Listed Migratory Species                                                                         |                       | [ Resource Information ]                               |
| * Species is listed under a different scientific name on the EPBC Act - Threatened Species list. |                       |                                                        |
| Name                                                                                             | Threatened            | Type of Presence                                       |
| <b>Migratory Marine Birds</b>                                                                    |                       |                                                        |
| <a href="#">Apus pacificus</a><br>Fork-tailed Swift [678]                                        |                       | Species or species habitat likely to occur within area |
| <b>Migratory Terrestrial Species</b>                                                             |                       |                                                        |
| <a href="#">Motacilla cinerea</a><br>Grey Wagtail [642]                                          |                       | Species or species habitat may occur within area       |
| <b>Migratory Wetlands Species</b>                                                                |                       |                                                        |
| <a href="#">Actitis hypoleucos</a><br>Common Sandpiper [59309]                                   |                       | Species or species habitat may occur within area       |
| <a href="#">Calidris acuminata</a><br>Sharp-tailed Sandpiper [874]                               |                       | Species or species habitat may occur within area       |
| <a href="#">Calidris ferruginea</a><br>Curlew Sandpiper [856]                                    | Critically Endangered | Species or species habitat may occur within area       |
| <a href="#">Calidris melanotos</a><br>Pectoral Sandpiper [858]                                   |                       | Species or species habitat may occur within area       |

## Other Matters Protected by the EPBC Act

| Listed Marine Species                                                                            |                       | [ Resource Information ]                               |
|--------------------------------------------------------------------------------------------------|-----------------------|--------------------------------------------------------|
| * Species is listed under a different scientific name on the EPBC Act - Threatened Species list. |                       |                                                        |
| Name                                                                                             | Threatened            | Type of Presence                                       |
| <b>Birds</b>                                                                                     |                       |                                                        |
| <a href="#">Actitis hypoleucos</a><br>Common Sandpiper [59309]                                   |                       | Species or species habitat may occur within area       |
| <a href="#">Apus pacificus</a><br>Fork-tailed Swift [678]                                        |                       | Species or species habitat likely to occur within area |
| <a href="#">Calidris acuminata</a><br>Sharp-tailed Sandpiper [874]                               |                       | Species or species habitat may occur within area       |
| <a href="#">Calidris ferruginea</a><br>Curlew Sandpiper [856]                                    | Critically Endangered | Species or species habitat may occur within area       |
| <a href="#">Calidris melanotos</a><br>Pectoral Sandpiper [858]                                   |                       | Species or species habitat may occur within area       |
| <a href="#">Chrysococcyx osculans</a><br>Black-eared Cuckoo [705]                                |                       | Species or species habitat known to occur within area  |
| <a href="#">Merops ornatus</a><br>Rainbow Bee-eater [670]                                        |                       | Species or species habitat may occur within area       |
| <a href="#">Motacilla cinerea</a><br>Grey Wagtail [642]                                          |                       | Species or species habitat may occur within area       |
| <a href="#">Thinornis rubricollis</a><br>Hooded Plover [59510]                                   |                       | Species or species habitat may occur within area       |

## Extra Information

| Invasive Species                                                                                                                                                                                                                                                                                                                                                                                                   |        | [ Resource Information ] |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|--------------------------|
| Weeds reported here are the 20 species of national significance (WoNS), along with other introduced plants that are considered by the States and Territories to pose a particularly significant threat to biodiversity. The following feral animals are reported: Goat, Red Fox, Cat, Rabbit, Pig, Water Buffalo and Cane Toad. Maps from Landscape Health Project, National Land and Water Resources Audit, 2001. |        |                          |
| Name                                                                                                                                                                                                                                                                                                                                                                                                               | Status | Type of Presence         |
| <b>Mammals</b>                                                                                                                                                                                                                                                                                                                                                                                                     |        |                          |
| Canis lupus familiaris<br>Domestic Dog [82654]                                                                                                                                                                                                                                                                                                                                                                     |        | Species or species       |

| Name                                                          | Status | Type of Presence                                                                                  |
|---------------------------------------------------------------|--------|---------------------------------------------------------------------------------------------------|
| Capra hircus<br>Goat [2]                                      |        | habitat likely to occur within area<br><br>Species or species habitat likely to occur within area |
| Felis catus<br>Cat, House Cat, Domestic Cat [19]              |        | Species or species habitat likely to occur within area                                            |
| Mus musculus<br>House Mouse [120]                             |        | Species or species habitat likely to occur within area                                            |
| Oryctolagus cuniculus<br>Rabbit, European Rabbit [128]        |        | Species or species habitat likely to occur within area                                            |
| Vulpes vulpes<br>Red Fox, Fox [18]                            |        | Species or species habitat likely to occur within area                                            |
| <b>Plants</b>                                                 |        |                                                                                                   |
| Carrichtera annua<br>Ward's Weed [9511]                       |        | Species or species habitat may occur within area                                                  |
| Cenchrus ciliaris<br>Buffel-grass, Black Buffel-grass [20213] |        | Species or species habitat may occur within area                                                  |

## Caveat

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

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

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

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

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

Where very little information is available for 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 reliable distribution mapping methods are used to update these distributions as time permits.

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

- migratory and
- marine

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

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

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

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

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

## Coordinates

-28.5846 118.8045 -28.5741 118.8267 -28.5814 118.8514 -28.6234 118.8817 -28.6291 119.0293 -28.5753 119.0483 -28.5713 119.0766 -28.5793 119.079 -28.583 119.0555 -28.638 119.0361 -28.6392 118.8825 -28.6279 118.8643 -28.6388 118.8332 -28.5846 118.8045



## 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](#)
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- [-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

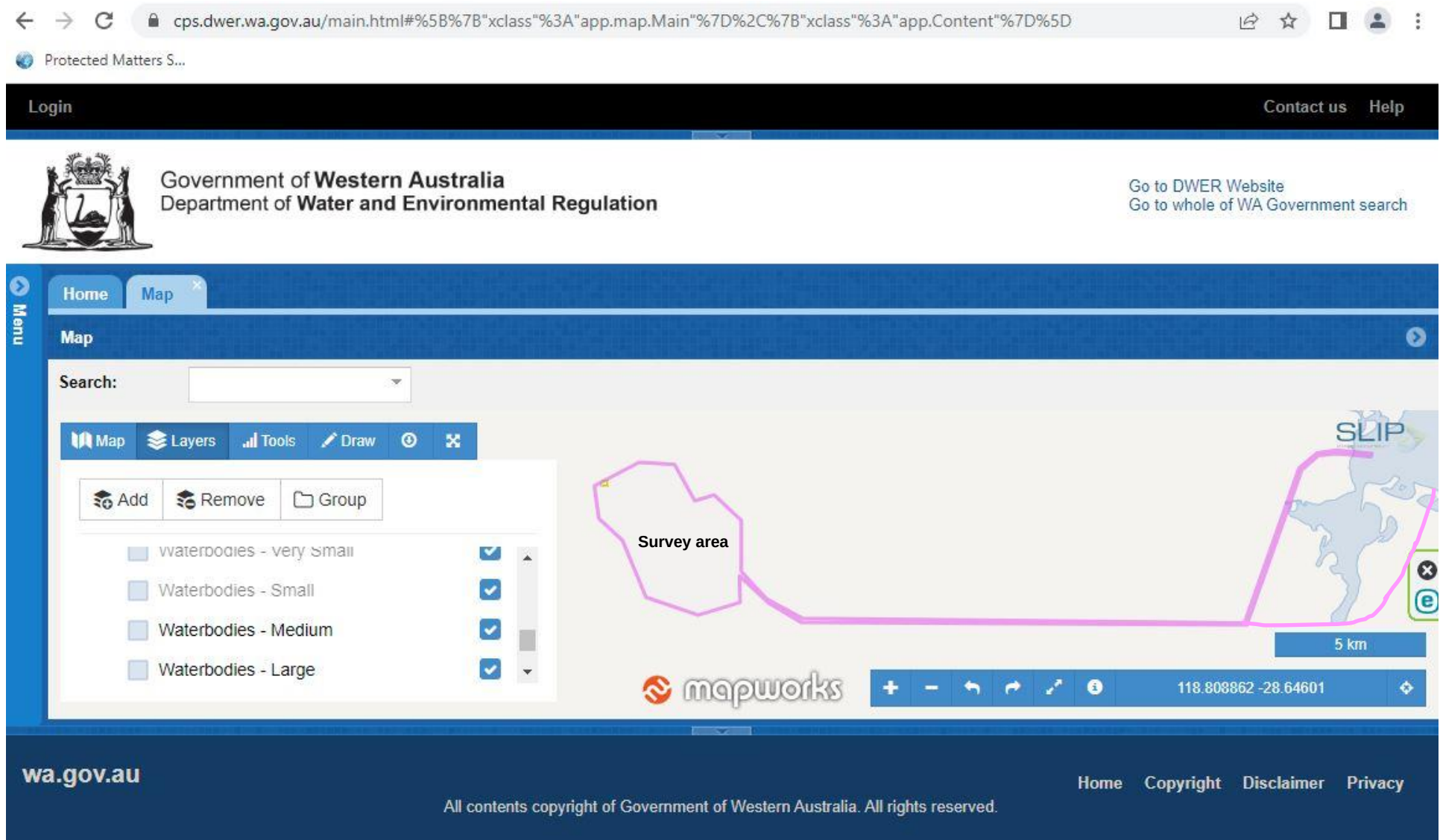
The Department is extremely grateful to the many organisations and individuals who provided expert advice and information on numerous draft distributions.

Please feel free to provide feedback via the [Contact Us](#) page.

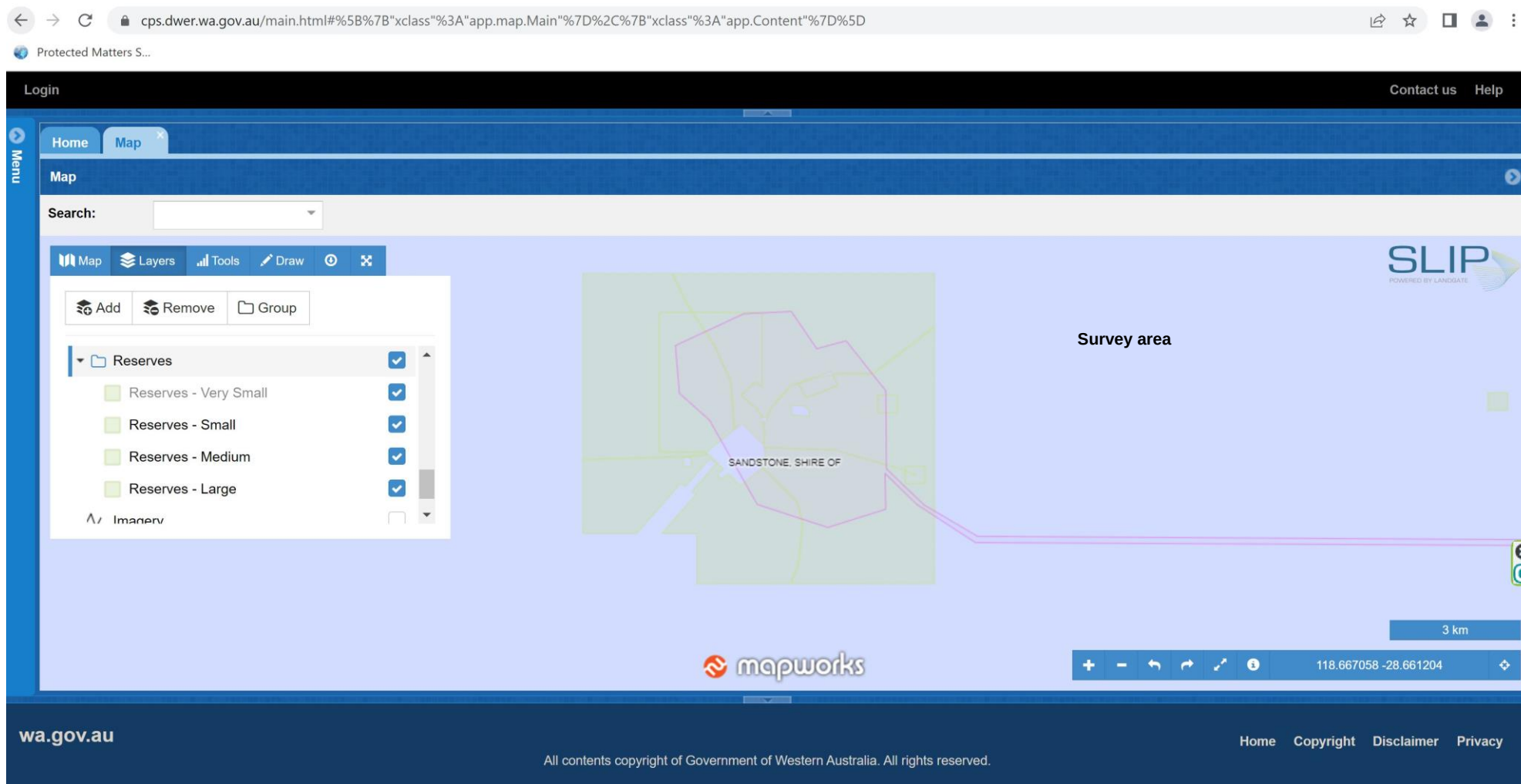
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GPO Box 858  
Canberra City ACT 2601 Australia  
+61 2 6274 1111



DWER's Clearing Permit System Map Viewer showing no ESA's (dark green shaded areas) within the survey area (DWER, 2022)



DWER Clearing Permit System Map Viewer showing waterbodies within the survey area (DWER, 2022)



DWER Clearing Permit System Map Viewer showing Class C reserves (township of Youanmi) within the survey area (DWER, 2022)



## **Appendix 2**

### **Threatened Flora Databases Search Results**

GIS information provided in the Search results (Reference: 57\_0522FL) listed the following species within a 10km radius of the survey area (DBCA, 2022a):

| <b>Taxon</b>                                         | <b>Conservation Code</b> | <b>Comment (Post field work)</b>                |
|------------------------------------------------------|--------------------------|-------------------------------------------------|
| <i>Alyxia tetanifolia</i>                            | P3                       | Possible suitable habitat, extensively searched |
| <i>Baeckea</i> sp. London Bridge (M.E. Trudgen 5393) | P3                       | Possible suitable habitat, extensively searched |
| <i>Euryomyrtus recurva</i>                           | P3                       | Possible suitable habitat, extensively searched |

## **Appendix 3**

### **Vegetation Definitions**

## Vegetation Condition Definitions (Keighery, 1994)

**Pristine (1).** Pristine or nearly so, no obvious signs of disturbance.

**Excellent (2).** Vegetation structure intact, disturbance affecting individual species and weeds are non-aggressive species.

**Very Good (3).** Vegetation structure altered, obvious signs of disturbance.  
For example, disturbance to vegetation structure caused by repeating fires, the presence of some more aggressive weeds, dieback, logging and grazing.

**Good (4).** Vegetation structure significantly altered by very obvious signs of multiple disturbance.

Retains basic vegetation structure or ability to regenerate it.

For example, disturbance to vegetation structure caused by frequent fires, the presence of some very aggressive weeds at high density, partial clearing, dieback and grazing.

**Degraded (5).** Basic vegetation structure severely impacted by disturbance.

Scope for regeneration but not to a state approaching good condition without intensive management.

For example, disturbance to vegetation structure caused by very frequent fires, the presence of very aggressive weeds, partial clearing, dieback and grazing.

**Completely Degraded (6).** The structure of the vegetation is no longer intact and the area is completely or almost completely without native species.

These areas are often described as 'parkland cleared' with the flora compromising weed or crop species with isolated trees or shrubs.



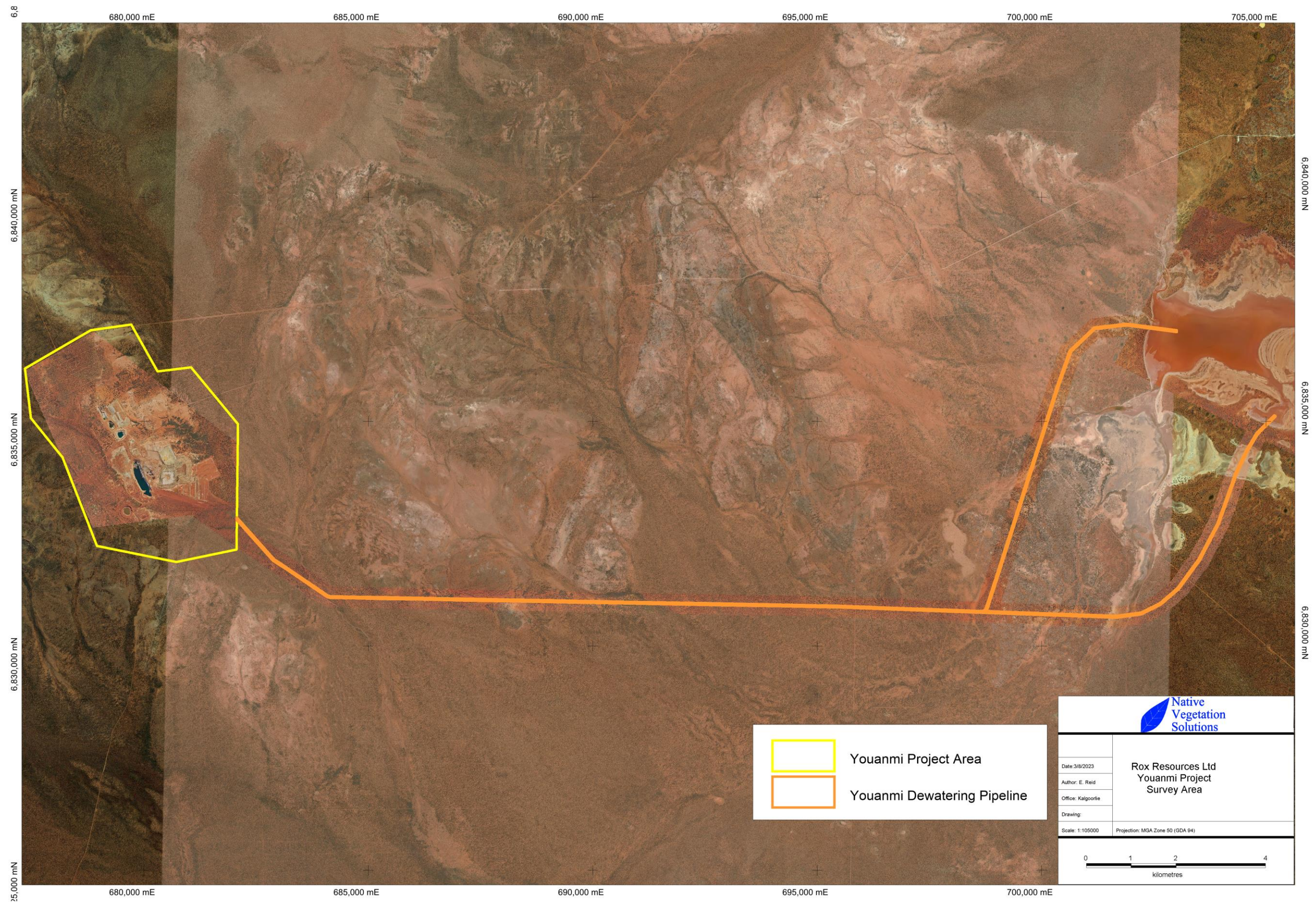
## Vegetation Structure Definitions (Muir, 1977)

| Life Form/Height Class | Canopy Cover          |                          |                       |                           |
|------------------------|-----------------------|--------------------------|-----------------------|---------------------------|
|                        | Dense<br>70-100%<br>d | Mid-Dense<br>30-70%<br>c | Sparse<br>10-30%<br>i | Very Sparse<br>2-10%<br>r |
| T Trees>30m            | Dense Tall Forest     | Tall Forest              | Tall Woodland         | Open Tall Woodland        |
| M Trees 15-30m         | Dense Forest          | Forest                   | Woodland              | Open Woodland             |
| LA Trees 5-15m         | Dense Low Forest A    | Low Forest A             | Low Woodland A        | Open Low Woodland A       |
| LB Trees<5m            | Dense Low Forest B    | Low Forest B             | Low Woodland B        | Open Low Woodland B       |
| KT Mallee tree form    | Dense Tree Mallee     | Tree Mallee              | Open Tree Mallee      | Very Open Tree Mallee     |
| KS Mallee shrub form   | Dense Shrub Mallee    | Shrub Mallee             | Open Shrub Mallee     | Very Open Shrub Mallee    |
| S Shrubs>2m            | Dense Thicket         | Thicket                  | Scrub                 | Open Scrub                |
| SA Shrubs 1.5-2.0m     | Dense Heath A         | Heath A                  | Low Scrub A           | Open Low Scrub A          |
| SB Shrubs 1.0-1.5m     | Dense Heath B         | Heath B                  | Low Scrub B           | Open Low Scrub B          |
| SC Shrubs 0.5-1.0m     | Dense Low Heath C     | Low Heath C              | Dwarf Scrub C         | Open Dwarf Scrub C        |
| SD Shrubs 0.0-0.5m     | Dense Low Heath D     | Low Heath D              | Dwarf Scrub D         | Open Dwarf Scrub D        |
| P Mat plants           | Dense Mat Plants      | Mat Plants               | Open Mat Plants       | Very Open Mat Plants      |
| H Hummock Grass        | Dense Hummock Grass   | Mid-Dense Hummock Grass  | Hummock Grass         | Open Hummock Grass        |
| GT Bunch grass >0.5m   | Dense Tall Grass      | Tall Grass               | Open Tall Grass       | Very Open Tall Grass      |
| GL Bunch grass <0.5m   | Dense Low Grass       | Low Grass                | Open Low Grass        | Very Open Low Grass       |
| J Herbaceous spp.      | Dense Herbs           | Herbs                    | Open Herbs            | Very Open Herbs           |
| VT Sedges >0.5m        | Dense Tall Sedges     | Tall Sedges              | Open Tall Sedges      | Very Open Tall Sedges     |
| VL Sedges <0.5m        | Dense Low Sedges      | Low Sedges               | Open Low Sedges       | Very Open Low Sedges      |
| X Ferns                | Dense Ferns           | Ferns                    | Open Ferns            | Very Open Ferns           |
| Mosses, liverwort      | Dense Mosses          | Mosses                   | Open Mosses           | Very Open Mosses          |

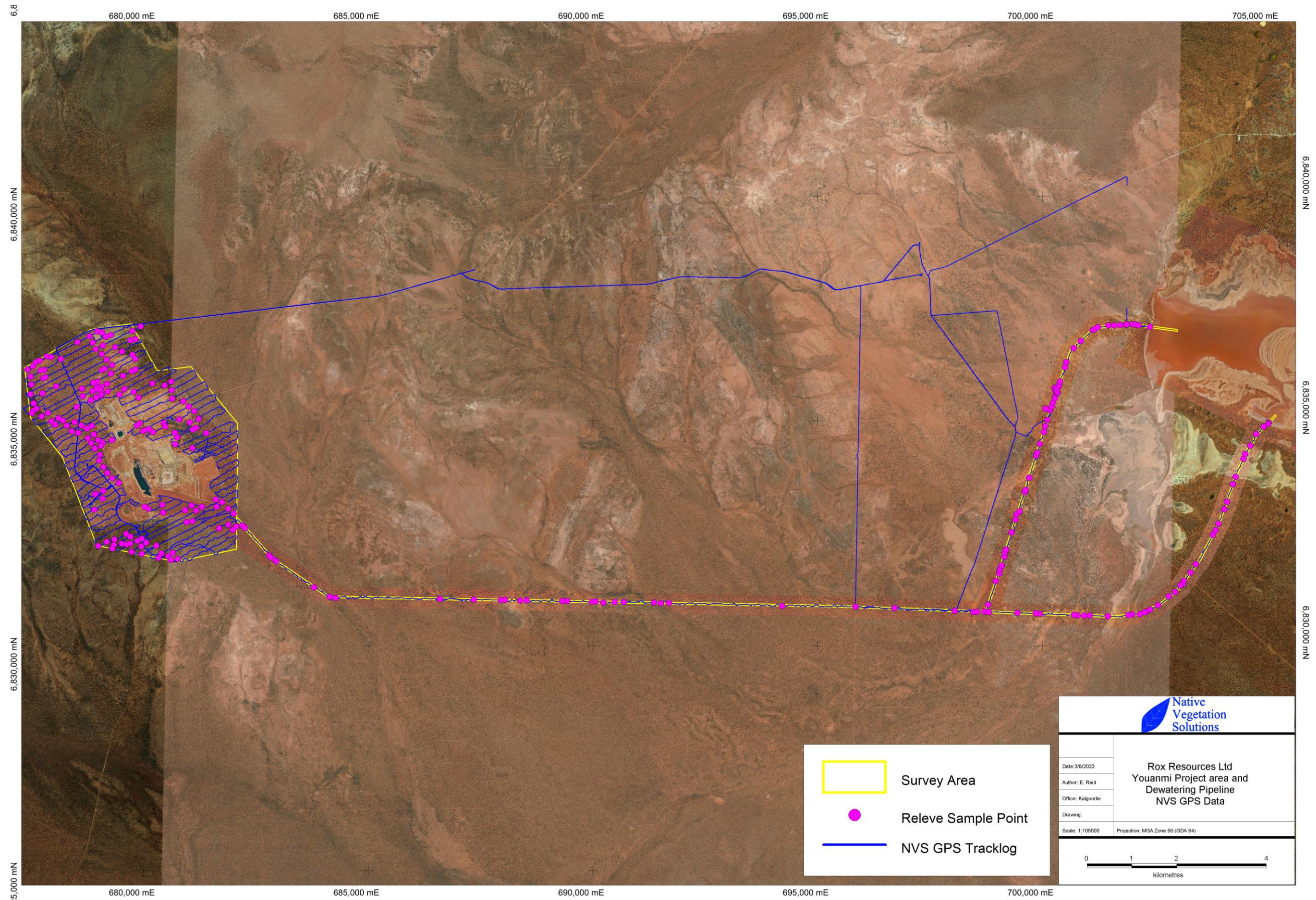
## **Appendix 4**

### **Vegetation Mapping**

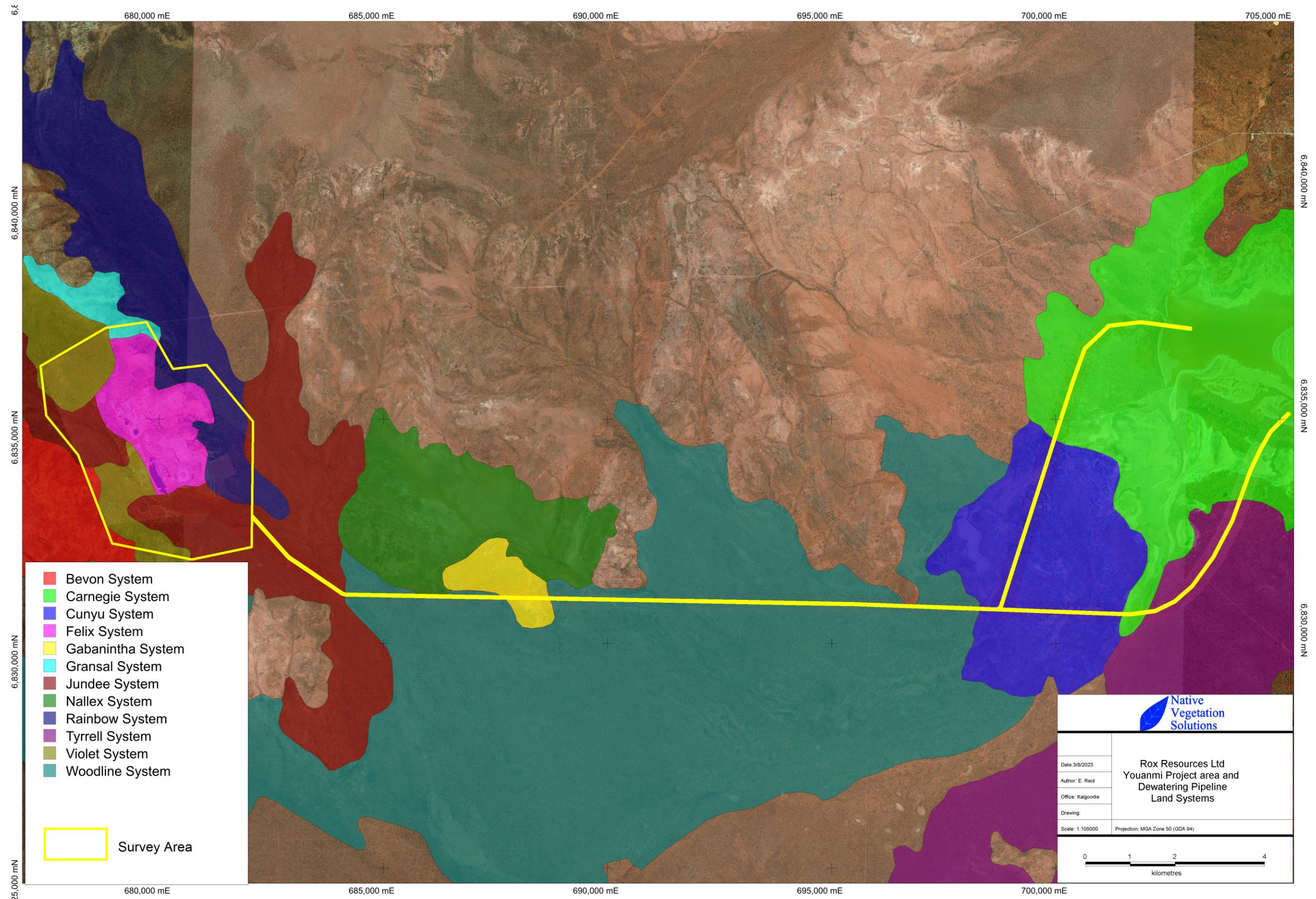




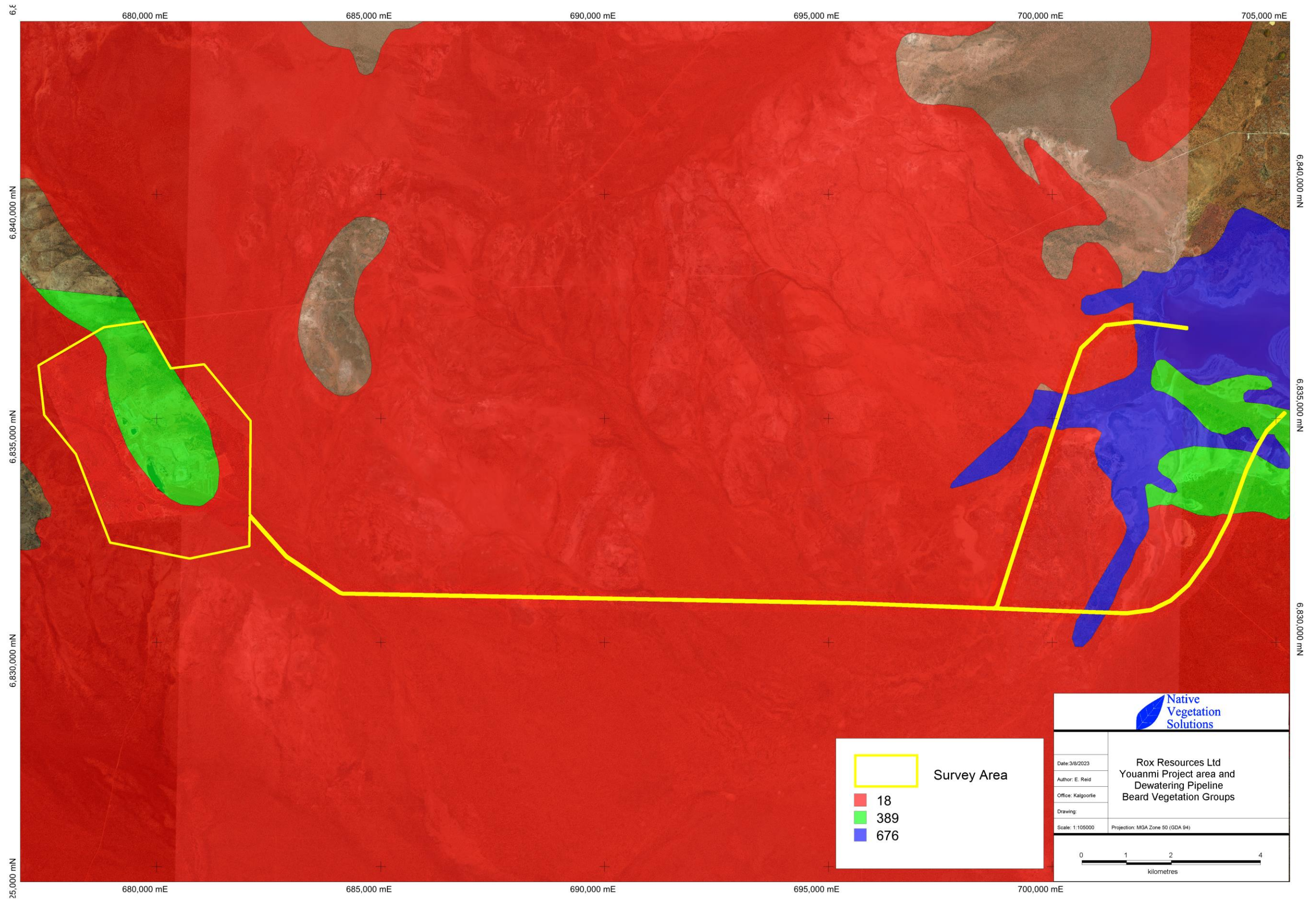




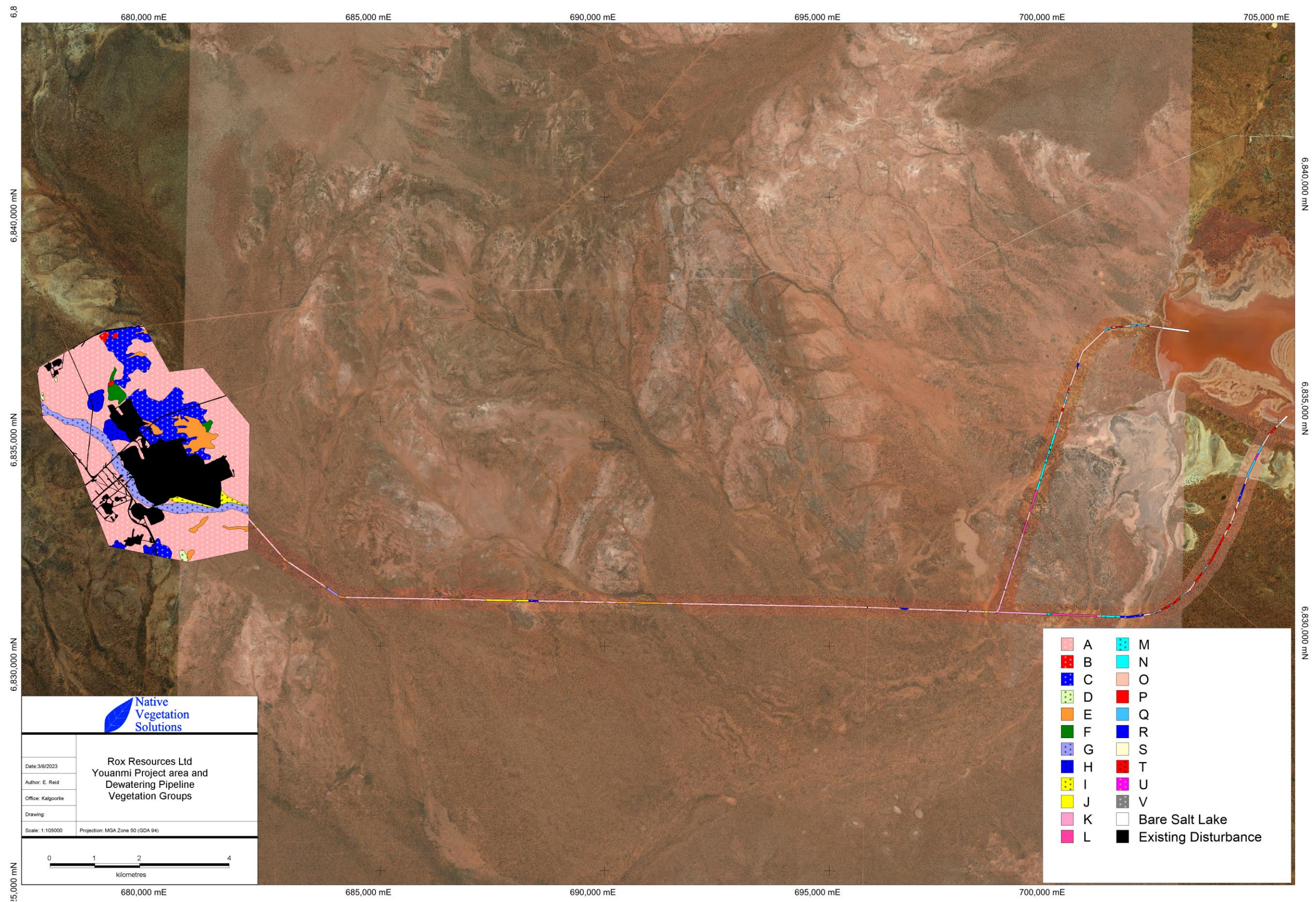




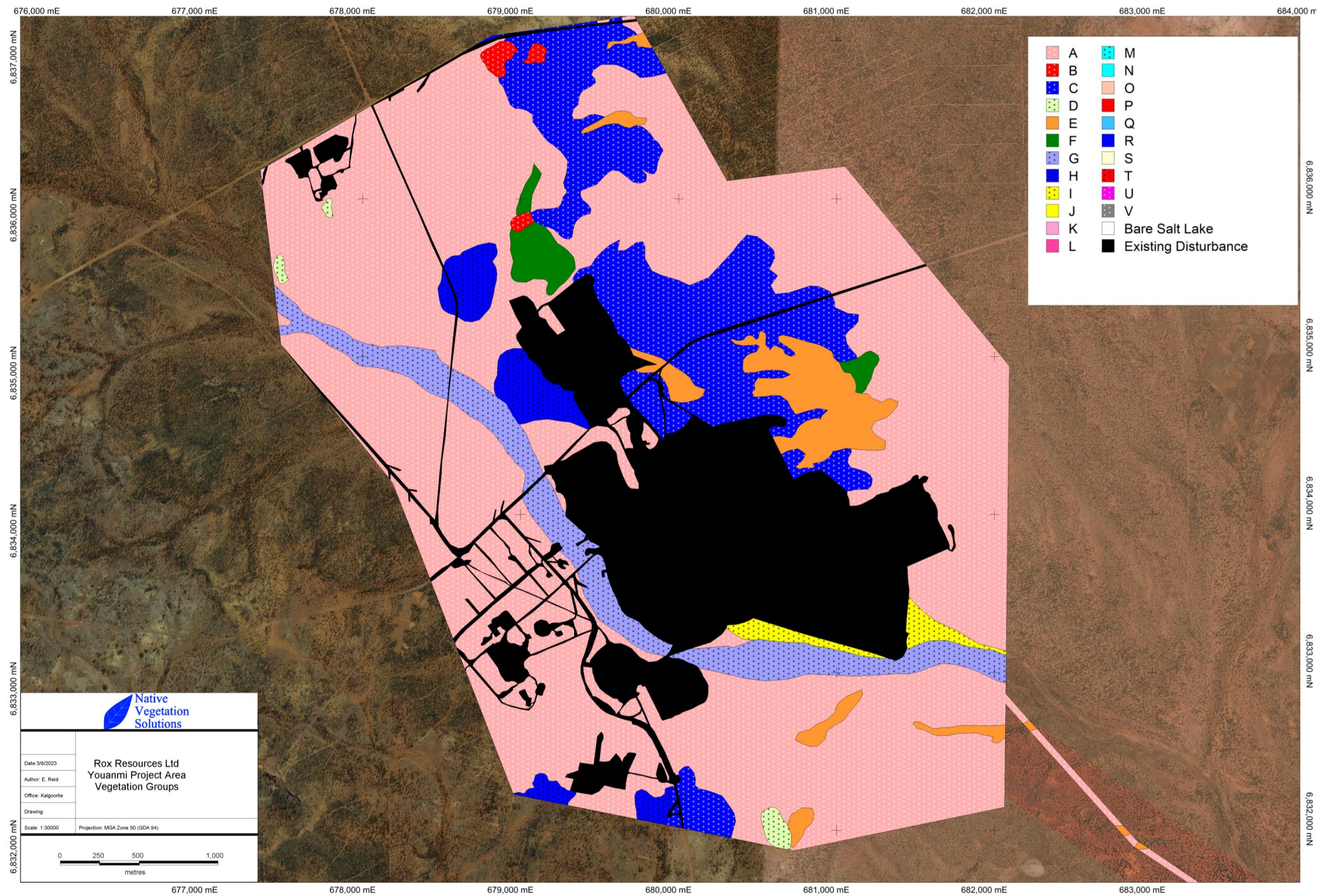




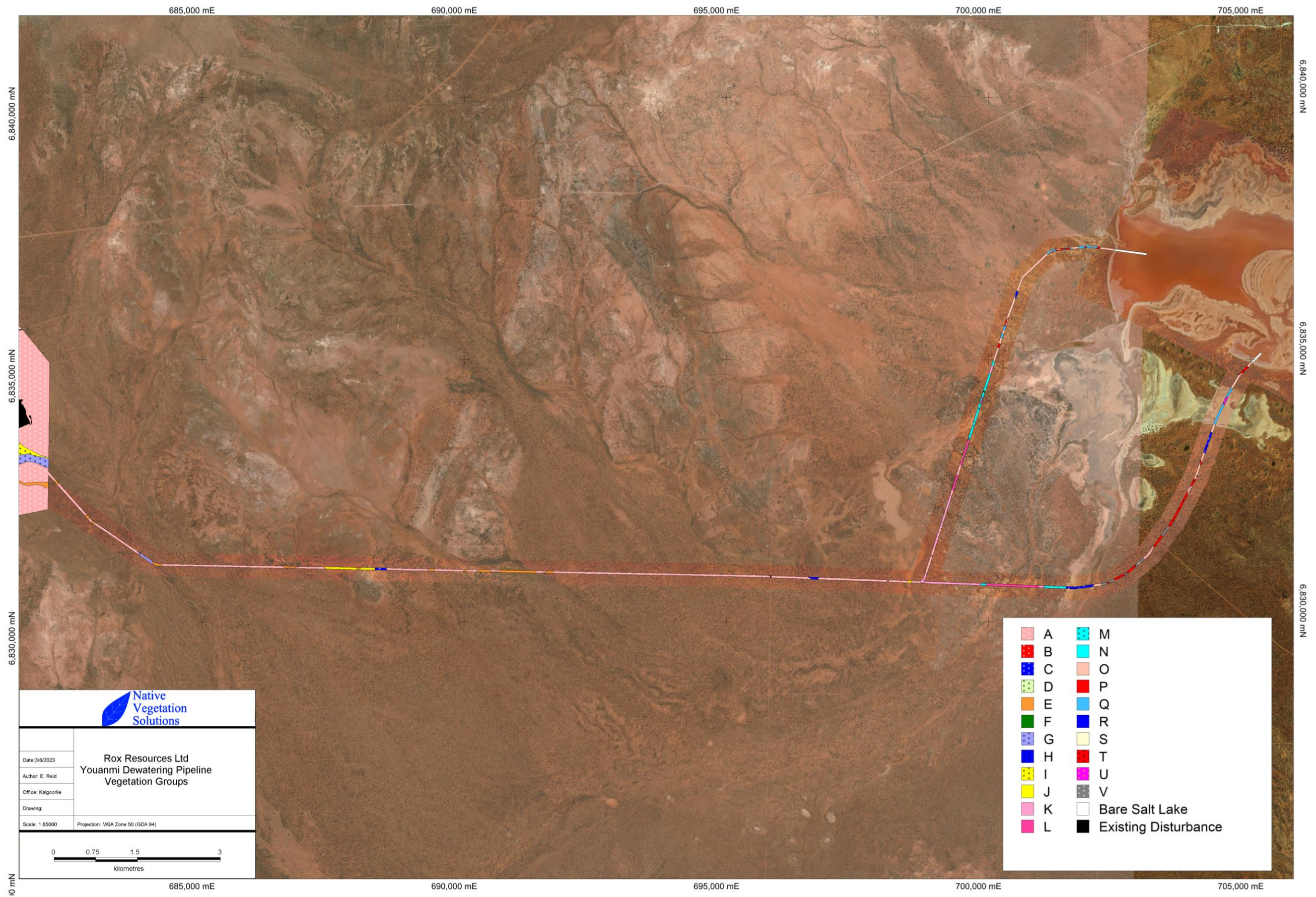




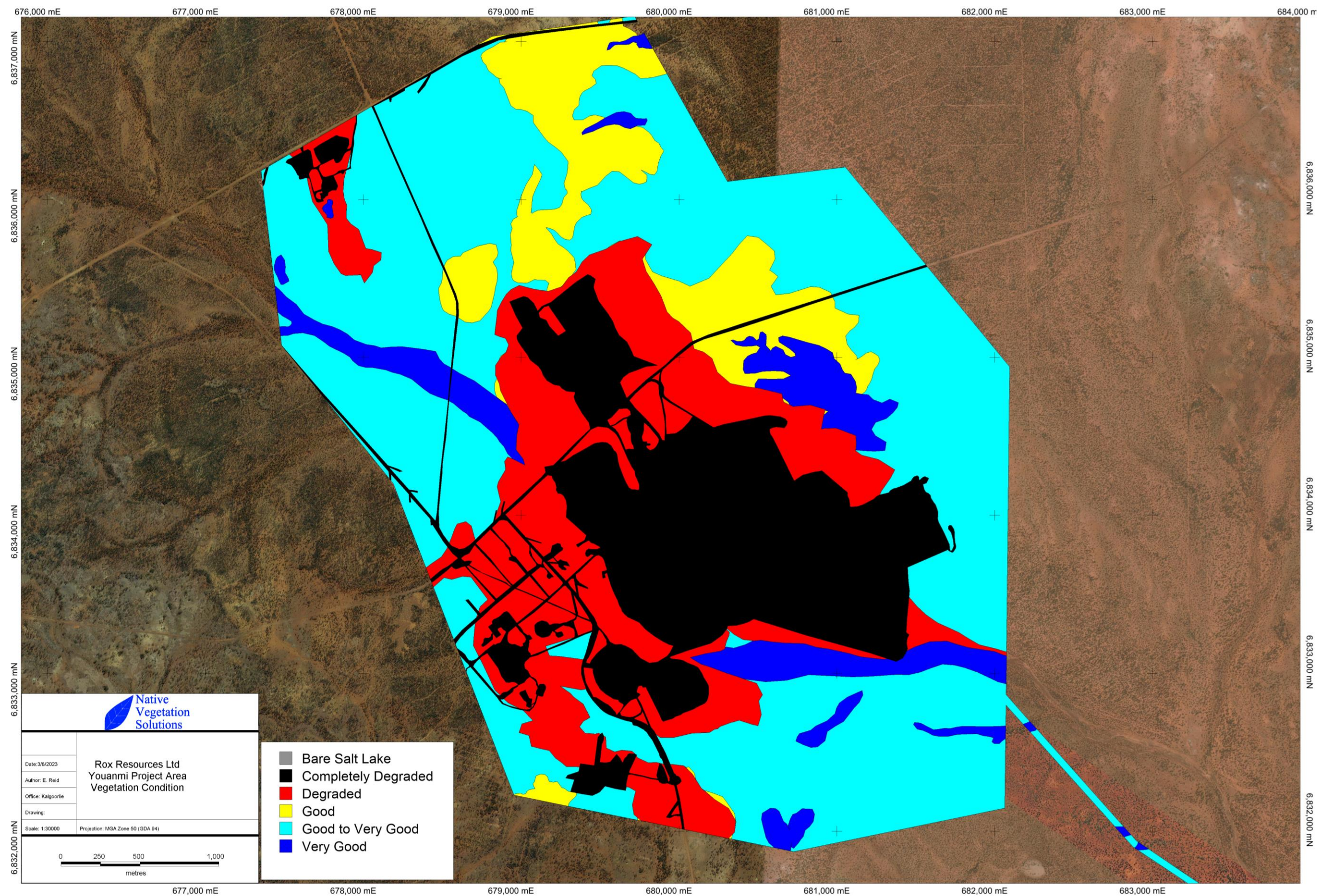




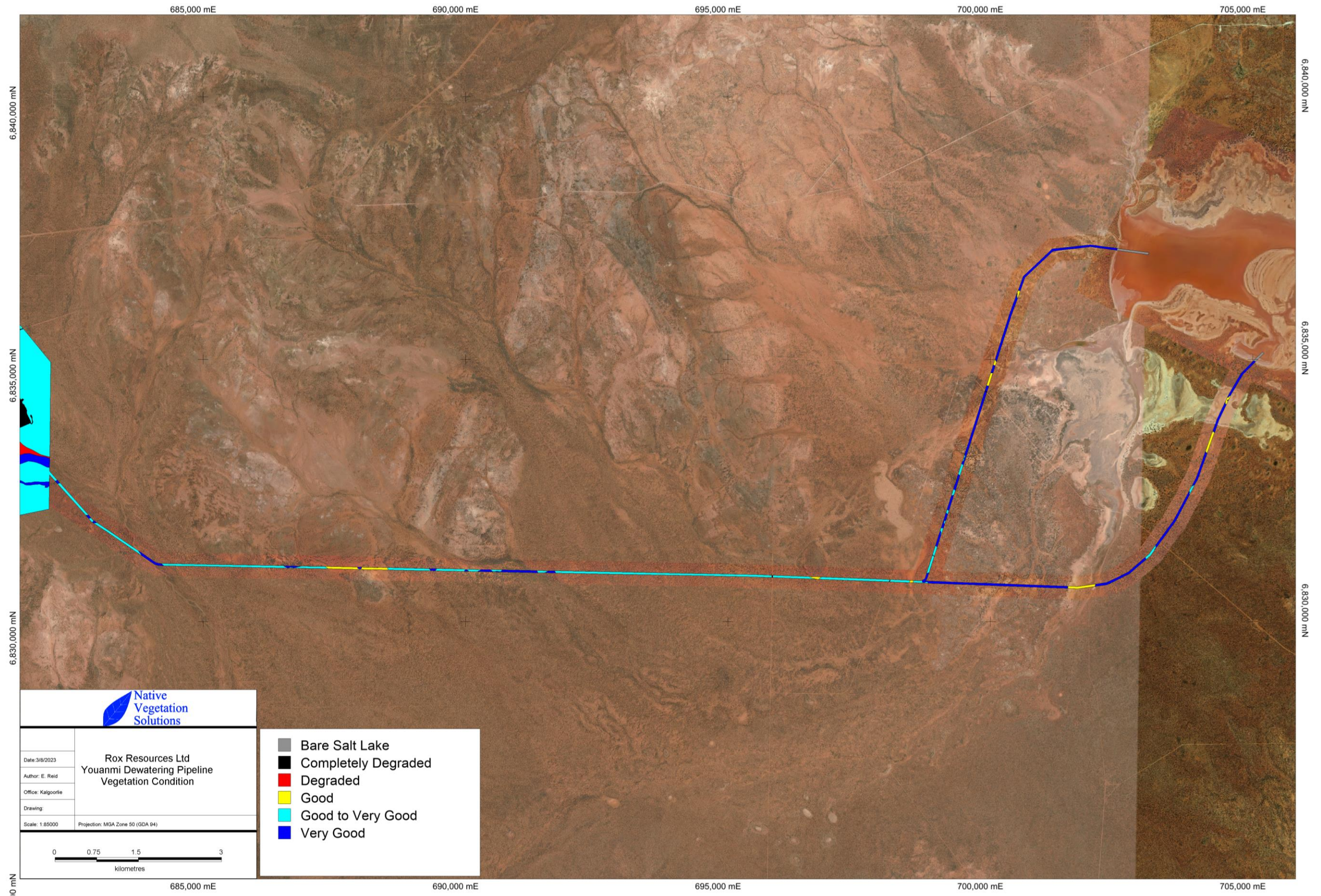




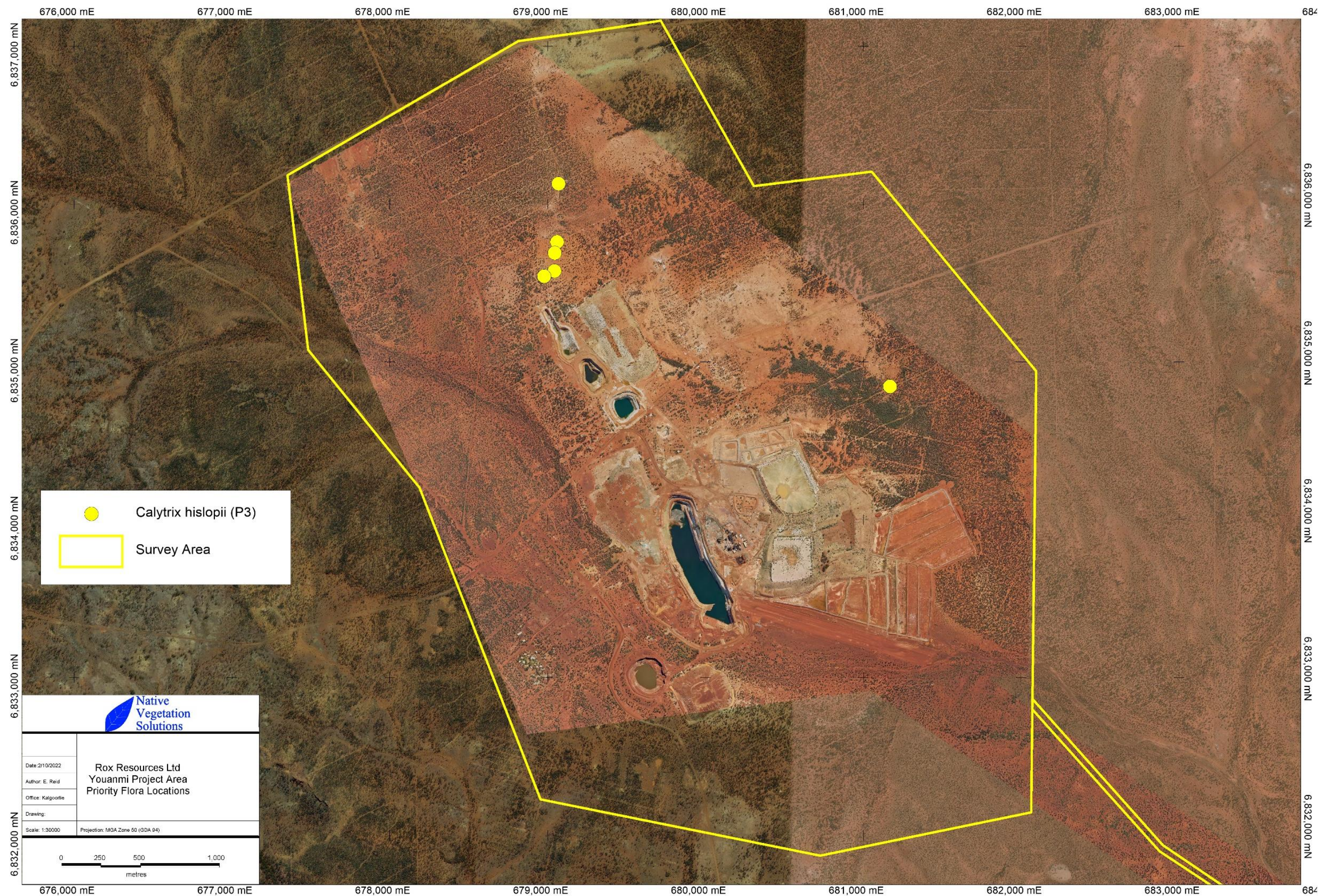














## **Appendix 5**

### **Species List**

| Family         | Genus                | Taxon                                                      | A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q | R | S | T | U | V |
|----------------|----------------------|------------------------------------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Aizoaceae      | <i>Gunnopsis</i>     | <i>Gunnopsis quadrifida</i>                                |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   | * |   | * | * |   |   |   |
| Amaranthaceae  | <i>Alternanthera</i> | <i>Alternanthera nodiflora</i>                             |   |   |   |   |   |   | * |   |   |   |   |   |   |   |   |   | * | * | * |   |   |   |
| Amaranthaceae  | <i>Gomphrena</i>     | <i>Gomphrena verecunda</i>                                 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   | * |   |   |   |   |   |   |
| Amaranthaceae  | <i>Ptilotus</i>      | <i>Ptilotus aervoides</i>                                  |   |   |   |   |   |   | * | * | * |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Amaranthaceae  | <i>Ptilotus</i>      | <i>Ptilotus exaltatus</i>                                  |   | * |   |   | * |   | * | * | * | * |   |   |   | * | * |   |   |   |   | * |   | * |
| Amaranthaceae  | <i>Ptilotus</i>      | <i>Ptilotus obovatus</i>                                   |   | * | * | * |   | * | * | * | * | * | * | * | * | * | * |   |   | * |   | * |   | * |
| Amaranthaceae  | <i>Ptilotus</i>      | <i>Ptilotus polystachyus</i>                               |   |   |   |   |   |   |   |   | * | * | * | * | * | * | * |   |   | * |   | * |   | * |
| Amaranthaceae  | <i>Ptilotus</i>      | <i>Ptilotus roei</i>                                       |   |   |   |   |   |   | * |   | * | * |   |   |   |   |   |   |   |   | * |   | * |   |
| Amaranthaceae  | <i>Ptilotus</i>      | <i>Ptilotus schwarzii</i>                                  |   | * |   | * |   | * |   |   | * | * |   | * |   |   |   |   |   |   |   |   |   |   |
| Apiaceae       | <i>Daucus</i>        | <i>Daucus glochidiatus</i>                                 |   |   |   |   | * |   |   |   |   |   |   |   |   | * | * |   |   |   | * |   |   | * |
| Apocynaceae    | <i>Leichhardtia</i>  | <i>Leichhardtia australis</i>                              |   | * |   |   |   |   |   |   |   |   | * |   |   | * | * |   |   |   |   |   |   |   |
| Apocynaceae    | <i>Vincetoxicum</i>  | <i>Vincetoxicum lineare</i>                                |   | * |   |   | * |   |   | * | * | * |   |   |   |   |   |   |   |   |   |   |   |   |
| Asteraceae     | <i>Cephalopterum</i> | <i>Cephalopterum drummondii</i>                            |   | * |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Asteraceae     | <i>Cratystylis</i>   | <i>Cratystylis subsppinescens</i>                          |   | * | * | * |   | * | * |   | * |   |   |   |   | * | * | * |   | * |   |   |   |   |
| Asteraceae     | <i>Gnephosis</i>     | <i>Gnephosis arachnoidea</i>                               |   | * | * | * |   | * | * |   | * |   |   |   |   | * | * | * |   |   | * |   |   |   |
| Asteraceae     | <i>Gnephosis</i>     | <i>Gnephosis brevifolia</i>                                |   |   |   |   | * |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Asteraceae     | <i>Gnephosis</i>     | <i>Gnephosis tenuissima</i>                                |   |   |   |   |   | * | * |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Asteraceae     | <i>Minuria</i>       | <i>Minuria leptophylla</i>                                 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   | * |   |   |
| Asteraceae     | <i>Olearia</i>       | <i>Olearia pimeleoides</i>                                 |   |   |   |   |   |   |   |   |   |   |   |   |   | * | * |   |   |   |   |   | * |   |
| Asteraceae     | <i>Rhodanthe</i>     | <i>Rhodanthe charasleyae</i>                               |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   | * |
| Asteraceae     | <i>Rhodanthe</i>     | <i>Rhodanthe chlorocephala</i> subsp. <i>splendida</i>     |   | * |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Asteraceae     | <i>Rhodanthe</i>     | <i>Rhodanthe floribunda</i>                                |   |   |   |   |   |   | * |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Asteraceae     | <i>Rhodanthe</i>     | <i>Rhodanthe oppositifolia</i> subsp. <i>oppositifolia</i> |   |   |   |   | * |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Asteraceae     | <i>Senecio</i>       | <i>Senecio lacustrinus</i>                                 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   | * |   |   |   |   |   |   |
| Asteraceae     | <i>Siemssenia</i>    | <i>Siemssenia capillaris</i>                               |   |   | * | * |   | * | * |   |   |   |   |   |   |   |   | * |   |   |   |   |   |   |
| Asteraceae     | <i>Sonchus</i>       | <i>Sonchus oleraceus*</i>                                  |   |   |   |   | * |   |   |   |   |   |   |   |   |   |   | * |   | * |   |   |   |   |
| Asteraceae     | <i>Waitzia</i>       | <i>Waitzia acuminata</i>                                   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   | * |
| Campanulaceae  | <i>Lobelia</i>       | <i>Lobelia ?simulans</i> (or <i>L ? winfridae</i> )        |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   | * |
| Casuarinaceae  | <i>Casuarina</i>     | <i>Casuarina pauper</i>                                    |   |   |   |   |   |   |   |   |   |   | * | * | * |   |   |   |   |   |   | * |   |   |
| Chenopodiaceae | <i>Atriplex</i>      | <i>Atriplex bunburyana</i>                                 |   |   | * |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   | * |
| Chenopodiaceae | <i>Atriplex</i>      | <i>Atriplex codonocarpa</i>                                |   |   |   |   | * |   |   | * |   |   |   |   |   |   |   |   |   |   |   |   |   |   |



| Family           | Genus       | Taxon                                        | A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q | R | S | T | U | V |
|------------------|-------------|----------------------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Malvaceae        | Lawrenzia   | Lawrenzia helmsii                            |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   | * |   |
| Malvaceae        | Sida        | Sida calyxthymenia                           | * |   | * |   | * | * |   | * |   |   | * | * |   |   |   |   |   |   |   |   |   |   |
| Malvaceae        | Sida        | Sida ectogama                                |   | * | * |   |   |   | * |   |   |   | * |   |   |   |   |   |   |   |   |   |   |   |
| Malvaceae        | Sida        | Sida sp. dark green fruits                   | * |   |   |   | * |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Malvaceae        | Sida        | Sida sp. Excedentifolia                      |   |   |   | * | * |   | * |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Malvaceae        | Sida        | Sida sp. Golden calyces glabrous             |   |   |   |   |   |   |   |   |   |   | * |   |   |   |   |   |   |   |   |   |   |   |
| Malvaceae        | Sida        | Sida sp. tiny glabrous fruit                 |   |   |   |   |   |   |   |   |   |   |   |   |   |   | * |   |   |   |   |   |   |   |
| Marsileaceae     | Marsilea    | Marsilea drummondii                          |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   | * |   |   |   |   |
| Montiaceae       | Calandrinia | Calandrinia eremaea                          |   |   |   |   |   |   | * |   |   |   |   |   |   |   | * |   |   |   |   | * |   | * |
| Myrtaceae        | Aluta       | Aluta aspera subsp. hesperia                 |   |   |   | * |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Myrtaceae        | Calytrix    | Calytrix hislopii (P3)                       |   |   |   |   |   | * |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Myrtaceae        | Eucalyptus  | Eucalyptus clelandiorum                      |   |   |   |   |   |   |   |   |   |   |   |   | * |   |   |   |   |   |   |   |   |   |
| Myrtaceae        | Eucalyptus  | Eucalyptus ewartiana                         | * |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Myrtaceae        | Eucalyptus  | Eucalyptus kingsmillii                       | * |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Myrtaceae        | Eucalyptus  | Eucalyptus kochii subsp. plenissima          | * |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   | * |   | * |   |
| Myrtaceae        | Eucalyptus  | Eucalyptus lucasii                           | * |   |   |   |   |   |   |   |   |   |   | * |   |   |   |   |   |   |   |   |   |   |
| Myrtaceae        | Eucalyptus  | Eucalyptus striatocalyx                      |   |   |   |   |   |   |   |   |   |   |   |   | * | * | * |   |   |   |   |   |   |   |
| Myrtaceae        | Melaleuca   | Melaleuca xerophila                          |   |   |   |   |   |   |   |   |   |   |   | * |   |   |   |   |   |   |   |   |   |   |
| Myrtaceae        | Verticordia | Verticordia interioris                       |   |   |   |   | * |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Nyctaginaceae    | Boerhavia   | Boerhavia coccinea                           |   |   |   |   |   |   |   |   |   |   |   |   |   |   | * |   |   |   |   |   |   |   |
| Pittosporaceae   | Bursaria    | Bursaria occidentalis                        | * |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Pittosporaceae   | Pittosporum | Pittosporum angustifolium                    |   |   |   |   |   |   |   |   |   |   | * |   |   |   | * |   |   |   |   |   |   |   |
| Poaceae          | Aristida    | Aristida contorta                            |   |   | * |   |   |   |   |   | * | * | * |   |   |   |   |   |   |   |   |   | * |   |
| Poaceae          | Austrostipa | Austrostipa elegantissima                    |   |   |   |   |   |   |   |   | * |   |   |   | * |   | * |   |   |   |   |   |   |   |
| Poaceae          | Austrostipa | Austrostipa nitida                           |   |   |   |   |   |   |   |   | * |   | * |   |   |   | * |   |   |   |   |   |   |   |
| Poaceae          | Enneapogon  | Enneapogon caeruleus                         |   |   | * |   |   |   |   |   |   |   |   |   |   |   |   | * |   |   |   |   |   |   |
| Poaceae          | Eragrostis  | Eragrostis dielsii                           |   |   |   |   |   |   |   |   |   | * |   |   |   |   | * | * |   |   | * |   |   |   |
| Poaceae          | Eragrostis  | Eragrostis eriopoda                          |   |   |   |   |   |   |   |   |   |   |   |   |   |   | * | * | * |   | * |   |   |   |
| Poaceae          | Eriachne    | Eriachne helmsii                             | * |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Poaceae          | Eriachne    | Eriachne mucronata                           |   |   |   |   | * | * |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Poaceae          | Eriachne    | Eriachne pulchella subsp. pulchella          |   |   |   |   |   | * |   |   | * |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Poaceae          | Monachather | Monachather paradoxus                        | * |   |   | * |   |   |   |   | * | * |   |   |   |   |   |   |   |   |   |   |   |   |
| Poaceae          | Tridax      | Tridax basedowii                             |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   | * | * | * |
| Polygonaceae     | Duma        | Duma florulenta                              |   |   |   |   | * |   |   |   |   |   |   |   |   |   |   |   |   |   | * |   |   |   |
| Polygonaceae     | Rumex       | Rumex vesicarius*                            | * |   |   |   | * |   | * |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Primulaceae      | Lysimachia  | Lysimachia arvensis*                         |   |   |   |   | * |   |   |   |   |   |   |   |   |   | * |   |   |   |   |   |   |   |
| Proteaceae       | Grevillea   | Grevillea berryana                           |   |   |   | * |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   | * |
| Proteaceae       | Grevillea   | Grevillea nematophylla subsp. supraplana     | * |   |   |   |   |   |   |   |   | * | * |   |   | * |   |   |   |   |   |   | * |   |
| Proteaceae       | Grevillea   | Grevillea pityophylla                        |   |   |   |   |   |   |   |   |   |   | * |   |   |   | * |   |   |   |   | * |   |   |
| Proteaceae       | Hakea       | Hakea preissii                               |   |   | * |   |   | * |   | * |   |   | * |   |   |   | * |   |   | * |   |   |   |   |
| Proteaceae       | Hakea       | Hakea recurva subsp. arida                   |   |   |   |   |   | * | * | * | * | * |   |   | * |   |   |   |   |   |   |   |   |   |
| Proteaceae       | Hakea       | Hakea recurva subsp. recurva                 | * | * |   |   | * | * | * | * | * | * |   |   | * |   |   |   |   |   |   |   |   |   |
| Pteridaceae      | Cheilanthes | Cheilanthes sieberi subsp. sieberi           | * |   |   |   | * | * | * | * | * |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Rhamnaceae       | Cryptandra  | Cryptandra connata                           |   |   |   | * | * |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Rubiaceae        | Psyrax      | Psyrax rigidula                              | * |   |   |   | * |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Rutaceae         | Philotheca  | Philotheca brucei subsp. brevifolia          | * |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Rutaceae         | Philotheca  | Philotheca brucei subsp. brucei              |   |   |   |   |   | * |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Santalaceae      | Exocarpos   | Exocarpos aphyllus                           |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   | * |
| Santalaceae      | Santalum    | Santalum spicatum                            |   |   |   |   |   |   |   |   |   |   | * |   |   |   |   |   |   |   |   |   |   |   |
| Sapindaceae      | Dodonaea    | Dodonaea adenophora                          |   | * |   |   |   | * |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Sapindaceae      | Dodonaea    | Dodonaea rigida                              | * |   |   | * |   |   |   |   |   |   |   | * | * |   | * |   | * | * | * | * | * | * |
| Sapindaceae      | Dodonaea    | Dodonaea viscosa subsp. angustissima         |   |   |   |   |   |   |   |   |   |   | * | * |   | * |   | * | * | * | * | * | * | * |
| Scrophulariaceae | Eremophila  | Eremophila alternifolia                      |   |   |   |   |   |   |   | * |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Scrophulariaceae | Eremophila  | Eremophila clarkii                           | * | * |   |   |   |   |   | * |   |   | * |   |   |   |   |   |   |   |   |   |   |   |
| Scrophulariaceae | Eremophila  | Eremophila decipiens subsp. decipiens        |   |   |   |   |   |   |   |   |   | * | * |   |   |   |   |   |   |   | * |   | * |   |
| Scrophulariaceae | Eremophila  | Eremophila falcata                           |   |   |   |   |   |   |   |   |   | * | * |   |   |   |   |   |   |   |   |   |   |   |
| Scrophulariaceae | Eremophila  | Eremophila forrestii subsp. forrestii        | * | * |   |   | * | * | * |   | * | * | * |   |   |   |   |   |   |   |   |   |   |   |
| Scrophulariaceae | Eremophila  | Eremophila georgei                           | * |   |   | * | * | * |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Scrophulariaceae | Eremophila  | Eremophila glutinosa                         | * |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Scrophulariaceae | Eremophila  | Eremophila lachnocalyx                       |   |   | * |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Scrophulariaceae | Eremophila  | Eremophila latrobei subsp. latrobei          | * |   |   | * | * | * | * | * |   |   |   |   |   |   | * |   | * | * | * | * | * | * |
| Scrophulariaceae | Eremophila  | Eremophila longifolia                        | * |   |   |   |   |   |   |   |   | * | * |   | * | * | * |   | * | * | * | * | * | * |
| Scrophulariaceae | Eremophila  | Eremophila miniata                           |   |   |   |   |   |   |   |   |   |   |   |   |   | * | * | * | * | * | * | * | * | * |
| Scrophulariaceae | Eremophila  | Eremophila oppositifolia subsp. angustifolia |   | * |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Scrophulariaceae | Eremophila  | Eremophila pantonii                          |   |   |   |   |   |   |   |   |   | * | * | * |   |   |   |   |   |   |   |   |   |   |
| Scrophulariaceae | Eremophila  | Eremophila platycalyx subsp. Leonora         |   |   |   |   |   |   |   |   | * |   |   |   |   |   |   |   |   |   |   | * |   |   |
| Scrophulariaceae | Eremophila  | Eremophila caperata                          |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   | * |   |   |
| Solanaceae       | Lycium      | Lycium australe                              |   |   |   |   |   |   | * |   |   |   |   |   |   |   | * |   |   |   |   |   |   |   |
| Solanaceae       | Nicotiana   | Nicotiana glauca*                            | * |   |   |   | * |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Solanaceae       | Nicotiana   | Nicotiana rosulata                           |   |   |   |   |   |   | * |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Solanaceae       | Solanum     | Solanum ferocissimum                         | * |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Solanaceae       | Solanum     | Solanum lasiophyllum                         | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * |
| Solanaceae       | Solanum     | Solanum nummularium                          |   |   |   |   |   |   |   |   |   | * | * | * | * | * | * | * | * | * | * | * | * | * |
| Solanaceae       | Solanum     | Solanum orbiculatum                          |   |   |   |   | * |   |   |   |   | * | * | * | * | * | * | * | * | * | * | * | * | * |
| Zygophyllaceae   | Roepera     | Roepera aurantiaca                           |   |   |   |   |   |   |   |   | * | * | * | * | * | * | * | * | * | * | * | * | * | * |
| Zygophyllaceae   | Roepera     | Roepera eremaea                              |   |   |   |   |   |   |   |   | * | * | * | * | * | * | * | * | * | * | * | * | * | * |

## **APPENDIX 2: Detailed Fauna Survey – Western Ecological 2022**





**Detailed Fauna Survey – Youanmi Project**  
**December 2022**  
**Prepared for Rox Resources**





## Limitations

### Scope of services

This report ("the report") has been prepared by Western Ecological Pty Ltd (WE) in accordance with the scope of services set out in the contract, or as otherwise agreed, between the Client and WE. In some circumstances, a range of factors such as time, budget, access and/or site disturbance constraints may have limited the scope of services. This report is strictly limited to the matters stated in it and is not to be read as extending, by implication, to any other matter in connection with the matters addressed in it.

### Reliance on data

In preparing the report, WE have relied upon data and other information provided by the Client and other individuals and organisations, most of which are referred to in the report ("the data"). Except as otherwise expressly stated in the report, WE have not verified the accuracy or completeness of the data. To the extent that the statements, opinions, facts, information, conclusions and/or recommendations in the report ("conclusions") are based in whole or part on the data, those conclusions are contingent upon the accuracy and completeness of the data. WE have also not attempted to determine whether any material matter has been omitted from the data. WE will not be liable in relation to incorrect conclusions should any data, information or condition be incorrect or have been concealed, withheld, misrepresented or otherwise not fully disclosed to WE. The making of any assumption does not imply that WE have made any enquiry to verify the correctness of that assumption.

The report is based on conditions encountered and information received at the time of preparation of this report or the time that site investigations were carried out. WE disclaim responsibility for any changes that may have occurred after this time. This report and any legal issues arising from it are governed by and construed in accordance with the law of Western Australia as at the date of this report.

| Report Version | Revision No. | Purpose           | Author/reviewer    | Submitted to Client |            |
|----------------|--------------|-------------------|--------------------|---------------------|------------|
|                |              |                   |                    | Form                | Date       |
| Report 2022    | 1            | For client review | Western Ecological | Electronic          | 23/12/2022 |
| Final Report   | 2            | Client submission |                    | Electronic          |            |



## Executive Summary

Western Ecological was commissioned by Rox Resources to undertake a single season detailed terrestrial vertebrate survey associated with the recommencing of mining at the Youanmi Gold Mine. Rox Resources intends to seek regulatory approvals to bring into operation a series of small open pit mines, including greenfield developments as well as cutbacks on existing excavations, and continue development and production of the Youanmi Deeps Underground Mine. The mine will require dewatering at a rate of 60-80L/second, with discharge planned to be managed initially via existing evaporation ponds and longer term to include discharge to the nearby Lake Noondie via a proposed pipeline.

The detailed field survey was undertaken over 12 days from the 5–16 October 2022 by two qualified Zoologists, Dr Ron Firth and Laura Stevens from Western Ecological. The field survey included undertaking a trapping programme that included six dedicated trap sites with pitfall traps and funnel traps, Elliott and cage traps, and camera traps. Acoustic recording units (Song Meter 4 units) were also placed to record the calls of micro bat species.

Targeted searches for the threatened Malleefowl (*Leipoa ocellata*) and Night Parrot (*Pezoporus occidentalis*) were undertaken. This included some systematic searches in limited suitable habitat for the Malleefowl, and placing out Song Meter 4 units to record the calls of the Night Parrot should it be present.

During the field survey, 15 reptile species, 47 bird species and 16 mammal species were recorded. Of these 16 mammal species eight were micro bat species that were recorded on the Song Meter 4 units. A total of 14 species across the six trap sites were captured During the trapping programme. The most frequently captured species was the Western Spotted Ctenotus (*Ctenotus uber*) with 14 captures, followed by the Southern Spinifex Skink (*Ctenotus atlas*) with four captures.

A total of 22 bird species were detected during the survey either by their calls or they were observed across the six trap sites. The most frequently detected bird was the Rufous Whistler (*Pachycephala rufiventris*) with eight detections, followed by the Crested Bellbird (*Oreoica gutturalis*) and Spiny-cheeked Honeyeater (*Acanthagenys rufogularis*), both with seven detections.

Camera traps recorded the images of seven species. Of the seven species recorded, three are introduced – the Cat, Rabbit and Cow. The Cat and Rabbit were recorded on cameras at three locations, the Grey Currawong (*Strepera versicolor*) was recorded on two cameras, while the remaining four species were recorded on just one camera trap.

Seven broad fauna habitat types were identified in the survey area across the mining tenements and pipeline and included:

- Mulga shrubland
- Open Mulga Shrubland
- Existing Disturbance
- Drainage Line
- Salt Lake
- Casuarina Shrubland
- Tecticornia Shrubland.

During the survey (24 person days of effort in the survey area) no Malleefowl or their nesting mounds, tracks or diggings were recorded in the survey area. No Night Parrot calls were recorded on the two Song Meter 4 units that were placed in the survey area over six nights.

The Song Meter 4 units recorded the calls of eight micro bat species during the survey. The White-striped Freetail Bat (*Austronomus australis*) and Gould's Wattled Bat (*Chalinolobus gouldii*) were recorded at all four of the sites where Song Meter 4 units were located.



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# 1. Introduction

## 1.1 Background

Western Ecological (WE) was commissioned by Rox Resources (Rox) to undertake a single season detailed terrestrial vertebrate survey associated with the recommencing of mining at the Youanmi Gold Mine (Figure 1). Rox Resources intends to seek regulatory approvals to bring into operation a series of small open pit mines, including greenfield developments as well as cutbacks on existing excavations, and continue development and production of the Youanmi Deeps Underground Mine. The mine will require dewatering at a rate of 60-80L/second, with discharge planned to be managed initially via existing evaporation ponds and longer term to include discharge to the nearby Lake Noondie via a proposed pipeline.

The survey area for this assessment included the mine areas where proposed disturbance is to occur (labelled survey area on figures in the report) and surrounding tenements (labelled tenement boundary on figures in the report) and the proposed pipeline (40 m wide easement).

Rox is currently undertaking scoping and soon feasibility studies for the project in order to prepare environmental approval documentation. These will include a Mining Proposal & Mine Closure Plan for the mining and pipeline disturbance and development, in accordance with 2020 Guidelines; a Native Vegetation Clearing Permit, plus a Works Approval to construct discharge infrastructure Licence to discharge (Part V EP Act). The single season detailed terrestrial vertebrate survey will help support the environmental approvals process.

## 1.2 Scope and Objectives

The scope of work (SoW) to be undertaken and broad objectives were as follows:

- Undertake a desktop assessment for terrestrial vertebrate fauna in the survey area and surrounds (the focus being threatened fauna)
- Detailed single season terrestrial vertebrate survey
- Targeted searches for the threatened species such as the Malleefowl (*Leipoa ocellata*) and Night Parrot (*Pezoporus occidentalis*) where suitable habitat is present
- Opportunistic observations of fauna, with a particular focus on threatened fauna (terrestrial vertebrates)
- Document the above in a technical report.

## 1.3 Legislative context

Fauna in Western Australia is protected formally and informally by various legislative and non-legislative measures, which are as follows:

- *Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)* – Commonwealth Government
- *Biodiversity Conservation Act 2016 (BC Act)* – WA State Government.

Non-legislative measures:

- WA Department of Biodiversity, Conservation and Attractions (DBCA) Priority lists for flora, ecological communities and fauna.

A short description of each is given below. Other definitions, including species conservation categories, are provided in Appendix 1.

### EPBC Act

The *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) aims to protect matters of national environmental significance, which are detailed in Appendix 1. Under the EPBC Act, the Commonwealth Department of Climate Change, Energy, the Environment and Water (DCCEEW) lists protected species and Threatened Ecological Communities (TECs) by criteria set out in the Act. Species are conservation significant if they are listed as Threatened (i.e., Critically Endangered [CrEn], Endangered [En] and Vulnerable [Vu]) or Migratory.

Bird species protected as Migratory under the EPBC Act include those listed under international migratory bird agreements relating to the protection of birds, which migrate between Australia and other countries, for which Australia has agreed. This



includes the Japan-Australia Migratory Bird Agreement (JAMBA), the China-Australia Migratory Bird Agreement (CAMBA), the Republic of Korea-Australia Migratory Bird Agreement (ROKAMBA) and the Convention on the Conservation of Migratory Species of Wild Animals (Bonn Convention).

Some marine fauna or terrestrial fauna that use marine habitats are listed as Marine under the EPBC Act. These species are only considered conservation significant when a proposed development occurs in a Commonwealth marine area (i.e., any Commonwealth Waters or Commonwealth Marine Protected Area). Outside of such areas, the EPBC Act does not consider these species to be matters of national environmental significance, so are not protected under the Act.

### **BC Act**

The *Biodiversity Conservation Act 2016* (BC Act) replaced both the *Wildlife Conservation Act 1950* and the *Sandalwood Act 1929* and came into effect on 1 January 2019. The aim of the new Act is to conserve and protect biodiversity and to promote the ecologically sustainable use of biodiversity components in the State, and will bring more activities within the scope of biodiversity laws.

Taxa listed as Threatened in the category of critically endangered, endangered or vulnerable under section 19(1a, 1b, and 1c), or is a rediscovered species to be regarded as threatened species under section 26(2) of the BC Act. Other categories include extinct or extinct in the wild and they are listed under section 23 (1) of the BC Act (Appendix 1).

If species meet 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, they are covered under section 13(1) of the BC Act and are called specially protected species. Species that are listed as threatened species (critically endangered, endangered or vulnerable) or extinct species under the BC Act can't also be listed as Specially Protected species (see Appendix 1 for a more detailed description of each threat category).

Threatened Ecological Communities (TECs) are also covered under the BC Act and are placed into three categories of critically endangered, endangered or vulnerable under section 27(1a, 1b, and 1c) of the BC Act depending on their threat status.

### **DBCA Priority Species and Communities**

DBCA lists species that are possibly threatened but that do not meet criteria for listing under the BC Act, or are otherwise data deficient, and adds them 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. Consideration 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 (see Appendix 1 for more detail of the priority codes).

The DBCA also has a list of Priority Ecological Communities (PECs) that have scant information available to be considered a TEC, or which are rare but not currently threatened. Ecological communities that do not meet survey criteria or that are not sufficiently defined are added to the PEC list under priorities 1, 2 and 3. These three categories are ranked in order of priority for survey and/or definition of the community, and evaluation of conservation status, so that consideration can be given to their declaration as a TEC. Ecological communities that are adequately known, and are rare but not threatened or meet criteria for near threatened, or that have been recently removed from the threatened list, are placed in priority 4. These ecological communities require regular monitoring. Conservation dependent ecological communities are placed in priority 5.

### **Informal Recognition of Threatened Fauna**

Certain populations or communities of fauna may be of local significance or interest because of their patterns of distribution and abundance. For example, fauna may be locally significant because they are range extensions to the previously known distribution or are newly discovered species (and have the potential to be of conservation significance). In addition, many species are in decline as a result of threatening processes (land clearing, grazing, and changed fire regimes) and relict



populations of such species assume local importance for DBCA. It is not uncommon for DBCA to make comment on these species of interest.



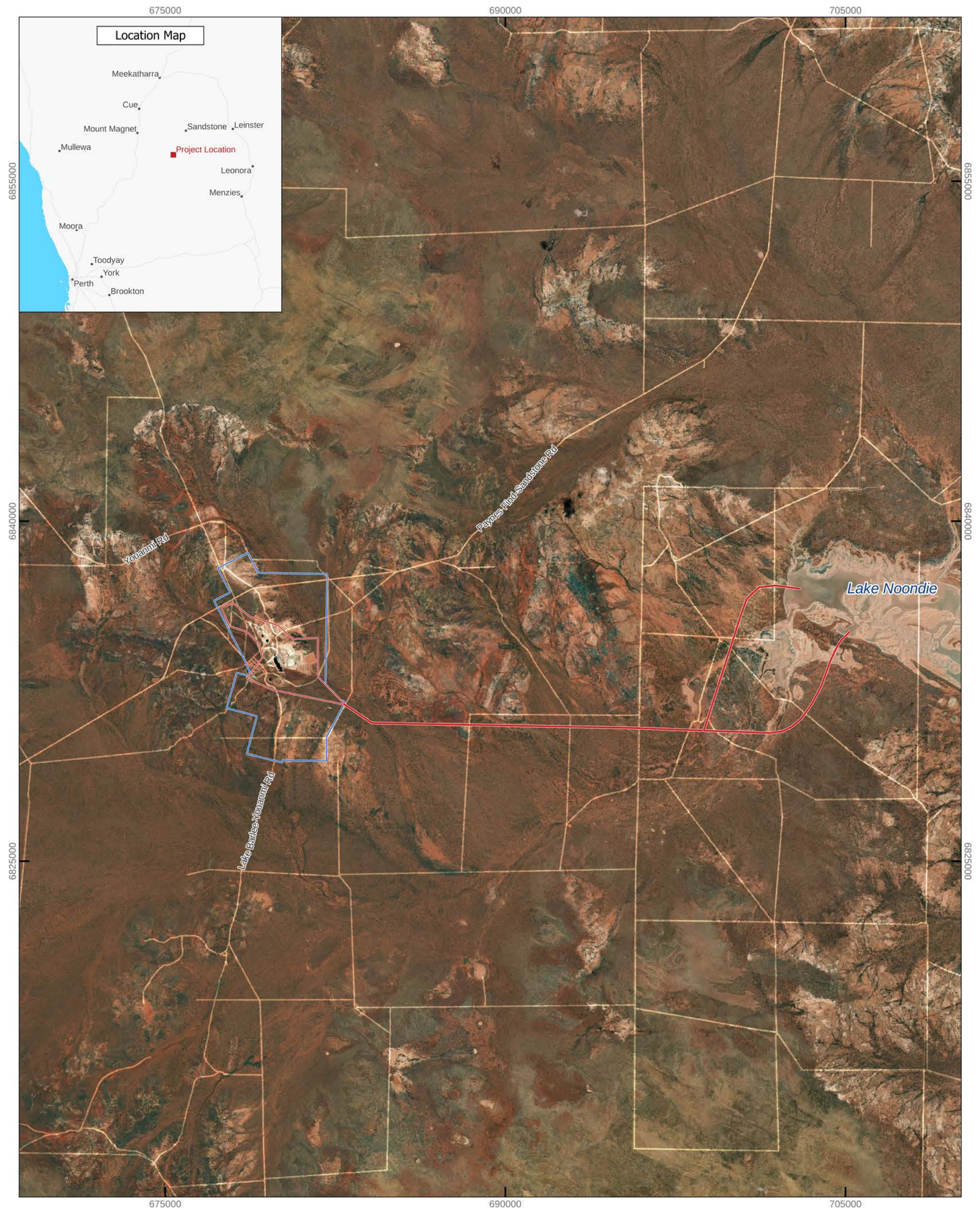


Figure 1: Project Location

0 1 2 3 4 5 km

GDA2020 - MGA Zone 50

Legend

- Survey Area
- Tenement Boundary

WESTERN  
ECOLOGICAL





## 2. Existing Environment

### 2.1 Bioregions

The Biogeographic Regionalisation of Australia (IBRA7) divides Australia into 89 bioregions based on major biological, geographical and geological attributes. These bioregions are subdivided into 419 subregions as part of a refinement of the IBRA framework (DEE 2016). The survey area sits within the Murchison 1 (MUR1 – East Murchison subregion) which forms part of the Murchison Bioregion.

The climate of this subregion is arid. This subregion is characterised by its internal drainage, and extensive areas of elevated red desert sandplains with minimal dune development. Salt Lake systems associated with the occluded Paleodrainage system. Broad plains of red-brown soils and breakaway complexes as well as red sandplains. Vegetation is dominated by Mulga Woodlands often rich in ephemerals; hummock grasslands, saltbush shrublands and *Halosarcia* shrublands (Cowan 2001). Major land use in the subregion is pastoralism followed by mining.

### 2.2 Climate

#### Climate

The nearest Bureau of Meteorology (BoM) weather station is Bulga Downs (Station No. 012239) which is approximately 85 km east of the survey area. The annual long-term average (1924 – 2022) rainfall is 234.8 mm, with the lowest average monthly rainfall being 7.6 mm in September, while the highest average monthly rainfall is 30.3 mm in February (BoM 2022) (Figure 2). The mean annual monthly temperature maximum recorded at the Bulga Downs weather station is 28.9°C and minimum is 13.6°C. On average the warmest month of the year is January with a mean maximum temperature of 37.9°C. July is the coolest month with a mean minimum temperature of 4.8°C.

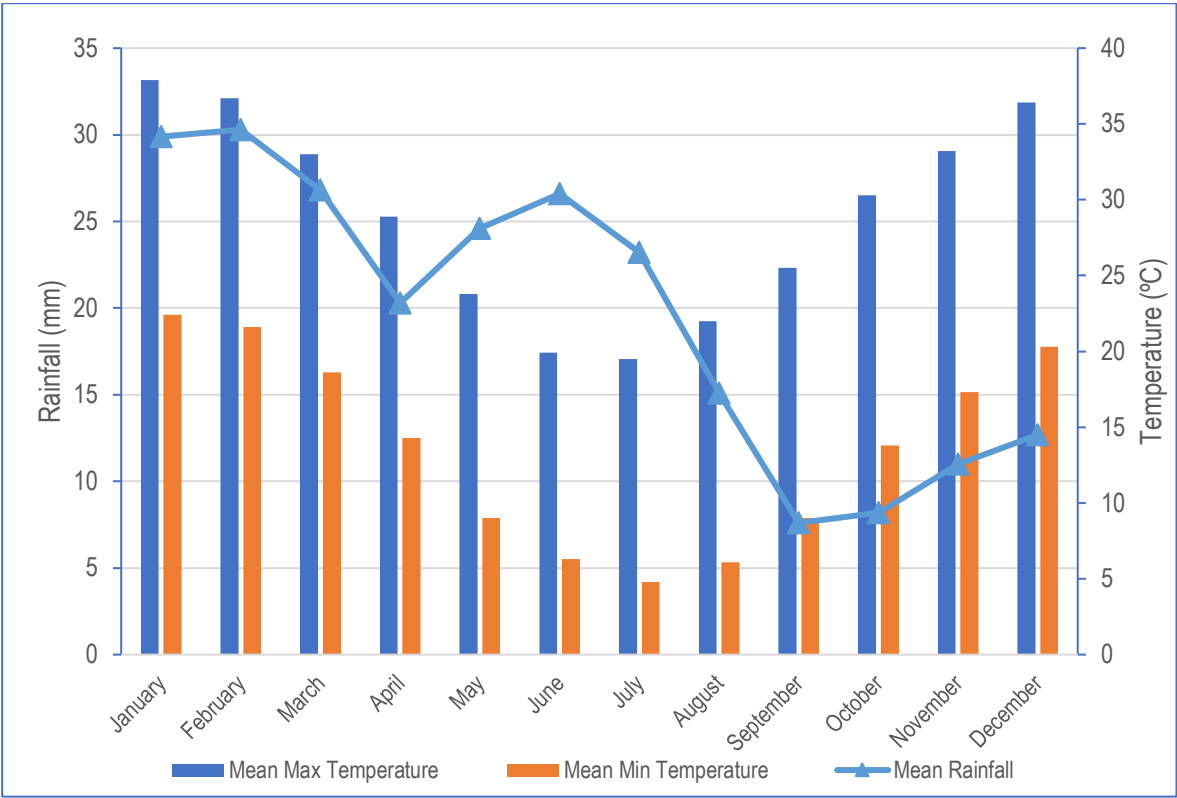


Figure 2. Climate Graph. Mean temperatures (from 2002 – 2022) and rainfall (1924 – 2022) data per month from Bulga Downs (BoM 2022).

During the survey (days traps were open) daily minimum and maximum temperatures recorded were variable and considerably different to the long-term average maximum and minimum (refer to Table 1 below).



The monthly October long-term average for maximum and minimum temperatures are 30.3°C and 13.8°C respectively. Only two trapping days experienced a maximum temperature above the long-term average and six days were considerably below the long-term average (Table 1). Minimum temperatures were noticeably lower than the long-term average on all days.

During the survey no rainfall was recorded at the Bulga Downs weather station and none was observed in the survey area (Table 1). Rainfall for the month of October at the Bulga Downs weather station was only 1.4 mm which is below the long-term average of 8.2 mm, while the previous month of September rainfall recorded there was 24.2 mm, which is well above the long-term average of 7.6 mm.

It is important to acknowledge that the Bulga Downs weather station is approximately 85 km east of the survey area and as such the temperatures and rainfall may be different to the survey area to some extent.

**Table 1. Maximum and minimum temperatures and rainfall for the Bulga Downs BoM station in October 2022 during days traps were being setup and open. Those temperatures in bold are above the long-term October average (BoM 2022).**

| Date (October 2022) | Max Temp (°C) | Min Temp (°C) | Rainfall (mm) |
|---------------------|---------------|---------------|---------------|
| 5                   | 27.4          | no data       | no data       |
| 6                   | 22.2          | 10.3          | 0             |
| 7                   | 23.1          | 7.9           | 0             |
| 8                   | no data       | 7.1           | 0             |
| 9                   | no data       | no data       | 0             |
| 10                  | <b>34.1</b>   | no data       | 0             |
| 11                  | 20.8          | 11.0          | 0             |
| 12                  | 20.8          | 10.8          | 0             |
| 13                  | 23.2          | 7.4           | 0             |
| 14                  | no data       | 7.5           | 0             |
| 15                  | <b>31.3</b>   | no data       | no data       |

### 2.3 Previous Fauna Surveys

In September 2019, ecologia Environment undertook a detailed flora survey and a basic fauna survey at the Penny West gold project which is about 25 km to the south of the survey area (ecologia Environment 2020). While undertaking the assessment 22 fauna species were recorded which included two reptile species, 18 bird species, and two mammal species. No species of conservation significance were recorded.

Western Ecological carried out a detailed terrestrial fauna survey in November 2020 at the Sandstone gold project for Middle Island Resources which is about 70 km north east of the survey area (Western Ecological 2021). During the survey 56 species were recorded which included 12 reptile species, 30 bird species, and 14 species of mammal (this included micro bat species). No conservation significant species were recorded during the survey, however, 12 disused and old mounds were recorded. These mounds were of various ages, and sizes with some having weathered to a stage that made them almost unrecognisable.

### 3. Methods

#### 3.1 Survey Guidance

The fauna survey was completed in accordance with the following EPA and DCCEEW requirements (and other institutions) for the environmental surveying and reporting of fauna surveys in WA, where relevant and practical, and as documented in:

- EPA Technical Guidance: Terrestrial Vertebrate Fauna Surveys for Environmental Impact Assessment (EPA 2020)
- EPA Statement of Environmental Principles, Factors and Objectives (EPA 2018)
- Survey Guidelines for Australia's Threatened Bats. EPBC Act survey guidelines 6.1 (2010) (DEWHA)
- Survey Guidelines for Australia's Threatened Birds. EPBC Act survey guidelines 6.2 (2010) (DSEWPaC)
- Survey Guidelines for Australia's Threatened Frogs. EPBC Act survey guidelines 6.3 (2010) (DSEWPaC)
- Survey Guidelines for Australia's Threatened Mammals. EPBC Act survey guidelines 6.5 (2011) (DSEWPaC)
- Survey Guidelines for Australia's Threatened Reptiles. EPBC Act survey guidelines 6.6 (2011) (DSEWPaC)
- Threatened Species Scientific Committee. Conservation Advice where provided for species listed under the EPBC Act (DCCEEW)
- National Recovery Plan for Malleefowl (*Leipoa ocellata*), Department for Environment and Heritage (Benshemesh 2007)
- Interim Guideline for preliminary surveys of the Night Parrot (*Pezoporus occidentalis*) in Western Australia (WA) Department of Parks and Wildlife [DPaW] 2017)
- DBCA/ DPaW standard fauna operating procedures (where relevant).

#### 3.2 Database Searches

Searches of DBCA threatened fauna database, the EPBC Protected Matters Search Tool (PMST) and the Atlas of Living Australia (ALA) were undertaken to identify fauna species of conservation significance potentially occurring in and near the survey area (DBCA 2022, DCCEEW 2022, ALA 2022) (Appendix 2). The database searches were centred on -28.6103 and 118.4414 with a 100 km radial search area.

It is important to note that databases such as the ALA get many of their records from the various state museums and government departments such as DBCA, hence the records are very similar. And finally for assessments such as this we are primarily interested in significant species records, not common and widespread species that form the majority of records in these database searches. The DBCA threatened fauna database is typically the most relevant and best resource for records of threatened species.

The ALA search resulted in 9367 records and as such we do not present this data in Appendix 2 as it would take up hundreds of pages even when reduced in size to a point where it would be illegible.

#### 3.3 Detailed Field Survey

The detailed field survey was undertaken over 12 days from the 5–16 October 2022 by two qualified Zoologists, Dr Ron Firth and Laura Stevens from Western Ecological.

The primary focus of the survey was terrestrial vertebrates, however, while undertaking assessments in our trap sites we decided to look for burrows of the Northern Shield-backed Trapdoor Spider (Trapdoor) (*Idiosoma clypeatum*) which is a Priority 3 listed species (the focus was primarily our trap sites and no other sections of the survey area) because of potential habitat. This spider is known from the region and it has distinctive burrows that are adorned at the entrance with a moustache like arrangement of twigs.

##### 3.3.1 Trapping Programme

The trapping programme consisted of six trap sites (systematic sampling sites) situated across the survey area (this included the mining area and pipeline corridor) in the main broad habitat types identified in the survey area (see Table 2 below). Each trap site was open for seven nights with the same survey effort (time, number of traps and search effort [defined as

person hours)). Traps were not placed in areas mapped as existing disturbance because these areas were highly degraded and as result reward for effort establishing the trap sites would be inefficient in terms of trap captures.

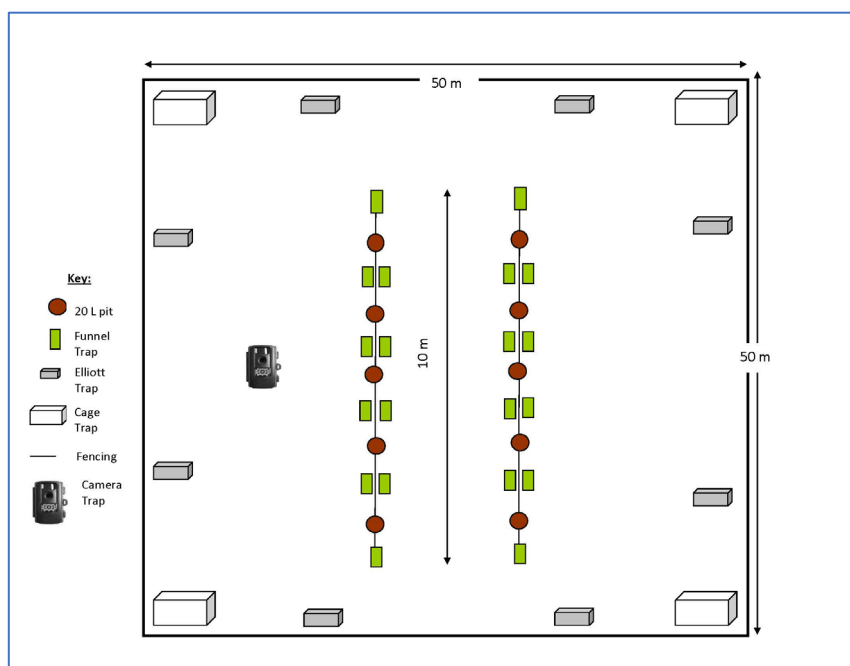
**Table 2. The habitat type that each trap site was located in (including its coordinates).**

| Trap Site Number | Habitat Type          | Coordinates in UTMs (GDA 94) |
|------------------|-----------------------|------------------------------|
| 1                | Mulga Shrubland       | N 6836246, E 677999          |
| 2                | Mulga Shrubland       | N 6832499, E 680442          |
| 3                | Tecticornia Shrubland | N 6837147, E 701887          |
| 4                | Mulga Shrubland       | N 6836595, E 681777          |
| 5                | Mulga Shrubland       | N 6831528, E 703220          |
| 6                | Mulga Shrubland       | N 6834615, E 681679          |

Each of the trap sites consisted of a 50 x 50 m quadrat. In each quadrat, 10 pitfall traps (20 L buckets) were set with drift fence. These consisted of two lines of five pitfall traps at about 2 – 3 m intervals each with an approximate 10 m section of drift fence. A minimum of eight to a maximum of 10 funnel traps were set along the sides of the drift fence, and four cage traps and eight Elliott traps were spaced equidistantly around the perimeter of the quadrat (Figure 3 – trap site layout below [not to scale] and Plate 1 for an image of one pitfall trap line).

One camera trap was also set in each of the trap sites for at least six nights (see Plate 2 below for example of setup). Trap effort across all sites can be seen below in Table 3 and the locations of survey sites can be seen on Figure 4. We also placed out an additional three camera traps in areas deemed more likely to capture images of threatened species such as a drainage line and a small rocky quartz ridge (Figure 4).

Cage, Elliott and funnel traps were covered with cloth to reduce sun exposure during the day and cloth was added inside the traps for warmth at night. Pitfall buckets had wet sponge (for frogs) and cloth/egg cartons added for shade and cover during the day and night. Traps were checked within the first 2 – 4 hours of sunrise each day and then again in the afternoon (animal ethics is of paramount importance). Cage and Elliott traps were baited with universal bait and fresh bait was added every second day (the old bait was also retained in the traps until trapping was complete).



**Figure 3. Trap Site Layout.**

Data collected systematically (i.e., where methods and effort are the same per sample unit) can be analysed to determine patterns in the richness, abundance and composition of the fauna (should the data collected be adequate to do so). Sites were selected to obtain a broad coverage of the survey area and to be readily accessible to check traps in a timely manner to reduce stress on captured animals (for animal ethics purposes).



**Table 3. Trap site effort undertaken in the survey area (7 nights in total at each trap site).**

| Trap Site Number    | Pitfall Buckets – No. of nights | Funnel traps – No. of nights | Elliott traps – No. of nights | Cage traps – No. of nights | Camera traps – No. of nights |
|---------------------|---------------------------------|------------------------------|-------------------------------|----------------------------|------------------------------|
| 1                   | 70                              | 56                           | 28                            | 28                         | 6                            |
| 2                   | 70                              | 56                           | 28                            | 28                         | 6                            |
| 3                   | 70                              | 56                           | 28                            | 28                         | 6                            |
| 4                   | 70                              | 56                           | 28                            | 28                         | 6                            |
| 5                   | 70                              | 56                           | 28                            | 28                         | 6                            |
| 6                   | 70                              | 56                           | 28                            | 28                         | 6                            |
| <b>Total effort</b> | <b>420</b>                      | <b>336</b>                   | <b>168</b>                    | <b>168</b>                 | <b>36</b>                    |

**Plate 1.** An example of a pitfall trap line setup in the survey area (each trap site had two of these pitfall trap lines within the 50 m quadrat).**Plate 2.** An example of a camera trap setup in the survey area with the camera in the foreground and the bait station in the background (this camera was placed in a drainage line where there was some but very limited water).

### 3.3.2 Fauna Habitat Assessment

During the detailed survey, habitat assessments were undertaken systematically throughout the survey area to define and delineate the main habitats present (see examples from trap sites in Appendix 3). A description and map of the broad main habitat type was developed for the survey area with this based on broad vegetation types, usually the dominant species in the canopy, vegetation structure and cover and position in the landscape.

The habitat assessment included an evaluation (likelihood assessment) of the potential for habitats to support the species of conservation significance being targeted during this survey (with this based on the database results, previous surveys, habitats present, known distributions and ecology of species from the literature and survey personnel's extensive experience).

Each habitat description included the following information where relevant:

- GPS co-ordinate will be recorded
- habitat condition will be assessed as 'completely degraded through to pristine, based on the scale given in Keighery (1994)
- landscape position
- dominant vegetation and structure e.g., number of vegetation strata
- hollow-bearing trees and dead stags (e.g., average size and abundance of hollows – should they be present)
- description of any rock and rocky outcrops
- logs (e.g., abundance and size)
- substrate (e.g., leaf litter)
- wetlands, creeks, rivers, dams and other water bodies
- description of any observed nests and roosts
- associated fauna species observed using the habitat
- disturbance e.g., cattle grazing, fire
- photo showing a typical example of the broad habitat type.

### 3.3.3 Targeted Threatened Species Surveys

The following targeted threatened species surveys were undertaken because of database results, vegetation and habitats in the region and survey area, fauna known to occur in the region and WE experience.

#### Malleefowl Survey

Prior to the field assessment, the original intent was to walk a series of systematic transects across the survey area (primarily looking for Malleefowl and their signs (i.e., nesting mounds and or tracks) if suitable Malleefowl habitat was deemed present. However, when the survey area was visited it was considered mostly unsuitable for Malleefowl (see Results and Discussion sections below). As a consequence, a number of photo points (and habitat assessments) were taken in the survey area to illustrate the broad habitats present (these areas were visited on foot).

We did, however, walk a relatively small section of the survey area that we considered to have some potential but limited Malleefowl habitat based on vegetation cover and structure. The methods applied are outlined below.

The targeted Malleefowl survey methods undertaken in the survey area were consistent with relevant guidelines, conservation advice and current practices where relevant and practical and were as follows:

- Systematic transects were walked on foot and these were spaced approximately between 30 – 60 m apart
- These transects were traversed in habitat that was deemed suitable with this based mostly on the density of vegetation in the midstorey and groundstorey i.e., not being too dense in order for birds to construct mounds or too open i.e., not enough cover from the sun and or potential predators.
- Camera traps were also used as a potential method to record Malleefowl
- Recording evidence of Malleefowl activity while walking the transects such as:
  - Malleefowl tracks
  - Malleefowl nesting mounds including status (inactive/ active) and activity according to the following criteria:
    - Nest in preparation – eggs not laid (evidence of litter trail)
    - Mound is in progress/ maintenance – eggs assumed to be laid



- Evidence of chicks leaving nest – chicks fledging site / shell fragments
- Decommissioned – spreading and returning of mound soil
- Malleefowl individual sightings and assessment of age (chick/ adult)
- Opportunistic observations of Malleefowl evidence (tracks, mounds, feathers and or individual sightings) in the survey area while not assessing the systematic transects.

In addition, Malleefowl evidence (mounds and or individual sightings) in the survey area was also looked for when driving tracks between trap sites (and other survey activities), as this was mostly undertaken at about 20-30 km/h.

### Night Parrot Survey

The DBCA recommends that Night Parrot surveys should be undertaken if there is suitable Night Parrot habitat present in an area proposed to be disturbed. The survey area falls close to the boundary that the DBCA considers a high to medium priority area for the species – noting that this based on a very broad map presented in the interim guidelines for preliminary surveys of the Night Parrot (DPaW 2017).

The Night Parrot survey included:

- Placing out two Song Meter 4 (SM4) acoustic recoding units (ARUs) for six nights at two locations (these were placed in trap sites 3 and 5 – see Table 4 and Plate 3 below)
- Suitable habitat for the Night Parrot is considered long-unburnt spinifex hummocks, clay pans, salt pans and salt lake margins and this habitat is present in limited sections of the survey area, such as trap site 3 and 5 and areas surrounding them)
- Recordings on the ARUs were analysed by Bob Bullen (Bat Call WA) to determine the presence or absence of the Night Parrot.

**Table 4. Night Parrot SM4 unit, trap site and habitat type it was placed in.**

| SM4 Unit Number | Trap Site Number | Habitat Type                                |
|-----------------|------------------|---------------------------------------------|
| S4A19131        | 3                | Tecticornia Shrubland (on salt lake margin) |
| S4A18942        | 5                | Mulga Shrubland (with some spinifex)        |



**Plate 3.** An example of the SM4 setup for the Night Parrot.



### 3.3.4 Bird Surveys

Systematic bird surveys were undertaken in all habitats in the study area for 20 minutes in a 1-ha quadrat during the survey. They were also undertaken in the same locations as the trap sites on four occasions, but again in a 1-ha quadrat during the morning (twice) and afternoons (twice) (the centre of the trap site was the basis of the 1-ha quadrat).

Bird surveys were carried out during typical peak periods of activity when birds are calling and moving about, which is typically in the 3-4 hours of sunrise, particularly during warmer periods and again the late afternoon. However, this is dependent on season and local weather. We also used call playback to help identify some species and to try and locate cryptic and or conservation significant species where possible and relevant.

### 3.3.5 Acoustic Bat Survey

Two Song Meter (SM4) acoustic recording units were each placed at four separate locations for two nights each, including at trap sites (Table 5 and Plate 4 below). The units were set up in perceived flyways, beside an old mine shaft and in different habitats. Bat specialist Bob Bullen (Bat Call WA) identified the calls recorded on the SM4 units.

**Table 5. Micro bat SM4 unit, trap site and habitat type it was placed in.**

| SM4 Unit Number | Trap Site Number | Habitat Type          |
|-----------------|------------------|-----------------------|
| S4U16597        | 2                | Mulga shrubland       |
| S4U14094        | 3                | Tecticornia Shrubland |
| S4U16597        | Old Mine shaft   | Existing Disturbance  |
| S4U14094        | 6                | Mulga shrubland       |



**Plate 4.** Example of a SM4 unit setup for micro bats that was beside an old mine shaft in the survey area.

### 3.3.6 Nocturnal Spotlighting

Spotlighting at each of the systematic trap sites was undertaken once by two people with head torches for five minutes each (10 minutes of effort per trap site). Spotlighting was also done by car along vehicle tracks while travelling between sites for a total period of 90 minutes per person. Total spotlighting effort for the study area was 240 person minutes or four hours.

### 3.3.7 Reptile Search Sites

We undertook a number of specific reptile searches for 20 person minutes in six locations during the survey (with a focus on areas in the mining tenements section of the survey area). We specifically looked for relatively large piles of dead trees and wood that had fallen over and that had bark peeling off where small reptiles such as geckos could shelter (noting that this is generally limited in Mulga Shrubland). We also looked under bark on live and dead trees, and trees that were on the ground, including in litter (Table 6 and Figure 4).

**Table 6. Reptile search site, its location and habitat type it was placed in.**

| Reptile Search Site Number | Habitat Type         | Coordinates in UTM's (GDA 94) |
|----------------------------|----------------------|-------------------------------|
| 1                          | Existing Disturbance | N 6834443, E 679282           |
| 2                          | Mulga shrubland      | N 6835360, E 678776           |
| 3                          | Mulga shrubland      | N 6835564, E 678333           |
| 4                          | Open Mulga Shrubland | N 6835413, E 679707           |
| 5                          | Mulga shrubland      | N 6832565, E 680129           |
| 6                          | Mulga shrubland      | N 6833367, E 679331           |

### 3.3.8 Opportunistic Searches

Fauna was opportunistically observed and recorded during the survey. The opportunistic data supplements the systematic data collected at trap sites. During the opportunistic searches, the following techniques were used: raking through leaf litter, overturning rocks, looking under decorticating bark, investigating burrows, tracks and scats where observed.

In addition, opportunistic records of fauna species encountered while travelling between trap sites were also documented. Opportunistic data comprises records of fauna species by location and coordinates are taken with a GPS in the case of any conservation significant fauna. Noting that many of the bird species recorded during the survey come from opportunistic observations.

### 3.3.8 Photo Points

A number of photo points was undertaken across the survey area. The aim of these photo points was to further establish what the habitats of the survey area looked like i.e., their condition and level of disturbance, and how varied they were within the same habitat type and between habitat types (Figure 4).

### 3.3.9 Taxonomy

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

Taxonomy and nomenclature in this report follows the accepted listing of published terrestrial vertebrate species, primarily the WA Museum (2022). In addition, the following are also considered where relevant; the listing for amphibians and reptiles is consistent with Wilson & Swan (2021) and Chapple (2019) and to a lesser extent Cogger (2014); bird listings are consistent with Christidis & Boles (2008) and mammal listings are consistent with Woinarski et al. (2014).

### 3.3.10 Fauna Survey limitations

Survey limitations are sometimes difficult to predict prior to undertaking the assessment, as is the extent to which they influence survey effort. The limitations of the fauna survey are outlined below in Table 7.

**Table 7. Limitations associated with the survey.**

| Potential Limitation or Constraint   | Impact on Survey | Comment                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|--------------------------------------|------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Qualifications and survey experience | None             | <p>The Zoologists that undertook the survey are qualified and experienced. Dr Ron Firth has almost 25 years of experience designing, managing and undertaking biodiversity and ecological surveys throughout Western Australia, the Northern Territory, Queensland, New South Wales and Victoria. He has written over 120 consultant reports and has authored or co-authored 15 papers that have been published in peer reviewed scientific journals and has made other contributions to published Books.</p> <p>Laura Stevens has over 9 years of experience undertaking fauna surveys in WA and has written more than 35 consultant reports. Therefore, no perceived limitations associated with qualifications and experience.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Timing - weather, season             | Little impact    | <p>The detailed fauna assessment was undertaken from 5-15 October. This is the recommend time to survey for species that are much more temperature dependent i.e., reptiles. Survey timing according to guidance for this group is September-April.</p> <p>The nearest BoM weather station with long-term rainfall and temperature records is Bulga Downs (Station No. 012239) (see section 2.2 above). The annual long-term average (1924 – 2022) rainfall at the Bulga Downs weather station is 234.8 mm (BoM 2022).</p> <p>During the survey (days that traps were open) daily minimum and maximum temperatures recorded at the Bulga Downs weather station were variable and considerably different to the October long-term average maximum (30.3°C) and minimum (13.8°C) (refer to Table 1 in section 2.2 above). Only two trapping days experienced a maximum temperature above the long-term October average and six days were considerably below the long-term October average (Table 1). Minimum temperatures were noticeably lower than the long-term average on all days.</p> <p>During the survey no rainfall was recorded at the Bulga Downs weather station and none was observed in the survey area (Table 1). Rainfall for the month of October at the Bulga Downs weather station was only 1.4 mm which is below the long-term average of 8.2 mm, while the previous month of September there was 24.2 mm recorded, which is well above the long-term average of 7.6 mm.</p> <p>Lower than average maximum and minimum temperatures could have impacted reptile active to some extent, which in turn could reduce their detectability, but this is not quantifiable from the work undertaken so far.</p> |
| Scope - Life forms sampled           | None             | The primary objective of the survey was to sample terrestrial vertebrates by undertaking a detailed fauna assessment (baseline trapping) and an assessment of habitat and targeted searches for the Malleefowl and Night Parrot and this was achieved.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Sources of information               | None             | Sources of information included the DBCA threatened fauna database, EPBC Protected Matters Search Tool and Atlas of Living Australia. Other sources of information include two past reports, and the scientific literature (peer reviewed scientific papers and books).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Completeness                         | None             | The main objective of the survey was to undertake a detailed fauna assessment (baseline trapping), an assessment of habitat and targeted searches for the Malleefowl and Night Parrot and this was achieved. Then based on the current survey, previous surveys and database search results we assessed the likelihood of several threatened species occurring in the survey area.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Disturbance                          | Moderate Impact  | <p>The survey area has been disturbed as a result of historic mining that has occurred over more than a century (mine pits, tailings dams, processing plants and associated infrastructure) and current mining activity (exploration associated activities). The area also historically supported Cattle and Sheep grazing.</p> <p>Cats were recorded on camera traps during the survey, Goats were observed in and around old mine pits, and Rabbits and their signs were also recorded.</p> <p>The extent to which these disturbances might have impacted on the results is difficult to quantify based on the work undertaken in the survey area thus far, as this work represents baseline information, however, habitat clearing and degradation as a result of historic mining and grazing, and predation by Cats is likely to negatively impact the fauna.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |



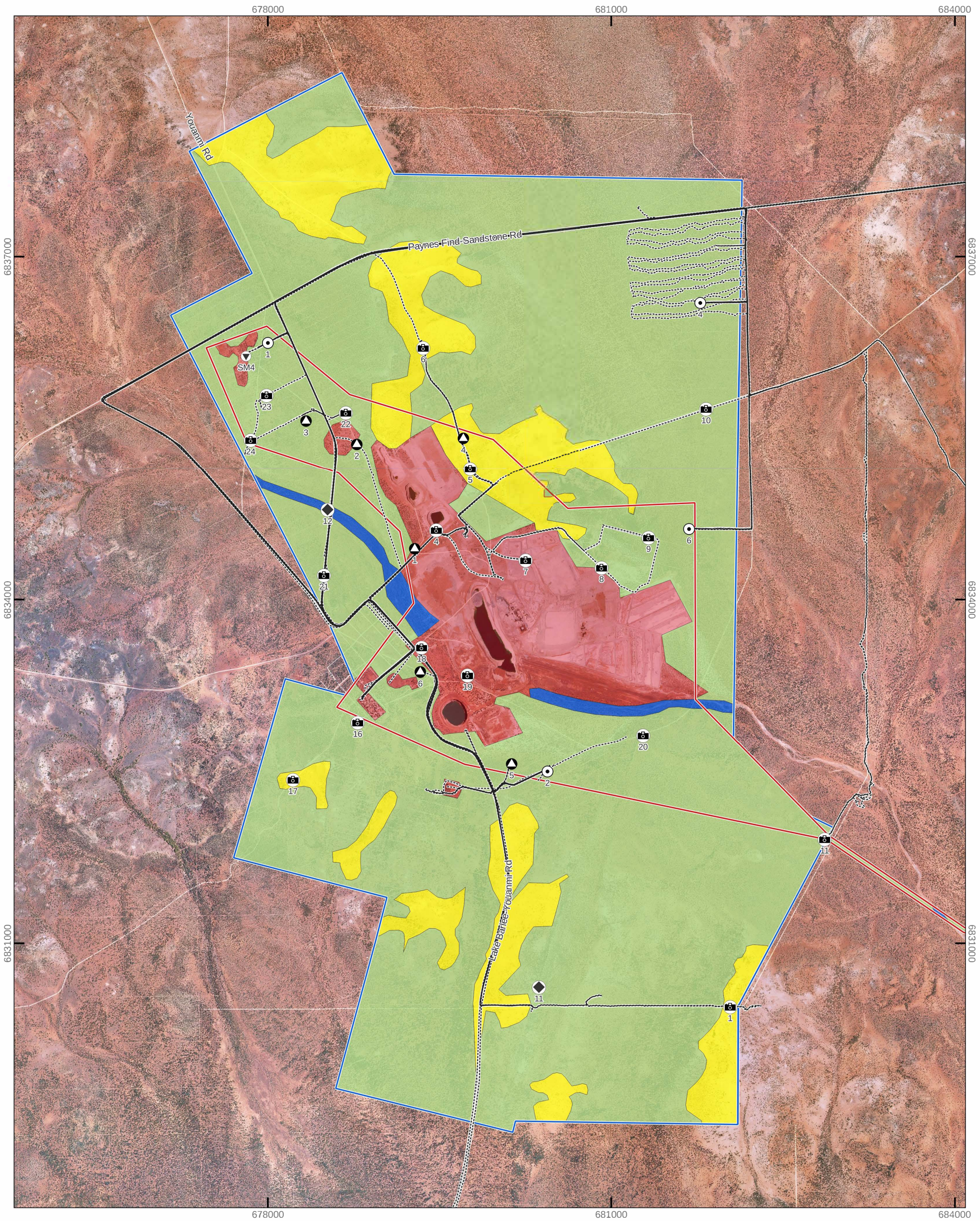


Figure 4: Habitat Mapping and Assessment Sites

0 0.6 1.2 km

GDA2020 - MGA Zone 50

**Legend**

|             |                     |                      |                      |
|-------------|---------------------|----------------------|----------------------|
| Camera      | Reptile Search Site | Survey Area          | Existing Disturbance |
| Photo Point | Trapsite            | Tenement Boundary    | Mulga Shrubland      |
| SM4         | Track               | <b>Fauna Habitat</b> | Open Mulga Shrubland |
|             |                     | Drainage Line        |                      |

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Ref: 182\_006\_RevC.qgz



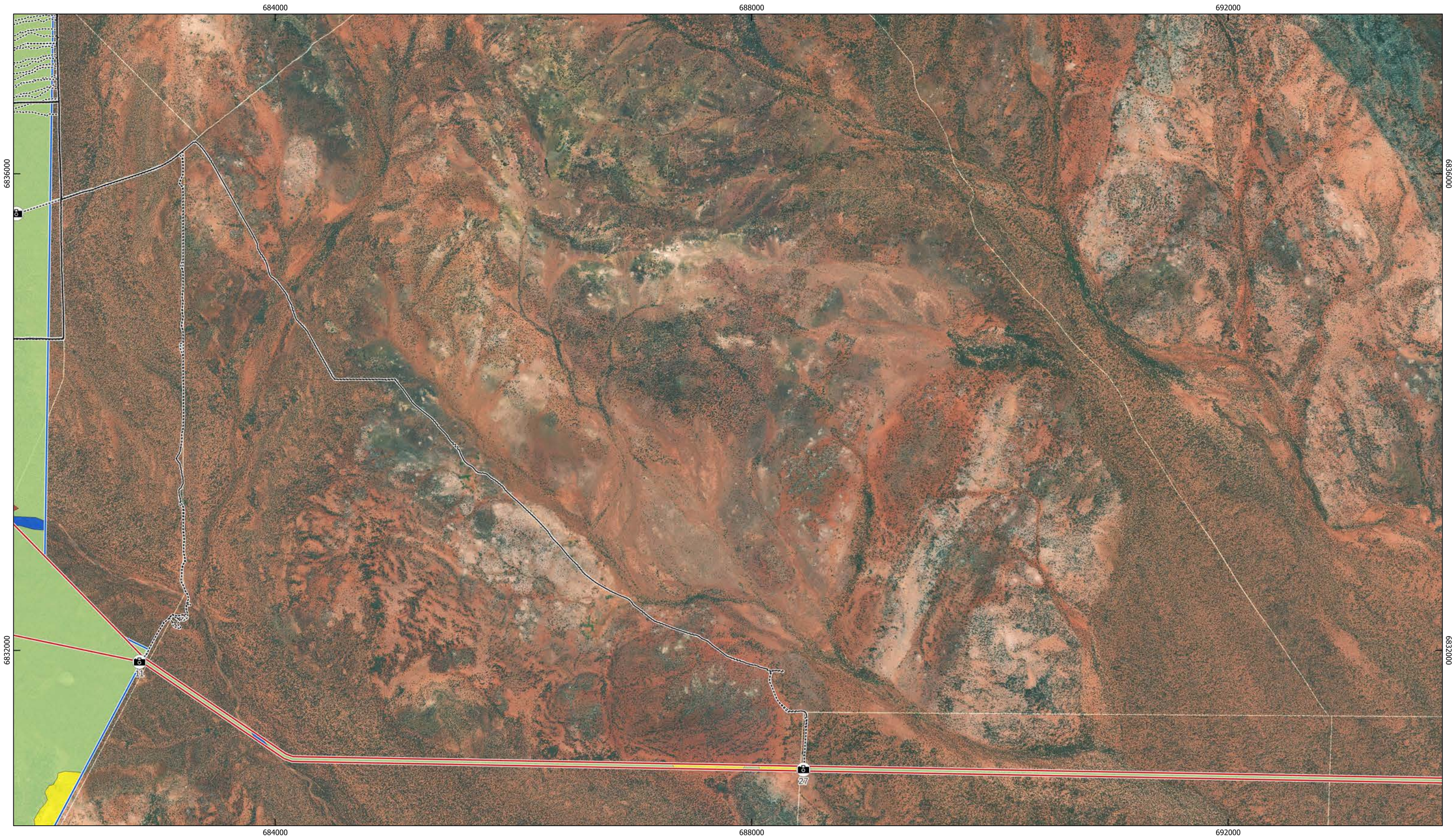
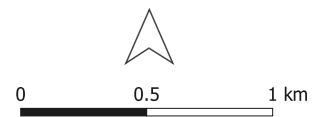


Figure 4: Habitat Mapping and Assessment Sites



Scale 1:30,000

GDA2020 - MGA Zone 50

Legend

- |             |                   |                      |
|-------------|-------------------|----------------------|
| Photo Point | Tenement Boundary | Existing disturbance |
| Track       | Fauna Habitat     | Mulga Shrubland      |
| Survey Area | Drainage line     | Open mulga shrubland |





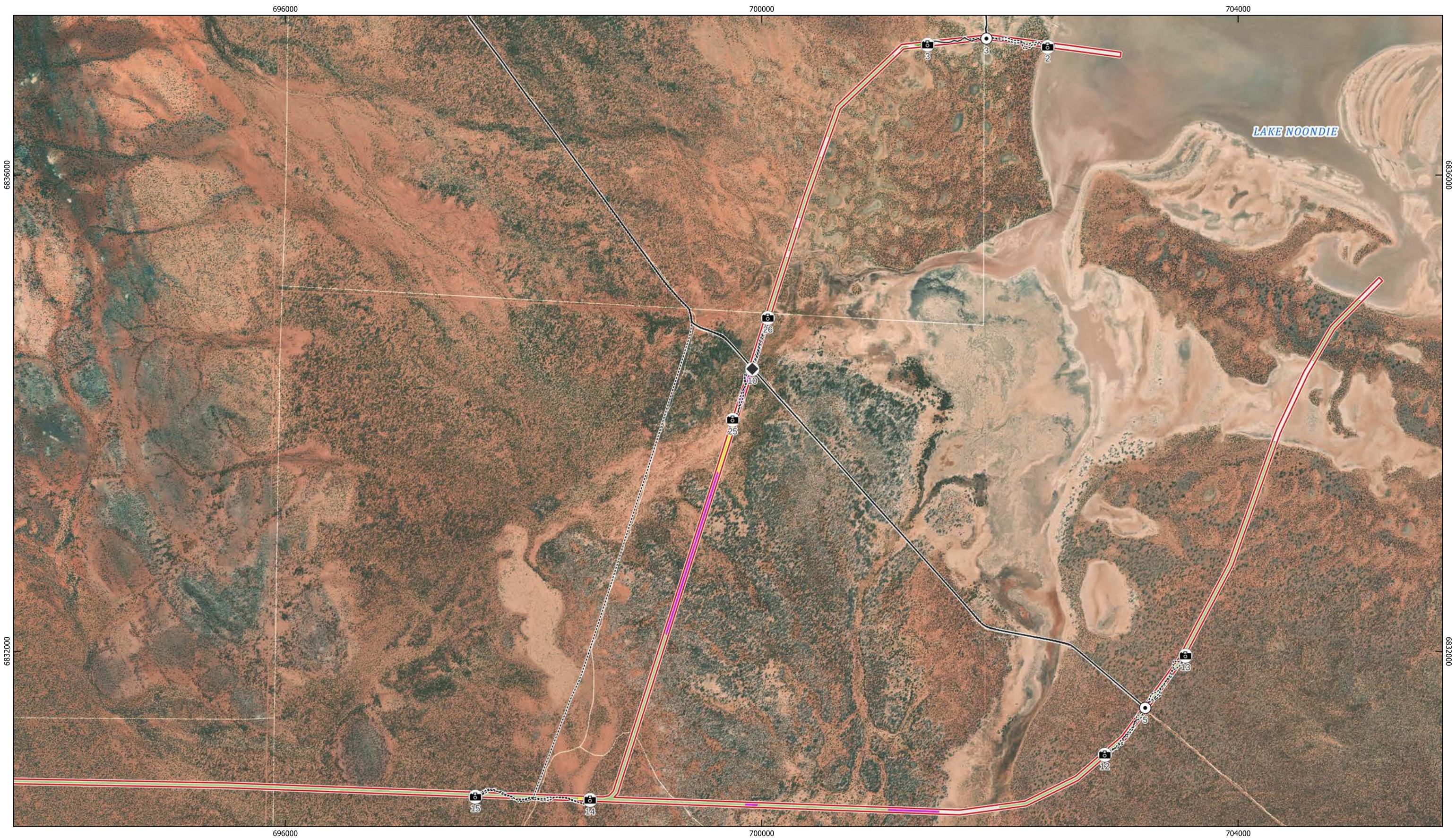
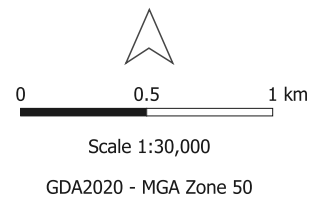


Figure 4: Habitat Mapping and Assessment Sites



Legend

- |             |                     |                       |
|-------------|---------------------|-----------------------|
| Camera      | Track               | Mulga Shrubland       |
| Photo Point | Survey Area         | Open mulga shrubland  |
| Trapsite    | Fauna Habitat       | Salt lake             |
|             | Casuarina shrubland | Tecticornia shrubland |







## 4. Results

### 4.1 Database Results

A total of 26 conservation significant species (including Priority species) were identified during the desktop review of the database searches (Appendix 2). Of the 26 species, 17 were bird species, seven were mammals, one was a reptile and one was an invertebrate species (Appendix 2).

Some marine fauna or terrestrial fauna that use marine habitats or have been recorded in marine reserves are listed as Marine under the EPBC Act. Several species of bird in the PMST database search are listed as Marine under the EPBC Act; however, these species are only considered conservation significant when a proposed development occurs in a Commonwealth marine area (i.e., any Commonwealth Waters or Commonwealth Marine Protected Area). Outside of such areas, the EPBC Act does not consider these species to be matters of national environmental significance (unless they are listed under another category such as migratory), so are not protected under the Act.

Please note that the number of species above excludes other invertebrates (apart from the Trapdoor) that were present in the database searches as the scope was to undertake a terrestrial vertebrate survey.

#### Shorebirds and Waterbirds

Several shorebird and waterbird species were returned in the database searches. These were a combination of waders/shorebirds and waterbirds (Appendix 2). These wetland avifauna such as wading birds, including Sandpipers inhabit estuaries, mudflats, saltmarshes, sandflats and beaches, with shallow water edges, where they feed on invertebrates such as worms, molluscs, insects and crustaceans (Garnett et al. 2011, Garnett & Baker 2021). Waterbirds such as various Duck and Teal species are waterbirds that feed on the surface of the water, taking mainly seeds and insects as well as floating vegetation from on or just below the surface of the water. Suitable habitat for some of these shorebird and waterbird species is very limited in the survey area, apart from two small sections where the proposed pipeline intersects Lake Noondie. Therefore most have been omitted from any further discussion.

#### Now Regionally Extinct

A number of threatened species in the database searches were also known to be historical records of species now regionally extinct, for example the Western Grasswren (*Amytornis textilis textilis*), Bilby (*Macrotis lagotis*), Boodie (Inland) (*Bettongia lesueur graii*), Ghost Bat (*Macroderma gigas*) and Lesser Stick-nest Rat (*Leporillus apicalis*) (Appendix 2). These species have been excluded from any further discussion.

#### Unsuitable Habitat

Some species present in the database searches simply won't be in the survey area because suitable habitat is not available e.g., the Australian Painted Snipe (*Rostratula australis*) as it requires swamp and wetland habitat (Garnett et al. 2011, Knuckey et al. 2013), which is not present in the survey area.

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

#### Database Errors and Anomalies

Occasionally there are errors and/or anomalies in the database searches that are sourced from the various government departments, for example, the Grey Wagtail (*Motacilla cinerea*) which is a rare visitor with very few records were present in the EPBC PMST (Johnstone & Storr 1998, DotE 2015). These species have been omitted from any further discussion.

The DBCA threatened fauna database had 25 records of the Southern Marsupial Mole (*Notoryctes typhlops*) all from 2009, with the location given as the Tropicana Gold Project which is about 550 km south east of the survey area (Appendix 2). There is an error in the coordinates provided and that is why the records appear in this DBCA search.

The DBCA threatened fauna database also had one record of the Western Pebble-mound Mouse (*Pseudomys chapmani*) from 2012. The record was given as BHPBIO (BHP Billiton Iron Ore) mainline which is a trainline. The coordinates given place it about 55 km south west of the survey area, however, there is no BHPBIO trainline in this area (Figure 5 and Appendix 2).



It is important to note that the EPBC PMST is not entirely based on point records but also on broader information (e.g., bioclimatic distribution models), whereas the DBCA threatened fauna database is solely based on point records. Consequently, the results of the EPBC PMST are in some cases less accurate, particularly at a local scale. As a result, the EPBC PMST can include species that do not occur in the study area because, for example, there is no habitat available or they are now known to be locally extinct.

As a result all of the DBCA threatened fauna records (apart from the Southern Marsupial Mole) that were present in the database search have been presented on Figure 5 (see below).

### **Conservation Significant Fauna**

With the above-mentioned species removed, a total of 11 conservation significant species retrieved from the database searches are considered as either recorded (none were recorded), likely, possible or unlikely to occur in the survey area, with this based on location of the database record, habitats present in the survey area, and importantly the species ecology. Of these 11 conservation significant species, none have been recorded in the survey area, one species is considered Likely to occur in the survey area, three are considered as Possible and seven species are considered Unlikely to occur (Table 8). A summary of the 11 threatened species records is outlined below. All 11 conservation significant species will be considered further below in the discussion.

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

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

**Table 8. Conservation significant fauna potentially occurring in the survey area.**

CrE = Listed as Critically Endangered under the EBPC Act and BC Act, En = Listed as Endangered under the EBPC Act and BC Act, Vu = Listed as Vulnerable under the EBPC Act and BC Act, Mi = Listed as Migratory under the EBPC Act and BC Act, OS = Other specially protected species under the BC Act. Both the EPBC Act and BC Act use IUCN threat categories to determine the threat status and category of species. P4 and P3 = Priority listed under the BC Act.

| Common name                            | Species name                       | EPBC Act | BC Act | Likelihood |
|----------------------------------------|------------------------------------|----------|--------|------------|
| <b>Invertebrate</b>                    |                                    |          |        |            |
| Northern Shield-backed Trapdoor Spider | <i>Idiosoma clypeatum</i>          |          | P3     | Unlikely   |
| <b>Reptiles</b>                        |                                    |          |        |            |
| Western Spiny-tailed Skink             | <i>Egernia stokesii badia</i>      | En       | Vu     | Unlikely   |
| <b>Birds</b>                           |                                    |          |        |            |
| Malleefowl                             | <i>Leipoa ocellata</i>             | Vu       | Vu     | *Possible  |
| Forked-tailed Swift                    | <i>Apus pacificus</i>              | Mi       | Mi     | Likely     |
| Hooded Plover                          | # <i>Thinornis rubricollis</i>     |          | P4     | Possible   |
| Peregrine Falcon                       | <i>Falco peregrinus</i>            |          | OS     | Possible   |
| Princess Parrot                        | <i>Polytelis alexandrae</i>        | Vu       | P4     | Unlikely   |
| Night Parrot                           | <i>Pezoporus occidentalis</i>      | En       | CrE    | Unlikely   |
| Striated Grasswren                     | <i>Amytornis striatus striatus</i> |          | P4     | Unlikely   |
| <b>Mammals</b>                         |                                    |          |        |            |
| Brush-tailed Mulgara                   | <i>Dasycercus blythi</i>           |          | P4     | Unlikely   |
| Long-tailed Dunnart                    | <i>Sminthopsis longicaudata</i>    |          | P4     | Unlikely   |

\* Recorded but outside of the survey area at approximately 7 km south (see Figure 5). # The DBCA threatened fauna database listed the Hooded Plover as *Thinornis rubricollis*, however, it should be *Thinornis cucullatus tregallasi*.





### **Northern Shield-backed Trapdoor Spider**

There were two records of this species in the DBCA threatened fauna database, both from 1957 and the closest of these records was approximately 28 km to the south of the survey area (Figure 5 and Appendix 2).

### **Western Spiny-tailed Skink**

This species was only present in the PMST databases search results, but absent from the DBCA threatened fauna database and ALA database.

### **Malleefowl**

The 29 records of this bird in the DBCA threatened fauna database were from between the years 1984 and 2015. The closest of these records was approximately 28 km south west of the survey area (Figure 5 and Appendix 2).

### **Forked-tailed Swift**

There was only one record of this species in the DBCA threatened fauna database from 2008. The record is from the Sandstone Caravan park which is about 68 km north west of the survey area (Figure 5 and Appendix 2).

### **Hooded Plover**

The four records of this bird in the DBCA threatened fauna database were from between the years 1980 and 1998. The closest of these records was from Lake Barlee and approximately 57 km south of the survey area (Figure 5 and Appendix 2).

### **Peregrine Falcon**

There were four records of this species in the DBCA threatened fauna database and they were from between the years 1999 and 2014. the closest of these records was approximately 8.5 km to the south of the survey area (Figure 5 and Appendix 2).

### **Princess Parrot**

There was only one record (WAM vouchered specimen) of this species in the DBCA threatened fauna database from 1915. The record is from just near Sandstone approximately 69.5 km north east of the survey area (Figure 5 and Appendix 2).

### **Night Parrot**

This species was only present in the PMST databases search results, but absent from the DBCA threatened fauna database and ALA database.

### **Striated Grasswren**

There was one record of this species in the DBCA threatened fauna database from 2016. The record is from along the Mt Magnet-Leinster Road about 63 km north east of the survey area (Figure 5 and Appendix 2).

### **Brush-tailed Mulgara**

There was one record of this species in the DBCA threatened fauna database from 2004. The record is from Lake Mason station approximately 101 km north east of the survey area (Figure 5 and Appendix 2).

### **Long-tailed Dunnart**

The 44 records of this small mammal in the DBCA threatened fauna database were from between the years 2004 and 2013. The closest of these records was from 2011 and about 83 km south east of the survey area (Figure 5 and Appendix 2).



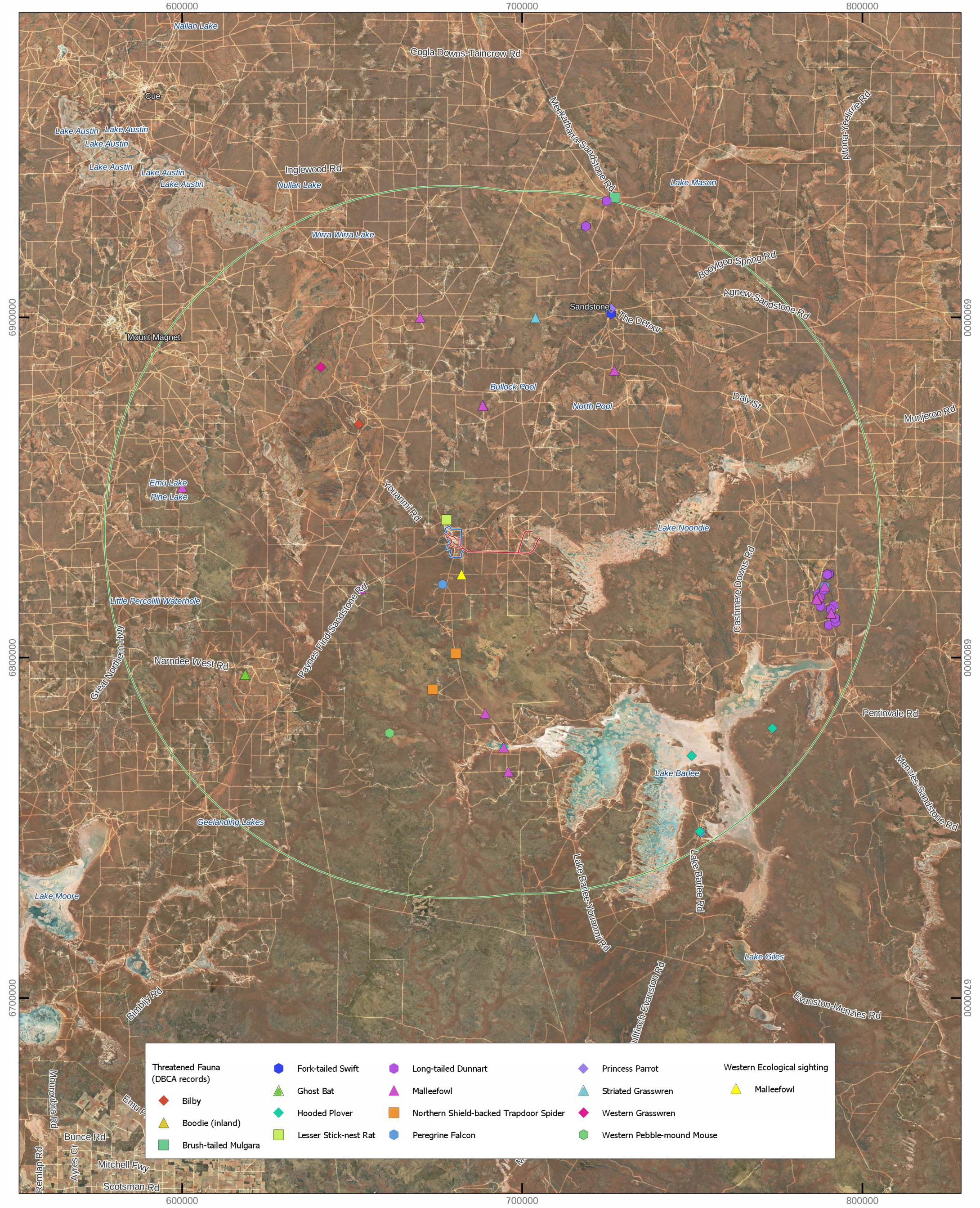


Figure 5: DBCA Threatened Fauna Database Records

0 7 14 21 28 35 km

GDA2020 - MGA Zone 50

Legend

- Survey Area
- Tenement Boundary
- 100km Buffer



## 4.2 Field Survey Results

The following species were recorded during the field assessment in the survey area and this includes species captured in trap sites, microbat species recorded on the SM4 units, while spotlighting and species captured opportunistically while traversing tracks. The data collections sites (trap sites, camera trap sites, SM4 sites for both micro bats and Night Parrot, transects and tracks traversed and photo points) and the habitats in which they were located are illustrated on Figure 4 below.

### Amphibians

No amphibian species was recorded (seen or heard calling) during the field assessment. There was very little water present in the survey area. There were six species of frog in the ALA database search results, none of which are of conservation significance. The absence of frogs is not surprising given almost no water was present in the survey area.

### Reptiles

During the field survey, 15 reptile species were recorded. Three of the 15 reptile species were geckos (family Diplodactylidae and Gekkonidae), six species were skinks (family Scincidae), four species were dragons (from the Agamidae family) and two species were Goannas (the Varanidae family). None of the species recorded are of conservation significance.

### Birds

During the field assessment 47 bird species were recorded. The family with the most species recorded was the Artamidae with six species and this included Butcherbirds (two species), Woodswallows (two species), Magpie and Currawong. Only one threatened bird species was recorded during the survey – one sighting of the Malleefowl. However, this one sighting comes from about 7 km south of the survey area (Figure 5). This bird was recorded while trying access a section of the proposed pipeline.

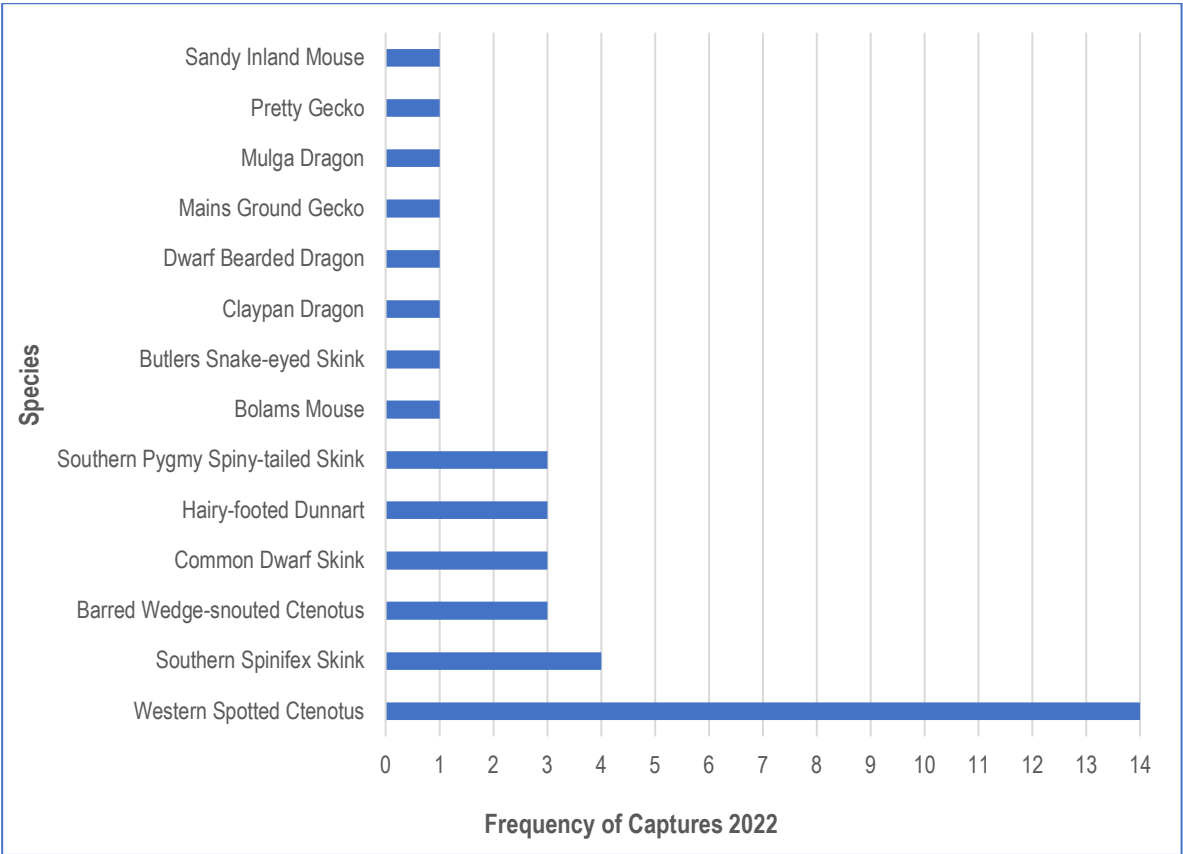
### Mammals

During the field survey 16 mammal species were recorded. Four of the species were introduced i.e., cat, cow, goat and rabbit and Pig. While undertaking the assessment eight species of micro bat was recorded on the SM4s. The micro bat family with the most species was the Vespertilionidae (5 species), followed by the Molossidae with two species. Two rodent species were also recorded – Bolam's Mouse (*Pseudomys bolami*) and Sandy Inland Mouse (*Pseudomys hermannsburgensis*). Other mammals recorded included the Hairy-footed Dunnart (*Sminthopsis hirtipes*) and the Red Kangaroo (*Osphranter rufus*). None of the mammals recorded are of conservation significance.



**4.2.1 Trapping Programme Results**

During the trapping programme a total of 14 species across the six trap sites were captured. The most frequently captured species was the Western Spotted Ctenotus (*Ctenotus uber*) with 14 captures, followed by the Southern Spinifex Skink (*Ctenotus atlas*) with 4 captures (Figure 6). Four of the next most frequently captured species were only captured three times. Finally eight species were captured only once during seven nights of trapping at each trap site (Figure 6). The most frequently captured small mammal was the Hairy-footed Dunnart with three captures. Photos of some of the species captured can be seen in Appendix 4.



**Figure 6. Frequency of Species Captures.**

The number of species and number of captures was insufficient to generate species accumulation curves that would have accurately reflected the species richness for the survey area. Species richness tends to be underestimated when curves are based on too few samples.



#### 4.2.2 Bird Survey Results

During the survey a total of 22 bird species were detected either by their calls or they were observed across the six trap sites (Figure 7). The most frequently detected bird was the Rufous Whistler (*Pachycephala rufiventris*) with eight detections, followed by the Crested Bellbird (*Oreoica gutturalis*) and Spiny-cheeked Honeyeater (*Acanthagenys rufogularis*), both with seven detections (Figure 7). Of the 22 species detected, 14 species were only detected once during the four occasions the census was undertaken. None of the birds detected are of conservation significance.

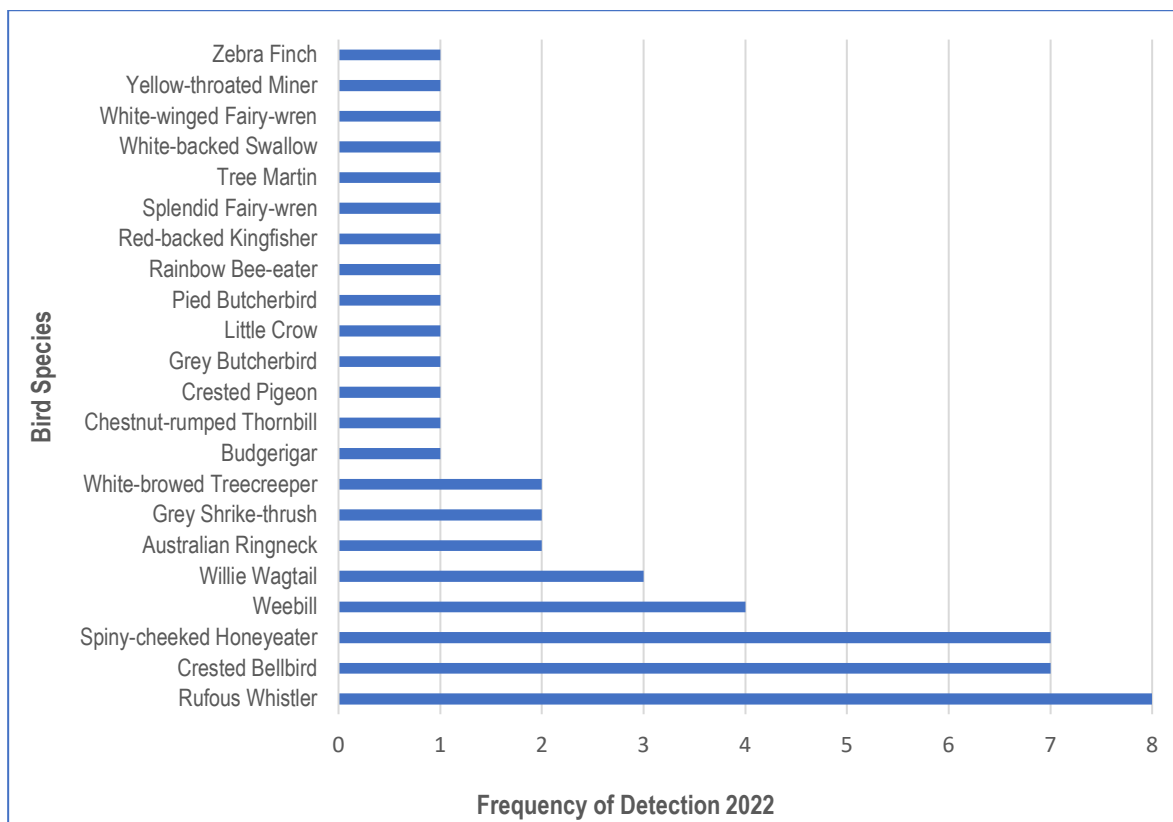


Figure 7. Bird Species Frequency of Detection.

#### 4.2.3 Camera Traps

Camera traps recorded the images of seven species (Table 9 and Appendix 5). Of the seven species recorded, three are introduced – the Cat, Rabbit and Cow. The Cat and Rabbit were recorded on cameras at three locations, the Grey Currawong was recorded on two cameras, while the remaining four species were recorded on just one camera trap. Camera 12 recorded three species which was the greatest number of species on cameras at trap sites (Table 9). No species of conservation significance was recorded on the camera traps.

Table 9. Species recorded on cameras at trap sites and at an additional three camera trap sites.

|                                               | Camera Trap Number |    |    |    |    |    |    |    |    |
|-----------------------------------------------|--------------------|----|----|----|----|----|----|----|----|
| Species                                       | T1                 | T2 | T3 | T4 | T5 | T6 | 10 | 11 | 12 |
| Sand Goanna ( <i>Varanus gouldii</i> )        |                    |    |    |    |    |    |    |    | ✓  |
| Grey Currawong ( <i>Strepera versicolor</i> ) |                    | ✓  |    |    |    |    |    |    | ✓  |
| Little Crow ( <i>Corvus bennetti</i> )        |                    |    | ✓  |    |    |    |    |    |    |
| Red Kangaroo ( <i>Osphranter rufus</i> )      |                    |    |    |    |    | ✓  |    |    |    |
| Cat ( <i>Felis catus</i> )                    | ✓                  |    |    |    |    |    |    | ✓  | ✓  |
| Rabbit ( <i>Oryctolagus cuniculus</i> )       |                    |    |    |    | ✓  | ✓  |    | ✓  |    |
| Cow ( <i>Bos taurus</i> )                     |                    |    |    |    |    |    | ✓  |    |    |

#### 4.2.4 Fauna Habitat

Seven broad fauna habitat types were identified in the survey area across the mining tenements and pipeline and included:

- Mulga shrubland
- Open Mulga Shrubland
- Existing Disturbance
- Drainage Line
- Salt Lake
- Casuarina Shrubland
- Tecticornia Shrubland.

These broad habitats are widespread and common in areas adjacent to the survey area and, more broadly, across the region. The fauna habitat types are mapped in Figure 4 and the habitat assessments undertaken in each of the habitat types is detailed in Appendix 3. The extent of each habitat in the survey area is presented below in Table 10 (note that there has been some very minor rounding of the figures). The broad habitat types were for the most part differentiated by the dominant plant species, vegetation cover and density, and where they were in the landscape.

Of the seven habitat types, Mulga Shrubland is by far the most extensive in the mining tenement and pipeline portions of the survey area, followed by Open Mulga Shrubland in the mining tenement section of the survey area and Salt Lake in the pipeline section of the survey area (Table 10).

**Table 10. Fauna habitat type and extent in the survey area.**

| Habitat Type          | Extent (ha) in Mining Tenement | Extent (ha) in Pipeline |
|-----------------------|--------------------------------|-------------------------|
| Mulga Shrubland       | 2592.3                         | 103.35                  |
| Open Mulga Shrubland  | 443.13                         | 8.69                    |
| Existing Disturbance  | 386.29                         | None                    |
| Drainage Line         | 40.9                           | 0.52                    |
| Salt Lake             | None                           | 12.62                   |
| Casuarina Shrubland   | None                           | 8.97                    |
| Tecticornia Shrubland | None                           | 0.79                    |
| <b>Total</b>          | <b>3462.62</b>                 | <b>134.94</b>           |

##### Mulga shrubland

This broad habitat type is widespread across the survey area, primarily on flats and lower slopes, where there was some surface rock (mostly small pebbles when present) and the soil was a sandy-loam, but relatively compact (Plate 5, Appendix 3 and 6). Mulga was the dominant flora species in the canopy and when there was a mid storey, it was sparse and comprised of a number of different species, but mostly Acacia. The groundstorey consisted mostly as a sparse cover of annuals. There are relatively few hollows of any substantial size in the Mulga. There was no grass (apart from a section of the pipeline that had some spinifex) and relatively little leaf litter and woody debris (Appendix 3 and 6). This habitat varied significantly across the survey area, particularly with respect to the amount of Mulga cover and this was most likely a reflection of the levels of disturbance, substrate and position in the landscape. Most of the disturbance is associated with historic mining activity (including recent exploration activity), grazing (Cattle and historically Sheep) and introduced pests such as Rabbits and Goats.



**Plate 5.** Example of Mulga Shrubland habitat.



### Open Mulga shrubland

This broad habitat type is relatively widespread, particularly across the mining tenements section of the survey area, where it primarily occurs on flats and lower slopes, with some surface rock (mostly larger stones) and the soil was a sandy-loam, but compact (Plate 6, Appendix 3 and 6). The canopy consisted of a sparse cover of Mulga, the midstorey was mostly absent and when there was groundcover it comprised mixed annuals, chenopods, *Ptilotus* sp. and *Maireana* sp. There are relatively few hollows of any substantial size in the Mulga. This habitat varied significantly across the survey area, particularly with respect to the amount of Mulga cover and this was most likely a reflection of the levels of disturbance, substrate and position in the landscape. Most of the disturbance is associated with historic mining activity (including recent exploration activity), grazing and introduced pests such as Rabbits and Goats.



**Plate 6.** Example of Open Mulga Shrubland.

### Existing Disturbance

The areas mapped as existing disturbance mostly include sections of the mining tenements that have been cleared of vegetation for mine pits, tailings storage (other associated mining infrastructure), explorations activities such as drill lines and pads, roads and other tracks and the mine sites accommodation (Plate 7, Appendix 3 and 6). There is some but limited vegetation cover present such as Mulga and other Acacia species, small shrubs, some grasses and weeds.



**Plate 7.** An example of Existing Disturbance.

### Drainage Line

This broad habitat type is limited in the survey area and occurs in lower lying areas where surface water concentrates and runs through the landscape after periods of rainfall, which in this region is intermittently (Plate 8 and Appendix 3). Given this the vegetation is very similar to that around it, and the canopy consists primarily of Mulga with other Acacia species in the midstorey which is sparse. There is some but limited vegetation cover in the groundstorey and it consists mostly of annuals (some grasses and other herbaceous species).



**Plate 8.** An example of Drainage Line habitat.

### **Salt Lake**

This habitat type only occurs at the ends of the proposed pipeline as it enters Lake Noondie. There is limited habitat for fauna when there is no water in the lake, but bird species such as Martins and Woodswallows may hawk for insects above the edges of the lake (Plate 9, Appendix 3 and 6).



**Plate 9.** An example of Salt Lake.

### **Casuarina Shrubland**

This broad habitat type is limited in the survey area and only occurs in the proposed pipeline. Vegetation in the canopy of this habitat type is relatively sparse and dominated by Casuarina and Mulga (Plate 10, Appendix 3 and 6). There is not much of an understorey, but includes Acacia species. Signs of disturbance included Cattle.



**Plate 10.** An example of Casuarina Shrubland.



### **Tecticornia Shrubland**

This habitat type was limited to the proposed pipeline section of the survey area along edges of Lake Noondie and associated claypans, and was dominated by a moderate cover of Tecticornia species (Plate 11, Appendix 3 and 6). The soils were sandy to sandy loam.



**Plate 11.** An example of Tecticornia Shrubland habitat.

### **4.2.5 Targeted Threatened Species Surveys**

#### **Malleefowl Survey**

During the survey (24 person days of effort in the survey area) no Malleefowl or their nesting mounds, tracks or diggings were recorded in the survey area, despite walking a small series of systematic transects (Figure 4), traversing much of the mining tenements section of the survey area by vehicle and on foot, undertaking habitat assessments and visiting many additional locations to take photo points.

#### **Night Parrot Survey**

No Night Parrot calls were recorded on the two SM4 units that were placed in the survey area over six nights.

### **4.2.6 Acoustic Bat Survey Results**

The SM4 units recorded the calls of eight microbat species during the survey (Table 11). The White-striped Freetail Bat and Gould's Wattled Bat were recorded at all four of the sites where SM4 units were located. Seven microbat species were recorded at the old mine shaft and trap site 6. None of the species recorded are of conservation significance.

**Table 11.** Micro bat species recorded during the survey.

| Bat Species                                             | Trap Site 2 | Trap Site 3 | Old Mine Shaft | Trap Site 6 |
|---------------------------------------------------------|-------------|-------------|----------------|-------------|
| <i>Taphozous hilli</i> (Hill's Sheathtail-bat)          |             |             | ✓              | ✓           |
| <i>Auromotus australis</i> (White-striped Freetail Bat) | ✓           | ✓           | ✓              | ✓           |
| <i>Ozimops petersi</i> (Inland Free-tailed Bat)         |             | ✓           | ✓              | ✓           |
| <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 finlaysoni</i> (Finlayson's Cave Bat)     | ✓           |             | ✓              |             |

#### 4.2.7 Nocturnal Spotlighting

While spotlighting we recorded the following three species (noting that none were of conservation significance):

- Tree Dtella (*Gehyra variegata*)
- Australian Owlet-nightjar (*Aegotheles cristatus*)
- Red Kangaroo (*Osphranter rufus*).

These three species were not recorded in trap sites while spotlighting, but observed opportunistically while traversing between trap sites.

#### 4.2.8 Reptile Search Sites

During the reptile searches we captured and observed three reptile species (Table 11). The Lozenge-marked Dragon was recorded at three of the six sites. Of these three species only the Tree Dtella had not been captured in trap sites. These three reptiles are relatively common and widespread and not of conservation significance.

**Table 11. Reptile species captured by hand or seen at six specific reptile search sites in the survey area.**

|                                                         | Reptile Search Site |   |   |   |   |   |
|---------------------------------------------------------|---------------------|---|---|---|---|---|
| Species                                                 | 1                   | 2 | 3 | 4 | 5 | 6 |
| Tree Dtella ( <i>Gehyra variegata</i> )                 |                     | ✓ |   |   | ✓ |   |
| Lozenge-marked Dragon ( <i>Ctenophorus scutulatus</i> ) | ✓                   |   |   | ✓ |   | ✓ |
| Stripe-tailed Monitor ( <i>Varanus caudolineatus</i> ). |                     |   | ✓ |   |   |   |

#### 4.2.9 Photo Points

While traversing the survey area we took photos at 27 points to illustrate the habitats, their condition and the variation seen within them across the site (Appendix 6 and Figure 4). These photo points further illustrate how open the habitats are and how across most of the survey area, particularly in the mining tenements there is relatively little vegetation in the midstorey and groundstorey. The photos also highlight the disturbance associated with past and present mining activity and this has resulted in significant areas of vegetation being removed, leaving less habitat available for fauna.



## 5. Discussion

### 5.1 Conservation Significant Fauna

A total of 11 conservation significant species retrieved from the database searches are considered as either Likely, Possible or Unlikely to occur in the survey area, with this based on location of the database record, habitats present in the survey area and survey results, and importantly the species ecology. Of these 11 conservation significant species, none have been recorded in the survey area, one species is considered Likely to occur in the survey area, three are considered as Possible and seven species are considered Unlikely to occur (Table 8). All 11 conservation significant species will be discussed further below and their likelihood of occurrence will be outlined.

#### 5.1.1 Conservation Significant Fauna Considered Likely to Occur

##### Forked-tailed Swift

The Fork-tailed Swift is listed as Migratory under the EPBC Act and BC Act. It is a non-breeding visitor to all states and territories of Australia (Higgins 1999). The Fork-tailed Swift is a summer migrant to Australia usually during the months of October-April. The Fork-tailed Swift is an aerial species which forages high above the tree canopy and is independent of terrestrial habitats. It occurs in flocks of up to 2,000 birds and is often seen accompanying Tree Martins (*Petrochelidon nigricans*) and Masked Wood swallows (*Artamus personatus*) (Johnstone & Storr 1998).

There was one record in the DBCA threatened fauna database from 2008 at the Sandstone Caravan Park (Appendix 2 and Figure 5). While the species will not be reliant on the habitats of the survey area, it is likely to visit them as part of its larger foraging home range.

#### 5.1.2 Conservation Significant Fauna Considered as Possibly Occurring

##### Malleefowl

During the survey no Malleefowl were sighted, nor were their mounds or tracks despite being in the survey area for 24 person days. The 29 records of this bird in the DBCA threatened fauna database were from between the years 1984 and 2015. The closest of these records was approximately 28 km south west of the survey area (Figure 5 and Appendix 2). However, when trying to access a section of the proposed pipeline via a station track, one Malleefowl was sighted about 7 km south of the survey area (Figure 5).

Malleefowl prefer habitat with a dense canopy and an open ground layer in which they can construct their mounds (Benshemesh 2007). Benshemesh (1992) also found that dense canopy cover was the most important feature associated with high breeding densities at sites in Victoria. The habitats present in the survey area are mostly unsuitable because they don't have a dense canopy cover for Malleefowl to build their mounds under. There are also very few to no shrub species in the midstorey and groundstorey in the habitats of the survey area which might provide a food source (Appendix 3 and 6). Studies have also shown that a wide range of food shrubs, rather than an abundance of any one species is probably important for Malleefowl during for example droughts (Harlen & Priddel 1996). This is supported by studies showing that Malleefowl are more abundant in areas where shrubs are more diverse (Woinarski 1989). These birds also have a relatively large home range that can be up to 4 km<sup>2</sup> in low rainfall areas (Booth 1987).

This current assessment has demonstrated that there is an absence of suitable habitat in the survey area, particularly in the mining tenements section of the survey area for Malleefowl to construct their mounds, or to forage in. However, the likelihood of Malleefowl occurring in the survey area is considered Possible as these birds are highly mobile and because of the one sighting of the Malleefowl about 7 km south during the survey.

##### Peregrine Falcon

There were four records of this species in the DBCA threatened fauna database and they were from between the years 1999 and 2014. the closest of these records was approximately 8.5 km to the south of the survey area (Figure 5 and Appendix 2).

This species occurs mainly along rivers and ranges as well as wooded watercourses and lakes and nests primarily on cliffs, granite outcrops and quarries. The diet of the Peregrine Falcon has been well studied and primarily includes flocking species such as Parrots, Pigeons and on the east coast European Starlings (*Sturnus vulgaris*) (Olsen & Fuentes 2008). The survey

area lacks suitable and substantial cliff and rock outcrop habitat, but analogous habitat could be the old mine pits in the survey. The survey area also seems to lack potential foraging habitat, but given the nearby record and its mobility the species is considered as Possibly occurring.

### **Hooded Plover**

The four records of this bird in the DBCA threatened fauna database were from between the years 1980 and 1998. The closest of these records was from Lake Barlee and approximately 57 km south of the survey area (Figure 5 and Appendix 2). This WA subspecies of the Hooded Plover uses beaches less than the eastern subspecies and are often found on margins of inland salt lakes even when nesting (Menkhorst et al. 2019).

There is some suitable habitat on the edge of Lake Noondie where the pipeline enters the lake (noting that the proposed pipeline easement is 40 m wide). Consequently, the species is considered as Possibly occurring.

### **5.1.3 Conservation Significant Fauna Considered Unlikely to Occur**

#### **Northern Shield-backed Trapdoor Spider**

There were two records of this species in the DBCA threatened fauna database, both from 1957 and the closest of these records was approximately 28 km to the south of the survey area (Figure 5 and Appendix 2).

Suitable habitat for this species appears to be near drainage lines under Acacia vegetation (e.g., Mulga), on plains, low slopes or on rocky slopes with a variety of soils types (dominated by clay and rocks, or clay, sand and rocks). Most burrow sites also appear to be placed in areas with considerable litter (vegetative litter).

There is some limited suitable habitat present in the survey area i.e., limited areas with leaf litter under some of the Acacia trees and shrubs. However, during the assessment the species distinctive burrow entrance with its two tufts of leaf litter radiating out from the centre of the burrow rim, similar to a moustache were not observed in six trap sites. Given this the species is Unlikely to occur in the survey area.

#### **Western Spiny-tailed Skink**

This Western Spiny-tailed Skink (Skink) was only present in the PMST databases search results, but absent from the DBCA threatened fauna database and ALA database.

This species occurs in several forms, including a black form that occurs in the upper Murchison (DEC 2012). Typically the Skinks habitat includes isolated stands of granite boulders or more extensive clusters of rock that have crevices and cracks present, including lateritic breakaways (Dec 2012, Chapple et al. 2019).

While conducting the assessment no Skinks were recorded on camera traps and no scats or latrine sites were recorded. The survey area has limited areas of rocky habitat where there are limited cracks and crevices in which it could shelter. Given the lack of suitable habitat in the survey area this species is considered Unlikely to occur.

#### **Princess Parrot**

There was only one record (WAM vouchered specimen) of this species in the DBCA threatened fauna database from 1915. The record is from just near Sandstone approximately 69.5 km north east of the survey area (Figure 5 and Appendix 2).

The species is scattered and occurs irregularly across the arid regions from near Oodnadatta in South Australia, west to near Coolgardie and the east Murchison River in WA and north to near the Fitzroy River in WA and Howell Ponds in the Northern Territory. It may be concentrated in the Great Sandy Desert, Gibson, Tanami and Great Victoria Deserts and in the Central ranges (Higgins 1999, Garnett et. al. 2021).

The movements of the Princess Parrot are poorly known. It is said to be highly nomadic or irruptive (Carter 1993), and it may possibly be both (Higgins 1999). The available evidence suggests that it may be dispersive, but any assessment of the movement patterns is purely speculative due to a lack of information (Higgins 1999). The core range is believed to be in the Great Sandy Desert (Higgins 1999), but the movement of birds within the core range, and movements associated with records outside of the core range, are not known (Higgins 1999). It has been speculated that movements are governed by seasonal changes in conditions, and by the availability of food (Garnett et. al. 2011, 2021). It has also been speculated that movements are governed by the occurrence of ephemeral water, and the flowering of Acacia shrubs (Garnett et. al. 2011).



Historical records include reports of large-scale flocks and large breeding colonies (Garnett et al. 2011). Contemporary records are mostly of very small numbers, with significant numbers only recorded twice: up to 300 on the Canning Stock Route in the early 1990's (Carter 1993) and several hundred west of Alice Springs in 2010, extending to the eastern Gibson Desert where the population may have been in the low thousands (Carter 1993, Garnett et al. 2011). It is suspected that the total population probably varies with season and may be as low as 1000 mature individuals in poor years (Garnett et al. 2021).

No known threats exist, but the Princess Parrot may be adversely affected by the same habitat changes that led to the extinction of many central Australian mammals over the 20<sup>th</sup> century (Burbidge & McKenzie 1989). Throughout their range, habitat may have been degraded and food availability reduced by altered fire regimes with a coarser mosaic of fire history and the introduction of sheep and feral herbivores such as Rabbits, and Camels. Loss of tree hollows from intense fire may affect breeding success and increased availability of water in areas grazed by domestic stock have allowed other, more water-dependent parrots, to expand into the arid zone and compete with the Princess Parrot (Garnett et al. 2011).

The species inhabits shrublands and savanna woodlands in swales between sand dunes, with occupied sites typically consisting of *Triodia* spp. and a variety of shrubs and scattered emergent trees. The Princess Parrot feeds on the seeds of grasses, including spinifex, and nests have been found in Desert Oak (*Allocasuarina decaisneana*) (Higgins 1999).

The Princess Parrot is said to breed from September to January, however, dependent young have been recorded in July (Carter 1993), and it is possible that breeding may occur at any time of the year following rainfall (Garnett et al. 2011). The Princess Parrot nests in hollows or holes in Eucalyptus trees (including *E. camaldulensis*) close to watercourses, or occasionally in *A. decaisneana* trees away from water (Forshaw & Cooper 2002). The nest consists of a pile of decaying wood dust, upon which it lays a clutch of three to six white eggs (Forshaw & Cooper 2002).

The survey area lacks any of the habitat features that this species is currently known to be associated with, particularly to any significant extent such as dunes with *Triodia* and other grasses that this species is known to feed on. Given the lack of suitable habitat in the survey area this species is considered Unlikely to occur.

### **Night Parrot**

The Night Parrot is an enigmatic species thought possibly to be extinct until the recent recoveries of two dead specimens from Queensland (and new locations more recently). The type specimen and many early sightings, however, came from WA (Johnstone et al. 2013). Night Parrots are cryptic, nocturnal and endemic to Australia's arid interior. Until the late 19th century, they were widespread and relatively easily found at least at some locations. For instance, 14 of the 25 museum specimens in existence came from the Gawler Ranges in South Australia between 1871 and 1881 (Murphy et al. 2017). The last Night Parrot collected intentionally was in Western Australia in 1912 (Wilson 1937). Then followed 78 years of unconfirmed reports spanning all mainland states and the Northern Territory, until in 1990 a desiccated bird was found by a roadside in western Queensland (Boles et al. 1994, Murphy et al. 2017). In 2006, another dead bird was discovered by a Ranger 200 km to the south-east of the 1990 specimen (McDougall et al. 2009, Murphy et al. 2017). In 2013, the first photographs of a living night parrot were captured close to the site of the 2006 specimen (Dooley 2013, Murphy et al. 2017). Their cryptic nature, remote distribution and apparently rapid decline means that there is scant ecological information about night parrots.

A more recent sighting of the Night Parrot in WA comes from the Pilbara (12 April 2005) at a well near the Fortescue Marshes (Davis & Metcalf 2008). There was also a sighting near Matuwa (Lorna Glen), which is about 160 km north-east of Wiluna, in 2009 (Hamilton et al. 2017).

This species was present only in the EPBC PMST database, however, none of their calls were recorded on the acoustic units. There is very limited ecological information available for this species such as its preferred habitat (only very broad information). However, with increasing conservation focus being given to this species, more information is likely to become available, e.g., the discovery of Night Parrot nests in large Spinifex hummocks in Queensland (Murphy et al. 2017) which is a common and widespread habitat type throughout much of south-east Queensland and WA. There is no suitable habitat in the form of large spinifex hummocks in the survey area, consequently, this species is considered Unlikely to occur.

### **Striated Grasswren**

There are currently some workers who have advocated the splitting of this species complex into several species, however, for the purposes of this report we will treat the species as per the database output. The Striated Grasswren inhabits spinifex sand ridges and inter-dunes with spinifex and acacia where it feeds on insects and seeds, including from *Triodia* spp.



There was one record of this species in the DBCA threatened fauna database from 2016. The record is from along the Mt Magnet-Leinster Road about 63 km north east of the survey area (Figure 5 and Appendix 2).

There is one record of this species in the DBCA threatened fauna database from 2016, approximately 20 km north west of the survey area (Appendix 2 and Figure 4). It was recorded along the Mt Magnet-Sandstone Road in a parking bay. The record is in the database as very certain with the following text - photo, specimen, expert).

There is no suitable habitat in the form of sand ridges and inter-dunes with spinifex in the survey area., as a result the Striated Grasswren is considered Unlikely to occur.

#### **Brush-tailed Mulgara**

The Brush-tailed Mulgara is distributed across inland Australia with a population that fluctuates somewhat in response to seasonal conditions, but is probably substantially >10,000 individuals even at its lowest point. The population size has declined historically but may now be stable. If still declining, this is at a rate of <10% over ten years (Woinarski et al. 2014).

The Brush-tailed Mulgara is associated mostly with hummock (spinifex) grasslands but also uses other vegetation types (often sandplains, grasslands and woodlands) when mixed with or adjacent to hummock grasslands. It is mainly nocturnal and shelters during the day in excavated burrow systems. Brush-tailed Mulgara burrows typically contain between two and nine entrances with tunnels mostly found on a single level at a below ground depth of about 300 mm. The shape for a burrow entrance is typically an arch over a flat bottom with a height of 70-80 mm and a width of 80-100 mm at the base (Thompson & Thompson 2007). The diet of the Brush-tailed Mulgara comprises a broad range of invertebrates and small vertebrates (Woinarski et al. 2014).

There was one record of this species in the DBCA threatened fauna database from 2004. The record is from Lake Mason station approximately 101 km north east of the survey area (Figure 5 and Appendix 2). During the survey, no Brush-tailed Mulgara were recorded and no signs such as burrows and scats were observed. The survey area has limited to no suitable habitat in terms of sandy areas in which the Brush-tailed Mulgara can construct burrows, consequently, this species is considered Unlikely to occur.

#### **Long-tailed Dunnart**

Records of the Long-tailed Dunnart come from widely scattered localities in the arid zone where it inhabits rugged, rocky areas. Little is known of the life history of long-tailed dunnarts, but available evidence suggests that this widely scattered species is restricted to rugged, rocky areas (Burbidge et al. 2008). Habitat includes plateaus composed of boulders and stones, with fine red sand sparsely vegetated with Mulga and miniritchie (*Acacia sp.*) shrubs over spinifex and areas of open woodland of Mulga (Van Dyck & Strahan 2008). The striated foot-pad and long strongly muscular tail of the Long-tailed Dunnart suggest it is an active and capable climber.

The 44 records of this small mammal in the DBCA threatened fauna database were from between the years 2004 and 2013. The closest of these records was from 2011 and about 83 km south east of the survey area and occur on rocky ridges (Figure 5 and Appendix 2).

This species was not recorded in the survey area and the survey area lacks the rugged rocky areas that this species tends to be associated with, consequently, the Long-tailed Dunnart is considered Unlikely to occur.





## 5. References

Atlas of Living Australia website at <http://www.ala.org.au>. Accessed December 2022.

Benshemesh, J. (1992). The conservation ecology of Malleefowl, with particular regard to fire. Pages 1-224. Monash University, Clayton.

Boles W. E., Longmore N. W. & Thompson M. C. (1994). A recent specimen of the Night Parrot *Geopsittacus occidentalis*. Emu 94, 37–40.

Booth, D. T. (1987). Home range and hatching success of Malleefowl, *Leipoa ocellata* Gould (Megapodiidae), in Murray mallee near Renmark, S.A. Australian Wildlife Research 14, 95-104.

Burbidge, A. A., and McKenzie, N. L. (1989). Patterns in the modern decline of Western Australia's vertebrate fauna: causes and conservation implications. Biological Conservation 50, 143-198.

Burbidge, A. A., McKenzie, N. L. & Fuller, P. J. (2008). Long-tailed Dunnart, *Sminthopsis longicaudata*. In: Van Dyck, S. & R. Strahan (eds), The mammals of Australia. Third Edition, pp. 148-150. Reed New Holland, Sydney.

Bureau of Meteorology (BOM) (2022). Climate Data Online, Commonwealth of Australia. Retrieved December 2022, from [www.bom.gov.au/climate/data/](http://www.bom.gov.au/climate/data/)

Carter, M. (1993). Alexandra's or Princess Parrot – status and normal range. Wingspan 12, 32-35.

Chapple, D.G., Tingley, R., Mitchell, N.J., Macdonald, S.L., Keogh, J.S., Shea, G.M., Bowles, P., Cox, N.A. & Woinarski, J.C.Z. (2019). The Action Plan for Australia Lizards and Snakes 2017.

Cogger, H. (2014). Reptiles and Amphibians of Australia. CSIRO Publishing.

Cowan, M. (2001). Subregion description and biodiversity values, Murchison 1 (Mur 1 – East Murchison subregion). A Biodiversity Audit of Western Australia's 53 Biogeographical Subregions in 2002. WA Department of Conservation and Land Management.

Cristidis, L., & Boles, W.E. (2008). Systematics and Taxonomy of Australian Birds. Victoria: CSIRO Publishing.

Currie, D. J. (2007). Disentangling the roles of environment and space in ecology. Journal of Biogeography 34, 2009-2011.

Davis, R., & Metcalf, B. (2008). The night parrot (*Pezoporus occidentalis*) in northern Western Australia: a recent sighting from the Pilbara region. Emu 108, 233-236.

Department of Environment and Conservation (2012). Western Spiny-tailed Skink *Egernia stokesii* Recovery Plan. Department of Environment and Conservation, Perth, WA.

Department of Biodiversity, Conservation and Attractions (DBCA) (2022). Threatened and Priority Fauna Information (custom search).

Department of the Environment (DotE) (2015). Draft referral guideline for 14 birds listed as migratory species under the EPBC Act. Commonwealth of Australia.

Department of the Environment and Energy (DEE) (2016). The Biogeographic Regionalisation of Australia (IBRA). Commonwealth of Australia.

Department of Climate Change, Energy, the Environment and Water (DCCEEW) (2022). Protected Matters Search Tool, Accessed from <<http://www.environment.gov.au/epbc/pmst/index.html>> Commonwealth of Australia.

Dooley S. (2013). Out of the shadows. Australian Birdlife 2, 26–30.

Ecologia Environment (2020). Penny West Gold Project Biological Survey 2019. Report prepared for Spectrum Minerals Limited.

Forshaw, J.M. & W.T. Cooper (2002). Australian Parrots, 3rd edition. Robina, Queensland: Alexander Editions.

- Garnett, S. T., Szabo, J.K., & Dutson, G. (2011). The Action Plan for Australian Birds 2010. Collingwood, Victoria: CSIRO Publishing and Birds Australia.
- Garnett, S. T., & Baker, G. B. (Eds) (2021). The Action Plan for Australian Birds 2020. CSIRO Publishing, Melbourne.
- Hamilton, N., A., Onus, M., Withnell, B. & Withnell K. (2017). Recent sightings of the Night Parrot *Pezoporus occidentalis* from Matuwa (Lorna Glen) and Millrose Station in Western Australia. Australian Field Ornithology 34, 71-75.
- Harlen, R., & D. Priddel. (1996). Potential food resources available to malleefowl *Leipoa ocellata* in marginal mallee lands during drought. Australian Journal of Ecology 21, 418-428.
- Higgins, P. J. (ed.) (1999). Handbook of Australian, New Zealand and Antarctic Birds. Volume Four - Parrots to Dollarbird. Melbourne: Oxford University Press.
- Johnstone, R. E., Burbidge, A. H., & Darnell, J. C. (2013). Birds of the Pilbara region, including seas and offshore islands, Western Australia: distribution, status and historical changes. Records of the Western Australian Museum Supplement 78, 343–441.
- Johnstone, R. E. & Storr, G. M. (1998). Handbook of Western Australian Birds. Volume 1 - Non-Passerines (Emu to Dollarbird). Oxford University Press.
- Keighery, B. J. (1994). Bushland Plant Survey. A Guide to Plant Community Survey for the Community. Wildflower Society of WA (Inc.), Western Australia.
- McDougall, A., Porter G., Mostert M. et al. (2009). Another piece in an Australian ornithological puzzle – a second Night Parrot is found dead in Queensland. Emu 109, 198–203.
- Menkhorst, P., Rogers, D., Clarke, R., Davies, J., Marsack, P., & Franklin, K. (2019). The Australian Bird Guide. CSIRO Publishing.
- Murphy, S.A., Silcock, J., Murphy, R., Reid, J., and Austin, J.J. (2017). Movements and habitat use of the night parrot *Pezoporus occidentalis* in south-western Queensland. Austral Ecology 42, 858-868.
- Olsen, J. & Fuentes, E. (2008). Dietary shifts based upon prey availability in Peregrine Falcons and Australian Hobbies breeding near Canberra, Australia. Journal of Raptor Research 42, 125–137.
- Thompson, G. G., and Thompson, S. A. (2007). Shape and spatial distribution of mulgara (*Dasyurus cristicauda*) burrows, with comments on their presence in a burnt habitat and a translocation protocol. Journal of the Royal Society of Western Australia 90, 195–202.
- Van Dyck, S., & Strahan, R. (2008). The Mammals of Australia. New South Wales: New Holland Publishers.
- Western Ecological (2021). Detailed Fauna Survey – Sandstone Gold Project. Unpublished report prepared for Middle Island Resources, January 2021.
- Wilson, H. (1937) Notes on the Night Parrot, with references to recent occurrences. Emu 37, 79–87.
- Wilson, S. & Swan, G. (2021). A Complete Guide to Reptiles of Australia. Sixth Edition. New Holland: Sydney, NSW.
- Woinarski, J. C. Z. (1989). The vertebrate fauna of Broombush *Melaleuca uncinata* vegetation in north-western Victoria, with reference to effects of broombush harvesting. Australian Wildlife Research 16, 217-238.
- Woinarski, J. C.Z. Burbidge, A. A., & Harrison, P. L. (2014). The action plan for Australian Mammals 2012. CSIRO Publishing.





# ***APPENDICES***



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## ***Appendix 1: Conservation Categories***





### Categories of Threatened Fauna Species under the EPBC Act

| Conservation Code | Description                                                                                                                                                                                                                                                                                                                                                     |
|-------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Ex                | Extinct<br>Taxa which at a particular time if, at the time, there is no reasonable doubt that the last member of the species has died.                                                                                                                                                                                                                          |
| ExW               | Extinct in the Wild<br>Taxa which are known only to survive in cultivation, in captivity or as a naturalised population well outside its past range; or it has not been recorded in its known and/or expected habitat, at appropriate seasons, anywhere in its past range, despite exhaustive surveys over a time frame appropriate to its life cycle and form. |
| CE                | Critically Endangered<br>Taxa which at a particular time, it is facing an extremely high risk of extinction in the wild in the immediate future, as determined in accordance with the prescribed criteria.                                                                                                                                                      |
| En                | Endangered<br>Taxa which is not critically endangered and it is facing a very high risk of extinction in the wild in the medium-term future, as determined in accordance with the prescribed criteria.                                                                                                                                                          |
| Vu                | Vulnerable<br>Taxa which is not critically endangered or endangered and is facing a high risk of extinction in the wild in the medium-term future, as determined in accordance with the prescribed criteria.                                                                                                                                                    |

Source: Environment Protection and Biodiversity Conservation Act 1999.

# CONSERVATION CODES

## For Western Australian Flora and Fauna

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.

### **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 wild. 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 species**

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 dependent 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.

**1 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.

**2 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.

**3 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.

**4 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.

<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).





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## ***Appendix 2: Database Searches***

| SCI_NAME                       | COM_NAME                         | CLASS      | WA_LISTING                 | WA_status | EPBCstatus | Date       | DAY | MONTH | YEAR | SOURCE_ID | SOURCE             | CERTAINTY                 | OBS_METHOD             |
|--------------------------------|----------------------------------|------------|----------------------------|-----------|------------|------------|-----|-------|------|-----------|--------------------|---------------------------|------------------------|
| Leipoa ocellata                | malleefowl                       | BIRD       | Threatened - Vulnerable    | VU        |            | 25/07/1995 |     | 25    | 7    | 1995      | 1320 TFAUNA        | Certain                   | Opportunistic sighting |
| Falco peregrinus               | peregrine falcon                 | BIRD       | Specially Protected - othe | OS        |            | 15/10/1999 |     | 15    | 10   | 1999      | 3630 TFAUNA        | Certain                   | Survey                 |
| Sminthopsis longicaudata       | Long-tailed dunnart              | MAMMAL     | Priority                   | P4        |            | 17/09/2004 |     | 17    | 9    | 2004      | 4484 COWANSURVEYS  | Very Certain              | Survey                 |
| Dasyercus blythi               | Brush-tailed mulgara             | MAMMAL     | Priority                   | P4        |            | 29/11/2004 |     | 29    | 11   | 2004      | 6900 COWANSURVEYS  | Very Certain              | Survey                 |
| Thinornis rubricollis          | hooded plover, hooded dottere    | BIRD       | Priority                   | P4        |            | 3/06/1992  |     | 3     | 6    | 1992      | 7022 TFAUNA        | Certain                   | Survey                 |
| Macroderma gigas               | ghost bat                        | MAMMAL     | Threatened - Vulnerable    | VU        | VU         |            |     | 0     | 0    | 0         | 8986 TFAUNA        | Moderately certain        | Historical (written)   |
| Macrotis lagotis               | bilby, dalgyte, ninu             | MAMMAL     | Threatened - Vulnerable    | VU        | VU         |            |     | 0     | 0    | 0         | 8987 TFAUNA        | Moderately certain        | Historical (written)   |
| Idiosoma clypeatum             | northern shield-backed trapdoo   | INVERTEBRA | Priority                   | P3        |            | 1/08/1957  |     | 1     | 8    | 1957      | 9028 TFAUNA        | Very Certain (photo, spec | Survey                 |
| Sminthopsis longicaudata       | Long-tailed dunnart              | MAMMAL     | Priority                   | P4        |            | 16/03/2005 |     | 16    | 3    | 2005      | 9183 COWANSURVEYS  | Very Certain              | Survey                 |
| Sminthopsis longicaudata       | Long-tailed dunnart              | MAMMAL     | Priority                   | P4        |            | 17/03/2005 |     | 17    | 3    | 2005      | 9269 COWANSURVEYS  | Very Certain              | Survey                 |
| Sminthopsis longicaudata       | Long-tailed dunnart              | MAMMAL     | Priority                   | P4        |            | 15/09/2005 |     | 15    | 9    | 2005      | 10581 COWANSURVEYS | Very Certain              | Survey                 |
| Thinornis rubricollis          | hooded plover, hooded dottere    | BIRD       | Priority                   | P4        |            | 1/09/1980  |     | 1     | 9    | 1980      | 10739 TFAUNA       | Certain                   | Opportunistic sighting |
| Sminthopsis longicaudata       | Long-tailed dunnart              | MAMMAL     | Priority                   | P4        |            | 19/11/2005 |     | 19    | 11   | 2005      | 11569 COWANSURVEYS | Very Certain              | Survey                 |
| Sminthopsis longicaudata       | Long-tailed dunnart              | MAMMAL     | Priority                   | P4        |            | 21/11/2005 |     | 21    | 11   | 2005      | 11676 COWANSURVEYS | Very Certain              | Survey                 |
| Thinornis rubricollis          | hooded plover, hooded dottere    | BIRD       | Priority                   | P4        |            | 5/06/1998  |     | 5     | 6    | 1998      | 21739 TFAUNA       | Certain                   | Targeted survey        |
| Thinornis rubricollis          | hooded plover, hooded dottere    | BIRD       | Priority                   | P4        |            | 4/06/1998  |     | 4     | 6    | 1998      | 21740 TFAUNA       | Certain                   | Targeted survey        |
| Leipoa ocellata                | malleefowl                       | BIRD       | Threatened - Vulnerable    | VU        | VU         | 1/01/1995  |     | 1     | 1    | 1995      | 24876 TFAUNA       | Not sure                  | Opportunistic sighting |
| Leipoa ocellata                | malleefowl                       | BIRD       | Threatened - Vulnerable    | VU        | VU         | 27/06/1996 |     | 27    | 6    | 1996      | 24898 TFAUNA       | Moderately certain        | Opportunistic sighting |
| Leipoa ocellata                | malleefowl                       | BIRD       | Threatened - Vulnerable    | VU        | VU         | 27/09/2015 |     | 27    | 9    | 2015      | 81096 TFAUNA       | Certain                   | Survey                 |
| Amytornis striatus striatus    | striated grasswren (sandplain)   | BIRD       | Priority                   | P4        |            | 1/09/2016  |     | 1     | 9    | 2016      | 85126 TFAUNA       | Very Certain (photo, spec | Opportunistic sighting |
| Leipoa ocellata                | malleefowl                       | BIRD       | Threatened - Vulnerable    | VU        | VU         | 3/01/2014  |     | 3     | 1    | 2014      | 89740 TFAUNA       | Moderately certain        | Opportunistic sighting |
| Leipoa ocellata                | malleefowl                       | BIRD       | Threatened - Vulnerable    | VU        | VU         | 5/08/2004  |     | 5     | 8    | 2004      | 89898 TFAUNA       | Moderately certain        | Opportunistic sighting |
| Leipoa ocellata                | malleefowl                       | BIRD       | Threatened - Vulnerable    | VU        | VU         | 26/07/1995 |     | 26    | 7    | 1995      | 90342 TFAUNA       | Moderately certain        | Opportunistic sighting |
| Leipoa ocellata                | malleefowl                       | BIRD       | Threatened - Vulnerable    | VU        | VU         | 30/04/1984 |     | 30    | 4    | 1984      | 91019 TFAUNA       | Moderately certain        | Opportunistic sighting |
| Leipoa ocellata                | malleefowl                       | BIRD       | Threatened - Vulnerable    | VU        | VU         | 1/02/2002  |     | 1     | 2    | 2002      | 91713 TFAUNA       | Moderately certain        | Opportunistic sighting |
| Paraplatyrhynchus subterraneus | Poseidon slater                  | INVERTEBRA | Priority                   | P1        |            | 1/03/2010  |     | 1     | 3    | 2010      | 98294 TFAUNA       | Not sure                  | Level 1 or 2 survey    |
| Apus pacificus                 | fork-tailed swift                | BIRD       | Specially Protected - migr | MI        | MI         | 20/07/2009 |     | 20    | 7    | 2009      | 98297 TFAUNA       | Certain                   | Level 1 or 2 survey    |
| Notoryctes typhlops            | southern marsupial mole, Itjarit | MAMMAL     | Priority                   | P4        |            | 20/07/2009 |     | 20    | 7    | 2009      | 98298 TFAUNA       | Certain                   | Level 1 or 2 survey    |
| Notoryctes typhlops            | southern marsupial mole, Itjarit | MAMMAL     | Priority                   | P4        |            | 20/07/2009 |     | 20    | 7    | 2009      | 98299 TFAUNA       | Certain                   | Level 1 or 2 survey    |
| Notoryctes typhlops            | southern marsupial mole, Itjarit | MAMMAL     | Priority                   | P4        |            | 20/07/2009 |     | 20    | 7    | 2009      | 98300 TFAUNA       | Certain                   | Level 1 or 2 survey    |
| Notoryctes typhlops            | southern marsupial mole, Itjarit | MAMMAL     | Priority                   | P4        |            | 20/07/2009 |     | 20    | 7    | 2009      | 98301 TFAUNA       | Certain                   | Level 1 or 2 survey    |
| Notoryctes typhlops            | southern marsupial mole, Itjarit | MAMMAL     | Priority                   | P4        |            | 20/07/2009 |     | 20    | 7    | 2009      | 98302 TFAUNA       | Certain                   | Level 1 or 2 survey    |
| Notoryctes typhlops            | southern marsupial mole, Itjarit | MAMMAL     | Priority                   | P4        |            | 20/07/2009 |     | 20    | 7    | 2009      | 98303 TFAUNA       | Certain                   | Level 1 or 2 survey    |
| Notoryctes typhlops            | southern marsupial mole, Itjarit | MAMMAL     | Priority                   | P4        |            | 20/07/2009 |     | 20    | 7    | 2009      | 98304 TFAUNA       | Certain                   | Level 1 or 2 survey    |
| Notoryctes typhlops            | southern marsupial mole, Itjarit | MAMMAL     | Priority                   | P4        |            | 20/07/2009 |     | 20    | 7    | 2009      | 98305 TFAUNA       | Certain                   | Level 1 or 2 survey    |
| Notoryctes typhlops            | southern marsupial mole, Itjarit | MAMMAL     | Priority                   | P4        |            | 20/07/2009 |     | 20    | 7    | 2009      | 98306 TFAUNA       | Certain                   | Level 1 or 2 survey    |
| Notoryctes typhlops            | southern marsupial mole, Itjarit | MAMMAL     | Priority                   | P4        |            | 20/07/2009 |     | 20    | 7    | 2009      | 98307 TFAUNA       | Certain                   | Level 1 or 2 survey    |
| Notoryctes typhlops            | southern marsupial mole, Itjarit | MAMMAL     | Priority                   | P4        |            | 20/07/2009 |     | 20    | 7    | 2009      | 98308 TFAUNA       | Certain                   | Level 1 or 2 survey    |
| Notoryctes typhlops            | southern marsupial mole, Itjarit | MAMMAL     | Priority                   | P4        |            | 20/07/2009 |     | 20    | 7    | 2009      | 98309 TFAUNA       | Certain                   | Level 1 or 2 survey    |
| Notoryctes typhlops            | southern marsupial mole, Itjarit | MAMMAL     | Priority                   | P4        |            | 20/07/2009 |     | 20    | 7    | 2009      | 98310 TFAUNA       | Certain                   | Level 1 or 2 survey    |
| Notoryctes typhlops            | southern marsupial mole, Itjarit | MAMMAL     | Priority                   | P4        |            | 16/05/2019 |     | 16    | 5    | 2019      | 98311 TFAUNA       | Certain                   | Level 1 or 2 survey    |
| Notoryctes typhlops            | southern marsupial mole, Itjarit | MAMMAL     | Priority                   | P4        |            | 20/07/2009 |     | 20    | 7    | 2009      | 98312 TFAUNA       | Certain                   | Level 1 or 2 survey    |
| Notoryctes typhlops            | southern marsupial mole, Itjarit | MAMMAL     | Priority                   | P4        |            | 20/07/2009 |     | 20    | 7    | 2009      | 98313 TFAUNA       | Certain                   | Level 1 or 2 survey    |
| Notoryctes typhlops            | southern marsupial mole, Itjarit | MAMMAL     | Priority                   | P4        |            | 20/07/2009 |     | 20    | 7    | 2009      | 98314 TFAUNA       | Certain                   | Level 1 or 2 survey    |
| Notoryctes typhlops            | southern marsupial mole, Itjarit | MAMMAL     | Priority                   | P4        |            | 20/07/2009 |     | 20    | 7    | 2009      | 98315 TFAUNA       | Certain                   | Level 1 or 2 survey    |
| Notoryctes typhlops            | southern marsupial mole, Itjarit | MAMMAL     | Priority                   | P4        |            | 20/07/2009 |     | 20    | 7    | 2009      | 98316 TFAUNA       | Certain                   | Level 1 or 2 survey    |
| Notoryctes typhlops            | southern marsupial mole, Itjarit | MAMMAL     | Priority                   | P4        |            | 20/07/2009 |     | 20    | 7    | 2009      | 98317 TFAUNA       | Certain                   | Level 1 or 2 survey    |
| Notoryctes typhlops            | southern marsupial mole, Itjarit | MAMMAL     | Priority                   | P4        |            | 20/07/2009 |     | 20    | 7    | 2009      | 98318 TFAUNA       | Certain                   | Level 1 or 2 survey    |
| Notoryctes typhlops            | southern marsupial mole, Itjarit | MAMMAL     | Priority                   | P4        |            | 20/07/2009 |     | 20    | 7    | 2009      | 98319 TFAUNA       | Certain                   | Level 1 or 2 survey    |
| Notoryctes typhlops            | southern marsupial mole, Itjarit | MAMMAL     | Priority                   | P4        |            | 20/07/2009 |     | 20    | 7    | 2009      | 98320 TFAUNA       | Certain                   | Level 1 or 2 survey    |
| Notoryctes typhlops            | southern marsupial mole, Itjarit | MAMMAL     | Priority                   | P4        |            | 20/07/2009 |     | 20    | 7    | 2009      | 98321 TFAUNA       | Certain                   | Level 1 or 2 survey    |
| Notoryctes typhlops            | southern marsupial mole, Itjarit | MAMMAL     | Priority                   | P4        |            | 20/07/2009 |     | 20    | 7    | 2009      | 98322 TFAUNA       | Certain                   | Level 1 or 2 survey    |
| Idiosoma clypeatum             | northern shield-backed trapdoo   | INVERTEBRA | Priority                   | P3        |            | 1/07/1957  |     | 1     | 7    | 1957      | 98891 TFAUNA       | Certain                   | Survey                 |
| Sminthopsis longicaudata       | Long-tailed dunnart              | MAMMAL     | Priority                   | P4        |            | 19/05/2011 |     | 19    | 5    | 2011      | 257363 FAUNASURVEY | Certain                   | Survey                 |
| Sminthopsis longicaudata       | Long-tailed dunnart              | MAMMAL     | Priority                   | P4        |            | 22/05/2011 |     | 22    | 5    | 2011      | 257366 FAUNASURVEY | Certain                   | Survey                 |
| Sminthopsis longicaudata       | Long-tailed dunnart              | MAMMAL     | Priority                   | P4        |            | 18/05/2011 |     | 18    | 5    | 2011      | 257369 FAUNASURVEY | Certain                   | Survey                 |
| Sminthopsis longicaudata       | Long-tailed dunnart              | MAMMAL     | Priority                   | P4        |            | 23/05/2011 |     | 23    | 5    | 2011      | 257370 FAUNASURVEY | Certain                   | Survey                 |
| Sminthopsis longicaudata       | Long-tailed dunnart              | MAMMAL     | Priority                   | P4        |            | 24/05/2011 |     | 24    | 5    | 2011      | 257371 FAUNASURVEY | Certain                   | Survey                 |
| Sminthopsis longicaudata       | Long-tailed dunnart              | MAMMAL     | Priority                   | P4        |            | 20/05/2011 |     | 20    | 5    | 2011      | 257374 FAUNASURVEY | Certain                   | Survey                 |
| Sminthopsis longicaudata       | Long-tailed dunnart              | MAMMAL     | Priority                   | P4        |            | 22/05/2011 |     | 22    | 5    | 2011      | 257375 FAUNASURVEY | Certain                   | Survey                 |
| Sminthopsis longicaudata       | Long-tailed dunnart              | MAMMAL     | Priority                   | P4        |            | 25/05/2011 |     | 25    | 5    | 2011      | 257381 FAUNASURVEY | Certain                   | Survey                 |
| Sminthopsis longicaudata       | Long-tailed dunnart              | MAMMAL     | Priority                   | P4        |            | 18/05/2011 |     | 18    | 5    | 2011      | 257382 FAUNASURVEY | Certain                   | Survey                 |



|                             |                                  |        |                           |    |    |            |    |    |      |                    |                    |            |
|-----------------------------|----------------------------------|--------|---------------------------|----|----|------------|----|----|------|--------------------|--------------------|------------|
| Sminthopsis longicaudata    | Long-tailed dunnart              | MAMMAL | Priority                  | P4 |    | 24/05/2011 | 24 | 5  | 2011 | 257383 FAUNASURVEY | Certain            | Survey     |
| Sminthopsis longicaudata    | Long-tailed dunnart              | MAMMAL | Priority                  | P4 |    | 22/05/2011 | 22 | 5  | 2011 | 257396 FAUNASURVEY | Certain            | Survey     |
| Sminthopsis longicaudata    | Long-tailed dunnart              | MAMMAL | Priority                  | P4 |    | 23/05/2011 | 23 | 5  | 2011 | 257409 FAUNASURVEY | Certain            | Survey     |
| Sminthopsis longicaudata    | Long-tailed dunnart              | MAMMAL | Priority                  | P4 |    | 16/11/2011 | 16 | 11 | 2011 | 364406 FAUNASURVEY | Certain            | Survey     |
| Sminthopsis longicaudata    | Long-tailed dunnart              | MAMMAL | Priority                  | P4 |    | 17/11/2011 | 17 | 11 | 2011 | 364463 FAUNASURVEY | Certain            | Survey     |
| Sminthopsis longicaudata    | Long-tailed dunnart              | MAMMAL | Priority                  | P4 |    | 17/11/2011 | 17 | 11 | 2011 | 364464 FAUNASURVEY | Certain            | Survey     |
| Sminthopsis longicaudata    | Long-tailed dunnart              | MAMMAL | Priority                  | P4 |    | 17/11/2011 | 17 | 11 | 2011 | 364465 FAUNASURVEY | Certain            | Survey     |
| Sminthopsis longicaudata    | Long-tailed dunnart              | MAMMAL | Priority                  | P4 |    | 18/11/2011 | 18 | 11 | 2011 | 364527 FAUNASURVEY | Certain            | Survey     |
| Sminthopsis longicaudata    | Long-tailed dunnart              | MAMMAL | Priority                  | P4 |    | 18/11/2011 | 18 | 11 | 2011 | 364528 FAUNASURVEY | Certain            | Survey     |
| Sminthopsis longicaudata    | Long-tailed dunnart              | MAMMAL | Priority                  | P4 |    | 19/11/2011 | 19 | 11 | 2011 | 364583 FAUNASURVEY | Certain            | Survey     |
| Sminthopsis longicaudata    | Long-tailed dunnart              | MAMMAL | Priority                  | P4 |    | 19/11/2011 | 19 | 11 | 2011 | 364584 FAUNASURVEY | Certain            | Survey     |
| Sminthopsis longicaudata    | Long-tailed dunnart              | MAMMAL | Priority                  | P4 |    | 20/11/2011 | 20 | 11 | 2011 | 364625 FAUNASURVEY | Certain            | Survey     |
| Sminthopsis longicaudata    | Long-tailed dunnart              | MAMMAL | Priority                  | P4 |    | 21/11/2011 | 21 | 11 | 2011 | 364716 FAUNASURVEY | Certain            | Survey     |
| Sminthopsis longicaudata    | Long-tailed dunnart              | MAMMAL | Priority                  | P4 |    | 21/11/2011 | 21 | 11 | 2011 | 364717 FAUNASURVEY | Certain            | Survey     |
| Sminthopsis longicaudata    | Long-tailed dunnart              | MAMMAL | Priority                  | P4 |    | 21/11/2011 | 21 | 11 | 2011 | 364718 FAUNASURVEY | Certain            | Survey     |
| Pseudomys chapmani          | Western pebble-mound mouse,      | MAMMAL | Priority                  | P4 |    | 17/02/2012 | 17 | 2  | 2012 | 473033 FAUNASURVEY | Certain            | Survey     |
| Sminthopsis longicaudata    | Long-tailed dunnart              | MAMMAL | Priority                  | P4 |    | 13/12/2012 | 13 | 12 | 2012 | 564876 FAUNASURVEY | Certain            | Survey     |
| Falco peregrinus            | Peregrine falcon                 | BIRD   | Specialy Protected - othe | OS |    | 14/12/2012 | 14 | 12 | 2012 | 564986 FAUNASURVEY | Certain            | Survey     |
| Leipooa ocellata            | Malleefowl                       | BIRD   | Threatened - Vulnerable   | VU | VU | 14/12/2012 | 14 | 12 | 2012 | 564989 FAUNASURVEY | Certain            | Survey     |
| Bettongia lesueur graii     | Boodie (inland), burrowing bettu | MAMMAL | Extinct                   | EX | EX |            | 0  | 0  | 0    | 649491 FAUNASURVEY | Moderately certain | Survey     |
| Sminthopsis longicaudata    | Long-tailed dunnart              | MAMMAL | Priority                  | P4 |    | 19/10/2012 | 19 | 10 | 2012 | 649852 FAUNASURVEY | Certain            | Survey     |
| Sminthopsis longicaudata    | Long-tailed dunnart              | MAMMAL | Priority                  | P4 |    | 23/10/2012 | 23 | 10 | 2012 | 649853 FAUNASURVEY | Certain            | Survey     |
| Sminthopsis longicaudata    | Long-tailed dunnart              | MAMMAL | Priority                  | P4 |    | 23/10/2012 | 23 | 10 | 2012 | 649854 FAUNASURVEY | Certain            | Survey     |
| Sminthopsis longicaudata    | Long-tailed dunnart              | MAMMAL | Priority                  | P4 |    | 23/10/2012 | 23 | 10 | 2012 | 649855 FAUNASURVEY | Certain            | Survey     |
| Sminthopsis longicaudata    | Long-tailed dunnart              | MAMMAL | Priority                  | P4 |    | 17/03/2013 | 17 | 3  | 2013 | 649856 FAUNASURVEY | Certain            | Survey     |
| Sminthopsis longicaudata    | Long-tailed dunnart              | MAMMAL | Priority                  | P4 |    | 23/10/2012 | 23 | 10 | 2012 | 649857 FAUNASURVEY | Certain            | Survey     |
| Sminthopsis longicaudata    | Long-tailed dunnart              | MAMMAL | Priority                  | P4 |    | 28/10/2012 | 28 | 10 | 2012 | 649858 FAUNASURVEY | Certain            | Survey     |
| Sminthopsis longicaudata    | Long-tailed dunnart              | MAMMAL | Priority                  | P4 |    | 24/10/2012 | 24 | 10 | 2012 | 649859 FAUNASURVEY | Certain            | Survey     |
| Sminthopsis longicaudata    | Long-tailed dunnart              | MAMMAL | Priority                  | P4 |    | 19/10/2012 | 19 | 10 | 2012 | 649860 FAUNASURVEY | Certain            | Survey     |
| Sminthopsis longicaudata    | Long-tailed dunnart              | MAMMAL | Priority                  | P4 |    | 22/10/2012 | 22 | 10 | 2012 | 649861 FAUNASURVEY | Certain            | Survey     |
| Sminthopsis longicaudata    | Long-tailed dunnart              | MAMMAL | Priority                  | P4 |    | 23/10/2012 | 23 | 10 | 2012 | 649862 FAUNASURVEY | Certain            | Survey     |
| Sminthopsis longicaudata    | Long-tailed dunnart              | MAMMAL | Priority                  | P4 |    | 23/10/2012 | 23 | 10 | 2012 | 649863 FAUNASURVEY | Certain            | Survey     |
| Sminthopsis longicaudata    | Long-tailed dunnart              | MAMMAL | Priority                  | P4 |    | 18/03/2013 | 18 | 3  | 2013 | 649864 FAUNASURVEY | Certain            | Survey     |
| Leipooa ocellata            | Malleefowl                       | BIRD   | Threatened - Vulnerable   | VU | VU | 23/10/2012 | 23 | 10 | 2012 | 650221 FAUNASURVEY | Certain            | Survey     |
| Leipooa ocellata            | Malleefowl                       | BIRD   | Threatened - Vulnerable   | VU | VU | 24/10/2012 | 24 | 10 | 2012 | 650222 FAUNASURVEY | Certain            | Survey     |
| Leipooa ocellata            | Malleefowl                       | BIRD   | Threatened - Vulnerable   | VU | VU | 25/10/2012 | 25 | 10 | 2012 | 650223 FAUNASURVEY | Certain            | Survey     |
| Leipooa ocellata            | Malleefowl                       | BIRD   | Threatened - Vulnerable   | VU | VU | 26/10/2012 | 26 | 10 | 2012 | 650224 FAUNASURVEY | Certain            | Survey     |
| Leipooa ocellata            | Malleefowl                       | BIRD   | Threatened - Vulnerable   | VU | VU | 27/10/2012 | 27 | 10 | 2012 | 650225 FAUNASURVEY | Certain            | Survey     |
| Leipooa ocellata            | Malleefowl                       | BIRD   | Threatened - Vulnerable   | VU | VU | 28/10/2012 | 28 | 10 | 2012 | 650226 FAUNASURVEY | Certain            | Survey     |
| Leipooa ocellata            | Malleefowl                       | BIRD   | Threatened - Vulnerable   | VU | VU | 28/10/2012 | 28 | 10 | 2012 | 650227 FAUNASURVEY | Certain            | Survey     |
| Leipooa ocellata            | Malleefowl                       | BIRD   | Threatened - Vulnerable   | VU | VU | 25/05/2013 | 25 | 5  | 2013 | 665493 FAUNASURVEY | Certain            | Survey     |
| Leipooa ocellata            | Malleefowl                       | BIRD   | Threatened - Vulnerable   | VU | VU | 30/05/2013 | 30 | 5  | 2013 | 665494 FAUNASURVEY | Certain            | Survey     |
| Leipooa ocellata            | Malleefowl                       | BIRD   | Threatened - Vulnerable   | VU | VU | 8/06/2013  | 8  | 6  | 2013 | 665495 FAUNASURVEY | Certain            | Survey     |
| Leipooa ocellata            | Malleefowl                       | BIRD   | Threatened - Vulnerable   | VU | VU | 9/06/2013  | 9  | 6  | 2013 | 665496 FAUNASURVEY | Certain            | Survey     |
| Leipooa ocellata            | Malleefowl                       | BIRD   | Threatened - Vulnerable   | VU | VU | 10/06/2013 | 10 | 6  | 2013 | 665497 FAUNASURVEY | Certain            | Survey     |
| Leipooa ocellata            | Malleefowl                       | BIRD   | Threatened - Vulnerable   | VU | VU | 10/06/2013 | 10 | 6  | 2013 | 665498 FAUNASURVEY | Certain            | Survey     |
| Leipooa ocellata            | Malleefowl                       | BIRD   | Threatened - Vulnerable   | VU | VU | 10/06/2013 | 10 | 6  | 2013 | 665499 FAUNASURVEY | Certain            | Survey     |
| Leipooa ocellata            | Malleefowl                       | BIRD   | Threatened - Vulnerable   | VU | VU | 11/06/2013 | 11 | 6  | 2013 | 665500 FAUNASURVEY | Certain            | Survey     |
| Leipooa ocellata            | Malleefowl                       | BIRD   | Threatened - Vulnerable   | VU | VU | 17/06/2013 | 17 | 6  | 2013 | 665501 FAUNASURVEY | Certain            | Survey     |
| Leipooa ocellata            | Malleefowl                       | BIRD   | Threatened - Vulnerable   | VU | VU | 17/06/2013 | 17 | 6  | 2013 | 665502 FAUNASURVEY | Certain            | Survey     |
| Leipooa ocellata            | Malleefowl                       | BIRD   | Threatened - Vulnerable   | VU | VU | 25/07/2013 | 25 | 7  | 2013 | 665503 FAUNASURVEY | Certain            | Survey     |
| Leipooa ocellata            | Malleefowl                       | BIRD   | Threatened - Vulnerable   | VU | VU | 10/08/2013 | 10 | 8  | 2013 | 665504 FAUNASURVEY | Certain            | Survey     |
| Falco peregrinus            | Peregrine falcon                 | BIRD   | Specialy Protected - othe | OS |    | 11/07/2014 | 11 | 7  | 2014 | 0 BIRDATA          |                    |            |
| Falco peregrinus            | Peregrine falcon                 | BIRD   | Specialy Protected - othe | OS |    | 5/04/2005  | 5  | 4  | 2005 | 0 BIRDATLAS2       |                    |            |
| Apus pacificus              | Fork-tailed swift                | BIRD   | Specialy Protected - migr | MI | MI | 9/09/2008  | 9  | 9  | 2008 | 0 BIRDATLAS2       |                    |            |
| Amytornis textilis textilis | Western grasswren, thick-billed  | BIRD   | Priority                  | P4 |    | 23/04/1900 | 23 | 4  | 1900 | 0 WAM_BIRDS        | WAM Vouchered      | Collection |
| Polytelis alexandrae        | Princess parrot                  | BIRD   | Priority                  | P4 | VU | 1/01/1915  | 1  | 1  | 1915 | 0 WAM_BIRDS        | WAM Vouchered      | Collection |
| Leporillus apicalis         | Lesser stick-nest rat            | MAMMAL | Extinct                   | EX | EX |            | 0  | 0  | 0    | 0 WAM_MAMMALS      | WAM Vouchered      | Collection |

| OBS_TYPE          | COUNT | LOCALITY                | SITE                        | ACCURACY | LONG_GDA        | LAT_GDA         | NAME_ID | FAMILY            | GENUS            | SPECIES      | SUBSPECIES | KINGDOM  |
|-------------------|-------|-------------------------|-----------------------------|----------|-----------------|-----------------|---------|-------------------|------------------|--------------|------------|----------|
| Sighting          | 1     | Atley                   | 4km south of the N/W co     | 500      | 118.92142010000 | -28.24454166000 | 24557   | Megapodiidae      | Leipoa           | ocellata     |            | Animalia |
| Day sighting      | 2     | Mount Elvire            | Mount Elvire Stn            | 10000    | 119.60142810000 | -29.36537610000 | 25624   | Falconidae        | Falco            | peregrinus   |            | Animalia |
| Caught or trapped | 1     | SANDSTONE               | Lake Mason Station          | 30       | 119.21970000000 | -27.76590000000 | 24115   | Dasyuridae        | Sminthopsis      | longicaudata |            | Animalia |
| Caught or trapped | 1     | SANDSTONE               | Lake Mason Station          | 30       | 119.30430000000 | -27.68800000000 | 30903   | Dasyuridae        | Dasyercus        | blythi       |            | Animalia |
| Sighting          | 0     | Lake Barlee             | Lake Barlee                 | 50000    | 119.00000440000 | -29.15000009000 | 48135   | Charadriidae      | Thinornis        | rubricollis  |            | Animalia |
| Day sighting      | 3     | Wydgee                  | In a cave on west side of   | 1000     | 118.21666210000 | -28.96666399000 | 24180   | Megadermatidae    | Macroderma       | gigas        |            | Animalia |
| Secondary sign    | 0     | Windimurra              | Near Recruit Flats in the N | 10000    | 118.55000420000 | -28.29999757000 | 24168   | Peramelidae       | Macrootis        | lagotis      |            | Animalia |
| Caught or trapped | 1     | Brown's Soak            | Brown's Soak, 20 miles (3   | 1000     | 118.85139150000 | -28.90416497000 | 48926   | Idiopidae         | Idiosoma         | clypeatum    |            | Animalia |
| Caught or trapped | 1     | SANDSTONE               | Lake Mason Station          | 30       | 119.28020000000 | -27.69780000000 | 24115   | Dasyuridae        | Sminthopsis      | longicaudata |            | Animalia |
| Caught or trapped | 1     | SANDSTONE               | Lake Mason Station          | 30       | 119.21970000000 | -27.76590000000 | 24115   | Dasyuridae        | Sminthopsis      | longicaudata |            | Animalia |
| Caught or trapped | 1     | SANDSTONE               | Lake Mason Station          | 30       | 119.21970000000 | -27.76590000000 | 24115   | Dasyuridae        | Sminthopsis      | longicaudata |            | Animalia |
| Day sighting      | 0     | Mount Elvire            | Mt Elvire                   | 50000    | 119.59800040000 | -29.36299838000 | 48135   | Charadriidae      | Thinornis        | rubricollis  |            | Animalia |
| Caught or trapped | 1     | SANDSTONE               | Lake Mason Station          | 30       | 119.21970000000 | -27.76590000000 | 24115   | Dasyuridae        | Sminthopsis      | longicaudata |            | Animalia |
| Caught or trapped | 1     | SANDSTONE               | Lake Mason Station          | 30       | 119.21970000000 | -27.76590000000 | 24115   | Dasyuridae        | Sminthopsis      | longicaudata |            | Animalia |
| Day sighting      | 2     | Goldfields              | Lake Barlee, Southern Crc   | 1000     | 119.56876070000 | -29.16331201000 | 48135   | Charadriidae      | Thinornis        | rubricollis  |            | Animalia |
| Day sighting      | 2     | Goldfields              | near Lake Barlee, Souther   | 1000     | 119.81026560000 | -29.08526241000 | 48135   | Charadriidae      | Thinornis        | rubricollis  |            | Animalia |
| Day sighting      | 1     | Sandstone               | Windsor Station             | 10000    | 118.72909830000 | -28.01429753000 | 24557   | Megapodiidae      | Leipoa           | ocellata     |            | Animalia |
| Day sighting      | 1     | Cooladar Hill           | Downa Station, north of M   | 1000     | 118.02149960000 | -28.47269565000 | 24557   | Megapodiidae      | Leipoa           | ocellata     |            | Animalia |
| Secondary sign    | 0     | Mount Jackson           | S edge of Die Hardy Rang    | 1000     | 119.31273830000 | -28.14663560000 | 24557   | Megapodiidae      | Leipoa           | ocellata     |            | Animalia |
| Day sighting      | 1     | Sandstone               | Mt Magnet-Leinsted Rd, 2    | 1000     | 119.07370000000 | -28.01020000000 | 24539   | Maluridae         | Amytornis        | striatus     | striatus   | Animalia |
| Sighting          | 2     | Sandstone               | Halfway along Paynes Fin    | 1000     | 118.56170000000 | -28.73630000000 | 24557   | Megapodiidae      | Leipoa           | ocellata     |            | Animalia |
| Sighting          | 1     | SANDSTONE               | 13.1 km from homestead      | 1000     | 118.94277780000 | -29.06111111000 | 24557   | Megapodiidae      | Leipoa           | ocellata     |            | Animalia |
| Sighting          | 1     | SANDSTONE               | Atley Station               | 0        | 118.92000000000 | -28.24583333000 | 24557   | Megapodiidae      | Leipoa           | ocellata     |            | Animalia |
| Sighting          | 2     | SANDSTONE               | Lake Barlee Station         | 10000    | 119.00000000000 | -29.15000000000 | 24557   | Megapodiidae      | Leipoa           | ocellata     |            | Animalia |
| Sighting          | 0     | SANDSTONE               | South Side of Lake Barlee   | 1000     | 119.01588490000 | -29.21451738000 | 24557   | Megapodiidae      | Leipoa           | ocellata     |            | Animalia |
| Caught or trapped | 3     | Tropicanna Gold Mine    | Site SBA 104, TPRC 420, R   | 10000    | 118.54395330000 | -29.26833605000 | 48052   | Paraplatyarthridi | Paraplatyarthrus | subterraneus |            | Animalia |
| Sighting          | 1     | Tropicanna Gold Mine    |                             | 1000     | 118.49180000000 | -29.22380000000 | 25554   | Apodidae          | Apus             | pacificus    |            | Animalia |
| Secondary sign    | 0     | Tropicanna Gold Mine    | M28                         | 1000     | 118.50480000000 | -29.22290000000 | 24148   | Notoryctidae      | Notoryctes       | typhlops     |            | Animalia |
| Secondary sign    | 0     | Tropicanna Gold Mine    | M29                         | 1000     | 118.51070000000 | -29.22490000000 | 24148   | Notoryctidae      | Notoryctes       | typhlops     |            | Animalia |
| Secondary sign    | 0     | Tropicanna Gold Mine    | M34                         | 1000     | 118.49050000000 | -29.22700000000 | 24148   | Notoryctidae      | Notoryctes       | typhlops     |            | Animalia |
| Secondary sign    | 0     | Tropicanna Gold Mine    | M35                         | 1000     | 118.49640000000 | -29.22730000000 | 24148   | Notoryctidae      | Notoryctes       | typhlops     |            | Animalia |
| Secondary sign    | 0     | Tropicanna Gold Mine    | M36                         | 1000     | 118.49450000000 | -29.22890000000 | 24148   | Notoryctidae      | Notoryctes       | typhlops     |            | Animalia |
| Secondary sign    | 0     | Tropicanna Gold Mine    | M37                         | 1000     | 118.49060000000 | -29.22930000000 | 24148   | Notoryctidae      | Notoryctes       | typhlops     |            | Animalia |
| Secondary sign    | 0     | Tropicanna Gold Mine    | M38                         | 1000     | 118.49610000000 | -29.22980000000 | 24148   | Notoryctidae      | Notoryctes       | typhlops     |            | Animalia |
| Secondary sign    | 0     | Tropicanna Gold Mine    | M40                         | 1000     | 118.52480000000 | -29.23080000000 | 24148   | Notoryctidae      | Notoryctes       | typhlops     |            | Animalia |
| Secondary sign    | 0     | Tropicanna Gold Mine    | M41                         | 1000     | 118.49050000000 | -29.23180000000 | 24148   | Notoryctidae      | Notoryctes       | typhlops     |            | Animalia |
| Secondary sign    | 0     | Tropicanna Gold Mine    | M47                         | 1000     | 118.49630000000 | -29.23500000000 | 24148   | Notoryctidae      | Notoryctes       | typhlops     |            | Animalia |
| Secondary sign    | 0     | Tropicanna Gold Mine    | M53                         | 1000     | 118.47570000000 | -29.24900000000 | 24148   | Notoryctidae      | Notoryctes       | typhlops     |            | Animalia |
| Secondary sign    | 0     | Tropicanna Gold Project | M56                         | 1000     | 118.47560000000 | -29.25110000000 | 24148   | Notoryctidae      | Notoryctes       | typhlops     |            | Animalia |
| Secondary sign    | 0     | Tropicanna Gold Project | M58                         | 1000     | 118.55630000000 | -29.24030000000 | 24148   | Notoryctidae      | Notoryctes       | typhlops     |            | Animalia |
| Secondary sign    | 0     | Tropicanna Gold Project | M59                         | 1000     | 118.55630000000 | -29.24030000000 | 24148   | Notoryctidae      | Notoryctes       | typhlops     |            | Animalia |
| Secondary sign    | 0     | Tropicanna Gold Project | M62                         | 1000     | 118.55420000000 | -29.24300000000 | 24148   | Notoryctidae      | Notoryctes       | typhlops     |            | Animalia |
| Secondary sign    | 0     | Tropicanna Gold Project | M63                         | 1000     | 118.55810000000 | -29.24280000000 | 24148   | Notoryctidae      | Notoryctes       | typhlops     |            | Animalia |
| Secondary sign    | 0     | Tropicanna Gold Project | M66                         | 1000     | 118.53260000000 | -29.24980000000 | 24148   | Notoryctidae      | Notoryctes       | typhlops     |            | Animalia |
| Secondary sign    | 0     | Tropicanna Gold Project | M68                         | 1000     | 118.54280000000 | -29.25000000000 | 24148   | Notoryctidae      | Notoryctes       | typhlops     |            | Animalia |
| Secondary sign    | 0     | Tropicanna Gold Project | M69                         | 1000     | 118.54650000000 | -29.24880000000 | 24148   | Notoryctidae      | Notoryctes       | typhlops     |            | Animalia |
| Secondary sign    | 0     | Tropicanna Gold Project | M72                         | 1000     | 118.53760000000 | -29.25300000000 | 24148   | Notoryctidae      | Notoryctes       | typhlops     |            | Animalia |
| Secondary sign    | 0     | Tropicanna Gold Project | M76                         | 1000     | 118.52760000000 | -29.25290000000 | 24148   | Notoryctidae      | Notoryctes       | typhlops     |            | Animalia |
| Secondary sign    | 0     | Tropicanna Gold Project | M77                         | 1000     | 118.53420000000 | -29.25330000000 | 24148   | Notoryctidae      | Notoryctes       | typhlops     |            | Animalia |
| Secondary sign    | 0     | Tropicanna Gold Project | M78                         | 1000     | 118.54400000000 | -29.25650000000 | 24148   | Notoryctidae      | Notoryctes       | typhlops     |            | Animalia |
| Secondary sign    | 0     | Tropicanna Gold Project | M83                         | 1000     | 118.47160000000 | -29.26500000000 | 24148   | Notoryctidae      | Notoryctes       | typhlops     |            | Animalia |
| Secondary sign    | 0     | Tropicanna Gold Project | M84                         | 1000     | 118.47080000000 | -29.26810000000 | 24148   | Notoryctidae      | Notoryctes       | typhlops     |            | Animalia |
| Caught or trapped | 1     | Lake Barlee             | Browns Soak, 20 miles N (   | 500      | 118.78333000000 | -29.00000000000 | 48926   | Idiopidae         | Idiosoma         | clypeatum    |            | Animalia |
| Unknown           | 1     | ULARRING                | Mount Forrest, Mindax M     | 100      | 119.96470000000 | -28.67440000000 | 24115   | Dasyuridae        | Sminthopsis      | longicaudata |            | Animalia |
| Unknown           | 1     | ULARRING                | Mount Forrest, Mindax M     | 100      | 119.96420000000 | -28.67520000000 | 24115   | Dasyuridae        | Sminthopsis      | longicaudata |            | Animalia |
| Unknown           | 1     | ULARRING                | Mount Forrest, Mindax M     | 100      | 119.96440000000 | -28.67510000000 | 24115   | Dasyuridae        | Sminthopsis      | longicaudata |            | Animalia |
| Unknown           | 1     | ULARRING                | Mount Forrest, Mindax M     | 100      | 119.96440000000 | -28.67510000000 | 24115   | Dasyuridae        | Sminthopsis      | longicaudata |            | Animalia |
| Unknown           | 1     | ULARRING                | Mount Forrest, Mindax M     | 100      | 119.96440000000 | -28.67510000000 | 24115   | Dasyuridae        | Sminthopsis      | longicaudata |            | Animalia |
| Unknown           | 1     | ULARRING                | Mount Forrest, Mindax M     | 100      | 119.96460000000 | -28.67460000000 | 24115   | Dasyuridae        | Sminthopsis      | longicaudata |            | Animalia |
| Unknown           | 1     | ULARRING                | Mount Forrest, Mindax M     | 100      | 119.96920000000 | -28.67320000000 | 24115   | Dasyuridae        | Sminthopsis      | longicaudata |            | Animalia |
| Unknown           | 1     | ULARRING                | Mount Forrest, Mindax M     | 100      | 119.96930000000 | -28.67360000000 | 24115   | Dasyuridae        | Sminthopsis      | longicaudata |            | Animalia |
| Unknown           | 1     | ULARRING                | Mount Forrest, Mindax M     | 100      | 119.96920000000 | -28.67340000000 | 24115   | Dasyuridae        | Sminthopsis      | longicaudata |            | Animalia |



|                |   |          |                          |       |                  |                  |       |              |             |              |       |          |
|----------------|---|----------|--------------------------|-------|------------------|------------------|-------|--------------|-------------|--------------|-------|----------|
| Unknown        | 1 | ULARRING | Mount Forrest, Mindax M  | 100   | 119.969200000000 | -28.673400000000 | 24115 | Dasyuridae   | Sminthopsis | longicaudata |       | Animalia |
| Unknown        | 1 | ULARRING | Mount Forrest, Mindax M  | 100   | 119.944100000000 | -28.733700000000 | 24115 | Dasyuridae   | Sminthopsis | longicaudata |       | Animalia |
| Unknown        | 1 | ULARRING | Mount Forrest, Mindax M  | 100   | 119.937700000000 | -28.727100000000 | 24115 | Dasyuridae   | Sminthopsis | longicaudata |       | Animalia |
| Unknown        | 1 | ULARRING | Mount Forrest, Mindax M  | 100   | 119.969200000000 | -28.673200000000 | 24115 | Dasyuridae   | Sminthopsis | longicaudata |       | Animalia |
| Unknown        | 1 | ULARRING | Mount Forrest, Mindax M  | 100   | 119.969300000000 | -28.673800000000 | 24115 | Dasyuridae   | Sminthopsis | longicaudata |       | Animalia |
| Unknown        | 1 | ULARRING | Mount Forrest, Mindax M  | 100   | 119.969300000000 | -28.673600000000 | 24115 | Dasyuridae   | Sminthopsis | longicaudata |       | Animalia |
| Unknown        | 1 | ULARRING | Mount Forrest, Mindax M  | 100   | 119.944800000000 | -28.732800000000 | 24115 | Dasyuridae   | Sminthopsis | longicaudata |       | Animalia |
| Unknown        | 1 | ULARRING | Mount Forrest, Mindax M  | 100   | 119.969300000000 | -28.673600000000 | 24115 | Dasyuridae   | Sminthopsis | longicaudata |       | Animalia |
| Unknown        | 1 | ULARRING | Mount Forrest, Mindax M  | 100   | 119.969200000000 | -28.673300000000 | 24115 | Dasyuridae   | Sminthopsis | longicaudata |       | Animalia |
| Unknown        | 1 | ULARRING | Mount Forrest, Mindax M  | 100   | 119.964200000000 | -28.675300000000 | 24115 | Dasyuridae   | Sminthopsis | longicaudata |       | Animalia |
| Unknown        | 1 | ULARRING | Mount Forrest, Mindax M  | 100   | 119.969200000000 | -28.673200000000 | 24115 | Dasyuridae   | Sminthopsis | longicaudata |       | Animalia |
| Unknown        | 1 | ULARRING | Mount Forrest, Mindax M  | 100   | 119.964400000000 | -28.674900000000 | 24115 | Dasyuridae   | Sminthopsis | longicaudata |       | Animalia |
| Unknown        | 1 | ULARRING | Mount Forrest, Mindax M  | 100   | 119.964600000000 | -28.674600000000 | 24115 | Dasyuridae   | Sminthopsis | longicaudata |       | Animalia |
| Unknown        | 1 | ULARRING | Mount Forrest, Mindax M  | 100   | 119.964200000000 | -28.675300000000 | 24115 | Dasyuridae   | Sminthopsis | longicaudata |       | Animalia |
| Unknown        | 1 | ULARRING | Mount Forrest, Mindax M  | 100   | 119.964200000000 | -28.675300000000 | 24115 | Dasyuridae   | Sminthopsis | longicaudata |       | Animalia |
| Unknown        | 1 | ULARRING | BHPBIO_MAINLINE,         | 100   | 118.654600000000 | -29.117400000000 | 24233 | Muridae      | Pseudomys   | chapmani     |       | Animalia |
| Unknown        | 1 | ULARRING | Mount Forrest, Mindax M  | 100   | 119.954800000000 | -28.715900000000 | 24115 | Dasyuridae   | Sminthopsis | longicaudata |       | Animalia |
| Unknown        | 1 | ULARRING | Mount Forrest, Mindax M  | 10000 | 119.957000000000 | -28.705900000000 | 25624 | Falconidae   | Falco       | peregrinus   |       | Animalia |
| Unknown        | 1 | ULARRING | Mount Forrest, Mindax M  | 10000 | 119.957000000000 | -28.705900000000 | 24557 | Megapodiidae | Leipoa      | ocellata     |       | Animalia |
| Secondary sign | 1 | ULARRING | Mt Richardson, RICO2 - M | 100   | 119.985500000000 | -28.757600000000 | 24161 | Potoroidae   | Bettongia   | lesueur      | graii | Animalia |
| Unknown        | 1 | ULARRING | Mt Richardson, RICO1     | 100   | 119.990900000000 | -28.792400000000 | 24115 | Dasyuridae   | Sminthopsis | longicaudata |       | Animalia |
| Unknown        | 1 | ULARRING | Mt Richardson, RICO1     | 100   | 119.990900000000 | -28.792400000000 | 24115 | Dasyuridae   | Sminthopsis | longicaudata |       | Animalia |
| Unknown        | 1 | ULARRING | Mt Richardson, RICO1     | 100   | 119.990900000000 | -28.792400000000 | 24115 | Dasyuridae   | Sminthopsis | longicaudata |       | Animalia |
| Unknown        | 1 | ULARRING | Mt Richardson, RICO2     | 100   | 119.985500000000 | -28.757600000000 | 24115 | Dasyuridae   | Sminthopsis | longicaudata |       | Animalia |
| Unknown        | 1 | ULARRING | Mt Richardson, RICO4     | 100   | 119.972600000000 | -28.808900000000 | 24115 | Dasyuridae   | Sminthopsis | longicaudata |       | Animalia |
| Unknown        | 1 | ULARRING | Mt Richardson, RICO5     | 100   | 119.992500000000 | -28.801000000000 | 24115 | Dasyuridae   | Sminthopsis | longicaudata |       | Animalia |
| Unknown        | 1 | ULARRING | Mt Richardson, RICO5     | 100   | 119.992500000000 | -28.801000000000 | 24115 | Dasyuridae   | Sminthopsis | longicaudata |       | Animalia |
| Unknown        | 1 | ULARRING | Mt Richardson, RICO6     | 100   | 119.977000000000 | -28.768000000000 | 24115 | Dasyuridae   | Sminthopsis | longicaudata |       | Animalia |
| Unknown        | 1 | ULARRING | Mt Richardson, RICO8     | 100   | 119.945900000000 | -28.760000000000 | 24115 | Dasyuridae   | Sminthopsis | longicaudata |       | Animalia |
| Unknown        | 1 | ULARRING | Mt Richardson, RICO8     | 100   | 119.945900000000 | -28.760000000000 | 24115 | Dasyuridae   | Sminthopsis | longicaudata |       | Animalia |
| Unknown        | 1 | ULARRING | Mt Richardson, RICO8     | 100   | 119.945900000000 | -28.760000000000 | 24115 | Dasyuridae   | Sminthopsis | longicaudata |       | Animalia |
| Unknown        | 1 | ULARRING | Mt Richardson, RICO8     | 100   | 119.945900000000 | -28.760000000000 | 24115 | Dasyuridae   | Sminthopsis | longicaudata |       | Animalia |
| Unknown        | 1 | ULARRING | Mt Richardson, RICO8     | 100   | 119.945900000000 | -28.760000000000 | 24115 | Dasyuridae   | Sminthopsis | longicaudata |       | Animalia |
| Unknown        | 1 | ULARRING | Mt Richardson, RICO8     | 100   | 119.945900000000 | -28.760000000000 | 24115 | Dasyuridae   | Sminthopsis | longicaudata |       | Animalia |
| Unknown        | 1 | ULARRING | Mt Richardson, RICO8     | 100   | 119.945900000000 | -28.760000000000 | 24115 | Dasyuridae   | Sminthopsis | longicaudata |       | Animalia |
| Unknown        | 1 | ULARRING | Mt Richardson, RICO8     | 100   | 119.945900000000 | -28.760000000000 | 24115 | Dasyuridae   | Sminthopsis | longicaudata |       | Animalia |
| Unknown        | 1 | ULARRING | Mt Richardson, RICO8     | 100   | 119.945900000000 | -28.760000000000 | 24115 | Dasyuridae   | Sminthopsis | longicaudata |       | Animalia |
| Unknown        | 1 | ULARRING | Mt Richardson, RICO8     | 100   | 119.945900000000 | -28.760000000000 | 24115 | Dasyuridae   | Sminthopsis | longicaudata |       | Animalia |
| Unknown        | 1 | ULARRING | Mt Richardson, RICO8     | 100   | 119.945900000000 | -28.760000000000 | 24115 | Dasyuridae   | Sminthopsis | longicaudata |       | Animalia |
| Unknown        | 1 | ULARRING | Mt Richardson, RICO8     | 100   | 119.945900000000 | -28.760000000000 | 24115 | Dasyuridae   | Sminthopsis | longicaudata |       | Animalia |
| Unknown        | 1 | ULARRING | Mt Richardson, RICO8     | 100   | 119.945900000000 | -28.760000000000 | 24115 | Dasyuridae   | Sminthopsis | longicaudata |       | Animalia |
| Unknown        | 1 | ULARRING | Mt Richardson, RICO8     | 100   | 119.945900000000 | -28.760000000000 | 24115 | Dasyuridae   | Sminthopsis | longicaudata |       | Animalia |
| Unknown        | 1 | ULARRING | Mt Richardson, RICO8     | 100   | 119.945900000000 | -28.760000000000 | 24115 | Dasyuridae   | Sminthopsis | longicaudata |       | Animalia |
| Unknown        | 1 | ULARRING | Mt Richardson, RICO8     | 100   | 119.945900000000 | -28.760000000000 | 24115 | Dasyuridae   | Sminthopsis | longicaudata |       | Animalia |
| Unknown        | 1 | ULARRING | Mt Richardson, RICO8     | 100   | 119.945900000000 | -28.760000000000 | 24115 | Dasyuridae   | Sminthopsis | longicaudata |       | Animalia |
| Unknown        | 1 | ULARRING | Mt Richardson, RICO8     | 100   | 119.945900000000 | -28.760000000000 | 24115 | Dasyuridae   | Sminthopsis | longicaudata |       | Animalia |
| Unknown        | 1 | ULARRING | Mt Richardson, RICO8     | 100   | 119.945900000000 | -28.760000000000 | 24115 | Dasyuridae   | Sminthopsis | longicaudata |       | Animalia |
| Unknown        | 1 | ULARRING | Mt Richardson, RICO8     | 100   | 119.945900000000 | -28.760000000000 | 24115 | Dasyuridae   | Sminthopsis | longicaudata |       | Animalia |
| Unknown        | 1 | ULARRING | Mt Richardson, RICO8     | 100   | 119.945900000000 | -28.760000000000 | 24115 | Dasyuridae   | Sminthopsis | longicaudata |       | Animalia |
| Unknown        | 1 | ULARRING | Mt Richardson, RICO8     | 100   | 119.945900000000 | -28.760000000000 | 24115 | Dasyuridae   | Sminthopsis | longicaudata |       | Animalia |
| Unknown        | 1 | ULARRING | Mt Richardson, RICO8     | 100   | 119.945900000000 | -28.760000000000 | 24115 | Dasyuridae   | Sminthopsis | longicaudata |       | Animalia |
| Unknown        | 1 | ULARRING | Mt Richardson, RICO8     | 100   | 119.945900000000 | -28.760000000000 | 24115 | Dasyuridae   | Sminthopsis | longicaudata |       | Animalia |
| Unknown        | 1 | ULARRING | Mt Richardson, RICO8     | 100   | 119.945900000000 | -28.760000000000 | 24115 | Dasyuridae   | Sminthopsis | longicaudata |       | Animalia |
| Unknown        | 1 | ULARRING | Mt Richardson, RICO8     | 100   | 119.945900000000 | -28.760000000000 | 24115 | Dasyuridae   | Sminthopsis | longicaudata |       | Animalia |
| Unknown        | 1 | ULARRING | Mt Richardson, RICO8     | 100   | 119.945900000000 | -28.760000000000 | 24115 | Dasyuridae   | Sminthopsis | longicaudata |       | Animalia |
| Unknown        | 1 | ULARRING | Mt Richardson, RICO8     | 100   | 119.945900000000 | -28.760000000000 | 24115 | Dasyuridae   | Sminthopsis | longicaudata |       | Animalia |
| Unknown        | 1 | ULARRING | Mt Richardson, RICO8     | 100   | 119.945900000000 | -28.760000000000 | 24115 | Dasyuridae   | Sminthopsis | longicaudata |       | Animalia |
| Unknown        | 1 | ULARRING | Mt Richardson, RICO8     | 100   | 119.945900000000 | -28.760000000000 | 24115 | Dasyuridae   | Sminthopsis | longicaudata |       | Animalia |
| Unknown        | 1 | ULARRING | Mt Richardson, RICO8     | 100   | 119.945900000000 | -28.760000000000 | 24115 | Dasyuridae   | Sminthopsis | longicaudata |       |          |



Australian Government

Department of Climate Change, Energy,  
the Environment and Water

# 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: 15-Dec-2022

[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>                   | 8    |
| <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>                              | 13   |
| <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>           | 3    |
| <a href="#">Regional Forest Agreements:</a>             | None |
| <a href="#">Nationally Important Wetlands:</a>          | 1    |
| <a href="#">EPBC Act Referrals:</a>                     | 2    |
| <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 |
|-----------------|---------------------|---------------|
| BIRD            |                     |               |

|                                                                                   |                       |                                                       |
|-----------------------------------------------------------------------------------|-----------------------|-------------------------------------------------------|
| <a href="#">Calidris ferruginea</a><br>Curlew Sandpiper [856]                     | Critically Endangered | Species or species habitat known to occur within area |
| <a href="#">Falco hypoleucos</a><br>Grey Falcon [929]                             | Vulnerable            | Species or species habitat may occur within area      |
| <a href="#">Leipoa ocellata</a><br>Malleefowl [934]                               | Vulnerable            | Species or species habitat known to occur within area |
| <a href="#">Pezoporus occidentalis</a><br>Night Parrot [59350]                    | Endangered            | Species or species habitat may occur within area      |
| <a href="#">Polytelis alexandrae</a><br>Princess Parrot, Alexandra's Parrot [758] | Vulnerable            | Species or species habitat known to occur within area |
| <a href="#">Rostratula australis</a><br>Australian Painted Snipe [77037]          | Endangered            | Species or species habitat may occur within area      |

PLANT

|                                                |            |                                                        |
|------------------------------------------------|------------|--------------------------------------------------------|
| <a href="#">Ricinocarpos brevis</a><br>[82879] | Endangered | Species or species habitat likely to occur within area |
|------------------------------------------------|------------|--------------------------------------------------------|

REPTILE



| Scientific Name                                                                                                   | Threatened Category | Presence Text                                                |
|-------------------------------------------------------------------------------------------------------------------|---------------------|--------------------------------------------------------------|
| <a href="#">Egernia stokesii badia</a><br>Western Spiny-tailed Skink, Baudin<br>Island Spiny-tailed Skink [64483] | Endangered          | Species or species<br>habitat likely to occur<br>within area |

Listed Migratory Species

[ [Resource Information](#) ]

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

Migratory Terrestrial Species

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

Migratory Wetlands Species

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

Other Matters Protected by the EPBC Act

| Listed Marine Species                                                                     |                       | [ Resource Information ]                                                   |
|-------------------------------------------------------------------------------------------|-----------------------|----------------------------------------------------------------------------|
| Scientific Name                                                                           | Threatened Category   | Presence Text                                                              |
| Bird                                                                                      |                       |                                                                            |
| <a href="#">Actitis hypoleucos</a><br>Common Sandpiper [59309]                            |                       | Species or species habitat may occur within area                           |
| <a href="#">Apus pacificus</a><br>Fork-tailed Swift [678]                                 |                       | Species or species habitat likely to occur within area overfly marine area |
| <a href="#">Bubulcus ibis as Ardea ibis</a><br>Cattle Egret [66521]                       |                       | Species or species habitat may occur within area overfly marine area       |
| <a href="#">Calidris acuminata</a><br>Sharp-tailed Sandpiper [874]                        |                       | Species or species habitat known to occur within area                      |
| <a href="#">Calidris ferruginea</a><br>Curlew Sandpiper [856]                             | Critically Endangered | Species or species habitat known to occur within area overfly marine area  |
| <a href="#">Calidris melanotos</a><br>Pectoral Sandpiper [858]                            |                       | Species or species habitat may occur within area overfly marine area       |
| <a href="#">Chalcites osculans as Chrysococcyx osculans</a><br>Black-eared Cuckoo [83425] |                       | Species or species habitat known to occur within area overfly marine area  |
| <a href="#">Merops ornatus</a><br>Rainbow Bee-eater [670]                                 |                       | Species or species habitat may occur within area overfly marine area       |



| Scientific Name                                                                                                  | Threatened Category | Presence Text                                                             |
|------------------------------------------------------------------------------------------------------------------|---------------------|---------------------------------------------------------------------------|
| <a href="#">Motacilla cinerea</a><br>Grey Wagtail [642]                                                          |                     | Species or species habitat may occur within area overfly marine area      |
| <a href="#">Motacilla flava</a><br>Yellow Wagtail [644]                                                          |                     | Species or species habitat may occur within area overfly marine area      |
| <a href="#">Rostratula australis as Rostratula benghalensis (sensu lato)</a><br>Australian Painted Snipe [77037] | Endangered          | Species or species habitat may occur within area overfly marine area      |
| <a href="#">Thinornis cucullatus as Thinornis rubricollis</a><br>Hooded Plover, Hooded Dotterel [87735]          |                     | Species or species habitat known to occur within area overfly marine area |
| <a href="#">Tringa nebularia</a><br>Common Greenshank, Greenshank [832]                                          |                     | Species or species habitat may occur within area overfly marine area      |

### Extra Information

| State and Territory Reserves                                                                                 |                                     |                       | [ <a href="#">Resource Information</a> ] |
|--------------------------------------------------------------------------------------------------------------|-------------------------------------|-----------------------|------------------------------------------|
| Protected Area Name                                                                                          | Reserve Type                        | State                 |                                          |
| Black Range                                                                                                  | NRS Addition - Gazettal in Progress | WA                    |                                          |
| Bulga Downs & Cashmere Downs Pastoral leases portions                                                        | NRS Addition - Gazettal in Progress | WA                    |                                          |
| Lake Mason                                                                                                   | NRS Addition - Gazettal in Progress | WA                    |                                          |
| Nationally Important Wetlands                                                                                |                                     |                       | [ <a href="#">Resource Information</a> ] |
| Wetland Name                                                                                                 |                                     | State                 |                                          |
| <a href="#">Lake Barlee</a>                                                                                  |                                     | WA                    |                                          |
| EPBC Act Referrals                                                                                           |                                     |                       | [ <a href="#">Resource Information</a> ] |
| Title of referral                                                                                            | Reference                           | Referral Outcome      | Assessment 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                                |

| Title of referral                                         | Reference | Referral Outcome  | Assessment Status    |
|-----------------------------------------------------------|-----------|-------------------|----------------------|
| Not controlled action                                     |           |                   |                      |
| Referral decision                                         |           |                   |                      |
| <a href="#">Northern Goldfields Interconnect Pipeline</a> | 2021/8900 | Referral Decision | Referral Publication |



# 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 are 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

## 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

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

## 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
- 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.

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Department of Climate Change, Energy, the Environment and Water

GPO Box 3090

Canberra ACT 2601 Australia

+61 2 6274 1111



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## ***Appendix 3: Habitat Assessments***



| FAUNA HABITAT ASSESSMENT SHEET                                                     |                   |                        |                   |                                            |                          |                       |               |              |             |          |         |  |
|------------------------------------------------------------------------------------|-------------------|------------------------|-------------------|--------------------------------------------|--------------------------|-----------------------|---------------|--------------|-------------|----------|---------|--|
| North-west                                                                         |                   |                        |                   |                                            |                          |                       |               |              |             |          |         |  |
| Location: Youanmi                                                                  |                   |                        |                   |                                            |                          | Site Number: HA1      |               |              |             |          |         |  |
| Project Number: Rox 01                                                             |                   |                        |                   |                                            |                          |                       |               |              |             |          |         |  |
| Date: 10/10/2022                                                                   |                   |                        | Easting: 681679   |                                            |                          | Aspect                | N             | NE           | SW          | NW       |         |  |
| Quadrat Size: 50 x 50                                                              |                   |                        | Northing: 6834615 |                                            |                          |                       | E             | SE           | W           | N/A      |         |  |
|  |                   |                        |                   |                                            |                          |                       |               |              |             |          |         |  |
| Soil Texture                                                                       | sand              |                        | sandy-loam        |                                            | loam                     |                       | cracking clay |              | clay        |          |         |  |
| VEGETATION                                                                         |                   |                        |                   |                                            |                          |                       |               |              |             |          |         |  |
| Vegetation Description                                                             | Hummock Grassland | Other: Mulga Shrubland |                   |                                            | Average Height in metres | Cover                 |               |              |             |          |         |  |
|                                                                                    | Acacia Shrubland  | Stratum                |                   |                                            |                          | Scattered Plants      | Sparse        | Moderate     | Thick       |          |         |  |
|                                                                                    | Riverine Woodland | Overstorey             | Acacia sp.        |                                            | 6                        | 0 <5%                 | 1 <20%        | 2 20-60%     | 3 60-100%   |          |         |  |
|                                                                                    | Other Grassland   | Midstorey              | Acacia sp.        |                                            | 2                        | 0 <5%                 | 1 <20%        | 2 20-60%     | 3 60-100%   |          |         |  |
|                                                                                    | Euc Woodland      | Ground Cover           | Mixed annuals     |                                            | <0.3                     | 0 <5%                 | 1 <20%        | 2 20-60%     | 3 60-100%   |          |         |  |
|                                                                                    |                   |                        |                   |                                            |                          |                       |               |              |             |          |         |  |
| CONDITION                                                                          |                   |                        |                   |                                            |                          | LAST FIRE             |               |              |             |          |         |  |
| Scale:                                                                             | 5 Pristine        | 4 Excellent            | 3 Very Good       | 2 Good                                     | 1 Degraded               | 0 Completely Degraded | 0 <1 year     | 1 1-3 Yr     | 2 5 Yr      | 4-       | 3 >5 Yr |  |
| (general)                                                                          |                   |                        |                   |                                            |                          | (cattle)              |               |              |             |          |         |  |
|                                                                                    | 0 heavy           | 1 medium               | 2 mild            | 3 none                                     |                          | 0 heavy               | 1 medium      | 2 mild       | 3 none      |          |         |  |
| GROUND COVER                                                                       |                   |                        |                   |                                            |                          |                       |               |              |             |          |         |  |
| Bare Ground                                                                        | 0 <5%             | 1 <20%                 | 2 20-60%          | 3 60-100%                                  | Hummock Grass            | 0 <5%                 | 1 <20%        | 2 20-60%     | 3 60-100%   |          |         |  |
| Rock                                                                               | 0 <5%             | 1 <20%                 | 2 20-60%          | 3 60-100%                                  | Other Grass              | 0 <5%                 | 1 <20%        | 2 20-60%     | 3 60-100% * |          |         |  |
| Leaf Litter                                                                        | 0 <5%             | 1 <20%                 | 2 20-60%          | 3 60-100%                                  | Herbs                    | 0 <5%                 | 1 <20%        | 2 20-60%     | 3 60-100%   |          |         |  |
| Logs >10cm                                                                         | 0 <5%             | 1 <20%                 | 2 20-60%          | 3 60-100%                                  | Other                    | 0 <5%                 | 1 <20%        | 2 20-60%     | 3 60-100%   |          |         |  |
| MICROHABITATS                                                                      |                   |                        |                   |                                            |                          |                       |               |              |             |          |         |  |
| Burrowing Suitability                                                              | 0 Rock            | 1 Stony                | 2 Sandy Loam      | 3 Sand                                     | Peeling Bark             | 0 none                | 1 rare        | 2 moderate   | 3 common    |          |         |  |
| Pebbles Stones                                                                     | 0 none            | 1 0-30%                | 2 30-70%          | 3 70-100%                                  | Large Hollows            | 0 none                | 1 rare        | 2 moderate   | 3 common    |          |         |  |
| Exfoliating Slabs                                                                  | 0 none            | 1 0-30%                | 2 30-70%          | 3 70-100%                                  | Small Hollows            | 0 none                | 1 rare        | 2 moderate   | 3 common    |          |         |  |
| Rock Crevices                                                                      | 0 none            | 1 0-30%                | 2 30-70%          | 3 70-100%                                  | Water Prescence          | 0 none                | 1 rare        | 2 moderate   | 3 common    |          |         |  |
| Boulders                                                                           | 0 none            | 1 0-30%                | 2 30-70%          | 3 70-100%                                  | Distance to Water        | 0 >5km                | 1 2-5km       | 2 500m - 2km | 3 <500m     |          |         |  |
| Suitability for Bats                                                               | YES               |                        |                   | NO                                         |                          | Termite Mounds        | 0 none        | 1 rare       | 2 moderate  | 3 common |         |  |
| Caves                                                                              | Absent            | Present                |                   |                                            | Woody Debris             | 0 none                | 1 rare        | 2 moderate   | 3 common    |          |         |  |
| SPECIES                                                                            |                   |                        |                   |                                            |                          |                       |               |              |             |          |         |  |
| Malleefowl                                                                         | YES               | NO                     | DETAILS           | No suitable habitat present in survey area |                          |                       |               |              |             |          |         |  |
| Night Parrot                                                                       | YES               | NO                     |                   | No suitable habitat present in survey area |                          |                       |               |              |             |          |         |  |
| Long-tailed Dunnart                                                                | YES               | NO                     |                   | No suitable habitat present in survey area |                          |                       |               |              |             |          |         |  |
| Mulgara                                                                            | YES               | NO                     |                   | No suitable habitat present in survey area |                          |                       |               |              |             |          |         |  |
| Birds                                                                              |                   |                        |                   | Mammals                                    |                          |                       |               | Reptiles     |             |          |         |  |
|                                                                                    |                   |                        |                   |                                            |                          |                       |               |              |             |          |         |  |
|                                                                                    |                   |                        |                   |                                            |                          |                       |               |              |             |          |         |  |
|                                                                                    |                   |                        |                   |                                            |                          |                       |               |              |             |          |         |  |
|                                                                                    |                   |                        |                   |                                            |                          |                       |               |              |             |          |         |  |

| FAUNA HABITAT ASSESSMENT SHEET                                                     |                   |                             |                           |                                            |                          |                       |               |              |             |          |         |  |
|------------------------------------------------------------------------------------|-------------------|-----------------------------|---------------------------|--------------------------------------------|--------------------------|-----------------------|---------------|--------------|-------------|----------|---------|--|
| North-west                                                                         |                   |                             |                           |                                            |                          |                       |               |              |             |          |         |  |
| Location: Youanmi                                                                  |                   |                             |                           |                                            |                          | Site Number: HA2      |               |              |             |          |         |  |
| Project Number: Rox 01                                                             |                   |                             |                           |                                            |                          |                       |               |              |             |          |         |  |
| Date: 10/10/2020                                                                   |                   |                             | Easting: 678219           |                                            |                          | Aspect                | N             | NE           | SW          | NW       |         |  |
| Quadrat Size: 50 x 50                                                              |                   |                             | Northing: 6832428         |                                            |                          |                       | E             | SE           | W           | N/A      |         |  |
|  |                   |                             |                           |                                            |                          |                       |               |              |             |          |         |  |
| Soil Texture                                                                       | sand              |                             | sandy-loam                |                                            | loam                     |                       | cracking clay |              | clay        |          |         |  |
| VEGETATION                                                                         |                   |                             |                           |                                            |                          |                       |               |              |             |          |         |  |
| Vegetation Description                                                             | Hummock Grassland | Other: Open Mulga Shrubland |                           |                                            | Average Height in metres | Cover                 |               |              |             |          |         |  |
|                                                                                    | Acacia Shrubland  | Stratum                     |                           |                                            |                          | Scattered Plants      | Sparse        | Moderate     | Thick       |          |         |  |
|                                                                                    | Riverine Woodland | Overstorey                  | Acacia sp.                |                                            | 6                        | 0 <5%                 | 1 <20%        | 2 20-60%     | 3 60-100%   |          |         |  |
|                                                                                    | Other Grassland   | Midstorey                   | Acacia sp.                |                                            | <2                       | 0 <5%                 | 1 <20%        | 2 20-60%     | 3 60-100%   |          |         |  |
|                                                                                    | Euc Woodland      | Ground Cover                | Mixed Annuals & Ruby Dock |                                            | <0.5                     | 0 <5%                 | 1 <20%        | 2 20-60%     | 3 60-100%   |          |         |  |
| CONDITION                                                                          |                   |                             |                           |                                            |                          |                       |               |              |             |          |         |  |
| Scale:                                                                             | 5 Pristine        | 4 Excellent                 | 3 Very Good               | 2 Good                                     | 1 Degraded               | 0 Completely Degraded | 0 <1 year     | 1 1-3 Yr     | 2 Yr        | 4-5      | 3 >5 Yr |  |
| DISTURBANCE                                                                        |                   |                             |                           |                                            |                          |                       |               |              |             |          |         |  |
| (general)                                                                          |                   |                             |                           |                                            |                          |                       | (cattle)      |              |             |          |         |  |
|                                                                                    | 0 heavy           | 1 medium                    | 2 mild                    | 3 none                                     |                          | 0 heavy               | 1 medium      | 2 mild       | 3 none      |          |         |  |
| GROUND COVER                                                                       |                   |                             |                           |                                            |                          |                       |               |              |             |          |         |  |
| Bare Ground                                                                        | 0 <5%             | 1 <20%                      | 2 20-60%                  | 3 60-100%                                  | Hummock Grass            | 0 <5%                 | 1 <20%        | 2 20-60%     | 3 60-100%   |          |         |  |
| Rock                                                                               | 0 <5%             | 1 <20%                      | 2 20-60%                  | 3 60-100%                                  | Other Grass              | 0 <5%                 | 1 <20%        | 2 20-60%     | 3 60-100% * |          |         |  |
| Leaf Litter                                                                        | 0 <5%             | 1 <20%                      | 2 20-60%                  | 3 60-100%                                  | Herbs                    | 0 <5%                 | 1 <20%        | 2 20-60%     | 3 60-100%   |          |         |  |
| Logs >10cm                                                                         | 0 <5%             | 1 <20%                      | 2 20-60%                  | 3 60-100%                                  | Other                    | 0 <5%                 | 1 <20%        | 2 20-60%     | 3 60-100%   |          |         |  |
| MICROHABITATS                                                                      |                   |                             |                           |                                            |                          |                       |               |              |             |          |         |  |
| Burrowing Suitability                                                              | 0 Rock            | 1 Stony                     | 2 Sandy Loam              | 3 Sand                                     | Peeling Bark             | 0 none                | 1 rare        | 2 moderate   | 3 common    |          |         |  |
| Pebbles Stones                                                                     | 0 none            | 1 0-30%                     | 2 30-70%                  | 3 70-100%                                  | Large Hollows            | 0 none                | 1 rare        | 2 moderate   | 3 common    |          |         |  |
| Exfoliating Slabs                                                                  | 0 none            | 1 0-30%                     | 2 30-70%                  | 3 70-100%                                  | Small Hollows            | 0 none                | 1 rare        | 2 moderate   | 3 common    |          |         |  |
| Rock Crevices                                                                      | 0 none            | 1 0-30%                     | 2 30-70%                  | 3 70-100%                                  | Water Presence           | 0 none                | 1 rare        | 2 moderate   | 3 common    |          |         |  |
| Boulders                                                                           | 0 none            | 1 0-30%                     | 2 30-70%                  | 3 70-100%                                  | Distance to Water        | 0 >5km                | 1 2-5km       | 2 500m - 2km | 3 <500m     |          |         |  |
| Suitability for Bats                                                               | YES               |                             |                           | NO                                         |                          | Termite Mounds        | 0 none        | 1 rare       | 2 moderate  | 3 common |         |  |
| Caves                                                                              | Absent            | Present                     |                           |                                            |                          | Woody Debris          | 0 none        | 1 rare       | 2 moderate  | 3 common |         |  |
| SPECIES                                                                            |                   |                             |                           |                                            |                          |                       |               |              |             |          |         |  |
| Malleefowl                                                                         | YES               | NO                          | DETAILS                   | No suitable habitat present in survey area |                          |                       |               |              |             |          |         |  |
| Night Parrot                                                                       | YES               | NO                          |                           | No suitable habitat present in survey area |                          |                       |               |              |             |          |         |  |
| Long-tailed Dunnart                                                                | YES               | NO                          |                           | No suitable habitat present in survey area |                          |                       |               |              |             |          |         |  |
| Mulgara                                                                            | YES               | NO                          |                           | No suitable habitat present in survey area |                          |                       |               |              |             |          |         |  |
| Birds                                                                              |                   |                             |                           | Mammals                                    |                          |                       |               |              | Reptiles    |          |         |  |
|                                                                                    |                   |                             |                           |                                            |                          |                       |               |              |             |          |         |  |
|                                                                                    |                   |                             |                           |                                            |                          |                       |               |              |             |          |         |  |
|                                                                                    |                   |                             |                           |                                            |                          |                       |               |              |             |          |         |  |
|                                                                                    |                   |                             |                           |                                            |                          |                       |               |              |             |          |         |  |
|                                                                                    |                   |                             |                           |                                            |                          |                       |               |              |             |          |         |  |

| FAUNA HABITAT ASSESSMENT SHEET                                                     |                   |                              |                            |                                            |                          |                       |               |            |              |          |         |  |
|------------------------------------------------------------------------------------|-------------------|------------------------------|----------------------------|--------------------------------------------|--------------------------|-----------------------|---------------|------------|--------------|----------|---------|--|
| North-west                                                                         |                   |                              |                            |                                            |                          |                       |               |            |              |          |         |  |
| Location: Youanmi                                                                  |                   |                              |                            |                                            |                          | Site Number: HA3      |               |            |              |          |         |  |
| Project Number: Rox 01                                                             |                   |                              |                            |                                            |                          |                       |               |            |              |          |         |  |
| Date: 10/10/2020                                                                   |                   |                              |                            | Easting: 679744                            |                          | Aspect                | N             | NE         | SW           | NW       |         |  |
| Quadrat Size: 50 x 50                                                              |                   |                              |                            | Northing: 6833339                          |                          |                       | E             | SE         | W            | N/A      |         |  |
|  |                   |                              |                            |                                            |                          |                       |               |            |              |          |         |  |
| Soil Texture                                                                       | sand              |                              | sandy-loam                 |                                            | loam                     |                       | cracking clay |            | clay         |          |         |  |
| VEGETATION                                                                         |                   |                              |                            |                                            |                          |                       |               |            |              |          |         |  |
| Vegetation Description                                                             | Hummock Grassland | Other: Existing Disturbancee |                            |                                            | Average Height in metres | Cover                 |               |            |              |          |         |  |
|                                                                                    | Acacia Shrubland  | Stratum                      |                            |                                            |                          | Scattered Plants      | Sparse        | Moderate   | Thick        |          |         |  |
|                                                                                    | Riverine Woodland | Overstorey                   | Acacia Sp.                 |                                            | 6                        | 0 <5%                 | 1 <20%        | 2 20-60%   | 3 60-100%    |          |         |  |
|                                                                                    | Other Grassland   | Midstorey                    |                            |                                            |                          | 0 <5%                 | 1 <20%        | 2 20-60%   | 3 60-100%    |          |         |  |
|                                                                                    | Euc Woodland      | Ground Cover                 | Grass and mixed low shrubs |                                            |                          | 0 <5%                 | 1 <20%        | 2 20-60%   | 3 60-100%    |          |         |  |
| CONDITION                                                                          |                   |                              |                            |                                            |                          | LAST FIRE             |               |            |              |          |         |  |
| Scale:                                                                             | 5 Pristine        | 4 Excellent                  | 3 Very Good                | 2 Good                                     | 1 Degraded               | 0 Completely Degraded | 0 <1 year     | 1 1-3 Yr   | 2 5 Yr       | 4-       | 3 >5 Yr |  |
| (general)                                                                          |                   |                              |                            |                                            |                          | DISTURBANCE (cattle)  |               |            |              |          |         |  |
|                                                                                    | 0 heavy           | 1 medium*                    | 2 mild                     | 3 none                                     |                          | 0 heavy               | 1 medium      | 2 mild     | 3 none       |          |         |  |
| GROUND COVER                                                                       |                   |                              |                            |                                            |                          |                       |               |            |              |          |         |  |
| Bare Ground                                                                        | 0 <5%             | 1 <20%                       | 2 20-60%                   | 3 60-100%                                  | Hummock Grass            | 0 <5%                 | 1 <20%        | 2 20-60%   | 3 60-100%    |          |         |  |
| Rock                                                                               | 0 <5%             | 1 <20%                       | 2 20-60%                   | 3 60-100%                                  | Other Grass              | 0 <5%                 | 1 <20%        | 2 20-60%   | 3 60-100% *  |          |         |  |
| Leaf Litter                                                                        | 0 <5%             | 1 <20%                       | 2 20-60%                   | 3 60-100%                                  | Herbs                    | 0 <5%                 | 1 <20%        | 2 20-60%   | 3 60-100%    |          |         |  |
| Logs >10cm                                                                         | 0 <5%             | 1 <20%                       | 2 20-60%                   | 3 60-100%                                  | Other                    | 0 <5%                 | 1 <20%        | 2 20-60%   | 3 60-100%    |          |         |  |
| MICROHABITATS                                                                      |                   |                              |                            |                                            |                          |                       |               |            |              |          |         |  |
| Burrowing Suitability                                                              | 0 Rock            | 1 Stony                      | 2 Sandy Loam               | 3 Sand                                     | Peeling Bark             | 0 none                | 1 rare        | 2 moderate | 3 common     |          |         |  |
| Pebbles Stones                                                                     | 0 none            | 1 0-30%                      | 2 30-70%                   | 3 70-100%                                  | Large Hollows            | 0 none                | 1 rare        | 2 moderate | 3 common     |          |         |  |
| Exfoliating Slabs                                                                  | 0 none            | 1 0-30%                      | 2 30-70%                   | 3 70-100%                                  | Small Hollows            | 0 none                | 1 rare        | 2 moderate | 3 common     |          |         |  |
| Rock Crevices                                                                      | 0 none            | 1 0-30%                      | 2 30-70%                   | 3 70-100%                                  | Water                    | 0 none                | 1 rare        | 2 moderate | 3 common     |          |         |  |
| Boulders                                                                           | 0 none            | 1 0-30%                      | 2 30-70%                   | 3 70-100%                                  | Prescence                | 0 none                | 1 rare        | 2 moderate | 3 common     |          |         |  |
| Suitability for Bats                                                               | YES               |                              |                            | NO                                         |                          | Distance to Water     | 0 >5km        | 1 2-5km    | 2 500m - 2km | 3 <500m  |         |  |
| Caves                                                                              | Absent            | Present                      | Old Mine Shafts            |                                            |                          | Termite Mounds        | 0 none        | 1 rare     | 2 moderate   | 3 common |         |  |
| SPECIES                                                                            |                   |                              |                            |                                            |                          |                       |               |            |              |          |         |  |
| Malleefowl                                                                         | YES               | NO                           | DETAILS                    | No suitable habitat present in survey area |                          |                       |               |            |              |          |         |  |
| Night Parrot                                                                       | YES               | NO                           |                            | No suitable habitat present in survey area |                          |                       |               |            |              |          |         |  |
| Long-tailed Dunnart                                                                | YES               | NO                           |                            | No suitable habitat present in survey area |                          |                       |               |            |              |          |         |  |
| Mulgara                                                                            | YES               | NO                           |                            | No suitable habitat present in survey area |                          |                       |               |            |              |          |         |  |
| Birds                                                                              |                   |                              |                            | Mammals                                    |                          |                       |               | Reptiles   |              |          |         |  |
|                                                                                    |                   |                              |                            |                                            |                          |                       |               |            |              |          |         |  |
|                                                                                    |                   |                              |                            |                                            |                          |                       |               |            |              |          |         |  |
|                                                                                    |                   |                              |                            |                                            |                          |                       |               |            |              |          |         |  |
|                                                                                    |                   |                              |                            |                                            |                          |                       |               |            |              |          |         |  |
|                                                                                    |                   |                              |                            |                                            |                          |                       |               |            |              |          |         |  |



| FAUNA HABITAT ASSESSMENT SHEET                                                     |                   |             |                      |                                            |                          |                       |           |               |             |          |         |    |  |     |  |
|------------------------------------------------------------------------------------|-------------------|-------------|----------------------|--------------------------------------------|--------------------------|-----------------------|-----------|---------------|-------------|----------|---------|----|--|-----|--|
| North-west                                                                         |                   |             |                      |                                            |                          |                       |           |               |             |          |         |    |  |     |  |
| Location: Youanmi                                                                  |                   |             |                      |                                            |                          | Site Number: HA4      |           |               |             |          |         |    |  |     |  |
| Project Number: Rox 01                                                             |                   |             |                      |                                            |                          |                       |           |               |             |          |         |    |  |     |  |
| Date: 10/10/2020                                                                   |                   |             | Easting: 678521      |                                            |                          | Aspect                |           | N             |             | NE       |         | SW |  | NW  |  |
| Quadrat Size: 50 x 50                                                              |                   |             | Northing: 6834785    |                                            |                          |                       |           | E             |             | SE       |         | W  |  | N/A |  |
|  |                   |             |                      |                                            |                          |                       |           |               |             |          |         |    |  |     |  |
| Soil Texture                                                                       |                   | sand        |                      | sandy-loam                                 |                          | loam                  |           | cracking clay |             | clay     |         |    |  |     |  |
| VEGETATION                                                                         |                   |             |                      |                                            |                          |                       |           |               |             |          |         |    |  |     |  |
| Vegetation Description                                                             | Hummock Grassland |             | Other: Drainage Line |                                            | Average Height in metres | Cover                 |           |               |             |          |         |    |  |     |  |
|                                                                                    | Acacia Shrubland  |             | Stratum              |                                            |                          | Scattered Plants      | Sparse    | Moderate      | Thick       |          |         |    |  |     |  |
|                                                                                    | Riverine Woodland |             | Overstorey           | Acacia sp.                                 | 5                        | 0 <5%                 | 1 <20%    | 2 20-60%      | 3 60-100%   |          |         |    |  |     |  |
|                                                                                    | Other Grassland   |             | Midstorey            |                                            |                          | 0 <5%                 | 1 <20%    | 2 20-60%      | 3 60-100%   |          |         |    |  |     |  |
|                                                                                    | Euc Woodland      |             | Ground Cover         | Mixed Annuals                              | <0.3                     | 0 <5%                 | 1 <20%    | 2 20-60%      | 3 60-100%   |          |         |    |  |     |  |
|                                                                                    |                   |             |                      |                                            |                          |                       |           |               |             |          |         |    |  |     |  |
| CONDITION                                                                          |                   |             |                      |                                            |                          | LAST FIRE             |           |               |             |          |         |    |  |     |  |
| Scale:                                                                             | 5 Pristine        | 4 Excellent | 3 Very Good          | 2 Good                                     | 1 Degraded               | 0 Completely Degraded | 0 <1 year | 1 1-3 Yr      | 2 5 Yr      | 4-       | 3 >5 Yr |    |  |     |  |
| (general)                                                                          |                   |             |                      |                                            |                          | (cattle)              |           |               |             |          |         |    |  |     |  |
|                                                                                    | 0 heavy           | 1 medium    | 2 mild               | 3 none                                     |                          | 0 heavy               | 1 medium  | 2 mild        | 3 none      |          |         |    |  |     |  |
| GROUND COVER                                                                       |                   |             |                      |                                            |                          |                       |           |               |             |          |         |    |  |     |  |
| Bare Ground                                                                        | 0 <5%             | 1 <20%      | 2 20-60%             | 3 60-100%                                  | Hummock Grass            | 0 <5%                 | 1 <20%    | 2 20-60%      | 3 60-100%   |          |         |    |  |     |  |
| Rock                                                                               | 0 <5%             | 1 <20%      | 2 20-60%             | 3 60-100%                                  | Other Grass              | 0 <5%                 | 1 <20%    | 2 20-60%      | 3 60-100% * |          |         |    |  |     |  |
| Leaf Litter                                                                        | 0 <5%             | 1 <20%      | 2 20-60%             | 3 60-100%                                  | Herbs                    | 0 <5%                 | 1 <20%    | 2 20-60%      | 3 60-100%   |          |         |    |  |     |  |
| Logs >10cm                                                                         | 0 <5%             | 1 <20%      | 2 20-60%             | 3 60-100%                                  | Other                    | 0 <5%                 | 1 <20%    | 2 20-60%      | 3 60-100%   |          |         |    |  |     |  |
| MICROHABITATS                                                                      |                   |             |                      |                                            |                          |                       |           |               |             |          |         |    |  |     |  |
| Burrowing Suitability                                                              | 0 Rock            | 1 Stony     | 2 Sandy Loam         | 3 Sand                                     | Peeling Bark             | 0 none                | 1 rare    | 2 moderate    | 3 common    |          |         |    |  |     |  |
| Pebbles Stones                                                                     | 0 none            | 1 0-30%     | 2 30-70%             | 3 70-100%                                  | Large Hollows            | 0 none                | 1 rare    | 2 moderate    | 3 common    |          |         |    |  |     |  |
| Exfoliating Slabs                                                                  | 0 none            | 1 0-30%     | 2 30-70%             | 3 70-100%                                  | Small Hollows            | 0 none                | 1 rare    | 2 moderate    | 3 common    |          |         |    |  |     |  |
| Rock Crevices                                                                      | 0 none            | 1 0-30%     | 2 30-70%             | 3 70-100%                                  | Water Prescence          | 0 none                | 1 rare    | 2 moderate    | 3 common    |          |         |    |  |     |  |
| Boulders                                                                           | 0 none            | 1 0-30%     | 2 30-70%             | 3 70-100%                                  | Distance to Water        | 0 >5km                | 1 2-5km   | 2 500m - 2km  | 3 <500m     |          |         |    |  |     |  |
| Suitability for Bats                                                               | YES               |             |                      | NO                                         |                          | Termite Mounds        | 0 none    | 1 rare        | 2 moderate  | 3 common |         |    |  |     |  |
| Caves                                                                              | Absent            | Present     |                      |                                            | Woody Debris             | 0 none                | 1 rare    | 2 moderate    | 3 common    |          |         |    |  |     |  |
| SPECIES                                                                            |                   |             |                      |                                            |                          |                       |           |               |             |          |         |    |  |     |  |
| Malleefowl                                                                         | YES               | NO          | DETAILS              | No suitable habitat present in survey area |                          |                       |           |               |             |          |         |    |  |     |  |
| Night Parrot                                                                       | YES               | NO          |                      | No suitable habitat present in survey area |                          |                       |           |               |             |          |         |    |  |     |  |
| Long-tailed Dunnart                                                                | YES               | NO          |                      | No suitable habitat present in survey area |                          |                       |           |               |             |          |         |    |  |     |  |
| Mulgara                                                                            | YES               | NO          |                      | No suitable habitat present in survey area |                          |                       |           |               |             |          |         |    |  |     |  |
| Birds                                                                              |                   |             | Mammals              |                                            |                          |                       |           | Reptiles      |             |          |         |    |  |     |  |
|                                                                                    |                   |             |                      |                                            |                          |                       |           |               |             |          |         |    |  |     |  |
|                                                                                    |                   |             |                      |                                            |                          |                       |           |               |             |          |         |    |  |     |  |
|                                                                                    |                   |             |                      |                                            |                          |                       |           |               |             |          |         |    |  |     |  |
|                                                                                    |                   |             |                      |                                            |                          |                       |           |               |             |          |         |    |  |     |  |

| FAUNA HABITAT ASSESSMENT SHEET                                                     |                   |                  |                   |                                            |                          |                       |               |              |             |          |  |  |
|------------------------------------------------------------------------------------|-------------------|------------------|-------------------|--------------------------------------------|--------------------------|-----------------------|---------------|--------------|-------------|----------|--|--|
| North-west                                                                         |                   |                  |                   |                                            |                          |                       |               |              |             |          |  |  |
| Location: Youanmi                                                                  |                   |                  |                   |                                            |                          | Site Number: HA5      |               |              |             |          |  |  |
| Project Number: Rox 01                                                             |                   |                  |                   |                                            |                          |                       |               |              |             |          |  |  |
| Date: 11/10/2020                                                                   |                   |                  | Easting: 702401   |                                            |                          | Aspect                | N             | NE           | SW          | NW       |  |  |
| Quadrat Size: 50 x 50                                                              |                   |                  | Northing: 6837080 |                                            |                          |                       | E             | SE           | W           | NA       |  |  |
|  |                   |                  |                   |                                            |                          |                       |               |              |             |          |  |  |
|                                                                                    |                   |                  |                   |                                            |                          |                       |               |              |             |          |  |  |
| Soil Texture                                                                       | sand              |                  | sandy-loam        |                                            | loam                     |                       | cracking clay |              | clay        |          |  |  |
| VEGETATION                                                                         |                   |                  |                   |                                            |                          |                       |               |              |             |          |  |  |
| Vegetation Description                                                             | Hummock Grassland | Other: Salt Lake |                   |                                            | Average Height in metres | Cover                 |               |              |             |          |  |  |
|                                                                                    | Acacia Shrubland  | Stratum          |                   |                                            |                          | Scattered Plants      | Sparse        | Moderate     | Thick       |          |  |  |
|                                                                                    | Riverine Woodland | Overstorey       |                   |                                            | 0 <5%                    | 1 <20%                | 2 20-60%      | 3 60-100%    |             |          |  |  |
|                                                                                    | Other Grassland   | Midstorey        |                   |                                            | 0 <5%                    | 1 <20%                | 2 20-60%      | 3 60-100%    |             |          |  |  |
|                                                                                    | Euc Woodland      | Ground Cover     |                   |                                            | 0 <5%                    | 1 <20%                | 2 20-60%      | 3 60-100%    |             |          |  |  |
|                                                                                    |                   |                  |                   |                                            |                          |                       |               |              |             |          |  |  |
| CONDITION                                                                          |                   |                  |                   |                                            |                          | LAST FIRE             |               |              |             |          |  |  |
| Scale:                                                                             | 5 Pristine        | 4 Excellent      | 3 Very Good       | 2 Good                                     | 1 Degraded               | 0 Completely Degraded | 0 <1 year     | 1 1-3 Yr     | 2 5 Yr      | 4- >5 Yr |  |  |
| (general)                                                                          |                   |                  |                   |                                            |                          | (cattle)              |               |              |             |          |  |  |
|                                                                                    | 0 heavy           | 1 medium*        | 2 mild            | 3 none                                     |                          | 0 heavy               | 1 medium      | 2 mild       | 3 none      |          |  |  |
| GROUND COVER                                                                       |                   |                  |                   |                                            |                          |                       |               |              |             |          |  |  |
| Bare Ground                                                                        | 0 <5%             | 1 <20%           | 2 20-60%          | 3 60-100%                                  | Hummock Grass            | 0 <5%                 | 1 <20%        | 2 20-60%     | 3 60-100%   |          |  |  |
| Rock                                                                               | 0 <5%             | 1 <20%           | 2 20-60%          | 3 60-100%                                  | Other Grass              | 0 <5%                 | 1 <20%        | 2 20-60%     | 3 60-100% * |          |  |  |
| Leaf Litter                                                                        | 0 <5%             | 1 <20%           | 2 20-60%          | 3 60-100%                                  | Herbs                    | 0 <5%                 | 1 <20%        | 2 20-60%     | 3 60-100%   |          |  |  |
| Logs >10cm                                                                         | 0 <5%             | 1 <20%           | 2 20-60%          | 3 60-100%                                  | Other                    | 0 <5%                 | 1 <20%        | 2 20-60%     | 3 60-100%   |          |  |  |
| MICROHABITATS                                                                      |                   |                  |                   |                                            |                          |                       |               |              |             |          |  |  |
| Burrowing Suitability                                                              | 0 Rock            | 1 Stony          | 2 Sandy Loam      | 3 Sand                                     | Peeling Bark             | 0 none                | 1 rare        | 2 moderate   | 3 common    |          |  |  |
| Pebbles Stones                                                                     | 0 none            | 1 0-30%          | 2 30-70%          | 3 70-100%                                  | Large Hollows            | 0 none                | 1 rare        | 2 moderate   | 3 common    |          |  |  |
| Exfoliating Slabs                                                                  | 0 none            | 1 0-30%          | 2 30-70%          | 3 70-100%                                  | Small Hollows            | 0 none                | 1 rare        | 2 moderate   | 3 common    |          |  |  |
| Rock Crevices                                                                      | 0 none            | 1 0-30%          | 2 30-70%          | 3 70-100%                                  | Water                    | 0 none                | 1 rare        | 2 moderate   | 3 common    |          |  |  |
| Boulders                                                                           | 0 none            | 1 0-30%          | 2 30-70%          | 3 70-100%                                  | Presence of Water        | 0 >5km                | 1 2-5km       | 2 500m - 2km | 3 <500m     |          |  |  |
| Suitability for Bats                                                               | YES               |                  |                   | NO                                         |                          | Termite Mounds        | 0 none        | 1 rare       | 2 moderate  | 3 common |  |  |
| Caves                                                                              | Absent            |                  | Present           |                                            | Woody Debris             | 0 none                | 1 rare        | 2 moderate   | 3 common    |          |  |  |
| SPECIES                                                                            |                   |                  |                   |                                            |                          |                       |               |              |             |          |  |  |
| Malleefowl                                                                         | YES               | NO               | DETAILS           | No suitable habitat present in survey area |                          |                       |               |              |             |          |  |  |
| Night Parrot                                                                       | YES               | NO               |                   | No suitable habitat present in survey area |                          |                       |               |              |             |          |  |  |
| Long-tailed Dunnart                                                                | YES               | NO               |                   | No suitable habitat present in survey area |                          |                       |               |              |             |          |  |  |
| Mulgara                                                                            | YES               | NO               |                   | No suitable habitat present in survey area |                          |                       |               |              |             |          |  |  |
| Birds                                                                              |                   |                  |                   | Mammals                                    |                          |                       |               | Reptiles     |             |          |  |  |
|                                                                                    |                   |                  |                   |                                            |                          |                       |               |              |             |          |  |  |
|                                                                                    |                   |                  |                   |                                            |                          |                       |               |              |             |          |  |  |
|                                                                                    |                   |                  |                   |                                            |                          |                       |               |              |             |          |  |  |
|                                                                                    |                   |                  |                   |                                            |                          |                       |               |              |             |          |  |  |
|                                                                                    |                   |                  |                   |                                            |                          |                       |               |              |             |          |  |  |

| FAUNA HABITAT ASSESSMENT SHEET                                                     |                   |                            |                          |                                            |                          |                       |               |              |             |          |         |  |
|------------------------------------------------------------------------------------|-------------------|----------------------------|--------------------------|--------------------------------------------|--------------------------|-----------------------|---------------|--------------|-------------|----------|---------|--|
| North-west                                                                         |                   |                            |                          |                                            |                          |                       |               |              |             |          |         |  |
| Location: Youanmi                                                                  |                   |                            |                          |                                            |                          | Site Number: HA6      |               |              |             |          |         |  |
| Project Number: Rox 01                                                             |                   |                            |                          |                                            |                          |                       |               |              |             |          |         |  |
| Date: 11/10/2020                                                                   |                   |                            |                          | Easting: 699756                            |                          | Aspect                | N             | NE           | SW          | NW       |         |  |
| Quadrat Size: 50 x 50                                                              |                   |                            |                          | Northing: 6833949                          |                          |                       | E             | SE           | W           | N/A      |         |  |
|  |                   |                            |                          |                                            |                          |                       |               |              |             |          |         |  |
| Soil Texture                                                                       | sand              |                            | sandy-loam               |                                            | loam                     |                       | cracking clay |              | clay        |          |         |  |
| VEGETATION                                                                         |                   |                            |                          |                                            |                          |                       |               |              |             |          |         |  |
| Vegetation Description                                                             | Hummock Grassland | Other: Casuarina Shrubland |                          |                                            | Average Height in metres | Cover                 |               |              |             |          |         |  |
|                                                                                    | Acacia Shrubland  | Stratum                    |                          |                                            |                          | Scattered Plants      | Sparse        | Moderate     | Thick       |          |         |  |
|                                                                                    | Riverine Woodland | Overstorey                 | Casuarina sp. Acacia sp. |                                            | 8                        | 0 <5%                 | 1 <20%        | 2 20-60%     | 3 60-100%   |          |         |  |
|                                                                                    | Other Grassland   | Midstorey                  | Acacia sp.               |                                            | 3                        | 0 <5%                 | 1 <20%        | 2 20-60%     | 3 60-100%   |          |         |  |
|                                                                                    | Euc Woodland      | Ground Cover               | Mixed Annuals            |                                            | <0.3                     | 0 <5%                 | 1 <20%        | 2 20-60%     | 3 60-100%   |          |         |  |
| CONDITION                                                                          |                   |                            |                          |                                            |                          | LAST FIRE             |               |              |             |          |         |  |
| Scale:                                                                             | 5 Pristine        | 4 Excellent                | 3 Very Good              | 2 Good                                     | 1 Degraded               | 0 Completely Degraded | 0 <1 year     | 1 1-3 Yr     | 2 5 Yr      | 4-       | 3 >5 Yr |  |
| (general)                                                                          |                   |                            |                          | DISTURBANCE                                |                          |                       |               | (cattle)     |             |          |         |  |
|                                                                                    | 0 heavy           | 1 medium                   | 2 mild                   | 3 none                                     |                          | 0 heavy               | 1 medium      | 2 mild       | 3 none      |          |         |  |
| GROUND COVER                                                                       |                   |                            |                          |                                            |                          |                       |               |              |             |          |         |  |
| Bare Ground                                                                        | 0 <5%             | 1 <20%                     | 2 20-60%                 | 3 60-100%                                  | Hummock Grass            | 0 <5%                 | 1 <20%        | 2 20-60%     | 3 60-100%   |          |         |  |
| Rock                                                                               | 0 <5%             | 1 <20%                     | 2 20-60%                 | 3 60-100%                                  | Other Grass              | 0 <5%                 | 1 <20%        | 2 20-60%     | 3 60-100% * |          |         |  |
| Leaf Litter                                                                        | 0 <5%             | 1 <20%                     | 2 20-60%                 | 3 60-100%                                  | Herbs                    | 0 <5%                 | 1 <20%        | 2 20-60%     | 3 60-100%   |          |         |  |
| Logs >10cm                                                                         | 0 <5%             | 1 <20%                     | 2 20-60%                 | 3 60-100%                                  | Other                    | 0 <5%                 | 1 <20%        | 2 20-60%     | 3 60-100%   |          |         |  |
| MICROHABITATS                                                                      |                   |                            |                          |                                            |                          |                       |               |              |             |          |         |  |
| Burrowing Suitability                                                              | 0 Rock            | 1 Stony                    | 2 Sandy Loam             | 3 Sand                                     | Peeling Bark             | 0 none                | 1 rare        | 2 moderate   | 3 common    |          |         |  |
| Pebbles Stones                                                                     | 0 none            | 1 0-30%                    | 2 30-70%                 | 3 70-100%                                  | Large Hollows            | 0 none                | 1 rare        | 2 moderate   | 3 common    |          |         |  |
| Exfoliating Slabs                                                                  | 0 none            | 1 0-30%                    | 2 30-70%                 | 3 70-100%                                  | Small Hollows            | 0 none                | 1 rare        | 2 moderate   | 3 common    |          |         |  |
| Rock Crevices                                                                      | 0 none            | 1 0-30%                    | 2 30-70%                 | 3 70-100%                                  | Water Presence           | 0 none                | 1 rare        | 2 moderate   | 3 common    |          |         |  |
| Boulders                                                                           | 0 none            | 1 0-30%                    | 2 30-70%                 | 3 70-100%                                  | Distance to Water        | 0 >5km                | 1 2-5km       | 2 500m - 2km | 3 <500m     |          |         |  |
| Suitability for Bats                                                               | YES               |                            |                          | NO                                         |                          | Termite Mounds        | 0 none        | 1 rare       | 2 moderate  | 3 common |         |  |
| Caves                                                                              | Absent            | Present                    |                          |                                            | Woody Debris             | 0 none                | 1 rare        | 2 moderate   | 3 common    |          |         |  |
| SPECIES                                                                            |                   |                            |                          |                                            |                          |                       |               |              |             |          |         |  |
| Malleefowl                                                                         | YES               | NO                         | DETAILS                  | No suitable habitat present in survey area |                          |                       |               |              |             |          |         |  |
| Night Parrot                                                                       | YES               | NO                         |                          | No suitable habitat present in survey area |                          |                       |               |              |             |          |         |  |
| Long-tailed Dunnart                                                                | YES               | NO                         |                          | No suitable habitat present in survey area |                          |                       |               |              |             |          |         |  |
| Mulgara                                                                            | YES               | NO                         |                          | No suitable habitat present in survey area |                          |                       |               |              |             |          |         |  |
| Birds                                                                              |                   |                            | Mammals                  |                                            |                          |                       |               |              | Reptiles    |          |         |  |
|                                                                                    |                   |                            |                          |                                            |                          |                       |               |              |             |          |         |  |
|                                                                                    |                   |                            |                          |                                            |                          |                       |               |              |             |          |         |  |
|                                                                                    |                   |                            |                          |                                            |                          |                       |               |              |             |          |         |  |
|                                                                                    |                   |                            |                          |                                            |                          |                       |               |              |             |          |         |  |
|                                                                                    |                   |                            |                          |                                            |                          |                       |               |              |             |          |         |  |



| FAUNA HABITAT ASSESSMENT SHEET                                                     |                   |                              |                 |                                            |                          |                          |                  |              |              |               |               |             |
|------------------------------------------------------------------------------------|-------------------|------------------------------|-----------------|--------------------------------------------|--------------------------|--------------------------|------------------|--------------|--------------|---------------|---------------|-------------|
| North-west                                                                         |                   |                              |                 |                                            |                          |                          |                  |              |              |               |               |             |
| Location: Youanmi                                                                  |                   |                              |                 |                                            |                          |                          | Site Number: HA7 |              |              |               |               |             |
| Project Number: Rox 01                                                             |                   |                              |                 |                                            |                          |                          |                  |              |              |               |               |             |
| Date: 11/10/2020                                                                   |                   |                              |                 | Easting: 701887                            |                          |                          | Aspect           | N            | NE           | SW            | NW            |             |
| Quadrat Size: 50 x 50                                                              |                   |                              |                 | Northing: 6837147                          |                          |                          |                  | E            | SE           | W             | N/A           |             |
|  |                   |                              |                 |                                            |                          |                          |                  |              |              |               |               |             |
| Soil Texture                                                                       | sand              |                              | sandy-loam      |                                            | loam                     |                          | cracking clay    |              | clay         |               |               |             |
| VEGETATION                                                                         |                   |                              |                 |                                            |                          |                          |                  |              |              |               |               |             |
| Vegetation Description                                                             | Hummock Grassland | Other: Tecticornia Shrubland |                 |                                            | Average Height in metres | Cover                    |                  |              |              |               |               |             |
|                                                                                    | Acacia Shrubland  | Stratum                      |                 |                                            |                          | Scattered Plants         | Sparse           | Moderate     | Thick        |               |               |             |
|                                                                                    | Riverine Woodland | Overstorey                   | Tecticornia sp. |                                            |                          |                          |                  |              |              |               |               |             |
|                                                                                    | Other Grassland   | Midstorey                    |                 |                                            |                          |                          |                  |              |              |               |               |             |
|                                                                                    | Euc Woodland      | Ground Cover                 |                 |                                            |                          |                          |                  |              |              |               |               |             |
| CONDITION                                                                          |                   |                              |                 |                                            |                          |                          | LAST FIRE        |              |              |               |               |             |
| Scale:                                                                             | 5<br>Pristine     | 4<br>Excellent               | 3<br>Very Good  | 2<br>Good                                  | 1<br>Degraded            | 0<br>Completely Degraded | 0<br>1-3 Yr      | 1<br>4-5 Yr  | 2<br>6-10 Yr | 3<br>11-20 Yr | 4<br>21-30 Yr | 5<br>>30 Yr |
| (general) DISTURBANCE (cattle)                                                     |                   |                              |                 |                                            |                          |                          |                  |              |              |               |               |             |
|                                                                                    | 0<br>heavy        | 1<br>medium*                 | 2<br>mild       | 3<br>none                                  |                          | 0<br>heavy               | 1<br>medium      | 2<br>mild    | 3<br>none    |               |               |             |
| GROUND COVER                                                                       |                   |                              |                 |                                            |                          |                          |                  |              |              |               |               |             |
| Bare Ground                                                                        | 0 <5%             | 1 <20%                       | 2 20-60%        | 3 60-100%                                  | Hummock Grass            | 0 <5%                    | 1 <20%           | 2 20-60%     | 3 60-100%    |               |               |             |
| Rock                                                                               | 0 <5%             | 1 <20%                       | 2 20-60%        | 3 60-100%                                  | Other Grass              | 0 <5%                    | 1 <20%           | 2 20-60%     | 3 60-100% *  |               |               |             |
| Leaf Litter                                                                        | 0 <5%             | 1 <20%                       | 2 20-60%        | 3 60-100%                                  | Herbs                    | 0 <5%                    | 1 <20%           | 2 20-60%     | 3 60-100%    |               |               |             |
| Logs >10cm                                                                         | 0 <5%             | 1 <20%                       | 2 20-60%        | 3 60-100%                                  | Other                    | 0 <5%                    | 1 <20%           | 2 20-60%     | 3 60-100%    |               |               |             |
| MICROHABITATS                                                                      |                   |                              |                 |                                            |                          |                          |                  |              |              |               |               |             |
| Burrowing Suitability                                                              | 0 Rock            | 1 Stony                      | 2 Sandy Loam    | 3 Sand                                     | Peeling Bark             | 0 none                   | 1 rare           | 2 moderate   | 3 common     |               |               |             |
| Pebbles Stones                                                                     | 0 none            | 1 0-30%                      | 2 30-70%        | 3 70-100%                                  | Large Hollows            | 0 none                   | 1 rare           | 2 moderate   | 3 common     |               |               |             |
| Exfoliating Slabs                                                                  | 0 none            | 1 0-30%                      | 2 30-70%        | 3 70-100%                                  | Small Hollows            | 0 none                   | 1 rare           | 2 moderate   | 3 common     |               |               |             |
| Rock Crevices                                                                      | 0 none            | 1 0-30%                      | 2 30-70%        | 3 70-100%                                  | Water Prescence          | 0 none                   | 1 rare           | 2 moderate   | 3 common     |               |               |             |
| Boulders                                                                           | 0 none            | 1 0-30%                      | 2 30-70%        | 3 70-100%                                  | Distance to Water        | 0 >5km                   | 1 2-5km          | 2 500m - 2km | 3 <500m      |               |               |             |
| Suitability for Bats                                                               | YES               |                              |                 | NO                                         |                          | Termite Mounds           | 0 none           | 1 rare       | 2 moderate   | 3 common      |               |             |
| Caves                                                                              | Absent            | Present                      |                 |                                            |                          | Woody Debris             | 0 none           | 1 rare       | 2 moderate   | 3 common      |               |             |
| SPECIES                                                                            |                   |                              |                 |                                            |                          |                          |                  |              |              |               |               |             |
| Malleefowl                                                                         | YES               | NO                           | DETAILS         | No suitable habitat present in survey area |                          |                          |                  |              |              |               |               |             |
| Night Parrot                                                                       | YES               | NO                           |                 | No suitable habitat present in survey area |                          |                          |                  |              |              |               |               |             |
| Long-tailed Dunnart                                                                | YES               | NO                           |                 | No suitable habitat present in survey area |                          |                          |                  |              |              |               |               |             |
| Mulgara                                                                            | YES               | NO                           |                 | No suitable habitat present in survey area |                          |                          |                  |              |              |               |               |             |
| Birds                                                                              |                   |                              | Mammals         |                                            |                          |                          |                  | Reptiles     |              |               |               |             |
|                                                                                    |                   |                              |                 |                                            |                          |                          |                  |              |              |               |               |             |
|                                                                                    |                   |                              |                 |                                            |                          |                          |                  |              |              |               |               |             |
|                                                                                    |                   |                              |                 |                                            |                          |                          |                  |              |              |               |               |             |
|                                                                                    |                   |                              |                 |                                            |                          |                          |                  |              |              |               |               |             |
|                                                                                    |                   |                              |                 |                                            |                          |                          |                  |              |              |               |               |             |



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## ***Appendix 4: Fauna Photos***



Tree Dtella (*Gehyra variegata*).



Pretty Gecko (*Diplodactylus pulcher*).





Southern Spinifex Skink (*Ctenotus atlas*).





Barred Wedge-snouted Ctenotus (*Ctenotus schomburgkii*).



Western Spotted Ctenotus (*Ctenotus uber*).





Butlers Snake-eyed Skink (*Morethia butleri*).



Southern Pygmy Spiny-tailed Skink (*Egernia depressa*).





Lozenge-marked Dragon (*Ctenophorus scutulatus*).



Claypan Dragon (*Ctenophorus salinarum*).





Dwarf Bearded Dragon (*Pogona minor*).



Stripe-tailed Monitor (*Varanus caudolineatus*).





Hairy-footed Dunnart (*Sminthopsis hirtipes*).



Bolam's Mouse (*Pseudomys bolami*).





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## ***Appendix 5: Camera Trap Photos***



Cat (camera trap number, temperature, date and time are on the image [this data can be taken from all the images presented below]).



Grey Currawong.





Little Crows.



Rabbit (background on right side).





Red Kangaroo (faint image in background on right side).



Cow.





Sand Goanna.



## ***Appendix 6: Photo Points***



For the geographical location of all photo points in the survey area see Figure 4. The easting and northing coordinates (UTMs – GDA94) of each photo point are below each image.



Photo Point 1 (6830445, 682039).



Photo Point 2 (6837081, 702401).





Photo Point 3 (6837099, 701393).



Photo Point 4 (6834607, 679471).





Photo Point 5 (6835146, 679768).



Photo Point 6 (6836203, 679357).





Photo Point 7 (6834343, 680252).



Photo Point 8 (6834278, 680915).





Photo Point 9 (6834541, 681326).



Photo Point 10 (6835671,681828).





Photo Point 11 (6831909, 682862).



Photo Point 12 (6831137, 702881).





Photo Point 13 (6831969, 703558).



Photo Point 14 (6830758, 698560).





Photo Point 15 (6830784, 697597).



Photo Point 16 (6832928, 678784).





Photo Point 17 (6832428, 678219).



Photo Point 18 (6833582, 679343).





Photo Point 19 (6833340, 679744).



Photo Point 20 (6832815, 681279).





Photo Point 21 (6834212, 678490).



Photo Point 22 (6835637, 678681).





Photo Point 23 (6835789, 677989).



Photo Point 24 (6835399, 677850).





Photo Point 25 (6833950, 699757).



Photo Point 26 (6834805, 700053).



Photo Point 27 (6831005, 688435).



## **APPENDIX 3: Aboriginal Heritage Field Inspection – A J Rayner Consulting 2022**

# A Report of an Aboriginal Heritage Field Inspection of the Youanmi Gold Project Area

Prepared for Rox Resources Ltd.



By Aaron Rayner, Principal

A J Rayner Consulting, Aboriginal Heritage – Native Title

July 2022



## Disclaimers

The analysis and recommendations contained within this report are based on information made available at the time of its preparation. The author takes no responsibility for omissions and/or inconsistencies that may result from information becoming available after the report's completion.

This report offers independent heritage advice and recommendations to assist Rox Resources Ltd. This advice is based on the author's own opinions, interpretations, knowledge and experience of the Aboriginal regulatory heritage system in Western Australia and does not constitute legal advice.

This advice is relevant to the prevailing Aboriginal heritage laws in Western Australia – the *Aboriginal Heritage Act 1972*.

Any future compensation liabilities that may arise under the *Native Title Act 1993* do not form part of this advice.

## Author

Aaron Rayner conducted the field survey and prepared this report for Rox Resources Ltd. Aaron is the former Chief Heritage Officer and Deputy Director General at the Department of Aboriginal Affairs in Western Australia. In these roles Aaron was responsible for managing the *Aboriginal Heritage Act 1972* and its regulations and for providing advice to executive government and industry proponents. For five years Aaron was a member of the Aboriginal Cultural Material Committee the statutory body that provides advice to the Minister for Aboriginal Affairs on all Aboriginal heritage matters. Aaron has significant experience and expert understanding of the Aboriginal Heritage regulatory framework in WA and is routinely called upon to provide expert evidence in the National Native title Tribunal and State Administrative Tribunal.

## Glossary of Terms

|           |                                                            |
|-----------|------------------------------------------------------------|
| ACMC      | Aboriginal Cultural Material Committee                     |
| ACH Act   | <i>Aboriginal Cultural Heritage Act 2021</i>               |
| AH Act    | <i>Aboriginal Heritage Act 1972</i>                        |
| DPLH      | Department of Planning, Lands and Heritage                 |
| Minister  | Minister for Aboriginal Affairs                            |
| NT Act    | <i>Native Title Act 1993</i> (Cth.)                        |
| Register  | Register of Aboriginal Sites                               |
| Registrar | Registrar of Aboriginal Sites                              |
| Rox       | Rox Resources Ltd                                          |
| s18       | Section 18 of the <i>Aboriginal Heritage Act 1972</i> (WA) |

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## Executive Summary

Rox Resources Ltd (**Rox**) is preparing to recommence mining operations at its Youanmi Gold Project (the **Project**) located approximately 80kms southwest of the Town of Sandstone in the Shire of Sandstone, Western Australia. The Project area is located on granted mining tenure. Rox commissioned an Aboriginal heritage field inspection and assessment to inform its mine planning exercise and to ensure that any future mining operations are carried out in full compliance with the *Aboriginal Heritage Act 1972* (**AH Act**). The purpose of the field assessment was to identify the presence of any Aboriginal heritage cultural material or Aboriginal heritage sites within a defined area that Rox is seeking to develop (**Survey Area** – see **Appendix 1**).

The survey area has been subject to significant land disturbance from previous mining operations and historic exploration campaigns. The land is host to numerous mining pits, haul roads, waste dumps, aircraft landing strip and a large mining camp. Very little of the survey area is undisturbed, which means there is very low potential for identifying unrecorded Aboriginal cultural material sites.

There is no native title claim over the Project area since the Wutha native title claim was dismissed in 2017. The Marlinyu Ghoorlie native title claim (*Brian Champion & Ors v State of WA* WC 2017/007) is the nearest claim and is located some 25km southwest of the Project area. Rox do not have an Aboriginal heritage agreement with the previous native title claimants or individual Aboriginal people or families that prescribe the processes for conducting heritage surveys and compliance with the AH Act. In these circumstances Rox is required to undertake its Aboriginal heritage due diligence in accordance with the requirements of the law.

Prior to the field survey a desktop assessment considered the existing Aboriginal heritage information that is on the public record for the survey area and broader region. A search of the Aboriginal Heritage Inquiry System (**AHIS**) found that there are no recorded Aboriginal sites in the survey area and there is no record of any Aboriginal heritage survey having been undertaken. The nearest recorded Aboriginal site is Lake Noondie site ID 19515, a mythological place located approximately 20km to the east of the survey area. A search of the National Native Title Tribunal database found no future act decisions had been made for land within the survey area and consequently there are no records of sites of particular significance in the database.

The field inspection was undertaken between 24 and 26 June 2022 by the author and Mr Terry Russell, Field Assistant and GIS expert. Access to the survey area was good given the network of haul roads and exploration access tracks. The field work was undertaken using both vehicle and pedestrian inspection. Given the relatively large size of the survey area and the high levels of ground disturbance the field methodology was designed to focus inspection on creek lines and areas where the ground was relatively intact.

No Aboriginal sites were identified within the meaning of section 5 of the AH Act were identified. Two isolated artefacts were identified during the course of the inspection. These two single artefacts do not constitute Aboriginal sites under section 5 of the AH Act. A set of rock shelters were identified in a breakaway area just outside of the southwestern corner of the survey area in tenement M57/160A. No artefacts were identified near to the rock shelters and the potential for sub-surface deposit is considered low

The survey area is clear of Aboriginal sites and there are no Aboriginal heritage management considerations that Rox needs to address.

## Recommendations

It is recommended that Rox Resources Ltd notes that:

1. The field inspection of the Youanmi Project survey area is complete;
2. No new Aboriginal sites were identified, and the findings are detailed at **Appendix 1**;
3. No offence will be committed under section 17 of the *Aboriginal Heritage Act 1972* if Rox confines its proposed mining activities to within the surveyed area;
4. Prior to carrying out ground disturbing activities outside of the survey area, Rox should undertake heritage surveys;
5. It should ensure that its staff and contractors are aware of the provisions and obligations under the *Aboriginal Heritage Act 1972*;
6. Section 15 of the *Aboriginal Heritage Act 1972* obliges Rox to report any newly discovered Aboriginal sites to the Registrar of Aboriginal Sites.



## Introduction

Rox is planning to recommence mining operations at its Youanmi Gold Project near Sandstone 480km northeast of Perth. Rox requested that a cultural heritage field inspection and assessment be undertaken prior to finalising its mine plan and recommencing gold mining operations. The Youanmi Project area is a former mine site that closed in 1997.

The survey area is within six mining leases: M57/166, M57/165, M57/160A, M57/135, M57/109, M57/51 and M57/10. These tenements were granted prior to the *Native Title Act 1993* coming into force.

The survey area is one of the few places in Western Australia that is not subject to a current native title claim. There are no Aboriginal heritage agreements in place for any of the granted mining tenure.

Rox's primary objective is to ensure that the proposed mining operations do not interfere with Aboriginal sites or objects and inadvertently cause any offence under section 17 of the AH Act.

## Methodology

The methodology used to conduct this Aboriginal cultural heritage field inspection and assessment included:

- Review of historical cultural heritage information including relevant site files and Aboriginal heritage survey reports
- Examination of aerial imagery, topography, previous land uses and proposed land use
- Conducting the field inspection and preparation of this survey report and spatial information

The primary objective of the field inspection was to establish if any Aboriginal cultural material and Aboriginal sites are located within the survey area or in immediate proximity to it and assess what harm if any would be caused by the recommencement of mining activities.

Prior to the field inspection the author undertook a review of the existing Aboriginal heritage information recorded in the survey area and the region. This was done by searching and considering the following sources of Aboriginal heritage information from:

- The Department of Planning, Land and Heritage (**DPLH**) AHIS and Register of Aboriginal Sites
- The National Native Title Tribunal (**NNTT**) database of Future Act decisions during the period of the Wutha claim
- The author's own private collection of reports, papers and journals

The field inspection of the survey area was conducted to a 'site avoidance' standard. The objective of the site avoidance heritage assessment is to identify the location and boundary of the heritage place(s) in sufficient detail to give the land user sufficient information to avoid the place when carrying out the proposed land use.

The fieldwork methodology included vehicle navigation to the survey areas using existing the numerous access tracks and then a pedestrian inspection of the land.

## Ethnographic Background of the Project Area and Broader Region

The area where the Project area is located is in land that forms part of the Western Desert Cultural Bloc. The ethnographic understanding of the Western Desert Region is well defined with many Dreamtime narratives held on the public record.

The Dreaming is the creative period in which a set of known creative (or ancestral) beings formed the landscape, often transforming themselves or others into recognisable features, and established the correct ways for Aboriginal people to live their lives, the lore.

The creative beings roamed the earth and transformed it from a featureless plain into its present shape by creating or forming the various physical features which we know today. In some cases, these ancestors were also responsible for the creation of animal and plant species. On their journeys they camped, ate, killed, gave birth and performed ritual and magical acts. In places they are metamorphosed in stone, water and other natural features, which are the foci from which the sacred presence radiates.

Two of the most important beings in Western Desert Dreaming are the “two men”, *Wati Kutjarra*. These two men are sometimes depicted as two snakes or two lizards. Their travels and accomplishments span the Western Desert. Aboriginal people living in the different parts of the Western Desert know local events and places associated with the *Wati Kutjarra* and other ancestral beings of the Dreamtime such as *Papa*, *Walawaru* and *Karlaya*. Song lines recount the activities and creations of these creation beings that connect places and form a strong part of Aboriginal tradition and prescribe the customs and rituals performed at each place.

## Environment

The project area falls within a desert climatic zone characterised by highly variable summer and winter rainfall. No permanent water sources occur in the vicinity of the survey area, but shallow creek lines and small drainage lines are evident. These are minor, diffuse, and highly ephemeral.

The topography of the survey area is mainly flat with small hills at the southwestern corner of the survey area.

The survey area is situated on Youanmi Down Pastoral Station. The tenements are therefore also networked with access tracks and supporting infrastructure such as fencing. Prospecting and gold mining activities commenced in the late 19<sup>th</sup> century comprising underground reef mining and surface alluvial gold mining operations. There are numerous mine shafts and historic workings dotted through the survey area.





Photo 1. Old Workings

## Regulatory Framework

### *State Aboriginal heritage legislation*

In December 2021 the Aboriginal Cultural Heritage Act 2021 (**ACH Act**) was passed by the Western Australia Parliament. The ACH Act is currently in a transitional period which commenced on 22 December 2021 and will last for at least 12 months. During the transitional period regulations, statutory guidelines and operational policies will be developed, as parts of the ACH Act are progressively proclaimed. Part 1 of the ACH Act came into effect on the 22 December 2021. Part 1 includes the commencement clause, an overview of the proposed Act, the objects and principles of the proposed act, terms used and the interaction with other Acts. Further parts of the ACH Act establishing the Aboriginal Cultural Heritage Council, and associated *Aboriginal Cultural Heritage Regulations 2022*, came into effect on 18 and 17 June 2022 (respectively). When the ACH Act comes fully into operation, it will replace the AH Act

Until this time the AH Act remains the primary legislation in Western Australia for protecting all Aboriginal heritage sites of significance whether the sites are registered or not, and whether they are known or unknown. Section 5 defines the places the Act protects. The legislative regime is expansive as it protects both cultural material places and sacred sites of importance and significance to Aboriginal people.

Section 5 of the AH Act applies to:

- (a) Any place of importance and significance where persons of Aboriginal descent have, or appeared to have, left any object, natural or artificial, used for, or made or adapted for use for, any purpose connected with traditional cultural life of the Aboriginal people, past or present;
- (b) Any sacred, ritual or ceremonial site, which is of importance and special significance to persons of Aboriginal descent;
- (c) Any place which, in the opinion of the Committee, is or was associated with the Aboriginal people and which is of historical, anthropological, archaeological or ethnographical interest and should be preserved because of its importance and significance to the cultural heritage of the State; and
- (d) Any place where objects to which this Act applies are traditionally stored, or to which, under the provisions of this Act, such objects have been taken or remove.

Section 6 of the AH Act protects Aboriginal objects.

Section 17 of the AH Act provides that it is a criminal offence to excavate, destroy, damage, conceal or in any way alter any Aboriginal site. Penalties include fines up to \$100,000 and or 2 years imprisonment for a breach of section 17.

Section 18 of the AH Act provides the only means whereby a landowner can use land where an Aboriginal site might exist, and where a site can be altered or damaged in any way without the activity being an offence.

Section 28 establishes the Aboriginal Cultural Material Committee as an advisory body to the Minister for Aboriginal Affairs.

Section 38 provides for a Register of Aboriginal Places and Objects.

Section 39 prescribes the functions of the ACMC to evaluate on behalf of the community the importance of places and objects alleged to be associated with Aboriginal persons and to recommend to the Minister places and objects which, in the opinion of the ACMC, are, or have been, of special significance to persons of Aboriginal descent and should preserved. Associated sacred beliefs, and ritual or ceremonial usage, in so far as such matters can be ascertained, are regarded as the primary considerations to be taken into account in the evaluation of any place or objects for the purposes of this Act.

Section 62 provides that it is a defense if the charged person did not know and could not reasonably be expected to have known, that the place or object to which the charge relates was a place or object to which the Act applies.

### *State Aboriginal heritage guidance*

The State's Cultural Heritage Due Diligence Guidelines contain a Risk Matrix designed to assist land users determine risk of damage to an Aboriginal heritage site and appropriate course of action to mitigate that risk – see **Figure 1**. The State encourages land users to determine risk of damage to Aboriginal heritage sites by using the Cultural Heritage Due Diligence Guidelines and taking appropriate action to obtain further information where appropriate.



Figure 1.

**SCHEDULE 2 – THE ABORIGINAL HERITAGE RISK MATRIX**

| Previous Land Use                                                                | LAND ACTIVITIES – CATEGORIES 1-5                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                               |                        |                         |                            |                      |
|----------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|-------------------------|----------------------------|----------------------|
|                                                                                  |                                                                                        | 1. Negligible disturbance                                                                                                                                                                                                                                                                                                                                                                                                     | 2. Minimal disturbance | 3. Moderate disturbance | 4. Significant disturbance | 5. Major disturbance |
|                                                                                  | Built Environment - e.g. urban environment, towns, metropolitan region.                | Low                                                                                                                                                                                                                                                                                                                                                                                                                           | Low                    | Low                     | Low                        | Medium               |
|                                                                                  | Significantly Altered Environment - e.g. cultivated and cleared land.                  | Low                                                                                                                                                                                                                                                                                                                                                                                                                           | Low                    | Low                     | Medium                     | High                 |
|                                                                                  | Moderately Altered Environment - e.g. partially cleared lands, re-vegetated landscape. | Low                                                                                                                                                                                                                                                                                                                                                                                                                           | Low                    | Medium                  | Medium                     | High                 |
|                                                                                  | Minimally Altered Environment - e.g. urban bush land, regrowth areas                   | Low                                                                                                                                                                                                                                                                                                                                                                                                                           | Medium                 | Medium                  | High                       | High                 |
|                                                                                  | Unaltered Environment - e.g. protected areas or pristine environment.                  | Low                                                                                                                                                                                                                                                                                                                                                                                                                           | Medium                 | High                    | High                       | High                 |
| Risk Assessment                                                                  |                                                                                        | Actions                                                                                                                                                                                                                                                                                                                                                                                                                       |                        |                         |                            |                      |
| Low Risk (Review)                                                                |                                                                                        | Review the landscape and proposed activity (see sections 2.4 - 2.8 - assessing the landscape and the activity). Refer to the AHIS.                                                                                                                                                                                                                                                                                            |                        |                         |                            |                      |
| Medium Risk (Review /Exercise Caution)                                           |                                                                                        | Review the landscape and proposed activity (as above). The precautionary principle (see page 2) applies. Refer to the AHIS and contact the DAA. A range of actions may be recommended, including: no action, consultation with the relevant Aboriginal people, an Aboriginal heritage survey or modification of the proposed activity to avoid or minimise site impact.                                                       |                        |                         |                            |                      |
| High Risk (Consult / Survey / Approvals)                                         |                                                                                        | Refer to the AHIS. Consult with the DAA and the relevant Aboriginal people. Dependent on consultation outcomes you may need to include: an Aboriginal heritage survey, modification of the proposed activity to avoid or minimise (see sections 2.24 - 2.28) impact to the site and/or other heritage management strategies. The land user may also need to apply for approval or consent (see section 2.26) to the activity. |                        |                         |                            |                      |
| For major development projects refer to sections 2.10 - 2.12 for further advice. |                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                               |                        |                         |                            |                      |

With reference to the Aboriginal Heritage Risk Matrix, the survey area is considered a Significantly Altered Environment and Rox's proposal to recommence mining operations is considered a *Major Disturbance*. According to the Risk Matrix, the proposed activities are considered a **high risk** to Aboriginal heritage values. The actions that the DPLH recommended include carrying out a field survey and or consulting with the relevant native title claimants or native title holders.

### *Register of Aboriginal Sites*

The State categorises Aboriginal heritage sites into two categories; *Registered sites* and *Other Heritage Places*. Registered sites have been assessed by the ACMC as meeting the threshold tests for registration under section 5 of the AH Act. Other Heritage Places have either been assessed as not meeting the threshold test to be entered in the Register (*not a site*), or that the site is awaiting a formal assessment by the ACMC (*lodged*).

There are no Registered or Other Heritage Places within the survey area or the entire Rox tenement footprint. Site searches of the AHIS were conducted for the tenements within the survey area. the results of these searches are shown at Appendix 2.

The nearest recorded site is Lake Noondie site ID 19515 located some 20km east of the survey area. Lake Noondie was recorded by the Wutha native title claimants in October 2001 during a survey for a proposed gas pipeline infrastructure corridor. The traditional owners on the

survey confirmed that Lake Noondie is a mythological site of importance and special significance because of its association with the *Warnumpi* Dreamtime Story. Very little other information about the place was recorded. During a survey<sup>1</sup> in 2007 for Aldershot Resources Ltd, the Aboriginal participants said that the Lake was associated with the Marlu (red kangaroo) Dreaming but went on to agree to a large-scale exploration program being undertaken on the lake.

Other Aboriginal sites recorded in relative proximity to the survey area include Breakaway Bore site ID 4616 which was recorded in 1988 by a former owner of the Youanmi Down Pastoral Station following consultation with 'local Aboriginal people'. The site is described as a stone arrangement that marked a Dancing Ground where Aboriginal ceremonies used to take place. The site was described as being slightly damaged at that time. 'Breakaways' site ID 20420 was recorded in 2001 as a cultural land feature that is part of an undisclosed Dreaming Track. The site is regarded by the Aboriginal site recorders as being of cultural significance requesting that the area be avoided by any proposed future land uses.

## Previous Heritage Survey Reports

There are no Aboriginal heritage reports listed on the AHIS for the survey area. It is therefore not possible to determine whether Aboriginal heritage surveys were undertaken prior to the Youanmi mine commencing in the 1980s. Surveys in the broader region have identified culturally significant sites such as Lake Noondie site ID 19515 and other Dreamtime sites. The sites that have been identified are topographical features such as lakes, breakaways, rock holes.

In this part of the Western Desert, it is common for topographical features to be connected to a Dreamtime myth. It is believed that during the Dreamtime the human-animal creatures created the high hills and the breakaways. They burrowed below the ground, they fought and hunted, and then passed on leaving the caves and rock hole.

The collection of stones marking the dancing (ceremonial) grounds are the only archaeological site to have been identified in a 50km radius of the survey area. Very few of the recorded sites included the presence of cultural artefacts. This indicates that there is a limited supply of suitable lithic materials such as fine grained stone like chert, chalcedony, and some banded ironstone.

## Findings of Field Inspection

The field survey was conducted by the author and Mr. Terry Russell between 24 – 26 June 2022. The map of the survey area and findings is shown **Appendix 1**.

The survey area was accessed by light vehicle utilizing the many well maintained access tracks. A limited pedestrian inspection was carried out in areas 100m around the existing mining pits and infrastructure as the potential to identify Aboriginal sites or remnant cultural material is extremely low.

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<sup>1</sup> Report of an Aboriginal Heritage Survey of a proposed exploration drilling program at Lake Noondie, near Sandstone by Western Heritage Research January 2007





**Photo 2. Exploration Activities M57/51**

Around the mining pits there is evidence of continued exploration activities - see **Photo 2**. Very little of the land remains undisturbed. Ground surface visibility at all proposed locations was mainly very good, with only sparse to moderate vegetation coverage, and field conditions for Aboriginal object and site identification were optimal.

The ground cover in this part of the survey area is a coarse-grained quartz which is unsuitable for stone tool manufacture. No finer grained materials were observed and there are no permanent or semi- permanent water sources near to the mining pits. No cultural material or Aboriginal sites were identified around the existing mining infrastructure.

A more focused pedestrian inspection was carried out in the areas of land next to the creek lines in tenements M57/109, M57/135 and M57/51.

The land in these tenements is situated on sands and clays, which are interspersed with stone fields of outcropping low-grade quartz and scree, ranging in size from pebble sized nodules to cobbles. The quartz local to the area, both outcropping and nodules, is blocky and coarse grained, which would have been a poor raw material for making stone implements.





**Photo 3. Granites**

For the most part, the survey area is situated on unremarkable flat plains with sparse mulga scrub the primary vegetation. Landforms associated with use by Aboriginal people in the past, and good preservation conditions, such as breakaways, rock shelters and rock overhangs were not present in the immediate survey area. There is one impressive breakaway area in tenement M57/160A, located approximately 300m outside of the survey area boundary – see **Photo 4.**





**Photo 4. Breakaway area southwest of survey area**

This breakaway area does not contain any stone artefacts and has very limited potential for sub-surface materials being present. The ground within the breakaway caves is hard rock meaning there is very little excavation potential.

The area within M57/135 contains an ephemeral creek that on the day of inspection was full of water due to the recent heavy rains. Within 100 to 150m either side of the creek there are signs of heavy flooding with significant surface movement. There is no outcropping rock materials present and no artefacts were identified.



**Photo 5. Creek line in M57/135**



Pedestrian transects were carried out at approximately 25m spacing in the northwest section of the survey area. In an area of dense vegetation and a single chalcedony artefact was identified in tenement M57/165.



**Photo 6. Artefact in M57/165**

No other chalcedony artefacts were present and no other fine grained stone materials. The artefact is most likely present as a result of surface water movement. A further isolated artefact was identified during an inspection in the southeast corner of the survey area in tenement M57/51. This artefact is a flaked piece of banded iron formation. Again, no other banded iron formation rocks or artefacts were present. The present of these isolated artefacts do not mean they are considered sites under section 5 of the AH Act. For a place to be defined an Aboriginal site they must be of importance and significance. The artefacts were washed into these areas and not manufactured for a purpose in these two areas. Accordingly, they are not places to which the AH Act applies.

No other cultural material was identified during the survey. Approximately 29km of pedestrian field inspection was undertaken over the three days. It is concluded that there are no Aboriginal heritage sites present in the survey area.



## Conclusion and Recommendations

This report presents the findings of a cultural heritage field inspection that was undertaken over three days. The survey was undertaken using vehicle and pedestrian access to the survey areas. The purpose of the heritage survey was to inspect the proposed mining areas for the presence of Aboriginal sites or objects and to provide advice about whether the mining activity can proceed as planned and in compliance with the AH Act. Section 17 of the AH Act makes it an offence to destroy, damage, alter or conceal an Aboriginal site, whether the site is registered or not.

A search of the AHIS found that there are no recorded Aboriginal sites in the survey area or any of the Rox Resources tenement package. The nearest recorded site being some 20km east of the survey area.

Two singled artefacts were identified during the inspection. No new Aboriginal sites within the definition of section 5 of the AH Act were identified.

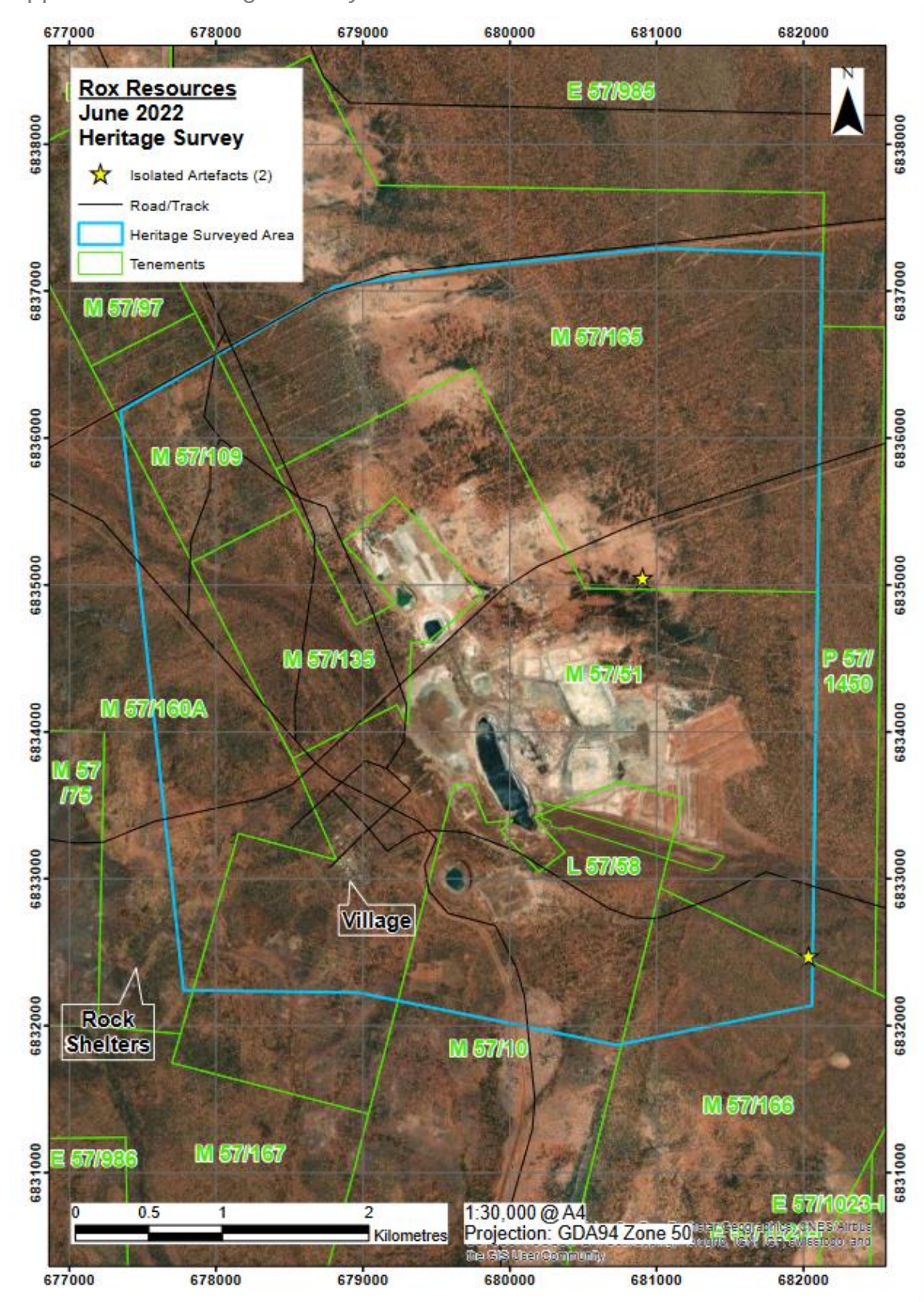
On the basis of the desktop assessment and field inspection the survey area as depicted in **Appendix 1** is clear of any Aboriginal heritage cultural material sites.

## Recommendations

It is recommended that Rox Resources Ltd notes that:

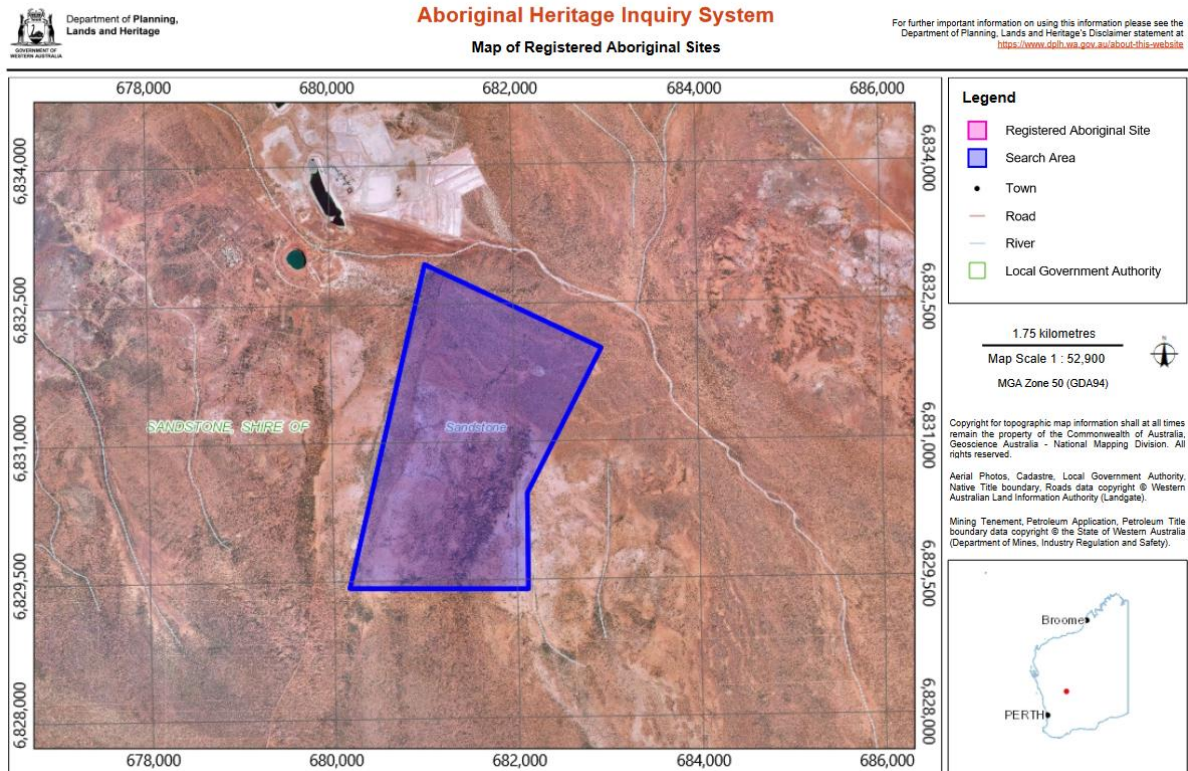
1. The field inspection of the Youanmi Project survey area is complete;
2. No new Aboriginal sites were identified, and the findings are detailed at **Appendix 1**;
3. No offence will be committed under section 17 of the *Aboriginal Heritage Act 1972* if Rox confines its proposed mining activities to within the surveyed area;
4. Prior to carrying out ground disturbing activities outside of the survey area, Rox should undertake heritage surveys;
5. It should ensure that its staff and contractors are aware of the provisions and obligations under the *Aboriginal Heritage Act 1972*;
6. Section 15 of the *Aboriginal Heritage Act 1972* obliges Rox to report any newly discovered Aboriginal sites to the Registrar of Aboriginal Sites.

## Appendix 1 – Heritage Survey Areas and Results

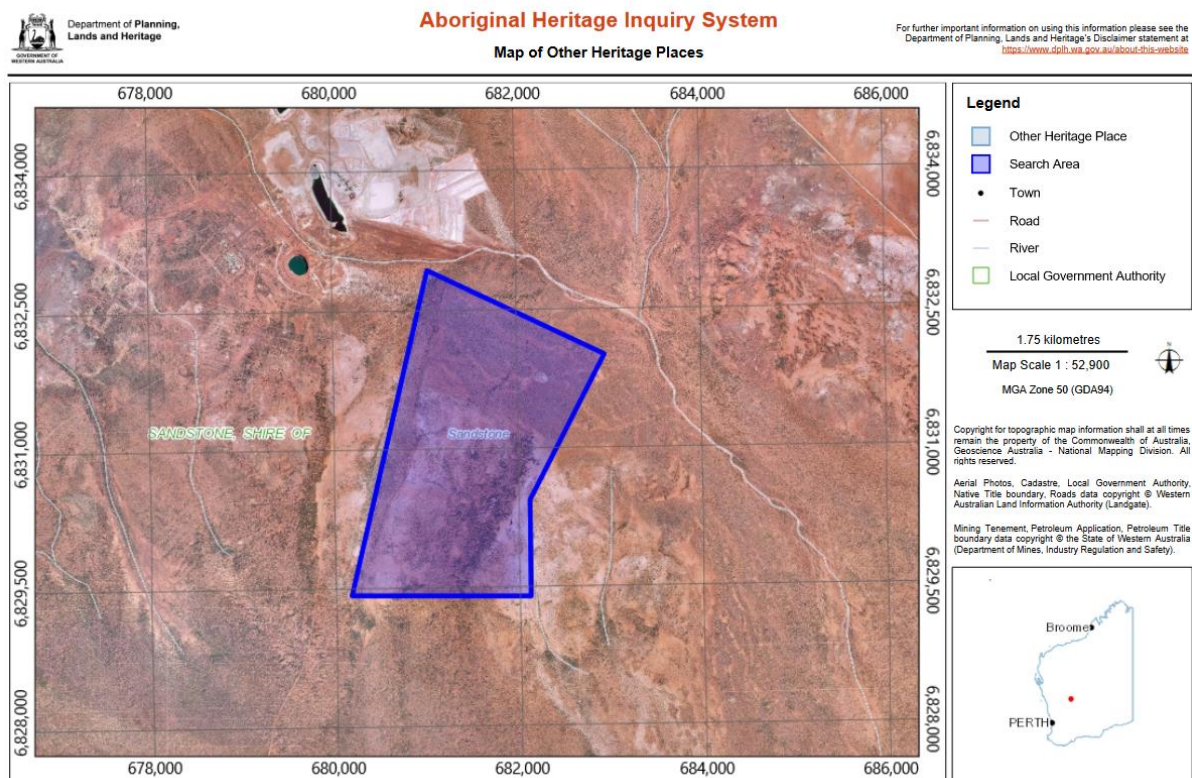




## Appendix 2 – AHIS Search Results



### Registered Site Search M57/166



### Other Heritage Place – M57/166



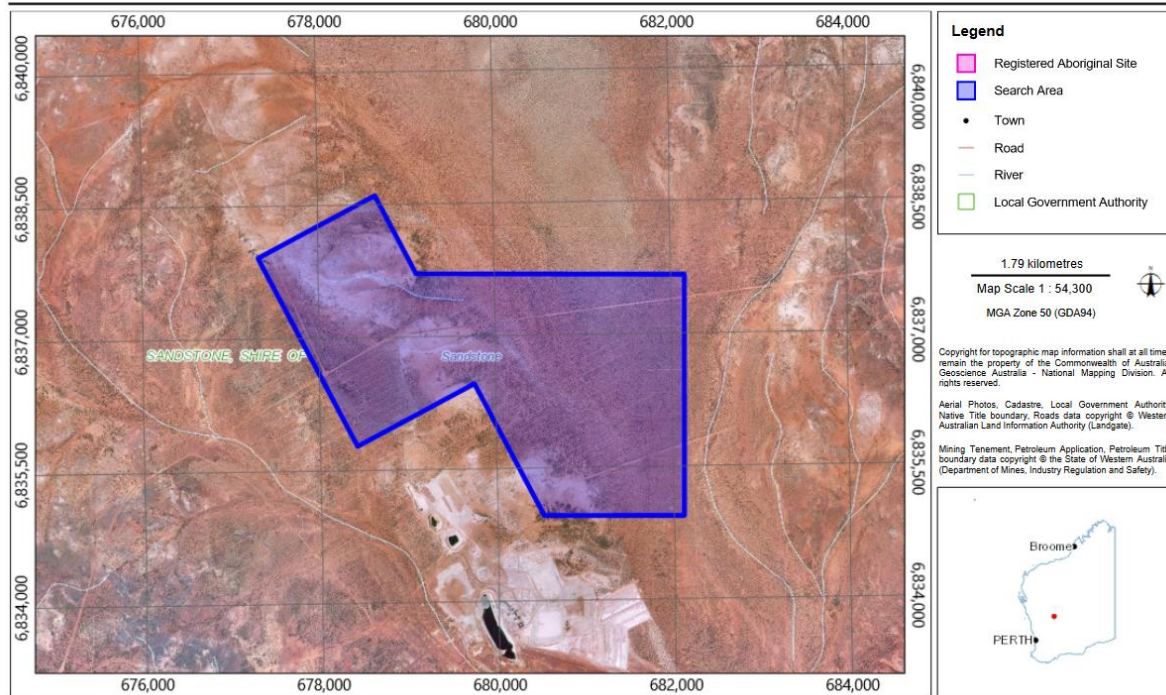


Department of Planning,  
Lands and Heritage

## Aboriginal Heritage Inquiry System

### Map of Registered Aboriginal Sites

For further important information on using this information please see the  
Department of Planning, Lands and Heritage's Disclaimer statement at  
<https://www.dph.wa.gov.au/about-this-website>



### Registered Site Search M57/165

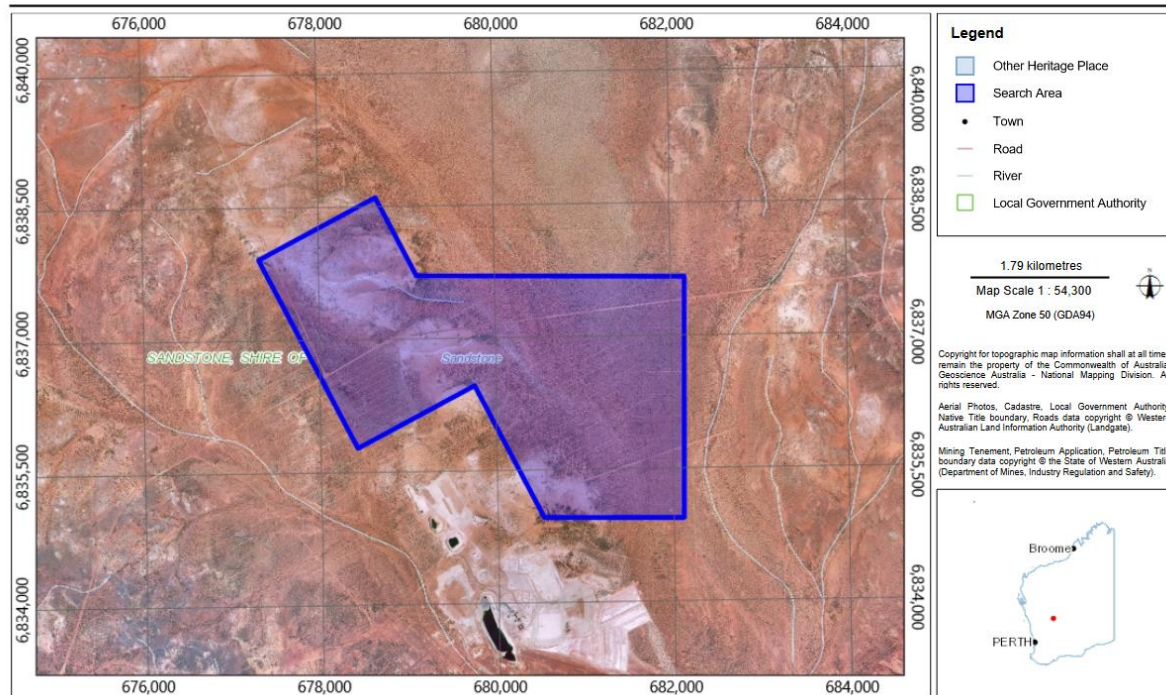


Department of Planning,  
Lands and Heritage

## Aboriginal Heritage Inquiry System

### Map of Other Heritage Places

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Department of Planning, Lands and Heritage's Disclaimer statement at  
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### Other Heritage Place – M57/165



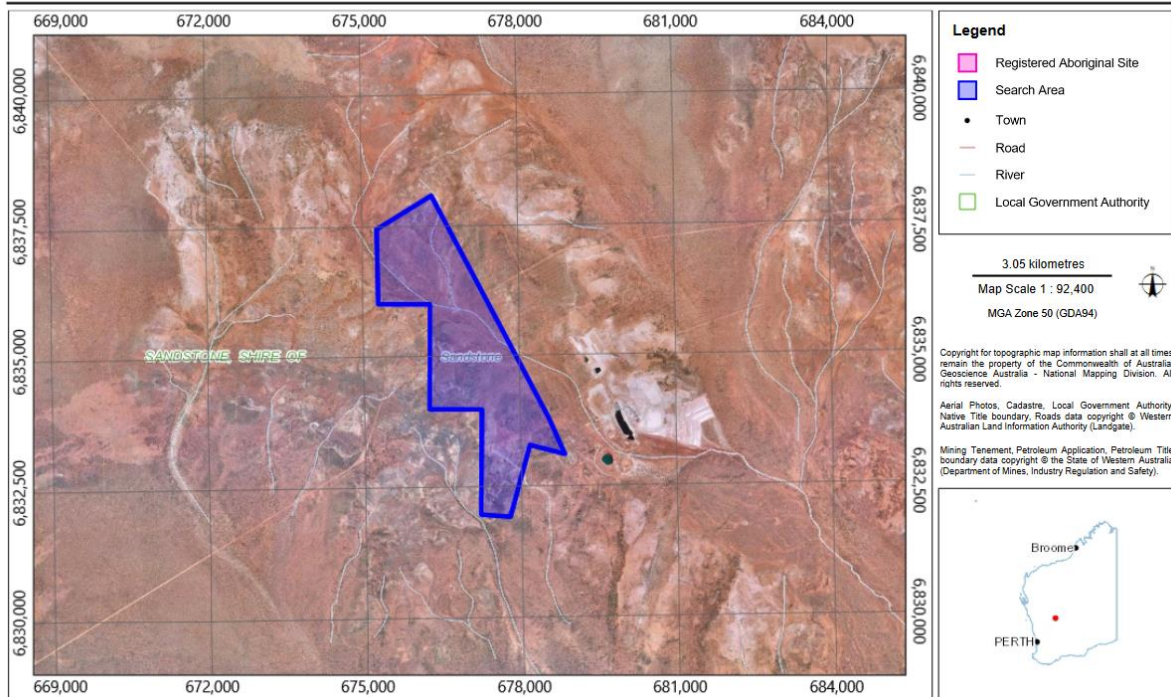


Department of Planning,  
Lands and Heritage

## Aboriginal Heritage Inquiry System

### Map of Registered Aboriginal Sites

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### Registered Site Search M57/160A

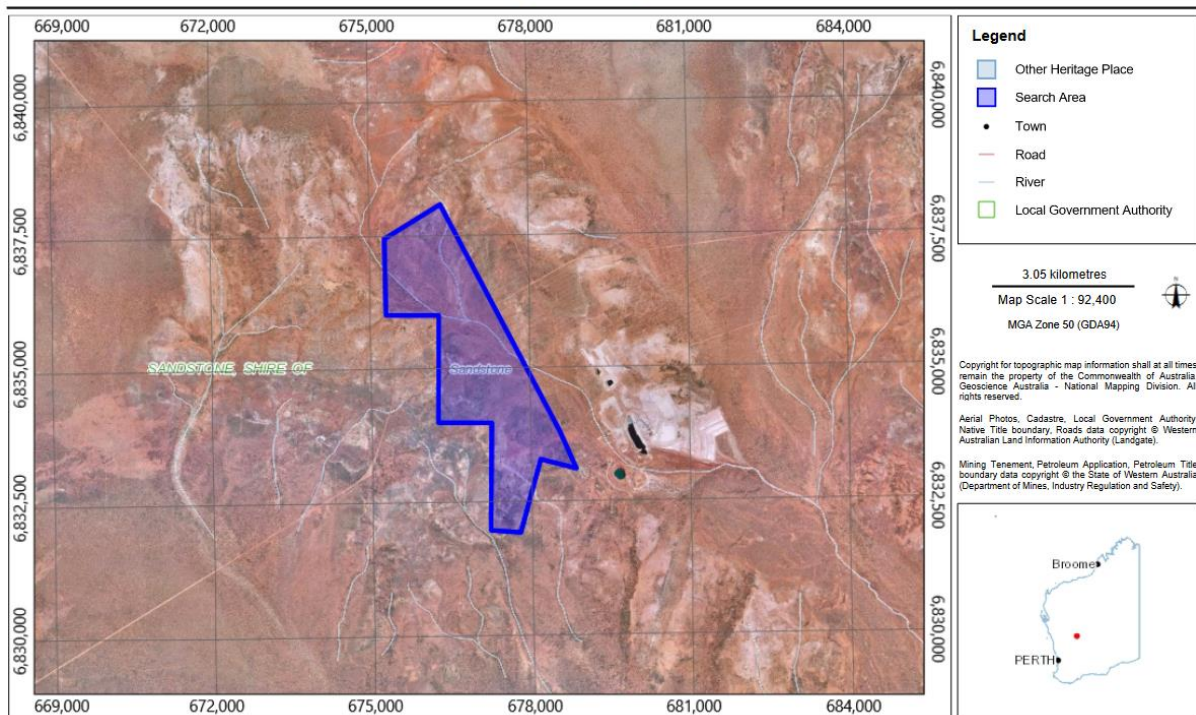


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Lands and Heritage

## Aboriginal Heritage Inquiry System

### Map of Other Heritage Places

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### Other Heritage Place – M57/160A



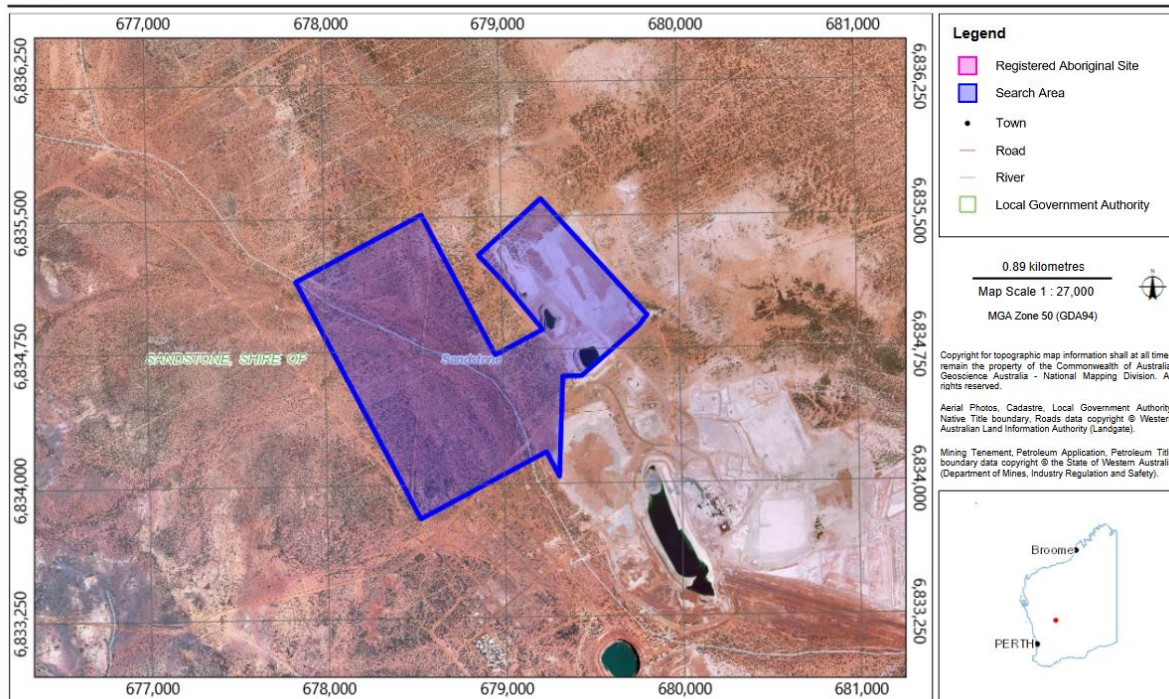


Department of Planning,  
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## Aboriginal Heritage Inquiry System

### Map of Registered Aboriginal Sites

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### Registered Site Search – M57/135

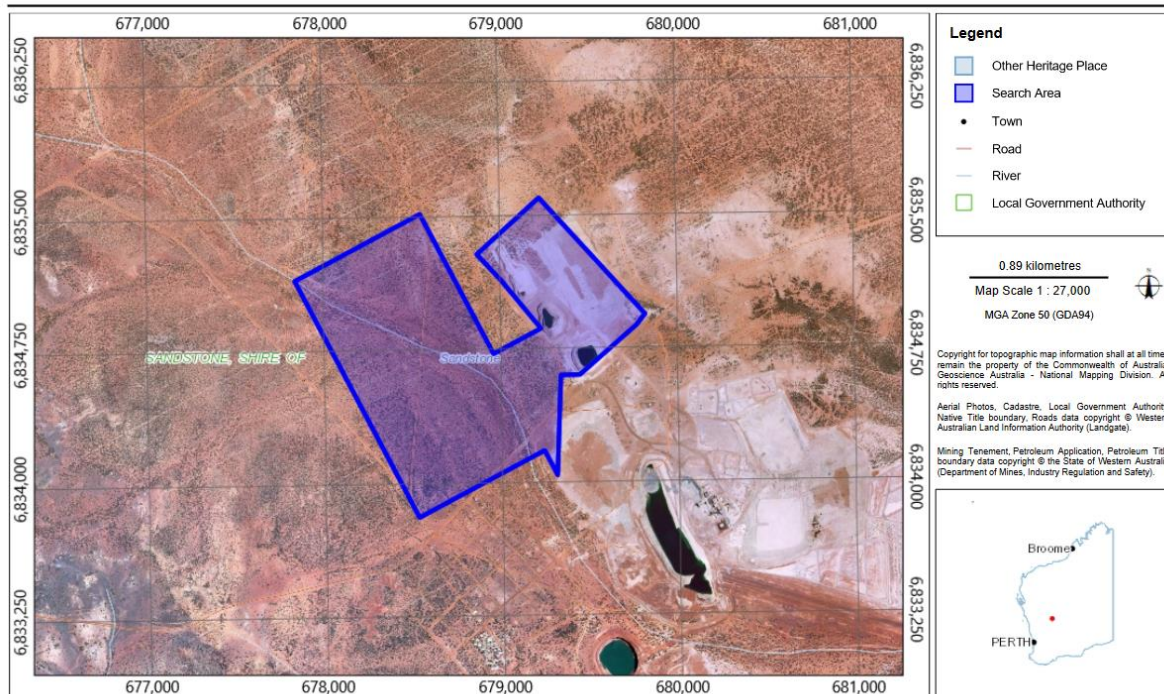


Department of Planning,  
Lands and Heritage

## Aboriginal Heritage Inquiry System

### Map of Other Heritage Places

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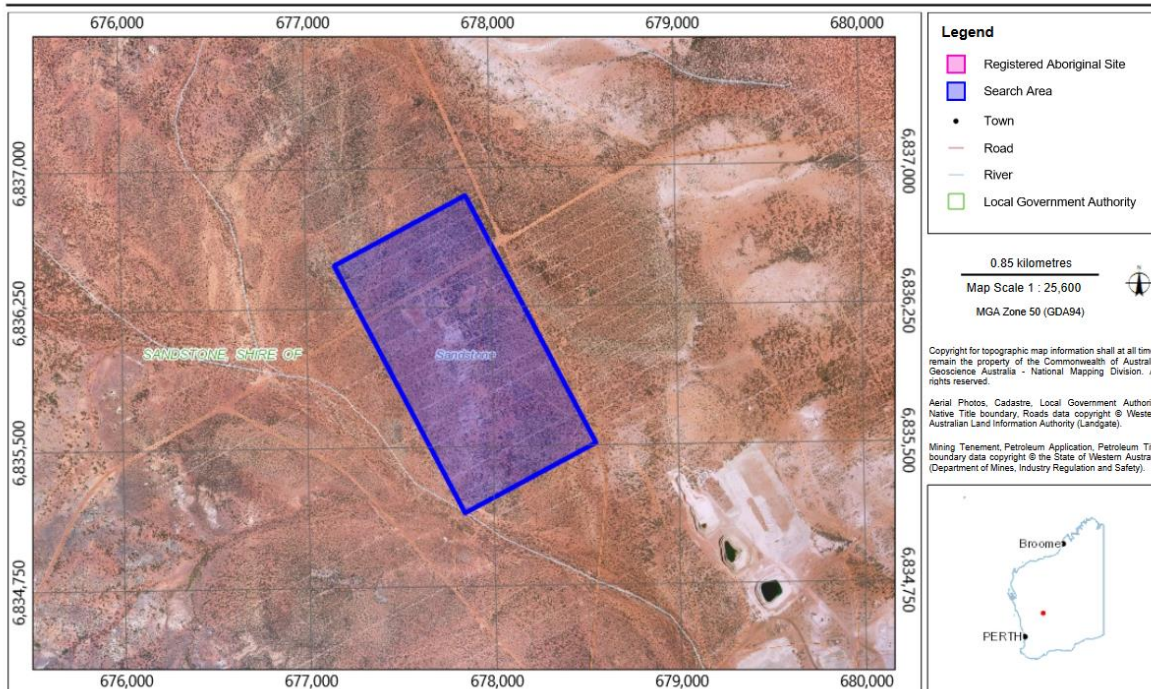
### Other Heritage Place – M57/135



## Aboriginal Heritage Inquiry System

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Department of Planning, Lands and Heritage's Disclaimer statement at  
<https://www.dplh.wa.gov.au/about-this-website>

### Map of Registered Aboriginal Sites

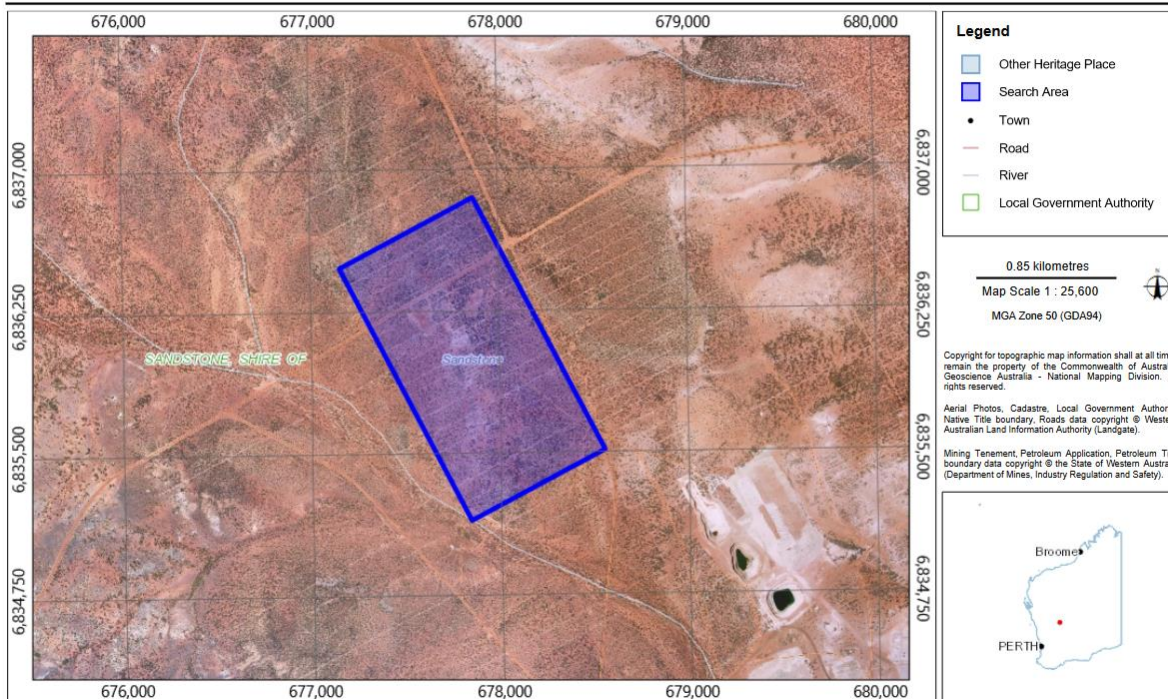


### Registered Site Search M57/109

## Aboriginal Heritage Inquiry System

For further important information on using this information please see the  
Department of Planning, Lands and Heritage's Disclaimer statement at  
<https://www.dplh.wa.gov.au/about-this-website>

### Map of Other Heritage Places



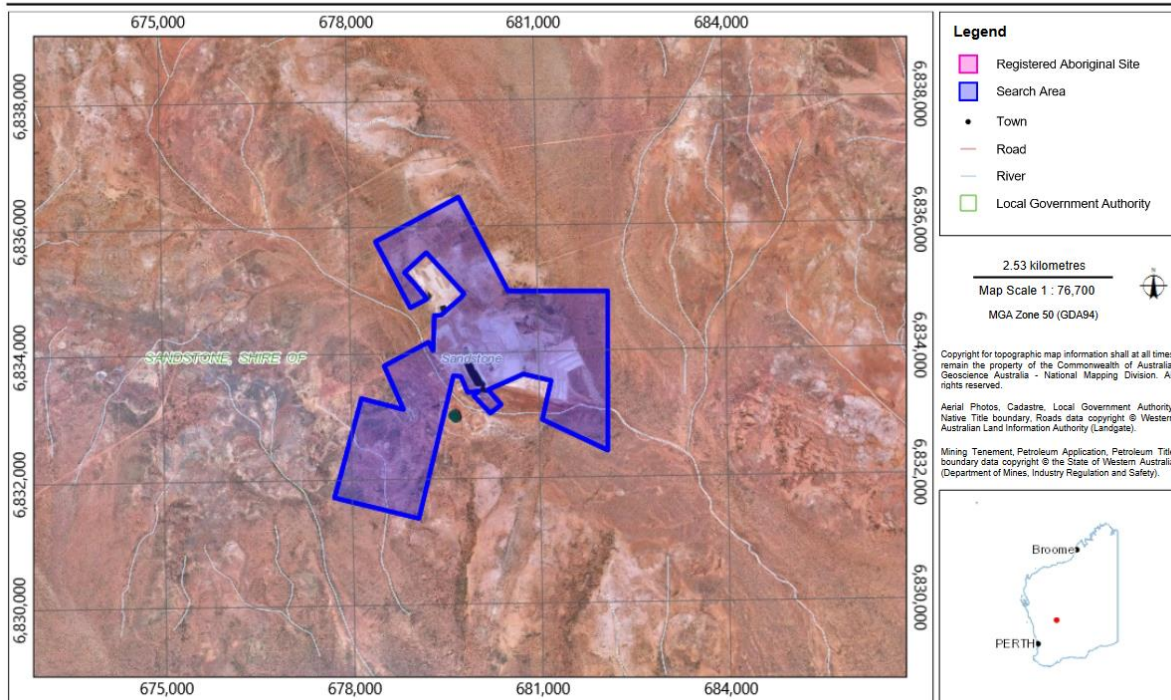
### Other Heritage Place – M57/109



## Aboriginal Heritage Inquiry System

### Map of Registered Aboriginal Sites

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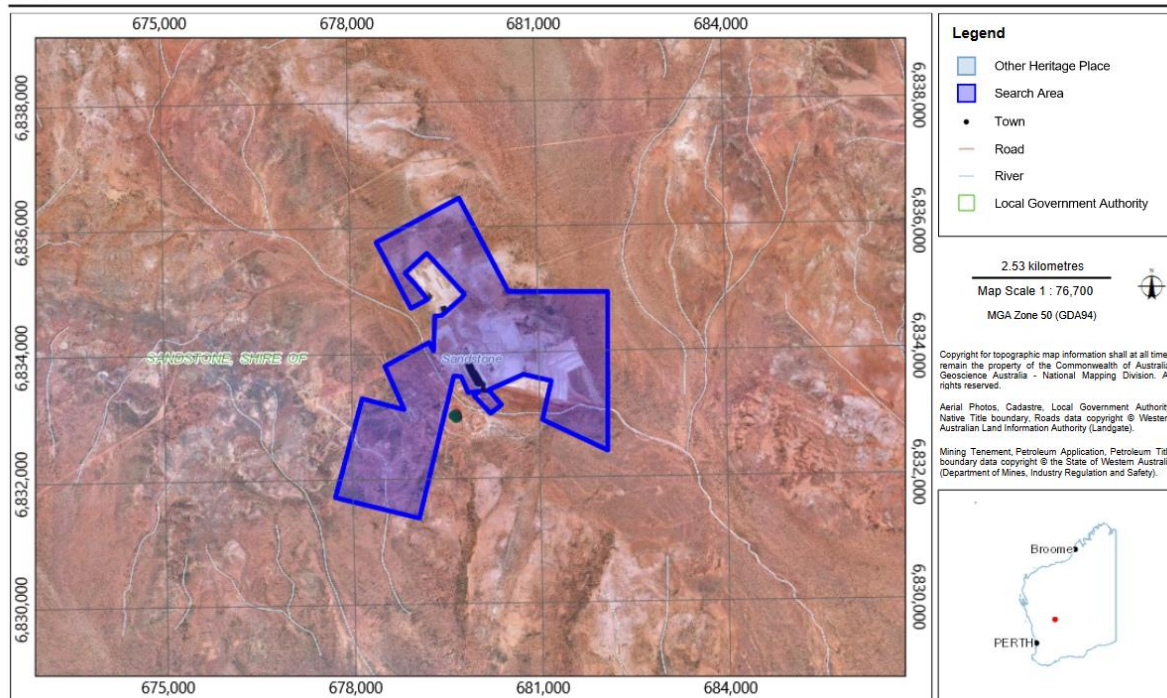


### Registered Site Search M57/51

## Aboriginal Heritage Inquiry System

### Map of Other Heritage Places

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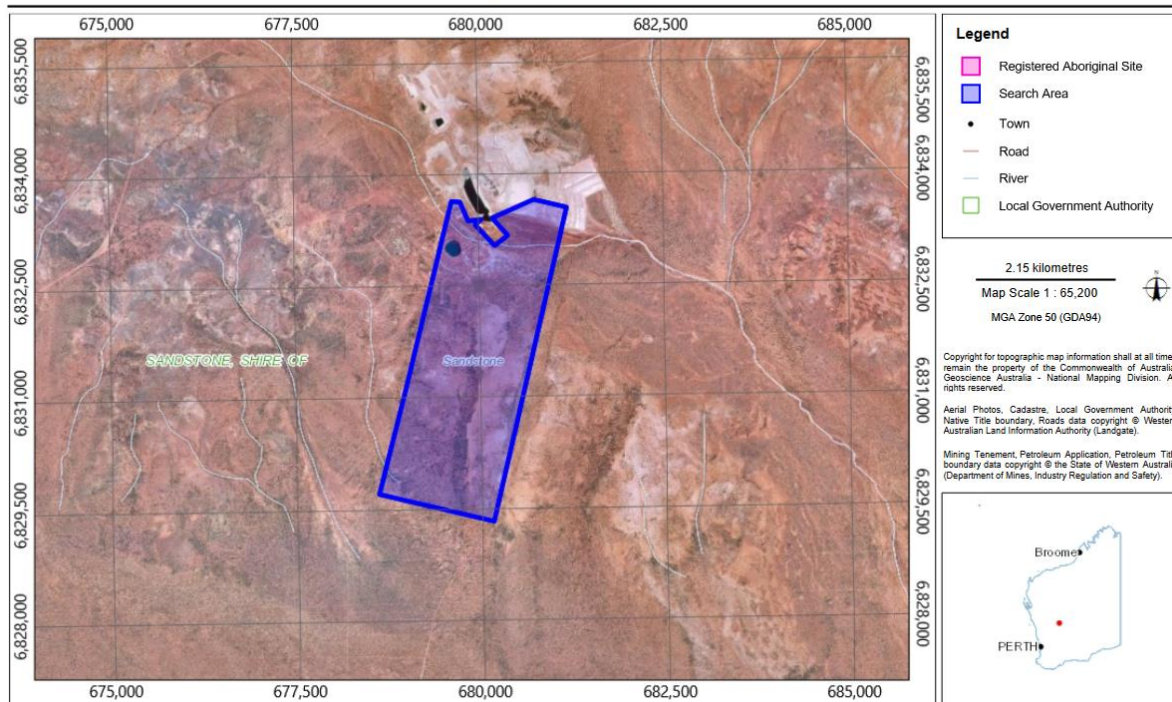
### Other Heritage Place – M57/51



## Aboriginal Heritage Inquiry System

### Map of Registered Aboriginal Sites

For further important information on using this information please see the  
Department of Planning, Lands and Heritage's Disclaimer statement at  
<https://www.dplh.wa.gov.au/about-this-website>

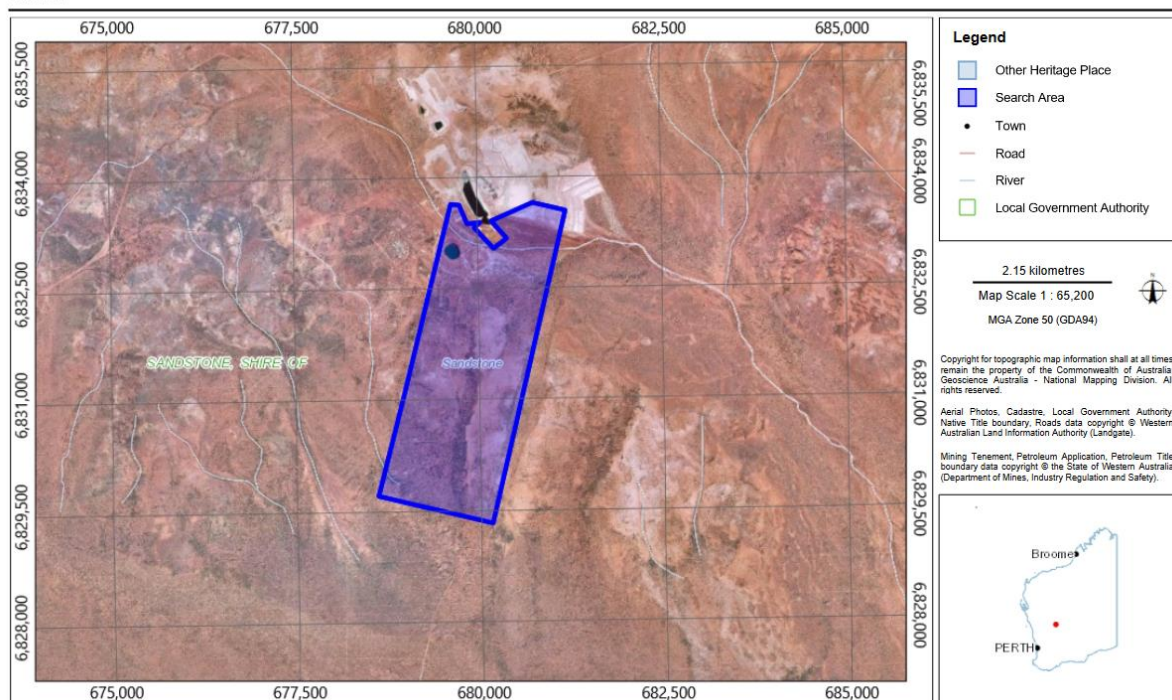


### Registered Site Search M57/10

## Aboriginal Heritage Inquiry System

### Map of Other Heritage Places

For further important information on using this information please see the  
Department of Planning, Lands and Heritage's Disclaimer statement at  
<https://www.dplh.wa.gov.au/about-this-website>

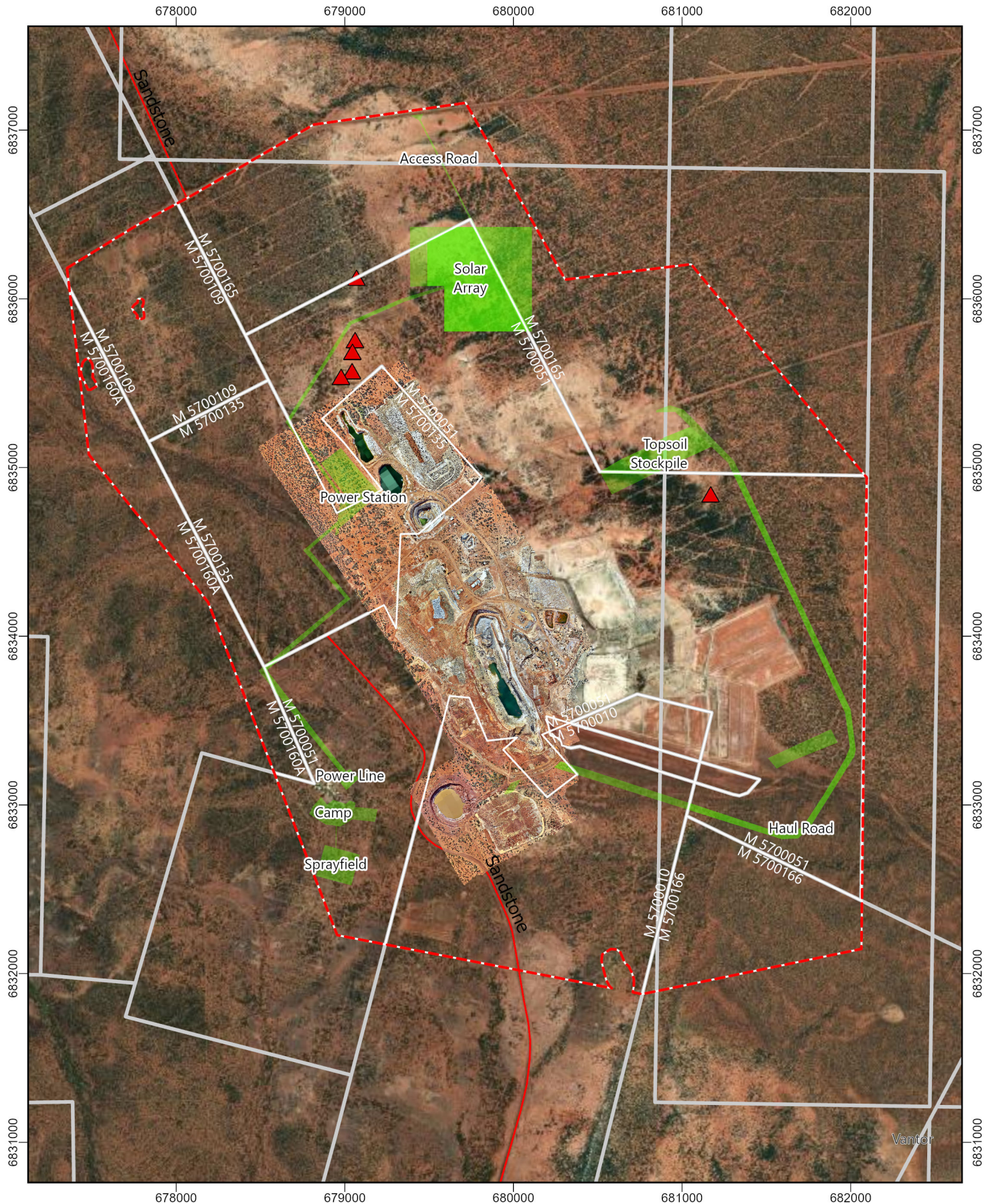


### Other Heritage Place – M57/10

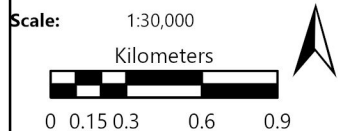
## **ATTACHMENT 2**

### **AERIAL IMAGE OF THE SITE**





**Filename:** Youanmi NVCP CPS 1102/1 Amendment  
**Date:** June 2026  
**Created by:** Ben Sambell  
**Projection:** GDA 1994 MGA ZONE 50



#### Legend

- NVCP Amendment Areas
- CPS 11021/1 NVCP Boundary

## Youanmi Gold Mine Proposed NVCP Amendment





## **ATTACHMENT 4**

### **CPS 11021-1 MARKED CHANGES**





## CLEARING PERMIT

*Granted under section 51E of the Environmental Protection Act 1986*

|                               |                                                                 |
|-------------------------------|-----------------------------------------------------------------|
| <b>Purpose Permit number:</b> | 11021/1 <b>11021/2</b>                                          |
| <b>Duration of Permit:</b>    | From 30 August 2025 to 29 August <b>2034</b><br><del>2030</del> |
| <b>Permit Holder:</b>         | Rox Resources Limited                                           |

The Permit Holder is authorised to clear native vegetation subject to the following conditions of this Permit.

### **PART I – CLEARING AUTHORISED**

**1. Land on which clearing is to be done**

Mining Leases 57/10, 57/51, 57/109, 57/135, 57/160A, 57/165 and 57/166

**2. Clearing authorised (purpose)**

The Permit Holder is authorised to clear native vegetation for the purpose of mineral production and associated activities.

**3. Area of clearing**

**223**

The Permit Holder must not clear more than ~~122.9~~ hectares of native vegetation within the area cross-hatched yellow in Figure 1 of Schedule 1.

**4. Type of clearing authorised**

The Permit Holder shall not clear native vegetation unless the purpose for which the clearing is authorised is enacted within 3 months of the authorised clearing being undertaken.

### **PART II – MANAGEMENT CONDITIONS**

**5. Avoid, minimise and reduce the impacts and extent of clearing**

In determining the amount of native vegetation to be cleared under this Permit, the Permit Holder must apply the following principles, set out in descending order of preference:

- avoid the clearing of native vegetation;
- minimise the amount of native vegetation to be cleared; and
- reduce the impact of clearing on any environmental value.

**6. Weed control**

When undertaking any clearing or other activity authorised under this Permit, the Permit Holder must take the following steps to minimise the risk of the introduction and spread of *weeds*:

- clean earth-moving machinery of soil and vegetation prior to entering and leaving the area to be cleared;

- (b) ensure that no known *weed*-affected soil, *mulch*, *fill* or other material is brought into the area to be cleared; and
- (c) restrict the movement of machines and other vehicles to the limits of the areas to be cleared.

## 7. Vegetation management

- (a) where practicable the Permit Holder shall avoid clearing *riparian vegetation*; and
- (b) where a *watercourse* or *drainage line* is to be impacted by clearing, the Permit Holder shall ensure that the existing surface flow is maintained, or reinstated downstream into existing natural *drainage lines*.

## 8. Flora management

~~Where priority flora species *Calytrix hislopii* have been identified and their locations provided to the CEO, and retained on the Department of Mines, Petroleum and Exploration file DMS04719/2025 as Doc ID A95678615, the Permit Holder must ensure:~~

- ~~(a) no clearing of identified *Calytrix hislopii* occurs unless first approved by the CEO; and~~
- ~~(b) no clearing occurs within 10 metres of identified *Calytrix hislopii* occurs unless first approved by the CEO.~~

## **PART III – RECORD KEEPING AND REPORTING**

## 9. Records to be kept

The Permit Holder must maintain records relating to the listed relevant matters in accordance with the specifications detailed in Table 1.

**Table 1: Records that must be kept**

| No. | Relevant matter                                                    | Specifications                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|-----|--------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1.  | In relation to the authorised clearing activities generally        | <ul style="list-style-type: none"> <li>(a) the location where the clearing occurred, recorded using a Global Positioning System (GPS) unit set to Geocentric Datum Australia 2020 (GDA2020), expressing the geographical coordinates in Eastings and Northings or decimal degrees;</li> <li>(b) the date that the area was cleared;</li> <li>(c) the size of the area cleared (in hectares);</li> <li>(d) actions taken in accordance with Condition 4;</li> <li>(e) actions taken to avoid, minimise, and reduce the impacts and extent of clearing in accordance with Condition 5;</li> <li>(f) actions taken to minimise the risk of the introduction and spread of <i>weeds</i> in accordance with Condition 6; and</li> <li>(g) vegetation management actions taken in accordance with Condition 7.</li> </ul> |
| 2.  | <del>In relation to flora management pursuant to Condition 8</del> | <ul style="list-style-type: none"> <li><del>(a) actions taken to demarcate <i>Calytrix hislopii</i> recorded and their relevant buffers; and</del></li> <li><del>(b) actions taken to avoid the clearing of <i>Calytrix hislopii</i>.</del></li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |

## 10. Reporting

- (a) The Permit Holder shall provide a report to the CEO by 31 July each year for the life of this Permit, demonstrating adherence to all conditions of this Permit, and setting out the records required under Condition 9 of this Permit in relation to clearing carried out between 1 July and 30 June of the previous financial year.
- (b) If no clearing authorised under this Permit was undertaken between 1 July and 30 June of the previous financial year, a written report confirming that no clearing under this permit has been carried out, must be provided to the CEO by 31 July of each year.



- (c) Prior to 29 August 2030, the Permit Holder must provide to the *CEO* a written report of records required under Condition 9 of this Permit where these records have not already been provided under Condition 10(a) or 10(b) of this Permit.

## DEFINITIONS

In this Permit, the terms in Table 2 have the meanings defined.

**Table 2: Definitions**

| Term                | Definition                                                                                                                                                                                                                                                                                                                                                 |
|---------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| CEO                 | the Chief Executive Officer of the Department responsible for administering the clearing provisions contained within the <i>Environmental Protection Act 1986</i> or an Officer with delegated authority under Section 20 of the <i>Environmental Protection Act 1986</i> .                                                                                |
| clearing            | has the meaning given under section 3(1) of the EP Act.                                                                                                                                                                                                                                                                                                    |
| condition/s         | a condition to which this clearing permit is subject under section 51H of the EP Act.                                                                                                                                                                                                                                                                      |
| department          | means the department established under section 35 of the <i>Public Sector Management Act 1994</i> (WA) and designated as responsible for the administration of the EP Act, which includes Part V Division 3.                                                                                                                                               |
| drainage line/s     | means a natural depression that carries surface water runoff.                                                                                                                                                                                                                                                                                              |
| EP Act              | <i>Environmental Protection Act 1986</i> (WA)                                                                                                                                                                                                                                                                                                              |
| fill                | means material used to increase the ground level, or to fill a depression.                                                                                                                                                                                                                                                                                 |
| mulch               | means the use of organic matter, wood chips or rocks to slow the movement of water across the soil surface and to reduce evaporation.                                                                                                                                                                                                                      |
| native vegetation   | has the meaning given under section 3(1) and section 51A of the EP Act.                                                                                                                                                                                                                                                                                    |
| priority flora      | means those plant taxa described as priority flora classes 1, 2, 3 or 4 in the Department of Biodiversity, Conservation and Attractions Threatened and Priority Flora List for Western Australia (as amended).                                                                                                                                             |
| riparian vegetation | has the meaning given to it in Regulation 3 of the Environmental Protection (Clearing of Native Vegetation) Regulation 2004.                                                                                                                                                                                                                               |
| watercourse         | has the meaning given to it in section 3 of the <i>Rights in Water and Irrigation Act 1914</i> .                                                                                                                                                                                                                                                           |
| weed/s              | means any plant –<br>(a) that is a declared pest under section 22 of the <i>Biosecurity and Agriculture Management Act 2007</i> ; or<br>(b) published in a Department of Biodiversity, Conservation and Attractions species-led ecological impact and invasiveness ranking summary, regardless of ranking; or<br>(c) not indigenous to the area concerned. |

## END OF CONDITIONS

*Danielle Risbey*

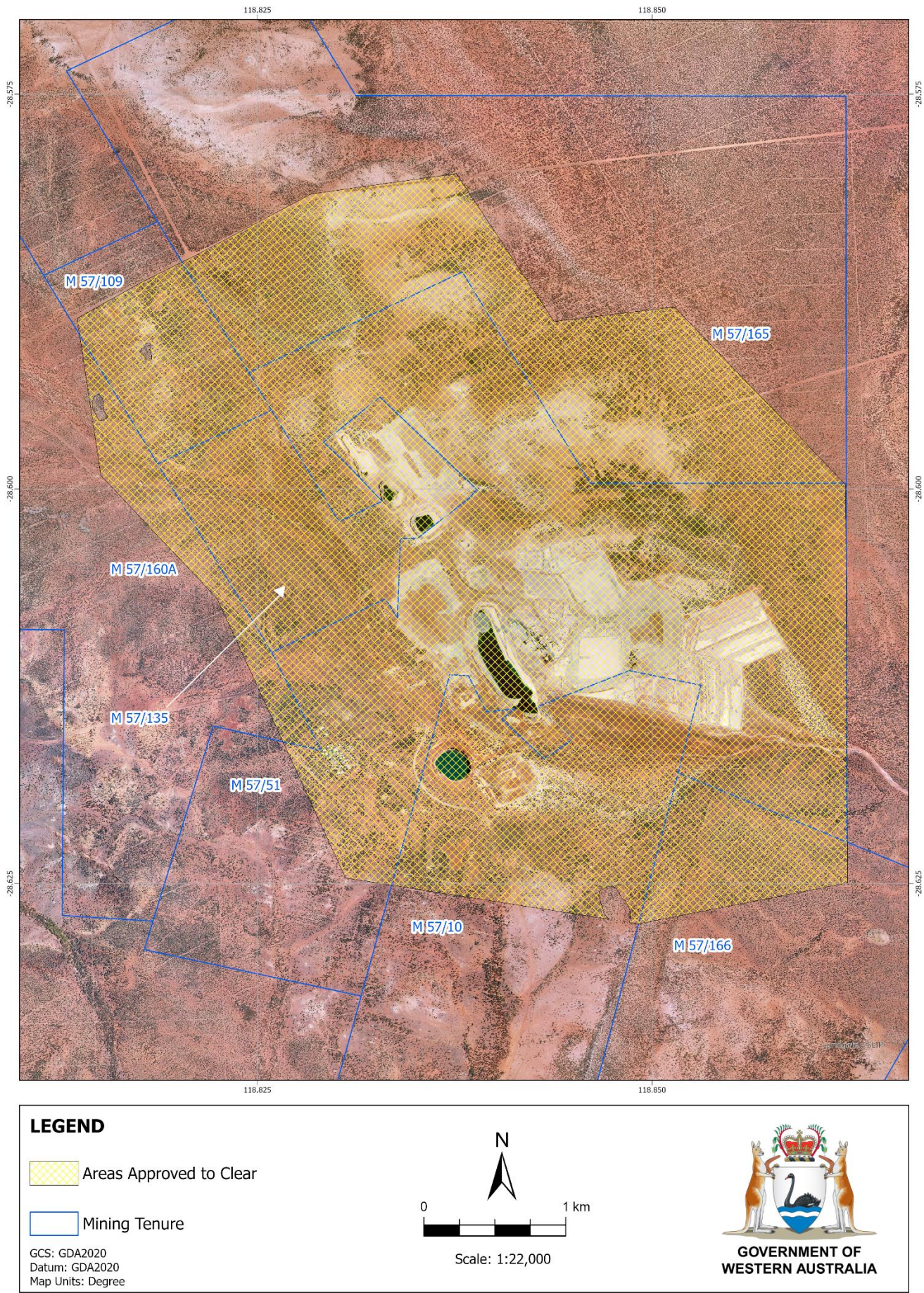
**Danielle Risbey** | General Manager Mine Closure and Environmental Services  
 Resource and Environmental Compliance Division  
 07 August 2025

Officer with delegated authority under Section 20  
 of the *Environmental Protection Act 1986*



**SCHEDULE 1**

The boundary of the area authorised to be cleared is shown in the map below (Figure 1).



**Figure 1: Map of the boundary of the area within which clearing may occur.**