

Golden Pig - Flora and Fauna Assessment

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Golden Pig Mine
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Golden Pig - Flora and Fauna Assessment

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Executive Summary

Cygnnet Gold engaged AECOM Australia Pty Ltd (AECOM) to undertake a flora, vegetation and fauna assessment for the Golden Pig Project. The Project encompasses several mine tenements extending 732.53 ha and includes cleared, private property, salt lake, old mine site (waste dump and open cut pit) and native vegetation.

A flora, vegetation and fauna survey was undertaken between 23 and 24 November 2023. The objective was to get a broad understanding of environmental values present across a large area. A combination of detailed and reconnaissance level flora and vegetation survey and a basic fauna habitat survey were undertaken. The main focus were unique landforms and core habitat for significant fauna.

Areas of native vegetation were traversed on foot and a broad-level sample plan was implemented to meet the objective. The desktop assessment identified:

- No Threatened or Priority Ecological Communities (TEC or PEC) are likely to occur.
- Two flora species, *Daviesia microcarpa* (listed as Endangered under the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) and Critically Endangered under the Biodiversity Conservation Act 2016 (BC Act)), and *Hakea pendens* (listed as Priority 3 by the Department of Biodiversity, Conservation and Attractions (DBCA)) had a high likelihood of occurrence, recorded 4.4 km and 0 km (in 1969) from the survey area respectively.
- Four fauna species have a high likelihood of occurring including two listed as Threatened (Vulnerable) under the EPBC Act and BC Act, one listed as Endangered, Migratory/Marine under the EPBC Act and BC Act and one listed as Priority by DBCA.

The field survey detected:

- Six vegetation communities were mapped. Of these, the Tecticornia Samphire Shrubland and Eucalypt Mallee Woodland were associated with protecting the condition of the saltlake through erosion control. No Threatened or Priority Ecological Communities were identified.
- Condition was largely mapped as Very Good (335.32 ha, 46%), followed by Good (152.04 ha, 20%). The salt lake was a large contributor to the extent of Very Good vegetation (167.22 ha). The saltlake was assumed to reflect the same condition as adjacent vegetation.
- No Threatened or Priority flora were recorded. *Daviesia microcarpa* (Threatened) cannot be excluded from occurring at this time as there was no access to the old mine pit and waste dump. *Hakea pendens* (P3) is a large shrub that was not recorded, it is unlikely to occur.
- Ninety-three native and four weed flora species were recorded. Species diversity was low compared to comparable available datasets. This reduced diversity reflects the level of disturbance noted from historical land use and human interference, and low rainfall that has led to the senescence (death) of short-lived species.
- Six fauna habitats were mapped including a Eucalypt Woodland, Mallee Woodland, Low Shrubland, Salt Pan, Trees and Cleared.
- Four significant fauna species are likely to occupy the survey area:
 - Chuditch (*Dasyurus geoffroyi*) listed as EPBC Act and BC Act Vulnerable
 - Malleefowl (*Leipoa ocellata*) listed as EPBC Act and BC Act Vulnerable
 - Common Greenshank (*Tringia nebularia*) listed as EPBC Act and BC Act Endangered, Migratory
 - Tree-stem Trapdoor Spider (*Idiosoma castellum*) listed as Priority 4
- No evidence of significant fauna species was recorded during the survey.

The field survey was successfully undertaken with no significant limitations identified. The survey effort reflects the objective of the Program, to gain a broad understanding of environmental values across a large area.

1.0 Introduction

1.1 Background

Cygnnet Gold are preparing to commence underground mining at the Golden Pig deposit at Southern Cross. This deposit has been mined previously and the abandoned pit has since filled with water. In order to commence any activity, Cygnnet Gold will first require dewatering. AECOM has been engaged to undertake an ecological survey of the survey area to support the environmental assessment and approval process required prior to the recommencement of dewatering.

1.2 Location

The survey area borders the town of Southern Cross at its southern end, extending north to encompass a portion of Lake Koorkoordine in the Coolgardie region of Western Australia. The survey area incorporates 732.53 ha and is located approximately 370 km northeast of Perth (Figure 1). It is intersected by the Great Eastern Highway, Bullfinch Road, Turner Road and the Eastern Goldfields Railway.

1.3 Objectives

The objective of this scope of work was to gain a broad understanding of the environmental values within the larger tenement lease boundaries of Golden Pig Mine. This included:

- a detailed desktop assessment to characterise floristic and fauna diversity as well as identify and map any known occurrences of conservation significant species and/or Threatened Ecological Communities (TECs) and Priority Ecological Communities (PECs)
- combination reconnaissance and detailed flora and vegetation assessment targeting desktop assessment results, infrastructure locations and edges of salt lakes
- identify, map and discuss the significance of any Threatened Ecological Communities (TECs) and Priority Ecological Communities (PECs)
- classify and assess the condition of native vegetation and significant fauna habitat within the survey area.

2.0 Existing Environment

2.1 Climate

The survey area is located approximately 370 km east of Perth Central Business District (CBD), within the Shire of Yilgarn. The climate is semi-arid characterised by areas that receive precipitation below the potential evapotranspiration rates. The climate is an intermediate between desert and humid climates and is characterised by hot and dry (sometimes exceptionally hot) summers, with cold winters. Cold semi-arid climates can have major temperature swings between day and night of up to 20°C.

Rainfall and temperature data was obtained from Southern Cross Airfield WA (Station Number 012320), located approximately 36km from the survey area. The long-term rainfall and temperature data are compared against the November 2022 to October 2023 data in Figure 2 (BoM, 2023), to determine if climatic conditions posed a constraint to the survey.

The survey was undertaken in late November, 2023. Below average rainfall was recorded for ten out of the twelve months preceding the survey, with a total rainfall of 210 mm (Figure 2). This is 92.5 mm below the long-term annual average of 302.5 mm. Rainfall was 50% or more below the long-term average during the summer months and into autumn, although April received double the average. The lower rainfall would not appear to have affected the presence of short-lived species. Thirteen annual flora species were recorded during the survey which indicates that rainfall was still somewhat effective at initiating germination of short-lived species.

Temperatures between November 2022 to October 2023 were very close to the long-term average, with maximum temperatures slightly higher than average from August to October. Minimum temperatures were below average between April to July, with above average temperatures recorded for September and October. During periods of increased temperature, fauna struggle to lose excess body heat through evaporation, and have an elevated probability to develop heat stress. As a result, fauna will likely seek shelter from the sun. This would in turn reduce the number of sightings of fauna during the survey, as habitat assessments were conducted this does not have a significant impact on the survey efforts.

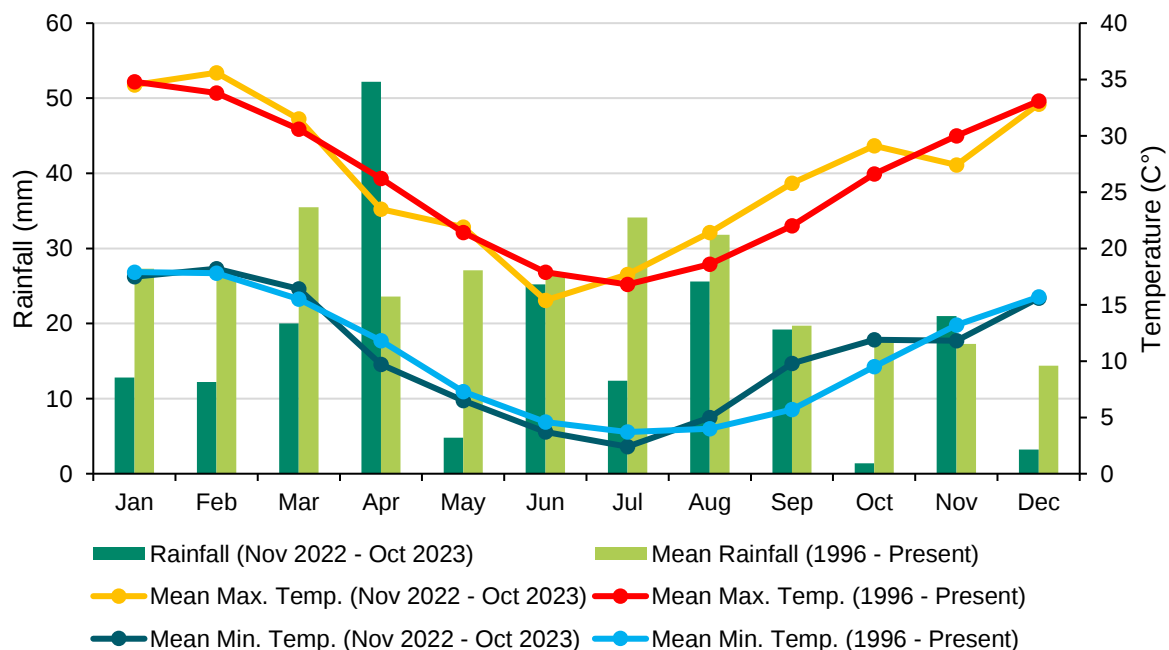


Figure 2 Rainfall and temperature data from Southern Cross Airfield WA (012320) (BOM, 2023).

2.2 Interim Biogeographical Region of Australia Regions

The largest regional vegetation classification scheme recognised by Environmental Protection Agency (EPA) is the Interim Biogeographical Region of Australia (IBRA). The IBRA Regions provide the planning framework for the systematic development of a comprehensive, adequate and representative (CAR) national reserve system. There are 89 recognised IBRA regions across Australia that have been defined based on climate, geology, landforms and characteristic vegetation and fauna (IBRA7, 2012). The survey area is situated across the Coolgardie IBRA Region and the Southern Cross IBRA Subregion.

The Coolgardie IBRA Region, according to CALM (2002) is within the Yilgarn Craton with a granite basement including Archaean Greenstone intrusions in parallel belts. Low greenstone hills support diverse woodlands rich in endemic Eucalypts on alluvial soils on the valley floors, around saline playas of the occluded drainage system and on broad plains of calcareous earths. Granite basement outcrops supports granite grass, wattles and York Gum. Playa lakes support Samphire shrubs.

The Southern Cross subregion, described by Cowan et. al (2001) is characterised by valleys, low greenstone hills, salt lakes, granite basement outcrops, and uplands of yellow sandplains, gravelly sandplains and laterite breakaways. Rare features of the area include the arid woodlands with rare plants and rare vertebrates.

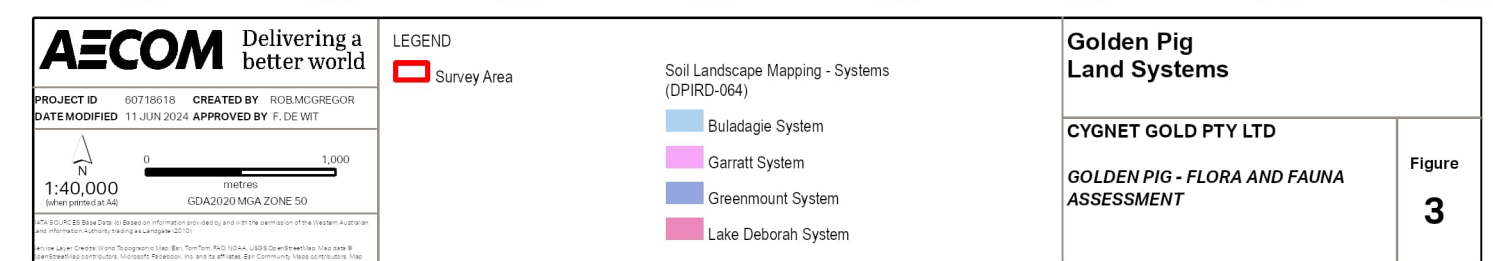
2.3 Geology and Land Systems

Four soil landscapes are mapped across the survey area (Figure 3) (Tille, 2006):

- Lake Deborah System: Broad valley floor dominated by salt lakes with minor dunes, north-east of Southern Cross. Salt lake soils and calcareous loamy earths.
- Garratt System: Lower slopes and footslopes adjacent to salt lakes in the eastern Zone of Ancient Drainage. Loamy earth (mostly calcareous), hard cracking clay and alkaline shallow duplex.
- Greenmount System: Gently undulating rises to rolling low hills in the Eastern Zone of Ancient Drainage. Loamy earth (mostly red, calcareous and clayey and stoney).
- Buladagie System: Gently undulating upland plains and subdued rises in the Eastern Zone of Ancient Drainage. 'Fresh' red rocky loams, yellow sands and sandy earths and shallow duplexes.

The survey area intersects with the following geological units (Pringle et al., 1994):

- Qa: Channel and flood plain alluvium; gravel, sand, silt, clay, locally calcreted
- Axy: Komatiitic basalt, quartz-muscovite-andalusite schist, basalt, dacitic porphyry, granite with greenstone rafts, agglomerate, talc schist, banded gneiss, quartzite, amphibolite, schist, ultramafic rocks, banded iron formation, dolerite, granite
- An: Banded granitic gneiss (monzogranitic to granodioritic), quartzofeldspathic gneiss with mafic bands, migmatite, granofels, mafic and felsic granulites, hypersthene-plagioclase-quartz granulite; schist, pelitic or mafic granofels
- Anh: Banded to agmatitic felsic and/or granitic gneiss, migmatite; high-Ca group
- Qt: Lacustrine or residual mud, clay, silt and sand, commonly gypsiferous and/or saline; playa, claypan, and swamp deposits; peat; peaty sand and clay; halitic and gypsiferous evaporites
- Aty: Amphibolite, mafic schist, mafic rock intercalated with granite, para-amphibolite; metabasalt, metagabbro, metapyroxenite and metadolerite; Youanmi Terrane



2.4 Vegetation

Beard et al. (2013) mapping is used to determine the current extent of remnant vegetation remaining when compared to pre-European vegetation extent (Figure 4). Six Beard et al (2013) vegetation associations were recorded within the survey area. None of the vegetation associations fall below the 30% threshold that EPA requires for retention.

Descriptions of these vegetation associations and their extent are detailed below in Table 1.

Table 1 Beard et al. (2013) vegetation associations and percent remaining (Govt. of WA, 2019)

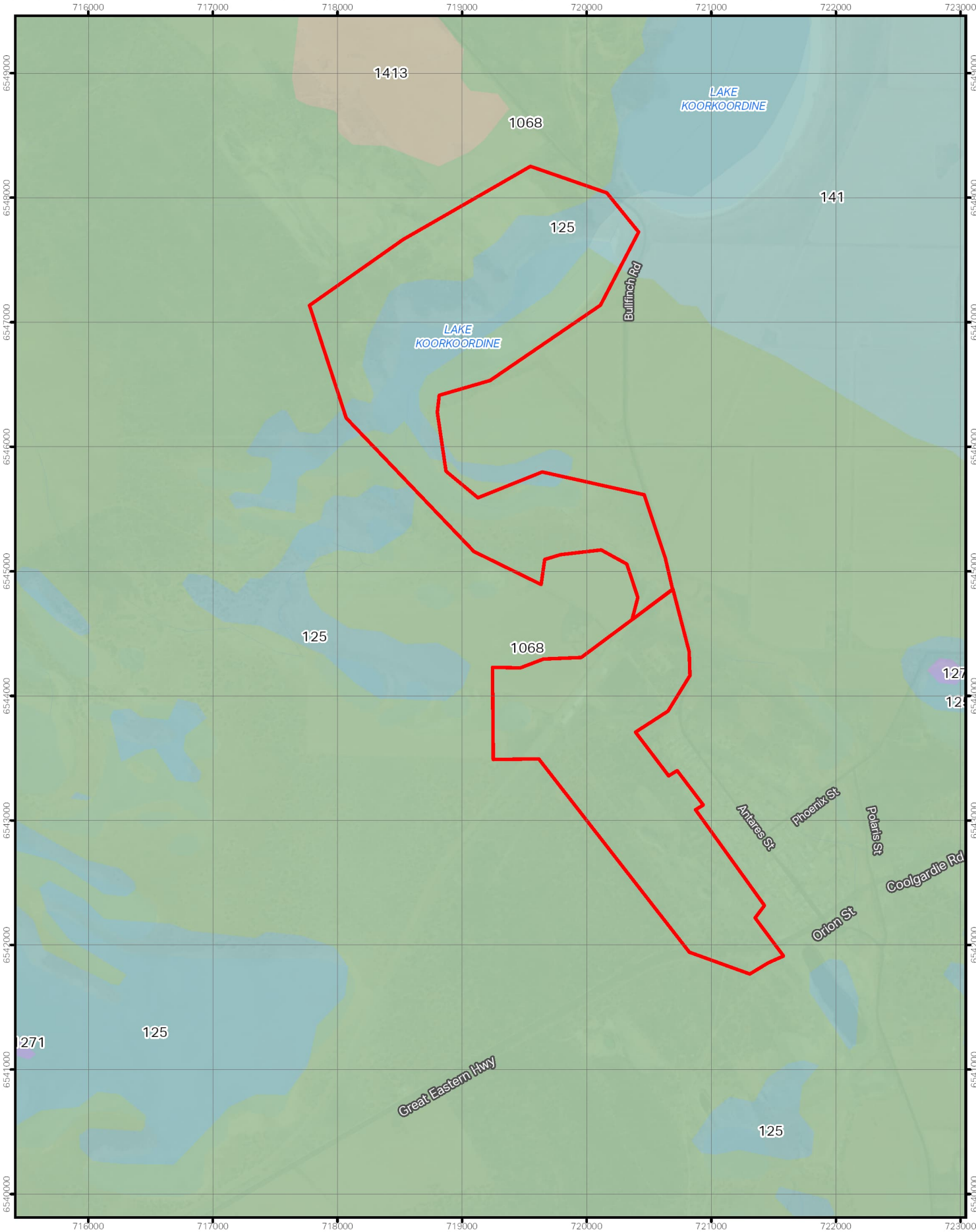
Vegetation Association	Description	Percentage Remaining (%)		
		Western Australia	Coolgardie IBRA Region	Shire of Yilgarn
125	Bare areas; salt lakes	90.27	92.87	55.02
1068	Medium woodland; salmon gum, morrel, gimlet & Eucalyptus sheathiana	52.84	54.03	52.84
141	Medium woodland; York gum, salmon gum & gimlet	82.91	97.22	97.07

2.5 Conservation Reserves and Environmentally Sensitive Areas

The survey area is not located on a conservation reserve or Environmentally Sensitive Area. A section of the northern edge of the survey area abuts the boundary of an un-named Nature Reserve encompassing the northern section of Lake Koorkoordine and camp ground DBCA legislated land within the vicinity of the project site are described in Table 2 and mapped in Figure 5.

Table 2 Nature reserves within the vicinity of the survey area.

Name	Type	Purpose	Distance (km)
Un-named	Nature Reserve	Conservation Of Flora and Fauna	0.0
Yellowdine Nature Reserve	Nature Reserve	Conservation Of Flora and Fauna	27.8
Wockallarry Nature Reserve	Nature Reserve	Conservation Of Flora and Fauna	22.6
Frog Rock Nature Reserve	Nature Reserve	Conservation Of Flora and Fauna	23.1



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LEGEND

Survey Area

Pre-European Vegetation (DPIRD-006)

125.Salt lake, lagoon, clay pan,

141.Woodland other,Wheatbelt; York gum, salmon gum etc. Eucalyptus loxophleba, E. salmonophloia. Goldfields: gimlet, redwood etc. E. salubris, E. oleosa. Riverine; rivergum E. camaldulensis. Tropical; messmate, woolly

1068.Woodland other,Wheatbelt; York gum, salmon gum etc. Eucalyptus loxophleba, E. salmonophloia. Goldfields: gimlet, redwood etc. E. salubris, E. oleosa. Riverine; rivergum E. camaldulensis. Tropical; messmate, woolly

1271.Salt lake, lagoon, clay pan,

1413.Thicket,Wattle, casuarina and teatree acacia-allocauarina-melaleuca alliance.

Golden Pig

Pre-European Vegetation

CYGNET GOLD PTY LTD

GOLDEN PIG - FLORA AND FAUNA ASSESSMENT

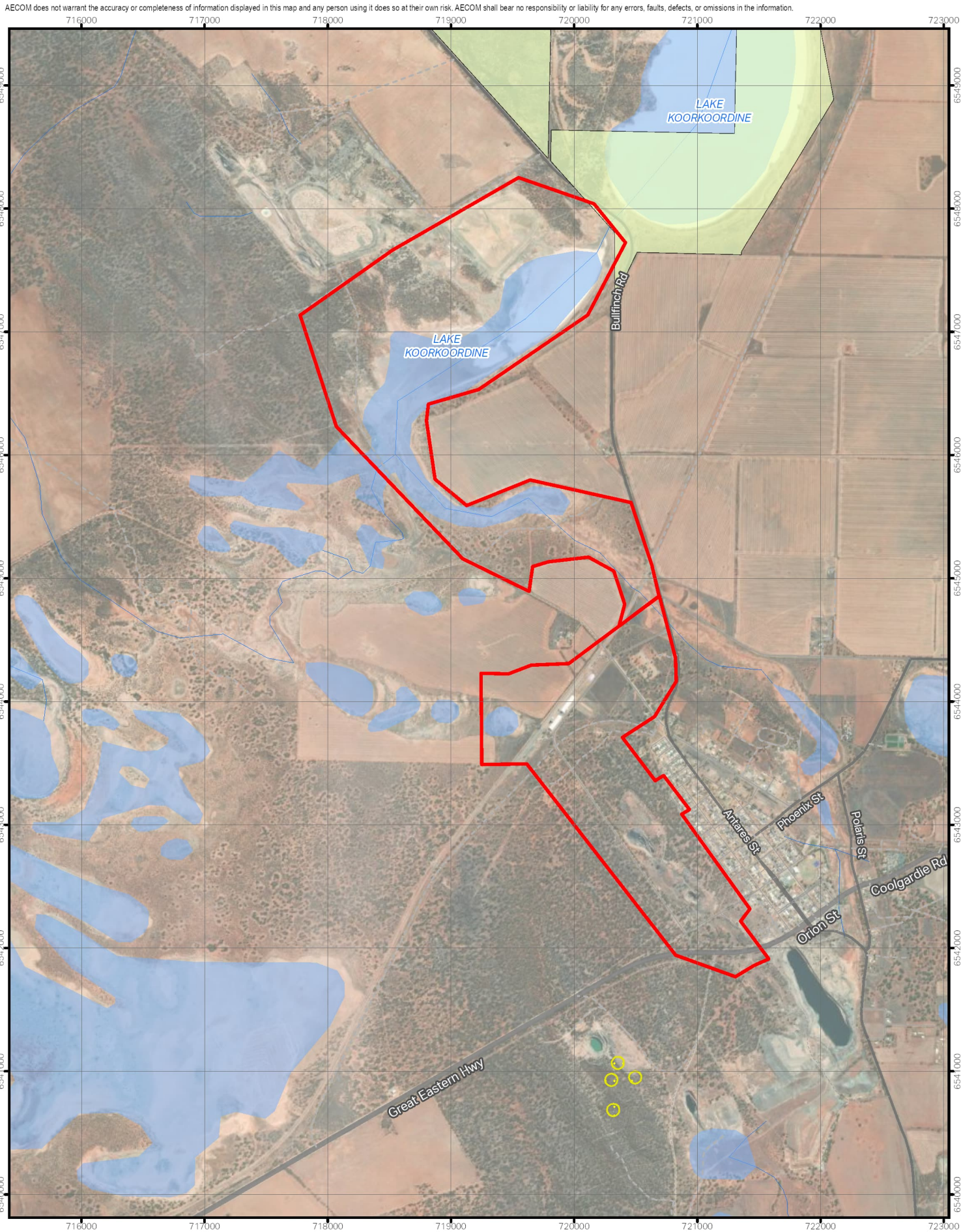
Figure

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AECOM Delivering a better world PROJECT ID 60718618 CREATED BY ROB.MCGREGOR DATE MODIFIED 11 JUN 2024 APPROVED BY F. DE WIT 1:40,000 0 1,000 metres GDA2020 MGA ZONE 50 NTS (Scale) Base Data is Based on information provided by and with the permission of the Western Australian and Information Authority (training as a landscape 2020). Source Layer Credits: World Topographic Map, Ben Tomlin, RAO 10244, USGS Downloadable Map, Map data ©, LandStreetMap contributors, Microsoft, Roadmap, Inc. and its affiliates, Ben Community, Map contributors, Map	LEGEND [Red Outline] Survey Area [Yellow Dashed Outline] Clearing Regulations - Environmentally Sensitive Areas (DWER-046) [Green Fill] DBCA - Legislated Lands and Waters (DBCA-011) [Light Green Fill] Nature Reserve	Golden Pig Environmentally Sensitive Areas CYGNET GOLD PTY LTD GOLDEN PIG - FLORA AND FAUNA ASSESSMENT	Figure 5

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3.0 Conservation Codes

3.1 Flora and Fauna

Species at risk of extinction are recognised at a Commonwealth level under the *Environment Protection, Biodiversity and Conservation Act 1999* (EPBC Act) and are categorised as outlined in Table 3.

Table 3 Categories of species listed under Schedule 179 of the EPBC Act

Code	Category
Ex	Extinct Taxa A species which at a particular time if, at that time, there is no reasonable doubt that the last member of the species has died.
ExW	Extinct in the Wild Taxa A species which is known only to survive in cultivation, in captivity or as a naturalised population well outside its past range; or it has not been recorded in its known and/or expected habitat, at appropriate seasons, anywhere in its past range, despite exhaustive surveys over a time frame appropriate to its life cycle and form.
CE	Critically Endangered Taxa A species which at a particular time if, at that time, it is facing an extremely high risk of extinction in the wild in the immediate future, as determined in accordance with the prescribed criteria.
E	Endangered Taxa A species which is not critically endangered, and it is facing a very high risk of extinction in the wild in the immediate or near future, as determined in accordance with the prescribed criteria.
V	Vulnerable Taxa A species which is not critically endangered or endangered and is facing a high risk of extinction in the wild in the medium-term future, as determined in accordance with the prescribed criteria.
CD	Conservation Dependent Taxa A species which at a particular time if, at that time: the species is the focus of a specific conservation program the cessation of which would result in the species becoming vulnerable, endangered or critically endangered the following subparagraphs are satisfied: - the species is a species of fish, - the species is the focus of a plan of management that provides for management actions necessary to stop the decline of, and support the recovery of, the species so that its chances of long term survival in nature are maximised the plan of management is in force under a law of the Commonwealth or of a State or Territory cessation of the plan of management would adversely affect the conservation status of the species.
Mi	Migratory Taxa The EPBC Act also requires the compilation of a list of migratory species that are recognised under international treaties including the: - Japan Australia Migratory Bird Agreement 1981 (JAMBA) - China Australia Migratory Bird Agreement 1998 (CAMBA) - Republic of Korea-Australia Migratory Bird Agreement 2007 (ROKAMBA) - Bonn Convention 1979 (The Convention on the Conservation of Migratory Species of Wild Animals). All migratory bird species listed in the annexes to these bilateral agreements are protected in Australia as a MNES under the EPBC Act.
Ma	Marine Taxa A species established under s248 of the EPBC Act.

Flora and fauna species that are considered Threatened and need to be specially protected because they are under identifiable threat of extinction are listed under the *Biodiversity Conservation Act 2016* (BC Act). These categories are defined in Table 4.

Table 4 Conservation codes for WA flora and fauna listed under the BC Act (DBCA, 2019)

Code	Category
CR	Critically Endangered Taxa 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.
EN	Endangered Taxa 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 20 and the ministerial guidelines.
VU	Vulnerable Taxa 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 20 and the ministerial guidelines.
EX	Extinct Taxa Species which have been adequately searched for and there is no reasonable doubt that the last individual has died, and listing is otherwise in accordance with the ministerial guidelines (section 24 of the BC Act).
MI	Migratory Taxa 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.
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).
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).

Species that have not yet been adequately surveyed to warrant being listed under the BC Act, or are otherwise data deficient, are added to a Priority List as Priority 1, 2 or 3 by the State Minister for Environment. 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 listed as Priority 4. Categories and definitions of Priority Flora and Fauna species are provided in Table 5

Table 5 Conservation codes for WA flora and fauna as listed by DBCA and endorsed by the Ministers for the Environment

Code	Category
P1	Priority One – Poorly Known Species Species that are known from one or a few locations (generally five or less) which are potentially at risk. All occurrences are either: very small; or on lands not managed for conservation, e.g. agricultural or pastoral lands, urban areas, road and rail reserves, gravel reserves and active mineral leases; or otherwise under threat of habitat destruction or degradation. Species may be included if they are comparatively well known from one or more locations but do not meet adequacy of survey requirements and appear to be under immediate threat from known threatening processes. Such species are in urgent need of further survey.
P2	Priority Two – Poorly Known Species Species that are known from one or a few locations (generally five or less), some of which are on lands managed primarily for nature conservation, e.g. national parks, conservation parks, nature reserves and other lands with secure tenure being managed for conservation. Species may be included if they are comparatively well known from one or more locations but do not meet adequacy of survey requirements and appear to be under threat from known threatening processes. Such species are in urgent need of further survey.
P3	Priority Three – Poorly Known Species Species that are known from several locations, and the species does not appear to be under imminent threat, or from few but widespread locations with either large population size or significant remaining areas of apparently suitable habitat, much of it not under imminent threat. Species may be included if they are comparatively well known from several locations but do not meet adequacy of survey requirements and known threatening processes exist that could affect them. Such species are in need of further survey.
P4	Priority Four – Rare, Near Threatened and other species in need of monitoring 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. 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. Species that have been removed from the list of threatened species during the past five years for reasons other than taxonomy.

3.2 Vegetation Communities

TECs are naturally occurring biological assemblages that occur in a particular type of habitat and that may be subject to processes that threaten to destroy or significantly modify the assemblage across its range. TECs are listed by both State and Commonwealth legislation.

Communities can be classified as TECs under the EPBC Act. Categories of EPBC Act listed TECs are described in Table 6.

Table 6 Categories of TECs that are listed under the EPBC Act

Code	Category
CE	Critically Endangered If, at that time, it is facing an extremely high risk of extinction in the wild in the immediate future.
E	Endangered If, at that time, it is not critically endangered and is facing a very high risk of extinction in the wild in the near future.
V	Vulnerable If, at that time, it is not critically endangered or endangered, and is facing a high risk of extinction in the wild in the medium-term future.

Vegetation communities in Western Australia are described as TECs if they have been endorsed by the Western Australian Minister for Environment following recommendations made by the Threatened Species Scientific Committee. TECs are listed under the BC Act in one of four categories defined in Table 7.

The DBCA maintains a database of state listed TECs which is available for online searches via their website. Possible TECs that do not meet survey criteria or are not adequately defined are listed as PECs under Priorities 1, 2 and 3. 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. Conservation dependent communities are classified as Priority 5. PECs are endorsed by the Minister for Environment and are described in Table 8.

DBCA requires that all Priority and Threatened ecological communities are considered during environmental impact assessments and clearing permit applications.

Table 7 Conservation codes for state listed Ecological Communities

Code	Category
PD	Presumed Totally Destroyed
CR	Critically Endangered
EN	Endangered
VU	Vulnerable

Table 8 Categories for Priority Ecological Communities

Code	Category
P1	Priority One: poorly-known ecological communities
P2	Priority Two: poorly-known ecological communities
P3	Priority Three: poorly known ecological communities
P4	Priority Four: ecological communities that are adequately known, rare but not threatened or meet criteria for Near Threatened, or that have been recently removed from the threatened list.

3.3 Biosecurity and Agriculture Management Act 2007

Biosecurity is the management of the risk of animal and plant pests and diseases entering, emerging, establishing or spreading in WA to protect the economy, environment, and community. Biosecurity is managed under the *Biosecurity and Agriculture Management Act 2007* BAM Act which came into effect 1 May 2013. Exotic animals and plants can become an invasive species if they can establish in new areas where local conditions are favourable for their growth. Each organism listed under the BAM Act comes with certain legal / import requirements:

- Declared Pest, Prohibited - s12. Prohibited organisms are declared pests by virtue of section 22(1) and may only be imported and kept subject to permits.
- Permitted - s11. Permitted organisms may be subject to an import permit if they are potential carriers of high-risk organisms.
- Declared Pest - s22(2). Declared pests may be subject to an import permit if they are potential carriers of high-risk organisms and may also be subject to control and keeping requirements once within Western Australia.
- Permitted, Requires Permit - r73. Regulation 73 permitted organisms may only be imported subject to an import permit.

- Declared pests can be assigned to a C1, C2 or C3 control category under the [Biosecurity and Agriculture Management Regulations 2013](#):
 - C1 Exclusion - Organisms which should be excluded from part or all of Western Australia
 - C2 Eradication - Organisms which should be eradicated from part or all of Western Australia
 - C3 Management - Organisms that should have some form of management applied that will alleviate the harmful impact of the organism, reduce the numbers or distribution of the organism, or prevent or contain the spread of the organism.
- Unassigned - Declared pests that are recognised as having a harmful impact under certain circumstances, where their subsequent control requirements are determined by a Plan or other legislative arrangements under the BAM Act.

4.0 Methodology

4.1 Desktop Assessment

A comprehensive desktop assessment was undertaken prior to the field survey to identify significant environmental values likely to be present in the survey area including flora and vegetation communities. Desktop database searches were requested from the following government databases (including a variable radius):

- DBCA Threatened Species and Communities database including Threatened and Priority flora, communities and Threatened and Priority fauna (50 km buffer from the survey area).
- Western Australian Herbarium (WAH, 1998) records.
- EPBC Act Protected Matters Search Tool (PMST) (50 km buffer from survey area).
- Public domain including Index of Biodiversity Surveys for Assessments (IBSA), EPA and DWER websites
 - Stantec (2020) Glendower Flora, Vegetation and Fauna Assessment.
 - Barto Gold Mining Pty Ltd (2023) Native Vegetation Clearing Permit including supporting flora and fauna assessment
 - APM (2014) Southern Cross Goldfields Fauna Assessment

Significant flora and fauna species likelihood of occurrence was assessed systematically using a point-based system which takes into account proximity (defined as less than 5 km) and date of known records (defined as less than 20 years old), presence within the Local Government Area (LGA) and habitat suitability (Table 9 and Table 10).

The likelihood of significant ecological communities occurring depends on the presence of suitable landforms, land systems, known occurrences and distance of known occurrences.

Table 9 Categories of likelihood of occurrence for flora species

Likelihood of Occurrence	Score	Definition
Known	6	Species is known to occur in the survey area.
High (Likely)	5	Not known to occur in the survey area however there are records nearby and suitable habitat for the species is known or likely to be present within the survey area.
Moderate (Possible)	4 (if suitable habitat is known) 3 (if suitable habitat may be present)	Species is not known to occur within the survey area however there are nearby records AND/OR recent records OR records within the LGA AND suitable habitat for the species is known or likely to be present within the survey area. OR Not known to occur within the survey area but there are records nearby AND recent records AND records within the LGA, and suitable habitat for the species may be present (marginal habitat).
Low (Unlikely)	2, 3	Species is not known to occur within the survey area but there are records nearby OR recent records OR within the LGA AND suitable habitat for the species may be present (marginal habitat).
Negligible (Suitable Habitat not Present)	1, 2, 3	Despite records nearby OR being present within the LGA OR recent records, no suitable habitat is present within the survey area and therefore the likelihood of the species occurring is negligible.

Table 10 Categories of likelihood of occurrence for fauna species

Likelihood of Occurrence	Score	Definition
Known	5	Species is known to occur in the survey area
High (Likely)	3, 4	Not known to occur in the survey area but there are records within close proximity of the survey area and suitable habitat for the species is known to be, or likely to be, present within the survey area OR not known to occur within the survey area but there are recent records in close proximity of the survey area and suitable habitat for the species is known to be, or likely to be present within the survey area OR not known to occur within the survey area but there are recent records and suitable habitat for the species may be present.
Moderate (Possible)	2, 3	Not known to occur within the survey area but there are recent records in close proximity/within the LGA and suitable habitat for the species may be present (marginal habitat) OR suitable habitat present.
Low (Unlikely)	1, 2	Records present within the LGA, and marginal suitable habitat is present within the survey area, therefore the likelihood of the species occurring there is low OR marginal habitat present OR recent record within LGA
Negligible (Suitable Habitat not Present)	0, 1	No nearby records or suitable habitat OR recent record with no suitable habitat within the survey area OR records nearby with no suitable habitat within the survey area

4.2 Flora and Vegetation Assessment

A single-phase detailed flora and vegetation assessment was undertaken in accordance with methodology outlined in the Flora Survey Technical Guide (EPA, 2016). The assessment was led by Floora DeWit (collection permit FB62000497). Floora has over 17 years' experience as a consulting botanist. The field survey was undertaken 23 to 24 November 2023.

The entire survey area was traversed on foot using systematic linear traverses to conduct targeted flora searches. Floristic data was collected from nine non-permanent 50 x 50 m quadrats and nine unbounded relevés. Data collected at quadrats and relevés included:

- date
- location using hand-held GPS (accuracy of 5 m)
- sample site type and size
- photograph (north-west corner)
- soil details (type, colour, moisture)
- landform
- vegetation condition
- fire history
- species list including:
 - estimated height
 - estimated percentage cover (for trees both percentage within relevé and within community was recorded to enable better description of vegetation community).

Any species unable to be identified in the field were collected for identification in AECOM's in-house herbarium and the specimens and taxonomic references and keys at the Western Australian Herbarium (WAH). Naming of species followed the convention of the WAH (1998).

Vegetation communities were described and mapped based on changes in dominant species composition and landform. Vegetation community descriptions were based on the Association Level V in accordance with the National Vegetation Information System (NVIS) Framework (DotEE, 2017a). Delineation of vegetation communities was supported by analysing floristic data collected within quadrats.

The software package Primer-E was used to compare floristic data from sample sites. Both relevés and quadrats were considered to determine the relationship of each site to one another. The similarity matrix used both Bray-Curtis and Euclidian distance measures to produce Dendrograms which are presented in this document.

Vegetation condition was determined using the Keighery (1994) vegetation condition scale as recommended in the *Flora Survey Technical Guide* (EPA, 2016).

4.3 Fauna Survey

The fauna survey was undertaken simultaneously with the flora and vegetation assessment. The survey was undertaken by Nina Sergeev who has two years' experience undertaking fauna habitat surveys across WA.

Fauna habitat assessments were completed throughout the survey area and were used to define the structure, complexity, and continuity of the habitat present, and documented the presence and abundance of habitat features that included but were not limited to presence or absence of large mature trees, water bodies, dense vegetation, hollows, and leaf litter. Any Malleefowl mounds or other significant fauna habitat features were also recorded to inform this assessment.

The habitat assessment was used to verify the findings in the desktop survey as per the EPA (2020) Technical Guidance. Potential usage within the survey area by conservation significant fauna species was recorded, primarily focusing on suitable and/or core habitat and any ecological values that may support likelihood of occurrence. Any observations were recorded using a hand-held GPS (accuracy of 5 m).

In addition to recording observed fauna and birds identified from distinctive calls, details of indirect evidence such as scats, tracks and diggings were documented. Attention was given to searching for conservation significant species identified in the desktop assessment as having the potential to occur in the area. All observations were made between daylight hours of 0700 and 1700.

The taxonomy and nomenclature of vertebrate species is consistent with the Western Australian Museum's Checklist of Vertebrates of Western Australia (2023) and the Australian Faunal Directory for bird species.

5.0 Survey Limitations

No significant limitations were identified that may impact on the ability to use the data to inform the environmental impact assessment. Limitations of the biological surveys are discussed in Table 11.

Table 11 Limitations of the flora, fauna, and vegetation survey

Limitation	Flora, Fauna and Vegetation Survey
Availability of contextual information on the region	Nil Contextual information was available using the DBCA and PMST database results and publicly available information.
Competency/experience of consultant conducting survey	Nil The flora and vegetation survey was led by Floora de Wit who has more than 17 years' experience undertaking flora and vegetation assessments. The fauna assessment was undertaken by Nina Sergeev who has 2 years' experience undertaking fauna surveys. She has actively pursued knowledge in local native fauna species, reviewing relevant guidelines and publications to maximise detectability of species and assess habitat suitability.
Proportion of flora / fauna identified, recorded and/or collected (based on sampling, timing and intensity)	Nil The survey was undertaken in Spring following several months of below-average rainfall. Floristic data was collected at nine quadrats and nine relevés. All vegetation was affected by historical disturbance including previous mining activities and drilling. The lower rainfall did not appear to have affected the presence of short-lived species. Thirteen annual flora species were recorded during the survey. A total of 15 detailed fauna habitat assessments were undertaken to capture the ecological features of the survey area, of which is considered suitable effort for the size and complexity of the vegetation and fauna habitats present.
Completion (is further work needed)	Nil The objectives of the flora, fauna and vegetation assessment were met to delineate key values. Areas of native vegetation were traversed on foot to undertake broad-level sampling and target potential significant features (habitat, landform etc.). In particular the edge of the salt lake and adjacent drainage habitat was investigated.
Remoteness and/or access problems	Minor Areas on private property were not accessed. This was limited to paddocks and one patch of native vegetation. It is unlikely that the proposed Project will have any impact on private properties.
Timing, weather, season, cycle	Nil The survey was undertaken during the ideal survey season of Spring as defined in the Technical Guide. Rainfall was below-average in the months leading up to the survey but not considered to have influenced the outcome of the survey.
Disturbances (e.g. fire flood, accidental human intervention) which affected results of the survey	Nil. No disturbances were noted that may influence the outcome of the survey.

6.0 Desktop Assessment Results

6.1 Threatened and Priority Ecological Communities

One TEC listed under the EPBC Act was known to occur in the vicinity of the survey area. The Eucalypt Woodlands of the Western Australian Wheatbelt (Eucalypt Woodland TEC) is listed as Critically Endangered under the EPBC Act and is described in Table 12. Occurrences require field verification, with the nearest occurrence being 2.6 km west of the survey area.

No TECs overlap with the survey area (Figure 6).

Table 12 Significant Ecological Communities known to occur in the vicinity of the survey area

Community Name and Description	Cons. Status ¹	Distance from survey area
Eucalypt Woodlands of the Western Australian Wheatbelt The structure of the ecological community is a woodland in which the minimum crown cover of the tree canopy in a mature woodland is 10%. The key dominant or co-dominant species of the tree canopy are species of Eucalyptus trees that typically have a single trunk. Native understorey is present but is of variable composition, being a combination of grasses, other herbs and shrubs (DotE, 2015).	EPBC Act: CE DBCA: P3	2.6 km

1. EPBC Act CE Critically Endangered, DBCA P=Priority

6.2 Significant Flora

A total of 51 significant flora species were identified in the desktop assessment. This included 19 species listed as Threatened under the EPBC Act and BC Act, and 32 species listed as Priority by DBCA.

The likelihood assessment determined that:

- two species had a High likelihood of occurrence
- 20 species had a Moderate likelihood of occurrence
- 7 species had a Low likelihood of occurrence
- 22 species were considered Negligible in the absence of suitable habitat.

Species with a High likelihood of occurrence are presented in Table 13. Significant flora recorded in the vicinity of the survey area are mapped on Figure 6. The comprehensive desktop study is presented in Appendix A.

Table 13 Conservation significant flora species that are known and/or with a high likelihood of occurrence

Species	Cons. Code ¹		Habitat ²
	EPBC Act	BC Act / DBCA	
High			
<i>Daviesia microcarpa</i>	E	CR	Grows in alkaline red-brown clay loam with calcrete nodules (Schwarten, 1995) on lower slopes, bases of hills with outcropping rock, on road verges, gravel pits and mine waste dumps (DBCA, 2021).
<i>Hakea pendens</i>	-	P3	Shrub, 2-3 m high, 2.5-3.1 m wide. Flowers pink-white, in September. Grows in stony loam on ironstone ridges.

1. Conservation codes E-EN Endangered, V-VU Vulnerable, CE-CR Critically Endangered, P Priority

2. Habitat derived from WAH (1998) Florabase

6.3 Significant Fauna

A total of 32 Threatened, Priority and Migratory fauna species were identified in the desktop database searches. This included 16 bird, nine mammal, five invertebrate and two reptile species. Oceanic or strictly marine species were excluded from the desktop assessment as the survey does not include marine waters.

The likelihood assessment determined that:

- four species had a High likelihood of occurrence
- one species had a Moderate likelihood of occurrence
- 17 species had a Low likelihood of occurrence
- 10 species were considered Negligible in the absence of suitable habitat.

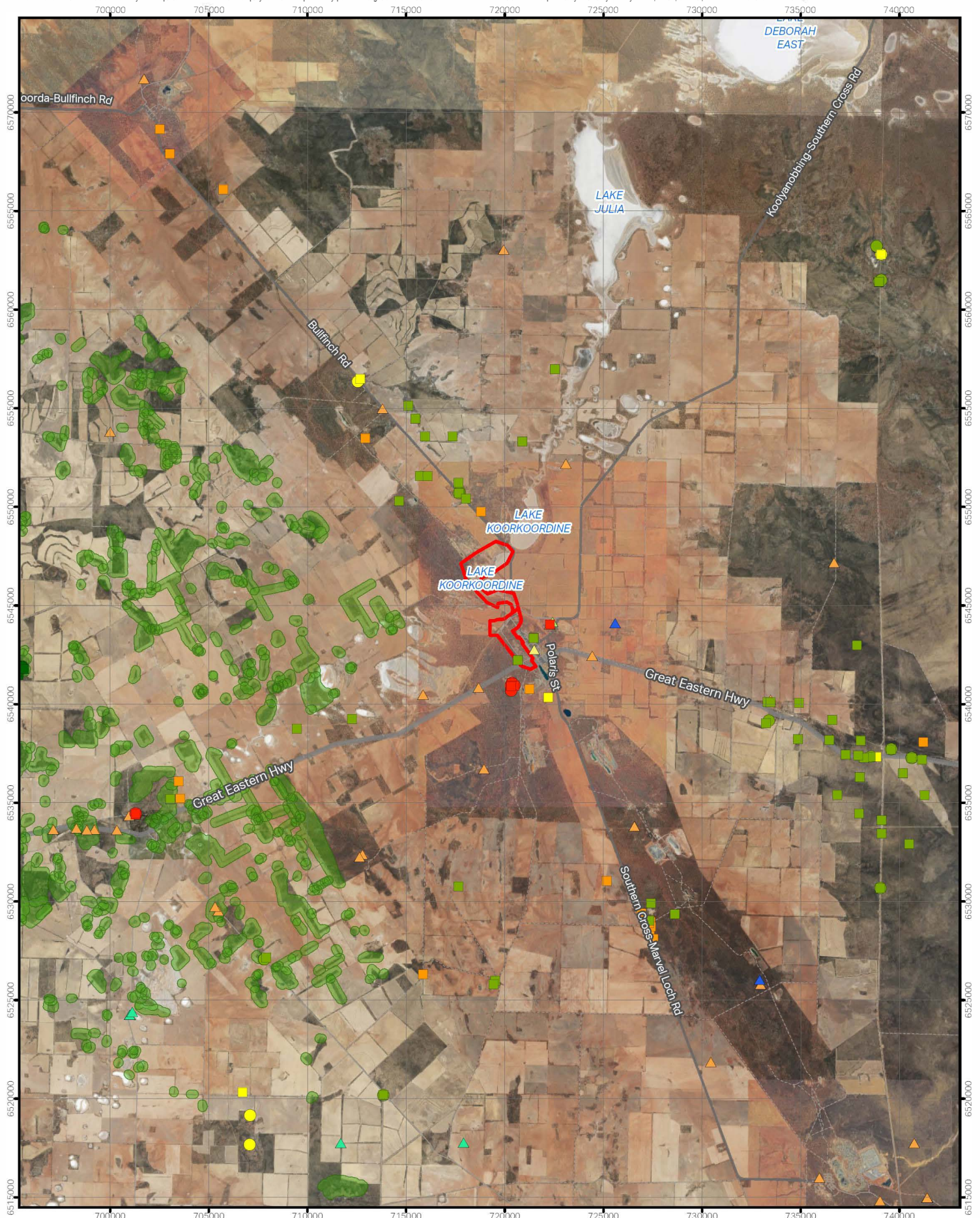
The species with a 'high' and 'moderate' likelihood of occurrence are presented below in Table 14 and the results are mapped in Figure 6. Database search results and the analysis of these are provided in Appendix B.

Table 14 Significant fauna species that have a 'high' and 'moderate' likelihood of occurrence

Class	Scientific Name	Common Name	Conservation Status		Ecology
			BC Act / DBCA ²	EPBC Act ¹	
High					
Mammal	<i>Dasyurus geoffroii</i>	Western Quoll, Chuditch	VU	V	Currently restricted to south-west Western Australia, in areas dominated by sclerophyll forest or drier woodland, heath and mallee shrubland (Van Dyck & Strahan, 2008).
Bird	<i>Leipoa ocellata</i>	Malleefowl	VU	V	Semi-arid to arid zone in shrublands and low woodlands dominated by mallee and associated habitats such as such as Broombush (<i>Melaleuca uncinata</i>) and Scrub Pine (<i>Callitris verrucosa</i>) (Benshemesh, 2007).
Bird	<i>Tringa nebularia</i>	Common Greenshank	IA	E & Mi & Ma	Inland wetlands and sheltered coastal habitats. In shallows around the edges of water often among pneumatophores of mangroves or other sparse, emergent or fringing vegetation, such as sedges or saltmarsh (DCCEEW, 2023).
Invertebrate	<i>Idiosoma castellum</i>	Tree-stem Trapdoor Spider	P4	-	Habitat is exclusive to the Avon Wheatbelt in WA (Main, 1986).
Moderate					
Bird	<i>Falco peregrinus</i>	Peregrine Falcon	OS	-	Rainforests, arid zones and coastal to alpine areas (BirdLife, 2021).

1. EPBC Conservation status codes: V Vulnerable, MI Migratory, Ma Marine

2. BC Conservation status codes: EN Endangered, VU Vulnerable, IA Migratory, OS Other Specially Protected Fauna, P Priority Species.



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Scale 1:250,000
GDA2020 MGA ZONE 58
0 1 2 3 4
Kilometers

Legend
TEC/PEC
Priority 3

WA Herbarium database (WAHERB)
Threatened
P1
P2
P3
P4

Threatened Fauna database (DECA)
Vulnerable
Migratory Species
Specially Protected
Priority 1
Priority 4

Threatened and Priority Flora database (TPFL)
Threatened
P2
P3
P4

Golden Pig Desktop Significant Flora, Fauna and Communities

CYGNET GOLD PTY LTD

GOLDEN PIG - FLORA AND FAUNA ASSESSMENT

Figure
6

7.0 Field Survey Results

7.1 Vegetation

7.1.1 Communities

Six vegetation communities were defined and mapped including:

- Three Eucalypt Woodlands EyAnAe, EyEsMt and EsDvarC
- One Eucalypt Mallee Woodland EmMiRc recorded on slopes near Tecticornia Samphire Shrubland. High variation was noted in species composition that appeared to reflect drainage.
- One Tecticornia Samphire Shrubland TpDcc recorded at the edge of the salt lake.
- One Maireana Chenopod Shrubland EsMt representing lower slopes / floodplain

The similarity of sample sites is presented in Figure 7 and symbolised according to vegetation community. Clustering was readily represented by the Bray-Curtis similarity index with only two outliers (sites 22 and 27).

The survey area is not in the Avon Wheatbelt. As such, none of the vegetation communities represent the Eucalypt Woodlands of the WA Wheatbelt TEC.

Vegetation communities are mapped in Figure 8.

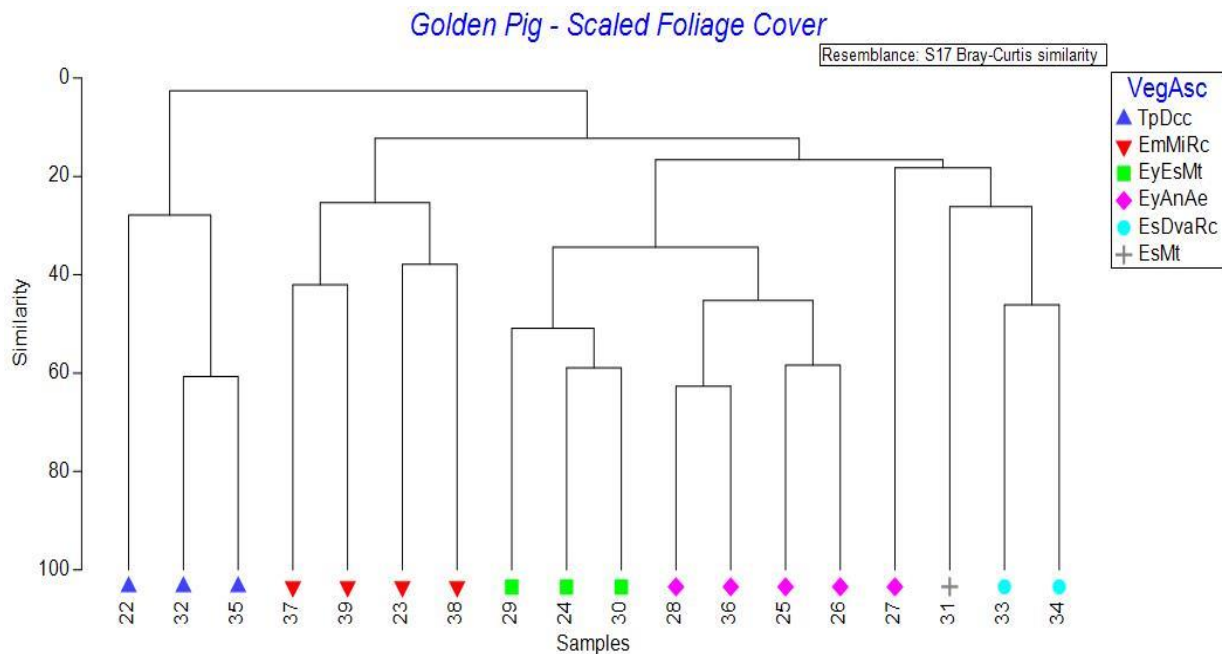


Figure 7 Similarity of sample sites symbolised by vegetation community

Table 15 Vegetation community descriptions and photographs

Vegetation Description	Details	Photographs
TpDcc Tecticornia Samphire Shrubland <i>Tecticornia pruinosa</i>, <i>Tecticornia halocnemoides</i> and <i>Roycea divaricata</i> low samphire shrubland over <i>Disphyma crassifolium</i> subsp. <i>clavellatum</i>, <i>Eragrostis falcata</i> and <i>Aristida holathera</i> mixed. This community is associated with the saltpan and represents the fringing vegetation. It is valuable for preventing erosion and managing surface hydrology.	Survey effort: 22Q,32R, 35Q Species richness: 24 native species Extent: 63.11 ha, 9%	
EyAnAe Eucalypt Woodland <i>Eucalyptus yilgarnensis</i>, <i>Eucalyptus corrugata</i> and <i>Eucalyptus longicornis</i> mid woodland over <i>Atriplex nummularia</i>, <i>Exocarpos aphyllus</i> and <i>Senna artemisioides</i> subsp. <i>filifolia</i> mid open shrubland over <i>Austrostipa elegantissima</i>, <i>Aristida holathera</i> and <i>Rytidosperma caespitosum</i> low sparse tussock grassland. Includes a second low tree stratum of <i>Melaleuca pauperiflora</i> subsp. <i>fastigiata</i>. Recorded on flat terrain with clay loam soils and rocks on surface.	Survey effort: 25Q, 26R, 27Q, 28R, 36R Species richness: 32 native species Extent: 73.05 ha, 10%	

Vegetation Description	Details	Photographs
EyEsMt Eucalypt Woodland <i>Eucalyptus yilgarnensis</i>, <i>Eucalyptus salubris</i> and <i>Eucalyptus corrugata</i> mid open woodland over <i>Eremophila scoparia</i> and <i>Exocarpos aphyllus</i> tall sparse shrubland over <i>Maireana trichoptera</i>, <i>Maireana integra</i> and <i>Roepera glauca</i> mixed low open chenopod shrub and forbland. Recorded on flat to lower slope terrain with sandy loam sands. Degraded areas (potentially historically cleared) lack a tree stratum.	Survey effort: 24Q, 29Q, 30R Species richness: 31 native species Extent: 47.63 ha, 7%	
EsDvaRc Eucalypt Woodland <i>Eucalyptus salmonophloia</i>, <i>Eucalyptus yilgarnensis</i> mid open woodland over <i>Dodonaea viscosa</i> subsp. <i>angustissima</i>, <i>Templetonia smithiana</i> and <i>Rhagodia drummondii</i> mid to tall open shrubland over <i>Rytidosperma caespitosum</i>, <i>Aristida holathera</i> and <i>Austrostipa elegantissima</i> tall open tussock grassland. Recorded on lower slopes adjacent to salt lates and samphire / chenopod shrublands. Includes stands of <i>E. salmonophloia</i> over shrublands.	Survey effort: 33R and 34R Species richness: 30 native and 1 weed species Extent: 65.34 ha, 9%	

Vegetation Description	Details	Photographs
EmMiRc Eucalypt Mallee Woodland <i>Eucalyptus myriadena</i> mid open mallee woodland over <i>Maireana integra</i>, <i>Grevillea acuaria</i> and <i>Acacia deficiens</i> low open shrubland over <i>Rhodanthe citrina</i>, <i>Waitzia acuminata</i> and <i>Disphyma crassifolium</i> subsp. <i>clavellatum</i> low open forbland. Includes a low tree strata of <i>Acacia assimilis</i>, <i>Melaleuca hamata</i> and <i>Santalum acuminatum</i>. Recorded on slopes with red clay loam soils and only some rocks on surface.	Survey effort: 23Q, 37Q, 38R, 39R Species richness: 55 native species. Extent: 86.59 ha, 12%	
EsMt Maireana Chenopod Shrubland <i>Eremophila scoparia</i> and <i>Acacia enervia</i> subsp. <i>explicata</i> mid to tall open shrubland over <i>Maireana trichoptera</i>, <i>Rhagodia drummondii</i> and <i>Maireana georgei</i> mid to low chenopod shrubland. Recorded at one discrete location between Tecticornia Samphire Shrubland and Eucalypt Woodlands. Represents lower slopes likely to act as floodplain for the saltpan.	Survey effort: 31Q Species richness: 16 native and 1 weed species. Extent: 12.74 ha, 2%	
Trees Comprising native and planted trees in paddocks.	Survey effort: observation Extent: 40.35 ha, 9%	No photo

Vegetation Description	Details	Photographs
Salt Pan Bare natural saltpan.	Survey effort: observation Extent: 167.22 ha, 23%	 A photograph showing a wide, flat, light-colored salt pan in the foreground, transitioning into a darker, possibly vegetated area in the distance. The sky is blue with scattered white and grey clouds.

7.1.2 Condition

Vegetation condition varied from Completely Degraded to Very Good (Table 16) with the majority of native vegetation (excluding cleared) mapped as Very Good (335.32 ha, 45%). Disturbance was evident from previous mining activities and edge effects from adjacent land use (predominantly agriculture and the township of Southern Cross). Weed invasion was notably low despite numerous sources present. Private property access was not granted in some cases, denoted as “not accessed” in the table below.

The salt pan was assumed to represent the same condition as adjacent Samphire Shrubland vegetation, presumed to be Very Good. Adjacent land use context was used to assess condition, including altered hydrology, sedimentation, and the tracks intersecting the salt lake.

Vegetation condition is mapped in Figure 9.

Table 16 Vegetation condition extent

Condition	Extent (ha)	Proportion (%)
Very Good	335.32	46
Good	145.39	20
Degraded	34.96	5
Completely Degraded	40.35	6
Not accessed	42.84	6
Cleared	133.67	18
Total	732.53	100

7.2 Flora

A total of 93 native flora species were recorded from 28 families. The best represented families are Chenopodiaceae (18 species), Fabaceae (12 species) and Myrtaceae (ten species).

No species listed as Threatened under the EPBC Act or BC Act or listed as Priority by DBCA were recorded.

Four weed species were recorded. None of these are listed under the BAM Act or as a Weed of National Significance.

7.3 Fauna

7.3.1 Significant Fauna Species

No significant fauna species were observed and no indirect evidence was recorded. Based on the desktop assessment and the field survey, the following significant fauna species considered to have the potential to utilise the habitat within the survey area as both core and marginal habitat are listed below:

Potential core habitat for:

- Chuditch (*Dasyurus geoffroii*) listed as EPBC and BC Act Vulnerable
- Malleefowl (*Leipoa ocellata*) listed as EPBC and BC Act Vulnerable.

Potential marginal habitat for:

- Common Greenshank (*Tringa nebularia*) listed as EPBC Act Endangered, Migratory and Marine
- Tree-stem Trapdoor Spider (*Idiosoma castellum*) listed as DBCA Priority 4

No evidence of these species was recorded during the survey, including scats, Malleefowl mounds, and tracks.

7.3.2 Fauna Habitat

Six fauna habitats have been defined and mapped in Figure 10 and Table 17, and are described as follows:

- Eucalypt Woodland (186.02 ha, 25% of survey area)
- Mallee Woodland (86.59 ha, 12% of survey area)
- Low Shrubland (63.11 ha, 9% of survey area)
- Salt Pan (167.22 ha, 23% of survey area)
- Trees over cleared (40.35 ha, 6% of survey area)
- Cleared (133.67 ha, 18% of survey area).

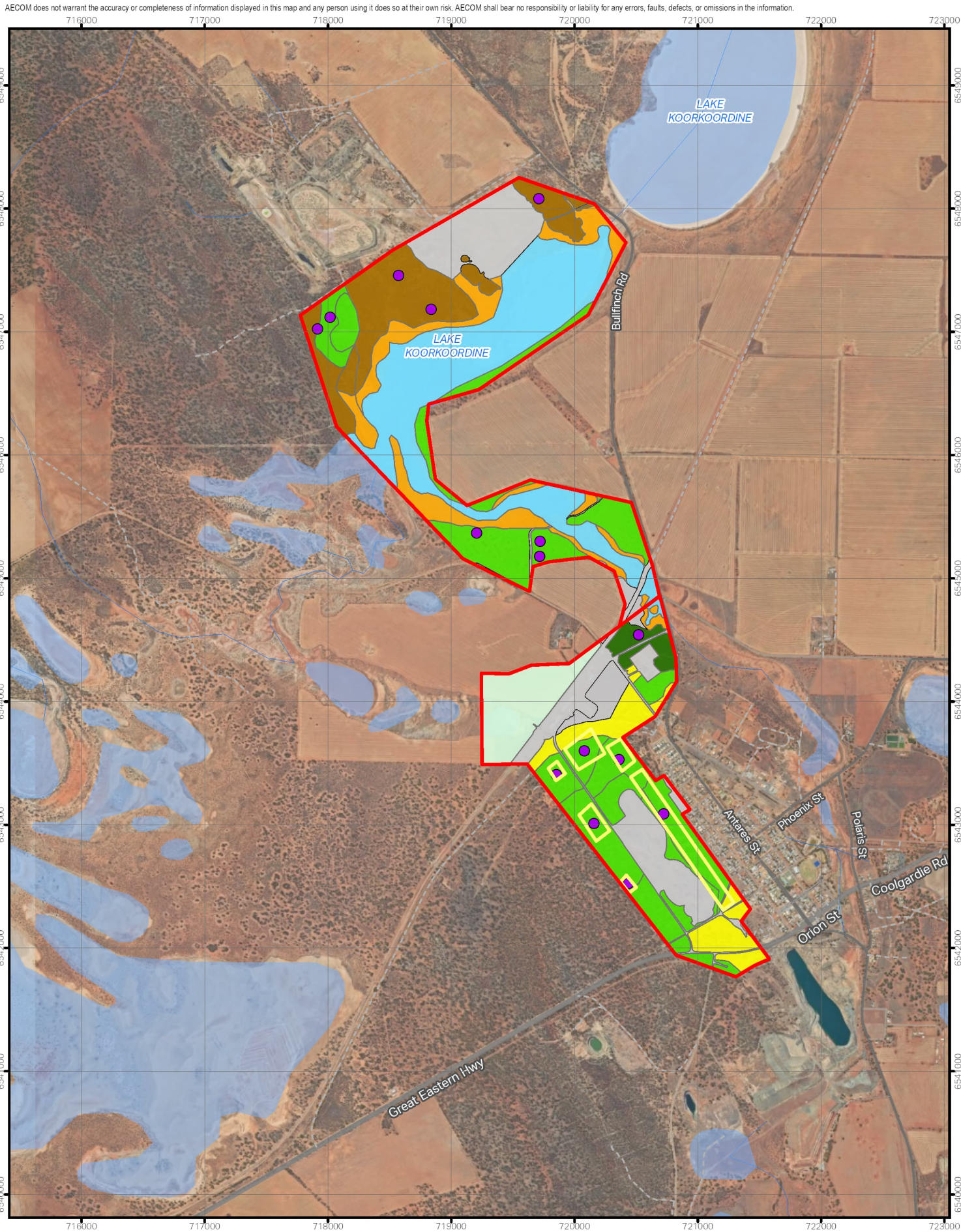
It should be noted that the habitat calculations do not equal to 100% as two areas were mapped as 'No Access' (N/A) and have been excluded from the fauna habitat assessment.

Table 17 Fauna habitats of the survey area

Fauna habitat (area and % of habitat within the survey area)	Description	Conservation significant species potentially using habitat	Photos
Eucalypt Woodland (186.02 ha, 25%)	<i>Eucalyptus yilgarnensis</i>, <i>Eucalyptus corrugata</i> and <i>Eucalyptus longicornis</i> woodland over shrubland and tussock grassland. Bare ground common amongst fine litter, recorded on orange-brown sandy clay. Understorey comprised of native shrubs inclusive of <i>Melaleuca</i> species, however not very common across area. Hollowed out fallen tree trunks may be utilised as potential refuge habitat. Habitat value: Moderate to High	Potential suitable habitat for: - Chuditch (<i>Dasyurus geoffroii</i>) EPBC and BC Act Vulnerable Potential marginal habitat for: - Malleefowl (<i>Leipoa ocellata</i>) EPBC and BC Act Vulnerable. Tree-stem Trapdoor Spider (<i>Idiosoma castellum</i>) listed as DBCA Priority 4	
Mallee Woodland (86.59 ha, 12%)	<i>Eucalyptus myriadena</i> open mallee woodland over low shrubland and forbland. Ground cover common, mainly comprised of fine litter. Bare ground common over light brown sandy clay, with occasional patches of gravelly rock on slight slope. Understorey comprised of native shrubs, with occasional mid storey of <i>Acacia</i> and <i>Melaleuca</i> species. Small logs recorded occasionally throughout area may provide sheltering opportunities for fauna species. Rubbish in the form of aluminium cans and wooden pegs was observed in the area, reducing the habitat value. Habitat value: Moderate to High	Potential suitable habitat for: - Chuditch (<i>Dasyurus geoffroii</i>) EPBC and BC Act Vulnerable - Malleefowl (<i>Leipoa ocellata</i>) EPBC and BC Act Vulnerable. Potential marginal habitat for: - Tree-stem Trapdoor Spider (<i>Idiosoma castellum</i>) listed as DBCA Priority 4	

Fauna habitat (area and % of habitat within the survey area)	Description	Conservation significant species potentially using habitat	Photos
Low Shrubland (63.11 ha, 9%)	<i>Tecticornia</i> shrubland over native shrubs and grasses. Common bare ground over orange sandy clay. This habitat is linked with the Salt Pan habitat and serves as fringing vegetation. It may offer shelter, food and breeding grounds for fauna species, however no ecological benefits for significant fauna species were identified for this area. Habitat value: Low	The Common Greenshank (<i>Tringia nebularia</i>) (listed as EPBC and BC Act E, Mi, Ma) may utilise the fringing shoreline of this habitat when wet. . Potentially used as transient habitat	
Salt Pan (167.22 ha, 23%)	Bare natural saltpan. No vegetation observed or ecological values able to support habitat for any fauna species. This habitat is linked to fringing vegetation from the Low Shrubland habitat. Habitat value: Negligible.	The Common Greenshank (<i>Tringia nebularia</i>) (listed as EPBC and BC Act E, Mi, Ma) may utilise the fringing shoreline of this habitat when wet. No core habitat provided for any other conservation significant fauna species. Habitat may be utilised as a wildlife corridor.	

Fauna habitat (area and % of habitat within the survey area)	Description	Conservation significant species potentially using habitat	Photos
Trees over cleared (40.35 ha, 6%)	Scattered native and planted trees over grass on orange-brown clay, with occasional cracks and gravelly rocks. Abundant bare ground with minimal litter, providing little to no sheltering opportunities for invertebrate and/or reptile species. Minimal overstorey and understorey reduces habitat value, with no suitable ecological features supporting use of area by fauna species. Habitat value: Low	Unlikely to provide core habitat for any conservation significant fauna species. Habitat may be utilised as a wildlife corridor.	
Cleared (133.67 ha, 18%)	Cleared is representative of tracks, roads and highly modified or degraded vegetation with no biological benefit. Habitat value: Negligible	Unlikely to provide core habitat for any conservation significant fauna species. Potentially used as transient habitat to traverse between habitats.	No photo



AECOM Delivering a better world PROJECT ID 60718618 CREATED BY ROB.MCGREGOR DATE MODIFIED 11 JUN 2024 APPROVED BY F. DE WIT 1:40,000 (when printed at A4) 0 1,000 metres GDA2020 MGA ZONE 50 NTA SOURCES Base Data is Based on information provided by and with the permission of the Western Australian and Information Authority, trading as Landgate 2020. Aerial Layer Credits: World Topographic Map: Ben Tomlin, 2020. Aerial: N/A. ESRI Landgate, Queensland, Imagery: iStock, OpenStreetMap (map data © OpenStreetMap contributors).		LEGEND Golden Pig Survey Area - Survey Area - Impact Areas Fauna Habitat - Cleared - Eucalypt Woodland - Low Shrubland - Mallee Woodland - Salt Pan - Tall Shrubland - Trees over cleared - N/A Fauna Habitat Sample Sites		Golden Pig Fauna Habitats CYGNET GOLD PTY LTD GOLDEN PIG - FLORA AND FAUNA ASSESSMENT		Figure 10
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8.0 Discussion

8.1 Vegetation and Flora

Vegetation communities were delineated using floristic data collected at quadrats and relevés supported by similarity statistics. Six vegetation communities were defined and mapped including:

- three Eucalypt Woodlands, EyAnAe, EyEsMt and EsDvarC
- one Eucalypt Mallee Woodland EmMiRc
- one Tecticornia Samphire Shrubland TpDcc
- one Maireana Chenopod Shrubland EsMt.

The Tecticornia Samphire Shrubland TpDcc represents salt lake riparian vegetation that has a relationship with groundwater depth, root saturation and seasonality. This vegetation provides important ecological functions by reducing erosion and protecting the salt lake from sedimentation.

The Eucalypt Mallee Woodland EmMiRc was mapped north of the Tecticornia Samphire Shrublands. Altered drainage from an old mine site including elevated waste dump has affected this community. This was evident in the erosion gullies forming from the mine down into this vegetation type. This vegetation is likely contributing to soil stabilisation and hence protects the Tecticornia Samphire Shrublands and the salt lake. Soils were softer, perhaps a result of sedimentation from the waste dump, or naturally occurring. Soils elsewhere were harder clays with small to medium sized rocks stabilising the soil surface.

The three Eucalypt Woodlands were typical of the Coolgardie region, representing a variety of Eucalypt trees over sparse large shrubs (*Eremophila* spp. and *Exocarpos aphyllus*) over Chenopods including *Maireana* spp. and *Atriplex* spp.

Defining vegetation condition was difficult. Obvious historical disturbance was present including rubbish, old mine infrastructure, some weed incursion, numerous tracks old and new from legal and illegal access, and potentially grazing. The entire survey area is near Southern Cross, which is an old townsite founded in 1888. It is unlikely that any of the vegetation represents 'pristine' vegetation. Without any appropriate reference sites, it was assumed that vegetation was 'Very Good' unless obvious signs of native species displacement or other disturbance was noted.

Condition varied from Very Good to Completely Degraded. Lacking suitable in-tact reference sites it was difficult to determine the condition of the Samphire Shrubland. It was assumed that altered hydrology from adjacent land use (agriculture), and the drying climate has had some impact on this vegetation and drainage system. Weed invasion was notably low despite numerous sources present. Only four weeds were recorded and they were not observed to displace native vegetation.

Ninety-three flora species were recorded from 732 ha. This is moderate compared to the other source of information available including:

- 60 species recorded from 250.56 ha (Stantec, 2020)
- 592 species recorded from a 50 km radius (Dandjoo, 2024)
- 115 species recorded from 874.75 ha (Barto Gold Mining Pty Ltd, 2023)

The reduced biodiversity reflects the disturbance on site and the poor flowering season for annual/short-lived species due to the dry climate. Degraded areas dominated by weeds were excluded and the sample plan was considered broad-level. The species list therefore is not a comprehensive list for the survey area.

No significant flora species were recorded. Two had a high likelihood of occurring including *Daviesia microcarpa* (Threatened) and *Hakea pendens* (Priority 3). *Daviesia microcarpa* is associated with calcrete at the base of hills and outcrops and has been associated with old mine pits and waste dumps. The nearest known record is 4.4 km from the survey area, recorded in 2006. This species was targeted during meandering traverses and not recorded. There was no access to the old mine pit and waste dump, therefore it cannot be excluded at this time. It is assumed to be a disturbance opportunist.

There is a record of *Hakea pendens* in the survey area dated 1969. This location is unlikely to be accurate. The lead botanist is familiar with this large shrub species and it was targeted during the survey. The DBCA record of the species within the survey area is over 50 years old, and no further records were made during the survey, it is therefore unlikely to occur.

8.2 Fauna

Of the six fauna habitats present within the survey area, only the Eucalypt Woodland and Mallee Woodland habitats were considered potentially suitable habitat for four significant fauna species, which include the Chuditch (*Dasyurus geoffroii*), Malleefowl (*Leipoa ocellata*), Tree-stem Trapdoor Spider (*Idiosoma castellum*) and the Common Greenshank (*Tringia nebularia*), as either core or marginal habitat. Despite their elusive characteristics, the presence of these species within the survey area cannot be ruled out even if evidence for them was not recorded during the survey. This uncertainty is mitigated by implementing fauna habitat assessments for the species identified in the desktop assessment which is evaluated against the fauna habitat identified in the survey areas. There are numerous records on the WA DBCA fauna database for all four species including 106 Chuditch records, 249 Malleefowl records, 125 Tree-stem Trapdoor spider records and 3 Common Greenshank records. The suitability of each habitat type for these significant species is discussed below.

Eucalypt Woodland

The Eucalypt habitat is mapped for 186.02 ha across the survey area and is considered suitable habitat for the Chuditch (*Dasyurus geoffroii*). This habitat is characterised by variable tree canopy cover and density influenced by historical disturbance (clearing and mining activities). Eucalypt trees form an overstorey over native shrubs and tussock grasses. Bare ground is common due to the lack of leaf litter and ground cover species. This habitat is considered moderate to high quality due to the presence of large mature Eucalypts and native shrubs and grasses providing suitable habitat for Chuditch as both foraging and shelter opportunities. Hollowed out trunks from fallen Eucalypt trees occurred infrequently across the habitat, providing potential refuge habitat for Chuditch.

Malleefowl (*Leipoa ocellata*) may also potentially utilise the area but are more likely to use it for foraging and shelter opportunities. This species prefers low woodlands dominated by mallee, and the Eucalypt Woodland habitat may, at best, provide potential marginal habitat or act as a wildlife corridor for the Malleefowl to the neighbouring Mallee Woodland habitat. Marginal habitat may also be provided to the Tree-stem Trapdoor Spider (*Idiosoma castellum*) from leaf litter, however bare ground is more common throughout this habitat than leaf litter, deeming it unlikely for the Tree-stem Trapdoor Spider to utilise as potential core habitat.

Mallee Woodland

The Mallee Woodland habitat is mapped for 86.59 ha and may provide suitable habitat for the Chuditch (*Dasyurus geoffroii*) and the Malleefowl (*Leipoa ocellata*). This habitat is characterised by *Eucalyptus myriadena* over native shrubs and ground cover on light brown sandy clay, with fine litter common throughout the area. The abundant understorey provides potential shelter, refuge and foraging opportunities for the Chuditch and Malleefowl as both species are known to inhabit Mallee Woodland habitats. Small logs were recorded throughout the survey area which may provide sheltering opportunities for the Chuditch but Malleefowl are unlikely to utilise logs for any purpose. Minimal rubbish in the form of aluminium cans and wooden pegs was recorded, however the presence of rubbish did not appear to diminish the habitat value of the area and was therefore deemed as 'moderate' to 'high'.

The occasional litter recorded throughout this habitat may provide marginal habitat for the Tree-stem Trapdoor Spider (*Idiosoma castellum*), however as bare ground was also commonly observed, it is unlikely for this species to frequent and utilise this habitat as it requires dense leaf litter for foraging and shelter.

Low Shrubland

The Low Shrubland habitat represents 63.11 ha of the survey area and is characterised by *Tecticornia* shrubs over grasses on orange sandy clay. This habitat is linked to the Salt Pan fauna habitat and represents fringing riparian vegetation, which may provide occasional shelter for an array of fauna species. The Common Greenshank (*Tringia nebularia*) may sparingly utilise this habitat during the wet periods. However, the habitat assessment did not identify any key ecological features that would support core or marginal habitat for any conservation significant fauna species, nor was evidence of utilisation recorded. The habitat value is deemed 'low'.

Salt Pan

The Salt Pan fauna habitat represents 167.22 ha of the survey area. It is devoid of any vegetation and no ecological values were recorded that may support habitat for any fauna species, thus deeming the habitat value for this area 'negligible'.

The Common Greenshank (*Tringia nebularia*) may sparingly utilise this habitat during the wet periods should the habitat sustain water. It is likely to utilise only the fringe of the habitat near the riparian vegetation. Due to its vagrant nature, this habitat is unlikely to provide any additional ecological value and/or core habitat for the Common Greenshank.

Trees over cleared

This habitat represents 40.35 ha of the survey areas. It is characterised by scattered native and planted trees over abundant bare ground. Minimal overstorey and understorey vegetation reduces the habitat value for this area. Little to no ecological values were observed for this area, and it is unlikely to provide core or marginal habitat for any conservation significant fauna species.

Cleared

This habitat represents 133.67 ha of the survey areas and was not suitable for significant fauna. It is unlikely to provide core habitat for any conservation significant fauna species, however species are likely to traverse the Cleared habitat to access patches of native vegetation, with it acting as a corridor between other fauna habitats. The area was primarily devoid of all vegetation and included infrastructural areas such as tracks, roads and previously active mining areas. Predatory species such as foxes, hawks or falcons may take advantage of these spaces for hunting smaller species.

9.0 Conclusion

A flora, vegetation and fauna assessment was undertaken for the Golden Pig survey area situated around the townsite of Southern Cross in the Coolgardie region of WA.

No Threatened or Priority ecological communities or flora species were recorded during the survey.

Two conservation significant flora species were considered to have a high likelihood of occurrence in the desktop assessment. A post survey likelihood determined that *Daviesia microcarpa* (Threatened) cannot be excluded from occurring at this time as there was no access to the old mine pit and waste dump. Whilst, *Hakea pendens* (P3) is a large shrub that was not recorded, and therefore is unlikely to occur.

Six vegetation communities were mapped including three Eucalypt Woodlands, one Eucalypt Mallee Woodland, one *Tecticornia* Samphire Shrubland and one *Maireana* Chenopod Shrubland. The *Tecticornia* Samphire Shrubland and Eucalypt Mallee Woodland provide important ecological functions for the integrity of the saltlake including surface water hydrology, sedimentation and erosion control.

All vegetation within the survey area has been historically disturbed. This is attributed to the proximity to the Southern Cross townsite and the history of mining in this region. Disturbance included rubbish, public access (tracks, soil compaction), old mine infrastructure and drilling. This has led to reduced biodiversity in the area. None of the vegetation was considered in Excellent condition.

Six fauna habitats were mapped in the survey area including Eucalypt Woodland, Mallee Woodland, Low Shrubland, Salt Pan, Trees, and Cleared. A review of significant fauna species likely to occur determine that habitat was present for all four species including:

- Western Quoll, Chuditch (*Dasyurus geoffroii*) listed as EPBC and BC Act Vulnerable
- Malleefowl (*Leipoa ocellata*) listed as EPBC and BC Act Vulnerable
- Common Greenshank (*Tringia nebularia*) listed as EPBC Act and BC Act Endangered, Marine and Migratory
- Tree-stem Trapdoor Spider (*Idiosoma castellum*) listed as DBCA Priority 4.

Two fauna habitats were identified within the survey area as providing suitable habitat for the Chuditch (*Dasyurus geoffroii*) and the Malleefowl (*Leipoa ocellata*). The Eucalypt Woodland represented 186.02 ha (25%) of the survey area, and the Mallee Woodland represented 86.59 ha (12%) of the survey area, both of which provide moderate to high habitat value.. Both conservation significant species are more likely to utilise the Mallee Woodland habitat for foraging and breeding. Ecological values recorded in the Eucalypt Woodland may support marginal habitat for the two species.

The Salt Pan habitat represented 167.22 ha (23%) of the survey area and may potentially house the Common Greenshank (*Tringia nebularia*) during the wet season if the habitat retains water for an extended period of time. This species exhibits a vagrant behaviour, and due to its migratory nature, the likelihood of utilisation within this habitat is minimal.

The survey was successfully undertaken and level of effort is considered suitable for assessing the significant environmental values of the survey area.

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Appendix A

Flora Desktop Results

Appendix A Flora Desktop Results

Taxon	Habitat ¹	Cons. Code		Distance (km)		Date		PMST	Likelihood Assessment					Total Score	Likelihood
		EPBC Act	DBC / BC Act	WAHerb	TPFL	WAHerb	TPFL		Known	Known Near (<5km)	Recent Record (<20 years)	Known Within LGA	Habitat Suitability (0,1,2)		
<i>Acacia ancistrophylla</i> var. <i>perarcuata</i>	Red sand, clay loam, loam. Undulating plains.		P3	20.81		1968			0	0	0	1	1	2	Low
<i>Acacia crenulata</i>	Clay, sandy clay, yellow sand. Rocky rises, granite outcrops, breakaways.		P3	28.42		1981			0	0	0	1	1	2	Low
<i>Acacia cylindrica</i>	Yellow/brown sand, gravelly soils. Undulating plains, flats.		P3	35.27	22.99	2008	2008		0	0	1	1	1	3	Moderate
<i>Acacia desertorum</i> var. <i>nudipes</i>	Yellow sand, lateritic gravel. Sandplains, flats.		P3	212.41	41.92	2018	2006		0	0	1	1	2	4	Moderate
<i>Acacia filifolia</i>	Yellow sand, gravelly lateritic sand. Sandplains.		P3	27.82	48.45	2002	2002		0	0	0	1	2	3	Moderate
<i>Acacia formidabilis</i>	Yellow or red/brown sand. Undulating plains, hillsides.		P4	15.63		1985			0	0	0	1	1	2	Low
<i>Acacia haematites</i>	Grows on a haematite-rich BIF range where it occurs in red loam or palecoloured sandy clay on the eroded slopes below massive ironstone or lateritized duricrust outcrops. Known from only a single BIF range near Koolyanobbing (about 50 km north-east of Southern Cross), namely, the Koolyanobbing Range (Maslin, 2014)		P1	74.68		2015			0	0	1	1	1	3	Moderate
<i>Acacia lanuginophylla</i>	Occurs in broad drainage channels in areas of open mallee over low scrub with sand overlying loams and clays (DCCEEW, 2023).	E	VU					May	0	0	0	0	1	1	Negligible
<i>Acacia</i> sp. Moorine Rock (B.R. Maslin 4474)	Dark brown hard clay-loam, granite. Clay flats at base of rock outcrops.		P1	35.15		1990			0	0	0	1	1	2	Low
<i>Balaustion grandibracteatum</i> subsp. <i>grandibracteatum</i>	Very gentle landscape, slight depression. Yellow sand, silty.		P3	189.98		2008			0	0	1	1	1	3	Moderate
<i>Banksia sphaerocarpa</i> var. <i>dolichostyla</i>	Preference for iron-capped hills and rises on ironstone (lateritic) soil profiles.	V	VU					May	0	0	0	0	0	0	Negligible
<i>Boronia adamsiana</i>	Grows in heath or scrub heath on yellow sand, near granite outcrops	V	VU					May	0	0	0	0	0	0	Negligible
<i>Bossiaea</i> sp. Jackson Range (G. Cockerton & S. McNee LCS 13614)	Flat, lower slope at base of weather granite breakaway. Dry white/grey sandy loam.		P3	92.11	34.71	2011	2011		0	0	1	1	1	3	Moderate
<i>Calectasia pignattiana</i>	Grows in white or yellow sand over laterite in open woodland, shrubland (kwongan) and heath in low lying areas.	V	EN					May	0	0	0	0	0	0	Negligible
<i>Dasymalla axillaris</i>	Known from sandy soils in the Yalgoo area of the northern area of the Avon Wheatbelt.	CE	CR					May	0	0	0	0	1	1	Negligible
<i>Daviesia microcarpa</i>	Grows in alkaline red-brown clay loam with calcrete nodules (Schwarten, 1995) on lower slopes, bases of hills with outcropping rock, on road verges, gravel pits and mine waste dumps (DAWE, 2021a).	E	CR	4.43	32.59	2006	2009	Known	0	1	1	1	2	5	High
<i>Eremophila resinosa</i>	Occurs on soil types from sandy loams to loams and clays in open mallee woodland with a mixed Acacia scrub understorey (DEC, 2009).	E	EN					Likely	0	0	0	0	1	1	Negligible
<i>Eremophila viscida</i>	Granitic soils, sandy loam. Stony gullies, sandplains.	E	EN					Likely	0	0	0	0	1	1	Negligible
<i>Eucalyptus calycogona</i> subsp. <i>miraculum</i>	Below small breakaway.		P1	16.39		2012			0	0	1	1	1	3	Moderate
<i>Eucalyptus crucis</i> subsp. <i>crucis</i>	Grows on shallow, granitic, sandy loam soil on granite rocks associated with sheoak (<i>Allocasuarina</i>), wattle (<i>Acacia</i>) and One-sided Bottlebrush (<i>Calothamnus</i>) (DAWE, 2008).	V	EN	86.01	34.03	2006	2008	Known	0	0	1	1	1	3	Moderate
<i>Eucalyptus polita</i>	Loam, sand. Around salt lakes, flats.		P3	27.46		2010			0	0	1	1	2	4	Moderate

Appendix A Flora Desktop Results

Taxon	Habitat ¹	Cons. Code		Distance (km)		Date		PMST	Likelihood Assessment					Total Score	Likelihood
		EPBC Act	DBC / BC Act	WAHerb	TPFL	WAHerb	TPFL		Known	Known Near (<5km)	Recent Record (<20 years)	Known Within LGA	Habitat Suitability (0,1,2)		
<i>Frankenia parvula</i>	Preferred habitat is white to brown sand over sandy clay around the high water mark of major drainage channels where it grows both independent of and within fringing vegetation (DEWHA, 2008a).	E	EN					Known	0	0	0	0	0	0	Negligible
<i>Gastrolobium diabolophyllum</i>	Grows in yellow-brown sand over laterite on broadly undulating dunes in open mallee shrublands amongst <i>Eucalyptus salmonophloia</i> (Salmon Gum), <i>Acacia</i> , <i>Allocasuarina</i> , <i>Gastrolobium</i> , and <i>Banksia</i> species (Chandler et al. 2002)	CE	CR					Known	0	0	0	0	0	0	Negligible
<i>Gastrolobium graniticum</i>	Associated with the margins of granite outcrops, especially along drainage lines, on sandy soils in open woodland in association with <i>Allocasuarina huegeliana</i> , <i>Acacia lariocalyx</i> , and <i>Eucalyptus eremophila</i> (DEWHA, 2008b).	E	VU					Known	0	0	0	0	0	0	Negligible
<i>Glossostigma trichodes</i>	Pools in granite.		P1	46.20		2009			0	0	1	1	0	2	Negligible
<i>Goodenia heatheriana</i>	Red crumbly clay, greenstone gravel and cobbles. Lower slopes, moderately exposed gently undulating plain, roadsides.		P1	47.81		2015			0	0	1	1	0	2	Negligible
<i>Grammosolen odgersii subsp. occidentalis</i>	Grows in orange sandy soils and red-brown sandy and clayey loams in open mallee-heath (DEC, 2008).	E	CR					Likely	0	0	0	0	1	1	Negligible
<i>Hakea pendens</i>	Stony loam. Ironstone ridges.		P3	0.00		1969			1	1	0	1	2	5	High
<i>Hemigenia</i> sp. Newdegate (E. Bishop 75)	Clay loam. Disturbed sites.		P1	28.14		2018			0	0	1	1	2	4	Moderate
<i>Hydrocotyle corynophora</i>	Grows in damp depressions which seasonally dry into areas of red or red-brown cracking clays or clay loam, surrounded by low open woodland often dominated by <i>Eucalyptus salubris</i> (Perkins, 2017). Known only from two areas (approximately 30 km apart) near Marvel Loch, south-east of Southern Cross, Western Australia.		P1	114.76		2015			0	0	1	1	1	3	Moderate
<i>Isopogon robustus</i>	Occurs on a decomposing laterite shelf and grows in grey skeletal sandy loam over laterite.	CE	CR					Known	0	0	0	0	0	0	Negligible
<i>Leucopogon</i> sp. Yellowdine (M. Hislop & F. Hort MH 3194)	Undulating sand plain. Dry yellow loamy sand.		P2	17.91		2011			0	0	1	1	1	3	Moderate
<i>Lissanthe scabra</i>	Dry, white to orange-brown clay, sandy gravel loams, granite. Breakaways, uplands.		P2	60.16	15.45	2010	2010		0	0	1	1	1	3	Moderate
<i>Melaleuca sciotostyla</i>	Grows in orange clayey sand with lateritic pebbles and scree slopes in dense shrubland.	E	EN					May	0	0	0	0	0	0	Negligible
<i>Millotia newbeyi</i>	Red/brown loam, red clay. Undulating plains.		P1	11.39		1993			0	0	0	1	1	2	Low
<i>Myriophyllum petraeum</i>	Strictly confined to ephemeral rock pools on granite outcrops.		P4	91.85	27.06	2009	1989		0	0	1	1	1	3	Moderate
<i>Notisia intonsa</i>	-		P3	14.07		2015			0	0	1	1	2	4	Moderate
<i>Phlegmatospermum eremaeum</i>	Stony loam.		P3	13.33		2015			0	0	1	1	2	4	Moderate
<i>Prostanthera nanophylla</i>	Yellow sand over laterite, rocky loam. Sandplains.		P4	31.73		1967			0	0	0	1	1	2	Low
<i>Ricinocarpos brevis</i>	Confined to shallow sandy soils on rocky banded ironstone outcrops (Halford & Henderson 2007).	E	EN					Known	0	0	0	0	0	0	Negligible
<i>Rinzia fimbriolata</i>	Rather disturbed area; brownish sandy loam soil.		P1	9.66		2005			0	0	1	1	2	4	Moderate
<i>Rinzia triplex</i>	Undulating plain. Dry bare yellow gravelly sandy loam.		P3	19.64	41.79	2003	2003		0	0	1	1	1	3	Moderate
<i>Roycea pycnophylloides</i>	Grows along shorelines or on slight rises above open saline flats and major drainage channels (DAWE, 2021b).	E	VU					Likely	0	0	0	0	0	0	Negligible
<i>Stylidium choreanthum</i>	White/yellow or red sand. Plains.		P3	53.57	22.99	2011	1996		0	0	1	1	1	3	Moderate

Appendix A Flora Desktop Results

Taxon	Habitat ¹	Cons. Code		Distance (km)		Date		PMST	Likelihood Assessment					Total Score	Likelihood
		EPBC Act	DBCA / BC Act	WAHerb	TPFL	WAHerb	TPFL		Known	Known Near (<5km)	Recent Record (<20 years)	Known Within LGA	Habitat Suitability (0,1,2)		
<i>Tecticornia flabelliformis</i>	Grows on the margins of salt lakes and coastal salt marshes over gypsum deposits, and is often associated with other Tecticornia species (Carter, 2010).	V	EN					Known	0	0	0	0	1	1	Negligible
<i>Tetradlea paynterae</i>	Grows in rock crevices, in shallow pockets of soil of rich red loam	E	NA					May	0	0	0	0	1	1	Negligible
<i>Teucrium diabolicum</i>	Grows in red cracking clay or clay loam, usually in shallow depressions or on low undulating plains that support low scrub or heath, or in association with low open woodland (e.g. with <i>Eucalyptus tenuis</i>) (Wege & Davis, 2020).		P3	14.39		2015			0	0	1	1	1	3	Moderate
<i>Verticordia elizabethiae</i>	Grows on flats surrounding salt lakes, with halophytic heath (e.g. Maireana, Gunniopsis and Frankenia) and fringing Callitris (Rye & Barrett, 2020).		P1	0.99		1926			0	1	0	1	1	3	Low
<i>Verticordia mitodes</i>	Yellow sand. Undulating plains.		P3	90.12		1993			0	0	0	1	0	1	Negligible
<i>Verticordia pulchella</i>	Sandy soils over granite. Massive granite areas.		P2	25.83	49.58	1988	1988		0	0	0	1	0	1	Negligible
<i>Verticordia stenopetala</i>	Yellow sand, sometimes with gravel. Undulating plains.		P3	104.25	49.70	2009	1984		0	0	1	1	0	2	Negligible

1. Habitat information derived from WAH (1998-) unless stated otherwise.

Appendix B

Golden Pig Fauna Desktop Results

Type	Taxon	Common Name	Habitat	Cons. Code		Date (DBCA)	Records (DBCA)	Distance (km) [DBCA]	PMST	Likelihood Assessment				Total Score	Likelihood
				Cons. Code WA	Cons. Code EPBC					Known	Known Near (<20km)	Recent Record (< 20 years)	Habitat Suitability		
Bird	<i>Actitis hypoleucos</i>	Common Sandpiper	Wide range of coastal wetlands, around muddy margins or rocky shores, some inland wetlands and rarely on mudflats (DCCEEW, 2023)	IA	MI & MA				Likely	0	0	1	1	2	Low
Bird	<i>Aphelocephala leucopsis</i>	Southern Whiteface	Dry open forests and woodland and inland scrubs of mallee, mulga and saltbush are the preferred habitat of Southern Whiteface, especially areas with fallen timber or dead trees and stumps (Higgins & Davies, 1996).		V				Known	0	0	1	1	2	Low
Bird	<i>Apus pacificus</i>	Fork-tailed Swift	Over inland plains, sometimes boave foothills or in coastal areas (DCCEEW, 2023).	IA	MI & MA				Likely	0	0	1	1	2	Low
Bird	<i>Calidris acuminata</i>	Sharp-tailed Sandpiper	Occurs along muddy edges of shallow fresh or brackish wetlands with inundated or emergent sedges, grass, saltmarsh or other low vegetation (DCCEEW, 2023).	VU	V & MI & MA				May	0	0	1	1	2	Low
Bird	<i>Calidris ferruginea</i>	Curlew Sandpiper	Intertidal mudflats in sheltered coastal areas and inland around ephemeral and permanent lakes, dams, waterholes and bore drains with bare edges of mud and sand (DCCEEW, 2023).	CR & IA	CE & MI & MA	2003	1	44.11	Known	0	0	1	1	2	Low
Bird	<i>Calidris melanotos</i>	Pectoral Sandpiper	Occupies shallow, fresh waters often containing low grass or other small herbs, swamp margins, flooded pastures and saltmarshes (Pizzey & Knight, 2007;DCCEEW, 2023).	IA	MI & MA				May	0	0	1	1	2	Low
Bird	<i>Calidris ruficollis</i>	Red-necked Stint	Coastal sheltered areas and exposed or ocean beaches, sometimes on stony or rocky shores, reefs or shoals (DCCEEW, 2023).	IA	MI & MA	2003	1	44.11		0	0	1	1	2	Low
Bird	<i>Calyptorhynchus banksii naso</i>	Forest Red-tailed Black-Cockatoo, Karrak	northern Darling Range.It inhabits the dense <i>Eucalyptus marginata</i> (Jarrah), <i>E. diversicolor</i> r (Karri) and <i>Corymbia calophylla</i> (Marri) forests receiving more than 600mm	VU	V	2000	1	50.78		0	0	0	1	1	Negligible
Bird	<i>Falco hypoleucos</i>	Grey Falcon	Timered lowland plains, including acacia shrublands)particularly with tree-lined watercourses), tussock grassland and open woodland (TSSC, 2020).	VU	V				May	0	0	1	0	1	Negligible
Bird	<i>Falco peregrinus</i>	Peregrine Falcon	Rainforests, arid zones and coastal to alpine areas (BirdLife, 2021).	OS		2015	14	1.59		0	1	1	1	3	Moderate
Bird	<i>Leipoa ocellata</i>	Malleefowl	Semi-arid to arid zone in shrublands and low woodlands dominated by mallee and associated habitats such as such as Broombush (Melaleuca uncinata) and Scrub Pine (<i>Callitris verrucosa</i>) (Benshemesh, 2007).	VU	V	2022	249	2.37	Known	0	1	1	2	4	High
Bird	<i>Motacilla cinerea</i>	Grey Wagtail	Found across a wide variety of wetlands, watercourses and on the banks of lakes and marshes (DCCEEW, 2023).	IA	MI & MA				May	0	0	1	1	2	Low
Bird	<i>Pezoporus occidentalis</i>	Night Parrot	Wiluna district of central Western Australia, and the Lake Gregory area of northern Western Australia (Olsen, 2018), in spinifex grasslands and/or chenopod shrublands (Garnett et al., 2011).	CR	E				May	0	0	1	0	1	Negligible
Bird	<i>Platycercus icterotis xanthogenys</i>	Western Rosella	Western Rosellas are found in open eucalypt forests and timbered areas, including cultivated land and orchards. The nominate icterotis is found in high rainfall areas and the other subspecies, xanthogenys, in drier woodland, with a heath understorey (Birdlife, 2023).	P4		2022	2	42.16		0	0	1	0	1	Negligible
Bird	<i>Tringa nebularia</i>	Common Greenshank	Inland wetlands and sheltered coastal habitats In shallows around the edges of water often among pneumatophores of mangroves or other sparse, emergent or fringing vegetation, such as sedges or saltmarsh (DCCEEW, 2023).	IA	E & MI & MA	2007	3	0.32		0	1	1	2	4	High
Bird	<i>Zanda latirostris</i>	Carnaby's Cockatoo	Uncleared or remnant native eucalypt woodlands containing salmon gum and wandoo, and in shrubland or kwongan heathland dominated by hakea, dryandra, banksia and grevillea species. It also occurs in remnant patches of native vegetation on land otherwise cleared for agriculture. Forages seasonally in pine plantations (DCCEEW, 2023)	EN	E	2013	6	108.95	Likely	0	0	1	1	2	Low
Invertebrate	<i>Daphnia jollyi</i>	a water flea (inland south west)	Endemic to Western Australia, where it lives in shallow freshwater pools over granite bedrock (Colbourne et al., 2006)	P1		2007	8	24.23		0	0	1	1	2	Low
Invertebrate	<i>Idiosoma castellum</i>	Tree-stem trapdoor spider	Habitat is exclusive to the Avon Wheatbelt in WA (Main, 1986).	P4		2009	125	4.54		0	1	1	2	4	High
Invertebrate	<i>Idiosoma intermedium</i>	Coolgardie shield-backed trapdoor spider	Species occur in the south-west of Western Australia in the eastern Avon Wheatbelt and north-western Coolgardie bioregions. The type locality is Bodallin (Rix et al., 2018).	P3		2009	3	43.73		0	0	1	1	2	Low
Invertebrate	<i>Idiosoma nigrum</i>	Shield-backed Trapdoor Spider	Clay soils are inhabited in the Wheatbelt, and rocky habitats in the Midwest, primarily in positions with increased moisture retention properties like gullies and drainage lines on southern facing slopes (Ecologia Environment, 2010).	EN	V	2010	10	50.04	Likely	0	0	1	1	2	Low
Invertebrate	<i>Parartemia contracta</i>	a brine shrimp (Wheatbelt)	Species commonly occurs in Australia and is otherwise poorly-known	P1		2007	4	26.32		0	0	1	0	1	Negligible
Mammal	<i>Bettongia penicillata ogilbyi</i>	Woylie	Dry sclerophyllous forest with a dense understory (ALA, 2023).	EN	CE	1982	1	66.25		0	0	0	1	1	Low
Mammal	<i>Dasyurus geoffroii</i>	Western Quoll, Chuditch	Currently restricted to south-west Western Australia, in areas dominated by sclerophyll forest or drier woodland, heath and mallee shrubland (Van Dyck & Strahan, 2008).	VU	V	2022	106	1.45	May	0	1	1	2	4	High
Mammal	<i>Leporillus conditor</i>	Greater Stick-nest Rat	Southern arid and semi-arid regions of southern Australia including the local mountain ranges with perennial, semi-succulent shrubs. Greater stick-nest rats prefer dune and dune base habitats (DCCEEW, 2023).	CD			1	50.64		0	0	0	0	0	Negligible
Mammal	<i>Macrotis lagotis</i>	Bilby	Arid to semi-arid woodlands and hummock grasslands in the north of Australia, restricted to the Gibson, Little Sandy and Great Sandy Deserts, and parts of the Pilbara, Dampierland, Central Kimberley and Ord-Victoria Plains bioregions in Western Asutralia (Bradley et al. 2015).	VU	V		1	29.62		0	0	0	0	0	Negligible

Appendix B Fauna Desktop Results

Mammal	<i>Myrmecobius fasciatus</i>	Numbat	Mulga woodland, spinifex sandplains and Eucalypt forests and woodlands. In WA, their habitat is generally woodland dominated by Eucalyptus species, with abundant hollow logs and branches (DBCA, 2017)	EN	E		1	31.68		0	0	0	1	1	Low
Mammal	<i>Notamacropus irma</i>	Western Brush Wallaby	Open forest or woodland, particularly favouring open, seasonally wet flats with low grasses and open scrubby thickets (DCCEEW, 2023).	P4		2022	4	19.55		0	1	1	0	2	Negligible
Mammal	<i>Nyctophilus major tor</i>	Central Long-eared Bat	The trees of the upperstory of its habitat are the large to very tall eucalypt species, karri <i>Eucalyptus diversicolor</i> , jarrah <i>E. marginata</i> , tuart <i>E. gomphocephala</i> , and marri <i>Corymbia calophylla</i> . Other woodland types inhabited by the bat include stands of melaleuca, banksia and sheoak trees of genus <i>Allocasuarina</i> , and include a dense understory (Andrew, 2015).	P3		1981	1	61.83		0	0	0	0	0	Negligible
Mammal	<i>Petrogale lateralis lateralis</i>	Black-footed Rock-wallaby	Wide variety of rock types, requiring sufficient cave and crevice development (DCCEEW, 2023).	EN	E	2007	1	55.17		0	0	1	1	2	Low
Mammal	<i>Phascogale calura</i>	Red-tailed Phascogale	Restricted to remnant native vegetation throughout the wheat belt of south-western Western Australia (Kitchener, 1981) in allocasuarina woodlands with hollow-containing eucalypts (e.g. <i>Eucalyptus wandoo</i>) and <i>Gastrolobium</i> spp. (Kitchener, 1981). It prefers older, vegetation that is unburnt with ample canopy cover.	EN	V	1998	1	38.73		0	0	0	0	0	Negligible
Reptile	<i>Egernia stokesii badia</i>	Western Spiny-tailed Skink	Aemi-Arid condition in South-West interior of Western Australia in woodlands of York Gum (<i>Eucalyptus loxophleba</i>), Gimlet (<i>E. salubris</i>) and Salmon Gum (<i>E. salmonophloia</i>) (Pearson, 2012).	VU	E				May	0	0	1	1	2	Low
Reptile	<i>Paroplocephalus atriceps</i>	Lake Cronin Snake	Open eucalypt woodland on sandy loam at Lake Cronin, Western Australia (Storr, 1980).	P3		2007	1	71.81		0	0	1	1	2	Low

Appendix C

Flora Species
Golden Pig

Family	Cons Code	Taxon	EmMiRc				EsDvaRc		EsMt	EyAnAe				EyEsMt			TpDcc		
			23	37	38	39	33	34	31	25	26	28	36	24	29	30	22	32	35
Aizoaceae																			
		<i>Disphyma crassifolium</i> subsp. <i>clavellatum</i>	x		x			x									x	x	x
	*	<i>Mesembryanthemum nodiflorum</i>																x	
Amaranthaceae																			
		<i>Ptilotus aervoides</i>											x						
		<i>Ptilotus exaltatus</i>			x	x			x										
		<i>Ptilotus obovatus</i>										x							
		<i>Surreya diandra</i>						x								x			x
Apocynaceae																			
		<i>Alyxia buxifolia</i>		x	x	x	x												
Asparagaceae																			
		<i>Lomandra effusa</i>					x												
		<i>Thysanotus manglesianus/patersonii</i> complex	x																
Asteraceae																			
		<i>Asteraceae</i> sp.		x													x		
	*	<i>Gazania linearis</i>																	x
		<i>Olearia muelleri</i>	x		x		x				x		x	x		x			
		<i>Olearia pimeleoides</i>	x	x		x													
		<i>Rhodanthe citrina</i>			x														
		<i>Siemssenia capillaris</i>					x	x	x							x			
		<i>Waitzia acuminata</i>	x	x	x	x													
Boryaceae																			
		<i>Borya sphaerocephala</i>		x															
Brassicaceae																			
	*	<i>Carrichtera annua</i>							x										
Chenopodiaceae																			
		<i>Atriplex ?hymenotheca</i>															x		
		<i>Atriplex codonocarpa</i>							x								x		
		<i>Atriplex nummularia</i>			x					x	x	x	x	x		x			
		<i>Atriplex vesicaria</i>	x		x	x	x	x	x				x	x	x	x			
		<i>Maireana carnosa</i>	x							x							x		
		<i>Maireana georgei</i>		x	x		x	x	x										
		<i>Maireana integra</i>	x		x				x		x			x	x	x			
		<i>Maireana trichoptera</i>		x	x		x	x	x	x	x	x	x	x	x	x	x		
		<i>Maireana triptera</i>	x				x						x						
		<i>Roycea divaricata</i>															x	x	x

Family	Cons Code	Taxon	EmMiRc				EsDvaRc		EsMt	EyAnAe				EyEsMt			TpDcc		
			23	37	38	39	33	34	31	25	26	28	36	24	29	30	22	32	35
		<i>Sclerolaena eurotioides</i>																	X
		<i>Sclerolaena obliquicuspis</i>			X										X				
		<i>Sclerolaena patenticuspis</i>	X					X		X									
		<i>Tecticornia halocnemoides</i>																X	X
		<i>Tecticornia pergranulata</i> subsp. <i>pergranulata</i>																X	X
		<i>Tecticornia pruinosa</i>															X		X
Chenopodiaceae																			
		<i>Rhagodia drummondii</i>	X	X			X	X	X			X				X			
Crassulaceae																			
		<i>Crassula colorata</i>			X												X		
Euphorbiaceae																			
		<i>Beyeria sulcata</i> var. <i>brevipes</i>		X															
Fabaceae																			
		<i>Senna artemisioides</i> subsp. <i>filifolia</i>	X			X	X					X	X						
		<i>Senna pleurocarpa</i>							X					X					
		<i>Templetonia smithiana</i>					X	X											
		<i>Acacia assimilis</i>	X	X		X						X	X						
		<i>Acacia coolgardiensis</i>		X															
		<i>Acacia deficiens</i>		X		X						X	X	X					
		<i>Acacia merrallii</i>				X	X			X	X	X	X			X			
		<i>Acacia nyssophylla</i>			X			X								X			
		<i>Acacia rigens</i>		X															
		<i>Acacia tetragonophylla</i>	X			X													
		<i>Acacia enervia</i> subsp. <i>explicata</i>						X	X										
		<i>Daviesia nematophylla</i>											X						
Frankeniaceae																			
		<i>Frankenia setosa</i>															X	X	X
Goodeniaceae																			
		<i>Scaevola spinescens</i>	X	X	X		X		X			X				X			
Hemerocallidaceae																			
		<i>Dianella revoluta</i>		X									X						
Lamiaceae																			
		<i>Westringia rigida</i>																	
Loranthaceae																			
		<i>Amyema</i> sp.					X												
Malvaceae																			

Family	Cons Code	Taxon	EmMiRc				EsDvaRc		EsMt	EyAnAe				EyEsMt			TpDcc		
			23	37	38	39	33	34	31	25	26	28	36	24	29	30	22	32	35
		<i>Lawrenzia ?repens</i>			X														
Myrtaceae																			
		<i>Eucalyptus corrugata</i>								X		X	X	X					
		<i>Eucalyptus longicornis</i>								X	X			X					
		<i>Eucalyptus myriadena</i>	X	X	X	X													
		<i>Eucalyptus salmonophloia</i>					X												
		<i>Eucalyptus salubris</i>													X				
		<i>Eucalyptus yilgarnensis</i>					X	X		X	X	X	X	X	X	X			
		<i>Eucalyptus loxophleba</i> subsp. <i>lissophloia</i>																	
		<i>Melaleuca eleuterostachya</i>		X		X													
		<i>Melaleuca hamata</i>		X															
		<i>Melaleuca pauperiflora</i> subsp. <i>fastigiata</i>			X			X		X	X	X	X	X	X				
Poaceae																			
	*	<i>Aira caryophyllea</i>					X												X
		<i>Amphipogon caricinus</i> var. <i>caricinus</i>		X															
		<i>Aristida contorta</i>				X													X
		<i>Aristida holathera</i>		X			X	X	X	X	X			X	X	X			X
		<i>Austrostipa elegantissima</i>	X	X			X	X		X	X	X				X	X		
		<i>Austrostipa scabra</i>	X																
		<i>Eragrostis falcata</i>						X									X		X
		<i>Rytidosperma caespitosum</i>	X				X	X				X							
Polygalaceae																			
		<i>Comesperma virgatum</i>		X															
Proteaceae																			
		<i>Grevillea acuaria</i>		X	X	X													
		<i>Grevillea anethifolia</i>		X															
		<i>Hakea preissii</i>					X	X											
		<i>Hakea recurva</i> subsp. <i>recurva</i>																	X
Rhamnaceae																			
		<i>Cryptandra micrantha</i>																	X
		<i>Cryptandra spyridioides</i>		X		X													
		<i>Stenanthemum stipulosum</i>											X						
Rutaceae																			
		<i>Phebalium tuberculatum</i>		X															
Santalaceae																			
		<i>Exocarpos aphyllus</i>		X	X			X	X	X	X		X	X	X	X			

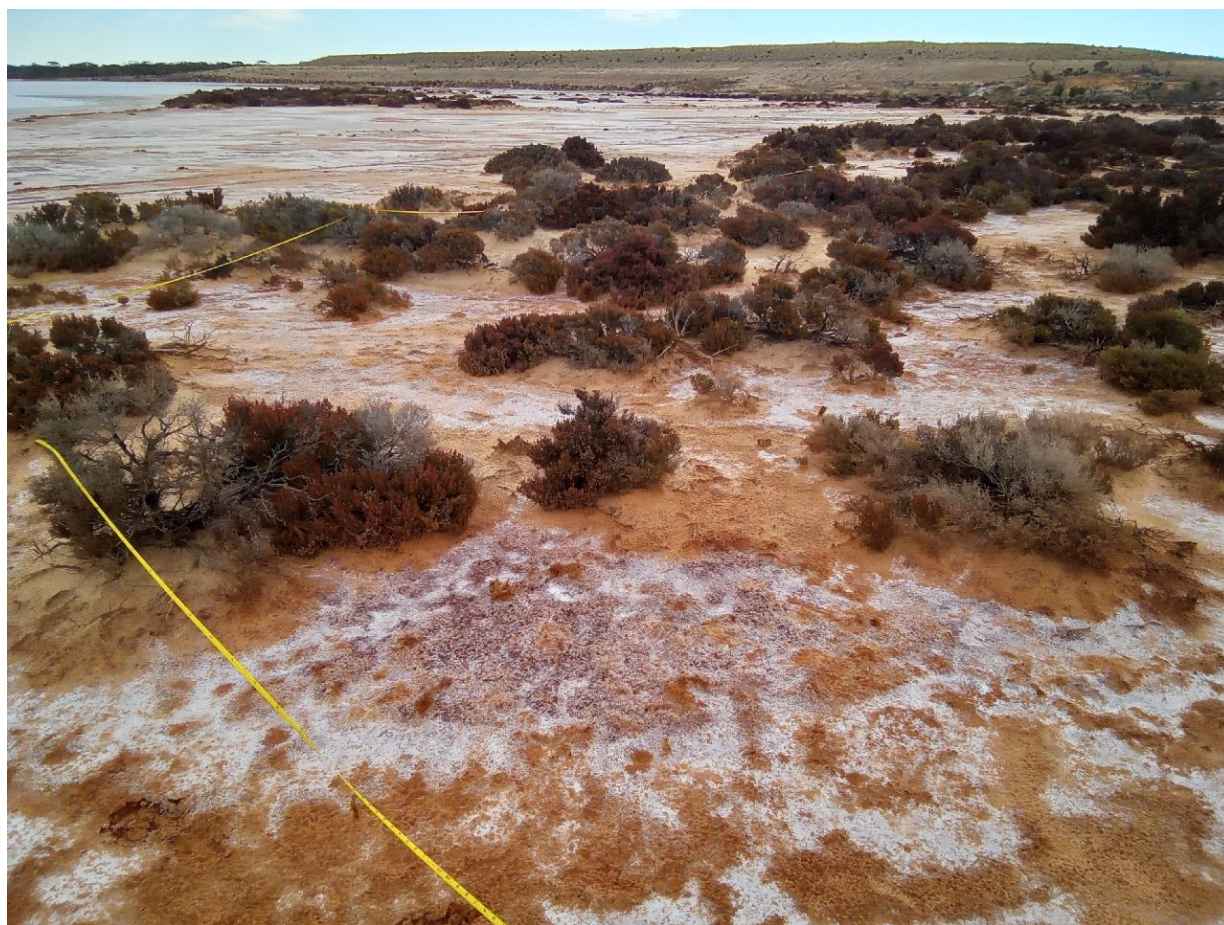
Family	Cons Code	Taxon	EmMiRc				EsDvaRc		EsMt	EyAnAe				EyEsMt			TpDcc		
			23	37	38	39	33	34	31	25	26	28	36	24	29	30	22	32	35
		<i>Santalum acuminatum</i>				X										X			
		<i>Santalum spicatum</i>													X				
Sapindaceae																			
		<i>Dodonaea stenozyga</i>											X						
		<i>Dodonaea viscosa</i> subsp. <i>angustissima</i>					X	X	X							X			X
Scrophulariaceae																			
		<i>Eremophila interstans</i> subsp. <i>interstans</i>								X				X					
		<i>Eremophila ionantha</i>																	
		<i>Eremophila oppositifolia</i>			X					X									
		<i>Eremophila scoparia</i>		X	X	X			X	X	X		X	X	X	X			
Solanaceae																			
		<i>Lycium australe</i>			X				X		X								
		<i>Solanum lasiophyllum</i>																	
		<i>Solanum orbiculatum</i>	X																
Thymelaeaceae																			
		<i>Pimelea microcephala</i> subsp. <i>microcephala</i>					X	X			X					X			
Zygophyllaceae																			
		<i>Roepera aurantiaca</i> subsp. <i>aurantiaca</i>	X	X										X	X	X			
		<i>Roepera glauca</i>								X		X	X	X	X				

Appendix D

Sample Site Data
Cygnet Golden Pig

Appendix D Sample Site Data

Site No: 22	Date: 22/11/2023	Longitude: 119.30839	Latitude: -31.18369667
Type: Quadrat		Soil Types: Sand	
Size: 20m x 20m		Effort: 1 person, 30 minutes	
Topography: Slope		Surface: 70% bare ground	
Vegetation Type: <i>Tecticornia</i> Samphire Shrubland		Vegetation Condition: Good	
Fire: 10+ years		Condition Notes: Mining, rubbish, tracks	
Rock Type: -			
Vegetation Community: TpDcc: <i>Tecticornia pruinosa</i> , <i>Tecticornia halocnemoides</i> and <i>Roycea divaricata</i> low samphire shrubland over <i>Disphyma crassifolium</i> subsp. <i>clavellatum</i> , <i>Eragrostis falcata</i> and <i>Aristida holathera</i> mixed.			



Cons. Status	Taxon	Height (cm)	% Cover	Comment
	Asteraceae sp.	10	0.5	
	<i>Atriplex ?hymenotheca</i>	20	2	FDW231122-60
	<i>Atriplex codonocarpa</i>	20	0.1	

Cons. Status	Taxon	Height (cm)	% Cover	Comment
	<i>Austrostipa elegantissima</i>	30	0.1	
	<i>Crassula colorata</i>	3	0.1	
	<i>Disphyma crassifolium</i> subsp. <i>clavellatum</i>	5	8	
	<i>Eragrostis falcata</i>	5	3	
	<i>Frankenia setosa</i>	20	10	FDW231122-62
	<i>Maireana carnosae</i>	20	1	
	<i>Maireana trichoptera</i>	20	0.1	
	<i>Roycea divaricata</i>	30	0.1	
	<i>Surreya diandra</i>	30	1	FDW231122-61
	<i>Tecticornia pruinosa</i>	50	25	

Site No: 23	Date: 22/11/2023	Longitude: 119.30668	Latitude: -31.181545
Type: Quadrat		Soil Types: Sand clay	
Size: 20m x 20m		Effort: 1 person, 20 minutes	
Topography: Flat		Surface: Bare ground 30%, litter 30%, crypto 30%	
Vegetation Type: Eucalypt Mallee Woodland		Vegetation Condition: Good	
Fire: 10+ years		Condition Notes: Rubbish, tracks, test pits	
Rock Type: -			
Vegetation Community: EmMiRc: <i>Eucalyptus myriadena</i> mid open mallee woodland over <i>Maireana integra</i> , <i>Grevillea acuaria</i> and <i>Acacia deficiens</i> low open shrubland over <i>Rhodanthe citrina</i> , <i>Waitzia acuminata</i> and <i>Disphyma crassifolium</i> subsp. <i>clavellatum</i> low open forbland.			



Cons. Status	Taxon	Height (cm)	% Cover	Comment
	<i>Acacia assimilis</i>	220	2	
	<i>Acacia tetragonophylla</i>	250	0.5	
	<i>Atriplex vesicaria</i>	30	2	
	<i>Austrostipa elegantissima</i>	5	0.1	
	<i>Austrostipa scabra</i>	30	0.1	
	<i>Disphyma crassifolium</i> subsp. <i>clavellatum</i>	5	0.1	

Cons. Status	Taxon	Height (cm)	% Cover	Comment
	<i>Eucalyptus myriadena</i>	1000	18	
	<i>Maireana carnososa</i>	20	2	
	<i>Maireana integra</i>	20	6	
	<i>Maireana triptera</i>	20	0.5	
	<i>Olearia muelleri</i>	30	0.5	
	<i>Olearia pimeleoides</i>	50	0.1	
	<i>Rhagodia drummondii</i>	50	1	
	<i>Roepera aurantiaca</i> subsp. <i>aurantiaca</i>	20	0.1	
	<i>Rytidosperma caespitosum</i>	5	0.1	
	<i>Scaevola spinescens</i>	30	0.5	
	<i>Sclerolaena patentiuspis</i>	10	0.5	
	<i>Senna artemisioides</i> subsp. <i>filifolia</i>	130	1	
	<i>Solanum orbiculatum</i>	30	0.1	
	<i>Thysanotus manglesianus/patersonii</i> complex	0	0.1	
	<i>Waitzia acuminata</i>	10	0.1	

Site No: 24 **Date:** 23/11/2023 **Longitude:** 119.317125 **Latitude:** -31.232672

Type: Quadrat
Size: 20m x 20m

Topography: Undulating

Vegetation Type: Eucalypt Woodland

Fire: 10+ years

Rock Type: Quartz and ironstone rocks

Soil Types: Clay sand (hard)

Effort: 1 person, 20 minutes

Surface: Bare 20%, litter small 50%

Vegetation Condition: Good

Condition Notes: Rubbish, clearing

Vegetation Community: EyEsMt: *Eucalyptus yilgarnensis*, *Eucalyptus salubris* and *Eucalyptus corrugata* mid open woodland over *Eremophila scoparia* and *Exocarpos aphyllus* tall sparse shrubland over *Maireana trichoptera*, *Maireana integra* and *Roepera glauca* mixed low open chenopod shrub and forbland.



Cons. Status	Taxon	Height (cm)	% Cover	Comment
	<i>Acacia deficiens</i>	20	0.1	
	<i>Aristida holathera</i>	20	0.1	
	<i>Atriplex nummularia</i>	30	0.5	
	<i>Atriplex vesicaria</i>	20	0.5	
	<i>Eremophila interstans</i> subsp. <i>interstans</i>	300	1	FDW231123-66
	<i>Eremophila scoparia</i>	200	2	

Cons. Status	Taxon	Height (cm)	% Cover	Comment
	<i>Eucalyptus corrugata</i>	800	8	
	<i>Eucalyptus longicornis</i>			FDW231123-68
	<i>Eucalyptus yilgarnensis</i>	1200	15	FDW231123-64
	<i>Exocarpos aphyllus</i>			in area
	<i>Maireana integra</i>	20	6	FDW231123-65
	<i>Maireana trichoptera</i>	20	6	
	<i>Maireana triptera</i>	20	0.1	
	<i>Melaleuca pauperiflora</i> subsp. <i>fastigiata</i>			in area
	<i>Olearia muelleri</i>			in area
	<i>Ptilotus aervoides</i>	2	0.1	
	<i>Roepera aurantiaca</i> subsp. <i>aurantiaca</i>	20	0.1	
	<i>Roepera glauca</i>	10	0.5	
	<i>Senna pleurocarpa</i>	100	0.1	

Site No: 25 **Date:** 23/11/2023 **Longitude:** 119.313655 **Latitude:** -31.229400

Type: Quadrat
Size: 20m x 20m

Topography: Undulating

Vegetation Type: Eucalypt Woodland

Fire: 10+ years

Rock Type: Ironstone rocks

Soil Types: Rocky

Effort: 1 person, 20 minutes

Surface: Bare rocks 80%, small litter 5%

Vegetation Condition: Good

Condition Notes: Rubbish, tracks, clearing

Vegetation Community: EyAnAe: *Eucalyptus yilgarnensis*, *Eucalyptus corrugata* and *Eucalyptus longicornis* mid woodland over *Atriplex nummularia*, *Exocarpos aphyllus* and *Senna artemisioides* subsp. *filifolia* mid open shrubland over *Austrostipa elegantissima*, *Aristida holathera* and *Rytidosperma caespitosum* low sparse tussock grassland.



Cons. Status	Taxon	Height (cm)	% Cover	Comment
	<i>Acacia merrallii</i>	80	0.1	FDW231123-69
	<i>Aristida holathera</i>	20	0.1	
	<i>Atriplex nummularia</i>	50	1	
	<i>Austrostipa elegantissima</i>	40	0.1	
	<i>Eremophila interstans</i> subsp. <i>interstans</i>	100	3	FDW231123-67
	<i>Eremophila oppositifolia</i>	200	1	

Cons. Status	Taxon	Height (cm)	% Cover	Comment
	<i>Eremophila scoparia</i>	80	0.1	
	<i>Eucalyptus corrugata</i>	800	6	
	<i>Eucalyptus longicornis</i>	1000	5	
	<i>Eucalyptus yilgarnensis</i>	1500	15	
	<i>Exocarpos aphyllus</i>	30	2	
	<i>Maireana carnososa</i>	20	2	
	<i>Maireana trichoptera</i>	10	0.5	
	<i>Melaleuca pauperiflora</i> subsp. <i>fastigiata</i>	300	10	
	<i>Roepera glauca</i>	5	0.1	
	<i>Sclerolaena patentiuspis</i>	3	0.1	

Site No: 26	Date: 23/11/2023	Longitude: 119.309953	Latitude: -31.225033
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Type: Relevé**Size:** -**Topography:** Flat**Vegetation Type:** Eucalypt Woodland**Fire:** 10+ years**Rock Type:** -**Soil Types:** Clay loam**Effort:** 1 person, 15 minutes**Surface:** Bare 15%, crypto 60%, small litter 20%**Vegetation Condition:** Good**Condition Notes:** Bore holes, tracks, clearing

Vegetation Community: EyAnAe: *Eucalyptus yilgarnensis*, *Eucalyptus corrugata* and *Eucalyptus longicornis* mid woodland over *Atriplex nummularia*, *Exocarpos aphyllus* and *Senna artemisioides* subsp. *filifolia* mid open shrubland over *Austrostipa elegantissima*, *Aristida holathera* and *Rytidosperma caespitosum* low sparse tussock grassland.



Cons. Status	Taxon	Height (cm)	% Cover	Comment
	<i>Acacia merrallii</i>	130	0.5	
	<i>Aristida holathera</i>	20	0.1	
	<i>Atriplex nummularia</i>	80	12	
	<i>Austrostipa elegantissima</i>	50	0.5	
	<i>Eremophila scoparia</i>	150	1	
	<i>Eucalyptus longicornis</i>	1400	8	

Cons. Status	Taxon	Height (cm)	% Cover	Comment
	<i>Eucalyptus yilgarnensis</i>	1800	15	
	<i>Exocarpos aphyllus</i>	220	0.5	
	<i>Lycium australe</i>	100	0.1	
	<i>Maireana integra</i>	10	0.5	
	<i>Maireana trichoptera</i>	10	0.5	
	<i>Melaleuca pauperiflora</i> subsp. <i>fastigiata</i>	400	2	
	<i>Olearia muelleri</i>	50	0.1	
	<i>Pimelea microcephala</i> subsp. <i>microcephala</i>	100	0.1	FDW231123-70

Site No: 27 **Date:** 23/11/2023 **Longitude:** 119.3078908 **Latitude:** -31.2226327

Type: Quadrat

Size: 20m x 20m

Topography: Flat

Vegetation Type: Eucalypt Woodland

Fire: 10+ years

Rock Type: -

Soil Types: Clay loam

Effort: 1 person, 20 minutes

Surface: Bare 10%, crypto 60%, small litter and logs 10%

Vegetation Condition: Good

Condition Notes: -

Vegetation Community: EyAnAe: *Eucalyptus yilgarnensis*, *Eucalyptus corrugata* and *Eucalyptus longicornis* mid woodland over *Atriplex nummularia*, *Exocarpos aphyllus* and *Senna artemisioides* subsp. *filifolia* mid open shrubland over *Austrostipa elegantissima*, *Aristida holathera* and *Rytidosperma caespitosum* low sparse tussock grassland.



Cons. Status	Taxon	Height (cm)	% Cover	Comment
	<i>Acacia merrallii</i>	100	0.5	
	<i>Acacia nyssophylla</i>	80	4	
	<i>Aristida holathera</i>	5	0.5	
	<i>Asteraceae</i> sp.	5	2	
	<i>Atriplex nummularia</i>	50	0.5	
	<i>Atriplex vesicaria</i>	50	0.5	

Cons. Status	Taxon	Height (cm)	% Cover	Comment
	<i>Austrostipa scabra</i>	100	8	
*	<i>Carrichtera annua</i>	5	1	
	<i>Eremophila ionantha</i>			nearby
	<i>Eucalyptus salubris</i>	1200	5	FDW231123-72
	<i>Lycium australe</i>	80	0.1	2% dead
	<i>Maireana integra</i>	10	1	
	<i>Maireana trichoptera</i>	10	1	
	<i>Olearia muelleri</i>	50	0.1	
	<i>Pimelea microcephala</i> subsp. <i>microcephala</i>	100	3	
	<i>Roepera aurantiaca</i> subsp. <i>aurantiaca</i>	30	0.1	
	<i>Rytidosperma caespitosum</i>	20	0.1	
	<i>Santalum spicatum</i>	180	0.1	
	<i>Scaevola spinescens</i>	50	0.1	
	<i>Sclerolaena obliquicuspis</i>	5	0.1	
	<i>Senna artemisioides</i> subsp. <i>filifolia</i>	150	6	
	<i>Templetonia smithiana</i>	200	2	FDW231123-71

Site No: 28	Date: 23/11/2023	Longitude: 119.315120	Latitude: -31.223105
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Type: Relevé**Size:** Meandering**Topography:** Undulating**Vegetation Type:** Eucalypt Woodland**Fire:** 10+ years**Rock Type:** Quartz**Soil Types:** Sand clay**Effort:** 1 person, 10 minutes**Surface:** -**Vegetation Condition:** Degraded**Condition Notes:** Ground disturbance, tracks

Vegetation Community: EyAnAe: *Eucalyptus yilgarnensis*, *Eucalyptus corrugata* and *Eucalyptus longicornis* mid woodland over *Atriplex nummularia*, *Exocarpos aphyllus* and *Senna artemisioides* subsp. *filifolia* mid open shrubland over *Austrostipa elegantissima*, *Aristida holathera* and *Rytidosperma caespitosum* low sparse tussock grassland.



Cons. Status	Taxon	Height (cm)	% Cover	Comment
	<i>Acacia assimilis</i>	200	0.5	
	<i>Acacia deficiens</i>	50	0.5	
	<i>Acacia merrallii</i>	200	0.5	
	<i>Atriplex nummularia</i>	200	0.1	
	<i>Austrostipa elegantissima</i>	30	0.1	
	<i>Eucalyptus corrugata</i>	1200	15	

Cons. Status	Taxon	Height (cm)	% Cover	Comment
	<i>Eucalyptus yilgarnensis</i>	1600	8	
	<i>Maireana trichoptera</i>	10	0.1	
	<i>Melaleuca pauperiflora</i> subsp. <i>fastigiata</i>	400	5	
	<i>Rhagodia drummondii</i>	50	1	
	<i>Roepera glauca</i>	20	0.1	
	<i>Rytidosperma caespitosum</i>	30	0.1	
	<i>Scaevola spinescens</i>	50	0.1	
	<i>Senna artemisioides</i> subsp. <i>filifolia</i>	180	3	

Site No: 29	Date: 23/11/2023	Longitude: 119.317303	Latitude: -31.225463
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Type: Quadrat**Size:** 20m x 20m**Topography:** Flat**Vegetation Type:** Eucalypt Woodland**Fire:** 10+ years**Rock Type:** Quartz**Soil Types:** Clay loam**Effort:** 1 person, 20 minutes**Surface:** Bare 15%, small litter 75%**Vegetation Condition:** Good**Condition Notes:** -

Vegetation Community: Eucalypt Woodland: *Eucalyptus yilgarnensis*, *Eucalyptus salubris* and *Eucalyptus corrugata* mid open woodland over *Eremophila scoparia* and *Exocarpos aphyllus* tall sparse shrubland over *Maireana trichoptera*, *Maireana integra* and *Roepera glauca* mixed low open chenopod shrub and forbland.



Cons. Status	Taxon	Height (cm)	% Cover	Comment
	<i>Aristida holathera</i>	20	0.1	
	<i>Atriplex vesicaria</i>	50	0.1	
	<i>Eremophila scoparia</i>	50	0.1	
	<i>Eucalyptus salubris</i>	700	8	
	<i>Eucalyptus yilgarnensis</i>	1400	20	
	<i>Exocarpos aphyllus</i>	50	6	

Cons. Status	Taxon	Height (cm)	% Cover	Comment
	<i>Maireana integra</i>	20	4	
	<i>Maireana trichoptera</i>	20	12	
	<i>Melaleuca pauperiflora</i> subsp. <i>fastigiata</i>	250	4	
	<i>Roepera aurantiaca</i> subsp. <i>aurantiaca</i>	20	0.1	
	<i>Roepera glauca</i>	2	0.1	
	<i>Santalum spicatum</i>	80	1	
	<i>Sclerolaena obliquicuspis</i>	5	0.1	

Site No: 30	Date: 23/11/2023	Longitude: 119.3160406	Latitude: -31.2162690
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Type: Relevé**Size:** -**Topography:** Flat**Vegetation Type:** Eucalypt Woodland**Fire:** 10+ years**Rock Type:** -**Soil Types:** Loam sand**Effort:** 1 person, 15 minutes**Surface:** Bare ground 5%, crypto 50%, small litter 25%**Vegetation Condition:** Good**Condition Notes:** Tracks, dead plants, hydrology

Vegetation Community: EyEsMt: *Eucalyptus yilgarnensis*, *Eucalyptus salubris* and *Eucalyptus corrugata* mid open woodland over *Eremophila scoparia* and *Exocarpos aphyllus* tall sparse shrubland over *Maireana trichoptera*, *Maireana integra* and *Roepera glauca* mixed low open chenopod shrub and forbland.



Cons. Status	Taxon	Height (cm)	% Cover	Comment
	<i>Acacia merrallii</i>	180	1	
	<i>Acacia nyssophylla</i>	50	0.5	
	<i>Aristida holathera</i>	5	0.1	
	<i>Atriplex nummularia</i>	80	0.5	
	<i>Atriplex vesicaria</i>	30	2	
	<i>Austrostipa elegantissima</i>	100	2	

Cons. Status	Taxon	Height (cm)	% Cover	Comment
	<i>Dodonaea viscosa</i> subsp. <i>angustissima</i>			Nearby
	<i>Eremophila scoparia</i>	150	2	
	<i>Eucalyptus yilgarnensis</i>	1600	10	
	<i>Exocarpos aphyllus</i>	250	1	
	<i>Maireana integra</i>	10	2	
	<i>Maireana trichoptera</i>	10	15	
	<i>Olearia muelleri</i>	50	0.1	
	<i>Pimelea microcephala</i> subsp. <i>microcephala</i>	100	0.5	
	<i>Rhagodia drummondii</i>	50	0.5	
	<i>Roepera aurantiaca</i> subsp. <i>aurantiaca</i>	20	0.1	
	<i>Santalum acuminatum</i>	400	0.1	
	<i>Scaevola spinescens</i>	80	0.1	
	<i>Siemssenia capillaris</i>	15	0.1	

Site No: 31	Date: 23/11/2023	Longitude: 119.317010	Latitude: -31.213273
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Type: Quadrat**Size:** 20m x 20m**Topography:** Flat**Vegetation Type:** Maireana Chenopod Shrubland**Soil Types:** Sand loam**Effort:** 1 person, 20 minutes**Surface:** Bare ground 15%, crypto 60%, small litter 15%**Vegetation Condition:** Good - Degraded**Fire:** 10+ years**Condition Notes:** Rubbish**Rock Type:** -

Vegetation Community: EsMt: *Eremophila scoparia* and *Acacia enervia* subsp. *explicata* mid to tall open shrubland over *Maireana trichoptera*, *Rhagodia drummondii* and *Maireana georgei* mid to low chenopod shrubland.



Cons. Status	Taxon	Height (cm)	% Cover	Comment
	<i>Acacia enervia</i> subsp. <i>explicata</i>	300	0.1	FDW231123-73
	<i>Aristida holathera</i>	30	0.1	
	<i>Atriplex codonocarpa</i>	30	0.1	
	<i>Atriplex vesicaria</i>	50	1	
*	<i>Carrichtera annua</i>	5	4	
	<i>Dodonaea viscosa</i> subsp. <i>angustissima</i>	30	0.1	

Cons. Status	Taxon	Height (cm)	% Cover	Comment
	<i>Eremophila scoparia</i>	200	20	
	<i>Exocarpos aphyllus</i>	200	0.1	
	<i>Lycium australe</i>	80	0.1	
	<i>Maireana georgei</i>	20	1	
	<i>Maireana integra</i>	20	0.1	
	<i>Maireana trichoptera</i>	20	25	mostly dead
	<i>Ptilotus exaltatus</i>	10	0.1	
	<i>Rhagodia drummondii</i>	50	2	
	<i>Scaevola spinescens</i>	50	4	
	<i>Senna pleurocarpa</i>	100	0.5	
	<i>Siemssenia capillaris</i>	20	0.1	FDW231123-74
	<i>Acacia enervia</i> subsp. <i>explicata</i>	300	0.1	FDW231123-73
	<i>Aristida holathera</i>	30	0.1	

Site No: 32	Date: 23/11/2023	Longitude: 119.3161277	Latitude: 31.2114498
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Type: Relevé**Size:** -**Topography:** Flat**Vegetation Type:** Tecticornia Samphire Shrubland**Soil Types:** Clay**Effort:** 1 person, 15 minutes**Surface:** -**Vegetation Condition:** Degraded**Fire:** 10+ years**Condition Notes:** Hydrology, clearing**Rock Type:** -

Vegetation Community: TpDcc: *Tecticornia pruinosa*, *Tecticornia halocnemoides* and *Roycea divaricata* low samphire shrubland over *Disphyma crassifolium* subsp. *clavellatum*, *Eragrostis falcata* and *Aristida holathera* mixed.



Cons. Status	Taxon	Height (cm)	% Cover	Comment
	<i>Disphyma crassifolium</i> subsp. <i>clavellatum</i>	5	4	
	<i>Frankenia setosa</i>	20		nearby
*	<i>Mesembryanthemum nodiflorum</i>	5	0.1	
	<i>Roycea divaricata</i>	50	10	
	<i>Tecticornia halocnemoides</i>	50	15	

Cons. Status	Taxon	Height (cm)	% Cover	Comment
	<i>Tecticornia pergranulata</i> subsp. <i>pergranulata</i>	50	8	

Site No: 33	Date:23/11/2023	Longitude: 119.3032574	Latitude: 31.2067998
Type: Relevé		Soil Types: Sand	
Size: 50m x 8m		Effort: 1 person, 20 minutes	
Topography: Flats		Surface: Bare ground 75%, litter small 10%	
Vegetation Type: Eucalypt Woodland		Vegetation Condition: Very Good	
Fire: 10+ years		Condition Notes: -	
Rock Type: -			
Vegetation Community: EsDvaRc: <i>Eucalyptus salmonophloia</i> , <i>Eucalyptus yilgarnensis</i> mid open woodland over <i>Dodonaea viscosa</i> subsp. <i>angustissima</i> , <i>Templetonia smithiana</i> and <i>Rhagodia drummondii</i> mid to tall open shrubland over <i>Rytidosperma caespitosum</i> , <i>Aristida holathera</i> and <i>Austrostipa elegantissima</i> tall open tussock grassland.			



Cons. Status	Taxon	Height (cm)	% Cover	Comment
	<i>Acacia merrallii</i>	250	0.5	
*	<i>Aira caryophyllea</i>	10	0.1	
	<i>Alyxia buxifolia</i>	200	0.5	
	<i>Amyema sp.</i>	0	0.1	
	<i>Aristida holathera</i>	20	0.5	
	<i>Atriplex vesicaria</i>	30	1	
	<i>Austrostipa elegantissima</i>	100	1	

Cons. Status	Taxon	Height (cm)	% Cover	Comment
	<i>Dodonaea viscosa</i> subsp. <i>angustissima</i>	100	6	
	<i>Eucalyptus salmonophloia</i>	800	5	
	<i>Eucalyptus yilgarnensis</i>	1800	4	
	<i>Hakea preissii</i>	50	0.1	
	<i>Lomandra effusa</i>	30	0.1	
	<i>Maireana georgei</i>	50	0.1	
	<i>Maireana trichoptera</i>	20	1	
	<i>Maireana triptera</i>	30	0.1	
	<i>Olearia muelleri</i>	50	0.1	
	<i>Pimelea microcephala</i> subsp. <i>microcephala</i>	100	0.5	
	<i>Rhagodia drummondii</i>	40	1	
	<i>Rytidosperma caespitosum</i>	5	5	
	<i>Scaevola spinescens</i>	100	8	
	<i>Senna artemisioides</i> subsp. <i>filifolia</i>	130	3	
	<i>Siemssenia capillaris</i>	10	0.1	
	<i>Templetonia smithiana</i>	200	8	

Site No: 34	Date: 23/11/2023	Longitude: 119.3129567	Latitude: -31.20475
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Type: Relevé**Size:** -**Topography:** Flat**Vegetation Type:** Eucalypt Woodland**Fire:** 10+ years**Rock Type:** -**Soil Types:** Sand loam**Effort:** 1 person, 20 minutes**Surface:** -**Vegetation Condition:** Very Good**Condition Notes:** -

Vegetation Community: EsDvaRc: *Eucalyptus salmonophloia*, *Eucalyptus yilgarnensis* mid open woodland over *Dodonaea viscosa* subsp. *angustissima*, *Templetonia smithiana* and *Rhagodia drummondii* mid to tall open shrubland over *Rytidosperma caespitosum*, *Aristida holathera* and *Austrostipa elegantissima* tall open tussock grassland.



Cons. Status	Taxon	Height (cm)	% Cover	Comment
	<i>Acacia nyssophylla</i>	50	0.1	
	<i>Acacia enervia</i> subsp. <i>explicata</i>	400	2	
	<i>Aristida holathera</i>	20	0.1	
	<i>Atriplex vesicaria</i>	30	2	
	<i>Austrostipa elegantissima</i>	50	0.1	

Cons. Status	Taxon	Height (cm)	% Cover	Comment
	<i>Disphyma crassifolium</i> subsp. <i>clavellatum</i>	10	4	
	<i>Dodonaea viscosa</i> subsp. <i>angustissima</i>	200	20	
	<i>Eragrostis falcata</i>	2	1	
	<i>Eucalyptus yilgarnensis</i>	2000	1	
	<i>Exocarpos aphyllus</i>	300	0.1	
	<i>Hakea preissii</i>	200	0.5	
	<i>Maireana georgei</i>	20	0.1	
	<i>Maireana trichoptera</i>	10	0.5	
	<i>Melaleuca pauperiflora</i> subsp. <i>fastigiata</i>	400	0.5	
	<i>Pimelea microcephala</i> subsp. <i>microcephala</i>	100	0.1	
	<i>Rhagodia drummondii</i>	30	10	
	<i>Rytidosperma caespitosum</i>	30	0.5	
	<i>Sclerolaena patentiuspis</i>	10	0.1	
	<i>Siemssenia capillaris</i>	10	0.1	
	<i>Surreya diandra</i>	10	0.1	
	<i>Templetonia smithiana</i>	300	2	

Site No: 35	Date: 23/11/2023	Longitude: 119.304725	Latitude: -31.20378667
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Type: Quadrat**Size:** Flat**Topography:** 40m x 10m**Vegetation Type:** Tecticornia Samphire Shrubland**Fire:** 10+ years**Rock Type:** -**Soil Types:** Clay**Effort:** 1 person, 15 minutes**Surface:** Bare 60%**Vegetation Condition:** Very Good**Condition Notes:** -

Vegetation Community: TpDcc: *Tecticornia pruinosa*, *Tecticornia halocnemoides* and *Roycea divaricata* low samphire shrubland over *Disphyma crassifolium* subsp. *clavellatum*, *Eragrostis falcata* and *Aristida holathera* mixed.



Cons. Status	Taxon	Height (cm)	% Cover	Comment
*	<i>Aira caryophyllea</i>	10	0.1	
	<i>Aristida contorta</i>	30	0.1	
	<i>Aristida holathera</i>	20	1	
	<i>Cryptandra micrantha</i>	30	0.1	FDW231123-77
	<i>Disphyma crassifolium</i> subsp. <i>clavellatum</i>	10	6	

Cons. Status	Taxon	Height (cm)	% Cover	Comment
	<i>Dodonaea viscosa</i> subsp. <i>angustissima</i>	30	0.1	
	<i>Eragrostis falcata</i>	2	2	
	<i>Frankenia setosa</i>	20	0.5	
	<i>Frankenia setosa</i>	20	1	
*	<i>Gazania linearis</i>	15	0.1	FDW231123-78
	<i>Hakea recurva</i> subsp. <i>recurva</i>	20	0.1	FDW231123-76
	<i>Roycea divaricata</i>	50	25	
	<i>Sclerolaena eurotioides</i>	10	0.1	FDW231123-75
	<i>Surreya diandra</i>	10	0.1	
	<i>Tecticornia halocnemoides</i>	30	5	
	<i>Tecticornia pergranulata</i> subsp. <i>pergranulata</i>	30	1	
	<i>Tecticornia pruinosa</i>	30	1	

Site No: 36	Date: 23/11/2023	Longitude: 119.2878346	Latitude: 31.1888840
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Type: Relevé**Size:** -**Topography:** Slope**Vegetation Type:** Eucalypt Woodland**Fire:** 10+ years**Rock Type:** -**Soil Types:** Sand clay**Effort:** 1 person 15 minutes**Surface:** Rock 40%, crypto 30%, litter 15%**Vegetation Condition:** Good**Condition Notes:** Clearing, rubbish, test pits, bores

Vegetation Community: EyAnAe *Eucalyptus yilgarnensis*, *Eucalyptus corrugata* and *Eucalyptus longicornis* mid woodland over *Atriplex nummularia*, *Exocarpos aphyllus* and *Senna artemisioides* subsp. *filifolia* mid open shrubland over *Austrostipa elegantissima*, *Aristida holathera* and *Rytidosperma caespitosum* low sparse tussock grassland.



Cons. Status	Taxon	Height (cm)	% Cover	Comment
	<i>Acacia assimilis</i>	200	0.1	
	<i>Acacia deficiens</i>	30	0.1	
	<i>Acacia merrallii</i>	130	0.1	
	<i>Atriplex nummularia</i>	50	0.5	
	<i>Atriplex vesicaria</i>	30	0.5	
	<i>Daviesia nematophylla</i>	200	1	FDW231123-80
	<i>Dianella revoluta</i>	40	0.1	

Cons. Status	Taxon	Height (cm)	% Cover	Comment
	<i>Dodonaea stenozyga</i>	100	0.5	FDW231123-79
	<i>Eremophila scoparia</i>	100	0.1	
	<i>Eucalyptus corrugata</i>	1000	15	
	<i>Eucalyptus yilgarnensis</i>	1500	4	
	<i>Exocarpos aphyllus</i>	200	1	
	<i>Maireana trichoptera</i>	20	0.1	
	<i>Melaleuca pauperiflora</i> subsp. <i>fastigiata</i>	400	10	
	<i>Olearia muelleri</i>	30	0.1	
	<i>Ptilotus obovatus</i>	30	0.1	
	<i>Roepera glauca</i>	5	0.1	
	<i>Senna artemisioides</i> subsp. <i>filifolia</i>	100	0.1	
	<i>Stenanthemum stipulosum</i>	100	2	FDW231123-81

Site No: 37 **Date:** 23/11/2023 **Longitude:** 119.2944536 **Latitude:** 31.1892053

Type: Quadrat
Size: 20m x 20m

Topography: -

Vegetation Type: Eucalypt Mallee Woodland

Fire: 10+ years

Rock Type: -

Soil Types: Clay loam

Effort: 1 person, 20 minutes

Surface: Bare ground 60%, small litter and logs 15%

Vegetation Condition: Very Good

Condition Notes: -

Vegetation Community: EmMiRc: *Eucalyptus myriadena* mid open mallee woodland over *Maireana integra*, *Grevillea acuaria* and *Acacia deficiens* low open shrubland over *Rhodanthe citrina*, *Waitzia acuminata* and *Disphyma crassifolium* subsp. *clavellatum* low open forbland.



Cons. Status	Taxon	Height (cm)	% Cover	Comment
	<i>Acacia assimilis</i>	300	15	
	<i>Acacia coolgardiensis</i>	200	1	FDW231123-87
	<i>Acacia deficiens</i>	40	2	
	<i>Acacia rigens</i>	13	0.1	
	<i>Alyxia buxifolia</i>	150	1	
	<i>Amphipogon caricinus</i> var. <i>caricinus</i>	20	5	FDW231123-86
	<i>Aristida holathera</i>	10	0.1	

Cons. Status	Taxon	Height (cm)	% Cover	Comment
	<i>Asteraceae</i> sp.	10	2	
	<i>Austrostipa elegantissima</i>	30	0.1	
	<i>Beyeria sulcata</i> var. <i>brevipes</i>	130	1	FDW231123-82
	<i>Borya sphaerocephala</i>	5	5	
	<i>Comesperma virgatum</i>	0	0.1	
	<i>Cryptandra spyridioides</i>	50	0.1	FDW231123-85
	<i>Dianella revoluta</i>	30	0.1	
	<i>Eremophila scoparia</i>	130	0.1	
	<i>Eucalyptus myriadena</i>	700	8	
	<i>Exocarpos aphyllus</i>	30	1	
	<i>Grevillea acuaria</i>	100	2	FDW231123-83
	<i>Grevillea anethifolia</i>	80	0.1	FDW231123-89
	<i>Maireana georgei</i>	20	0.1	
	<i>Maireana trichoptera</i>	10	0.1	
	<i>Melaleuca eleuterostachya</i>	200	0.5	FDW231123-84
	<i>Melaleuca hamata</i>	300	5	
	<i>Olearia pimeleoides</i>	80	0.1	
	<i>Phebalium tuberosum</i>	150	2	FDW231123-88
	<i>Rhagodia drummondii</i>	30	0.5	
	<i>Roepera aurantiaca</i> subsp. <i>aurantiaca</i>	40	0.1	
	<i>Scaevola spinescens</i>	50	1	
	<i>Waitzia acuminata</i>	5	1	

Site No: 38	Date: 23/11/2023	Longitude: 119.2969717	Latitude: -31.18757833
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Type: Relevé**Size:** -**Topography:** Flat**Vegetation Type:** Eucalypt Mallee Woodland**Fire:** 10+ years**Rock Type:** Small rocks**Soil Types:** Sand clay**Effort:** 1 person 20 minutes**Surface:** Bare 20%, crypto 60%, small litter 5**Vegetation Condition:** Very Good**Condition Notes:** -

Vegetation Community: EmMiRc: *Eucalyptus myriadena* mid open mallee woodland over *Maireana integra*, *Grevillea acuaria* and *Acacia deficiens* low open shrubland over *Rhodanthe citrina*, *Waitzia acuminata* and *Disphyma crassifolium* subsp. *clavellatum* low open forbland.



Cons. Status	Taxon	Height (cm)	% Cover	Comment
	<i>Acacia nyssophylla</i>	150	1	
	<i>Alyxia buxifolia</i>	50	0.1	
	<i>Atriplex nummularia</i>	80	4	
	<i>Atriplex vesicaria</i>	30	3	
	<i>Crassula colorata</i>	2	0.1	
	<i>Disphyma crassifolium</i> subsp. <i>clavellatum</i>	10	1	
	<i>Eremophila oppositifolia</i>	200	4	

Cons. Status	Taxon	Height (cm)	% Cover	Comment
	<i>Eremophila scoparia</i>	100	1	
	<i>Eucalyptus myriadena</i>	800	10	
	<i>Exocarpos aphyllus</i>	300	2	
	<i>Grevillea acuaria</i>	30	0.1	
	<i>Lawrenia ?repens</i>	2	0.1	FDW231123-90
	<i>Lycium australe</i>	30	0.1	
	<i>Maireana georgei</i>	30	0.1	
	<i>Maireana integra</i>	10	2	
	<i>Maireana trichoptera</i>	10	1	
	<i>Melaleuca pauperiflora</i> subsp. <i>fastigiata</i>	500		nearby
	<i>Olearia muelleri</i>	30	0.5	
	<i>Ptilotus exaltatus</i>	10	0.1	
	<i>Rhodanthe citrina</i>	10	10	
	<i>Scaevola spinescens</i>	50	0.1	
	<i>Sclerolaena obliquicuspis</i>	10	1	
	<i>Waitzia acuminata</i>	10	0.5	

Site No: 39	Date: 23/11/2023	Longitude: 119.2910933	Latitude: -31.187645
Type: Relevé		Soil Types: Sand loam	
Size: -		Effort: 1 person 20 minutes	
Topography: Slope		Surface: Bare ground 60%, crypto 15%, logs and litter 20%	
Vegetation Type: Eucalypt Mallee Woodland		Vegetation Condition: Very Good	
Fire: 10+ years		Condition Notes: -	
Rock Type: -			
Vegetation Community: EmMiRc: <i>Eucalyptus myriadena</i> mid open mallee woodland over <i>Maireana integra</i> , <i>Grevillea acuaria</i> and <i>Acacia deficiens</i> low open shrubland over <i>Rhodanthe citrina</i> , <i>Waitzia acuminata</i> and <i>Disphyma crassifolium</i> subsp. <i>clavellatum</i> low open forbland.			



Cons. Status	Taxon	Height (cm)	% Cover	Comment
	<i>Acacia assimilis</i>	200	15	
	<i>Acacia deficiens</i>	50	0.5	
	<i>Acacia merrallii</i>	180	1	
	<i>Acacia tetragonophylla</i>	200	0.5	
	<i>Alyxia buxifolia</i>	100	1	
	<i>Aristida contorta</i>	30	0.1	
	<i>Atriplex vesicaria</i>	30	0.1	

Cons. Status	Taxon	Height (cm)	% Cover	Comment
	<i>Cryptandra spyridioides</i>	30	0.1	
	<i>Eremophila scoparia</i>	150	0.5	
	<i>Eucalyptus myriadena</i>	800	10	
	<i>Grevillea acuaria</i>	100	0.1	
	<i>Melaleuca eleuterostachya</i>	200	0.1	
	<i>Olearia pimeleoides</i>	80	0.1	
	<i>Ptilotus exaltatus</i>	10	0.1	
	<i>Santalum acuminatum</i>	200	1	
	<i>Senna artemisioides</i> subsp. <i>filifolia</i>	100	2	
	<i>Waitzia acuminata</i>	10	4	

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