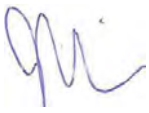
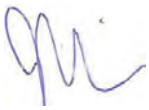
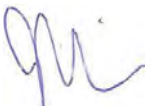
Midwest and Remote Towns

Biological assessment

Horizon Power

31 August 2023

→ The Power of Commitment

Project name		HP10187A1 Midwest and Remote Towns IRP Project Desktop and Field Study					
Document title		Midwest and Remote Towns | Biological assessment					
Project number		12611848					
File name		12611848-REP_Midwest_and_Remote_Towns_Biological_Assessment.docx					
Status Code	Revision	Author	Reviewer		Approved for issue		
			Name	Signature	Name	Signature	Date
S3	A	A. Benkovic, E. Lynch, S. Flemington, L. Taaffe, L. Griffin	J. Collins		D. Farrar	On file	30/06/2023
S4	0	A. Benkovic, E. Lynch, S. Flemington, L. Taaffe, L. Griffin	J. Collins		J. Collins		30/08/2023

GHD Pty Ltd | ABN 39 008 488 373
Contact: Angela Benkovic, Senior Botanist | GHD
999 Hay Street, Level 10
Perth, Western Australia 6000, Australia
T +61 8 6222 8222 | **F** +61 8 6222 8555 | **E** permail@ghd.com | **ghd.com**

Executive Summary

Horizon Power is proposing to develop renewable energy projects for eight sites in the Murchison, Pilbara and Gascoyne regions of Western Australia (WA). GHD Pty Ltd (GHD) has been commissioned to undertake Detailed (single season) flora and vegetation survey and a Basic and Targeted fauna survey of the proposed survey areas.

There are a total of eight individual sites (survey areas):

– Nullagine, 6.06 hectares (ha)
– Cue, 45.79 ha
– Meekatharra, 29.35 ha
– Menzies, 5.78 ha
– Sandstone, 5.90 ha
– Wiluna, 15.98 ha
– Gascoyne Junction, 10.78 ha
– Laverton, 25.08 ha.

The outcomes of the assessment will be used to inform the project design and provide information to support a native vegetation clearing permit application under Part V of the *Environmental Protection Act 1986*.

Key findings

Flora and vegetation

Fifteen vegetation types aligning with broad landforms were identified and described in the survey areas, not including cleared tracks. These have been summarised in the below table.

Survey area	Vegetation type
Nullagine	VT01 - Isolated Snappy Gum over Triodia: *Eucalyptus leucophloia* subsp. *leucophloia* isolated trees over *Acacia bivenosa, Senna symonii* and *Acacia hilliana* isolated shrubs over and *Triodia* spp. tussock grassland
Cue	VT02 - *Acacia grasbyi* and *Acacia aptaneura* isolated clumps of shrubs over *Maireana georgei*, *Maireana glomerifolia*, *Sclerolaena eriacantha* and *Ptilotus obovatus* sparse chenopod and mixed shrubland over *Aristida holathera* var. *holathera* and *Enneapogon polyphyllus* isolated clumps of grasses on orange, sandy-loam on flat plains with sparse quartz pebble scatter. VT03 - *Acacia incurvaneura* open woodland over *Eremophila latrobei* subsp. *latrobei* and *Psydrax suaveolens* sparse shrubland over, *Tripogonella loliiformis, Cheilanthes sieberi* susp. *sieberi* and *Erodium* sp. isolated clumps of forbs on orange sandy clay loam on rocky granitic hills. VT04 - *Acacia kalgoorliensis*, *Acacia pteraneura* and *Eremophila pantonii* isolated clumps of shrubs over, *Maireana glomerifolia*, *Ptilotus polakii* and *Sclerolaena eriacantha* sparse shrubland on orange sandy loam on low rises with quartz stone scatter. VT05 - *Eucalyptus victrix* isolated clumps of trees over, *Acacia tetragonophylla*, *Sida* sp. and *Eremophila longifolia* sparse shrubland over, *Enteropogon ramosus* and **Cenchrus ciliaris* grassland on orange clay within minor drainage lines.
Meekatharra	VT06 -*Acacia incurvaneura* and *Acacia pteraneura* open woodland over, *Eremophila citrina*, *Eremophila latrobei* subsp. *latrobei, Solanum lasiophyllum* and *Maireana planifolia* isolated clumps of shrubs on orange clay-loam on low rocky rises. VT07 -*Eucalyptus victrix* and *Eucalyptus camaldulensis* open woodland over, *Acacia tetragonophylla*, *Acacia victoriae* and *Eremophila longifolia* open shrubland over, **Cenchrus ciliaris* and *Peplidium* sp. isolated clumps of forbs and grasses on brown sandy-clay-loam within drainage areas.
Menzies	VT08 - *Maireana pyramidata*, *Atriplex bunburyana*, *Maireana planifolia* and *Sclerolaena diacantha* open chenopod shurbland over, **Cenchrus ciliaris*, **Carrichtera annua* and *Sclerolaena alata* sparse grassland and forbland on orange clay flats.

Survey area	Vegetation type
	VT09 -**Schinus molle* and *Acacia jennerae* isolated clumps of trees over *Eremophila longifolia*, *Maireana pyramidata* and *Atriplex bunburyana* sparse shrubland over *Chloris truncata* and **Cenchrus ciliata* grassland on orange clay within minor drainage lines.
Sandstone	VT10 - *Acacia aneura, Acacia mulganeura* and *Acacia incurvaneura* mulga woodland over, *Cryptandra connata* and *Eremophila margarethae* isolated shrubs over, Poaceae sp. and Chenopodiaceae sp. isolated clumps of sterile chenopods and grasses on orange clay loam, flat plains.
Wiluna	VT11 - *Acacia pruinocarpa* and *Acacia pteraneura* (± *Acacia aneura* x *Acacia craspedocarpa*) woodland over, *Ptilotus obovatus* and *Lepidium platpetalum* isolated shrubs over, *Dysphania kalpari*, *Sclerolaena eriacantha* and *Dactyloctenium radulans* on orange, sandy-clay-loam within minor drainage lines. VT12 - *Acacia aptaneura*, *Acacia pteraneura* and *Acacia pruinocarpa* (± *Acacia aneura* x *Acacia craspedocarpa*) woodland over *Grevillea sarissa* subsp. *succincta* and *Eremophila margarethae* isolated shrubs on orange clay-loam, rocky rises.
Gascoyne Junction	VT13 - *Acacia victoriae, Acacia tetragonophylla* and *Hakea recurva* isolated shrubs over *Rhagodia eremaea, Atriplex ?codonocarpa* and *Maireana* sp. isolated chenopod shrubs on brown loamy clay on low undulating rise with quartz.
Laverton	VT14 - *Acacia aneura, Acacia ramulosa* and *Acacia ayersiana* open woodland to isolated trees over *Acacia tetragonophylla, Acacia craspedocarpa* and *Senna artemisioides* subsp. ×*artemisioides* open shrubland over *Salsola australis, Sclerolaena eurotioides* and *Maireana thesioides* open chenopod over mixed annual herbs on shrubland on brown loam clay on plain. VT15 - *Eucalyptus camaldulensis* open woodland to isolated trees on drainage line

No Threatened Ecological Communities listed under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) or *Biodiversity Conservation Act 2016* (BC Act) were identified within the survey areas during the field survey.

One Priority Ecological Community (PEC) was identified as occurring within the Cue survey area, the Austin Land System (Priority 3). The Austin Land System PEC is described as saline stony plains with low rises and drainage foci supporting low halophytic shrublands with scattered mulga; occurs mainly adjacent to lakes Austin and Annean below greenstone hill systems. Vegetation types VT02, VT04 and VT05 were representative of this PEC.

The condition of the vegetation within the survey areas ranged from Excellent to Completely Degraded. Most sites have areas that are completely cleared which have been presented/mapped separately. The majority of the survey areas are in Excellent or Very Good condition.

One EPBC Act or BC Act listed flora taxon was recorded from the Cue survey area; *Eremophila rostrata* subsp. *rostrata* (Threatened – BC Act listed and Critically Endangered - EPBC Act). No other EPBC Act or BC Act listed flora were recorded from the other survey areas.

Four DBCA priority listed flora taxa were recorded from the following survey areas:

– *Acacia aphanoclada* (Priority 1) – Nullagine survey area
– *Solanum* sp. Mosquito Creek (A.A. Mitchell et al. AAM 10795) (Priority 1) – Nullagine survey area
– *Maireana prosthecochaeta* (Priority 3) – Cue survey area
– *Ptilotus* sp. Cue (P. Armstrong PA 16/362) (Priority 1) – Cue survey area.

Of the identified significant species for the survey areas the following assessment on likelihood post-survey is as follows:

– Nullagine - All other significant flora taxa are considered Unlikely to occur
– Cue - Seven taxa possible to occur and all other taxa are considered unlikely to occur
– Meekatharra – Four taxa are considered possible to occur and all other taxa are considered unlikely to occur
– Menzies – One taxon is considered possible to occur and all other taxa are considered unlikely to occur
– Sandstone - All taxa are considered unlikely to occur
– Wiluna – Two taxa are considered possible to occur and all other taxa are considered unlikely to occur
– Gascoyne Junction - One taxon is considered possible to occur and all other taxa are considered unlikely to occur

– Laverton - One taxon is considered possible to occur and all other taxa are considered unlikely to occur.

One range extension was recorded from the Laverton survey area; the common *Arivela viscosa*. This record represents a range extension of approximately 400 km south (WAH 1998-).

Fauna

Twelve broad fauna habitat types (excluding cleared and disturbed areas) were identified across the survey areas based on the predominant landforms, soil and vegetation structure in the area. The habitat types identified at each site are summarised in the table below.

Survey area	Fauna habitat
Nullagine	– Undulating low rocky hills
Cue	– Saline stony/rocky plains and low rises – Rocky granite hills – Minor Drainage line
Meekatharra	– Mulga Woodland on rocky plains/low rises and broad drainage lines – Eucalyptus open woodland ephemeral drainage line
Wiluna	– Mulga Woodland on rocky plains/low rises and broad drainage lines
Menzies	– Low chenopod shrublands on clay flats – Tall shrubland minor drainage line
Sandstone	– Mulga woodland
Laverton	– Mulga woodland on open clay plain – Eucalyptus-lined minor drainage line
Gascoyne Junction	– Acacia shrubland on low rise

No Threatened fauna listed under the EPBC Act or BC Act was recorded during the surveys. One Priority 4 species (listed by DBCA) was recorded at the Nullagine survey area, a recently active mound of the Western Pebble-mound Mouse (*Pseudomys chapmani*)

A target assessment was undertaken for Greater Bilby at Nullagine, with no evidence found.

Transect searches were undertaken for *Idiosoma clypteatum* (P3) burrows in suitable habitat at the Menzies, Wiluna, Sandstone, Cue, Meekatharra and Laverton sites. A trapdoor spider burrow was recorded in the Laverton survey area. The identification of this burrow would not be possible without specimen collection. No previous records for *Idiosoma* were identified in the desktop assessment for Laverton, with the closest known records of *Idiosoma clypteatum* located approximately 230 km northwest of the Laverton survey area. There is potential for *Idiosoma clypteatum* to occur at the Laverton site.

Thirteen significant fauna species were identified as likely to occur post-survey. These species and the associated survey area they are likely to occur in is summarised in the table below.

Species	Status		Likely to occur in survey area
	BC Act	EPBC Act	
Pilbara Olive Python (*Lialis olivaceus barroni*)	VU	VU	Nullagine
Pin-striped finesnout Ctenotus (*Ctenotus nigrilineatus)*	P1	-	Nullagine
West Coast Mulga Slider (*Lerista eupoda*)	P1	-	Cue
Pilbara leaf-nosed Bat (*Rhinonicteris aurantia)*	VU	VU	Nullagine
Ghost Bat (*Macroderma gigas)*	VU	VU	Nullagine
Northern Quoll (*Dasyurus hallucatus*)			Nullagine
Grey Falcon (*Falco hypoleucos*)	VU	VU	Nullagine, Cue, Meekatharra, Menzies, Sandstone, Wiluna, Gascoyne Junction

Species	Status		Likely to occur in survey area
	BC Act	EPBC Act	
Peregrine Falcon (*Falco peregrinus*)	OS	-	Cue, Meekatharra, Sandstone, Wiluna, Gascoyne Junction, Laverton
Southern Whiteface (*Aphelocephala leucopsis*)	VU	VU	Meekatharra, Menzies, Sandstone, Wiluna, Gascoyne Junction
Long-tailed Dunnart (*Sminthopsis longicaudata*)	P4	-	Meekatharra, Sandstone, Wiluna
Woma (*Aspodotes ramsayi*) (southwest subpop.)	P1	-	Menzies
Princess Parrot (*Polytelis alexandrae*)	P4	VU	Sandstone, Laverton
Malleefowl (*Leipoa ocellata*)	VU	VU	Sandstone, Wiluna

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1. Introduction

1.1 Project background

Horizon Power is proposing to develop renewable energy projects for eight sites in the Murchison region of Western Australia (WA).

There are a total of eight individual sites (survey areas):

– Nullagine
– Cue
– Meekatharra
– Menzies
– Sandstone
– Wiluna
– Gascoyne Junction
– Laverton

GHD Pty Ltd (GHD) have been commissioned to undertake a Detailed (single season) flora and vegetation survey and a Basic and Targeted fauna survey of the proposed sites (the survey area).

1.2 Purpose of this report

The purpose of the flora, vegetation and fauna assessment is to define sensitive environmental values, in particular their spatial location and conservation significance, so the impacts of the proposed works can be managed to inform subsequent approvals and works to be undertaken. The outcomes of the assessment will be used to inform the project design and provide information to support a native vegetation clearing permit application under Part V of the *Environmental Protection Act 1986* (EP Act).

1.3 Location

1.3.1 Survey area

Six of the survey areas, Cue, Meekatharra, Menzies, Sandstone, Wiluna and Laverton, are located within the Murchison region of WA. One survey area, Gascoyne Junction, is located in the Carnarvon region of WA and one survey area, Nullagine, is located in the Pilbara region of WA.

The total area of each survey area is:

– Nullagine, 6.06 hectares (ha)
– Cue, 45.79 ha
– Meekatharra, 29.35 ha
– Menzies, 5.78 ha
– Sandstone, 5.90 ha
– Wiluna, 15.98 ha
– Gascoyne Junction, 10.78 ha
– Laverton, 25.08 ha.

The locations of each of the eight survey areas is shown on Figure 1, Figure 7, Figure 13, Figure 19, Figure 25, Figure 31, Figure 37 and Figure 43 (Appendix A).

1.3.2 Study area

A study area was defined for the desktop-based searches of the assessment and consists of a 20 km buffer of the survey area. Where the number of records of significant fauna were low, the Department of Biodiversity, Conservation and Attractions (DBCA) search area was extended to 40 km (fauna only).

1.4 Scope of works

The scope of works included the following:

- A desktop assessment of relevant literature, databases and spatial datasets to determine the environmental values that may be present within or in close proximity to the survey areas
- A Detailed and Targeted flora and vegetation survey
- A Basic and Targeted fauna survey
- A concise technical report (this document) outlining the method and results of the assessment.

1.5 Relevant legislation, conservation codes and background information

In WA significant communities, and flora and fauna are protected under both Federal and State Government legislation, including the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act), EP Act, *Biodiversity Conservation Act 2016* (BC Act) and the *Biosecurity and Agriculture Management Act 2007* (BAM Act).

In addition, regulatory bodies also provide a range of guidance and information on expected standards and protocols for environmental surveys. An overview of key legislation and guidelines, conservation codes and background information relevant to this assessment are provided in Appendix B.

1.6 Report limitations and assumptions

This report has been prepared by GHD for Horizon Power and may only be used and relied on by Horizon Power for the purpose agreed between GHD and Horizon Power as set out in section 1.2 of this report. GHD otherwise disclaims responsibility to any person other than Horizon Power arising in connection with this report. GHD also excludes implied warranties and conditions, to the extent legally permissible. The services undertaken by GHD in connection with preparing this report were limited to those specifically detailed in the report and are subject to the scope limitations set out in the report.

The opinions, conclusions and any recommendations in this report are based on conditions encountered and information reviewed at the date of preparation of the report. GHD has no responsibility or obligation to update this report to account for events or changes occurring subsequent to the date that the report was prepared. The opinions, conclusions and any recommendations in this report are based on assumptions made by GHD described in this report. GHD disclaims liability arising from any of the assumptions being incorrect.

GHD has prepared this report on the basis of information provided by Horizon Power and others who provided information to GHD (including Government authorities), which GHD has not independently verified or checked beyond the agreed scope of work. GHD does not accept liability in connection with such unverified information, including errors and omissions in the report which were caused by errors or omissions in that information.

The opinions, conclusions and any recommendations in this report are based on information obtained from, and testing undertaken at or in connection with, specific sample points. Site conditions at other parts of the site may be different from the site conditions found at the specific sample points. Site conditions may change after the date of this report. GHD does not accept responsibility arising from, or in connection with, any change to the site conditions. GHD is also not responsible for updating this report if the site conditions change.

This report has assessed the flora and fauna values within the survey area, as shown in the Locality figures in Appendix A for each location. Should the survey area change or be refined, further assessment may be required.

2. Methodology

2.1 Desktop assessment

Prior to the commencement of the field survey, a desktop assessment of the study areas to identify environmental values and constraints was undertaken by viewing geographic information system (GIS) spatial files largely sourced from Government of Western Australia (GoWA) (2023) and reviewing publicly available, government managed databases. The information sources utilised in this assessment are presented in Table 1.

Table 1 Desktop information sources

Aspect	Information source
Climate	Bureau of Meteorology (BoM) Climate Data Online (2023)
Geology, landforms and soil	1:500 000 State linear structures layer (DMIRS-015) Soil Landscape Mapping – Systems (DPIRD-064) (GoWA 2023)
Environmentally Sensitive Areas (ESAs)	Clearing Regulations - Environmentally Sensitive Areas (DWER-046) (GoWA 2023)
Conservation reserves and areas	DBCA – Legislated Lands and Waters (DBCA-011) DBCA – Lands of Interest (DBCA-012) (GoWA 2023)
Hydrology	Public Drinking Water Source Areas (DWER-033) RIWI Act, Surface Water Areas and Irrigation Districts (DWER-037) RIWI Act, Groundwater Areas (DWER-034) RIWI Act, Rivers (DWER-036) Waterways Conservation Act Management Areas (DWER-072) Ramsar Sites (DBCA-010) Directory of Important Wetlands in Australia - Western Australia (DBCA-045) (GoWA 2023)
Vegetation	Pre-European Vegetation (DPIRD-006) Native Vegetation Extent (DPIRD-005) (GoWA 2023) Statewide Vegetation Statistics (GoWA 2019)
Threatened and Priority Ecological Communities (TECs and PECs)	DBCA Threatened Ecological Community (TEC) and Priority Ecological Community (PEC) spatial dataset. Priority Ecological Communities for Western Australia Version 28 (DBCA 2023)
Conservation significant flora and fauna	DBCA *NatureMap* database (DBCA 2007–) DBCA Threatened and Priority Flora database (TPFL) and WA Herbarium database (WAHERB) (DBCA 2023b)
Matters of National Environmental Significance	EPBC Act Protected Matters Search Tool (PMST) (Department of Agriculture, Water and the Environment (DCCEEW 2023)

2.1.1 Flora and vegetation

The flora and vegetation desktop assessment included a review of:

- The Department of Climate Change, Energy, the Environment and Water (DCCEEW) PMST to identify communities and species listed under the EPBC Act potentially occurring within the study area (DCCEEW 2023). (Appendix C)
- The DBCA Threatened and Priority Ecological Community (TECs and PECs) database for conservation significant communities present in the desktop study area (DBCA 2023a)
- The DBCA Threatened and Priority Flora and WA Herbarium databases for Threatened flora listed under the BC Act and listed Priority by the DBCA previously recorded in the desktop study area (DBCA 2023b)
- The DBCA *NatureMap* database for flora and fauna species previously recorded within the desktop study area (DBCA 2007-) (Appendix C)

– Aerial photography, geology/soils, land systems and hydrology information to provide background information on the variability of the environment and likely vegetation and habitat types present
– A flora likelihood of occurrence assessment (Appendix D).

2.1.2 Fauna

The fauna desktop assessment included a review of:

– DCCEEW PMST database to identify fauna species listed under the EPBC Act potentially occurring within the study area (DCCEEW 2023) (Appendix C)
– The DBCA Threatened and Priority Fauna database for the study area (DBCA 2023c)
– The DBCA *NatureMap* (DBCA 2007–) database for fauna species previously recorded within the study area (Appendix C). This database comprises the following composite datasets:
  - Atlas of Australian birds
  - Bird data – Birdlife Australia
  - Fauna Survey Returns Database
  - WA Museum (WAM) databases (mammals, birds, reptiles)
– Aerial photography, geology/soils, land systems and hydrology information to provide background information on the variability of the environment and likely habitat types present
– A fauna likelihood of occurrence assessment. For the purpose of this study, exclusively marine animals (fish, whales, turtles etc.) were excluded from the likelihood of occurrence assessment as they are not expected to interact with the survey areas (Appendix E).

2.2 Field survey

2.2.1 Survey timing and personnel

The post-wet single season Detailed and Targeted flora and vegetation survey and Basic and Targeted fauna survey was undertaken as follows:

– Nullagine - 27 to 29 April 2023 by GHD senior botanist Angela Benkovic (flora licence no. FB62000080-3) and GHD senior zoologist Glen Gaikhorst
– Cue, Meekatharra, Menzies, Sandstone and Wiluna – 28 April to 4 May 2023 by GHD senior ecologist Erin Lynch (flora licence no. FB62000081-3) and GHD botanist Lauren Taaffe (flora licence no. FB62000021-4)
– Gascoyne Junction – 3 to 5 May 2023 by GHD senior botanist/ecologist Joel Collins (flora licence no. FB62000200-2) and GHD zoologist Sarah Flemington
– Laverton - 24 to 26 May 2023 by GHD senior botanist/ecologist Joel Collins (flora licence no. FB62000200-2) and GHD zoologist Sarah Flemington.

2.2.2 Guiding documents

The survey methodology and data collection that GHD employed was consistent with:

– Environmental Protection Authority (EPA) *Technical Guidance – Flora and Vegetation Surveys for Environmental Impact Assessment* (EPA 2016a)
– EPA *Technical Guidance – Terrestrial vertebrate fauna surveys for environmental impact assessment* (EPA 2020)
– *EPA Technical Guidance – Sampling of short range endemic invertebrate fauna* (EPA 2016b)
– Department of Sustainability, Environment, Water, Population and Communities (DSEWPC) *Survey Guidelines for Australia's Threatened Mammals* (DSEWPC 2011a)
– DSEWPC *Survey Guidelines for Australia's Threatened Reptiles* (DSEWPC 2011b)
– DBCA Guidelines for surveys to detect the presence of bilbies, and assess the importance of habitat in Western Australia (DBCA 2017)

– Verifying Bilby presence and the systematic sampling of wild populations using sign based protocols – with notes on aerial and ground based techniques and asserting absence (Southgate et al 2018).

2.2.3 Data collection and storage

Field data collection for the flora, vegetation and fauna survey was undertaken using GPS enabled tablets using electronic forms in Collector and tailored to IBSA spatial data requirements. Data was synced to the cloud at the conclusion of each field day. Field photographs were stored and where applicable have been provided as part of the deliverables.

2.2.4 Detailed and Targeted flora and vegetation survey

The field survey was undertaken to identify and describe the broad dominant vegetation types, assess vegetation condition, and high intensity sampling of vascular flora taxa present at the time of survey. Searches for significant ecological communities and flora species were also undertaken during the field survey.

Field survey methods involved a combination of high intensity quadrat sampling and traversing the survey area by foot. Quadrats were conducted with each survey area to describe the broad-scale vegetation and physical features.

The following number of quadrats and/or releves were conducted across each survey site:

– Nullagine: 3 quadrats
– Cue: 7 quadrats, and 1 releve
– Meekatharra: 4 quadrats
– Menzies: 3 quadrats, and 1 releve
– Sandstone: 3 quadrats
– Wiluna: 6 quadrats
– Gascoyne Junction: 3 quadrats
– Laverton: 3 quadrats and 1 releve.

The quadrat and releve locations are presented in separate figures (Figure 3, Figure 9, Figure 15, Figure 21, Figure 27, Figure 33, Figure 39 and Figure 45) for each survey area and provided in Appendix A. The raw sampling data has been provided in Appendix D.

2.2.5 Basic and Targeted fauna survey

The Basic fauna and Targeted fauna survey was completed in association with the flora and vegetation survey. The survey areas were traversed by foot to identify and describe dominant fauna habitat types present, and their condition, and to assess habitat for significant fauna. Some sites were identified to require targeted assessment of Greater Bilby or Northern Shield-backed Trapdoor Spider. These assessments were undertaken alongside the Basic assessment which also identified and recorded fauna occurring in the area.

Habitat assessment

A fauna habitat assessment was undertaken to document the type, value and extent of habitats within the survey area. The following information was recorded:

– Habitat structure (e.g. vegetation type, presence/absence of structural layers such as ground cover and midstorey)
– Presence/absence of refuge including density of ground covers, fallen timber (course woody debris), rocks/boulder piles, and the type and extent of each refuge
– Presence/absence of waterways including type, extent and habitat quality within waterway
– Location of the habitat within the survey area in comparison to the habitat within the surrounding landscape
– Habitat connectivity and identification of wildlife corridors within and immediately adjacent to the survey area
– Current land use and disturbance history

– Evaluation of key habitat features and types identified during the desktop assessment relevant to significant fauna
– Evaluation of the likelihood of occurrence of significant fauna within the habitat (based on presence of suitable habitat)
– A representative photograph of each habitat-type.

Opportunistic fauna searches

Opportunistic fauna searches were conducted across the survey area. This included:

– Searching the survey area for tracks, scats, bones, diggings and feeding areas for native and feral species
– Searching through microhabitats including examining termite mounds, tree hollows and hollow logs and turning over leaf litter
– Visual and aural surveys, which accounted for all the bird species recorded utilising the habitats of the survey area at that time
– Recording GPS locations of significant fauna species.

Targeted Bilby searches

The Greater Bilby is recognised as a locally and regionally significant species in the Pilbara south western Kimberley, desert country in Western Australia, that requires targeted surveys. The sampling technique endorsed by the DAWE, references Southgate's methods of Greater Bilby Plot Assessments (Southgate et al. 2005), and the DBCA guidelines (DBCA 2017), which involves a transect assessment of the entire survey areas (if less than 5 ha) otherwise a 2 ha plot based method of sampling applies to a proportion of a given survey area (if larger than 5 ha).

The approach for the survey was to undertake transects of the Nullagine survey area, to detect any Greater Bilby activity, particularly any burrows of resident animals, but also secondary signs including tracks, scats and foraging digs. The survey area was traversed on foot to detect signs of Greater Bilby activity that would indicate its presence, and other information that assesses the detectability of Greater Bilby in an area (Southgate method). Searching was undertaken by GHD senior zoologist Glen Gaikhorst. Survey areas were walked across the entirety of the survey sites where vegetation density permitted, with space between transects approximately 30-50 m apart.

During the traverses, various information on the habitat characteristics was recorded in an excel spreadsheet on the handheld Tablet device to complete the Plot Assessments. The Plot Assessments when completed, provide two values that assess the trackability of Bilby, and the availability of Other Determining Signs (ODS), which will reflect if Bilby were able to be detected (if they were present) in the area. The plots provide an overall assessment of each of the survey sites.

The results and the information recorded for the Plot Assessments during the survey, is provided in Appendix E.

Targeted SRE Invertebrate searches

Short Range Endemic (SRE) invertebrate fauna surveys have also been considered for the survey areas located in the Murchison Bioregion (Menzies, Cue, Meekatharra, Wiluna, Laverton and Sandstone). An assessment of conservation significant invertebrates identified only one species, the Northern Shield-backed Trapdoor Spider *Idiosoma clypeatum* (Priority 3) has potential habitat in the region. *Idiosoma clypeatum* was previously known by the WAM identification code 'MYG018' and prior to the taxonomic revision of Rix et al. 2018 was often incorporated into *Idiosoma nigrum* that is now known to only occur in the northern Wheatbelt region of Western Australia (Rix et al. 2018).

The Murchison region is poorly surveyed for invertebrates and an absence of previously recorded species does not necessarily indicate an absence of potential SRE species. Therefore targeted searches for this species was undertaken in suitable habitats during the surveys.

The opportunistic SRE surveys has been prepared in accordance with the Technical Guidance Sampling of short range endemic invertebrate fauna (EPA 2016) for undertaking transects for Shield-backed trapdoor spiders to record opportunistic/visual records. No trapping is being proposed for SRE sampling. The targeted SRE survey was undertaken in conjunction with the flora and fauna survey.

2.3 Limitations

2.3.1 Desktop limitations

The EPBC Act PMST is based on bioclimatic modelling for the potential presence of species. As such, this does not represent actual records of the species within the survey area. The records from the DBCA searches of Threatened and Priority flora and fauna provide more accurate information for the general area and local occurrence. However, some collections, sighting or trapping records cannot be dated and often misrepresent the current range of Threatened and Priority species.

2.3.2 Field survey limitations

The EPA (2016, 2020) Technical Guidance states that flora and fauna survey reports for environmental impact assessment in WA should contain a section describing the limitations of the survey methods used. The limitations and constraints associated with this field survey are discussed in Table 2. Based on this assessment, the survey effort has not been subject to any constraints, which affect the thoroughness of the assessment or conclusions formed.

Table 2 Field survey limitations

Aspect	Constraint	Comment
Sources of information and availability of contextual information.	Nil	Adequate information is available across the survey areas which includes: - Broad scale (1:1,000,000) pre-European vegetation mapping of the area by Beard (1974; 1977) and digitised by Shepherd et al. (2002) - *NatureMap* (DBCA, 2007-).
Scope (what life forms were sampled etc.)	Nil	Vascular flora and terrestrial vertebrate fauna were sampled during the survey. Non-vascular flora, invertebrate and aquatic fauna were not surveyed.
Proportion of flora and fauna collected and identified (based on sampling, timing and intensity)	Minor	The single season Detailed flora and vegetation and Basic/Targeted fauna surveys were undertaken as follows: – Nullagine - 27 to 29 April 2023. – Cue, Meekatharra, Menzies, Sandstone and Wiluna – 28 April to 4 May 2023 – Gascoyne Junction – 3 to 5 May 2023 – Laverton - 24 to 26 May 2023. This is within the recommended timing for flora surveys in the Eremaean Province (EPA 2016). The flora recorded is detailed in the Vegetation and flora sections and full flora species lists are provided in Appendix D. The proportion of flora collected and identified was considered suitable for the purposes of the assessment of the survey area. The basic fauna surveys were undertaken to identify habitat types and terrestrial vertebrate fauna utilising the survey area. The fauna assessment sampled those species that can be easily seen, heard or have distinctive signs, such as tracks, scats, diggings, etc. Many cryptic species would not have been identified during a basic survey and seasonal variation within species often requires targeted surveys at a particular time of the year. Of the fauna species recorded during the survey, all were identified to species level.
Flora determination	Minor	Flora determination was undertaken by GHD botanists in the field and by GHD Senior botanist/taxonomist Pali Jayasekara. Specimens were also submitted to the WA Herbarium for professional ID where they were significant.

Aspect	Constraint	Comment
		Majority of flora were able to be identified to species level, and some only at genus level due to lack of flowering and/or fruiting material required for identification. None of these species are considered likely to be significant flora. The taxonomy and conservation status of the WA flora is dynamic. This report was prepared with reliance on taxonomy and conservation status current at the time of report development, but it should be noted this may change in response to ongoing research and review of the International Union for Conservation Nature criteria.
Completeness and further work which might be needed (e.g. was the relevant area fully surveyed	Nil	The entire survey area was traversed on foot and was adequately surveyed. An adequate number of floristic sampling sites were completed, where possible, for a detailed flora and vegetation survey. The following number of quadrats and/or releves were conducted across each survey site: – Nullagine: 3 quadrats – Cue: 7 quadrats, and 1 releve – Meekatharra: 4 quadrats – Menzies: 3 quadrats, and 1 releve – Sandstone: 3 quadrats – Wiluna: 6 quadrats – Gascoyne Junction: 3 quadrats – Laverton: 3 quadrats and 1 releve. Additional opportunistic sampling was undertaken through all the survey area to develop a comprehensive species inventory.
Mapping reliability	Nil	The vegetation types were mapped using high-resolution ESRI aerial imagery obtained from Landgate, topographical features, previous broad scale mapping (Beard 1977; 1974) and field data. Data was recorded in the field using hand-held GPS tools (e.g. Samsung tablet and Garmin GPS). Certain atmospheric factors and other sources of error can affect the accuracy of GPS receivers. The Garmin ® GPS units and Android ® tablets used for this survey are accurate to within ±5 m on average. Therefore, the data points consisting of coordinates recorded from the GPS may contain inaccuracies. However, the aerial imagery displayed on the interactive tablet surface allowed for greater accuracy as field staff could use key visual indicators (such as tree canopy's, cleared areas, fence line etc.) to more accurately locate points.
Timing/weather/ season/cycle	Minor	The field survey was undertaken in Autumn 2023 which is considered to be during the optimal season to undertake flora and vegetation surveys in the regions. The Laverton and Gascoyne Junction regions were experiencing drought conditions. This would have reduced the detectability of some flora. The remaining survey areas were not affected and conditions were fine for the survey.
Disturbances (e.g. fire, flood, accidental human intervention)	Nil	No disturbance had an impact on the results of the survey.
Intensity (in retrospect, was the intensity adequate)	Nil	The vascular flora of the survey area was sampled in accordance with EPA (2016) and terrestrial fauna sampled in accordance with EPA (2020). The survey area was sufficiently covered by the field ecologists during the survey.
Resources	Nil	Adequate resources were employed during the field survey. The person-days conducted at each site are: - Nullagine – 6 person days - Cue, Meekatharra, Menzies, Sandstone and Wiluna – 14 person days - Gascoyne Junction – 2 person days

Aspect	Constraint	Comment
		- Laverton – 2 person days
Access restrictions	Nil	The survey area was accessible by vehicle and traversed on foot.
Experience levels	Nil	All survey staff are suitably qualified and experienced: Senior botanist Angela Benkovic - 17 years' experience Senior zoologist Glen Gaikhorst – over 20 year's experience Senior ecologist Erin Lynch - over 15 years' experience Botanist Lauren Taaffe – 5 years experience Senior botanist/ecologist Joel Collins - over 20 year' experience Zoologist Sarah Flemington – 6 years experience

3. Desktop assessment - Nullagine

3.1 Location

The Nullagine survey area is located on the north-western side of Marble Bar Road in Nullagine. The survey area is approximately 6.06 ha (Figure 1, Appendix A).

3.2 Physical environment

Ecological and land use constraints for the Nullagine survey area are presented in Figure 2, Appendix A.

3.2.1 Climate

The Pilbara is characterised by very hot summers, mild winters and low and variable rainfall. Rainfall in the eastern Pilbara is mostly influenced by tropical and monsoonal drivers, which are predominantly active in summer and autumn (Sudmeyer 2016). The closest BoM weather station to Nullagine with sufficient historical temperature data is Marble Bar, located 120 km north (site number 004106). Noreena Downs (site number 004026) is located 62 km from Nullagine and is the closest station with historical rainfall data.

Temperature data from Marble Bar station indicates the mean maximum temperature ranges from 40.8 °C in January to 27.1 °C in July. The mean minimum temperature ranges from 12.2 °C in July to 26.5 °C in January. Rainfall data from Noreena Downs shows the mean annual rainfall in the area as 328.1 mm (BoM 2023).

3.2.2 Land systems and soil

The Pilbara region has been surveyed by the Department of Primary Industries and Regional Development (DPIRD) and others for the purposes of land classification, mapping and resource evaluation. One hundred and two land systems have been described for the region, which are distinguished on the basis of topography, geology, soils and vegetation (van Vreeswyk et al. 2004). The survey area occurs on the Mosquito Land System, described in Table 3.

Table 3 Land system mapped for Nullagine survey area

Land system	Description	Geology	Geomorphology
Mosquito	Gently undulating stony plains and prominent ridges and hills (relief up to 100 m) of schist and other metamorphic rocks, largely restricted to a large single area to the east of Nullagine.	Archaean schist, greywacke, gabbro and minor conglomerate.	Formed by erosional surfaces; stony plains and pediments with prominent ridges and hills with steep upper slopes and short more gently inclined foot slopes, moderately spaced tributary flow lines and channels. Relief up to 100 m.

3.3 Land use

3.3.1 Conservation reserves and estates

No DBCA managed conservation area occur within the survey area or wider study area.

3.3.2 Environmentally sensitive area

No ESAs are located within the survey area or study area. The closest ESA is located approximately 79 km south; no.7010 and associated with the Fortescue Marsh (Marsh Land System).

3.4 Hydrology

The GoWA (2023) data layers identified the water resource aspects present in the study area. These are detailed below in Table 4.

Table 4 Hydrology aspects within the study area

Aspect	Details	Results
Groundwater Areas	Groundwater areas proclaimed under the RIWI Act	Pilbara Groundwater Area
Surface Water Areas	Surface water areas proclaimed under the RIWI Act	Pilbara Surface Water Area
Irrigation District	Irrigation Districts proclaimed under the RIWI Act	Pilbara Surface Water Area
Public Drinking Water Source Areas (PDWSA)	PDWSA is a collective term used for the description of Water Reserves, Catchment Areas and Underground Pollution Control Areas declared (gazetted) under the provisions of the *Country Area Water Supply Act 1947*	Nullagine Water Reserve, Priority 1

3.4.1 Wetlands

There are no wetlands of significance located within or in close vicinity to the survey area. The closest significant wetland is the Fortescue Marsh approximately 79 km south of the survey area. The closest Wetland of International Importance (Ramsar Wetland) is Eighty Mile Beach, 210 km north of the survey area.

3.5 Vegetation and flora

3.5.1 Regional biogeography

The project area is located in the Pilbara bioregion and Chichester sub-region as described by Interim Biogeographic Regionalisation of Australia (IBRA). The Pilbara bioregion is characterised by vast coastal plains and inland mountain ranges with cliffs and deep gorges. Vegetation is predominantly mulga low woodlands or snappy gum over bunch and hummock grasses (Bastin G and the ACRIS Management Committee 2008).

The subregion comprises the northern section of the Pilbara Craton. Undulating Archaean granite and basalt plains include significant areas of basaltic ranges. The climate is semi-desert-tropical and receives 300mm of rainfall annually. Plains support a shrub steppe characterised by *Acacia inaequilatera* over *Triodia wiseana* hummock grasslands, while *Eucalyptus leucophloia* tree steppes occur on ranges (Kendrick & McKenzie 2001)

3.5.2 Broad vegetation mapping and extent

Broad scale (1:1,000,000) pre-European vegetation mapping of the area was completed by Beard (1977) at an association level. The mapping indicates that one vegetation association is present within the survey area. Vegetation association 190- Hummock grassland with sparse shrubs *Triodia* spp. *Acacia* spp.

The pre-European mapping has been adapted and digitised by Shepherd et al. (2002). The extent of vegetation associations have been determined by the state-wide vegetation remaining extent calculations maintained by DBCA (GoWA 2019). As shown in Table 5, the current extent remaining of vegetation association 190 is greater than 99% of their calculated pre-European extents at all scales (e.g. State, IBRA bioregion, IBRA subregion and Local Government Area (LGA)).

Table 5 Extent of pre-European vegetation association mapped within the survey area (GoWA 2019)

Vegetation association	Scale	Pre-European extent (ha)	Current extent (ha)	Remaining (%)	% Current extent in all DBCA managed land (proportion of Current Extent)
190	State: Western Australia	169,199.72	169,051.00	99.91	Not available
	IBRA bioregion: Pilbara	169,199.72	169,051.00	99.91	Not available
	IBRA Subregion: Chichester (PIL01)	169,199.72	169,051.00	99.91	Not available
	LGA: Shire of East Pilbara	169,199.72	169,051.00	99.91	Not available

3.5.3 Significant ecological communities

The EPBC Act PMST did not identify any EPBC Act listed TECs within the study area. The DBCA TEC and PEC database identified two PECs occurring within the study area:

– Wona Land System -Four plant assemblages of the Wona Land System (previously 'Cracking clays of the Chichester and Mungaroona Range'). A Priority 1 (P1) community with ten occurrences within the study area
– Mosquito Land System - Stony saline clay plains of the Mosquito Land System. A Priority 3 (P3) community with 4 occurrences within the study area

The survey area is located within one of the P3 Mosquito Land System communities (ID # 3738) (Figure 2, Appendix A).

3.5.4 Flora diversity

The *NatureMap* database identified 290 flora taxa previously recorded within the study area (DBCA 2007-). The *NatureMap* database search for flora is provided in Appendix C.

3.5.5 Significant flora

The EPBC Act PMST and DBCA *NatureMap*, WAHERB and TPFL databases identified the presence/potential presence of 11 significant taxa within a 20 km buffer of the survey area. The desktop searches recorded:

– Seven Priority 1 taxa
– One Priority 2 taxa
– One Priority 3 taxa
– Two Priority 4 taxa.

The locations of significant flora registered on the DBCA databases are mapped in Figure 2, Appendix A.

3.6 Fauna

3.6.1 Fauna diversity

The *NatureMap* database identified 230 fauna species previously recorded within 20 km of the project area. This total comprised 123 birds, 73 reptiles, 31 mammals and three amphibians. The *NatureMap* database search is provided in Appendix C.

3.6.2 Significant fauna

The EPBC Act PMST, *NatureMap* and DBCA Threatened Fauna databases identified the presence/potential presence of 25 conservation significant fauna within the study area. This total comprised 16 birds, three reptiles and six mammals.

The locations of significant fauna registered on the DBCA databases are mapped in Figure 2, Appendix A.

4. Desktop assessment - Cue

4.1 Location

The Cue survey area is located just north of the town of Cue, in the mid-west region of WA. The survey area is approximately 45.79 ha (Figure 7, Appendix A).

4.2 Physical environment

Ecological and land use constraints for the Cue survey area are presented in Figure 8, Appendix A.

4.2.1 Climate

The Murchison is characterised by an arid climate, with mainly Winter rainfall (Cowan 2001). The closest BoM weather station to Cue with sufficient historical temperature data is Mount Magnet Aero, located approximately 72 km south (site number 007600). Cue (site number 007017) is located 4 km from Cue and is the closest station with historical rainfall data.

Temperature data from Mount Magnet Aero station indicates the mean maximum temperature ranges from 37.8 °C in January to 18.4 °C in July. The mean minimum temperature ranges from 23.5°C in January to 7.2°C in July. Rainfall data from Noreena Downs shows the mean annual rainfall in the area as 232.5 mm (BoM 2023).

4.2.2 Land systems and soil

The survey area is located within two land systems; the Austin system (273Au) and the Sherwood system (273Sh) (GoWA 2023). These are described in Table 6.

Table 6 Land systems mapped for Cue survey area

Land system	Description
Austin (273Au)	Saline stony plains with low rises and drainage foci supporting low halophytic shrublands with scattered mulga and snakewood.
Sherwood system (273Sh)	Breakaways, kaolinized foot slopes and extensive gently sloping plains on granite supporting mulga shrublands and minor halophytic shrublands.

4.3 Land use

4.3.1 Conservation reserves and estates

No DBCA managed conservation areas occur within the survey area or wider study area.

4.3.2 Environmentally sensitive area

One ESA is located within the survey area and four ESAs are located within the study area, within 900 m of the survey area. These ESAs are all associated with the location of Threatened (T) flora, *Eremophila rostrata* subsp. *rostrata*. (Figure 8, Appendix A). No other ESAs are located within the 20 km study area (GoWA 2023).

4.4 Hydrology

The GoWA (2023) data layers identified the water resource aspects present in the study area. These are detailed below in Table 7.

Table 7 Hydrology aspects within the study area

Aspect	Details	Results
Groundwater Areas	Groundwater areas proclaimed under the RIWI Act	East Murchison Groundwater Area is present within the survey area
Surface Water Areas	Surface water areas proclaimed under the RIWI Act	None present within the survey area or study area
Irrigation District	Irrigation Districts proclaimed under the RIWI Act	None present within the survey area or study area
Public Drinking Water Source Areas (PDWSA)	PDWSA is a collective term used for the description of Water Reserves, Catchment Areas and Underground Pollution Control Areas declared (gazetted) under the provisions of the *Country Area Water Supply Act 1947*	Cue Water Reserve (UFI:167), Priority 1 (located 4.6 km east of the survey area) and Cue Water Reserve (UFI:166), Priority 3 (located 6.2 km north east of the survey area)

4.4.1 Wetlands

There are no wetlands of significance located within the survey area or study area.

4.5 Vegetation and flora

4.5.1 Regional biogeography

The project area is located in the Murchison bioregion and the Eastern Murchison sub-region as described by IBRA. The Murchison bioregion is characterised by low hills and mesas separated by flat colluvium and alluvial plains. Vegetation is predominantly low mulga woodlands (Bastin G and the ACRIS Management Committee 2008).

The subregion comprises the northern parts of the Yilgarn Craton. Characterised by internal drainage, extensive areas of elevated red desert sandplains with minimal dune development, salt lake systems and broad plains of red-brown soils. Vegetation is dominated by mulga woodlands often rich in ephemerals, hummock grasslands, saltbush shrublands and *Tecticornia* shrublands (Cowan 2001).

4.5.2 Broad vegetation mapping and extent

Broad scale (1:1,000,000) pre-European vegetation mapping of the area was completed by Beard (1974) at an association level. The mapping indicates that one vegetation association is present within the survey area. Vegetation association 313- Succulent steppe with open shrub; scattered *Acacia sclerosperma* and *A. victoriae* over bluebush.

The pre-European mapping has been adapted and digitised by Shepherd et al. (2002). The extent of vegetation associations have been determined by the state-wide vegetation remaining extent calculations maintained by DBCA (GoWA 2019). As shown in Table 8, the current extent remaining of vegetation association 313 is greater than 94% of their calculated pre-European extents at all scales (e.g. State, IBRA bioregion, IBRA subregion and LGA. This database has not been updated since 2019 and may not reflect accurate current extents remaining.

Table 8 Extent of pre-European vegetation association mapped within the survey area (GoWA 2019)

Vegetation association	Scale	Pre-European extent (ha)	Current extent (ha)	Remaining (%)	% Current extent in all DBCA managed land (proportion of Current Extent)
313	State: Western Australia	68,843.52	65,261.44	94.80	0.00
	IBRA bioregion: Murchison	68,843.52	65,261.44	94.80	0.00
	IBRA Subregion: Eastern Murchison (MUR01)	68,843.52	65,261.44	94.80	0.00
	LGA: Shire of Cue	40,806.58	37,979.08	93.07	0.00

4.5.3 Significant ecological communities

The EPBC Act PMST did not identify any EPBC Act listed TECs within the study area. The DBCA TEC and PEC database identified one PECs occurring within the survey area and two additional PECs occurring within the study area:

– Austin Land System (Priority 3) - Saline stony plains with low rises and drainage foci supporting low halophytic shrublands with scattered mulga; occurs mainly adjacent to lakes Austin and Annean below greenstone hill systems. This PEC occurs within the entirety of the survey area
– Taincrow Calcrete groundwater assemblage types on Gascoyne palaeodrainage on Three Rivers Station (Priority 1) - unique assemblages of invertebrates have been identified in the groundwater calcretes. This PEC occurs approximately 6.5 km north west of the survey area
– Lake Austin calcrete groundwater assemblage type on Murchison palaeodrainage on Austin Downs Station (Priority 1) - Unique assemblages of invertebrates have been identified in the groundwater calcretes. This PEC occurs approximately 11 km west of the survey area.

The survey area is located within the P3 Austin land system PEC (ID # 105207) (Figure 8, Appendix A).

4.5.4 Flora diversity

The *NatureMap* database identified 329 flora taxa previously recorded within the study area (DBCA 2007-). The *NatureMap* database search for flora is provided in Appendix C.

4.5.5 Significant flora

The EPBC Act PMST and DBCA *NatureMap*, WAHERB and TPFL databases identified the presence/potential presence of 20 significant taxa within a 20 km buffer of the survey area. The desktop searches recorded:

– One Threatened taxon
– One taxon listed as Threatened under the EPBC Act and P1 by DBCA
– Two Priority 1 taxa
– Four Priority 2 taxa
– Eight Priority 3 taxa
– Four Priority 4 taxa.

The locations of significant flora registered on the DBCA databases are mapped in Figure 8, Appendix A.

4.6 Fauna

4.6.1 Fauna diversity

The *NatureMap* database identified 241 fauna species previously recorded within 20 km of the project area. This total comprised 183 birds, 26 reptiles, 12 mammals, 19 invertebrates and one amphibian. The *NatureMap* database search is provided in Appendix C.

4.6.2 Significant fauna

The EPBC Act PMST, DBCA database and *NatureMap* database identified the presence/potential presence of 26 conservation significant fauna within the study area. This total does not include those species that are exclusively marine as no marine habitat is present within the survey area or study area. The desktop searches recorded:

– Six EPBC and/or DBCA (BC Act)- listed Threatened fauna taxa
– 14 Migratory taxa protected under international agreement
– One DBCA Other Specially Protected (OS) fauna taxon
– One DBCA Priority 1 fauna taxon
– One DBCA Priority 3 fauna taxa

– Three DBCA Priority 4 fauna taxa.

This total comprised 22 birds, two reptiles, one invertebrate and one mammal. The locations of significant fauna registered on the DBCA databases are mapped in Figure 8, Appendix A.

5. Desktop assessment - Meekatharra

5.1 Location

The Meekatharra survey area is located directly west of Meekatharra townsite, north of Landor-Meekatharra Road. The survey area is approximately 29.35 ha (Figure 13, Appendix A).

5.2 Physical environment

5.2.1 Climate

The Murchison is characterised by an arid climate, with mainly Winter rainfall (Cowan 2001). The closest BoM weather station to Meekatharra with sufficient historical temperature data is Meekatharra Airport, located approximately 32 km of the townsite (site number 007045). Meekatharra station (site number 007149) is located 1.2 km from Cue townsite and is the closest station with historical rainfall data.

Temperature data from Meekatharra Airport indicates the mean maximum temperature ranges from 38.4 °C in January to 19.3 °C in July. The mean minimum temperature ranges from 24.4°C in January to 7.5°C in July. Rainfall data from Meekatharra shows the mean annual rainfall in the area as 234.1 mm (BoM 2023).

5.2.2 Land systems and soil

The survey area is located within one land systems; the Wiluna system (272Wi) (GoWA 2023). This system is described in Table 9.

Table 9 Land system mapped for Meekatharra survey area

Land system	Description
Wiluna system (2732Au)	Low greenstone hills with occasional lateritic breakaways and broad stony slopes, lower saline stony plains and broad drainage tracts; supporting sparse mulga and other *Acacia* shrublands with patches of halophytic shrubs

5.3 Land use

5.3.1 Conservation reserves and estates

No DBCA managed conservation areas occur within the survey area or wider study area.

5.3.2 Environmentally sensitive area

No ESAs are located within the survey area or wider study area.

5.4 Hydrology

The GoWA (2023) data layers identified the water resource aspects present in the study area. These are detailed below in Table 10.

Table 10 Hydrology aspects within the study area

Aspect	Details	Results
Groundwater Areas	Groundwater areas proclaimed under the RIWI Act	East Murchison Groundwater Area is present within the survey area

Aspect	Details	Results
Surface Water Areas	Surface water areas proclaimed under the RIWI Act	None present within the survey area or study area
Irrigation District	Irrigation Districts proclaimed under the RIWI Act	None present within the survey area or study area
Public Drinking Water Source Areas (PDWSA)	PDWSA is a collective term used for the description of Water Reserves, Catchment Areas and Underground Pollution Control Areas declared (gazetted) under the provisions of the *Country Area Water Supply Act 1947*	Meekatharra Water Reserve (UFI:213), Priority 1 (located approximately 7 km east of the survey area)

5.4.1 Wetlands

There are no wetlands of significance located within the survey area or study area.

5.5 Vegetation and flora

5.5.1 Regional biogeography

The project area is located in the Murchison bioregion and the Western Murchison sub-region as described by IBRA. The Murchison bioregion is characterised by low hills and mesas separated by flat colluvium and alluvial plains. Vegetation is predominantly low mulga woodlands (Bastin G and the ACRIS Management Committee 2008).

The subregion comprises the northern parts of the 'Murchison' terrains of the Yilgarn Craton. Characterised by Mulga low woodlands, rich in ephemerals located on outcrop and fine-textured Quaternary alluvial and eluvial surfaces (extensive hardpan washplains that dominate and characterise the subregion). Surfaces associated with the occluded drainage occur throughout with hummock grasslands on Quaternary sandplains, saltbush shrublands on calcareous soils and *Tecticornia* low shrublands on saline alluvia (Desmond et al. 2001).

5.5.2 Broad vegetation mapping and extent

Broad scale (1:1,000,000) pre-European vegetation mapping of the area was completed by Beard (1974) at an association level. The mapping indicates that one vegetation association is present within the survey area. Vegetation association 18- Low woodland; mulga (*Acacia aneura*).

The pre-European mapping has been adapted and digitised by Shepherd et al. (2002). The extent of vegetation associations have been determined by the state-wide vegetation remaining extent calculations maintained by DBCA (GoWA 2019). As shown in Table 11, the current extent remaining of vegetation association 18 is greater than 99% of their calculated pre-European extents at all scales (e.g. State, IBRA bioregion, IBRA subregion and LGA. This database has not been updated since 2019 and may not reflect accurate current extents remaining.

Table 11 Extent of pre-European vegetation association mapped within the survey area (GoWA 2019)

Vegetation association	Scale	Pre-European extent (ha)	Current extent (ha)	Remaining (%)	% Current extent in all DBCA managed land (proportion of Current Extent)
18	State: Western Australia	19,892,306.46	19,843,148.07	99.75	6.64
	IBRA bioregion: Murchison	12,403,172.30	12,363,252.47	99.68	4.97
	IBRA Subregion: Western Murchison (MUR02)	2,133,275.86	2,128,414.25	99.77	4.20
	LGA: Shire of Meekatharra	3,117,900.46	3,111,264.68	99.79	11.11

5.5.3 Significant ecological communities

The EPBC Act PMST did not identify any EPBC Act listed TECs within the study area. The DBCA TEC and PEC database did not identify any TECs or PECs occurring within the survey area. However, three PECs were identified as occurring within the study area:

– Austin Land System (Priority 3) - Saline stony plains with low rises and drainage foci supporting low halophytic shrublands with scattered mulga; occurs mainly adjacent to lakes Austin and Annean below greenstone hill systems. This PEC occurs approximately 7.3 km north west of the survey area
– Trillbar Land System (Priority 3) - Gently sloping stony plains with low rises of metamorphic rocks and gilgaied drainage foci; supports more or less saline shrublands of snakewood, mulga, bluebush and samphire with patches of tussock grassland. This PEC occurs approximately 12.8 km south east of the survey area
– Yagahong Land System (Priority 3) - Rough greenstone ridges, hills and cobble-strewn footslopes supporting mulga shrublands. This PEC occurs approximately 14.5 km north east and 15.2 km south west of the survey area.

The locations of these PECs are shown in Figure 14, Appendix A.

5.5.4 Flora diversity

The *NatureMap* database identified 345 flora taxa previously recorded within the study area (DBCA 2007-). The *NatureMap* database search for flora is provided in Appendix C.

5.5.5 Significant flora

The EPBC Act PMST and DBCA *NatureMap*, WAHERB and TPFL databases identified the presence/potential presence of 12 significant taxa within a 20 km buffer of the survey area. The desktop searches recorded:

– Two Priority 1 taxa
– Eight Priority 3 taxa
– Two Priority 4 taxa.

The locations of significant flora registered on the DBCA databases are mapped in Figure 14, Appendix A.

5.6 Fauna

5.6.1 Fauna diversity

The *NatureMap* database identified 123 fauna species previously recorded within 20 km of the project area. This total comprised 83 birds, 25 reptiles, six mammals, eight invertebrates and one amphibian. The *NatureMap* database search is provided in Appendix C.

5.6.2 Significant fauna

The EPBC Act PMST, DBCA database and *NatureMap* database identified the presence/potential presence of 18 conservation significant fauna within the study area. This total does not include those species that are exclusively marine as no marine habitat is present within the survey area or study area. The desktop searches recorded:

– Five EPBC and/or DBCA (BC Act)- listed Threatened fauna taxa (one of which is listed under international agreement)
– Ten Migratory taxa protected under international agreement
– One DBCA Other Specially Protected (OS) fauna taxon
– One DBCA Priority 1 fauna taxon
– One DBCA Priority 4 fauna taxon.

This total comprised 16 birds, one reptile and one mammal. The locations of significant fauna registered on the DBCA databases are mapped in Figure 14, Appendix A.

6. Desktop assessment - Menzies

6.1 Location

The Menzies survey area is located directly east of Menzies townsite, along Mahon Street and east of Mahon Street 5.78 ha (Figure 19, Appendix A).

6.2 Physical environment

6.2.1 Climate

The Murchison is characterised by an arid climate, with mainly Winter rainfall (Cowan 2001). The closest BoM weather station to Menzies with sufficient historical temperature data is Leonora Aero, located approximately 91 km from Menzies (site number 012241). Menzies (site number 012052) is located 1.1 km from Menzies townsite and is the closest weather station with historical rainfall data.

Temperature data from Leonora Aero indicates the mean maximum temperature ranges from 36.9 °C in January to 19.3 °C in July. The mean minimum temperature ranges from 22.7°C in January to 6.1°C in July. Rainfall data from Menzies shows the mean annual rainfall in the area as 249.9 mm (BoM 2023).

6.2.2 Land systems and soil

The survey area is located within one land systems; the Moriarty system (265Mo) (GoWA 2023). This system is described in Table 12.

Table 12 Land system mapped for Menzies survey area

Land system	Description
Moriarty system (265Mo)	Low greenstone rises and stony plains supporting chenopod shrublands with patchy eucalypt overstoreys

6.3 Land use

6.3.1 Conservation reserves and estates

No DBCA managed conservation areas occur within the survey area or wider study area.

6.3.2 Environmentally sensitive area

No ESAs are located within the survey area. One ESA is located within the study area, this ESA is located approximately 17 km north of the survey area and is associated with Lake Ballard, an WA listed important wetland.

6.4 Hydrology

The GoWA (2023) data layers identified the water resource aspects present in the study area. These are detailed below in Table 13.

Table 13 Hydrology aspects within the study area

Aspect	Details	Results
Groundwater Areas	Groundwater areas proclaimed under the RIWI Act	Goldfields Groundwater Area is present within the survey area

Aspect	Details	Results
Surface Water Areas	Surface water areas proclaimed under the RIWI Act	None present within the survey area or study area
Irrigation District	Irrigation Districts proclaimed under the RIWI Act	None present within the survey area or study area
Public Drinking Water Source Areas (PDWSA)	PDWSA is a collective term used for the description of Water Reserves, Catchment Areas and Underground Pollution Control Areas declared (gazetted) under the provisions of the *Country Area Water Supply Act 1947*	None are present within the survey area. Four PDWSAs occur within the study area: – Menzies Water Reserve (UFI: 892), Priority 1 (located approximately 800 m east of the survey area) – Menzies Water Reserve (UFI: 893) Priority 2 (located approximately 3.5 km from the survey area) – Menzies Water Reserve (UFI: 890), Priority 1 (located approximately 4.8 km east of the survey area) – Menzies Water Reserve (UFI: 889), Priority 1 (located approximately 4.5 km north east of the survey area)

6.4.1 Wetlands

No wetlands of significance occur within the survey area. One wetland, Lake Ballard, is located approximately 17 km north of the survey area and is listed under the directory of important wetlands and as a draft proposed Ramsar wetland.

6.5 Vegetation and flora

6.5.1 Regional biogeography

The project area is located in the Murchison bioregion and the Eastern Murchison sub-region as described by IBRA. The Murchison bioregion is characterised by low hills and mesas separated by flat colluvium and alluvial plains. Vegetation is predominantly low mulga woodlands (Bastin G and the ACRIS Management Committee 2008).

The subregion comprises the northern parts of the Yilgarn Craton. Characterised by internal drainage, extensive areas of elevated red desert sandplains with minimal dune development, salt lake systems and broad plains of red-brown soils. Vegetation is dominated by mulga woodlands often rich in ephemerals, hummock grasslands, saltbush shrublands and Tecticornia shrublands (Cowan 2001).

6.5.2 Broad vegetation mapping and extent

Broad scale (1:1,000,000) pre-European vegetation mapping of the area was completed by Beard (1974) at an association level. The mapping indicates that one vegetation association is present within the survey area. Vegetation association 251- Low woodland; mulga & *Casuarina pauper*

The pre-European mapping has been adapted and digitised by Shepherd et al. (2002). The extent of vegetation associations have been determined by the state-wide vegetation remaining extent calculations maintained by DBCA (GoWA 2019). As shown in Table 14, the current extent remaining of vegetation association 251 is greater than 99% of their calculated pre-European extents at all scales (e.g. State, IBRA bioregion, IBRA subregion and LGA. This database has not been updated since 2019 and may not reflect accurate current extents remaining.

Table 14 Extent of pre-European vegetation association mapped within the survey area (GoWA 2019)

Vegetation association	Scale	Pre-European extent (ha)	Current extent (ha)	Remaining (%)	% Current extent in all DBCA managed land (proportion of Current Extent)
251	State: Western Australia	173,096.19	172,864.64	99.87	69.71
	IBRA bioregion: Murchison	58,012.00	57,780.45	99.60	9.37
	IBRA Subregion: Eastern Murchison (MUR01)	58,012.00	57,780.45	99.60	9.37
	LGA: Shire of Menzies	173,096.19	172,864.64	99.87	69.71

6.5.3 Significant ecological communities

The EPBC Act PMST did not identify any EPBC Act listed TECs within the study area. The DBCA TEC and PEC database did not identify any TECs or PECs occurring within the survey area or study area.

6.5.4 Flora diversity

The *NatureMap* database identified 259 flora taxa previously recorded within the study area (DBCA 2007-). The *NatureMap* database search for flora is provided in Appendix C.

6.5.5 Significant flora

The EPBC Act PMST and DBCA *NatureMap*, WAHERB and TPFL databases identified the presence/potential presence of 14 significant taxa within a 20 km buffer of the survey area. The desktop searches recorded:

– Three Threatened taxa
– One Priority 1 taxon
– Two Priority 2 taxa
– Seven Priority 3 taxa
– One Priority 4 taxon.

The locations of significant flora registered on the DBCA databases are mapped in Figure 20, Appendix A.

6.6 Fauna

6.6.1 Fauna diversity

The *NatureMap* database identified 145 fauna species previously recorded within 20 km of the project area. This total comprised 74 birds, 46 reptiles, 11 mammals and 14 invertebrates. The *NatureMap* database search is provided in Appendix C.

6.6.2 Significant fauna

The EPBC Act PMST, DBCA database and *NatureMap* database identified the presence/potential presence of 12 conservation significant fauna within the study area. This total does not include those species that are exclusively marine as no marine habitat is present within the survey area or study area. The desktop searches recorded:

– Six EPBC and/or DBCA (BC Act)- listed Threatened fauna taxa
– Five Migratory taxa protected under international agreement
– One DBCA Priority 1 fauna taxon.

This total comprised 10 birds, one reptile and one mammal. The locations of significant fauna registered on the DBCA databases are mapped in Figure 20, Appendix A.

7. Desktop assessment - Sandstone

7.1 Location

The Sandstone survey area is located adjacently north west of Sandstone townsite, on Sandstone- Wiluna Road 5.90 ha (Figure 25, Appendix A).

7.2 Physical environment

7.2.1 Climate

The Murchison is characterised by an arid climate, with mainly Winter rainfall (Cowan 2001). The closest BoM weather station to Sandstone with sufficient historical temperature data is Bulga downs, located approximately 70 km from Sandstone (site number 012239). Sandstone (site number 012072) is located 0.4 km from Sandstone townsite and is the closest weather station with historical rainfall data.

Temperature data from Bulga Downs indicates the mean maximum temperature ranges from 37.9 °C in January to 19.5 °C in July. The mean minimum temperature ranges from 22.3°C in January to 4.8°C in July. Rainfall data from Sandstone shows the mean annual rainfall in the area as 249.7 mm (BoM 2023).

7.2.2 Land systems and soil

The survey area is located within one land systems; the Violet system (279Vi) (GoWA 2023). This system is described in Table 15.

Table 15 Land system mapped for Sandstone survey area

Land system	Description
Violet system (279Vi)	Gently undulating gravelly plains on greenstone, laterite and hardpan, with low stony rises and minor saline plains; supporting groved mulga and bowgada shrublands and occasionally chenopod shrublands

7.3 Land use

7.3.1 Conservation reserves and estates

No DBCA managed conservation areas occur within the survey area or wider study area.

7.3.2 Environmentally sensitive area

No ESAs are located within the survey area or wider study area.

7.4 Hydrology

The GoWA (2023) data layers identified the water resource aspects present in the study area. These are detailed below in Table 16.

Table 16 Hydrology aspects within the study area

Aspect	Details	Results
Groundwater Areas	Groundwater areas proclaimed under the RIWI Act	East Murchison Groundwater Area is present within the survey area

Aspect	Details	Results
Surface Water Areas	Surface water areas proclaimed under the RIWI Act	None present within the survey area or study area
Irrigation District	Irrigation Districts proclaimed under the RIWI Act	None present within the survey area or study area
Public Drinking Water Source Areas (PDWSA)	PDWSA is a collective term used for the description of Water Reserves, Catchment Areas and Underground Pollution Control Areas declared (gazetted) under the provisions of the *Country Area Water Supply Act 1947*	None are present within the survey area. One PDWSAs occur within the study area, Sandstone water reserve (UFI: 919) (Priority 1) occurs approximately 1 km north of the survey area

7.4.1 Wetlands

No wetlands of significance occur within the survey area or study area.

7.5 Vegetation and flora

7.5.1 Regional biogeography

The project area is located in the Murchison bioregion and the Eastern Murchison sub-region as described by IBRA. The Murchison bioregion is characterised by low hills and mesas separated by flat colluvium and alluvial plains. Vegetation is predominantly low mulga woodlands (Bastin G and the ACRIS Management Committee 2008).

The subregion comprises the northern parts of the Yilgarn Craton. Characterised by internal drainage, extensive areas of elevated red desert sandplains with minimal dune development, salt lake systems and broad plains of red-brown soils. Vegetation is dominated by mulga woodlands often rich in ephemerals, hummock grasslands, saltbush shrublands and Tecticornia shrublands (Cowan 2001).

7.5.2 Broad vegetation mapping and extent

Broad scale (1:1,000,000) pre-European vegetation mapping of the area was completed by Beard (1974) at an association level. The mapping indicates that one vegetation association is present within the survey area. Vegetation association 2121- Mosaic: Open low woodland; mulga / Succulent steppe; saltbush & bluebush on greenstone.

The pre-European mapping has been adapted and digitised by Shepherd et al. (2002). The extent of vegetation associations have been determined by the state-wide vegetation remaining extent calculations maintained by DBCA (GoWA 2019). As shown in Table 17, the current extent remaining of vegetation association 2121 is greater than 98% of their calculated pre-European extents at all scales (e.g. State, IBRA bioregion, IBRA subregion and LGA. This database has not been updated since 2019 and may not reflect accurate current extents remaining.

Table 17 Extent of pre-European vegetation association mapped within the survey area (GoWA 2019)

Vegetation association	Scale	Pre-European extent (ha)	Current extent (ha)	Remaining (%)	% Current extent in all DBCA managed land (proportion of Current Extent)
2121	State: Western Australia	124,419.03	123,396.04	99.18	N/A
	IBRA bioregion: Murchison	124,419.03	123,396.04	99.18	N/A
	IBRA Subregion: Eastern Murchison (MUR01)	124,419.03	123,396.04	99.18	N/A
	LGA: Shire of Sandstone	98,705.38	97,708.41	98.99	N/A

7.5.3 Significant ecological communities

The EPBC Act PMST did not identify any EPBC Act listed TECs within the study area. The DBCA TEC and PEC database did not identify any TECs or PECs occurring within the survey area or study area.

7.5.4 Flora diversity

The *NatureMap* database identified 236 flora taxa previously recorded within the study area (DBCA 2007-). The *NatureMap* database search for flora is provided in Appendix C.

7.5.5 Significant flora

The EPBC Act PMST and DBCA *NatureMap*, WAHERB and TPFL databases identified the presence/potential presence of six significant taxa within a 20 km buffer of the survey area. The desktop searches recorded:

– One Threatened taxa
– One Priority 1 taxon
– Four Priority 3 taxa.

The locations of significant flora registered on the DBCA databases are mapped in Figure 26, Appendix A.

7.6 Fauna

7.6.1 Fauna diversity

The *NatureMap* database identified 104 fauna species previously recorded within 20 km of the project area. This total comprised 70 birds, 17 reptiles, four mammals, eight invertebrates and five amphibians. The *NatureMap* database search is provided in Appendix C.

7.6.2 Significant fauna

The EPBC Act PMST, DBCA database and *NatureMap* database identified the presence/potential presence of 15 conservation significant fauna within the study area. This total does not include those species that are exclusively marine as no marine habitat is present within the survey area or study area. The desktop searches recorded:

– Five EPBC and/or DBCA (BC Act)- listed Threatened fauna taxa
– Six Migratory taxa protected under international agreement
– Three DBCA Priority 4 taxa
– One Other Specially Protected (OS) fauna taxon.

This total was comprised of 13 birds and 2 mammals. The locations of significant fauna registered on the DBCA databases are mapped in Figure 26, Appendix A.

8. Desktop assessment - Wiluna

8.1 Location

The Wiluna survey area is located approximately 400 m west of Wiluna townsite, north of Thompson Street. The total survey area is 15.98 ha (Figure 31, Appendix A).

8.2 Physical environment

8.2.1 Climate

The Murchison is characterised by an arid climate, with mainly Winter rainfall (Cowan 2001). The closest BoM weather station to Wiluna with sufficient historical temperature data is Leinster Aero, located approximately 144 km from Wiluna (site number 012314). Packsaddle Farm (site number 013039) is located 11 km from Wiluna townsite and is the closest weather station with historical rainfall data.

Temperature data from Leinster Aero indicates the mean maximum temperature ranges from 37.3 °C in January to 19.0 °C in July. The mean minimum temperature ranges from 23.2°C in January to 6.2°C in July. Rainfall data from Sandstone shows the mean annual rainfall in the area as 292.8 mm (BoM 2023).

8.2.2 Land systems and soil

The survey area is located within one land systems; the Wiluna system (279Wi) (GoWA 2023). This system is described in Table 18.

Table 18 Land system mapped for Wiluna survey area

Land system	Description
Wiluna system (279Wi)	Low greenstone hills with occasional lateritic breakaways and broad stony slopes, lower saline stony plains and broad drainage tracts; supporting sparse mulga and other acacia shrublands with patches of halophytic shrubs

8.3 Land use

8.3.1 Conservation reserves and estates

No DBCA managed conservation areas occur within the survey area or wider study area.

8.3.2 Environmentally sensitive area

No ESAs are located within the survey area or wider study area.

8.4 Hydrology

The GoWA (2023) data layers identified the water resource aspects present in the study area. These are detailed below in Table 19.

Table 19 Hydrology aspects within the study area

Aspect	Details	Results
Groundwater Areas	Groundwater areas proclaimed under the RIWI Act	East Murchison Groundwater Area is present within the survey area

Aspect	Details	Results
Surface Water Areas	Surface water areas proclaimed under the RIWI Act	None present within the survey area or study area
Irrigation District	Irrigation Districts proclaimed under the RIWI Act	None present within the survey area or study area
Public Drinking Water Source Areas (PDWSA)	PDWSA is a collective term used for the description of Water Reserves, Catchment Areas and Underground Pollution Control Areas declared (gazetted) under the provisions of the *Country Area Water Supply Act 1947*	None are present within the survey area. One PDWSAs occur within the study area, Wiluna water reserve (UFI: 249) (Priority 1) occurs approximately 6.8 km east of the survey area

8.4.1 Wetlands

No wetlands of significance occur within the survey area or study area.

8.5 Vegetation and flora

8.5.1 Regional biogeography

The project area is located in the Murchison bioregion and the Eastern Murchison sub-region as described by IBRA. The Murchison bioregion is characterised by low hills and mesas separated by flat colluvium and alluvial plains. Vegetation is predominantly low mulga woodlands (Bastin G and the ACRIS Management Committee, 2008).

The subregion comprises the northern parts of the Yilgarn Craton. Characterised by internal drainage, extensive areas of elevated red desert sandplains with minimal dune development, salt lake systems and broad plains of red-brown soils. Vegetation is dominated by mulga woodlands often rich in ephemerals, hummock grasslands, saltbush shrublands and Tecticornia shrublands (Cowan 2001).

8.5.2 Broad vegetation mapping and extent

Broad scale (1:1,000,000) pre-European vegetation mapping of the area was completed by Beard (1974) at an association level. The mapping indicates that one vegetation association is present within the survey area. Vegetation association 28- Mosaic: Open low woodland; mulga

The pre-European mapping has been adapted and digitised by Shepherd et al. (2002). The extent of vegetation associations have been determined by the state-wide vegetation remaining extent calculations maintained by DBCA (GoWA 2019). As shown in Table 20, the current extent remaining of vegetation association 28 is greater than 97% of their calculated pre-European extents at State, IBRA bioregion and IBRA subregion scales. The current extent remaining for the LGA scale is 66.84%. This database has not been updated since 2019 and may not reflect accurate current extents remaining.

Table 20 Extent of pre-European vegetation association mapped within the survey area (GoWA 2019)

Vegetation association	Scale	Pre-European extent (ha)	Current extent (ha)	Remaining (%)	% Current extent in all DBCA managed land (proportion of Current Extent)
28	State: Western Australia	395,895.08	392,171.83	99.06	N/A
	IBRA bioregion: Murchison	224,291.84	220,583.71	98.35	N/A
	IBRA Subregion: Eastern Murchison (MUR01)	141,411.26	137,703.12	97.38	N/A
	LGA: Shire of Wiluna	4,522.51	3,022.80	66.84	N/A

8.5.3 Significant ecological communities

The EPBC Act PMST did not identify any EPBC Act listed TECs within the study area. The DBCA TEC and PEC database did not identify any TECs or PECs occurring within the survey area. However, four PECs were identified as occurring within the study area:

– Wiluna BF calcrete groundwater assemblage type on Carey palaeodrainage on Millbillillie Station (Priority 1)- Unique assemblages of invertebrates have been identified in the groundwater calcretes.
This PEC occurs approximately 5.6 km east of the survey area
– Uramurdah Lake calcrete groundwater assemblage type on Carey palaeodrainage on Millbillillie Station (Priority 1 - Unique assemblages of invertebrates have been identified in the groundwater calcretes. This PEC occurs approximately 7.4 km south east of the survey area
– Lake Violet south and Lake Violet calcrete groundwater assemblage types on Carey palaeodrainage on Millbillillie Station (Priority 1) -. Unique assemblages of invertebrates have been identified in the groundwater calcretes. This PEC occurs approximately 6.1 km south of the survey area
– Millbillillie: Bubble calcrete groundwater assemblage type on Carey palaeodrainage on Millbillillie Station (Priority 1) - Unique assemblages of invertebrates have been identified in the groundwater calcretes. This PEC occurs approximately 12.3 km west of the survey area.

The locations of these PECs are shown in Figure 32, Appendix A.

8.5.4 Flora diversity

The *NatureMap* database identified 432 flora taxa previously recorded within the study area (DBCA 2007-). The *NatureMap* database search for flora is provided in Appendix C.

8.5.5 Significant flora

The EPBC Act PMST and DBCA *NatureMap*, WAHERB and TPFL databases identified the presence/potential presence of nine significant taxa within a 20 km buffer of the survey area. The desktop searches recorded:

– Four Priority 1 taxon
– Five Priority 3 taxa.

The locations of significant flora registered on the DBCA databases are mapped in Figure 32, Appendix A.

8.6 Fauna

8.6.1 Fauna diversity

The *NatureMap* database identified 188 fauna species previously recorded within 20 km of the project area. This total comprised 85 birds, 53 reptiles, 23 mammals, 24 invertebrates and three amphibians. The *NatureMap* database search is provided in Appendix C.

8.6.2 Significant fauna

The EPBC Act PMST, DBCA database and *NatureMap* database identified the presence/potential presence of 26 conservation significant fauna within the study area. This total does not include those species that are exclusively marine as no marine habitat is present within the survey area or study area. The desktop searches recorded:

– Seven EPBC and/or DBCA (BC Act)- listed Threatened fauna taxa
– Sixteen Migratory taxa protected under international agreement
– Two Priority 4 fauna taxa
– One Other Specially Protected fauna taxa.

This total was comprised of 22 birds, three mammals and one reptile. The locations of significant fauna registered on the DBCA databases are mapped in Figure 32, Appendix A.

9. Desktop assessment – Gascoyne Junction

9.1 Location

The Gascoyne Junction survey area is located south of the township. It follows Pimbee Road for approximately 600m and includes sections to the east and west. The survey area is approximately 10.78 ha (Figure 37, Appendix A).

9.2 Physical environment

Ecological and land use constraints for the Gascoyne Junction survey area are presented in Figure 38, Appendix A.

9.2.1 Climate

The Carnarvon bioregion is characterised by a seasonal arid climate tending towards biomodal rainfall (Desmond and Chant 2001). There is a BoM weather station at Gascoyne Junction (006022). Temperature data from Gascoyne Junction station indicates the mean maximum temperature ranges from 40.7 °C in January to 23.4 °C in July. The mean minimum temperature ranges from 9.6 °C in July to 24.4 °C in February. Rainfall data shows the mean annual rainfall in the area as 216.5 mm (BoM 2023).

9.2.2 Land systems and soil

The Carnarvon region has been surveyed by the DPIRD and others for the purposes of land classification, mapping and resource evaluation. The Carnarvon Province has been divided into 10 soil-landscape zones. The survey area occurs on the Sandiman System (Tille 2006), described in Table 21.

Table 21 Land system mapped for Gascoyne Junction survey area

Land system	Description	Geology	Geomorphology
Sandiman	Undulating stony uplands with low breakaways, slopes and ridges, supporting very scattered shrublands of mulga and other acacias.	Permian greywacke, sandstone and siltstone, locally with tillitic shale, mainly of the Sakmarian Series.	Mainly erosional surfaces, extensively mantled by cobbles and pebbles: residual plateaux, summits and ridges, trellised drainage into narrow floors with incised channels and, locally, to narrow plains with gilgaied surfaces.

9.3 Land use

9.3.1 Conservation reserves and estates

No DBCA managed conservation areas occur within the survey area. Kennedy Range National Park occurs within the study area, approximately 18 km north west of the survey area.

9.3.2 Environmentally sensitive area

No ESAs are located within the survey area. ESA no.6922 occurs within the study area, 18 km north west of the survey area. It's associated with the Kennedy Range National Park (Figure 38, Appendix A).

9.4 Hydrology

The GoWA (2023) data layers identified the water resource aspects present in the study area. These are detailed below in Table 22.

Table 22 Hydrology aspects within the study area

Aspect	Details	Results
Groundwater Areas	Groundwater areas proclaimed under the RIWI Act	Gascoyne Groundwater Area
Surface Water Areas	Surface water areas proclaimed under the RIWI Act	Gascoyne River and Tributaries
Irrigation District	Irrigation Districts proclaimed under the RIWI Act	Gascoyne River and Tributaries
Public Drinking Water Source Areas (PDWSA)	PDWSA is a collective term used for the description of Water Reserves, Catchment Areas and Underground Pollution Control Areas declared (gazetted) under the provisions of the *Country Area Water Supply Act 1947*	Gascoyne Junction Water Reserve DWSPP, Priority 1 and Priority 2

9.4.1 Wetlands

There are no wetlands of significance located within or in close vicinity to the survey area or study area. The closest significant wetland is Shark Bay East approximately 128 km south west of the survey area.

9.5 Vegetation and flora

9.5.1 Regional biogeography

The project area is located in the Canarvon bioregion and Wooramel sub-region as described by IBRA. The Carnarvon bioregion is composed of quaternary alluvial, aeolian and marine sediments overlying Cretaceous strata. A mosaic of saline alluvial plains with samphire and saltbush low shrublands, Bowgada low woodland on sandy ridges and plains, Snakewood scrub on clay flats, and tree to shrub steppe over hummock grasslands on and between red sand dune fields.

The Wooramel Subregion is the southern and central parts of the Carnarvon Basin. Alluvial plains associated with downstream sections and deltas of Gascoyne, Minilya and Wooramel Rivers. Includes Lake MacLeod and Kennedy Range. Tree to shrub steppe over hummock grasslands on and between aeolian red sand dunefields are extensive in the north and east as well as on top of Kennedy Range. Southern areas comprise limestone plateaux overlain by red sand plains. Acacia shrublands (Mulga, Bowgada and *A. coriacea*) over bunch grasses on red sandy ridges and plains (Desmond and Chant 2001).

9.5.2 Broad vegetation mapping and extent

Broad scale (1:1,000,000) pre-European vegetation mapping of the area was completed by Beard (1974) at an association level. The mapping indicates that one vegetation association is present within the survey area. Vegetation association 282- Shrublands; *Acacia sclerosperma & A. victoriae* sparse scrub.

The pre-European mapping has been adapted and digitised by Shepherd et al. (2002). The extent of vegetation associations have been determined by the state-wide vegetation remaining extent calculations maintained by DBCA (GoWA 2019). As shown in Table 23, the current extent remaining of vegetation association 282 is reported as 100% of its calculated pre-European extents at all scales (e.g. State, IBRA bioregion, IBRA subregion and LGA).

Table 23 Extent of pre-European vegetation association mapped within the survey area (GoWA 2019)

Vegetation association	Scale	Pre-European extent (ha)	Current extent (ha)	Remaining (%)	% Current extent in all DBCA managed land (proportion of Current Extent)
282	State: Western Australia	12,031.29	12,031.29	100	Not available

	IBRA bioregion: Pilbara	12,031.29	12,031.29	100	Not available
	IBRA Subregion: Wooramel (CAR02)	12,031.29	12,031.29	100	Not available
	LGA: Shire of Upper Gascoyne	12,031.29	12,031.29	100	Not available

9.5.3 Significant ecological communities

The EPBC Act PMST did not identify any EPBC Act listed TECs within the study area. The DBCA TEC and PEC database identified one PEC occurring within the study area at five locations, Jingle Land System – Flood plains with Eucalypt woodlands and variable shrublands marginal rivers (Figure 38, Appendix A):

9.5.4 Flora diversity

The *NatureMap* database identified 241 flora taxa previously recorded within the study area (DBCA 2007-). The *NatureMap* database search for flora is provided in Appendix C.

9.5.5 Significant flora

The EPBC Act PMST and DBCA *NatureMap*, WAHERB and TPFL databases identified the presence/potential presence of five significant taxa within the study area. The desktop searches recorded:

– One Threatened taxa listed under the EPBC Act and BC Act
– One Priority 1 taxa
– One Priority 2 taxa
– Two Priority 3 taxa.

The locations of significant flora registered on the DBCA databases are mapped in Figure 38, Appendix A.

9.6 Fauna

9.6.1 Fauna diversity

The *NatureMap* database identified 230 fauna species previously recorded within the study area. This total comprised 97 birds, 53 reptiles, seven mammals, eight amphibians and 85 invertebrates. The *NatureMap* database search is provided in Appendix C.

9.6.2 Significant fauna

The EPBC Act PMST, DBCA database and *NatureMap* database identified the presence/potential presence of 20 significant fauna within the study area. This total does not include those species that are exclusively marine as no marine habitat is present within the survey area or study area. The desktop searches recorded:

– Nine EPBC and/or DBCA (BC Act)- listed Threatened fauna taxa
– Nine Migratory taxa protected under international agreement
– One DBCA Priority 4 fauna taxa
– One DBCA Other Specially Protected (OS) fauna taxa.

This total was comprised of 16 birds, three mammals and one reptile. The locations of significant fauna registered on the DBCA databases are mapped in Figure 38, Appendix A.

10. Desktop assessment - Laverton

10.1 Location

The Laverton survey area is located just north of the township. It follows sturt Pea Drive and finishes north of the airport. The survey area is approximately 25.08 ha (Figure 43, Appendix A).

10.2 Physical environment

Ecological and land use constraints for the Laverton survey area are presented in Figure 44, Appendix A.

10.2.1 Climate

The Murchison is characterised by an arid climate, with mainly Winter rainfall (Cowan 2001). The closest BoM weather station to Laverton is Laverton Aero (012305). Temperature data from Laverton Aero station indicates the mean maximum temperature ranges from 35.6 °C in January to 18.6 °C in July. The mean minimum temperature ranges from 5.9 °C in July to 21.6 °C in January. Rainfall data shows the mean annual rainfall in the area as 275.9 mm (BoM 2023).

10.2.2 Land systems and soil

The Murchison region has been surveyed by the DPIRD and others for the purposes of land classification, mapping and resource evaluation. Seven soil-landscape zones have been mapped in the region. The survey area occurs within the Salinaland Plains Zone. This zone is characterised by sandplains on granitic rocks of the Yilgarn Craton with red deep sands/ shallow loams and some hardpan areas (Tille 2006).

Within the Salinaland Plains Zone are land systems. The survey area occurs on the Violet Land Systen to the south and the Mindura Land System at the northern extent (GoWA 2023). Both land systems are described in Table 24.

Table 24 Land systems mapped for Laverton survey area

Land system	Description
Violet (279Vi)	Gently undulating gravelly plains on greenstone, laterite and hardpan, with low stony rises and minor saline plains; supporting groved mulga and bowgada shrublands and occasionally chenopod shrublands.
Mindura (279Mn)	Low hills, ridges and outcrops of granite, gneiss and quartz above convex, quartz-strewn interfluves and lower plains supporting sparse acacia shrublands becoming more dense in drainage floors.

10.3 Land use

10.3.1 Conservation reserves and estates

No DBCA managed conservation area occur within the survey area or wider study area.

10.3.2 Environmentally sensitive area

No ESAs occur within the survey area or wider study area.

10.4 Hydrology

The GoWA (2023) data layers identified the water resource aspects present in the study area. These are detailed below in Table 25.

Table 25 Hydrology aspects within the study area

Aspect	Details	Results
Groundwater Areas	Groundwater areas proclaimed under the RIWI Act	Goldfields Groundwater Area
Surface Water Areas	Surface water areas proclaimed under the RIWI Act	None
Irrigation District	Irrigation Districts proclaimed under the RIWI Act	None
Public Drinking Water Source Areas (PDWSA)	PDWSA is a collective term used for the description of Water Reserves, Catchment Areas and Underground Pollution Control Areas declared (gazetted) under the provisions of the *Country Area Water Supply Act 1947*	Laverton Water Reserve, Priority 1

10.4.1 Wetlands

There are no wetlands of significance located within or in close vicinity to the survey area or wider study area. The closest significant wetland and Ramsar Wetland is Lake Gore over 500 km south of the survey area.

10.5 Vegetation and flora

10.5.1 Regional biogeography

The project area is located in the Murchison bioregion and the Eastern Murchison sub-region as described by IBRA. The Murchison bioregion is characterised by low hills and mesas separated by flat colluvium and alluvial plains. Vegetation is predominantly low mulga woodlands (Bastin G and the ACRIS Management Committee 2008).

The subregion comprises the northern parts of the Yilgarn Craton. Characterised by internal drainage, extensive areas of elevated red desert sandplains with minimal dune development, salt lake systems and broad plains of red-brown soils. Vegetation is dominated by mulga woodlands often rich in ephemerals, hummock grasslands, saltbush shrublands and *Tecticornia* shrublands (Cowan 2001).

10.5.2 Broad vegetation mapping and extent

Broad scale (1:1,000,000) pre-European vegetation mapping of the area was completed by Beard (1974) at an association level. The mapping indicates that one vegetation association is present within the survey area. Vegetation association 18- Low woodland; mulga (*Acacia aneura*).

The pre-European mapping has been adapted and digitised by Shepherd et al. (2002). The extent of vegetation associations have been determined by the state-wide vegetation remaining extent calculations maintained by DBCA (GoWA 2019). As shown in Table 26, the current extent remaining of vegetation association 18 is greater than 99% of their calculated pre-European extents at State, IBRA bioregion, IBRA subregion and LGA scales. It should be noted that this database has not been updated since 2019 and may not reflect accurate current extents remaining.

Table 26 Extent of pre-European vegetation association mapped within the survey area (GoWA 2019)

Vegetation association	Scale	Pre-European extent (ha)	Current extent (ha)	Remaining (%)	% Current extent in all DBCA managed land (proportion of Current Extent)
18	State: Western Australia	19,892,306.46	18,843,148.07	99.75	6.64
	IBRA bioregion: Murchison	12,403,172.30	12,363,252.47	99.68	4.97
	IBRA Subregion: Eastern Murchison (MUR01)	10,269,896.44	10,234,838.22	99.66	5.14
	LGA: Shire of Laverton	2,878,673.28	2,867,359.23	99.61	6.50

10.5.3 Significant ecological communities

The EPBC Act PMST or DBCA TEC and PEC database searches did not identify any significant ecological communities within the survey area or study area.

10.5.4 Flora diversity

The *NatureMap* database identified 305 flora taxa previously recorded within the study area (DBCA 2007-). The *NatureMap* database search for flora is provided in Appendix C.

10.5.5 Significant flora

The EPBC Act PMST and DBCA *NatureMap*, WAHERB and TPFL databases identified the presence/potential presence of three significant taxa within the study area. The desktop searches recorded:

– One Priority 1 taxa
– Two Priority 3 taxa.

The locations of significant flora registered on the DBCA databases are mapped in Figure 44, Appendix A.

10.6 Fauna

10.6.1 Fauna diversity

The *NatureMap* database identified 169 fauna species previously recorded within the study area. This total comprised 95 birds, 43 reptiles, nine mammals, seven amphibians and 15 invertebrates. The *NatureMap* database search is provided in Appendix C.

10.6.2 Significant fauna

The EPBC Act PMST, DBCA database and *NatureMap* database identified the presence/potential presence of 24 significant fauna within the study area. This total does not include those species that are exclusively marine as no marine habitat is present within the survey area or study area. The desktop searches recorded:

– 10 EPBC and/or DBCA (BC Act)- listed Threatened fauna taxa
– 12 Migratory taxa protected under international agreement
– One DBCA Other Specially Protected (OS) fauna taxon
– One DBCA Priority 4 fauna taxon.

This total was comprised of 18 birds, five mammals and one reptile. The locations of significant fauna registered on the DBCA databases are mapped in Figure 44, Appendix A.

11. Field survey results

11.1 Flora and vegetation

11.1.1 Vegetation types

Fifteen vegetation types aligning with broad landforms were identified and described in the survey areas, not including cleared areas for tracks, or weed dominated patches:

Nullagine survey area:

– VT01- Isolated Snappy Gum over Triodia: *Eucalyptus leucophloia* subsp. *leucophloia* isolated trees over *Acacia bivenosa, Senna symonii* and *Acacia hilliana* isolated shrubs over and *Triodia* spp. tussock grassland

Cue survey area:

– VT02 - *Acacia grasbyi* and *Acacia aptaneura* isolated clumps of shrubs over *Maireana georgei*, *Maireana glomerifolia*, *Sclerolaena eriacantha* and *Ptilotus obovatus* sparse chenopod and mixed shrubland over *Aristida holathera* var. *holathera* and *Enneapogon polyphyllus* isolated clumps of grasses on orange, sandy-loam on flat plains with sparse quartz pebble scatter

– VT03 - *Acacia incurvaneura* open woodland over *Eremophila latrobei* subsp. *latrobei* and *Psydrax suaveolens* sparse shrubland over, *Tripogonella loliiformis, Cheilanthes sieberi* susp. *sieberi* and *Erodium* sp. isolated clumps of forbs on orange sandy clay loam on rocky granitic hills

– VT04 - *Acacia kalgoorliensis*, *Acacia pteraneura* and *Eremophila pantonii* isolated clumps of shrubs over, *Maireana glomerifolia*, *Ptilotus polakii* and *Sclerolaena eriacantha* sparse shrubland on orange sandy loam on low rises with quartz stone scatter

– VT05 - *Eucalyptus victrix* isolated clumps of trees over, *Acacia tetragonophylla*, *Sida* sp. and *Eremophila longifolia* sparse shrubland over, *Enteropogon ramosus* and **Cenchrus ciliaris* grassland on orange clay within minor drainage lines.

Meekatharra survey area:

– VT06 -*Acacia incurvaneura* and *Acacia pteraneura* open woodland over, *Eremophila citrina*, *Eremophila latrobei* subsp. *latrobei, Solanum lasiophyllum* and *Maireana planifolia* isolated clumps of shrubs on orange clay-loam on low rocky rises

– VT07 -*Eucalyptus victrix* and *Eucalyptus camaldulensis* open woodland over, *Acacia tetragonophylla*, *Acacia victoriae* and *Eremophila longifolia* open shrubland over, **Cenchrus ciliaris* and *Peplidium* sp. isolated clumps of forbs and grasses on brown sandy-clay-loam within drainage areas.

Menzies survey area:

– VT08 - *Maireana pyramidata*, *Atriplex bunburyana*, *Maireana planifolia* and *Sclerolaena diacantha* open chenopod shurbland over, **Cenchrus ciliaris*, **Carrichtera annua* and *Sclerolaena alata* sparse grassland and forbland on orange clay flats

– VT09 -**Schinus molle* and *Acacia jennerae* isolated clumps of trees over *Eremophila longifolia*, *Maireana pyramidata* and *Atriplex bunburyana* sparse shrubland over *Chloris tuncata* and **Cenchrus ciliata* grassland on orange clay within minor drainage lines.

Sandstone survey area

– VT10 - *Acacia aneura, Acacia mulganeura* and *Acacia incurvaneura* mulga woodland over, *Cryptandra connata* and *Eremophila margarethae* isolated shrubs over, Poaceae sp. and Chenopodiaceae sp. isolated clumps of sterile chenopods and grasses on orange clay loam, flat plains.

Wiluna survey area:

– VT11 - *Acacia pruinocarpa* and *Acacia pteraneura* (± *Acacia aneura* x *Acacia craspedocarpa*) woodland over, *Ptilotus obovatus* and *Lepidium platpetalum* isolated shrubs over, *Dysphania kalpari*, *Sclerolaena eriacantha* and *Dactyloctenium radulans* on orange, sandy-clay-loam within minor drainage lines.

– VT12 - *Acacia aptaneura*, *Acacia pteraneura* and *Acacia pruinocarpa* (± *Acacia aneura* x *Acacia craspedocarpa*) woodland over *Grevillea sarissa* subsp. *succincta* and *Eremophila margarethae* isolated shrubs on orange clay-loam, rocky rises.

Gascoyne Junction survey area:

– VT13 - *Acacia victoriae, Acacia tetragonophylla* and *Hakea recurva* isolated shrubs over *Rhagodia eremaea, Atriplex ?codonocarpa* and *Maireana* sp. isolated chenopod shrubs on brown loamy clay on low undulating rise with quartz.

Laverton survey area:

– VT14 - *Acacia aneura, Acacia ramulosa* and *Acacia ayersiana* open woodland to isolated trees over *Acacia tetragonophylla, Acacia craspedocarpa* and *Senna artemisioides* subsp. ×*artemisioides* open shrubland over *Salsola australis, Sclerolaena eurotioides* and *Maireana thesioides* open chenopod over mixed annual herbs on shrubland on brown loam clay on plain.
– VT15 - *Eucalyptus camaldulensis* open woodland to isolated trees on drainage line

The vegetation types are described in further detail in Table 27 and mapped in Figure 4, Figure 10, Figure 16, Figure 22, Figure 28, Figure 34, Figure 40 and Figure 46 (Appendix A).

11.1.2 Significant vegetation communities

No TEC's listed under the EPBC Act or BC Act were identified within the survey areas during the field survey.

The Nullagine survey area occurs within the buffer of the *Stony saline clay plains of the Mosquito Land System* Priority 3 PEC, however the dominant vegetation and landform recorded within the survey area do not align with this community. Dominant flora that is representative of this community includes *Triodia longiceps, Maireana melanocoma*, *Melaleuca eleuterostachya*, *Acacia bivenosa* and Priority flora taxa *Atriplex spinulosa (P1)* and *Ptilotus wilsonii* (P1). Isolated occurrences of *Melaleuca eleuterostachya* and *Acacia bivenosa* were recorded within the survey area. Observations of the vegetation outside the survey area near the north-western edge show similarities to the PEC, suggesting this community may occur northwest of the survey area.

One PEC was identified as occurring within the Cue survey area, the Austin Land System (Priority 3). The Austin Land System PEC is described as saline stony plains with low rises and drainage foci supporting low halophytic shrublands with scattered mulga; occurs mainly adjacent to lakes Austin and Annean below greenstone hill systems. Vegetation types VT02, VT04 and VT05 were representative of this PEC and is shown on Figure 10, Appendix A.

No other PECs were recorded for the remaining survey areas at Meekatharra, Menzies, Sandstone, Wiluna, Gascoyne Junction and Laverton.

Table 27 Vegetation types within the survey area

Vegetation type	Vegetation Type Description	Extent (ha) and proportion of individual survey area (%)	Sampling sites	Photograph
VT01- Isolated Snappy Gum over *Triodia*	*Eucalyptus leucophloia* subsp. *leucophloia* isolated trees over *Acacia bivenosa, Senna symonii* and *A. hilliana* isolated shrubs over *Triodia brizoides, T epactia* and *T pungens* tussock grassland on stony low undulating hills.	4.00 ha (66.01%) (Nullagine)	Nul_01, Nul_02 & Nul_03 (Nullagine)	
VT02	*Acacia grasbyi* and *Acacia aptaneura* isolated clumps of shrubs over *Maireana georgei, Maireana glomerifolia*, *Sclerolaena eriacantha* and *Ptilotus obovatus* sparse chenopod and mixed shrubland over *Aristida holathera* var. *holathera* and *Enneapogon polyphyllus* isolated clumps of grasses on orange, sandy-loam on flat plains with sparse quartz pebble scatter. Representative of the PEC Austin Land System (Priority 3)	27.20 ha (59.41%) (Cue)	CUE01, CUE03, CUE04	

Vegetation type	Vegetation Type Description	Extent (ha) and proportion of individual survey area (%)	Sampling sites	Photograph
VT03	*Acacia incurvaneura* open woodland over *Eremophila latrobei* subsp. *latrobei* and *Psydrax suaveolens* sparse shrubland over, *Tripogonella loliiformis*, *Cheilanthes sieberi* susp. *sieberi* and *Erodium* sp. isolated clumps of forbs on orange sandy clay loam on rocky sandstone hills.	0.86 ha (1.87%) (Cue)	CUE02	
VT04	*Acacia kalgoorliensis, Acacia pteraneura* and *Eremophila pantonii* isolated clumps of shrubs over, *Maireana glomerifolia, Ptilotus polakii* and *Sclerolaena eriacantha* sparse shrubland on orange sandy loam on low rises with quartz stone scatter. Representative of the PEC Austin Land System (Priority 3)	11.39 ha (24.88%) (Cue)	CUE05, CUE06, CUE08	

Vegetation type	Vegetation Type Description	Extent (ha) and proportion of individual survey area (%)	Sampling sites	Photograph
VT05	*Eucalyptus victrix* isolated clumps of trees over, *Acacia tetragonophylla, Sida* sp. and *Eremophila longifolia* sparse shrubland over, *Enteropogon ramosus* and **Cenchrus ciliaris* grassland on orange clay within minor drainage lines. Representative of the PEC Austin Land System (Priority 3)	0.92 ha (2.02%) (Cue)	CUE07R	
VT06	*Acacia incurvaneura* and *Acacia pteraneura* open woodland over, *Eremophila citrina*, *Eremophila latrobei* subsp. *latrobei, Solanum lasiophyllum* and *Maireana planifolia* isolated clumps of shrubs on orange clay-loam on low rocky rises.	23.75 ha (80.93%) (Meekatharra)	MEE01, MEE02, MEE04	

Vegetation type	Vegetation Type Description	Extent (ha) and proportion of individual survey area (%)	Sampling sites	Photograph
VT07	*Eucalyptus victrix* and *Eucalyptus camaldulensis* open woodland over, *Acacia tetragonophylla*, *Acacia victoriae* and *Eremophila longifolia* open shrubland over, **Cenchrus ciliaris* and *Peplidium* sp. isolated clumps of forbs and grasses on brown sandy-clay-loam within drainage areas.	1.01 ha (3.45%) (Meekatharra)	MEE03	
VT08	*Maireana pyramidata*, *Atriplex bunburyana*, *Maireana planifolia* and *Sclerolaena diacantha* open chenopod shrubland over, **Cenchrus ciliaris*, **Carrichtera annua* and *Sclerolaena alata* sparse grassland and forbland on orange clay flats.	3.42 ha (59.04%) (Menzies)	GAS01, GAS02, GAS03	

Vegetation type	Vegetation Type Description	Extent (ha) and proportion of individual survey area (%)	Sampling sites	Photograph
VT09	**Schinus molle* and *Acacia jennerae* isolated clumps of trees over *Eremophila longifolia*, *Maireana pyramidata* and *Atriplex bunburyana* sparse shrubland over *Chloris truncata* and **Cenchrus ciliata* grassland on orange clay within minor drainage lines.	0.33 ha (5.63%) (Menzies)	GAS04R	
VT10	*Acacia aneura, Acacia mulganeura* and *Acacia incurvaneura* mulga woodland over, *Cryptandra connata* and *Eremophila margarethae* isolated shrubs over, Poaceae sp. and Chenopodiaceae sp. isolated clumps of sterile chenopods and grasses on orange clay loam, flat plains.	4.21 ha (71.35%) (Sandstone)	SAN01, SAN02, SAN03	

Vegetation type	Vegetation Type Description	Extent (ha) and proportion of individual survey area (%)	Sampling sites	Photograph
VT11	*Acacia pruinocarpa* and *Acacia pteraneura* (± *Acacia aneura* x *Acacia craspedocarpa*) woodland over, *Ptilotus obovatus* and *Lepidium platpetalum* isolated shrubs over, *Dysphania kalpari*, *Sclerolaena eriacantha* and *Dactyloctenium radulans* on orange, sandy-clay-loam within minor drainage lines.	3.45 ha (21.58%) (Wiluna)	WIL01, WIL04, WIL05	
VT12	*Acacia aptaneura*, *Acacia pteraneura* and *Acacia pruinocarpa* (± *Acacia aneura* x *Acacia craspedocarpa*) woodland over *Grevillea sarissa* subsp. *succincta* and *Eremophila margarethae* isolated shrubs on orange clay-loam, rocky rises.	11.61 ha (72.68%) (Wiluna)	WIL02, WIL03, WIL06	

Vegetation type	Vegetation Type Description	Extent (ha) and proportion of individual survey area (%)	Sampling sites	Photograph
VT13	*Acacia victoriae, Acacia tetragonophylla* and *Hakea recurva* isolated shrubs over *Rhagodia eremaea, Atriplex ?codonocarpa* and *Maireana* sp. Isolated chenopod shrubs over *Eragrostis dielsii, Eragrostis xerophila* and *Aristida contorta* isolated tussock grasses over *Streptoglossa liatroides, Salsola australis* and *Scaevola* sp. open forbland on brown loamy clay on low undulating rise with quartz.	8.70 ha (80.69%) (Gascoyne Junction)	GJ01, GJ02, GJ03	
VT14	*Acacia aneura, Acacia ramulosa* and *Acacia ayersiana* open woodland to isolated trees over *Acacia tetragonophylla, Acacia craspedocarpa* and *Senna artemisioides* subsp. *×artemisioides* open shrubland over *Salsola australis, Sclerolaena eurotioides* and *Maireana thesioides* open chenopod over mixed annual herbs on shrubland on brown loam clay on plain.	15.39 ha (61.36%) (Laverton)	LAV01, LAV02, LAV03	

Vegetation type	Vegetation Type Description	Extent (ha) and proportion of individual survey area (%)	Sampling sites	Photograph
VT15	*Eucalyptus camaldulensis* open woodland to isolated trees over *Acacia wanyu* and *Acacia aneura* open shrubland over *Salsola australis* and *Sclerolaena eurotioides* open chenopod shrubland over **Cenchrus ciliaris* open tussock grassland over *Brachyscome ciliaris* isolated herbs on drainage line.	0.38 ha (1.50%) (Laverton)	LAV04R	
Scattered natives over weeds	Occasional native shrub over weed dominated understorey	Nullagine 0.37 ha (6.11%)	No sites	No photo
Cleared	Areas devoid of native vegetation, such as tracks and historically cleared areas.	Nullagine 1.69 ha (27.88%) Cue 5.42 ha (11.84%) Meekatharra 4.58 ha (15.62%) Menzies 2.04 ha (35.33%) Sandstone 1.69 ha (28.65%) Wiluna 0.92 ha (5.74%) Gascoyne Junction 2.08 ha (23.93%)	-	

Vegetation type	Vegetation Type Description	Extent (ha) and proportion of individual survey area (%)	Sampling sites	Photograph
		Laverton 9.31 ha (37.14%)		

11.1.3 Vegetation condition

The condition of the vegetation within the survey area ranged from Excellent to Completely Degraded. Most sites have areas that are completely cleared which have been presented separately. The majority of the survey areas are in Excellent or Very Good condition. The vegetation condition extents are detailed below for each survey area.

Nullagine

The fenced area surrounding the solar farm and the adjacent vehicle track were mapped as Cleared. This area attributed to 27.88% of the survey area. The remainder of the survey area was in mostly Excellent condition (44.06%). A fire scar along the southern boundary and a section that had been either cleared or backfilled with soil/ rubble was mapped as Good (21.95%). Patches of disturbed vegetation containing the occasional native and a weed-dominated understorey, was mapped as Degraded (6.11%). The extents of the vegetation condition within the Nullagine survey area are detailed in Table 28 and mapped in Figure 5, Appendix A.

Table 28 Vegetation condition extent in the Nullagine survey area

Vegetation Condition	Extent in survey area (ha)	% within the survey area
Excellent	2.67	44.06
Good	1.33	21.95
Degraded	0.37	6.11
Cleared	1.69	27.88
Total	6.06	100.00

Cue

The majority of the vegetation within the survey area is in Very Good condition (82.74%), with the main disturbance being vehicle tracks throughout the site. Areas associated with and adjacent to creek lines were in Good condition (3.55%) due to the presence of weeds such as **Cenchrus ciliaris* forming a large component of the understorey. Cleared areas were associated within vehicle tracks and dirt roads within the survey area. The extents of the vegetation condition within the Cue survey area are detailed in Table 29 and mapped in Figure 11, Appendix A.

Table 29 Vegetation condition extent in the Cue survey area

Vegetation Condition	Extent in survey area (ha)	% within the survey area
Excellent	0.86	1.87
Very Good	37.89	82.74
Good	1.62	3.55
Cleared	5.42	11.84
Total	45.79	100.00

Meekatharra

The vegetation within the survey area was in Good condition (84.38%) with the majority of the survey area has been subject to historical disturbance with the whole survey area covered in litter and debris, the occasional presence of more aggressive weeds and grazing evidence. Cleared areas within the survey area are associated with roads and a solar array (15.62%). The extents of the vegetation condition within the Meekatharra survey area are detailed in Table 30 and mapped in Figure 17, Appendix A.

Table 30 Vegetation condition extent in the Meekatharra survey area

Vegetation Condition	Extent in survey area (ha)	% within the survey area
Good	24.77	84.38
Cleared	4.58	15.62

Vegetation Condition	Extent in survey area (ha)	% within the survey area
Total	29.35	100.00

Menzies

The vegetation within the survey area was in Good condition (64.67%) weeds such as **Cenchrus ciliaris* formed a large component of the understorey in some areas. Vehicles tracks, litter and mine shafts were also present within the survey area. Cleared areas within the survey area are associated with vehicle tracks and a dam (35.33%). The extents of the vegetation condition within the Menzies survey area are detailed in Table 31 and mapped in Figure 23, Appendix A.

Table 31 Vegetation condition extent in the Menzies survey area

Vegetation Condition	Extent in survey area (ha)	% within the survey area
Good	3.74	64.67
Cleared	2.04	35.33
Total	5.78	100.00

Sandstone

The vegetation within the survey area was in Good to Excellent condition. The north eastern portion of the survey area was in Excellent condition (61.56%) the central and southern areas along the corridor and existing roads were in Very Good condition (9.55%). Cleared areas were associated with sealed and dirt roads (28.65%). The extents of the vegetation condition within the Sandstone survey area are detailed in Table 32 and mapped in Figure 29, Appendix A.

Table 32 Vegetation condition extent in the Sandstone survey area

Vegetation Condition	Extent in survey area (ha)	% within the survey area
Excellent	3.63	61.56
Very Good	0.56	9.55
Good	0.01	0.24
Cleared	1.69	28.65
Total	5.90	100.00

Wiluna

The vegetation within the survey area ranged from Good to Very Good, with the majority of the survey area in Very Good condition (75.01%). Areas of Good condition rating occur along the central drainage line, the north eastern corner and adjacent to dirt tracks (19.25%), these were associated with more aggressive weeds such as **Rumex vesicarius.* Cleared areas were associated with sealed or dirt roads (5.74%). The extents of the vegetation condition within the Wiluna survey area are detailed in Table 33 and mapped in Figure 35, Appendix A.

Table 33 Vegetation condition extent in the Wiluna survey area

Vegetation Condition	Extent in survey area (ha)	% within the survey area
Very Good	11.98	75.01
Good	3.07	19.25
Cleared	0.92	5.74
Total	15.98	100.00

Gascoyne Junction

The vegetation within the survey area ranged from Good to Degraded, with the majority of the survey area in Good condition (75.51%). The survey area had been subject to grazing with the vegetation structure and cover reduced

through grazing pressure. There were a number of cleared tracks through the survey area and signs of rubbish. There were a low number of introduced weeds (**Cenchrus ciliaris*). The extents of the vegetation condition within the Gascoyne Junction survey area are detailed in Table 34 and mapped in Figure 41, Appendix A.

Table 34 Vegetation condition extent in the Gascoyne Junction survey area

Vegetation Condition	Extent in survey area (ha)	% within the survey area
Good	8.14	75.51
Degraded	0.56	5.18
Cleared	2.08	19.31
Total	10.78	100.00

Laverton

The vegetation within the survey area ranged from Good to Completely Degraded, with the majority of the survey area in Degraded condition (44.11%). The survey area had been subject to grazing with the vegetation structure and cover reduced through grazing pressure. There were also signs of canopy decline in the overstorey in the northern section of the survey area potentially caused by either drought and/or inappropriate fire regimes. The survey area also has edge effects from established roads and signs of rubbish. There were a number of introduced weeds across the survey area. The extents of the vegetation condition within the Gascoyne Junction survey area are detailed in Table 35 and mapped in Figure 47, Appendix A.

Table 35 Vegetation condition extent in the Laverton survey area

Vegetation Condition	Extent in survey area (ha)	% within the survey area
Good	2.58	10.29
Poor	1.98	7.88
Degraded	11.06	44.11
Completely degraded	0.15	0.58
Cleared	9.31	37.14
Total	25.08	100.00

11.1.4 Flora diversity

The full list of flora identified within the Nullagine, Cue, Meekatharra, Menzies, Sandstone, Wiluna, Gascoyne Junction and Laverton survey areas complied by site and species list by family is provided in Appendix D. The flora diversity for each site is detailed below.

Nullagine

Forty-eight flora taxa (including subspecies and varieties) representing 18 families and 33 genera were recorded from the Nullagine survey area during the field survey. This total comprised 46 native taxa and two introduced flora taxa.

Dominant families recorded from the survey area included:

– Poaceae (11 taxa)
– Fabaceae (10 taxa)
– Asteraceae (4 taxa).

Cue

Fifty-four (54) flora taxa (including subspecies and varieties) representing 17 families and 34 genera were recorded from the Cue survey area during the field survey. This total comprised 53 native taxa and one introduced flora taxon.

Dominant families recorded from the survey area included:

– Chenopodiaceae (nine taxa)
– Poaceae (seven taxa)
– Fabaceae (six taxa)
– Malvaceae (six taxa).

Meekatharra

Forty-five (45) flora taxa (including subspecies and varieties) representing 20 families and 29 genera were recorded from the Meekatharra survey area during the field survey. This total comprised 43 native taxa and two introduced flora taxa.

Dominant families recorded from the survey area included:

– Fabaceae (nine taxa)
– Chenopodiaceae (five taxa)
– Amaranthaceae (four taxa).
– Poaceae (four taxa)
– Scrophulariaceae (four taxa).

Menzies

Thirty-four (34) flora taxa (including subspecies and varieties) representing 14 families and 27 genera were recorded from the Menzies survey area during the field survey. This total comprised 28 native taxa and six introduced flora taxa.

Dominant families recorded from the survey area included:

– Chenopodiaceae (nine taxa)
– Asteraceae (five taxa).
– Fabaceae (four taxa).

Sandstone

Thirteen (13) flora taxa (including subspecies and varieties) representing seven families and eight genera were recorded from the Sandstone survey area during the field survey. No introduced flora were recorded.

Dominant families recorded from the survey area included:

– Fabaceae (four taxa)
– Chenopodiaceae (three taxa).
– Poaceae (two taxa).

Wiluna

Thirty (30) flora taxa (including subspecies and varieties) representing 12 families and 20 genera were recorded from the Wiluna survey area during the field survey. This total comprised 29 native taxa and one introduced flora taxon.

Dominant families recorded from the survey area included:

– Fabaceae (nine taxa)
– Poaceae (five taxa)
– Chenopodiaceae (four taxa).

Gascoyne Junction

Twenty-two (22) flora taxa (including subspecies and varieties) representing 9 families and 18 genera were recorded from the Gascoyne Junction survey area during the field survey. This total comprised 21 native taxa and one introduced flora taxon.

– Dominant families recorded from the survey area included:
– Chenopodiaceae (six taxa)
– Poaceae (five taxa).

Laverton

Sixty-five (65) flora taxa (including subspecies and varieties) representing 24 families and 45 genera were recorded from the Laverton survey areas during the field survey. This total comprised 61 native taxa and five introduced flora taxa.

Dominant families recorded from the survey area included:

– Fabaceae (9 taxa)
– Poaceae (9 taxa)
– Malvaceae (6 taxa).

11.1.5 Introduced flora

The introduced flora recorded within each survey area is described below.

Nullagine

Two introduced flora taxa were recorded in the Nullagine survey area:

– **Cenchrus ciliaris*
– **Calotropis procera*

**Calotropis procera*, recorded in the Nullagine survey area is listed as a Declared Pest under the BAM Act. No Weeds of National Significance (WoNS) were recorded.

All of the introduced flora have been previously recorded from the Pilbara bioregion.

Cue

One introduced flora taxon was recorded in the Cue survey area:

– **Cenchrus ciliaris*

No Declared Pests under the *Biosecurity and Management Act 2007* or WoNS were recorded.

**Cenchrus ciliaris* has previously been recorded from the Murchison bioregion.

Meekatharra

Two introduced flora taxa were recorded in the Meekatharra survey area:

– **Cenchrus ciliaris*
– **Rumex vesicarius*

No Declared Pests under the *BAM Act or* WoNS were recorded. All of the introduced flora have been previously recorded from the Murchison bioregion.

Menzies

Six introduced flora taxa were recorded in the Menzies survey area:

– **Carrichtera annua*
– **Cenchrus ciliaris*
– **Medicago polymorpha*
– **Schinus molle*
– **Sisymbrium orientale*
– **Sonchus oleraceus*

No Declared Pests under the BAM Act or WoNS were recorded. All of the introduced flora have been previously recorded from the Murchison bioregion.

Sandstone

No introduced flora taxa were recorded within the Sandstone survey area.

Wiluna

One introduced flora taxon was recorded in the Wiluna survey area:

– **Rumex vesicarius*

No Declared Pests under the BAM Act or WoNS were recorded. **Rumex vesicarius* has been previously recorded from the Murchison bioregion.

Gascoyne Junction

One introduced flora taxon was recorded in the Gascoyne Junction survey area:

– **Cenchrus ciliaris*

No Declared Pests under the BAM Act or WoNS were recorded. **Cenchrus ciliaris* has previously been recorded from the Murchison bioregion.

Laverton

Five introduced flora taxon was recorded in the Laverton survey area:

– **Cenchrus ciliaris*
– **Opuntia stricta* (DP, WoNS)
– **Sisymbrium orientale*
– **Sonchus oleraceus*
– **Rumex vesicarius*

One Declared Pest Plant under the BAM Act and WoNS was recorded in the survey area:

– **Opuntia stricta* (Prickly Pear)

**Opuntia stricta* was recorded from one location (one individual) (Plate 1) with the location shown in Figure 47, Appendix A, and has previously been recorded from the Murchison bioregion.

Plate 1 ****Opuntia stricta (Prickly Pear) Laverton survey area***

11.1.6 Significant flora

One EPBC Act and BC Act listed flora taxon was recorded from the Cue survey area; *Eremophila rostrata* subsp. *rostrata* (Threatened – BC Act listed and Critically Endangered - EPBC Act). No other EPBC Act or BC Act listed flora were recorded from the other survey areas.

Four DBCA Priority listed flora taxa were recorded from the following survey areas:

– *Acacia aphanoclada* (Priority 1) – Nullagine survey area
– *Solanum* sp. Mosquito Creek (A.A. Mitchell et al. AAM 10795) (Priority 1) – Nullagine survey area
– *Maireana prosthecochaeta* (Priority 3) – Cue survey area
– *Ptilotus* sp. Cue (P. Armstrong PA 16/362) (Priority 1) – Cue survey area.

No other DBCA listed priority flora taxa were recorded from the other survey areas.

Acacia aphanoclada (Priority 1)

Forty-eight occurrences of *Acacia aphanoclada* (Priority 1) were recorded within the Nullagine survey area. *Acacia aphanoclada* has a very distinct slender wispy form that can grow up to 5 m. It is known to grow on rocky hills and rises from the Nullagine area (WAH 1998-). This species was not in flower and only one seed pod was found during the field survey (Plate 2) The species locations are shown in Figure 4, Appendix A.


(a)


(b)

Plate 2 ***Acacia aphanoclada habit (a) and seed pod (b)***

Solanum* sp. Mosquito Creek (A.A. Mitchell et al. AAM 10795) *(Priority 1)

One individual was recorded within the Nullagine survey area. *Solanum* sp. Mosquito Creek (A.A. Mitchell et al. AAM 10795) (Priority 1) is described as un upright silver to grey shrub with linear leaves and a bluish/ purple flower. It has only ever been recorded within the Nullagine area (WAH 1998-). This species was in full flower during the field survey and recorded as 1.25m tall (Plate 3). The species location is shown in Figure 4, Appendix A.

(a)

(b)

Plate 3 ***Solanum* sp. Mosquito Creek (A.A. Mitchell et al. AAM 10795 habit (a) and flower (b)**

Eremophila rostrata subsp. rostrata (Threatened)

Sixty-four occurrences of *Eremophila rostrata* subsp. *rostrata* (Threatened) were recorded within the southern and eastern portion of the Cue survey area. This species is described as an erect, rounded shrub, that can grow up to 3 m in height. It has glossy, dark green leaves and pendulous scarlet flowers, flowering from June to October (WAH 1998-). In 2008 the known population of this species was approximately 90 mature plants. This *Eremophila* is found in two geographically distinct population groups with different habits. The Cue population group is known to grow on stony, buff coloured saline clays at the base of quartzite hills in an open shrubland of *Acacia* and *Eremophila* species (DCCEEW 2009). This species was recorded as vegetative during the survey and up to 2 m in height (Plate 4). The species locations are shown in Figure 10, Appendix A.

(a)

(b)

Plate 4 ***Eremophila rostrata subsp. rostrata (T) habit (a) leaves (b)***

Maireana prosthecochaeta (Priority 3)

One individual was recorded within the Cue survey area. *Maireana prosthecochaeta* (Priority 3) is described as an open, densely – leaved shrub, 0.3 – 0.6 m in height, known from laterite, hills and saline area (WAH 1998-). This species was in flower during the field survey and recorded as 0.25 m tall (Plate 5). The species location is shown in Figure 10, Appendix A.


(a)

(b)

Plate 5 Maireana prosthecochaeta (P3) habit (a) leaves and fruit (b)

Ptilotus sp. Cue (P. Armstrong PA 16/362) (Priority 1)

One individual was recorded within the Cue survey area. This phrase-named taxon currently listed as priority 1 by DBCA is only known from one previous specimen record at the WA Herbarium from 2016 from near the townsite of Cue. This specimen has very limited collecting information available on habitat (WAH 1998-). No description or habitat details are available on this taxon. This species was in flower during the survey and approximately 2 cm in height (Plate 6), it was recorded on orange sandy loam with quartz stone scatter. The species location is shown in Figure 10, Appendix A.

Plate 6 Ptilotus sp. Cue (P. Armstrong PA 16/362) (P1)

Likelihood of occurrence

A likelihood of occurrence assessment was conducted for all significant flora taxa identified in the desktop assessment (Appendix D). Of the identified significant species for the survey areas the following assessment on likelihood post-survey is as follows:

– Nullagine - *Acacia aphanoclada* (P1) and *Solanum* sp. Mosquito Creek (A.A. Mitchell et al. AAM 10795) (P1) were recorded and all other taxa are considered unlikely to occur
– Cue - *Eremophila rostrata* subsp. *rostrata* (Threatened), *Maireana prosthecochaeta* (P3) and *Ptilotus* sp. Cue (P. Armstrong PA 16/362) (P1) were recorded, seven taxa possible to occur and all other taxa are considered unlikely to occur
– Meekatharra – four taxa are considered possible to occur and all other taxa are considered unlikely to occur
– Menzies – one taxon is considered possible to occur and all other taxa are considered unlikely to occur
– Sandstone - all taxa are considered unlikely to occur
– Wiluna – two taxa are considered possible to occur and all other taxa are considered unlikely to occur
– Gascoyne Junction - one taxon is considered possible to occur and all other taxa are considered unlikely to occur
– Laverton - one taxon is considered possible to occur and all other taxa are considered unlikely to occur.

11.1.7 Flora of interest and range extensions

There were no flora taxa recorded from any of the survey areas that represented flora of interest, such as undescribed species or taxonomic anomalies.

One range extension was recorded from the Laverton survey area; the common *Arivela viscosa.* This record represents a range extension of approximately 400 km south (WAH 1998-).

11.2 Fauna

11.2.1 Fauna habitats

Twelve broad fauna habitat types (excluding cleared and disturbed areas) were identified across the survey areas based on the predominant landforms, soil and vegetation structure in the area. The habitat types identified at each site are listed as follows:

Nullagine:

– Undulating low rocky hills.

Cue:

– Saline stony/rocky plains and low rises
– Rocky granite hills
– Minor Drainage line.

Meekatharra:

– Mulga Woodland on rocky plains/low rises and broad drainage lines
– *Eucalyptus* open woodland ephemeral drainage line.

Wiluna:

– Mulga Woodland on rocky plains/low rises and broad drainage lines.

Menzies:

– Low chenopod shrublands on clay flats
– Tall shrubland minor drainage line.

Sandstone:

– Mulga woodland.

Laverton:

– Mulga woodland on open clay plain
– *Eucalyptus*-lined minor drainage line.

Gascoyne:

– Acacia shrubland on low rise.

These fauna habitats generally align with the mapped vegetation types described in section 11.1.1, with one grouping of similar stony/rocky plains and low rises vegetation types (VT02 and VT04) and grouping of Mulga woodlands on rocky plains/low rises and broad drainage lines (VT06, VT11 and VT12). The habitat types are described in further detail in Table 36 and mapped in Figure 6, Figure 12, Figure 18, Figure 24, Figure 30, Figure 36 and Figure 42, Appendix A.

The vegetation within all of the survey areas form part of a large continuous tract of habitat and have a high degree of habitat connectivity with surrounding vegetation, having similar or better condition vegetation. The habitat types identified during the survey are not confined to the survey areas and are considered well represented in the local and regional area. Overall, the habitat was generally in good condition with some areas impacted to some degree by vehicle tracks, previous clearing, weeds, rubbish dumping, grazing livestock and feral animals.

Table 36 Fauna habitat types within the survey area

Habitat Type	Habitat Description	Extent (ha) and proportion of survey area (%)	Representative photograph
Undulating low rocky hills	The survey area is undulating low hills of Ironstone with areas of low exfoliating rocky ridge line and associated rocky slopes. This habitat type supports limited vegetation (likely due to shallow soil profiles). However the environment supports scattered mixed shrubs of Acacia, Senna sp., Eucalypt., Solanum and grevillea sp.. The environment had few ground covers, litter, logs or debris present. This is due to the lack of vegetative material and/or impacts by fire which the site appeared a mosaic of ages from long unburnt to within the last 12 months. Evidence of historical disturbance were present from old drill lines, soil excavation, tracks and erosion. The low rocky slopes are a mosaic of quartz and iron stone composition with scattered minor outcropping, crevasses, slopes, rock sizes and stability. No typical caves were recorded in outcropping but ground level undermined areas were recorded around some small exfoliating areas likely dug by echidna or monitors. Locally and regionally an extensive habitat type occurring to the north and east with the Nullagine Gold project to the west and town centre to the south. Associated vegetation types: VT01 **Significant fauna** The Western Pebble-mound Mouse was recorded via a recently active mound on the southern boundary of the survey area. The habitats in the region are likely to support this species. Foraging habitat for Peregrine Falcon (*Falco peregrinus*) and foraging and potential breeding for Grey Falcon (*Falco hypoleucos)* is present although use would be opportunistic. **Habitat value** Moderate value	Nullagine 4.00 ha (66.01%)	

Habitat Type	Habitat Description	Extent (ha) and proportion of survey area (%)	Representative photograph
Saline stony/rocky plains and low rises	Isolated trees and clumps of Mulga (*Acacia* species) over a sparse low chenopod shrubland and scattered grasses on stony/rocky sandy clay loam open plains, broad drainage areas and low quartz rises. This habitat type consists of large bare areas and provides minimal ground covers, litter, logs or debris due to the lack of vegetative material. Evidence of historical disturbance were present from old vehicle tracks, scattered rubbish, grazing and laydown areas. Scattered tin sheets found across the survey area have provided shelter for a number of reptile and small mammals species, such as skinks, geckos, snakes, dunnarts and rodents. Associated vegetation types: VT02 and VT04 **Significant fauna** *Lerista eupoda* is likely to occur within this habitat type. The Grey Falcon and Peregrine Falcon have the potential to utilise this habitat as it contains suitable foraging opportunity. **Habitat value** Moderate value	Cue 38.59 ha (84.29%)	
Rocky granite hills	Low rocky hills and granite outcrops supporting a sparse to open Mulga woodland over a sparse understorey of scattered low shrubs and forbs. The granite hills with granite outcrops and loose boulders provide rock crevices and small shallow caves for small reptile and mammal species such as skinks, geckos, dragons, dunnarts and echidna. The *Acacia* and *Eremophila* shrubs provide foraging opportunities, breeding habitat and refugia for small birds such as thornbills, red-capped robin, honeyeaters and wrens. Associated vegetation types: VT03 **Significant fauna** Suitable foraging habitat for Peregrine Falcon. **Habitat value** Moderate value	Cue 0.86 ha (1.87%)	

Habitat Type	Habitat Description	Extent (ha) and proportion of survey area (%)	Representative photograph
Minor drainage line	Minor drainage lined with *Eucalyptus victrix* isolated trees over a mixed shrubland and grassland on sandy clay. This habitat would attract honeyeaters and granivores for foraging on the grasses, shrubs and trees, such as singing honeyeater, Yellow-throated minor and finches. Associated vegetation types: VT05 **Significant fauna** *Lerista eupoda* may occur within this habitat type. The Grey Falcon and Peregrine Falcon have the potential to utilise this habitat as it contains suitable foraging opportunity. **Habitat value** Moderate value	Cue 0.92 ha (2.02%)	
Mulga Woodland on rocky plains/low rises and broad drainage lines	Stony/rocky plains and low rises supporting Mulga (mixed *Acacia* spp.) woodlands to open woodlands over a very sparse understorey of isolated shrubs, grasses and herbs. The soils in the habitat type comprise of clay-loam on the rocky plains and low rises and a sandier clay-loam in broad drainage lines. This habitat type contains minimal ground covers, litter, logs or debris due to the lack of vegetative material in the understorey. The rocky substrate provides rock crevices for small reptiles such as skinks and geckos. There is the occasional old mine shaft in the Wiluna survey area which provides suitable habitat for reptiles, small mammals and birds such as Welcome Swallows. The *Acacia* and *Eremophila* shrubs provide foraging opportunities, breeding habitat and refugia for small birds such as thornbills, red-capped robin, honeyeaters and wrens. Associated vegetation types: VT06, VT11, VT12 **Significant fauna**: Suitable foraging habitat for Peregrine Falcon and Grey Falcon. Potential habitat for Southern Whiteface (*Aphelocephala leucopsis*) and Long-tailed Dunnart (*Sminthopsis longicaudata*). **Habitat value**	Meekatharra 23.75 ha (80.93%) Wiluna 15.06 ha (94.26%)	

Habitat Type	Habitat Description	Extent (ha) and proportion of survey area (%)	Representative photograph
	Moderate value		
Eucalyptus open woodland ephemeral drainage line	Seasonally inundated drainage area lined with a *Eucalyptus camaldulensis* open woodland over a mixed shrubland of *Acacia* and *Eremophila* species over a sparse understorey of tussock grasses and forbs on sandy-clay-loam. At the time of survey there was a small body of water attracting a diversity of bird species including Black-fronted Dotterel, finches, magpie-larks, white-browed babblers, honeyeaters and birds of prey. Small tadpoles were also observed swimming in the waterbody. The tall Eucalypt trees and shrublands provide greater canopy cover and therefore provide a cooler environment than the surrounding areas. Drainage lines are recognised for hosting greater fauna species richness and abundances compared with other habitats. Hollows and spouts in river red gum trees provide habitat for water and forest birds as well as reptiles and bats. Drainage lines provide a diversity of micro habitats including fallen logs and branches, tree hollows and thicker leaf litter. The area has been disturbed by previous clearing, vehicle tracks, rubbish, and runoff from adjacent road. Associated vegetation types: VT07 **Significant fauna** Suitable foraging habitat for Peregrine Falcon and Grey Falcon. **Habitat value** Moderate value	Meekatharra 1.01 ha (3.45%)	

Habitat Type	Habitat Description	Extent (ha) and proportion of survey area (%)	Representative photograph
Low chenopod shrublands on clay flats	Clay flats with some gilgai micro-relief, supporting low chenopod shrublands over a sparse grassland and forbland with occasional scattered trees and shrubs (*Acacia* and *Eremophila* species). The survey area has been impacted by a long history of disturbances including previous clearing, vehicle tracks, old fencing, adjacent dam, weed invasion, grazing and old mine shafts. The old mine shafts provide habitat for a number reptile, small mammal and bird species such as the Welcome Swallow. The depressions in the clay soils (gilgais) provide shelter for small reptiles and mammals which inhabit the area such as skinks, snakes, dragons and dunnarts. Associated vegetation types: VT08 **Significant fauna** Suitable foraging habitat for the Grey Falcon and Peregrine Falcon. Potential habitat for Southern Whiteface and Woma (*Aspidites ramsayi* (southwest subpop)). **Habitat value** Moderate value	Menzies 3.42 ha (59.04%)	
Tall Shrubland Minor Drainage Line	Minor drainage with an upperstorey dominated by **Schinus molle* and *Acacia jennerae* over a sparse shrubland of *Eremophila and* halophytic species over *a* tussock grassland on sandy clay soils. Disturbances to this habitat type include previous clearing and mining activities (old mine shafts), vehicles tracks, weed invasion and grazing. The shrubby upperstorey provide foraging opportunities, breeding habitat and refugia for bird species such as thornbills, honeyeaters, and wrens. The more densely covered drainage lines also provide cover and shelter for dispersal of larger fauna species. Associated vegetation types: VT09 **Significant fauna** Suitable foraging habitat for the Grey Falcon and Peregrine Falcon. Potential habitat for Southern Whiteface and Woma (*Aspidites ramsayi* (southwest subpop.)). **Habitat value**	Menzies 0.33 ha (5.63%)	

Habitat Type	Habitat Description	Extent (ha) and proportion of survey area (%)	Representative photograph
	Moderate value		
Mulga Woodland Plains	Hardpan plains supporting Mulga woodlands (*Acacia* species) over a very sparse understorey of *Eremophila* and halophytic shrubs and grasses. The woodlands provide foraging opportunities, breeding habitat and refugia for bush birds, reptiles and mammals. Hollows in trees and branches provide suitable habitat for a number of reptile species, birds and small mammals such as micro bats. Associated vegetation types: VT10 **Significant fauna** Suitable foraging habitat for Peregrine Falcon, Grey Falcon and may provide dispersal habitat for Malleefowl. Potential habitat for Southern Whiteface, Princess Parrot and Long-tailed Dunnart. **Habitat value** Moderate value	Sandstone 4.21 ha (71.35%)	
Mulga woodland on open clay plain	Mid-tall Mulga and Acacia open woodland over chenopods on flat clay plain. This habitat type provides breeding and foraging habitat for a variety of arid-land birds, and dispersal and foraging opportunity for reptiles such as elapid snakes, geckos and dragons. Disturbances in this habitat include grazing from rabbits, and drought. The understory at the time of the survey was very sparse, and the trees were mostly dead/dying off. The area around the airstrip is fenced off, which limits the dispersal through the area of larger mammals or birds such as Malleefowl. **Significant fauna** The habitat provides suitable foraging habitat for the Peregrine Falcon. The Princess Parrot may utilise this habitat for dispersal, but there is limited foraging opportunity (lacking spinifex or grassy understorey). **Habitat value** Moderate	Laverton 15.39 ha (61.36%)	

Habitat Type	Habitat Description	Extent (ha) and proportion of survey area (%)	Representative photograph
Eucalyptus lined minor drainage line	*Eucalyptus camaldulensis* open woodland on minor drainage line. Disturbances to this habitat type include weed invasion and rubbish. The drainage line is ephemeral and species such as frogs, woodland birds, snakes and lizards would utilise the habitat on a seasonal basis. Mammals such as dogs, cats, cattle and other livestock will use this habitat as a dispersal corridor. **Significant fauna** The habitat provides suitable foraging and potentially breeding habitat for the Peregrine Falcon. The Princess Parrot may utilise this habitat for dispersal and breeding as well in the form of tall hollow Eucalypts. **Habitat value** High	Laverton 0.38 ha (1.50%)	
Acacia shrubland on low rise	Mid-tall Acacia open shrubland with emergent isolated chenopod shrubs and grasses on undulating stony ground. Disturbances to this habitat type include severe drought and grazing. There is surrounding clearing and disturbance from industry as well. Very little fauna species were recorded during the survey. A long domed bird nest was found in one of the tall shrubs, which may have been a finch, wren or thornbill nest. No active reptiles were recorded, but would provide suitable dispersal for some elapid snakes, lizards and arboreal geckos. This habitat type is associated with VT13. **Significant fauna** The Grey Falcon and Peregrine Falcon may both utilise the survey area for foraging opportunity as they are known to occur in the area. The Southern Whiteface may be present on a seasonal basis, as this species is known to occur in the area and the survey area contains suitable habitat (chenopods). At the time of the survey, the understorey was very bare due to drought, and provides little foraging opportunity, but the species may be a visitor and fly through the habitat. **Habitat value**	Gascoyne 8.70 ha (80.69%)	

Habitat Type	Habitat Description	Extent (ha) and proportion of survey area (%)	Representative photograph
	Moderate		
Scattered natives over weeds	Occasional native shrub over weed dominated understorey. No habitat value.	Nullagine 0.37 ha (6.11%)	Scattered natives over weeds
Cleared areas	Areas devoid of native vegetation or dominated by weeds, such as tracks and historically cleared areas.	Nullagine 1.69 ha (27.88%) Cue 5.42 ha (11.84%) Meekatharra 4.58 ha (15.62%) Menzies 2.04 ha (35.33%) Sandstone 1.69 ha (28.65%) Wiluna 0.92 ha (5.74%) Gascoyne Junction 2.08 ha (23.93%) Laverton 9.31 ha (37.14%)	

11.2.2 Fauna diversity

Nullagine survey area

A total of 34 fauna species were identified in the Nullagine survey area. This total comprised:

– 21 birds
– Nine reptiles
– Four mammals.

One of the species are introduced (dingo/domestic dog).

Cue survey area

A total of 31 fauna species were identified in the Cue survey area. This total comprised:

– 20 birds
– Seven mammals
– Four reptiles.

Four introduced species (dog, cat, house mouse and rabbits) were recorded and are included in this total.

Meekatharra survey area

A total of 32 fauna species were identified in the Meekatharra survey area. This total comprised:

– 24 birds
– Four mammals
– Four reptiles.

Three introduced species (dog, cat and rabbits) were recorded and are included in this total.

Menzies survey area

A total of 17 fauna species were identified in the Menzies survey area. This total comprised:

– 11 birds
– Five mammals
– One reptile.

Four introduced species (cattle, cat, dog and rabbits) were recorded and are included in this total.

Sandstone survey area

A total of ten fauna species were identified in the Sandstone survey area. This total comprised:

– Seven birds
– Two mammals
– One reptile.

Wiluna survey area

A total of 30 fauna species were identified in the Warmun site. This total comprised:

– 14 birds
– Five mammals
– Three reptiles.

Three species are introduced (dog, cat and cattle).

Gascoyne Junction survey area

A total of 17 fauna species were recorded at the Gascoyne Junction site. This total comprised:

– 14 birds

– Two mammals
– One reptile.

One of the mammals recorded is introduced (cow).

Laverton survey area

A total of 23 fauna species were recorded in the Laverton survey area. This total comprised:

– 18 birds
– Four mammals
– One reptile.

Three of the mammals are introduced (dog, cow and rabbit).

11.2.3 Significant fauna

No Threatened fauna listed under the EPBC Act or BC Act was recorded during the surveys. One Priority 4 species (listed by DBCA) was recorded at the Nullagine survey area. A recently active Western Pebble-mound Mouse mound was observed on the southern boundary of the survey area (located at 201487.959 E and 7577623.215768 N). No other significant fauna was recorded during the surveys.

Targeted survey for Greater Bilby (Macrotis lagotis)

Nullagine

A target assessment was undertaken for Greater Bilby at this site with no evidence found. Due to the size of the site the entire area was traversed with all diggings and evidence recorded from Monitors, rodents and small birds. If Bilby were present the likelihood of observing evidence would be high suggesting the species is not present in the area.

Targeted survey for Northern Shield-backed Trapdoor Spider (Idiosoma clypeatum)

The Northern Shield-backed Trapdoor Spider *(Idiosoma clypeatum)* (P3) has a widespread distribution in the Yalgoo and Murchison bioregions of Western Australia's inland arid zone. *Idiosoma* spiders typically inhabit clay soils of eucalypt woodlands and acacia vegetation, and relies heavily on leaf-litter and twigs to build its burrow (Main, 1996; 2003) which are adorned with a 'moustache-like' arrangement of twig-line (Rix et al. 2018). Transect searches were undertaken for *Idiosoma clypteatum* burrows in suitable habitat at the Menzies, Wiluna, Sandstone, Cue, Meekatharra and Laverton sites.

A trapdoor spider burrow was recorded in the Laverton survey area (Plate 7). The identification of this burrow would not be possible without specimen collection. No previous records for *Idiosoma* were identified in the desktop assessment for Laverton, with the closest known records of *Idiosoma clypteatum* located approximately 230 km northwest of the Laverton survey area. Only the one burrow was recorded during the survey. There is potential for *Idiosoma clypteatum* to occur at the Laverton site.

No burrows were identified in the remaining survey areas. There is suitable habitat (Mulga woodland) for *Idiosoma* in the Meekatharra, Sandstone and Wiluna survey areas and limited suitable habitat within the Cue survey area.

Plate 7 Idiosoma sp. (trapdoor spider) burrow recorded at Laverton

Likelihood of occurrence

A likelihood of occurrence assessment was conducted for significant fauna species identified in the desktop assessment. This assessment was based on species biology, habitat requirements, the quality and availability of suitable habitat (based on vegetation types present within the survey area) and previous records of species in the study area. No assumptions were made on the transient potential of these species. The complete likelihood of assessment is provided in Appendix E.

The likelihood of occurrence of significant fauna species has been separated by each survey site:

Nullagine

– One fauna species is considered highly likely to occur as it was recorded during the survey just on the southern boundary of the survey area; the Western Pebble Mound-mouse (*Pseudomys chapmani*) (P4). Six (6) species are considered likely to occur due to potentially suitable foraging and/or breeding habitat in the survey area and close proximity of previous records. These species include:
  - Pilbara Olive Python (*Lialis olivaceus barroni*) (VU)
  - Pin-striped finesnout Ctenotus (*Ctenotus nigrilineatus*) (P1)
  - Pilbara leaf-nosed Bat (*Rhinonicteris aurantia)* (VU)
  - Ghost Bat (*Macroderma gigas)* (VU)
  - Northern Quoll (*Dasyurus hallucatus*) (EN)
  - Grey Falcon (*Falco hypoleucos*) (VU)
  - Peregrine Falcon (*Falco peregrinus*) (OS). The Peregrine Falcon was not identified in the desktop assessment at Nullagine, but it is known to occur in the wider region and suitable foraging habitat is present, although it may utilise the survey area opportunistically, similar to the Grey Falcon.
– 14 species are considered Unlikely to occur
– Five species are considered Highly Unlikely to occur.

Cue

– Three species are Likely to occur:
  - Grey Falcon (*Falco hypoleucos*) (VU)
  - Peregrine Falcon (*Falco peregrinus*) (OS)

- West Coast Mulga Slider (*Lerista eupoda*) (P1)

– Twenty-one fauna taxa are considered Unlikely to occur

– Two taxa are considered Highly Unlikely to occur.

Meekatharra

– Four species are Likely to occur:

- Southern Whiteface (*Aphelocephala leucopsis*) (VU)
- Peregrine Falcon (*Falco peregrinus*) (OS)
- Grey Falcon (*Falco hypoleucos*) (VU)
- Long-tailed Dunnart (*Sminthopsis longicaudata*) (P4)

– Eleven are Unlikely to occur

– Three are Highly Unlikely to occur.

Menzies

– Four are Likely to occur:

- Southern Whiteface (*Aphelocephala leucopsis*) (VU)
- Grey Falcon (*Falco hypoleucos*) (VU)
- Woma (*Aspodotes ramsayi*) (southwest subpop.) (P1)
- Peregrine Falcon (*Falco peregrinus*) (OS). The Peregrine Falcon was not identified in the desktop assessment at Menzies, but it is known to occur in the wider region and suitable foraging habitat is present.

– Seven are Unlikely to occur

– Two are Highly Unlikely to occur.

Sandstone

– Six species are Likely to occur:

- Princess Parrot (*Polytelis alexandrae*) (P4/VU)
- Malleefowl (*Leipoa ocellata*) (VU)
- Southern Whiteface (*Aphelocephala leucopsis*) (VU)
- Peregrine Falcon (*Falco peregrinus)* (OS)
- Grey Falcon *(Falco hypoleucos)* (VU)
- Long -tailed Dunnart (*Sminthopsis longicaudata*) (P4)

– Four are Unlikely to occur

– Five are Highly Unlikely to occur.

Wiluna

– Five species are Likely to occur:

- Southern Whiteface (*Aphelocephala leucopsis*) (VU)
- Malleefowl (*Leipoa ocellata*) (VU)
- Peregrine Falcon (*Falco peregrinus*) (OS)
- Grey Falcon (*Falco hypoleucos*) (VU)
- Long-tailed Dunnart (*Sminthopsis longicaudata*) (P4)

– Twelve are Unlikely to occur

– Nine are Highly Unlikely to occur.

Gascoyne Junction

– Three species are Likely to occur:
  - Southern Whiteface (*Aphelocephala leucopsis*) (VU)
  - Peregrine Falcon (*Falco peregrinus*) (OS)
  - Grey Falcon (*Falco hypoleucos*) (VU).
– Five are Unlikely to occur
– Twelve are Highly Unlikely to occur.

Laverton

– Two species are Likely to occur:
  - Princess Parrot (*Polytelis alexandrae*) (P4/VU)
  - Peregrine Falcon (*Falco peregrinus*) (OS)
– Twelve are Unlikely to occur
– Ten are Highly Unlikely to occur.

12. Conclusion

The vegetation within the survey areas form part of a large continuous tract of habitat and have a high degree of habitat connectivity with surrounding vegetation, which have similar or better condition vegetation. The habitat types identified during the survey are not confined to the survey areas and are considered well represented in the local and regional area. Overall, the habitat was generally in good condition with some areas impacted to some degree by vehicle tracks, previous clearing, weeds, rubbish dumping, grazing livestock and feral animals.

One PEC was identified as occurring within the Cue survey area, the Austin Land System (Priority 3). The Austin Land System PEC is described as saline stony plains with low rises and drainage foci supporting low halophytic shrublands with scattered mulga; occurs mainly adjacent to lakes Austin and Annean below greenstone hill systems. Vegetation types VT02, VT04 and VT05 were representative of this PEC.

One EPBC Act and BC Act listed flora taxon was recorded from the Cue survey area; *Eremophila rostrata* subsp. *rostrata* (Threatened – BC Act listed and Critically Endangered - EPBC Act). Sixty-four occurrences of *Eremophila rostrata* subsp. *rostrata* were recorded within the southern and eastern portion of the Cue survey area. In 2008 the known population of this species was approximately 90 mature plants. This *Eremophila* is found in two geographically distinct population groups with different habitats. The Cue population group is known to grow on stony, buff coloured saline clays at the base of quartzite hills in an open shrubland of *Acacia* and *Eremophila* species (DCCEEW 2009).

No other EPBC Act or BC Act listed flora were recorded from the other survey areas. Four DBCA priority listed flora taxa were recorded from the following survey areas:

– Forty-eight occurrences of *Acacia aphanoclada* (Priority 1) were recorded within the Nullagine survey area
– One *Solanum* sp. Mosquito Creek (A.A. Mitchell et al. AAM 10795) (Priority 1) individual was recorded within the Nullagine survey area, and has only been recorded form the Nullagine area (WAH 1998-)
– One *Maireana prosthecochaeta* (Priority 3) individual was recorded within the Cue survey area
– One *Ptilotus* sp. Cue (P. Armstrong PA 16/362) (Priority 1) individual was recorded within the Cue survey area and is only known from one previous specimen record at the WA Herbarium from 2016 from near the townsite of Cue. This specimen has very limited collecting information available on habitat (WAH 1998-).

Twelve broad fauna habitat types (excluding cleared and disturbed areas) were identified across the survey areas based on the predominant landforms, soil and vegetation structure in the area.

No Threatened fauna listed under the EPBC Act or BC Act was recorded during the surveys. One Priority 4 species (listed by DBCA) was recorded at the Nullagine survey area, a recently active Western Pebble-mound mouse (*Pseudomys chapmani*) mound was observed on the southern boundary of the survey area. No other significant fauna was recorded during the surveys.

The survey areas support habitat for a total of thirteen significant fauna species (that were identified as likely to occur post-survey), in the form of mostly dispersal and foraging habitat, but also potential breeding habitat where large trees support hollows in the drainage lines.

A targeted assessment for the Bilby (*Macrotis lagotis*) at Nullagine did not identify the presence of Bilby through secondary signs. The likelihood of detectability was recorded as high, due to the openness of the understorey, and the recording of other species during the assessment (bird and rodent tracks and monitor diggings and burrows).

Transect searches were undertaken for Northern Shield-backed Trapdoor Spider (*Idiosoma clypteatum*) burrows in suitable habitat at the Menzies, Wiluna, Sandstone, Cue, Meekatharra and Laverton sites. A trapdoor spider burrow was recorded in the Laverton survey area. The identification of this burrow would not be possible without specimen collection. No previous records for *Idiosoma* were identified in the desktop assessment for Laverton, with the closest known records of *Idiosoma clypteatum* located approximately 230 km northwest of the Laverton survey area. Only the one burrow was recorded during the survey. There is potential for *Idiosoma clypteatum* to occur at the Laverton site, but it is not considered likely as there is limited available data for this species in the region, and no previous records of *Idiosoma* in the study area.

There is suitable habitat (Mulga woodland) for *Idiosoma* in the Meekatharra, Sandstone and Wiluna survey areas and limited suitable habitat within the Cue survey area*. Idiosoma clypteatum* was assessed unlikely to occur post-survey at all sites as the search effort did not record any burrows, and the areas generally don't represent known core habitat for the species.

13. References

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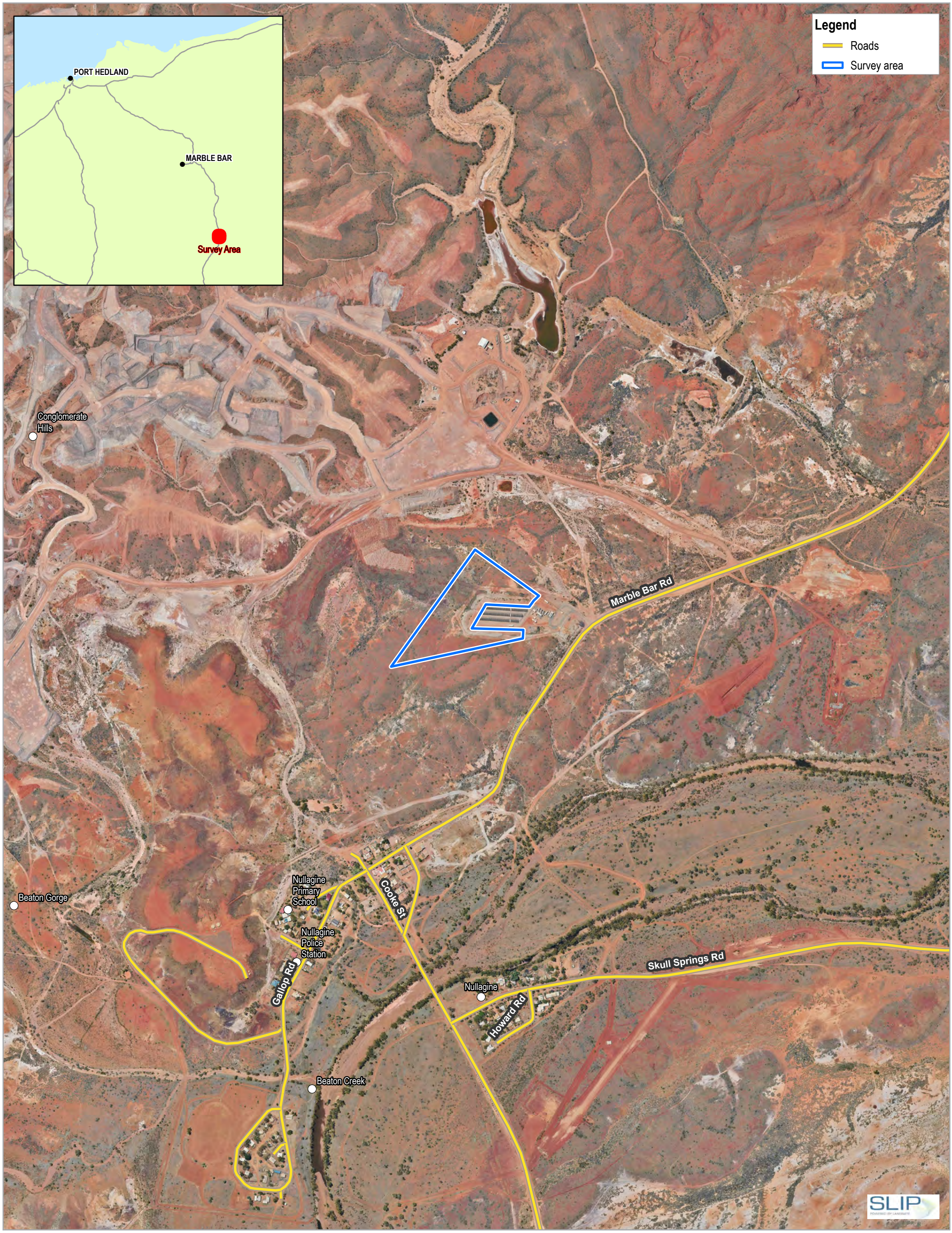
Appendices

Appendix A

Figures



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Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 50

N

GHD

Horizon Power
Midwest and Remote Towns IRP
Project Desktop and Field Study

Locality - Nullagine

Project No. **12611848**
Revision No. **0**
Date **8/31/2023**

FIGURE 1

G:\61\12611848\GIS\Maps\Working\12611848_Figures\12611848_Figures.aprx\12611848_01_Nullagine_Locality_Rev0
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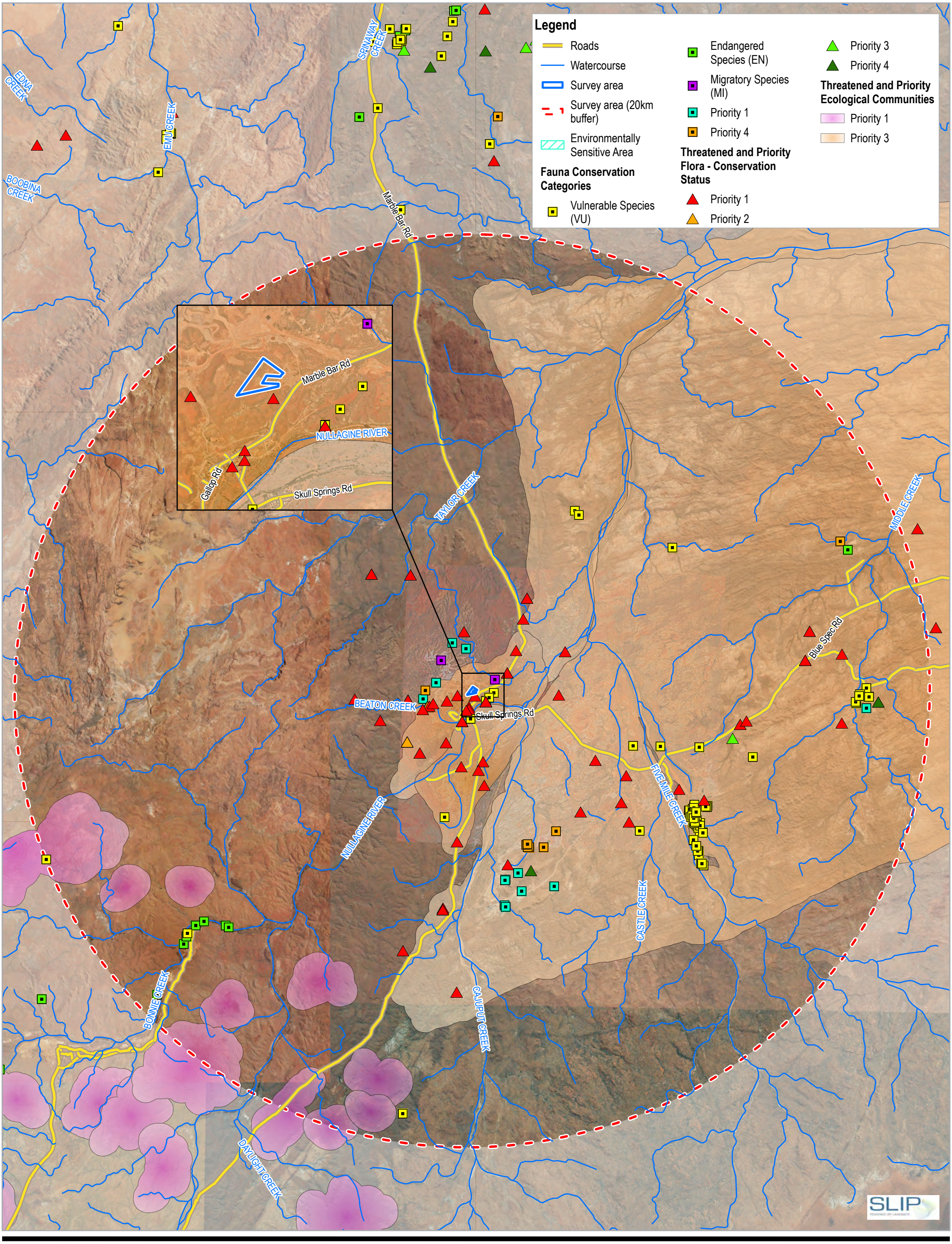

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Map Projection: Transverse Mercator
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Grid: GDA2020 MGA Zone 50

N

GHD

Horizon Power
Midwest and Remote Towns IRP
Project Desktop and Field Study

Environmental Constraints - Nullagine

Project No. **12611848**
Revision No. **0**
Date **6/30/2023**

FIGURE 2

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Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 50

GHD

Horizon Power
Midwest and Remote Towns IRP
Project Desktop and Field Study

Project No. **12611848**
Revision No. **0**
Date **8/9/2023**

Survey Effort - Nullagine

FIGURE 3

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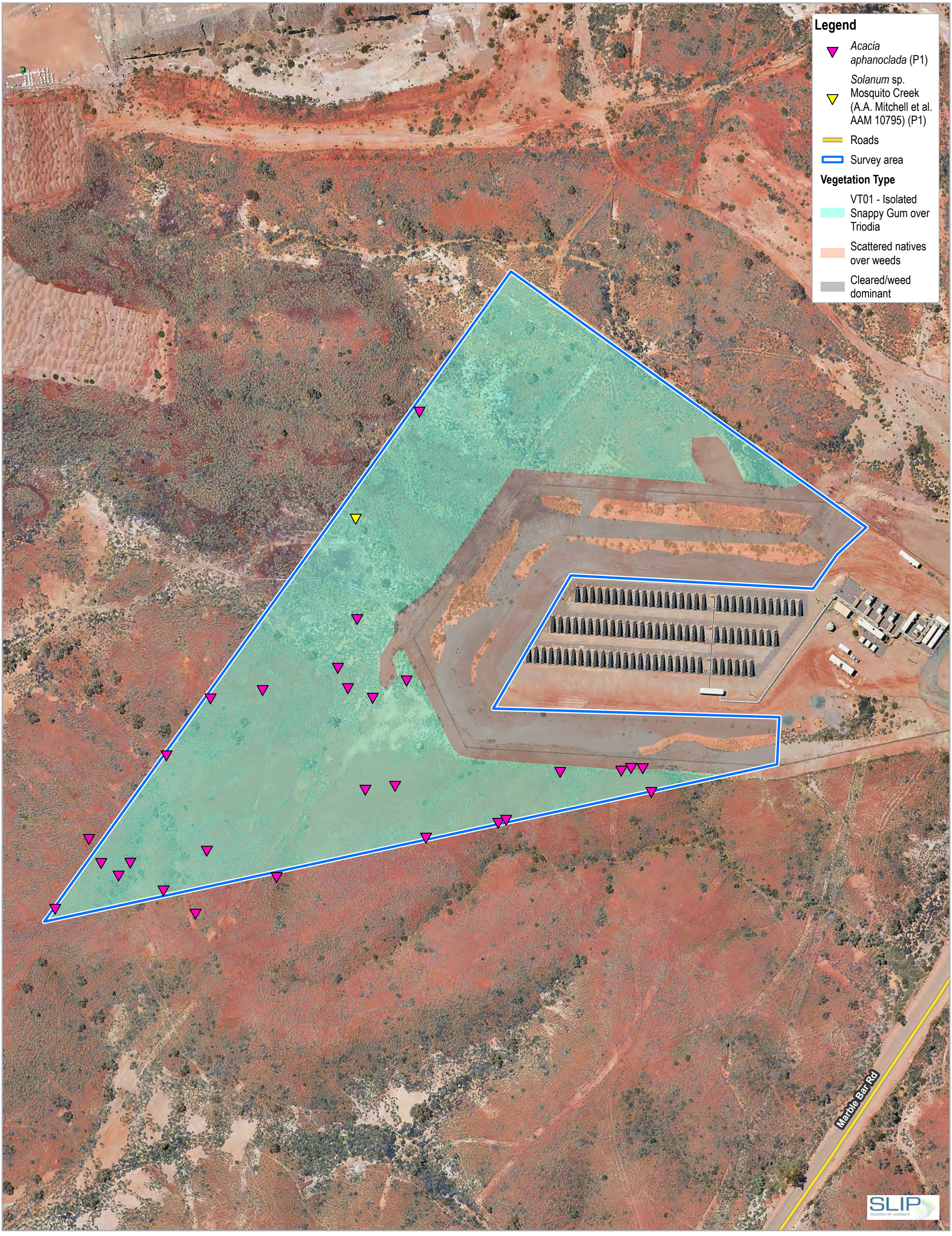

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Map Projection: Transverse Mercator
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GHD

Horizon Power
Midwest and Remote Towns IRP
Project Desktop and Field Study

Vegetation Types and Significant Flora - Nullagine

Project No. **12611848**
Revision No. **0**
Date **8/10/2023**

FIGURE 4

G:\61\12611848\GIS\Maps\Working\12611848_Figures\12611848_Figures.aprx\12611848_04_Nullagine_VegTypeSampleSite&SigFlora_Rev0
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Meters

N

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GHD

Horizon Power
Midwest and Remote Towns IRP
Project Desktop and Field Study

Vegetation Condition and Significant Weeds - Nullagine

Project No. **12611848**
Revision No. **0**
Date **8/9/2023**

FIGURE 5

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Grid: GDA2020 MGA Zone 50

GHD

Horizon Power
Midwest and Remote Towns IRP
Project Desktop and Field Study

Fauna Habitat and Significant Fauna - Nullagine

Project No. **12611848**
Revision No. **0**
Date **8/10/2023**

FIGURE 6

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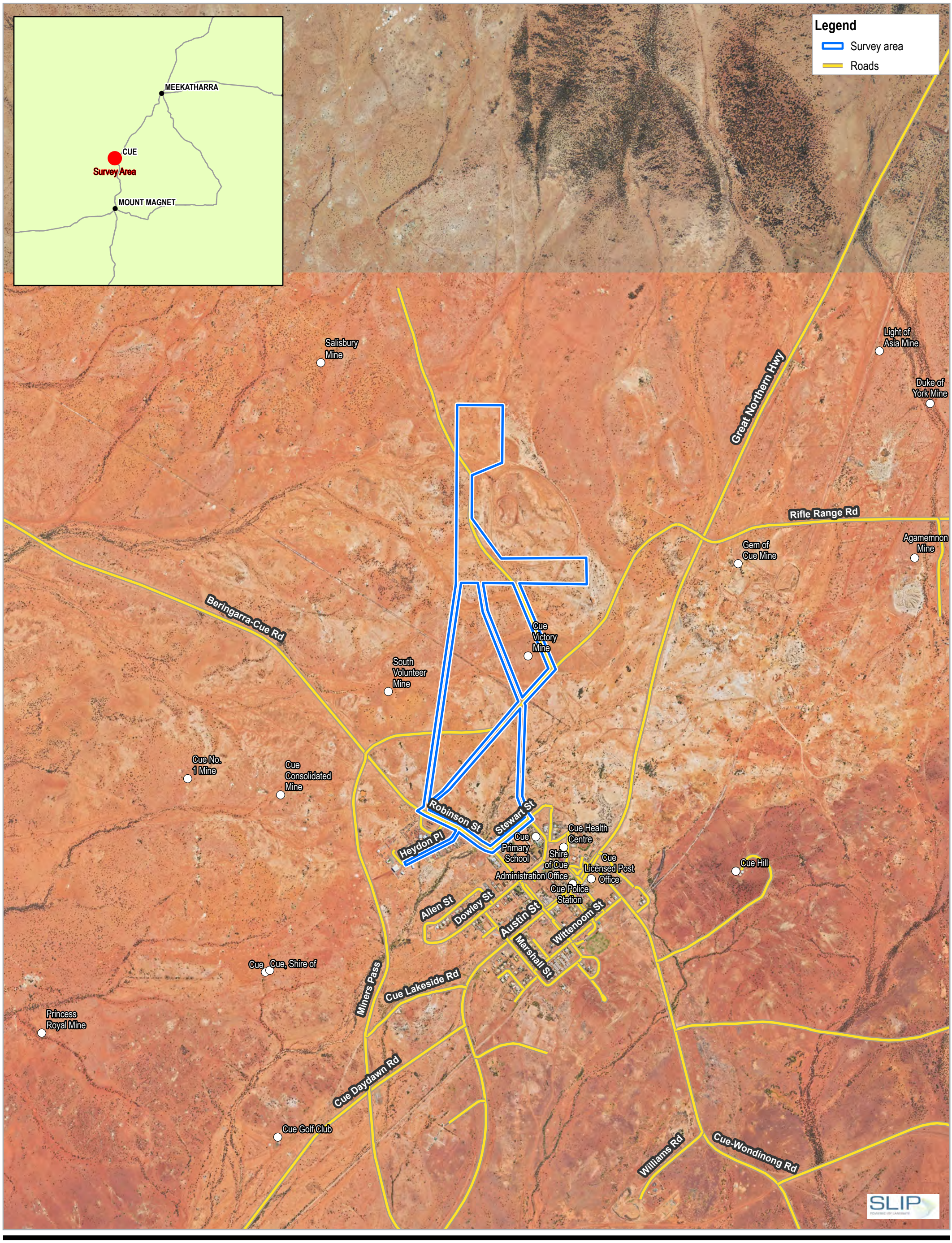

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Kilometers

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Grid: GDA2020 MGA Zone 50

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GHD

Horizon Power
Midwest and Remote Towns IRP
Project Desktop and Field Study

Locality - Cue

Project No. **12611848**
Revision No. **0**
Date **6/1/2023**

FIGURE 7

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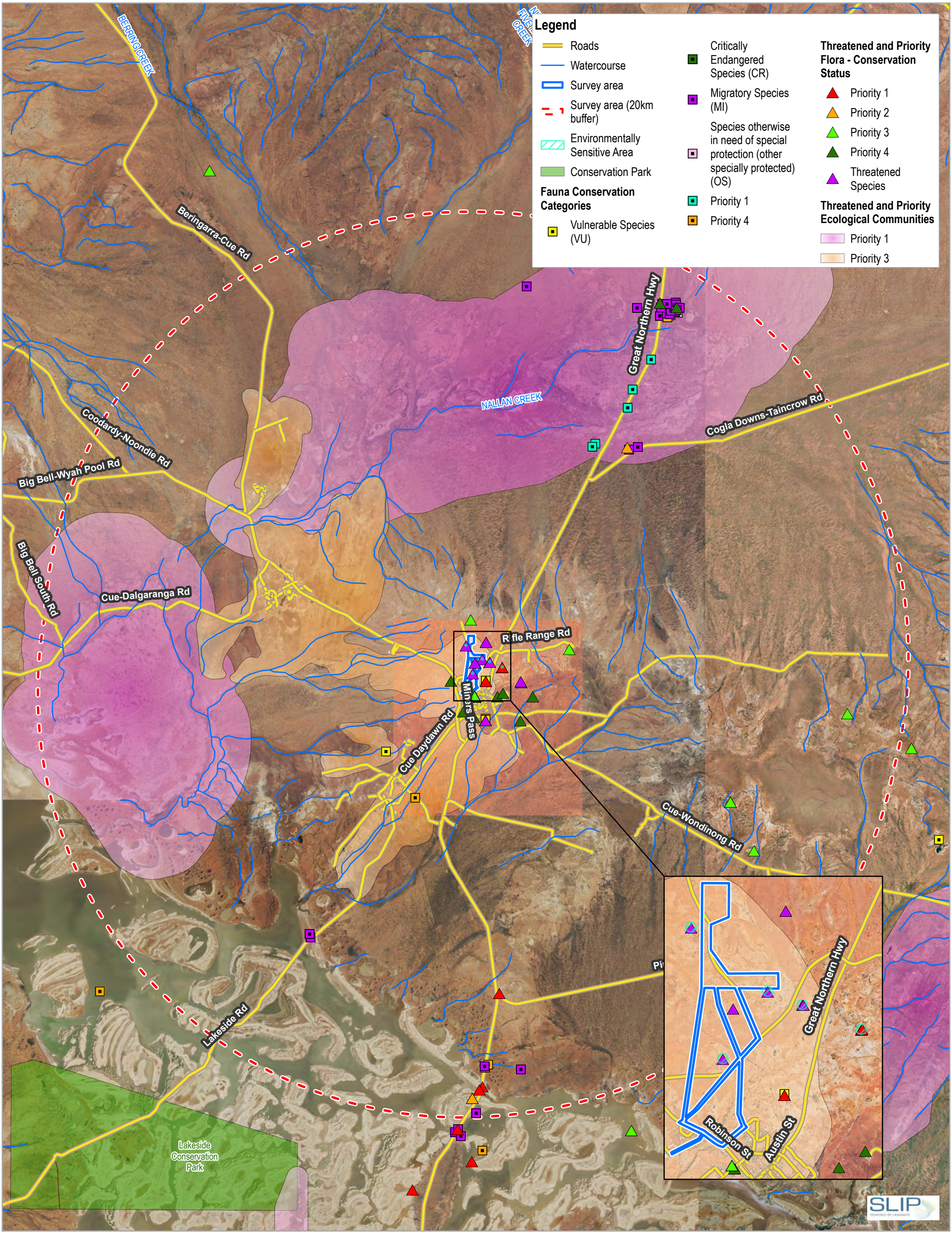

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Kilometers

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Grid: GDA2020 MGA Zone 50

N

GHD

Horizon Power
Midwest and Remote Towns IRP
Project Desktop and Field Study

Project No. **12611848**
Revision No. **0**
Date **6/19/2023**

Environmental Constraints - Cue

FIGURE 8

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Legend
Quadrat
Releve
Roads
Tracklogs
Survey area
CUE01
CUE02
CUE03
CUE04
CUE05
CUE06
CUE07R
CUE08
Great Northern Hwy
Beringarra-Cue Rd
Miners Pass
Heydon Pl
Robinson St
Stewart St
Simpson St
Mitchell St
Chesson St
Richmond St
Victoria St
Dowley St
Austin St
Patterson St
Livingstone St
SLIP

Paper Size ISO A3
at Scale: 1:8,000
0 100 200 300 400
Meters
N
Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 50

GHD

Horizon Power
Midwest and Remote Towns IRP
Project Desktop and Field Study

Survey Effort - Cue

Project No. 12611848
Revision No. 0
Date 6/14/2023

FIGURE 9

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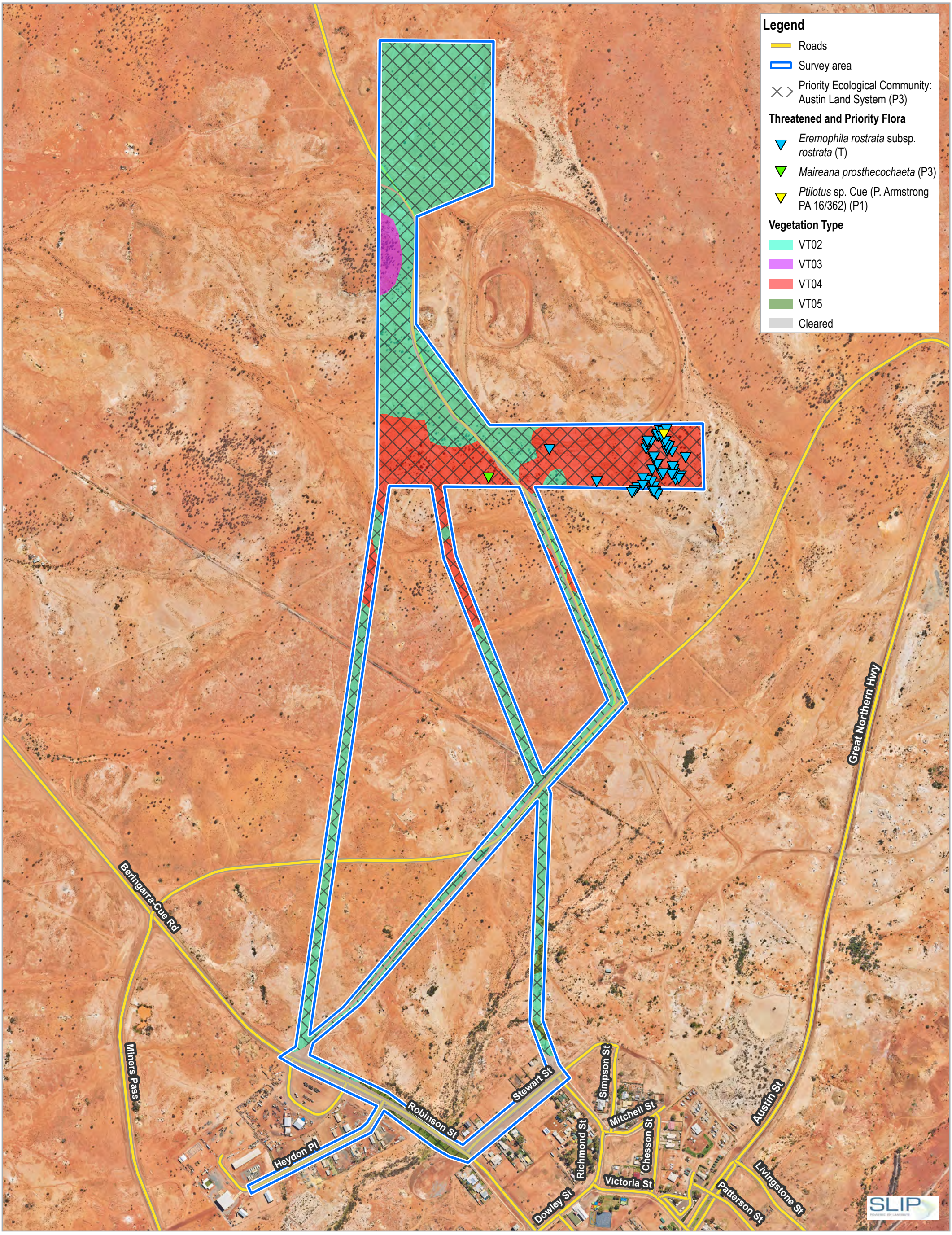

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Meters

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Map Projection: Transverse Mercator
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Grid: GDA2020 MGA Zone 50

GHD

Horizon Power
Midwest and Remote Towns IRP
Project Desktop and Field Study

Vegetation Types, Significant Flora and Communities - Cue

Project No. **12611848**
Revision No. **0**
Date **8/30/2023**

FIGURE 10

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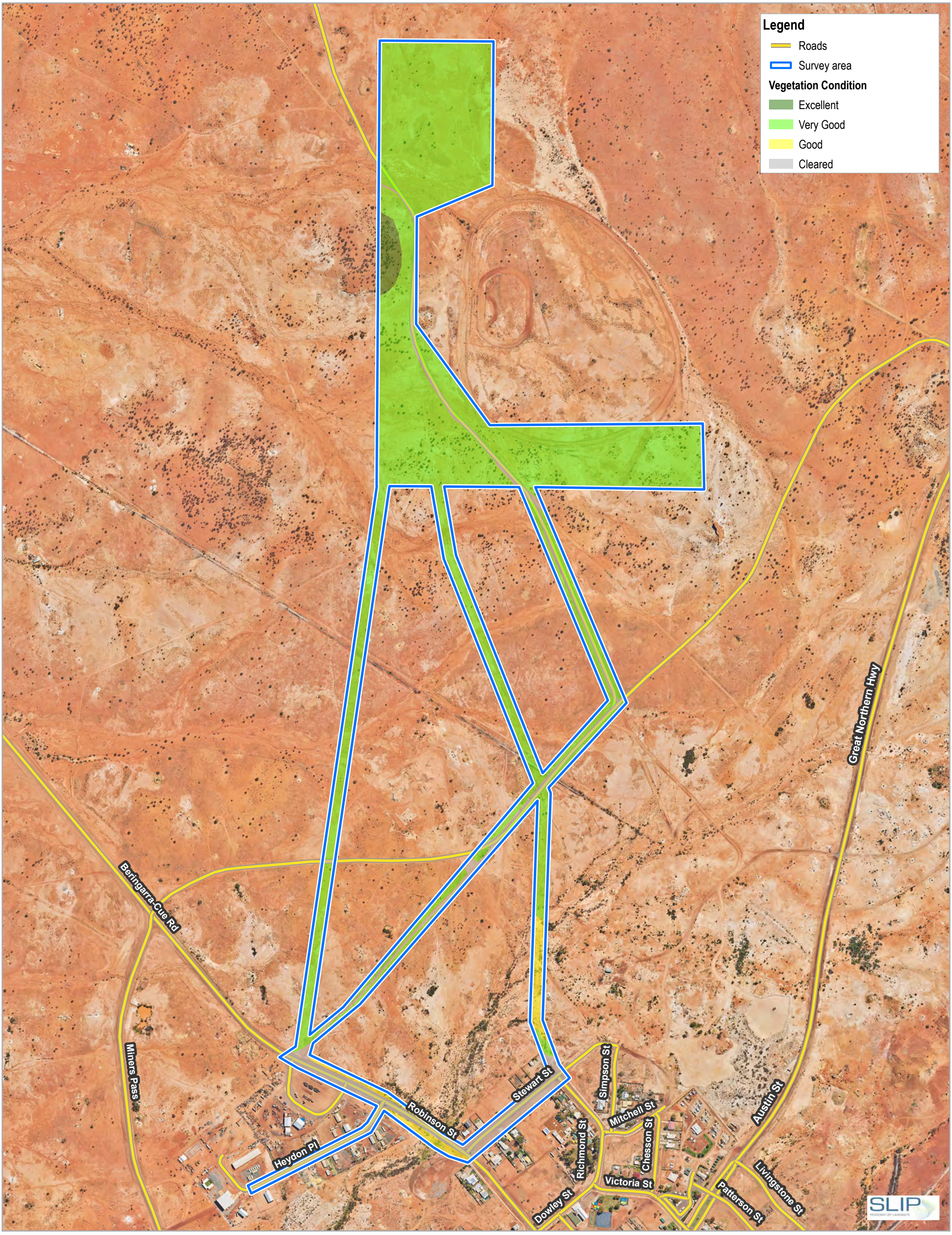

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0 100 200 300 400
Meters

N

Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 50

GHD

Horizon Power
Midwest and Remote Towns IRP
Project Desktop and Field Study

Project No. **12611848**
Revision No. **0**
Date **6/14/2023**

Vegetation Condition - Cue

FIGURE 11

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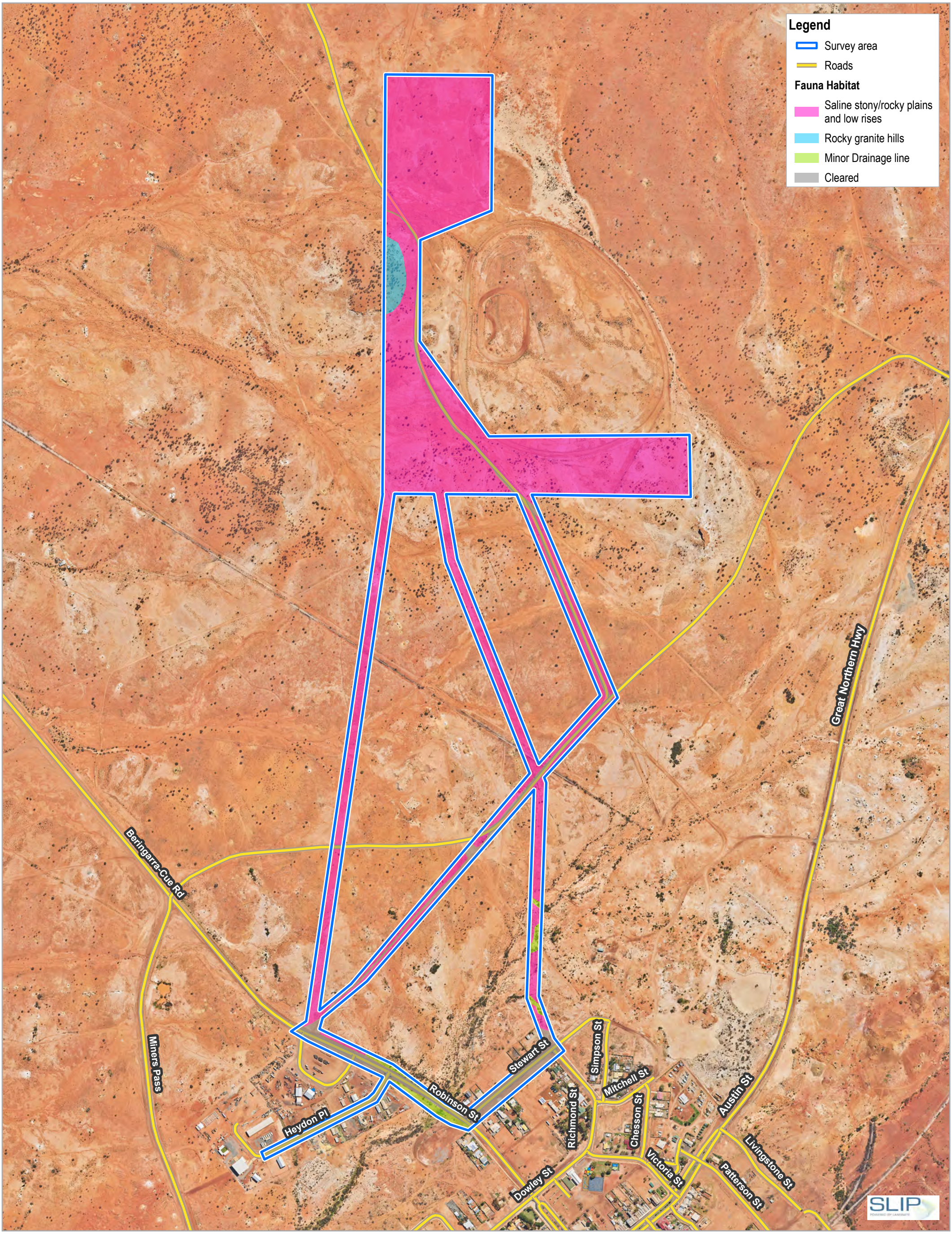

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Meters

N

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GHD

Horizon Power
Midwest and Remote Towns IRP
Project Desktop and Field Study

Fauna Habitat - Cue

Project No. **12611848**
Revision No. **0**
Date **8/30/2023**

FIGURE 12

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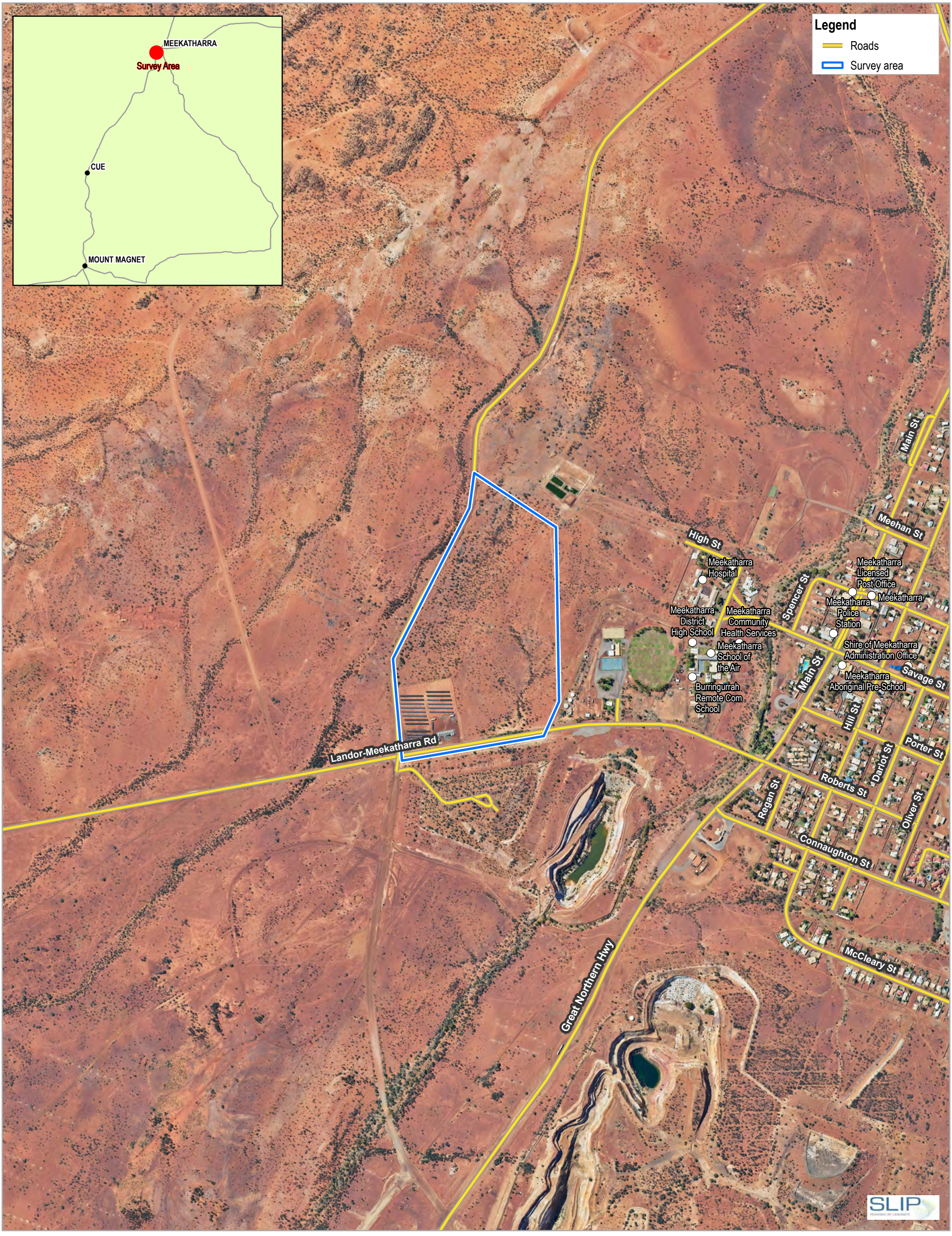

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Kilometers

Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 50

N

GHD

Horizon Power
Midwest and Remote Towns IRP
Project Desktop and Field Study

Locality - Meekatharra

Project No. **12611848**
Revision No. **0**
Date **6/13/2023**

FIGURE 13

G:\61\12611848\GIS\Maps\Working\12611848_Figures\12611848_Figures.aprx\12611848_13_Meekatharra_Locality_Rev0
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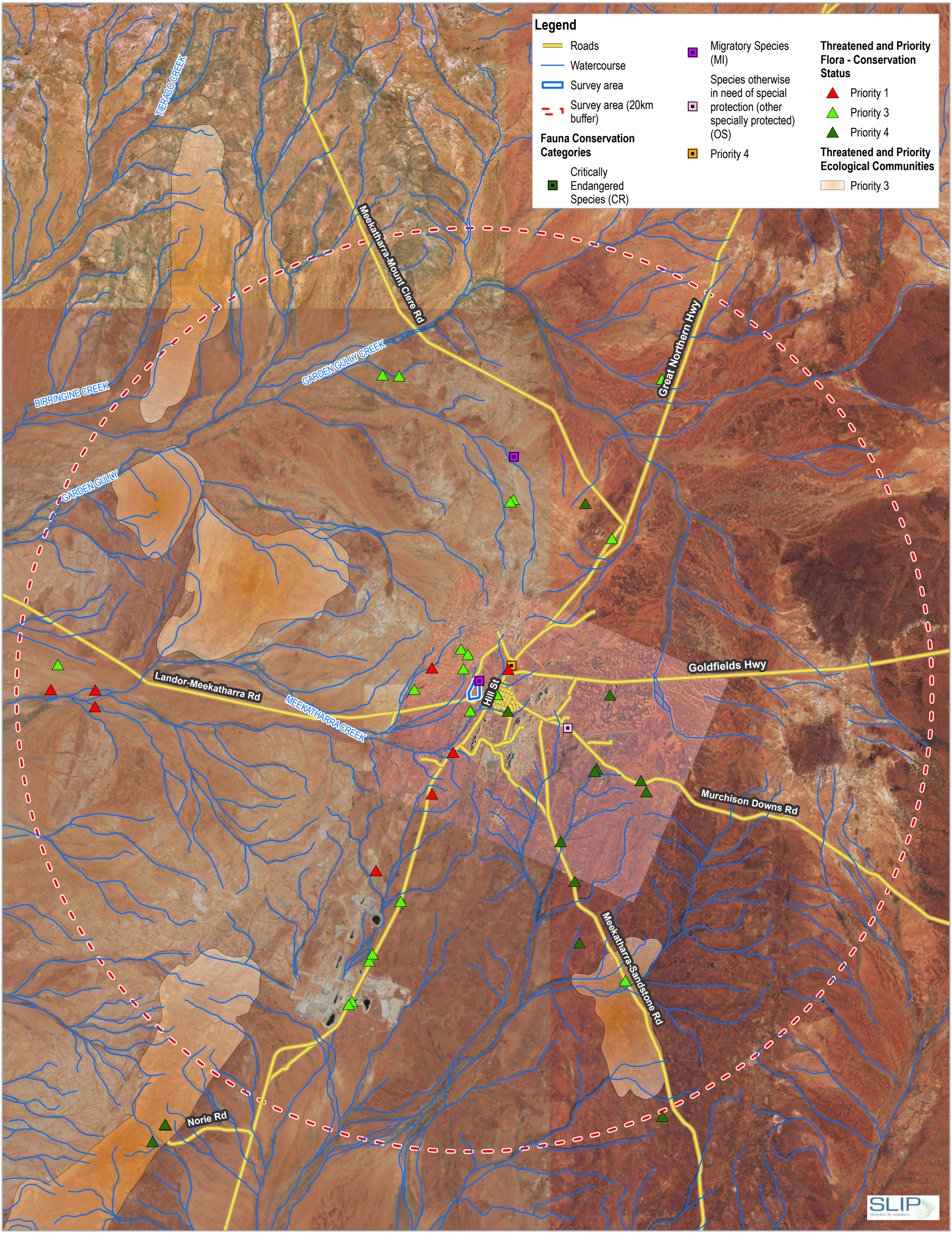

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0 1.5 3 4.5 6
Kilometers

Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 50

N

GHD

Horizon Power
Midwest and Remote Towns IRP
Project Desktop and Field Study

Environmental Constraints - Meekatharra

Project No. **12611848**
Revision No. **0**
Date **6/19/2023**

FIGURE 14

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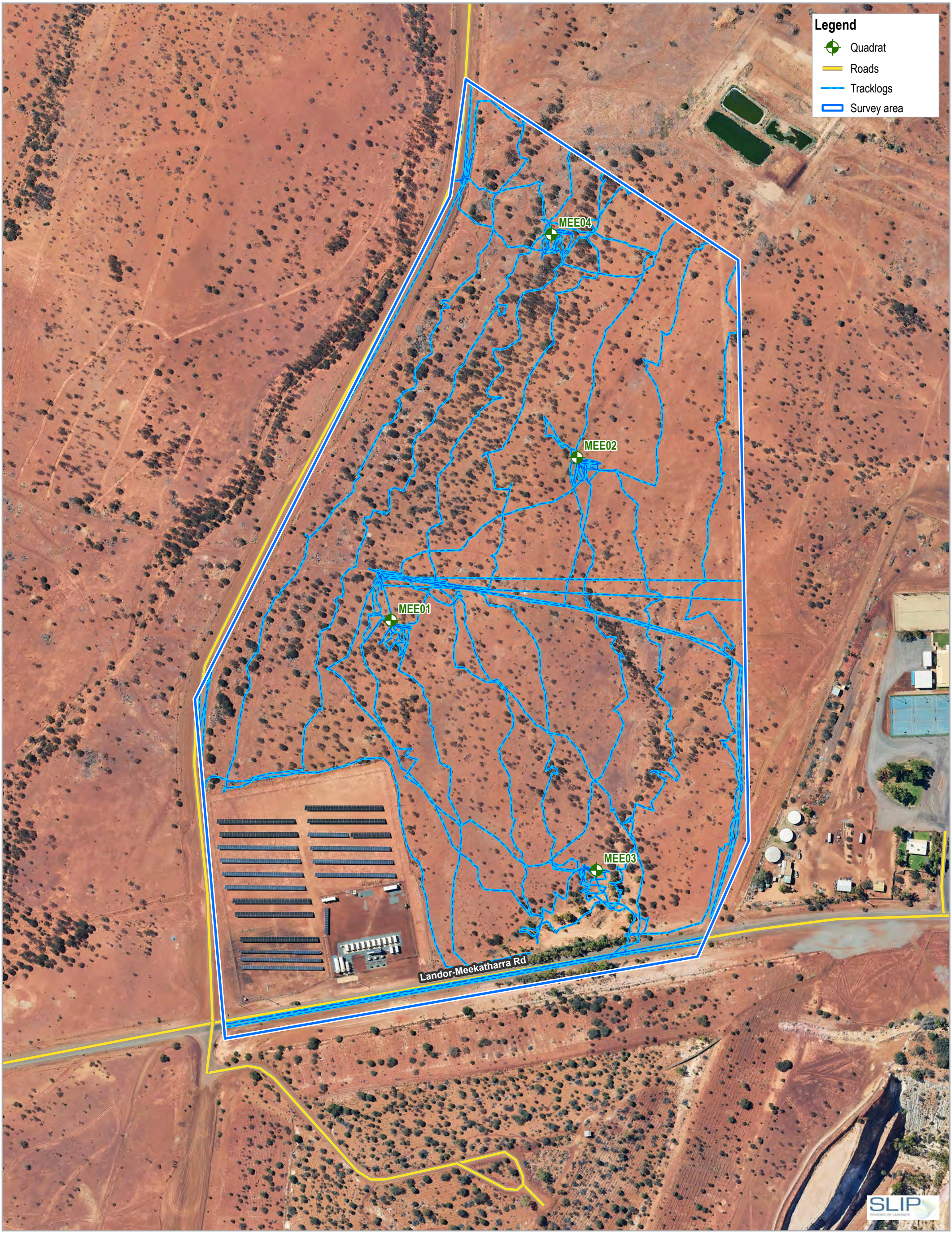

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0 30 60 90 120

Meters

N

Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 50

GHD

Horizon Power
Midwest and Remote Towns IRP
Project Desktop and Field Study

Project No. **12611848**
Revision No. **0**
Date **6/19/2023**

Survey Effort - Meekatharra

FIGURE 15

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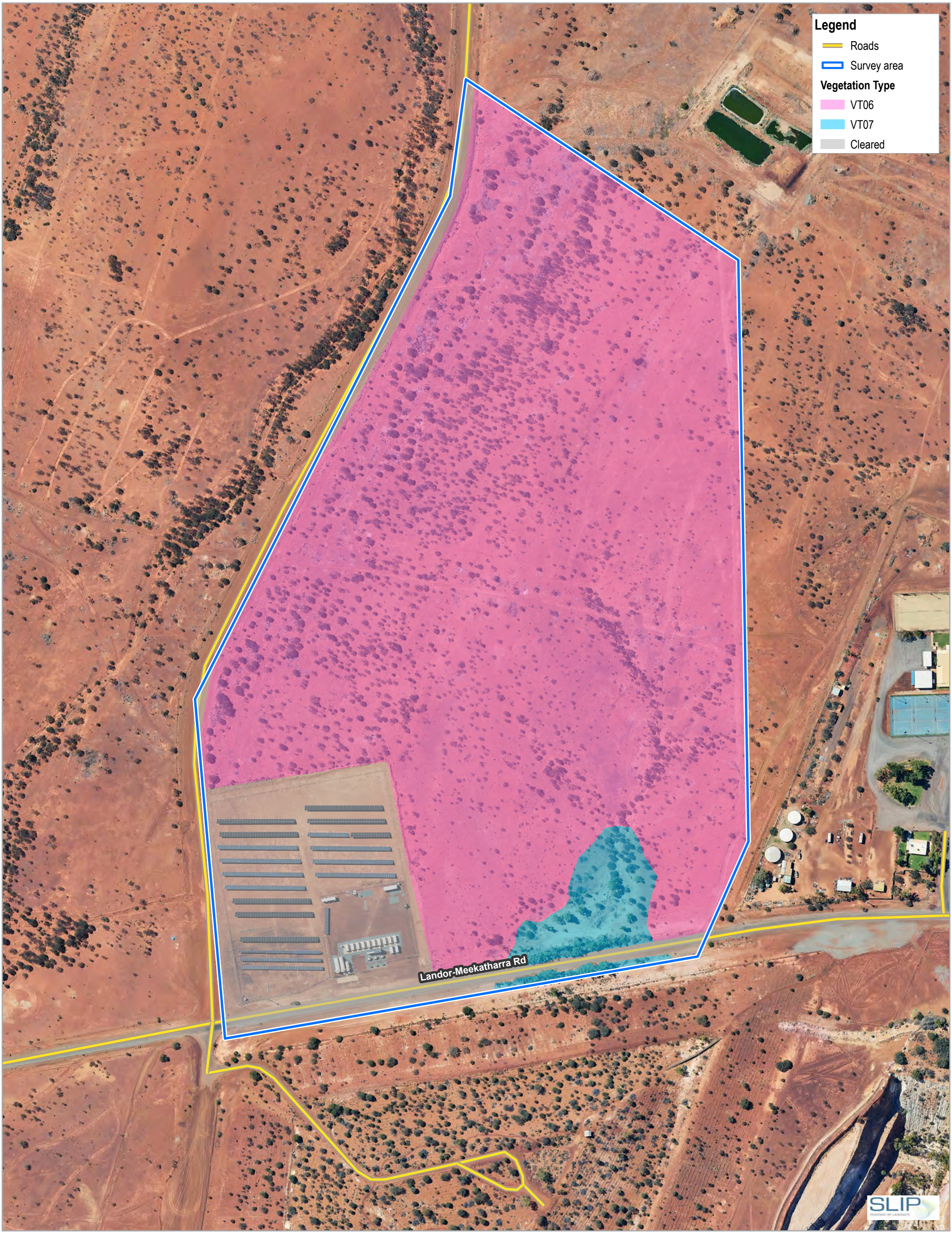

Paper Size ISO A3
at Scale: 1:3,000

0 30 60 90 120

Meters

Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 50

N

GHD

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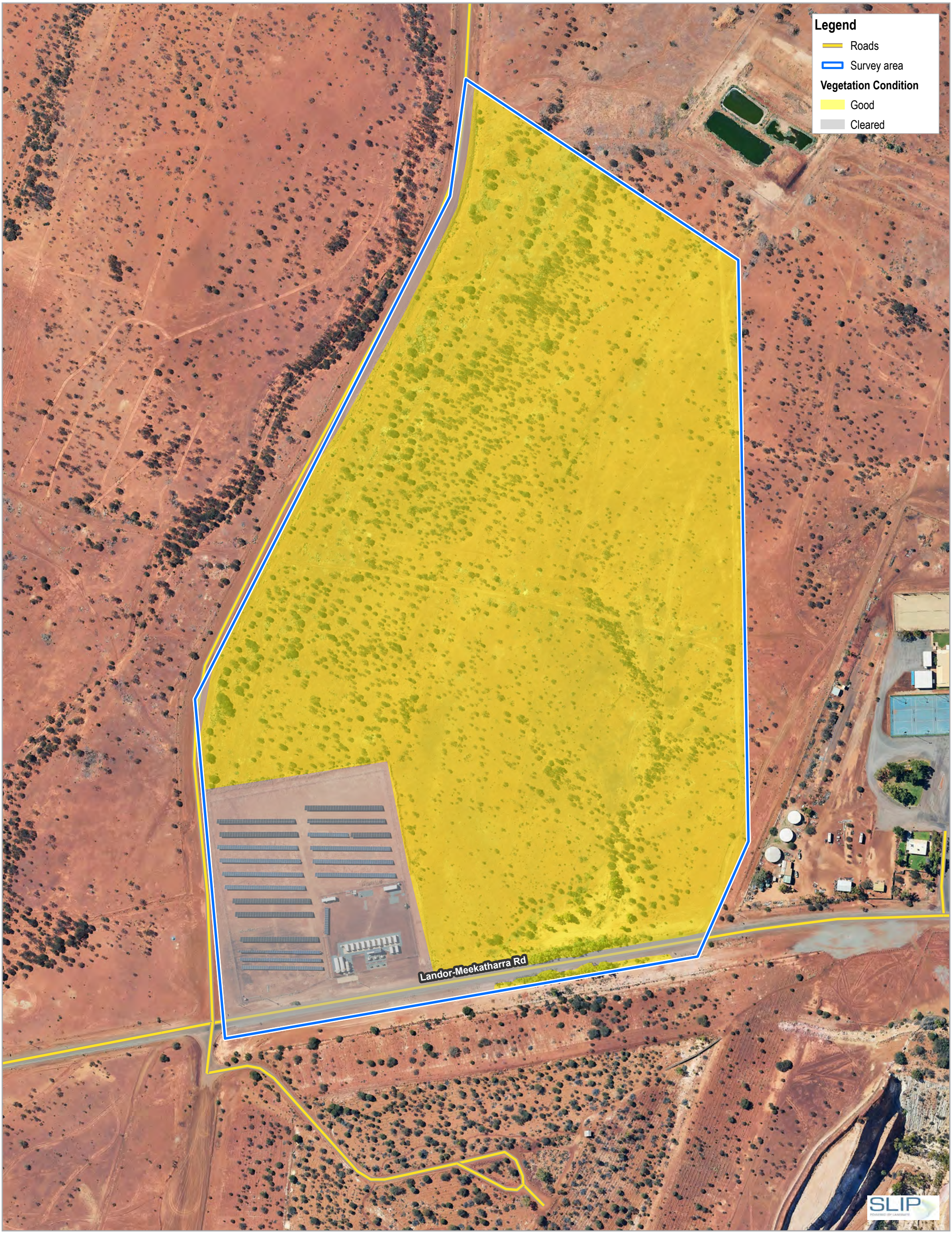
Vegetation Types - Meekatharra

FIGURE 16

G:\61\12611848\GIS\Maps\Working\12611848_Figures\12611848_Figures.aprx\12611848_16_Meekatharra_VegetationType_Rev0
Print date: 31 Aug 2023 - 15:37

Data source: Landgate_Subscription_Imagery\WANow: . Created by: rbrown3



Paper Size ISO A3
at Scale: 1:3,000

0 30 60 90 120

Meters

N

Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 50

GHD

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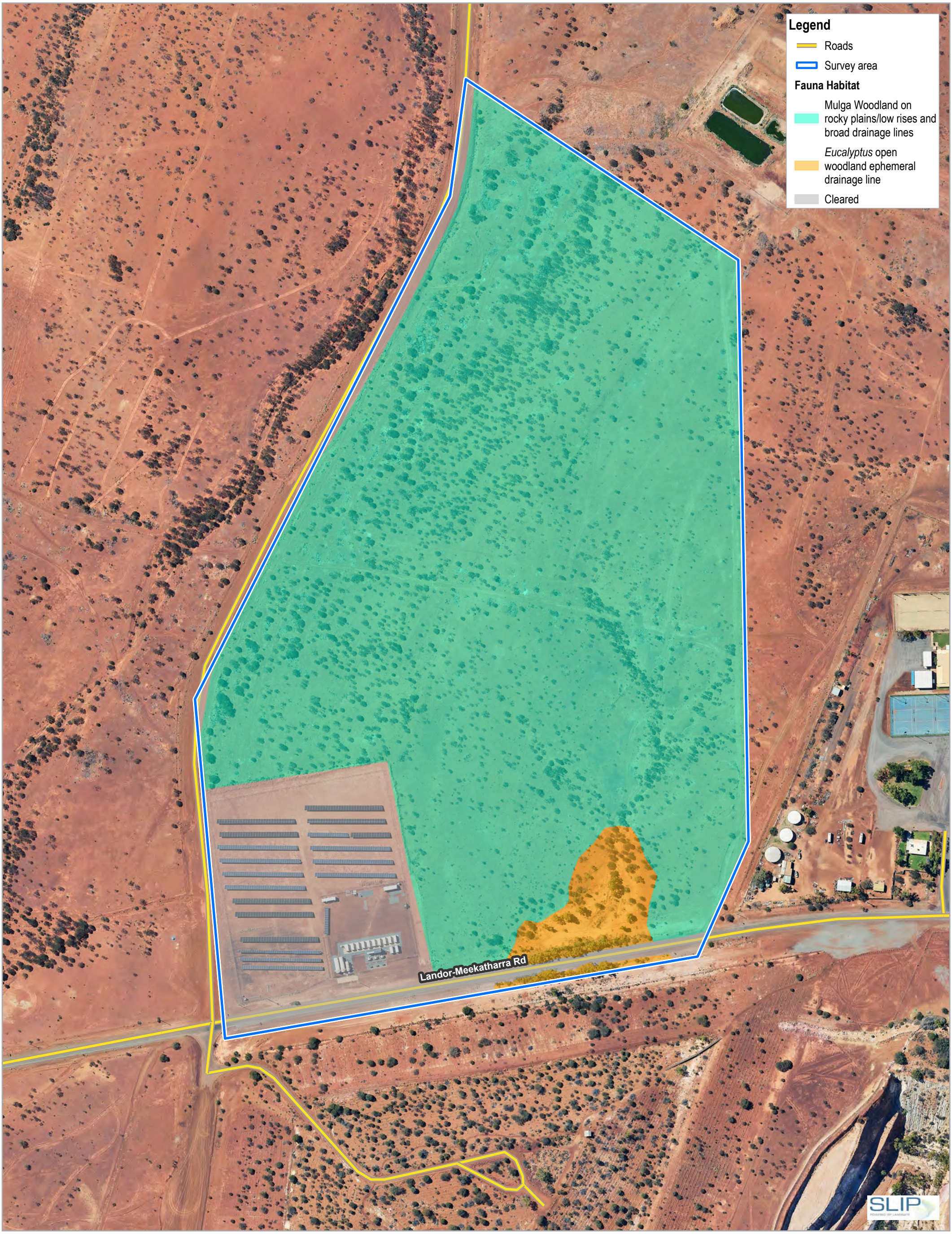
Vegetation Condition - Meekatharra

FIGURE 17

G:\61\12611848\GIS\Maps\Working\12611848_Figures\12611848_Figures.aprx\12611848_17_Meekatharra_VegetationCondition_Rev0
Print date: 31 Aug 2023 - 15:37

Data source: Landgate_Subscription_Imagery\WANow: . Created by: rbrown3



Paper Size ISO A3
at Scale: 1:3,000

0 30 60 90 120

Meters

Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 50

N

GHD

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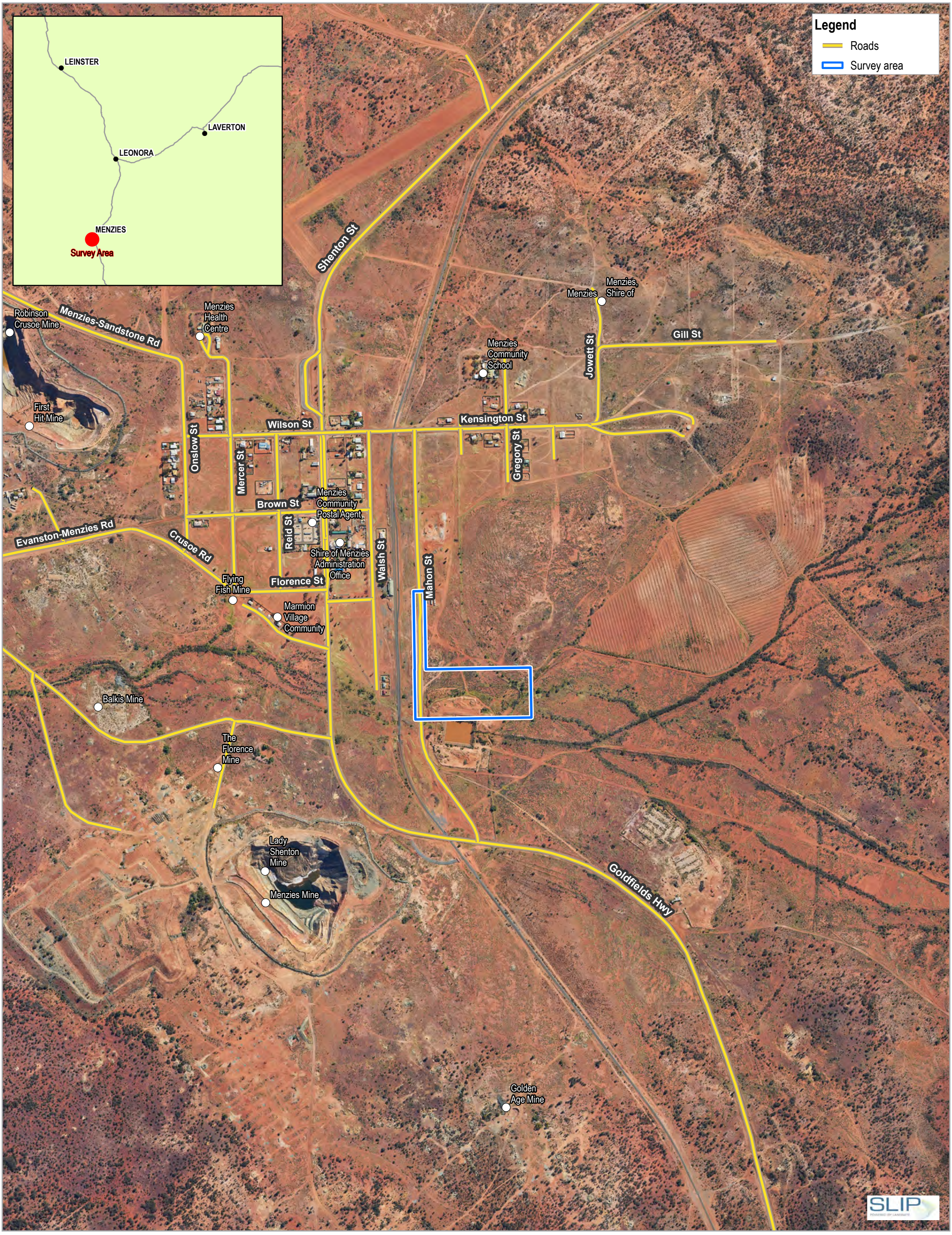
Fauna Habitat - Meekatharra

FIGURE 18

G:\61\12611848\GIS\Maps\Working\12611848_Figures\12611848_Figures.aprx\12611848_18_Meekatharra_FaunaHabitat_Rev0
Print date: 31 Aug 2023 - 15:38

Data source: Landgate_Subscription_Imagery\WANow: . Created by: rbrown3



Paper Size ISO A3
at Scale: 1:10,000

0 0.1 0.2 0.3 0.4

Kilometers

Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 51

N

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Locality - Menzies

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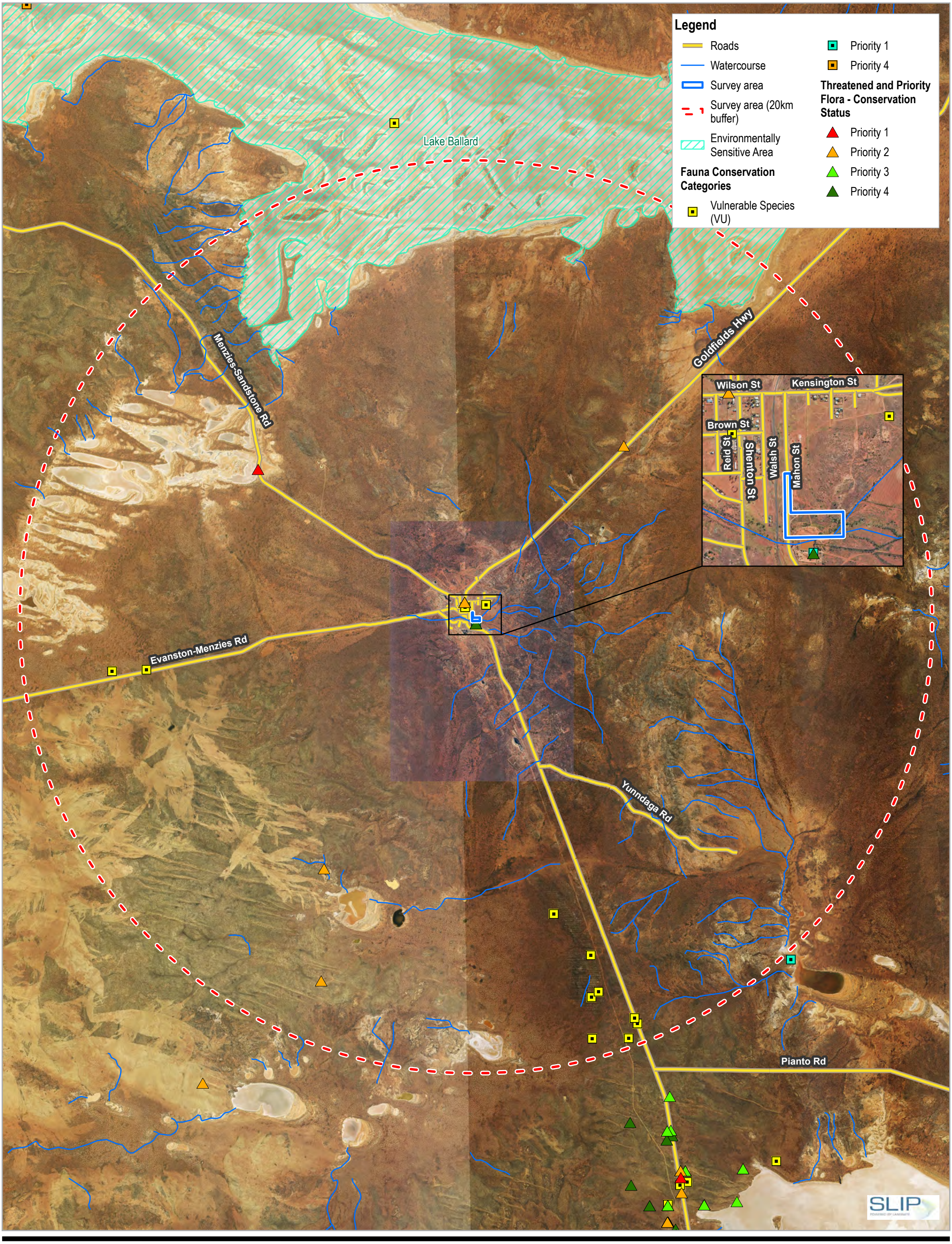
FIGURE 19

G:\61\12611848\GIS\Maps\Working\12611848_Figures\12611848_Figures.aprx\12611848_19_Menzies_Locality_Rev0
Print date: 31 Aug 2023 - 15:50

Data source: Landgate_Subscription_Imagery\WANow: . Created by: rbrown3



Paper Size ISO A3
at Scale: 1:150,000

0 1.5 3 4.5 6
Kilometers

N

Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 51

GHD

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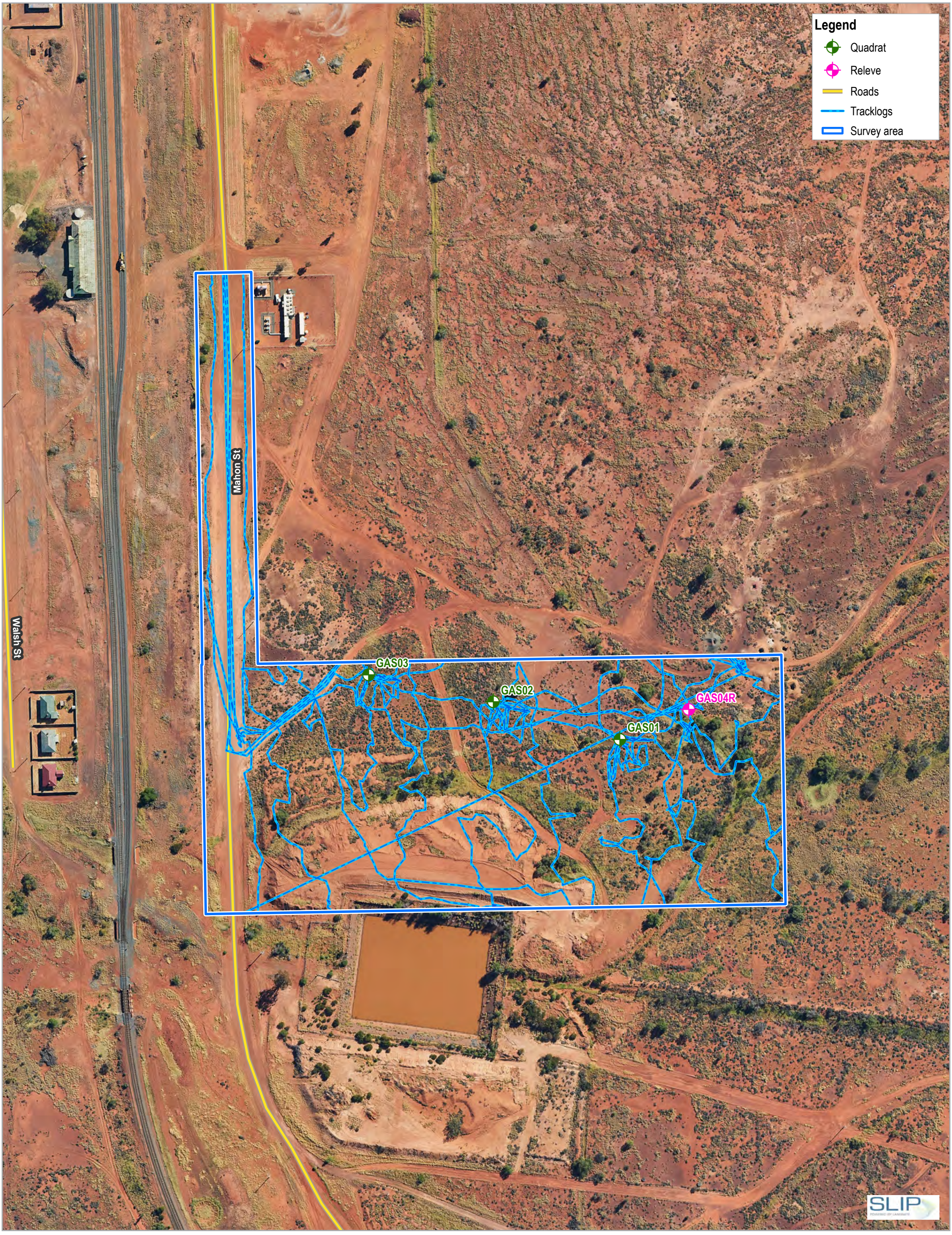
Environmental Constraints - Menzies

FIGURE 20

G:\61\12611848\GIS\Maps\Working\12611848_Figures\12611848_Figures.aprx\12611848_20_Menzies_EnvironmentalConstraints_Rev0
Print date: 31 Aug 2023 - 15:51

Data source: Landgate_Subscription_Imagery\WANow: . Created by: rbrown3



Paper Size ISO A3
at Scale: 1:2,000

0 20 40 60 80

Meters

Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 51

N

GHD

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Survey Effort - Menzies

FIGURE 21

G:\61\12611848\GIS\Maps\Working\12611848_Figures\12611848_Figures.aprx\12611848_21_Menzies_SurveyEffort_Rev0
Print date: 31 Aug 2023 - 15:51

Data source: Landgate_Subscription_Imagery\WANow: . Created by: rbrown3

Paper Size ISO A3
at Scale: 1:2,000

0 20 40 60 80

Meters

Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 51

N

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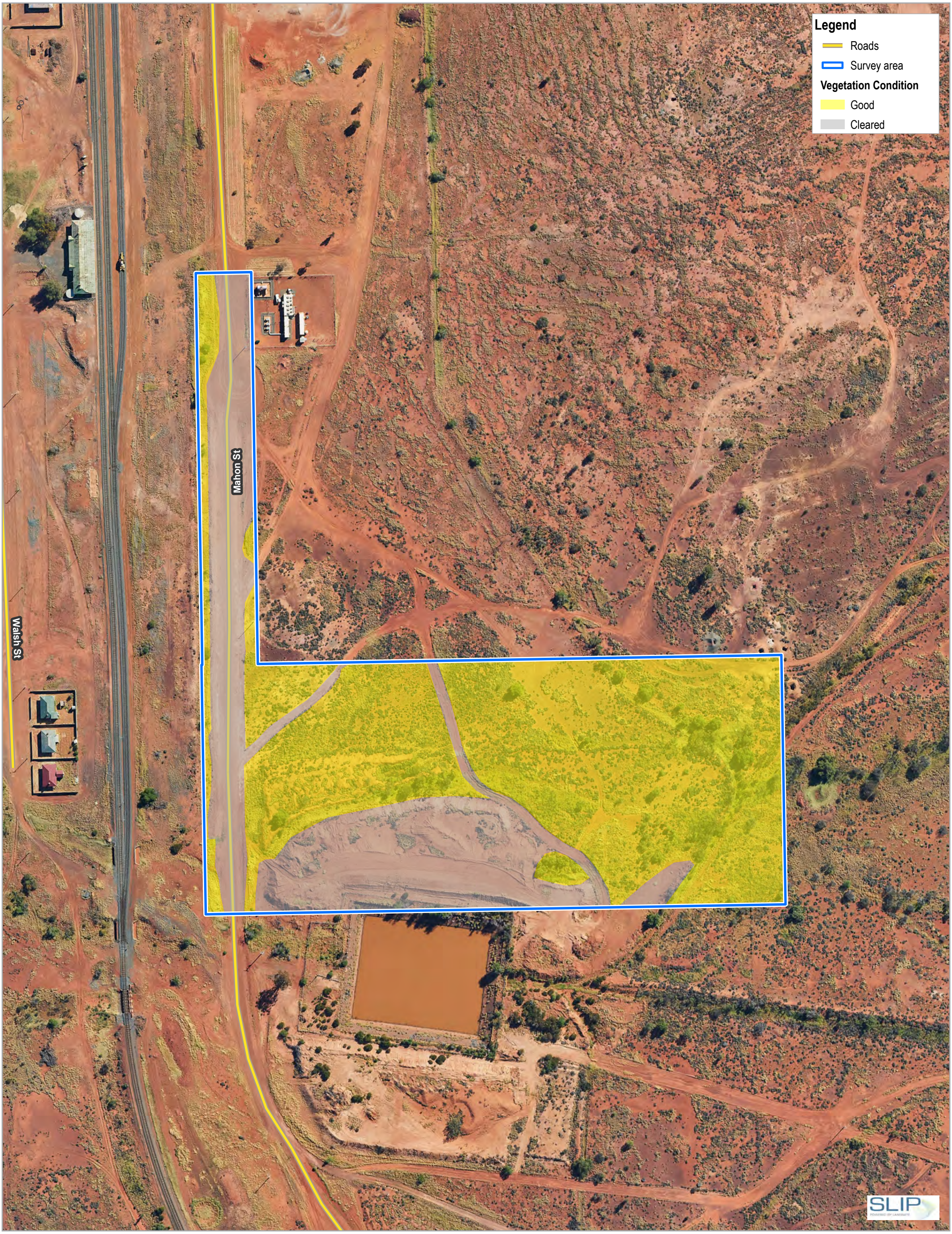
Date **6/14/2023**

Vegetation Types - Menzies

FIGURE 22

G:\61\12611848\GIS\Maps\Working\12611848_Figures\12611848_Figures.aprx\12611848_22_Menzies_VegetationTypes_Rev0
Print date: 31 Aug 2023 - 15:52

Data source: Landgate_Subscription_Imagery\WANow: . Created by: rbrown3



Paper Size ISO A3
at Scale: 1:2,000

0 20 40 60 80

Meters

Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 51

N

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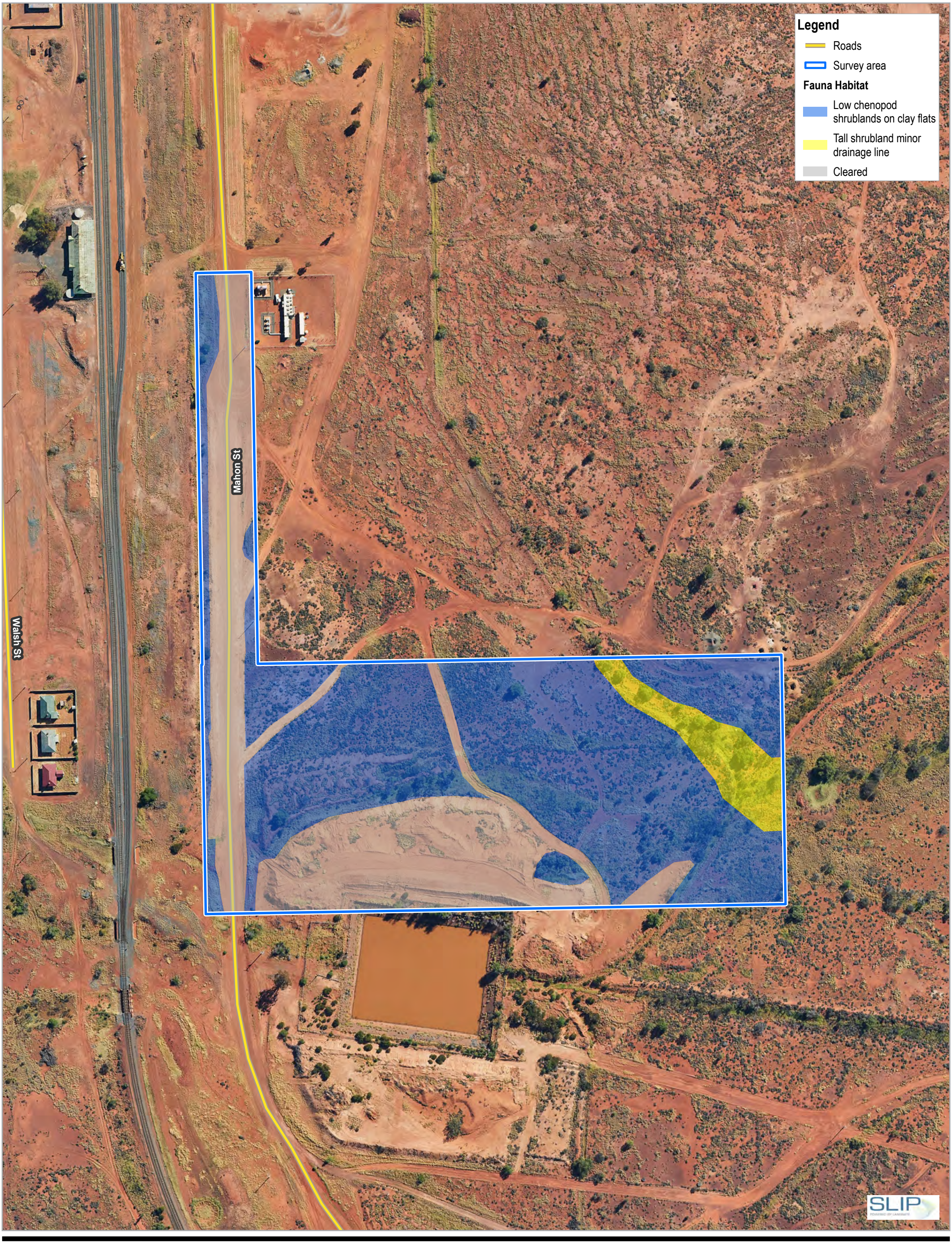
Vegetation Condition - Menzies

FIGURE 23

G:\61\12611848\GIS\Maps\Working\12611848_Figures\12611848_Figures.aprx\12611848_23_Menzies_VegetationCondition_Rev0
Print date: 31 Aug 2023 - 15:52

Data source: Landgate_Subscription_Imagery\WANow: . Created by: rbrown3



Paper Size ISO A3
at Scale: 1:2,000

0 20 40 60 80
Meters

N

Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 51

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Fauna Habitat - Menzies

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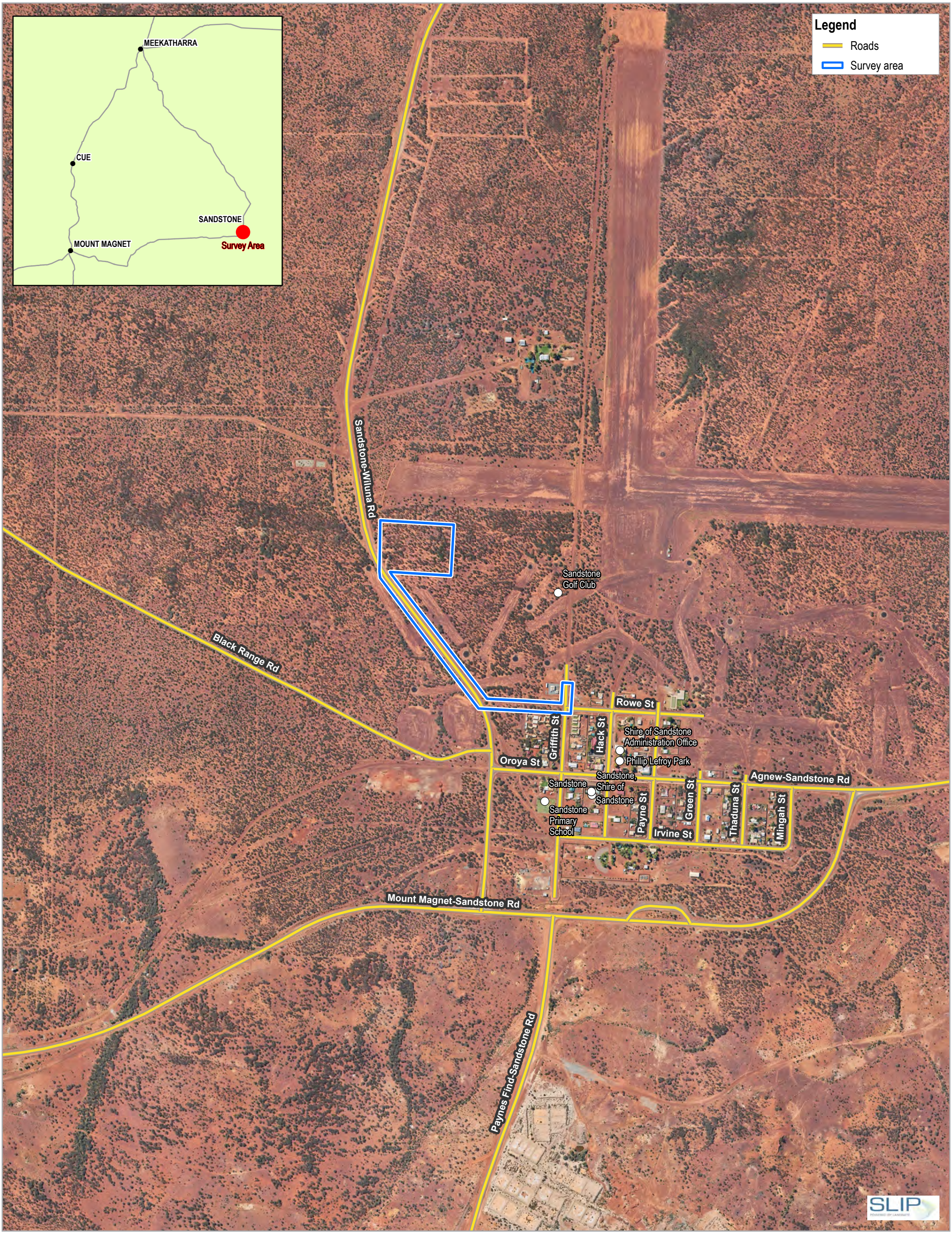
FIGURE 24

G:\61\12611848\GIS\Maps\Working\12611848_Figures\12611848_Figures.aprx\12611848_24_Menzies_FaunaHabitat_Rev0
Print date: 31 Aug 2023 - 15:53

Data source: Landgate_Subscription_Imagery\WANow: . Created by: rbrown3



Paper Size ISO A3
at Scale: 1:10,000

0 0.1 0.2 0.3 0.4

Kilometers

Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 50

N

GHD

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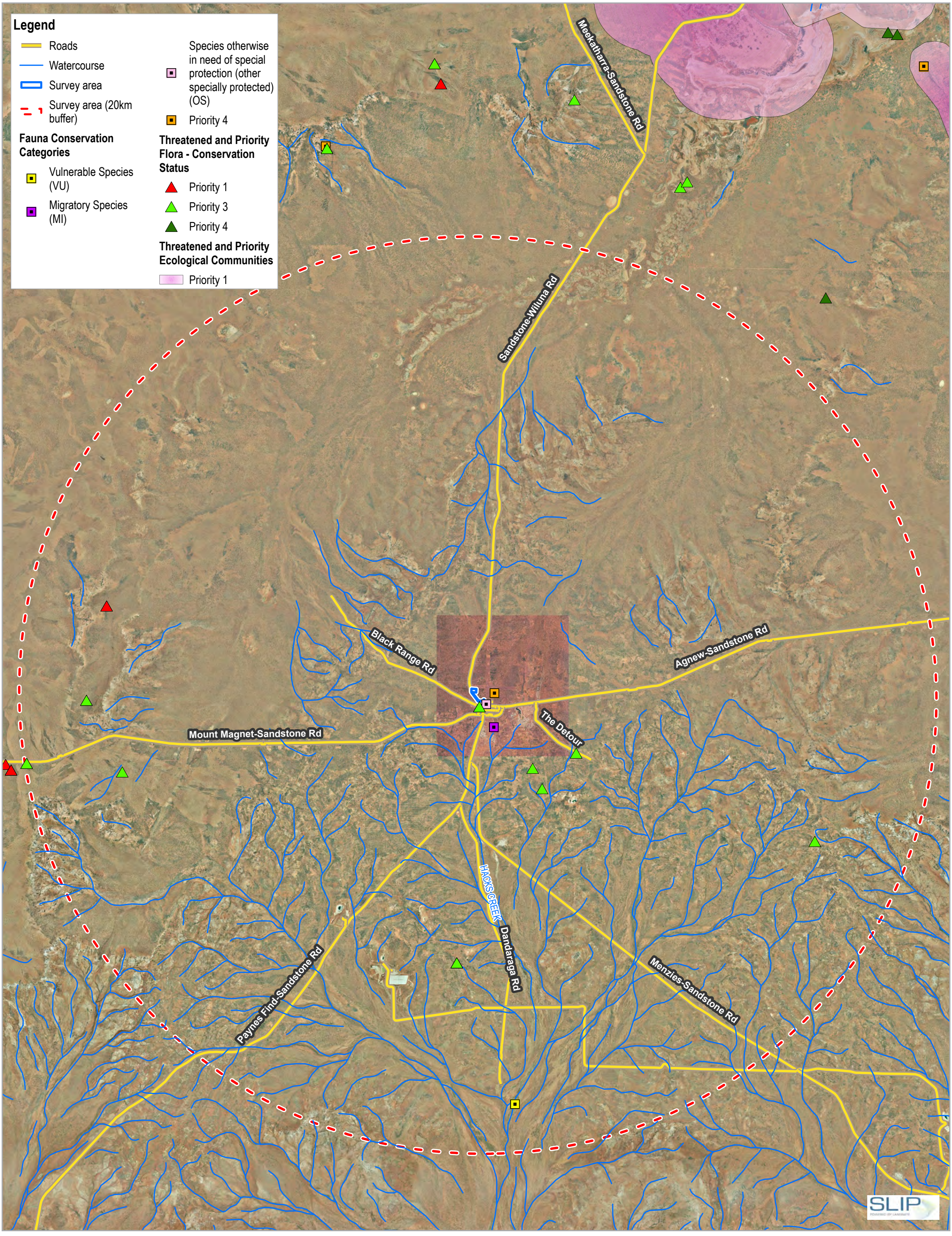
Locality - Sandstone

FIGURE 25

G:\61\12611848\GIS\Maps\Working\12611848_Figures\12611848_Figures.aprx\12611848_25_Sandstone_Locality_Rev0
Print date: 31 Aug 2023 - 15:56

Data source: Landgate_Subscription_Imagery\WANow: . Created by: rbrown3



Paper Size ISO A3
at Scale: 1:150,000

0 1.5 3 4.5 6

Kilometers

Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 50

N

GHD

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Environmental Constraints - Sandstone

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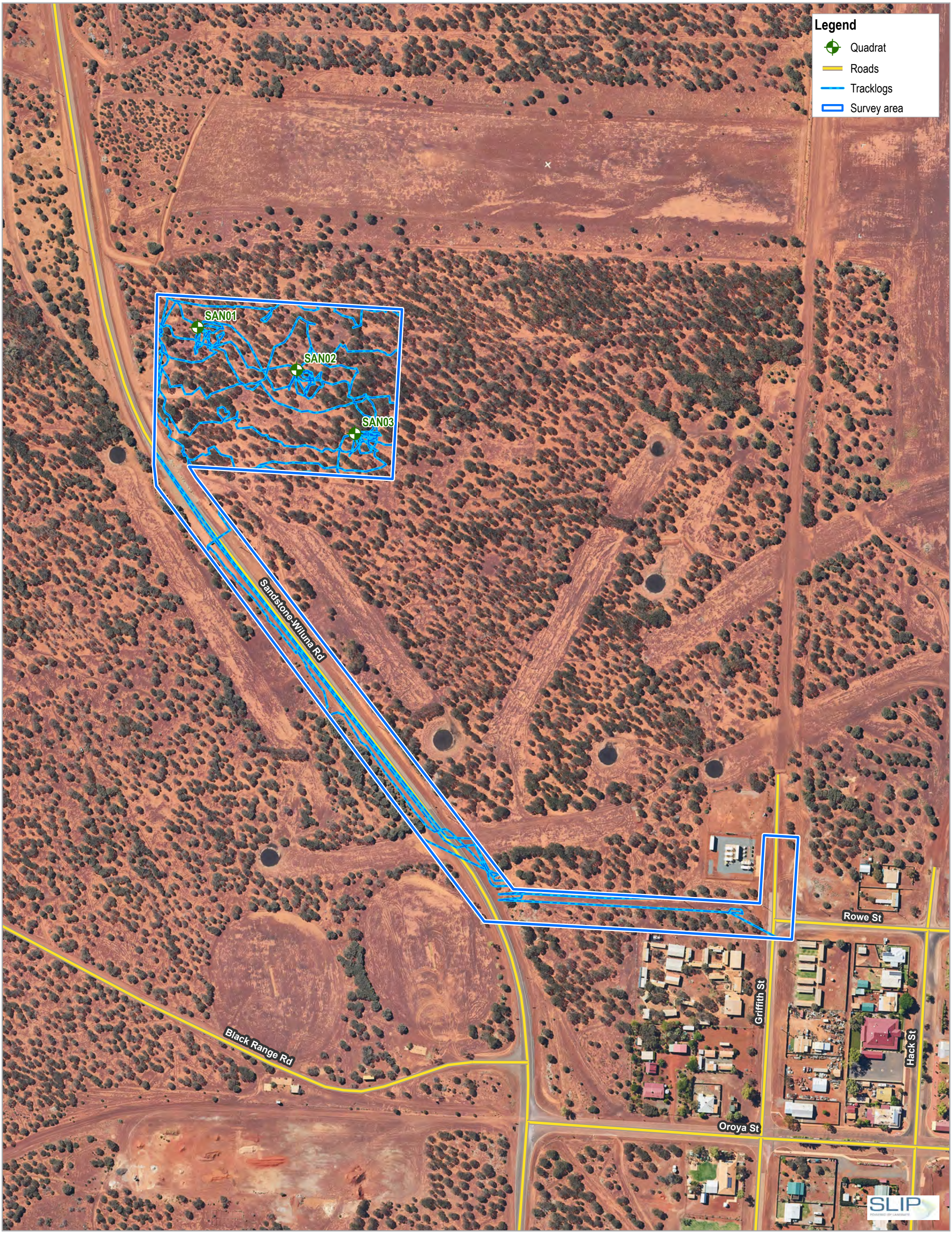
FIGURE 26

G:\61\12611848\GIS\Maps\Working\12611848_Figures\12611848_Figures.aprx\12611848_26_Sandstone_EnvironmentalConstraints_Rev0
Print date: 31 Aug 2023 - 15:58

Data source: Landgate_Subscription_Imagery\WANow: . Created by: rbrown3



Paper Size ISO A3
at Scale: 1:3,000

0 30 60 90 120

Meters

Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 50

N

GHD

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Survey Effort - Sandstone

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FIGURE 27

G:\61\12611848\GIS\Maps\Working\12611848_Figures\12611848_Figures.aprx\12611848_27_Sandstone_SurveyEffort_Rev0
Print date: 31 Aug 2023 - 15:57

Data source: Landgate_Subscription_Imagery\WANow: . Created by: rbrown3

Paper Size ISO A3
at Scale: 1:3,000

0 30 60 90 120

Meters

Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 50

N

GHD

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Vegetation Types - Sandstone

FIGURE 28

G:\61\12611848\GIS\Maps\Working\12611848_Figures\12611848_Figures.aprx\12611848_28_Sandstone_VegetationTypes_Rev0
Print date: 31 Aug 2023 - 15:56

Data source: Landgate_Subscription_Imagery\WANow: . Created by: rbrown3

Paper Size ISO A3
at Scale: 1:3,000

0 30 60 90 120

Meters

N

Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 50

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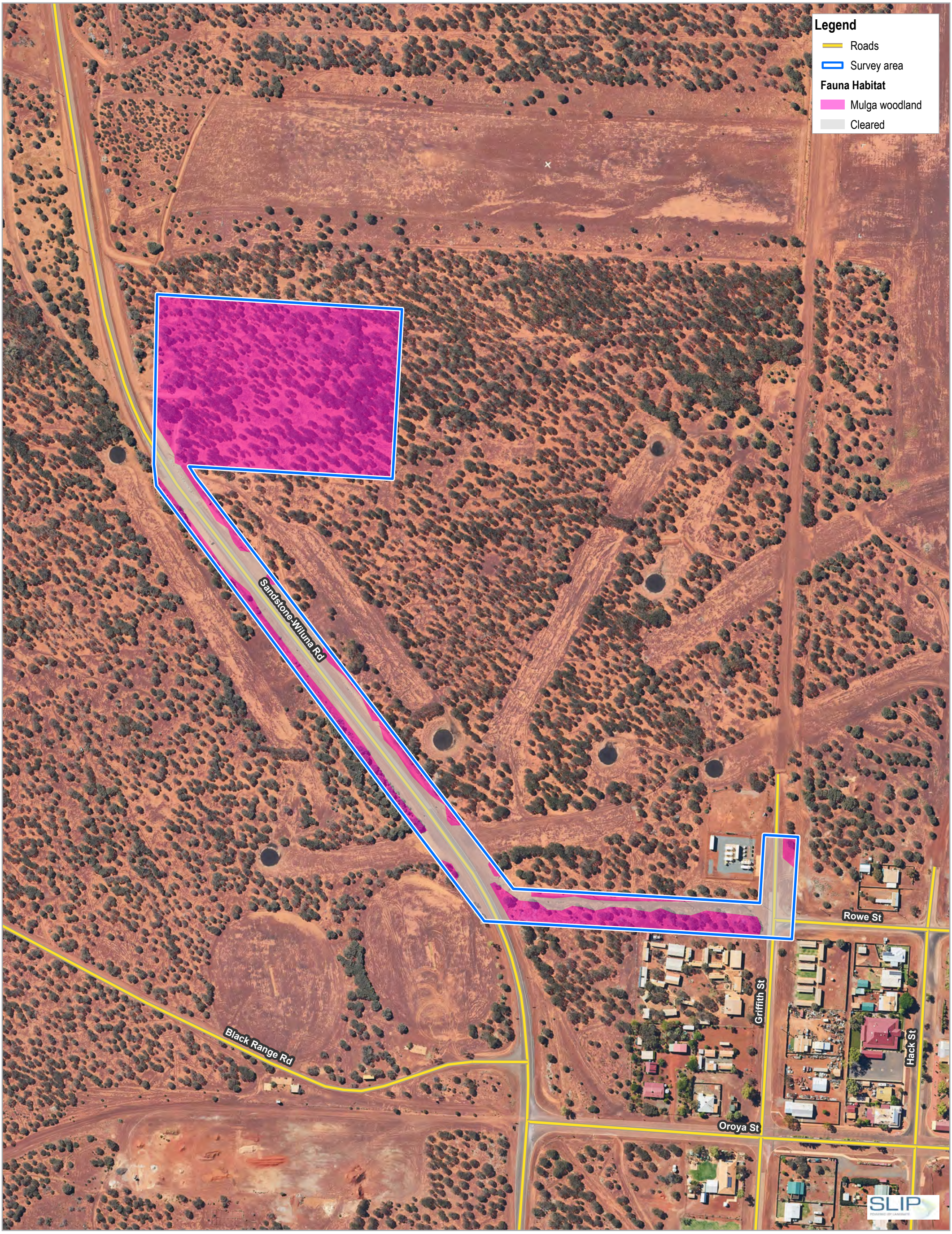
Vegetation Condition - Sandstone

FIGURE 29

G:\61\12611848\GIS\Maps\Working\12611848_Figures\12611848_Figures.aprx\12611848_29_Sandstone_VegetationCondition_Rev0
Print date: 31 Aug 2023 - 15:56

Data source: Landgate_Subscription_Imagery\WANow: . Created by: rbrown3



Paper Size ISO A3
at Scale: 1:3,000

0 30 60 90 120

Meters

Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 50

N

GHD

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Fauna Habitat - Sandstone

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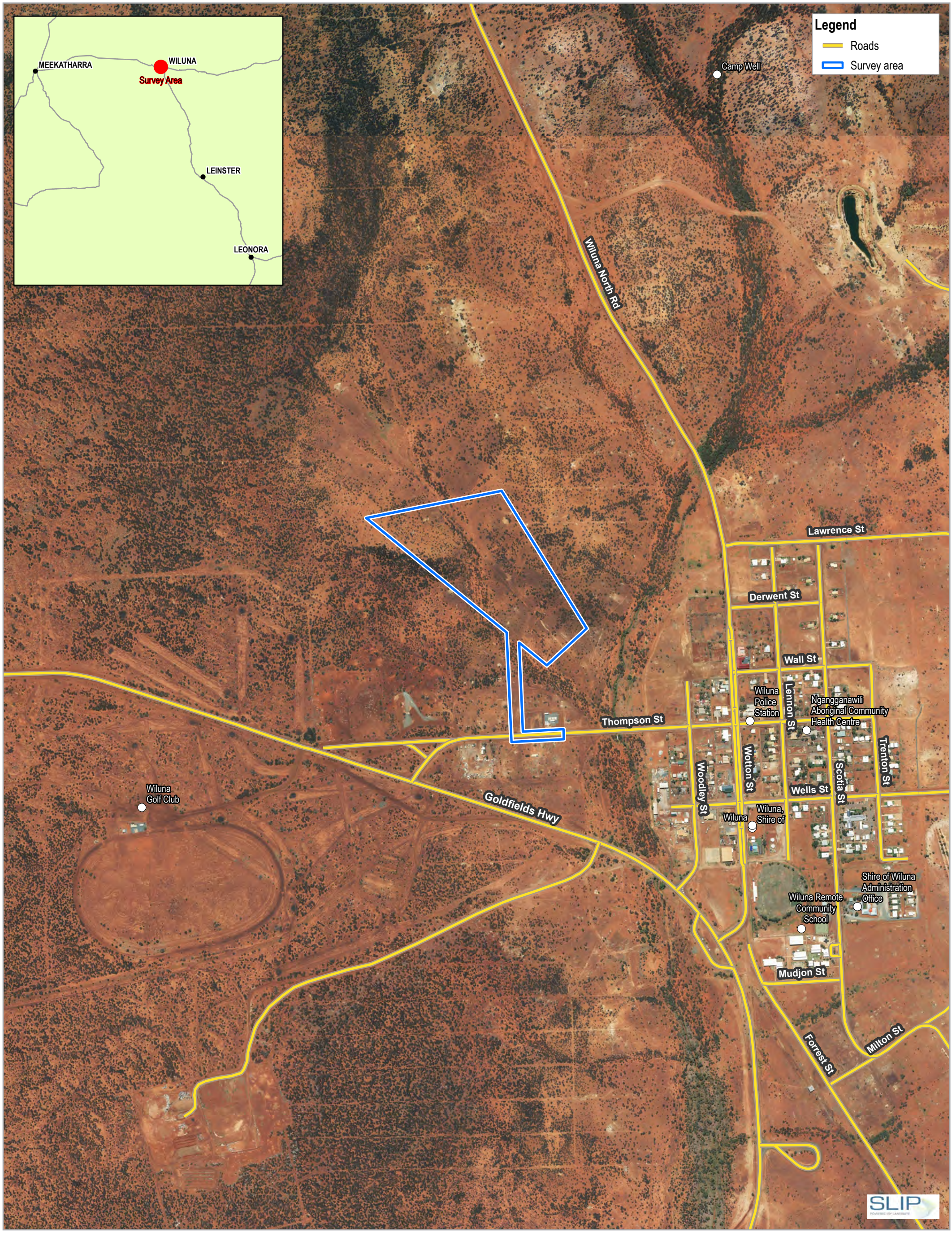
FIGURE 30

G:\61\12611848\GIS\Maps\Working\12611848_Figures\12611848_Figures.aprx\12611848_30_Sandstone_FaunaHabitat_Rev0
Print date: 31 Aug 2023 - 15:57

Data source: Landgate_Subscription_Imagery\WANow: . Created by: rbrown3



Paper Size ISO A3
at Scale: 1:10,000

0 0.1 0.2 0.3 0.4

Kilometers

Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 51

N

GHD

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Locality - Wiluna

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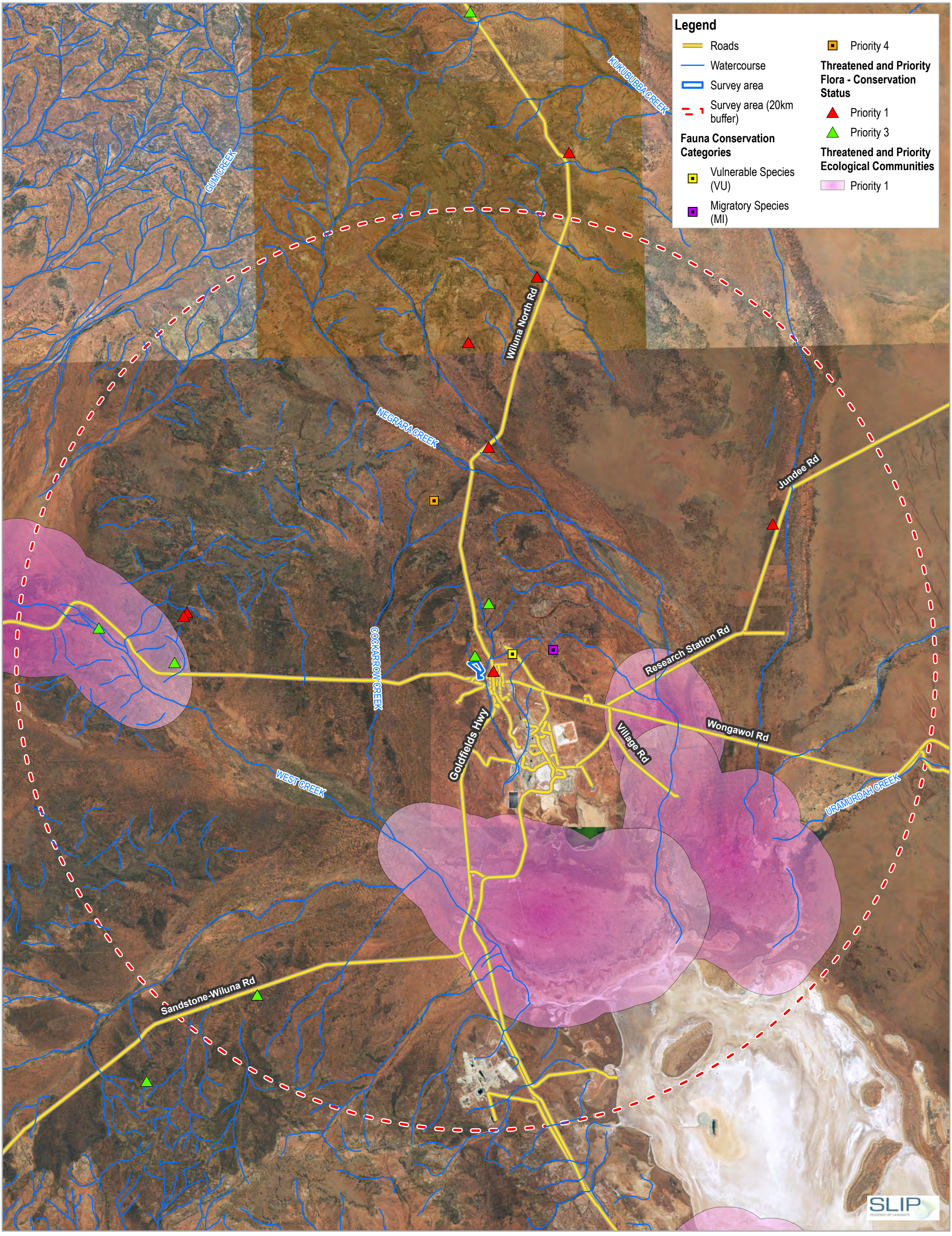
FIGURE 31

G:\61\12611848\GIS\Maps\Working\12611848_Figures\12611848_Figures.aprx\12611848_31_Wiluna_Locality_Rev0
Print date: 31 Aug 2023 - 16:00

Data source: Landgate_Subscription_Imagery\WANow: . Created by: rbrown3



Paper Size ISO A3
at Scale: 1:150,000

0 1.5 3 4.5 6
Kilometers

Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 51

N

GHD

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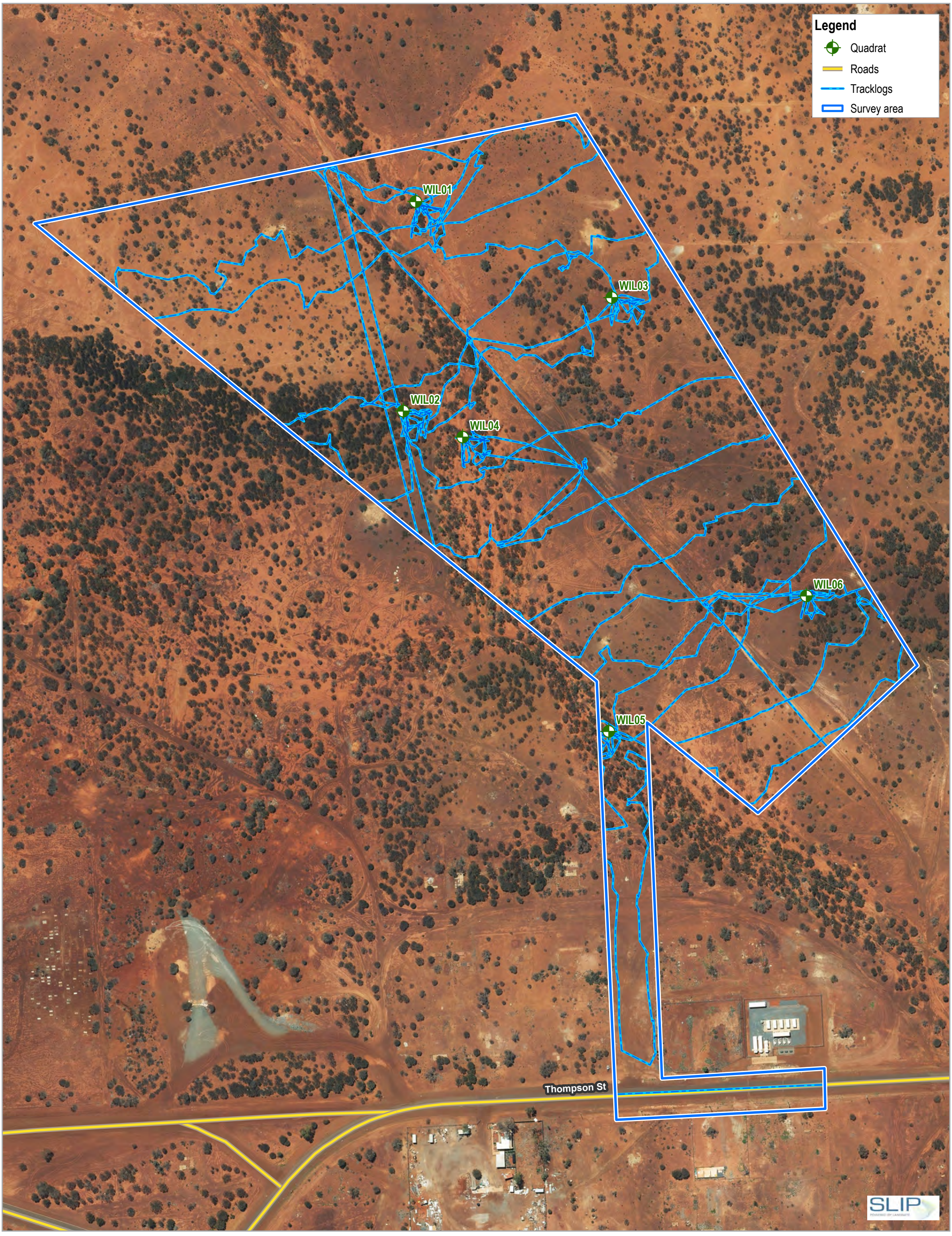
Environmental Constraints - Wiluna

FIGURE 32

G:\61\12611848\GIS\Maps\Working\12611848_Figures\12611848_Figures.aprx\12611848_32_Wiluna_EnvironmentalConstraints_Rev0
Print date: 31 Aug 2023 - 16:02

Data source: Landgate_Subscription_Imagery\WANow: . Created by: rbrown3



Paper Size ISO A3
at Scale: 1:2,500

0 30 60 90 120

Meters

N

Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 51

GHD

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Survey Effort - Wiluna

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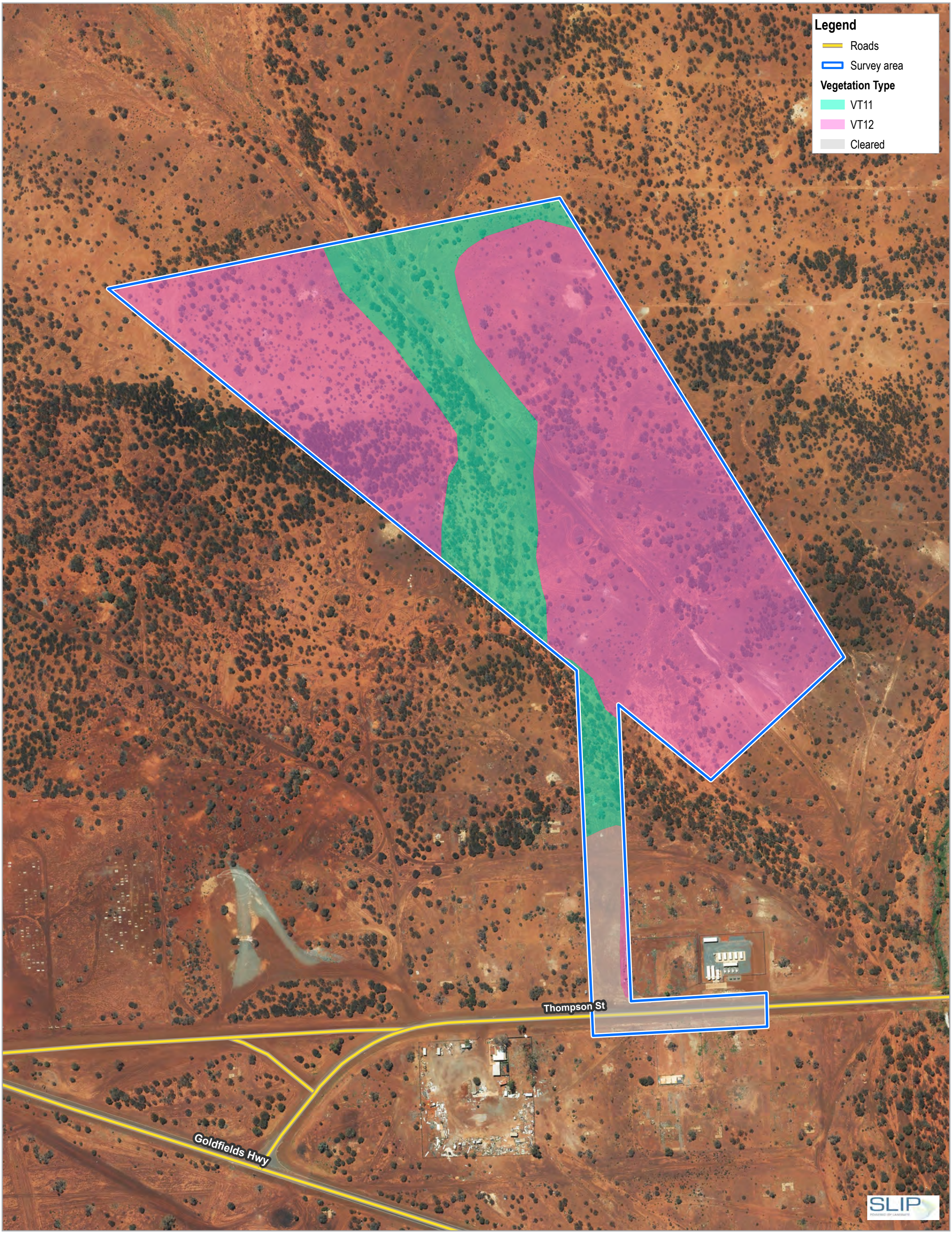
FIGURE 33

G:\61\12611848\GIS\Maps\Working\12611848_Figures\12611848_Figures.aprx\12611848_33_Wiluna_SurveyEffort_Rev0
Print date: 31 Aug 2023 - 16:01

Data source: Landgate_Subscription_Imagery\WANow: . Created by: rbrown3



Paper Size ISO A3
at Scale: 1:3,000

0 30 60 90 120

Meters

N

Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 51

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Vegetation Types - Wiluna

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FIGURE 34

G:\61\12611848\GIS\Maps\Working\12611848_Figures\12611848_Figures.aprx\12611848_34_Wiluna_VegetationTypes_Rev0
Print date: 31 Aug 2023 - 16:02

Data source: Landgate_Subscription_Imagery\WANow: . Created by: rbrown3

Paper Size ISO A3
at Scale: 1:3,000

0 30 60 90 120
Meters

Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 51

N

GHD

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Vegetation Condition - Wiluna

FIGURE 35

G:\61\12611848\GIS\Maps\Working\12611848_Figures\12611848_Figures.aprx\12611848_35_Wiluna_VegetationCondition_Rev0
Print date: 31 Aug 2023 - 16:02

Data source: Landgate_Subscription_Imagery\WANow: . Created by: rbrown3

Paper Size ISO A3
at Scale: 1:3,000

0 30 60 90 120
Meters

Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 51

N

GHD

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Fauna Habitat - Wiluna

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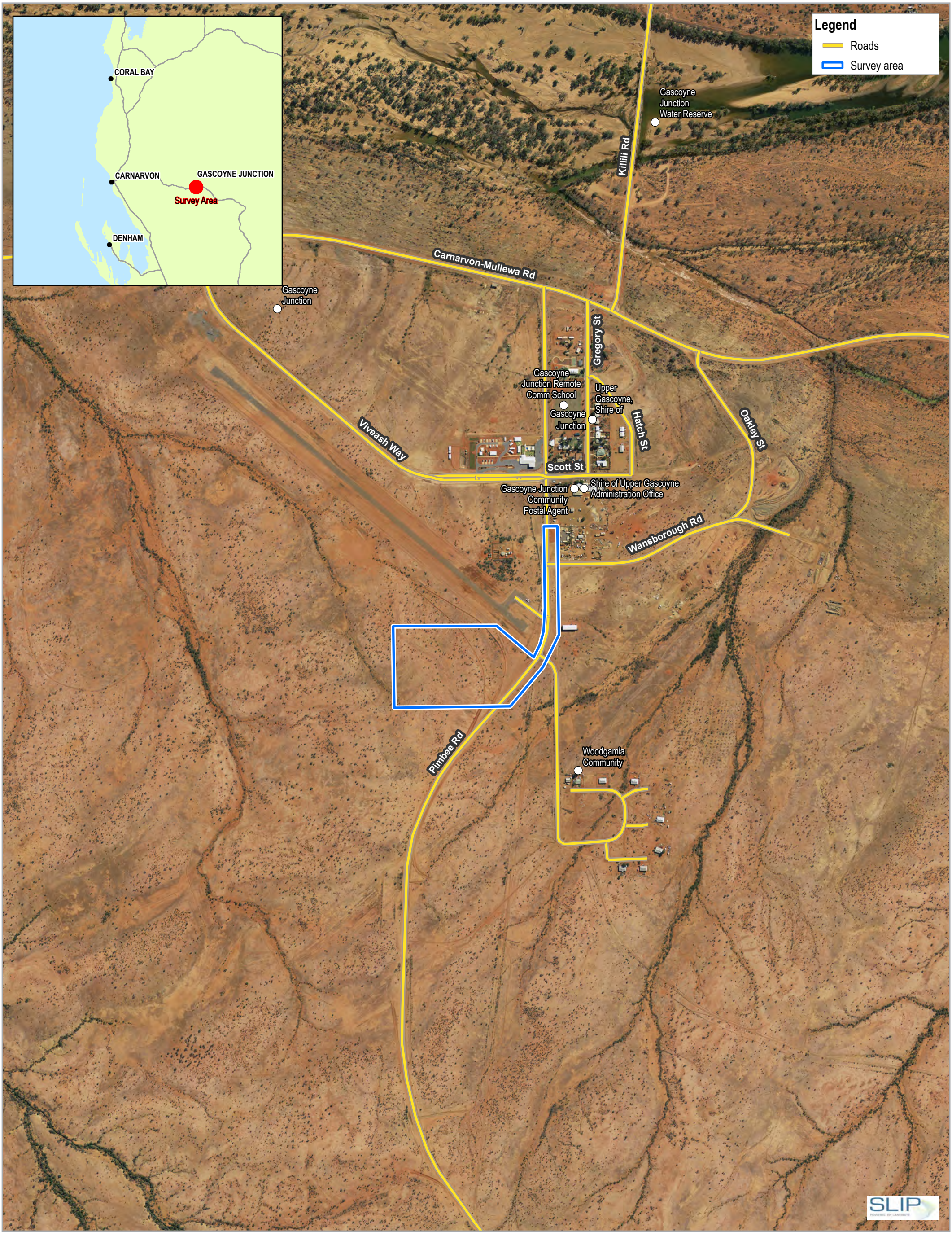
FIGURE 36

G:\61\12611848\GIS\Maps\Working\12611848_Figures\12611848_Figures.aprx\12611848_36_Wiluna_FaunaHabitat_Rev0
Print date: 31 Aug 2023 - 16:03

Data source: Landgate_Subscription_Imagery\WANow: . Created by: rbrown3



Paper Size ISO A3
at Scale: 1:10,000

0 0.1 0.2 0.3 0.4

Kilometers

Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 50

N

GHD

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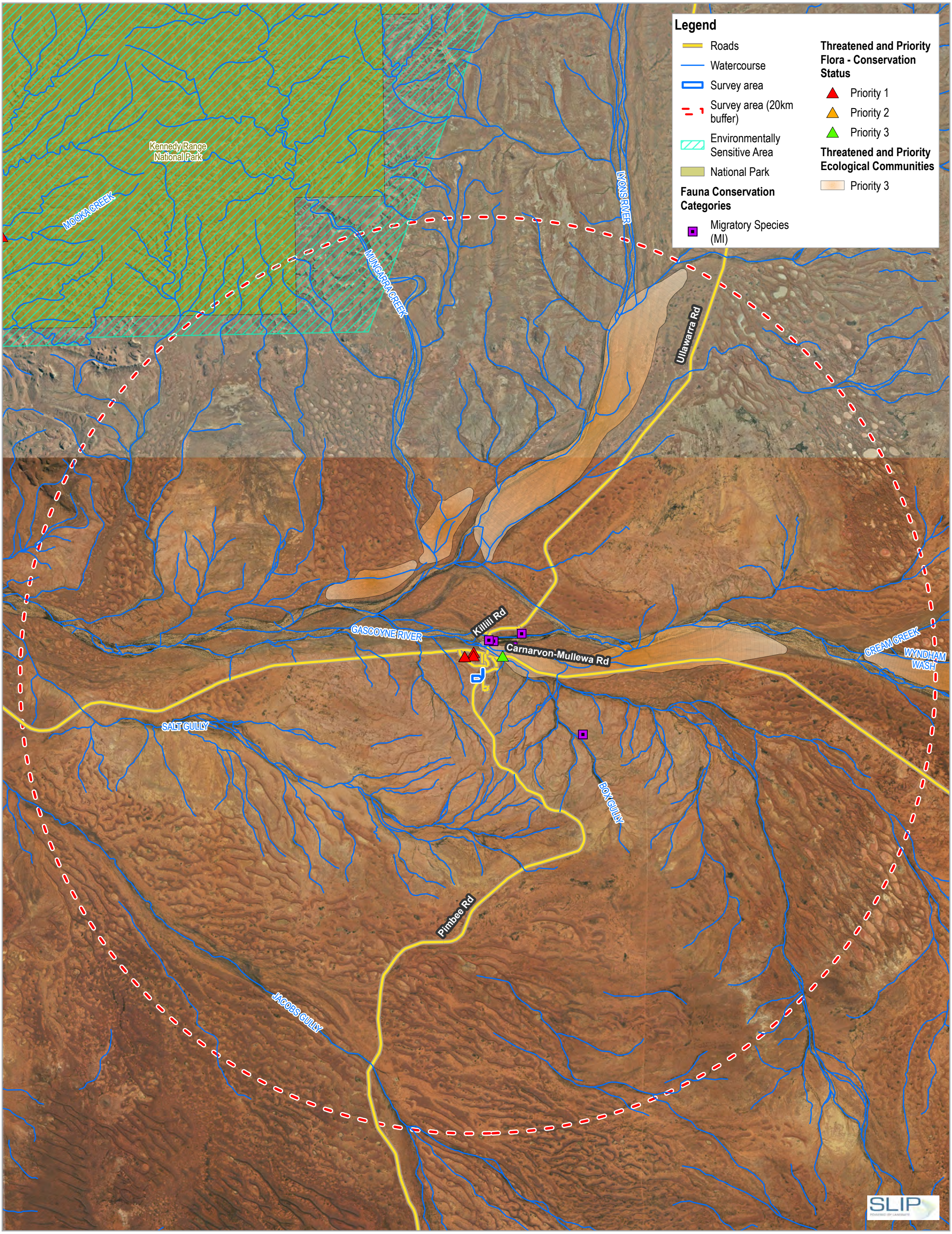
Locality - Gascoyne Junction

FIGURE 37

G:\61\12611848\GIS\Maps\Working\12611848_Figures\12611848_Figures.aprx\12611848_37_GascoyneJunction_Locality_Rev0
Print date: 31 Aug 2023 - 16:05

Data source: Landgate_Subscription_Imagery\WANow: . Created by: rbrown3



Paper Size ISO A3
at Scale: 1:150,000

0 1.5 3 4.5 6
Kilometers

Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 50

N

GHD

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Environmental Constraints - Gascoyne Junction

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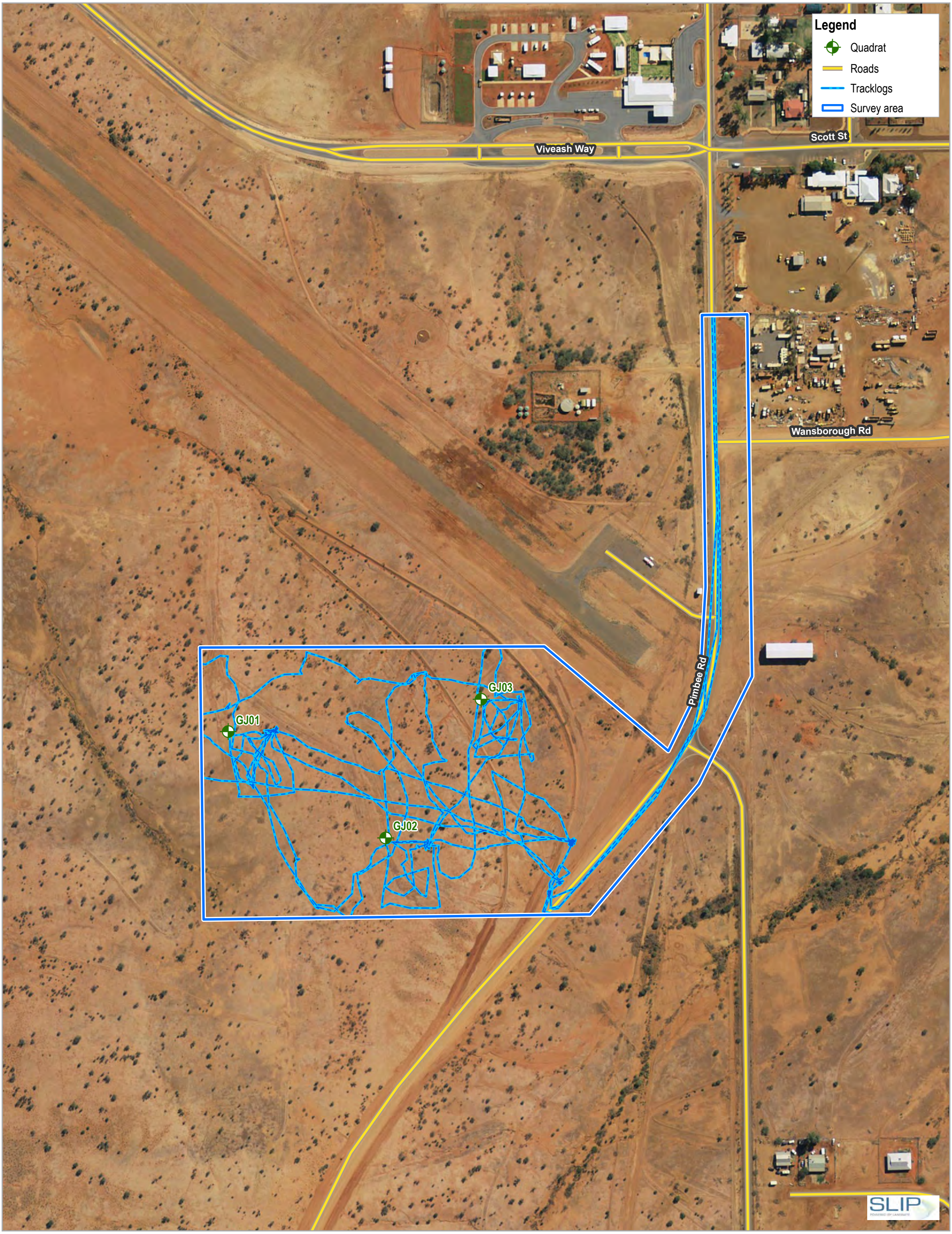
FIGURE 38

G:\61\12611848\GIS\Maps\Working\12611848_Figures\12611848_Figures.aprx\12611848_38_GascoyneJunction_EnvironmentalConstraints_Rev0
Print date: 31 Aug 2023 - 16:06

Data source: Landgate_Subscription_Imagery\WANow: . Created by: rbrown3



Paper Size ISO A3
at Scale: 1:3,000

0 30 60 90 120

Meters

Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 50

N

GHD

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Survey Effort - Gascoyne Junction

FIGURE 39

G:\61\12611848\GIS\Maps\Working\12611848_Figures\12611848_Figures.aprx\12611848_39_GascoyneJunction_SurveyEffort_Rev0
Print date: 31 Aug 2023 - 16:06

Data source: Landgate_Subscription_Imagery\WANow: . Created by: rbrown3

Paper Size ISO A3
at Scale: 1:3,000

0 30 60 90 120

Meters

Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 50

N

GHD

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Vegetation Types - Gascoyne Junction

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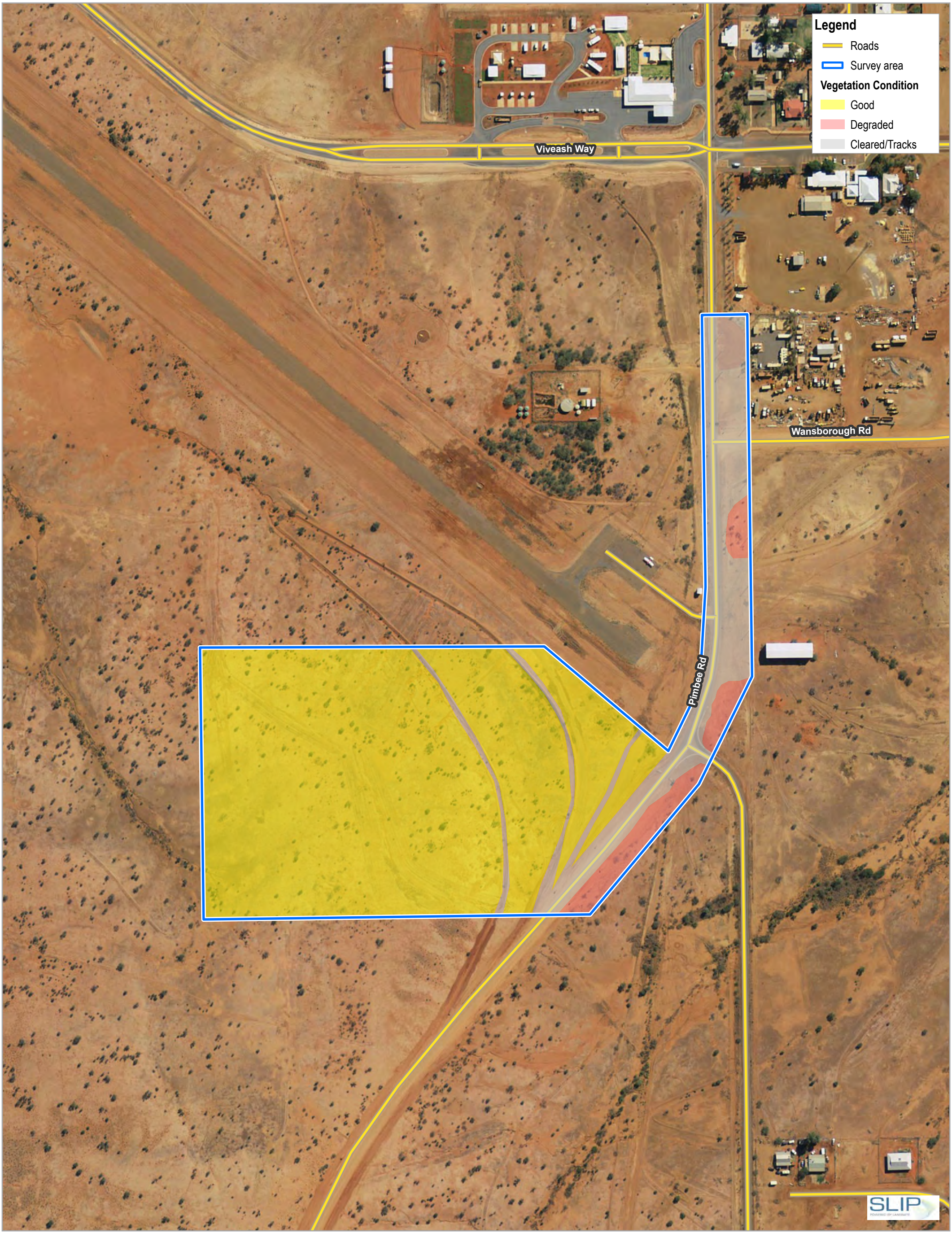
FIGURE 40

G:\61\12611848\GIS\Maps\Working\12611848_Figures\12611848_Figures.aprx\12611848_40_GascoyneJunction_VegetationTypes_Rev0
Print date: 31 Aug 2023 - 16:06

Data source: Landgate_Subscription_Imagery\WANow: . Created by: rbrown3



Paper Size ISO A3
at Scale: 1:3,000

0 30 60 90 120

Meters

Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 50

N

GHD

Horizon Power
Midwest and Remote Towns IRP
Project Desktop and Field Study

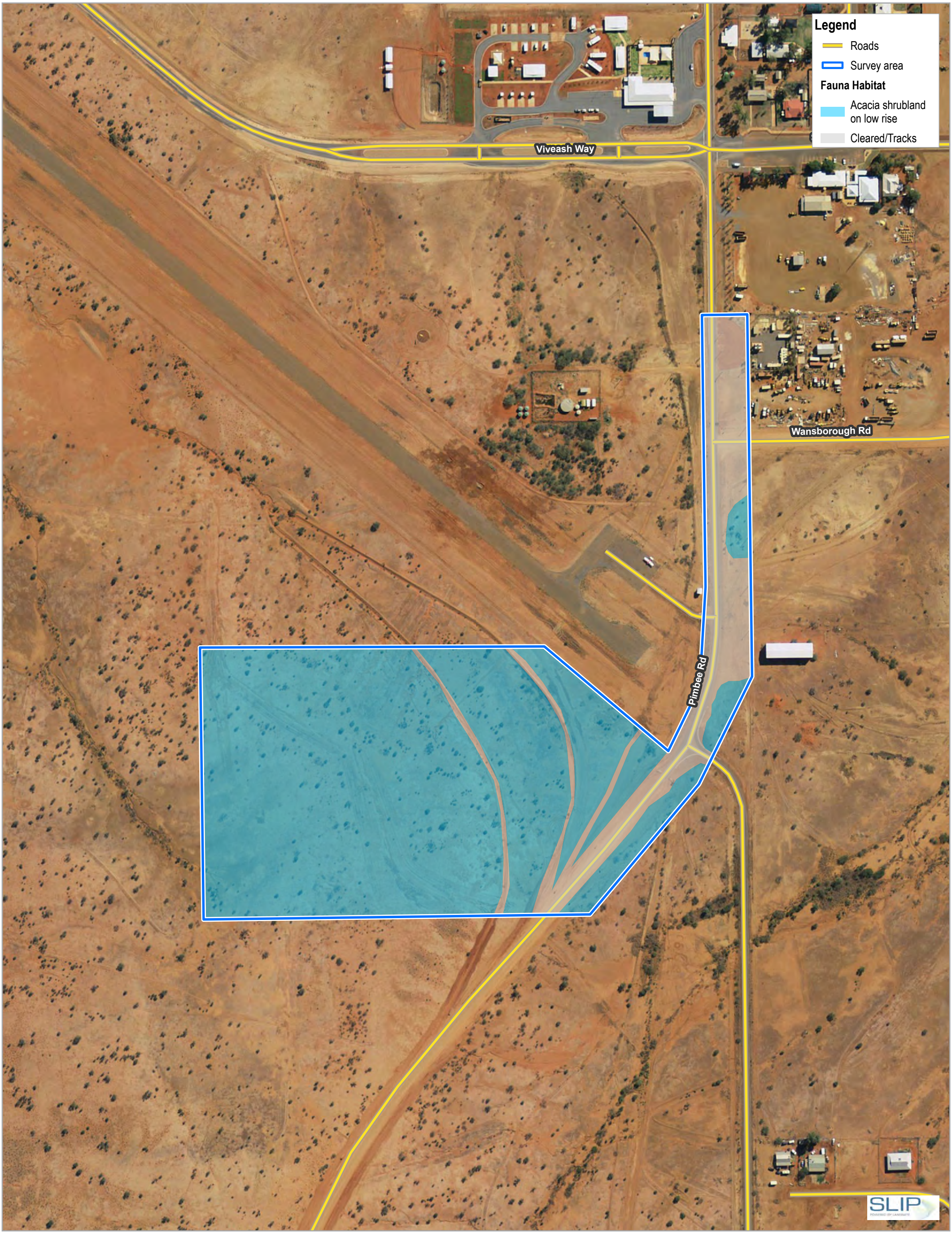
Vegetation Condition - Gascoyne Junction

Project No. **12611848**
Revision No. **0**
Date **6/19/2023**

FIGURE 41

G:\61\12611848\GIS\Maps\Working\12611848_Figures\12611848_Figures.aprx\12611848_41_GascoyneJunction_VegetationCondition_Rev0
Print date: 31 Aug 2023 - 16:07

Data source: Landgate_Subscription_Imagery\WANow: . Created by: rbrown3



Paper Size ISO A3
at Scale: 1:3,000

0 30 60 90 120

Meters

Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 50

N

GHD

Horizon Power
Midwest and Remote Towns IRP
Project Desktop and Field Study

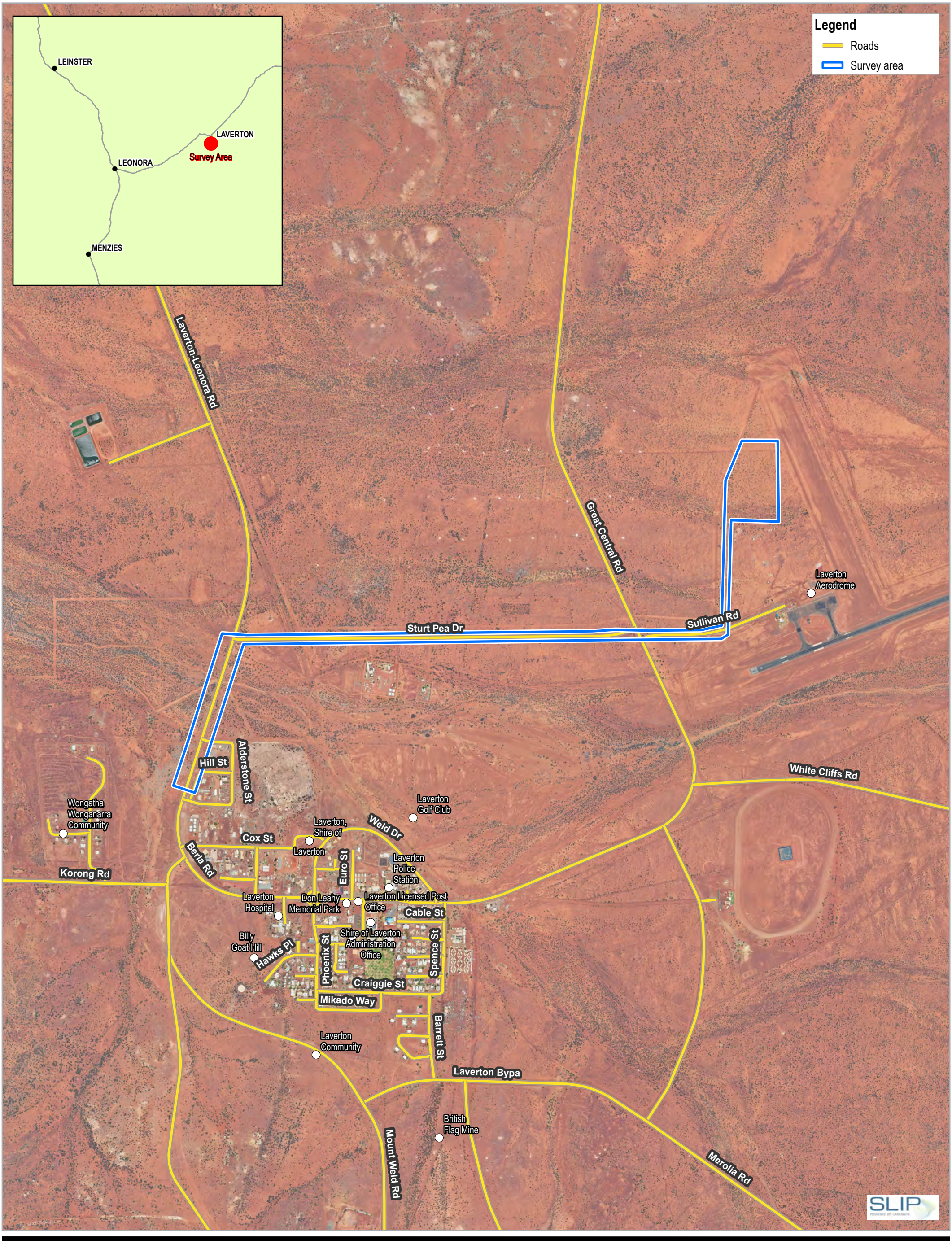
Project No. **12611848**
Revision No. **0**
Date **6/19/2023**

Fauna Habitat - Gascoyne Junction

FIGURE 42

G:\61\12611848\GIS\Maps\Working\12611848_Figures\12611848_Figures.aprx\12611848_42_GascoyneJunction_FaunaHabitat_Rev0
Print date: 31 Aug 2023 - 16:07

Data source: Landgate_Subscription_Imagery\WANow: . Created by: rbrown3



Paper Size ISO A3
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0 0.1 0.2 0.3 0.4
Kilometers

Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 51

N

GHD

Horizon Power
Midwest and Remote Towns IRP
Project Desktop and Field Study

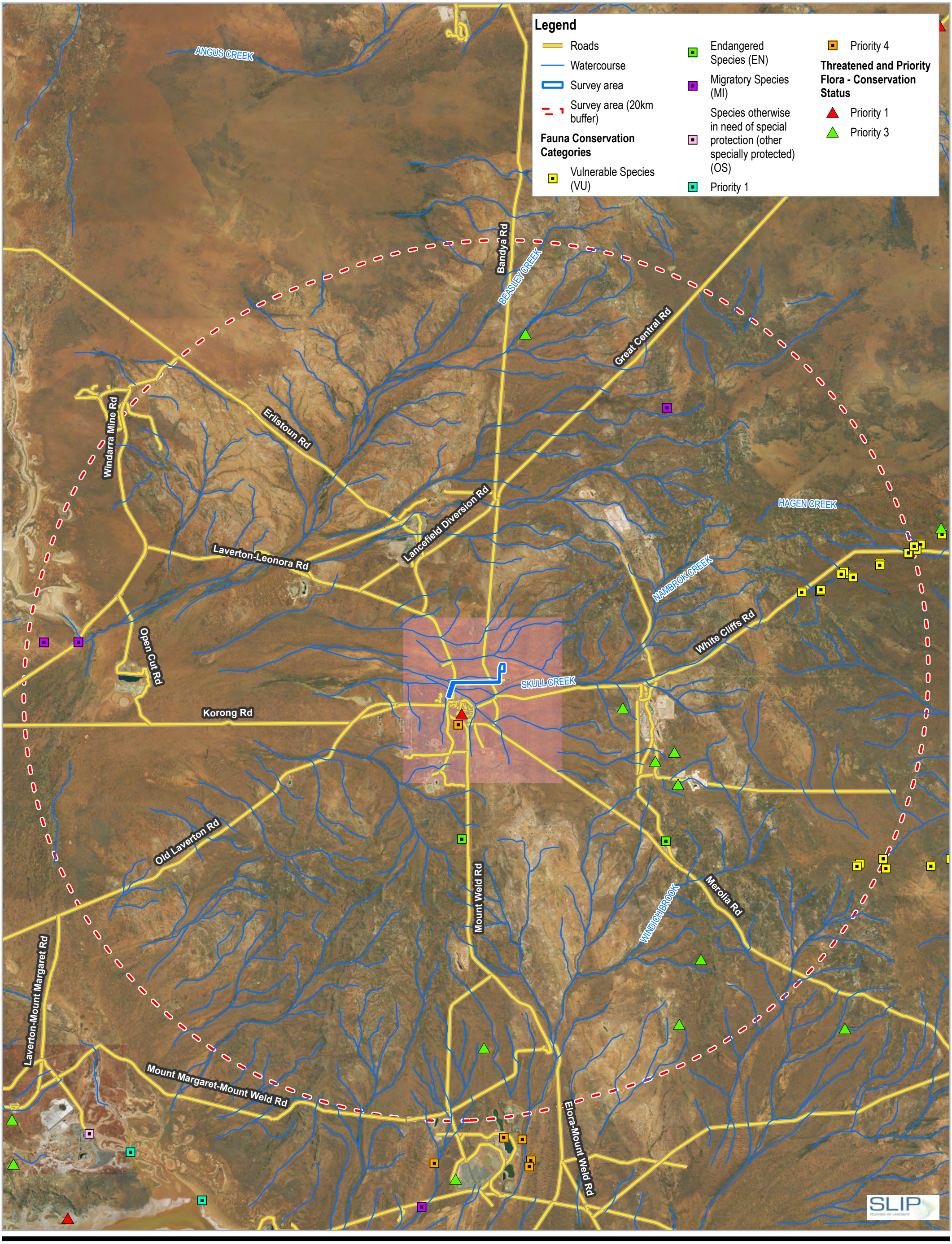
Locality - Laverton

Project No. **12611848**
Revision No. **0**
Date **6/19/2023**

FIGURE 43

G:\61\12611848\GIS\Maps\Working\12611848_Figures\12611848_Figures.aprx\12611848_43_Laverton_Locality_Rev0
Print date: 31 Aug 2023 - 16:09

Data source: Landgate_Subscription_Imagery\WANow: . Created by: rbrown3



Paper Size ISO A3
at Scale: 1:160,000

0 1.5 3 4.5 6
Kilometers

Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 51

N

GHD

Horizon Power
Midwest and Remote Towns IRP
Project Desktop and Field Study

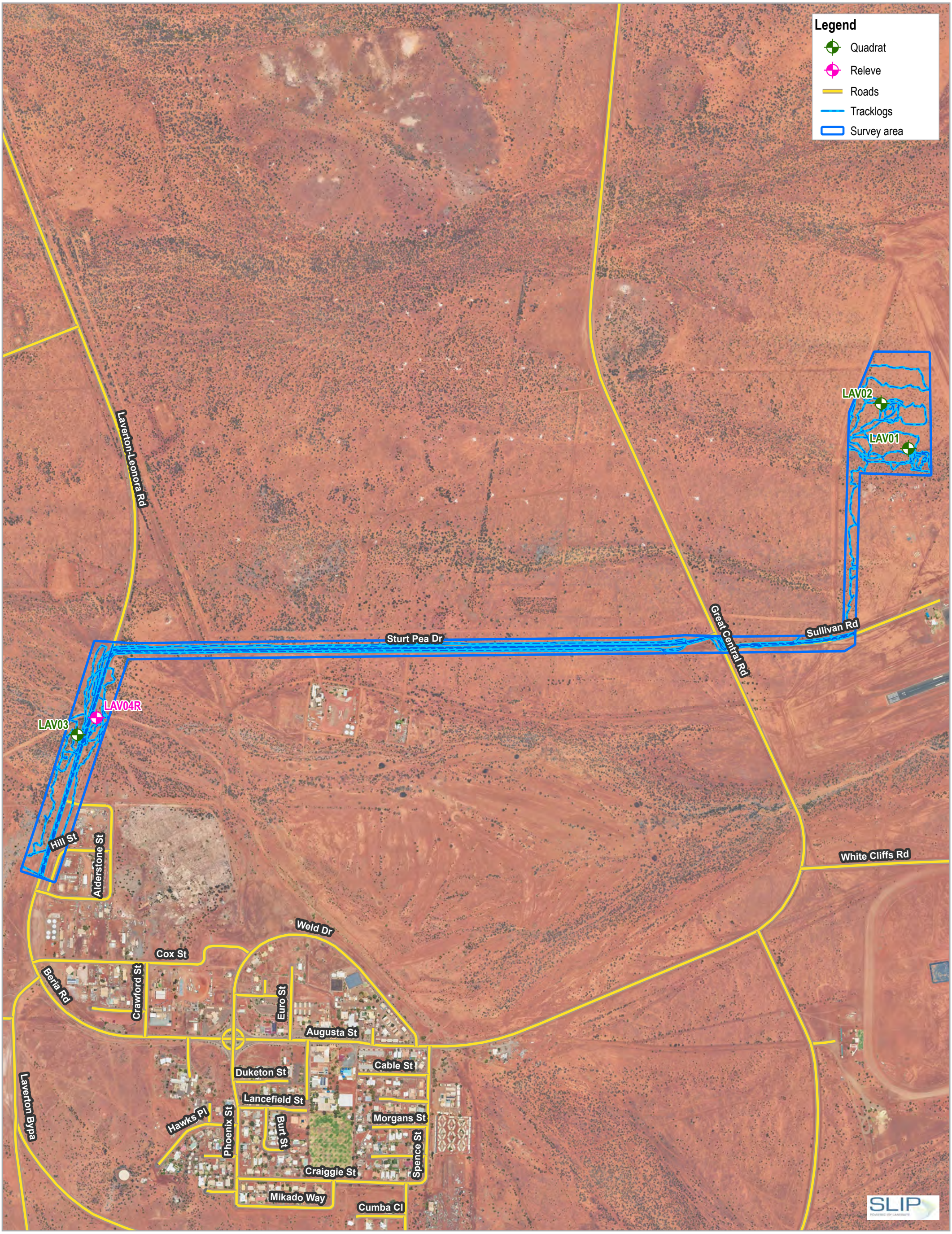
Project No. **12611848**
Revision No. **0**
Date **6/20/2023**

Environmental Constraints - Laverton

FIGURE 44

G:\61\12611848\GIS\Maps\Working\12611848_Figures\12611848_Figures.aprx\12611848_44_Laverton_EnvironmentalConstraints_Rev0
Print date: 31 Aug 2023 - 16:10

Data source: Landgate_Subscription_Imagery\WANow: . Created by: rbrown3



Paper Size ISO A3
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0 0.1 0.2 0.3 0.4

Kilometers

Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 51

N

GHD

Horizon Power
Midwest and Remote Towns IRP
Project Desktop and Field Study

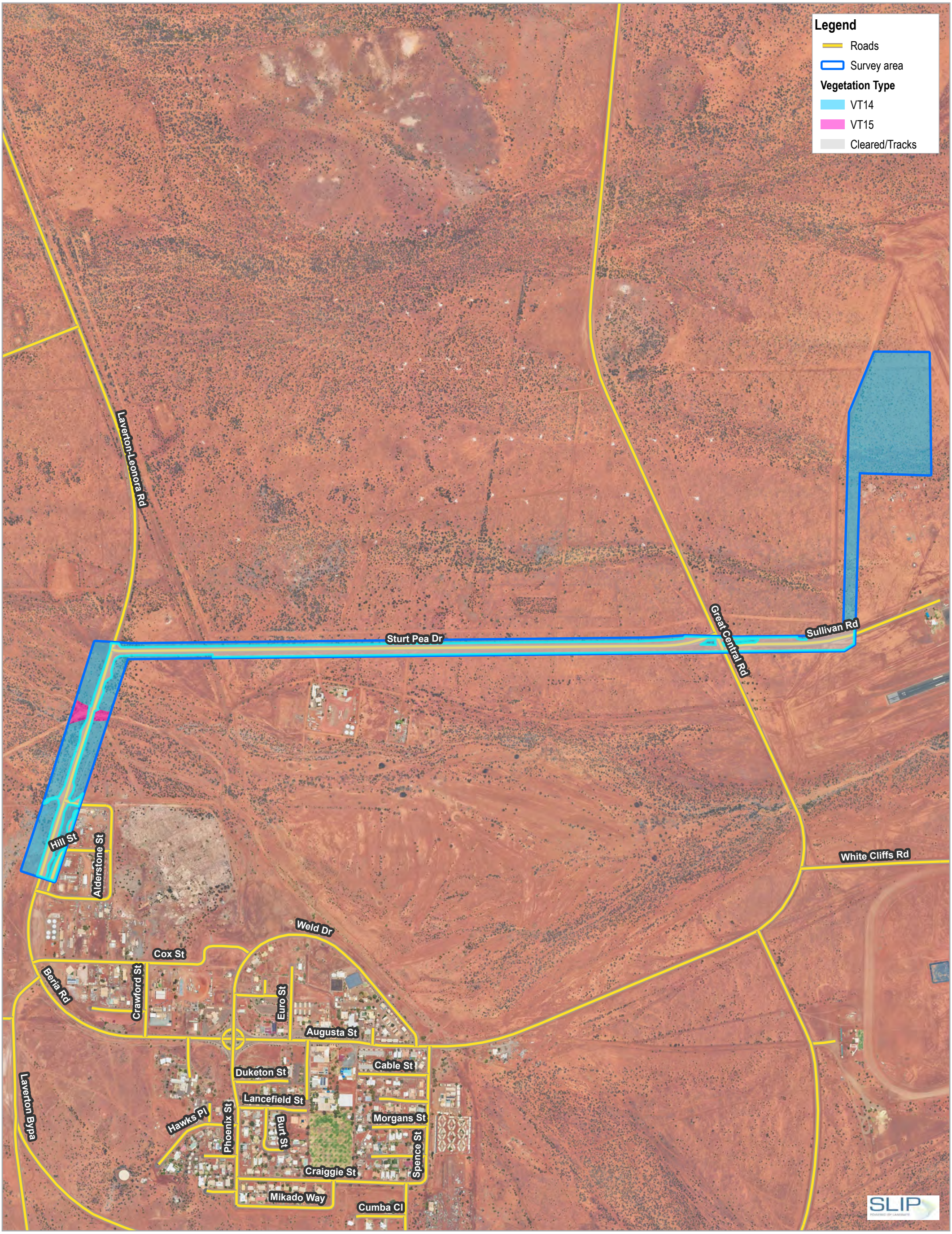
Project No. **12611848**
Revision No. **0**
Date **6/20/2023**

Survey Effort - Laverton

FIGURE 45

G:\61\12611848\GIS\Maps\Working\12611848_Figures\12611848_Figures.aprx\12611848_45_Laverton_SurveyEffort_Rev0
Print date: 31 Aug 2023 - 16:10

Data source: Landgate_Subscription_Imagery\WANow: . Created by: rbrown3



Paper Size ISO A3
at Scale: 1:10,000

0 0.1 0.2 0.3 0.4

Kilometers

Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 51

N

GHD

Horizon Power
Midwest and Remote Towns IRP
Project Desktop and Field Study

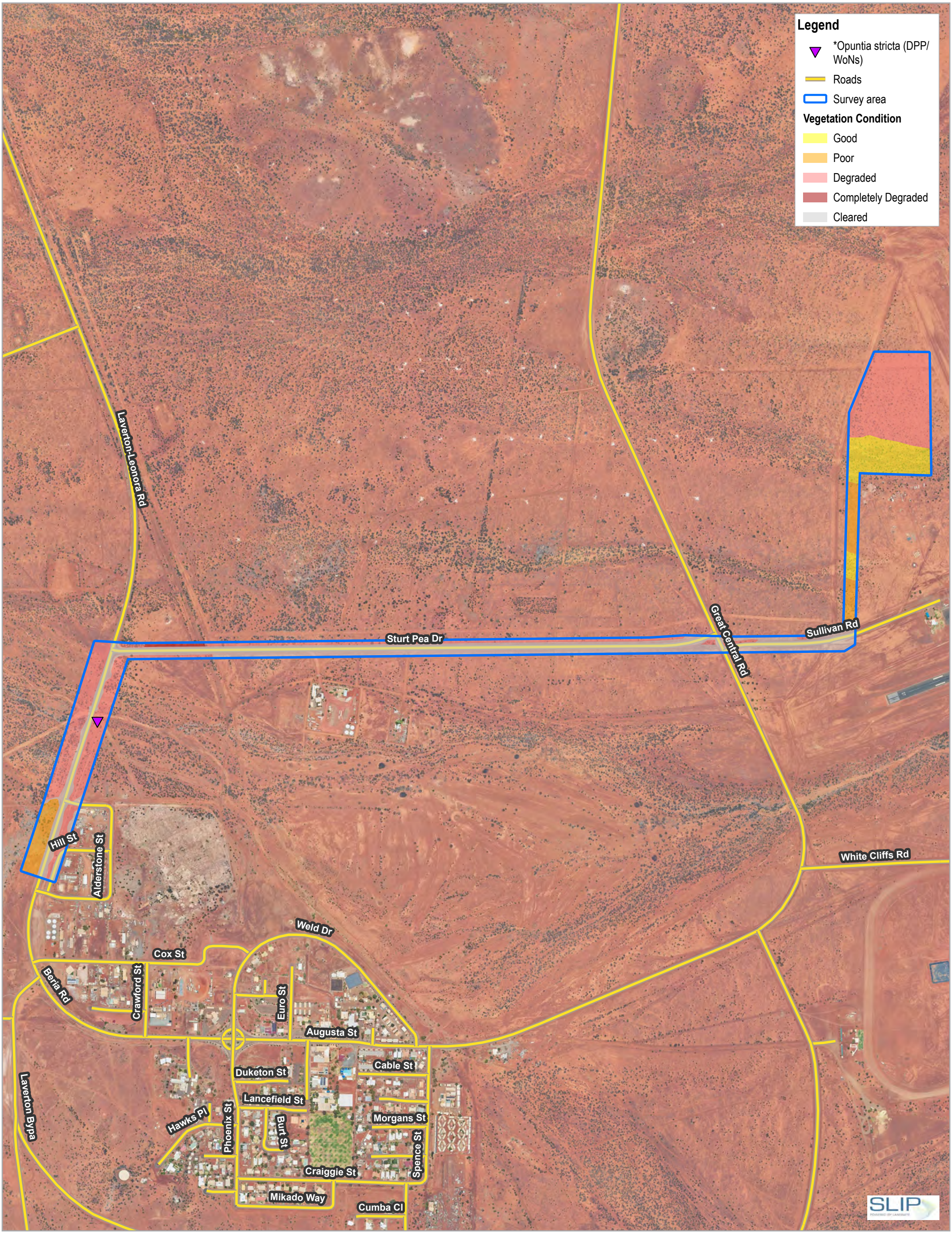
Project No. **12611848**
Revision No. **0**
Date **6/20/2023**

Vegetation Types - Laverton

FIGURE 46

G:\61\12611848\GIS\Maps\Working\12611848_Figures\12611848_Figures.aprx\12611848_46_Laverton_VegetationTypes_Rev0
Print date: 31 Aug 2023 - 16:11

Data source: Landgate_Subscription_Imagery\WANow: . Created by: rbrown3



Paper Size ISO A3
at Scale: 1:10,000

0 0.1 0.2 0.3 0.4

Kilometers

Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 51

N

GHD

Horizon Power
Midwest and Remote Towns IRP
Project Desktop and Field Study

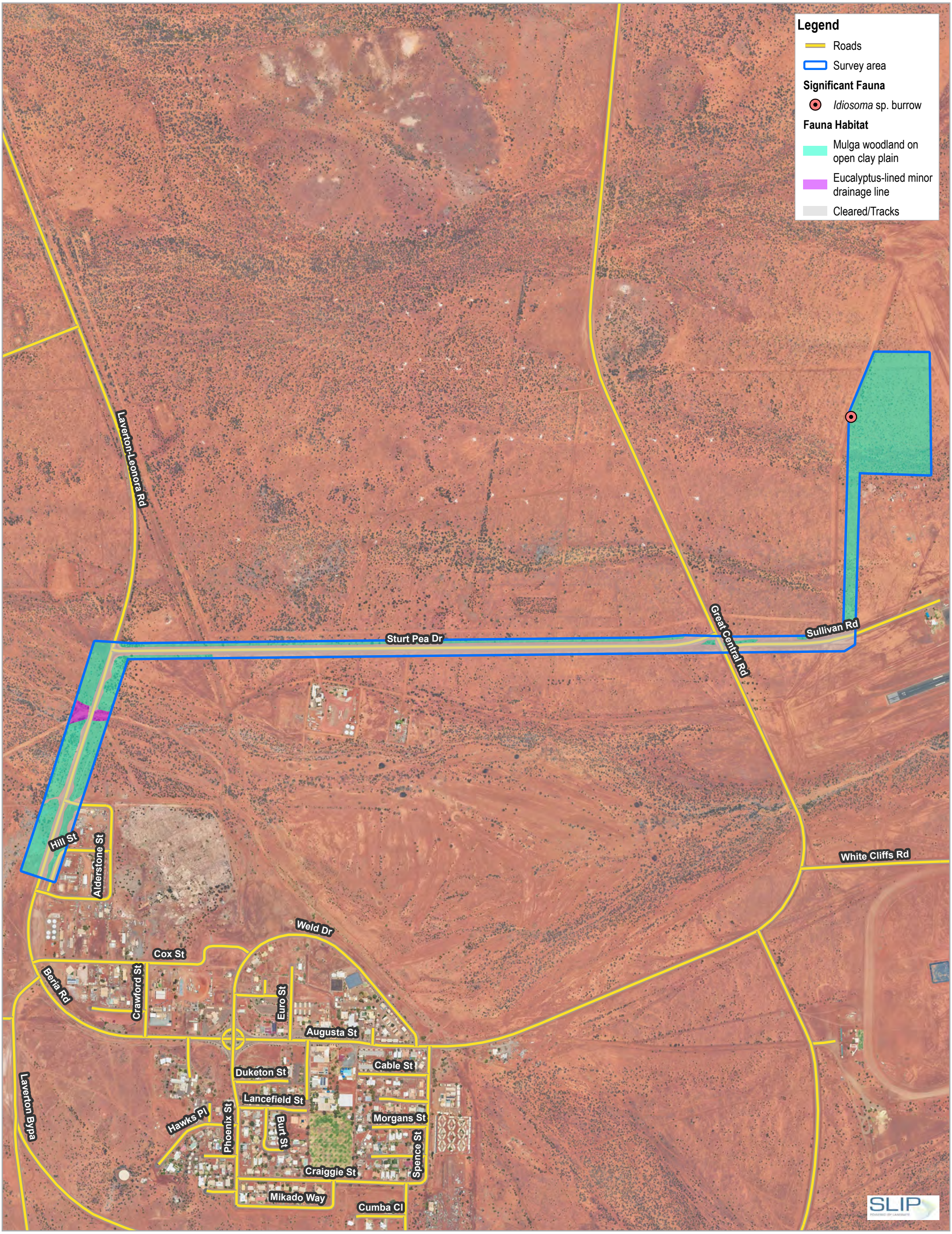
Vegetation Condition and Significant Weeds - Laverton

Project No. **12611848**
Revision No. **0**
Date **8/10/2023**

FIGURE 47

G:\61\12611848\GIS\Maps\Working\12611848_Figures\12611848_Figures.aprx\12611848_47_Laverton_VegConditionSigWeeds_Rev0
Print date: 31 Aug 2023 - 16:11

Data source: Landgate_Subscription_Imagery\WANow: . Created by: rbrown3



Paper Size ISO A3
at Scale: 1:10,000

0 0.1 0.2 0.3 0.4
Kilometers

Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 51

N

GHD

Horizon Power
Midwest and Remote Towns IRP
Project Desktop and Field Study

Fauna Habitat and Significant Fauna - Laverton

Project No. **12611848**
Revision No. **0**
Date **6/20/2023**

FIGURE 48

G:\61\12611848\GIS\Maps\Working\12611848_Figures\12611848_Figures.aprx\12611848_48_Laverton_FaunaHabitatSigFauna_Rev0
Print date: 31 Aug 2023 - 16:11

Data source: Landgate_Subscription_Imagery\WANow: . Created by: rbrown3

Appendix B

Relevant legislation, conservation codes and background information

Relevant legislation

Federal *Environment Protection and Biodiversity Conservation Act 1999*

The *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) is the Federal Government's central piece of environmental legislation. It provides a legal framework to protect and manage nationally and internationally important flora, fauna, ecological communities and heritage places, which are defined in the EPBC Act as Matters of National Environmental Significance (MNES).

The biological aspects listed as MNES include:

– Nationally threatened flora and fauna species and ecological communities
– Migratory species

A person must not undertake an action that has, will have, or is likely to have a significant impact (direct or indirect) on MNES, without approval from the Federal Minister for the Environment.

The EPBC Act is administered by the Department of Climate Change, Energy, the Environment and Water (DCCEEW).

State *Environmental Protection Act 1986*

The *Environmental Protection Act 1986* (EP Act) is the primary legislative Act dealing with the protection of the environment in Western Australia. The Act allows the Environmental Protection Authority (EPA), to prevent, control and abate pollution and environmental harm, for the conservation, preservation, protection, enhancement and management of the environment and for matters incidental to or connected with the foregoing. Part IV of the EP Act is administered by the EPA and makes provisions for the EPA to undertake environmental impact assessment of significant proposals, strategic proposals and land use planning schemes.

The Department of Water and Environment Regulation (DWER) is responsible for administering the clearing provisions of the EP Act (Part V). Clearing of native vegetation in Western Australia requires a permit from the DWER, unless exemptions apply. Applications for clearing permits are assessed by the Department and decisions are made to grant or refuse the application in accordance with the Act. When making a decision the assessment considers clearing against the ten clearing principles as specified in Schedule 5 of the EP Act:

1. Native vegetation should not be cleared if it comprises a high level of biodiversity.
2. Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of a significance habitat for fauna indigenous to Western Australia.
3. Native vegetation should not be cleared if it includes, or is necessary, for the continued existence of rare flora.
4. Native vegetation should not be cleared if it comprises the whole or part of native vegetation in an area that has been extensively cleared.
5. Native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been extensively cleared.
6. Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland.
7. Native vegetation should not be cleared if the clearing of the vegetation is likely to have an impact on the environmental values of any adjacent or nearby conservation area.
8. Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation.
9. Native vegetation should not be cleared if the clearing of the vegetation is likely to cause deterioration in the quality of surface or underground water.

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

Exemptions for clearing include clearing that is a requirement of a written law or authorised under certain statutory processes (listed in Schedule 6 of the EP Act) and exemptions for prescribed low impact day-to-day activities (prescribed in the Environmental Protection (Clearing of Native Vegetation) Regulations 2004); these exemptions do not apply in environmentally sensitive areas (ESAs).

State *Biodiversity and Conservation Act 2016*

The *Biodiversity Conservation Act 2016* (BC Act) provides for the conservation and protection of biodiversity and biodiversity components, as well as the promotion of the ecologically sustainable use of biodiversity components in Western Australia. The BC Act replaces both the repealed *Wildlife Conservation Act 1950* (WC Act) and the *Sandalwood Act 1929* (Sandalwood Act), as well as their associated regulations. To attain the objectives of the BC Act, principles of ecological sustainable development have been established:

– Decision-making processes should effectively integrate both long-term and short-term economic, environmental, social and equitable considerations
– If there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation
– The present generation should ensure that the health, diversity and productivity of the environment is maintained or enhanced for the benefit of future generations
– The conservation of biodiversity and ecological integrity should be a fundamental consideration indecision-making
– Improved valuation, pricing and incentive mechanisms should be promoted.

The BC Act is administered by the Department of Biodiversity Conservation and Attractions (DBCA).

State *Biosecurity and Agriculture Management Act 2007*

The *Biosecurity and Agriculture Management Act 2007* (BAM Act) and associated regulations are administered by the Department of Primary Industries and Regional Development (DPIRD) and replace the repealed *Agriculture and Related Resources Protection Act 1976.* The main purposes of the BAM Act and its regulations are to:

– Prevent new animal and plant pests (vermin and weeds) and diseases from entering WA
– Manage the impact and spread of those pests already present in the state
– Safely manage the use of agricultural and veterinary chemicals
– Increased control over the sale of agricultural products that contain violative chemical residues.

The Western Australian Organism List (WAOL) provides the status of organisms which have been categorised under the BAM Act. A Declared Pest is a prohibited organism or an organism for which a declaration under Section 22(2) of the Act is in force. Declared Pests may be assigned a control category including: C1 (exclusion), C2 (eradication) and C3 (management). The category may apply to the whole of the State, LGAs, districts, individual properties or even paddocks, and all landholders are obliged to comply with the specific category of control. Categories of control are defined below.

DPIRD Categories for Declared Pests under the BAM Act

Control class code	Description
C1 (Exclusion)	Pests will be assigned to this category if they are not established in Western Australia and control measures are to be taken, including border checks, in order to prevent them entering and establishing in the State.
C2 (Eradication)	Pests will be assigned to this category if they are present in Western Australia in low enough numbers or in sufficiently limited areas that their eradication is still a possibility.
C3 (Management)	Pests will be assigned to this category if they are established in Western Australia but it is feasible, or desirable, to manage them in order to limit their damage. Control measures can prevent a C3 pest from increasing in population size or density or moving from an area in which it is established into an area which currently is free of that pest.

Background information

Environmentally Sensitive Areas

Environmentally Sensitive Areas (ESAs) are declared by the Minister for Environment under Section 51B of the EP Act. The Table below outlines the aspects of areas declared as ESA in the Environmental Protection (Environmentally Sensitive Areas) Notice 2005.

Aspects of ESAs

Aspects of Environmentally Sensitive Areas
A declared World Heritage property as defined in Section 13 of the EPBC Act.
An area that is included on the Register of the National Estate (RNE), because of its natural values, under the *Australian Heritage Commission Act 1975* of the Commonwealth (the RNE was closed in 2007 and is no longer a statutory list – all references to the RNE were removed from the EPBC Act on 19 February 2012).
A defined wetland and the area within 50 m of the wetland. Defined wetlands include Ramsar wetlands, conservation category wetlands and nationally important wetlands.
The area covered by vegetation within 50 m of rare flora, to the extent to which the vegetation is continuous with the vegetation in which the rare flora is located.
The area covered by a Threatened Ecological Community.
A Bush Forever Site listed in "Bush Forever" Volumes 1 and 2 (2000), published by the Western Australia Planning Commission, except to the extent to which the site is approved to be developed by the Western Australia Planning Commission.
The areas covered by the *Environmental Protection (Gnangara Mound Crown Land) Policy 1992*.
The areas covered by the *Environmental Protection (Western Swamp Tortoise Habitat) Policy 2002.*
The areas covered by the lakes to which the *Environmental Protection (Swan Coastal Plain Lakes) Policy 1992* (EPP Lakes) applies.
Protected wetlands as defined in the *Environmental Protection (South West Agricultural Zone Wetlands) Policy 1998*.

Reserves and conservation areas

Department of Biodiversity, Conservation and Attractions managed lands and waters

DBCA manages lands and waters throughout Western Australia to conserve ecosystems and species, and to provide for recreation and appreciation of the natural environment. DBCA managed lands and waters include national parks, conservation parks and reserves, marine parks and reserves, regional parks, nature reserves, State forest and timber reserves. Access to, or through, some areas of DBCA managed lands may require a permit or could be restricted due to management activities. Proposed land use changes and development proposals that abut DBCA managed lands will generally be referred to DBCA throughout the assessment process.

Wetlands

Ramsar Wetlands (Wetlands of International Importance)

The Convention of Wetlands of International Importance was signed in 1971 at the Iranian town of Ramsar. The Convention has since been referred to as the Ramsar Convention. Ramsar Listed wetlands are "sites containing representative, rare or unique wetlands, or wetlands that are important for conserving biological diversity … because of their ecological, botanical, zoological, limnological or hydrological importance" (DAWE 2020b). Once a Ramsar Listed Wetland is designated, the country agrees to manage its conservation and ensure its wise use.

Under the Convention, wise use is broadly defined as “maintaining the ecological character of a wetland” (DAWE 2020b).

Nationally important wetlands

Wetlands of national significance are listed under the Directory of Important Wetlands in Australia. Nationally important wetlands are wetlands which meet at least one of the following criteria (DAWE 2020a):

- It is a good example of a wetland type occurring within a biogeographic region in Australia
- It is a wetland which plays an important ecological or hydrological role in the natural functioning of a major wetland system/complex
- It is a wetland which is important as the habitat for animal taxa at a vulnerable stage in their life cycles, or provides a refuge when adverse conditions such as drought prevail
- The wetland supports one percent or more of the national populations of any native plant or animal taxa
- The wetland supports native plant or animal taxa or communities which are considered endangered or vulnerable at the national level
- The wetland is of outstanding historical or cultural significance.

Vegetation extent and status

The National Objectives and Targets for Biodiversity Conservation 2001–2005 (Commonwealth of Australia 2001) recognise that the retention of 30 percent or more of the pre-clearing extent of each ecological community is necessary if Australia’s biological diversity is to be protected. This is the threshold level below which species loss appears to accelerate exponentially and loss below this level should not be permitted. This level of recognition is in keeping with the targets recommended in the review of the National Strategy for the Conservation of Australia’s Biological Diversity (ANZECC 2000).

The extent of remnant native vegetation in WA has been assessed by Shepherd et al. (2002) and the GoWA (2019), based on broadscale vegetation association mapping by Beard (various publications). The GoWA produces Statewide Vegetation Statistics Reports that are used for a number of purposes including conservation planning, land use planning and when assessing development applications. The reports are updated every 2-3 years.

Vegetation condition

The vegetation condition can be assessed in accordance with the vegetation condition rating scale for the South West and Interzone Botanical Provinces (EPA 2016a). The scale recognises the intactness of vegetation and consists of six rating levels as outlined below.

Vegetation condition rating and scale for the South West and Interzone Botanical Provinces

Condition	South West and Interzone Botanical Provinces description
Pristine	Pristine or nearly so, no obvious signs of damage caused by human activities since European settlement.
Excellent	Vegetation structure intact, disturbance affecting individual species and weeds are non-aggressive species. Damage to trees caused by fire, the presence of non-aggressive weeds and occasional vehicle tracks.
Very Good	Vegetation structure altered, obvious signs of disturbance. Disturbance to vegetation structure caused by repeated fires, the presence of some more aggressive weeds, dieback, logging and grazing.
Good	Vegetation structure significantly altered by very obvious signs of multiple disturbances. Retains basic vegetation structure or ability to regenerate it. Disturbance to vegetation structure caused by very frequent fires, the presence of very aggressive weeds, partial clearing, dieback and grazing.
Degraded	Basic vegetation structure severely impacted by disturbance. Scope for regeneration but not to a state approaching good condition without intensive management. Disturbance to vegetation structure caused by very frequent fires, the presence of very aggressive weeds at high density, partial clearing, dieback and grazing.

Condition	South West and Interzone Botanical Provinces description
Completely Degraded	The structure of vegetation is no longer intact and the area is completely or almost completely without native species. These areas are often described as 'parkland cleared' with the flora comprising weed or crop species with isolated native trees or shrubs.

Conservation codes

Species of significant flora, fauna and communities are protected under both Federal and State Acts. The Federal EPBC Act provides a legal framework to protect and manage nationally important flora and communities. The State BC Act is the primary wildlife conservation legislation in Western Australia. Information on the conservation codes is summarised in the following sections.

Ecological communities

Significant communities

Ecological communities are defined as naturally occurring biological assemblages that occur in a particular type of habitat (English and Blyth 1997). Federally listed Threatened Ecological Communities (TECs) are protected under the EPBC Act. The BC Act provides for the Minister to list an ecological community as a TEC (section 27), or as a collapsed ecological community (section 31) statutory listing of State TECs by the Minister. The legislation also describes statutory processes for preparing recovery plans for TECs, the registration of their critical habitat, and penalties for unauthorised modification of TECs.

Possible TECs that do not meet survey criteria are added to the DBCA Priority Ecological Community (PEC) List under Priorities 1, 2 and 3. These are ecological communities that are adequately known; are rare but not threatened, or meet criteria for Near Threatened. PECs that have been recently removed from the threatened list are placed in Priority 4. These ecological communities require regular monitoring. Conservation dependent ecological communities are placed in Priority 5. PECs are not listed under any formal Federal or State legislation, however, may be listed as TECs under the EPBC Act.

Codes and definitions for TECs listed under the EPBC Act and/or BC Act

Categories	Definition
Federal Government Conservation Categories (EPBC Act)	
Critically Endangered (CR)	An ecological community if, at that time, is facing an extremely high risk of extinction in the wild in the immediate future, as determined in accordance with the prescribed criteria (as outlined in Environment Protection and Biodiversity Conservation Regulations 2000).
Endangered (EN)	An ecological community if, at that time: – is not critically endangered; and – is facing a very high risk of extinction in the wild in the near future, as determined in accordance with the prescribed criteria (as outlined in Environment Protection and Biodiversity Conservation Regulations 2000).
Vulnerable (VU)	An ecological community if, at that time: – 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 (as outlined in Environment Protection and Biodiversity Conservation Regulations 2000).
Western Australia Conservation Categories (BC Act)	
Threatened Ecological Communities	
Critically Endangered (CR)	An ecological community that has been adequately surveyed and found to have been subject to a major contraction in area and/or that was originally of limited distribution and is facing severe modification or destruction throughout its range in the immediate future, or is already severely degraded throughout its range but capable of being substantially restored or rehabilitated.
Endangered (EN)	An ecological community that has been adequately surveyed and found to have been subject to a major contraction in area and/or was originally of limited distribution and is in danger of significant modification throughout its range or severe modification or destruction over most of its range in the near future.

Categories	Definition
Vulnerable (VU)	An ecological community that has been adequately surveyed and is found to be declining and/or has declined in distribution and/or condition and whose ultimate security has not yet been assured and/or a community that is still widespread but is believed likely to move into a category of higher threat in the near future if threatening processes continue or begin operating throughout its range.
Collapsed ecological communities	
An ecological community is eligible for listing as a collapsed ecological community at a particular time if, at that time – – there is no reasonable doubt that the last occurrence of the ecological community has collapsed); or – the ecological community has been so extensively modified throughout its range that no occurrence of it is likely to recover – • its species composition or structure; or • its species composition and structure. Section 33 of the BC Act provides for a collapsed ecological community to be regarded as a threatened ecological community if it is discovered in a state that no longer makes it eligible for listing as a collapsed ecological community.	

Categories and definitions for PECs as listed by the DBCA

Category	
Priority 1	Poorly known ecological communities. Ecological communities that are known from very few occurrences with a very restricted distribution (generally ≤5 occurrences or a total area of ≤100 ha). Occurrences are believed to be under threat either due to limited extent, or being on lands under immediate threat (e.g. within agricultural or pastoral lands, urban areas, active mineral leases) or for which current threats exist. May include communities with occurrences on protected lands. Communities may be included if they are comparatively well-known from one or more localities but do not meet adequacy of survey requirements, and/or are not well defined, and appear to be under immediate threat from known threatening processes across their range.
Priority 2	Poorly known ecological communities. Communities that are known from few occurrences with a restricted distribution (generally ≤10 occurrences or a total area of ≤200 ha). At least some occurrences are not believed to be under immediate threat of destruction or degradation. Communities may be included if they are comparatively well known from one or more localities but do not meet adequacy of survey requirements, and/or are not well defined, and appear to be under threat from known threatening processes.
Priority 3	Poorly known ecological communities. – Communities that are known from several to many occurrences, a significant number or area of which are not under threat of habitat destruction or degradation or: – communities known from a few widespread occurrences, which are either large or with significant remaining areas of habitat in which other occurrences may occur, much of it not under imminent threat, or; – communities made up of large, and/or widespread occurrences, that may or may not be represented in the reserve system, but are under threat of modification across much of their range from processes such as grazing by domestic and/or feral stock, and inappropriate fire regimes. Communities may be included if they are comparatively well known from several localities but do not meet adequacy of survey requirements and/or are not well defined, and known threatening processes exist that could affect them.
Priority 4	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. These communities require regular monitoring. – Rare. Ecological communities known from few occurrences 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 communities are usually represented on conservation lands.

Category	
	– Near Threatened. Ecological communities that are considered to have been adequately surveyed and that do not qualify for Conservation Dependent, but that are close to qualifying for Vulnerable. – Ecological communities that have been removed from the list of threatened communities during the past five years.
Priority 5	Conservation Dependent ecological communities. Ecological communities that are not threatened but are subject to a specific conservation program, the cessation of which would result in the community becoming threatened within five years.

Other significant vegetation

Vegetation may be significant for a range of reasons other than a statutory listing. The EPA (2016a, b) states that significant vegetation may include vegetation that includes the following:

- Restricted distribution
- Degree of historical impact from threatening processes
- A role as a refuge
- Providing an important function required to maintain ecological integrity of a significant ecosystem
- Local endemism in restricted habitats
- Novel combinations of taxa
- A role as a key habitat for Threatened species or large population representing a significant proportion of the local to regional total population of a species
- Being representative of a vegetation unit in 'pristine' condition in a highly cleared landscape, recently discovered range extensions, or isolated outliers of the main range.

This may apply at a number of levels, so the unit may be significant when considered at the fine-scale (intra-locality), intermediate-scale (locality or inter-locality) or broad-scale (local to region).

Flora and fauna

Significant flora and fauna

Species of significant flora are protected under both Federal and State legislation. Any activities that are deemed to have a significant impact on species that are recognised by the EPBC Act, and/or the BC Act can warrant referral to the DCCEEW and/or the EPA.

The Federal conservation level of flora and fauna species and their significance status is assessed under the EPBC Act. The significance levels for flora and fauna used in the EPBC Act align with the International Union for Conservation of Nature (IUCN) Red List criteria, which are internationally recognised as providing best practice for assigning the conservation status of species. The EPBC Act also protects land and migratory species that are listed under International Agreements. The list of migratory species established under section 209 of the EPBC Act comprises:

- Migratory species which are native to Australia and are included in the appendices to the Bonn Convention (Convention on the Conservation of Migratory Species of Wild Animals Appendices I and II)
- Migratory species included in annexes established under the Japan-Australia Migratory Bird Agreement (JAMBA) and the China–Australia Migratory Bird Agreement (CAMBA)
- Native, migratory species identified in a list established under, or an instrument made under, an international agreement approved by the Minister, such as the republic of Korea–Australia Migratory Bird Agreement (ROKAMBA)

The State conservation level of flora and fauna species and their significance status also follows the IUCN Red List criteria. Under the BC Act flora and fauna can be listed as Threatened, Extinct and as Specially Protected species.

Threatened species are those are species which have been adequately searched for and are deemed to be, in the wild, either rare, under identifiable threat of extinction, or otherwise in need of special protection, and have been gazetted as such. The assessment of the conservation status of Threatened species is based on their national extent and ranked according to their level of threat using IUCN Red List categories and criteria. Specially protected species meet one or more of the following categories: species of special conservation interest; migratory species; cetaceans; species subject to international agreement; or species otherwise in need of special protection. Species that are listed as Threatened or Extinct species under the BC Act cannot also be listed as Specially Protected species.

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

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

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

For the purposes of this assessment, all species listed under the EPBC Act, BC Act and DBCA Priority species are considered significant.

Categories and definitions for EPBC Act and BC Act listed flora and fauna species

Conservation category	Definition
Threatened species	
Critically Endangered (CR)	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.
Endangered (EN)	Threatened species considered to be "facing a very high risk of extinction in the wild in the near future, as determined in accordance with criteria set out in the ministerial guidelines". Listed as endangered under section 19(1)(b) of the BC Act in accordance with the criteria set out in section 21 and the ministerial guidelines.
Vulnerable (VU)	Threatened species considered to be "facing a high risk of extinction in the wild in the medium term future, as determined in accordance with criteria set out in the ministerial guidelines". Listed as vulnerable under section 19(1)(c) of the BC Act in accordance with the criteria set out in section 22 and the ministerial guidelines.
Extinct species	
Extinct (EX)	Species where "there is no reasonable doubt that the last member of the species has died", and listing is otherwise in accordance with the ministerial guidelines (section 24 of the BC Act).
Extinct in the Wild (EW)	Species that "is known only to survive in cultivation, in captivity or as a naturalised population well outside its past range; and it has not been recorded in its known habitat or expected habitat, at appropriate seasons, anywhere in its past range, despite surveys over a time frame appropriate to its life cycle and form", and listing is otherwise in accordance with the ministerial guidelines (section 25 of the BC Act).
Specially protected species	
Migratory (MI)	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.
Species of special conservation interest (conservation dependent fauna) (CD)	Fauna of special conservation need being species dependent on ongoing conservation intervention to prevent it becoming eligible for listing as threatened.
Other specially protected fauna (OS)	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).

Codes for DBCA listed Priority flora and fauna

Priority category	Definition
Priority 1	Poorly-known taxa 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

Priority category	Definition
	of survey requirements and appear to be under immediate threat from known threatening processes. Such species are in urgent need of further survey.
Priority 2	Poorly-known taxa Species that are known from one or a few locations (generally five or less), some of which are on lands managed primarily for nature conservation, e.g. national parks, conservation parks, nature reserves and other lands with secure tenure being managed for conservation. Species may be included if they are comparatively well known from one or more locations but do not meet adequacy of survey requirements and appear to be under threat from known threatening processes. Such species are in urgent need of further survey.
Priority 3	Poorly-known taxa Species that are known from several locations, and the species does not appear to be under imminent threat, or from few but widespread locations with either large population size or significant remaining areas of apparently suitable habitat, much of it not under imminent threat. Species may be included if they are comparatively well known from several locations but do not meet adequacy of survey requirements and known threatening processes exist that could affect them. Such species are in need of further survey.
Priority 4	Rare, Near Threatened and other taxa in need of monitoring – Rare: Taxa 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 taxa are usually represented on conservation lands. – Near Threatened. Taxa that are considered to have been adequately surveyed and that do not qualify for Conservation Dependent, but that are close to qualifying for Vulnerable. – Taxa that have been removed from the list of threatened taxa during the past five years for reasons other than taxonomy.

Other significant flora

Flora species, subspecies, varieties, hybrids and ecotypes may be significant for a range of reasons, other than a statutory listing. The EPA (2016a, b) states that significant flora may include taxa that have/are:

– A keystone role in a particular habitat for Threatened or Priority flora or fauna species, or large populations representing a considerable proportion of the local or regional total population of a species
– Relictual status, being representation of taxonomic or physiognomic groups that no longer occur widely in the broader landscape
– New species or anomalous features that indicate a potential new species
– Being representative of the range of a species (particularly, at the extremes of range, recently discovered range extensions, or isolated outliers of the main range)
– Unusual species, including restricted subspecies, varieties, or naturally occurring hybrids
– Local endemism (a restricted distribution) or association with a restricted habitat type (e.g. surface water or groundwater dependent ecosystems).

Other significant fauna

Fauna species may be significant for a range of reasons other than those protected by international agreement or treaty, Specially Protected or Priority Fauna. Significant fauna may include short-range endemic species, species that have declining populations or declining distributions, species at the extremes of their range, or isolated outlying populations, or species which may be undescribed (EPA 2010).

Introduced plants (weeds)

Declared Pests

Information on species considered to be Declared Pests is provided under *State Biosecurity and Agriculture Management Act 2007.*

Weeds of National Significance

The spread of weeds across a range of land uses or ecosystems is important in the context of socio-economic and environmental values. The assessment of Weeds of National Significance (WoNS) is based on four major criteria:

– Invasiveness
– Impacts
– Potential for spread
– Socio-economic and environmental values.

Australian state and territory governments have identified thirty-two Weeds of National Significance (WoNS); a list of 20 WoNS was endorsed in 1999 and a further 12 were added in 2012.

References

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Appendix C

Desktop searches

EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected. Please see the caveat for interpretation of information provided here.

Report created: 13-Apr-2023

Summary

Matters of National Environment Significance

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

World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International Importance (Ramsar	None
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	None
Listed Threatened Species:	9
Listed Migratory Species:	8

Other Matters Protected by the EPBC Act

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

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

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

Commonwealth Lands:	1
Commonwealth Heritage Places:	None
Listed Marine Species:	11
Whales and Other Cetaceans:	None
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	None
Habitat Critical to the Survival of Marine Turtles:	None

Extra Information

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

State and Territory Reserves:	1
Regional Forest Agreements:	None
Nationally Important Wetlands:	None
EPBC Act Referrals:	1
Key Ecological Features (Marine):	None
Biologically Important Areas:	None
Bioregional Assessments:	None
Geological and Bioregional Assessments:	None

Details

Matters of National Environmental Significance

Listed Threatened Species			[Resource Information]
Status of Conservation Dependent and Extinct are not MNES under the EPBC Act. Number is the current name ID.			
Scientific Name	Threatened Category	Presence Text	Buffer Status
BIRD			
Aphelocephala leucopsis Southern Whiteface [529]	Vulnerable	Species or species habitat known to occur within area	In feature area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area	In feature area
Falco hypoleucos Grey Falcon [929]	Vulnerable	Species or species habitat may occur within area	In feature area
Leipoa ocellata Malleefowl [934]	Vulnerable	Species or species habitat known to occur within area	In feature area
Pezoporus occidentalis Night Parrot [59350]	Endangered	Species or species habitat may occur within area	In feature area
PLANT			
Eremophila rostrata Beaked Eremophila [65124]	Critically Endangered	Species or species habitat known to occur within area	In feature area
Minuria tridens Minnie Daisy [13753]	Vulnerable	Species or species habitat may occur within area	In buffer area only
REPTILE			

Scientific Name	Threatened Category	Presence Text	Buffer Status
Egernia stokesii badia			
Western Spiny-tailed Skink, Baudin Island Spiny-tailed Skink [64483]	Endangered	Species or species habitat may occur within area	In feature area
SPIDER			
Idiosoma nigrum			
Shield-backed Trapdoor Spider, Black Rugose Trapdoor Spider [66798]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only

Listed Migratory Species [Resource Information]

Scientific Name	Threatened Category	Presence Text	Buffer Status
Migratory Marine Birds			
Apus pacificus			
Fork-tailed Swift [678]		Species or species habitat likely to occur within area	In feature area
Migratory Terrestrial Species			
Motacilla cinerea			
Grey Wagtail [642]		Species or species habitat may occur within area	In feature area
Motacilla flava			
Yellow Wagtail [644]		Species or species habitat may occur within area	In buffer area only
Migratory Wetlands Species			
Actitis hypoleucos			
Common Sandpiper [59309]		Species or species habitat known to occur within area	In feature area
Calidris acuminata			
Sharp-tailed Sandpiper [874]		Species or species habitat known to occur within area	In feature area
Calidris ferruginea			
Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area	In feature area
Calidris melanotos			
Pectoral Sandpiper [858]		Species or species habitat may occur within area	In feature area
Tringa nebularia			
Common Greenshank, Greenshank [832]		Species or species habitat likely to occur within area	In feature area

Other Matters Protected by the EPBC Act

Commonwealth Lands [Resource Information]

The Commonwealth area listed below may indicate the presence of Commonwealth land in this vicinity. Due to the unreliability of the data source, all proposals should be checked as to whether it impacts on a Commonwealth area, before making a definitive decision. Contact the State or Territory government land department for further information.

Commonwealth Land Name	State	Buffer Status
Unknown		
Commonwealth Land - [51945]	WA	In feature area

Listed Marine Species [Resource Information]

Scientific Name	Threatened Category	Presence Text	Buffer Status
Bird			
Actitis hypoleucos			
Common Sandpiper [59309]		Species or species habitat known to occur within area	In feature area
Apus pacificus			
Fork-tailed Swift [678]		Species or species habitat likely to occur within area overfly marine area	In feature area
Calidris acuminata			
Sharp-tailed Sandpiper [874]		Species or species habitat known to occur within area	In feature area
Calidris ferruginea			
Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area overfly marine area	In feature area
Calidris melanotos			
Pectoral Sandpiper [858]		Species or species habitat may occur within area overfly marine area	In feature area
Chalcites osculans as Chrysococcyx osculans			
Black-eared Cuckoo [83425]		Species or species habitat known to occur within area overfly marine area	In feature area
Merops ornatus			
Rainbow Bee-eater [670]		Species or species habitat may occur within area overfly marine area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Motacilla cinerea Grey Wagtail [642]		Species or species habitat may occur within area overfly marine area	In feature area
Motacilla flava Yellow Wagtail [644]		Species or species habitat may occur within area overfly marine area	In buffer area only
Thinornis cucullatus as Thinornis rubricollis Hooded Plover, Hooded Dotterel [87735]		Species or species habitat known to occur within area overfly marine area	In buffer area only
Tringa nebularia Common Greenshank, Greenshank [832]		Species or species habitat likely to occur within area overfly marine area	In feature area

Extra Information

State and Territory Reserves			[Resource Information]
Protected Area Name	Reserve Type	State	Buffer Status
Lakeside Pastoral Lease	NRS Addition - Gazettal in Progress	WA	In buffer area only

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

Caveat

1 PURPOSE

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

The report contains the mapped locations of:

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

2 DISCLAIMER

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

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

3 DATA SOURCES

Threatened ecological communities

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

Threatened, migratory and marine species

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

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

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

4 LIMITATIONS

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

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

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

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

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

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

Acknowledgements

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

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

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

Please feel free to provide feedback via the Contact us page.

Department of Climate Change, Energy, the Environment and Water
GPO Box 3090
Canberra ACT 2601 Australia
+61 2 6274 1111

EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected. Please see the caveat for interpretation of information provided here.

Report created: 24-Apr-2023

Summary

Matters of National Environment Significance

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

World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International Importance (Ramsar	None
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	None
Listed Threatened Species:	9
Listed Migratory Species:	8

Other Matters Protected by the EPBC Act

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

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

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

Commonwealth Lands:	1
Commonwealth Heritage Places:	None
Listed Marine Species:	12
Whales and Other Cetaceans:	None
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	None
Habitat Critical to the Survival of Marine Turtles:	None

Extra Information

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

State and Territory Reserves:	2
Regional Forest Agreements:	None
Nationally Important Wetlands:	None
EPBC Act Referrals:	2
Key Ecological Features (Marine):	None
Biologically Important Areas:	None
Bioregional Assessments:	None
Geological and Bioregional Assessments:	None

Details

Matters of National Environmental Significance

Listed Threatened Species			[Resource Information]
Status of Conservation Dependent and Extinct are not MNES under the EPBC Act. Number is the current name ID.			
Scientific Name	Threatened Category	Presence Text	Buffer Status
BIRD			
Aphelocephala leucopsis Southern Whiteface [529]	Vulnerable	Species or species habitat known to occur within area	In feature area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area	In feature area
Erythrotriorchis radiatus Red Goshawk [942]	Endangered	Species or species habitat may occur within area	In buffer area only
Falco hypoleucos Grey Falcon [929]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Pezoporus occidentalis Night Parrot [59350]	Endangered	Species or species habitat may occur within area	In buffer area only
Rostratula australis Australian Painted Snipe [77037]	Endangered	Species or species habitat may occur within area	In feature area
MAMMAL			
Dasyurus hallucatus Northern Quoll, Digul [Gogo-Yimidir], Wijingadda [Dambimangari], Wiminji [Martu] [331]	Endangered	Species or species habitat may occur within area	In buffer area only
PLANT			

Scientific Name	Threatened Category	Presence Text	Buffer Status
[Pityrodia augustensis](#)			
Mt Augustus Foxglove [4962]	Vulnerable	Species or species habitat may occur within area	In buffer area only
REPTILE			
[Egernia stokesii badia](#)			
Western Spiny-tailed Skink, Baudin Island Spiny-tailed Skink [64483]	Endangered	Species or species habitat may occur within area	In feature area

Listed Migratory Species

[Resource Information]

Scientific Name	Threatened Category	Presence Text	Buffer Status
Migratory Marine Birds			
[Apus pacificus](#)			
Fork-tailed Swift [678]		Species or species habitat likely to occur within area	In feature area
Migratory Terrestrial Species			
[Motacilla cinerea](#)			
Grey Wagtail [642]		Species or species habitat may occur within area	In feature area
[Motacilla flava](#)			
Yellow Wagtail [644]		Species or species habitat may occur within area	In feature area
Migratory Wetlands Species			
[Actitis hypoleucos](#)			
Common Sandpiper [59309]		Species or species habitat known to occur within area	In feature area
[Calidris acuminata](#)			
Sharp-tailed Sandpiper [874]		Species or species habitat may occur within area	In feature area
[Calidris ferruginea](#)			
Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area	In feature area
[Calidris melanotos](#)			
Pectoral Sandpiper [858]		Species or species habitat may occur within area	In feature area
[Charadrius veredus](#)			
Oriental Plover, Oriental Dotterel [882]		Species or species habitat may occur within area	In feature area

Other Matters Protected by the EPBC Act

Commonwealth Lands [Resource Information]

The Commonwealth area listed below may indicate the presence of Commonwealth land in this vicinity. Due to the unreliability of the data source, all proposals should be checked as to whether it impacts on a Commonwealth area, before making a definitive decision. Contact the State or Territory government land department for further information.

Commonwealth Land Name	State	Buffer Status
Unknown		
Commonwealth Land - [51484]	WA	In feature area

Listed Marine Species [Resource Information]

Scientific Name	Threatened Category	Presence Text	Buffer Status
Bird			
Actitis hypoleucos			
Common Sandpiper [59309]		Species or species habitat known to occur within area	In feature area
Apus pacificus			
Fork-tailed Swift [678]		Species or species habitat likely to occur within area overfly marine area	In feature area
Bubulcus ibis as Ardea ibis			
Cattle Egret [66521]		Species or species habitat may occur within area overfly marine area	In feature area
Calidris acuminata			
Sharp-tailed Sandpiper [874]		Species or species habitat may occur within area	In feature area
Calidris ferruginea			
Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area overfly marine area	In feature area
Calidris melanotos			
Pectoral Sandpiper [858]		Species or species habitat may occur within area overfly marine area	In feature area
Chalcites osculans as Chrysococcyx osculans			
Black-eared Cuckoo [83425]		Species or species habitat likely to occur within area overfly marine area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Charadrius veredus Oriental Plover, Oriental Dotterel [882]		Species or species habitat may occur within area overfly marine area	In feature area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area overfly marine area	In feature area
Motacilla cinerea Grey Wagtail [642]		Species or species habitat may occur within area overfly marine area	In feature area
Motacilla flava Yellow Wagtail [644]		Species or species habitat may occur within area overfly marine area	In feature area
Rostratula australis as Rostratula benghalensis (sensu lato) Australian Painted Snipe [77037]	Endangered	Species or species habitat may occur within area overfly marine area	In feature area

Extra Information

State and Territory Reserves			[Resource Information]
Protected Area Name	Reserve Type	State	Buffer Status
Kennedy Range	National Park	WA	In buffer area only
Kennedy Range National Park Addition	NRS Addition - Gazettal in Progress	WA	In buffer area only

EPBC Act Referrals				[Resource Information]
Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Not controlled action				
Improving rabbit biocontrol: releasing another strain of RHDV, sthrn two thirds of Australia	2015/7522	Not Controlled Action	Completed	In feature area
Northern Looping project, Karratha to Gingin	2005/2251	Not Controlled Action	Completed	In buffer area only

Caveat

1 PURPOSE

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

The report contains the mapped locations of:

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

2 DISCLAIMER

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

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

3 DATA SOURCES

Threatened ecological communities

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

Threatened, migratory and marine species

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

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

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

4 LIMITATIONS

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

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

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

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

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

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

Acknowledgements

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

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-Australian Bird and Bat Banding Scheme
-Australian National Wildlife Collection
-Natural history museums of Australia
-Museum Victoria
-Australian Museum
-South Australian Museum
-Queensland Museum
-Online Zoological Collections of Australian Museums
-Queensland Herbarium
-National Herbarium of NSW
-Royal Botanic Gardens and National Herbarium of Victoria
-Tasmanian Herbarium
-State Herbarium of South Australia
-Northern Territory Herbarium
-Western Australian Herbarium
-Australian National Herbarium, Canberra
-University of New England
-Ocean Biogeographic Information System
-Australian Government, Department of Defence
Forestry Corporation, NSW
-Geoscience Australia
-CSIRO
-Australian Tropical Herbarium, Cairns
-eBird Australia
-Australian Government – Australian Antarctic Data Centre
-Museum and Art Gallery of the Northern Territory
-Australian Government National Environmental Science Program
-Australian Institute of Marine Science
-Reef Life Survey Australia
-American Museum of Natural History
-Queen Victoria Museum and Art Gallery, Inveresk, Tasmania
-Tasmanian Museum and Art Gallery, Hobart, Tasmania
-Other groups and individuals

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

Please feel free to provide feedback via the Contact us page.

Department of Climate Change, Energy, the Environment and Water
GPO Box 3090
Canberra ACT 2601 Australia
+61 2 6274 1111

Department of Agriculture, Water and the Environment

Protected Matters Search Tool

Report Generated - 5:21PM - 05 May 2023

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Matters of National Environment Significance	Count
World Heritage Properties	0
National Heritage Places	0
Wetlands of International Importance (Ramsar Wetlands)	0
Great Barrier Reef Marine Park	0
Commonwealth Marine Area	0
Listed Threatened Ecological Communities	0
Listed Threatened Species	7
Listed Migratory Species	8

Other Matters Protected by the EPBC Act	Count
Commonwealth Lands	3
Commonwealth Heritage Places	0
Listed Marine Species	11
Whales and Other Cetaceans	0
Critical Habitats	0
Commonwealth Reserves Terrestrial	0
Australian Marine Parks	0
Habitat Critical to the Survival of Marine Turtles	0

Extra Information	Count
State and Territory Reserves	0
Regional Forest Agreements	0
Nationally Important Wetlands	0
EPBC Act Referrals	3
Key Ecological Features	0
Biologically Important Areas	0
Bioregional Assessments	0
Geological and Bioregional Assessments	0

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected and is accurate at the time of generation.
Please see the caveat for interpretation of information provided here. Consider carefully the age of information for decision making.

Report Metadata	Caveat

Listed Threatened Species

Species ID	Scientific Name	Common Name	Class	Simple Presence	Presence Text	Threatened Category	Migratory Status	Migratory Category	Marine Status	Cetacean Status	Website	Buffer Status
291	*Sminthopsis*	Sandhill Dunnart	Mammal	Likely	Species or species habitat	Endangered					Species Profile and Threat	In buffer area only
59350	*Pezoporus occidentalis*	Night Parrot	Bird	May	Species or species habitat	Endangered					Species Profile and Threat	In buffer area only
934	*Leipoa ocellata*	Malleefowl	Bird	Known	Species or species habitat	Vulnerable					Species Profile and Threat	In feature area
529	*Aphelocephala leucopsis*	Southern Whiteface	Bird	Known	Species or species habitat	Vulnerable					Species Profile and Threat	In feature area
929	*Falco hypoleucos*	Grey Falcon	Bird	May	Species or species habitat	Vulnerable					Species Profile and Threat	In feature area
83160	*Liopholis kintorei*	Great Desert Skink,	Reptile	May	Species or species habitat	Vulnerable					Species Profile and Threat	In buffer area only
758	*Polytelis alexandrae*	Princess Parrot,	Bird	Known	Species or species habitat	Vulnerable					Species Profile and Threat	In feature area

EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected. Please see the caveat for interpretation of information provided here.

Report created: 13-Apr-2023

Summary

Matters of National Environment Significance

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

World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International Importance (Ramsar	None
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	None
Listed Threatened Species:	5
Listed Migratory Species:	8

Other Matters Protected by the EPBC Act

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

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

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

Commonwealth Lands:	10
Commonwealth Heritage Places:	None
Listed Marine Species:	10
Whales and Other Cetaceans:	None
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	None
Habitat Critical to the Survival of Marine Turtles:	None

Extra Information

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

State and Territory Reserves:	None
Regional Forest Agreements:	None
Nationally Important Wetlands:	None
EPBC Act Referrals:	1
Key Ecological Features (Marine):	None
Biologically Important Areas:	None
Bioregional Assessments:	None
Geological and Bioregional Assessments:	None

Details

Matters of National Environmental Significance

Listed Threatened Species			[Resource Information]
Status of Conservation Dependent and Extinct are not MNES under the EPBC Act. Number is the current name ID.			
Scientific Name	Threatened Category	Presence Text	Buffer Status
BIRD			
Aphelocephala leucopsis Southern Whiteface [529]	Vulnerable	Species or species habitat known to occur within area	In feature area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area	In feature area
Falco hypoleucos Grey Falcon [929]	Vulnerable	Species or species habitat may occur within area	In feature area
Leipoa ocellata Malleefowl [934]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Pezoporus occidentalis Night Parrot [59350]	Endangered	Species or species habitat may occur within area	In feature area

Listed Migratory Species			[Resource Information]
Scientific Name	Threatened Category	Presence Text	Buffer Status
Migratory Marine Birds			
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area	In buffer area only
Migratory Terrestrial Species			
Motacilla cinerea Grey Wagtail [642]		Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Motacilla flava			
Yellow Wagtail [644]		Species or species habitat may occur within area	In feature area
Migratory Wetlands Species			
Actitis hypoleucos			
Common Sandpiper [59309]		Species or species habitat may occur within area	In feature area
Calidris acuminata			
Sharp-tailed Sandpiper [874]		Species or species habitat may occur within area	In feature area
Calidris ferruginea			
Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area	In feature area
Calidris melanotos			
Pectoral Sandpiper [858]		Species or species habitat may occur within area	In feature area
Charadrius veredus			
Oriental Plover, Oriental Dotterel [882]		Species or species habitat may occur within area	In feature area

Other Matters Protected by the EPBC Act

Commonwealth Lands [Resource Information]

The Commonwealth area listed below may indicate the presence of Commonwealth land in this vicinity. Due to the unreliability of the data source, all proposals should be checked as to whether it impacts on a Commonwealth area, before making a definitive decision. Contact the State or Territory government land department for further information.

Commonwealth Land Name	State	Buffer Status
Unknown		
Commonwealth Land - [51946]	WA	In feature area
Commonwealth Land - [51663]	WA	In feature area
Commonwealth Land - [51662]	WA	In feature area
Commonwealth Land - [51659]	WA	In feature area
Commonwealth Land - [51658]	WA	In feature area
Commonwealth Land - [51656]	WA	In feature area
Commonwealth Land - [51657]	WA	In buffer area only

Commonwealth Land Name	State	Buffer Status
Commonwealth Land - [51660]	WA	In feature area
Commonwealth Land - [51654]	WA	In buffer area only
Commonwealth Land - [51661]	WA	In feature area

Listed Marine Species [Resource Information]

Scientific Name	Threatened Category	Presence Text	Buffer Status
Bird			
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat may occur within area	In feature area
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area overfly marine area	In buffer area only
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Chalcites osculans as Chrysococcyx osculans Black-eared Cuckoo [83425]		Species or species habitat known to occur within area overfly marine area	In feature area
Charadrius veredus Oriental Plover, Oriental Dotterel [882]		Species or species habitat may occur within area overfly marine area	In feature area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area overfly marine area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
[Motacilla cinerea](#) Grey Wagtail [642]		Species or species habitat may occur within area overfly marine area	In feature area
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Extra Information

EPBC Act Referrals [Resource Information]

Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Not controlled action				
[Improving rabbit biocontrol: releasing another strain of RHDV, sthrn two thirds of Australia](#)	2015/7522	Not Controlled Action	Completed	In feature area

Caveat

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4 LIMITATIONS

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

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

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-Environment and Planning Directorate, ACT
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-Australian Bird and Bat Banding Scheme
-Australian National Wildlife Collection
-Natural history museums of Australia
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-State Herbarium of South Australia
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-Australian National Herbarium, Canberra
-University of New England
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-Australian Government, Department of Defence
Forestry Corporation, NSW
-Geoscience Australia
-CSIRO
-Australian Tropical Herbarium, Cairns
-eBird Australia
-Australian Government – Australian Antarctic Data Centre
-Museum and Art Gallery of the Northern Territory
-Australian Government National Environmental Science Program
-Australian Institute of Marine Science
-Reef Life Survey Australia
-American Museum of Natural History
-Queen Victoria Museum and Art Gallery, Inveresk, Tasmania
-Tasmanian Museum and Art Gallery, Hobart, Tasmania
-Other groups and individuals

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EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected. Please see the caveat for interpretation of information provided here.

Report created: 13-Apr-2023

Summary

Matters of National Environment Significance

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

World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International Importance (Ramsar	None
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	None
Listed Threatened Species:	8
Listed Migratory Species:	5

Other Matters Protected by the EPBC Act

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

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

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

Commonwealth Lands:	1
Commonwealth Heritage Places:	None
Listed Marine Species:	8
Whales and Other Cetaceans:	None
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	None
Habitat Critical to the Survival of Marine Turtles:	None

Extra Information

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

State and Territory Reserves:	None
Regional Forest Agreements:	None
Nationally Important Wetlands:	1
EPBC Act Referrals:	3
Key Ecological Features (Marine):	None
Biologically Important Areas:	None
Bioregional Assessments:	None
Geological and Bioregional Assessments:	None

Details

Matters of National Environmental Significance

Listed Threatened Species			[Resource Information]
Status of Conservation Dependent and Extinct are not MNES under the EPBC Act. Number is the current name ID.			
Scientific Name	Threatened Category	Presence Text	Buffer Status
BIRD			
Aphelocephala leucopsis Southern Whiteface [529]	Vulnerable	Species or species habitat known to occur within area	In feature area
Falco hypoleucos Grey Falcon [929]	Vulnerable	Species or species habitat may occur within area	In feature area
Leipoa ocellata Malleefowl [934]	Vulnerable	Species or species habitat known to occur within area	In feature area
Pezoporus occidentalis Night Parrot [59350]	Endangered	Species or species habitat may occur within area	In buffer area only
Polytelis alexandrae Princess Parrot, Alexandra's Parrot [758]	Vulnerable	Species or species habitat may occur within area	In feature area
MAMMAL			
Dasyurus geoffroii Chuditch, Western Quoll [330]	Vulnerable	Species or species habitat likely to occur within area	In feature area
PLANT			
Eleocharis papillosa Dwarf Desert Spike-rush [2519]	Vulnerable	Species or species habitat known to occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Ricinocarpos brevis [82879]	Endangered	Species or species habitat may occur within area	In feature area

Listed Migratory Species [Resource Information]

Scientific Name	Threatened Category	Presence Text	Buffer Status
Migratory Marine Birds			
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area	In buffer area only
Migratory Terrestrial Species			
Motacilla cinerea Grey Wagtail [642]		Species or species habitat may occur within area	In feature area
Migratory Wetlands Species			
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat may occur within area	In feature area
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat may occur within area	In feature area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area	In feature area

Other Matters Protected by the EPBC Act

Commonwealth Lands [Resource Information]

The Commonwealth area listed below may indicate the presence of Commonwealth land in this vicinity. Due to the unreliability of the data source, all proposals should be checked as to whether it impacts on a Commonwealth area, before making a definitive decision. Contact the State or Territory government land department for further information.

Commonwealth Land Name	State	Buffer Status
Unknown		
Commonwealth Land - [51750]	WA	In feature area

Listed Marine Species [Resource Information]

Scientific Name	Threatened Category	Presence Text	Buffer Status
Bird			

Scientific Name	Threatened Category	Presence Text	Buffer Status
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat may occur within area	In feature area
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area overfly marine area	In buffer area only
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat may occur within area	In feature area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area overfly marine area	In feature area
Chalcites osculans as Chrysococcyx osculans Black-eared Cuckoo [83425]		Species or species habitat known to occur within area overfly marine area	In feature area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area overfly marine area	In feature area
Motacilla cinerea Grey Wagtail [642]		Species or species habitat may occur within area overfly marine area	In feature area
Thinornis cucullatus as Thinornis rubricollis Hooded Plover, Hooded Dotterel [87735]		Species or species habitat likely to occur within area overfly marine area	In buffer area only

Extra Information

Nationally Important Wetlands		[Resource Information]
Wetland Name	State	Buffer Status
Lake Ballard	WA	In buffer area only

EPBC Act Referrals	[Resource Information]

Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Comet Vale Sand Project	2023/09460		Referral Decision	In buffer area only
Not controlled action				
Improving rabbit biocontrol: releasing another strain of RHDV, sthrn two thirds of Australia	2015/7522	Not Controlled Action	Completed	In feature area
Ularring Hematite Project, WA	2012/6426	Not Controlled Action	Completed	In buffer area only

Caveat

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

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

3 DATA SOURCES

Threatened ecological communities

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

Threatened, migratory and marine species

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

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

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4 LIMITATIONS

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

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

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

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

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

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

Acknowledgements

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-Tasmanian Herbarium
-State Herbarium of South Australia
-Northern Territory Herbarium
-Western Australian Herbarium
-Australian National Herbarium, Canberra
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-Queen Victoria Museum and Art Gallery, Inveresk, Tasmania
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-Other groups and individuals

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

Please feel free to provide feedback via the Contact us page.

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EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected. Please see the caveat for interpretation of information provided here.

Report created: 24-Apr-2023

Summary

Matters of National Environment Significance

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

World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International Importance (Ramsar	None
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	None
Listed Threatened Species:	12
Listed Migratory Species:	9

Other Matters Protected by the EPBC Act

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

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

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

Commonwealth Lands:	2
Commonwealth Heritage Places:	None
Listed Marine Species:	14
Whales and Other Cetaceans:	None
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	None
Habitat Critical to the Survival of Marine Turtles:	None

Extra Information

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

State and Territory Reserves:	None
Regional Forest Agreements:	None
Nationally Important Wetlands:	None
EPBC Act Referrals:	6
Key Ecological Features (Marine):	None
Biologically Important Areas:	None
Bioregional Assessments:	None
Geological and Bioregional Assessments:	None

Details

Matters of National Environmental Significance

Listed Threatened Species			[Resource Information]
Status of Conservation Dependent and Extinct are not MNES under the EPBC Act. Number is the current name ID.			
Scientific Name	Threatened Category	Presence Text	Buffer Status
BIRD			
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area	In feature area
Erythrotriorchis radiatus Red Goshawk [942]	Endangered	Species or species habitat may occur within area	In feature area
Falco hypoleucos Grey Falcon [929]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Pezoporus occidentalis Night Parrot [59350]	Endangered	Species or species habitat likely to occur within area	In feature area
Polytelis alexandrae Princess Parrot, Alexandra's Parrot [758]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Rostratula australis Australian Painted Snipe [77037]	Endangered	Species or species habitat may occur within area	In feature area
MAMMAL			
Dasyurus hallucatus Northern Quoll, Digul [Gogo-Yimidir], Wijingadda [Dambimangari], Wiminji [Martu] [331]	Endangered	Species or species habitat known to occur within area	In feature area
Macroderma gigas Ghost Bat [174]	Vulnerable	Species or species habitat known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
[Macrotis lagotis](#)			
Greater Bilby [282]	Vulnerable	Species or species habitat known to occur within area	In feature area
[Rhinonicteris aurantia (Pilbara form)](#)			
Pilbara Leaf-nosed Bat [82790]	Vulnerable	Species or species habitat likely to occur within area	In feature area
REPTILE			
[Liasis olivaceus barroni](#)			
Olive Python (Pilbara subspecies) [66699]	Vulnerable	Species or species habitat likely to occur within area	In feature area
[Liopholis kintorei](#)			
Great Desert Skink, Tjakura, Warrarna, Mulyamiji [83160]	Vulnerable	Species or species habitat may occur within area	In feature area

Listed Migratory Species			[Resource Information]
Scientific Name	Threatened Category	Presence Text	Buffer Status
Migratory Marine Birds			
[Apus pacificus](#)			
Fork-tailed Swift [678]		Species or species habitat likely to occur within area	In feature area
Migratory Terrestrial Species			
[Hirundo rustica](#)			
Barn Swallow [662]		Species or species habitat may occur within area	In feature area
[Motacilla cinerea](#)			
Grey Wagtail [642]		Species or species habitat may occur within area	In feature area
[Motacilla flava](#)			
Yellow Wagtail [644]		Species or species habitat may occur within area	In feature area
Migratory Wetlands Species			
[Actitis hypoleucos](#)			
Common Sandpiper [59309]		Species or species habitat may occur within area	In feature area
[Calidris acuminata](#)			
Sharp-tailed Sandpiper [874]		Species or species habitat known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Calidris ferruginea			
Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area	In feature area
Calidris melanotos			
Pectoral Sandpiper [858]		Species or species habitat may occur within area	In feature area
Charadrius veredus			
Oriental Plover, Oriental Dotterel [882]		Species or species habitat may occur within area	In feature area

Other Matters Protected by the EPBC Act

Commonwealth Lands [Resource Information]

The Commonwealth area listed below may indicate the presence of Commonwealth land in this vicinity. Due to the unreliability of the data source, all proposals should be checked as to whether it impacts on a Commonwealth area, before making a definitive decision. Contact the State or Territory government land department for further information.

Commonwealth Land Name	State	Buffer Status
Unknown		
Commonwealth Land - [51745]	WA	In feature area
Commonwealth Land - [51746]	WA	In feature area

Listed Marine Species [Resource Information]

Scientific Name	Threatened Category	Presence Text	Buffer Status
Bird			
Actitis hypoleucos			
Common Sandpiper [59309]		Species or species habitat may occur within area	In feature area
Apus pacificus			
Fork-tailed Swift [678]		Species or species habitat likely to occur within area overfly marine area	In feature area
Bubulcus ibis as Ardea ibis			
Cattle Egret [66521]		Species or species habitat may occur within area overfly marine area	In feature area
Calidris acuminata			
Sharp-tailed Sandpiper [874]		Species or species habitat known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
[Calidris ferruginea](#) Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area overfly marine area	In feature area
[Calidris melanotos](#) Pectoral Sandpiper [858]		Species or species habitat may occur within area overfly marine area	In feature area
[Chalcites osculans as Chrysococcyx osculans](#) Black-eared Cuckoo [83425]		Species or species habitat likely to occur within area overfly marine area	In feature area
[Charadrius veredus](#) Oriental Plover, Oriental Dotterel [882]		Species or species habitat may occur within area overfly marine area	In feature area
[Haliaeetus leucogaster](#) White-bellied Sea-Eagle [943]		Species or species habitat may occur within area	In buffer area only
[Hirundo rustica](#) Barn Swallow [662]		Species or species habitat may occur within area overfly marine area	In feature area
[Merops ornatus](#) Rainbow Bee-eater [670]		Species or species habitat may occur within area overfly marine area	In feature area
[Motacilla cinerea](#) Grey Wagtail [642]		Species or species habitat may occur within area overfly marine area	In feature area
[Motacilla flava](#) Yellow Wagtail [644]		Species or species habitat may occur within area overfly marine area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Rostratula australis as Rostratula benghalensis (sensu lato)			
Australian Painted Snipe [77037]	Endangered	Species or species habitat may occur within area overfly marine area	In feature area

Extra Information

EPBC Act Referrals				[Resource Information]
Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Controlled action				
Golden Eagle Satellite Deposits Development	2011/5855	Controlled Action	Post-Approval	In feature area
Nullagine Iron Ore Extension Project, Pilbara region, WA	2013/6887	Controlled Action	Post-Approval	In buffer area only
Nullagine Iron Ore Project	2009/4930	Controlled Action	Post-Approval	In buffer area only
Not controlled action				
Improving rabbit biocontrol: releasing another strain of RHDV, sthrn two thirds of Australia	2015/7522	Not Controlled Action	Completed	In feature area
Not controlled action (particular manner)				
Northwest Resources Blue Spec Shear Gold-Antimony Project	2012/6672	Not Controlled Action (Particular Manner)	Post-Approval	In buffer area only
Referral decision				
Mining at the Blue Spec and Gold Spec deposits	2012/6234	Referral Decision	Completed	In buffer area only

Caveat

1 PURPOSE

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The report contains the mapped locations of:

- World and National Heritage properties;
- Wetlands of International and National Importance;
- Commonwealth and State/Territory reserves;
- distribution of listed threatened, migratory and marine species;
- listed threatened ecological communities; and
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-Australian Government National Environmental Science Program
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World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International Importance (Ramsar	None
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	None
Listed Threatened Species:	6
Listed Migratory Species:	6

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Commonwealth Lands:	None
Commonwealth Heritage Places:	None
Listed Marine Species:	8
Whales and Other Cetaceans:	None
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	None
Habitat Critical to the Survival of Marine Turtles:	None

Extra Information

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

State and Territory Reserves:	2
Regional Forest Agreements:	None
Nationally Important Wetlands:	None
EPBC Act Referrals:	1
Key Ecological Features (Marine):	None
Biologically Important Areas:	None
Bioregional Assessments:	None
Geological and Bioregional Assessments:	None

Details

Matters of National Environmental Significance

Listed Threatened Species			[Resource Information]
Status of Conservation Dependent and Extinct are not MNES under the EPBC Act. Number is the current name ID.			
Scientific Name	Threatened Category	Presence Text	Buffer Status
BIRD			
Aphelocephala leucopsis Southern Whiteface [529]	Vulnerable	Species or species habitat known to occur within area	In feature area
Falco hypoleucos Grey Falcon [929]	Vulnerable	Species or species habitat may occur within area	In feature area
Leipoa ocellata Malleefowl [934]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Pezoporus occidentalis Night Parrot [59350]	Endangered	Species or species habitat may occur within area	In buffer area only
Polytelis alexandrae Princess Parrot, Alexandra's Parrot [758]	Vulnerable	Species or species habitat known to occur within area	In feature area
PLANT			
Ricinocarpos brevis [82879]	Endangered	Species or species habitat may occur within area	In buffer area only

Listed Migratory Species			[Resource Information]
Scientific Name	Threatened Category	Presence Text	Buffer Status
Migratory Marine Birds			
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area	In buffer area only
Migratory Terrestrial Species			

Scientific Name	Threatened Category	Presence Text	Buffer Status
Motacilla cinerea			
Grey Wagtail [642]		Species or species habitat may occur within area	In feature area
Motacilla flava			
Yellow Wagtail [644]		Species or species habitat may occur within area	In buffer area only
Migratory Wetlands Species			
Actitis hypoleucos			
Common Sandpiper [59309]		Species or species habitat may occur within area	In feature area
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Scientific Name	Threatened Category	Presence Text	Buffer Status
Chalcites osculans as Chrysococcyx osculans			
Black-eared Cuckoo [83425]		Species or species habitat known to occur within area overfly marine area	In feature area
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Extra Information

State and Territory Reserves			[Resource Information]
Protected Area Name	Reserve Type	State	Buffer Status
Black Range	NRS Addition - Gazettal in Progress	WA	In buffer area only
Lake Mason	NRS Addition - Gazettal in Progress	WA	In buffer area only

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

Caveat

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-Australian Bird and Bat Banding Scheme
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-Natural history museums of Australia
-Museum Victoria
-Australian Museum
-South Australian Museum
-Queensland Museum
-Online Zoological Collections of Australian Museums
-Queensland Herbarium
-National Herbarium of NSW
-Royal Botanic Gardens and National Herbarium of Victoria
-Tasmanian Herbarium
-State Herbarium of South Australia
-Northern Territory Herbarium
-Western Australian Herbarium
-Australian National Herbarium, Canberra
-University of New England
-Ocean Biogeographic Information System
-Australian Government, Department of Defence
Forestry Corporation, NSW
-Geoscience Australia
-CSIRO
-Australian Tropical Herbarium, Cairns
-eBird Australia
-Australian Government – Australian Antarctic Data Centre
-Museum and Art Gallery of the Northern Territory
-Australian Government National Environmental Science Program
-Australian Institute of Marine Science
-Reef Life Survey Australia
-American Museum of Natural History
-Queen Victoria Museum and Art Gallery, Inveresk, Tasmania
-Tasmanian Museum and Art Gallery, Hobart, Tasmania
-Other groups and individuals

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

Please feel free to provide feedback via the Contact us page.

Department of Climate Change, Energy, the Environment and Water
GPO Box 3090
Canberra ACT 2601 Australia
+61 2 6274 1111

EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected. Please see the caveat for interpretation of information provided here.

Report created: 13-Apr-2023

Summary

Matters of National Environment Significance

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

World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International Importance (Ramsar	None
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	None
Listed Threatened Species:	7
Listed Migratory Species:	6

Other Matters Protected by the EPBC Act

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

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

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

Commonwealth Lands:	2
Commonwealth Heritage Places:	None
Listed Marine Species:	8
Whales and Other Cetaceans:	None
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	None
Habitat Critical to the Survival of Marine Turtles:	None

Extra Information

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

State and Territory Reserves:	None
Regional Forest Agreements:	None
Nationally Important Wetlands:	None
EPBC Act Referrals:	2
Key Ecological Features (Marine):	None
Biologically Important Areas:	None
Bioregional Assessments:	None
Geological and Bioregional Assessments:	None

Details

Matters of National Environmental Significance

Listed Threatened Species			[Resource Information]
Status of Conservation Dependent and Extinct are not MNES under the EPBC Act. Number is the current name ID.			
Scientific Name	Threatened Category	Presence Text	Buffer Status
BIRD			
Aphelocephala leucopsis Southern Whiteface [529]	Vulnerable	Species or species habitat known to occur within area	In feature area
Falco hypoleucos Grey Falcon [929]	Vulnerable	Species or species habitat may occur within area	In feature area
Leipoa ocellata Malleefowl [934]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Pezoporus occidentalis Night Parrot [59350]	Endangered	Species or species habitat likely to occur within area	In feature area
Polytelis alexandrae Princess Parrot, Alexandra's Parrot [758]	Vulnerable	Species or species habitat known to occur within area	In feature area
MAMMAL			
Macrotis lagotis Greater Bilby [282]	Vulnerable	Species or species habitat may occur within area	In buffer area only
REPTILE			
Liopholis kintorei Great Desert Skink, Tjakura, Warrarna, Mulyamiji [83160]	Vulnerable	Species or species habitat may occur within area	In feature area

Listed Migratory Species			[Resource Information]
Scientific Name	Threatened Category	Presence Text	Buffer Status
Migratory Terrestrial Species			

Scientific Name	Threatened Category	Presence Text	Buffer Status
Motacilla cinerea			
Grey Wagtail [642]		Species or species habitat may occur within area	In feature area
Motacilla flava			
Yellow Wagtail [644]		Species or species habitat may occur within area	In feature area
Migratory Wetlands Species			
Actitis hypoleucos			
Common Sandpiper [59309]		Species or species habitat may occur within area	In feature area
Calidris acuminata			
Sharp-tailed Sandpiper [874]		Species or species habitat may occur within area	In feature area
Calidris melanotos			
Pectoral Sandpiper [858]		Species or species habitat may occur within area	In feature area
Charadrius veredus			
Oriental Plover, Oriental Dotterel [882]		Species or species habitat may occur within area	In feature area

Other Matters Protected by the EPBC Act

Commonwealth Lands [Resource Information]

The Commonwealth area listed below may indicate the presence of Commonwealth land in this vicinity. Due to the unreliability of the data source, all proposals should be checked as to whether it impacts on a Commonwealth area, before making a definitive decision. Contact the State or Territory government land department for further information.

Commonwealth Land Name	State	Buffer Status
Unknown		
Commonwealth Land - [51749]	WA	In feature area
Commonwealth Land - [51748]	WA	In feature area

Listed Marine Species [Resource Information]

Scientific Name	Threatened Category	Presence Text	Buffer Status
Bird			
Actitis hypoleucos			
Common Sandpiper [59309]		Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat may occur within area	In feature area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area overfly marine area	In feature area
Chalcites osculans as Chrysococcyx osculans Black-eared Cuckoo [83425]		Species or species habitat likely to occur within area overfly marine area	In feature area
Charadrius veredus Oriental Plover, Oriental Dotterel [882]		Species or species habitat may occur within area overfly marine area	In feature area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area overfly marine area	In feature area
Motacilla cinerea Grey Wagtail [642]		Species or species habitat may occur within area overfly marine area	In feature area
Motacilla flava Yellow Wagtail [644]		Species or species habitat may occur within area overfly marine area	In feature area

Extra Information

EPBC Act Referrals				[Resource Information]
Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Controlled action				
Wiluna Uranium Project	2009/5174	Controlled Action	Post-Approval	In buffer area only
Not controlled action				
Improving rabbit biocontrol: releasing another strain of RHDV, sthrn two thirds of Australia	2015/7522	Not Controlled Action	Completed	In feature area

Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Not controlled action				

Caveat

1 PURPOSE

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

The report contains the mapped locations of:

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

2 DISCLAIMER

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

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

3 DATA SOURCES

Threatened ecological communities

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

Threatened, migratory and marine species

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

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

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

4 LIMITATIONS

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

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

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

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

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

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

Acknowledgements

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

-Office of Environment and Heritage, New South Wales
-Department of Environment and Primary Industries, Victoria
-Department of Primary Industries, Parks, Water and Environment, Tasmania
-Department of Environment, Water and Natural Resources, South Australia
-Department of Land and Resource Management, Northern Territory
-Department of Environmental and Heritage Protection, Queensland
-Department of Parks and Wildlife, Western Australia
-Environment and Planning Directorate, ACT
-Birdlife Australia
-Australian Bird and Bat Banding Scheme
-Australian National Wildlife Collection
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NatureMap Sandstone

Row Labels	COUNT
Animalia	**487**
AMPHI	**11**
Litoria rubella	1
Neobatrachus sp.	3
Neobatrachus wilsmorei	1
Platyplectrum spenceri	2
Pseudophryne occidentalis	4
BIRD	**427**
Acanthagenys rufogularis	18
Acanthiza apicalis	15
Acanthiza chrysorrhoa	12
Acanthiza robustirostris	13
Acanthiza uropygialis	29
Accipiter fasciatus	3
Aegotheles cristatus	1
Amytornis striatus	1
Anthochaera carunculata	1
Aphelocephala leucopsis	9
Apus pacificus	1
Aquila audax	12
Ardeotis australis	1
Artamus cinereus	16
Artamus minor	1
Barnardius zonarius	4
Burhinus grallarius	2
Cacomantis pallidus	1
Cheramoeca leucosterna	1
Cincloramphus mathewsi	1
Cinclosoma castaneothorax	4
Climacteris affinis	3
Climacteris affinis subsp. superciliosa	1
Colluricincla harmonica	10
Coracina maxima	2
Coracina novaehollandiae	3
Corvus bennetti	5
Corvus orru	7
Cracticus nigrogularis	9
Cracticus tibicen	6

Cracticus torquatus	11
Dromaius novaehollandiae	3
Eolophus roseicapillus	5
Epthianura aurifrons	1
Eurostopodus argus	1
Falco berigora	2
Falco cenchroides	5
Falco peregrinus	1
Gallinula tenebrosa subsp. tenebrosa	1
Grallina cyanoleuca	9
Hirundo neoxena	10
Leipoa ocellata	1
Lichenostomus penicillatus	1
Lichenostomus virescens	23
Malurus leucopterus	3
Malurus splendens	6
Malurus splendens subsp. splendens	1
Manorina flavigula	21
Melanodryas cucullata	4
Melopsittacus undulatus	1
Ocyphaps lophotes	17
Oreoica gutturalis	25
Pachycephala rufiventris	15
Petrochelidon nigricans	6
Petroica goodenovii	17
Phaps chalcoptera	2
Podargus strigoides	1
Polytelis alexandrae	1
Pomatostomus superciliosus	6
Pomatostomus temporalis	2
Ptilonorhynchus guttatus	3
Purnella albifrons	1
Pyrrholaemus brunneus	2
Rhipidura fuliginosa subsp. preissi	1
Rhipidura leucophrys	10
Smicrornis brevirostris	1
Strepera versicolor	2
Strepera versicolor subsp. plumbea	1
Taeniopygia guttata	10
Todiramphus pyrrhopygius	2
INVERT	**13**

Allotrochosina karri	1
Anidiops villosus	1
Asadipus phaleratus	1
Austracantha minax	1
beetle sp.	1
Cormocephalus turneri	2
Thereuopoda lesueurii	1
Urodacus hoplurus	5
MAMMAL	**5**
Mus musculus	1
Nyctophilus geoffroyi	2
Scotorepens balstoni	1
Vespadelus finlaysoni	1
REPTILE	**31**
Ctenophorus caudicinctus subsp. mensarum	3
Ctenophorus ornatus	8
Ctenophorus reticulatus	1
Ctenotus schomburgkii	1
Ctenotus severus	1
Eremiascincus richardsonii	1
Gehyra variegata	1
Heteronotia binoei	3
Lerista timida	1
Lucasium bungabinna	2
Nephrurus vertebralis	1
Nephrurus wheeleri subsp. wheeleri	1
Rhynchoedura ornata	1
Suta fasciata	1
Tympanocryptis cephalus	1
Varanus caudolineatus	1
Varanus panoptes subsp. rubidus	3
Fungi	**3**
LICHEN	**3**
Xanthoparmelia antleriformis	2
Xanthoparmelia reptans	1
Plantae	**467**
DICOT	**437**
Acacia aneura	2
Acacia aneura group (hybrid)	3
Acacia aptaneura	1
Acacia burkittii	2

Acacia caesaneura	7
Acacia caesaneura x incurvaneura	2
Acacia craspedocarpa	2
Acacia donaldsonii	1
Acacia effusifolia	1
Acacia eremophila var. eremophila	1
Acacia heteroneura var. prolixa	1
Acacia incurvaneura	4
Acacia paraneura	2
Acacia Plurinerves Phyllodes 8-nerved, terete/flat (fragilis group)	2
Acacia prainii	1
Acacia pteraneura	3
Acacia quadrimarginea	1
Acacia synchronicia	1
Acacia tetragonophylla	4
Actinobole oldfieldianum	1
Actinobole uliginosum	1
Anthotroche pannosa	3
Asteridea athrixioides	1
Baeckea elderiana	5
Baeckea sp. London Bridge (M.E. Trudgen 5393)	6
Bossiaea eremaea	2
Brachychiton gregorii	1
Brachyscome ciliaris	1
Calocephalus multiflorus	1
Calotis hispidula	3
Calotis multicaulis	1
Calotis sp.	2
Calytrix amethystina	5
Calytrix birdii	1
Calytrix desolata	3
Cephalipterum drummondii	1
Chthonocephalus pseudevax	1
Codonocarpus cotinifolius	1
Cryptandra connata	7
Dicrastylis brunnea	5
Dicrastylis flexuosa	1
Dicrastylis fulva	1
Dicrastylis sessilifolia	1
Diplopeltis stuartii var. stuartii	1
Dodonaea lobulata	2

Dodonaea microzyga var. acrolobata	7
Dodonaea petiolaris	1
Duboisia hopwoodii	2
Duperreya sericea	1
Dysphania kalpari	1
Dysphania melanocarpa	1
Dysphania saxatilis	1
Enekbatus cryptandroides	1
Enekbatus eremaeus	2
Eremophila alternifolia	2
Eremophila conglomerata	5
Eremophila decipiens subsp. decipiens	1
Eremophila eriocalyx	1
Eremophila foliosissima	3
Eremophila forrestii subsp. forrestii	2
Eremophila galeata	3
Eremophila gilesii subsp. gilesii	1
Eremophila glabra subsp. glabra	1
Eremophila glabra subsp. tomentosa	1
Eremophila glandulifera	1
Eremophila glutinosa	1
Eremophila granitica	2
Eremophila homoplastica	5
Eremophila hygrophana	1
Eremophila jucunda subsp. jucunda	2
Eremophila latrobei subsp. latrobei	5
Eremophila longifolia	4
Eremophila maculata subsp. brevifolia	1
Eremophila metallicorum	1
Eremophila oppositifolia subsp. angustifolia	7
Eremophila pantonii	4
Eremophila platycalyx subsp. Granites (D.J. Edinger & G. Marsh DJE 4782)	3
Eremophila platycalyx subsp. Leonora (J. Morrisey 252)	1
Eremophila platycalyx subsp. Yalgoo (A. Markey & S. Dillon 3337)	3
Eremophila platythamnos subsp. platythamnos	2
Eremophila serrulata	1
Eremophila shonae subsp. shonae	3
Eremophila simulans subsp. lapidensis	3
Eremophila simulans subsp. simulans	3
Eremophila sp.	2
Eremophila willsii	1

Eriochiton sclerolaenoides	1
Erymophyllum ramosum subsp. ramosum	3
Eucalyptus carnei	23
Eucalyptus gongylocarpa	4
Eucalyptus kingsmillii	6
Eucalyptus kochii subsp. amaryssia	1
Eucalyptus leptopoda subsp. elevata	1
Eucalyptus lucasii	5
Eucalyptus oldfieldii	5
Eucalyptus petraea	1
Eucalyptus striaticalyx	2
Euphorbia australis var. subtomentosa	1
Euryomyrtus patrickiae	1
Gilberta tenuifolia	2
Gilruthia osbornii	2
Glycine canescens	1
Gnephosis arachnoidea	1
Gnephosis brevifolia	2
Gonocarpus confertifolius var. confertifolius	1
Goodenia macroplectra	2
Goodenia mueckeana	1
Goodenia peacockiana	2
Goodenia prostrata	1
Grevillea acacioides	5
Grevillea berryana	1
Grevillea didymobotrya subsp. didymobotrya	1
Grevillea extorris	7
Grevillea juncifolia subsp. temulenta	8
Grevillea nematophylla subsp. supraplana	2
Hakea preissii	1
Hakea recurva	1
Halgania cyanea var. Allambi Stn (B.W. Strong 676)	2
Haloragis trigonocarpa	1
Hemiphora elderi	2
Homalocalyx thryptomenoides	1
Hybanthus floribundus subsp. curvifolius	1
Hybanthus floribundus subsp. floribundus	1
Hysterobaeckea occlusa	2
Isotoma petraea	1
Labichea eremaea	1
Lachnostachys coolgardiensis	5

Lawrencella davenportii	1
Lawrencia helmsii	1
Lepidium platypetalum	1
Leptosema chambersii	2
Leucopogon sp. Clyde Hill (M.A. Burgman 1207)	2
Lysiana murrayi	1
Maireana carnosa	2
Maireana convexa	1
Maireana georgei	2
Maireana thesioides	1
Maireana tomentosa	1
Maireana tomentosa subsp. tomentosa	1
Maireana trichoptera	1
Maireana triptera	1
Melaleuca hamata	1
Menkea australis	1
Menkea villosula	1
Micromyrtus sulphurea	2
Millotia myosotidifolia	1
Millotia perpusilla	1
Mirbelia microphylla	1
Mirbelia seorsifolia	2
Monotaxis luteiflora	1
Myriocephalus guerinae	1
Myriocephalus pygmaeus	1
Newcastelia hexarrhena	1
Olearia calcarea	1
Olearia humilis	1
Olearia pimeleoides	2
Olearia stuartii	1
Petalostylis cassioides	1
Philotheca brucei subsp. brevifolia	3
Philotheca brucei subsp. brucei	1
Philotheca sericea	1
Philotheca tomentella	2
Phyllanthus baeckeoides	3
Phyllota humilis	1
Pimelea subvillifera	1
Pityrodia canaliculata	2
Plantago turrifera	1
Podolepis aristata subsp. affinis	1

Podolepis lessonii	2
Pogonolepis sp.	1
Pogonolepis stricta	1
Prostanthera althoferi subsp. althoferi	2
Prostanthera patens	1
Psydrax latifolia	1
Ptilotus aervoides	6
Ptilotus divaricatus	1
Ptilotus drummondii	1
Ptilotus exaltatus	3
Ptilotus gaudichaudii	3
Ptilotus helipteroides	2
Ptilotus macrocephalus	1
Ptilotus obovatus	5
Ptilotus polystachyus	1
Rhagodia drummondii	1
Rhodanthe battii	1
Rhodanthe charsleyae	1
Rhodanthe maryonii	3
Roebuckiella ciliocarpa	2
Rumex vesicarius	1
Salsola australis	1
Scaevola parvifolia subsp. acuminata	1
Sclerolaena burbidgeae	1
Sclerolaena fusiformis	2
Sclerolaena obliquicuspis	1
Sclerolaena patenticuspis	1
Senna artemisioides subsp. helmsii	1
Senna artemisioides subsp. x artemisioides	1
Senna artemisioides subsp. x sturtii	1
Senna charlesiana	2
Senna glutinosa subsp. chatelainiana	1
Solanum lasiophyllum	2
Solanum nigrum	1
Solanum plicatile	1
Stenopetalum filifolium	1
Stenopetalum lineare var. lineare	1
Streptoglossa cylindriceps	1
Swainsona beasleyana	4
Swainsona incei	1
Swainsona kingii	1

Taplinia saxatilis	1
Teucrium teucriiflorum	1
Thryptomene decussata	1
Tietkensia corrickiae	1
Trichodesma zeylanicum	2
Velleia rosea	1
Verticordia helmsii	1
Waitzia acuminata var. acuminata	1
Waitzia fitzgibbonii	2
Zygophyllum eichleri	2
FERN	**4**
Cheilanthes lasiophylla	4
GYMNO	**2**
Callitris columellaris	2
MONOCOT	**24**
Aristida contorta	2
Cenchrus setiger	1
Chamaexeros fimbriata	1
Dactyloctenium radulans	2
Enneapogon caerulescens	1
Eragrostis eriopoda	4
Eragrostis lanipes	2
Eragrostis xerophila	1
Eriachne helmsii	1
Lomandra leucocephala subsp. robusta	1
Monachather paradoxus	3
Setaria dielsii	1
Thyridolepis multiculmis	2
Triodia basedowii	1
Tripogonella loliiformis	1
Grand Total	**957**

NatureMap Menzies

Row Labels	COUNT
Animalia	**725**
BIRD	**397**
Acanthagenys rufogularis	29
Acanthiza apicalis	8
Acanthiza chrysorrhoa	2
Acanthiza uropygialis	8
Accipiter fasciatus	2
Anas gracilis	1
Anas rhynchotis	1
Anthochaera carunculata	12
Aphelocephala leucopsis	1
Aquila audax	7
Barnardius zonarius	4
Cacomantis pallidus	2
Charadrius ruficapillus	1
Chenonetta jubata	1
Cheramoeca leucosterna	2
Cincloramphus mathewsi	1
Cinclosoma castaneothorax	2
Cinclosoma castanotus	3
Cladorhynchus leucocephalus	2
Colluricincla harmonica	12
Coracina novaehollandiae	3
Corvus bennetti	16
Corvus coronoides	4
Corvus orru	2
Cracticus nigrogularis	8
Cracticus tibicen	9
Cracticus torquatus	8
Cygnus atratus	1
Dicaeum hirundinaceum	2
Dromaius novaehollandiae	11
Elanus axillaris	1
Eolophus roseicapillus	4
Epthianura albifrons	1
Epthianura aurifrons	1
Falco berigora	4
Falco cenchroides	4
Fulica atra	1

Grallina cyanoleuca	12
Hieraaetus morphnoides	1
Himantopus himantopus	1
Hirundo neoxena	10
Leipoa ocellata	10
Lichenostomus leucotis	1
Lichenostomus plumulus	1
Lichenostomus virescens	22
Lichmera indistincta	12
Malacorhynchus membranaceus	1
Malurus leucopterus	1
Malurus splendens	5
Manorina flavigula	19
Melanodryas cucullata	1
Melithreptus brevirostris	1
Melithreptus brevirostris subsp. leucogenys	1
Microeca fascinans	3
Ocyphaps lophotes	12
Oreoica gutturalis	16
Pachycephala rufiventris	12
Pardalotus striatus	7
Petrochelidon ariel	1
Petrochelidon nigricans	1
Petroica goodenovii	4
Phaps chalcoptera	3
Poliocephalus poliocephalus	1
Pomatostomus superciliosus	5
Ptilonorhynchus guttatus	3
Purnella albifrons	7
Pyrrholaemus brunneus	10
Rhipidura albiscapa	2
Rhipidura leucophrys	9
Smicrornis brevirostris	12
Strepera versicolor	4
Tadorna tadornoides	2
Taeniopygia guttata	2
Todiramphus pyrrhopygius	1
INVERT	**27**
ant sp.	2
Antichiropus 'g2'	1
Antichiropus sp. (fragments)	2

Bothriembryon sp.	2
Bursaria sp.	1
Hoggicosa alfi	1
Hoggicosa forresti	1
Lychas annulatus	8
Lychas splendens	2
Mainosa longipes	1
Masasteron piankai	2
Nicodamus mainae	2
Pediana occidentalis	1
Urodacus hoplurus	1
MAMMAL	**59**
Cercartetus concinnus	3
Macropus robustus subsp. erubescens	2
Macropus sp.	1
Mus musculus	2
Ningaui ridei	19
Nyctophilus geoffroyi	2
Pseudomys albocinereus	2
Pseudomys hermannsburgensis	18
Sminthopsis dolichura	2
Sminthopsis hirtipes	7
Tachyglossus aculeatus	1
REPTILE	**242**
Aspidites ramsayi subsp. (southwest subpop.)	1
Brachyurophis fasciolatus subsp. fasciolatus	1
Ctenophorus fordi	38
Ctenophorus salinarum	1
Ctenophorus scutulatus	1
Ctenotus atlas	42
Ctenotus brooksi	15
Ctenotus leae	8
Ctenotus leonhardii	1
Ctenotus schomburgkii	4
Ctenotus xenopleura	2
Cyclodomorphus melanops subsp. elongatus	2
Delma butleri	3
Demansia psammophis subsp. psammophis	1
Diplodactylus granariensis subsp. granariensis	9
Diplodactylus granariensis subsp. rex	2
Diplodactylus pulcher	3

Egernia depressa	2
Furina ornata	1
Gehyra variegata	4
Heteronotia binoei	7
Lerista picturata	3
Lerista timida	1
Liopholis inornata	3
Menetia greyii	4
Moloch horridus	5
Morethia butleri	4
Neelaps bimaculatus	1
Nephrurus laevissimus	35
Nephrurus vertebralis	4
Pogona minor subsp. minor	11
Pseudonaja mengdeni	1
Pygopus nigriceps	2
Ramphotyphlops bicolor	1
Ramphotyphlops bituberculatus	1
Rhynchoedura ornata	1
Simoselaps bertholdi	1
Strophurus assimilis	5
Strophurus elderi	1
Strophurus strophurus	4
Strophurus wellingtonae	1
Tiliqua occipitalis	1
Underwoodisaurus milii	1
Varanus caudolineatus	1
Varanus giganteus	1
Varanus gouldii	1
Fungi	**2**
FUNGUS	**2**
Poronia erici	1
Pycnoporus coccineus	1
Plantae	**493**
DICOT	**471**
Acacia aneura	5
Acacia aptaneura	1
Acacia burkittii	4
Acacia caesaneura	9
Acacia colletioides	1
Acacia craspedocarpa	2

Acacia desertorum var. desertorum	1
Acacia duriuscula	1
Acacia effusifolia	4
Acacia erinacea	2
Acacia helmsiana	2
Acacia hemiteles	4
Acacia incurvaneura	3
Acacia jennerae	3
Acacia ligulata	2
Acacia mulganeura	2
Acacia murrayana	3
Acacia nigripilosa subsp. nigripilosa	1
Acacia ramulosa var. ramulosa	3
Acacia resinimarginea	1
Acacia sibirica	8
Alectryon oleifolius subsp. canescens	1
Allocasuarina spinosissima	1
Aluta aspera subsp. aspera	1
Amyema fitzgeraldii	2
Arabidella trisecta	1
Asteridea athrixioides	2
Asteridea chaetopoda	2
Atriplex codonocarpa	1
Atriplex nummularia subsp. spathulata	1
Atriplex semilunaris	1
Atriplex vesicaria	1
Bertya dimerostigma	4
Brachyscome ciliaris	3
Brunonia sp. Goldfields (K.R. Newbey 6044)	1
Bursaria occidentalis	5
Calandrinia eremaea	1
Calandrinia quartzitica	1
Calotis multicaulis	1
Calytrix watsonii	1
Casuarina pauper	4
Cephalipterum drummondii	6
Chamelaucium ciliatum	1
Chenopodium curvispicatum	1
Chrysocephalum apiculatum subsp. glandulosum	1
Codonocarpus cotinifolius	1
Commersonia magniflora subsp. oblongifolia	1

Convolvulus clementii	1
Convolvulus remotus	2
Cylindropuntia pallida	2
Dampiera roycei	1
Dampiera tenuicaulis	1
Daucus glochidiatus	2
Dillwynia sp. Coolgardie (V.E. Sands 637.3.1)	1
Dodonaea amblyophylla	1
Dodonaea lobulata	6
Dodonaea rigida	7
Dodonaea viscosa subsp. angustissima	2
Duboisia hopwoodii	2
Enchylaena tomentosa	1
Eremophila caperata	1
Eremophila clarkei	4
Eremophila decipiens subsp. decipiens	2
Eremophila eriocalyx	5
Eremophila forrestii subsp. forrestii	2
Eremophila glabra subsp. glabra	1
Eremophila glandulifera	2
Eremophila granitica	2
Eremophila maculata subsp. brevifolia	1
Eremophila miniata	3
Eremophila oldfieldii subsp. angustifolia	6
Eremophila oppositifolia subsp. angustifolia	2
Eremophila pantonii	7
Eremophila platycalyx subsp. Leonora (J. Morrisey 252)	1
Eremophila platythamnos subsp. exotrachys	1
Eremophila platythamnos subsp. platythamnos	2
Eremophila scoparia	2
Eremophila serrulata	2
Eremophila subfloccosa subsp. lanata	1
Eremophila youngii subsp. youngii	1
Eriochiton sclerolaenoides	2
Erodium cygnorum	2
Eucalyptus ceratocorys	3
Eucalyptus clelandiorum	1
Eucalyptus comitae-vallis	2
Eucalyptus concinna	6
Eucalyptus gracilis	1
Eucalyptus horistes	1

Eucalyptus leptopoda subsp. subluta	1
Eucalyptus lesouefii	1
Eucalyptus longicornis	1
Eucalyptus longissima	3
Eucalyptus moderata	6
Eucalyptus oldfieldii	3
Eucalyptus oleosa	2
Eucalyptus oleosa subsp. oleosa	3
Eucalyptus rigidula	5
Eucalyptus trichopoda	1
Eucalyptus websteriana subsp. websteriana	1
Eucalyptus yilgarnensis	1
Euphorbia porcata	1
Euryomyrtus leptospermoides	1
Euryomyrtus maidenii	1
Frankenia sp.	1
Glischrocaryon aureum	1
Gnephosis arachnoidea	1
Gonocarpus confertifolius var. helmsii	1
Goodenia eremophila	1
Goodenia gypsicola	1
Goodenia mimuloides	2
Grevillea acuaria	1
Grevillea erectiloba	2
Grevillea haplantha subsp. haplantha	1
Grevillea juncifolia subsp. temulenta	1
Grevillea nematophylla subsp. nematophylla	2
Hakea lorea subsp. lorea	1
Hakea recurva subsp. arida	1
Hakea recurva subsp. recurva	1
Haloragis dura	1
Haloragis trigonocarpa	3
Helipterum craspedioides	1
Hemiphora elderi	1
Homalocalyx thryptomenoides	1
Hysterobaeckea ochropetala subsp. cometes	1
Lachnostachys coolgardiensis	6
Lachnostachys verbascifolia var. verbascifolia	2
Lawrencella davenportii	2
Lemooria burkittii	1
Lepidium rotundum	1

Leptospermum fastigiatum	1
Leucopogon sp. Boorabbin (K.R. Newbey 8374)	1
Leucopogon sp. Coolgardie (M. Hislop & F. Hort MH 3197)	1
Lysiana murrayi	1
Maireana amoena	1
Maireana appressa	1
Maireana carnosa	2
Maireana eriosphaera	2
Maireana georgei	2
Maireana glomerifolia	1
Maireana planifolia	2
Maireana pyramidata	1
Maireana tomentosa subsp. tomentosa	1
Maireana trichoptera	2
Maireana triptera	1
Malleostemon roseus	1
Malleostemon sp. Adelong (G.J. Keighery 11825)	1
Malva weinmanniana	1
Marianthus bicolor	1
Marsdenia australis	1
Medicago minima	2
Medicago polymorpha	1
Melaleuca hamata	1
Micromyrtus flaviflora	7
Millotia incurva	1
Myriocephalus guerinae	2
Newcastelia hexarrhena	1
Newcastelia insignis	3
Nicotiana occidentalis subsp. obliqua	1
Olearia muelleri	3
Olearia pimeleoides	2
Olearia stuartii	1
Olearia subspicata	2
Phebalium brevifolium	1
Phebalium canaliculatum	1
Phebalium canaliculatum x laevigatum	1
Phebalium laevigatum	1
Philotheca brucei subsp. brucei	7
Philotheca coateana	1
Phyllota humilis	1
Physopsis viscida	2

Pimelea angustifolia	3
Pimelea microcephala subsp. microcephala	1
Pimelea trichostachya	1
Pityrodia lepidota	1
Plantago drummondii	1
Podolepis aristata subsp. affinis	5
Pogonolepis stricta	2
Ptilotus chamaecladus	1
Ptilotus drummondii	1
Ptilotus exaltatus	4
Ptilotus gaudichaudii	2
Ptilotus helipteroides	1
Ptilotus holosericeus	2
Ptilotus obovatus	4
Ptilotus polystachyus	1
Radyera farragei	1
Rhagodia preissii subsp. preissii	2
Rhodanthe charsleyae	1
Rhodanthe chlorocephala subsp. rosea	1
Rhodanthe chlorocephala subsp. splendida	3
Rhodanthe floribunda	5
Rhodanthe haigii	1
Rhodanthe maryonii	2
Rhodanthe oppositifolia subsp. oppositifolia	1
Rhodanthe pygmaea	1
Rhodanthe stricta	2
Roepera eremaea	1
Salsola australis	1
Santalum acuminatum	2
Scaevola collaris	1
Scaevola spinescens	1
Schinus molle var. areira	1
Schoenia cassiniana	4
Sclerolaena cuneata	1
Sclerolaena diacantha	1
Sclerolaena fimbriolata	1
Sclerolaena gardneri	1
Sclerolaena patenticuspis	1
Senna artemisioides subsp. filifolia	3
Senna cardiosperma	5
Senna pleurocarpa var. angustifolia	2

Senna sp. Meekatharra (E. Bailey 1-26)	2
Sida calyxhymenia	1
Solanum lasiophyllum	1
Solanum nummularium	2
Stackhousia muricata subsp. annual (W.R. Barker 2172)	1
Stenanthemum stipulosum	2
Stenopetalum filifolium	1
Stenopetalum lineare var. lineare	1
Stenopetalum sphaerocarpum	1
Streptoglossa liatroides	3
Swainsona affinis	1
Swainsona canescens	1
Swainsona colutoides	2
Swainsona formosa	1
Swainsona halophila	2
Swainsona rostellata	1
Tecticornia sp. Dennys Crossing (K.A. Shepherd & J. English KS 552)	2
Templetonia incrassata	2
Teucrium teucriiflorum	1
Thryptomene eremaea	2
Thryptomene urceolaris	3
Trachymene cyanopetala	1
Trachymene ornata	2
Trichanthodium skirrophorum	2
Velleia daviesii	1
Velleia rosea	3
Verticordia helmsii	1
Vincetoxicum lineare	2
Waitzia acuminata var. acuminata	4
Waitzia fitzgibbonii	3
Westringia rigida	1
Zygophyllum eremaeum	1
Zygophyllum fruticulosum	1
Zygophyllum ovatum	1
GYMNO	**8**
Callitris columellaris	4
Callitris preissii	4
MONOCOT	**14**
Austrostipa nitida	1
Austrostipa platychaeta	1
Bromus arenarius	1

Digitaria brownii	2
Eragrostis eriopoda	1
Rytidosperma caespitosum	1
Schoenus subaphyllus	1
Thysanotus manglesianus	1
Tricoryne sp.	2
Triodia sp.	1
Wurmbea tenella	1
Xanthorrhoea thorntonii	1
Grand Total	**1220**

NatureMap Wiluna

Row Labels	COUNT
Animalia	**835**
AMPHI	**7**
Neobatrachus kunapalari	1
Neobatrachus sudellae	2
Neobatrachus wilsmorei	4
BIRD	**571**
Acanthagenys rufogularis	26
Acanthiza apicalis	10
Acanthiza chrysorrhoa	10
Acanthiza robustirostris	2
Acanthiza uropygialis	21
Accipiter cirrocephalus	2
Accipiter fasciatus	1
Aegotheles cristatus	1
Anas rhynchotis	1
Anas superciliosa	2
Aphelocephala leucopsis	4
Aquila audax	6
Ardea pacifica	2
Ardeotis australis	1
Artamus cinereus	12
Artamus personatus	1
Barnardius zonarius	12
Cacatua sanguinea	3
Cacomantis pallidus	3
Cheramoeca leucosterna	3
Cinclosoma marginatum	1
Colluricincla harmonica	5
Coracina novaehollandiae	7
Corvus bennetti	10
Corvus orru	10
Cracticus nigrogularis	21
Cracticus tibicen	6
Cracticus torquatus	21
Cygnus atratus	1
Dicaeum hirundinaceum	5
Elanus axillaris	1
Elseyornis melanops	3
Eolophus roseicapillus	6

Epthianura aurifrons	2
Epthianura tricolor	2
Eurostopodus argus	2
Falco berigora	4
Falco cenchroides	9
Geopelia cuneata	4
Gerygone fusca	1
Gerygone fusca subsp. mungi	2
Gerygone mungi	2
Grallina cyanoleuca	23
Haliastur sphenurus	6
Hamirostra melanosternon	3
Hieraaetus morphnoides	1
Hirundo neoxena	10
Hirundo nigricans	1
Lichenostomus penicillatus	30
Lichenostomus virescens	23
Lichmera indistincta	4
Malurus lamberti	2
Malurus leucopterus	1
Malurus leucopterus subsp. leuconotus	1
Malurus splendens	7
Manorina flavigula	25
Melopsittacus undulatus	1
Merops ornatus	7
Microeca fascinans	1
Neophema bourkii	1
Nymphicus hollandicus	4
Ocyphaps lophotes	19
Oreoica gutturalis	13
Pachycephala rufiventris	9
Pardalotus striatus	2
Pardalotus striatus subsp. murchisoni	1
Petrochelidon ariel	1
Petrochelidon nigricans	19
Petroica goodenovii	13
Phaps chalcoptera	3
Phylidonyris albifrons	1
Platycercus zonarius subsp. zonarius	2
Poliocephalus poliocephalus	1
Pomatostomus superciliosus	6

Pomatostomus temporalis	5
Ptilonorhynchus guttatus	6
Ptilonorhynchus maculatus subsp. guttatus	1
Purnella albifrons	4
Pyrrholaemus brunneus	1
Rhipidura albiscapa	1
Rhipidura leucophrys	25
Smicrornis brevirostris	17
Tadorna tadornoides	4
Taeniopygia guttata	16
Todiramphus pyrrhopygius	2
INVERT	**73**
amphipod sp.	2
amphipod sp. SAM1	1
Anidiops villosus	2
ant sp.	6
Argiope protensa	1
Cormocephalus aurantiipes	1
Cormocephalus turneri	2
Cyrtophora parnasia	1
Desognanops humphreysi	4
earthworm sp.	9
Ethmostigmus pachysoma	1
Hoggicosa castanea	1
Lychas annulatus	4
Lychas jonesae	1
Lycosa australicola	1
Missulena insignis	1
Missulena occatoria	2
Oratemnus distinctus	2
Parartemia laticaudata	2
Scolopendra laeta	4
Scolopendra morsitans	2
Selenotholus foelschei	1
Urodacus hoplurus	21
Urodacus similis	1
MAMMAL	**48**
Antechinomys laniger	1
Bos taurus	4
Canis lupus subsp. familiaris	3
Chalinolobus gouldii	2

Dasycercus blythi	1
Equus asinus	1
Equus caballus	2
Felis catus	1
Macropus robustus	3
Macropus rufus	4
Macrotis lagotis	1
Mormopterus planiceps	1
Mus musculus	1
Ningaui ridei	11
Nyctophilus geoffroyi	2
Pseudomys hermannsburgensis	1
Scotorepens balstoni	1
Sminthopsis crassicaudata	1
Sminthopsis longicaudata	1
Sminthopsis macroura	1
Tachyglossus aculeatus	1
Tadarida australis	1
Vespadelus finlaysoni	3
REPTILE	**136**
Amphibolurus longirostris	5
Antaresia perthensis	3
Brachyurophis approximans	4
Brachyurophis fasciolatus subsp. fasciolatus	1
Chelodina steindachneri	4
Ctenophorus caudicinctus subsp. mensarum	6
Ctenophorus isolepis subsp. gularis	2
Ctenophorus isolepis subsp. isolepis	1
Ctenophorus nuchalis	4
Ctenophorus scutulatus	6
Ctenotus leonhardii	1
Ctenotus pantherinus	2
Ctenotus quattuordecimlineatus	1
Ctenotus severus	3
Delma butleri	2
Demansia psammophis	1
Demansia psammophis subsp. cupreiceps	1
Diplodactylus conspicillatus	1
Diplodactylus granariensis	1
Diplodactylus granariensis subsp. rex	1
Eremiascincus richardsonii	2

Gehyra variegata	11
Heteronotia binoei	3
Lerista bipes	6
Lerista desertorum	2
Lerista muelleri	13
Lerista timida	2
Lialis burtonis	1
Lucasium damaeum	1
Lucasium stenodactylum	1
Menetia greyii	5
Moloch horridus	1
Nephrurus laevissimus	2
Nephrurus vertebralis	1
Nephrurus wheeleri	2
Nephrurus wheeleri subsp. wheeleri	1
Parasuta monachus	4
Pogona minor subsp. minor	1
Pseudonaja mengdeni	1
Pseudonaja modesta	2
Pygopus nigriceps	3
Ramphotyphlops hamatus	6
Ramphotyphlops sp.	1
Ramphotyphlops waitii	1
Rhynchoedura ornata	4
Simoselaps bertholdi	1
Strophurus elderi	1
Strophurus strophurus	1
Strophurus wellingtonae	1
Suta fasciata	1
Tiliqua multifasciata	1
Tiliqua occipitalis	1
Tympanocryptis cephalus	2
Chromista	**8**
SLIMEMOULD	**8**
Arcyria cinerea	2
Calomyxa metallica	1
Comatricha elegans	1
Echinostelium apitectum	1
Licea kleistobolus	1
Licea scyphoides	1
Perichaena vermicularis	1

Fungi	**10**
FUNGUS	**2**
Fusarium chlamydosporum	1
Fusarium concolor	1
LICHEN	**8**
Collema coccophorum	1
Collema novozelandicum	1
Endocarpon aridum	1
Heppia sp.	1
Paraporpidia glauca	1
Psora decipiens	3
Plantae	**876**
DICOT	**770**
Abutilon otocarpum	1
Acacia aneura	1
Acacia aneura group	2
Acacia aptaneura	8
Acacia ayersiana	3
Acacia burkittii	7
Acacia caesaneura	1
Acacia caesaneura x incurvaneura	1
Acacia dictyophleba	2
Acacia effusifolia	1
Acacia heteroneura var. prolixa	1
Acacia incurvaneura	6
Acacia incurvaneura x mulganeura	1
Acacia jamesiana	1
Acacia jennerae	1
Acacia kempeana	1
Acacia ligulata	1
Acacia macraneura	6
Acacia minyura hybrid	1
Acacia mulganeura	1
Acacia murrayana	3
Acacia nyssophylla	7
Acacia oswaldii	1
Acacia pachyacra	5
Acacia pruinocarpa	1
Acacia pteraneura	1
Acacia quadrimarginea	3
Acacia ramulosa var. ramulosa	1

Acacia salicina	2
Acacia sibirica	1
Acacia sp.Juliflorae - terete Eremaean Region	1
Acacia subtessarogona	1
Acacia synchronicia	2
Acacia tetragonophylla	2
Acacia xanthocarpa	1
Acacia xiphophylla	1
Aluta maisonneuvei subsp. auriculata	2
Alyogyne pinoniana	1
Amaranthus cuspidifolius	1
Amaranthus mitchellii var. cuspidifolius	1
Amyema fitzgeraldii	2
Amyema gibberula var. gibberula	1
Amyema gibberula var. tatei	1
Amyema microphylla	6
Amyema miquelii	1
Androcalva loxophylla	1
Androcalva luteiflora	1
Angianthus cornutus	2
Anthobolus leptomerioides	5
Atriplex bunburyana	2
Atriplex codonocarpa	6
Atriplex nana	1
Atriplex semilunaris	1
Atriplex spongiosa	1
Brachychiton gregorii	2
Brachyscome ciliaris	1
Brunonia australis	5
Calandrinia aff. eremaea	1
Calandrinia creethiae	1
Calandrinia eremaea	1
Calandrinia ptychosperma	1
Calandrinia schistorhiza	2
Calandrinia sp. The Pink Hills (F. Obbens FO 19/06)	1
Calothamnus aridus	2
Calotis hispidula	1
Calotis multicaulis	3
Calotis plumulifera	1
Calytrix carinata	2
Calytrix desolata	2

Casuarina obesa	2
Casuarina obesa x pauper	1
Casuarina pauper	3
Cephalipterum drummondii	2
Chenopodium cf. gaudichaudianum	1
Chrysocephalum apiculatum	1
Chrysocephalum apiculatum subsp. glandulosum	2
Chrysocephalum eremaeum	1
Chrysocephalum puteale	2
Cleome oxalidea	1
Clerodendrum tomentosum	1
Codonocarpus cotinifolius	4
Corymbia lenziana	5
Crassula sp.	1
Cyphanthera miersiana	1
Dampiera dentata	2
Dicrastylis brunnea	2
Dicrastylis exsuccosa	2
Dicrastylis flexuosa	7
Dissocarpus paradoxus	5
Dodonaea microzyga var. acrolobata	1
Dodonaea petiolaris	3
Dodonaea rigida	2
Dodonaea viscosa subsp. mucronata	2
Duboisia hopwoodii	1
Duperreya commixta	1
Dysphania kalpari	2
Dysphania melanocarpa	1
Enchylaena tomentosa var. tomentosa	2
Eremophea spinosa	2
Eremophila alternifolia	1
Eremophila arachnoides subsp. arachnoides	3
Eremophila arguta	1
Eremophila battii	4
Eremophila citrina	2
Eremophila congesta	12
Eremophila enata	3
Eremophila eriocalyx	1
Eremophila falcata	2
Eremophila flabellata	7
Eremophila foliosissima	3

Eremophila forrestii	2
Eremophila forrestii subsp. forrestii	2
Eremophila fraseri	1
Eremophila galeata	2
Eremophila georgei	1
Eremophila gilesii subsp. gilesii	3
Eremophila glabra subsp. glabra	1
Eremophila hygrophana	2
Eremophila jucunda subsp. jucunda	2
Eremophila latrobei subsp. glabra	1
Eremophila latrobei subsp. latrobei	3
Eremophila linearis	1
Eremophila longifolia	2
Eremophila maculata subsp. brevifolia	5
Eremophila malacoides	2
Eremophila margarethae	4
Eremophila oppositifolia subsp. angustifolia	1
Eremophila pantonii	2
Eremophila platythamnos subsp. exotrachys	1
Eremophila platythamnos subsp. platythamnos	2
Eremophila pterocarpa subsp. acicularis	6
Eremophila punctata	3
Eremophila serrulata	3
Eremophila sp.	1
Eremophila spectabilis subsp. brevis	4
Eremophila spinescens	2
Eremophila spuria	1
Eremophila youngii subsp. youngii	2
Eriochiton sclerolaenoides	1
Erodium aureum	1
Erodium cygnorum	2
Erymophyllum compactum	1
Eucalyptus camaldulensis subsp. obtusa	7
Eucalyptus eremicola	1
Eucalyptus eremicola subsp. eremicola	1
Eucalyptus eremicola subsp. peeneri	6
Eucalyptus kingsmillii	3
Eucalyptus kochii subsp. plenissima	2
Eucalyptus leptopoda subsp. elevata	1
Eucalyptus lucasii	7
Eucalyptus striaticalyx	7

Eucalyptus trivalva	1
Euphorbia drummondii	1
Euphorbia porcata	1
Euryomyrtus inflata	3
Exocarpos aphyllus	2
Flaveria trinervia	1
Frankenia pauciflora	1
Frankenia setosa	1
Gastrolobium laytonii	1
Glischrocaryon angustifolium	1
Glischrocaryon flavescens	1
Glycine canescens	1
Gnephosis arachnoidea	1
Gnephosis brevifolia	1
Gnephosis tenuissima	1
Goodenia centralis	1
Goodenia eremophila	1
Goodenia macroplectra	1
Goodenia mimuloides	1
Goodenia peacockiana	2
Goodenia schwerinensis	1
Goodenia tenuiloba	2
Goodenia wilunensis	4
Grevillea eriostachya	1
Grevillea juncifolia subsp. juncifolia	3
Grevillea nematophylla subsp. supraplana	1
Grevillea pterosperma	1
Grevillea sarissa subsp. succincta	3
Gunniopsis quadrifida	2
Gyrostemon ramulosus	1
Gyrostemon tepperi	1
Hakea francisiana	3
Hakea lorea subsp. lorea	1
Hakea minyma	1
Hakea rhombales	1
Halgania cyanea var. Allambi Stn (B.W. Strong 676)	2
Halgania erecta	1
Haloragis odontocarpa	1
Haloragis trigonocarpa	4
Halosarcia halocnemoides	1
Harnieria kempeana subsp. muelleri	1

Heliotropium heteranthum	2
Heliotropium moorei	1
Helipterum craspedioides	1
Hemichroa diandra	1
Hyalosperma glutinosum subsp. venustum	1
Indigofera georgei	1
Isotropis sp. Arid zone (G. Byrne 2775)	3
Kennedia prorepens	1
Lawrencella davenportii	2
Lawrencia densiflora	4
Lawrencia helmsii	1
Lemooria burkittii	1
Lepidium echinatum	3
Lepidium oxytrichum	2
Lepidium platypetalum	5
Leptosema chambersii	3
Leucochrysum stipitatum	3
Limonium sinuatum	1
Lotus cruentus	1
Lycium australe	2
Lysiana murrayi	3
Maireana amoena	4
Maireana aphylla	1
Maireana appressa	1
Maireana carnosa	1
Maireana georgei	5
Maireana melanocoma	3
Maireana planifolia	3
Maireana platycarpa	1
Maireana pyramidata	1
Maireana sp. indet	3
Maireana suaedifolia	1
Maireana thesioides	1
Maireana tomentosa subsp. tomentosa	3
Maireana trichoptera	3
Maireana triptera	3
Maireana villosa	1
Marsdenia australis	1
Medicago sativa	1
Melaleuca eleuterostachya	1
Melaleuca interioris	7

Melaleuca xerophila	8
Menkea sphaerocarpa	2
Micromyrtus flaviflora	2
Millotia myosotidifolia	1
Minuria macrocephala	1
Mirbelia rhagodioides	2
Monotaxis luteiflora	1
Muellerolimon salicorniaceum	2
Myriocephalus guerinae	1
Newcastelia cephalantha	1
Newcastelia cladotricha	2
Newcastelia hexarrhena	3
Newcastelia spodiotricha	1
Nicotiana occidentalis subsp. obliqua	1
Nicotiana rosulata subsp. rosulata	5
Nicotiana simulans	1
Olearia stuartii	1
Peplidium sp.	1
Petalostylis cassioides	4
Philotheca brucei subsp. brucei	1
Pimelea microcephala subsp. microcephala	1
Pimelea trichostachya	2
Pittosporum angustifolium	1
Pluchea dentex	1
Podolepis aristata subsp. affinis	2
Podolepis kendallii	4
Prostanthera wilkieana	2
Psydrax latifolia	2
Ptilotus aervoides	1
Ptilotus albidus	3
Ptilotus arthrolasius	1
Ptilotus chamaecladus	3
Ptilotus divaricatus	2
Ptilotus drummondii	1
Ptilotus exaltatus	4
Ptilotus gaudichaudii	1
Ptilotus helipteroides	4
Ptilotus luteolus	2
Ptilotus macrocephalus	4
Ptilotus obovatus	6
Ptilotus polystachyus	2

Ptilotus roei	3
Ptilotus rotundifolius	3
Ptilotus schwartzii	2
Quoya loxocarpa	1
Rhagodia drummondii	3
Rhagodia sp.	1
Rhodanthe charsleyae	3
Rhodanthe chlorocephala subsp. rosea	2
Rhodanthe chlorocephala subsp. splendida	2
Rhodanthe floribunda	1
Rhodanthe humboldtiana	1
Rhodanthe maryonii	2
Rhodanthe sterilescens	6
Roebuckiella ciliocarpa	3
Roebuckiella similis	2
Roycea sp.	1
Rumex vesicarius	2
Salsola australis	5
Samolus repens	5
Santalum lanceolatum	1
Santalum spicatum	2
Scaevola amblyanthera var. centralis	1
Scaevola parvifolia subsp. pilbarae	1
Scaevola spinescens	4
Schoenia ayersii	2
Schoenia cassiniana	2
Sclerolaena articulata	1
Sclerolaena bicornis var. bicornis	1
Sclerolaena convexula	1
Sclerolaena deserticola	2
Sclerolaena diacantha	7
Sclerolaena eriacantha	4
Sclerolaena eurotioides	2
Sclerolaena gardneri	1
Sclerolaena tetragona	1
Senecio glossanthus	1
Senna artemisioides	4
Senna artemisioides subsp. ferraria	1
Senna artemisioides subsp. filifolia	2
Senna artemisioides subsp. helmsii	2
Senna artemisioides subsp. helmsii x artemisioides subsp. oligophylla	1

Senna artemisioides subsp. x artemisioides	2
Senna artemisioides subsp. x coriacea	1
Senna artemisioides subsp. x sturtii	1
Senna charlesiana	6
Senna charlesiana integrade	1
Senna charlesiana x artemisioides subsp. filifolia	1
Senna charlesiana x artemisioides subsp. x artemisioides	1
Senna glutinosa subsp. chatelainiana	2
Senna glutinosa subsp. x luerssenii	1
Senna pleurocarpa var. angustifolia	2
Senna sp. Austin (A. Strid 20210)	1
Senna sp. Billabong (J.D. Alonzo 721)	2
Senna sp. Meekatharra (E. Bailey 1-26)	3
Senna venusta	1
Seringia elliptica	2
Sida ectogama	1
Sida platycalyx	1
Solanum centrale	4
Solanum coactiliferum	1
Solanum ferocissimum	1
Solanum lachnophyllum	2
Solanum lasiophyllum	3
Solanum nummularium	1
Spergularia marina	1
Stackhousia clementii	2
Stenopetalum pedicellare	1
Streptoglossa cylindriceps	2
Streptoglossa liatroides	1
Swainsona affinis	4
Swainsona canescens	1
Swainsona formosa	1
Swainsona kingii	1
Swainsona oroboides	1
Swainsona tenuis	1
Synaptantha tillaeacea var. tillaeacea	1
Tecticornia calyptrata	4
Tecticornia indica	1
Tecticornia indica subsp. bidens	1
Tecticornia laevigata	1
Tecticornia moniliformis	1
Tecticornia sp.	1

Tecticornia sp. Burnerbinmah (D. Edinger et al. 101)	2
Tecticornia sp. Dennys Crossing (K.A. Shepherd & J. English KS 552)	1
Tecticornia undulata	1
Teucrium racemosum	1
Trachymene bialata	2
Tribulus astrocarpus	1
Trichodesma zeylanicum	2
Velleia connata	3
Velleia glabrata	1
Velleia rosea	1
Velleia sp.	2
Vincetoxicum lineare	2
Vittadinia sulcata	1
Waitzia acuminata	1
Zygophyllum aurantiacum	1
Zygophyllum compressum	2
Zygophyllum ovatum	3
Zygophyllum simile	1
GYMNO	**3**
Callitris columellaris	2
Callitris verrucosa	1
MONOCOT	**103**
Aristida contorta	2
Aristida inaequiglumis	2
Aristida obscura	1
Austrostipa trichophylla	1
Bromus arenarius	1
Cymbopogon ambiguus	3
Cymbopogon obtectus	1
Cynodon dactylon	1
Cyperus betchei subsp. commiscens	1
Cyperus rotundus	1
Dactyloctenium radulans	2
Dichanthium sericeum subsp. humilius	2
Digitaria brownii	1
Diplachne fusca subsp. fusca	1
Enneapogon caerulescens	4
Enneapogon polyphyllus	1
Enteropogon ramosus	2
Eragrostis australasica	1
Eragrostis dielsii	2

Eragrostis eriopoda	8
Eragrostis falcata	1
Eragrostis laniflora	1
Eragrostis lanipes	1
Eragrostis leptocarpa	1
Eragrostis setifolia	1
Eragrostis sp. Yeelirrie Calcrete (S. Regan LCH 26770)	2
Eragrostis xerophila	1
Eriachne aristidea	1
Eriachne benthamii	1
Eriachne flaccida	4
Eriachne helmsii	3
Eriachne mucronata	2
Eriachne pulchella	1
Eulalia aurea	2
Lomandra leucocephala subsp. robusta	1
Monachather paradoxus	4
Neurachne minor	1
Paraneurachne muelleri	2
Paspalidium basicladum	1
Paspalidium clementii	1
Paspalidium constrictum	2
Paspalidium reflexum	1
Polypogon monspeliensis	2
Themeda triandra	2
Thyridolepis mitchelliana	1
Thyridolepis multiculmis	1
Thyridolepis sp.	1
Thysanotus manglesianus	2
Thysanotus sp. Eremaean (S. van Leeuwen 1067)	2
Triglochin isingiana	1
Triglochin nana	1
Triodia basedowii	5
Triodia melvillei	9
Tripogonella loliiformis	1
Triraphis mollis	1
Wurmbea deserticola	1
Grand Total	**1729**

NatureMap Meekatharra

Row Labels	COUNT
Animalia	**580**
AMPHI	**5**
Cyclorana platycephala	5
BIRD	**496**
Acanthagenys rufogularis	19
Acanthiza chrysorrhoa	4
Acanthiza robustirostris	2
Acanthiza uropygialis	5
Aegotheles cristatus	1
Anas gracilis	6
Anas superciliosa	4
Aphelocephala leucopsis	1
Aquila audax	11
Ardea novaehollandiae	1
Ardea pacifica	1
Artamus cinereus	12
Artamus minor	1
Artamus personatus	1
Aythya australis	4
Barnardius zonarius	3
Cacatua sanguinea subsp. westralensis	1
Cacomantis pallidus	1
Certhionyx variegatus	2
Cheramoeca leucosterna	4
Cincloramphus cruralis	1
Cincloramphus mathewsi	2
Cinclosoma castaneothorax	2
Cladorhynchus leucocephalus	3
Colluricincla harmonica	3
Columba livia	2
Coracina novaehollandiae	5
Coracina novaehollandiae subsp. novaehollandiae	1
Corvus bennetti	17
Corvus orru	10
Cracticus nigrogularis	15
Cracticus tibicen	13
Cracticus torquatus	6
Dicaeum hirundinaceum	3
Dromaius novaehollandiae	3

Egretta novaehollandiae	2
Elseyornis melanops	5
Eolophus roseicapillus	2
Epthianura tricolor	2
Erythrogonys cinctus	1
Falco berigora	1
Falco cenchroides	15
Falco longipennis	3
Falco peregrinus	2
Fulica atra	5
Geopelia cuneata	2
Grallina cyanoleuca	27
Haliastur sphenurus	14
Hieraaetus morphnoides	1
Himantopus himantopus	2
Hirundo neoxena	12
Lichenostomus penicillatus	25
Lichenostomus virescens	22
Malacorhynchus membranaceus	5
Malurus lamberti	1
Malurus splendens	4
Manorina flavigula	31
Melanodryas cucullata	3
Melopsittacus undulatus	4
Milvus migrans	3
Ninox novaeseelandiae	1
Nymphicus hollandicus	2
Ocyphaps lophotes	23
Oreoica gutturalis	17
Pachycephala rufiventris	2
Petrochelidon ariel	3
Petrochelidon nigricans	10
Petroica goodenovii	6
Phaps chalcoptera	2
Poliocephalus poliocephalus	5
Pomatostomus superciliosus	4
Pomatostomus temporalis	6
Pomatostomus temporalis subsp. rubeculus	1
Porzana fluminea	2
Psophodes occidentalis	2
Ptilonorhynchus guttatus	3

Rhipidura leucophrys	15
Tachybaptus novaehollandiae	1
Tadorna tadornoides	2
Taeniopygia guttata	22
Tribonyx ventralis	1
Tringa glareola	1
Vanellus tricolor	1
INVERT	**23**
Acariformes sp.	1
Aganippe occidentalis	1
ant sp.	8
Lampona cylindrata	1
Scolopendra morsitans	1
Thereuopoda lesueurii	1
Urodacus armatus	2
Urodacus hoplurus	8
MAMMAL	**12**
Notomys alexis	1
Nyctophilus geoffroyi	3
Sminthopsis crassicaudata	2
Sminthopsis longicaudata	1
Vespadelus finlaysoni	4
Vulpes vulpes	1
REPTILE	**44**
Antaresia stimsoni subsp. stimsoni	1
Chelodina steindachneri	5
Ctenophorus caudicinctus subsp. caudicinctus	1
Ctenophorus caudicinctus subsp. mensarum	4
Ctenophorus nuchalis	2
Ctenophorus reticulatus	2
Ctenophorus salinarum	1
Ctenotus helenae	2
Ctenotus leonhardii	2
Diplodactylus pulcher	1
Egernia depressa	1
Eremiascincus richardsonii	1
Gehyra variegata	4
Heteronotia binoei	3
Lerista macropisthopus subsp. fusciceps	1
Lerista timida	1
Lucasium squarrosum	1

Nephrurus wheeleri subsp. wheeleri	1
Pseudonaja mengdeni	2
Simoselaps bertholdi	1
Strophurus wellingtonae	1
Suta fasciata	1
Tympanocryptis cephalus	1
Varanus caudolineatus	1
Varanus panoptes subsp. rubidus	3
Fungi	**3**
FUNGUS	**2**
Boletus sp.	1
Sporisorium themedae	1
LICHEN	**1**
Myriospora smaragdula	1
Plantae	**835**
DICOT	**766**
Acacia aneura group	2
Acacia aneura group (hybrid)	2
Acacia aptaneura	1
Acacia burkittii	7
Acacia caesaneura	4
Acacia craspedocarpa hybrid	1
Acacia cuthbertsonii subsp. linearis	3
Acacia effusifolia	2
Acacia exocarpoides	6
Acacia fuscaneura	6
Acacia fuscaneura / pteraneura group	1
Acacia grasbyi	2
Acacia incurvaneura	9
Acacia incurvaneura hybrid	3
Acacia mulganeura	2
Acacia pruinocarpa	1
Acacia pteraneura	10
Acacia quadrimarginea	6
Acacia quadrimarginea (Variant)	1
Acacia ramulosa hybrid	1
Acacia ramulosa var. linophylla	3
Acacia ramulosa var. ramulosa	3
Acacia rhodophloia	3
Acacia sclerosperma subsp. sclerosperma	5
Acacia sp. Wiluna (B.R. Maslin 7090)	1

Acacia sp.Juliflorae-flat, Eremaean region	2
Acacia speckii	2
Acacia subtessarogona	3
Acacia tetragonophylla	4
Acacia thoma	2
Acacia wanyu	1
Actinobole oldfieldianum	5
Alternanthera angustifolia	1
Aluta aspera subsp. hesperia	1
Aluta maisonneuvei subsp. auriculata	2
Amyema fitzgeraldii	1
Amyema nestor	5
Androcalva luteiflora	2
Angianthus cyathifer	1
Argemone ochroleuca subsp. ochroleuca	1
Atriplex codonocarpa	2
Atriplex semilunaris	6
Atriplex sp.	1
Brachyscome ciliaris	3
Brachyscome simulans	1
Brunonia australis	2
Calandrinia brevipedata	1
Calandrinia creethiae	1
Calandrinia eremaea	1
Calandrinia polyandra	1
Calandrinia translucens	1
Calocephalus beardii	1
Calocephalus knappii	2
Calocephalus multiflorus	1
Calotis hispidula	3
Calotis multicaulis	4
Calotis plumulifera	1
Calytrix amethystina	1
Calytrix desolata	7
Calytrix uncinata	1
Calytrix verruculosa	6
Cassia sturtii	1
Cephalipterum drummondii	4
Chamelaucium gracile	1
Chrysocephalum puteale	1
Chthonocephalus pseudevax	1

Chthonocephalus viscosus	3
Codonocarpus cotinifolius	2
Convolvulus clementii	1
Cynanchum floribundum	1
Dicrastylis sessilifolia	1
Dielitzia tysonii	2
Dissocarpus paradoxus	1
Dodonaea ceratocarpa	1
Dodonaea ericoides	1
Dodonaea pachyneura	2
Dodonaea petiolaris	3
Dodonaea viscosa	1
Dodonaea viscosa subsp. angustissima	1
Drummondita miniata	4
Duboisia hopwoodii	1
Duperreya commixta	3
Dysphania kalpari	1
Dysphania rhadinostachya subsp. inflata	2
Dysphania saxatilis	1
Eremophila clarkei	5
Eremophila compacta subsp. fecunda	1
Eremophila exilifolia	6
Eremophila fasciata	1
Eremophila flabellata	6
Eremophila foliosissima	3
Eremophila forrestii	2
Eremophila forrestii subsp. forrestii	4
Eremophila forrestii subsp. hastieana	1
Eremophila fraseri subsp. fraseri	2
Eremophila galeata	6
Eremophila glabra subsp. tomentosa	1
Eremophila glutinosa	16
Eremophila granitica	1
Eremophila jucunda subsp. jucunda	3
Eremophila lachnocalyx	3
Eremophila latrobei	1
Eremophila latrobei subsp. latrobei	5
Eremophila linearis	7
Eremophila longifolia	1
Eremophila macmillaniana	5
Eremophila margarethae	2

Eremophila oppositifolia subsp. angustifolia	2
Eremophila pantonii	1
Eremophila phyllopoda	1
Eremophila phyllopoda subsp. phyllopoda	8
Eremophila platycalyx subsp. Granites (D.J. Edinger & G. Marsh DJE 4782)	6
Eremophila platycalyx subsp. platycalyx	1
Eremophila platycalyx subsp. Yalgoo (A. Markey & S. Dillon 3337)	1
Eremophila retropila	7
Eremophila serrulata	1
Eremophila setacea	1
Eremophila sp.	2
Eremophila spathulata	5
Eremophila spectabilis subsp. spectabilis	1
Eremophila spuria	8
Eremophila youngii subsp. youngii	3
Erodium crinitum	2
Erodium cygnorum	4
Erymophyllum compactum	1
Erymophyllum ramosum	3
Eucalyptus carnei	1
Eucalyptus gypsophila	1
Eucalyptus kingsmillii	3
Eucalyptus leptopoda subsp. elevata	1
Eucalyptus striaticalyx	1
Eucalyptus trivalva	2
Euphorbia boophthona	2
Euphorbia tannensis subsp. eremophila	2
Exocarpos aphyllus	1
Frankenia sp.	1
Gilruthia osbornii	1
Glycine canescens	4
Gnephosis arachnoidea	1
Goodenia berardiana	2
Goodenia havilandii	1
Goodenia macroplectra	2
Goodenia mimuloides	1
Goodenia quasilibera	2
Goodenia tenuiloba	17
Grevillea deflexa	10
Grevillea inconspicua	9
Gunniopsis sp.	1

Hakea lorea subsp. lorea	3
Hakea preissii	2
Hakea recurva subsp. arida	2
Halgania cyanea var. Allambi Stn (B.W. Strong 676)	2
Haloragis odontocarpa	1
Harnieria kempeana	1
Harnieria kempeana subsp. muelleri	6
Helichrysum davenportii	1
Heliotropium mitchellii	3
Heliotropium sp.	1
Helipterum craspedioides	4
Hemigenia tomentosa	2
Hemigenia virescens	1
Hibiscus sp. Gardneri (A.L. Payne PRP 1435)	2
Homalocalyx echinulatus	2
Hyalosperma glutinosum subsp. venustum	1
Indigofera chamaeclada subsp. chamaeclada	2
Indigofera monophylla	3
Isotropis sp. Arid zone (G. Byrne 2775)	1
Lactuca serriola	1
Lactuca serriola forma serriola	1
Lawrencella davenportii	2
Lemooria burkittii	3
Lepidium didymum	1
Lepidium oxytrichum	3
Lepidium platypetalum	2
Levenhookia chippendalei	1
Levenhookia leptantha	1
Lysiana murrayi	1
Macgregoria racemigera	1
Maireana carnosa	6
Maireana convexa	5
Maireana georgei	5
Maireana glomerifolia	1
Maireana melanocoma	4
Maireana planifolia	3
Maireana pyramidata	1
Maireana sp.	1
Maireana thesioides	1
Maireana tomentosa	1
Maireana trichoptera	1

Maireana villosa	2
Malva parviflora	1
Menkea draboides	2
Menkea villosula	2
Micromyrtus sulphurea	1
Mirbelia rhagodioides	2
Muelleranthus trifoliolatus	2
Myriocephalus guerinae	2
Myriocephalus rudallii	1
Nicotiana cavicola	2
Nicotiana rosulata subsp. rosulata	1
Nicotiana stenocarpa	2
Olearia stuartii	1
Opuntia stricta	1
Papaver hybridum	1
Parietaria cardiostegia	1
Peplidium sp.	1
Peplidium sp. C Evol. Fl. Fauna Arid Aust. (N.T. Burbidge & A. Kanis 8158)	1
Pimelea microcephala	1
Pittosporum angustifolium	2
Podolepis gardneri	1
Podolepis kendallii	1
Portulaca cyclophylla	1
Portulaca oleracea	1
Portulaca sp.	1
Prostanthera albiflora	2
Prostanthera campbellii	3
Prostanthera wilkieana	5
Psydrax latifolia	5
Psydrax rigidula	4
Ptilotus aervoides	2
Ptilotus albidus	1
Ptilotus astrolasius var. luteolus	1
Ptilotus chamaecladus	1
Ptilotus drummondii var. minor	1
Ptilotus exaltatus	6
Ptilotus gaudichaudii	2
Ptilotus grandiflorus	1
Ptilotus helipteroides	8
Ptilotus luteolus	4
Ptilotus macrocephalus	4

Ptilotus obovatus	13
Ptilotus obovatus var. obovatus	1
Ptilotus polystachyus	7
Ptilotus roei	5
Ptilotus rotundifolius	9
Ptilotus schwartzii	2
Ptilotus schwartzii var. schwartzii	1
Rhodanthe charsleyae	3
Rhodanthe chlorocephala subsp. splendida	2
Rhodanthe floribunda	1
Rhodanthe humboldtiana	1
Rhodanthe maryonii	7
Rhodanthe propinqua	5
Rhodanthe sterilescens	1
Rhodanthe stricta	2
Roebuckiella cheilocarpa var. cheilocarpa	4
Roebuckiella ciliocarpa	4
Roepera kochii	1
Rumex vesicarius	2
Salsola australis	4
Santalum lanceolatum	1
Scaevola spinescens	1
Schoenia ayersii	2
Schoenia cassiniana	4
Sclerolaena cuneata	4
Sclerolaena eriacantha	5
Sclerolaena gardneri	1
Sclerolaena lanicuspis	1
Sclerolaena sp.	1
Senecio glossanthus	2
Senna artemisioides	5
Senna artemisioides subsp. helmsii	8
Senna artemisioides subsp. helmsii x artemisioides subsp. oligophylla	1
Senna artemisioides subsp. x sturtii	3
Senna charlesiana	1
Senna glaucifolia	1
Senna glutinosa	1
Senna glutinosa subsp. chatelainiana	3
Senna glutinosa subsp. pruinosa	1
Senna glutinosa subsp. x luerssenii	3
Senna sp. Meekatharra (E. Bailey 1-26)	2

Sida calyxhymenia	3
Sida ectogama	3
Sisymbrium orientale	1
Solanum austropiceum	1
Solanum lasiophyllum	1
Solanum orbiculatum	1
Spergularia marina	2
Stenopetalum anfractum	1
Stenopetalum filifolium	2
Streptoglossa cylindriceps	1
Streptoglossa liatroides	1
Swainsona affinis	2
Swainsona canescens	1
Swainsona kingii	1
Swainsona oroboides	3
Swainsona paucifoliolata	2
Swainsona pterostylis	2
Swainsona sp.	1
Synaptantha tillaeacea var. tillaeacea	1
Taplinia saxatilis	2
Tecticornia sp. Yoothapina Station (A.A. Mitchell 883)	2
Tetragonia cristata	1
Tetragonia moorei	1
Teucrium teucriiflorum	4
Thryptomene decussata	3
Trachymene ornata	2
Trianthema glossostigmum	2
Trianthema triquetrum	1
Tribulus platypterus	1
Tribulus suberosus	1
Trichodesma zeylanicum	2
Velleia glabrata	1
Velleia sp.	1
Verticordia interioris	1
Wahlenbergia tumidifructa	1
Waitzia acuminata var. acuminata	1
Zygophyllum iodocarpum	1
Zygophyllum kochii	1
FERN	**3**
Cheilanthes lasiophylla	1
Cheilanthes sieberi subsp. sieberi	1

Marsilea sp.	1
GYMNO	**1**
Callitris columellaris	1
LIVERWORT	**4**
Riccia crystallina	2
Riccia marginata	1
Riccia nigrella	1
MONOCOT	**61**
Aristida contorta	5
Austrostipa nitida	1
Austrostipa scabra	1
Cenchrus ciliaris	1
Cymbopogon ambiguus	2
Cymbopogon obtectus	1
Cynodon prostratus	3
Cyperus bulbosus	1
Cyperus dactylotes	1
Diplachne fusca subsp. muelleri	1
Enneapogon polyphyllus	1
Eragrostis dielsii	3
Eragrostis eriopoda	2
Eragrostis lanipes	2
Eragrostis pergracilis	1
Eragrostis setifolia	1
Eriachne aristidea	3
Eriachne flaccida	4
Eriachne helmsii	3
Eriachne mucronata	1
Isolepis congrua	1
Monachather paradoxus	8
Neurachne minor	3
Paspalidium clementii	2
Sporobolus australasicus	1
Thyridolepis mitchelliana	1
Thysanotus manglesianus	2
Thysanotus sp. Eremaean (S. van Leeuwen 1067)	1
Triglochin isingiana	2
Triodia scariosa	1
Tripogonella loliiformis	1
Grand Total	**1418**

NatureMap Cue

Row Labels	COUNT
Animalia	**5734**
AMPHI	**1**
Neobatrachus sutor	1
BIRD	**5584**
Acanthagenys rufogularis	190
Acanthiza apicalis	56
Acanthiza chrysorrhoa	58
Acanthiza iredalei	1
Acanthiza iredalei subsp. iredalei	12
Acanthiza robustirostris	28
Acanthiza uropygialis	102
Accipiter cirrocephalus	7
Accipiter fasciatus	13
Actitis hypoleucos	3
Aegotheles cristatus	4
Aegotheles cristatus subsp. cristatus	1
Amytornis textilis subsp. textilis	3
Anas castanea	2
Anas gracilis	81
Anas rhynchotis	19
Anas superciliosa	46
Anhinga novaehollandiae	9
Anthus australis	2
Anthus australis subsp. australis	2
Aphelocephala leucopsis	83
Aphelocephala leucopsis subsp. castaneiventris	9
Aphelocephala nigricincta	9
Aquila audax	51
Ardea modesta	24
Ardea pacifica	53
Artamus cinereus	79
Artamus cinereus subsp. melanops	1
Artamus cyanopterus	4
Artamus minor	2
Artamus personatus	8
Aythya australis	36
Barnardius zonarius	29
Biziura lobata	78
Burhinus grallarius	15

Cacatua sanguinea	2
Cacomantis pallidus	16
Calamanthus campestris	7
Calidris acuminata	3
Calidris ferruginea	1
Calidris ruficollis	2
Certhionyx variegatus	20
Charadrius ruficapillus	22
Chenonetta jubata	42
Cheramoeca leucosterna	4
Chlidonias leucopterus	3
Chroicocephalus novaehollandiae	6
Cincloramphus cruralis	7
Cincloramphus mathewsi	27
Cinclosoma castaneothorax	23
Cinclosoma marginatum	2
Circus approximans	5
Circus assimilis	3
Cladorhynchus leucocephalus	8
Climacteris affinis	4
Colluricincla harmonica	84
Colluricincla harmonica subsp. rufiventris	1
Columba livia	1
Coracina maxima	2
Coracina novaehollandiae	63
Corvus bennetti	84
Corvus coronoides	6
Corvus orru	54
Coturnix pectoralis	1
Coturnix ypsilophora	1
Cracticus nigrogularis	80
Cracticus tibicen	82
Cracticus torquatus	48
Cygnus atratus	53
Daphoenositta chrysoptera	8
Daphoenositta chrysoptera subsp. pileata	8
Dicaeum hirundinaceum	8
Dromaius novaehollandiae	61
Egretta novaehollandiae	56
Elanus axillaris	5
Elseyornis melanops	82

Eolophus roseicapillus	68
Epthianura albifrons	5
Epthianura aurifrons	22
Epthianura tricolor	35
Erythrogonys cinctus	32
Eurostopodus argus	2
Falco berigora	30
Falco berigora subsp. berigora	1
Falco cenchroides	41
Falco longipennis	9
Falco peregrinus	5
Falco subniger	1
Fulica atra	38
Gavicalis virescens	3
Gelochelidon nilotica	3
Geopelia cuneata	56
Geopelia striata	3
Geophaps plumifera	1
Gerygone fusca	20
Gerygone fusca subsp. fusca	2
Grallina cyanoleuca	169
Haliastur sphenurus	91
Hamirostra melanosternon	10
Hieraaetus morphnoides	10
Himantopus himantopus	65
Hirundo neoxena	116
Hirundo nigricans	1
Hirundo nigricans subsp. nigricans	1
Hydroprogne caspia	1
Lacustroica whitei	1
Lalage tricolor	3
Leipoa ocellata	1
Lichenostomus keartlandi	1
Lichenostomus penicillatus	147
Lichenostomus plumulus	1
Lichenostomus virescens	186
Lichmera indistincta	22
Malacorhynchus membranaceus	42
Malurus lamberti	47
Malurus lamberti subsp. assimilis	3
Malurus leucopterus	19

Malurus leucopterus subsp. leuconotus	30
Malurus splendens	85
Manorina flavigula	83
Melanodryas cucullata	36
Melopsittacus undulatus	34
Merops ornatus	7
Microcarbo melanoleucos	15
Microeca fascinans	3
Milvus migrans	3
Neophema bourkii	1
Neopsephotus bourkii	23
Ninox novaeseelandiae	1
Nymphicus hollandicus	18
Ocyphaps lophotes	152
Oreoica gutturalis	155
Oxyura australis	1
Pachycephala rufiventris	95
Pardalotus striatus	7
Pelecanus conspicillatus	15
Peltohyas australis	2
Petrochelidon ariel	26
Petrochelidon nigricans	55
Petroica cucullata	4
Petroica goodenovii	142
Phalacrocorax carbo	4
Phalacrocorax sulcirostris	24
Phaps chalcoptera	43
Platalea flavipes	35
Platalea regia	2
Platycercus varius	2
Plegadis falcinellus	4
Podargus strigoides	3
Podargus strigoides subsp. brachypterus	1
Podiceps cristatus	2
Poliocephalus poliocephalus	67
Pomatostomus superciliosus	61
Pomatostomus temporalis	47
Porzana fluminea	1
Psophodes occidentalis	49
Ptilonorhynchus guttatus	53
Ptilotula plumulus	1

Purnella albifrons	36
Pyrrholaemus brunneus	20
Recurvirostra novaehollandiae	15
Rhipidura albiscapa	12
Rhipidura leucophrys	193
Rhipidura leucophrys subsp. leucophrys	1
Smicrornis brevirostris	9
Stictonetta naevosa	4
Streptopelia senegalensis	1
Sugomel niger	2
Tachybaptus novaehollandiae	53
Tadorna tadornoides	51
Taeniopygia guttata	167
Thinornis rubricollis	3
Threskiornis molucca	22
Threskiornis spinicollis	60
Todiramphus pyrrhopygius	17
Todiramphus sanctus	11
Tribonyx ventralis	49
Tringa glareola	5
Tringa nebularia	17
Tringa stagnatilis	3
Turnix velox	5
Vanellus tricolor	6
Zosterops lateralis	1
FISH	**2**
Craterocephalus cuneiceps	2
INVERT	**32**
Aganippe occidentalis	1
beetle sp.	1
Branchinella longirostris	1
Cercophonius granulosus	1
Corimaethes campestrus	1
Dingosa simsoni	1
Eulimnadia sp. 3 (Garden Rock)	2
fly sp.	4
Latrodectus hasseltii	1
Parartemia sp.	2
Pediana tenuis	1
Phryganoporus candidus	3
Storena sinuosa	1

Supunna picta	1
Tyrannochthonius souchomalus	1
Urodacus armatus	1
Urodacus hoplurus	7
Urodacus novaehollandiae	1
Wesmaldra waldockae	1
MAMMAL	**28**
Antechinomys laniger	1
Bos taurus	3
Canis lupus subsp. familiaris	4
Capra hircus	2
Macropus rufus	5
Macrotis lagotis	3
Notomys alexis	1
Oryctolagus cuniculus	4
Sminthopsis crassicaudata	1
Sminthopsis macroura	1
Tachyglossus aculeatus	2
Tadarida australis	1
REPTILE	**87**
Brachyurophis approximans	1
Ctenophorus ornatus	2
Ctenophorus reticulatus	3
Ctenophorus scutulatus	1
Ctenotus leonhardii	1
Ctenotus schomburgkii	1
Egernia depressa	3
Eremiascincus richardsonii	4
Gehyra variegata	18
Heteronotia binoei	9
Lerista eupoda	7
Lerista macropisthopus	1
Lerista nichollsi	8
Lerista timida	1
Moloch horridus	1
Nephrurus wheeleri subsp. wheeleri	6
Pogona minor subsp. minor	1
Pseudonaja mengdeni	1
Pseudonaja modesta	1
Pygopus nigriceps	4
Strophurus strophurus	1

Strophurus wellingtonae	5
Suta fasciata	4
Tympanocryptis cephalus	1
Varanus caudolineatus	1
Varanus panoptes subsp. rubidus	1
Fungi	**1**
FUNGUS	**1**
Phallus sp.	1
Plantae	**636**
DICOT	**598**
Acacia acuminata	1
Acacia aneura	1
Acacia aneura group	4
Acacia aneura group (hybrid)	1
Acacia aptaneura	3
Acacia aulacophylla	2
Acacia burkittii	2
Acacia caesaneura	1
Acacia caesaneura x incurvaneura	1
Acacia craspedocarpa	12
Acacia craspedocarpa hybrid	4
Acacia craspedocarpa x ramulosa	1
Acacia cuthbertsonii subsp. linearis	1
Acacia eremaea	9
Acacia fuscaneura	2
Acacia grasbyi	5
Acacia incurvaneura	1
Acacia ligulata	4
Acacia macraneura	2
Acacia masliniana	1
Acacia pruinocarpa	1
Acacia pteraneura	3
Acacia quadrimarginea	1
Acacia ramulosa var. linophylla	7
Acacia ramulosa var. ramulosa	2
Acacia sibilans	4
Acacia sp.	3
Acacia speckii	1
Acacia synchronicia	2
Acacia tysonii	4
Acacia umbraculiformis	1

Acetosa vesicaria	1
Actinobole oldfieldianum	1
Aluta aspera subsp. hesperia	2
Alyogyne pinoniana	1
Amyema fitzgeraldii	1
Amyema nestor	2
Androcalva luteiflora	3
Angianthus milnei	1
Angianthus uniflorus	1
Asteridea athrixioides	1
Asteridea chaetopoda	1
Atriplex cephalantha	1
Atriplex codonocarpa	1
Atriplex holocarpa	1
Atriplex nana	1
Atriplex semilunaris	1
Atriplex sp.	1
Bergia auriculata	1
Bergia perennis subsp. exigua	3
Brachyscome ciliaris	2
Brachyscome perpusilla	1
Bursaria occidentalis	1
Calandrinia pumila	1
Calandrinia schistorhiza	1
Calocephalus knappii	1
Calocephalus pilbarensis	1
Calotis hispidula	3
Calotis multicaulis	2
Calotis sp.	2
Calotis sp. Perrinvale Station (R.J. Cranfield 7096)	1
Centaurea melitensis	2
Centipeda thespidioides	1
Cephalipterum drummondii	2
Chenopodium gaudichaudianum	2
Chenopodium murale	2
Chorizema genistoides	2
Chthonocephalus pseudevax	1
Citrullus amarus	1
Codonocarpus cotinifolius	2
Crassula colorata var. acuminata	1
Cuscuta planiflora	2

Cyanostegia angustifolia	1
Daucus glochidiatus	1
Dicrastylis sp. Cue (A.A. Mitchell 764)	1
Dodonaea amplisemina	9
Dodonaea inaequifolia	3
Dodonaea petiolaris	1
Dodonaea viscosa	2
Dodonaea viscosa subsp. mucronata	1
Dodonaea viscosa subsp. spatulata	1
Drosera finlaysoniana	2
Drosera glanduligera	1
Drosera macrantha	1
Drummondita miniata	13
Duma florulenta	1
Dysphania melanocarpa	1
Dysphania rhadinostachya subsp. inflata	1
Eremophila clarkei	1
Eremophila compacta subsp. compacta	1
Eremophila compacta subsp. fecunda	1
Eremophila deserti	1
Eremophila exilifolia	1
Eremophila flabellata	3
Eremophila foliosissima	3
Eremophila forrestii subsp. forrestii	5
Eremophila galeata	3
Eremophila georgei	9
Eremophila gilesii subsp. gilesii	1
Eremophila glabra subsp. glabra / glabra subsp. tomentosa	1
Eremophila glabra subsp. tomentosa	3
Eremophila glutinosa	3
Eremophila hygrophana	1
Eremophila jucunda subsp. jucunda	1
Eremophila lachnocalyx	3
Eremophila latrobei subsp. latrobei	1
Eremophila longifolia	1
Eremophila macmillaniana	5
Eremophila maculata subsp. brevifolia	1
Eremophila miniata	2
Eremophila oldfieldii subsp. angustifolia	2
Eremophila oppositifolia subsp. angustifolia	2
Eremophila platycalyx subsp. Granites (D.J. Edinger & G. Marsh DJE 4782)	4

Eremophila punicea	4
Eremophila rostrata subsp. rostrata	18
Eremophila serrulata	1
Eremophila shonae subsp. shonae	1
Eremophila simulans subsp. simulans	1
Eremophila sp.	1
Eremophila youngii subsp. youngii	1
Eriochiton sclerolaenoides	1
Erodium crinitum	1
Erodium cygnorum	1
Erymophyllum glossanthus	1
Eucalyptus camaldulensis x coolabah	1
Eucalyptus striaticalyx	7
Eucalyptus victrix	1
Euphorbia tannensis subsp. eremophila	1
Exocarpos aphyllus	1
Feldstonia nitens	1
Frankenia fecunda	1
Frankenia pauciflora	1
Gastrolobium laytonii	2
Gilruthia osbornii	1
Glycine canescens	1
Gnaphalium sp.	1
Gnephosis angianthoides	1
Gnephosis brevifolia	1
Gnephosis eriocephala	1
Gnephosis macrocephala	1
Gnephosis tenuissima	1
Goodenia berringbinensis	3
Goodenia kingiana	4
Goodenia mimuloides	1
Goodenia pusilliflora	1
Grevillea deflexa	1
Grevillea inconspicua	11
Gunniopsis rodwayi	1
Hakea preissii	2
Halgania anagalloides	1
Halgania cyanea var. Allambi Stn (B.W. Strong 676)	1
Haloragis trigonocarpa	1
Helipterum craspedioides	1
Hemigenia sp. Yalgoo (A.M. Ashby 2624)	1

Hyalosperma glutinosum subsp. venustum	1
Hypochaeris glabra	1
Indigofera australis subsp. hesperia	1
Isotoma petraea	2
Jacksonia arida	2
Jacksonia lanicarpa	1
Kippistia suaedifolia	2
Lachnostachys verbascifolia var. verbascifolia	1
Lawrencia densiflora	1
Lawrencia helmsii	2
Lepidium oxytrichum	4
Lepidium platypetalum	2
Levenhookia dubia	1
Lobelia heterophylla	1
Lotus cruentus	1
Lysiana casuarinae	4
Lysiana murrayi	1
Lysimachia arvensis	1
Maireana amoena	4
Maireana carnosa	6
Maireana convexa	2
Maireana georgei	3
Maireana glomerifolia	2
Maireana oppositifolia	1
Maireana planifolia	2
Maireana prosthecochaeta	1
Maireana pyramidata	2
Maireana sp.	3
Maireana tomentosa	1
Maireana tomentosa subsp. tomentosa	4
Maireana trichoptera	1
Maireana triptera	5
Marsdenia australis	1
Melaleuca stereophloia	5
Menkea villosula	1
Micromyrtus placoides	1
Minuria cunninghamii	1
Minuria gardneri	1
Mirbelia ramulosa	2
Mirbelia rhagodioides	1
Muelleranthus trifoliolatus	6

Myriocephalus appendiculatus	1
Myriocephalus guerinae	2
Myriocephalus oldfieldii	6
Myriocephalus pygmaeus	1
Myriocephalus rudallii	1
Nicotiana occidentalis subsp. obliqua	2
Olearia humilis	1
Omphalolappula concava	1
Opuntia stricta	1
Philotheca brucei subsp. brucei	3
Pimelea forrestiana	1
Pimelea microcephala subsp. microcephala	1
Pimelea trichostachya	1
Pittosporum angustifolium	2
Plantago sp. Mt Magnet (A.S. George 6793)	1
Pluchea dentex	1
Podolepis capillaris	4
Pogonolepis stricta	2
Portulaca oleracea	1
Prostanthera albiflora	1
Prostanthera petrophila	1
Psydrax latifolia	1
Psydrax rigidula	1
Pterocaulon sphacelatum	1
Ptilotus chamaecladus	1
Ptilotus eremita	1
Ptilotus gaudichaudii	1
Ptilotus gomphrenoides	1
Ptilotus grandiflorus	1
Ptilotus helipteroides	1
Ptilotus macrocephalus	5
Ptilotus obovatus	3
Ptilotus polakii subsp. polakii	7
Ptilotus rotundifolius	4
Ptilotus schwartzii	1
Quinqueremulus linearis	1
Rhagodia eremaea	1
Rhodanthe battii	3
Rhodanthe charsleyae	1
Rhodanthe chlorocephala subsp. splendida	2
Rhodanthe laevis	1

Rhodanthe maryonii	4
Rhodanthe propinqua	1
Rhodanthe sterilescens	9
Rhodanthe stricta	1
Roebuckiella ciliocarpa	4
Roepera aurantiaca subsp. aurantiaca	1
Roepera eichleri	1
Roepera eremaea	1
Roepera fruticulosa	1
Roepera lobulata	1
Rumex hypogaeus	2
Rumex vesicarius	1
Salsola australis	2
Scaevola spinescens	2
Scaevola tomentosa	1
Schenkia australis	1
Schoenia ayersii	1
Schoenia cassiniana	2
Schoenia filifolia subsp. filifolia	1
Sclerolaena cuneata	2
Sclerolaena densiflora	1
Sclerolaena diacantha	1
Sclerolaena eriacantha	3
Sclerolaena fimbriolata	1
Sclerolaena gardneri	1
Senecio glossanthus	2
Senna artemisioides subsp. helmsii	3
Senna glaucifolia	1
Senna glutinosa subsp. chatelainiana	1
Senna sp. Austin (A. Strid 20210)	2
Sisymbrium erysimoides	1
Solanum lasiophyllum	5
Solanum nummularium	1
Solanum orbiculatum subsp. orbiculatum	1
Stackhousia sp. Mt Keith (G. Cockerton & G. O'Keefe 11017)	4
Stemodia viscosa	1
Stenopetalum anfractum	1
Stenopetalum lineare var. lineare	1
Stenopetalum sp.	1
Streptoglossa liatroides	3
Stylidium induratum	3

Swainsona elegans	3
Swainsona formosa	1
Swainsona gracilis	1
Swainsona kingii	1
Swainsona oliveri	1
Swainsona paradoxa	2
Tetragonia cristata	1
Teucrium racemosum	2
Teucrium teucriiflorum	1
Thryptomene decussata	1
Thyridia repens	1
Trachymene ornata	2
Trianthema triquetrum	1
Tribulus forrestii	1
Trichanthodium skirrophorum	1
Trigonella suavissima	2
Triptilodiscus pygmaeus	1
Vachellia farnesiana	1
Velleia glabrata	1
Velleia hispida	1
Velleia rosea	2
Vittadinia eremaea	1
Wahlenbergia tumidifructa	2
Zygophyllum iodocarpum	1
Zygophyllum kochii	2
FERN	**5**
Cheilanthes lasiophylla	3
Isoetes muelleri	1
Ophioglossum lusitanicum	1
MONOCOT	**33**
Aristida contorta	3
Bromus arenarius	1
Bulbine semibarbata	1
Dichanthium sericeum subsp. humilius	2
Enneapogon caerulescens	1
Eragrostis curvula	1
Eragrostis dielsii	1
Eragrostis falcata	1
Eragrostis lanipes	1
Eragrostis pergracilis	1
Eriachne flaccida	1

Isolepis congrua	2
Lachnagrostis filiformis	1
Paspalidium basicladum	1
Pentameris airoides	1
Pentameris airoides subsp. airoides	1
Prasophyllum gracile	1
Rostraria pumila	2
Rytidosperma caespitosum	1
Schoenus variicellae	1
Thysanotus manglesianus	3
Tricoryne sp. Mullewa (G.J. Keighery 12080)	1
Tripogonella loliiformis	2
Wurmbea densiflora	1
Wurmbea inframediana	1
Grand Total	**6371**

Nullagine NatureMap search

Row Labels	COUNT
Animalia	**2483**
AMPHI	**8**
Cyclorana platycephala	1
Platyplectrum spenceri	3
Uperoleia saxatilis	4
BIRD	**771**
Acanthagenys rufogularis	1
Accipiter fasciatus	3
Acrocephalus australis	2
Aegotheles cristatus	2
Amytornis striatus	2
Anas gracilis	2
Anas superciliosa	10
Anhinga melanogaster	2
Anhinga novaehollandiae	9
Anthus australis	6
Aquila audax	3
Ardea modesta	6
Ardea novaehollandiae	1
Ardea pacifica	4
Ardeotis australis	3
Artamus cinereus	14
Artamus minor	2
Artamus personatus	2
Aythya australis	3
Barnardius zonarius	6
Burhinus grallarius	1
Cacatua roseicapilla	3
Cacatua sanguinea	16
Cacomantis pallidus	3
Calidris acuminata	1
Charadrius melanops	3
Chenonetta jubata	3
Chrysococcyx basalis	1
Cincloramphus cruralis	1
Cincloramphus mathewsi	1
Cinclosoma marginatum	1
Circus assimilis	1
Colluricincla harmonica	5

Coracina novaehollandiae	17
Coracina novaehollandiae subsp. subpallida	1
Corvus bennetti	4
Corvus orru	47
Coturnix ypsilophora	2
Cracticus nigrogularis	25
Cracticus tibicen	10
Cuculus pallidus	1
Cygnus atratus	12
Dacelo leachii	13
Dendrocygna eytoni	1
Dromaius novaehollandiae	3
Egretta garzetta	1
Egretta novaehollandiae	7
Elanus axillaris	2
Elseyornis melanops	5
Emblema pictum	14
Eolophus roseicapillus	7
Ephippiorhynchus asiaticus	6
Epthianura tricolor	1
Eremiornis carteri	7
Eurostopodus argus	2
Falco berigora	9
Falco cenchroides	10
Falco hypoleucos	1
Falco longipennis	2
Fulica atra	2
Gavicalis virescens	1
Geopelia cuneata	7
Geopelia striata	1
Geophaps plumifera	31
Gerygone fusca	2
Grallina cyanoleuca	28
Haliastur sphenurus	25
Hieraaetus morphnoides	1
Himantopus himantopus	1
Hirundo ariel	5
Lalage tricolor	1
Lichenostomus keartlandi	15
Lichenostomus penicillatus	11
Lichenostomus virescens	6

Lichmera indistincta	11
Lichmera indistincta subsp. indistincta	2
Malurus lamberti	11
Malurus leucopterus	3
Malurus leucopterus subsp. leuconotus	2
Manorina flavigula	32
Melanodryas cucullata	2
Melithreptus gularis subsp. laetior	1
Melopsittacus undulatus	4
Merops ornatus	28
Microcarbo melanoleucos	9
Milvus migrans	15
Mirafra javanica	1
Neochmia ruficauda	1
Ninox novaeseelandiae	2
Nymphicus hollandicus	7
Ocyphaps lophotes	10
Oreoica gutturalis	2
Pachycephala rufiventris	5
Pardalotus rubricatus	10
Pardalotus striatus	2
Pelecanus conspicillatus	3
Petrochelidon ariel	2
Petrochelidon nigricans	5
Petroica cucullata	2
Phalacrocorax melanoleucos	2
Phalacrocorax melanoleucos subsp. melanoleucos	1
Phalacrocorax sulcirostris	9
Phaps chalcoptera	1
Platalea regia	1
Poliocephalus poliocephalus	3
Pomatostomus superciliosus	1
Pomatostomus temporalis	3
Pomatostomus temporalis subsp. rubeculus	2
Ptilonorhynchus guttatus	1
Ptilotula keartlandi	3
Ptilotula penicillatus	2
Rhipidura leucophrys	44
Smicrornis brevirostris	21
Sterna nilotica subsp. nilotica	1
Tachybaptus novaehollandiae	3

Tachybaptus novaehollandiae subsp. novaehollandiae	1
Taeniopygia guttata	17
Threskiornis molucca	1
Threskiornis spinicollis	4
Todiramphus pyrrhopygia	2
Todiramphus sanctus	4
Tringa glareola	1
Turnix velox	1
INVERT	**843**
Acariformes sp.	42
Achnanthes exilis K??ï¿½tz.	1
Alona clathrata	1
Aname mellosa	1
Aname sp.7	2
Aname sp.9	1
Anisops canaliculatus	1
Anisops hackeri	2
Anopheles annulipes s.l.	1
ant sp.	75
Antichiropus sp.	4
Antiporus bakewelli	2
Arcella sp. P1	1
Areacandona 'iuno' (PSS)	1
Argiocnemis rubescens	1
Arrenurus (Arrenurus) ensifer	1
Arrenurus (Micruracarus) purpureus	1
Arrenurus sp. 9 (nr pseudaffinis) (PSW)	1
Australiobates queenslandensis	1
Australutica sp.1	1
Austroagrion pindrina/Ischnura heterosticta	1
Austropeplea lessoni	2
Axonopsella nr eremita (PSW)	1
Batrachomatus wingi	1
Bdelloidea sp. 2:2	1
beetle sp.	56
Berosus dallasae	2
Berosus nr josephenae (was Pilbara sp 3) (PSW)	1
Bidessodes denticulatus	2
Bolboleaus trifoveicollis	1
Boreosaragus sp1	1
Brachionus angularis	1

Brachionus calyciflorus	1
Brachionus dichotomus	1
Brachionus falcatus	1
Brachionus leydigii	1
Buddelundia sp. B37 (= sp. nov.)	2
Buddelundia sp. nov. 11 (= sp. B36)	4
Buddelundia sp. nov. 13 (= sp. B34)	5
Buddelundia sp. nov. 14 (= sp. B33)	51
Caloneis silicula (Ehr.) Cl.	1
Camponotus capito Mayr	2
Camponotus discors Forel	2
Camponotus evae complex sp. JDM 1158	1
Camponotus fieldeae Forel	2
Camponotus novaehollandiae Mayr	1
Carenum nr. subcyaneum sp2	1
Carenum pulchrum	3
Carenum sp6	1
Carenum venustum	1
Cephalodella gibba	1
Chaoborus punctilliger	1
Chydorus eurynotus	1
Clivina sp6 (procera-gr. -nr. brevisterna)	1
Cloeon sp. P1 (PSW)	1
Clynotis sp. 1	2
Clynotis sp. 2	1
Coelopynia pruinosa	2
Conopterum sp3	1
Crematogaster queenslandica gp. sp. JDM 1132	1
Cryptoerithrus sp.4	1
Cryptoerithrus sp.8	1
Culex sp.	1
Cylotella stelligera Cl. & Grun.	1
Cypretta sp PSW074	1
Dero nivea	1
Diacyclops humphreysi humphreysi	1
Diacyclops sobeprolatus	1
Diatoma vulgaris Bory	1
Dicrotendipes jobetus	2
Dicrotendipes P5 (=balciunasi?) (PSW)	1
Diplonychus eques	2
Ecnomus pilbarensis	2

Ecnomus sp. AV16 (PSW)	1
Enithares sp.	1
Eodiaptomus lumholtzi	1
Eosphora najas	1
Epithemia smithii Carruthers	2
Euasteron sp.1	1
Euchlanis dilatata	1
Eucyclops australiensis	1
Euoniticellus intermedius	1
Eurysticta coolawanyah	1
Filinia cf. pejleri (SAP)	1
Flosculariidae sp.	1
fly sp.	45
Fragilaria ulna (Nitz.) Lange Bertalot	2
Gamasomorpha sp.1	1
Gamasomorpha sp.2	1
Gamasomorpha sp.4	1
Gnathaphanus aridus	1
Gomphonema affine K??ï¿½tz.	1
Gonocephalum sp1	1
Grayenulla sp. 12	2
Grayenulla sp. 13	1
Grayenulla sp. 15	1
Grayenulla sp. 4	1
Grayenulla sp. 7	1
Grayenulla sp. 9	1
Gretacarus sp.	1
Gyraulus hesperus	2
Gyrosigma fonticolum Hust. (in Foged)	1
Habronestes sp.2	1
Habronestes sp.7	1
Haliplus pinderi	2
Hellyethira sp.	1
Hemicordulia tau	1
Hemicypris sp. BOS064	1
Hemiptera sp. B01	1
Hogna crispipes	1
Hogna sp.3	1
Holoplatys sp. 7	1
Hydra sp.	1
Hydraena barbipes	2

Hydraena brittoni	1
Hydraena cf. rudallensis (PSW)	1
Hydrochus burdekinensis	1
Hydrochus eurypleuron	2
Hydrochus group 3 "black" (PSW)	2
Hydrochus obscuroaeneus	1
Hydrochus sp. P1 (PSW)	1
Hydrodroma sp.	1
Hydroglyphus grammopterus (=trilineatus)	1
Hydroglyphus leai	1
Hydroglyphus orthogrammus	2
Hydrovatus sp.	1
Hypaulax ?orcus	2
Hypharpax sp2	1
Hyphydrus lyratus	2
Ictinogomphus australis	1
Ilyodromus dikrus	1
Ilyodromus sp. PB	1
Indohya 'pse002'	2
Indolpium sp.	2
Indolpium sp. (ex B11)	1
Iridomyrmex anceps (Roger)	2
Iridomyrmex chasei concolor Forel	1
Iridomyrmex hartmeyeri gp sp. JDM 327	2
Iridomyrmex sanguineus Forel	1
Iridomyrmex sp. JDM 133	1
Iridomyrmex sp. JDM 137 (incl. '315')	3
Iridomyrmex sp. JDM 319	1
Ischnura aurora aurora	1
Isocypris williamsi (ex Ilyodromus sp. 413)	1
Keratella procurva	1
Kiefferulus intertinctus	1
Lagriinae sp1	1
Lampona sp.3	1
Lamponina scutata	1
Lanatomyia sp.	1
Larsia albiceps	2
Lecane bulla	2
Lecane unguitata	1
Lepadella ovalis	1
Lepidiota squamulata	1

Leptocerus atsou	1
Leptocerus sp. AV2 (atsou?) (PSW)	1
Leydigia australis	1
Limnesia sp. 4 (PSW)	2
Limnochares australica	1
Limnogonus sp.	1
Liparochrus carnei	1
Lychas annulatus	1
Lychas bituberculatus	16
Lychas 'hairy tail group'	2
Lychas 'multipunctatus' ms	2
Lychas sp. 2	1
Lychas sp. 3	1
Lychas sp. 4	2
Lychas sp. 6	1
Lycosa gibsoni	1
Macrochaetus altamirai	1
Masasteron sp.1	1
Masasteron tealei	1
Masogloia smithii var. lacustris grun.	1
Mastogloia elliptica (Ag.) Cl.	2
Mastogloia elliptica var. danseii (thwaites) grun.	1
Mastogloia smithii Thwaites	1
Meedo houstoni	2
Melophorus bagoti Lubbock	2
Melophorus ludius sulla Forel	2
Mesocyclops darwini	2
Mesovelia hungerfordi	1
Microcyclops varicans	1
Micronecta adelaidae (ex P4)	1
Micronecta micra	1
Microvelia (Austromicrovelia) peramoena	1
Minasteron minusculum	1
Missulena sp.3	1
Monocentrum ?convexum	1
Monomorium antipodum Forel	1
Monomorium disetigerum Heterick	2
Monomorium laeve Mayr	2
Monomorium rothsteini Forel	1
Monomorium sordidum Forel	1
Monomorium 'sydneyense' (yellow form)	2

Myrmopopaea sp.1	1
Myrmopopaea sp.18	1
Myrmopopaea sp.19	1
Navicula bryophila Petersen	1
Navicula cryptocephala K??ï¿½tz.	1
Navicula cryptonella Lange-Bertalot	1
Navicula erifuga Lange-Bertalot	1
Navicula ilopangoensis Hust.	1
Navicula molestiformis Hust.	1
Navicula rhynchocephala K??ï¿½tz.	1
Navicula subrhynchocephala Hust.	1
Navicula veneta K??ï¿½tz.	1
Necterosoma regulare	2
Nematoda sp. 13 (PSS)	1
Neostorena sp.3	1
Nitzschia acicularis (K??ï¿½tz.) W. Sm.	1
Nitzschia agnita Hust.	1
Nitzschia amphibia Grun.	2
Nitzschia compressa var. elongata (grun.) lange-bertalot	1
Nitzschia frustulum (K??ï¿½tz.) Grun.	2
Nitzschia gracilis Hantz.	1
Nitzschia lanceolata W. Sm.	1
Nitzschia levidensis var. victoriae (grun.) cholnoky > cholnoky nitzschia levidensis v. victo	1
Nitzschia linearis (Ag.) W. Sm.	1
Nitzschia microcephala Grun.	1
Nitzschia palea (Kï¿½ï¿½ï¿½tz.) W. Sm.	1
Nitzschia perminuta (Grun.) M. Peragallo	1
Nitzschia reversa W. Sm.	1
Nitzschia sigma (K??ï¿½tz.) W. Sm.	1
No invertebrates	3
Nocticola sp.	12
Nocticola sp. B04	1
Nocticola sp. B4	1
Nocticola sp. B4/B5 (imm or female)	1
Nomindra sp.2	1
Nototarus sp. nov. 48 (MB)	1
Oecetis sp. Pilbara 5 (PSW)	2
Onthophagus consentaneus	2
Onthophagus gazella	1
Onthophagus minusculus	1

Onthophagus mjobergi	3
Onychohydrus sp.	1
Opisthopsis haddoni rufoniger Forel	1
Opisthopsis sp. JDM 1162	1
Oribatida group 5 (PSS)	1
Oxus orientalis	1
Paracladopelma sp. P1 (nr M1) (PSW)	1
Paracyclops chiltoni	1
Paracymus pygmaeus	1
Paracymus spenceri	1
Paramerina sp. D (PSW)	2
Paranacaena horni	1
Paraplatoides sp. 5	1
Paratrechina braueri glabrior (Forel)	1
Paratrechina minutula (Forel)	1
Pellenes bitaeniata	2
Phaeochrous australicus	2
Pheidole sp. JDM 280	1
Phorticosomus gularis	1
Phorticosomus sp1	1
Phorticosomus sp3	1
Pilbarascutigera incola	3
Pinnularia interurupta W. Sm.	1
Piona cumberlandensis	1
planthopper sp.	1
Plationus patulus	1
Pleurosigma elongatum W. Sm.	1
Polyarthra dolichoptera	1
Polypedilum leei	1
Polypedilum nubifer	1
Procladius paludicola	2
Prodidomus sp.2	1
Pseudagrion microcephalum	1
Pseudocloeon hypodelum (ex Baetid genus3 WA sp. 2) (PSW)	1
Ptygura sp.	1
Pyralidae Pilbara sp 2 (PSW)	2
Ranatra diminuta	1
Recifella sp.	1
Regimbartia attenuata	1
Rhopalodia gibba (Ehr.) O. Mull.)	1
Rhytidoponera crassinoda (Forel)	2

Rhytidoponera taurus Forel	2
Rhytidoponera violacea (Forel)	2
Scirtidae sp.	1
Sellephora pupula (K??ï¿½tz) Mereschkowsky	1
Sobas ?minor	3
spider sp.	79
Spinasteron barlee	1
springtail sp.	65
Sternopriscus pilbarensis	2
Stratiomyidae sp.	1
Supunna sp.1	2
Synchaeta oblonga	1
Synothele sp.5	1
Tabanidae sp.	1
Tapinoma sp. JDM 78	2
Tasmanocoenis arcuata	2
Tasmanocoenis sp. E (PSW)	1
Testudinella patina	2
Thorictosoma sp5	1
Tiporus lachlani	1
Tiporus tambreyi	2
Triaenodes sp. P1=P2 (PSW)	1
Trichocerca pusilla	2
Trichocerca similis	1
Trichocerca sp.	1
Trichocyclus gnalooma	1
Tropocyclops confinis (ex Paracyclops sp. 6)	1
Tubificidae stygo type 4	1
Unidentati genus 5 sp. 1	2
Unidentati genus 9 sp. 1	1
Urodacus hoplurus	1
Urodacus sp. 4	1
Venator yalkara	1
Vestalenula marmonieri	2
white ant sp.	9
Wydundra kennedy	1
Yilgarnia sp.2	1
Zyxomma elgneri	1
MAMMAL	**450**
Bos taurus	10
Camelus dromedarius	1

Canis lupus subsp. familiaris	3
Dasycercus blythi	13
Dasykaluta rosamondae	1
Dasyurus hallucatus	21
Equus asinus	4
Felis catus	11
Macroderma gigas	8
Macropus robustus	20
Macropus robustus subsp. erubescens	10
Macrotis lagotis	67
Mus musculus	2
Ningaui timealeyi	20
Osphranter robustus	7
Petrogale rothschildi	21
Planigale ingrami	3
Planigale maculata	1
Planigale sp.	1
Planigale Sp.1 (WAM)	10
Pseudantechinus woolleyae	2
Pseudomys chapmani	1
Pseudomys delicatulus	2
Pseudomys desertor	7
Pseudomys hermannsburgensis	25
Rhinonicteris aurantia	1
Scotorepens greyii	1
Tachyglossus aculeatus	3
Taphozous georgianus	30
Vespadelus finlaysoni	116
Zyzomys argurus	28
REPTILE	**411**
Acanthophis wellsi	2
Amphibolurus longirostris	3
Antaresia stimsoni subsp. stimsoni	1
Aspidites melanocephalus	1
Carlia munda	7
Crenadactylus ocellatus subsp. ocellatus	1
Crenadactylus sp.	3
Ctenophorus caudicinctus	8
Ctenophorus caudicinctus subsp. caudicinctus	25
Ctenophorus isolepis subsp. isolepis	14
Ctenophorus nuchalis	1

Ctenotus duricola	5
Ctenotus duricola/piankai	2
Ctenotus grandis subsp. titan	2
Ctenotus helenae	14
Ctenotus nigrilineatus	26
Ctenotus pantherinus	1
Ctenotus pantherinus subsp. ocellifer	14
Ctenotus saxatilis	37
Cyclodomorphus melanops	1
Cyclodomorphus melanops subsp. melanops	8
Delma elegans	2
Delma nasuta	4
Delma pax	7
Diplodactylus conspicillatus	8
Diplodactylus pulcher	1
Diplodactylus savagei	5
Diporiphora valens	4
Egernia cygnitos	1
Egernia formosa	1
Furina ornata	3
Gehyra 'fenestra'	2
Gehyra pilbara	2
Gehyra punctata	5
Gehyra purpurascens	1
Gehyra variegata	12
Glaphyromorphus sp.	1
Heteronotia binoei	43
Heteronotia spelea	3
Lerista jacksoni	8
Lerista sp.	1
Lerista verhmens	2
Lialis burtonis	1
Liasis olivaceus subsp. barroni	1
Lucasium stenodactylum	10
Lucasium wombeyi	6
Lucasium 'woodwardi'	2
Menetia surda	3
Menetia surda subsp. surda	14
Morethia ruficauda	10
Morethia ruficauda subsp. exquisita	6
Notoscincus ornatus	2

Notoscincus ornatus subsp. ornatus	2
Proablepharus reginae	1
Pseudechis australis	2
Pseudonaja mengdeni	2
Pseudonaja modesta	2
Pseudonaja nuchalis	1
Ramphotyphlops ammodytes	6
Ramphotyphlops grypus	7
Ramphotyphlops pilbarensis	4
Rhynchoedura ornata	9
Strophurus elderi	3
Suta punctata	1
Tiliqua multifasciata	2
Varanus acanthurus	5
Varanus brevicauda	1
Varanus caudolineatus	1
Varanus eremius	1
Varanus giganteus	3
Varanus panoptes	1
Varanus pilbarensis	8
Varanus tristis	2
Plantae	**587**
ALGA	**1**
Caulerpa chemnitzia	1
DICOT	**538**
Abutilon lepidum	1
Abutilon sp. Dioicum (A.A. Mitchell PRP 1618)	2
Abutilon sp. Pilbara (W.R. Barker 2025)	1
Acacia acradenia	2
Acacia acradenia x bivenosa	1
Acacia adoxa var. adoxa	1
Acacia adoxa var. adoxa x spondylophylla	1
Acacia ampliceps	3
Acacia ancistrocarpa	1
Acacia aphanoclada	29
Acacia aphanoclada x pyrifolia var. pyrifolia	3
Acacia arrecta	1
Acacia bivenosa	7
Acacia colei	1
Acacia colei var. colei	1
Acacia coriacea subsp. pendens	4

Acacia cowleana	1
Acacia cyperophylla var. omearana	17
Acacia eriopoda	6
Acacia eriopoda x trachycarpa	1
Acacia eriopoda x tumida var. pilbarensis	1
Acacia fecunda	7
Acacia holosericea	3
Acacia inaequilatera	3
Acacia maitlandii	1
Acacia monticola	1
Acacia monticola x trachycarpa	1
Acacia orthocarpa	7
Acacia orthocarpa (pendulous variant)	1
Acacia pruinocarpa	2
Acacia pyrifolia var. morrisonii	2
Acacia pyrifolia var. pyrifolia	4
Acacia sclerosperma subsp. sclerosperma	3
Acacia sibirica	1
Acacia sp. Ripon Hills (B.R. Maslin 8460)	1
Acacia spondylophylla	3
Acacia synchronicia	1
Acacia trachycarpa	9
Acacia trachycarpa x tumida var. pilbarensis	1
Acacia tumida var. pilbarensis	2
Acacia victoriae	1
Aerva javanica	1
Alternanthera denticulata	1
Alternanthera nodiflora	1
Alysicarpus muelleri	2
Amaranthus undulatus	1
Ammannia baccifera	4
Ammannia multiflora	1
Amyema preissii	1
Amyema sanguinea var. sanguinea	1
Argemone ochroleuca	1
Argemone ochroleuca subsp. ochroleuca	1
Atalaya hemiglauca	3
Atriplex codonocarpa	3
Atriplex spinulosa	11
Bergia ammannioides	1
Bergia trimera	1

Bidens bipinnata	1
Bonamia media	1
Bonamia pannosa	2
Calandrinia ptychosperma	1
Calandrinia tepperiana	3
Calocephalus beardii	1
Calytrix carinata	1
Cassytha capillaris	1
Centaurium clementii	1
Centipeda minima	2
Cleome viscosa	1
Corchorus lasiocarpus subsp. lasiocarpus	1
Corchorus parviflorus	3
Corchorus walcottii	1
Corymbia candida subsp. dipsodes	2
Corymbia hamersleyana	2
Corymbia opaca	1
Crotalaria cunninghamii	2
Crotalaria medicaginea	1
Crotalaria medicaginea var. neglecta	1
Cucumis variabilis	2
Cullen lachnostachys	2
Cullen leucanthum	3
Cullen pustulatum	1
Cullen stipulaceum	2
Dampiera candicans	1
Dicladanthera forrestii	1
Dodonaea coriacea	1
Dysphania plantaginella	1
Dysphania rhadinostachya subsp. inflata	1
Dysphania rhadinostachya subsp. rhadinostachya	1
Ehretia saligna	2
Ehretia saligna var. saligna	1
Eremophila lanceolata	2
Eremophila latrobei subsp. glabra	1
Eremophila latrobei subsp. latrobei	1
Eremophila longifolia	1
Erythrina vespertilio	1
Eucalyptus camaldulensis subsp. refulgens	1
Eucalyptus gamophylla	1
Eucalyptus leucophloia subsp. leucophloia	3

Eucalyptus leucophloia x rowleyi	1
Eucalyptus rowleyi	1
Euphorbia australis var. subtomentosa	3
Euphorbia boophthona	1
Euphorbia careyi	1
Euphorbia tannensis subsp. eremophila	3
Evolvulus alsinoides var. decumbens	1
Evolvulus alsinoides var. villosicalyx	2
Flaveria trinervia	4
Flueggea virosa subsp. melanthesoides	5
Genus C sp.11	1
Genus E sp.1	1
Genus E sp.3	1
Gomphrena canescens subsp. canescens	2
Gomphrena cunninghamii	2
Gomphrena leptoclada	1
Gomphrena leptoclada subsp. leptoclada	1
Gonocarpus sp.	1
Goodenia cusackiana	1
Goodenia lamprosperma	4
Goodenia microptera	2
Goodenia stobbsiana	4
Gossypium australe	3
Gossypium robinsonii	3
Grevillea pyramidalis	2
Grevillea pyramidalis subsp. leucadendron	4
Grevillea wickhamii	1
Grevillea wickhamii subsp. hispidula	2
Hakea lorea subsp. lorea	2
Haloragis gossei	3
Haloragis gossei var. gossei	1
Haloragis trigonocarpa	1
Helichrysum luteoalbum	1
Heliotropium crispatum	1
Heliotropium heteranthum	2
Heliotropium pachyphyllum	1
Heliotropium tenuifolium	2
Hibiscus burtonii	1
Hibiscus coatesii	2
Hibiscus leptocladus	1
Hibiscus sturtii	1

Hibiscus sturtii var. campylochlamys	1
Indigofera colutea	4
Indigofera ixocarpa	4
Indigofera monophylla	3
Indigofera rugosa	2
Indigofera trita	1
Isotropis atropurpurea	3
Ixiochlamys cuneifolia	4
Lepidium catapycnon	2
Lepidium pedicellosum	1
Lepidium pholidogynum	2
Lobelia arnhemiaca	2
Lotus cruentus	1
Maireana carnosa	1
Maireana georgei	3
Maireana melanocoma	2
Maireana triptera	1
Marsdenia angustata	1
Melaleuca eleuterostachya	2
Melaleuca glomerata	3
Melaleuca lasiandra	1
Newcastelia hexarrhena	1
Notoleptopus decaisnei	1
Oldenlandia crouchiana	3
Peplidium sp. E Evol. Fl. Fauna Arid Aust. (A.S. Weston 12768)	1
Peripleura obovata	1
Petalostylis cassioides	1
Phyllanthus erwinii	1
Phyllanthus exilis	1
Phyllanthus maderaspatensis	1
Pluchea dentex	4
Pluchea ferdinandi-muelleri	2
Pluchea rubelliflora	5
Pluchea tetranthera	1
Podolepis capillaris	1
Polycarpaea corymbosa	3
Polycarpaea corymbosa var. corymbosa	1
Polycarpaea holtzei	3
Polycarpaea longiflora	2
Polygala glaucifolia	2
Polymeria calycina	1

Pseudognaphalium luteoalbum	1
Pterocaulon sphacelatum	1
Pterocaulon sphaeranthoides	3
Ptilotus astrolasius	2
Ptilotus auriculifolius	4
Ptilotus carinatus	1
Ptilotus clementii	1
Ptilotus exaltatus	1
Ptilotus fusiformis	3
Ptilotus incanus	2
Ptilotus macrocephalus	1
Ptilotus mollis	1
Ptilotus nobilis	2
Ptilotus obovatus	1
Ptilotus wilsonii	1
Rhodanthe margarethae	2
Rhynchosia australis	1
Rhynchosia minima	2
Salsola australis	1
Santalum lanceolatum	1
Scaevola browniana subsp. browniana	1
Schenkia australis	1
Sclerolaena burbidgeae	1
Sclerolaena cornishiana	1
Sclerolaena costata	3
Sclerolaena cuneata	1
Sclerolaena densiflora	4
Sclerolaena hostilis	4
Senna artemisioides subsp. helmsii	1
Senna artemisioides subsp. oligophylla	1
Senna glutinosa subsp. glutinosa	2
Senna glutinosa subsp. pruinosa	1
Senna glutinosa subsp. x luerssenii	1
Senna notabilis	1
Senna sp.	1
Senna symonii	5
Sesbania cannabina	1
Sida echinocarpa	1
Solanum diversiflorum	1
Solanum horridum	5
Solanum lasiophyllum	3

Solanum phlomoides	2
Solanum sp. Mosquito Creek (A.A. Mitchell et al. AAM 10795)	8
Sonchus oleraceus	1
Stemodia grossa	4
Stemodia sp.	2
Stemodia viscosa	2
Streptoglossa decurrens	1
Streptoglossa odora	1
Stylidium fluminense	2
Swainsona decurrens	6
Swainsona formosa	2
Swainsona kingii	1
Swainsona stenodonta	3
Synaptantha tillaeacea var. tillaeacea	1
Tephrosia densa	3
Tephrosia rosea var. clementii	3
Tephrosia sp.	1
Tephrosia sp. Bungaroo Creek (M.E. Trudgen 11601)	4
Tephrosia sp. Fortescue (A.A. Mitchell 606)	1
Tephrosia virens	3
Trachymene oleracea	1
Trachymene oleracea subsp. oleracea	4
Trianthema cusackianum	2
Trianthema sp.	1
Trianthema triquetrum	1
Tribulus hirsutus	2
Tribulus platypterus	2
Tribulus suberosus	2
Trichodesma zeylanicum	1
Trichodesma zeylanicum var. zeylanicum	2
Trigastrotheca molluginea	4
Vachellia farnesiana	1
Wahlenbergia queenslandica	1
Wahlenbergia tumidifructa	2
FERN	**1**
Marsilea hirsuta	1
MONOCOT	**47**
Aristida contorta	1
Aristida holathera	2
Bulbostylis barbata	2
Cenchrus ciliaris	1

Cenchrus setiger	1
Centrolepis eremica	1
Cymbopogon ambiguus	2
Cyperus difformis	1
Cyperus iria	1
Cyperus squarrosus	2
Cyperus vaginatus	2
Echinochloa colona	1
Enneapogon caerulescens	3
Enneapogon polyphyllus	2
Eragrostis amabilis	1
Eragrostis cumingii	1
Eragrostis sp.	1
Eragrostis tenellula	2
Eriachne aristidea	1
Fimbristylis dichotoma	2
Fimbristylis simulans	1
Leptochloa fusca subsp. fusca	1
Paraneurachne muelleri	1
Paspalidium clementii	1
Schizachyrium fragile	1
Sporobolus australasicus	2
Triodia angusta	1
Triodia brizoides	1
Triodia epactia	3
Triodia pungens	1
Triodia wiseana	1
Tripogonella loliiformis	1
Xerochloa laniflora	1
Yakirra australiensis	1
Grand Total	**3070**

NatureMap Gascoyne Junction

Row Labels	COUNT
Animalia	**1068**
AMPHI	**28**
Cyclorana maini	1
Litoria rubella	3
Neobatrachus aquilonius	3
Neobatrachus pelobatoides	1
Neobatrachus sutor	4
Neobatrachus wilsmorei	5
Platyplectrum spenceri	10
Uperoleia russelli	1
BIRD	**650**
Acanthagenys rufogularis	3
Acanthiza uropygialis	1
Accipiter fasciatus	3
Actitis hypoleucos	3
Anas gracilis	10
Anas superciliosa	10
Anhinga novaehollandiae	9
Aquila audax	5
Ardea modesta	17
Ardea pacifica	4
Ardeotis australis	2
Artamus cinereus	1
Aythya australis	1
Barnardius zonarius	15
Burhinus grallarius	2
Cacatua roseicapilla	1
Cacatua sanguinea	27
Calyptorhynchus banksii	12
Chenonetta jubata	5
Cincloramphus mathewsi	5
Cinclosoma castaneothorax	1
Climacteris melanura	2
Colluricincla harmonica	2
Coracina novaehollandiae	10
Corvus bennetti	14
Corvus orru	6
Cracticus nigrogularis	14
Cracticus tibicen	13

Cracticus torquatus	1
Cygnus atratus	5
Dacelo leachii	19
Dendrocygna eytoni	4
Dromaius novaehollandiae	6
Egretta garzetta	2
Egretta novaehollandiae	10
Elseyornis melanops	16
Eolophus roseicapillus	19
Epthianura tricolor	1
Erythrogonys cinctus	2
Eurostopodus argus	1
Falco cenchroides	7
Fulica atra	3
Geopelia cuneata	5
Geopelia striata	11
Geophaps plumifera	4
Grallina cyanoleuca	29
Haliastur sphenurus	33
Hamirostra melanosternon	2
Hieraaetus morphnoides	3
Himantopus himantopus	2
Hirundo neoxena	9
Lichenostomus penicillatus	32
Lichenostomus virescens	2
Lichmera indistincta	1
Malacorhynchus membranaceus	1
Malurus lamberti	6
Malurus leucopterus	5
Malurus splendens	2
Manorina flavigula	24
Melopsittacus undulatus	9
Merops ornatus	13
Microcarbo melanoleucos	10
Mirafra javanica	1
Neochmia ruficauda	1
Ninox connivens	1
Ninox novaeseelandiae	2
Nycticorax caledonicus	3
Nymphicus hollandicus	9
Ocyphaps lophotes	16

Pachycephala rufiventris	3
Pardalotus rubricatus	3
Pardalotus striatus	3
Pelecanus conspicillatus	8
Petrochelidon nigricans	14
Petroica goodenovii	4
Phalacrocorax carbo	2
Phalacrocorax sulcirostris	11
Phalacrocorax varius	1
Platalea flavipes	9
Platalea regia	2
Plegadis falcinellus	1
Pomatostomus superciliosus	1
Pomatostomus temporalis	1
Psophodes occidentalis	2
Purnella albifrons	1
Pyrrholaemus brunneus	1
Rhipidura albiscapa	1
Rhipidura leucophrys	13
Smicrornis brevirostris	1
Tachybaptus novaehollandiae	1
Taeniopygia guttata	14
Threskiornis molucca	3
Threskiornis spinicollis	7
Todiramphus pyrrhopygius	2
Todiramphus sanctus	6
Tribonyx ventralis	3
Turnix velox	2
FISH	**2**
Mugil cephalus	1
Scleropages leichardti	1
INVERT	**152**
Ablabesmyia sp.	2
Agraptocorixa parvipunctata	1
Allodessus bistrigatus	2
Amblyomma triguttatum	1
Anax papuensis	1
Anisops sp.	1
Anopheles annulipes s.l.	1
Apocyclops dengizicus	1
Argiope protensa	2

Arrenurus (Arrenurus) balladoniensis	1
Asadipus woodleigh	19
Asplanchna sp. nov. (nr. sieboldi) (CB)	1
Australospilus elongatus	1
Austroagrion cyane	1
Austrolestes aridus	1
Bennelongia barangaroo lineage	1
Bennelongia triangulata (ex sp 414 /460 (CB)	1
Bigenditia zuytdorp	1
Boeckella triarticulata	2
Brachionus angularis	1
Branchinella occidentalis	1
Branchinella proboscida	1
Calamoecia canberra	1
Calamoecia halsei	1
Ceratopogonidae sp D5 (CB)	1
Ceratopogonidae sp.	1
Ceriodaphnia cornuta	1
Cladotanytarsus sp CB02 (CB)	1
Cloeon sp.	2
Coelopynia pruinosa	1
Cryptochironomus griseidorsum	2
Cryptoerithus occultus	2
Culicoides sp.	2
Cyzicus sp. A (CB)	1
Dicrotendipes sp CB13 (CB)	1
Ephydridae sp D (CB)	1
Eretes australis	1
Euchlanis dilatata	2
Eylais sp.	1
Harnischia sp.	1
Hemicordulia tau	1
Heterocypris tatei	1
Hexarthra brandorffi	1
Hexarthra fennica	1
Hoggicosa snelli	2
Hydrachna approximata	1
Hydrochus sp.	1
Ilyocypris australiensis	1
Keratella procurva	1
Keratella sp. nov. (aff. australis grp) (CB)	2

Lampona quinqueplagiata	4
Larsia albiceps	1
Latrodectus hasseltii	1
Lecane luna	1
Masasteron complector	4
Mesocyclops sp.	1
Micronecta sp.	1
Moina cf. australiensis (CB)	1
Moina micrura s.l.	1
Necterosoma regulare	1
Necterosoma sp.	1
Nematoda sp.	1
Nicodamus mainae	3
Nomindra leeuweni	5
Notsodipus bidgemia	1
Oecetis sp AV28 (CB)	1
Orthetrum caledonicum	1
Pediana tenuis	1
Polyarthra dolichoptera	1
Procladius sp.	2
Sarscypridopsis aculeata	2
Sternopriscus multimaculatus	1
Storena sinuosa	1
Strandesia cf. phoenix (CB)	1
Tanytarsus sp CB03 (nr fuscithorax-semibarbitarsus) (CB)	2
Tanytarsus sp CB16 (CB)	1
Tasmanocoenis sp. ARR J/M (CB)	1
Testudinella patina	1
Trichocyclus nigropunctatus	11
Triplectides australis	1
Urodacus hartmeyeri	5
Urodacus hoplurus	1
Urodacus novaehollandiae	1
Wesmaldra bidgemia	6
Wesmaldra waldockae	5
MAMMAL	**12**
Chaerephon jobensis	3
Chalinolobus gouldii	1
Mormopterus beccarii	1
Mus musculus	1
Notomys alexis	1

Pseudomys hermannsburgensis	2
Scotorepens greyii	3
REPTILE	**224**
Antaresia stimsoni subsp. stimsoni	1
Ctenophorus maculatus subsp. badius	2
Ctenophorus maculatus subsp. maculatus	1
Ctenophorus nuchalis	3
Ctenophorus reticulatus	14
Ctenophorus rubens	6
Ctenotus schomburgkii	48
Ctenotus severus	3
Delma tincta	3
Demansia psammophis subsp. cupreiceps	1
Diplodactylus conspicillatus	3
Gehyra variegata	11
Heteronotia binoei	4
Lerista gascoynensis	30
Lerista macropisthopus subsp. fusciceps	4
Lerista micra	1
Lerista occulta	1
Lerista rolfei	39
Lerista uniduo	13
Lucasium squarrosum	7
Lucasium stenodactylum	1
Menetia greyii	7
Nephrurus levis subsp. occidentalis	2
Notoscincus ornatus subsp. ornatus	6
Pseudonaja mengdeni	3
Pseudonaja modesta	1
Ramphotyphlops grypus	1
Ramphotyphlops hamatus	1
Rhynchoedura ornata	2
Simoselaps bertholdi	1
Strophurus strophurus	1
Suta fasciata	2
Varanus eremius	1
Plantae	**426**
DICOT	**341**
Abutilon geranioides	1
Abutilon oxycarpum subsp. Prostrate (A.A. Mitchell PRP 1266)	1
Abutilon sp. Pritzelianum (S. van Leeuwen 5095)	1

Acacia anastema	1
Acacia coriacea subsp. pendens	2
Acacia cuspidifolia	3
Acacia cuthbertsonii (Variant)	1
Acacia cuthbertsonii subsp. cuthbertsonii	2
Acacia cuthbertsonii subsp. linearis	3
Acacia fuscaneura	2
Acacia kempeana	1
Acacia ligulata	1
Acacia pteraneura	1
Acacia sclerosperma subsp. sclerosperma	5
Acacia subtessarogona	1
Acacia synchronicia	1
Acacia tetragonophylla	4
Acacia victoriae	1
Adriana tomentosa var. tomentosa	1
Alyogyne pinoniana	3
Amyema gibberula var. tatei	1
Amyema preissii	1
Angianthus milnei	2
Argemone ochroleuca	1
Atriplex amnicola	3
Atriplex codonocarpa	1
Atriplex holocarpa	2
Atriplex lindleyi subsp. inflata	1
Atriplex semilunaris	2
Bergia auriculata	1
Boerhavia gardneri	1
Calandrinia polyandra	1
Calandrinia sp. long fruit (GJK & NG 1495)	2
Calocephalus francisii	3
Calocephalus knappii	2
Calocephalus multiflorus	2
Calotis hispidula	1
Calytrix truncatifolia	3
Cassia helmsii	2
Cassia sp. indet	1
Cassia sturtii	2
Centipeda minima	1
Centipeda minima subsp. macrocephala	1
Centipeda thespidioides	1

Chenopodium gaudichaudianum	2
Chorizema racemosum	2
Commicarpus australis	2
Corchorus crozophorifolius	4
Corchorus walcottii	2
Corymbia lenziana	1
Cressa australis	1
Crotalaria cunninghamii	2
Cullen cinereum	1
Cullen lachnostachys	1
Cullen leucanthum	2
Dysphania platycarpa	1
Enchylaena tomentosa var. tomentosa	1
Eremophila cuneifolia	2
Eremophila fraseri subsp. fraseri	2
Eremophila latrobei	1
Eremophila mackinlayi subsp. spathulata	1
Eremophila maculata subsp. brevifolia	4
Eremophila maitlandii	2
Eremophila platycalyx subsp. Woolgorong (F. Hort et al. FH 3253)	1
Eremophila pterocarpa subsp. pterocarpa	2
Eremophila recurva	2
Eremophila sp. indet	1
Eremophila tietkensii	3
Eriochiton sclerolaenoides	1
Erodium cygnorum	2
Erymophyllum compactum	2
Erymophyllum ramosum subsp. ramosum	2
Erythrina vespertilio	2
Eucalyptus camaldulensis subsp. obtusa	1
Eucalyptus victrix	1
Euphorbia australis var. australis	1
Euphorbia australis var. subtomentosa	1
Euphorbia boophthona	6
Euphorbia drummondii	1
Euphorbia tannensis subsp. eremophila	1
Frankenia setosa	1
Glinus lotoides	3
Gnephosis brevifolia	4
Gnephosis gynotricha	1
Gnephosis tenuissima	1

Gomphrena sp.	1
Goodenia havilandii	1
Goodenia prostrata	1
Grevillea stenobotrya	5
Grevillea subterlineata	1
Hakea preissii	6
Halosarcia halocnemoides	1
Halosarcia indica	1
Haptotrichion conicum	4
Heliotropium ammophilum	1
Helipterum craspedioides	2
Indigofera linnaei	1
Indigofera trita	1
Ipomoea calobra	1
Ipomoea muelleri	2
Lepidium oxytrichum	2
Lepidium platypetalum	1
Lepidium rotundum	1
Lotus australis	1
Lotus cruentus	5
Lysimachia arvensis	1
Maireana aphylla	2
Maireana carnosa	1
Maireana georgei	1
Maireana lanosa	1
Maireana polypterygia	1
Maireana tomentosa subsp. tomentosa	1
Marsdenia australis	1
Melaleuca argentea	2
Melaleuca glomerata	1
Mirbelia spinosa	1
Muelleranthus trifoliolatus	2
Myriophyllum verrucosum	1
Nicotiana gascoynica	2
Nicotiana occidentalis	1
Osteocarpum acropterum	1
Osteocarpum acropterum var. acropterum	1
Petalostylis labicheoides	1
Pimelea microcephala subsp. microcephala	1
Pluchea rubelliflora	4
Podolepis aristata subsp. auriculata	1

Pogonolepis stricta	1
Psydrax rigidula	1
Ptilotus chamaecladus	1
Ptilotus exaltatus	3
Ptilotus gaudichaudii	3
Ptilotus helipteroides	3
Ptilotus latifolius	1
Ptilotus macrocephalus	1
Ptilotus obovatus	6
Ptilotus obovatus var. obovatus	1
Ptilotus polakii	1
Ptilotus polakii subsp. polakii	7
Ptilotus polystachyus	1
Ptilotus villosiflorus	2
Quoya loxocarpa	1
Quoya paniculata	4
Rhodanthe ascendens	3
Rhodanthe chlorocephala subsp. splendida	4
Rhodanthe floribunda	1
Rhodanthe humboldtiana	3
Rhynchosia minima	1
Roebuckiella cheilocarpa var. cheilocarpa	2
Roepera fruticulosa	1
Rumex vesicarius	2
Salsola australis	2
Scaevola spinescens	1
Schoenia ayersii	3
Sclerolaena bicuspis	1
Sclerolaena cuneata	1
Sclerolaena densiflora	2
Sclerolaena forrestiana	1
Sclerolaena tridens	5
Senecio conferruminatus	2
Senna artemisioides subsp. helmsii	2
Senna artemisioides subsp. oligophylla	1
Senna glutinosa subsp. chatelainiana	1
Senna sp. Meekatharra (E. Bailey 1-26)	1
Senna symonii	1
Sida aff. intricata (GJK & NG 1134)	1
Solanum gabrielae	1
Solanum lasiophyllum	2

Stenopetalum pedicellare	1
Stenopetalum sphaerocarpum	1
Streptoglossa cylindriceps	2
Streptoglossa decurrens	1
Streptoglossa liatroides	3
Surreya diandra	1
Swainsona forrestii	1
Swainsona gracilis	1
Swainsona kingii	2
Swainsona leeana	1
Swainsona pedunculata	1
Swainsona pterostylis	1
Swainsona sp.	1
Tecticornia disarticulata	2
Tecticornia halocnemoides	1
Tecticornia indica subsp. bidens	1
Tecticornia indica subsp. leiostachya	2
Tecticornia leptoclada subsp. leptoclada	1
Tephrosia gardneri	3
Tetragonia diptera	1
Teucrium racemosum	1
Trianthema oxycalyptrum var. oxycalyptrum	3
Trianthema triquetrum	1
Tribulus astrocarpus	3
Tribulus occidentalis	1
Trichodesma zeylanicum	1
Trigonella suavissima	1
Verticordia forrestii	5
FERN	**2**
Marsilea drummondii	2
MONOCOT	**83**
Aristida contorta	1
Aristida holathera	3
Asphodelus fistulosus	1
Bothriochloa ewartiana	1
Bulbostylis barbata	1
Cenchrus ciliaris	2
Chrysopogon fallax	1
Corynotheca sp.	1
Cynodon prostratus	1
Cyperus centralis	1

Cyperus rigidellus	2
Cyperus vaginatus	3
Dactyloctenium radulans	1
Dichanthium sericeum subsp. humilius	1
Diplachne fusca subsp. muelleri	1
Diplachne muelleri	1
Enteropogon acicularis	2
Enteropogon ramosus	2
Eragrostis basedowii	1
Eragrostis cumingii	1
Eragrostis dielsii	4
Eragrostis lanipes	3
Eragrostis leptocarpa	1
Eragrostis pergracilis	2
Eragrostis xerophila	4
Eriachne aristidea	5
Eriachne avenacea	1
Eriachne benthamii	3
Eriachne dominii	1
Eriachne flaccida	2
Eriachne pulchella	2
Eriachne pulchella subsp. dominii	1
Eriochloa pseudoacrotricha	1
Eulalia aurea	1
Leptochloa digitata	1
Panicum decompositum	1
Panicum effusum	4
Paractaenum novae-hollandiae	1
Paspalidium jubiflorum	1
Paspalidium reflexum	1
Setaria dielsii	1
Sporobolus actinocladus	5
Tragus australianus	3
Tripogon loliiformis	2
Triraphis mollis	4
Grand Total	**1494**

NatureMap Laverton

Row Labels	COUNT
Animalia	**863**
AMPHI	**79**
(blank)	79
Cyclorana maini	1
Cyclorana platycephala	56
Neobatrachus kunapalari	2
Neobatrachus sp.	10
Neobatrachus sutor	5
Neobatrachus wilsmorei	1
Platyplectrum spenceri	4
BIRD	**537**
MI	1
Plegadis falcinellus	1
P4	1
Polytelis alexandrae	1
(blank)	535
Acanthagenys rufogularis	24
Acanthiza apicalis	3
Acanthiza chrysorrhoa	9
Acanthiza robustirostris	5
Acanthiza uropygialis	9
Accipiter cirrocephalus	1
Aegotheles cristatus	1
Anas gracilis	5
Anas rhynchotis	1
Anas superciliosa	7
Aphelocephala leucopsis	4
Aphelocephala leucopsis subsp. leucopsis	6
Aquila audax	10
Ardea pacifica	1
Artamus cinereus	1
Artamus minor	1
Artamus personatus	1
Aythya australis	2
Barnardius zonarius	7
Biziura lobata	1
Cacatua roseicapilla subsp. assimilis	1
Cacomantis pallidus	6
Certhionyx variegatus	1

Charadrius ruficapillus	2
Chenonetta jubata	4
Cheramoeca leucosterna	1
Cheramoeca leucosternus	1
Cincloramphus cruralis	1
Cincloramphus mathewsi	2
Cinclosoma castaneothorax	2
Cinclosoma marginatum	1
Climacteris rufa	1
Columba livia	1
Coracina novaehollandiae	13
Corvus bennetti	17
Corvus orru	8
Cracticus nigrogularis	21
Cracticus tibicen	11
Cracticus torquatus	6
Cygnus atratus	5
Dromaius novaehollandiae	9
Egretta novaehollandiae	3
Elanus axillaris	2
Elseyornis melanops	4
Eolophus roseicapillus	10
Erythrogonys cinctus	1
Eurostopodus argus	1
Falco berigora	11
Falco cenchroides	19
Falco longipennis	1
Fulica atra	4
Gallus gallus	2
Gavicalis virescens	2
Grallina cyanoleuca	21
Haliastur sphenurus	3
Hirundo neoxena	14
Lichenostomus penicillatus	2
Lichenostomus plumulus	2
Lichenostomus virescens	29
Lichmera indistincta	11
Malacorhynchus membranaceus	2
Malurus leucopterus	3
Malurus splendens	7
Manorina flavigula	23

Melanodryas cucullata	3
Merops ornatus	1
Neophema splendida	1
Neopsephotus bourkii	1
Nymphicus hollandicus	1
Ocyphaps lophotes	20
Oreoica gutturalis	18
Pachycephala rufiventris	7
Pardalotus rubricatus	1
Pardalotus striatus	4
Pardalotus striatus subsp. westraliensis	1
Petrochelidon ariel	2
Petrochelidon nigricans	4
Petroica goodenovii	7
Phaps chalcoptera	3
Poliocephalus poliocephalus	2
Pomatostomus superciliosus	4
Psophodes occidentalis	1
Ptilonorhynchus guttatus	6
Purnella albifrons	8
Rhipidura leucophrys	22
Smicrornis brevirostris	2
Stictonetta naevosa	1
Strepera versicolor	1
Tachybaptus novaehollandiae	1
Tadorna tadornoides	3
Taeniopygia guttata	18
Threskiornis spinicollis	1
Todiramphus pyrrhopygia	1
INVERT	**54**
(blank)	54
Acariformes sp.	1
Artoriopsis expolita	1
Aurecocrypta lugubris	1
fly sp.	1
Hoggicosa castanea	1
Hogna kuyani	1
Lychas splendens	1
Lycosa australicola	1
Mainosa longipes	1
Missulena occatoria	2

Nephila edulis	1
Pediana tenuis	1
planthopper sp.	1
Scolopendra morsitans	7
Urodacus hoplurus	33
MAMMAL	**15**
EN	2
Myrmecobius fasciatus	2
VU	2
Lagostrophus fasciatus subsp. fasciatus	1
Macrotis lagotis	1
(blank)	11
Chalinolobus morio	1
Equus caballus	1
Macropus rufus	1
Nyctophilus geoffroyi	3
Sminthopsis crassicaudata	3
Vespadelus finlaysoni	2
REPTILE	**178**
(blank)	178
Brachyurophis fasciolatus subsp. fasciolatus	1
Cryptoblepharus plagiocephalus	1
Ctenophorus caudicinctus subsp. infans	2
Ctenophorus isolepis	1
Ctenophorus isolepis subsp. citrinus	1
Ctenophorus isolepis subsp. gularis	1
Ctenophorus nuchalis	12
Ctenophorus reticulatus	6
Ctenophorus scutulatus	7
Ctenotus atlas	1
Ctenotus hanloni	1
Ctenotus leonhardii	3
Ctenotus severus	3
Ctenotus uber	2
Diplodactylus pulcher	5
Egernia depressa	6
Eremiascincus richardsonii	2
Furina ornata	1
Gehyra variegata	27
Heteronotia binoei	12
Lerista desertorum	2

Lucasium damaeum	1
Menetia greyii	2
Moloch horridus	4
Morethia butleri	13
Parasuta monachus	2
Pogona minor subsp. minor	2
Pseudechis butleri	2
Pseudonaja mengdeni	2
Pseudonaja modesta	15
Ramphotyphlops hamatus	1
Ramphotyphlops waitii	2
Rhynchoedura ornata	2
Strophurus assimilis	1
Strophurus strophurus	1
Strophurus wellingtonae	4
Suta fasciata	3
Tiliqua occipitalis	1
Tympanocryptis cephalus	10
Underwoodisaurus milii	5
Varanus caudolineatus	6
Varanus eremius	1
Varanus tristis	1
Plantae	**535**
DICOT	**479**
P1	1
Vittadinia cervicularis var. oldfieldii	1
P3	13
Calytrix praecipua	2
Phyllanthus baeckeoides	11
(blank)	465
Acacia aneura	1
Acacia aptaneura	3
Acacia burkittii	3
Acacia craspedocarpa	5
Acacia helmsiana	1
Acacia melleodora	1
Acacia minyura	4
Acacia oswaldii	1
Acacia Plurinerves - Microneurae Phyllodes >8-nerved, terete (Misc. Eremaean)	1
Acacia prainii	1
Acacia pteraneura	6

Acacia quadrimarginea	1
Acacia ramulosa	1
Acacia ramulosa var. ramulosa	1
Acacia tetragonophylla	2
Aluta maisonneuvei subsp. auriculata	1
Alyogyne pinoniana	2
Amaranthus mitchellii var. cuspidifolius	1
Androcalva loxophylla	4
Angianthus tomentosus	1
Anthotroche pannosa	3
Asteridea athrixioides	1
Atriplex amnicola	1
Atriplex cephalantha	1
Atriplex quinii	1
Atriplex vesicaria	2
Bonamia erecta	2
Brachyscome ciliaris	5
Brachyscome iberidifolia	1
Brunonia australis var. A Kimberley Flora (K.F. Kenneally 5452)	1
Calandrinia polyandra	1
Calocephalus multiflorus	1
Calotis hispidula	1
Calotis multicaulis	1
Calytrix desolata	1
Cephalipterum drummondii	2
Convolvulus clementii	2
Convolvulus remotus	1
Crotalaria eremaea subsp. strehlowii	1
Cryptandra connata	1
Cucumis maderaspatanus	1
Cynanchum viminale subsp. australe	1
Dampiera roycei	1
Daucus glochidiatus	1
Daviesia grahamii	1
Dicrastylis brunnea	1
Dicrastylis exsuccosa	2
Dicrastylis sessilifolia	1
Diplopeltis stuartii var. stuartii	1
Disphyma crassifolium subsp. clavellatum	1
Dodonaea adenophora	1
Dodonaea lobulata	2

Dodonaea microzyga var. acrolobata	1
Dodonaea rigida	7
Dodonaea viscosa subsp. mucronata	1
Duboisia hopwoodii	1
Duperreya commixta	3
Dysphania kalpari	2
Dysphania melanocarpa	1
Dysphania saxatilis	1
Enekbatus eremaeus	2
Eremophila abietina subsp. abietina	11
Eremophila alternifolia	2
Eremophila battii	2
Eremophila clarkei	1
Eremophila eriocalyx	3
Eremophila exilifolia	1
Eremophila foliosissima	1
Eremophila forrestii subsp. forrestii	2
Eremophila glandulifera	1
Eremophila granitica	1
Eremophila hughesii	1
Eremophila ionantha	1
Eremophila latrobei	1
Eremophila longifolia	1
Eremophila maculata subsp. brevifolia	2
Eremophila margarethae	5
Eremophila metallicorum	4
Eremophila oldfieldii subsp. angustifolia	2
Eremophila oppositifolia subsp. angustifolia	1
Eremophila paisleyi subsp. paisleyi	1
Eremophila pantonii	1
Eremophila platycalyx subsp. Leonora (J. Morrisey 252)	2
Eremophila platythamnos subsp. exotrachys	2
Eremophila punctata	2
Eremophila scoparia	1
Eremophila serrulata	2
Eremophila youngii subsp. youngii	1
Erodiophyllum acanthocephalum	4
Erodium crinitum	1
Erodium cygnorum	1
Erymophyllum ramosum subsp. ramosum	2
Eucalyptus carnei	1

Eucalyptus celastroides subsp. celastroides	1
Eucalyptus clelandiorum / gypsophila	1
Eucalyptus concinna	1
Eucalyptus gongylocarpa	1
Eucalyptus gypsophila	1
Eucalyptus gypsophila / striaticalyx	1
Eucalyptus leptophylla	1
Eucalyptus lesouefii	1
Eucalyptus lucasii	1
Eucalyptus salubris	1
Eucalyptus sp. Mulga Rock (K.D. Hill & L.A.S. Johnson KH 2668)	2
Eucalyptus trivalva	2
Euphorbia boophthona	2
Euphorbia ferdinandi var. ferdinandi	1
Euphorbia tannensis subsp. eremophila	1
Frankenia cordata	1
Frankenia fecunda sensu	1
Frankenia pauciflora	1
Frankenia setosa	1
Gilberta tenuifolia	2
Glischrocaryon angustifolium	1
Glossostigma diandrum	1
Glycine canescens	2
Goodenia centralis	2
Goodenia macroplectra	5
Goodenia mimuloides	4
Goodenia peacockiana	2
Goodenia xanthosperma	1
Grevillea acacioides	1
Grevillea acuaria	1
Grevillea deflexa	1
Grevillea juncifolia subsp. juncifolia	2
Grevillea sarissa subsp. sarissa	1
Gunniopsis propinqua	1
Gunniopsis quadrifida	1
Gunniopsis rodwayi	1
Gyrostemon ramulosus	1
Hakea lorea subsp. lorea	1
Hakea minyma	1
Halgania cyanea	1
Halgania cyanea var. Allambi Stn (B.W. Strong 676)	1

Haloragis gossei	1
Haloragis odontocarpa forma rugosa	1
Heliotropium asperrimum	1
Heliotropium heteranthum	1
Helipterum craspedioides	5
Hemigenia botryphylla	2
Homalocalyx thryptomenoides	1
Hysterobaeckea occlusa	1
Indigofera psammophila	1
Isotoma petraea	4
Jasminum calcareum	2
Kennedia prorepens	3
Lawrencia densiflora	3
Lawrencia sp. small fruits (Symon 2338)	2
Lawrencia squamata	3
Leiocarpa semicalva subsp. semicalva	1
Lemooria burkittii	2
Lepidium oxytrichum	1
Leptosema chambersii	3
Leptospermum fastigiatum	1
Leucochrysum stipitatum	1
Lobelia winfridae	2
Lotus australis	1
Lysiana murrayi	1
Lysimachia arvensis	1
Maireana atkinsiana	4
Maireana convexa	1
Maireana georgei	3
Maireana glomerifolia	3
Maireana pentatropis	1
Maireana planifolia	4
Maireana thesioides	1
Maireana triptera	1
Melaleuca concreta	1
Menkea australis	1
Menkea sphaerocarpa	1
Menkea villosula	2
Micromyrtus flaviflora	2
Millotia incurva	1
Millotia perpusilla	2
Minuria cunninghamii	1

Mirbelia depressa	2
Mirbelia rhagodioides	3
Monotaxis luteiflora	1
Myriocephalus pygmaeus	1
Nicotiana cavicola	1
Nicotiana rosulata subsp. rosulata	1
Olearia humilis	2
Petalostylis cassioides	3
Philotheca brucei subsp. brucei	2
Phyllanthus sp.	1
Pimelea trichostachya	1
Pittosporum angustifolium	3
Plantago drummondii	1
Pluchea dentex	1
Podolepis capillaris	2
Podolepis kendallii	5
Pogonolepis stricta	1
Pomax sp. Sand dunes (P.G. Wilson 752)	4
Poranthera leiosperma	1
Prostanthera althoferi subsp. althoferi	3
Prostanthera sp.	1
Psydrax latifolia	1
Psydrax suaveolens	1
Ptilotus aervoides	2
Ptilotus divaricatus	1
Ptilotus drummondii	2
Ptilotus drummondii var. minor	3
Ptilotus exaltatus	1
Ptilotus gaudichaudii	1
Ptilotus helichrysoides	1
Ptilotus helipteroides	3
Ptilotus macrocephalus	1
Ptilotus obovatus	4
Ptilotus polystachyus	2
Ptilotus schwartzii var. schwartzii	1
Rhodanthe battii	2
Rhodanthe charsleyae	2
Rhodanthe chlorocephala subsp. rosea	1
Rhodanthe laevis	2
Rhodanthe maryonii	1
Rhodanthe stricta	1

Roepera aurantiaca	1
Rumex hypogaeus	2
Santalum lanceolatum	2
Santalum spicatum	1
Scaevola amblyanthera var. centralis	1
Scaevola parvifolia subsp. parvifolia	1
Schoenia cassiniana	1
Sclerolaena cuneata	1
Sclerolaena diacantha	1
Sclerolaena eriacantha	3
Sclerolaena lanicuspis	1
Senecio magnificus	7
Senna artemisioides	1
Senna artemisioides subsp. filifolia x glutinosa subsp. chatelainiana	1
Senna artemisioides subsp. helmsii	3
Senna artemisioides subsp. x artemisioides	2
Senna cardiosperma	3
Senna pleurocarpa	1
Seringia elliptica	1
Seringia velutina	1
Sida sp. Excedentifolia (J.L. Egan 1925)	1
Solanum ashbyae	1
Solanum austropiceum	2
Solanum centrale	1
Solanum esuriale	1
Solanum lasiophyllum	5
Spergularia bocconei	2
Stenanthemum petraeum	1
Stenopetalum filifolium	1
Stenopetalum lineare var. lineare	1
Swainsona canescens	1
Swainsona incei	2
Swainsona kingii	1
Swainsona oroboides	5
Swainsona purpurea	1
Swainsona sp.	1
Swainsona tenuis	5
Synaptantha tillaeacea var. tillaeacea	3
Tecticornia sp.	1
Tecticornia sp. Dennys Crossing (K.A. Shepherd & J. English KS 552)	1
Tecticornia undulata	1

Tetragonia sp.	1
Teucrium teucriiflorum	1
Thyridia repens	1
Trachymene glaucifolia	1
Trachymene ornata	1
Trichodesma zeylanicum	1
Velleia connata	1
Velleia rosea	2
Verticordia interioris	4
Vittadinia sulcata	2
Wahlenbergia tumidifructa	1
Waitzia fitzgibbonii	5
FERN	**4**
(blank)	4
Cheilanthes sieberi subsp. sieberi	2
Ophioglossum lusitanicum	1
Pleurosorus rutifolius	1
MONOCOT	**52**
(blank)	52
Amphipogon caricinus var. caricinus	5
Aristida contorta	4
Aristida holathera var. holathera	1
Austrostipa nitida	2
Bromus arenarius	1
Bulbine semibarbata	1
Centrolepis eremica	1
Cymbopogon ambiguus	1
Cynodon prostratus	1
Cyperus alterniflorus	1
Cyperus sp.	1
Dianella revoluta var. divaricata	1
Enneapogon caerulescens	1
Eragrostis dielsii	1
Eragrostis eriopoda	1
Eragrostis parviflora	1
Eriachne benthamii	1
Eriachne flaccida	2
Eriachne mucronata	3
Eriachne pulchella subsp. pulchella	4
Juncus aridicola	1
Lomandra leucocephala subsp. robusta	2

Monachather paradoxus	6
Themeda triandra	1
Thysanotus manglesianus	1
Triodia desertorum	2
Triodia melvillei	1
Wurmbea sp. Great Victoria Desert (G.J. Keighery 7501)	1
Wurmbea tenella	2
Xanthorrhoea thorntonii	1
Grand Total	**1398**

Appendix D

Flora survey results

Flora species list

Quadrat/Relevé data

Raw site data

Significant flora raw data

Flora likelihood of occurrence assessment

Flora species list (Nullagine)

Family	Status	Species
Amaranthaceae		*Ptilotus exaltatus*
Apocynaceae	*DP	*Calotropis procera*
Asteraceae		*Pluchea dentex*
Asteraceae		*Pluchea ferdinandi-muelleri*
Asteraceae		*Pluchea tetranthera*
Asteraceae		*Streptoglossa decurrens*
Chenopodiaceae		*Enchylaena tomentosa*
Chenopodiaceae		*Maireana* sp. (insufficient material)
Chenopodiaceae		*Sclerolaena eriacantha*
Convolvulaceae		*Bonamia media*
Convolvulaceae		*Bonamia pannosa*
Cucurbitaceae		*Cucumis variabilis*
Cyperaceae		*Bulbostylis barbata*
Cyperaceae		*Fimbristylis depauperata*
Euphorbiaceae		*Euphorbia biconvexa*
Fabaceae	P1	*Acacia aphanoclada*
Fabaceae		*Acacia acradenia*
Fabaceae		*Acacia bivenosa*
Fabaceae		*Acacia hilliana*
Fabaceae		*Acacia synchronicia*
Fabaceae		*Indigofera monophylla*
Fabaceae		*Petalostylis labicheoides*
Fabaceae		*Senna glutinosa* subsp. *glutinosa*
Fabaceae		*Senna glutinosa* subsp. *pruinosa*
Fabaceae		*Senna symonii*
Lauraceae		*Cassytha capillaris*
Malvaceae		*Sida* sp. Pilbara
Myrtaceae		*Corymbia hamersleyana*
Myrtaceae		*Eucalyptus leucophloia* subsp. *leucophloia*
Myrtaceae		*Melaleuca eleuterostachya*
Plantaginaceae		*Stemodia grossa*
Poaceae	*	*Cenchrus ciliaris*
Poaceae		*Aristida contorta*
Poaceae		*Aristida holathera* var. *holathera*
Poaceae		*Cymbopogon ambiguus*
Poaceae		*Enneapogon caerulescens*
Poaceae		*Enneapogon polyphyllus*
Poaceae		*Sporobolus australasicus*
Poaceae		*Triodia angusta*

Family	Status	Species
Poaceae		*Triodia brizoides*
Poaceae		*Triodia epactia*
Poaceae		*Triodia pungens*
Polygalaceae		*Bonamia erecta*
Polygalaceae		*Polygala glaucifolia*
Proteaceae		*Grevillea wickhamii* subsp. *hispidula*
Solanaceae	P1	*Solanum* sp. Mosquito Creek (A.A. Mitchell et al. AAM 10795)
Solanaceae		*Solanum horridum*
Zygophyllaceae		*Tribulus suberosus*

Flora species list (Cue)

Family	Status	Species
Aizoaceae		*Gunniopsis* sp.
Aizoaceae		*Mesembryanthemum nodiflorum*
Aizoaceae		*Trianthema triquetrum*
Amaranthaceae		*Ptilotus exaltatus*
Amaranthaceae		*Ptilotus obovatus*
Amaranthaceae		*Ptilotus polakii*
Amaranthaceae	P1	*Ptilotus* sp. Cue (P. Armstrong PA 16/362)
Apiaceae		*Daucus glochidiatus*
Asteraceae		*Brachyscome ciliaris*
Asteraceae		*Erymophyllum* sp.
Asteraceae		*Siemssenia capillaris*
Chenopodiaceae		*Atriplex* sp.
Chenopodiaceae		Chenopodiaceae sp.
Chenopodiaceae		*Maireana* sp.
Chenopodiaceae		*Maireana georgei*
Chenopodiaceae		*Maireana glomerifolia*
Chenopodiaceae	P3	*Maireana prosthecochaeta*
Chenopodiaceae		*Rhagodia eremaea*
Chenopodiaceae		*Sclerolaena* sp.
Chenopodiaceae		*Sclerolaena cuneata*
Chenopodiaceae		*Sclerolaena eriacantha*
Colchicaceae		*Wurmbea flavanthera*
Fabaceae		*Acacia tetragonophylla*
Fabaceae		*Acacia aptaneura*
Fabaceae		*Acacia grasbyi*
Fabaceae		*Acacia incurvaneura*
Fabaceae		*Acacia kalgoorliensis*
Fabaceae		*Acacia pteraneura*
Fabaceae		*Senna* sp. Meekatharra (E. Bailey 1-26)
Frankeniaceae		*Frankenia setosa*
Geraniaceae		*Erodium* sp.
Goodeniaceae		*Scaveola spinescens*
Malvaceae		*Abutilon oxycarpum* subsp. *prostrate*
Malvaceae		*Hibiscus burtonii*
Malvaceae		*Hibiscus* sp. Gardneri (A.L. Payne PRP 1435)
Malvaceae		*Sida* sp.
Malvaceae		*Sida calyxhymenia*
Malvaceae		*Sida* sp. dark green fruits (S. van Leeuwen 2260)
Myrtaceae		*Eucalyptus victrix*
Myrtaceae		*Thryptomene decussata*

Family	Status	Species
Poaceae		*Aristida holathera* var. *holathera*
Poaceae	*	*Cenchrus ciliaris*
Poaceae		*Dactyloctenium radulans*
Poaceae		*Enneapogon polyphyllus*
Poaceae		*Enteropogon ramosus*
Poaceae		*Eragrostis dielsii*
Poaceae		*Tripogonella loliiformis*
Pteridaceae		*Cheilanthes sieberi* subsp. *sieberi*
Rubiaceae		*Psydrax suaveolens*
Scrophulariaceae	T	*Eremophila rostrata* subsp. *rostrata*
Scrophulariaceae		*Eremophila georgei*
Scrophulariaceae		*Eremophila latrobei* subsp. *latrobei*
Scrophulariaceae		*Eremophila longifolia*
Scrophulariaceae		*Eremophila pantonii*
Solanaceae		*Solanum lasiophyllum*

Flora species list (Meekatharra)

Family	Status	Species
Amaranthaceae		*Ptilotus exaltatus*
Amaranthaceae		*Ptilotus drummondi*
Amaranthaceae		*Ptilotus obovatus*
Amaranthaceae		*Ptilotus rotundifolius*
Apiaceae		*Daucus glochidiatus*
Chenopodiaceae		Chenopodiaceae sp.
Chenopodiaceae		*Dysphania kalpari*
Chenopodiaceae		*Maireana planifolia*
Chenopodiaceae		*Salsola australis*
Chenopodiaceae		*Sclerolaena eriacantha*
Cleomaceae		*Areocleome oxalidea*
Fabaceae		*Acacia grasbyi*
Fabaceae		*Acacia tetragonophylla*
Fabaceae		*Acacia aneura*
Fabaceae		*Acacia incurvaneura*
Fabaceae		*Acacia pruinocarpa*
Fabaceae		*Acacia pteraneura*
Fabaceae		*Acacia pteraneura*
Fabaceae		*Acacia victoriae*
Fabaceae		*Senna* sp. Meekatharra (E. Bailey 1-26)
Geraniaceae		*Erodium* sp.
Goodeniaceae		*Scaevola spinescens*
Loranthaceae		*Amyema nestor*
Loranthaceae		*Lysiana casuarinae*
Malvaceae		*Hibiscus burtonii*
Malvaceae		*Sida arenicola*
Montiaceae		*Calandrinia* sp.
Myrtaceae		*Eucalyptus camaldulensis*
Myrtaceae		*Eucalyptus victrix*
Nyctaginaceae		*Boerhavia coccinea*
Phrymaceae		*Peplidium* sp.
Poaceae		*Aristida holathera* var. *holathera*
Poaceae	*	*Cenchrus ciliaris*
Poaceae		*Enneapogon caerulescens*
Poaceae		*Eriachne pulchella*
Polygonaceae	*	*Rumex vesicarius*
Proteaceae		*Grevillea juncifolia*
Pteridaceae		*Cheilanthes sieberi* subsp. *sieberi*
Scrophulariaceae		*Eremophila citrina*
Scrophulariaceae		*Eremophila latrobei* subsp. *latrobei*

Family	Status	Species
Scrophulariaceae		*Eremophila longifolia*
Scrophulariaceae		*Eremophila phyllopoda*
Solanaceae		*Solanum* sp.
Solanaceae		*Solanum lasiophyllum*
Zygophyllaceae		*Tribulus occidentalis*

Flora species list (Menzies)

Family	Status	Species
Amaranthaceae		*Ptilotus exaltatus*
Amaranthaceae		*Ptilotus obovatus*
Ancardiaceae	*	*Schinus molle*
Asteraceae		*Minuria cunninghamii*
Asteraceae	*	*Sonchus oleraceus*
Asteraceae		Submitted for Paid ID #ACC_10208
Asteraceae		*Vittadinia dissecta* var. *hirta*
Asteraceae		*Waitzia* sp.
Brassicaceae	*	*Carrichtera annua*
Brassicaceae	*	*Sisymbrium orientale*
Chenopodiaceae		*Atriplex bunburyana*
Chenopodiaceae		*Atriplex* sp.
Chenopodiaceae		*Dissocarpus paradoxus*
Chenopodiaceae		*Maireana planifolia*
Chenopodiaceae		*Maireana pyramidata*
Chenopodiaceae		*Maireana sedifolia*
Chenopodiaceae		*Salsola australis*
Chenopodiaceae		*Sclerolaena alata*
Chenopodiaceae		*Sclerolaena diacantha*
Convolvulaceae		*Duperreya sericea*
Crassulaceae		*Crassula colorata* var. *colorata*
Fabaceae		*Acacia tetragonophylla*
Fabaceae		*Acacia jennerae*
Fabaceae	*	*Medicago polymorpha*
Fabaceae		*Senna artemisioides* subsp. *filifolia*
Goodeniaceae		*Scaevola spinescens*
Malvaceae		*Abutilon oxycarpum* subsp. *Prostrate*
Malvaceae		*Sida fibulifera*
Plantaginaceae		*Plantago* sp. Mt Magnet (A.S. George 6793*)*
Poaceae	*	*Cenchrus ciliaris*
Poaceae		*Chloris truncata*
Poaceae		*Poaceae* sp.
Scrophulariaceae		*Eremophila longifolia*
Solanceae		*Solanum lasiophyllum*

Flora species list (Sandstone)

Family	Status	Species
Amaranthaceae		*Ptilotus obovatus*
Chenopodiaceae		Chenopodiaceae sp.
Chenopodiaceae		*Rhagodia eremaea*
Chenopodiaceae		*Salsola australis*
Fabaceae		*Acacia aneura*
Fabaceae		*Acacia incurvaneura*
Fabaceae		*Acacia mulganeura*
Fabaceae		*Acacia ramulosa* var. *ramulosa*
Poaceae		*Eragrostis eriopoda*
Poaceae		Poaceae sp.
Rhamnacceae		*Cryptandra connata*
Scrophulariaceae		*Eremophila margarethae*
Solanaceae		*Solanum lasiophyllum*

Flora species list (Wiluna)

Family	Status	Species
Amaranthaceae		*Ptilotus exaltatus*
Amaranthaceae		*Ptilotus obovatus*
Brassicaceae		*Lepidium platypetalum*
Chenopodiaceae		*Dysphania kalpari*
Chenopodiaceae		*Rhagodia eremaea*
Chenopodiaceae		*Salsola australis*
Chenopodiaceae		*Sclerolaena eriacantha*
Fabaceae		*Acacia* sp.
Fabaceae		*Acacia tetragonophylla*
Fabaceae		*Acacia aneura x Acacia craspedocarpa*
Fabaceae		*Acacia aptaneura*
Fabaceae		*Acacia incurvaneura*
Fabaceae		*Acacia pruinocarpa*
Fabaceae		*Acacia pteraneura*
Fabaceae		*Senna artemisioides* subsp. *filifolia*
Fabaceae		*Senna s*p. Meekatharra (E. Bailey 1-26)
Geraniaceae		*Erodium* sp.
Malvaceae		*Sida ectogama*
Monitaceae		*Calandrinia* sp.
Poaceae		*Dactyloctenium radulans*
Poaceae		*Enteropogon ramosus*
Poaceae		*Eriachne* sp.
Poaceae		*Paspalidium rarum*
Poaceae		*Triodia* sp.
Polygonaceae	*	*Rumex vesicarius*
Proteaceae		*Grevillea sarissa* subsp. *succincta*
Rubiaceae		*Psydrax latifolia*
Scrophulariaceae		*Eremophila* sp.
Scrophulariaceae		*Eremophila citrina*
Scrophulariaceae		*Eremophila margarethae*

Flora species list (Gascoyne Junction)

Family	Status	Species
Amaranthaceae		*Ptilotus exaltatus*
Asteraceae		*Asteraceae* sp. (sterile)
Asteraceae		*Podolepis* sp. (sterile)
Asteraceae		*Streptoglossa liatroides*
Chenopodiaceae		*Atriplex? codonocarpa*
Chenopodiaceae		*Rhagodia eremaea*
Chenopodiaceae		*Salsola australis*
Chenopodiaceae		*Tecticornia* sp.
Chenopodiaceae		*Maireana* sp. (sterile)
Chenopodiaceae		*Sclerolaena* sp. (sterile)
Fabaceae		*Acacia tetragonophila*
Fabaceae		*Acacia victoriae*
Frankeniaceae		*Frankenia setosa*
Goodeniaceae		*Scaevola* sp. (sterile)
Poaceae		*Aristida contorta*
Poaceae	*	*Cenchrus ciliaris*
Poaceae		*Digitaria* sp. (sterile)
Poaceae		*Eragrostis dielsii*
Poaceae		*Eragrostis xerophila*
Proteaceae		*Hakea recurva*
Scrophulariaceae		*Eremophila cuneifolia*

Flora species list (Laverton)

Family	Status	Species
Amaranthaceae		*Ptilotus obovatus*
Amaranthaceae		*Ptilotus divaricatus*
Amaranthaceae		*Ptilotus xerophilus*
Asteraceae		*Asteraceae* sp. (sterile)
Asteraceae		*Brachyscome ciliaris*
Asteraceae		*Calotis* sp.
Asteraceae		*Pluchea dentex*
Asteraceae	*	*Sonchus oleraceus*
Asteraceae		*Vittadinia sulcata*
Brassicaceae	*	*Sisymbrium erysimoides*
Cactaceae	* (DP, WoNS)	*Opuntia stricta*
Chenopodiaceae		*Dysphania kalpari*
Chenopodiaceae		*Dysphania melanocarpa*
Chenopodiaceae		*Enchylaena tomentosa* var. *tomentosa*
Chenopodiaceae		*Maireana thesioides*
Chenopodiaceae		*Maireana tomentosa*
Chenopodiaceae		*Rhagodia eremaea*
Chenopodiaceae		*Salsola australis*
Chenopodiaceae		*Sclerolaena cuneata*
Chenopodiaceae		*Sclerolaena eurotioides*
Cleomaceae	R.E	*Arivela viscosa*
Euphorbiaceae		*Euphorbia drummondii*
Fabaceae		*Acacia tetragonophylla*
Fabaceae		*Acacia aneura*
Fabaceae		*Acacia ayersiana*
Fabaceae		*Acacia craspedocarpa*
Fabaceae		*Acacia ramulosa*
Fabaceae		*Acacia wanyu*
Fabaceae		*Senna artemisioides* subsp. ×*artemisioides*
Fabaceae		*Senna glutinosa* subsp. *chatelainiana*
Fabaceae		*Senna* sp. Meekatharra (E. Bailey 1-26)
Geraniaceae		*Erodium cygnorum*
Hemerocallidaceae		*Dianella revoluta*
Loranthaceae		*Amyema fitzgeraldii*
Malvaceae		*Abutilon leucopetalum*
Malvaceae		*Abutilon otocarpum*
Malvaceae		*Brachychiton acuminatus*
Malvaceae		*Sida* sp. (sterile)
Malvaceae		*Sida ectogama*
Malvaceae		*Sida fibulifera*

Family	Status	Species
Marsileaceae		*Marsilea* sp. (sterile)
Montiaceae		*Calendrinia* sp. (sterile)
Myrtaceae		*Eucalyptus camaldulensis*
Oleaceae		*Jasminum didymum* subsp. *lineare*
Phyllanthaceae		*Dendrophyllanthus erwinii*
Poaceae	*	**Cenchrus ciliaris*
Poaceae		*Aristida contorta*
Poaceae		*Austrostipa elegantissima*
Poaceae		*Dactyloctenium radulans*
Poaceae		*Digitaria ammophila*
Poaceae		*Enneapogon polyphyllus*
Poaceae		*Eragrostis leptocarpa*
Poaceae		*Iseilema eremaeum*
Poaceae		*Panicum effusum*
Polygonaceae	*	*Rumex vesicarius*
Portulacaceae		*Portulaca oleracea*
Portulacaceae		*Cheilanthes sieberi* subsp. *Sieberi*
Pteridaceae		*Santalum lanceolatum*
Santalaceae		*Eremophila glandulifera*
Scrophulariaceae		*Eremophila metallicorum*
Scrophulariaceae		*Nicotiana obliqua*
Solanaceae		*Nicotiana rosulata*
Solanaceae		*Solanum lasiophyllum*
Solanaceae		*Roepera eremaea*
Zygophyllaceae		*Ptilotus obovatus*

Nullagine Sample Site Data

Site ID:	Nul_01	VT01
Type:	Quadrat	Size: 50 x 50 m
Date:	27/04/2023	Described by: Angela Benkovic
Co-ordinates (51K)	201297	7577651

Drainage:	Good	**Aspect:**	Low undulating
Soil colour:	Orange	**Soil type:**	Skeletal
Fire age and intensity:	5-10 years	**Vegetation condition:**	Excellent

Taxa	Status	Cover (%)	Height
Eucalyptus leucophloia subsp. *leucophloia*		5	4
Corymbia hamersleyana		1	2
Triodia angusta		2	1.75
Acacia bivenosa		2	1.75
Senna symonii		2	1.5
Triodia epactia		15	1.25
Triodia pungens		15	1.25
Triodia brizoides		30	1
Acacia hilliana		5	1
Indigofera monophylla		1	1
Cymbopogon ambiguus		1	1
Tribulus suberosus		1	0.5
Streptoglossa decurrens		1	0.25
Sida sp. Pilbara		1	0.25
Fimbristylis depauperata		1	0.25
Enneapogon caerulescens		1	0.25
Maireana sp.		1	0.25

Site ID:	Nul_02	VT01
Type:	Quadrat	Size: 50 x 50 m
Date:	27/04/2023	Described by: Angela Benkovic
Co-ordinates (51K)	201446	7577841

Drainage:	Good	Aspect:	Low undulating
Soil colour:	Orange	Soil type:	Skeletal
Fire age and intensity:	5-10 years	Vegetation condition:	Excellent

Taxa	Status	Cover (%)	Height
Eucalyptus leucophloia subsp. *leucophloia*		2	4
Acacia synchronicia		3	2
Acacia bivenosa		2	2
Triodia angusta		10	1.75
Senna symonii		2	1.5
Triodia brizoides		30	1.25
Ptilotus exaltatus		1	0.5
Enchylaena tomentosa		1	0.5
Maireana sp.		1	0.25
Pluchea tetranthera		1	0.25
Pluchea tetranthera		1	0.25
Sclerolaena eriacantha		1	0.25
Cassytha capillaris		1	cr

Site ID:	Nul_03	VT01
Type:	Quadrat	Size: 50 x 50 m
Date:	27/04/2023	Described by: Angela Benkovic
Co-ordinates (51K)	201446	7577841

Drainage:	Good	**Aspect:**	Low undulating
Soil colour:	Orange	**Soil type:**	Skeletal
Fire age and intensity:	5-10 years	**Vegetation condition:**	Excellent

Taxa	Status	Cover (%)	Height
Acacia aphanoclada	P1	3	4
Acacia bivenosa		3	1.75
Senna symonii		1	1.5
Triodia pungens		10	1.5
Senna glutinosa subsp. *glutinosa*		1	1.5
Triodia brizoides		30	1.25
Acacia hilliana		5	1
Senna glutinosa subsp. *pruinosa*		2	1
Maireana sp.		1	0.25
Solanum horridum		1	0.25
Polygala glaucifolia		1	0.1
Bonamia media		1	0.1

Cue Sample Site Data

Site ID:	CUE01	VT02
Type:	Quadrat	Size: 20 x 20 m
Date:	01/05/2023	Described by: Lauren Taaffe
Co-ordinates (50J)	588230	6969016

Drainage:	Good	**Aspect:**	Flat
Soil colour:	Orange	**Soil type:**	Sand clay loam
Fire age and intensity:	10+ years	**Vegetation condition:**	Very Good

Taxa	Status	Cover (%)	Height
Abutilon oxycarpum subsp. *Prostrate*		1	0.1
Acacia grasbyi		1	1.75
Aristida holathera var. *holathera*		2	0.25
Dactyloctenium radulans		1	0.1
Enneapogon polyphyllus		1	0.1
Eragrostis dielsii		1	0.1
Maireana georgei		1	0.25
Maireana glomerifolia		1	0.5
Ptilotus exaltatus		1	0.1
Ptilotus obovatus		1	0.5
Rhagodia eremaea		1	1
Scaevola spinescens		1	1
Sclerolaena		1	0.25
Sclerolaena cuneata		1	0.25
Sclerolaena eriacantha		1	0.25
Senna sp. Meekatharra (E. Bailey 1-26)		1	0.25
Sida calyxhymenia		1	0.5
Solanum lasiophyllum		1	0.25
Tripogonella loliiformis		1	0.1

Site ID:	CUE02	VT03
Type:	Quadrat	Size: 20 x 20 m
Date:	01/05/2023	Described by: Lauren Taaffe
Co-ordinates (50J)	588150	6968754

Drainage:	Good	**Aspect:**	South/East
Soil colour:	Orange	**Soil type:**	Sandy clay loam
Fire age and intensity:	10+ years	**Vegetation condition:**	Excellent

Taxa	Status	Cover (%)	Height
Acacia incurvaneura		15	3
Cheilanthes sieberi subsp. *Sieberi*		1	0.1
Daucus glochidiatus		1	0.1
Eremophila latrobei subsp. *Latrobei*		4	1
Erodium sp.		1	0.1
Erymophyllum sp.		1	0.1
Gunniopsis sp.		1	0.1
Psydrax suaveolens		1	0.25
Ptilotus obovatus		1	0.5
Sclerolaena eriacantha		1	0.25
Sida sp. dark green fruits (S. van Leeuwen 2260)		1	0.5
Solanum lasiophyllum		1	0.5
Thryptomene decussata		1	1.5
Tripogonella loliiformis		1	0.1
Tripogonella loliiformis		1	0.1

Site ID:	CUE03	VT02
Type:	Quadrat	Size: 20 x 20 m
Date:	01/05/2023	Described by: Lauren Taaffe
Co-ordinates (50J)	588162	6968465

Drainage:	Good	**Aspect:**	South
Soil colour:	Orange	**Soil type:**	Sandy loam
Fire age and intensity:	10+ years	**Vegetation condition:**	Very Good

Taxa	Status	Cover (%)	Height
Acacia kalgoorliensis		1	1.75
Aristida holathera var. *holathera*		1	0.1
Atriplex sp.		1	0.5
Enneapogon polyphyllus		1	0.1
Enteropogon ramosus		1	0.75
Erodium sp.		1	0.1
Erymophyllum sp.		1	0.1
Maireana georgei		4	0.25
Maireana glomerifolia		1	0.25
Ptilotus exaltatus		1	0.25
Ptilotus obovatus		1	0.5
Rhagodia eremaea		1	0.75
Sclerolaena		1	0.25
Sclerolaena eriacantha		1	0.25
Solanum lasiophyllum		1	0.5
Tripogonella loliiformis		1	0.1

Site ID:	CUE04	VT02
Type:	Quadrat	Size: 20 x 20 m
Date:	01/05/2023	Described by: Lauren Taaffe
Co-ordinates (50J)	588264	6968326

Drainage:	Good	**Aspect:**	Flat
Soil colour:	Orange	**Soil type:**	Sandy loam
Fire age and intensity:	10+ years	**Vegetation condition:**	Very Good

Taxa	Status	Cover (%)	Height
Acacia aptaneura		3	2.75
Acacia grasbyi		1	1.75
Aristida holathera var. *holathera*		2	0.1
Atriplex sp.		1	0.5
Dactyloctenium radulans		1	0.1
Enneapogon polyphyllus		1	0.1
Enteropogon ramosus		1	0.75
Erodium sp.		1	0.1
Maireana georgei		2	0.25
Maireana glomerifolia		1	0.1
Maireana glomerifolia		1	0.25
Ptilotus exaltatus		1	0.25
Ptilotus obovatus		1	0.5
Ptilotus polakii		1	0.25
Sclerolaena		1	0.25
Sclerolaena eriacantha		1	0.25
Sida sp. dark green fruits (S. van Leeuwen 2260)		1	0.5
Siemssenia capillaris		1	0.1
Solanum lasiophyllum		1	0.5
Trianthema triquetrum		1	0.1
Tripogonella loliiformis		1	0.1

Site ID:	CUE05	VT04
Type:	Quadrat	Size: 20 x 20 m
Date:	02/05/2023	Described by: Lauren Taaffe
Co-ordinates (50J)	588343	6968231

Drainage:	Good	**Aspect:**	North/West
Soil colour:	Orange	**Soil type:**	Sandy loam
Fire age and intensity:	10+ years	**Vegetation condition:**	Excellent

Taxa	Status	Cover (%)	Height
Acacia grasbyi		1	1.75
Acacia kalgoorliensis		2	1.75
Acacia pteraneura		1	4
Aristida holathera var. *holathera*		1	0.1
Atriplex sp.		1	0.5
Enteropogon ramosus		1	0.5
Eremophila pantonii		1	1.5
Maireana glomerifolia		1	0.1
Maireana glomerifolia		2	0.25
Ptilotus exaltatus		1	0.25
Ptilotus polakii		2	0.25
Sclerolaena eriacantha		1	0.25
Solanum lasiophyllum		1	0.25
Chenopodiaceae sp.		1	0.1

Site ID:	CUE06	VT04
Type:	Quadrat	Size: 20 x 20 m
Date:	02/05/2023	Described by: Lauren Taaffe
Co-ordinates (50J)	588338	6967932

Drainage:	Good	**Aspect:**	North
Soil colour:	Orange	**Soil type:**	Sandy loam
Fire age and intensity:	10+ years	**Vegetation condition:**	Excellent

Taxa	Status	Cover (%)	Height
Acacia kalgoorliensis		1	2
Acacia pteraneura		2	4
Aristida holathera var. *holathera*		1	0.1
Atriplex sp.		1	0.25
Eremophila pantonii		1	0.5
Maireana glomerifolia		1	0.1
Maireana glomerifolia		3	0.25
Ptilotus polakii		1	0.25
Sclerolaena eriacantha		1	0.25
Solanum lasiophyllum		1	0.25
Chenopodiaceae sp.		1	0.1

Site ID:	CUE07R	VT05
Type:	Relevé	Size: 20 x 20 m
Date:	02/05/2023	Described by: Lauren Taaffe
Co-ordinates (50J)	588525	6967037

Drainage:	Poor	**Aspect:**	Flat
Soil colour:	Orange	**Soil type:**	Clay
Fire age and intensity:	10+ years	**Vegetation condition:**	Good

Taxa	Status	Cover (%)	Height
Acacia tetragonophylla		10	2
Cenchrus ciliaris	*	4	0.25
Enneapogon polyphyllus		2	0.25
Enteropogon ramosus		35	0.25
Eremophila longifolia		1	0.75
Eucalyptus victrix		1	5
Sclerolaena cuneata		1	0.25
Sida sp.		2	1.2
Solanum lasiophyllum		1	0.5

Site ID:	CUE08	VT04
Type:	Quadrat	Size: 20 x 20 m
Date:	03/05/2023	Described by: Lauren Taaffe
Co-ordinates (50J)	588811	6968285

Drainage:	Good	**Aspect:**	North/West
Soil colour:	Orange	**Soil type:**	Sandy loam
Fire age and intensity:	10+ years	**Vegetation condition:**	Excellent

Taxa	Status	Cover (%)	Height
Acacia kalgoorliensis		3	2
Acacia pteraneura		1	4
Aristida holathera var. *holathera*		1	0.1
Atriplex sp.		1	0.25
Eremophila rostrata subsp. *rostrata*	T	1	1.25
Eremophila georgei		1	0.75
Eremophila pantonii		1	0.1
Eremophila pantonii		1	1
Frankenia setosa		1	0.25
Maireana sp.		1	0.25
Maireana glomerifolia		2	0.25
Mesembryanthemum nodiflorum		1	0.25
Ptilotus polakii		2	0.25
Ptilotus sp. Cue (P. Armstrong PA 16/362)	P1	1	0.1
Scaveola spinescens		1	0.75
Sclerolaena eriacantha		1	0.25
Chenopodiaceae sp.		1	0.1

Meekatharra Sample Site Data

Site ID:	MEE01	VT06
Type:	Quadrat	Size: 20 x 20 m
Date:	30/04/2023	Described by: Lauren Taaffe
Co-ordinates (50J)	647799	7057854

Drainage:	Good	**Aspect:**	North/West
Soil colour:	Orange	**Soil type:**	Clay loam
Fire age and intensity:	10+ years	**Vegetation condition:**	Excellent

Taxa	Status	Cover (%)	Height
Acacia aneura		2	2.25
Acacia incurvaneura		10	3
Aristida holathera var. *holathera*		1	0.25
Cheilanthes sieberi subsp. *Sieberi*		1	0.1
Eremophila citrina		1	0.25
Eremophila latrobei subsp. *Latrobei*		1	1
Grevillea juncifolia		1	3.5
Acacia sp.		1	1.5
Ptilotus drummondi		1	0.25
Sida arenicola		1	0.25
Solanum lasiophyllum		1	0.25

Site ID:	MEE02	VT06
Type:	Quadrat	Size: 20 x 20 m
Date:	30/04/2023	Described by: Lauren Taaffe
Co-ordinates (50J)	647964	7057999

Drainage:	Good	**Aspect:**	South
Soil colour:	Orange	**Soil type:**	Clay Loam
Fire age and intensity:	5-10 years	**Vegetation condition:**	Very Good

Taxa	Status	Cover (%)	Height
Acacia incurvaneura		1	2
Acacia pruinocarpa		1	0.75
Acacia pteraneura		1	2
Aristida holathera var. *holathera*		1	0.25
Calandrinia sp.		1	1
Eremophila citrina		1	0.25
Eriachne pulchella		1	0.1
Hibiscus burtonii		1	0.25
Maireana planifolia		1	0.25
Ptilotus exaltatus		1	0.1
Ptilotus drummondi		1	0.25
Daucus glochidiatus		1	0.1

Site ID:	MEE03	VT07
Type:	Quadrat	Size: 20 x 20 m
Date:	30/04/2023	Described by: Lauren Taaffe
Co-ordinates (50J)	647981	7057634

Drainage:	Good	**Aspect:**	South/East
Soil colour:	Brown	**Soil type:**	Sandy clay loam
Fire age and intensity:	10+ years	**Vegetation condition:**	Excellent

Taxa	Status	Cover (%)	Height
Acacia tetragonophylla		2	2
Acacia pteraneura		1	1.25
Acacia victoriae		2	3.5
Amyema nestor		1	-
Cenchrus ciliaris	*	1	0.25
Chenopodiaceae sp.		1	0.25
Eremophila longifolia		1	2
Eucalyptus camaldulensis		2	4.5
Eucalyptus victrix		2	3
Peplidium sp.		1	0.1
Scaevola spinescens		1	1
Senna sp. Meekatharra (E. Bailey 1-26)		1	0.75
Solanum sp.		1	0.25

Site ID:	MEE04	VT06
Type:	Quadrat	Size: 20 x 20 m
Date:	30/04/2023	Described by: Lauren Taaffe
Co-ordinates (50J)	647941	7058196

Drainage:	Good	**Aspect:**	North/West
Soil colour:	Orange	**Soil type:**	Sandy loam
Fire age and intensity:	10+ years	**Vegetation condition:**	Very Good

Taxa	Status	Cover (%)	Height
Acacia incurvaneura		10	3
Acacia pteraneura		10	2.5
Boerhavia coccinea		1	0.1
Dysphania kalpari		1	0.1
Enneapogon caerulescens		1	0.1
Erodium sp.		1	0.1
Maireana planifolia		2	0.25
Acacia sp.		1	2
Ptilotus obovatus		1	0.5
Rumex vesicarius	*(WON)	1	0.25
Salsola australis		1	0.1
Sclerolaena eriacantha		1	0.25
Senna sp. Meekatharra (E. Bailey 1-26)		1	0.5
Sida arenicola		1	0.75
Solanum lasiophyllum		1	0.5
Tribulus occidentalis		1	0.1
Daucus glochidiatus		1	0.1

Menzies Sample Site Data

Site ID:	GAS01	VT08
Type:	Quadrat	Size: 20 x 20 m
Date:	28/04/2023	Described by: Lauren Taaffe
Co-ordinates (51J)	890426	6707831

Drainage:	Good	**Aspect:**	Flat
Soil colour:	Orange	**Soil type:**	Clay loam
Fire age and intensity:	10+ years	**Vegetation condition:**	Very Good

Taxa	Status	Cover (%)	Height
Abutilon oxycarpum subsp. *Prostrate*		1	1.75
Atriplex bunburyana		1	1
Atriplex sp.		1	0.5
Carrichtera annua	*	1	0.25
Cenchrus ciliaris	*	3	0.75
Eremophila longifolia		1	1.5
Maireana planifolia		1	0.5
Maireana pyramidata		15	1
Medicago polymorpha	*	1	0.1
Ptilotus obovatus		1	0.5
Sclerolaena diacantha		1	0.25
Sonchus oleraceus	*	1	0.5
Waitzia sp.		1	0.1
Poaceae sp.		1	0.1

Site ID:	GAS02	VT08
Type:	Quadrat	Size: 20 x 20 m
Date:	28/04/2023	Described by: Lauren Taaffe
Co-ordinates (51J)	890352	6707857

Drainage:	Poor	**Aspect:**	Flat
Soil colour:	Orange	**Soil type:**	Clay
Fire age and intensity:	10+ years	**Vegetation condition:**	Good

Taxa	Status	Cover (%)	Height
Atriplex bunburyana		1	1
Carrichtera annua	*	1	0.25
Cenchrus ciliaris	*	4	0.75
Duperreya sericea		1	CL
Leiocarpa websteri		1	0.5
Maireana planifolia		1	0.5
Maireana pyramidata		15	1
Plantago sp. Mt Magnet (A.S. George 6793)		1	0.1
Sclerolaena diacantha		1	0.5
Sisymbrium orientale	*	1	0.75
Solanum lasiophyllum		1	0.25
Sonchus oleraceus	*	1	0.5
Waitzia sp.		1	0.25

Site ID:	GAS03	VT08
Type:	Quadrat	Size: 20 x 20 m
Date:	28/04/2023	Described by: Lauren Taaffe
Co-ordinates (51J)	890279	6707876

Drainage:	Poor	**Aspect:**	Flat
Soil colour:	Orange	**Soil type:**	Clay
Fire age and intensity:	10+ years	**Vegetation condition:**	Very Good

Taxa	Status	Cover (%)	Height
Atriplex bunburyana		1	1
Atriplex bunburyana		1	1
Carrichtera annua	*	1	0.75
Cenchrus ciliaris	*	10	0.75
Cenchrus ciliaris	*	1	0.75
Crassula colorata var. *colorata*		1	0.1
Dissocarpus paradoxus		1	0.5
Duperreya sericea		1	CL
Maireana planifolia		1	0.5
Maireana pyramidata		15	1
Medicago polymorpha	*	1	0.1
Salsola australis		1	0.25
Sclerolaena alata		1	0.1
Sclerolaena alata		1	0.1
Sida fibulifera		1	0.1
Sonchus oleraceus	*	1	0.75
Sonchus oleraceus	*	1	0.5
Submitted for Paid ID Accession Number 10208		1	0.5
Vittadinia dissecta var. *hirta*		1	0.1
Waitzia sp.		1	0.25

Site ID:	GAS04R	VT09
Type:	Relevé	Size: 20 x 20 m
Date:	28/04/2023	Described by: Lauren Taaffe
Co-ordinates (51J)	890467	6707846

Drainage:	Poor	**Aspect:**	Flat
Soil colour:	Orange	**Soil type:**	Clay
Fire age and intensity:	10+ years	**Vegetation condition:**	Good

Taxa	Status	Cover (%)	Height
Acacia tetragonophylla		1	2
Acacia jennerae		2	2.5
Atriplex bunburyana		1	1
Cenchrus ciliaris	*	15	0.75
Chloris truncata		15	0.5
Eremophila longifolia		2	1.75
Maireana pyramidata		4	1
Schinus molle	*	2	3.5
Senna artemisioides subsp. *filifolia*		1	1.5

Sandstone Sample Site Data

Site ID:	SAN01	VT10
Type:	Quadrat	Size: 20 x 20 m
Date:	02/05/2023	Described by: Lauren Taaffe
Co-ordinates (50J)	725232	6902738

Drainage:	Good	Aspect:	Flat
Soil colour:	Orange	Soil type:	Clay loam
Fire age and intensity:	10+ years	Vegetation condition:	Very Good

Taxa	Status	Cover (%)	Height
Acacia aneura		5	5
Acacia incurvaneura		1	4
Acacia mulganeura		2	5
Acacia ramulosa var. *ramulosa*		3	2
Eremophila margarethae		1	0.5

Site ID:	SAN02	VT10
Type:	Quadrat	Size: 20 x 20 m
Date:	02/05/2023	Described by: Lauren Taaffe
Co-ordinates (50J)	725320	6902700

Drainage:	Good	**Aspect:**	Flat
Soil colour:	Orange	**Soil type:**	Clay loam
Fire age and intensity:	10+ years	**Vegetation condition:**	Very Good

Taxa	Status	Cover (%)	Height
Acacia aneura		10	5
Acacia incurvaneura		2	4
Acacia mulganeura		2	5

Site ID:	SAN03	VT10
Type:	Quadrat	Size: 20 x 20 m
Date:	02/05/2023	Described by: Lauren Taaffe
Co-ordinates (50J)	725371	6902644

Drainage:	Good	**Aspect:**	Flat
Soil colour:	Orange	**Soil type:**	Clay loam
Fire age and intensity:	10+ years	**Vegetation condition:**	Very Good

Taxa	Status	Cover (%)	Height
Acacia aneura		10	4.5
Acacia mulganeura		1	3
Chenopodiaceae sp.		1	0.25
Cryptandra connata		1	0.75
Poaceae sp.		1	0.25

Wiluna Sample Site Data

Site ID:	WIL01	VT11
Type:	Quadrat	Size: 20 x 20 m
Date:	29/04/2023	Described by: Lauren Taaffe
Co-ordinates (51J)	820396	7055335

Drainage:	Good	**Aspect:**	Flat
Soil colour:	Orange	**Soil type:**	Sandy clay loam
Fire age and intensity:	10+ years	**Vegetation condition:**	Excellent

Taxa	Status	Cover (%)	Height
Acacia pruinocarpa		5	3.5
Acacia pteraneura		2	2.5
Calandrinia sp.		1	1
Dactyloctenium radulans		1	0.1
Dysphania kalpari		1	0.1
Eremophila margarethae		1	1
Lepidium platypetalum		1	0.5
Ptilotus obovatus		1	0.75
Acacia sp.		3	3.5
Sclerolaena eriacantha		1	0.25
Eremophila sp.		1	0.75

Site ID:	WIL02	VT12
Type:	Quadrat	Size: 20 x 20 m
Date:	29/04/2023	Described by: Lauren Taaffe
Co-ordinates (51J)	820379	7055181

Drainage:	Good	**Aspect:**	Flat
Soil colour:	Orange	**Soil type:**	Sandy clay loam
Fire age and intensity:	10+ years	**Vegetation condition:**	Excellent

Taxa	Status	Cover (%)	Height
Acacia aptaneura		5	3.5
Acacia pruinocarpa		4	3
Acacia pteraneura		5	3.5
Eremophila citrina		1	0.25
Eremophila margarethae		1	0.5
Grevillea sarissa subsp. *succincta*		1	1.25
Rhagodia eremaea		1	1

Site ID:	WIL03	VT12
Type:	Quadrat	Size: 20 x 20 m
Date:	29/04/2023	Described by: Lauren Taaffe
Co-ordinates (51J)	820537	7055257

Drainage:	Good	**Aspect:**	West
Soil colour:	Orange	**Soil type:**	Sandy clay loam
Fire age and intensity:	10+ years	**Vegetation condition:**	Excellent

Taxa	Status	Cover (%)	Height
Acacia incurvaneura		3	4.5
Acacia pteraneura		2	3.75
Calandrinia sp.		1	0.1
Eremophila margarethae		1	0.75
Grevillea sarissa subsp. *succincta*		1	1.5
Ptilotus obovatus		1	0.75

Site ID:	WIL04	VT11
Type:	Quadrat	Size: 20 x 20 m
Date:	29/04/2023	Described by: Lauren Taaffe
Co-ordinates (51J)	820422	7055159

Drainage:	Good	**Aspect:**	Flat
Soil colour:	Orange	**Soil type:**	Sandy clay loam
Fire age and intensity:	10+ years	**Vegetation condition:**	Good

Taxa	Status	Cover (%)	Height
Acacia aneura x Acacia craspedocarpa		10	3.75
Acacia aptaneura		2	3.5
Acacia pruinocarpa		1	3.5
Calandrinia sp.		1	1
Dactyloctenium radulans		1	0.1
Dysphania kalpari		1	0.1
Dysphania kalpari		1	0.1
Eremophila citrina		1	0.25
Erodium sp.		1	0.1
Lepidium platypetalum		1	0.5
Paspalidium rarum		1	0.25
Ptilotus exaltatus		1	0.25
Rumex vesicarius	*	1	0.1
Salsola australis		1	0.25
Sclerolaena eriacantha		1	0.25
Sida ectogama		1	1.25
Eremophila sp.		1	1.75

Site ID:	WIL05	VT11
Type:	Quadrat	Size: 20 x 20 m
Date:	29/04/2023	Described by: Lauren Taaffe
Co-ordinates (51J)	820520	7054938

Drainage:	Good	**Aspect:**	Flat
Soil colour:	Orange	**Soil type:**	Sandy clay loam
Fire age and intensity:	10+ years	**Vegetation condition:**	Excellent

Taxa	Status	Cover (%)	Height
Acacia tetragonophylla		1	2
Acacia pruinocarpa		2	3.5
Acacia pteraneura		10	3.5
Calandrinia sp.		1	1
Dactyloctenium radulans		1	0.1
Dysphania kalpari		1	0.1
Enteropogon ramosus		1	0.5
N/A		1	1
Ptilotus exaltatus		1	0.25
Ptilotus obovatus		1	1
Salsola australis		1	0.25
Senna artemisioides subsp. filifolia		1	0.5
Sida ectogama		2	1.25

Site ID:	WIL06	VT12
Type:	Quadrat	Size: 20 x 20 m
Date:	29/04/2023	Described by: Lauren Taaffe
Co-ordinates (51J)	820670	7055031

Drainage:	Good	**Aspect:**	West
Soil colour:	Brown	**Soil type:**	Clay loam
Fire age and intensity:	10+ years	**Vegetation condition:**	Excellent

Taxa	Status	Cover (%)	Height
Acacia tetragonophylla		1	1.75
Acacia aneura x Acacia craspedocarpa		10	4
Acacia aptaneura		2	2.75
Acacia pruinocarpa		1	3.25
Calandrinia sp.		1	1
Eriachne sp.		1	0.1
Sclerolaena eriacantha		1	0.25
Senna sp. Meekatharra (E. Bailey 1-26)		1	1.5
Sida ectogama		1	1.25

Site ID:	GJ01	VT13
Type:	Quadrat	Size: 50 x 50 m
Date:	04/05/2023	Described by: Joel Collins
Co-ordinates (50J)	318783	7227348

Drainage:	Good	**Aspect:**	North/East
Soil colour:	Brown	**Soil type:**	Sandy loam
Fire age and intensity:	10+ years	**Vegetation condition:**	Good

Taxa	Status	Cover (%)	Height
Acacia victoriae		1	1
Acacia victoriae		1	0.5
Acacia victoriae		2	1.5
Aristida contorta		1	0.1
Asteraceae sp. (sterile)		1	0.1
Atriplex? codonocarpa		1	0.1
Digitaria sp.		1	0.25
Eragrostis dielsii		2	0.1
Frankenia setosa		1	0.25
Hakea recurva		2	1.5
Maireana sp. (sterile)		1	0.1
Maireana sp.		1	0.1
Podolepis sp. (sterile)		1	0.1
Ptilotus exaltatus		1	0.1
Salsola australis		1	0.1
Scaevola sp.		1	0.1
Streptoglossa liatroides		1	0.1

Site ID:	GJ02	VT13
Type:	Quadrat	Size: 50 x 50 m
Date:	04/05/2023	Described by: Joel Collins
Co-ordinates (50J)	318922	7227255

Drainage:	Good	**Aspect:**	North/East
Soil colour:	Brown	**Soil type:**	Sandy loam
Fire age and intensity:	10+ years	**Vegetation condition:**	Good

Taxa	Status	Cover (%)	Height
Acacia victoriae		1	0.5
Aristida contorta		1	0.1
Atriplex? codonocarpa		1	0.1
Digitaria sp.		1	0.25
Eragrostis dielsii		2	0.1
Eragrostis xerophila		1	0.1
Eremophila cuneifolia		2	0.5
Hakea recurva		1	0.5
Maireana sp.		2	0.2
Rhagodia eremaea		1	0.5
Salsola australis		1	0.1
Sclerolaena sp (sterile)		1	0.1
Tecticornia sp.		1	0.25

Site ID:	GJ03	VT13
Type:	Quadrat	Size: 50 x 50 m
Date:	04/05/2023	Described by: Joel Collins
Co-ordinates (50J)	319007	7227377

Drainage:	Good	**Aspect:**	North/East
Soil colour:	Brown	**Soil type:**	Sandy loam
Fire age and intensity:	10+ years	**Vegetation condition:**	Good

Taxa	Status	Cover (%)	Height
Acacia tetragonophila		1	0.5
Acacia victoriae		5	1.75
Atriplex? codonocarpa		1	0.1
Cenchrus ciliaris		1	0.1
Digitaria sp.		1	0.25
Eragrostis xerophila		1	0.1
Hakea recurva		1	0.5
Maireana sp.		1	0.1
Rhagodia eremaea		1	0.5
Salsola australis		1	0.1
Streptoglossa liatroides		1	0.1

Laverton Sample Site Data

Site ID:	LAV01	
Type:	Quadrat	Size: 50 x 50 m
Date:	25/05/2023	Described by: Joel Collins
Co-ordinates (51J)	443472	6835080

Drainage:	Good	Aspect:	Flat
Soil colour:	Brown	Soil type:	Sandy clay loam
Fire age and intensity:	3-5 years	Vegetation condition:	Good

Taxa	Status	Cover (%)	Height
Abutilon leucopetalum		1	0.25
Acacia tetragonophylla		4	3
Acacia aneura		2	3
Acacia ayersiana		3	6
Acacia craspedocarpa		2	2
Acacia ramulosa		30	7
Austrostipa elegantissima		2	0.25
Calotis sp.		1	0.1
Cheilanthes sieberi subsp. *sieberi*		1	0.1
Dianella revoluta		1	0.25
Digitaria ammophila		1	0.25
Enchylaena tomentosa var. *tomentosa*		1	0.25
Eremophila glandulifera		1	0.25
Erodium cygnorum		1	0.1
Euphorbia drummondii		1	0.1
Iseilema eremaeum		1	0.1
Jasminum didymum subsp. *lineare*		1	0.5
Maireana thesioides		1	0.25
Nicotiana rosulata		1	0.1
Portulaca oleracea		1	0.1
Ptilotus obovatus		1	0.25
Rhagodia eremaea		1	0.25
Sclerolaena cuneata		1	0.25
Sclerolaena eurotioides		1	0.5
Senna glutinosa subsp. *chatelainiana*		1	0.25
Sida ectogama		1	1.5

Site ID:	LAV02	
Type:	Quadrat	Size: 50 x 50 m
Date:	25/05/2023	Described by: Joel Collins
Co-ordinates (51J)	443392	6835212

Drainage:	Good	Aspect:	Flat
Soil colour:	Brown	Soil type:	Sandy clay loam
Fire age and intensity:	3-5 years	Vegetation condition:	Degraded

Taxa	Status	Cover (%)	Height
Abutilon otocarpum		1	0.25
Acacia tetragonophylla		4	3
Acacia aneura		2	3
Acacia ramulosa		10	5
Digitaria ammophila		1	0.25
Enneapogon polyphyllus		1	0.1
Eremophila metallicorum		1	0.25
Ptilotus obovatus		1	0.25
Ptilotus divaricatus		1	0.25
Salsola australis		1	0.25
Sclerolaena eurotioides		1	0.5
Senna glutinosa subsp. *chatelainiana*		1	0.25
Sida ectogama		1	0.5

Site ID:	LAV03	
Type:	Quadrat	Size: 50 x 50 m
Date:	25/05/2023	Described by: Joel Collins
Co-ordinates (51J)	441022	6834236

Drainage:	Good	Aspect:	Flat
Soil colour:	Brown	Soil type:	Sandy clay loam
Fire age and intensity:	3-5 years	Vegetation condition:	Degraded

Taxa	Status	Cover (%)	Height
Abutilon leucopetalum	V	1	0.25
Abutilon otocarpum		1	0.25
Acacia tetragonophylla		2	2
Acacia aneura		40	6.75
Acacia craspedocarpa		5	2
Acacia ramulosa		3	7
Acacia wanyu		1	1.5
Aristida contorta		1	0.1
Arivela viscosa	R.E	1	0.25
Asteraceae sp. (sterile)		20	0.25
Brachyscome iberidifolia		2	0.25
Calendrinia sp. (sterile)		1	0.1
**Cenchrus ciliaris*		2	0.25
Dendrophyllanthus erwinii		1	0.1
Dysphania melanocarpa		1	0.25
Eragrostis leptocarpa		1	0.25
Erodium cygnorum		1	0.1
Euphorbia drummondii		1	0.1
Jasminum didymum subsp. *lineare*		1	0.5
Maireana thesioides		1	0.25
Maireana tomentosa		1	0.25
Marsilea sp. (sterile)		1	0.1
Nicotiana rosulata		1	0.25
Pluchea dentex		1	0.25
Portulaca oleracea		1	0.1
Ptilotus xerophilus		2	0.25
Rhagodia eremaea		1	0.25
Rhagodia eremaea		1	0.5
Roepera eremaea		1	0.25
Salsola australis		4	0.25
Santalum lanceolatum		1	1.25
Sclerolaena cuneata		1	0.25
Sclerolaena eurotioides		1	0.25
Senna artemisioides subsp. ×*artemisioides*		2	0.75
Sida sp. (sterile)		1	0.25
Sida fibulifera		2	0.1
Sisymbrium erysimoides	*	2	0.25
Solanum lasiophyllum		1	0.25
Sonchus oleraceus	*	1	0.1
Vittadinia sulcata		1	0.25

Site ID:	LAV04R	
Type:	Relevé	Size: 50 x 50 m
Date:	25/05/2023	Described by: Joel Collins
Co-ordinates (51J)	441078	6834287

Drainage:	Good	**Aspect:**	Flat
Soil colour:	Brown	**Soil type:**	Sandy clay loam
Fire age and intensity:	3-5 years	**Vegetation condition:**	Degraded

Taxa	Status	Cover (%)	Height
Acacia aneura		3	2.75
Acacia wanyu		5	2
Brachyscome iberidifolia		2	0.25
**Cenchrus ciliaris*		1	0.25
Eucalyptus camaldulensis subsp. *obtusa*		2	9
Salsola australis		2	0.25
Sclerolaena cuneata		1	0.25
Sclerolaena eurotioides		1	0.25
Sclerolaena eurotioides		1	0.25
Sida sp. (sterile)		1	0.25
Solanum lasiophyllum		1	0.25

Raw Flora Data Nullagine

Site	*Taxa*	Status	Form/Stratum	Reproductive state	Life form	Cover (%)	Height
Nul_01	*Tribulus suberosus*		Shrub, cycad, grass-tree (M)	Vegetative	Perennial	1	0.5
Nul_01	*Streptoglossa decurrens*		Forb (G)	Vegetative	Perennial	1	0.25
Nul_01	*Indigofera monophylla*		Shrub, cycad, grass-tree (M)	Flower	Perennial	1	1
Nul_01	*Senna symonii*		Shrub, cycad, grass-tree (M)	Flower	Perennial	2	1.5
Nul_01	*Sida* sp. Pilbara		Heath shrub (M)	Flowerbud	Perennial	1	0.25
Nul_01	*Triodia epactia*		Tussock grass (G)	Flower	Perennial	15	1.25
Nul_01	*Triodia angusta*		Tussock grass (G)	Flower	Perennial	2	1.75
Nul_01	*Fimbristylis depauperata*		Sedge (G)	Flower	Perennial	1	0.25
Nul_01	*Enneapogon caerulescens*		Other grass (G)	Flower	Perennial	1	0.25
Nul_01	*Acacia hilliana*		Heath shrub (M)	Flower	Perennial	5	1
Nul_01	*Maireana* sp. (insufficient material)		Chenopod shrub (M)	Vegetative	Perennial	1	0.25
Nul_01	*Triodia pungens*		Tussock grass (G)	Flower	Perennial	15	1.25
Nul_01	*Acacia bivenosa*		Shrub, cycad, grass-tree (M)	Fruit	Perennial	2	1.75
Nul_01	*Corymbia hamersleyana*		Tree (U)	Vegetative	Perennial	1	2
Nul_01	*Triodia brizoides*		Tussock grass (G)	Flower	Perennial	30	1
Nul_01	*Eucalyptus leucophloia* subsp. *leucophloia*		Tree mallee (U)	Flower	Perennial	5	4
Nul_01	*Cymbopogon ambiguus*		Other grass (G)	Flower	Perennial	1	1
Nul_02	*Triodia brizoides*		Tussock grass (G)	Flower	Perennial	30	1.25
Nul_02	*Eucalyptus leucophloia* subsp. *leucophloia*		Tree mallee (U)	Flower	Perennial	2	4
Nul_02	*Triodia angusta*		Tussock grass (G)	Flower	Perennial	10	1.75
Nul_02	*Senna symonii*		Shrub, cycad, grass-tree (M)	Flower	Perennial	2	1.5
Nul_02	*Ptilotus exaltatus*		Forb (G)	Vegetative	Perennial	1	0.5
Nul_02	*Acacia synchronicia*		Shrub, cycad, grass-tree (M)	Vegetative	Perennial	3	2
Nul_02	*Acacia bivenosa*		Shrub, cycad, grass-tree (M)	Fruit	Perennial	2	2
Nul_02	*Maireana* sp. (insufficient material)		Chenopod shrub (M)	Vegetative	Perennial	1	0.25
Nul_02	*Cassytha capillaris*		Forb (G)	Fruit	Perennial		

Site	*Taxa*	Status	Form/Stratum	Reproductive state	Life form	Cover (%)	Height
Nul_02	*Pluchea tetranthera*		Forb (G)	Vegetative	Perennial	1	0.25
Nul_02	*Pluchea tetranthera*		Forb (G)	Vegetative	Perennial	1	0.25
Nul_02	*Sclerolaena eriacantha*		Chenopod shrub (M)	Fruit	Perennial	1	0.25
Nul_02	*Enchylaena tomentosa*		Chenopod shrub (M)	Vegetative	Perennial	1	0.5
Nul_03	*Senna symonii*		Shrub, cycad, grass-tree (M)	Flower	Perennial	1	1.5
Nul_03	*Acacia hilliana*		Heath shrub (M)	Flower	Perennial	5	1
Nul_03	*Maireana* sp. (insufficient material)		Chenopod shrub (M)	Vegetative	Perennial	1	0.25
Nul_03	*Triodia pungens*		Tussock grass (G)	Flower	Perennial	10	1.5
Nul_03	*Acacia bivenosa*		Shrub, cycad, grass-tree (M)	Fruit	Perennial	3	1.75
Nul_03	*Triodia brizoides*		Tussock grass (G)	Flower	Perennial	30	1.25
Nul_03	*Acacia aphanoclada*	P1	Shrub, cycad, grass-tree (M)	Fruit	Perennial	3	4
Nul_03	*Polygala glaucifolia*		Forb (G)	Fruit	Annual	1	0.1
Nul_03	*Solanum horridum*		Shrub, cycad, grass-tree (M)	Vegetative	Perennial	1	0.25
Nul_03	*Senna glutinosa* subsp. *pruinosa*		Shrub, cycad, grass-tree (M)	Vegetative	Perennial	2	1
Nul_03	*Senna glutinosa* subsp. *glutinosa*		Shrub, cycad, grass-tree (M)	Vegetative	Perennial	1	1.5
Nul_03	*Bonamia media*		Heath shrub (M)	Vegetative	Perennial	1	0.1
Opp	*Petalostylis labicheoides*		Shrub, cycad, grass-tree (M)	Vegetative	Perennial	Opp	Opp
Opp	*Stemodia grossa*		Forb (G)	Vegetative	Perennial	Opp	Opp
Opp	*Pluchea ferdinandi-muelleri*		Forb (G)	Vegetative	Perennial	Opp	Opp
Opp	*Bonamia pannosa*		Heath shrub (M)	Vegetative	Perennial	Opp	Opp
Opp	*Bulbostylis barbata*		Sedge (G)	flower	Perennial	Opp	Opp
Opp	*Melaleuca eleuterostachya*		Shrub, cycad, grass-tree (M)	Fruit	Perennial	Opp	Opp
Opp	*Euphorbia biconvexa*		Forb (G)	Fruit	Annual	Opp	Opp
Opp	*Cucumis variabilis*		Forb (G)	Fruit	Perennial	Opp	Opp
Opp	*Aristida contorta*		Other grass (G)	Flower	Perennial	Opp	Opp
Opp	*Aristida holathera* var. *holathera*		Other grass (G)	Flower	Perennial	Opp	Opp
Opp	*Pluchea dentex*		Forb (G)	Vegetative	Perennial	Opp	Opp

Site	*Taxa*	Status	Form/Stratum	Reproductive state	Life form	Cover (%)	Height
Opp	*Sporobolus australasicus*		Other grass (G)	Flower	Perennial	Opp	Opp
Opp	*Enneapogon polyphyllus*		Other grass (G)	Flower	Perennial	Opp	Opp
Opp	*Solanum* sp. Mosquito Creek (A.A. Mitchell et al. AAM 10795)	P1	Shrub, cycad, grass-tree (M)	Flower	Perennial	Opp	Opp
Opp	*Bonamia erecta*		Heath shrub (M)	Vegetative	Perennial	Opp	Opp
Opp	*Grevillea wickhamii* subsp. *hispidula*		Shrub, cycad, grass-tree (M)	Flower	Perennial	Opp	Opp
Opp	*Acacia acradenia*		Shrub, cycad, grass-tree (M)	Flower	Perennial	Opp	Opp
Opp	*Cenchrus ciliaris*	*	Other grass (G)	Flower	Perennial	Opp	Opp
Opp	*Calotropis procera*	*DP	Shrub, cycad, grass-tree (M)	Flower	Perennial	Opp	Opp

Significant Flora - Nullagine

Species	Status	Count	Zone	Easting	Northing
Acacia aphanoclada	P1	1	51K	201239	7577568
Acacia aphanoclada	P1	1	51K	201254	7577569
Acacia aphanoclada	P1	2	51K	201248	7577561
Acacia aphanoclada	P1	2	51K	201273	7577554
Acacia aphanoclada	P1	1	51K	201290	7577543
Acacia aphanoclada	P1	1	51K	201295	7577576
Acacia aphanoclada	P1	3	51K	201232	7577580
Acacia aphanoclada	P1	1	51K	201215	7577543
Acacia aphanoclada	P1	1	51K	201332	7577564
Acacia aphanoclada	P1	1	51K	201377	7577612
Acacia aphanoclada	P1	2	51K	201393	7577615
Acacia aphanoclada	P1	2	51K	201411	7577588
Acacia aphanoclada	P1	2	51K	201449	7577597
Acacia aphanoclada	P1	4	51K	201453	7577599
Acacia aphanoclada	P1	1	51K	201480	7577626
Acacia aphanoclada	P1	4	51K	201513	7577628
Acacia aphanoclada	P1	2	51K	201518	7577629
Acacia aphanoclada	P1	2	51K	201524	7577629
Acacia aphanoclada	P1	1	51K	201529	7577617
Acacia aphanoclada	P1	2	51K	201397	7577671
Acacia aphanoclada	P1	1	51K	201379	7577661
Acacia aphanoclada	P1	1	51K	201271	7577626
Acacia aphanoclada	P1	5	51K	201293	7577657
Acacia aphanoclada	P1	1	51K	201321	7577663
Acacia aphanoclada	P1	1	51K	201360	7577676
Acacia aphanoclada	P1	1	51K	201366	7577666
Acacia aphanoclada	P1	1	51K	201370	7577702
Acacia aphanoclada	P1	1	51K	201398	7577814
Solanum sp. Mosquito Creek (A.A. Mitchell et al. AAM 10795)	P1	1	51K	201367	7577756

Significant flora - Cue

Species	Status	Count	Zone	Easting	Northing
Eremophila rostrata subsp. *rostrata*	T	1	50K	588791	6968151
Eremophila rostrata subsp. *rostrata*	T	1	50K	588792	6968145
Eremophila rostrata subsp. *rostrata*	T	1	50K	588796	6968143
Eremophila rostrata subsp. *rostrata*	T	1	50K	588788	6968162
Eremophila rostrata subsp. *rostrata*	T	2	50K	588782	6968174
Eremophila rostrata subsp. *rostrata*	T	1	50K	588771	6968177
Eremophila rostrata subsp. *rostrata*	T	1	50K	588762	6968182

Species	Status	Count	Zone	Easting	Northing
Eremophila rostrata subsp. *rostrata*	T	1	50K	588839	6968178
Eremophila rostrata subsp. *rostrata*	T	1	50K	588851	6968187
Eremophila rostrata subsp. *rostrata*	T	1	50K	588847	6968182
Eremophila rostrata subsp. *rostrata*	T	2	50K	588836	6968193
Eremophila rostrata subsp. *rostrata*	T	1	50K	588833	6968195
Eremophila rostrata subsp. *rostrata*	T	2	50K	588834	6968202
Eremophila rostrata subsp. *rostrata*	T	1	50K	588832	6968210
Eremophila rostrata subsp. *rostrata*	T	1	50K	588830	6968191
Eremophila rostrata subsp. *rostrata*	T	1	50K	588806	6968189
Eremophila rostrata subsp. *rostrata*	T	2	50K	588809	6968193
Eremophila rostrata subsp. *rostrata*	T	1	50K	588784	6968202
Eremophila rostrata subsp. *rostrata*	T	1	50K	588796	6968212
Eremophila rostrata subsp. *rostrata*	T	1	50K	588796	6968215
Eremophila rostrata subsp. *rostrata*	T	1	50K	588787	6968229
Eremophila rostrata subsp. *rostrata*	T	1	50K	588788	6968232
Eremophila rostrata subsp. *rostrata*	T	1	50K	588862	6968231
Eremophila rostrata subsp. *rostrata*	T	1	50K	588831	6968245
Eremophila rostrata subsp. *rostrata*	T	1	50K	588819	6968246
Eremophila rostrata subsp. *rostrata*	T	1	50K	588821	6968251
Eremophila rostrata subsp. *rostrata*	T	1	50K	588823	6968257
Eremophila rostrata subsp. *rostrata*	T	1	50K	588817	6968260
Eremophila rostrata subsp. *rostrata*	T	1	50K	588811	6968267
Eremophila rostrata subsp. *rostrata*	T	1	50K	588815	6968269
Eremophila rostrata subsp. *rostrata*	T	2	50K	588770	6968251
Eremophila rostrata subsp. *rostrata*	T	1	50K	588772	6968261
Eremophila rostrata subsp. *rostrata*	T	2	50K	588776	6968262
Eremophila rostrata subsp. *rostrata*	T	1	50K	588775	6968267
Eremophila rostrata subsp. *rostrata*	T	1	50K	588779	6968267
Eremophila rostrata subsp. *rostrata*	T	1	50K	588781	6968268
Eremophila rostrata subsp. *rostrata*	T	1	50K	588782	6968269
Eremophila rostrata subsp. *rostrata*	T	1	50K	588773	6968270
Eremophila rostrata subsp. *rostrata*	T	1	50K	588541	6968250
Eremophila rostrata subsp. *rostrata*	T	3	50K	588794	6968282
Eremophila rostrata subsp. *rostrata*	T	1	50K	588798	6968281
Eremophila rostrata subsp. *rostrata*	T	1	50K	588796	6968285
Eremophila rostrata subsp. *rostrata*	T	1	50K	588802	6968295
Eremophila rostrata subsp. *rostrata*	T	1	50K	588810	6968292
Eremophila rostrata subsp. *rostrata*	T	1	50K	588806	6968281
Eremophila rostrata subsp. *rostrata*	T	1	50K	588817	6968297
Eremophila rostrata subsp. *rostrata*	T	1	50K	588749	6968160
Eremophila rostrata subsp. *rostrata*	T	1	50K	588762	6968166

Species	Status	Count	Zone	Easting	Northing
Eremophila rostrata subsp. *rostrata*	T	1	50K	588784	6968153
Eremophila rostrata subsp. *rostrata*	T	1	50K	588788	6968151
Eremophila rostrata subsp. *rostrata*	T	1	50K	588653	6968174
Eremophila rostrata subsp. *rostrata*	T	1	50K	588742	6968153
Eremophila rostrata subsp. *rostrata*	T	1	50K	588742	6968152
Eremophila rostrata subsp. *rostrata*	T	3	50K	588736	6968149
Maireana prosthecochaeta	P3	1	50K	588398	6968183
Ptilotus sp. Cue (P. Armstrong PA 16/362)	P1	1	50K	588812	6968286

Flora likelihood of occurrence assessment guidelines

Likelihood of occurrence	Guideline
Recorded	Species recorded in current survey and/or previous recorded from desktop review
Likely	Species previously recorded within the study area and large areas of suitable habitat occur in the survey area.
Possible	Species previously recorded within the study area and areas of suitable habitat occur/may occur in the survey area.
Unlikely	Species previously recorded within the study area, but suitable habitat does not occur in the survey area.
Highly unlikely	Species not previously recorded within the study area, suitable habitat does not occur in the survey area and/or the survey area is outside the natural distribution of the species.
Other considerations	Intensity of survey, availability of access, growth form type, recorded flowering times, cryptic nature of species

Source information - desktop searches
PMST – DEE Protected Matters Search Tool (PMST) to identify flora listed under the EPBC Act potentially occurring within the study area
DBCA – records of threatened flora from TPFL and WAHERB database searches within the study area
NM – DBCA *NatureMap*

Flora likelihood of occurrence assessment of conservation significant flora identified in the desktop assessment as potentially occurring within the Nullagine survey area

Family	Taxon	Status		Description	Likelihood of occurrence	Source
		BC Act/ DBCA	EPBC Act			
Amaranthaceae	*Ptilotus mollis*	P4		Compact, perennial shrub, to 0.5 m high, soft grey foliage. Fl. white/pink, May or Sep. Stony hills and screes.	**Unlikely** Some suitable habitat present. The closest record is 8.5 km away from the survey area. Due to survey efficacy, if present in the survey area this species would have been recorded as it is not cryptic	NM, DBCA
Amaranthaceae	*Ptilotus wilsonii*	P1		Shrub, ca 0.5 m high. Fl. green-white, Oct. Stony gravelly soils. Rocky hills	**Unlikely** Some suitable habitat present. The closest record is 450 m west from the survey area. Due to survey efficacy, if present in the survey area this species would have been recorded as it is not cryptic	NM, DBCA
Brassicaceae	*Lepidium catapycnon*	P4		Open, woody perennial, herb or shrub, 0.2-0.3 m high, stems zigzag. Fl. white, Oct. Skeletal soils. Hillsides.	**Unlikely** Some suitable habitat present. The closest record is 17 km	NM, DBCA

Family	Taxon	Status		Description	Likelihood of occurrence	Source
		BC Act/ DBCA	EPBC Act			
					east from the survey area. Due to survey efficacy, if present in the survey area this species would have been recorded as it is not cryptic	
Chenopodiaceae	*Atriplex spinulosa*	P1		Monoeciouos, erect, rounded annual, herb, ca 0.2 m high.	**Unlikely** Some suitable habitat present. The closest record was from 1974 and 95 m away from the survey area. The location was checked however it was not located. Due to survey efficacy, if present in the survey area this species would have been recorded as it is not cryptic	NM, DBCA
Fabaceae	*Acacia aphanoclada*	P1		Slender, wispy shrub, 1.7-5 m high. Fl. yellow, Aug to Oct. Skeletal stony soils. Rocky hills, ridges & rises.	**Recorded** Fort-eight occurrences were recorded during the field survey	NM, DBCA
Fabaceae	*Acacia cyperophylla* var. *omearana*	P1		Tree, 4-10 m high, 'minni-ritchi' bark. Fl. yellow, Mar to Apr. Stony & gritty alluvium. Along drainage lines	**Unlikely** The closest record is 600 m south. Suitable habitat is not present and the species is conspicuous, it would have been recorded if present.	NM, DBCA
Fabaceae	*Acacia fecunda*	P1		Erect, obconic shrub, to 3 m high, bark grey, smooth becoming yellow-brown on upper branches; phyllodes more or less sub-glaucous with a slight sheen; inflorescence of spikes. Fl. yellow, May or Aug. Quartzite gibbers over grey-red skeletal soil. Along shallow creeks and drainage lines, hills, road verges.	**Unlikely** The closest record is 12 km east. Suitable habitat is not present. The species would be conspicuous in the survey area, it would have been recorded if present.	NM, DBCA
Fabaceae	*Indigofera ixocarpa*	P2		Shrub, to 1 m high. Fl. pink, May. Skeletal red soils over massive ironstone.	**Unlikely** The closest record is 2 km south west. Suitable habitat is not present. Due to survey efficacy, if present in the	NM, DBCA

Family	Taxon	Status		Description	Likelihood of occurrence	Source
		BC Act/ DBCA	EPBC Act			
					survey area this species would have been recorded as it is not cryptic	
Goodeniaceae	*Goodenia pedicellata*	P1		Single-stemmed perennial, herb (with dense, cottony and strigose hairs), to 0.25 m high. Rocky clayey soils. Flowers April-June Rocky slopes and crests of small hills.	**Unlikely** Suitable habitat present. The closest record is 8 km south from the survey area. The survey was conducted during the flowering period of this species. Survey efficacy would have recorded it if present	DBCA
Myrtaceae	*Eucalyptus rowleyi*	P3		Mallee. Smooth slightly powdery white bark. Dull green leaves on crown. Along drainage lines/ on red sandy loam	**Unlikely** The closest record is 12 km east. Suitable habitat is not present. The species would be conspicuous in the survey area, it would have been recorded if present.	NM, DBCA
Solanaceae	*Solanum* sp. Mosquito Creek (A.A. Mitchell et al. AAM 10795)	P1		Upright grey shrub with violet flowers; thin silvery leaves; black berry growing up to 1 m tall	**Recorded** One occurrence was recorded during the field survey	NM, DBCA

Flora likelihood of occurrence assessment of conservation significant flora identified in the desktop assessment as potentially occurring within the Cue survey area

Family	Taxon	Status		Description	Likelihood of occurrence	Source
		BC Act/ DBCA	EPBC Act			
Amaranthaceae	*Ptilotus beardii*	P3		Compact, perennial shrub, 0.15-0.5 m high, leaves linear, 2-10 mm long, 0.5-3 mm wide; spike pink, hemispherical, 15-30 mm long, 20-40 mm wide, 5-8 -flowered; tepals 14-17 mm long; 2 fertile stamens, staminodes 3; ovary glabrous; style slightly curved, 9.9-11.1 mm long, eccentrically fixed to ovary. Fl. pink-red, Aug to Oct. Clayey soils. Saline flats, low breakaways.	**Possible** Closest record is 17.4 km from the survey area. Suitable habitat is present within the survey area. Survey was conducted outside of this species flowering period, this species is difficult to identify outside of the flowering period.	DBCA
Amaranthaceae	*Ptilotus* sp. Cue (P. Armstrong PA 16/362)	P1		No information available.	**Recorded** One occurrence was recorded within the survey area.	DBCA
Asteraceae	*Angianthus microcephalus*	P2		Decumbent or ascending annual, herb, 0.06-0.1(-0.21) m high. Fl. yellow, Sep to Dec. Sandy or clayey soils. Salt swamps and pans.	**Possible** Closest record is 17.2 km from the survey area. Suitable habitat is present within the survey area. Survey was conducted outside of this species flowering period. This is an annual species not identifiable outside of flowering period.	DBCA
Asteraceae	*Angianthus uniflorus*	P2		Erect or ascending annual, herb, to 0.07 m high. Margin of calcrete rise near gypseous salt lake.	**Possible** Closest record 16.7 km. Limited information on flowering period and habitat. Due to the lack of information on this species and its habitat a precautionary approach lists this species as possible to occur within the survey area	DBCA, NM
Asteraceae	*Calotis* sp. Perrinvale Station (R.J. Cranfield 7096)	P3		Annual to 5 cm high, green leaves, red spikey heads. Flat. Red-orange sandy clay-loam, banded ironstone and quartz with orange brown soils.	**Possible** Closest record is 180 m from the survey area. Suitable habitat is present within the survey area. No information on flowering period, not	DBCA, NM

Family	Taxon	Status		Description	Likelihood of occurrence	Source
		BC Act/ DBCA	EPBC Act			
					identifiable outside of flowering period.	
Asteraceae	*Minuria tridens*	P1	VU	Dwarf virgate shrub, 0.25-0.35 m high. Fl. white-blue, Feb to Mar and May to Oct. Roadsides	**Unlikely** Suitable habitat present within the survey area. Survey was conducted during the flowering period. Due to survey efficacy, if present in the survey area this species would have been recorded as it is not cryptic.	PMST
Chenopodiaceae	*Maireana prosthecochaeta*	P3		Open, densely-leaved shrub, 0.3-0.6 m high. Laterite. Hills, salty places	**Recorded** One occurrence was recorded within the survey area.	DBCA, NM
Droseraceae	*Drosera eremaea*	P3		No description. Florabase records indicate it has pink to white flowers, found on open ground washes on banks of creeks, winter wet soils, red sand , quartz grit, over white quartz.	**Possible** Closest record is 13.6 km from the survey area. Limited information on flowering period. Due to the lack of information on this species flowering period, it is possible that it was not in flower during the survey. This species is dormant through periods of the year and may not have been detected.	DBCA
Elatinaceae	*Bergia auriculata*	P2		Prostrate perennial, herb. Clay soils. Mud flats	**Possible** Closest record is 10.8 km from the survey area. Suitable habitat present within the survey area. Due to the lack of information on this species flowering period, it is possible that it was not in flower during the survey, this species is cryptic and no easily identifiable outside of its flowering period.	DBCA, NM

Family	Taxon	Status		Description	Likelihood of occurrence	Source
		BC Act/ DBCA	EPBC Act			
Fabaceae	*Acacia speckii*	P4		Bushy, rounded shrub or tree, 1.5-3 m high. Rocky soils over granite, basalt or dolerite. Rocky hills or rises.	**Unlikely** Closest record is 1.2 km from the survey area. Limited suitable habitat is present. Due to survey efficacy, if present in the survey area this species would have been recorded as it is not cryptic.	DBCA, NM
Fabaceae	*Jacksonia lanicarpa*	P1		Shrub, to 2 m high. Fl. orange, Nov. Red sand.	**Unlikely** Closest record is 438 m from the survey area. Limited information on habitat. Due to survey efficacy, if present in the survey area this species would have been recorded as it is not cryptic.	DBCA, NM
Goodeniaceae	*Goodenia berringbinensis*	P4		Ascending annual, herb, 0.1-0.3 m high. Fl. yellow, Oct. Red sandy loam. Along watercourses.	**Possible** Suitable habitat within the survey area. Survey not conducted during flowering period. This is an annual species not identifiable outside of flowering period.	DBCA, NM
Lamiaceae	*Dicrastylis* sp. Cue (A.A. Mitchell 764)	P2		Shrub, 1-3 m high. Fl. white, Sep to Oct. Drainage area, near granite.	**Unlikely** Closest record is 180 m from the survey area. Suitable habitat present. Due to survey efficacy, if present in the survey area this species would have been recorded as it is not cryptic.	DBCA, NM
Lamiaceae	*Prostanthera petrophila*	P3		Spreading shrub, 0.6-1.5 m high. Fl. white, Aug. Lateritic soils	**Unlikely** Closest record is 180 m from the survey area. No suitable habitat present. Due to survey efficacy, if present in the survey area this species would have been recorded as it is not cryptic.	DBCA, NM

Family	Taxon	Status		Description	Likelihood of occurrence	Source
		BC Act/ DBCA	EPBC Act			
Malvaceae	*Hibiscus krichauffianus*	P3		Low or ascending shrub, (0.03-)0.2-0.7 m high. Fl. purple-pink, Mar or Oct. Red sandy soils.	**Unlikely** Closest record is 710 m from the survey area. Suitable habitat is present within the survey area. Survey conducted during flowering period. Due to survey efficacy, if present in the survey area this species would have been recorded as it is not cryptic.	DBCA
Myrtaceae	*Micromyrtus placoides*	P3		Shrub, 0.5-2.3 m high, sometimes widely spreading with several stems or branches from the base. Red-orange sandy clay, orange-yellow sandy clay to clayey loam, coarse gravel, banded ironstone, laterite, quartz, basalt. Gently undulating plains, dry creek beds, hillcrests, ridges.	**Unlikely** Closest record 180 m from the survey area. Suitable habitat present. Due to survey efficacy, if present in the survey area this species would have been recorded as it is not cryptic	DBCA, NM
Proteaceae	*Grevillea inconspicua*	P4		Intricately branched, spreading shrub, 0.6-2 m high. Fl. white/pink-white, Jun to Aug. Loam, gravel. Along drainage lines on rocky outcrops, creeklines.	**Unlikely** Closest record 180 m from the survey area. Suitable habitat present. Due to survey efficacy, if present in the survey area this species would have been recorded as it is not cryptic	DBCA, NM
Rutaceae	*Drummondita miniata*	P3		Divaricately branched shrub, 0.5-2 m high. Fl. orange-red, Jul to Aug or Nov. Laterite. Breakaways.	**Unlikely** Closest record is 220 m from the survey area. Suitable habitat is not present within the survey area.	DBCA, NM
Sapindaceae	*Dodonaea amplisemina*	P4		Dioecious, multi-stemmed shrub, 0.3-1 m high. Red-brown sandy clay on basalt and gabbro and banded ironstone or on dolerite and quartzite. Rocky hills.	**Unlikely** Closest record 180 m from the survey area. Suitable habitat present. Due to survey efficacy, if present in the survey area this species would have been recorded as it is not cryptic.	DBCA, NM

Family	Taxon	Status		Description	Likelihood of occurrence	Source
		BC Act/ DBCA	EPBC Act			
Scrophulariaceae	*Eremophila rostrata* subsp. *rostrata*	CR	CR	Shrub, to 3 m high, with a three-parted leaf apex. Hard, light brown, sandy loams, granite.	**Recorded** Sixty- four (64) occurrences of this species were present within the survey area.	DBCA, NM, PMST

Flora likelihood of occurrence assessment of conservation significant flora identified in the desktop assessment as potentially occurring within the Meekatharra survey area

Family	Taxon	Status		Description	Likelihood of occurrence	Source
		BC Act/ DBCA	EPBC Act			
Amaranthaceae	*Ptilotus luteolus*	P3		Shrubs or perennial herbs, 0.3 m high, flowers yellow in Spring.	**Possible** Closest record is 9.3 km away. There is limited information available on this species habitat. This species is cryptic and was not in flower during the survey period.	NM, DBCA
Boraginaceae	*Euploca mitchellii*	P1		Limited information available, the following information is based off Florabase collection notes. Perennial herb to 0.3 m tall, flowers white in August. Found on stoney ground and rocky hills	**Possible** Closest record is 16 km away. There is limited information available on this species habitat. This species is cryptic and was not in flower during the survey period.	DBCA
Brassicaceae	*Menkea draboides*	P3		Prostrate, spreading annual, herb, to 0.6 m wide. Fl. white/cream, Aug to Sep. Red sand or clay, granite.	**Possible** Previously recorded within 20 km of the survey area. This is an annual, cryptic species that was not in flower at the time of the survey. Suitable habitat is present in the survey area.	NM
Fabaceae	*Acacia speckii*	P4		Bushy, rounded shrub or tree, 1.5-3 m high. Rocky soils over granite, basalt or dolerite. Rocky hills or rises.	**Unlikely** Previously recorded 6 km from the survey area. Suitable habitat is present within the survey area. Due to survey efficacy, if present in the survey area this species would have been recorded as it is not cryptic.	NM, DBCA
Fabaceae	*Indigofera rotula*	P3		Shrub or subshrub 1.25 to 1 m high. Flowers from late Autumn to early Spring. Recorded in shrubland, adjacent to watercourses or near low, granite outcrops.	**Unlikely** Previously recorded 500 m from the survey area. Suitable habitat is present within the survey area. Due to survey efficacy, if present in the survey area this species would	DBCA

Family	Taxon	Status		Description	Likelihood of occurrence	Source
		BC Act/ DBCA	EPBC Act			
					have been recorded as it is not cryptic.	
Lamiaceae	*Hemigenia virescens*	P3		Limited information available, the following information is based off Florabase collection notes. Shrub to 0.4 m high. Flowers shite, record flowering in July. Recorded in hills with brown ironstone gravel.	**Unlikely** Previously recorded 18.3 km from the survey area. Suitable habitat is present within the survey area. Due to survey efficacy, if present in the survey area this species would have been recorded as it is not cryptic.	NM, DBCA
Myrtaceae	*Calytrix verruculosa*	P3		Shrub, 0.4-0.75 m high. Fl. pink/white, Aug or Oct. Sandy clay.	**Unlikely** Previously recorded 14.3 km from the survey area. Suitable habitat is present within the survey area. Due to survey efficacy, if present in the survey area this species would have been recorded as it is not cryptic.	NM, DBCA
Myrtaceae	*Homalocalyx echinulatus*	P3		Shrub, 0.45-1 m high. Fl. pink, Jun to Sep. Laterite. Breakaways, sandstone hills.	**Unlikely** Previously recorded 14.3 km from the survey area. No suitable habitat within the survey area. Due to survey efficacy, if present in the survey area this species would have been recorded as it is not cryptic.	NM
Proteaceae	*Grevillea inconspicua*	P4		Intricately branched, spreading shrub, 0.6-2 m high. Fl. white/pink-white, Jun to Aug. Loam, gravel. Along drainage lines on rocky outcrops, creeklines.	**Unlikely** Previously recorded 1.2 km from the survey area. Suitable habitat is present within the survey area. Due to survey efficacy, if present in the survey area this species would have been recorded as it is not cryptic.	NM, DBCA

Family	Taxon	Status		Description	Likelihood of occurrence	Source
		BC Act/ DBCA	EPBC Act			
Rutaceae	*Drummondita miniata*	P3		Divaricately branched shrub, 0.5-2 m high. Fl. orange-red, Jul to Aug or Nov. Laterite. Breakaways.	**Possible** Previously recorded 800 m from the survey area. Suitable habitat present within the survey. Survey conducted outside of flowering period, this species is not easily identifiable outside of flowering.	NM, DBCA
Scrophulariaceae	*Eremophila fasciata*	P3		Erect shrub, 0.6-0.9 m high. Fl. blue-violet, Aug.	**Unlikely** Previously recorded 800 m from the survey area. Limited information is available on habitat. Due to survey efficacy, if present in the survey area this species would have been recorded as it is not cryptic.	NM
Scrophulariaceae	*Eremophila retropila*	P1		Spreading shrub, 0.7-1.7 m high, to 4.2 m wide. Fl. purple-red-white, Aug to Sep. Gravelly loam. Stony flats.	**Unlikely** Previously recorded 1.4 km from the survey area. Suitable habitat is present within the survey area. Due to survey efficacy, if present in the survey area this species would have been recorded as it is not cryptic.	NM, DBCA

Flora likelihood of occurrence assessment of conservation significant flora identified in the desktop assessment as potentially occurring within the Menzies survey area

Family	Taxon	Status		Description	Likelihood of occurrence	Source
		BC Act/ DBCA	EPBC Act			
Euphorbiaceae	*Ricinocarpos brevis*	T	EN	Shrub, to 1.8 m high. Fl. white, Jun to Jul. Rocky hillslopes, rock outcrops.	**Unlikely** Previously recorded within 20 km of the survey area. Suitable habitat does not occur within the survey area. Due to survey efficacy, if present in the survey area this species would have been recorded as it is not cryptic.	PMST
Cyperaceae	*Eleocharis papillosa*	T	VU	Small, erect perennial sedge to 0.1 m tall. Recorded flowering and fruiting throughout the year. Occurs in temporary wetlands, freshwater and saline swamps	**Unlikely** Previously recorded within 20 km of the survey area. Suitable habitat does not occur within the survey area. Due to survey efficacy, if present in the survey area this species would have been recorded.	PMST
Lamiaceae	*Apatelantha insignis*	P2		No description available.	**Possible** Previously recorded 500 m from the survey area. Due to the lack of information on this species and its habitat a precautionary approach lists this species as possible to occur within the survey area.	DBCA
Montiaceae	*Calandrinia quartzitica*	P1		Perennial herb up to 5 cm tall. Flowers creamy white-pink from September to October. Habitat dominated by quartzite or partially derived from quartz.	**Unlikely** Previously recorded 11.5 km from the survey area. Suitable habitat is not present within the survey area.	NM, DBCA
Myrtaceae	*Hysterobaeckea ochropetala* subsp. *cometes*	P3		Shrub 0.3 to 2 m tall. Flowers white or pale yellow. Previously recorded in open mallee woodland.	**Unlikely** Previously recorded within 20 km of the survey area. Suitable habitat is not present within the survey area.	NM

Family	Taxon	Status		Description	Likelihood of occurrence	Source
		BC Act/ DBCA	EPBC Act			
Myrtaceae	*Malleostemon* sp. Adelong (G.J. Keighery 11825)	P2		Spreading shrub, 0.1-0.3 m high. Fl. white, Oct. Red sand. Found in mallee over shrubland.	**Unlikely** Previously recorded 13.1 km from the survey area. Suitable habitat is not present within the survey area.	NM, DBCA
Myrtaceae	*Thryptomene eremaea*	P2		Erect open shrub, 0.5-1.5 m high. Fl. pink/white, Jul to Sep. Red or yellow sand. Sandplains.	**Unlikely** Previously recorded 9.7 km from the survey area. Suitable habitat not present within the survey area.	NM, DBCA
Proteaceae	*Grevillea erectiloba*	P4		Shrub, 1-3 m high. Fl. red, Sep to Oct. Gravelly loam. Lateritic ridges.	**Unlikely** Previously recorded 90 m from the survey area. Suitable habitat is not present within the survey area. Previous record was recorded in 1998, this area is now mostly cleared and degraded.	NM, DBCA
Proteaceae	*Grevillea subterlineata*	P3		Shrub, to 2.5 m high. Fl. white, Aug.	**Unlikely** Previously recorded 9.7 km from the survey area. Limited habitat description. Due to survey efficacy, if present in the survey area this species would have been recorded.	DBCA
Rutaceae	*Philotheca coateana*	P3		Shrub, 0.3-0.5 m high, branchlets glabrous; leaf blades 3-4 mm long; flowers terminal, solitary; petals 7-9 mm long. Fl. white & pink, Aug to Sep. Red sand.	**Unlikely** Previously recorded within 20 km of the survey area. Limited habitat description available. Survey was conducted outside of flowering period, however no Rutaceae species were observed.	NM

Flora likelihood of occurrence assessment of conservation significant flora identified in the desktop assessment as potentially occurring within the Sandstone survey area

Family	Taxon	Status		Description	Likelihood of occurrence	Source
		BC Act/ DBCA	EPBC Act			
Euphorbiaceae	*Ricinocarpos brevis*	T	EN	Shrub, to 1.8 m high. Fl. white, Jun to Jul. Rocky hillslopes, rock outcrops.	**Unlikely** Previously recorded within 20 km of the survey area. Suitable habitat does not occur within the survey area. Due to survey efficacy, if present in the survey area this species would have been recorded as it is not cryptic.	PMST
Fabaceae	*Bossiaea eremaea*	P3		Divaricately branched, spreading shrub, to 1.2 m high. Fl. red-yellow-purple-brown, Jul to Sep. Deep red sand.	**Unlikely** Previously recorded 16.8 km from the survey area. Suitable habitat is present. Due to survey efficacy, if present in the survey area this species would have been recorded as it is not cryptic.	NM, DBCA
Fabaceae	*Labichea eremaea*	P3		Compact, rigid shrub, 0.3-0.8 m high, 0.3-1 m wide. Fl. yellow, Aug to Sep. Red sand.	**Unlikely** Previously recorded 15.8 km from the survey area. Suitable habitat is present. Due to survey efficacy, if present in the survey area this species would have been recorded as it is not cryptic.	NM, DBCA
Lamiaceae	*Pityrodia canaliculata*	P1		Many stemmed shrub, (0.6-)1-2.5 m high. Fl. white, Jun to Sep. Red sand.	**Unlikely** Previously recorded 16.9 km from the survey area. Suitable habitat is present. Due to survey efficacy, if present in the survey area this species would have been recorded as it is not cryptic.	NM, DBCA
	Baeckea sp. London Bridge (M.E. Trudgen 5393)	P3		Rounded shrub, 0.3-0.5 m high. Fl. red, Oct to Nov. Gravel, sandstone. Rocky breakaways & hills.	**Unlikely** Previously recorded 200 m from the survey area. Suitable habitat is not present within	NM, DBCA

Family	Taxon	Status		Description	Likelihood of occurrence	Source
		BC Act/ DBCA	EPBC Act			
					the survey area. Due to survey efficacy, if present in the survey area this species would have been recorded as it is not cryptic.	
	Lysiandra baeckeoides	P3		Limited information available. Florabase collection records indicate it is a shrub to 1.5 m tall, found on gravelly limestone soils.	**Unlikely** Previously recorded 11.6 km from the survey area. Suitable habitat is not present within the survey area. Due to survey efficacy, if present in the survey area this species would have been recorded as it is not cryptic.	NM, DBCA

Flora likelihood of occurrence assessment of conservation significant flora identified in the desktop assessment as potentially occurring within the Wiluna survey area

Family	Taxon	Status		Description	Likelihood of occurrence	Source
		BC Act/ DBCA	EPBC Act			
Amaranthaceae	*Ptilotus luteolus*	P3		Shrubs or perennial herbs, 0.3 m high, flowers yellow in Spring.	**Possible** Closest record is 2.6 km away. There is limited information available on this species habitat. This species is cryptic and was not in flower during the survey period.	NM, DBCA
Celestraceae	*Stackhousia clementii*	P3		Dense broom-like perennial, herb, to 0.45 m high. Fl. green/yellow/brown. Skeletal soils. Sandstone hills, saline depressions, clayey sand	**Unlikely** Previously recorded 13.2 km from the survey area. Limited suitable habitat within the survey area. Due to survey efficacy, if present in the survey area this species would have been recorded as it is not cryptic.	NM, DBCA
Fabaceae	*Indigofera rotula*	P3		Shrub or subshrub 1.25 to 1 m high. Flowers from late Autumn to early Spring. Recorded in shrubland, adjacent to watercourses or near low, granite outcrops.	**Unlikely** Previously recorded 280 m from the survey area. Suitable habitat is present within the survey area. Due to survey efficacy, if present in the survey area this species would have been recorded as it is not cryptic.	DBCA
Montiaceae	*Calandrinia mirabilis*	P1		Annual herb ranging in size from 3 cm diameter to 1.2 m diameter. Flowers pink, recorded flowering in September	**Possible** Previously recorded within 20 km of the survey area. There is limited information available on this species habitat. This species is cryptic and was not in flower during the survey period.	NM
Myrtaceae	*Euryomyrtus inflata*	P3		Shrub, 0.3-0.7 m high, leaves dull green, fruits erect. Fl. white-pink, Jun to Jul. Deep red sand. Flat plain.	**Unlikely** Previously recorded within 16.9 km of the survey area. Suitable habitat within the	NM, DBCA

Family	Taxon	Status		Description	Likelihood of occurrence	Source
		BC Act/ DBCA	EPBC Act			
					survey area. Due to survey efficacy, if present in the survey area this species would have been recorded, no Myrtaceae species were recorded.	
Scrophulariaceae	*Eremophila arachnoides* subsp. *arachnoides*	P3		Broom-like shrub, to 3 m high, branches with circular, discrete tubercles. Fl. white/blue-purple, Sep. Shallow loam over limestone.	**Unlikely** Previously recorded within 20 km of the survey area. Suitable habitat is not present within the survey area. Due to survey efficacy, if present in the survey area this species would have been recorded as it is not cryptic.	NM
Scrophulariaceae	*Eremophila arguta*	P1		Shrub to 0.5 m high. Brown sand, loam, edge of minor creek lines.	**Unlikely** Previously recorded 14.4 km from the survey area. Limited suitable habitat within the survey area. Due to survey efficacy, if present in the survey area this species would have been recorded as it is not cryptic.	NM, DBCA
Scrophulariaceae	*Eremophila congesta*	P1		Upright shrub, to 1.2 m high. Fl. purple-blue, Aug to Sep. Lateritic outcrops in greenstone hills, stony quartzite slopes.	**Unlikely** Previously recorded 400 m from the survey area. No suitable habitat is present within the survey area. Due to survey efficacy, if present in the survey area this species would have been recorded as it is not cryptic.	NM, DBCA
Scrophulariaceae	*Eremophila regia*	P1		Shrub 0.2-0.3 m high. Flowers pink, red, June to August. Growing on the rocky tops and slopes of hills in low, open shrubland with Eremophila citrina, E. latrobei and Acacia, Ptilotus, Senna, Solanum and Thryptomene species	**Unlikely** Previously recorded within 20 km of the survey area. No suitable habitat is present within the survey area. Due to survey efficacy, if present in	NM

Family	Taxon	Status		Description	Likelihood of occurrence	Source
		BC Act/ DBCA	EPBC Act			
					the survey area this species would have been recorded as it is not cryptic.	

Flora likelihood of occurrence assessment of conservation significant flora identified in the desktop assessment as potentially occurring within the Gascoyne Junction survey area

Family	Taxon	Status		Description	Likelihood of occurrence	Source
		BC Act/ DBCA	EPBC Act			
Asteraceae	*Rhodanthe ascendens*	P1		Ascending annual, herb, to 0.1 m high. Fl. yellow, Aug. Clay. Mulga. Roadside verge	**Possible** While suitable habitat may occur this species was not recorded after suitable search effort. Given the near by record it is possible to occur. The closest record is 1 km north from the survey area.	NM, DBCA
Elatinaceae	*Bergia auriculata*	P2		Prostrate perennial, herb. Clay soils. Mud flats. Seasonal wetland, gentle slope. Lignum swamp.	**Unlikely** Suitable habitat does not occur, search effort did not record the species. The closest record is 1 km north from the survey area.	NM, DBCA
Lamiaceae	*Pityrodia augustensis*	VU	VU	Bushy shrub, ca 1 m high. Fl. purple/purple-red, Aug to Sep. Amongst rocks on slopes or in drainage lines	**Unlikely** Suitable habitat does not occur, outside of the species known range. The closest record is > 100 km from the survey area.	PMST
Malvaceae	*Abutilon* sp. Pritzelianum (S. van Leeuwen 5095)	P3		Shrub to 1.5m. Flowers yellow to orange in July, August. Sandplain of orange brown sandy loam	**Unlikely** Suitable habitat does not occur, search effort did not record the species. The closest record is 1 km northeast from the survey area.	NM, DBCA
Proteaceae	*Grevillea subterlineata*	P3		Shrub, to 2.5 m high. Fl. white, Aug. Red sand/ clay	**Unlikely** While suitable habitat may occur suitable search effort did not record the distinctive	NM, DBCA

Family	Taxon	Status		Description	Likelihood of occurrence	Source
		BC Act/ DBCA	EPBC Act			
					species. The closest record is 1 km northwest from the survey area.	

Flora likelihood of occurrence assessment of conservation significant flora identified in the desktop assessment as potentially occurring within the Laverton survey area

Family	Taxon	Status		Description	Likelihood of occurrence	Source
		BC Act/ DBCA	EPBC Act			
Asteraceae	*Vittadinia cervicularis* var. *oldfieldii*	P1		Annual, herb, 0.1-0.3 m high. Fl. white-purple-blue, Aug to Sep. Alluvium. Mulga	**Possible** While suitable habitat may occur this species was not recorded after suitable search effort. Given the near by record it is possible to occur. Closest record is 1 km south of the survey area	NM, DBCA
Myrtaceae	*Calytrix praecipua*	P3		Shrub, 0.3-0.7 m high. Fl. pink-white, Jun to Jul or Sep to Nov. Skeletal sandy soils over granite or laterite. Breakaways, outcrops	**Unlikely** Suitable habitat does not occur, suitable search effort did not record the species. The closest records are 16 km south east and north from the survey area.	NM, DBCA
Phyllanthaceae	*Lysiandra baeckeoides*	P3		Low perennial shrub with small white flowers in March. Dry, red sand-loam over laterite. Sandy soil with ironstone oucropping. Hilltop, outcrop, hillslopes	**Unlikely** Suitable habitat does not occur, suitable search effort did not record the species. The closest record is 6 km east from the survey area.	NM, DBCA

Appendix E

Fauna survey results

Species list

Likelihood of Occurrence

Nullagine Species List

Family	Scientific Name	Common Name	Listing	quantity
Avian				
Accipitridae	*Accipiter cirrocephalus*	Collared Sparrowhawk		1
Accipitridae	*Circus assimilis*	Spotted Harrier		1
Accipitridae	*Milvus migrans*	Black Kite		1
Artamidae	*Artamus cinereus*	Black-faced Woodswallow		4
Artamidae	*Cracticus nigrogularis*	Pied Butcherbird		1
Cacatuidae	*Cacatua sanguinea*	Little Corella		4
Campephagidae	*Coracina novaehollandiae*	Black-faced Cuckoo-shrike		1
Columbidae	*Geopelia cuneata*	Diamond Dove		2
Columbidae	*Geophaps plumifera*	Spinifex Pigeon		1
Corvidae	*Corvus orru*	Torresian Crow		1
Estrildidae	*Emblema pictum*	Painted Finch		2
Estrildidae	*Taeniopygia guttata*	Zebra Finch		8
Falconidae	*Falco berigora*	Brown Falcon		1
Megaluridae	*Eremiornis carteri*	Spinifexbird		1
Meliphagidae	*Epthianura tricolor*	Crimson Chat		2
Meliphagidae	*Lichenostomus keartlandi*	Grey-headed Honeyeater		4
Meliphagidae	*Lichenostomus virescens*	Singing Honeyeater		1
Monarchidae	*Grallina cyanoleuca*	Magpie-lark		2
Pomatostomidae	*Pomatostomus temporalis*	Grey-crowned Babbler		4
Psittacidae	*Melopsittacus undulatus*	Budgerigar		4
Tunicidae	*Turnix velox*	Little Button-quail		2
Mammals				
Canidae	*Canis lupus*	Dingo, Domestic Dog		1
Felidae	*Felis catus*	Cat		
Macropodidae	*Macropus robustus*	Common Wallaroo		1
Muridae	*Notomys alexis*	Spinifex Hopping-mouse		1
Muridae	*Pseudomys chapmani*	Pebble-mound Mouse	P4	1
Reptiles				
Agamidae	*Ctenophorus caudicinctus*	Ring-tailed Dragon		2
Diplodactylidae	*Crenadactylus pilbarensis*	Pilbara Clawless Gecko		1
Gekkonidae	*Gehyra pilbara*	Pilbara Dtella		1
Scincidae	*Eremiascincus richardsonii*	Broad-banded Sand-swimmer		1
Scincidae	*Morethia ruficauda*	Lined Firetail Skink		1
Scincidae	*Ctenotus pantherinus*	Leopard Ctenotus		1
Scincidae	*Ctenotus duricola*	Pilbara Ctenotus		1
Scincidae	*Cyclodomorphus melanops*	Spinifex Slender Blue-tongue		4
Varanidae	*Varanus acanthurus*	Ridge-tailed Monitor		1

Family	Taxon	Common Name	Status	Menzies	Wiluna	Meekatharra	Cue	Sandstone
Birds								
Acanthizidae	*Acanthiza chrysorrhoa*	Yellow-rumped Thornbill				x		
Acanthizidae	*Acanthiza inornata*	Western Thornbill			x			
Acanthizidae	*Acanthiza robustirostris*	Slaty-backed Thornbill			x	x		
Acanthizidae	*Acanthiza uropygialis*	Chestnut-rumped Thornbill		x			x	
Acanthizidae	*Aphelocephala nigricinta*	Banded Whiteface					x	
Acanthizidae	*Gerygone fusca*	Western Gerygone				x		
Accipitridae	*Aquila audax*	Wedge-tailed Eagle			x		x	
Accipitridae	*Haliastur sphenurus*	Whistling Kite		x		x		
Anatidae	*Tadorna tadornoides*	Australian Shelduck				x		
Artamidae	*Artamus cinereus*	Black-faced Woodswallow					x	
Artamidae	*Gymnorhina tibicen*	Australian Magpie				x		
Artamidae	*Strepera versicolor*	Grey Currawong			x			
Cacatuidae	*Eolophus roseicapilla*	Galah					x	
Campephagidae	*Coracina novaehollandiae*	Black-faced Cuckoo-shrike		x				
Campephagidae	*Lalage tricolor*	White-winged Triller			x			
Charadriidae	*Elseyornis melanops*	Black-fronted Dotterel				x		
Columbidae	*Geopelia cuneata*	Diamond Dove				x		
Columbidae	*Ocyphaps lophotes*	Crested Pigeon		x		x	x	x
Columbidae	*Phaps chalcoptera*	Common Bronzewing		x				
Corvidae	*Corvus coronoides*	Australian Raven		x	x	x	x	x
Estrildidae	*Taeniopygia guttata*	Zebra Finch			x	x	x	x
Falconidae	*Falco berigora*	Brown Falcon				x		
Falconidae	*Falco cenchroides*	Nankeen Kestrel				x	x	
Hirundinidae	*Hirundo neoxena*	Welcome Swallow		x	x	x		
Hirundinidae	*Petrochelidon nigricans*	Tree Martin				x	x	x
Locustellidae	*Cincloramphus mathewsi*	Rufous Songlark					x	

Family	Taxon	Common Name	Status	Menzies	Wiluna	Meekatharra	Cue	Sandstone
Maluridae	*Malurus lamberti*	Variegated Wren					x	
Meliphagidae	*Acanthagenys rufogularis*	Spiny-cheeked Honeyeater		x				
Meliphagidae	*Lichebostomus virescens*	Singing Honeyeater		x			x	
Meliphagidae	*Manorina flavigula*	Yellow-throated Miner				x		x
Meliphagidae	*Ptilotula penicillata*	White-plumed Honeyeater				x		
Monarchidae	*Grallina cyanoleuca*	Magpie-lark			x	x	x	x
Motacillidae	*Anthus australis*	Australian Pipit		x			x	
Oreoicidae	*Oreoica gutturalis*	Crested Bellbird			x	x		
Pachycephalidae	*Colluricincla harmonica*	Grey-shrike Thrush				x	x	
Pachycephalidae	*Pachycephala pectoralis*	Golden Whistler			x			
Petroicidae	*Petroica goodenovii*	Red-capped Robin			x	x	x	
Pomatostomidae	*Pomatostomus superciliosus*	White-browed Babbler			x	x		
Psittacidae	*Melopsittacus undulatus*	Budgerigar				x	x	
Psittaculidae	*Barnardius zonarius*	Australian Ringneck						x
Psophodidae	*Psophodes occidentalis*	Chiming Wedgebill					x	
Ptilonorhynchidae	*Chlamydera guttata*	Western Bowerbird		x				
Rhipiduridae	*Rhipidura leucophrys*	Willie Wagtail			x	x	x	
Mammals								
Bovidae	*Bos taurus*	Cattle	*	x	x			
Camelidae	*Camelus dromedarius*	Camel	*		x			
Canidae	*Canis lupus familiaris*	Dog/Dingo	*	x	x	x	x	
Dasyuridae	*Sminthopsis macroura*	Stripe-faced Dunnart					x	
Felidae	*Felis catus*	Cat	*	x	x	x	x	
Leporidae	*Oryctolagus cuniculus*	Rabbit	*	x		x	x	
Macropdidae	*Macropus rufus*	Red Kangaroo		x	x	x	x	x
Macropdidae	*Macropus robustus*	Common Walleroo						
Muridae	*Mus musculus*	House Mouse	*				x	
Tachyglossidae	*Tachyglossus aculeatus*	Short-beaked Echidna					x	

Family	Taxon	Common Name	Status	Menzies	Wiluna	Meekatharra	Cue	Sandstone
Vespertilionidae	*Nyctophilus geoffroyi*	Lesser Long-eared Bat						x
Reptiles								
Agamidae	*Ctenophorus nuchalis*	Central Netted Dragon				x		
Gekkonidae	*Gehyra variagata*	Variegated Gehyra			x	x	x	
Gekkonidae	*Heteronotia binoei*	Binoe's Gecko		x		x	x	
Scincidae	*Lerista timida*	Dwarf Three-toed Slider			x	x		
Scincidae	*Morethia butleri*	Woodland Dark-flecked Morethia					x	
Varanidae	*Varanus gouldii*	Gould's Monitor			x		x	x

Laverton species list

Family	Scientific Name	Common Name	Listing
Avian			
Accipitridae	*Aquila audax*	Wedge-tailed Eagle	
Artamidae	*Gymnorhina tibicen*	Magpie	
Columbidae	*Ocyphaps lophotes*	Crested pigeon	
Corvidae	*Corvus orru*	Torresian Crow	
Estrildidae	*Taeniopygia guttata*	Zebra finch	
Falconidae	*Falco cenchroides*	Nankeen kestrel	
Hirundinidae	*Petrochelidon nigricans*	Tree martin	
Locustellidae	*Cincloramphus mathewsi*	Rufous songlark	
Meliphagidae	*Manorina flavigula*	Yellow throated miner	
Meliphagidae	*Acanthagenys rufogularis*	Spiny-cheeked honeyeater	
Meliphagidae	*Lichenostomus virescens*	Singing Honeyeater	
Motacillidae	*Anthus novaeseelandiae*	Australian pipit	
Oreoicidae	*Oreoica gutturalis*	Crested Bellbird	
Petroicidae	*Petroica goodenovii*	Red capped robin	
Petroicidae	*Melanodryas cucullata*	Hooded robin	
Psittacidae	*Neophema splendida*	Scarlet-chested Parrot	
Ptilonorphynchidae	*Chlamydera guttata*	Western bowerbird	
Rhipiduridae	*Rhipidura leucophrys*	Willie wagtail	
Mammals			
Canidae	*Canis familiaris*	Dingo, Domestic Dog	Introduced
Bovidae	*Bos taurus*	Cow	Introduced
Macropodidae	*Osphranter robustus*	Common Wallaroo	
Leporidae	*Oryctolagus cuniculus*	Rabbit	Introduced
Reptiles			
Elapidae	*Pseudonaja modesta*	Ringed-Brown Snake	

Gascoyne Junction species list

Family	Scientific Name	Common Name	Listing
Avian			
Accipitridae	*Haliastur sphenurus*	Whistling Kite	
Accipitridae	*Aquila audax*	Wedge-tailed Eagle	
Accipitridae	*Hieraaetus morphnoides*	Little Eagle	
Artamidae	*Artamus leucoryn*	White-breasted Woodswallow	
Artamidae	*Artamus cinereus*	Black-faced Wood-swallow	
Artamidae	*Gymnorhina tibicen*	Magpie	
Cacatuidae	*Eolophus roseicapilla*	Galah	
Casuariidae	*Dromaius novaehollandiae*	Emu	
Columbidae	*Ocyphaps lophotes*	Crested pigeon	
Corvidae	*Corvus orru*	Torresian crow	
Estrildidae	*Taeniopygia guttata*	Zebra finch	
Monarchidae	*Grallina cyanoleuca*	Magpie-lark	
Motacillidae	*Anthus novaeseelandiae*	Australian Pipit	
Rhipiduridae	*Rhipidura leucophrys*	Willie Wagtail	
Mammals			
Bovidae	*Bos taurus*	Cow	Introduced
Macropodidae	*Osphranter robustus*	Common Wallaroo	
Reptiles			
Gekkonidae	*Gehyra variegata*	Tree dtella	

Fauna likelihood of occurrence assessment guidelines

Assessment outcome	Description
Present	Species recorded during the field survey or from recent, reliable records from within or close proximity to the survey area.
Likely	Species are likely to occur in the survey area where there is suitable habitat within the survey area and there are recent records of occurrence of the species in close proximity to the survey area. OR Species known distribution overlaps with the survey area and there is suitable habitat within the survey area.
Unlikely	Species assessed as unlikely include those species previously recorded within 10 km of the survey area however: There is limited (i.e. the type, quality and quantity of the habitat is generally poor or restricted) habitat in the survey area. The suitable habitat within the survey area is isolated from other areas of suitable habitat and the species has no capacity to migrate into the survey area. OR Those species that have a known distribution overlapping with the survey area however: There is limited habitat in the survey area (i.e. the type, quality and quantity of the habitat is generally poor or restricted). The suitable habitat within the survey area is isolated from other areas of suitable habitat and the species has no capacity to migrate into the survey area.
Highly unlikely	Species that are considered highly unlikely to occur in the survey area include: Those species that have no suitable habitat within the survey area. Those species that have become locally extinct, or are not known to have ever been present in the region of the survey area.

Definitions

Term	Description
study area	a 20 - 40 km buffer around the survey area
survey area	the area subject to the current survey

Species Name	Common name	Status		Description and habitat requirements	Likelihood	Source
		BC Act	EPBC Act			
Birds						
Apus pacificus	Fork-tailed Swift	IA	IA	The fork-tailed Swift is a migratory species that follows large storm fronts and are almost exclusively areal species. In WA, there are sparsely scattered records of the Fork-tailed Swift along the south coast, ranging from near the Eyre Bird Observatory and west to Denmark. They are widespread in coastal and subcoastal areas between Augusta and Carnarvon, including some on nearshore and offshore islands. Scattered records are present in the Perth region. Records are scattered throughout WA including the Pilbara, Kimberley, Wheatbelt, Gascoyne and Isolated records occur at Neale Junction in the Great Victoria Desert and on the Nullarbor Plain (Higgins 1999).	**Unlikely** There is no suitable habitat for this species within the survey area. The species can occur sporadically shortly after major rain events or low-pressure system..	*NatureMap* PMST
Calidris acuminata	Sharp-tailed Sandpiper	IA	IA	In Australasia, the Sharp-tailed Sandpiper prefers muddy edges of shallow fresh or brackish wetlands, with inundated or emergent sedges, grass, saltmarsh or other low vegetation. This includes lagoons, swamps, lakes and pools near the coast, and dams, waterholes, soaks, bore drains and bore swamps, saltpans and hypersaline saltlakes inland. They also occur in saltworks and sewage farms. They use flooded paddocks, sedgelands and other ephemeral wetlands, but leave when they dry. They use intertidal mudflats in sheltered bays, inlets, estuaries or seashores, and also swamps and creeks lined with mangroves. Sometimes they occur on rocky shores. They are widespread from Cape Arid to Carnarvon, around coastal and subcoastal plains of Pilbara Region to south-west and east Kimberley Division. Inland records indicate the species is widespread and scattered from Newman, east to Lake Cohen, south to Boulder and west to Meekatharra. Inland records indicate the species is widespread and scattered from Newman, east to Lake Cohen, south to Boulder and west to Meekatharra (DAWE 2022b).	**Highly Unlikely** There is no suitable habitat for this species within the survey area.	*NatureMap* PMST
Calidris melanotos	Pectoral Sandpiper	MI	MI	In Australia, the Pectoral Sandpiper prefers shallow fresh to saline wetlands. The species is found at coastal lagoons, estuaries, bays, swamps, lakes, inundated grasslands, saltmarshes, river pools, creeks, floodplains	**Highly Unlikely**	PMST

Species Name	Common name	Status		Description and habitat requirements	Likelihood	Source
		BC Act	EPBC Act			
				and artificial wetlands. The species is usually found in coastal or near coastal habitat but occasionally found further inland. It prefers wetlands that have open fringing mudflats and low, emergent or fringing vegetation, such as grass or samphire. The species has also been recorded in swamp overgrown with lignum. In Western Australia the species is rarely recorded. It has been observed at the Nullarbor Plain, Reid, Stoke's Inlet, Grassmere Lake, Warden Lake, Dalyup and Yellilup Swamp, Swan River, Benger Swamp, Guraga Lake, Wittecarra, Harding River, coastal Gascoyne, the Pilbara and the Kimberley (DotE 2016).	There is no suitable habitat for this species within the survey area.	
Calidris ferruginea	Curlew Sandpiper	MI, CR	MI, CR	Curlew Sandpipers mainly occur in areas with soft mud conditions, including intertidal mudflats in sheltered coastal areas, such as estuaries, bays, inlets and lagoons, and also around non-tidal swamps, lakes and lagoons near the coast, and ponds in saltworks and sewage farms. They are found inland less often, including around ephemeral and permanent lakes, dams, waterholes and bore drains, usually with bare edges of mud or sand. They occur in both fresh and brackish waters. In WA, they are widespread around coastal and subcoastal plains from Cape Arid to south-west Kimberley Division, but are more sparsely distributed between Carnarvon and Dampier Archipelago (DotE 2016).	**Highly Unlikely** There is no suitable habitat for this species within the survey area.	PMST
Motacilla cinerea	Grey Wagtail	MI	MI	The Grey Wagtail is an opportunistic migrant to Australia. The species typically migrates to Indonesia occasionally landing in Australia. Most records for the species are from Northern Australia and South Australia (Morcombe 2004). The non-breeding habitat only of the Grey Wagtail has a strong association with water, particularly rocky substrates along water courses but also lakes and marshes (DotE 2016). It can be found mainly in banks and rocks in fast-running freshwater habitats: rivers, creeks, streams, and around waterfalls, both in forest and open country; but occurs almost anywhere during migration (Johnstone & Storr 2004).	**Highly Unlikely** There is no suitable habitat for this species within the survey area.	PMST
Motacilla flava	Yellow Wagtail	MI	MI	The Yellow Wagtail occupies a range of damp or wet habitats with low vegetation, from damp meadows, marshes, waterside pastures, sewage farms and bogs to	**Highly Unlikely**	PMST

Species Name	Common name	Status		Description and habitat requirements	Likelihood	Source
		BC Act	EPBC Act			
				damp steppe and grassy tundra (IUCN Redlist 2017). In Australia, the Yellow Wagtail is a very uncommon except in the Broome region. They can often be found in nothern towns wherever there are well watered grass areas (DotEE 2017).	There is no suitable habitat for this species within the survey area.	
Charadrius veredus	Oriental Plover, Oriental Dotterel	MI	MI	Immediately after arriving in non-breeding grounds in northern Australia, Oriental Plovers spend a few weeks in coastal habitats such as estuarine mudflats and sandbanks, on sandy or rocky ocean beaches or nearby reefs, or in near-coastal grasslands, before dispersing further inland. Thereafter they usually inhabit flat, open, semi-arid or arid grasslands, where the grass is short and sparse, and interspersed with hard, bare ground, such as claypans, and dry paddocks, or open areas that have been recently burnt. At the onset of the Wet Season, some may move into lightly wooded grasslands. Some remain in estuarine and littoral environments, and a few are occasionally recorded around terrestrial wetlands or flooded paddocks. Most records are along the north-western coast, between Exmouth Gulf and Derby, and there are records at a few scattered sites elsewhere, mainly along the northern coast, such as in the Top End, the Gulf of Carpentaria and on Cape York Peninsula. The species also often occurs further inland on the 'blacksoil' plains of northern WA (DotE 2016).	**Unlikely** There is no suitable habitat for this species within the survey area.	PMST
Actitis hypoleucos	Common Sandpiper	MI	MI	The species utilises a wide range of coastal wetlands and some inland wetlands, with varying levels of salinity, and is mostly found around muddy margins or rocky shores and rarely on mudflats. The Common Sandpiper has been recorded in estuaries and deltas of streams, as well as on banks farther upstream; around lakes, pools, billabongs, reservoirs, dams and claypans, and occasionally piers and jetties. The muddy margins utilised by the species are often narrow, and may be steep. The species is often associated with mangroves, and sometimes found in areas of mud littered with rocks or snags (Geering et al. 2007; Higgins & Davies 1996). Foraging environments: Generally the species forages in shallow water and on bare soft mud at the edges of wetlands; often where obstacles project from substrate, e.g. rocks or mangrove roots. Birds sometimes venture	**Unlikely** There is no suitable habitat for this species within the survey area.	PMST

Species Name	Common name	Status		Description and habitat requirements	Likelihood	Source
		BC Act	EPBC Act			
				into grassy areas adjoining wetlands (Higgins & Davies 1996). Roost sites: Roost sites are typically on rocks or in roots or branches of vegetation, especially mangroves. The species is known to perch on posts, jetties, moored boats and other artificial structures, and to sometimes rest on mud or 'loaf' on rocks (Higgins & Davies 1996).		
Hirundo rustica	Barn Swallow	MI	MI	In Australia, the Barn Swallow is recorded in open country in coastal lowlands, often near water, towns and cities. Birds are often sighted perched on overhead wires , and also in or over freshwater wetlands, paperbark Melaleuca woodland, mesophyll shrub thickets and tussock grassland.	**Unlikely** There is no suitable habitat for this species within the survey area.	PMST
Erythrotriorchis radiatus	Red Goshawk	EN	EN	The Red Goshawk occurs in coastal and sub-coastal areas in wooded and forested lands of tropical and warm-temperate Australia (Marchant & Higgins 1993). Riverine forests are also used frequently (Debus 1991, 1993). Such habitats typically support high bird numbers and biodiversity, especially medium to large species which the goshawk requires for prey. The Red Goshawk nests in large trees, frequently the tallest and most massive in a tall stand, and nest trees are invariably within one km of permanent water (Aumann & Baker-Gabb 1991).	**Unlikely** The central Pilbara is largely outside the species typical range. A sighting within the survey area would be considered vagrant.	PMST
Rostratula australis	Australian Painted Snipe	EN	EN	The Australian Painted Snipe generally inhabits shallow terrestrial freshwater (occasionally brackish) wetlands, including temporary and permanent lakes, swamps and claypans. They also use inundated or waterlogged grassland or saltmarsh, dams, rice crops, sewage farms and bore drains. Typical sites include those with rank emergent tussocks of grass, sedges, rushes or reeds, or samphire; often with scattered clumps of lignum Muehlenbeckia, canegrass, or sometimes tea-tree. It sometimes uses areas that are lined with trees, or that have some scattered fallen or washed-up timber (DotE 2016). In the south west it can be found around Carnarvon and wetlands north of Perth, particularly those west of Moora and Gin Gin (Nevill 2013).	**Unlikely** There is no suitable habitat for this species within the survey area.	PMST
Pezoporus occidentalis	Night Parrot	EN	EN	The Night Parrot is a highly elusive nocturnal ground dwelling parrot found in the arid and semi-arid zones of	**Unlikely**	PMST

Species Name	Common name	Status		Description and habitat requirements	Likelihood	Source
		BC Act	EPBC Act			
				Australia. The night parrot was thought to be extinct but in 2013 it was rediscovered in Queensland (Pullen Pullen Reserve). Subsequently, the species has been found in Goneaway National Park and Diamantina National Park in Queensland and near Broome in Western Australia (DotEE 2017).	Although recent records of the species have been recorded in the Pilbara, there is no suitable habitat for this species within the survey area.	
Polytelis alexandrae	Princess Parrot, Alexandra's Parrot	VU	VU	The Princess Parrot inhabits sand dunes and sand flats in the arid zone of western and central Australia. It occurs in open savanna woodlands and shrublands that usually consist of scattered stands of Eucalyptus (including E. gongylocarpa, E. chippendalei and mallee species), Casuarina or Allocasuarina trees; an understorey of shrubs such as Acacia (especially A. aneura), Cassia, Eremophila, Grevillea, Hakea and Senna; and a ground cover dominated by Triodia species (Allen 1987; Baxter & Henderson 2000;). It also frequents Eucalyptus or Allocasuarina trees in riverine or littoral areas (Carter 1993b).	**Unlikely** Although recent records of the species have been recorded in the Pilbara, there is no suitable habitat for this species within the survey area.	PMST
Falco hypoleucos	Grey Falcon	VU	VU	The Grey Falcon inhabits lightly timbered country, especially stony, inland plains and Acacia scrub, gibber deserts, sandridges, pastoral lands, and timbered watercourses, but seldom in driest deserts. Its distribution is centred on inland drainage systems. It also hunts in treeless areas and frequents tussock grassland and open woodland, especially in winter (Morcombe 2004; Pizzey & Knight 2012). It can mostly be seen on the northwest coast from Shark Bay to east Kimberley, and in the Pibara and desert regions (Nevill 2013; Pizzey & Knight 2012).	**Likely** Favourable habitat exists in the area and the species has been recorded nearby.	*NatureMap*, PMST
Gelochelidon nilotica	Gull-billed tern	MI	MI	The Gull-billed Tern is patchily distributed across all the continents of the world. In Australia, the subspecies *macrotarsa* occurs both coastally and inland Western Australia. The species uses coastal areas from Broome, south to Shark Bay. Inland, any lake or wetland catchment can be occupied after heavy rains (Nevill 2013).	**Unlikely** There is no suitable habitat for this species within the survey area.	*NatureMap*
Tringa glareola	Wood sandpiper	MI	MI	The Wood Sandpiper uses well-vegetated, shallow, freshwater wetlands, such as swamps, billabongs, lakes, pools and waterholes. They are typically associated with emergent, aquatic plants or grass, and dominated by taller fringing vegetation, such as dense stands of rushes	**Unlikely** There is no suitable habitat for this species within the survey area.	*NatureMap*

Species Name	Common name	Status		Description and habitat requirements	Likelihood	Source
		BC Act	EPBC Act			
				or reeds, shrubs, or dead or live trees, especially Melaleuca and River Red Gums E. camaldulensis. They also frequent inundated grasslands, short herbage or wooded floodplains, where floodwaters are temporary or receding. They can occasionally be found at drying or stony small wetlands, but rarely use brackish wetlands, or dry stunted saltmarsh. They can also use artificial wetlands, including open sewage ponds, reservoirs, large farm dams, and bore drains. In WA the species is widespread but scattered in most regions (DotE 2016).		
Mammals						
Dasycercus blythi	Brush-tailed mulgara	P4		The Brush-tailed Mulgara is primarily nocturnal, shelters in burrows and feeds on insects, other arthropods and small vertebrates. This species inhabits spinifex grasslands and, in central Australia, lives in burrows that it digs on the flats between low sand dunes (Van Dyck and Strahan 2008). The Mulgara is a solitary species exhibiting high site fidelity and a low propensity for dispersal once a home range has been established (Masters and Crowther 2003). Males and females maintain home ranges of 1.4 to 14 hectares (Masters and Crowther 2003) which on average, overlap by less than 20% (Masters and Crowther 2003).	**Unlikely** Although records are in the region, the lack significant of sand plain habitat within the survey area suggest the species presence is unlikely.	*NatureMap*
Dasyurus hallucatus	Northern quoll	EN	EN	The Northern Quoll once occurred across the majority of northern Australia but its range has significantly contracted. It occurs in the Pilbara region but in disjunct populations. The Northern Quoll inhabits a range of vegetation associations but is especially abundant on dissected rocky escarpment and eucalypt woodland within 200 km of the coast. It is known to den in rock crevices and rock piles and favors rocky areas. They are predominantly nocturnal but are occasionally active during the day, particularly during the mating season and are known to have a large home range (Van Dyck and Strahan 2008).	**Likely** The survey area lacks significant saxicoline habitat associated with the species. However, the presence of vagrant individuals is possible given the presence of nearby records.	*NatureMap*, PMST
Macroderma gigas	Ghost bat	VU	VU	In WA, the Ghost Bats' current range is discontinuous, with geographically disjunct colonies occurring in the Pilbara and Kimberley (including several islands). At the time of European settlement, arid zone subpopulations remained. Since then, ghost bats have contracted further northwards, with much of their arid zone distribution	**Likely** Favourable habitat exists nearby the area and the species has been recorded in the area.	*NatureMap*, PMST

Species Name	Common name	Status		Description and habitat requirements	Likelihood	Source
		BC Act	EPBC Act			
				disappearing in the past few decades. They currently occupy habitats ranging from the arid Pilbara to tropical savanna woodlands and rainforests. During the daytime they roost in caves, rock crevices and old mines. Roost sites used permanently are generally deep natural caves or disused mines with a relatively stable temperature of 23°−28°C and a moderate to high relative humidity of 50−100 % (TSSC 2016).		
Macrotis lagotis	Bilby	VU	VU	The Greater Bilby occupies sand plains, sandy dune systems or along drainage or salt lake systems (DEC 2012). They occur in three major vegetation types; open tussock grassland on uplands and hills, mulga woodland/shrubland growing on ridges and rises, and hummock grassland in plains and alluvial areas. In the south of its range, the Greater Bilby lives on rises and ridges among sparse grasses, especially mitchell grass Astrebla and short shrubs. In WA there are disjunct populations in the Gibson Desert, south-western Kimberley, inland areas of the Pilbara and northern Great Sandy Desert (Van Dyck and Strahan, 2008).	**Unlikely** The habitat within the survey area is marginal and there are no records within the Nullagine area.	*NatureMap*, PMST
Pseudomys chapmani	Western pebble-mound mouse	P4		The Western Pebble-mound Mouse is restricted to the Pilbara region where it is recognised as an endemic species. Habitat for the Western Pebble-mound Mouse can be found on stony hillsides with hummocky grasslands and little or no soil. It constructs large mounds of pebbles on stony slopes which cover an area of 0.5-9.0 square metres. 'Active' mounds are characterized by volcano-like cones capped by 'craters' that mark occluded entrances to subterranean burrow systems in which the mice live, often gregariously (Van Dyck and Strahan 2008).	**Highly likely** Favourable habitat exists within the survey area and the species has been recorded nearby.	*NatureMap*
Rhinonicteris aurantia	Pilbara leaf-nosed bat	VU	VU	The Pilbara Leaf-nosed Bat roosts in deep caves or mines in the wet season and forages nearby. This species occurs in the Pilbara region where its populations are scattered and localised. There are a few known populations of this species in the western Pilbara, roosting in caves formed in gorges that dissect massive siliceous sedimentary geology. It is most often observed in flight over waterholes in gorges (Van Dyck and Strahan 2008). Optimal roosts are thought to occur in caves that form between ascending rock layers, where	**Likely** Favourable habitat exists nearby the area and the species has been recorded in the area.	*NatureMap*, PMST

Species Name	Common name	Status		Description and habitat requirements	Likelihood	Source
		BC Act	EPBC Act			
				humidity is maintained from seeping groundwater (Van Dyck and Strahan 2008). Roosts are commonly located over pools of water, or areas deep within the mine or cave structure which provides elevated temperature and humidity. Foraging habitat includes: Triodia hummock grasslands covering low rolling hills and shallow gullies, with Eucalyptus camaldulensis along the creeks; over small watercourses throughout granite boulder terrain; over pools and low shrubs in ironstone gorges; and in and around gravelly watercourses with Melaleuca leucodendron.		
Reptiles						
Ctenotus nigrilineatus	Pin-striped finesnout Ctenotus	P1		The Pin-striped Fine-snout Skink is known only from the Pilbara region of Western Australia. The species is known only from spinifex at the base of a granite outcrop near Woodstock in the hilly interior of the Pilbara (Wilson and Swan 2010).	**Likely** Favourable habitat exists nearby the survey area and the species has been recorded in the Nullagine area.	*NatureMap*
Liasis olivaceus barroni	Pilbara olive python	VU	VU	The Olive Python (Pilbara subspecies) is a dull olive-brown to pale fawn orrich-brown python with a white underside and pale finely dotted lips. This species reaches an average size of 2.5 m but can grow up to 4 m long. The Olive Python's range is restricted to the Pilbara region, north WesternAustralia, and the Dampier Archipelago. Habitat consists of rocky escarpments, gorges and waterholes within the Pilbara region. The preferred microhabitats for this species are under rock piles, on top of rocks, and under spinifex as well as in man-made features such as overburden heaps, railway embankments and sewerage treatment ponds. The species' breeding season occurs from June to August, with males moving long distances in search of breeding females (Wilson and Swan 2010).	**Likely** Favourable habitat exists nearby the area and the species has been recorded in the area.	*NatureMap*, PMST
Liopholis kintorei	Great Desert Skink, Tjakura, Warrarna, Mulyamiji	VU	VU	The Great Desert Skink occurs on arid sand-flats and clay-based or loamy soils vegetated with spinifex (Wilson and Swan 2010). Populations in the Gibson Desert occur on sandplains with a surface cover of fine gravel (Pearson et al. 2001). Vegetation usually consists of hummock grassland (Triodia basedowii, Triodia pungens and Triodia schinzii), with some scattered shrubs and	**Unlikely** The habitat within the survey area is marginal and there are no records within the Nullagine area.	PMST

Species Name	Common name	Status		Description and habitat requirements	Likelihood	Source
		BC Act	EPBC Act			
				occasional trees (e.g. Acacia spp., Eucalyptus spp., Hakea spp., Grevillea spp. and Allocasuarina decaisneana) (McAlpin 2001). Sites in WA are dominated by Triodia basedowii and Triodia schinzii with some Eremophila leucophylla shrubs (Pearson et al. 2001). The population at Patjarr WA occurs on a gravelly undulating plain with scattered Black Gidgee (Acacia pruinocarpa) or Mulga over Triodia basedowii and low shrubs (McAlpin 2001).		

Cue Survey Area – Likelihood of occurrence assessment for significant fauna identified in the desktop assessment

Species Name	Common name	Status		Description and habitat requirements	Likelihood	Source
		BC Act	EPBC Act			
Birds						
Apus pacificus	Fork-tailed Swift	IA	IA	The fork-tailed Swift is a migratory species that follows large storm fronts and are almost exclusively areal species. In WA, there are sparsely scattered records of the Fork-tailed Swift along the south coast, ranging from near the Eyre Bird Observatory and west to Denmark. They are widespread in coastal and subcoastal areas between Augusta and Carnarvon, including some on nearshore and offshore islands. Scattered records are present in the Perth region. Records are scattered throughout WA including the Pilbara, Kimberley, Wheatbelt, Gascoyne and Isolated records occur at Neale Junction in the Great Victoria Desert and on the Nullarbor Plain (Higgins 1999).	Unlikely Species known distribution overlaps with the survey area however they are typically aerial feeders during non-breeding season when present locally, and very rarely utilising terrestrial habitats.	*NatureMap* ALA PMST
Calidris acuminata	Sharp-tailed Sandpiper	IA	IA	In Australasia, the Sharp-tailed Sandpiper prefers muddy edges of shallow fresh or brackish wetlands, with inundated or emergent sedges, grass, saltmarsh or other low vegetation. This includes lagoons, swamps, lakes and pools near the coast, and dams, waterholes, soaks, bore drains and bore swamps, saltpans and hypersaline saltlakes inland. They also occur in saltworks and sewage farms. They use flooded paddocks, sedgelands and other ephemeral wetlands, but leave when they dry. They use intertidal mudflats in sheltered bays, inlets, estuaries or seashores, and also swamps and creeks lined with mangroves. Sometimes they occur on rocky shores. They are widespread from Cape Arid to Carnarvon, around coastal and subcoastal plains of Pilbara Region to south-west and east Kimberley Division. Inland records indicate the species is widespread and scattered from Newman, east to Lake Cohen, south to Boulder and west to Meekatharra. Inland records indicate the species is widespread and scattered from Newman, east to Lake Cohen, south to Boulder and west to Meekatharra (DAWE 2022b).	Unlikely There is no suitable habitat for this species within the survey area.	*NatureMap* ALA PMST
Actitis hypoleucos	Common Sandpiper	IA	IA	The Common Sandpiper is found along all coastlines of Australia and uses a wide range of coastal wetlands and some inland wetlands, with varying levels of salinity, and is mostly found around often narrow and steep muddy margins or rocky shores. The species has been recorded in estuaries and deltas of streams, as well as on banks further upstream; around lakes, pools, mangroves, billabongs, reservoirs, dams and	Unlikely There is no suitable habitat for this species within the survey area.	DBCA PMST DBCA

Species Name	Common name	Status		Description and habitat requirements	Likelihood	Source
		BC Act	EPBC Act			
				claypans, and occasionally piers and jetties. It is often found near mangroves, and sometimes in areas of mud littered with rocks or snags. Found along all coastlines of Australia and in many areas inland, the Common Sandpiper is widespread in small numbers. The population when in Australia is concentrated in northern and western Australia (DotE 2016).		
Calidris ferruginea	Curlew sandpiper	CR	IA	Curlew Sandpipers mainly occur in areas with soft mud conditions, including intertidal mudflats in sheltered coastal areas, such as estuaries, bays, inlets and lagoons, and also around non-tidal swamps, lakes and lagoons near the coast, and ponds in saltworks and sewage farms. They are found inland less often, including around ephemeral and permanent lakes, dams, waterholes and bore drains, usually with bare edges of mud or sand. They occur in both fresh and brackish waters. In WA, they are widespread around coastal and subcoastal plains from Cape Arid to south-west Kimberley Division, but are more sparsely distributed between Carnarvon and Dampier Archipelago (DotE 2016).	Unlikely There is no suitable habitat for this species within the survey area.	DBCA PMST *NatureMap*
Tringa glareola	Wood sandpiper	IA	IA	The Wood Sandpiper uses well-vegetated, shallow, freshwater wetlands, such as swamps, billabongs, lakes, pools and waterholes. They are typically associated with emergent, aquatic plants or grass, and dominated by taller fringing vegetation, such as dense stands of rushes or reeds, shrubs, or dead or live trees, especially Melaleuca and River Red Gums E. camaldulensis. They also frequent inundated grasslands, short herbage or wooded floodplains, where floodwaters are temporary or receding. They can occasionally be found at drying or stony small wetlands, but rarely use brackish wetlands, or dry stunted saltmarsh. They can also use artificial wetlands, including open sewage ponds, reservoirs, large farm dams, and bore drains. In WA the species is widespread but scattered in most regions (DotE 2016).	Unlikely There is no suitable habitat for this species within the survey area.	DBCA *NatureMap*
Tringa stagnatilis	Marsh sandpiper	IA	IA	The Marsh Sandpiper lives in permanent or ephemeral wetlands of varying salinity, including swamps, lagoons, billabongs, saltpans, saltmarshes, estuaries, pools on inundated floodplains, and intertidal mudflats and also regularly at sewage farms and saltworks. They are recorded less often at reservoirs, waterholes, soaks, bore-drain swamps and flooded inland lakes. There are scattered records in WA where they are mainly found around the coast in freshwater to marine environments (DotE 2016).	Unlikely There is no suitable habitat for this species within the survey area.	DBCA *NatureMap*

Species Name	Common name	Status		Description and habitat requirements	Likelihood	Source
		BC Act	EPBC Act			
Calidris melanotos	Pectoral Sandpiper	IA		In Australia, the Pectoral Sandpiper prefers shallow fresh to saline wetlands. The species is found at coastal lagoons, estuaries, bays, swamps, lakes, inundated grasslands, saltmarshes, river pools, creeks, floodplains and artificial wetlands. The species is usually found in coastal or near coastal habitat but occasionally found further inland. It prefers wetlands that have open fringing mudflats and low, emergent or fringing vegetation, such as grass or samphire. The species has also been recorded in swamp overgrown with lignum. In Western Australia the species is rarely recorded. It has been observed at the Nullarbor Plain, Reid, Stoke's Inlet, Grassmere Lake, Warden Lake, Dalyup and Yellilup Swamp, Swan River, Benger Swamp, Guraga Lake, Wittecarra, Harding River, coastal Gascoyne, the Pilbara and the Kimberley (DotE 2016).	Unlikely There is no suitable habitat for this species within the survey area.	DBCA
Calidris ruficollis	Red-necked stint	IA	IA	The Red-necked Stint can be found in fresh and saline water, but primarily in coastal regions (Nevill 2013). It is mostly found in areas including sheltered inlets, bays, lagoons and estuaries with intertidal mudflats, often near spits, islets and banks and, sometimes, on protected sandy or coralline shores. Occasionally they have been recorded on exposed or ocean beaches, and on stony or rocky shores, reefs or shoals. They also occur in saltworks and sewage farms; saltmarsh; ephemeral or permanent shallow wetlands near the coast or inland, including lagoons, lakes, swamps, riverbanks, waterholes, bore drains, dams, soaks and pools in saltflats. They have occasionally been recorded on dry gibber plains, with little or no perennial vegetation. It has been observed at the Nullarbor Plain, Reid, Stoke's Inlet, Grassmere Lake, Warden Lake, Dalyup and Yellilup Swamp, Swan River, Benger Swamp, Guraga Lake, Wittecarra, Harding River, coastal Gascoyne, the Pilbara and the Kimberley (DotE 2016).	Unlikely There is no suitable habitat for this species within the survey area.	DBCA *NatureMap*
Tringa nebularia	Common greenshank	IA	IA	The Common Greenshank is found in a wide variety of inland wetlands and coastal habitats of varying salinity. It occurs in sheltered coastal areas typically with large mudflats and saltmarsh, mangroves or seagrass, including embayments, harbours, river estuaries, deltas and lagoons, but less often in round tidal pools, rock-flats and rock platforms. The species uses both permanent and ephemeral terrestrial wetlands, including swamps, lakes, dams, rivers, creeks, billabongs, waterholes and inundated floodplains, claypans and saltflats, and artificial wetlands. They occur around most of the coast	Unlikely There is no suitable habitat for this species within the survey area.	DBCA PMST *NatureMap*

Species Name	Common name	Status		Description and habitat requirements	Likelihood	Source
		BC Act	EPBC Act			
				from Cape Arid in the south to Carnarvon in the north-west (DotE 2016).		
Chlidonias leucopterus	White-winged black tern	IA	IA	In Australia, the White-Winged Tern mostly inhabits fresh, brackish or saline, and coastal or subcoastal wetlands. They frequent tidal wetlands, such as harbours, bays, estuaries and lagoons, and their associated tidal sandflats and mudflats. Terrestrial wetlands, including swamps, lakes, billabongs, rivers, floodplains, reservoirs, saltworks, sewage ponds and outfalls are also inhabited. Wetlands may be open, or with floating emergent or marginal vegetation. They rarely occur on inland wetlands. Most breeding is on vegetated, freshwater inland wetlands. The species is widespread on the southern west coast, north to Mongers Lake, and also on coasts of the Pilbara region and Kimberley Division, with occasional records farther inland, mainly along major river systems, such as the Ord. The species only rarely occurs in the Gascoyne Region of the central-western coast, and is occasionally recorded along the southern coast (DCCEEW 2023).	Unlikely There is no suitable habitat for this species within the survey area.	DBCA *NatureMap*
Gelochelidon nilotica	Gull-billed tern	IA	IA	The Gull-billed Tern can be found on beaches and mudflats in the southwest but has a preference for ephemeral freshwater or brackish lakes. It is highly nomadic and will also disperse to inland lakes. It is uncommon on the Swan Coastal Plain and scare in the southern region (Nevill 2013).	Unlikely There is no suitable habitat for this species within the survey area.	DBCA *NatureMap*
Hydroprogne caspia	Caspian Tern	IA	IA	The Caspian Tern is mostly found in sheltered coastal embayments (harbours, lagoons, inlets, bays, estuaries and river deltas) and those with sandy or muddy margins are preferred. They also occur on near-coastal or inland terrestrial wetlands that are either fresh or saline, especially lakes (including ephemeral lakes), waterholes, reservoirs, rivers and creeks. They also use artificial wetlands, including reservoirs, sewage ponds and saltworks. In offshore areas the species prefers sheltered situations, particularly near islands, and is rarely seen beyond reefs. In WA, the Caspian Tern is widespread in coastal regions, from the Great Australian Bight to the Dampier Peninsula (DotE 2016).	Unlikely There is no suitable habitat for this species within the survey area.	DBCA *NatureMap*
Oxyura australis	Blue-billed duck	P4		The blue-billed duck is a small Australian almost entirely aquatic duck (Morcombe 2004). The blue-billed duck is endemic to Australia's temperate regions, ranging from the south west of WA, extending to southern Queensland, through NSW and Victoria, to Tasmania. The species is readily seen	Unlikely There is no suitable habitat for this species within the survey area.	DBCA *NatureMap*

Species Name	Common name	Status		Description and habitat requirements	Likelihood	Source
		BC Act	EPBC Act			
				on freshwater lakes and billabongs where deep fresh water is present (Morcombe 2004).		
Plegadis falcinellus	Glossy ibis	IA	IA	The Glossy Ibis' preferred habitat for foraging and breeding are shallow, grassy, fresh water marshes at the edges of lakes and rivers, lagoons, flood-plains, wet meadows, swamps, reservoirs, sewage ponds, and cultivated areas under irrigation. The species is occasionally found in coastal locations such as estuaries, deltas, saltmarshes and coastal lagoons, and in wooded swamps, artificial wetlands (such as irrigated fields), and in mangroves. It may retreat to permanent wetlands and/or coastal areas (including tidal wetlands) during drought. Within Australia, the Glossy Ibis is generally located east of the Kimberley in WA and Eyre Peninsula in SA. The species is also known to be patchily distributed in the rest of WA (DotE 2016).	Unlikely There is no suitable habitat for this species within the survey area.	DBCA *NatureMap*s
Thinornis rubricollis	Hooded plover	P4		The Hooded Plover can be found on inland and coastal salt lakes as well as coastal beaches, with a preference for wide sandy beaches with large amounts of seaweed and backed by extensive open dunes. After breeding, many migrate to larger salt lakes like Lake Clifton south of Mandurah, or Lake Gore and Warden in the Esperance region. Their distribution extends from Horrocks to Eyre on the Nullarbor, with their largest numbers on the Esperance lakes, as well as inland on some of the smaller ephemeral salt lakes, particularly in the Salmon Gum woodlands north of Esperance and those north west of Hyden and between Hyden and Norseman (Morcombe 2004; Nevill 2013).	Highly Unlikely The survey area is outside of the known distribution for this species.	DBCA *NatureMap*s
Amytornis textilis textilis	Western grasswren	P4		The western subspecies of the Thick-billed Grasswren occurs in four types of semi-arid shrubland: (1) Acacia shrublands on coastal dunes, coastal plains and red sandplains, dominated by *Acacia ligulata*, *A. tetragonophylla*, *A. ramulosa* and *A. sclerosperma,* with chenopods such as *Rhagodia* spp. and *Threlkeldia diffusa*, other species of shrubs 1-3 m tall with a recumbent growth form that support twining species, and an extensive ground-cover of low shrubs, grasses and herbs. (2) Fire-affected shrublands dominated by *Ptilotus obovatus* and *Solanum orbiculatum*, which have replaced burnt-out Horse Mulga shrublands for at least 40 years following uncontrolled fires. (3) Low (< 1.5 m high) shrublands on calcareous sandplains, dominated by Umbrella Bush, *Exocarpus* spp., and other shrubs such as *Thryptomene* spp., and *Ptilotus* spp.,	Highly unlikely There are historic records (1899 and 1903) of this species occurring in the Cue area however this species is now considered locally extinct. Current distribution is restricted to the Shark Bay region. The survey area is not within the known distribution for this species. There is no suitable habitat for this species within the survey area.	DBCA *NatureMap*

Species Name	Common name	Status		Description and habitat requirements	Likelihood	Source
		BC Act	EPBC Act			
				mixed with hummocks of spinifex *Triodia* spp., and sometimes with *Atriplex* spp. (4) Dense thickets of *Muehlenbeckia cunninghamii*, *Atriplex* spp. and *Eremophila* spp. growing in drainage lines (DCCEEW 2023). The species is currently known only from the Shark Bay region (TSSC 2006)	Closest record (1903) 6 km Lake Austin area. South In Cue 1899.	
Leipoa ocellata	Malleefowl	VU	VU	The Malleefowl generally occurs in semi-arid areas of WA, in shrublands and low woodlands that are dominated by mallee vegetation, as well as native pine Callitris woodlands, Acacia shrublands, paperbark, sheoak, Broombush Melaleuca uncinata vegetation, eucalypt woodlands, or coastal heathlands. Mostly they are found where there are sandy or gravel soils. The nest is a large mound of sand or soil and organic matter (Jones & Goth 2008; Morcombe 2004; Nevill 2013). In WA they are found from the southwest Nullarbor to Albany, north, and then west from Moore River up to Shark Bay, past Cue, across to Wiluna and east to the northern Victoria Desert south of the Blackstone Ranges (Nevill 2013; Pizzey & Knight 2012).	Unlikely They are known to occur in the region with the closest known record less 1 km of the survey area (no date provided but likely to be historical). The habitat types within the survey area are not considered suitable for Malleefowl. The vegetation is too open and have very little to no cover in the upper story. No evidence (mounds) for the presence of Malleefowl was recorded during the survey. May use the area for dispersal.	DBCA PMST *NatureMap*
Pezoporus occidentalis	Night Parrot	EN		The Night Parrot is a highly elusive nocturnal ground dwelling parrot found in the arid and semi-arid zones of Australia. The night parrot was thought to be extinct but in 2013 it was rediscovered in Queensland (Pullen Pullen Reserve). Subsequently, the species has been found in Goneaway National Park and Diamantina National Park in Queensland and near Broome in Western Australia (DotEE 2017).	Unlikely Survey area overlaps with assumed distribution however the survey area lacks suitable habitat.	PMST
Falco hypoleucos	Grey Falcon	VU		The Grey Falcon inhabits lightly timbered country, especially stony, inland plains and Acacia scrub, gibber deserts, sandridges, pastoral lands, and timbered watercourses, but seldom in driest deserts. Its distribution is centred on inland drainage systems. It also hunts in treeless areas and frequents tussock grassland and open woodland, especially in winter (Morcombe 2004; Pizzey & Knight 2012). It can mostly be seen on the northwest coast from Shark Bay to east Kimberley, and in the Pibara and desert regions (Nevill 2013; Pizzey & Knight 2012).	Likely The survey area is within the known distribution of this species. The survey area provides suitable foraging habitat. This species is therefore likely to occur at least on an occasional/opportunistic basis.	PMST
Falco peregrinus	Peregrine falcon	OS		The Peregrine Falcon is found on and near cliffs, gorges, timbered watercourses, riverine environments, wetlands, plains, open woodlands, and pylons and spires of buildings,	Likely This species is known to persist in the region, however use	DBCA *NatureMap*

Species Name	Common name	Status		Description and habitat requirements	Likelihood	Source
		BC Act	EPBC Act			
				though less frequently in desert regions (Morcombe 2004; Pizzey & Knight 2012). They are not common but can be found almost anywhere throughout WA and in the southwest, including particularly at Fitzgerald River, Stirling Range, Porongurup National Parks, Kondinin, and Peak Charles, with many more locations north of Perth (Nevill 2013).	would be opportunistic/ foraging only as the survey area lacks suitable breeding habitat, such as tall structures or steep topography.	
Motacilla flava	Yellow Wagtail	IA		The Yellow Wagtail occupies a range of damp or wet habitats with low vegetation, from damp meadows, marshes, waterside pastures, sewage farms and bogs to damp steppe and grassy tundra (IUCN Redlist 2017). In Australia, the Yellow Wagtail is very uncommon except in the Broome region. They can often be found in nothern towns wherever there are well watered grass areas (DotEE 2017).	Unlikely There is no suitable habitat for this species within the survey area. Not in known distribution.	PMST
Motacilla cinerea	Grey Wagtail	IA		The Grey Wagtail is an opportunistic migrant to Australia. The species typically migrates to Indonesia occasionally landing in Australia. Most records for the species are from Northern Australia and South Australia (Morcombe 2004). The non-breeding habitat only of the Grey Wagtail has a strong association with water, particularly rocky substrates along water courses but also lakes and marshes (DotE 2016). It can be found mainly in banks and rocks in fast-running freshwater habitats: rivers, creeks, streams, and around waterfalls, both in forest and open country; but occurs almost anywhere during migration (Johnstone & Storr 2004).	Unlikely This species is a rare vagrant to Australia and any use is irregular and opportunistic.	PMST
Mammals						
Macrotis lagotis	Bilby	Vu	Vu	The Greater Bilby occupies sand plains, sandy dunes or along drainage or salt lake systems (DEC 2012). They occur in three major vegetation types; open tussock grassland on uplands and hills, mulga woodland/shrubland growing on ridges and rises, and hummock grassland in plains and alluvial areas. In the south of its range, the Greater Bilby lives on rises and ridges among sparse grasses, especially Mitchell grass, Astrebla and short shrubs. In WA there are disjunct populations in the Gibson Desert, south-western Kimberley, inland areas of the Pilbara and northern Great Sandy Desert (Van Dyck and Strahan, 2008).	Unlikely The habitat types within the survey area are not considered suitable for the Bilby. The survey area is outside the current known distribution for this species.	DBCA *NatureMap*
Reptiles						

Species Name	Common name	Status		Description and habitat requirements	Likelihood	Source
		BC Act	EPBC Act			
Lerista eupoda	West Coast Mulga Slider	P1		The West Coast Mulga Slider is found in the arid interior of southern WA. It inhabits open mulga on red loams and sandy loams (Cogger 2014).	Likely There is suitable habitat within survey area. This species is known to occur between Cue and Meekatharra.	DBCA *NatureMap*
Egernia stokesii badia	Western Spiny-tailed Skink	EN		The Western Spiny-tailed Skink is known to occur in a broad semi-arid area in south-west WA, between Shark Bay and Minnivale and east to Cue. Most records of the brown form Western Spiny-tailed Skink are in York Gum (*Eucalyptus loxophleba*) woodland with some records in Gimlet (*E. salubris*) and Salmon Gum (*E. salmonophloia*) woodland. Populations persist in woodland patches as small as one hectare and completely surrounded by wheatfields. Sites with the greatest number of individuals contain numerous fallen logs and were subjected to low-intensity grazing by domestic stock. Hollow logs are used as refuge sites in woodland habitat. Preferred refuges consist of piles of several, overlapping, hollow logs providing a combination of basking and shelter sites. An increasing number of skinks are being located in altered habitat under piles of wood, scrap metal or under buildings on private property (DotE 2016).	Unlikely There is no suitable habitat for this species within the survey area.	PMST
Invertebrates						
Idiosoma clypeatum *(*previously *Idiosoma nigrum)*	Northern Shield-back Trapdoor Spider	P3		*Idiosoma clypeatum* was previously known by the WAM identification code 'MYG018' and prior to the taxonomic revision of Rix et al. 2018 was often incorporated into *Idiosoma nigrum* that is now known to only occur in the northern Wheatbelt region of Western Australia (Rix et al. 2018). *Idiosoma clypeatum* has a widespread distribution in the Yalgoo and Murchison bioregions of Western Australia's inland arid zone strongly correlated with annual rainfall of less than 250 mm. Like many Idiosoma species from the *I. nigrum* complex the burrows are adorned with a moustache like arrangement of twigs. Males have been collected wandering in search of females in late autumn, winter and spring, with a peak of activity in winter (Invertebrate Solutions 2020, Rix et al. 2018).	Unlikely Targeted searches for *Idiosoma clypeatum* were undertaken during the survey. No evidence of their presence was observed. Habitats present within the survey area are not considered core habitat for this species.	PMST

Meekatharra survey area – Likelihood of occurrence assessment for significant fauna identified in the desktop assessment

Species Name	Common name	Status		Description and habitat requirements	Likelihood	Source
		BC Act	EPBC Act			
Birds						
Apus pacificus	Fork-tailed Swift	IA	IA	The fork-tailed Swift is a migratory species that follows large storm fronts and are almost exclusively areal species. In WA, there are sparsely scattered records of the Fork-tailed Swift along the south coast, ranging from near the Eyre Bird Observatory and west to Denmark. They are widespread in coastal and subcoastal areas between Augusta and Carnarvon, including some on nearshore and offshore islands. Scattered records are present in the Perth region. Records are scattered throughout WA including the Pilbara, Kimberley, Wheatbelt, Gascoyne and Isolated records occur at Neale Junction in the Great Victoria Desert and on the Nullarbor Plain (Higgins 1999).	**Unlikely** Species known distribution overlaps with the survey area however they are typically aerial feeders during non-breeding season when present locally, and very rarely utilising terrestrial habitats.	PMST
Calidris acuminata	Sharp-tailed Sandpiper	IA	IA	In Australasia, the Sharp-tailed Sandpiper prefers muddy edges of shallow fresh or brackish wetlands, with inundated or emergent sedges, grass, saltmarsh or other low vegetation. This includes lagoons, swamps, lakes and pools near the coast, and dams, waterholes, soaks, bore drains and bore swamps, saltpans and hypersaline saltlakes inland. They also occur in saltworks and sewage farms. They use flooded paddocks, sedgelands and other ephemeral wetlands, but leave when they dry. They use intertidal mudflats in sheltered bays, inlets, estuaries or seashores, and also swamps and creeks lined with mangroves. Sometimes they occur on rocky shores. They are widespread from Cape Arid to Carnarvon, around coastal and subcoastal plains of Pilbara Region to south-west and east Kimberley Division. Inland records indicate the species is widespread and scattered from Newman, east to Lake Cohen, south to Boulder and west to Meekatharra. Inland records indicate the species is widespread and scattered from Newman, east to Lake Cohen, south to Boulder and west to Meekatharra (DAWE 2022b).	**Unlikely** There is no permanent suitable habitat for this species within the survey area. Recent rains had resulted in a small pool of water adjacent to Landor-Meekatharra Rd, which may provide an opportunistic/seasonal resource for this species. The closest known record is approximately 10 km north of the survey area.	PMST DBCA
Calidris ferruginea	Curlew Sandpiper	CR;IA	IA	Curlew Sandpipers mainly occur in areas with soft mud conditions, including intertidal mudflats in sheltered coastal areas, such as estuaries, bays, inlets and	**Unlikely** There is no permanent suitable habitat for this species within the	PMST DBCA

Species Name	Common name	Status		Description and habitat requirements	Likelihood	Source
		BC Act	EPBC Act			
				lagoons, and also around non-tidal swamps, lakes and lagoons near the coast, and ponds in saltworks and sewage farms. They are found inland less often, including around ephemeral and permanent lakes, dams, waterholes and bore drains, usually with bare edges of mud or sand. They occur in both fresh and brackish waters. In WA, they are widespread around coastal and subcoastal plains from Cape Arid to south-west Kimberley Division, but are more sparsely distributed between Carnarvon and Dampier Archipelago (DotE 2016).	survey area. Recent rains had resulted in a small pool of water adjacent to Landor-Meekatharra Rd, which may provide an opportunistic/seasonal resource for this species.	
Pezoporus occidentalis	Night Parrot	EN		The Night Parrot is a highly elusive nocturnal ground dwelling parrot found in the arid and semi-arid zones of Australia. The night parrot was thought to be extinct but in 2013 it was rediscovered in Queensland (Pullen Pullen Reserve). Subsequently, the species has been found in Goneaway National Park and Diamantina National Park in Queensland and near Broome in Western Australia (DotEE 2017).	**Highly Unlikely** Survey area in assumed distribution but no suitable habitat within survey area. There are no records <100kms of survey area.	PMST
Leipoa ocellata	Malleefowl	VU		The Malleefowl generally occurs in semi-arid areas of WA, in shrublands and low woodlands that are dominated by mallee vegetation, as well as native pine *Callitris* woodlands, *Acacia* shrublands, paperbark, skheoak, Broombush *Melaleuca uncinata* vegetation, eucalypt woodlands, or coastal heathlands. Mostly they are found where there are sandy or gravel soils. The nest is a large mound of sand or soil and organic matter (Jones & Goth 2008; Morcombe 2004; Nevill 2013). In WA they are found from the southwest Nullarbor to Albany, north, and then west from Moore River up to Shark Bay, past Cue, across to Wiluna and east to the northern Victoria Desert south of the Blackstone Ranges (Nevill 2013; Pizzey & Knight 2012).	**Unlikely** The habitat types within the survey area are not considered suitable for Malleefowl. The soil is too rocky and the vegetation is considered too open. No evidence (mounds) for the presence of Malleefowl was recorded during the survey.	PMST
Aphelocephala leucopsis	Southern Whiteface	VU		The southern whiteface is endemic to Australia and typically inhabits arid open woodlands with a shrubby or grassy understory, as well as grass plains throughout much of the continents south. Not present in Tasmania or in coastal areas of the mainland. This species prefers Acacia woodlands, particularly those dominated by mulga and drought-resistant chenopod shrub species, including saltbush and bluebush. They are considered	**Likely** Species known distribution overlaps with the survey area and there is suitable habitat present.	PMST

Species Name	Common name	Status		Description and habitat requirements	Likelihood	Source
		BC Act	EPBC Act			
				sedentary; however, records indicate that individuals may move into wetter areas outside of their normal range during drought years. (Nevill 2013).		
Falco hypoleucos	Grey Falcon	VU		The Grey Falcon inhabits lightly timbered country, especially stony, inland plains and Acacia scrub, gibber deserts, sandridges, pastoral lands, and timbered watercourses, but seldom in driest deserts. Its distribution is centred on inland drainage systems. It also hunts in treeless areas and frequents tussock grassland and open woodland, especially in winter (Morcombe 2004; Pizzey & Knight 2012). It can mostly be seen on the northwest coast from Shark Bay to east Kimberley, and in the Pibara and desert regions (Nevill 2013; Pizzey & Knight 2012).	**Likely** Species known distribution overlaps with the survey area and there is suitable habitat within the survey area. Historical record within 50kms of survey area.	PMST
Actitis hypoleucos	Common Sandpiper	IA		The Common Sandpiper is found along all coastlines of Australia and uses a wide range of coastal wetlands and some inland wetlands, with varying levels of salinity, and is mostly found around often narrow and steep muddy margins or rocky shores. The species has been recorded in estuaries and deltas of streams, as well as on banks further upstream; around lakes, pools, mangroves, billabongs, reservoirs, dams and claypans, and occasionally piers and jetties. It is often found near mangroves, and sometimes in areas of mud littered with rocks or snags. Found along all coastlines of Australia and in many areas inland, the Common Sandpiper is widespread in small numbers. The population when in Australia is concentrated in northern and western Australia (DotE 2016).	**Unlikely** Survey area in known distribution but no suitable habitat within survey area. Suitable habitat <100kms away but only suitable for certain periods of the year (after rain events). There are no records within 50 km of the survey area.	PMST
Motacilla flava	Yellow Wagtail	IA		The Yellow Wagtail occupies a range of damp or wet habitats with low vegetation, from damp meadows, marshes, waterside pastures, sewage farms and bogs to damp steppe and grassy tundra (IUCN Redlist 2017). In Australia, the Yellow Wagtail is very uncommon except in the Broome region. They can often be found in northern towns wherever there are well watered grass areas (DotEE 2017).	**Highly Unlikely** There is no suitable habitat within the survey area. Survey area is outside of their current known distribution.	PMST
Charadrius veredus	Oriental Plover	IA		Immediately after arriving in non-breeding grounds in northern Australia, Oriental Plovers spend a few weeks in coastal habitats such as estuarine mudflats and	**Unlikely** Survey area in known distribution but no suitable habitat within	PMST

Species Name	Common name	Status		Description and habitat requirements	Likelihood	Source
		BC Act	EPBC Act			
				sandbanks, on sandy or rocky ocean beaches or nearby reefs, or in near-coastal grasslands, before dispersing further inland. Thereafter they usually inhabit flat, open, semi-arid or arid grasslands, where the grass is short and sparse, and interspersed with hard, bare ground, such as claypans, and dry paddocks, or open areas that have been recently burnt. At the onset of the Wet Season, some may move into lightly wooded grasslands. Some remain in estuarine and littoral environments, and a few are occasionally recorded around terrestrial wetlands or flooded paddocks. Most records are along the north-western coast, between Exmouth Gulf and Derby, and there are records at a few scattered sites elsewhere, mainly along the northern coast, such as in the Top End, the Gulf of Carpentaria and on Cape York Peninsula. The species also often occurs further inland on the 'blacksoil' plains of northern WA (DotE 2016).	survey area. Suitable habitat >100kms away but only suitable for certain periods of the year (after rain events).	
Calidris melanotos	Pectoral Sandpiper	IA		In Australia, the Pectoral Sandpiper prefers shallow fresh to saline wetlands. The species is found at coastal lagoons, estuaries, bays, swamps, lakes, inundated grasslands, saltmarshes, river pools, creeks, floodplains and artificial wetlands. The species is usually found in coastal or near coastal habitat but occasionally found further inland. It prefers wetlands that have open fringing mudflats and low, emergent or fringing vegetation, such as grass or samphire. The species has also been recorded in swamp overgrown with lignum (DotE 2016).	**Unlikely** Survey area in assumed distribution but no suitable habitat within survey area. The closest known records are more than 150 km east of the survey are.	PMST
Motacilla cinerea	Grey Wagtail	IA		The Grey Wagtail is an opportunistic migrant to Australia. The species typically migrates to Indonesia occasionally landing in Australia. Most records for the species are from Northern Australia and South Australia (Morcombe 2004). The non-breeding habitat only of the Grey Wagtail has a strong association with water, particularly rocky substrates along water courses but also lakes and marshes (DotE 2016). It can be found mainly in banks and rocks in fast-running freshwater habitats: rivers, creeks, streams, and around waterfalls, both in forest and open country; but occurs almost anywhere during migration (Johnstone & Storr 2004).	**Highly Unlikely** This species is a rare vagrant to Australia and any use is irregular and opportunistic.	PMST
Falco peregrinus	Peregrine falcon	OS		The Peregrine Falcon is found on and near cliffs, gorges, timbered watercourses, riverine environments, wetlands,	**Likely**	DBCA Naturemaps

Species Name	Common name	Status		Description and habitat requirements	Likelihood	Source
		BC Act	EPBC Act			
				plains, open woodlands, and pylons and spires of buildings, though less frequently in desert regions (Morcombe 2004; Pizzey & Knight 2012). They are not common but can be found almost anywhere throughout WA and in the southwest, including particularly at Fitzgerald River, Stirling Range, Porongurup National Parks, Kondinin, and Peak Charles, with many more locations north of Perth (Nevill 2013).	There is suitable habitat present within the survey area. This species has previously been recorded at the sewage ponds immediately adjacent (north) of the survey area.	
Gelochelidon nilotica	Gull-billed tern	IA	IA	The Gull-billed Tern can be found on beaches and mudflats in the southwest but has a preference for ephemeral freshwater or brackish lakes. It is highly nomadic and will also disperse to inland lakes. It is uncommon on the Swan Coastal Plain and scare in the southern region (Nevill 2013).	**Unlikely** Survey area is in known distribution but no suitable habitat present within survey area. Recent rains had resulted in a small pool of water adjacent to Landor-Meekatharra Rd, which may provide an opportunistic/ seasonal resource for this species. Closest known record is approximately 10 km north of the survey area.	DBCA
Tringa glareola	Wood sandpiper	IA	IA	The Wood Sandpiper uses well-vegetated, shallow, freshwater wetlands, such as swamps, billabongs, lakes, pools and waterholes. They are typically associated with emergent, aquatic plants or grass, and dominated by taller fringing vegetation, such as dense stands of rushes or reeds, shrubs, or dead or live trees, especially Melaleuca and River Red Gums E. camaldulensis. They also frequent inundated grasslands, short herbage or wooded floodplains, where floodwaters are temporary or receding. They can occasionally be found at drying or stony small wetlands, but rarely use brackish wetlands, or dry stunted saltmarsh. They can also use artificial wetlands, including open sewage ponds, reservoirs, large farm dams, and bore drains. In WA the species is widespread but scattered in most regions (DotE 2016).	**Unlikely** This species has previously been recorded from the sewage ponds directly adjacent (north) to the survey area. However there is no permanent suitable habitat for this species within the survey area. Recent rains had resulted in a small pool of water adjacent to Landor-Meekatharra Rd, which may provide an opportunistic/seasonal resource for this species.	DBCA Naturemaps
Tringa nebularia	Common greenshank	IA	IA	The Common Greenshank is found in a wide variety of inland wetlands and coastal habitats of varying salinity. It occurs in sheltered coastal areas typically with large mudflats and saltmarsh, mangroves or seagrass, including embayments, harbours, river estuaries, deltas and lagoons, but less often in round tidal pools, rock-flats	**Unlikely** Survey area is in known distribution but no suitable habitat present within survey area. Recent rains had resulted in a small pool of water adjacent to	DBCA

Species Name	Common name	Status		Description and habitat requirements	Likelihood	Source
		BC Act	EPBC Act			
				and rock platforms. The species uses both permanent and ephemeral terrestrial wetlands, including swamps, lakes, dams, rivers, creeks, billabongs, waterholes and inundated floodplains, claypans and saltflats, and artificial wetlands. They occur around most of the coast from Cape Arid in the south to Carnarvon in the north-west (DotE 2016).	Landor-Meekatharra Rd, which may provide an opportunistic/ seasonal resource for this species. Closest known record is approximately 10 km north of the survey area.	
Mammals						
Sminthopsis longicaudata	Long-tailed dunnart	P4		The Long-tailed Dunnart occurs throughout the Gibson Desert, Murchison, southern Canarvon Basin and the Pilbara in Western Australia. Its habitat includes rugged, rocky areas with hummock grasses, shrubs and tall open shrublands and woodlands. In the Young Range in the Gibson Desert, the Long-tailed Dunnart has been found to be associated with plateaus, composed of boulders and stones, with some fine red soils, and sparsely vegetated Mulga (*Acacia aneura*) and Miniritchie (*A. grasbyi*) shrubs over spinifex (Van Dyck and Strahan 2008).	**Likely** The survey area contains suitable habitat for this species. The closest known record is approximately 35 km south-east of the survey area.	DBCA *NatureMap*
Reptiles						
Lerista eupoda	West Coast mulga slider	P1		The West Coast Mulga Slider is found in the arid interior of southern WA. It inhabits open mulga on red loams and sandy loams (Cogger 2014).	**Unlikely** The survey area lacks suitable habitat. This species has previously been recorded south of Meekatharra, towards Cue.	DBCA

Menzies survey area – Likelihood of occurrence assessment for significant fauna identified in the desktop assessment

Species Name	Common name	Status		Description and habitat requirements	Likelihood	Source
		BC Act	EPBC Act			
Birds						
Apus pacificus	Fork-tailed Swift	IA	IA	The fork-tailed Swift is a migratory species that follows large storm fronts and are almost exclusively areal species. In WA, there are sparsely scattered records of the Fork-tailed Swift along the south coast, ranging from near the Eyre Bird Observatory and west to Denmark. They are widespread in coastal and subcoastal areas between Augusta and Carnarvon, including some on nearshore and offshore islands. Scattered records are present in the Perth region. Records are scattered throughout WA including the Pilbara, Kimberley, Wheatbelt, Gascoyne and Isolated records occur at Neale Junction in the Great Victoria Desert and on the Nullarbor Plain (Higgins 1999).	**Unlikely** Species known distribution overlaps with the survey area however they are typically aerial feeders during non-breeding season when present locally, and very rarely utilising terrestrial habitats.	PMST
Calidris acuminata	Sharp-tailed Sandpiper	IA	IA	In Australasia, the Sharp-tailed Sandpiper prefers muddy edges of shallow fresh or brackish wetlands, with inundated or emergent sedges, grass, saltmarsh or other low vegetation. This includes lagoons, swamps, lakes and pools near the coast, and dams, waterholes, soaks, bore drains and bore swamps, saltpans and hypersaline saltlakes inland. They also occur in saltworks and sewage farms. They use flooded paddocks, sedgelands and other ephemeral wetlands, but leave when they dry. They use intertidal mudflats in sheltered bays, inlets, estuaries or seashores, and also swamps and creeks lined with mangroves. Sometimes they occur on rocky shores. They are widespread from Cape Arid to Carnarvon, around coastal and subcoastal plains of Pilbara Region to south-west and east Kimberley Division. Inland records indicate the species is widespread and scattered from Newman, east to Lake Cohen, south to Boulder and west to Meekatharra. Inland records indicate the species is widespread and scattered from Newman, east to Lake Cohen, south to Boulder and west to Meekatharra (DAWE 2022b).	**Unlikely** No suitable habitat within the survey area.	PMST
Leipoa ocellata	Malleefowl	VU	VU	The Malleefowl generally occurs in semi-arid areas of WA, in shrublands and low woodlands that are dominated by mallee vegetation, as well as native pine	**Unlikely** Species distribution overlaps with the survey area and multiple	DBCA *NatureMap*s PMST

Species Name	Common name	Status		Description and habitat requirements	Likelihood	Source
		BC Act	EPBC Act			
				Callitris woodlands, Acacia shrublands, paperbark, skheoak, Broombush Melaleuca uncinata vegetation, eucalypt woodlands, or coastal heathlands. Mostly they are found where there are sandy or gravel soils. The nest is a large mound of sand or soil and organic matter (Jones & Goth 2008; Morcombe 2004; Nevill 2013). In WA they are found from the southwest Nullarbor to Albany, north, and then west from Moore River up to Shark Bay, past Cue, across to Wiluna and east to the northern Victoria Desert south of the Blackstone Ranges (Nevill 2013; Pizzey & Knight 2012).	records are within 10 km of the survey area. However, the habitat types with the survey area are not considered suitable for Malleefowl. The species may utilize the drainage lines where there is more vegetation cover for dispersal.	
Pezoporus occidentalis	Night Parrot	EN		The Night Parrot is a highly elusive nocturnal ground dwelling parrot found in the arid and semi-arid zones of Australia. The night parrot was thought to be extinct but in 2013 it was rediscovered in Queensland (Pullen Pullen Reserve). Subsequently, the species has been found in Goneaway National Park and Diamantina National Park in Queensland and near Broome in Western Australia (DotEE 2017).	**Unlikely** Potential species distribution overlaps with survey area. Habitat not suitable for species.	PMST
Aphelocephala leucopsis	Southern Whiteface	VU		The southern whiteface is endemic to Australia and typically inhabits arid open woodlands with a shrubby or grassy understory, as well as grass plains throughout much of the continents south. Not present in Tasmania or in coastal areas of the mainland. This species prefers Acacia woodlands, particularly those dominated by mulga and drought-resistant chenopod shrub species, including saltbush and bluebush. They are considered sedentary; however, records indicate that individuals may move into wetter areas outside of their normal range during drought years. (Nevill 2013).	**Likely** Species distribution overlaps with survey area. Suitable habitat within survey area.	PMST
Falco hypoleucos	Grey Falcon	VU		The Grey Falcon inhabits lightly timbered country, especially stony, inland plains and Acacia scrub, gibber deserts, sandridges, pastoral lands, and timbered watercourses, but seldom in driest deserts. Its distribution is centred on inland drainage systems. It also hunts in treeless areas and frequents tussock grassland and open woodland, especially in winter (Morcombe 2004; Pizzey & Knight 2012). It can mostly be seen on the northwest coast from Shark Bay to east Kimberley, and in the Pilbara and desert regions (Nevill 2013; Pizzey & Knight 2012).	**Likely** Species distribution overlaps with survey area. Suitable habitat within survey area.	PMST

Species Name	Common name	Status		Description and habitat requirements	Likelihood	Source
		BC Act	EPBC Act			
Polytelis alexandrae	Princess Parrot	VU		The Princess Parrot inhabits sand dunes and sand flats in the arid zone of western and central Australia. It occurs in open savanna woodlands and shrublands that usually consist of scattered stands of Eucalyptus (including *E. gongylocarpa*, *E. chippendalei* and mallee species), *Casuarina* or *Allocasuarina* trees; an understorey of shrubs such as Acacia (especially *A. aneura*), *Eremophila*, *Grevillea*, *Hakea* and *Senna*; and a ground cover dominated by *Triodia* species (Allen 1987; Baxter & Henderson 2000;). It also frequents *Eucalyptus* or *Allocasuarina* trees in riverine or littoral areas (Carter 1993b).	**Unlikely** Species distribution overlaps with survey area however there is no suitable habitat within survey area.	PMST
Motacilla cinerea	Grey Wagtail	IA		The Grey Wagtail is an opportunistic migrant to Australia. The species typically migrates to Indonesia occasionally landing in Australia. Most records for the species are from Northern Australia and South Australia (Morcombe 2004). The non-breeding habitat only of the Grey Wagtail has a strong association with water, particularly rocky substrates along water courses but also lakes and marshes (DotE 2016). It can be found mainly in banks and rocks in fast-running freshwater habitats: rivers, creeks, streams, and around waterfalls, both in forest and open country; but occurs almost anywhere during migration (Johnstone & Storr 2004).	**Highly Unlikely** This species is a rare vagrant to Australia and any use is irregular and opportunistic.	PMST
Actitis hypoleucos	Common Sandpiper	IA		The Common Sandpiper is found along all coastlines of Australia and uses a wide range of coastal wetlands and some inland wetlands, with varying levels of salinity, and is mostly found around often narrow and steep muddy margins or rocky shores. The species has been recorded in estuaries and deltas of streams, as well as on banks further upstream; around lakes, pools, mangroves, billabongs, reservoirs, dams and claypans, and occasionally piers and jetties. It is often found near mangroves, and sometimes in areas of mud littered with rocks or snags. Found along all coastlines of Australia and in many areas inland, the Common Sandpiper is widespread in small numbers. The population when in Australia is concentrated in northern and western Australia (DotE 2016).	**Unlikely** No suitable habitat within the survey area.	PMST
Calidris melanotos	Pectoral Sandpiper	IA		In Australia, the Pectoral Sandpiper prefers shallow fresh to saline wetlands. The species is found at coastal	**Unlikely**	PMST

Species Name	Common name	Status		Description and habitat requirements	Likelihood	Source
		BC Act	EPBC Act			
				lagoons, estuaries, bays, swamps, lakes, inundated grasslands, saltmarshes, river pools, creeks, floodplains and artificial wetlands. The species is usually found in coastal or near coastal habitat but occasionally found further inland. It prefers wetlands that have open fringing mudflats and low, emergent or fringing vegetation, such as grass or samphire. The species has also been recorded in swamp overgrown with lignum. In Western Australia the species is rarely recorded. It has been observed at the Nullarbor Plain, Reid, Stoke's Inlet, Grassmere Lake, Warden Lake, Dalyup and Yellilup Swamp, Swan River, Benger Swamp, Guraga Lake, Wittecarra, Harding River, coastal Gascoyne, the Pilbara and the Kimberley (DotE 2016).	No suitable habitat within the survey area.	
Mammals						
Dasyurus geoffroii	Chuditch	VU		The Chuditch inhabits eucalypt forest (especially Jarrah, Eucalyptus marginata), dry woodland and mallee shrublands . In Jarrah forest, Chuditch populations occur in both moist, densely vegetated, steeply sloping forest and drier, open, gently sloping forest. Most diurnal resting sites in sclerophyll forest consist of hollow logs or earth burrows (Van Dyke & Strahan, 2008). The species can travel large distances, has a large home range and is sparsely populated through a large portion of its range.	**Highly Unlikely** The survey area is outside of its current known range. This species is considered to be locally extinct.	PMST
Reptiles						
Aspidites ramsayi (southwest subpop.)	Woma	P1		The Woma inhabits woodlands, heaths and shrublands, often with spinifex. It occurs in the sub-humid and arid areas across Australia's interior with a separate sub-population occurring in the Wheatbelt and Goldfields of WA. The Woma shelters mainly in abandoned monitor and mammal burrows and in soil cracks (Wilson & Swan 2010).	**Likely** Suitable habitat is present. There is a historical record (1966) less than 500 m from the survey area. The survey area is considered to be on the edge of its current known distribution.	DBCA *NatureMap*

Sandstone survey area – Likelihood of occurrence assessment for significant fauna identified in the desktop assessment

Species Name	Common name	Status		Description and habitat requirements	Likelihood	Source
		BC Act	EPBC Act			
Birds						
Apus pacificus	Fork-tailed Swift	IA	IA	The fork-tailed Swift is a migratory species that follows large storm fronts and are almost exclusively areal species. In WA, there are sparsely scattered records of the Fork-tailed Swift along the south coast, ranging from near the Eyre Bird Observatory and west to Denmark. They are widespread in coastal and subcoastal areas between Augusta and Carnarvon, including some on nearshore and offshore islands. Scattered records are present in the Perth region. Records are scattered throughout WA including the Pilbara, Kimberley, Wheatbelt, Gascoyne and Isolated records occur at Neale Junction in the Great Victoria Desert and on the Nullarbor Plain (Higgins 1999).	**Unlikely** Species known distribution overlaps with the survey area however they are typically aerial feeders during non-breeding season when present locally, and very rarely utilising terrestrial habitats.	*NatureMap* PMST
Calidris acuminata	Sharp-tailed Sandpiper	IA	IA	In Australasia, the Sharp-tailed Sandpiper prefers muddy edges of shallow fresh or brackish wetlands, with inundated or emergent sedges, grass, saltmarsh or other low vegetation. This includes lagoons, swamps, lakes and pools near the coast, and dams, waterholes, soaks, bore drains and bore swamps, saltpans and hypersaline saltlakes inland. They also occur in saltworks and sewage farms. They use flooded paddocks, sedgelands and other ephemeral wetlands, but leave when they dry. They use intertidal mudflats in sheltered bays, inlets, estuaries or seashores, and also swamps and creeks lined with mangroves. Sometimes they occur on rocky shores. They are widespread from Cape Arid to Carnarvon, around coastal and subcoastal plains of Pilbara Region to south-west and east Kimberley Division. Inland records indicate the species is widespread and scattered from Newman, east to Lake Cohen, south to Boulder and west to Meekatharra. Inland records indicate the species is widespread and scattered from Newman, east to Lake Cohen, south to Boulder and west to Meekatharra (DAWE 2022b).	**Highly Unlikely** There is no suitable habitat for this species within the survey area.	PMST
Calidris melanotos	Pectoral Sandpiper	MI	MI	In Australia, the Pectoral Sandpiper prefers shallow fresh to saline wetlands. The species is found at coastal lagoons, estuaries, bays, swamps, lakes, inundated grasslands, saltmarshes, river pools, creeks, floodplains	**Highly Unlikely**	PMST

Species Name	Common name	Status		Description and habitat requirements	Likelihood	Source
		BC Act	EPBC Act			
				and artificial wetlands. The species is usually found in coastal or near coastal habitat but occasionally found further inland. It prefers wetlands that have open fringing mudflats and low, emergent or fringing vegetation, such as grass or samphire. The species has also been recorded in swamp overgrown with lignum. In Western Australia the species is rarely recorded. It has been observed at the Nullarbor Plain, Reid, Stoke's Inlet, Grassmere Lake, Warden Lake, Dalyup and Yellilup Swamp, Swan River, Benger Swamp, Guraga Lake, Wittecarra, Harding River, coastal Gascoyne, the Pilbara and the Kimberley (DotE 2016).	There is no suitable habitat for this species within the survey area.	
Motacilla cinerea	Grey Wagtail	MI	MI	The Grey Wagtail is an opportunistic migrant to Australia. The species typically migrates to Indonesia occasionally landing in Australia. Most records for the species are from Northern Australia and South Australia (Morcombe 2004). The non-breeding habitat only of the Grey Wagtail has a strong association with water, particularly rocky substrates along water courses but also lakes and marshes (DotE 2016). It can be found mainly in banks and rocks in fast-running freshwater habitats: rivers, creeks, streams, and around waterfalls, both in forest and open country; but occurs almost anywhere during migration (Johnstone & Storr 2004).	**Highly unlikely** This species is a rare vagrant to Australia and any use is irregular and opportunistic.	PMST
Motacilla flava	Yellow Wagtail	MI	MI	The Yellow Wagtail occupies a range of damp or wet habitats with low vegetation, from damp meadows, marshes, waterside pastures, sewage farms and bogs to damp steppe and grassy tundra (IUCN Redlist 2017). In Australia, the Yellow Wagtail is a very uncommon except in the Broome region. They can often be found in nothern towns wherever there are well watered grass areas (DotEE 2017).	**Highly unlikely** There is no suitable habitat for this species within the survey area. Not in known distribution.	PMST
Actitis hypoleucos	Common Sandpiper	MI	MI	The species utilises a wide range of coastal wetlands and some inland wetlands, with varying levels of salinity, and is mostly found around muddy margins or rocky shores and rarely on mudflats. The Common Sandpiper has been recorded in estuaries and deltas of streams, as well as on banks farther upstream; around lakes, pools, billabongs, reservoirs, dams and claypans, and occasionally piers and jetties. The muddy margins utilised by the species are often narrow, and may be	**Highly unlikely** There is no suitable habitat for this species within the survey area.	PMST

Species Name	Common name	Status		Description and habitat requirements	Likelihood	Source
		BC Act	EPBC Act			
				steep. The species is often associated with mangroves, and sometimes found in areas of mud littered with rocks or snags (Geering et al. 2007; Higgins & Davies 1996). Foraging environments: Generally the species forages in shallow water and on bare soft mud at the edges of wetlands; often where obstacles project from substrate, e.g. rocks or mangrove roots. Birds sometimes venture into grassy areas adjoining wetlands (Higgins & Davies 1996). Roost sites: Roost sites are typically on rocks or in roots or branches of vegetation, especially mangroves. The species is known to perch on posts, jetties, moored boats and other artificial structures, and to sometimes rest on mud or 'loaf' on rocks (Higgins & Davies 1996).		
Pezoporus occidentalis	Night Parrot	EN	EN	The Night Parrot is a highly elusive nocturnal ground dwelling parrot found in the arid and semi-arid zones of Australia. The night parrot was thought to be extinct but in 2013 it was rediscovered in Queensland (Pullen Pullen Reserve). Subsequently, the species has been found in Goneaway National Park and Diamantina National Park in Queensland and near Broome in Western Australia (DotEE 2017).	**Unlikely** There is no suitable habitat within the survey area.	PMST
Polytelis alexandrae	Princess Parrot, Alexandra's Parrot	P4	VU	The Princess Parrot inhabits sand dunes and sand flats in the arid zone of western and central Australia. It occurs in open savanna woodlands and shrublands that usually consist of scattered stands of *Eucalyptus* (including E. *gongylocarpa*, *E. chippendalei* and mallee species), *Casuarina* or *Allocasuarina* trees; an understorey of shrubs such as *Acacia* (especially *A. aneura*), *Eremophila*, *Grevillea*, *Hakea* and *Senna*; and a ground cover dominated by *Triodia* species (Allen 1987; Baxter & Henderson 2000;). It also frequents *Eucalyptus* or *Allocasuarina* trees in riverine or littoral areas (Carter 1993b).	**Likely** The survey area is within the known distribution for this species however the survey area is not considered favourable habitat. There is one historical record in sandstone from 1915. May occur as an irregular/ opportunistic visitor to the area.	*NatureMap*, PMST
Falco hypoleucos	Grey Falcon	VU	VU	The Grey Falcon inhabits lightly timbered country, especially stony, inland plains and Acacia scrub, gibber deserts, sandridges, pastoral lands, and timbered watercourses, but seldom in driest deserts. Its distribution is centred on inland drainage systems. It also hunts in treeless areas and frequents tussock grassland and open woodland, especially in winter (Morcombe	**Likely** Favourable habitat exists in the area and the species has been recorded nearby.	PMST

Species Name	Common name	Status		Description and habitat requirements	Likelihood	Source
		BC Act	EPBC Act			
				2004; Pizzey & Knight 2012). It can mostly be seen on the northwest coast from Shark Bay to east Kimberley, and in the Pibara and desert regions (Nevill 2013; Pizzey & Knight 2012).		
Falco peregrinus	Peregrine falcon	OS		The Peregrine Falcon is found on and near cliffs, gorges, timbered watercourses, riverine environments, wetlands, plains, open woodlands, and pylons and spires of buildings, though less frequently in desert regions (Morcombe 2004; Pizzey and Knight 2012). They are not common but can be found almost anywhere throughout WA and in the southwest, including particularly at Fitzgerald River, Stirling Range, Porongurup National Parks, Kondinin, and Peak Charles, with many more locations north of Perth (Nevill 2013).	**Likely** Favourable habitat exists in the area and the species has been recorded nearby.	*NatureMap*
Leipoa ocellata	Malleefowl	VU	VU	The Malleefowl generally occurs in semi-arid areas of Western Australia, in shrublands and low woodlands that are dominated by mallee vegetation, as well as native pine *Callitris* woodlands, *Acacia* shrublands, paperbark, skheoak, Broombush *Melaleuca uncinata* vegetation, eucalypt woodlands, or coastal heathlands. Mostly they are found where there are sandy or gravel soils. The nest is a large mound of sand or soil and organic matter (Jones and Goth 2008; Morcombe 2004; Nevill 2013). In WA they are found from the southwest Nullarbor to Albany, north, and then west from Moore River up to Shark Bay, past Cue, across to Wiluna and east to the northern Victoria Desert south of the Blackstone Ranges (Nevill 2013; Pizzey and Knight 2012).	**Likely** Suitable habitat occurs in the area. This species is known to occur in the surrounding region. The survey area does however lack sandier soils and organic matter suitable for mound building and are likely to use the area opportunistically or for dispersal.	*NatureMap*, PMST
Aphelocephala leucopsis	Southern Whiteface	VU	VU	The southern whiteface is endemic to Australia and typically inhabits arid open woodlands with a shrubby or grassy understory, as well as grass plains throughout much of the continents south. Not present in Tasmania or in coastal areas of the mainland. This species prefers Acacia woodlands, particularly those dominated by mulga and drought-resistant chenopod shrub species, including saltbush and bluebush. They are considered sedentary; however, records indicate that individuals may move into wetter areas outside of their normal range during drought years. (Nevill 2013).	**Likely** Species known distribution overlaps with the survey area and there is suitable habitat present.	PMST

Species Name	Common name	Status		Description and habitat requirements	Likelihood	Source
		BC Act	EPBC Act			
Amytornis striatus striatus	Striated Grasswren (sandplain)	P4		This species is widely distributed through the arid and semi-arid regions of mainland Australia. Occurs in spinifex country with sparsely scattered trees, on sand dunes or rocky ranges. Like other grasswren, skilled at hiding in low dense cover, contriving always to keep spinifex between themselves and observer.	**Unlikely** No suitable habitat within the survey area.	DBCA
Mammals						
Dasycercus blythi	Brush-tailed mulgara	P4		The Brush-tailed Mulgara is primarily nocturnal, shelters in burrows and feeds on insects, other arthropods and small vertebrates. This species inhabits spinifex grasslands and, in central Australia, lives in burrows that it digs on the flats between low sand dunes (Van Dyck and Strahan 2008). The Mulgara is a solitary species exhibiting high site fidelity and a low propensity for dispersal once a home range has been established (Masters and Crowther 2003). Males and females maintain home ranges of 1.4 to 14 hectares (Masters and Crowther 2003) which on average, overlap by less than 20% (Masters and Crowther 2003).	**Unlikely** The closest known record is approximately 33 km north of the survey area. Given the lack of groundcover and suitable sand plain habitat within the survey area suggest the species presence is unlikely. No evidence of their presence (burrows) were recorded during the survey.	*NatureMap*
Sminthopsis longicaudata	Long-tailed dunnart	P4		The Long-tailed Dunnart occurs throughout the Gibson Desert, Murchison, southern Canarvon Basin and the Pilbara in Western Australia. Its habitat includes rugged, rocky areas with hummock grasses, shrubs and tall open shrublands and woodlands. In the Young Range in the Gibson Desert, the Long-tailed Dunnart has been found to be associated with plateaus, composed of boulders and stones, with some fine red soils, and sparsely vegetated Mulga (*Acacia aneura*) and Miniritchie (*A. grasbyi*) shrubs over spinifex (Van Dyck and Strahan 2008).	**Likely** The habitat present within the survey area may be considered suitable for the Long-tailed Dunnart however does lack suitable ground cover and rocky crevices. The closest known record is approximately 25 km north of the survey area.	DBCA *NatureMap*

Wiluna survey area – Likelihood of occurrence assessment for significant fauna identified in the desktop assessment

Species Name	Common name	Status		Description and habitat requirements	Likelihood	Source
		BC Act	EPBC Act			
Birds						
Apus pacificus	Fork-tailed Swift	IA	IA	The fork-tailed Swift is a migratory species that follows large storm fronts and are almost exclusively areal species. In WA, there are sparsely scattered records of the Fork-tailed Swift along the south coast, ranging from near the Eyre Bird Observatory and west to Denmark. They are widespread in coastal and subcoastal areas between Augusta and Carnarvon, including some on nearshore and offshore islands. Scattered records are present in the Perth region. Records are scattered throughout WA including the Pilbara, Kimberley, Wheatbelt, Gascoyne and Isolated records occur at Neale Junction in the Great Victoria Desert and on the Nullarbor Plain (Higgins 1999).	**Unlikely** Species known distribution overlaps with the survey area however they are typically aerial feeders during non-breeding season when present locally, and very rarely utilising terrestrial habitats.	*NatureMap* PMST
Aphelocephala leucopsis	Southern Whiteface	VU	VU	The southern whiteface is endemic to Australia and typically inhabits arid open woodlands with a shrubby or grassy understory, as well as grass plains throughout much of the continents south. Not present in Tasmania or in coastal areas of the mainland. This species prefers Acacia woodlands, particularly those dominated by mulga and drought-resistant chenopod shrub species, including saltbush and bluebush. They are considered sedentary; however, records indicate that individuals may move into wetter areas outside of their normal range during drought years. (Nevill 2013).	**Likely** Species known distribution overlaps with the survey area and there is suitable habitat present.	PMST
Calidris acuminata	Sharp-tailed Sandpiper	IA	IA	In Australasia, the Sharp-tailed Sandpiper prefers muddy edges of shallow fresh or brackish wetlands, with inundated or emergent sedges, grass, saltmarsh or other low vegetation. This includes lagoons, swamps, lakes and pools near the coast, and dams, waterholes, soaks, bore drains and bore swamps, saltpans and hypersaline saltlakes inland. They also occur in saltworks and sewage farms. They use flooded paddocks, sedgelands and other ephemeral wetlands, but leave when they dry. They use intertidal mudflats in sheltered bays, inlets, estuaries or seashores, and also swamps and creeks lined with mangroves. Sometimes they occur on rocky shores. They are widespread from Cape Arid to	**Highly Unlikely** There is no suitable habitat for this species within the survey area.	*NatureMap* PMST

Species Name	Common name	Status		Description and habitat requirements	Likelihood	Source
		BC Act	EPBC Act			
				Carnarvon, around coastal and subcoastal plains of Pilbara Region to south-west and east Kimberley Division. Inland records indicate the species is widespread and scattered from Newman, east to Lake Cohen, south to Boulder and west to Meekatharra. Inland records indicate the species is widespread and scattered from Newman, east to Lake Cohen, south to Boulder and west to Meekatharra (DAWE 2022b).		
Calidris melanotos	Pectoral Sandpiper	MI	MI	In Australia, the Pectoral Sandpiper prefers shallow fresh to saline wetlands. The species is found at coastal lagoons, estuaries, bays, swamps, lakes, inundated grasslands, saltmarshes, river pools, creeks, floodplains and artificial wetlands. The species is usually found in coastal or near coastal habitat but occasionally found further inland. It prefers wetlands that have open fringing mudflats and low, emergent or fringing vegetation, such as grass or samphire. The species has also been recorded in swamp overgrown with lignum. In Western Australia the species is rarely recorded. It has been observed at the Nullarbor Plain, Reid, Stoke's Inlet, Grassmere Lake, Warden Lake, Dalyup and Yellilup Swamp, Swan River, Benger Swamp, Guraga Lake, Wittecarra, Harding River, coastal Gascoyne, the Pilbara and the Kimberley (DotE 2016).	**Highly Unlikely** There is no suitable habitat for this species within the survey area.	PMST, *NatureMap*
Calidris alba	Sanderling	MI	MI	In Australia, the species is almost always found on the coast, mostly on open sandy beaches exposed to open sea-swell, and also on exposed sandbars and spits, and shingle banks, where they forage in the wave-wash zone and amongst rotting seaweed. Sanderlings also occur on beaches that may contain wave-washed rocky outcrops. Less often the species occurs on more sheltered sandy shorelines of estuaries, inlets and harbours. Rarely, they are recorded in near-coastal wetlands, such as lagoons, hypersaline lakes, saltponds and samphire flats. There are rare inland records from sandy shores of ephemeral brackish lakes and brackish river-pools (Higgins & Davies 1996). They roost on/behind: bare sand high on the beach, clumps of washed-up kelp, coastal dunes, rocky reefs and ledges (Higgins & Davies 1996). Breeding habitat is usually open ground, sometimes on raised hummocks or ridges, in the Arctic tundra of	**Highly Unlikely** There is no suitable habitat for this species within the survey area.	*NatureMap*

Species Name	Common name	Status		Description and habitat requirements	Likelihood	Source
		BC Act	EPBC Act			
				Greenland, Canada and Siberia (Cramp 1985; Pringle 1987).		
Calidris ruficollis	Red-necked stint	MI	MI	In Australasia, the Red-necked Stint is mostly found in coastal areas, including in sheltered inlets, bays, lagoons and estuaries with intertidal mudflats, often near spits, islets and banks and, sometimes, on protected sandy or coralline shores. Occasionally they have been recorded on exposed or ocean beaches, and sometimes on stony or rocky shores, reefs or shoals. They also occur in saltworks and sewage farms; saltmarsh; ephemeral or permanent shallow wetlands near the coast or inland, including lagoons, lakes, swamps, riverbanks, waterholes, bore drains, dams, soaks and pools in saltflats. They sometimes use flooded paddocks or damp grasslands. They have occasionally been recorded on dry gibber plains, with little or no perennial vegetation (Higgins & Davies 1996).	**Highly Unlikely** There is no suitable habitat for this species within the survey area.	*NatureMap*
Calidris subminuta	Long-toed stint	MI	MI	In Australia, the Long-toed Stint occurs in a variety of terrestrial wetlands. They prefer shallow freshwater or brackish wetlands including lakes, swamps, river floodplains, streams, lagoons and sewage ponds. The species is also fond of areas of muddy shoreline, growths of short grass, weeds, sedges, low or floating aquatic vegetation, reeds, rushes and occasionally stunted samphire. It has also been observed at open, less vegetated shores of larger lakes and ponds and is common on muddy frindges of drying ephemeral lakes and swamps. The Long-toed Stint also frequents permanent wetlands such as reserviors and artificial lakes. They are uncommon, but not unknown, at tidal estuaries, saline lakes, saltponds and bore swamps (Higgnis & Davies 1996). The Long-toed Stint forages on wet mud or in shallow water, often among short grass, weeds and other vegetation on islets or around the edges of wetlands. They occasionally feed on open water, well away from the shore; this is more common in drying ephemeral wetlands. They roost or loaf in sparse vegetation at the edges of wetlands and on damp mud near shallow water. It also roosts in small depressions in the mud (Higgins & Davies 1996).	**Highly Unlikely** There is no suitable habitat for this species within the survey area.	*NatureMap*

Species Name	Common name	Status		Description and habitat requirements	Likelihood	Source
		BC Act	EPBC Act			
Motacilla cinerea	Grey Wagtail	MI	MI	The Grey Wagtail is an opportunistic migrant to Australia. The species typically migrates to Indonesia occasionally landing in Australia. Most records for the species are from Northern Australia and South Australia (Morcombe 2004). The non-breeding habitat only of the Grey Wagtail has a strong association with water, particularly rocky substrates along water courses but also lakes and marshes (DotE 2016). It can be found mainly in banks and rocks in fast-running freshwater habitats: rivers, creeks, streams, and around waterfalls, both in forest and open country; but occurs almost anywhere during migration (Johnstone & Storr 2004).	**Highly Unlikely** This species is a rare vagrant to Australia and any use is irregular and opportunistic.	PMST
Motacilla flava	Yellow Wagtail	MI	MI	The Yellow Wagtail occupies a range of damp or wet habitats with low vegetation, from damp meadows, marshes, waterside pastures, sewage farms and bogs to damp steppe and grassy tundra (IUCN Redlist 2017). In Australia, the Yellow Wagtail is a very uncommon except in the Broome region. They can often be found in nothern towns wherever there are well watered grass areas (DotEE 2017).	**Highly Unlikely** There is no suitable habitat within the survey area. Survey area is outside of their current known distribution.	PMST
Charadrius veredus	Oriental Plover, Oriental Dotterel	MI	MI	Immediately after arriving in non-breeding grounds in northern Australia, Oriental Plovers spend a few weeks in coastal habitats such as estuarine mudflats and sandbanks, on sandy or rocky ocean beaches or nearby reefs, or in near-coastal grasslands, before dispersing further inland. Thereafter they usually inhabit flat, open, semi-arid or arid grasslands, where the grass is short and sparse, and interspersed with hard, bare ground, such as claypans, and dry paddocks, or open areas that have been recently burnt. At the onset of the Wet Season, some may move into lightly wooded grasslands. Some remain in estuarine and littoral environments, and a few are occasionally recorded around terrestrial wetlands or flooded paddocks. Most records are along the north-western coast, between Exmouth Gulf and Derby, and there are records at a few scattered sites elsewhere, mainly along the northern coast, such as in the Top End, the Gulf of Carpentaria and on Cape York Peninsula. The species also often occurs further inland on the 'blacksoil' plains of northern WA (DotE 2016).	**Unlikely** There is no suitable habitat for this species within the survey area.	PMST, *NatureMap*

Species Name	Common name	Status		Description and habitat requirements	Likelihood	Source
		BC Act	EPBC Act			
Actitis hypoleucos	Common Sandpiper	MI	MI	The species utilises a wide range of coastal wetlands and some inland wetlands, with varying levels of salinity, and is mostly found around muddy margins or rocky shores and rarely on mudflats. The Common Sandpiper has been recorded in estuaries and deltas of streams, as well as on banks farther upstream; around lakes, pools, billabongs, reservoirs, dams and claypans, and occasionally piers and jetties. The muddy margins utilised by the species are often narrow, and may be steep. The species is often associated with mangroves, and sometimes found in areas of mud littered with rocks or snags (Geering et al. 2007; Higgins & Davies 1996). Foraging environments: Generally the species forages in shallow water and on bare soft mud at the edges of wetlands; often where obstacles project from substrate, e.g. rocks or mangrove roots. Birds sometimes venture into grassy areas adjoining wetlands (Higgins & Davies 1996). Roost sites: Roost sites are typically on rocks or in roots or branches of vegetation, especially mangroves. The species is known to perch on posts, jetties, moored boats and other artificial structures, and to sometimes rest on mud or 'loaf' on rocks (Higgins & Davies 1996).	**Unlikely** There is no suitable habitat for this species within the survey area.	PMST, *NatureMap*
Leipoa ocellata	Malleefowl	VU	VU	The Malleefowl generally occurs in semi-arid areas of Western Australia, in shrublands and low woodlands that are dominated by mallee vegetation, as well as native pine Callitris woodlands, Acacia shrublands, paperbark, skheoak, Broombush Melaleuca uncinata vegetation, eucalypt woodlands, or coastal heathlands. Mostly they are found where there are sandy or gravel soils. The nest is a large mound of sand or soil and organic matter (Jones and Goth 2008; Morcombe 2004; Nevill 2013). In WA they are found from the southwest Nullarbor to Albany, north, and then west from Moore River up to Shark Bay, past Cue, across to Wiluna and east to the northern Victoria Desert south of the Blackstone Ranges (Nevill 2013; Pizzey and Knight 2012).	**Likely** This species is known to occur in the surrounding region. There is suitable habitat present within the survey area where the Mulga shrubs are denser and have greater canopy cover and leaf litter below. Transects across the survey area did not record any evidence (mounds) for the presence of Malleefowl.	PMST
Pezoporus occidentalis	Night Parrot	EN	EN	The Night Parrot is a highly elusive nocturnal ground dwelling parrot found in the arid and semi-arid zones of Australia. The night parrot was thought to be extinct but in 2013 it was rediscovered in Queensland (Pullen Pullen	**Highly Unlikely**	PMST

Species Name	Common name	Status		Description and habitat requirements	Likelihood	Source
		BC Act	EPBC Act			
				Reserve). Subsequently, the species has been found in Goneaway National Park and Diamantina National Park in Queensland and near Broome in Western Australia (DotEE 2017).	There is no suitable habitat for this species within the survey area.	
Polytelis alexandrae	Princess Parrot, Alexandra's Parrot	VU	VU	The Princess Parrot inhabits sand dunes and sand flats in the arid zone of western and central Australia. It occurs in open savanna woodlands and shrublands that usually consist of scattered stands of Eucalyptus (*including E. gongylocarpa, E. chippendalei* and mallee species), *Casuarina* or *Allocasuarina* trees; an understorey of shrubs such as *Acacia* (especially *A. aneura*), *Eremophila*, *Grevillea*, *Hakea* and *Senna*; and a ground cover dominated by *Triodia* species (Allen 1987; Baxter & Henderson 2000;). It also frequents *Eucalyptus* or *Allocasuarina* trees in riverine or littoral areas (Carter 1993b).	**Unlikely** The closest records are over 100 km from the survey area which date back over 50 years (Naturemap 2007-). The survey area does not contain suitable habitat for this species.	PMST
Pluvialis fulva	Pacific golden plover	MI	MI	In non-breeding grounds in Australia this species usually inhabits coastal habitats, though it occasionally occurs around inland wetlands. Pacific Golden Plovers usually occur on beaches, mudflats and sandflats (sometimes in vegetation such as mangroves, low saltmarsh such as Sarcocornia, or beds of seagrass) in sheltered areas including harbours, estuaries and lagoons, and also in evaporation ponds in saltworks. The species is also sometimes recorded on islands, sand and coral cays and exposed reefs and rocks. They are less often recorded in terrestrial habitats, usually wetlands such as fresh, brackish or saline lakes, billabongs, pools, swamps and wet claypans, especially those with muddy margins and often with submerged vegetation or short emergent grass. Other terrestrial habitats inhabited include short (or, occasionally, long) grass in paddocks, crops or airstrips, or ploughed or recently burnt areas, and they are very occasionally recorded well away from water (Marchant & Higgins 1993).	**Unlikely** There is no suitable habitat for this species within the survey area.	*NatureMap*
Plegadis falcinellus	Glossy ibis	MI	MI	The Glossy Ibis' preferred habitat for foraging and breeding are fresh water marshes at the edges of lakes and rivers, lagoons, flood-plains, wet meadows, swamps, reservoirs, sewage ponds, rice-fields and cultivated areas under irrigation. The species is occasionally found in coastal locations such as estuaries, deltas,	**Highly Unlikely** There is no suitable habitat for this species within the survey area.	*NatureMap*

Species Name	Common name	Status		Description and habitat requirements	Likelihood	Source
		BC Act	EPBC Act			
				saltmarshes and coastal lagoons. Within Australia, the largest contiguous areas of prime habitat is inland and northern floodplains (Marchant & Higgins 1990).		
Falco hypoleucos	Grey Falcon	VU	VU	The Grey Falcon inhabits lightly timbered country, especially stony, inland plains and Acacia scrub, gibber deserts, sandridges, pastoral lands, and timbered watercourses, but seldom in driest deserts. Its distribution is centred on inland drainage systems. It also hunts in treeless areas and frequents tussock grassland and open woodland, especially in winter (Morcombe 2004; Pizzey & Knight 2012). It can mostly be seen on the northwest coast from Shark Bay to east Kimberley, and in the Pibara and desert regions (Nevill 2013; Pizzey & Knight 2012).	**Likely** The survey area provides suitable foraging habitat for this species.	PMST
Falco peregrinus	Peregrine falcon	OS		The Peregrine Falcon is found on and near cliffs, gorges, timbered watercourses, riverine environments, wetlands, plains, open woodlands, and pylons and spires of buildings, though less frequently in desert regions (Morcombe 2004; Pizzey & Knight 2012). They are not common but can be found almost anywhere throughout WA and in the southwest, including particularly at Fitzgerald River, Stirling Range, Porongurup National Parks, Kondinin, and Peak Charles, with many more locations north of Perth (Nevill 2013).	**Likely** There is suitable habitat present within the survey area. This species has previously been recorded in the region.	DBCA Naturemaps
Gelochelidon nilotica	Gull-billed tern	MI	MI	The Gull-billed Tern is patchily distributed across all the continents of the world. In Australia, the subspecies *macrotarsa* occurs both coastally and inland Western Australia. The species uses coastal areas from Broome, south to Shark Bay. Inland, any lake or wetland catchment can be occupied after heavy rains (Nevill 2013).	**Unlikely** There is no suitable habitat for this species within the survey area.	*NatureMap*
Glareola maldivarum	Oriental pratincole	MI	MI	The Oriental Pratincole usually inhabits open plains, floodplains or short grassland (including farmland or airstrips), often with extensive bare areas. They often occur near terrestrial wetlands, such as billabongs, lakes or creeks, and artificial wetlands such as reservoirs, saltworks and sewage farms, especially around the margins. The species also occurs along the coast, inhabiting beaches, mudflats and islands, or around coastal lagoons. The Oriental Pratincole is widespread in	**Unlikely** There is no suitable habitat for this species within the survey area.	*NatureMap*

Species Name	Common name	Status		Description and habitat requirements	Likelihood	Source
		BC Act	EPBC Act			
				northern areas, especially along the coasts of the Pilbara Region and the Kimberley Division. It is also widespread but scattered inland, mostly north of 20° S, and on various outlying islands (DotE 2016).		
Tringa glareola	Wood sandpiper	MI	MI	The Wood Sandpiper uses well-vegetated, shallow, freshwater wetlands, such as swamps, billabongs, lakes, pools and waterholes. They are typically associated with emergent, aquatic plants or grass, and dominated by taller fringing vegetation, such as dense stands of rushes or reeds, shrubs, or dead or live trees, especially Melaleuca and River Red Gums E. camaldulensis. They also frequent inundated grasslands, short herbage or wooded floodplains, where floodwaters are temporary or receding. They can occasionally be found at drying or stony small wetlands, but rarely use brackish wetlands, or dry stunted saltmarsh. They can also use artificial wetlands, including open sewage ponds, reservoirs, large farm dams, and bore drains. In WA the species is widespread but scattered in most regions (DotE 2016).	**Unlikely** There is no suitable habitat for this species within the survey area.	*NatureMap*
Tringa nebularia	Common greenshank	MI	MI	The Common Greenshank is found in a wide variety of inland wetlands and coastal habitats of varying salinity. It occurs in sheltered coastal areas typically with large mudflats and saltmarsh, mangroves or seagrass, including embayments, harbours, river estuaries, deltas and lagoons, but less often in round tidal pools, rock-flats and rock platforms. The species uses both permanent and ephemeral terrestrial wetlands, including swamps, lakes, dams, rivers, creeks, billabongs, waterholes and inundated floodplains, claypans and saltflats, and artificial wetlands. They occur around most of the coast from Cape Arid in the south to Carnarvon in the north-west (DotE 2016).	**Unlikely** There is no suitable habitat for this species within the survey area.	*NatureMap*
Mammals						
Dasycercus blythi	Brush-tailed mulgara	P4		The Brush-tailed Mulgara is primarily nocturnal, shelters in burrows and feeds on insects, other arthropods and small vertebrates. This species inhabits spinifex grasslands and, in central Australia, lives in burrows that it digs on the flats between low sand dunes (Van Dyck and Strahan 2008). The Mulgara is a solitary species exhibiting high site fidelity and a low propensity for	**Unlikely** Although records are in the region, the lack significant of sand plain habitat within the survey area suggest the species presence is unlikely. No evidence	*NatureMap*

Species Name	Common name	Status		Description and habitat requirements	Likelihood	Source
		BC Act	EPBC Act			
				dispersal once a home range has been established (Masters and Crowther 2003). Males and females maintain home ranges of 1.4 to 14 hectares (Masters and Crowther 2003) which on average, overlap by less than 20% (Masters and Crowther 2003).	of their presence (burrows) were recorded during the survey.	
Sminthopsis longicaudata	Long-tailed dunnart	P4		The Long-tailed Dunnart occurs throughout the Gibson Desert, Murchison region, southern Canarvon Basin and the Pilbara. Its habitat includes rugged, rocky areas with hummock grasses, shrubs and tall open shrublands and woodlands (Van Dyck & Strahan 2008).	**Likely** Favourable habitat exists in the area and the species has been recorded nearby.	*NatureMap*
Macrotis lagotis	Bilby	VU	VU	The Greater Bilby occupies sand plains, sandy dune systems or along drainage or salt lake systems (DEC 2012). They occur in three major vegetation types; open tussock grassland on uplands and hills, mulga woodland/shrubland growing on ridges and rises, and hummock grassland in plains and alluvial areas. In the south of its range, the Greater Bilby lives on rises and ridges among sparse grasses, especially mitchell grass Astrebla and short shrubs. In WA there are disjunct populations in the Gibson Desert, south-western Kimberley, inland areas of the Pilbara and northern Great Sandy Desert (Van Dyck and Strahan, 2008).	**Unlikely** The habitat within the survey area is marginal and although there is an historic nearby record from 1990, it is likely the species has become locally extinct within the local area.	*NatureMap*, PMST
Reptiles						
Liopholis kintorei	Great Desert Skink, Tjakura, Warrarna, Mulyamiji	VU	VU	The Great Desert Skink occurs on arid sand-flats and clay-based or loamy soils vegetated with spinifex (Wilson and Swan 2010). Populations in the Gibson Desert occur on sandplains with a surface cover of fine gravel (Pearson et al. 2001). Vegetation usually consists of hummock grassland (*Triodia basedowii, Triodia pungens* and *Triodia schinzii*), with some scattered shrubs and occasional trees (e.g. *Acacia* spp., *Eucalyptus* spp., *Hakea* spp., *Grevillea* spp. and *Allocasuarina decaisneana*) (McAlpin 2001). Sites in WA are dominated by *Triodia basedowii* and *Triodia schinzii* with some *Eremophila leucophylla* shrubs (Pearson et al. 2001). The population at Patjarr WA occurs on a gravelly undulating plain with scattered Black Gidgee (*Acacia pruinocarpa*) or Mulga over *Triodia basedowii* and low shrubs (McAlpin 2001).	**Unlikely** There is no suitable habitat for this species within the survey area.	PMST

Gascoyne Junction survey area – Likelihood of occurrence assessment for significant fauna identified in the desktop assessment

Species Name	Common name	Status		Description and habitat requirements	Likelihood	Source
		BC Act	EPBC Act			
Birds						
Aphelocephala leucopsis	Southern Whiteface	VU	VU	The southern whiteface is endemic to Australia and typically inhabits arid open woodlands with a shrubby or grassy understory, as well as grass plains throughout much of the continents south. Not present in Tasmania or in coastal areas of the mainland. This species prefers Acacia woodlands, particularly those dominated by mulga and drought-resistant chenopod shrub species, including saltbush and bluebush. They are considered sedentary; however, records indicate that individuals may move into wetter areas outside of their normal range during drought years. (Nevill 2013).	**Likely** Suitable habitat is present for this species, although at the time of the survey the understory was very bare and provides little opportunity for foraging. The species may be a visitor, and fly through the habitat.	PMST
Calidris ferruginea	Curlew Sandpiper	CR; IA		Curlew Sandpipers mainly occur in areas with soft mud conditions, including intertidal mudflats in sheltered coastal areas, such as estuaries, bays, inlets and lagoons, and also around non-tidal swamps, lakes and lagoons near the coast, and ponds in saltworks and sewage farms. They are found inland less often, including around ephemeral and permanent lakes, dams, waterholes and bore drains, usually with bare edges of mud or sand. They occur in both fresh and brackish waters. In WA, they are widespread around coastal and subcoastal plains from Cape Arid to south-west Kimberley Division, but are more sparsely distributed between Carnarvon and Dampier Archipelago (DotE 2016).	**Highly Unlikely** There is no suitable habitat for this species within the survey area.	PMST
Rostratula australis	Australian Painted Snipe	EN		The Australian Painted Snipe generally inhabits shallow terrestrial freshwater (occasionally brackish) wetlands, including temporary and permanent lakes, swamps and claypans. They also use inundated or waterlogged grassland or saltmarsh, dams, rice crops, sewage farms and bore drains. Typical sites include those with rank emergent tussocks of grass, sedges, rushes or reeds, or samphire; often with scattered clumps of lignum Muehlenbeckia, canegrass, or sometimes tea-tree (Melaleuca). It sometimes uses areas that are lined with trees, or that have some scattered fallen or washed-up timber (DEE 2017). In the south west it can be found	**Highly Unlikely** There is no suitable habitat for this species within the survey area.	PMST

Species Name	Common name	Status		Description and habitat requirements	Likelihood	Source
		BC Act	EPBC Act			
				around Carnarvon and wetlands north of Perth, particularly those west of Moora and Gin Gin (Nevill 2013).		
Actitis hypoleucos	Common Sandpiper	IA	IA	The Common Sandpiper is found along all coastlines of Australia and uses a wide range of coastal wetlands and some inland wetlands, with varying levels of salinity, and is mostly found around often narrow and steep muddy margins or rocky shores. The species has been recorded in estuaries and deltas of streams, as well as on banks further upstream; around lakes, pools, mangroves, billabongs, reservoirs, dams and claypans, and occasionally piers and jetties. It is often found near mangroves, and sometimes in areas of mud littered with rocks or snags. Found along all coastlines of Australia and in many areas inland, the Common Sandpiper is widespread in small numbers. The population when in Australia is concentrated in northern and western Australia (DotE 2016).	**Unlikely** The records for this species are within the Gascoyne River, located approximately 2 km north of the survey area. No suitable habitat exists in the survey area for this species.	DBCA *NatureMap* PMST
Plegadis falcinellus	Glossy ibis	IA	IA	The Glossy Ibis' preferred habitat for foraging and breeding are shallow, grassy, fresh water marshes at the edges of lakes and rivers, lagoons, flood-plains, wet meadows, swamps, reservoirs, sewage ponds, and cultivated areas under irrigation. The species is occasionally found in coastal locations such as estuaries, deltas, saltmarshes and coastal lagoons, and in wooded swamps, artificial wetlands (such as irrigated fields), and in mangroves. It may retreat to permanent wetlands and/or coastal areas (including tidal wetlands) during drought. Within Australia, the Glossy Ibis is generally located east of the Kimberley in WA and Eyre Peninsula in SA. The species is also known to be patchily distributed in the rest of WA (DotE 2016).	**Unlikely** The records for this species are within the Gascoyne River, located approximately 2 km north of the survey area. No suitable habitat exists in the survey area for this species.	DBCA *NatureMap*
Tringa nebularia	Common greenshank	IA	IA	The Common Greenshank is found in a wide variety of inland wetlands and coastal habitats of varying salinity. It occurs in sheltered coastal areas typically with large mudflats and saltmarsh, mangroves or seagrass, including embayments, harbours, river estuaries, deltas and lagoons, but less often in round tidal pools, rock-flats and rock platforms. The species uses both permanent and ephemeral terrestrial wetlands, including swamps, lakes, dams, rivers, creeks, billabongs, waterholes and	**Unlikely** The record for this species is located approximately 5 km southeast of the survey area, within a drainage channel apart of the Gascoyne River. There is no suitable habitat in the survey area for this species.	DBCA

Species Name	Common name	Status		Description and habitat requirements	Likelihood	Source
		BC Act	EPBC Act			
				inundated floodplains, claypans and saltflats, and artificial wetlands. They occur around most of the coast from Cape Arid in the south to Carnarvon in the north-west (DotE 2016).		
Pezoporus occidentalis	Night Parrot	EN		The Night Parrot is a highly elusive nocturnal ground dwelling parrot found in the arid and semi-arid zones of Australia. The night parrot was thought to be extinct but in 2013 it was rediscovered in Queensland (Pullen Pullen Reserve). Subsequently, the species has been found in Goneaway National Park and Diamantina National Park in Queensland and near Broome in Western Australia (DotEE 2017).	**Highly Unlikely** There is no suitable habitat for this species in the survey area.	PMST
Erythrotriorchis radiatus	Red Goshawk	VU		The Red Goshawk is sparsely dispersed across Northern Australia and central Australia, spread across approximately 15% of coastal and sub-coastal Australia.	**Highly Unlikely** Species known distribution overlaps with the Survey Area. There is no suitable habitat within the Survey Area, the species utilises tree-lined watercourses.	PMST
Falco hypoleucos	Grey Falcon	VU		The Grey Falcon inhabits lightly timbered country, especially stony, inland plains and Acacia scrub, gibber deserts, sandridges, pastoral lands, and timbered watercourses, but seldom in driest deserts. Its distribution is centred on inland drainage systems. It also hunts in treeless areas and frequents tussock grassland and open woodland, especially in winter (Morcombe 2004; Pizzey & Knight 2012). It can mostly be seen on the northwest coast from Shark Bay to east Kimberley, and in the Pibara and desert regions (Nevill 2013; Pizzey & Knight 2012).	**Likely -** Species known distribution overlaps with the Survey Area. There is limited suitable habitat within the survey area, but the species might be seen flying overhead towards more suitable habitat, in or near the Gascoyne River and drainage channels.	PMST
Falco peregrinus	Peregrine Falcon	OS	OS	The Peregrine Falcon is found on and near cliffs, gorges, timbered watercourses, riverine environments, wetlands, plains, open woodlands, and pylons and spires of buildings, though less frequently in desert regions (Morcombe 2004; Pizzey and Knight 2012). They are not common but can be found almost anywhere throughout WA and in the southwest, including particularly at Fitzgerald River, Stirling Range, Porongurup National Parks, Kondinin, and Peak Charles, with many more locations north of Perth (Nevill 2013).	**Likely –** The records for this species are located more than 20 km northwest of the survey area. This species is more likely to utilise riverine habitat located outside of the survey area but may hawk over the survey area.	DBCA

Species Name	Common name	Status		Description and habitat requirements	Likelihood	Source
		BC Act	EPBC Act			
Calidris melanotos	Pectoral Sandpiper	IA		In Australia, the Pectoral Sandpiper prefers shallow fresh to saline wetlands. The species is found at coastal lagoons, estuaries, bays, swamps, lakes, inundated grasslands, saltmarshes, river pools, creeks, floodplains and artificial wetlands. The species is usually found in coastal or near coastal habitat but occasionally found further inland. It prefers wetlands that have open fringing mudflats and low, emergent or fringing vegetation, such as grass or samphire. The species has also been recorded in swamp overgrown with lignum (DotE 2016). The bird can be seen on the Swan Coastal Plain but is rare to scarce on Lake Thompson, and as well on any freshwater wetland in the southwest with shallow, well-grassed margins. They are seen at Lake Warden, Esperance, and at Lake McLarty (Nevill 2013).	**Highly Unlikely** There is no suitable habitat in the survey area for this species.	PMST
Motacilla flava	Yellow Wagtail	IA		The Yellow Wagtail occupies a range of damp or wet habitats with low vegetation, from damp meadows, marshes, waterside pastures, sewage farms and bogs to damp steppe and grassy tundra (IUCN Redlist 2017). In Australia, the Yellow Wagtail is a very uncommon except in the Broome region. They can often be found in nothern towns wherever there are well watered grass areas (DotEE 2017).	**Highly Unlikely** Species assumed distribution overlaps with the Survey Area. There is no suitable habitat within the Survey Area for the species.	PMST
Motacilla cinerea	Grey Wagtail	IA		The Grey Wagtail is an opportunistic migrant to Australia. The species typically migrates to Indonesia occasionally landing in Australia. Most records for the species are from Northern Australia and South Australia (Morcombe 2004). The non-breeding habitat only of the Grey Wagtail has a strong association with water, particularly rocky substrates along water courses but also lakes and marshes (DotE 2016). It can be found mainly in banks and rocks in fast-running freshwater habitats: rivers, creeks, streams, and around waterfalls, both in forest and open country; but occurs almost anywhere during migration (Johnstone & Storr 2004).	**Highly Unlikely -** Species assumed distribution overlaps with the Survey Area. There is no suitable habitat within the Survey Area.	PMST
Actitis hypoleucos	Fork-tailed swift	IA		The fork-tailed Swift is a migratory species that follows large storm fronts and are almost exclusively areal species. In WA, there are sparsely scattered records of the Fork-tailed Swift along the south coast, ranging from near the Eyre Bird Observatory and west to Denmark.	**Unlikely -** Species known distribution overlaps with the Survey Area. The habitat in the survey area is	PMST

Species Name	Common name	Status		Description and habitat requirements	Likelihood	Source
		BC Act	EPBC Act			
				They are widespread in coastal and subcoastal areas between Augusta and Carnarvon, including some on nearshore and offshore islands. Scattered records are present in the Perth region. Records are scattered throughout WA including the Pilbara, Kimberley, Wheatbelt, Gascoyne and Isolated records occur at Neale Junction in the Great Victoria Desert and on the Nullarbor Plain (Higgins 1999).	marginal. Inland records of these species are typically rare.	
Charadrius veredus	Oriental Plover	IA		Immediately after arriving in non-breeding grounds in northern Australia, Oriental Plovers spend a few weeks in coastal habitats such as estuarine mudflats and sandbanks, on sandy or rocky ocean beaches or nearby reefs, or in near-coastal grasslands, before dispersing further inland. Thereafter they usually inhabit flat, open, semi-arid or arid grasslands, where the grass is short and sparse, and interspersed with hard, bare ground, such as claypans, and dry paddocks, or open areas that have been recently burnt. At the onset of the Wet Season, some may move into lightly wooded grasslands. Some remain in estuarine and littoral environments, and a few are occasionally recorded around terrestrial wetlands or flooded paddocks. Most records are along the north-western coast, between Exmouth Gulf and Derby, and there are records at a few scattered sites elsewhere, mainly along the northern coast, such as in the Top End, the Gulf of Carpentaria and on Cape York Peninsula. The species also often occurs further inland on the 'blacksoil' plains of northern WA (DotE 2016).	**Highly Unlikely** There is no suitable habitat in the survey area for this species.	PMST
Calidris acuminata	Sharp-tailed Sandpiper	IA		In Australasia, the Sharp-tailed Sandpiper prefers muddy edges of shallow fresh or brackish wetlands, with inundated or emergent sedges, grass, saltmarsh or other low vegetation. This includes lagoons, swamps, lakes and pools near the coast, and dams, waterholes, soaks, bore drains and bore swamps, saltpans and hypersaline saltlakes inland. They also occur in saltworks and sewage farms. They use flooded paddocks, sedgelands and other ephemeral wetlands, but leave when they dry. They use intertidal mudflats in sheltered bays, inlets, estuaries or seashores, and also swamps and creeks lined with mangroves. Sometimes they occur on rocky shores. They are widespread from Cape Arid to	**Highly Unlikely** There is no suitable habitat in the survey area.	PMST

Species Name	Common name	Status		Description and habitat requirements	Likelihood	Source
		BC Act	EPBC Act			
				Carnarvon, around coastal and subcoastal plains of Pilbara Region to south-west and east Kimberley Division. Inland records indicate the species is widespread and scattered from Newman, east to Lake Cohen, south to Boulder and west to Meekatharra. Inland records indicate the species is widespread and scattered from Newman, east to Lake Cohen, south to Boulder and west to Meekatharra (DAWE 2022b).		
Mammals						
Dasyurus hallucatus	Northern Quoll	EN		The Northern Quoll once occurred across the majority of northern Australia but its range has significantly contracted. It occurs in the Pilbara region but in disjunct populations. The Northern Quoll inhabits a range of vegetation associations but is especially abundant on dissected rocky escarpment and eucalypt woodland within 200 km of the coast. It is known to den in rock crevices and rock piles and favors rocky areas. They are predominantly nocturnal but are occasionally active during the day, particularly during the mating season and are known to have a large home range (Van Dyck and Strahan 2008).	**Highly Unlikely** The habitat within the survey area is not suitable for this species. There are no nearby records of this species.	PMST
Phascogale calura	Red-tailed Phascogale	CD	VU	The Red-tailed Phascogale is restricted to parts of south-western Australia that receive an annual rainfall of 300-600 mm, and is found within remnant vegetation in the southern Wheatbelt, from Brookton to Katanning. Sparse records extend west to the margin of the Jarrah Forest, east to Hyden and Newdegate and south to Bremer Bay. There are outlying records along the east of the species range, at Marvel Loch (south of Southern Cross) and Jerdacuttup, and at Dwellingup in the Jarrah Forest region. They occur in isolated patches of forest, its preferred being the denser and taller climax vegetation communities within old-growth hollow-producing wandoo (Eucalyptus wandoo), York gum (E. loxophleba) and Rock Sheoak (Allocasuarina huegeliana) woodlands. The species prefers vegetation that is unburnt for a long time (DEC 2007; TSSC 2013; Van Dyck & Strahan 2008).	**Highly Unlikely –** The nearest record for this species is approximately 35 km north of the survey area. This is a fossil record, the species has had a range reduction and is now restricted to areas in the southwest.	DBCA
Sminthopsis longicaudata	Long-tailed Dunnart	P4	-	The Long-tailed Dunnart occurs throughout the Gibson Desert, Murchison, southern Canarvon Basin and the	**Unlikely –**	DBCA

Species Name	Common name	Status		Description and habitat requirements	Likelihood	Source
		BC Act	EPBC Act			
				Pilbara in Western Australia. Its habitat includes rugged, rocky areas with hummock grasses, shrubs and tall open shrublands and woodlands. In the Young Range in the Gibson Desert, the Long-tailed Dunnart has been found to be associated with plateaus, composed of boulders and stones, with some fine red soils, and sparsely vegetated Mulga (*Acacia aneura*) and Miniritchie *(A. grasbyi*) shrubs over spinifex (Van Dyck and Strahan 2008).	The survey area does not contain hummock grassland or much suitable understory for this species.	
Reptiles						
Egernia stokesii badia	Western Spiny-tailed Skink	EN		The Western Spiny-tailed Skink is known to occur in a broad semi-arid area in south-west WA, between Shark Bay and Minnivale and east to Cue. Most records of the brown form Western Spiny-tailed Skink are in York Gum (Eucalyptus loxophleba) woodland with some records in Gimlet (E. salubris) and Salmon Gum (E. salmonophloia) woodland. Populations persist in woodland patches as small as one hectare and completely surrounded by wheatfields. Sites with the greatest number of individuals contain numerous fallen logs and were subjected to low-intensity grazing by domestic stock. Hollow logs are used as refuge sites in woodland habitat. Preferred refuges consist of piles of several, overlapping, hollow logs providing a combination of basking and shelter sites. An increasing number of skinks are being located in altered habitat under piles of wood, scrap metal or under buildings on private property (DotE 2016).	**Highly Unlikely** The survey area is unlikely to support this species, as it is isolated and does not contain suitable refuge or woodland habitat. .	PMST

Laverton survey area – Likelihood of occurrence assessment for significant fauna identified in the desktop assessment

Species Name	Common name	Status		Description and habitat requirements	Likelihood	Source
		BC Act	EPBC Act			
Birds						
Aphelocephala leucopsis	Southern Whiteface	VU	VU	The southern whiteface is endemic to Australia and typically inhabits arid open woodlands with a shrubby or grassy understory, as well as grass plains throughout much of the continents south. Not present in Tasmania or in coastal areas of the mainland. This species prefers Acacia woodlands, particularly those dominated by mulga and drought-resistant chenopod shrub species, including saltbush and bluebush. They are considered sedentary; however, records indicate that individuals may move into wetter areas outside of their normal range during drought years. (Nevill 2013).	**Unlikely-** Suitable habitat is present for this species, although at the time of the survey the understory was very bare around the airport, and provides little opportunity for foraging.	PMST
Calidris ruficollis	Red-necked Stint	MI	MI	In Australasia, the Red-necked Stint is mostly found in coastal areas, including in sheltered inlets, bays, lagoons and estuaries with intertidal mudflats, often near spits, islets and banks and, sometimes, on protected sandy or coralline shores. Occasionally they have been recorded on exposed or ocean beaches, and sometimes on stony or rocky shores, reefs or shoals. They also occur in saltworks and sewage farms; saltmarsh; ephemeral or permanent shallow wetlands near the coast or inland, including lagoons, lakes, swamps, riverbanks, waterholes, bore drains, dams, soaks and pools in saltflats. They sometimes use flooded paddocks or damp grasslands. They have occasionally been recorded on dry gibber plains, with little or no perennial vegetation (Higgins & Davies 1996).	**Unlikely –** The nearest record is approximately 23 km south of the survey area. There is no suitable habitat in the survey area for this species.	DBCA
Actitis hypoleucos	Common Sandpiper	IA	IA	The Common Sandpiper is found along all coastlines of Australia and uses a wide range of coastal wetlands and some inland wetlands, with varying levels of salinity, and is mostly found around often narrow and steep muddy margins or rocky shores. The species has been recorded in estuaries and deltas of streams, as well as on banks further upstream; around lakes, pools, mangroves, billabongs, reservoirs, dams and claypans, and occasionally piers and jetties. It is often found near mangroves, and sometimes in areas of mud littered with rocks or snags. Found along all coastlines of Australia	**Unlikely** The record for this species is approximately 17 km north of the survey area. No suitable habitat exists in the survey area for this species.	DBCA *NatureMap* PMST

Species Name	Common name	Status		Description and habitat requirements	Likelihood	Source
		BC Act	EPBC Act			
				and in many areas inland, the Common Sandpiper is widespread in small numbers. The population when in Australia is concentrated in northern and western Australia (DotE 2016).		
Plegadis falcinellus	Glossy ibis	IA	IA	The Glossy Ibis' preferred habitat for foraging and breeding are shallow, grassy, fresh water marshes at the edges of lakes and rivers, lagoons, flood-plains, wet meadows, swamps, reservoirs, sewage ponds, and cultivated areas under irrigation. The species is occasionally found in coastal locations such as estuaries, deltas, saltmarshes and coastal lagoons, and in wooded swamps, artificial wetlands (such as irrigated fields), and in mangroves. It may retreat to permanent wetlands and/or coastal areas (including tidal wetlands) during drought. Within Australia, the Glossy Ibis is generally located east of the Kimberley in WA and Eyre Peninsula in SA. The species is also known to be patchily distributed in the rest of WA (DotE 2016).	**Unlikely** The records for this species are located approximately 20 km west of the survey area. No suitable habitat exists in the survey area for this species.	DBCA *NatureMap*
Polytelis alexandrae	Princess Parrot	P4	VU	The Princess Parrot inhabits sand dunes and sand flats in the arid zone of western and central Australia. It occurs in open savanna woodlands and shrublands that usually consist of scattered stands of Eucalyptus (*including E. gongylocarpa, E. chippendalei* and mallee species), *Casuarina* or *Allocasuarina* trees; an understorey of shrubs such as *Acacia* (especially *A. aneura*), *Eremophila*, *Grevillea*, *Hakea* and *Senna*; and a ground cover dominated by *Triodia* species (Allen 1987; Baxter & Henderson 2000;). It also frequents *Eucalyptus* or *Allocasuarina* trees in riverine or littoral areas (Carter 1993b).	**Likely -** Nearest record for this species is 2 km south of the survey area. The species may be present utilising the survey area for dispersal. There is limited foraging opportunity in the survey area.	DBCA *NatureMap* PMST
Tringa nebularia	Common greenshank	IA	IA	The Common Greenshank is found in a wide variety of inland wetlands and coastal habitats of varying salinity. It occurs in sheltered coastal areas typically with large mudflats and saltmarsh, mangroves or seagrass, including embayments, harbours, river estuaries, deltas and lagoons, but less often in round tidal pools, rock-flats and rock platforms. The species uses both permanent and ephemeral terrestrial wetlands, including swamps, lakes, dams, rivers, creeks, billabongs, waterholes and inundated floodplains, claypans and saltflats, and artificial wetlands. They occur around most of the coast	**Unlikely** The record for this species is located approximately 20 km west of the survey area. There is no suitable habitat in the survey area for this species.	DBCA PMST

Species Name	Common name	Status		Description and habitat requirements	Likelihood	Source
		BC Act	EPBC Act			
				from Cape Arid in the south to Carnarvon in the north-west (DotE 2016).		
Pezoporus occidentalis	Night Parrot	EN		The Night Parrot is a highly elusive nocturnal ground dwelling parrot found in the arid and semi-arid zones of Australia. The night parrot was thought to be extinct but in 2013 it was rediscovered in Queensland (Pullen Pullen Reserve). Subsequently, the species has been found in Goneaway National Park and Diamantina National Park in Queensland and near Broome in Western Australia (DotEE 2017).	**Highly Unlikely** There is no suitable habitat for this species in the survey area.	PMST
Falco hypoleucos	Grey Falcon	VU	VU	The Grey Falcon inhabits lightly timbered country, especially stony, inland plains and Acacia scrub, gibber deserts, sandridges, pastoral lands, and timbered watercourses, but seldom in driest deserts. Its distribution is centered on inland drainage systems. It also hunts in treeless areas and frequents tussock grassland and open woodland, especially in winter (Morcombe 2004; Pizzey & Knight 2012). It can mostly be seen on the northwest coast from Shark Bay to east Kimberley, and in the Pibara and desert regions (Nevill 2013; Pizzey & Knight 2012).	**Unlikely -** Species known distribution overlaps with the Survey Area. Limited suitable habitat is present in the survey area.	PMST
Falco peregrinus	Peregrine Falcon	OS	OS	The Peregrine Falcon is found on and near cliffs, gorges, timbered watercourses, riverine environments, wetlands, plains, open woodlands, and pylons and spires of buildings, though less frequently in desert regions (Morcombe 2004; Pizzey and Knight 2012). They are not common but can be found almost anywhere throughout WA and in the southwest, including particularly at Fitzgerald River, Stirling Range, Porongurup National Parks, Kondinin, and Peak Charles, with many more locations north of Perth (Nevill 2013).	**Likely -** The records for this species are located 27 km southwest of the survey area. This species may utilise the drainage line in the survey area flying overhead to reach opportune habitat.	DBCA
Gelochelidon nilotica	Gull-billed tern	MI	MI	The Gull-billed Tern is patchily distributed across all the continents of the world. In Australia, the subspecies macrotarsa occurs both coastally and inland Western Australia. The species uses coastal areas from Broome, south to Shark Bay. Inland, any lake or wetland catchment can be occupied after heavy rains (Nevill 2013).	**Unlikely -** The records for this species are located 20 km northwest of the survey area. There is no suitable habitat in the survey area.	DBCA

Species Name	Common name	Status		Description and habitat requirements	Likelihood	Source
		BC Act	EPBC Act			
Leipoa ocellata	Malleefowl	VU	VU	The Malleefowl generally occurs in semi-arid areas of Western Australia, in shrublands and low woodlands that are dominated by mallee vegetation, as well as native pine Callitris woodlands, Acacia shrublands, paperbark, skheoak, Broombush Melaleuca uncinata vegetation, eucalypt woodlands, or coastal heathlands. Mostly they are found where there are sandy or gravel soils. The nest is a large mound of sand or soil and organic matter (Jones and Goth 2008; Morcombe 2004; Nevill 2013). In WA they are found from the southwest Nullarbor to Albany, north, and then west from Moore River up to Shark Bay, past Cue, across to Wiluna and east to the northern Victoria Desert south of the Blackstone Ranges (Nevill 2013; Pizzey and Knight 2012).	**Unlikely -** The nearest record for this species is approximately 15 km northeast of the survey area. There are numerous records located all throughout the east of Laverton. However, there is limited habitat in the survey area as it is linear, and the area around the airstrip is fenced off, preventing use of the habitat.	DBCA *NatureMap* PMST
Tringa glareola	Wood sandpiper	MI	MI	The Wood Sandpiper uses well-vegetated, shallow, freshwater wetlands, such as swamps, billabongs, lakes, pools and waterholes. They are typically associated with emergent, aquatic plants or grass, and dominated by taller fringing vegetation, such as dense stands of rushes or reeds, shrubs, or dead or live trees, especially Melaleuca and River Red Gums E. camaldulensis. They also frequent inundated grasslands, short herbage or wooded floodplains, where floodwaters are temporary or receding. They can occasionally be found at drying or stony small wetlands, but rarely use brackish wetlands, or dry stunted saltmarsh. They can also use artificial wetlands, including open sewage ponds, reservoirs, large farm dams, and bore drains. In WA the species is widespread but scattered in most regions (DotE 2016).	**Unlikely -** Nearest record is approximately 24 km south of the survey area. There is limited suitable habitat in the survey area.	DBCA
Calidris melanotos	Pectoral Sandpiper	IA		In Australia, the Pectoral Sandpiper prefers shallow fresh to saline wetlands. The species is found at coastal lagoons, estuaries, bays, swamps, lakes, inundated grasslands, saltmarshes, river pools, creeks, floodplains and artificial wetlands. The species is usually found in coastal or near coastal habitat but occasionally found further inland. It prefers wetlands that have open fringing mudflats and low, emergent or fringing vegetation, such as grass or samphire. The species has also been recorded in swamp overgrown with lignum (DotE 2016). The bird can be seen on the Swan Coastal Plain but is rare to scarce on Lake Thompson, and as well on any	**Highly Unlikely** There is no suitable habitat in the survey area for this species.	PMST

Species Name	Common name	Status		Description and habitat requirements	Likelihood	Source
		BC Act	EPBC Act			
				freshwater wetland in the southwest with shallow, well-grassed margins. They are seen at Lake Warden, Esperance, and at Lake McLarty (Nevill 2013).		
Motacilla flava	Yellow Wagtail	IA		The Yellow Wagtail occupies a range of damp or wet habitats with low vegetation, from damp meadows, marshes, waterside pastures, sewage farms and bogs to damp steppe and grassy tundra (IUCN Redlist 2017). In Australia, the Yellow Wagtail is a very uncommon except in the Broome region. They can often be found in nothern towns wherever there are well watered grass areas (DotEE 2017).	**Highly Unlikely** Species assumed distribution overlaps with the Survey Area. There is no suitable habitat within the Survey Area for the species.	PMST
Motacilla cinerea	Grey Wagtail	IA		The Grey Wagtail is an opportunistic migrant to Australia. The species typically migrates to Indonesia occasionally landing in Australia. Most records for the species are from Northern Australia and South Australia (Morcombe 2004). The non-breeding habitat only of the Grey Wagtail has a strong association with water, particularly rocky substrates along water courses but also lakes and marshes (DotE 2016). It can be found mainly in banks and rocks in fast-running freshwater habitats: rivers, creeks, streams, and around waterfalls, both in forest and open country; but occurs almost anywhere during migration (Johnstone & Storr 2004).	**Highly Unlikely -** Species assumed distribution overlaps with the Survey Area. There is no suitable habitat within the Survey Area.	PMST
Actitis hypoleucos	Fork-tailed swift	IA		The fork-tailed Swift is a migratory species that follows large storm fronts and are almost exclusively areal species. In WA, there are sparsely scattered records of the Fork-tailed Swift along the south coast, ranging from near the Eyre Bird Observatory and west to Denmark. They are widespread in coastal and subcoastal areas between Augusta and Carnarvon, including some on nearshore and offshore islands. Scattered records are present in the Perth region. Records are scattered throughout WA including the Pilbara, Kimberley, Wheatbelt, Gascoyne and Isolated records occur at Neale Junction in the Great Victoria Desert and on the Nullarbor Plain (Higgins 1999).	**Unlikely -** Species known distribution overlaps with the Survey Area. The habitat in the survey area is marginal. Inland records of these species are typically rare.	PMST
Charadrius veredus	Oriental Plover	IA		Immediately after arriving in non-breeding grounds in northern Australia, Oriental Plovers spend a few weeks in coastal habitats such as estuarine mudflats and sandbanks, on sandy or rocky ocean beaches or nearby	**Highly Unlikely** There is no suitable habitat in the survey area for this species.	PMST

Species Name	Common name	Status		Description and habitat requirements	Likelihood	Source
		BC Act	EPBC Act			
				reefs, or in near-coastal grasslands, before dispersing further inland. Thereafter they usually inhabit flat, open, semi-arid or arid grasslands, where the grass is short and sparse, and interspersed with hard, bare ground, such as claypans, and dry paddocks, or open areas that have been recently burnt. At the onset of the Wet Season, some may move into lightly wooded grasslands. Some remain in estuarine and littoral environments, and a few are occasionally recorded around terrestrial wetlands or flooded paddocks. Most records are along the north-western coast, between Exmouth Gulf and Derby, and there are records at a few scattered sites elsewhere, mainly along the northern coast, such as in the Top End, the Gulf of Carpentaria and on Cape York Peninsula. The species also often occurs further inland on the 'blacksoil' plains of northern WA (DotE 2016).		
Calidris acuminata	Sharp-tailed Sandpiper	IA		In Australasia, the Sharp-tailed Sandpiper prefers muddy edges of shallow fresh or brackish wetlands, with inundated or emergent sedges, grass, saltmarsh or other low vegetation. This includes lagoons, swamps, lakes and pools near the coast, and dams, waterholes, soaks, bore drains and bore swamps, saltpans and hypersaline saltlakes inland. They also occur in saltworks and sewage farms. They use flooded paddocks, sedgelands and other ephemeral wetlands, but leave when they dry. They use intertidal mudflats in sheltered bays, inlets, estuaries or seashores, and also swamps and creeks lined with mangroves. Sometimes they occur on rocky shores. They are widespread from Cape Arid to Carnarvon, around coastal and subcoastal plains of Pilbara Region to south-west and east Kimberley Division. Inland records indicate the species is widespread and scattered from Newman, east to Lake Cohen, south to Boulder and west to Meekatharra. Inland records indicate the species is widespread and scattered from Newman, east to Lake Cohen, south to Boulder and west to Meekatharra (DAWE 2022b).	**Highly Unlikely** There is no suitable habitat in the survey area.	PMST
Mammals						
Lagostrophus fasciatus fasciatus	Banded hare-wallaby	VU	VU	The banded hare-wallaby is an endangered macropod currently extinct on mainland Australia. This species is restricted to Bernier and Dorre Islands in Shark Bay,	**Highly Unlikely -**	DBCA *NatureMap*

Species Name	Common name	Status		Description and habitat requirements	Likelihood	Source
		BC Act	EPBC Act			
				Western Australia. On these islands it is commonly found among dense thickets of *Acacia ligulata, A. coriacea* and *Alectryon oleifolium* scrub on sandplains and *Diplolaena dampeiri* and *A. oleifolium* on the dunes (Van Dyck and Strahan 2008).	The nearest record to the survey area is less than 1 km, but it is a historical record, and the species no longer occurs on the mainland.	
Macrotis lagotis	Bilby	VU	VU	The Greater Bilby occupies sand plains, sandy dune systems or along drainage or salt lake systems (DEC 2012). They occur in three major vegetation types; open tussock grassland on uplands and hills, mulga woodland/shrubland growing on ridges and rises, and hummock grassland in plains and alluvial areas. In the south of its range, the Greater Bilby lives on rises and ridges among sparse grasses, especially mitchell grass Astrebla and short shrubs. In WA there are disjunct populations in the Gibson Desert, south-western Kimberley, inland areas of the Pilbara and northern Great Sandy Desert (Van Dyck and Strahan, 2008).	**Highly Unlikely -** The nearest record to the survey area is less than 1 km, but it is a historical record, and the species no longer occurs in the area, as part of its former range.	DBCA *NatureMap*
Myrmecobius fasciatus	Numbat	EN	EN	Current Numbat populations occupy several different habitat types: upland Jarrah forest, open eucalypt woodland, banksia woodland and tall closed shrubland. The only remaining original subpopulations are at Dryandra Woodland and the Upper Warren area (including Tone Perup Nature Reserve, Greater Kingston National Park and adjoining State Forest). In WA there are nine translocation sites, including Boyagin Nature Reserve, Tutanning Nature Reserve, Batalling block and Karroun Hill Nature Reserve (see DPaW 2015 for complete list and details). At Dryandra, numbats inhabit brown mallet (*Eucalyptus astringens*) plantations. Habitats usually have an abundance of termites in the soil, and hollow logs, tree hollows, burrows and branches for shelter (DEE 2017; Van Dyck and Strahan 2008).	**Highly Unlikely –** The records for this species in the area are historical (nearest is 7 km south of the survey area). The species no longer occurs in this region.	DBCA *NatureMap*
Sminthopsis longicaudata	Long-tailed Dunnart	P4	-	The Long-tailed Dunnart occurs throughout the Gibson Desert, Murchison, southern Canarvon Basin and the Pilbara in Western Australia. Its habitat includes rugged, rocky areas with hummock grasses, shrubs and tall open shrublands and woodlands. In the Young Range in the Gibson Desert, the Long-tailed Dunnart has been found to be associated with plateaus, composed of boulders and stones, with some fine red soils, and sparsely	**Unlikely –** Nearest records are approximately 22 km south of the survey area. This species is more likely to be present in surrounding habitats that contain triodia hummock grasses, the survey	DBCA

Species Name	Common name	Status		Description and habitat requirements	Likelihood	Source
		BC Act	EPBC Act			
				vegetated Mulga (*Acacia aneura*) and Miniritchie *(A. grasbyi*) shrubs over spinifex (Van Dyck and Strahan 2008).	area contains limited suitable habitat.	
Sminthopsis psammophila	Sandhill Dunnart	EN	EN	The sandhill dunnart occurs in isolated sandy arid and semi arid areas in the Great Victoria Desert and the Eyre Peninsula. It occurs in vegetation dominated by hummock (Triodia) grassland. The species shelters during the day in nests in the centre of large hummocks, especially in hummocks that have started to die off in the centre, where the dig a circular depression (Commonwealth of Australia, 2023).	**Highly Unlikely –** There is no suitable habitat in the survey area.	PMST
Reptiles						
Liopholis kintorei	Great Desert Skink	VU	VU	The Great Desert Skink occurs on arid sand-flats and clay-based or loamy soils vegetated with spinifex (Wilson and Swan 2010). Populations in the Gibson Desert occur on sandplains with a surface cover of fine gravel (Pearson et al. 2001). Vegetation usually consists of hummock grassland (*Triodia basedowii, Triodia pungens* and *Triodia schinzii*), with some scattered shrubs and occasional trees (e.g. *Acacia* spp., *Eucalyptus* spp., *Hakea* spp., *Grevillea* spp. and *Allocasuarina decaisneana*) (McAlpin 2001). Sites in WA are dominated by *Triodia basedowii* and *Triodia schinzii* with some *Eremophila leucophylla* shrubs (Pearson et al. 2001). The population at Patjarr WA occurs on a gravelly undulating plain with scattered Black Gidgee (*Acacia pruinocarpa*) or Mulga over *Triodia basedowii* and low shrubs (McAlpin 2001).	**Unlikely –** The record is historical and the species is not likely to occur in this area anymore. Record is approximately 35 km north east of the survey area. No suitable habitat is present in the survey area.	DBCA PMST

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