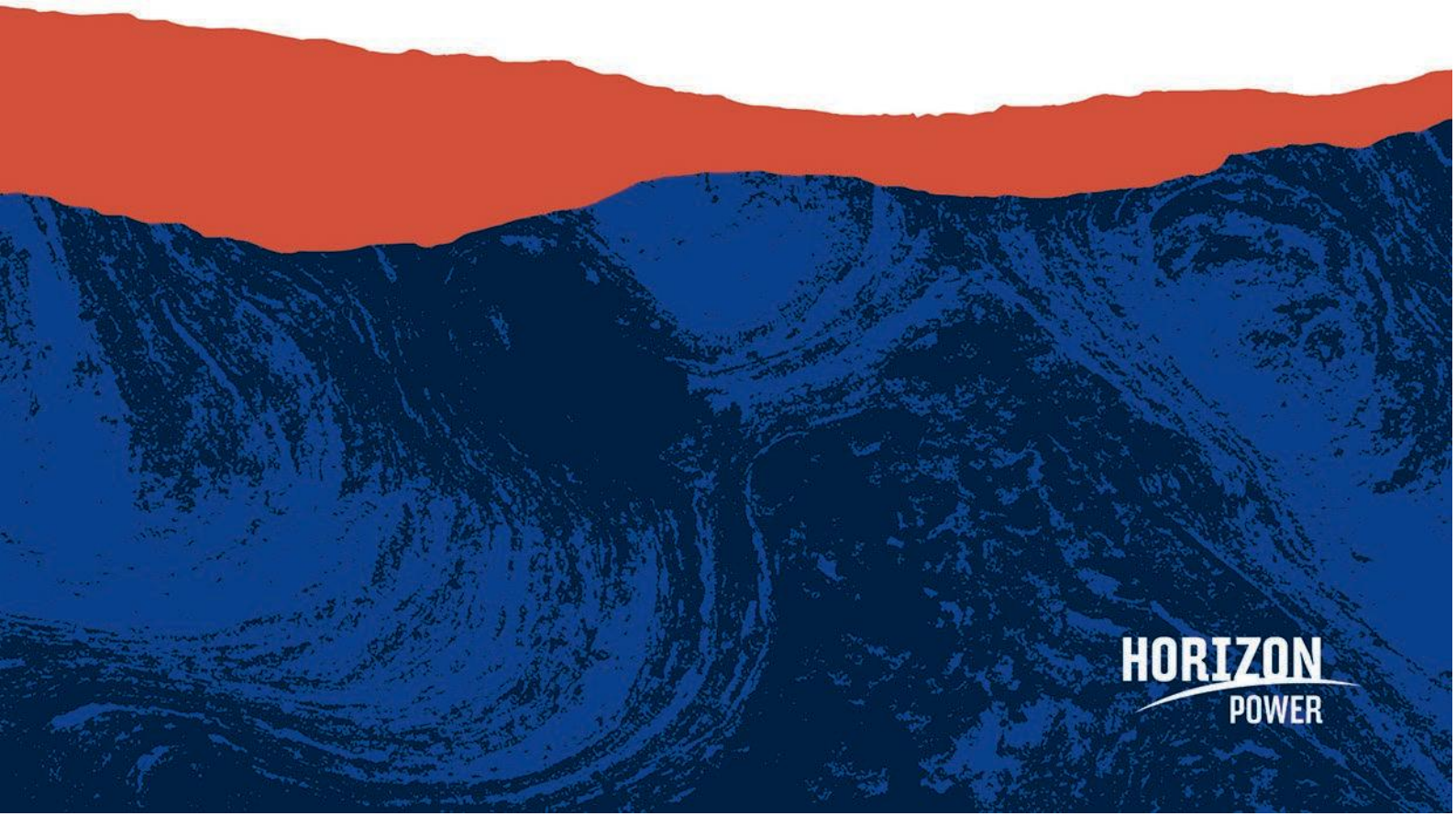
East Pilbara Connection - Native Vegetation Clearing Permit

Supporting Document

August 2024



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1 Introduction

1.1 Project Context

Regional Power Corporation, trading as (T/A) Horizon Power, is a Western Australian (WA) Government Trading Enterprise (GTE) and the state's regional and remote energy provider. Horizon Power operates under the *Electricity Corporations Act 2005* and is governed by a Board of Directors accountable to the Minister for Energy.

Horizon Power is proposing to construct a 220 kV dual circuit common use transmission line connecting the South Hedland Terminal to the proposed Atlas Ridley Magnetite Mine, in the Pilbara region in Western Australia (the Project). The estimated length of the Transmission Line is 70.2 km comprising of mono poles, with an average height of 40 m. The Project is also likely to consist of access tracks along the pole route, geotechnical investigations and laydown areas for construction.

The Project involves the following permanent elements which will require up to 60.6 ha of permanent clearing:

- Approximately 70.2 km long 220 kV overhead transmission line
- Approximately 201 poles with a 20 x 20 m clearing footprint
- Permanent cleared access tracks (approximately 4 m wide).

The Project involves the following temporary elements which will require up to 40.2 ha of temporary clearing:

- Laydown area
- Geotechnical investigations
- Sites to facilitate stringing and winching of the transmission line.

Specific detail of the proposed clearing is provided in Section 3 of this document.

A Native Vegetation Clearing Permit (NVCP) will be required from the Department of Water and Environmental Regulation (DWER) to allow for the clearing of up to 60.6 ha of permanent clearing and 40.2 ha of temporary clearing.

1.2 Scope and Purpose

This document has been prepared to support a NVCP application for the Project. Specifically, this document provides further detail regarding the proposed activities (Section 2) and related clearing (Section 3).

To support environmental approvals for the Project, an ecological survey was undertaken by SLR (2024) (Appendix A). The results of this survey, as relevant to the proposed clearing, are summarised in Section 4 of this document and have been taken into account when avoiding and mitigating Project environmental impacts (Section 6).

An assessment of the 10 Clearing Principles as outlined in '*A guide to the assessment of applications to clear native vegetation*' (DER 2014) has also been undertaken and is presented Section 8.

A Construction Environment Management Plan (CEMP) has also been prepared in support of the NVCP Application and is provided in Appendix B.

2 Description of the Activity

2.1 Project Location

The Proposal is located between South Hedland and De Grey, within the Pilbara region (Figure 1). As final design has yet to be undertaken, a Development Envelope (DE) has been applied, within which all project activities will be undertaken. The DE is described in Table 1 and shown in Figure 1.

Table 1 Development Envelope for the Project

Size of Development Envelope (ha)	Development Envelope location	Town	Neighbouring land uses
10,233.9	Reserve 33016 - Lot 273 on DP219540, LR3109/390 (managed by Minister for Water Resources)	Town of Port Hedland	Roads, crown land, crown lots, crown reserves, pastoral leases and residential
	Unallocated Crown Land - Lot 1499 on DP404497, LR3165/640 (subject to dealing)		
	Road - Lot 325 on DP220768, LR3116/935		
	Unallocated Crown Land - Lot 1507 on DP423425, LR3175/534		
	Pastoral Lease P461306 - Lot 1505 on DP423425, LR3175/532 (pastoral lessee: Alinta Dewap Pty Ltd, Alinta Dewah Pty Ltd)		
	Pastoral Lease N50445 - Lot 158 on DP407151, LR3170/570 (pastoral lessee: BHP Billiton Direct Reduced Iron Pty Ltd)		

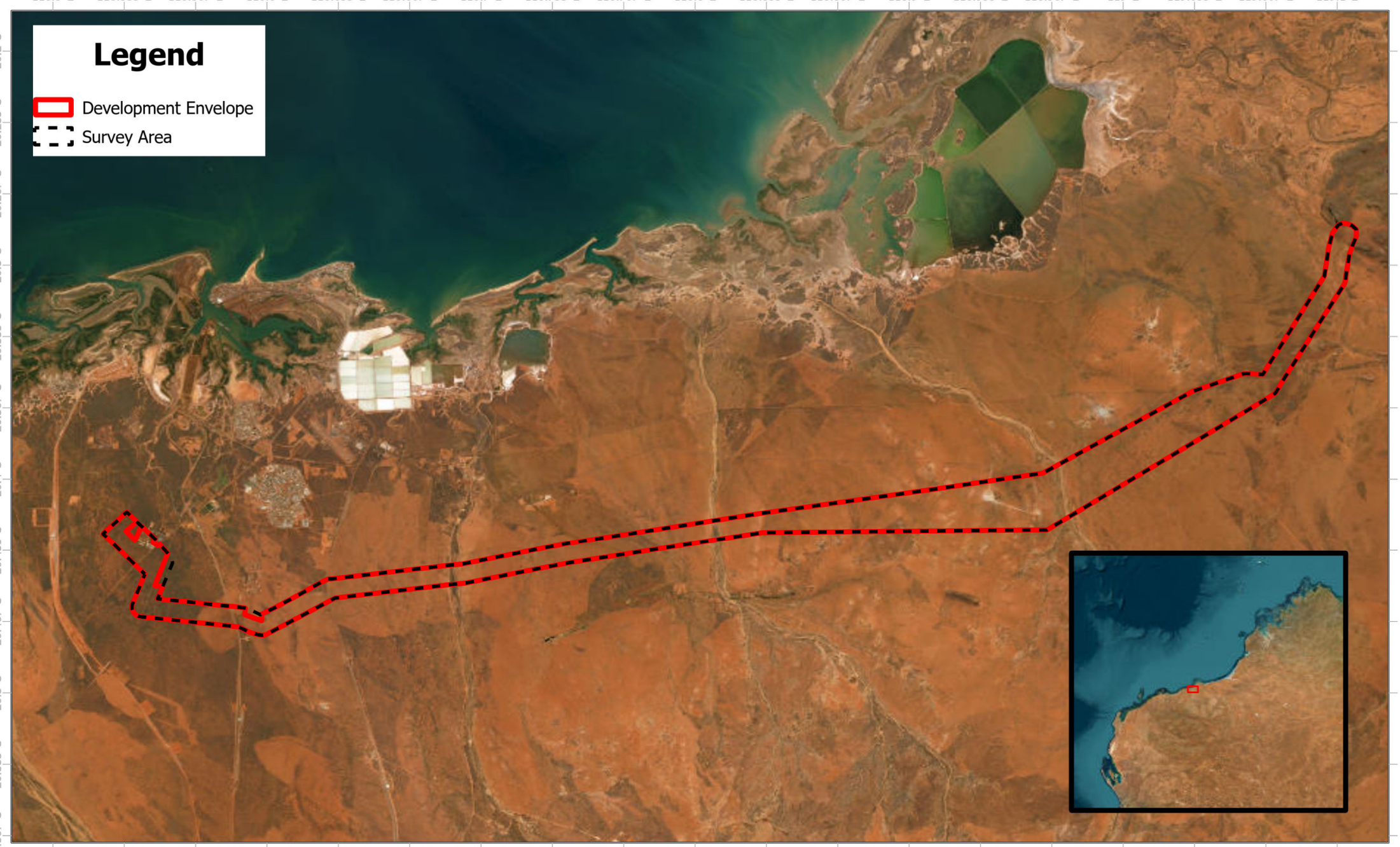

Figure 1 | Development Envelope and Survey Area

N

0 2.5 5 10 Kilometers

Scale: 1:250,000

HORIZON POWER

2.2 Activity Overview and Timelines

The project requires geotechnical survey works, which will consist of mainly incidental clearing (driving over and parking on native vegetation) for vehicle / machinery access to test sites. The Project also requires construction of the overhead transmission line including poles and permanent access tracks which will be used for maintenance.

A five-year clearing permit is requested with clearing undertaken within 3 months of construction.

2.3 Land Access

Horizon Power will utilise the access conferred by Sections 46 and 49 of the *Energy Operators (Powers) Act 1979* (the Act) for geotechnical investigations and connection infrastructure.

3 Description of Proposed Clearing

3.1 Proposed Clearing Area

The final design and footprint required for the Project will be determined once geotechnical survey works are undertaken. All clearing will be undertaken within the DE, as described in Section 2.1.

The Project involves the following permanent elements which will require up to 60.6 ha of permanent clearing and up to 40.2 ha of temporary clearing. Total clearing for the Project (permanent and temporary) will be up to 100.8 ha.

Table 2 Clearing estimated within the DE

Proposed clearing	Clearing breakdown
100.8 ha	• Permanent clearing: 60.6 ha • Temporary clearing: 40.2 ha

3.2 Proposed Clearing Method

Temporary clearing is proposed for the geotechnical survey, stringing and winching of the transmission line and a laydown area. This will include mechanical removal and driving over vegetation.

Mechanical removal will be undertaken for the permanent infrastructure including poles and permanent maintenance access tracks.

4 Ecological Survey

To inform the Project, SLR (2024) undertook a detailed and targeted flora and vegetation survey, and basic and targeted fauna survey. The survey area covers the entire DE, and was undertaken from 1st March to 10th March 2024. The ecological survey has been appended to this document (Appendix A) and is summarised in Table 3.

Surveys have been undertaken for other projects in the region, these overlap the DE. These surveys are listed in Table 4. Results from these surveys have also been used as secondary information to inform the Project impact assessment.

Table 3 Summary of ecological survey undertaken for the Project

Survey	Vegetation type

Atlas Ridely Magnetite Project Connection Flora and Fauna Survey Technical Report (SLR, 2024)
IBSA Number: IBSA-2024-0325
	Survey date: 1st March to 10th March 2024
	Survey area: Approximately 10,363 ha
	Flora / Vegetation findings:
	• 172 flora taxa (including subspecies and varieties) representing 40 families and 94 genera were recorded in the survey area. This total comprised 164 native taxa and eight introduced flora taxon.
	• No flora listed as Threatened under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) or *Biodiversity Conservation Act 2016* (BC Act) were recorded within the survey area
	• Two DBCA-listed Priority species were recorded in the survey area:
	  ○ *Gymnanthera cunninghamii* (Priority 3 - DBCA) - Six individuals of *Gymnanthera cunninghamii* were recorded across four locations in the MaEc vegetation type.
	  ○ *Tephrosia rosea* subsp. Port Hedland (A.S. George 1114) (Priority 1 - DBCA) - Two individuals of *Tephrosia rosea* subsp. Port Hedland were recorded from one location in the AsTe vegetation type.
	Fourteen vegetation types were recorded within the survey area:
	• AiTe - *Triodia epactia* low hummock grassland (30 ha (0.29%))
	• AoTe - Granite and quartz outcroppings (53 ha (0.51%))
	• AspTe - Mixed Acacia (*A. inaequilatera, A. colei, A. ancistrocarpa, A. acradenia, A. bivenosa*) tall shrubland over *Triodia epactia* (*T. wiseana*) low to mid hummock grassland (5,495 ha (53.03%))
	• AsTe - *Acacia stellaticeps* mid open shrubland over *Triodia epactia* low hummock grassland (3,067 ha (29.6%))
	• At - *Acacia tumida* tall shrubland over *Triodia epactia* mid open hummock grassland (18.3 ha (0.18%))
	• CcAcTe - *Corymbia candida* low sparse woodland over *Acacia colei* and *A.tumida* tall open shrubland over *Triodia epactia* low hummock grassland and *Eulalia aurea* low open tussock grassland (123.9 ha (1.2%))
	• CfAh - *Corymbia flavescens* (Eucalyptus victrix) low sparse woodland over *Atalaya hemiglauca* (*Dolichandrone occidentalis*, *Ficus aculeata*) tall open shrubland over Eulalia aurea low sparse tussock grassland (42.5 ha (0.41%))
	• EvAcTe - *Eucalyptus victrix* low sparse woodland over *Acacia colei* tall open shrubland over *Triodia epactia* mid open hummock grassland (263.5 ha (2.54%))
	• EvEa - *Eucalyptus victrix* low sparse woodland over *Acacia colei* tall sparse shrubland over *Triodai epactia* mid sparse hummock grassland and *Eulalia aurea* mid sparse tussock grassland (24.1 ha (0.23%))
	• FspAh - Low sparse woodland of *Atalaya hemiglauca* and *Ficus brachypoda* over *Triodia epactia* low sparse hummock grassland (1.8 ha (0.02%))
	• FspTe - Mixed Acacia (A. *inaequilatera, A. ancistrocarpa*) with *Ficus brachypoda* low isolated trees over low open hummock grassland *Triodia epactia* (13.5 ha (0.13%))

	• MaEc - *Eucalyptus camaldulensis* subsp. *refulgens* (*E.victrix*), *Melaleuca argentea* low sparse woodland over tall sparse shrubs *Acacia trachycarpa*, *M. glomerata* over *Eulalia aurea* low sparse tussock grasses and *Triodia epactia* low sparse hummock grasses (165.7 ha (1.6%)) • Sh - *Sclerolaena hostilis* low sparse forbland (9.6 ha (0.09%)) • TsTe - *Triodia secunda* and *T. epactia* low hummock grassland (848.4 ha (8.19%)) • Cleared (206.26 ha (1.99%)). The vegetation condition in the survey area varied from Degraded to Very Good: • Degraded - 52.1 ha (0.50%) • Poor - 3.3 ha (0.03%) • Good - 232.4 ha (2.24%) • Very Good - 9,868.9 ha (95.23%) • Cleared – 206.26 ha (1.99%). No Threatened Ecological Communities (TEC) listed under the EPBC Act or BC Act were identified within the survey area during the field survey. Additionally, no Priority Ecological Communities (PEC) listed by DBCA were identified within the survey area during the field survey. One vegetation type, MaEc, is likely to represent groundwater dependent ecosystems (GDE) associated with some of the major drainages intersecting the survey area. This vegetation type supports known *phreatophytic* tree species such *Melaleuca argentea* and *Eucalyptus camaldulensis* subsp. *refulgens*, which are reliant on access to the groundwater table. **Fauna / Fauna habitat findings:** Nine fauna habitat types were recorded within the survey area: • Closed *Acacia* Shrubland - Flat plains with red sand substrate. Vegetation consists of open *Corymbia* and *Eucalyptus* woodland over *Eucalyptus* and *Acacia* open shrubland midstory over low *Triodia* hummock grassland. Microhabitats include *Triodia* hummocks and leaf litter. This habitat contained disturbances caused by vehicle tracks (15.01 ha (0.14%)) • Low *Acacia stellaticeps* over *Triodia* - Flat plains with brown-orange clay, loam and sandy substrate. Vegetation consists of low, isolated clumps of *Acacia stellaticeps* over low *Triodia epactia* open hummock grassland. Microhabitats include *Triodia* hummocks, leaf litter and woody debris were observed. This habitat contained disturbances caused by vehicle tracks and overgrazing (3,071.26 ha (29.64%)) • Major Drainage - Flat plains with red-orange sandy substrate. Vegetation consists of open eucalypt woodland over sparse Acacia midstory and open *Triodia* hummock grassland. Microhabitats include *Triodia* hummocks, leaf litter, peeling bark, woody debris, and burrows. Tree hollows, log hollows and logs over 10 cm were also observed. This habitat contained disturbances caused by vehicle tracks, overgrazing and weeds (1100.79 ha (1.60%)) • Minor Drainage - Flat plains with red sandy substrate. Vegetation consists of open *Eucalyptus* woodland over *Eucalyptus* and *Acacia* open shrubland midstory over low *Triodia* hummock grassland. Microhabitats include *Triodia* hummocks, leaf litter, peeling bark and woody debris. This habitat contained disturbances caused by vehicle tracks (24.12 ha (0.23%)) • Mixed *Acacia* Shrubs and *Triodia* Plains - Flat plains with red-orange sandy and clay-loam substrate. Vegetation consists of open *Eucalyptus* woodland over *Acacia* open shrubland midstory with *Triodia* hummock grassland. Microhabitats include *Triodia* hummocks and leaf litter. This habitat contained disturbances caused by vehicle tracks and overgrazing (5,501.32 ha (53.09%))

	• Open *Eucalypt* Woodland - Flat plains with red sandy substrate. Vegetation consists of open *Corymbia* and Eucalyptus woodland over *Eucalyptus* and *Acacia* open shrubland midstory over low *Triodia* hummock grassland. Microhabitats include *Triodia* hummocks and leaf litter. This habitat contained disturbances caused by vehicle tracks (429.90 ha (4.15%)) • Outcrops and Breakaways - Sloped granite, ironstone and quartz ridges and outcrops with red-brown sandy-clay substrate. Vegetation consists of open Acacia shrubland midstory over sparse and open *Triodia* hummock grassland. Microhabitats include Exfoliating rock, rock crevices, *Triodia* hummocks, leaf litter, peeling bark and woody debris (43.56 ha (0.42%)) • Sparse *Triodia* Plains - Open rocky granite plains with red sandy-pebble substrate. Vegetation consists of sparse *Acacia* shrubland midstory over open hummock grassland. Microhabitats include *Triodia* hummocks and leaf litter. This habitat contained disturbances caused by vehicle tracks and overgrazing (858.02 ha (8.28%)) • Stony Hills - Undulating granite and quartz plains with red sandy substrate. Vegetation consists of sparse *Acacia* shrubland midstory over sparse *Triodia* hummock grassland. Microhabitats include *Triodia* hummocks and termite mounds. This habitat contained disturbances caused by vehicle tracks (47.82 ha (0.46%)) • Cleared - Cleared land for existing tracks/roads (206.26 ha (1.99%)). A total of 63 fauna taxa were identified in the survey area. This total comprised: • 33 birds • 14 mammals • 16 reptiles. Three introduced species (European Cattle, Cat and Domestic Pigeon/Rock Dove) were recorded and are included in this total. Two significant fauna species were recorded in the survey area: • Pilbara Leaf-nosed Bat (*Rhinonicteris aurantia* (Pilbara form)) – Vulnerable • Western Pebble-mound Mouse (*Pseudomys chapmani*) – Priority 4. Additional conservation significant fauna assessed as known to occur in the survey area are: • Northern Quoll (*Dasyurus hallucatus*) – Endangered • Bilby (*Macrotis lagotis*) – Vulnerable Conservation significant fauna assessed as likely to occur in the survey area include: • Grey Falcon (*Falco hypoleucos*) – Vulnerable • Oriental Pratincole (*Glareola maldivarum*) – Migratory • Common Greenshank (*Tringa nebularia*) – Migratory • Barn Swallow (*Hirundo rustica*) – Migratory • Little Curlew (*Numenius minutus*) – Migratory • Oriental Plover (*Charadrius veredus*) – Migratory • Osprey (*Pandion haliaetus*) – Migratory • Peregrine Falcon (*Falco peregrinus*) – Other specially protected fauna

	• Ghost Bat (*Macroderma gigas*) – Vulnerable • Brush-tailed Mulgara (*Dasycercus blythi*) – Priority 4 • Pilbara Olive Python (*Liasis olivacea barroni*) – Vulnerable Conservation significant fauna that may occur in the survey area include: • Pilbara Grasswren (*Amytornus whitei whitei*) – Priority 4 (as *Amytornis striatus striatus*, DBCA) • Glossy Ibis (*Plegadis falcinellus*) – Migratory • Fork-tailed Swift (*Apus pacificus*) – Migratory • Short-tailed Mouse (*Leggadina lakedownensis*) – Priority 4 • There were an additional 23 bird species that may occur in the survey area due to the proximity of historic records, however with limited suitable habitats within the survey area. The likelihood of occurrence assessment is provided in Appendix C.

Table 4 Additional surveys that overlap the DE

Year	Author	Survey Name	Relevance to the Project
2023	Focus Vision Consulting (FVC)	Detailed Flora and Vegetation Assessment	33,905.09 ha in size, overlaps the DE.
2022	GHD	Boodarie Solar Farm	Of the 175 ha of the Boodarie solar farm survey area, approximately 90 ha intersects the western portion of the DE.
2024	Biota Environmental Sciences	Ridley Detailed Terrestrial Vertebrate Fauna Survey	Of the 12,235 ha survey area, approximately 5 ha intersects the eastern portion of the DE.
2022	Phoenix Environmental	Detailed terrestrial fauna and targeted Bilby Survey for the Port Hedland Solar Farm Proposal	Of the 9,000 ha survey area, approximately 1,065 ha intersects the western portion of the DE.

5 Existing Environment

The existing environment of the DE is described in Table 5.

Table 5 Existing environment in the DE.

<table>
<tr><th>Environmental value</th><th>Assessment</th></tr>
<tr><td>Vegetation associations, types and condition</td><td>The Project is located within Pre-European Vegetation Associations 589, 619, 647 and 93. More than 97% of these vegetation associations remain on State, bioregion and local government levels.
<table>
<tr><th>Vegetation association</th><th>Scale</th><th>Pre-European extent (ha)</th><th>Current extent (ha)</th><th>% Remaining</th><th>% of current extent in all DBCA managed</th></tr>
<tr><td>589</td><td>State: Western Australia</td><td>807,698.58</td><td>802,713.40</td><td>99.38</td><td>1.91</td></tr>
<tr><td></td><td>IBRA bioregion: Pilbara</td><td>728,768.20</td><td>724,695.82</td><td>99.44</td><td>2.11</td></tr>
<tr><td></td><td>IBRA Subregion: Roebourne</td><td>675,391.80</td><td>671,327.48</td><td>99.40</td><td>2.14</td></tr>
<tr><td></td><td>IBRA Subregion: Chichester</td><td>53,376.40</td><td>53,368.34</td><td>99.98</td><td>1.78</td></tr>
<tr><td></td><td>LGA: Town of Port Hedland</td><td>338,269.05</td><td>335,921.21</td><td>99.31</td><td>-</td></tr>
<tr><td>619</td><td>State: Western Australia</td><td>119,373.78</td><td>118,205.01</td><td>99.02</td><td>0.20</td></tr>
<tr><td></td><td>IBRA bioregion: Pilbara</td><td>118,920.31</td><td>118,116.78</td><td>99.32</td><td>0.20</td></tr>
<tr><td></td><td>IBRA Subregion: Chichester</td><td>85,543.15</td><td>85,520.95</td><td>99.97</td><td>0.28</td></tr>
<tr><td></td><td>LGA: Town of Port Hedland</td><td>63,650.59</td><td>62,598.14</td><td>98.35</td><td>-</td></tr>
<tr><td>647</td><td>State: Western Australia</td><td>195,860.89</td><td>191,711.41</td><td>97.88</td><td>-</td></tr>
<tr><td></td><td>IBRA bioregion: Pilbara</td><td>195,859.95</td><td>191,710.92</td><td>97.88</td><td>-</td></tr>
</table>
</td></tr>
</table>

Environmental value	Assessment

	IBRA Subregion: Roebourne	188,901.32	184,774.70	97.82	-
	LGA: Town of Port Hedland	180,908.49	176,759.02	97.71	-
93	State: Western Australia	3,044,309.52	3,040,640.98	99.88	1.96
	IBRA bioregion: Pilbara	3,042,114.27	3,038,471.67	99.88	1.96
	IBRA Subregion: Chichester	2,940,348.04	2,936,731.54	99.88	2.03
	IBRA Subregion: Roebourne	46,360.53	46,334.43	99.94	-
	LGA: Town of Port Hedland	1,015,339.22	1,014,599.99	99.93	-

As described in Table 3, fourteen vegetation types were recorded within the DE (SLR, 2024):

Vegetation type	Condition	Extent (ha) within DE	Extent (%) within DE
AiTe	Very Good	30.0	0.3
AoTe	Very Good	53.0	0.5
AspTe	Very Good	5,495.0	53.7
AsTe	Very Good	2,963.1	29.0
At	Very Good	18.3	0.2
CcAcTe	Very Good	123.9	1.2
CfAh	Degraded	42.5	0.4
EvAcTe	Good to Very Good	263.5	2.6
EvEa	Very Good	24.1	0.2
FspAh	Very Good	1.8	0.0
FspTe	Very Good	13.5	0.1
MaEc	Good	165.7	1.6
Sh	Degraded	9.6	0.1
TsTe	Very Good	829.2	8.1
Cleared		200.8	2.0
Total		10,233.9	100%

As described in Table 3, the vegetation condition in the DE varied from Degraded to Very Good, with the majority in Very Good condition (SLR, 2024).

Eight introduced flora taxa were recorded in the DE (SLR, 2024):

- Kapok (**Aerva javanica*)
- Neem tree (**Azadirachta indica*)
- Calotrope (**Calotropis procera*)
- Buffel grass (**Cenchrus ciliaris*)
- **Indigofera oblongifolia*
- Spiked Malvastrum (**Malvastrum Americanum*)
- Stinking Passion Flower (**Passiflora foetida*)

<table>
<tr><th>Environmental value</th><th>Assessment</th></tr>
<tr><td></td><td>
Mimosa Bush (*Vachellia farnesiana)
None of the introduced flora species are listed as Weeds of National Significance (WoNS). One taxon (*Calotropis procera) is listed as a Declared Pest under the Biosecurity and Agriculture Management Act 2007 (BAM Act), of which approximately 144 individuals were recorded opportunistically, and another four individuals within flora sites (SLR, 2024).
</td></tr>
<tr><td>Fauna habitat</td><td>
As described in Table 3, nine fauna habitat types were recorded within the DE (SLR, 2024):
<table>
<tr><th>Fauna habitat</th><th>Extent (ha) within DE</th><th>Extent (%) within DE</th></tr>
<tr><td>Closed Acacia Shrubland</td><td>15.0</td><td>0.1</td></tr>
<tr><td>Low Acacia stellaticeps over Triodia</td><td>2966.9</td><td>29.0</td></tr>
<tr><td>Major Drainage</td><td>165.7</td><td>1.6</td></tr>
<tr><td>Minor Drainage</td><td>24.1</td><td>0.2</td></tr>
<tr><td>Mixed Acacia Shrubs and Triodia Plains</td><td>5501.3</td><td>53.8</td></tr>
<tr><td>Open Eucalypt Woodland</td><td>429.9</td><td>4.2</td></tr>
<tr><td>Outcrops and Breakaways</td><td>43.6</td><td>0.4</td></tr>
<tr><td>Sparse Triodia Plains</td><td>838.8</td><td>8.2</td></tr>
<tr><td>Stony Hills</td><td>47.8</td><td>0.5</td></tr>
<tr><td>Cleared</td><td>200.8</td><td>2.0</td></tr>
<tr><td>Total</td><td>10,233.9</td><td>100%</td></tr>
</table>
</td></tr>
<tr><td>Significant fauna</td><td>
Two significant fauna species were recorded in the DE (SLR, 2024):

Pilbara Leaf-nosed Bat (Rhinonicteris aurantia (Pilbara form)) – Vulnerable
Western Pebble-mound Mouse (Pseudomys chapmani) – Priority 4.

Additional conservation significant fauna assessed as known to occur in the DE are (SLR, 2024):

Northern Quoll (Dasyurus hallucatus) – Endangered
Bilby (Macrotis lagotis) – Vulnerable

Conservation significant fauna assessed as likely to occur in the DE are (SLR, 2024):

Grey Falcon (Falco hypoleucos) – Vulnerable
Oriental Pratincole (Glareola maldivarum) – Migratory
Common Greenshank (Tringa nebularia) – Migratory
Barn Swallow (Hirundo rustica) – Migratory
Little Curlew (Numenius minutus) – Migratory
Oriental Plover (Charadrius veredus) – Migratory
Osprey (Pandion haliaetus) – Migratory
Peregrine Falcon (Falco peregrinus) – Other specially protected fauna
Ghost Bat (Macroderma gigas) – Vulnerable
Brush-tailed Mulgara (Dasycercus blythi) – Priority 4
Pilbara Olive Python (Liasis olivacea barroni) – Vulnerable
Conservation significant fauna assessed as may occur in the DE are (SLR, 2024):
Pilbara Grasswren (Amytornus whitei whitei) – Priority 4 (as Amytornis striatus striatus, DBCA)
Glossy Ibis (Plegadis falcinellus) – Migratory
Fork-tailed Swift (Apus pacificus) – Migratory
Short-tailed Mouse (Leggadina lakedownensis) – Priority 4
There were an additional 23 bird species that were considered to may occur in the DE due to the proximity of historic records and the limited suitable habitats within the DE.

The likelihood of occurrence assessment is provided in Appendix C.
</td></tr>
</table>

Environmental value	Assessment
Significant ecological linkages	The Major Drainage and Minor Drainage habitat types play a role as ecological linkage and provides water sources for significant species such as Northern Quoll and Pilbara Olive Python.
Ecological communities	No TECs listed under the EPBC Act or BC Act were identified within the DE during the SLR (2024) field survey. Additionally, no PECs listed by DBCA were identified within the DE during the field survey. One vegetation type, MaEc, is likely to represent GDE associated with some of the major drainages intersecting the DE. This vegetation type supports known *phreatophytic* tree species such *Melaleuca argentea* and *Eucalyptus camaldulensis* subsp. *refulgens*, which are reliant on access to the groundwater table (SLR, 2024).
Significant flora	Conservation significant flora that were recorded in the DE include (SLR, 2024): • *Gymnanthera cunninghamii* (Priority 3) - Six individuals of *Gymnanthera cunninghamii* were recorded across four locations in the MaEc vegetation type. • *Tephrosia rosea* subsp. Port Hedland (A.S. George 1114) (Priority 1) - Two individuals of *Tephrosia rosea* subsp. Port Hedland were recorded from one location in the AsTe vegetation type. An additional two Priority 3 species are considered likely to occur, *Eragrostis crateriformis* (Priority 3) and *Euploca mutica* (Priority 3). The likelihood of occurrence assessment is provided in Appendix D.
Wetlands and/or waterways	Two drainage habitats within the DE are connected to an important wetland, the Leslie (Port Hedland) Saltfields System approximately 6 km north of the DE.
Water resources	The Pilbara Groundwater Area (Proclaimed under the *Rights in Water and Irrigation Act 1914* (RIWI Act)) is present within the DE. No Public Drinking Water Source Areas (PDWSAs) are present within the DE. The De Grey River Water Reserve (Priority 1) is located approximately 2 km east of the DE. The Pilbara Surface Water Proclaimed under the RIWI Act is present within the DE. No rivers proclaimed under the RIWI Act are present within the DE.
Conservation Reserves	No DBCA managed conservation areas occur within the DE or within 20 km of the DE.
Environmentally Sensitive Areas (ESAs)	There are no ESAs within the DE.
Land and soil quality	The DE intersects the following land systems: • Uaroo System (281Ua) - Broad sandy plains, pebbly plains and drainage tracts supporting hard and soft spinifex hummock grasslands with scattered Acacia shrubs. • River System (281Ri) - Narrow, seasonally active flood plains and major river channels supporting moderately close, tall shrublands or woodlands of Acacia and fringing communities of eucalypts sometimes with tussock grasses or spinifex. • Boolaloo System (281Bo) - Granite hills, domes, tor fields and sandy plains supporting spinifex grasslands with scattered shrubs. • Macroy System (281Mc) - Stony plains and occasional tor fields based on granite supporting hard and soft spinifex shrubby grasslands. • Capricorn System (281Cp) - Rugged sandstone hills, ridges, stony footslopes and interfluves supporting low Acacia shrublands or hard spinifex grasslands with scattered shrubs. • Paradise System (281Pd) - Alluvial plains supporting soft spinifex grasslands and tussock grasslands. • Boolgeeda System (280Bg) - Stony lower slopes and plains below hill systems supporting hard and soft spinifex grasslands or mulga shrublands. A review of Acid Sulphate Soil (ASS) risk mapping (spatial dataset DWER-048; GoWA, 2024) indicates that the northern portion of the DE overlaps an area of moderate to low risk of ASS occurring within 3 m of natural soil surface but high to moderate risk of ASS beyond 3 m of natural soil surface. The DE does not intersect any contaminated sites (spatial dataset DWER-059; GoWA, 2024). No known contaminated sites are recorded within 20 km of the DE.

Environmental value	Assessment
Environmental heritage	There are no National or World Heritage Areas mapped as overlapping the DE.

6 Avoidance, Mitigation and Management Measures

6.1 Avoidance

Initial avoidance and minimisation was undertaken during route selection and a large area was surveyed to allow for further refinement after the biological survey, to remove environmental constraints from the DE.

The following avoidance measures have been applied:

- A 20 m avoidance buffer has been placed around Priority species recorded during the SLR (2024) survey, including:
    - *Gymnanthera cunninghamii*
    - *Tephrosia rosea* var. Port Hedland (A.S. George 1114).
- Avoidance areas have been placed around Stony Hills and Rocky Outcrops and Breakaways fauna habitat types. These will be avoided for all project activities.
- Avoidance areas have been placed around the Minor Drainage and Major Drainage habitat types. These will not be impacted by permanent clearing including permanent access tracks, there may be minor temporary impacts to this habitat type in the form of vehicles driving over these habitat types during stringing. Helicopter stringing is being considered which will further reduce impacts to drainage lines, however this constructability decision can not be finalised until design is completed.
- Avoidance areas have been placed around the MaEc vegetation type, which is also associated with the major drainage fauna habitat type. There may still be minor temporary clearing in the form of vehicles driving over this vegetation type during stringing.

6.2 Mitigation and Management

6.2.1 Geotechnical works

A CEMP has been developed for the project (Appendix B), this lists the specific mitigation and management measures to be applied. Key management measures include:

- Avoidance areas will be clearly communicated prior to geotechnical investigations commencing and no more than 35.2 ha of clearing will be undertaken for geotechnical investigations.
- Works will be undertaken systematically to minimise re-run and compaction of access tracks.
- Standard weed and hygiene management practices which will be applied to these works.
- Mechanical clearing will be undertaken slowly and in a one-way direction to allow fauna to move offsite if present.
- Implementation of the standard management measures to minimise risks to vegetation and flora.
- Dust, noise and vibration management measures will be implemented during construction.

6.2.2 Project infrastructure

Key management measures detailed in the CEMP for the project infrastructure include the following:

- No clearing is permitted outside the DE.
- Clearing areas are to be checked by an Environmental Specialist or Site Supervisor prior to clearing to ensure no more than 100.8 ha of clearing is undertaken for the Project (including the 35.2 ha of clearing required for geotechnical investigations detailed above).
- Clearing impacts will be further reduced through the detailed design process, including the positioning of access tracks, poles and pole pads to minimise impacts to vegetation and flora.

- Avoidance areas are to be identified and communicated prior to clearing activities commencing.
- Where possible, pre-existing access tracks will be used.
- Clearing impacts will be further reduced through the detailed design process, including the positioning of access tracks, poles and pole pads to minimise impacts to vegetation and flora.
- Works will be undertaken systematically to minimise re-run and compaction of access tracks.
- Standard weed and hygiene management practices which will be applied to these works.
- A pre-clearing toolbox will be held so all staff are aware of their responsibilities under the permit.
- Mechanical clearing will be undertaken slowly and in a one-way direction to allow fauna to move offsite if present.
- Implementation of the standard management measures to minimise risks to vegetation and flora.
- Dust, noise and vibration management measures will be implemented during construction.

6.2.3 Restoration of Cleared Areas

Restoration of the DE following temporary clearing will be undertaken, as follows:

- Topsoil will be stockpiled separately to other excavated materials.
- On completion of test pit works for the geotechnical survey, excavated materials will be placed back into the test pits. Topsoil from the test pit will then be respread over the surface.
- Recontouring of soil within the test pit and laydown areas will be undertaken to prevent compaction.
- Any clearing required for temporary purposes, and not required for ongoing maintenance, will be rehabilitated upon completion of construction including re-laying of soil and recontouring to prevent compaction.

7 Stakeholder Engagement

Horizon Power will continue engagement with Traditional Owners, local businesses and community, the local Shire and Department of Planning, Lands and Heritage prior to undertaking this work.

8 Assessment Against the 10 Clearing Principles

An assessment against the 10 Clearing Principles has been undertaken to support the NVCP application for the Project, as presented in Table 6. The assessment found that the Project may be at variance with clearing principle b and is unlikely to be at variance with any of the other clearing principles.

Table 6 Assessment Against the 10 Clearing Principles

Principle	Assessment	Outcome
(a) Native vegetation should not be cleared if it comprises a high level of biological diversity.	Up to 100.8 ha of native vegetation is proposed to be cleared for the Project within the DE, of which 40.2 ha is temporary clearing. **Vegetation** The DE is located in the Pilbara bioregion and the Roebourne and Chichester sub-regions as described by IBRA. 14 vegetation types were identified in the DE during the SLR (2024) survey. These vegetation types are described in Table 5. The vegetation condition in the DE varied from Degraded to Very Good, with the majority of vegetation in Very Good condition (95.23% of the SLR (2024) survey area). The areas of vegetation in Good, Poor or Degraded condition were often affected by weeds such as **Cenchrus ciliaris* and **Calotropis*. These occurred in areas associated with drainagelines and floodplains, which were also impacted by livestock that act as vectors for the spread of weeds. No TECs listed under the EPBC Act or BC Act were identified within the DE during the SLR (2024) field survey. Additionally, no PECs listed by DBCA were identified within the DE during the field survey. One vegetation type, MaEc, is likely to represent GDE associated with some of the major drainage lines intersecting the DE (SLR, 2024). This vegetation type supports known *phreatophytic* tree species such *Melaleuca* argentea and *Eucalyptus camaldulensis* subsp. *refulgens*, which are reliant on access to the groundwater table. As shown in Figure 2, avoidance areas for permanent clearing have been placed around the MaEc vegetation type. There may still be temporary clearing in the form of vehicles driving over this vegetation type during stringing, which will result in a negligible impact. Examination of similarities of vegetation descriptions shows the vegetation types are representative of the vegetation associations in the region (SLR, 2024). As shown in Table 5, there is a high proportion (greater than 97%) of the pre-European extent of these vegetation associations remaining. **Flora** 172 flora taxa (including subspecies and varieties) representing 40 families and 94 genera were recorded in the DE during the SLR (2024) field survey. This total comprised 164 native taxa and eight introduced flora taxon. The below conservation significant flora that were recorded in the DE have been excluded from the DE with a 20 m buffer to avoid impacts from the Project (as shown in Figure 2): • *Gymnanthera cunninghamii (Priority 3 - DBCA)* • *Tephrosia rosea* subsp. Port Hedland *(A.S. George 1114) (Priority 1 - DBCA).* As outlined in Appendix D, an additional eight Priority flora species were considered to likely occur or may occur within the DE: • *Eragrostis crateriformis* (Priority 3) • *Euploca mutica* (Priority 3) • *Euploca parviantrum* (Priority 1) • *Euphorbia inappendiculata* var. *inappendiculate* (Priority 2) • *Abutilon* sp. *Pritzelia*num (S. van Leeuwen 5095) (Priority 3)	Proposed clearing is unlikely to be at variance to this Principle.

Principle	Assessment	Outcome
	• *Euphorbia clementii* (Priority 3) • *Rothia indica* subsp. *australis* (Priority 3) • *Bulbostylis burbidgeae* (Priority 4). Eight introduced flora taxa were recorded in the DE: • *Kapok (*Aerva javanica)* • *Neem tree (*Azadirachta indica)* • *Calotrope (*Calotropis procera)* • *Buffel grass (*Cenchrus ciliaris)* • **Indigofera oblongifolia* • *Spiked Malvastrum (*Malvastrum Americanum)* • *Stinking Passion Flower (*Passiflora foetida)* • *Mimosa Bush (*Vachellia farnesiana)* None of these introduced flora species are listed as WoNS. One taxon (**Calotropis procera*) is listed as a Declared Pest under the *Biosecurity and Agriculture Management Act 2007* (BAM Act), of which approximately 144 individuals were recorded opportunistically, and another four individuals within flora sites that were surveyed by SLR (2024). Standard weed and hygiene management practices which will be applied to mitigate the spread of weeds from the Project. The suite of flora taxa recorded during the survey is considered typical for the bioregion and aligns with the database search results obtained (SLR, 2024). **Fauna Habitat** Nine fauna habitat types were recorded within the DE during the SLR (2024) survey (Closed *Acacia* Shrubland, Low *Acacia stellaticeps* over *Triodia*, Major Drainage, Minor Drainage, Mixed *Acacia* Shrubs and *Triodia* Plains, Open Eucalypt Woodland, Outcrops and Breakaways, Sparse *Triodia* Plains and Stony Hills). These habitat types are described in Table 5. The habitat types recorded in the DE are typical of the Pilbara bioregion and consistent with habitats identified by previous studies in the region (SLR, 2024). Nearly all fauna habitat types extend outside the DE to form larger ecosystems. However, there is one pocket of Stony Hills and Closed *Acacia* Shrubland habitats, and a series of Outcrops and Breakaways habitat contained entirely within the DE which lack connectivity to similar habitats (SLR, 2024). Avoidance areas have been placed around Stony Hills and Rocky Outcrops and Breakaways habitat types to prevent impacts from the Project. The Major Drainage and Minor Drainage habitat types play a role as ecological linkages, and provide water sources for significant species such as Northern Quoll and Pilbara Olive Python. Avoidance areas have been placed around these drainage habitats for permanent clearing. There may still be temporary clearing in the form of vehicles driving over these habitat types during stringing, which will result in a negligible impact. The avoidance areas around the Stony Hills, Rocky Outcrops and Breakaways, Major Drainage and Minor Drainage habitats are shown in Figure 2 to mitigate impacts to conservation significant fauna from clearing of important habitat. **Fauna**	

Principle	Assessment	Outcome
	A total of 63 fauna species were identified in the DE (SLR, 2024). This total comprised 33 birds, 14 mammals and 16 reptiles and included three introduced species (European Cattle, Cat and Domestic Pigeon/Rock Dove). The DE has a typical level of fauna diversity, based on comparisons of fauna diversity captured in other fauna surveys conducted in the region (See Table 3). Two significant fauna species were recorded in the DE (SLR, 2024): • Pilbara Leaf-nosed Bat (*Rhinonicteris aurantia* (Pilbara form)) – Vulnerable • Western Pebble-mound Mouse (*Pseudomys chapmani*) – Priority 4. Additional conservation significant fauna assessed as known to occur in the DE and are detailed in Principle b. The Project will mitigate impacts to biological diversity by utilising existing access tracks and degraded areas where possible, as well as the application of avoidance areas for significant aspects identified in the biological survey. Overall, the flora, vegetation and fauna values of the DE are highly represented outside the DE and surrounding vegetation typically has similar or better condition vegetation. The native vegetation within the DE is not considered to comprise high levels of biological diversity compared to the surrounding region, and as such, the proposed clearing is not considered to be at variance with this principle.	
(b) Native vegetation should not be cleared if it comprises the whole or part of, or is necessary for the maintenance of, a significant habitat for fauna indigenous Western Australia.	**Fauna Habitat** Nine fauna habitat types were recorded within the DE and are described in Table 5. The habitat types recorded in the DE are typical of the Pilbara bioregion and consistent with habitats identified by previous studies in the region (SLR, 2024). Nearly all fauna habitat types extend outside the DE to form larger ecosystems. However, there is one pocket of Stony Hills and Closed *Acacia* Shrubland habitats, and a series of Outcrops and Breakaways habitat contained entirely within the DE which lack connectivity to similar habitats (SLR, 2024). Avoidance areas have been placed around Stony Hills and Rocky Outcrops and Breakaways habitats as these were considered high value habitat for conservation significant species and are located in discrete pocket that can be excluded from the impact area. The Major Drainage and Minor Drainage habitat types play a role as ecological linkage and provides water sources for some significant species. Avoidance areas have been placed around these drainage habitats for permanent clearing. There may still be temporary clearing in the form of vehicles driving over these habitat types during stringing, which will result in a negligible impact. The avoidance areas around the Stony Hills, Rocky Outcrops and Breakaways, Major Drainage and Minor Drainage habitats are shown in Figure 2 to mitigate impacts to conservation significant fauna from clearing of important habitat. **Fauna** The desktop assessment conducted by SLR (2024) identified the presence/potential presence of 76 significant fauna species within 50 km of the DE. This total comprised 62 birds, 11 mammals and three reptiles. A total of 63 fauna species were identified in the DE (SLR, 2024). This total comprised 33 birds, 14 mammals and 16 reptiles and included three introduced species (European Cattle, Cat and Domestic Pigeon/Rock Dove). The DE has a typical level of fauna diversity, based on comparisons of fauna diversity captured in other fauna surveys conducted in the region. The habitat preferences and suitable habitat within the DE for the conservation significant fauna that are considered known, likely or may occur within the DE are described in Appendix C. Appendix C also outlines whether habitat is considered critical to the survival of a species, according to relevant recovery plans and conservation advice. The discussion of potential impacts for these species is provided below. *Northern Quoll*	Proposed clearing may be at variance to this Principle.

Principle	Assessment	Outcome
	The Northern Quoll is listed as Endangered under the BC Act and known to occur in the DE. As described in Appendix C, the Outcrops and Breakaways and Stony Hills habitats within the DE are considered habitat critical to the survival of the Northern Quoll (Hill and Ward, 2010). Avoidance areas have been applied around these two habitat types to mitigate impacts to the Northern Quoll. Additionally, the Major Drainage and Minor Drainage habitats would provide valuable water sources for the Northern Quoll after significant rain events. Avoidance areas have been placed around these drainage habitats for permanent clearing. There may still be temporary clearing in the form of vehicles driving over these habitat types during stringing, which will result in a negligible impact. The Northern Quoll may also utilise the Low *Acacia stellaticeps* over *Triodia*, Mixed *Acacia* Shrubs and *Triodia* Plains and Sparse *Triodia* Plains habitat types within the DE for foraging and dispersal, which is considered supporting habitat. Up to 100.8 ha may be cleared for the Project, of which only 60.6 ha is permanent clearing and 40.2 is temporary clearing. Based on aerial imagery and the Native Vegetation Extent (spatial dataset DPIRD-005, GoWA 2024) and Pre-European Vegetation (spatial dataset DPIRD-006, GoWA 2024) datasets, habitat for the Northern Quoll is widespread within a 20 km radius of the DE. Clearing of up to 100.8 ha of foraging and dispersal habitat for the Northern Quoll, represents approximately 0.03% of potential habitat available within 20 km of the DE. Up to 60.6 ha of permanent clearing of foraging and dispersal habitat for Northern Quoll is proposed, consisting predominantly of 20m x 20m pole pads and a small maintenance access track. Given the linear nature of the Project, the dispersal and foraging habitat for Northern Quoll in the region is unlikely to be significantly impacted. *Pilbara Leaf-nosed Bat* The Pilbara Leaf-nosed Bat is listed as Vulnerable under the BC Act and known to occur in the DE. As described in Appendix C, the Outcrops and Breakaways and Stony Hills habitats within the DE are considered habitat critical to the survival of the Pilbara Leaf-nosed bat (TSSC, 2016). Avoidance areas have been applied around these two habitat types to mitigate impacts to the Pilbara Leaf-nosed Bat. Additionally, the Major Drainage and Minor Drainage habitats may provide potential foraging and dispersal habitat for the species. Avoidance areas have also been placed around these drainage habitats for permanent clearing. There may still be temporary clearing in the form of vehicles driving over these habitat types, which will result in a negligible impact. The Pilbara Leaf-nosed Bat may also utilise the Low *Acacia stellaticeps* over *Triodia*, Mixed *Acacia* Shrubs and *Triodia* Plains, Sparse *Triodia* Plains and Open Eucalypt Woodland habitats for foraging and dispersal. As described in Appendix C, these habitats are considered critical to the survival of the Pilbara Leaf-nosed Bat (TSSC, 2016) and up to 100.8 ha may be cleared for the Project (of which only 60.6 ha is permanent clearing and 40.2 is temporary clearing). Based on aerial imagery and the Native Vegetation Extent (spatial dataset DPIRD-005, GoWA 2024) and Pre-European Vegetation (spatial dataset DPIRD-006, GoWA 2024) datasets, habitat for the Pilbara Leaf-nosed Bat is widespread within a 20 km radius of the DE. Clearing of up to 100.8 ha within the DE, represents approximately 0.03% of potential habitat available within 20 km of the DE. Given this species is aerial and Pilbara Leaf-nosed Bats can range over 20 km for foraging (Bat Call WA, 2021), the proposed clearing is not considered a significant impact on Pilbara Leaf- nosed bat foraging or dispersal habitat. *Bilby* The Bilby is listed as Vulnerable under the BC Act and known to occur in the DE. As described in Appendix C, the Low *Acacia stellaticeps* over *Triodia* and Sparse *Triodia* Plains habitats within the DE are considered habitat critical to the survival of the Bilby (DCCEEW, 2023b) due to their values for denning, foraging and dispersal. Up to 100.8 ha of these critical habitats may be cleared for the Project (of which only 60.6 ha is permanent clearing and 40.2 is temporary clearing).	

Principle	Assessment	Outcome
	Based on aerial imagery and the Native Vegetation Extent (spatial dataset DPIRD-005, GoWA 2024) and Pre-European Vegetation (spatial dataset DPIRD-006, GoWA 2024) datasets, habitat for the Bilby is widespread within a 20 km radius of the DE. Clearing of up to 100.8 ha within the DE, represents approximately 0.03% of potential habitat available within 20 km of the DE. No burrows were identified for Bilby in the survey area. Up to 60.6 ha of permanent clearing of critical habitat for Bilby is proposed, consisting predominantly of 20m x 20m pole pads and a small maintenance access track. *Western Pebble-mound Mouse* The Western Pebble-mound Mouse is listed as Priority 4 by DBCA and known to occur in the DE. As described in Appendix C, the Outcrops and Breakaways and Stony Hills habitat types occur within the DE in discrete pockets, and are considered habitat critical to the survival of the Western Pebble-mound Mouse. Avoidance areas have been applied around these two habitat types to mitigate impacts to the Western Pebble-mound Mouse. The Western Pebble-mound Mouse may also utilise other habitat types within the DE for foraging and dispersal. Up to 100.8 ha may be cleared for the Project (of which only 60.6 ha is permanent clearing and 40.2 is temporary clearing). Based on aerial imagery and the Native Vegetation Extent (spatial dataset DPIRD-005, GoWA 2024) and Pre-European Vegetation (spatial dataset DPIRD-006, GoWA 2024) datasets, habitat for the Western Pebble-mound Mouse is widespread within a 20 km radius of the DE. Clearing of up to 100.8 ha within the DE, represents approximately 0.03% of potential habitat available within 20 km of the DE. The project will require the permanent clearing of up to 60.6 ha of foraging and dispersal habitat for Western Pebble Mound Mouse. Given the sporadic nature of the clearing for the poles, narrow access track, and abundance of alternative habitat in the region, this impact is not considered significant to Western Pebble Mound mouse. *Grey Falcon* The Grey Falcon is listed as Vulnerable under the BC Act and is likely to occur in the DE. As described in Appendix C, the Major Drainage and Minor Drainage habitats in the DE may be suitable nesting habitat for the Grey Falcon. Avoidance areas have been placed around these drainage habitats for permanent clearing. There may still be temporary clearing in the form of vehicles driving over these habitat types, which will result in a negligible impact. The Grey Falcon may also utilise the Low *Acacia stellaticeps* over *Triodia*, Mixed *Acacia* Shrubs and *Triodia* Plains, Open Eucalypt Woodland and Sparse *Triodia* Plains habitat types within the DE for foraging and dispersal. Up to 100.8 ha may be cleared for the Project (of which only 60.6 ha is permanent clearing and 40.2 is temporary clearing). Based on aerial imagery and the Native Vegetation Extent (spatial dataset DPIRD-005, GoWA 2024) and Pre-European Vegetation (spatial dataset DPIRD-006, GoWA 2024) datasets, habitat for the Grey Falcon is widespread within a 20 km radius of the DE. Clearing of up to 100.8 ha within the DE, represents approximately 0.03% of potential habitat available within 20 km of the DE. The Grey Falcon occurs in a wide variety of habitats which are abundant in the area (Ehmann and Watson, 2008). As Grey Falcon habitat is abundant in the area and potential nesting habitat will be avoided, it is unlikely that clearing of potential foraging and dispersal habitat for the Project will significantly impact this species. *Oriental Pratincole* The Oriental Pratincole is listed as Migratory under the BC Act and is likely to occur in the DE. As described in Appendix C, the Major Drainage and Minor Drainage habitats in the DE may be suitable foraging habitat for the Oriental Pratincole. Avoidance areas have been placed around	

Principle	Assessment	Outcome
	these drainage habitats for permanent clearing. There may still be temporary clearing in the form of vehicles driving over these habitat types, which will result in a negligible impact. The Oriental Pratincole may also utilise other habitat types within the DE for foraging. Up to 100.8 ha may be cleared for the Project (of which only 60.6 ha is permanent clearing and 40.2 is temporary clearing). Based on aerial imagery and the Native Vegetation Extent (spatial dataset DPIRD-005, GoWA 2024) and Pre-European Vegetation (spatial dataset DPIRD-006, GoWA 2024) datasets, habitat for the Oriental Pratincole is widespread within a 20 km radius of the DE. Clearing of up to 100.8 ha within the DE, represents approximately 0.22% of potential habitat available within 20 km of the DE. As the Oriental Pratincole does not breed in Australia, habitat is abundant in the area and the species is likely to be transient within the DE, significant impacts to this species are considered unlikely. *Common Greenshank* The Common Greenshank is listed as Migratory under the BC Act and is likely to occur in the DE. As described in Appendix C, the Major Drainage and Minor Drainage habitats in the DE may be suitable foraging habitat for the Common Greenshank and are considered habitat critical to the species' survival (DCCEEW, 2024e). Avoidance areas have been placed around these drainage habitats for permanent clearing. There may still be some minor temporary clearing in the form of vehicles driving over these habitat types. The Common Greenshank was also considered likely to utilize *Triodia* habitat types (SLR 2024). These are also considered habitat critical to the survival of the Common Greenshank (DCCEEW, 2024e). Up to 100.8 ha may be cleared for the Project, including 60.6 ha of permanent clearing. Based on aerial imagery and the Native Vegetation Extent (spatial dataset DPIRD-005, GoWA 2024) and Pre-European Vegetation (spatial dataset DPIRD-006, GoWA 2024) datasets, habitat for the Common Greenshank is widespread within a 20 km radius of the DE. Clearing of up to 100.8 ha within the DE, represents approximately 0.22% of potential habitat available within 20 km of the DE. The Common Greenshank does not breed in Australia and is likely to be transient within the DE. Given the abundant habitat within the region and the sporadic nature of the permanent clearing proposed (20m x 20m pole pads connected by access track), the Project is unlikely to have a significant impact on Common Greenshank. *Barn Swallow* The Barn Swallow is listed as Migratory under the BC Act and is likely to occur in the DE. As described in Appendix C, the Major Drainage and Minor Drainage habitats in the DE may be suitable foraging, roosting and dispersal habitat for the Barn Swallow. Avoidance areas have been placed around these drainage habitats for permanent clearing. There may still be temporary clearing in the form of vehicles driving over these habitat types, which will result in a negligible impact. The Barn Swallow may also utilise the Low *Acacia stellaticeps* over *Triodia*, Mixed *Acacia* Shrubs and *Triodia* Plains, and Sparse *Triodia* Plains habitat types within the DE for foraging, roosting and dispersal. Up to 100.8 ha may be cleared for the Project (of which only 60.6 ha is permanent clearing and 40.2 is temporary clearing). Based on aerial imagery and the Native Vegetation Extent (spatial dataset DPIRD-005, GoWA 2024) and Pre-European Vegetation (spatial dataset DPIRD-006, GoWA 2024) datasets, habitat for the Barn Swallow is widespread within a 20 km radius of the DE. Clearing of up to 100.8 ha within the DE, represents approximately 0.22% of potential habitat available within 20 km of the DE. As the Barn Swallow does not breed in Australia, habitat is abundant in the area and the species is likely to be transient within the DE, it is unlikely that clearing would be significant.	

Principle	Assessment	Outcome
	Little Curlew The Little Curlew is listed as Migratory under the BC Act and is likely to occur in the DE. As described in Appendix C, the Major Drainage and Minor Drainage habitats in the DE may be suitable foraging habitat for the Little Curlew. Avoidance areas have been placed around these drainage habitats for permanent clearing. There may still be temporary clearing in the form of vehicles driving over these habitat types, which will result in a negligible impact. The Little Curlew may also utilise the Low *Acacia stellaticeps* over *Triodia*, Mixed *Acacia* Shrubs and *Triodia* Plains, Sparse *Triodia* Plains and Open Eucalypt Woodland habitat types within the DE for foraging. Up to 100.8 ha may be cleared for the Project (of which only 60.6 ha is permanent clearing and 40.2 is temporary clearing). Based on aerial imagery and the Native Vegetation Extent (spatial dataset DPIRD-005, GoWA 2024) and Pre-European Vegetation (spatial dataset DPIRD-006, GoWA 2024) datasets, habitat for the Little Curlew is widespread within a 20 km radius of the DE. Clearing of up to 100.8 ha within the DE, represents approximately 0.03% of potential habitat available within 20 km of the DE. As the Little Curlew does not breed in Australia, habitat is abundant in the area and the species is likely to be transient within the DE, the proposed clearing is unlikely to be significant. *Oriental Plover* The Oriental Plover is listed as Migratory under the BC Act and is likely to occur in the DE. As described in Appendix C, the Major Drainage and Minor Drainage habitats in the DE may be suitable foraging habitat for the Oriental Plover. Avoidance areas have been placed around these drainage habitats for permanent clearing. There may still be temporary clearing in the form of vehicles driving over these habitat types, which will result in a negligible impact. The Oriental Plover may also utilise the Low *Acacia stellaticeps* over *Triodia*, Mixed *Acacia* Shrubs and *Triodia* Plains and Sparse *Triodia* Plains habitat types within the DE for foraging. Up to 100.8 ha may be cleared for the Project (of which only 60.6 ha is permanent clearing and 40.2 is temporary clearing). Based on aerial imagery and the Native Vegetation Extent (spatial dataset DPIRD-005, GoWA 2024) and Pre-European Vegetation (spatial dataset DPIRD-006, GoWA 2024) datasets, habitat for the Oriental Plover is widespread within a 20 km radius of the DE. Clearing of up to 100.8 ha within the DE, represents approximately 0.03% of potential habitat available within 20 km of the DE. As the Oriental Plover does not breed in Australia, habitat is abundant in the area and the species is likely to be transient within the DE, the proposed clearing is unlikely to be significant. *Osprey* The Osprey is listed as Migratory under the BC Act and is likely to occur in the DE. As described in Appendix C, the Major Drainage and Minor Drainage habitats in the DE may be suitable foraging and dispersal habitat for the Osprey. SLR (2024) defined these habitats as critical to the survival of the species. Avoidance areas have been placed around these drainage habitats for permanent clearing. There may still be temporary clearing in the form of vehicles driving over these habitat types, which will result in a negligible impact. Based on aerial imagery and the Native Vegetation Extent (spatial dataset DPIRD-005, GoWA 2024) and Pre-European Vegetation (spatial dataset DPIRD-006, GoWA 2024) datasets, habitat for the Osprey is widespread within a 20 km radius of the DE. Clearing of up to 100.8 ha within the DE, represents approximately 0.20% of potential habitat available within 20 km of the DE.	

Principle	Assessment	Outcome
	As Osprey habitat is abundant in the area, the species is likely to be transient within the DE, and permanent clearing of critical habitat for the Project will be avoided, the proposed clearing is unlikely to be significant. *Peregrine Falcon* The Peregrine Falcon is listed as Other Specially Protected Fauna by DBCA and is likely to occur in the DE. As described in Appendix C, the Major Drainage and Minor Drainage habitats in the DE may be suitable nesting, dispersal and foraging habitat for the Peregrine Falcon. Avoidance areas have been placed around these drainage habitats for permanent clearing. There may still be temporary clearing in the form of vehicles driving over these habitat types, which will result in a negligible impact. The Peregrine Falcon may also utilise the Open Eucalypt Woodland habitat type within the DE for nesting, dispersal and foraging. Up to 100.8 ha may be cleared for the Project (of which only 60.6 ha is permanent clearing and 40.2 is temporary clearing). Based on aerial imagery and the Native Vegetation Extent (spatial dataset DPIRD-005, GoWA 2024) and Pre-European Vegetation (spatial dataset DPIRD-006, GoWA 2024) datasets, habitat for the Peregrine Falcon is widespread within a 20 km radius of the DE. Clearing of up to 100.8 ha within the DE, represents approximately 0.82% of potential habitat available within 20 km of the DE. As Peregrine Falcon habitat is abundant in the area, it is unlikely that clearing would result in a significant impact to this species. *Ghost Bat* The Ghost Bat is listed as Vulnerable under the BC Act and is likely to occur in the DE. As described in Appendix C, habitat critical to the survival of the Ghost Bat isn't defined, however, Biota (2024) defined the rocky hills habitat within their survey area (which intersects the DE) as potential critical habitat for the Ghost Bat (Biota, 2024). This habitat is considered similar to the Outcrops and Breakaways habitat and is therefore considered critical habitat as well. Avoidance areas have been applied this habitat type to mitigate impacts to the Ghost Bat. The Ghost Bat may also utilise the Major Drainage and Minor Drainage habitat types within the DE for foraging and dispersal. Avoidance areas have been placed around these drainage habitats for permanent clearing. There may still be temporary clearing in the form of vehicles driving over these habitat types, which will result in a negligible impact. Due to avoidance areas being implemented in the DE, no habitat for the Ghost Bat will be cleared for the Project (except potential minor temporary clearing of drainage lines from vehicles). Based on aerial imagery and the Native Vegetation Extent (spatial dataset DPIRD-005, GoWA 2024) and Pre-European Vegetation (spatial dataset DPIRD-006, GoWA 2024) datasets, habitat for the Ghost Bat is widespread within a 20 km radius of the DE. As Ghost Bat habitat is abundant in the area, and clearing of critical habitat and other potential foraging and dispersal habitat will be avoided, it is unlikely the Project will significantly impact this species. *Brush-tailed Mulgara* The Brush-tailed Mulgara is listed as Priority 4 by DBCA and is likely to occur in the DE. As described in Appendix C, the Low *Acacia stellaticeps* over *Triodia* and Mixed *Acacia* Shrubs and *Triodia* Plains habitat types may be used as burrowing, foraging and dispersal habitats by the Brush-tailed Mulgara. Up to 100.8 ha may be cleared for the Project (of which only 60.6 ha is permanent clearing and 40.2 is temporary clearing). Based on aerial imagery and the Native Vegetation Extent (spatial dataset DPIRD-005, GoWA 2024) and Pre-European Vegetation (spatial dataset DPIRD-006, GoWA 2024) datasets, habitat for the Brush-tailed Mulgara is widespread within a 20 km radius of the DE. Clearing of up to 100.8 ha within the DE, represents approximately 0.03% of potential habitat available within 20 km of the DE.	

Principle	Assessment	Outcome
	As Brush-tailed Mulgara habitat is abundant in the area, it is unlikely that clearing of potential burrowing, foraging and dispersal habitat (which is not considered critical habitat) for the Project would result in a significant impact to this species. *Pilbara Olive Python* The Pilbara Olive Python is listed as Vulnerable under the BC Act and is likely to occur in the DE. As described in Appendix C, critical habitat is not defined for this species (DEWHA, 2008). However, Biota (2024) defined the rocky hills habitat they recorded within the Atlas Iron survey area as potential critical habitat for the species. The Outcrops and Breakaway habitat is similar and therefore potentially critical habitat for the species. Avoidance areas have been applied this habitat type to mitigate impacts to the Pilbara Olive Python. The Pilbara Olive Python may also utilise the Major Drainage and Minor Drainage habitat types within the DE for foraging. Avoidance areas have been placed around these drainage habitats for permanent clearing. There may still be temporary clearing in the form of vehicles driving over these habitat types, which will result in a negligible impact. Based on aerial imagery and the Native Vegetation Extent (spatial dataset DPIRD-005, GoWA 2024) and Pre-European Vegetation (spatial dataset DPIRD-006, GoWA 2024) datasets, habitat for the Pilbara Olive Python is widespread within a 20 km radius of the DE. As Pilbara Olive Python habitat is abundant in the area, and clearing of critical habitat and other potential foraging habitat will be avoided, it is unlikely the Project will significantly impact this species. *Pilbara Grasswren* The Pilbara Grasswren is listed as Priority 4 by DBCA and may occur in the DE. As described in Appendix C, SLR (2024) defined Stony Hills habitat in the DE as habitat critical to the survival of the Pilbara Grasswren due to its value for foraging and shelter. Avoidance areas have been applied this habitat type to mitigate impacts to the Pilbara Grasswren. The Pilbara Grasswren may also utilise the Sparse *Triodia* Plains habitat type within the DE for foraging and shelter. SLR (2024) also defined this habitat as critical to the survival of the Pilbara Grasswren. Up to 100.8 ha may be cleared for the Project (of which only 60.6 ha is permanent clearing and 40.2 is temporary clearing). Based on aerial imagery and the Native Vegetation Extent (spatial dataset DPIRD-005, GoWA 2024) and Pre-European Vegetation (spatial dataset DPIRD-006, GoWA 2024) datasets, habitat for the Pilbara Grasswren is widespread within a 20 km radius of the DE. Clearing of up to 100.8 ha within the DE, represents approximately 0.03% of potential habitat available within 20 km of the DE. The Project will result in clearing of up to 100.8 ha of critical habitat for foraging and shelter for the Pilbara Grasswren. *Short-tailed Mouse* The Short-tailed Mouse is listed as Priority 4 by DBCA and may occur in the DE. As described in Appendix C, SLR (2024) defined the Stony Hills habitat within the DE as habitat critical to the survival of the Short-tailed Mouse due to its foraging and shelter values. Avoidance areas have been applied around this habitat type to mitigate impacts to the Short-tailed Mouse. The Short-tailed Mouse may also utilise the Sparse *Triodia* Plains habitat type within the DE for foraging and shelter. SLR (2024) also defined this habitat type as habitat critical to the survival of the species. Up to 100.8 ha may be cleared for the Project (of which only 60.6 ha is permanent clearing and 40.2 is temporary clearing). Based on aerial imagery and the Native Vegetation Extent (spatial dataset DPIRD-005, GoWA 2024) and Pre-European Vegetation (spatial dataset DPIRD-006, GoWA 2024) datasets, habitat for the Short-tailed Mouse is widespread within a 20 km radius of the DE. Clearing of up to 100.8 ha within the DE, represents approximately 0.03% of potential habitat available within 20 km of the DE.	

Principle	Assessment	Outcome
	The Project will result in clearing of up to 100.8 ha of critical foraging and shelter habitat for the Short-tailed Mouse. *Other Birds* The Glossy Ibis, Fork-tailed Swift, Curlew Sandpiper, Great Knot, Red Knot, Grey-tailed Tattler, White-winged Black Tern, Gull-billed Tern, Caspian Tern, Common Tern, Common Sandpiper, Sharp-tailed Sandpiper, Sanderling, Borad-billed Sandpiper, Pectoral Sandpiper, Ruff, Red-necked Stint, Long-toed Stint, Pin-tailed Snipe, Bar-tailed Godwit, Black-tailed Godwit, Whimbrel, Red-necked Phalarope, Wood Sandpiper and Marsh Sandpiper may occur in the DE. As described in Appendix C, the bird species may use the Major Drainage and Minor Drainage habitats within the DE for foraging and dispersal after flooding events. This is considered critical habitat for the Curlew Sandpiper, Great Knot, Red Knot, Sharp-tailed Sandpiper and Black-tailed Godwit as any foraging habitat is considered critical habitat for these species (DCCEEW, 2023a; DCCEEW, 2024a, DCCEEW, 2024b; DCCEEW, 2024c; DCCEEW, 2024d). Avoidance areas have been placed around these drainage habitats for permanent clearing. There may still be temporary clearing in the form of vehicles driving over these habitat types, which will result in a negligible impact. The Glossy Ibis may also utilise the Low Acacia *stellaticeps* over *Triodia*, Mixed *Acacia* Shrubs and *Triodia* Plains and Sparse *Triodia* Plains habitats within the DE for foraging and breeding. Up to 100.8 ha may be cleared for the Project (of which only 60.6 ha is permanent clearing and 40.2 is temporary clearing). The Fork-tailed Swift may use the Outcrops and Breakaways and Stony Hills habitats in the DE for suitable foraging and dispersal. Avoidance areas have been applied around the Outcrops and Breakaways and Stony Hills habitat types to mitigate impacts to the Fork-tailed Swift. The Fork-tailed Swift may also utilise the Closed *Acacia* Shrubland, Low *Acacia stellaticeps* over *Triodia*, Mixed *Acacia* Shrubs and *Triodia* Plains, Open Eucalypt Woodland and Sparse *Triodia* Plains habitats within the DE for foraging and dispersal. Based on aerial imagery and the Native Vegetation Extent (spatial dataset DPIRD-005, GoWA 2024) and Pre-European Vegetation (spatial dataset DPIRD-006, GoWA 2024) datasets, habitat for these bird species is widespread within a 20 km radius of the DE. The main impact to these migratory species would be mortality of individuals from direct collisions with vehicles and the power line infrastructure. As the migratory species that may potentially occur would be likely utilising the habitat as temporary only during flooding events, the number of individuals killed from direct collisions is not expected to be significant. As habitat is abundant in the area, the species are likely to be transient in the DE, and clearing of critical habitat will be avoided, it is unlikely the Project will significantly impact these species. *Outcome* Avoidance areas have been applied around the majority of critical habitat for conservation significant species to minimise impacts from the project, and temporary clearing will be rehabilitated. The project is linear and sporadic in nature, with permanent clearing consisting mainly of 20m x 20m pole pads and a narrow maintenance access track connecting the poles, similar to other transmission infrastructure in the Pilbara. Given the abundance of alternative habitat in the region, significant impacts are not expected as the Project will not significantly limit dispersal or foraging habitat in the region. The project may be at variance to Principle b) due to the clearing of critical (foraging, shelter and dispersal) habitat for Pilbara Leaf-nosed Bat, Bilby, Pilbara Grasswren and Short-tailed Mouse.	
(c) Native vegetation should not be cleared if it includes, or is necessary for the	No flora species listed as Threatened under the BC Act or EPBC Act were recorded in the DE by SLR (2024) or were considered likely to occur or may occur within the DE. The proposed clearing of native vegetation for the Project is therefore unlikely to be at variance with this principle.	Proposed clearing is unlikely to be at variance to this Principle.

Principle	Assessment	Outcome
continued existence of, rare flora.		
(d) Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of, a threatened ecological community.	No TECs listed under the EPBC Act or BC Act were identified within the DE during the SLR (2024) survey. As no vegetation within the DE is representative of any TEC, the proposed clearing is not at variance to this Principle.	Proposed clearing is not at variance to this Principle.
(e) Native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been extensively cleared.	14 vegetation types were identified in the DE during the SLR (2024) survey (AiTe, AoTe, AspTe, AsTe, At, CcAcTe, CfAh, EvAcTe, EvEa, FspAh, FspTe, MaEc, Sh and TsTe). These vegetation types are described in Table 5. Broad scale (1:250,000) pre-European vegetation mapping of the area was completed by Beard (1976) at an association level. Vegetation associations 589, 619, 647 and 93 are present in the DE. As shown in Table 5, there is a high proportion (greater than 97%) of the pre-European extent of these vegetation associations remaining. Examination of similarities of vegetation descriptions shows the vegetation types are representative of the vegetation associations in the region (SLR, 2024). The DE is not within an area that has been extensively cleared given is has more than 97% of pre-European extent remaining. Overall, the flora and vegetation values of the DE are highly represented outside the DE and surrounding vegetation typically has similar or better condition vegetation. The vegetation types identified during the survey are not confined to the DE and are considered well represented at the local and regional scale.	Proposed clearing is not at variance to this Principle.
(f) Native vegetation should not be cleared if it is growing in or in association with a watercourse or wetland.	One vegetation type, MaEc, is likely to represent a GDE associated with some of the major drainages intersecting the DE (SLR, 2024). This vegetation type supports known phreatophytic tree species such *Melaleuca argentea* and *Eucalyptus camaldulensis* subsp. *refulgens*, which are reliant on access to the groundwater table. As shown in Figure 2, avoidance areas for permanent clearing have been placed around the MaEc vegetation type, which is associated with the drainage habitats. There may still be temporary clearing in the form of vehicles driving over this vegetation type, which will result in a negligible impact. Two drainage habitats within the DE (Major Drainage and Minor Drainage) are connected to an important wetland, the Leslie (Port Hedland) Saltfields System approximately 6 km north of the DE. There will be no permanent clearing of these habitat types for the Project, and any temporary clearing will be associated with driving over vegetation for stringing. Therefore, the impact to these drainage habitats are expected to be negligible. The proposed clearing is unlikely to be at variance with this Principle.	Proposed clearing is unlikely to be at variance to this Principle.
(g) Native vegetation should not be cleared if the clearing of the vegetation is likely to	The DE intersects the following land systems (Van Vreeswyk et al., 2004): • Uaroo System (281Ua) - Broad sandy plains, pebbly plains and drainage tracts supporting hard and soft spinifex hummock grasslands with scattered *Acacia* shrubs. Occasionally some erosion and pasture decline is evident on drainage tracts, but generally the system is not susceptible to erosion or significant vegetation degradation.	Proposed clearing is unlikely to be at variance to this Principle.

Principle	Assessment	Outcome
cause appreciable land degradation.	• River System (281Ri) - Narrow, seasonally active flood plains and major river channels supporting moderately close, tall shrublands or woodlands of *Acacias* and fringing communities of eucalypts sometimes with tussock grasses or spinifex. The system is largely stabilised by buffel and spinifex and accelerated erosion is uncommon. However, susceptibility to erosion is high or very high if vegetative cover is removed. • Boolaloo System (281Bo) - Granite hills, domes, tor fields and sandy plains supporting spinifex grasslands with scattered shrubs. The spinifex vegetation is not usually prone to grazing induced degradation but is subject to fairly frequent burning. • Macroy System (281Mc) - Stony plains and occasional tor fields based on granite supporting hard and soft spinifex shrubby grasslands. The system has low or very low erosion hazard. • Capricorn System (281Cp) - Rugged sandstone hills, ridges, stony footslopes and interfluves supporting low *Acacia* shrublands or hard spinifex grasslands with scattered shrubs. The stoniness of this land system confers resistance to erosion. • Paradise System (281Pd) - Alluvial plains supporting soft spinifex grasslands and tussock grasslands. The system is prone to periodic flooding. Much of the vegetation on the system is favoured by grazing animals and is prone to degradation if overgrazed. Loamy plains and alluvial plains are highly susceptible to water and wind erosion if the vegetative cover is depleted. • Boolgeeda System (280Bg) - Stony lower slopes and plains below hill systems supporting hard and soft spinifex grasslands or mulga shrublands. Vegetation is generally not prone to degradation and the system is not susceptible to erosion. The majority of the DE is covered by the Uaroo System which is generally not susceptible to erosion. The River and Paradise land systems are susceptible to erosion and land degradation if vegetation cover is depleted. The River land system aligns with Drainage habitat type which will be avoided. Some temporary clearing may be required, in the form of vehicles driving over these habitat types during stringing. The remaining land systems have low erosion and degradation hazards. The soil landscape land quality mapping (spatial dataset DPIRD-017, GoWA 2024) indicates that the DE is within the De Grey-Roebourne Lowlands Zone, which is described as 'alluvial plains and sandplains on alluvial and marine deposits over the northern Pilbara Craton with Red deep sandy duplexes, Red loamy earths, Red/brown non-cracking clays, Cracking clays, Red sandy earths and Red deep loamy duplexes'. The northeastern tip of the DE overlaps the Nullagine Hills Zone, which is described as 'hills and ranges (with some stony plains) on volcanic and sedimentary rocks of the Pilbara Craton (including the Hamersley Basin) with Stony soils and Red shallow loams and sands'. A review of ASS risk mapping (spatial dataset DWER-048; GoWA, 2024) indicates that the northern portion of the DE overlaps an area of moderate to low risk of ASS occurring within 3 m of natural soil surface but high to moderate risk of ASS beyond 3 m of natural soil surface. If digging below 3m is required, an ASS investigation will be undertaken and appropriate management will be applied. The DE does not intersect any contaminated sites (spatial dataset DWER-059; GoWA, 2024). No known contaminated sites are recorded within 20 km of the DE. The clearing proposed in the DE will be 100.8 ha in total, 40.2 ha of which will be temporary clearing that will be revegetated, and 60.6 ha of which will be permanent clearing. Any dust produced during construction will be managed through the implementation of a CEMP. Given the linear nature of the Project, it is not likely that the clearing will cause appreciable land degradation. The DE contains land systems that are generally not susceptible to erosion. It is expected that hydrological regimes will be maintained through design and that standard management practices will be implemented to prevent erosion / sedimentation. Rehabilitation post construction will	

Principle	Assessment	Outcome
	be undertaken to stabilise areas that are temporarily cleared, especially if there are slopes and exposed soil that increase the risk of erosion. The Project will incorporate standard construction management measures to reduce the risk of soil erosion and sedimentation as a result of ground disturbance and clearing (Attachment B). The clearing is not expected to cause appreciable land degradation and based on the above, the proposed clearing of native vegetation for the Project is not considered to be at variance with this principle.	
(h) 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.	No DBCA managed conservation areas were identified within the DE or within 20 km of the DE. The proposed clearing is not at variance to this principle.	Proposed clearing is not at variance to this Principle.
(i) Native vegetation should not be cleared if the clearing of the vegetation is likely to cause deterioration in the quality of surface or underground water.	The DE occurs within the Pilbara Groundwater Area. The De Grey River Water Reserve (Priority 1 PDWSA) is located approximately 2 km east of the DE (GoWA, 2024). One vegetation type, MaEc, is likely to represent a GDE associated with some of the major drainages intersecting the DE (SLR, 2024). This vegetation type supports known *phreatophytic* tree species such *Melaleuca* argentea and *Eucalyptus camaldulensis* subsp. *refulgens*, which are reliant on access to the groundwater table. As shown in Figure 2, avoidance areas for permanent clearing have been placed around the MaEc vegetation type, which is associated with the drainage habitats. There may still be temporary clearing in the form of vehicles driving over this vegetation type, which will result in a negligible impact. There will be no permanent clearing of Major Drainage and Minor Drainage habitat types. Any clearing will be temporary and associated with driving over the habitat type and is therefore considered to be a negligible impact. It is not expected that the Project will require dewatering or groundwater abstraction within the DE. The groundwater bores within the DE are drilled to depths ranging from 7.9 m to 72 m. Potential impacts to surface water quality from erosion / sedimentation / hydrocarbons will be managed by the CEMP. Clearing within the DE is unlikely to cause deterioration in the quality of surface or underground water, therefore the proposal is unlikely to be at variance to this principle.	Proposed clearing is unlikely to be at variance to this Principle.
(j) Native vegetation should not be cleared if the clearing of the vegetation is likely to cause, or exacerbate, the intensity of flooding.	The nearest Bureau of Meteorology (BoM) weather station with comprehensive data collection and recent historic climate data is at Port Hedland Airport (no. 004032), approximately 8 km north of the DE. Mean annual rainfall is 313.0 mm with February recording the highest monthly mean (88.3 mm) (BoM, 2024). One vegetation type, MaEc, is likely to represent a GDE associated with some of the major drainages intersecting the DE. This vegetation type supports known *phreatophytic* tree species such *Melaleuca argentea* and *Eucalyptus camaldulensis* subsp. *refulgens*, which are reliant on access to the groundwater table. As shown in Figure 2, avoidance areas for permanent clearing have been placed around the MaEc vegetation type, which is associated with the drainage habitats. There may still be temporary clearing in the form of vehicles driving over this vegetation type, which will result in a negligible impact. There will be no permanent clearing of Major Drainage and Minor Drainage habitat types. Any clearing will be temporary and associated with driving over the habitat type and is therefore considered to be a negligible impact.	Proposed clearing is unlikely to be at variance to this Principle.

Principle	Assessment	Outcome
	The scale of the DE and clearing required is not likely to have an impact on the flood regimes or increase intensity of flooding in the region. The DE is located on a variety of different landforms including broad sandy plains, flood plains, river channels, granite hills, stony plains, sandstone hills, alluvial plains and stony lower slopes and plains. It is expected that the hydrological regimes of these landforms will be maintained through design and therefore unlikely to incur flooding. Additionally, given the abundance of vegetation within the surrounding region, with over 97% pre-European vegetation remaining, the proposed clearing is not expected to increase the risk of flooding. Standard management measures for construction will be in place to mitigate against / manage erosion and associated environmental aspects. Therefore, the proposed clearing of native vegetation for the Project is not considered to be at variance with this principle.	

Figure 2 | Environmental Constraints

N

0 2.5 5 10 Kilometers

Scale: 1:250,000

HORIZON POWER

9 Other matters

9.1 Land Planning

9.1.1 Approvals required under the *Planning and Development Act 2005*

No approvals under the *Planning and Development Act 2005* are required for this project.

9.2 Other approvals

In considering a clearing matter under section 51O of the *Environmental Protection Act 1986* (EP Act), the DWER CEO shall have regard to any planning instrument and other relevant matters when making decisions as to clearing permits. 'Other matters' are not defined in the EP Act, and consequently are any matters the CEO considers relevant. Other matters are generally environmental issues not directly within the scope of the clearing principles, but within the object and principles of the Act. Other approvals that may apply to this Project are detailed in Table 7.

Table 7 Other approvals

Other approvals	Assessment
Referral to Environmental Protection Authority	The impact of this Proposal are only associated with vegetation clearing, and can therefore be assessed under Part V of the EP Act via a Native Vegetation Clearing Permit.
Referral to Department of Climate Change, Energy, the Environment and Water (DCCEEW)	*Threatened flora, fauna and ecological communities* No TECs were recorded in the DE. The likelihood of occurrence assessment in Appendix C shows the following species are known to occur, likely to occur or may occur within the DE: • Northern Quoll (Endangered) • Pilbara Leaf-nosed Bat (Vulnerable) • Bilby (Vulnerable) • Grey Falcon (Vulnerable) • Common Greenshank (Endangered, Migratory) • Ghost Bat (Vulnerable) • Pilbara Olive Python (Vulnerable) • Curlew Sandpiper (Critically Endangered, Migratory) • Great Knot (Vulnerable, Migratory) • Red Knot (Vulnerable, Migratory) • Sharp-tailed Sandpiper (Vulnerable, Migratory) • Black-tailed Godwit (Endangered, Migratory) As described in Table 6 (Principle b) the Project will require clearing of up to 100.8 ha of potential critical habitat for the Pilbara Leaf-nosed Bat and Bilby, and clearing of potential foraging and dispersal habitat for the Northern Quoll. Given the abundance of habitat within the region and the linear and sporadic nature of the proposed clearing, impacts are not considered significant. An assessment of Matters of National Environmental Significance identified referral to DCCEEW was not required. *Migratory fauna* The likelihood of occurrence assessment in Appendix C shows the following species are known to occur, likely to occur or may occur within the DE: • Oriental Pratincole (Migratory) • Common Greenshank (Endangered, Migratory) • Barn Swallow (Migratory) • Little Curlew (Migratory) • Oriental Plover (Migratory) • Osprey (Migratory) • Glossy Ibis (Migratory)

Other approvals	Assessment
	• Fork-tailed Swift (Migratory) • Curlew Sandpiper (Critically Endangered, Migratory) • Great Knot (Vulnerable, Migratory) • Red Knot (Vulnerable, Migratory) • Grey-tailed Tattler (Migratory) • White-winged Black Tern (Migratory) • Gull-billed Tern (Migratory) • Caspian Tern (Migratory) • Common Tern (Migratory) • Common Sandpiper (Migratory) • Sharp-tailed Sandpiper (Vulnerable, Migratory) • Sanderling (Migratory) • Broad-billed Sandpiper (Migratory) • Pectoral Sandpiper (Migratory) • Ruff (Migratory) • Red-necked Stint (Migratory) • Long-toed Stint (Migratory) • Pin-tailed Snipe (Migratory) • Bar-tailed Godwit (Migratory) • Black-tailed Godwit (Endangered, Migratory) • Whimbrel (Migratory) • Red-necked Phalarope (Migratory) • Wood Sandpiper (Migratory) • Marsh Sandpiper (Migratory) As described in Table 6 (Principle b), no significant impacts are expected to these Migratory fauna species. *National heritage* The DE does not overlap any National Heritage Areas. Aboriginal Heritage surveys have been undertaken for the Project to assess Aboriginal Heritage values within the DE in consultation with Traditional Owners. No impacts to national heritage values are expected from the proposed works. *Wetlands of international importance* The DE does not overlap any wetlands of international importance.
Works Approval or Licence under EP Act	No works approvals or licences are required for this project.
Groundwater or surface water licence under the *Rights in Water and Irrigation Act 1914*	Horizon Power is permitted to access water under Section 42 and 49 of *the Energy Operator (Powers) Act 1979*. Any licences required for construction water will be acquired by the construction contractor.
Notice of Intent to Clear system under the *Soil and Land Conservation Act 1945*	Not Applicable.
State and municipal heritage	The DE overlaps the Railway Line from Port Hedland to Newman which is on the Municipal Inventory. Aboriginal Heritage surveys are being undertaken for the Project to assess Aboriginal Heritage values within the DE in consultation with Traditional Owners.

Other approvals	Assessment
Native title	The DE intersects three separate native title determinations; • Kariyarra - WCD2018/015 – RNTBC Kariyarra Aboriginal Corporation • Ngarla Overlap Proceeding - WCD2013/001 – RNTBC Wanparta Aboriginal Corporation • Ngarla and Ngarla # 2 (Area A) - WCD2007/003 - RNTBC Wanparta Aboriginal Corporation
Aboriginal Sites of Significance under the *Aboriginal Heritage Act 1972*	The DE overlaps two Registered Aboriginal Cultural Heritage places: • Mikurrunya Hills (ACH ID: 9904): Creation / Dreaming Narrative • Kumpaja Tree (ACH ID: 729): Creation / Dreaming Narrative. The DE overlaps three Lodged Aboriginal Cultural Heritage places: • 12 Mile site (ACH ID 27412): Burial; Ritual / Ceremonial • Strelley Engravings 001, this name has been selected because the traditional name must not be used (ACH ID 37344) • PDO-43-22 (ACH ID 39654): Artefacts / scatter. Both Kariyarra and Wanparta have carried out Aboriginal Heritage surveys for the DE. Based on the findings of these surveys, heritage protection plans will be developed, in consultation with the knowledge holders. Horizon Power has an Aboriginal Cultural Heritage Management Policy, that details our commitment to *avoid impacting on Aboriginal Cultural Heritage whenever and wherever possible*. As appropriate, management measures will be implemented during activities, such as the engagement of cultural heritage monitors during ground disturbing works.

10 References

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Public Drinking Water Source Areas (DWER-033)

RIWI Act, Rivers (DWER-036)

RIWI Act Surface Water and Irrigation District (DWER-037)

DBCA Legislated Lands and Waters (DBCA-011)

Aboriginal Heritage Places (DPLH-001)

Heritage Council WA - State Register (DPLH-006)

Heritage Council WA - Local Heritage Survey (DPLH-008)

Acid Sulfate Soil Risk Map 100K (DWER-048)

Soil landscape land quality - Zones (DPIRD-017)

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Appendix A: Atlas Ridley Magnetite Project Connection Flora and Fauna Survey Technical Report

Atlas Ridley Magnetite Project Connection

Flora and Fauna Survey Technical Report

Horizon Power

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2.0	29 July 2024	N/A	L. Geidans	S. Walker

Basis of Report

This report has been prepared by SLR Consulting Australia (SLR) with all reasonable skill, care and diligence, and taking account of the timescale and resources allocated to it by agreement with Horizon Power (the Client). Information reported herein is based on the interpretation of data collected, which has been accepted in good faith as being accurate and valid.

This report is for the exclusive use of the Client. No warranties or guarantees are expressed or should be inferred by any third parties. This report may not be relied upon by other parties without written consent from SLR.

SLR disclaims any responsibility to the Client and others in respect of any matters outside the agreed scope of the work.

Executive Summary

Horizon Power commissioned SLR Consulting Australia Pty Ltd to undertake a detailed flora and vegetation, targeted significant flora, basic terrestrial vertebrate fauna, and targeted significant fauna survey for the proposed Atlas Ridley Magnetite Project Connection. The Survey Area covers approximately 10,363 hectares and runs in an approximate east-west alignment from just south of South Hedland to approximately 50 km east of Port Hedland airport in the Pilbara bioregion of Western Australia.

The objective of the survey was to identify key flora, vegetation, and fauna values or other environmental features within the Survey Area as part of the environmental impact assessment process. This report presents the findings of the survey.

Flora and Vegetation

The flora desktop assessment conducted prior to the survey identified 33 conservation significant species occurring within 50 km of the Survey Area. A pre-survey likelihood of occurrence assessment determined 11 species as having a high likelihood of occurrence, none as having a medium likelihood of occurrence, and the remaining 22 species as having a low likelihood of occurrence.

The detailed flora and vegetation survey recorded the floristic composition and vegetation types from 26 quadrats, 28 relevés, 250 mapping notes, and opportunistic observations. A total of 172 taxa were recorded from 94 genera across 40 families.

No Threatened flora taxa were recorded within the Survey Area. Two Priority flora taxa, both of which had a high pre-survey likelihood of occurrence, were recorded within the Survey Area. *Tephrosia rosea* subsp. Port Hedland (A.S. George 1114) (P1) was recorded at one location within a roadside drain, and *Gymnanthera cunninghamii* (P3) was recorded in two locations within a major drainage.

Nineteen specimens could not be identified to species level due to the generally sterile and dry conditions at the time of survey. Eight introduced (weed) taxa were recorded during the survey, of which one is a Declared Pest (**Calotropis procera*). Weed abundance was considered standard for the region, with common Pilbara weeds such as **Cenchrus ciliaris*, **Vachellia farnesiana*, **Malvastrum americanum* and **Aerva javanica* regularly observed.

Fourteen vegetation types were described and mapped across five broad landforms (ironstone hilltops and ridges, outcroppings, plains, low lying floodplains/flats/minor drainages and major drainages), none of which were considered analogous to Threatened or Priority Ecological Communities. Vegetation condition within the Survey Area ranged from Degraded to Very Good with the majority considered to be in Very Good condition. Disturbances were widespread in the form of pastoralism/cattle, weeds, litter and historical clearing for infrastructure.

Vertebrate Fauna

The basic and targeted terrestrial vertebrate fauna survey recorded fauna using a variety of detection methods including opportunistic observations, ground searching, and deploying Autonomous Recording Units (ARUs). Fauna habitat mapping was based on a combination of field observations, vegetation mapping, fauna habitat assessment data, and aerial imagery. Nine fauna habitats were mapped within the Survey Area, of which the Low *Acacia stellaticeps* over Triodia, Mixed Acacia Shrubs and Triodia Plains, Outcrops and Breakaways, and Stony Hills habitats represent the most value to fauna assemblages overall.

A total of 63 fauna taxa from 34 families were recorded, comprising 33 birds, 14 mammals, and 16 reptiles. Two significant taxa were recorded during the fauna survey, Western Pebble-mound Mouse (*Pseudomys chapmani*) – P4 (DBCA, and Pilbara Leaf-nosed Bat (*Rhinonicteris aurantia*) (Pilbara form) – VU (BC Act & EPBC Act).

A further seven significant fauna taxa have been recorded within the Survey Area during previous surveys, and nine significant fauna taxa were assessed as having a high likelihood, 24 significant fauna taxa were assessed as having a medium likelihood, and 33 significant fauna taxa were assessed as having have a low likelihood of occurring within the Survey Area.

Three introduced taxa were recorded during the survey, European Cattle (**Bos primigenius taurus*), Cat (**Felis catus*), and Domestic Pigeon/Rock Dove (**Columba livia*).

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Acronyms and Abbreviations

°C	Degree Celsius
ALA	Atlas of Living Australia
BAM Act	*Biosecurity and Agriculture Management Act 2007*
BC Act	*Biodiversity Conservation Act 2016*
BoM	Bureau of Meteorology
CISS	Centre for Invasive Species Solutions
CR	Critically Endangered
DAWE	Department of Agriculture Water and Environment
DBCA	Department of Biodiversity, Conservation and Attractions
DCCEEW	Department of Climate Change, Energy, the Environment and Water
Desktop Study Area	The area that was studied during the desktop assessment encompassing the Survey Area and surrounds
DMIRS	Department of Mines, Industry Regulation and Safety
DoE	Department of the Environment
DP	Declared Pest
DPIRD	Department of Primary Industries and Regional Development
DPLH	Department of Planning, Lands and Heritage
DSEWPaC	Department of Sustainability, Environment, Water, Population and Communities
DWER	Department of Water and Environmental Regulation
EIA	Environmental Impact Assessment
EN	Endangered
EP Act	*Environmental Protection Act 1986*
EPA	Environmental Protection Authority
EPBC Act	*Environment Protection Biodiversity and Conservation Act 1999*
ESA	Environmentally Sensitive Area
GIS	Geographic Information System
GPS	Global Positioning System
GDE	Groundwater Dependent Ecosystem
ha	Hectare
IBRA	Interim Biogeographic Regionalisation for Australia
IBSA	Index of Biodiversity Surveys for Assessments
ILUA	Indigenous land Use Agreement
km	Kilometres
Lat	Latitude
Long	Longitude
m	Metres

mm	Millimetres
mths	Months
MNES	Matters of National Environmental Significance
NVCP	Native Vegetation Clearing Permit
NVIS	National Vegetation Information System
P	Priority
PEC	Priority Ecological Community
PMST	Protected Matters Search Tool
SLR	SLR Consulting Australia
Survey Area	The area that was surveyed
T	Threatened
TEC	Threatened Ecological Community
TPFL	Threatened and Priority Flora Database
TPFRF	Threatened and Priority Flora Report Form
VU	Vulnerable
WA	Western Australia
WAH	Western Australian Herbarium
WAM	Western Australian Museum
WoNS	Weeds of National Significance

1.0 Introduction

1.1 The Project

Horizon Power commissioned SLR Consulting Australia Pty Ltd (SLR) to undertake a detailed flora and vegetation, targeted flora, basic terrestrial vertebrate fauna, and targeted significant fauna survey for the proposed Atlas Ridley Magnetite Project Connection. The survey was undertaken within the Pilbara bioregion of Western Australia, covering 10,363 hectares from South Hedland in the west to Pardoo Iron Ore Mine in the east (the Survey Area) (**Map 1**). All maps are provided in Appendix A.

1.2 Objectives and Scope

The specific objectives of the biological assessments were to:

- Carry out an initial desktop assessment to determine environmental values and significant flora, vegetation, fauna or other environmental features (such as riparian areas, wetlands) relating to the project area.
- Carry out an (in season) detailed flora and vegetation survey, basic fauna and targeted fauna survey focusing on suitable habitat likely to support conservation significant fauna.
- Prepare a technical combined flora and fauna survey report.
- Provide all spatial/mapping data collected during the survey in IBSA format.

2.0 Background

2.1 Statutory and Regulatory Framework

Western Australian flora, vegetation, and fauna is governed by the following legislative measures:

- *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC Act). (Commonwealth of Australia, 1999).
- *Biodiversity Conservation Act 2016* (WA) (BC Act) (Biodiversity Conservation Act 2016, 2016).
- *Environmental Protection Act 1986* (WA) (EP Act) (Environmental Protection Act 1986, 1986).
- *Biosecurity and Agriculture Management Act 2007* (WA) (BAM Act) (Biosecurity and Agriculture Management Act 2007, 2007).

In addition to these legislative measures, the following non-legislative lists are considered on a case-by-case basis:

- WA Department of Biodiversity Conservation and Attractions (DBCA) Priority lists for fauna, flora, and ecological communities.
- Weeds of National Significance (WoNS).
- Recognition of locally significant populations by DBCA.

The EIA process is supported by guidance documents published by the Environmental Protection Authority (EPA), DBCA and the Department of Climate Change, Energy, the Environment and Water (DCCEEW).

Western Australia

- *Environmental Factor Guideline - Flora and Vegetation* (EPA, 2016a).
- *Environmental Factor Guideline – Terrestrial Fauna* (EPA, 2016b).
- *Guidelines for surveys to detect the presence of bilbies and assess the importance of habitat in Western Australia* (DBCA, 2017).
- *Interim Guideline for Preliminary Surveys of Night Parrot (Pezoporus occidentalis) in Western Australia* (DPAW, 2017).
- *Technical Guidance – Flora and vegetation surveys for environmental impact assessment* (EPA, 2016c).
- *Technical Guidance – Terrestrial vertebrate fauna surveys for environmental impact assessment* (Environmental Protection Authority, 2020).

Commonwealth

- *EPBC Act Referral guideline for the endangered northern quoll Dasyurus hallucatus* (DoE, 2016).
- *Matters of National Environmental Significance – Significant Impact Guidelines 1.1* (DoE, 2013).
- *Survey guidelines for Australia's threatened bats* (DEWHA, 2010a).
- *Survey guidelines for Australia's threatened birds* (DEWHA, 2010b).

- *Survey guidelines for Australia's threatened frogs* (DEWHA, 2010c).
- *Survey guidelines for Australia's threatened mammals* (DSEWPaC, 2011a).
- *Survey guidelines for Australia's threatened reptiles* (DSEWPaC, 2011b).

2.2 Existing Environment

2.2.1 Climate

The closest long-term Bureau of Meteorology weather station with a complete dataset is the Port Hedland Airport Weather Station (Station 004032), located approximately 89 km west of the Survey Area.

The long-term mean minimum temperature for Port Hedland Airport ranges from 12.5˚C (July) to 25.7˚C (January) (1948 to 2024) and the long-term mean maximum temperature ranges from 27.4˚C (July) to 36.8˚C (December and March) (1948 to 2022) (**Figure 1**) (Bureau of Meteorology, 2024).

The Port Hedland Airport weather station recorded 100.6 mm of rainfall in the 12 months prior to the survey (March 2023 to February 2024), which is 217.9 mm below the long-term average of 318.5 mm (Bureau of Meteorology, 2024). In the three months prior to the survey (December 2023 to February 2024), just 24 mm of rainfall was recorded, which is 146.6 mm below the long-term average of 170.6 mm for the same time period (Bureau of Meteorology, 2024).

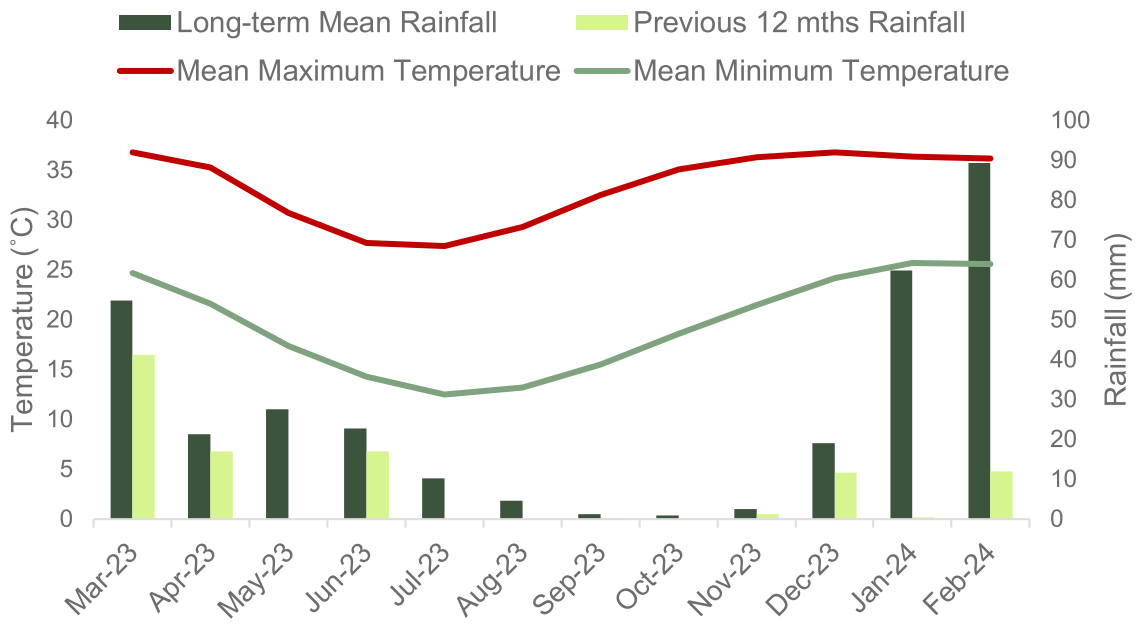


Figure 1: Climate graph of the Port Hedland Airport Weather Station

2.2.2 Interim Biogeographic Regionalisation of Australia

The Interim Biogeographic Regionalisation of Australia (IBRA) divides Australia into 89 bioregions based on major biological, geographical, and geological attributes. These bioregions are subdivided into 419 subregions as part of a refinement of the IBRA framework (DCCEEW, 2023). The Survey Area occurs within two subregions of the Pilbara bioregion: the Roebourne (PIL04) and the Chichester (PIL01) subregions (**Map 2**).

The Roebourne (PIL04) subregion is represented by quaternary alluvial and older colluvial coastal and sub-coastal plains with a grass savannah of mixed bunch and hummock grasses, and dwarf shrub steppe of *Acacia stellaticeps* or *A. pyrifolia* and *A. inaequilatera* (Kendrick & Stanley, 2001). Uplands are dominated by *Triodia* hummock grasslands. Ephemeral drainage lines support *Eucalyptus victrix* or *Corymbia hamersleyana* woodlands (Kendrick & Stanley, 2001).

The Chichester (PIL01) subregion comprises the northern section of the Pilbara Craton and is characterised by undulating Archaean granite and basalt plains include significant areas of basaltic ranges. The subregion is represented by plains supporting a shrub steppe characterised by *Acacia inaequilatera* over *Triodia wiseana* hummock grasslands, and ranges supporting *Eucalyptus leucophloia* tree steppes. The climate is Semi-desert-tropical and receives 300 mm of rainfall annually, with drainage occurring to the north via numerous rivers (e.g. De Grey, Oakover, Nullagine, Shaw, Yule, Sherlock) (Kendrick & McKenzie, 2001).

2.2.3 Soil Landscapes and Land Systems

Soil landscapes and land system mapping of Western Australia describes broad soil and landscape characteristics from regional to local scales, ranging from 1:20,000 to 1:250,000 (DPIRD, 2018). The Survey Area occurs within eight land systems (**Table 1, Map 3**).

Table 1: Land Systems within the Survey Area

Land System		Description (DPIRD, 2018)
Name	Code	
Mallina System	281Ma	Sandy surfaced alluvial plains supporting soft spinifex grasslands and minor hard spinifex and tussock grasslands.
Uaroo System	281Ua	Broad sandy plains, pebbly plains and drainage tracts supporting hard and soft spinifex hummock grasslands with scattered acacia shrubs.
River System	281Ri	Narrow, seasonally active flood plains and major river channels supporting moderately close, tall shrublands or woodlands of acacias and fringing communities of eucalypts sometimes with tussock grasses or spinifex.
Boolaloo System	281Bo	Granite hills, domes, tor fields and sandy plains supporting spinifex grasslands with scattered shrubs.
Macroy System	281Mc	Stony plains and occasional tor fields based on granite supporting hard and soft spinifex shrubby grasslands.
Capricorn System	281Cp	Rugged sandstone hills, ridges, stony footslopes and interfluves supporting low acacia shrublands or hard spinifex grasslands with scattered shrubs.
Paradise System	281Pd	Alluvial plains supporting soft spinifex grasslands and tussock grasslands.
Boolgeeda System	280Bg	Stony lower slopes and plains below hill systems supporting hard and soft spinifex grasslands or mulga shrublands.

2.2.4 Hydrography

Hydrographic features intersecting, and in the vicinity of, the Survey Area are shown in **Map 4** (DWER, 2018). Three major river systems (Turner River, King Edward and Devil Creek) with associated drainage channels intersect the Survey Area, flowing in a northerly direction before discharging into the Indian Ocean east of Port Hedland.

2.2.5 Broad Vegetation Types

Mapping of pre-European vegetation in Western Australia was completed on a broad scale (1:1,000,000) by Beard (1976). These vegetation types were later refined by Shepherd *et al.* (Shepherd, Beeston, and Hopkins, 2002) resulting in 819 vegetation types.

Four broad vegetation system associations are mapped over the Survey Area (**Map 5**). Representation of the system associations at a local, regional, and state level is shown in **Table 2**.

- Abydos Plain (Abydos Plain 589): Short bunch-grass savanna / Grass-steppe
- Abydos Plain (Abydos Plain 93): Hummock grasslands, shrub steppe; kanji over soft spinifex
- Abydos Plain (Abydos Plain 619): Wheatbelt; York gum, salmon gum etc. *Eucalyptus loxophleba*, *E. salmonophloia*. Goldfields; gimlet, redwood etc. *E. salubris*, *E. oleosa*. Riverine; rivergum *E. camaldulensis*.
- Abydos Plain (Abydos Plain 647): Shrub-steppe - hummock grassland with scattered shrubs or mallee *Triodia* spp. *Acacia* spp., *Grevillea* spp. *Eucalyptus* spp.

Table 2: Broad Vegetation Associations within the Survey Area and their Representation at the State, Regional and Local Levels (Government of Western Australia, 2019)

Vegetation Association	Extent			
	Pre-European (ha)	Current (ha)	Remaining (%)	Managed in DBCA Lands (%)
Representation across Western Australia				
Abydos Plain 589	807,698.58	802,713.40	99.38	1.91
Abydos Plain 619	119,373.78	118,205.01	99.02	0.2
Abydos Plain 647	195,860.89	191,711.41	97.88	0
Abydos Plain 93	3,044,309.52	3,040,640.98	99.88	1.96
Representation across the Pilbara Bioregion				
Abydos Plain 589	728,768.20	724,695.82	99.44	2.11
Abydos Plain 619	118,920.31	118,116.78	99.32	0.2
Abydos Plain 647	195,859.95	191,710.92	97.88	0
Abydos Plain 93	3,042,114.27	3,038,471.67	99.88	1.96
Representation across the Roebourne Subregion				
Abydos Plain 589	675,391.80	671,327.48	99.40	2.14
Abydos Plain 619	33,377.16	32,595.83	97.66	n/a
Abydos Plain 647	188,901.32	184,774.70	97.82	n/a
Abydos Plain 93	46,360.53	46,334.43	99.94	n/a
Representation across the Chichester Subregion				
Abydos Plain 589	53,376.40	53,368.34	99.98	1.78
Abydos Plain 619	85,543.15	85,520.95	99.97	0.28
Abydos Plain 647	6,958.63	6,936.22	99.68	n/a

Vegetation Association	Extent			
	Pre-European (ha)	Current (ha)	Remaining (%)	Managed in DBCA Lands (%)
Abydos Plain 93	2,940,348.04	2,936,731.54	99.88	2.03
Representation across the Town of Port Hedland				
Abydos Plain 589	338,269.05	335,921.21	99.31	0
Abydos Plain 619	63,650.59	62,598.14	98.35	0
Abydos Plain 647	180,908.49	176,759.02	97.71	n/a
Abydos Plain 93	1,015,339.22	1,014,599.99	99.93	n/a

*as a portion of the current extent

2.2.6 Environmentally Sensitive and Conservation Areas

Environmentally Sensitive Areas (ESAs) are declared by the Department of Water and Environmental Regulation (DWER) to prevent the degradation of important environmental values such as Threatened flora, Threatened Ecological Communities (TECs) or significant wetlands.

The Survey Area is not identified within a conservation area (**Map 6**). The closest mapped ESAs to the Survey Area is the De Grey River located approximately 9.5 kms to the east of the north-eastern end of the Survey Area and the Leslie Saltfields System located approximately 8 kms to the north at its closest point (**Map 6**) (DWER, 2023).

2.2.7 Land Use

Pastoral stations and mining tenements cover almost the entirety of the Survey Area, excluding the far western end. Pippingarra pastoral station occupies majority of the western half of the Survey Area, Strelley pastoral station occupies most of the eastern half, while the far eastern end is occupied by De Grey station (DMIRS, 2024; DPLH, 2023).

3.0 Methods

The surveys documented in this report were undertaken in accordance with relevant EPA and DAWE guidelines (see **Section 2.1**).

3.1 Desktop Assessment

3.1.1 Literature Review

Background information on the Survey Area and surrounds (the Desktop Study Area) was compiled prior to the field survey. The literature review considered a selection of relevant reports detailing assessments undertaken in the region that were either publicly available from sources such as the Index of Biodiversity Surveys for Assessments (IBSA) website, the EPA Consultation Hub, or internet searches, or provided by the client. These reports are listed below and summarised in **Appendix B**.

- De Grey South Borefield Biological Surveys (SLR Consulting, 2023), 10 km east of the Survey Area.
- Detailed Flora and Vegetation Assessment, Ridley Magnetite Project (Focused Vision, 2023), encompassing current Survey Area.
- Flora and Vegetation Assessment, Port Hedland Regional, directly west of the survey area (ENV Australia Pty Ltd, 2011)

- Flora and Vegetation Assessment, Corunna Downs Intersection Works (Woodman Environmental, 2017), approximately 90 km southeast of the survey area.
- Corunna Downs Project, Level 2 Flora, and Vegetation Assessment (Woodman Environmental, 2016), approximately 90 km southeast of the survey area.
- Wodgina Gas Pipeline, Detailed Flora, and Vegetation Survey (360 Environmental Pty Ltd, 2018a), approximately 30 km southeast of the survey area.
- Roy Hill Port Facility Power Line Port Hedland, Ecological Assessment (GHD, 2016), approximately 15 km north of the survey area.
- Flora and Fauna survey Port Hedland International Airport – Highway Precinct 2 (Emerge Associates, 2019), approximately 10 km north of the survey area.
- Flora and Vegetation Reconnaissance Survey of Spoilbank Marina Project Area(Strategen JBS&G, 2020), approximately 15 km north of the survey area.
- Ridley Detailed Terrestrial Vertebrate Fauna Survey (Biota, 2024), overlapping with the eastern section of the survey area.
- Ridley Services Corridors Basic and Targeted Fauna Survey (Biota, 2023), overlapping the survey area.
- Detailed terrestrial fauna and targeted Bilby survey for the Port Hedland Solar Farm Project (Phoenix Environmental, 2022), overlapping the western section of the survey area.
- Wodgina Gas Pipeline targeted Fauna Survey (360 Environmental Pty Ltd, 2018b), 20 km southwest of the Survey Area.
- Wodgina Project: Level 1 Fauna Survey, Targeted Conservation Significant Fauna Survey and Desktop Assessment (Stantec Australia Pty Ltd, 2018), 80 km south of the Survey Area.
- Pardoo Stage 3 Irrigation Project and 80 Mile Beach Ramsar Site Fauna Assessment (Bamford Consulting Ecologists, 2017b), 100 km east of the Survey Area.
- Assessment of the Bilby *Macrotis lagotis* Pardoo Station; Stage 2 areas (Bamford Consulting Ecologists, 2017a), 100 km east of the Survey Area.
- Assessment of the Bilby *Macrotis lagotis* Pardoo Station; Stage 2 and 3 project areas (Bamford Consulting Ecologists, 2016), 100 km east of the Survey Area.
- Supplementary Flora and Vegetation Survey and Terrestrial Fauna Survey for the Balla Balla Infrastructure Group Ltd (Phoenix Environmental, 2018), 100 km west of the Survey Area.
- Terrestrial Fauna Surveys for the Balla Balla Railway Project (Phoenix Environmental, 2014), 100 km west of the Survey Area.

3.1.2 Database Searches

Database searches were undertaken to compile a list of flora and fauna known to occur in the Desktop Study Area and identify significant flora, fauna, and ecological communities with potential to occur within the Survey Area (Table 3).

Table 3: Database Search details

Database name	Date received	Search target	Buffer around the Survey Area
Threatened and Priority Ecological Communities database search (DBCA, 2024c)	26 February 2024	TECs and PECs	50 km
Threatened and Priority Flora (TPFL) database search (DBCA, 2024e)	15 January 2024	Threatened and Priority flora	50 km
Western Australian Herbarium Flora database search (DBCA, 2024f)	15 January 2024	Threatened and Priority flora	50 km
Threatened and Priority Fauna database search (DBCA, 2024d)	15 January 2024	Threatened and Priority fauna	50 km
Protected Matters Search Tool (PMST) (DCCEEW, 2024a)	16 January 2024	Threatened flora, fauna, and ecological communities	50 km
NatureMap (DBCA, 2024b)	22 January 2024	Flora and fauna	50 km

3.1.3 Likelihood of Occurrence

Significant flora and fauna taxa identified during the desktop assessment were assessed to determine the likelihood of their occurrence within the Survey Area before and after the field survey. The assessment used the likelihood of occurrence criteria presented in Table 4.

Taxa listed as Marine only under the EPBC Act were not considered to be significant taxa because the Marine listing does not constitute MNES under the EPBC Act. Additionally, erroneous records (i.e. records that occur well outside a taxon's known distribution) were excluded from consideration. Only taxa that have been recorded within the Survey Area or were assessed as having a high or medium likelihood of occurrence are discussed in detail.

Table 4: Likelihood of occurrence criteria

Rank	Criteria
Recorded	The taxon was recorded within the Survey Area during the current survey.
Previously Recorded	The taxon has been previously recorded within the Survey Area according to database search or literature review results.
High (Likely to occur)	There are existing records of the taxon near the Survey Area (within 20 km), suitable habitat is present within the Survey Area, and, for fauna, the taxon has been recorded within the Desktop Study Area in the last 15 years.
Medium (May occur)	There are existing records of the taxon within the Desktop Study Area, however, the taxon does meet the criteria for high likelihood, or suitable habitat within the Survey Area is marginal or limited in extent, or, for fauna, the taxon has not been recorded within the Desktop Study Area in the last 15 years.
Low (Unlikely to occur)	Suitable habitat is not present within the Survey Area, or the taxon is very infrequently recorded in the locality despite reasonable previous search effort, or the taxon is believed to be extinct or locally extinct.

3.2 Field Survey

3.2.1 Survey Timing

The biological assessments were undertaken during one trip from 1st to 10th March 2024 **Table 5**.

Table 5: Survey Timing and Personne

Trip	Scope	Date	Personnel	Person Field Days
1. Flora and Fauna	• Establishment of flora sites • Preliminary vegetation and condition mapping • Inventory of vascular flora • Targeted flora searches during traverses between flora sites • Targeted fauna survey • Basic fauna survey	01/03/2024-10/03/2024	Lukas Geidans Grant Buller Jack Hardie Lewis Berry	40

3.2.2 Field Personnel and Licences

The flora and vegetation surveys were undertaken by Senior Botanist Grant Buller and Botanist Jack Hardie under flora licences FB62000321-2 and FB62000389-02, respectively. The flora field team has a combined 5.5 years' experience conducting surveys of similar scope in the Pilbara region of Western Australia.

The basic terrestrial vertebrate fauna survey was undertaken by Associate Ecologist Lukas Geidans, who has 4.5 years' experience, and Zoologist Lewis Berry who has 2 years' experience, conducting surveys of similar scope in the Pilbara. The fauna fieldwork was completed under Fauna Taking (Biological Assessment) License – Regulation 27 (BA27000816) and an authorisation to take or disturb threatened species under Section 40 of the BC Act (TFA 2223-0222). Animal ethics approval was obtained under scientific use licence number U336 / 2023 - 2025 and permit number WAEC 24-02-11.

During the survey, SLR personnel were accompanied by Traditional Owners from the Kariyarra group to the west of the King Edward River, and to the east by traditional owners from the Wanparta group.

3.2.3 Weather Conditions

Weather conditions during the fauna survey are presented in Table 6. Daily temperature and rainfall data is from the Port Hedland Weather Station (Station 004032) (BoM, 2024). Weather conditions can impact potential detection of fauna taxa during a survey.

Table 6: Field survey weather conditions

Date	Temperature (°C)		Rainfall (mm)
	Min	Max	
01/03/2024	28.7	35.0	0
02/03/2024	27.8	33.7	1.8
03/03/2024	26.4	34.4	0
04/03/2024	26.5	34.1	0

Date	Temperature (°C)		Rainfall (mm)
	Min	Max	
05/03/2024	25.2	34	8.4
06/03/2024	28.3	34.7	0
07/03/2024	27.1	35.5	0
08/03/2024	27.4	36.2	8
09/03/2024	27.9	35.2	0
10/03/204	28	34.5	0

3.3 Flora and Vegetation

3.3.1 Field Survey

The detailed flora and vegetation survey was undertaken from 1 - 10 March 2024. A handheld Fulcrum mobile data collection device was used to record data, and mapping notes, opportunistic flora collections and photographs were also taken where required. The survey effort showing flora site locations and GPS track logs is shown in **Map 7**.

Vegetation types were described based on their structure and species composition, and condition was assessed according to the Eremaean and Northern Botanical Provinces vegetation condition scale (EPA, 2016c). Broad vegetation and condition mapping was conducted in the field, with boundaries delineated over aerial photography, at a scale of 1:2,000. Broad vegetation units were refined based on taxonomic identification of flora collections, and mapping notes taken during the field survey. Vegetation condition mapping was refined based on site data and mapping notes. Finalised polygons were digitised and produced as electronic mapping data using GIS software.

3.3.2 Establishment of Flora Sites

Indicative site selection was undertaken prior to the survey based on aerial photography and available literature. The number and locations of flora sites were then adjusted on site to achieve sites most representative of the vegetation present. Where possible, at least three flora sites were established in each vegetation type within the Survey Area. In instances where vegetation types were not large enough to accommodate three flora sites, one or two sites were established.

Flora sites consisted of either quadrats or relevés. Quadrats were 50 x 50 m with corners aligned to northwest, northeast, southeast and southwest, and were measured out using measuring tapes. Fence droppers are generally used as standard practice for marking north-west corners, however these were not used to avoid ground disturbance in accordance with traditional owner requirements. Relevés comprised unbounded sites of approximately 50 x 50 m where possible, or alternate configurations approximating 2500 m^2 (as required in linear areas such as drainage lines, gullies, and narrow ridge lines). A comprehensive list of the flora present at the time of sampling was recorded for both quadrat and relevé sites.

Flora site locations were recorded using a GPS-enabled handheld device, with points recorded at each corner of a quadrat, the start and finish point of linear relevés, and the central point of circular relevés. The following information was recorded at each flora site:

- Site code.
- Date and personnel.
- Landform and soil description.

- Relevant site descriptors including, slope, aspect, litter cover, bare ground cover, and fire history.
- Inventory of vascular flora including the approximate average height and percentage foliar cover for each taxon.
- Vegetation description in accordance with the National Vegetation Information System (NVIS) Level 5 'association' whereby the dominant growth form, height, cover, and species (three species) for the three traditional strata (upper, mid, and ground) are described.
- Vegetation condition in accordance with the Eremaean and Northern Botanical Provinces vegetation condition scale (EPA, 2016c).
- Evidence of disturbance (for example clearing, rubbish, feral animals, weed incursion, and evidence of feral animals and dieback) where present.
- Photograph of the vegetation occurring within the site.

A total of 54 flora sites comprising 26 quadrats and 28 relevés were established within the Survey Area. An additional approximately 250 mapping notes were completed to aid vegetation mapping. Flora site locations are shown in **Map 7.**

3.3.3 Opportunistic Flora

Flora taxa observed outside flora sites were recorded opportunistically. When significant flora, Declared Pests (DPs), or WoNS were encountered opportunistically, a GPS location and count of the individuals present was recorded.

3.3.4 Targeted Searching

Prior to the survey a list of significant flora taxa with the potential to occur within the Survey Area was compiled (see Section 3.1.3). Field personnel familiarised themselves with photographs, reference samples, and descriptions of these taxa before conducting the survey.

Targeted searching was undertaken within habitat suitable for Threatened and Priority flora as per standard practice in the Pilbara. The entire Survey Area was not systematically searched. Potential habitat within the proposed footprint was prioritised over areas outside the proposed footprint.

When Threatened or Priority flora were encountered in the field a GPS location was taken and a count of individuals was recorded, followed by a search in the local vicinity to determine if any other individuals were present nearby and delineate population boundaries where relevant and possible. Specimens of potential significant flora that could not be identified in the field were collected for identification and lodgement at the Western Australian Herbarium (WAH).

3.3.5 Vegetation Type and Condition Mapping

Vegetation type and condition mapping was initially conducted in the field with boundaries delineated over aerial photography at a scale of 1:5,000. Vegetation types were refined based on taxonomic identification of flora collections and mapping notes taken during the field survey. Further validation of vegetation types was undertaken using multivariate analysis of data collected from the quadrats and relevés. Vegetation condition mapping was refined based on site data and mapping notes. Polygons were digitised using GIS software.

3.3.6 Taxonomy and Nomenclature

Where field identification of plant taxa was not possible, specimens were collected for identification using resources of the WAH. Identification of flora collections was completed by SLR Principal Botanist Simon Colwill and WAH taxonomist Mike Hislop.

The finalised species list was checked against FloraBase (Department of Biodiversity Conservation and Attractions, 2023) to determine the conservation status and known distribution of each taxon. Introduced species were compared against the current BAM Act Declared Plants list the WoNS list to determine their control status (DAWE, 2023; DPIRD, 2023). FloraBase (DBCA, 2024a) was used to determine the conservation status and known distribution of each taxon. The control status of introduced flora was sourced from the WoNS list and declared plants list (CISS, 2024; DPIRD, 2024).

Any significant flora taxa, including potential Threatened and Priority taxa, range extensions, and potential new taxa, were submitted to the WAH for verification and lodgement. Where relevant, Threatened and Priority Flora Report Forms (TPFRFs) were submitted to DBCA.

3.3.7 Statistical Analyses

3.3.7.1 Vegetation Type Validation

Multivariate analysis to validate vegetation types was undertaken using PRIMER version 7. A comparison of the similarity of floristic composition between flora sites based on species presence or absence was undertaken using the Bray-Curtis similarity index. Vegetation types were defined based on approximately 40-80% similarity and distinguished visually in a dendrogram cluster analysis. The analysis was undertaken on a data matrix comprising 80 vascular flora taxa and 54 flora sites. Quadrats and relevés were included in the analysis as comprehensive species presence or absence was recorded at both site types. Singletons (flora taxa recorded at only one site) were excluded from the analysis as they can result in bias due to the Bray-Curtis coefficient and grouping properties. Unidentified or partially identified flora taxa were removed based on their ambiguity; exceptions were made for taxa that could not be identified but were confirmed to be the same across multiple sites. Introduced taxa (with the exception of dominant species, primarily Buffel Grass, *Cenchrus ciliaris) were also excluded as their presence is typically associated with a disturbance rather than representative of a vegetation type.

3.3.7.2 Species Accumulation Curve

A species accumulation curve was plotted using Primer v7 to determine the adequacy of the survey. The treatments comprised Sobs (Mao Tao), which effectively smooths the curve of observed species by simulating an infinite number of randomisations of the sample order, and richness estimators Chao 1, Chao 2, Jacknife 1, Bootstrap, and Michaelis-Menton to predict the theoretical maximum number of species that could potentially be recorded. The species accumulation curve was calculated using systematic sampling data from flora sites and does not include opportunistic flora records. All identified flora taxa, including annual and perennial, within each flora site was used to generate the species accumulation curve. Unknown flora taxa that could not be identified to a species level was excluded.

3.4 Fauna

3.4.1 Habitat Assessment and Mapping

Habitat assessments were undertaken in representative areas of fauna habitat within the Survey Area to record habitat values. Where possible, at least one habitat assessment was recorded within each habitat type. Habitat assessment locations are shown in **Map 7.**

The following information was collected at each habitat assessment locations using a GPS-enabled handheld device:

- Site photo.
- Landform.
- Soil type and colour.
- Rock types, surface stone cover, and size classes.
- Key habitat and microhabitat features including leaf litter, logs, burrows, rocky outcrops, rock crevices, hollows, and water sources.
- Habitat quality, fire history, and evidence of disturbance.
- General description of vegetation structure.

Fauna habitat mapping was based on a combination of field observations, habitat assessment data, aerial imagery, and, if available, vegetation type mapping. Polygons were digitised using GIS software.

3.4.2 Camera Traps

A total of 49 motion sensitive camera traps were set up during the targeted survey. Site selection was based on suitable habitat features targeting the Northern Quoll. Cameras were baited with universal bait (rolled oats and peanut butter and sardines). **Table 7** shows the total camera trap survey effort, and camera trap locations are shown in **Map 7**.

Table 7: Camera trap survey effort

Fauna Habitat	Camera ID number	Total camera trap nights
Low *Acacia stellaticeps* over Triodia Plains	675.072189-CAM-52	4
Low *Acacia stellaticeps* over Triodia Plains	675.072189-CAM-53	4
Low *Acacia stellaticeps* over Triodia Plains	675.072189-CAM-55	4
Low *Acacia stellaticeps* over Triodia Plains	675.072189-CAM-59	4
Major Drainage	675.072189-CAM-31	4
Major Drainage	675.072189-CAM-39	5
Major Drainage	675.072189-CAM-49	4
Major Drainage	675.072189-CAM-51	5
Major Drainage	675.072189-CAM-54	5
Major Drainage	675.072189-CAM-36	4
Major Drainage	675.072189-CAM-57	4
Major Drainage	675.072189-CAM-58	4
Major Drainage	675.072189-CAM-64	4
Mixed Acacia Shrubs and Triodia Plains	675.072189-CAM-22	4
Mixed Acacia Shrubs and Triodia Plains	675.072189-CAM-44	5

Fauna Habitat	Camera ID number	Total camera trap nights
Mixed Acacia Shrubs and Triodia Plains	675.072189-CAM-56	4
Open Eucalypt Woodland	675.072189-CAM-37	4
Open Eucalypt Woodland	675.072189-CAM-41	4
Open Eucalypt Woodland	675.072189-CAM-65	4
Outcrops and Breakaways	675.072189-CAM-19	4
Outcrops and Breakaways	675.072189-CAM-20	4
Outcrops and Breakaways	675.072189-CAM-21	4
Outcrops and Breakaways	675.072189-CAM-23	4
Outcrops and Breakaways	675.072189-CAM-24	4
Outcrops and Breakaways	675.072189-CAM-25	4
Outcrops and Breakaways	675.072189-CAM-26	4
Outcrops and Breakaways	675.072189-CAM-27	4
Outcrops and Breakaways	675.072189-CAM-28	4
Outcrops and Breakaways	675.072189-CAM-29	4
Outcrops and Breakaways	675.072189-CAM-32	4
Outcrops and Breakaways	675.072189-CAM-33	4
Outcrops and Breakaways	675.072189-CAM-34	4
Outcrops and Breakaways	675.072189-CAM-35	4
Outcrops and Breakaways	675.072189-CAM-38	4
Outcrops and Breakaways	675.072189-CAM-40	4
Outcrops and Breakaways	675.072189-CAM-42	4
Outcrops and Breakaways	675.072189-CAM-43	4
Outcrops and Breakaways	675.072189-CAM-45	5
Outcrops and Breakaways	675.072189-CAM-46	4
Outcrops and Breakaways	675.072189-CAM-47	4
Outcrops and Breakaways	675.072189-CAM-48	4
Outcrops and Breakaways	675.072189-CAM-50	4
Outcrops and Breakaways	675.072189-CAM-60	4
Outcrops and Breakaways	675.072189-CAM-61	4
Outcrops and Breakaways	675.072189-CAM-62	4
Outcrops and Breakaways	675.072189-CAM-63	4
Outcrops and Breakaways	675.072189-CAM-66	4
Outcrops and Breakaways	675.072189-CAM-67	4
Stony Hills	675.072189-CAM-30	4
Total		**201**

3.4.3 Acoustic Surveys

Autonomous recording units (ARUs) were used to passively record animal calls during the field survey.

3.4.3.1 Bats

Song Meter SM4BAT ultrasonic ARUs were used to target bats with a particular focus on the Pilbara Leaf-nosed Bat and Ghost Bat. SM4BAT ARUs were deployed in habitats likely to be used by significant bat species, such as water sources or rocky areas, for a minimum of four nights at each location. The number and time of significant bat species calls was documented, whereas non-significant bat species were simply recorded as present or absent per night at each location. **Table 8** shows the total SM4BAT ARU survey effort, and locations are shown in **Map 7**.

Table 8: SM4BAT ARU survey effort

Habitat	Site number	Trap nights
Outcrops and Breakaways	675.072189-BAT-1	9
Outcrops and Breakaways	675.072189-BAT-2	6
Low *Acacia stellaticeps* over Triodia Plains	675.072189-BAT-3	5
Outcrops and Breakaways	675.072189-BAT-4	4
Major Drainage	675.072189-BAT-5	6
	Total	**30**

3.4.3.2 Night Parrot

Song Meter SM4 ARUs were used to target Night Parrot (*Pezoporus occidentalis*). SM4 ARUs were deployed in habitats likely to be used by Night Parrot, such as water sources or long unburnt spinifex, for a minimum of six nights at each location. **Table 9** shows the total SM4 ARU survey effort, and locations are shown in **Map 7**.

Table 9: SM4 ARU survey effort

Habitat	Site number	Trap nights
Mixed Acacia Shrubs and Triodia Plains	675.072189-BIR-14	6
Open Eucalypt Woodland	675.072189-BIR-15	4
Major Drainage	675.072189-BIR-16	6
Open Eucalypt Woodland	675.072189-BIR-17	6
Low *Acacia stellaticeps* over Triodia Plains	675.072189-BIR-18	6
	Total	**28**

3.4.4 Opportunistic Observations

Opportunistic observations of fauna were recorded throughout the Survey Area, including primary evidence (direct sightings, calls) and secondary evidence (tracks, scats, diggings, remains).

3.4.5 Bilby Searches

Targeted Bilby searches were undertaken throughout the Survey Area in areas of suitable Bilby habitat and consisted of personnel conducting transect searches searching for evidence of Bilby activity, such as burrows, diggings, scats, and tracks. A total of 44 targeted Bilby searches were undertaken. **Table 10** shows the total survey effort for Bilby searches, and locations are shown in **Map 7**.

Table 10: Targeted Bilby search effort

Search Number	Habitat	Habitat Site Sheet	Search length (Kms)
Bilby Search 1	Low *Acacia stellaticeps* over Triodia Plains	675.072189-CAM-59	0.26
Bilby Search 2	Low *Acacia stellaticeps* over Triodia Plains	675.072189-CAM-52. 675.072189-BIR-18	0.72
Bilby Search 3	Low *Acacia stellaticeps* over Triodia Plains	675.072189-CAM-55	0.59
Bilby Search 4	Low *Acacia stellaticeps* over Triodia Plains	675.072189-CAM-53	2.09
Bilby Search 5	Low *Acacia stellaticeps* over Triodia Plains	675.072189-HAB-71	0.69
Bilby Search 6	Low *Acacia stellaticeps* over Triodia Plains	675.072189-HAB-71	3.87
Bilby Search 7	Low *Acacia stellaticeps* over Triodia Plains	675.072189-HAB-70	0.77
Bilby Search 8	Low *Acacia stellaticeps* over Triodia Plains	675.072189-HAB-77	1.71
Bilby Search 9	Low *Acacia stellaticeps* over Triodia Plains	675.072189-HAB-76	2.03
Bilby Search 10	Open Eucalypt Woodland	675.072189-BIL-6	1.84
Bilby Search 11	Open Eucalypt Woodland	675.072189-HAB-74	2.39
Bilby Search 12	Mixed Acacia Shrubs and Triodia Plains	675.072189-CAM-56	1.04
Bilby Search 13	Open Eucalypt Woodland	675.072189-HAB-93	2.52
Bilby Search 14	Minor Drainage	675.072189-CAM-57	0.23
Bilby Search 15	Minor Drainage	675.072189-CAM-58	0.59
Bilby Search 16	Major Drainage	675.072189-CAM-54	2.52
Bilby Search 17	Mixed Acacia Shrubs and Triodia Plains	675.072189-BIL-13, 675.072189-CAM-64, 675.072189-HAB-90	1.46
Bilby Search 18	Mixed Acacia Shrubs and Triodia Plains	675.072189-BIL-13	4.08

Search Number	Habitat	Habitat Site Sheet	Search length (Kms)
Bilby Search 19	Mixed Acacia Shrubs and Triodia Plains	675.072189-HAB-92	1.60
Bilby Search 20	Major Drainage	675.072189-CAM-31	1.58
Bilby Search 21	Major Drainage	675.072189-CAM-51	1.50
Bilby Search 22	Outcrops and Breakaways	675.072189-CAM-20, 675.072189-CAM-25, 675.072189-CAM-21	4.09
Bilby Search 23	Mixed Acacia Shrubs and Triodia Plains	675.072189-HAB-84	0.46
Bilby Search 24	Mixed Acacia Shrubs and Triodia Plains	675.072189-BIL-12	15.30
Bilby Search 25	Outcrops and Breakaways	675.072189-CAM-19	1.39
Bilby Search 26	Mixed Acacia Shrubs and Triodia Plains	675.072189-HAB-68	5.54
Bilby Search 27	Mixed Acacia Shrubs and Triodia Plains	675.072189-CAM-22	0.22
Bilby Search 28	Outcrops and Breakaways	675.072189-CAM-67	4.24
Bilby Search 29	Outcrops and Breakaways	675.072189-CAM-61	5.08
Bilby Search 30	Mixed Acacia Shrubs and Triodia Plains	675.072189-HAB-86	1.67
Bilby Search 31	Sparse Triodia Plains	675.072189-HAB-82	0.85
Bilby Search 32	Sparse Triodia Plains	675.072189-HAB-82	0.76
Bilby Search 33	Major Drainage	675.072189-HAB-81	1.89
Bilby Search 34	Major Drainage	675.072189-HAB-81	1.18
Bilby Search 35	Major Drainage	675.072189-CAM-39	0.56
Bilby Search 36	Major Drainage	675.072189-CAM-49	1.25
Bilby Search 37	Mixed Acacia Shrubs and Triodia Plains	675.072189-BIL-11	3.45
Bilby Search 38	Outcrops and Breakaways	675.072189-BIL-9 675.072189-BIL-10	1.97
Bilby Search 39	Low *Acacia stellaticeps* over Triodia Plains	675.072189-CAM-32	3.81
Bilby Search 40	Outcrops and Breakaways	675.072189-BIL-7	2.08
Bilby Search 41	Sparse Triodia Plains	675.072189-CAM-36	3.35
Bilby Search 42	Minor Drainage	675.072189-CAM-37	0.82

Search Number	Habitat	Habitat Site Sheet	Search length (Kms)
Bilby Search 43	Open Eucalypt Woodland	675.072189-CAM-41	0.37
Bilby Search 44	Open Eucalypt Woodland	675.072189-CAM-65	0.29
Total		**94.7**	

3.4.6 Identification and Taxonomy

Terrestrial vertebrate fauna taxa were identified in the field and released on site. Bat and bird calls were analysed by Robert Bullen from Bat Call WA.

Where there was doubt on a species name (through subsequent name changes or taxonomic reviews), an effort was made to determine the current scientific name for each taxon. Taxonomy and nomenclature in this report follows the Checklist of the Terrestrial Vertebrate Fauna of Western Australia (WAM, 2024) where relevant.

3.5 Limitations

Limitations and constraints of the flora, vegetation, and fauna survey are detailed below in **Table 11**.

Table 11: Limitations and constraints associated with the survey

Variable	Degree of limitation	Potential constraints on survey outcomes
Availability of data and information	None	Sufficient data and information, including regional and local contextual information, was available to complete the scope of the survey.
Competency and experience of the survey team	None	The survey was undertaken by a team with the following extensive experience undertaking similar scopes within the Pilbara bioregion. • Associate Ecologist Lukas Geidans – 4.5 years' experience • Zoologist Lewis Berry – 2.5 years' experience • Botanist Jack Hardie – 2.5 years' experience • Senior Botanist Grant Buller – 3 years' experience
The proportion of flora and fauna identified, recorded, or collected	None	Of the 172 flora taxa recorded, 19 specimens (11%), could not be identified to species level because they were sterile at the time of the survey. The unidentified flora specimens were not analogous to significant flora taxa. All of the fauna recorded during the field survey were identified on site.
Scope of the survey	None	The scope of the survey was limited to vascular plants and terrestrial vertebrate fauna. No further exclusions were made within these groups.
Adequacy of the survey intensity and proportion of survey achieved	None	A minimum of three flora sites were installed within most vegetation types, apart from two vegetation types which were restricted in distribution, and a minimum of two fauna habitat assessment were made within each habitat type. Additional survey effort may yield additional flora and fauna taxa, however,

Variable	Degree of limitation	Potential constraints on survey outcomes
		sufficient time and effort was allocated to the survey given the size and complexity of the Survey Area and the expected level of survey intensity.
Access problems	None	The different vegetation types and habitats within the Survey Area were sufficiently accessed by vehicle and on foot.
Timing, weather, and season	Partial	The recommended primary survey period Eremaean Botanical Province as per the EPA Technical Guidance occurs 6-8 weeks post wet season (March to June). The flora and vegetation survey was undertaken within the recommended primary survey period, however rainfall in the 3 and 12-month periods prior to the survey was well below average. The recommended primary periods for fauna surveys in the Pilbara region are: • Amphibians – immediately following rainfall • Birds – immediately following rainfall • Mammals – no preferred time • Reptiles – September to April The fauna survey was undertaken within the recommended primary survey period for all vertebrate species.
Disturbance that may have affected the results of survey	None	Areas of disturbance associated with weeds and livestock/pastoralism were present within the Survey Area but were not a limitation on the results of the survey.
Problems with data and analysis, including sampling biases	None	Survey effort for significant flora and fauna taxa was concentrated in preferred habitats. This may introduce a bias where the use of non-preferred habitat is underrepresented, however, this is not considered a limitation on the survey outcomes.

4.0 Results

4.1 Flora and Vegetation

4.1.1 Desktop Assessment

4.1.1.1 Database Searches

The database searches and literature review identified 33 significant flora taxa occurring within the Desktop Study Area, comprising:

- One Threatened taxa
- Eight Priority 1 taxa
- Two Priority 2 taxa
- 20 Priority 3 taxa
- Two Priority 4 taxa

Key findings of the literature review and database search results are summarised in **Appendix B** and presented in **Map 8**.

Three PECs were identified within the Desktop Study Area:

- Eighty Mile Land System (Priority 3), approximately 19 km north of the Survey Area.
- Gregory Land System (Priority 3), approximately 49 km south-south-west of the Survey Area.
- Horseflat Land System of the Roebourne Plains (Priority 3) approximately 75 km south west of the Survey Area.

The PECs identified by database searches are presented in **Map 8**.

4.1.1.2 Likelihood of Occurrence

The pre-survey likelihood of occurrence assessment identified that of the 33 significant flora species identified by the desktop assessment:

- None had previously been recorded within the Survey Area
- 11 were considered to have a high likelihood of occurrence
- None were considered to have a medium likelihood of occurrence
- 22 were considered to have a low likelihood of occurrence.

Following the survey, the likelihood of occurrence assessment identified that:

- Two taxa were recorded within the Survey Area
- Two taxa were considered to have a high likelihood of occurrence
- Six taxa were considered to have a medium likelihood of occurrence
- 23 taxa were considered to have a low likelihood of occurrence.

The likelihood of occurrence assessment is provided in **Appendix C**.

4.1.2 Field Survey

4.1.2.1 Floristic Composition

The survey recorded a total of 172 taxa from 94 genera across 40 families (**Appendix D**). The dominant families were Fabaceae (45 species), Poaceae (19 species) and Malvaceae (14 species). The dominant genera were *Acacia* (18 species), *Corymbia* and *Ptilotus* (6 species each). Of the 172 taxa recorded, 15 were identified to genus and two were identified to family, however these specimens are unlikely to represent conservation significant flora.

4.1.2.2 Significant Flora

Threatened and Priority Flora Recorded Within the Survey Area

No Threatened flora species pursuant to the Environment Protection and Biodiversity Conservation (EPBC) Act 1999 and/or gazetted as Threatened pursuant to the Biodiversity Conservation (BC) Act 2016 were recorded during the survey.

Two DBCA-listed Priority species, *Gymnanthera cunninghamii* (P3) and *Tephrosia rosea* subsp. Port Hedland (A.S. George 1114) (P1), were recorded within the Survey Area (Map 9). Six individuals of *Gymnanthera cunninghamii* (Plate 1) was recorded opportunistically in Devil Creek (vegetation type MaEc), while two individuals of *Tephrosia rosea subsp*. Port Hedland (A.S. George 1114) (Plate 2) were recorded opportunistically within vegetation type AsTe adjacent to Great Northern Highway at the western end of the survey area.

Threatened and Priority Flora Report Forms have been submitted to DBCA and are provided in **Appendix E**.

Plate 1. *Gymnathera cunninghamii* (P3) (Source: SLR Consulting).

Plate 2: *Tephrosia rosea* subsp. Port Hedland (A.S. George 1114) (Source: SLR Consulting)

Significant Flora Potentially Occurring Within the Survey Area

No significant flora taxa have been recorded within the Survey Area during previous surveys.

4.1.3 Introduced Flora

A total of eight introduced taxa were recorded within the Survey Area, representing 4.7% of the total taxa recorded (**Table 12; Map 10**). None are listed as WoNS. One taxon (**Calotropis procera*) is listed as a Declared Pest under the BAM Act, of which approximately 144 individuals were recorded opportunistically, and another four individuals within flora sites.

One individual of **Azadirachta indica* (Neem Tree) was recorded opportunistically in the King Edward River drainage; this record was determined to be a range extension as its current distribution according to Florabase is within the Kimberley region (DBCA, 2024a). The specimen collected was vouchered at the request of Mike Hislop from WAH (pers. com. M Hislop, 2024). The remaining six weed species recorded are commonly found throughout the Pilbara.

Table 12: Introduced Flora Taxa Recorded within the Survey Area

Taxon	Common name	Status under BAM Act	WoNS
**Aerva javanica*	Kapok	Permitted – s11	No
**Azadirachta indica*	Neem tree	Permitted – s11	No
**Calotropis procera*	Calotrope	Declared Pest - s22(2)	No
**Cenchrus ciliaris*	Buffel grass	Permitted – s11	No
**Indigofera oblongifolia*		Permitted – s11	No
**Malvastrum americanum*	Spiked Malvastrum	Permitted – s11	No
**Passiflora foetida*	Stinking Passion Flower	Permitted – s11	No
**Vachellia farnesiana*	Mimosa Bush	Permitted – s11	No

4.1.4 Unconfirmed Flora

Nineteen specimens (11% of the taxa recorded) could not be identified to species level because the taxa were too sterile and/or in poor condition at the time of the survey (Flora Inventory, **Appendix D**). Of these specimens, three were identified to family level, 15 were identified to genus level, and one was tentatively identified to species level. None of the unconfirmed flora taxa were analogous to significant flora taxa identified by the desktop assessment and may represent duplicates of taxa that were confirmed within the Survey Area. One of the three taxa identified to Family level (i.e. Violaceae) was only tentatively assigned a genus (i.e. ?*Afrohybanthus*) (refer to Discussion, Section **5.1.2.1**).

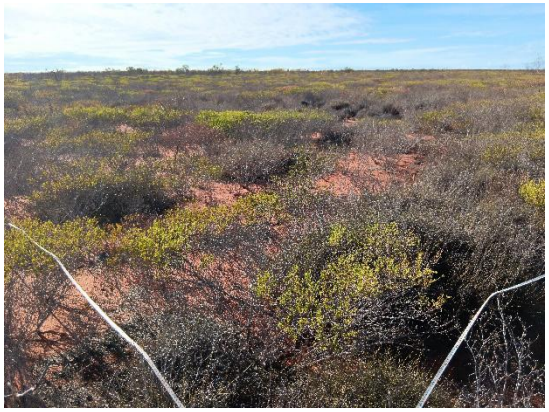
4.1.5 Vegetation Types

Fourteen vegetation types were described and mapped across five broad landforms within the Survey Area (**Table 13**; **Map 9**).

Detailed site sheets for each quadrat are provided in **Appendix F**.

Table 13: Vegetation types recorded within the Survey Area

Vegetation type and description*	Local landform	Total area, percentage of Survey Area	Sites	Vegetation condition	Representative photograph
Vegetation Type Code: **AiTe:** *Triodia epactia* low hummock grassland	Ironstone hilltops and ridges	30 ha, 0.29%	AR10, AR13, AR45	Very Good	
Vegetation Type Code: **AoTe:** *Acacia orthocarpa* tall open shrubland over *Triodia epactia* low open hummock grassland	Granite and quartz outcroppings	53 ha, 0.51%	AR05, AR36, AR38, AR40	Very Good	

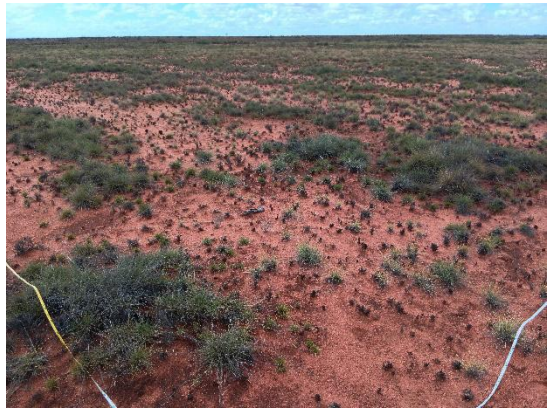
Vegetation type and description*	Local landform	Total area, percentage of Survey Area	Sites	Vegetation condition	Representative photograph
Vegetation Type Code: **AspTe:** Mixed *Acacia* (*A. inaequilatera*, *A. colei*, *A. ancistrocarpa*, *A. acradenia*, *A. bivenosa*) tall shrubland over *Triodia epactia* (*T. wiseana*) low to mid hummock grassland	Plains	5495 ha, 53.03%	AR15, AR18, AR23, AR34, AR32, AR49, AR52	Very Good	
Vegetation Type Code: **AsTe:** *Acacia stellaticeps* mid open shrubland over *Triodia epactia* low hummock grassland	Plains	3067 ha, 29.6%	AR02, AR03, AR04, AR20, AR31, AR42	Very Good	

Vegetation type and description*	Local landform	Total area, percentage of Survey Area	Sites	Vegetation condition	Representative photograph
Vegetation Type Code: **At:** *Acacia tumida* tall shrubland over *Triodia epactia* mid open hummock grassland	Plains and foothills	18.3 ha, 0.18%	AR29, AR35, AR46	Very Good	
Vegetation Type Code: **CcAcTe:** *Corymbia candida* low sparse woodland over *Acacia colei* and *A.tumida* tall open shrubland over *Triodia epactia* low hummock grassland and *Eulalia aurea* low open tussock grassland	Plains	123.9 ha, 1.2%	AR25, AR54, AR53	Very Good	

Vegetation type and description*	Local landform	Total area, percentage of Survey Area	Sites	Vegetation condition	Representative photograph
Vegetation Type Code: **CfAh:** *Corymbia flavescens* (*Eucalyptus victrix*) low sparse woodland over *Atalaya hemiglauca* (*Dolichandrone occidentalis*, *Ficus aculeata*) tall open shrubland over *Eulalia aurea* low sparse tussock grassland	Low lying floodplain/minor drainages	42.5 ha, 0.41%	AR16, AR17	Degraded	
Vegetation Type Code: **EvAcTe:** *Eucalyptus victrix* low sparse woodland over *Acacia colei* tall open shrubland over *Triodia epactia* mid open hummock grassland	Minor floodplains	263.5 ha, 2.54%	AR06, AR07, AR08, AR22, AR21	Good to Very Good	

Vegetation type and description*	Local landform	Total area, percentage of Survey Area	Sites	Vegetation condition	Representative photograph
Vegetation Type Code: **EvEa**: *Eucalyptus victrix* low sparse woodland over *Acacia colei* tall sparse shrubland over *Triodai epactia* mid sparse hummock grassland and *Eulalia aurea* mid sparse tussock grassland	Drainage	24.1 ha, 0.23%	AR12, AR26, AR27, AR33, AR30	Very Good	
Vegetation Type Code: **FspAh**: Low sparse woodland of *Atalaya hemiglauca* and *Ficus brachypoda* over *Triodia epactia* low sparse hummock grassland	Ironstone hilltops and ridges	1.8 ha, 0.02%	AR09, AR14, AR44	Very Good	

Vegetation type and description*	Local landform	Total area, percentage of Survey Area	Sites	Vegetation condition	Representative photograph
Vegetation Type Code: **FspTe:** Mixed *Acacia* (*A. inaequilatera*, *A. ancistrocarpa*) with *Ficus brachypoda* low isolated trees over low open hummock grassland *Triodia epactia*	Granite outcropping	13.5 ha, 0.13%	AR37, AR48, AR50	Very Good	
Vegetation Type Code: **MaEc:** *Eucalyptus camaldulensis* subsp. *refulgens* (*E.victrix*), *Melaleuca argentea* low sparse woodland over tall sparse shrubs *Acacia trachycarpa*, *M. glomerata* over *Eulalia aurea* low sparse tussock grasses and *Triodia epactia* low sparse hummock grasses	Major drainages	165.7 ha, 1.6%	AR28, AR39, AR41, AR47	Good	

Vegetation type and description*	Local landform	Total area, percentage of Survey Area	Sites	Vegetation condition	Representative photograph
Vegetation Type Code: **Sh**: *Sclerolaena hostilis* low sparse forbland	Low lying colluvial flats,	9.6 ha, 0.09%	AR11	Degraded	
Vegetation Type Code: **TsTe:** *Triodia secunda* and *T. epactia* low hummock grassland	Flats, floodplain	848.4 ha, 8.19%	AR01, AR19, AR24, AR43, AR51	Very Good	

*Brackets indicate species that may or may not be present, but were observed as dominant at some of the sites that make up the vegetation type

4.1.6 Vegetation Condition

Vegetation condition within the Survey Area ranged from Degraded to Very Good, with the majority (95.2%) being in Very Good condition (**Table 14**; **Map 10**).

The remainder of the Survey Area comprised previously cleared areas (i.e. for roads, tracks, pastoralism infrastructure) and were not assigned a vegetation condition (206.3 ha / 2 %).

Evidence of disturbance included historical clearing for access tracks, cattle grazing, trampling and scats, weeds, and frequent burning.

Table 14: Summary of Vegetation Condition within the Survey Area

Vegetation Condition	Area (ha)	Percentage of Survey Area (%)
Degraded	52.1	0.5
Good	232.4	2.2
Poor	3.3	0.03
Very Good	9868.9	95.2

4.1.7 Significant Vegetation

4.1.7.1 Threatened and Priority Ecological Communities

None of the vegetation types within the Survey Area were considered analogous to TECs or PECs.

4.1.8 Groundwater Dependent Ecosystems

One vegetation type, MaEc, is likely to represent groundwater dependent ecosystems (GDE) associated with some of the major drainages intersecting the survey area (i.e. King Edward River, Turner River and Devil Creek). This vegetation type supports known phreatophytic tree species such as *Melaleuca argentea* and *Eucalyptus camaldulensis* subsp. *refulgens*, which are reliant on access to the groundwater table.

4.1.9 Statistical Analysis

4.1.9.1 Floristics

Data was modified in accordance with the methodology in Section **3.3.7.1.** Selected inputs and outputs of the floristic analysis are presented in **Appendix G**. The following observations were made from the floristic analysis and the dendrogram output (**Figure 2**):

- Acacia dominated vegetation types on plains (At, AspTe, AoTe, AsTe and FspTe) grouped broadly together; these groups largely represented the Acacia plains which dominated the majority of the Survey Area (approximately 83%). While FspTe was included in this grouping, this was largely based on the shared presence of common Acacia shrubs which exist across a range of habitats and landforms (e.g. *A. inaequilatera* and *A. ancistrocarpa*). Vegetation mapping from the flora survey, however, determined the FspTe vegetation type to be separate based on the presence of *Ficus brachypoda* which is often associated with these landforms (i.e. granite outcroppings) and less so on the plains. These granite outcroppings also often represent a different suite of species to the surrounding plains, despite often sharing some common Acacias.

- The major drainage sites (MaEc) were grouped together with a shared similarity of 40 %, sharing dominant drainage/GDE-associated species such as *Melaleuca argentea*, *M. glomerata*, *Eucalyptus camaldulensis* subsp. *refulgens*, *Acacia trachycarpa*, *Cyperus vaginata* and *Eulalia aurea*. This grouping was generally consistent with mapping from the field survey.
- Low lying flats and floodplain sites associated with vegetation type TsTe grouped together, which was consistent with mapping from the survey. TsTe was often in close proximity to the widespread Acacia plains, and the analysis also grouped some AspTe sites with the four TsTe sites; this was due to some crossover of common Acacia species (e.g. *A. ancistrocarpa, A. acradenia, A. bivenosa, A. colei, A. inaequilatera*).
- One of the TsTe sites, AR19, grouped separately from the others due to the absence of *Triodia epactia*, however it was retained in TsTe by the survey vegetation mapping due to the dominant presence of *T. secunda*.
- Sites within the FspAh and AiTe vegetation types were associated with the ironstone ridge, hilltop and slopes landforms, and were generally grouped together by the analysis based on shared presence of Ficus spp. The ironstone ridge sites (FspAh) were separated from the nearby hilltop sites (AiTe) by the survey vegetation mapping due to the absence of *Ficus* spp. and *Atalaya hemiglauca* in these hilltop sites, however the close proximity of these landforms still resulted in the crossover of common species (e.g. *Acacia inaequilatera*) and therefore the floristic grouping of these sites by the analysis.
- Sites within the vegetation types EvAcTe and CcAcTe were grouped together, as well as some sites from EvEa. These vegetation types were associated with low lying plains, minor floodplains and minor drainages, and shared some similarities, particularly a low sparse overstorey of *Eucalyptus victrix* and a mid-storey of tall sparse to open shrubland of *Acacia colei* var. *colei*. EvEa was associated with a different landform (minor drainages) to EvAcTe and CcAcTe however was included in this grouping by the analysis due to presence of *Eulalia aurea* and *Eucalyptus victrix*; *E. victrix* is a facultative phreatophyte which often grows in minor drainages but also is common across low lying plains and minor floodplains, while *E. aurea* often inhabits watercourses, damp areas and floodplains though is commonly found across a range of habitats.

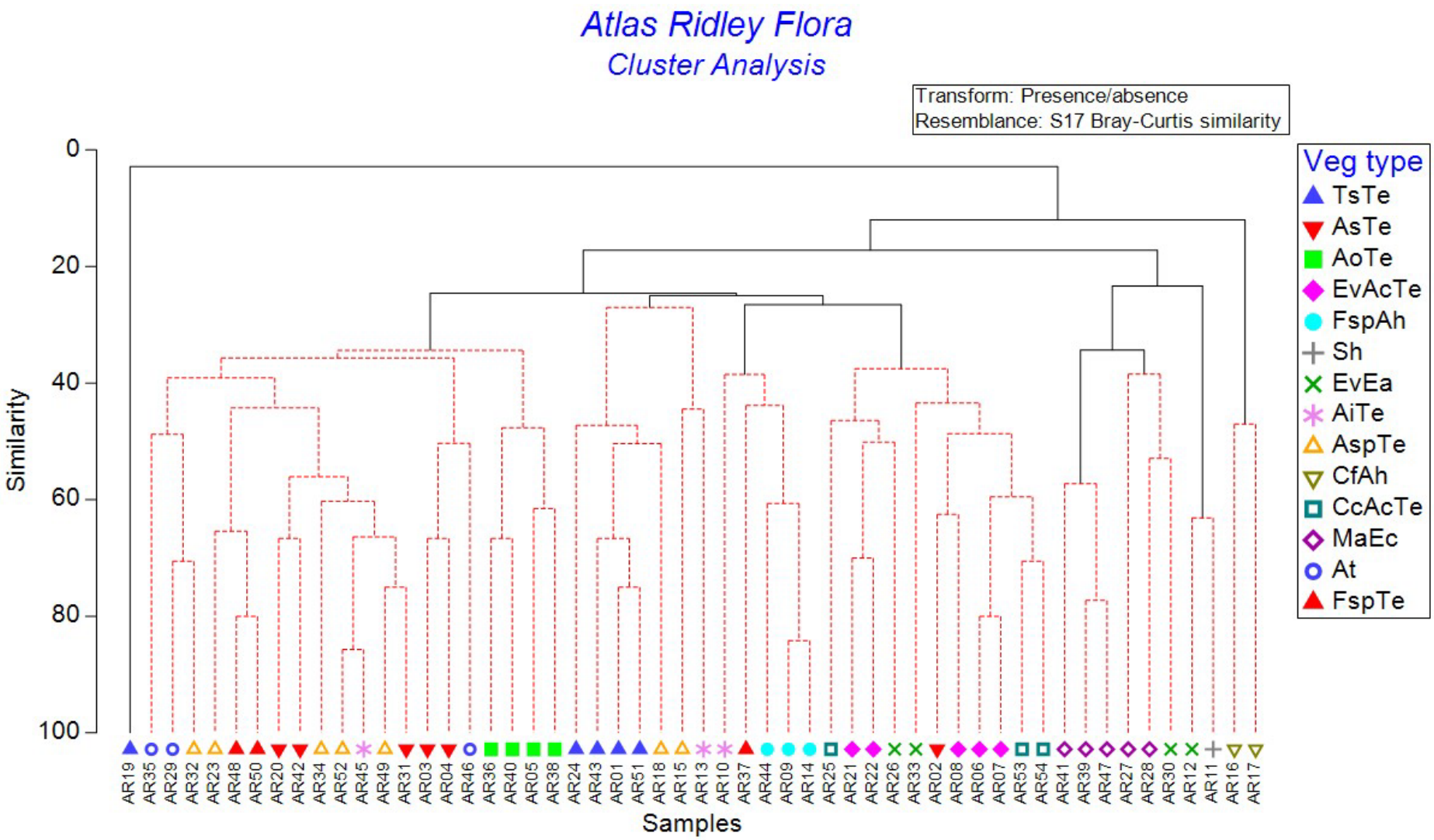


Figure 2: Cluster analysis (dendrogram) showing floristic groupings of sites for each vegetation type.

4.1.9.2 Flora Species Accumulation

Analysis of systematic flora data for the Survey Area Analysis of systematic flora data for the Survey Area produced a Sobs curve that is approaching an asymptotic plateau (**Figure 3**). All richness estimators were at or greater than the Sobs curve, indicating that the observed species richness was lower than, or equal to, that predicted by the analysis. The observed species richness for the Survey Area was 121, whereas estimated species richness ranged from 121 (Chao 1 and 2, Jacknife 1) to 157 (MM), which suggests that approximately 77 to 100% of the theoretical maximum number of flora species was recorded during the field survey (**Table 15**).

The data used to produce the species accumulation curve was conservative because opportunistic species (which are not associated with a site), and unconfirmed flora were not included. With opportunistic and unconfirmed flora included, the number of flora taxa recorded during the survey was 153, which is 98.0% of the highest expected species richness, and 126.4% of the lowest expected species richness.

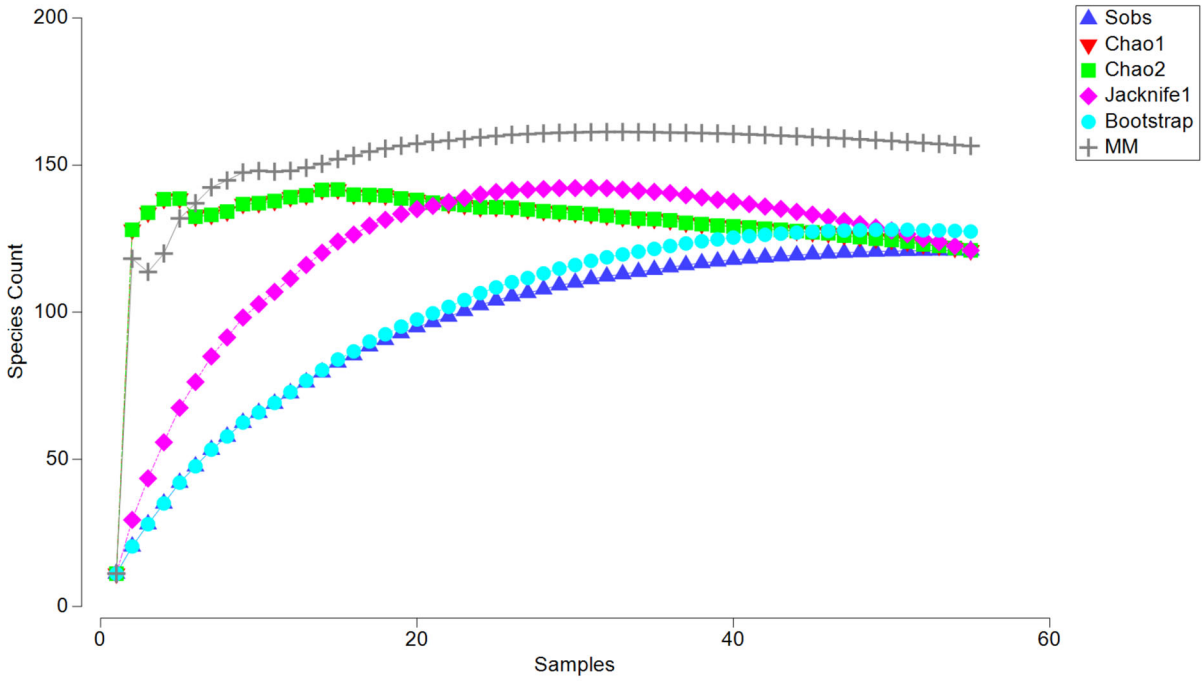


Figure 3: Flora Species Accumulation Curve

Table 15: Flora species richness estimators

Treatment	Estimated species richness	Observed species richness as a proportion of estimated species richness
Chao 1	121	100.00
Chao 2	121	100.00
Jacknife 1	121	100.00
Bootstrap	127.40	94.98
Michaelis-Menton	156.49	77.32

4.2 Fauna

4.2.1 Desktop Assessment

The database searches and literature review identified 426 terrestrial vertebrate fauna taxa occurring within the Desktop Study Area, comprising:

- 14 amphibians, of which none are significant.
- 244 birds, of which 62 are significant.
- 56 mammals, of which 11 are significant.
- 112 reptiles, of which three are significant.

Key findings of the literature review are summarised in **Appendix B**, a complete list of fauna taxa returned by the database search results is presented in **Appendix H** and displayed in **Map 11**.

4.2.2 Fauna Habitat

Nine fauna habitats (excluding cleared areas) were identified and mapped within the Survey Area. Fauna habitats are presented in **Map 12**, described below in **Table 16**, and site sheets for each habitat assessment are provided in **Appendix I**. Small discrepancies in fauna habitat extents (i.e., not adding up to the exact area extent of the Survey Area) are due to rounding.

Table 16: Fauna habitats recorded within the Survey Area

Fauna habitat	Total area, percentage of Survey Area	Habitat description	Representative photograph
Closed Acacia Shrubland	15.01 ha, 0.14%	Flat plains with red sandy substrate. Vegetation consists of open *Corymbia* and *Eucalyptus* woodland over *Eucalyptus* and *Acacia* open shrubland midstory over low *Triodia* hummock grassland. Microhabitats include *Triodia* hummocks and leaf litter. This habitat contained disturbances caused by vehicle tracks.	
Low *Acacia stellaticeps* over Triodia	3,071.26 ha, 29.64%	Flat plains with brown-orange clay, loam and sandy substrate. Vegetation consists of low, isolated clumps of *Acacia stellaticeps* over low *Triodia epactia* open hummock grassland. Microhabitats include *Triodia* hummocks, leaf litter and woody debris were observed. This habitat contained disturbances caused by vehicle tracks and overgrazing. The significant Pilbara Leaf-nosed Bat was recorded within this habitat. Previous surveys have recorded the Bilby, Oriental Pratincole, and the Brush-tailed Mulgara within this habitat type.	

Fauna habitat	Total area, percentage of Survey Area	Habitat description	Representative photograph
Major Drainage	165.69 ha, 1.60%	Flat plains with red-orange sandy substrate. Vegetation consists of open eucalypt woodland over sparse acacia midstory and open *Triodia* hummock grassland. Microhabitats include *Triodia* hummocks, leaf litter, peeling bark, woody debris, and burrows. Tree hollows, log hollows and logs over 10cm were also observed. This habitat contained disturbances caused by vehicle tracks, overgrazing and weeds. The significant Grey Falcon and Barn Swallow may utilise the eucalypt trees within this habitat for nesting. The significant Ghost Bat and Osprey may utilise this habitat for foraging.	
Minor Drainage	24.12 ha, 0.23%	Flat plains with red sandy substrate. Vegetation consists of open *Eucalyptus* woodland over *Eucalyptus* and *Acacia* open shrubland midstory over low *Triodia* hummock grassland. Microhabitats include *Triodia* hummocks, leaf litter, peeling bark and woody debris. This habitat contained disturbances caused by vehicle tracks. The significant Grey Falcon and Barn Swallow may utilise the eucalypt trees within this habitat for nesting. The significant Ghost Bat and Osprey may utilise this habitat for foraging.	

Fauna habitat	Total area, percentage of Survey Area	Habitat description	Representative photograph
Mixed Acacia Shrubs and Triodia Plains	5,501.32 ha, 53.09%	Flat plains with red-orange sandy and clay-loam substrate. Vegetation consists of open *Eucalyptus* woodland over *Acacia* open shrubland midstory with *Triodia* hummock grassland. Microhabitats include *Triodia* hummocks and leaf litter. This habitat contained disturbances caused by vehicle tracks and overgrazing. The significant Western Pebble-mound Mouse was recorded within this habitat. The Marsh Sandpiper, Red-necked Phalarope, and the Sanderling have been previously recorded within this habitat type. The significant Common Greenshank, Little Curlew, Oriental Plover, and the Glossy Ibis may utilise this habitat after significant rainfall event.	
Open Eucalypt Woodland	429.90 ha, 4.15%	Flat plains with red sandy substrate. Vegetation consists of open *Corymbia* and *Eucalyptus* woodland over *Eucalyptus* and *Acacia* open shrubland midstory over low *Triodia* hummock grassland. Microhabitats include *Triodia* hummocks and leaf litter. This habitat contained disturbances caused by vehicle tracks. The significant Peregrine Falcon may utilise this habitat for nesting and hunting.	

Fauna habitat	Total area, percentage of Survey Area	Habitat description	Representative photograph
Outcrops and Breakaways	43.56 ha, 0.42%	Sloped granite, ironstone and quartz ridges and outcrops with red-brown sandy-clay substrate. Vegetation consists of open acacia shrubland midstory over sparse and open *Triodia* hummock grassland. Microhabitats include Exfoliating rock, rock crevices, *Triodia* hummocks, leaf litter, peeling bark and woody debris. The significant Pilbara Leaf-nosed Bat and Western Pebble-mound Mouse were recorded within this habitat. The significant Northern Quoll has also been recorded by previous surveys within this habitat type. The significant Pilbara Olive Python may utilise this habitat for dispersal.	
Sparse Triodia Plains	858.02 ha, 8.28%	Open rocky granite plains with red sandy-pebble substrate. Vegetation consists of sparse acacia shrubland midstory over open hummock grassland. Microhabitats include *Triodia* hummocks and leaf litter. This habitat contained disturbances caused by vehicle tracks and overgrazing. The significant Western Pebble-mound Mouse was recorded within this habitat. The significant Common Greenshank, Little Curlew, Oriental Plover, and the Glossy Ibis may utilise this habitat after significant rainfall event. The Pilbara Grasswren and the Short-tailed Mouse may also utilise this habitat for foraging and shelter.	

Fauna habitat	Total area, percentage of Survey Area	Habitat description	Representative photograph
Stony Hills	47.82 ha, 0.46%	Undulating granite and quartz plains with red sandy substrate. Vegetation consists of sparse *Acacia* shrubland midstory over sparse *Triodia* hummock grassland. Microhabitats include *Triodia* hummocks and termite mounds. This habitat contained disturbances caused by vehicle tracks. The Pilbara Grasswren and the Short-tailed Mouse may also utilise this habitat for foraging and shelter.	
Cleared	206.26 ha, 1.99%	Cleared land for existing tracks/roads. Low/negligible fauna habitat value.	
Total	10,363 ha		

4.2.3 Fauna Records

The fauna survey recorded a total of 63 fauna taxa from 34 families. The fauna diversity within each habitat type is summarised in **Table 17** and a full inventory of fauna taxa recorded during the field survey is provided in **Appendix J**.

Table 17: Fauna diversity by habitat type

Fauna habitat	Birds	Mammals	Reptiles	Total
Closed Acacia Shrubland	0	0	0	0
Low *Acacia stellaticeps* over Triodia	20	10*	3	33*
Major Drainage	10	7	5	22
Minor Drainage	5	1	2	8
Mixed Acacia Shrubs and Triodia Plains	15	3*	10	28*
Open Eucalypt Woodland	8	2	3	13
Outcrops and Breakaways	4	12*	5	21*
Sparse Triodia Plains	9	1	0	10
Stony Hills	1	2*	0	3*
Cleared	7	0	1	8

*Contains significant fauna

Birds

A total of 33 native birds from 20 families were recorded within the Survey Area. The most abundant bird taxa were the Australian Zebra Finch (*Taeniopygia castanotis*), Spinifex Pigon (*Geophaps plumifera*), and Crested Pigon (*Ocyphaps lophotes*). The most diverse bird families were Alcedinidae (Four taxa), and Falconidae (three taxa), and Cacatuidae (three taxa).

No significant birds (see **Section 4.2.4.1**) and one introduced bird were recorded.

Mammals

A total of 14 native mammals from nine families were recorded within the Survey Area, comprising four non-volant (non-flying) mammals and six volant mammals (bats). The most abundant mammal taxa were the Gould's Wattled Bat (*Chalinolobus gouldii*), Sheath-tailed Bat (*Taphozous spp*), Greater Northern Free-tailed Bat (*Chaerephon jobensis*) and Finlayson's Cave Bat (*Vespadelus finlaysoni*). The most diverse mammal families were Vespertilionidae (three taxa) and Macropodidae (two taxa).

Two significant mammals (see **Section 4.2.4.1**) and two introduced mammals were recorded.

Reptiles

A total of 16 native reptiles from five families were recorded within the Survey Area. The most abundant reptile taxa were the Rock Ctenotus (*Ctenotus saxatilis*), Western Ring-tailed Dragon (*Ctenophorus caudicinctus*), and Spiny-tailed Goanna (*Varanus acanthurus*). The most diverse reptile families were Scincidae (five taxa), Agamidae (three taxa), and Varanidae (three taxa).

No significant reptiles (see **Section 4.2.4.1**) and no introduced reptiles were recorded.

Amphibians

No amphibians were recorded within the Survey Area

4.2.4 Significant Fauna

4.2.4.1 Recorded within the Survey Area during the current survey

Two significant fauna taxa were recorded within the Survey Area:

- Pilbara Leaf-nosed Bat (*Rhinonicteris aurantia*) (Pilbara form), listed as Vulnerable under the BC Act and EPBC Act, was recorded seven times during the field survey. all individuals were recorded by ultrasonic ARUs within Outcrops and Breakaways (-20.2906, 119.1062) and Low *Acacia stellaticeps* over Triodia adjacent to Outcrops and Breakaways (-20.3417, 119.0783) (**Map 12**).
- Western Pebble-mound Mouse (*Pseudomys chapmani*), listed as Priority 4 by DBCA, was recorded six times during the field survey. All individuals were recorded by residual mounds within Stony Hills (-20.4059, 118.9593; -204061, 118.9596; -20.4090, 118.9611), Outcrops and Breakaways (-20.4190, 118.9164; -20.3421, 118.0801), and Mixed Acacia Shrubs and Triodia Plains adjacent to Outcrops and Breakaways (-20.4196, 118.9155) (**Map 12**).

4.2.4.2 Previously recorded within the Survey Area

Seven significant fauna taxa have been recorded within the Survey Area in recent years but were not recorded during the current survey:

- Northern Quoll (*Dasyurus hallucatus*), listed as Endangered under the BC Act and EPBC Act.
- Bilby (*Macrotis lagotis*), listed as Vulnerable under the BC Act and EPBC Act.
- Oriental Pratincole (*Glareola maldivarum*), listed as Migratory under the BC Act and EPBC Act, and Marine under the EPBC Act.
- Marsh Sandpiper (*Tringa stagnatilis*), listed as Migratory under the BC Act and EPBC Act, and Marine under the EPBC Act.
- Red-necked Phalarope (*Phalaropus lobatus*), listed as Migratory under the BC Act, and Migratory and Marine under the EPBC Act.
- Sanderling (*Calidris alba*), listed as Migratory under the BC Act, and Migratory and Marine under the EPBC Act.
- Brush-tailed Mulgara (*Dasycercus blythi*), listed as Priority 4 by DBCA.

4.2.4.3 High likelihood of occurrence within the Survey Area

Nine significant fauna taxa were assessed as having a high likelihood of occurring within the Survey Area:

- Grey Falcon (*Falco hypoleucos*), listed as Vulnerable under the BC Act and EPBC Act.
- Ghost Bat (*Macroderma gigas*), listed as Vulnerable under the BC Act and EPBC Act.
- Pilbara Olive Python (*Liasis olivaceus barroni*), listed as Vulnerable under the BC Act and EPBC Act.

- Common Greenshank (*Tringa nebularia*), listed as Migratory under the BC Act, and Endangered, Migratory and Marine under the EPBC Act.
- Barn Swallow (*Hirundo rustica*), listed as Migratory under the BC Act, and Migratory and Marine under the EPBC Act.
- Little Curlew (*Numenius minutus*), listed as Migratory under the BC Act, and Migratory and Marine under the EPBC Act.
- Oriental Plover (*Charadrius veredus*), listed as Migratory under the BC Act, and Migratory and Marine under the EPBC Act.
- Osprey (*Pandion haliaetus*), listed as Migratory under the BC Act, and Migratory and Marine under the EPBC Act.
- Peregrine Falcon (*Falco peregrinus*), listed as Other Specially protected species under the BC Act.

4.2.4.4 Medium likelihood of occurrence within the Survey Area

A total of 25 significant fauna taxa were assessed as having a medium likelihood of occurring within the Survey Area, including:

- Glossy Ibis (*Plegadis falcinellus*), listed as Migratory under the BC Act, and Migratory and Marine under the EPBC Act.
- Pacific Swift/Fork-tailed Swift (*Apus pacificus*), listed as Migratory under the BC Act, and Migratory and Marine under the EPBC Act.
- Pilbara Grasswren (*Amytornis whitei whitei*), listed as P4 (as *A. striatus striatus*) by DBCA.
- Short-tailed Mouse (*Leggadina lakedownensis*), listed as Priority 4 by DBCA.

A further 21 shorebird species were also assessed as having a medium likelihood of occurring within the Survey Area (**Appendix K**). These species will be discussed as a group due to the similarities of their habitat requirement within the Survey Area.

A total of 33 significant fauna taxa were assessed as having a low likelihood of occurring within the Survey Area. The complete results of the significant fauna likelihood of occurrence assessment including justification for the assessment outcome for each taxon is provided in **Appendix K**.

5.0 Discussion

5.1 Flora and Vegetation

5.1.1 Floristic Composition

The suite of flora taxa recorded during the survey is considered typical for the respective areas (Beard 1976) and aligns with the database search results obtained.

Rainfall in the three month and 12-month periods prior to the survey was well below average. This likely resulted in a lower than expected floristic diversity when considering other surveys undertaken in the region and the timing of the survey undertaken. The lack of rainfall also likely contributed to several small herbs and grasses that could not be identified to species level due the poor and/or sterile nature of these specimens. Had rainfall totals in the 3 and 12 months prior to the survey been closer to the long-term average for these periods, the survey results may have shown fewer sterile species and a higher floristic diversity, including more annuals and ephemerals.

5.1.2 Significant Flora

The two DBCA-listed Priority species recorded, *Gymnanthera cunninghamii* (P3) and *Tephrosia rosea subsp*. Port Hedland (A.S. George 1114) (P1), were each determined by the pre-survey desktop assessment to be of high likelihood of occurrence.

Gymnanthera cunninghamii is an erect shrub that grows from 1 to 2 metres high with cream-yellow-green flowers from January to December (Department of Biodiversity Conservation and Attractions, 2020). The species grows in sandy soils (Department of Biodiversity Conservation and Attractions, 2023) and often favours creek beds, river systems and major drainage lines.

Tephrosia rosea subsp. Port Hedland (A.S. George 1114) is an erect, spindly shrub that has been recorded from only a few locations in the Pilbara, mostly on pale red-yellow-brown sand on sand plains (Western Australian Herbarium, 2023).

Focused Vision (2023) recorded one individual of *Tephrosia rosea* subsp. Port Hedland (A.S. George 1114) within their 2023 survey, located approximately 6.5 km to the north of the far western end of the current survey area.

5.1.2.1 Other Species of Interest

One flora collection from the survey, ?*Afrohybanthus*, could not be positively identified to Genus level, however it was noted by WAH taxonomist Mike Hislop as an interesting collection with some vegetative characters shared between the *Afrohybanthus* and *Pigea* genera (both in the Violaceae family). While this specimen has a generally similar vegetative morphology to a WAH specimen referred to as *A*. aff. *aurantiacus* from the PH area (Loudon, B.; Henshaw, N. BLNH-036), it differs from the WAH specimen which has hairy branchlets. A better specimen collected during a season with higher rainfall may yield a positive identification.

5.1.3 Vegetation Types and Condition

Mapping reliability ranged from very high, in areas where flora sites and mapping notes were completed within intact vegetation, to moderate in areas that were not traversed. The majority of the survey area (approximately 86.5%) comprised plains consisting of *Acacia stellaticeps* and mixed *Acacia* spp. with isolated patches of *Eucalyptus victrix* and *Corymbia* spp. woodland. Some areas, particularly in the AsTe vegetation type, were heavily fire affected, however sufficient intact vegetation remained to reliably inform vegetation mapping.

Five broad landforms – ironstone hilltops and ridges, outcroppings, plains, low lying floodplains/flats/minor drainages and major drainages – were recorded within the Survey Area.

Based on examining similarities in vegetation descriptions, vegetation within the survey area was largely representative of existing broad scale vegetation and soil and land system mapping for the area (Beard, 1976, Shepherd et al., 2002).

The vegetation throughout the majority of the survey area was in 'Very Good' condition. With many pastoral stations situated in the Port Hedland region, disturbances from livestock and weeds in this region are widespread; as such, these disturbances automatically downgrades any vegetation condition below that of 'Excellent' (EPA, 2016c). Areas in Good, Poor or Degraded condition were often affected by the presence of more aggressive and/or declared pest species of weeds such as **Cenchrus ciliaris* and **Calotropis procera* (DP). These areas were often associated with drainages and floodplains frequented by livestock, which often act as vectors for the spread of these weeds, as well as other weeds such as **Vachellia farnesiana* and **Malvastrum americanum*. Areas that had been cleared of vegetation for roads, tracks and infrastructure were not assigned a vegetation condition.

5.1.4 Significant Vegetation

5.1.4.1 Groundwater Dependent Ecosystems

Vegetation type MaEc is likely to be representative of groundwater dependent ecosystems. This is indicated by the presence of known phreatophytic vegetation, specifically *Melaleuca argentea* and *Eucalyptus camaldulensis* subsp. *refulgens. Melaleuca argentea* is an obligate phreatophyte and is almost exclusively dependent on groundwater for its water requirements while *Eucalyptus camaldulensis* subsp. *refulgens* is a facultative phreatophyte and utilises groundwater as well as water from other sources (Rio Tinto, 2017).

Whilst the MaEc vegetation type comprised a small proportion of the Survey Area (1.6%), it was mapped in three different locations, each one traversing the full width of the Survey Area corridor (see **Map 9**). These locations correspond to the three major drainages (from west to east): Turner River, King Edward River and Devil Creek.

Previous surveys conducted by Focused Vision in 2023 mapped the King Edward and Devil Creek as potentially representative of GDV due to a dominant overstorey of facultative phreatophytes *Eucalyptus camaldulensis* subsp. *refulgens* and *Eucalyptus victrix*.

5.1.5 Survey Adequacy

The flora and vegetation survey were conducted in accordance with the scope of works, and appropriate for a detailed flora and vegetation survey in the Pilbara. Fifty-four flora sites were sampled across the Survey Area, comprising 26 quadrats and 28 relevés. The inventory of vascular flora and records of significant and weed species was compiled using flora site data and opportunistic observations made during traverses between sites and targeted searches of habitat likely to support significant flora (e.g. drainages).

A minimum of three flora sites were sampled in each vegetation type, except for vegetation types Sh and CfAh which were each too restricted in distribution to accommodate three sites. Vegetation type FspAh comprised the smallest proportion of the total survey area (0.02%), however the ironstone ridges with which the vegetation type was associated with were distributed adequately enough to incorporate three flora sites.

When a curve approaches an asymptote, it indicates sampling effort has been sufficient to adequately collect the species comprising the floral assemblage at the locations sampled. The value at which the curve asymptotes can also be used as an approximate measure of the total size of the species complement at that location.

The species accumulation curve and the richness estimators approached asymptote and plateaued, indicating that additional surveys would be unlikely to record many additional vascular flora taxa. This in turn is indicative of the paucity of flora taxa throughout the Atlas Ridley Survey Area as a result of very dry conditions in the 3- and 12-month periods prior to the survey. The presence of ephemeral and annual herbs was very low, and even perennial grasses such as *Triodia* spp., *Eulalia aurea*, *Eragrostis* spp. and **Cenchrus ciliaris* (Buffel grass) were often observed either dead or sterile.

5.1.6 Regional Representation

According to the EPA (2000), the threshold level below which species loss appears to accelerate exponentially at an ecosystem level is regarded as being 30% of the pre-clearing extent of the vegetation type. Proposals that would affect a vegetation association with 30% or less of its pre-clearing extent remaining are likely to be formally assessed by the EPA (2006).

Each of the four Abydos Plain vegetation associations within the Survey Area are above the threshold level of 30% of the pre-clearing extent set by the EPA for protecting biological diversity.

5.2 Fauna

5.2.1 Fauna habitat

The nine broad fauna habitats (excluding cleared areas) identified within the Survey Area are typical of the Pilbara bioregion and consistent with habitats identified by previous studies in the region (Appendix B). At least one habitat assessment was conducted within each habitat type. Multiple assessments were conducted within the fauna habitats with the highest value to significant fauna (e.g. Outcrops and Breakaways) and overall fauna assemblages (e.g. Low *Acacia stellaticeps* over Triodia). Nearly all identified fauna habitats extend outside the Survey Area to form larger ecosystems. However, there is one pocket of Stony Hills and Closed Acacia Shrubland habitats, and a series of Outcrops and Breakaways habitat contained entirely within the Survey Area which lack connectivity to similar habitats.

Four fauna habitats: Outcrops and Breakaways; Stony Hills; Low *Acacia stellaticeps* over Triodia and Mixed Acacia Shrubs; and Triodia Plains habitats, represent the highest value to overall fauna assemblages and the highest value to significant fauna.

The Outcrops and Breakaways habitats are of value to significant fauna species such as Northern Quoll, Pilbara Leaf-nosed Bat, and Western Pebble-mound Mouse. The caves and rock crevices found throughout the habitats provide roosting, denning, and refuge habitat. The hills and valleys within these habitats may also occasionally flood, providing a temporary water source for fauna species.

The Stony Hill habitat is of value to significant species such as the Western Pebble-mound Mouse as it provides suitable burrowing, refuge, and foraging habitat. This habitat can also provide suitable hunting habitat for Northern Quoll and Pilbara Leaf-nosed Bat in areas adjacent to Outcrops and Breakaways.

The Low *Acacia stellaticeps* over Triodia habitat had the highest number of fauna species recorded of all fauna habitats and supports significant fauna species such as Brush Tailed Mulgara, Bilby, and Western Pebble-mound Mouse. This habitat can also provide suitable hunting habitat for Northern Quoll and Pilbara Leaf-nosed Bat in areas adjacent to Outcrops and Breakaways.

Mixed Acacia Shrubs and Triodia Plains habitats recorded the second highest number of species of all fauna habitats. In addition, they support significant species that favours plains habitats, such as Brush-tailed Mulgara and Western Pebble-mound Mouse. When adjacent to Outcrops and Breakaways habitat they can also support significant fauna such as Northern Quoll and Pilbara Leaf-nosed Bat.

The Major and Minor Drainage Line habitats represent moderate value to significant fauna due to dense fringing shrubland which provide suitable foraging habitat and plays a role as an ecological linkage. These habitats may also contain ephemeral pools after significant rain events, providing valuable water sources for significant species such as Northern Quoll and Pilbara Olive Python.

Habitat condition varied throughout the Survey Area. Large portions of the Survey Area had been recently cleared for mining activity, drill pads, and associated access tracks. Weeds and degradation caused by cattle and historic settlement were observed throughout all habitats.

5.2.2 Significant Fauna

5.2.2.1 Recorded within the Survey Area during the current survey

Pilbara Leaf-nosed Bat (*Rhinonicteris aurantia*) (Pilbara form) – VU (BC Act); VU (EPBC Act)

The Pilbara Leaf-nosed Bat was originally considered to be the same species as the Orange Leaf-nosed Bat, which occurs in the Kimberley region, Northern Territory, and northwest Queensland. It is now considered to be a separate form based on morphology; however, formal reclassification has not yet been undertaken (Cramer et al., 2016). The taxon is restricted to areas with suitable day roosts, which are typically deep caves that retain humidity or disused underground mines (Cramer et al., 2016).

The Pilbara Leaf-nosed Bat was recorded once within the Outcrops and Breakaways habitat, and one was recorded by an ARU 10 m away from the mapped boundary of an Outcrops and Breakaways habitat. The caves in this habitat provide ideal roosting habitat for the taxon.

Western Pebble-mound Mouse (*Pseudomys chapmani*) – P4 (DBCA)

The Western Pebble-mound Mouse is endemic to the Pilbara, where it builds pebble mounds from small stones. These pebble mounds typically cover areas from 0.5 – 9.0m^2 and are characteristic of this species. Pebble mounds are restricted to suitable-class stones and are usually found on gentle slopes and spurs that are often vegetated by hard spinifex (Ford & Johnson, 2007; Van Dyck & Strahan, 2008). Active mounds are characterised by the conical shape of the mound with clear, distinct entrance holes (Anstee, 1996). Pebble mounds constructed by the Western Pebble-mound Mouse are found throughout the Pilbara; however, studies have shown that not all mounds in an area are occupied by a Pebble-mound Mouse at any one time (Anstee, 1996).

Western Pebble-mound Mouse mound was recorded three times within the Stony Hills habitat, and twice within the Outcrops and Breakaways habitat. Given the presence of an entrance hole and the lack of debris around the entrance, it is highly likely that the mounds are currently occupied. This species was recorded once within the Mixed Acacia Shrubs and Triodia Plains habitat, however, the record is < 40 m away from the mapped boundary of an Outcrops and Breakaways habitat, therefore it is considered an ecotone of the Outcrops and Breakaways habitat.

5.2.2.2 Previously recorded within the Survey Area

Northern Quoll (*Dasyurus hallucatus*) – EN (BC Act); EN (EPBC Act)

The range of the Northern Quoll has contracted across northern Australia since European settlement, and it now occurs as several disjunct populations (Braithwaite & Griffiths, 1994). The Northern Quoll can be locally common, but its former range has retracted considerably (Van Dyck & Strahan, 2008). The Northern Quoll is found in dissected rocky escarpments, utilising a variety of den sites, including rock crevices, tree hollows, logs, and termite mounds. It favours rocky areas, taking refuge in rock crevices, and utilises gullies and drainage lines.

It is important to note that much of the ecological information for the Northern Quoll comes from studies in the Top End of the Northern Territory (e.g. (Begg, 1981); (Oakwood, 2000). Much of their ecology is likely to be similar in the Pilbara; however, differences in genetic structure and some demographic parameters have been observed (How et al., 2009).

The Northern Quoll has a relatively large home-range size of up to 150 ha for males (35 ha for females). Movements between den sites on consecutive nights can be up to 1.85 km for males (Oakwood, 2000). In the Northern Territory, mating occurs in late May to June and all males die after the mating season and females rear the young alone (Oakwood, 2000). The young spend about two months in the pouch and are then left in a succession of nursery dens for the next three months for periods at night while the mother forages (Oakwood, 2000). In the Kimberley region, Schmitt et al. (1989) found that breeding occurred in July and August. However, at Woodstock Station in the Pilbara, breeding occurred in September, a month later than the Kimberley (How et al., 2009). This variation in time of breeding across three distinct populations indicates some reproductive flexibility in the species.

There is an abundant (1,282) amount of previous Northern Quoll records within and around the Survey Area (DBCA, 2023). Most of the previous records of the Northern Quoll are in the Outcrops and Breakaways habitat, except for one record less than 1 km away. This is expected as the Outcrops and Breakaways, as well as the surrounding habitats constitute core habitat for the Northern Quoll because of their value for denning and foraging. In addition, the records range from early 1980 to the current days, which shows that the species occupies the Survey Area consistently.

Bilby (*Macrotis lagotis*) – VU (BC Act); VU (EPBC Act)

The Bilby is a solitary and nocturnal type of bandicoot, characterised by its distinct rabbit-like ears and long face with a pointed snout (Department of Biodiversity Conservation and Attractions, 2017a). The range of the Bilby has declined northwards, with wild subpopulations now restricted predominantly to the Tanami Desert in the Northern Territory and the Gibson, Little Sandy and Great Sandy Deserts as well as parts of the Pilbara region in Western Australia (Dziminski & Carpenter, 2017; Southgate, 1990). The Bilby is described as occupying a wide range of vegetation types, including open tussock grassland on upland hills, Mulga woodland/shrubland growing on ridges and rises and spinifex growing on sandplains and dunes, drainage systems, salt lake systems, and other alluvial areas (Dziminski & Carpenter, 2017; Pavey, 2006).

This species was recorded in large numbers within the Survey Area during a previous survey (Phoenix Environmental, 2022). They were previously recorded in the Low *Acacia stellaticeps* over Triodia and Sparse Triodia Plains habitats. The field survey did not identify evidence of the species within the Survey Area. These habitats constitute core habitat for the Bilby because of their value for denning, foraging, and dispersal.

Oriental Pratincole (*Glareola maldivarum*) – MI (BC Act); MI, MA (EPBC Act)

The Oriental Pratincole typically prefers plains, shallow wet and dry edges of open bare wetlands and tidal mudflats and beaches for habitat (Pizzey & Knight, 2013). However, as this species breeds in Pakistan, India, and parts of south-east Asia, the Survey Area would be used for foraging only (Pizzey & Knight, 2013).

The Oriental Pratincole was previously recorded within the Survey Area in 2004 (DBCA, 2023), within the Low *Acacia stellaticeps* over Triodia habitat, which have the potential to become inundated during the wet season, providing the taxon with foraging habitat.

Brush-tailed Mulgara (*Dasycercus blythi*) - P4 (DBCA)

The Brush-tailed Mulgara is distributed widely across inland Australia with a population that fluctuates somewhat in response to seasonal conditions, although is probably substantially greater than 10,000 individuals even at its lowest point (Woinarski et al., 2014). Brush-tailed Mulgara habitat is bounded broadly by the Tanami Desert in the north, the Simpson Desert in the east, the Great Victoria Desert in the south and the Carnarvon, Murchison and Pilbara IBRA regions in the west (Woinarski et al., 2014). It is associated with hummock spinifex grasslands, but also uses other vegetation types (often sandplains, grasslands and woodlands) when mixed with or adjacent to hummock grasslands. It is mainly nocturnal and shelters during the day in burrow systems. Brush-tailed Mulgara burrows typically contain between two and nine entrances, tunnels are mostly on a single level and to a depth of about 300 mm (Thompson & Thompson, 2007). The diet of the Brush-tailed Mulgara comprises a broad range of invertebrates and small vertebrates (Woinarski et al., 2014).

The Brush-tailed Mulgara was previously recorded in the Low *Acacia stellaticeps* over Triodia habitat within the Survey Area (DBCA, 2023), which is the preferred habitat of the taxa. These records are concentrated to the western portion of the Survey Area, however, 83% of the Survey Area consists of Low *Acacia stellaticeps* over Triodia & Mixed Acacia Shrubs and Triodia Plains habitats, which indicates the species may be able to persist throughout the majority of the Survey Area.

Other Previously Recorded Species

There are three historical (1981) records of Marsh Sandpiper (*Tringa stagnatilis*), Red-necked Phalarope (*Phalaropus lobatus*), and Sanderling (*Calidris alba*) within the Survey Area (DBCA, 2023). All three records are associated with vouchered specimens by the Western Australian Museum and have the same coordinate.

The records of the three taxa are located in the Mixed Acacia Shrubs and Triodia Plains habitat, which is not the typical habitat preferred by these taxa (Menkhorst et al., 2019; Pizzey & Knight, 2013). Therefore, considering the age of the records, it is reasonable to assume the coordinates are inaccurate, and the specimens were likely vouched north of the Survey Area near the coast, where most of the recent records of these species are located.

The Sanderling (*Calidris alba*) seldomly ventures away from the coast (Menkhorst et al., 2019; Pizzey & Knight, 2013), but the Marsh Sandpiper (*Tringa stagnatilis*) and the Red-necked Phalarope (*Phalaropus lobatus*) are able to utilize freshwater wetland habitat (Menkhorst et al., 2019; Pizzey & Knight, 2013). Considering there are tidal flats < 10 km to the north of the Survey Area, and major drainage habitat connecting these tidal flats to the Survey Area, it is possible for these species occupy the Survey Area after significant rain events. However, if we consider the records inside the Survey Area to be inaccurate, then their adjusted likelihood would be Low, as there are minimal recent or nearby records and limited suitable habitat.

5.2.2.3 High likelihood of occurrence within the Survey Area

Grey Falcon (*Falco hypoleucos*) – VU (BC Act); VU (EPBC Act)

The Grey Falcon is an elusive and endemic bird of the arid interior (Schoenjahn et al., 2019). It distributed sparsely over Australia's arid and semi-arid zones and is absent from Cape York Peninsula, south of the Great Dividing Range in Victoria, and south of 26°S in Western Australia (BirdLife International, 2016a; Johnstone & Storr, 2004). The Grey Falcon is restricted largely to areas of the highest annual average temperatures where there is average annual rainfall of less than 500 mm. It favours lightly timbered and untimbered lowland plains that are crossed by tree-lined watercourses, but frequents other habitats, including grassland and sand dune habitats (BirdLife International, 2016a; Johnstone & Storr, 2004).

The Survey Area has three Major Drainage habitats with eucalypt trees along the riverbanks, which constitute suitable nesting habitat for the Grey Falcon. The plains surrounding Major Drainage habitats are likely to be utilised by this taxon for hunting.

Ghost Bat (*Macroderma gigas*) – VU (BC Act); VU (EPBC Act)

The Ghost Bat is patchily distributed in small colonies in three areas of northern Australia, including the Pilbara and Kimberley in WA, the Northern Territory, and the northeast of QLD. The species requires undisturbed roost caves or mineshafts, usually complex systems with several openings (Van Dyck & Strahan, 2008). The species eats large insects, geckoes, frogs, small birds, and mammals including other bats. The kills are made on the ground or in the air and then taken to a feeding perch, which is usually a rocky overhang or small cave (Van Dyck & Strahan, 2008).

The presence of other bat species in the Survey Area indicates that there are suitable roosting caves for Ghost bat in the vicinity of the Survey Area. Ghost Bat also predate heavily on other bat species, particularly Pilbara Leaf-nosed Bat, which were recorded during the field survey. The Major and Minor Drainage habitats constitute moderate value habitat as the taxon may use these habitats for foraging and dispersal.

Pilbara Olive Python (*Liasis olivacea barroni*) – VU (BC Act); VU (EPBC Act)

The Olive Python occurs in the ranges of the Pilbara, typically in escarpments and gorges where water is present. It generally shelters under rock piles, or under spinifex and often basks on top of rocks (Pearson, 1993, 2003). This large python is threatened due to its relatively small distribution, low population densities and may be affected by habitat disturbance such as grazing and fire. This species is known to frequent water bodies where it ambushes prey (Pearson, 1993). During a systematic survey of a large series of quadrats in the Pilbara, the Olive Python was only recorded in one quadrat (Doughty et al., 2011). This species is extremely cryptic given its method of hunting and nocturnality.

The Pilbara Olive Python was recorded frequently and recently throughout the Desktop Study Area. Preferred habitat is not present within the Survey Area; however, several water source occur throughout the desktop study area which have recorded the species that are linked to the Survey Area. The taxon is likely to use Outcrops and Breakaways habitats for dispersal and the Major and Minor Drainages provide supporting habitat.

Common Greenshank (*Tringa nebularia*) – MI (BC Act); MI, MA (EPBC Act)

The Common Greenshank is a migratory species to Australia that typically breeds in the boreal forest zone from sea level to 1,200 m in Norway (BirdLife International, 2016b). Common Greenshanks are present in the North-west Marine Region in internationally significant numbers, with approximately 1% of the flyway population visiting Ashmore Reef between September and March (Bamford et al., 2008). The species is found in coastal areas, riverbanks and coastal to freshwater wetlands, where it wades in shallow water foraging for prey, often lunging or probing for fish and invertebrates (BirdLife International, 2016b; Menkhorst et al., 2017; Pizzey & Knight, 2001). It is generally absent from the Western Deserts although there are a few records from the Great Sandy Desert and the Nullarbor Plain. It occurs around most of the coast from Cape Arid in the south to Carnarvon in the north-west. In the Kimberley it is recorded in the south-west and the north-east (Pizzey & Knight, 2001).

The Common Greenshank has been recorded frequently and recently within the Desktop Study Area and likely occurs within the Survey Area. Within the Survey Area, the Mixed Acacia Shrubs and Triodia Plains, and Sparse Triodia Plains habitats constitute supporting habitat for the Common Greenshank as they may become flooded after significant rain events. The taxon is likely to be transient within the Survey Area and, if present, will occur within the Survey Area between August and March.

Barn Swallow (*Hirundo rustica*) – MI (BC Act); MI, MA (EPBC Act)

The Barn Swallow is a casual visitor primarily to coastal areas from the Gascoyne north, although the species may appear as a vagrant in inland areas on an irregular basis (Johnstone & Storr, 1998). After breeding in the temperate and subtropical regions of North America, Europe, northern Africa and Asia it migrates to the southern hemisphere where it spends the boreal winter (Johnstone & Storr, 1998). It is typically observed in the vicinity of urban water bodies and coastal wetlands.

The Barn Swallow has been recorded frequently within the Desktop Study Area and likely occurs within the Survey Area. Within the Survey Area, the Major and Minor Drainage habitats constitute supporting habitat for the Barn Swallow because of their value for roosting, foraging, and dispersal. The taxon is likely to be transient within the Survey Area and, if present, will occur within the Survey Area between Spring and Summer.

Little Curlew (*Numenius minutus*) – MI (BC Act); MI, MA (EPBC Act)

The Little Curlew is the smallest curlew, and generally spend the non-breeding season in northern Australia from Port Hedland in Western Australia to the Queensland coast. The Little Curlew is most often found feeding in short, dry grassland and sedgeland, including dry floodplains and blacksoil plains, which have scattered, shallow freshwater pools or areas seasonally inundated. Open woodlands with a grassy or burnt understorey, dry saltmarshes, coastal swamps, mudflats or sandflats of estuaries or beaches on sheltered coasts, mown lawns, gardens, recreational areas, ovals, racecourses and verges of roads, and airstrips are also used. Foraging sites are usually within 5 km of daytime roosting sites, as birds move between grassland and wetland, most feeding in drier grassland occurring during the first few hours after dawn and the late afternoon (DAWE, 2022).

The Little Curlew has been recorded frequently and recently within the Desktop Study Area and likely occurs within the Survey Area. Within the Survey Area, the Mixed Acacia Shrubs and Triodia Plains, and Sparse Triodia Plains habitats constitute supporting habitat for the Little Curlew as they may become flooded after significant rain events. The taxon is likely to be transient within the Survey Area and, if present, will occur within the Survey Area between October and April.

Oriental Plover (*Charadrius veredus*) – MI (BC Act); MI, MA (EPBC Act)

The Oriental Plover typically prefers grasslands and thinly vegetated plains, and open areas such as recently burnt country and heavily grazed pastures. During the hottest times of the day large flocks can be found on areas of wet ground associated with wetlands (Menkhorst et al., 2017). As this species breeds in China and Mongolia, the Survey Area would be used for foraging only.

The Oriental Plover has been recorded recently within the Desktop Study Area and likely occurs within the Survey Area. Within the Survey Area, the Mixed Acacia Shrubs and Triodia Plains, and Sparse Triodia Plains habitats constitute supporting habitat for the Oriental Plover as they may become flooded after significant rain events. The taxon is likely to be transient within the Survey Area during these flooding events and, if present, will occur within the Survey Area between mid-September and April.

Osprey (*Pandion haliaetus*) – MI (DBCA); MI, MA (EPBC Act)

The Osprey is considered to be moderately common in Australia (P. Olsen, 1998). The species is most abundant in northern Australia, where high population densities occur in remote areas (Johnstone & Storr, 1998). They require extensive areas of open fresh, brackish, or saline water for foraging (Marchant and Higgins, 1993). They are mostly found in coastal areas but occasionally travel inland along major rivers, particularly in northern Australia (Johnstone & Storr, 1998; P. Olsen, 1998). They frequent a variety of wetland habitats including inshore waters, reefs, bays, coastal cliffs, beaches, estuaries, mangrove swamps, broad rivers, reservoirs and large lakes and waterholes (Johnstone & Storr, 1998; P. Olsen, 1998).

The Osprey has been recorded recently within the Desktop Study Area and is likely to occur within the Survey Area. Within the Survey Area, the Major and Minor Drainage habitats constitute critical habitat for the Osprey because of their value for hunting and dispersal. The taxon is likely to be transient within the Survey Area during flooding events.

Peregrine Falcon (*Falco peregrinus*) – OS (DBCA)

The Peregrine Falcon is an uncommon but wide-ranging bird across Australia (Barrett et al., 2003). It occurs mainly along rivers and ranges as well as wooded watercourses and lakes. It nests primarily on cliffs, granite outcrops and quarries, although is also known to occupy existing raptor and corvid stick nests (Menkhorst et al., 2019). The diet of the Peregrine Falcon has been well studied and primarily includes flocking species such as parrots, pigeons and on the east coast, European Starlings (J. Olsen & Fuentes, 2008).

Peregrine Falcon was not observed during the survey; however, this species has been previously recorded twice within 3 km of the Survey Area in recent years (DBCA, 2023). In the absence of cliff ledges, Peregrine Falcons will use trees for nesting (Morcombe & Stewart, 2013). The Open Eucalypt Woodland habitat within the Survey Area and surrounds may provide suitable nesting and hunting habitat to support this species.

5.2.2.4 Medium likelihood of occurrence within the Survey Area

Glossy Ibis (*Plegadis falcinellus*) – MI (BC Act); MI, MA (EPBC Act)

The preferred foraging and breeding habitat of the Glossy Ibis includes freshwater marshes at the edges of lakes and rivers, lagoons, floodplains, wet meadows, swamps, reservoirs, sewage ponds, rice-fields and cultivated areas under irrigation (del Hoyo et al., 1992; Marchant & Higgins, 1990). The Glossy Ibis builds a platform nest of sticks in trees or shrubs above water and typically nests in colonies (Pizzey & Knight, 2013). The distribution of the Glossy Ibis is generally east of the Kimberley in Western Australia and Eyre Peninsula in South Australia. The species is also known to be patchily distributed in the rest of Western Australia (DEE, 2020).

The Glossy Ibis has been recorded within the Desktop Study Area and may occur within the Survey Area. Within the Survey Area, there are several habitats which may flood during significant rain events and provide suitable habitat for the Glossy Ibis. The taxon may be transient within the Survey Area during these flooding events.

Pacific Swift/Fork-tailed Swift (*Apus pacificus*) – MI (BC Act); MI, MA (EPBC Act)

The Pacific Swift is almost exclusively aerial, flying from less than 1 m to at least 300 m above ground and probably much higher. The Pacific Swift occupies a large airspace range (i.e. low to very high) over varied habitats, ranging from rainforests to semi-deserts (Morcombe, 2003).

The Pacific Swift has been recorded within the Desktop Study Area and may occur within the Survey Area. Within the Survey Area, all habitats within the Survey Area may be utilised for foraging and dispersal.

Pilbara Grasswren (*Amytornis whitei whitei*) – P4 (as *Amytornis striatus striatus*, DBCA)

Restricted to spinifex associations on rocky slopes and ridges, with or without shrubs or light tree cover, preferring areas with tall dense spinifex hummocks (Menkhorst et al., 2019). Its distribution across the ironstone Chichester, Hamersley, Ophthalmia and Parry Ranges is bisected by the Fortescue River, with an outlying population south of the Ashburton River in the Barlee Range. It is widely but patchily distributed and generally uncommon (Johnstone et al., 2013; Johnstone & Storr, 2004).

The Pilbara Grasswren has been recorded within the Desktop Study Area and may occur within the Survey Area. Within the Survey Area, the Sparse Triodia Plains and Stony Hills habitats constitute critical habitat for the Pilbara Grasswren because of their value for foraging and shelter.

Short-tailed Mouse (*Leggadina lakedownensis*) – P4 (DBCA)

The Short-tailed Mouse has a broad distribution across much of northern Australia and occurs in a range of habitat types. This includes spinifex and Acacia on seasonally inundated sandy-clay soils as well as sandy soils and cracking clays to build burrows which they shelter in during the day (Van Dyck & Strahan, 2008). In the Pilbara it occurs on stony hummock grassland. It is generally rare, with scattered populations, and very little is known of its biology (Van Dyck & Strahan, 2008).

The Short-tailed Mouse has been recorded within the Desktop Study Area and may occur within the Survey Area. Within the Survey Area, the Sparse Triodia Plains and Stony Hills habitats constitute critical habitat for the Short-tailed Mouse because of their value for foraging and shelter.

Other species with medium likelihood of occurrence within the Survey Area

There were an additional 20 shorebird species that were considered to have a medium likelihood of occurrence due to the proximity of historic records and the limited suitable habitats within the Survey Area. As there are suitable tidal flats < 10 km north of the Survey Area, and there are drainage habitats that connect these flats to the Survey Area, there presents an opportunity for these species to occur within the Survey Area after significant rain events that would flood these habitats.

6.0 Conclusion

Flora and Vegetation

- No Threatened flora species pursuant to the EPBC Act 1999 and/or gazetted as Threatened/Declared Rare Flora pursuant to the BC Act 2016 were recorded during the survey.
- Two DBCA listed Priority flora are considered to have been recorded; *Tephrosia rosea* subsp. Port Hedland (A.S. George 1114) (P1) and *Gymnanthera cunninghamii* (P3).
- Eight introduced species were recorded during the survey, including **Calotropis procera* which is listed by the State Department of Primary Industries and Regional Development as a Declared Pest.
- Fourteen vegetation types were mapped within the Survey Area, one of which likely represents GDEs. Vegetation condition throughout the Survey Area was largely in Very Good condition, with drainages and some low-lying floodplain areas in Good to Degraded condition, primarily due to Buffel Grass (**Cenchrus ciliaris*) and livestock/pastoralism.
- No TECs or PECs were recorded within the Survey Area.

Vertebrate Fauna

- Nine fauna habitats were mapped within the Survey Area, of which the Low *Acacia stellaticeps* over Triodia, Mixed Acacia Shrubs and Triodia Plains, Outcrops and Breakaways, and Stony Hills habitats represent the most value to fauna assemblages overall.
- Two significant fauna species were recorded during the fauna survey.
- Seven significant fauna species were previously recorded within the Survey Area.
- Nine significant fauna species had a high likelihood of occurrence, 24 had a medium likelihood of occurrence, and 33 species had a low likelihood of occurrence.
- Three introduced species were recorded during the survey, European Cattle (**Bos primigenius taurus*), Cat (**Felis catus*), and Domestic Pigeon/Rock Dove (*Columba livia*).

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Appendix A Maps

Atlas Ridley Magnetite Project Connection

Flora and Fauna Survey Technical Report

Horizon Power

SLR Project No.: 675.072189.00001

29 July 2024

N 0 5 10 20 km

Service Layer Credits: Landgate / SLIP

SLR

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Coordinate System: GDA 1994 MGA Zone 50 @ A4

Scale	: 1:500,000 @ A4
Project Number	: 072189
Date Drawn	: 4/07/2024
Drawn By	: Environmaps
Reviewed By	: GB

Horizon Power

Atlas Ridley Magnetite Project Connection

Flora and Fauna Survey Technical Report

Survey Area

MAP 1

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N 0 5 10 20 km

Service Layer Credits: Landgate / SLIP

Coordinate System: GDA 1994 MGA Zone 50 @ A4
Scale : 1:500,000 @ A4
Project Number : 072189
Date Drawn : 25/06/2024
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Atlas Ridley Magnetite Project Connection
Flora and Fauna Survey Technical Report

IBRA Subregions
MAP 2

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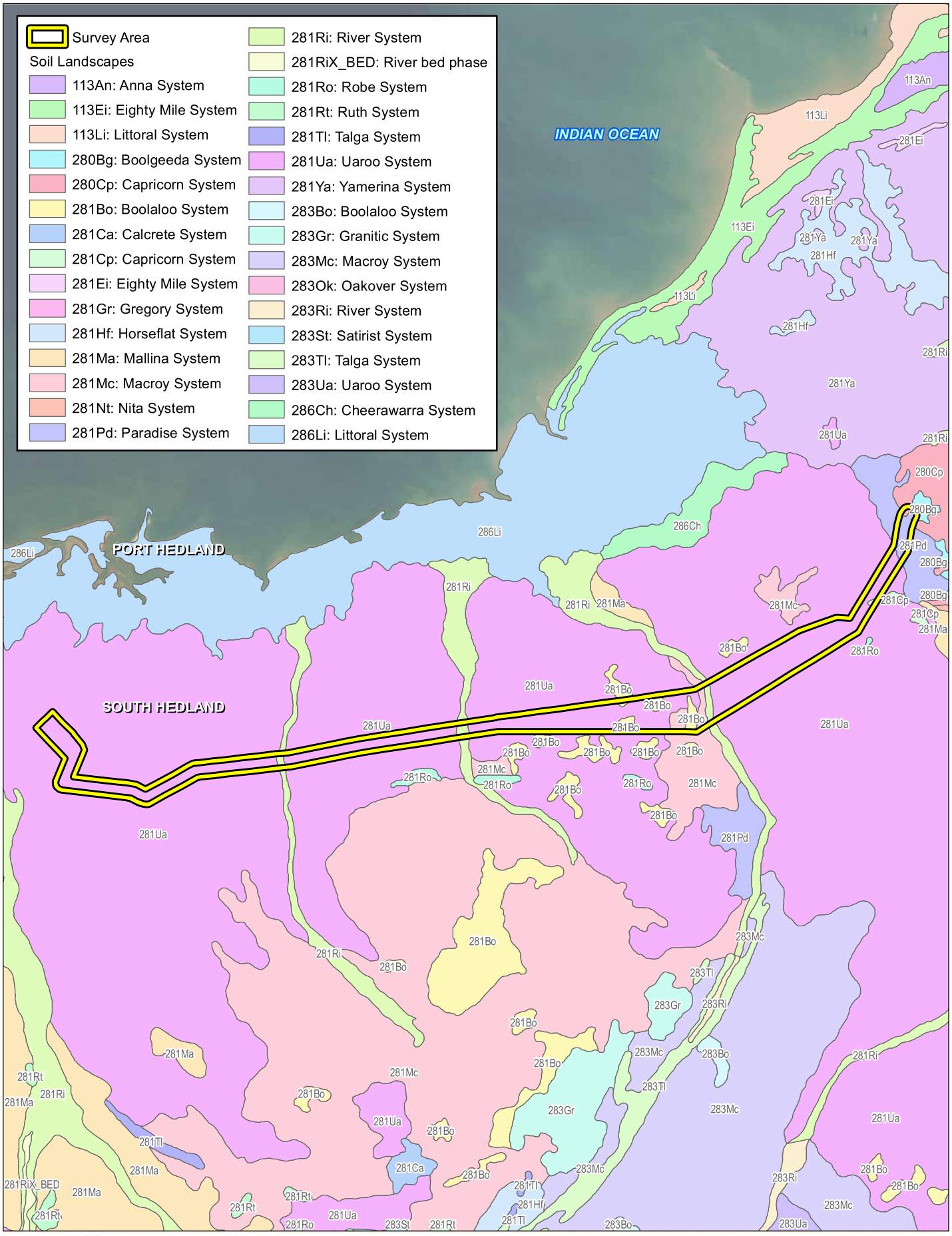

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Service Layer Credits: Landgate / SLIP

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Atlas Ridley Magnetite Project Connection

Flora and Fauna Survey Technical Report

Soil Landscapes

MAP 3

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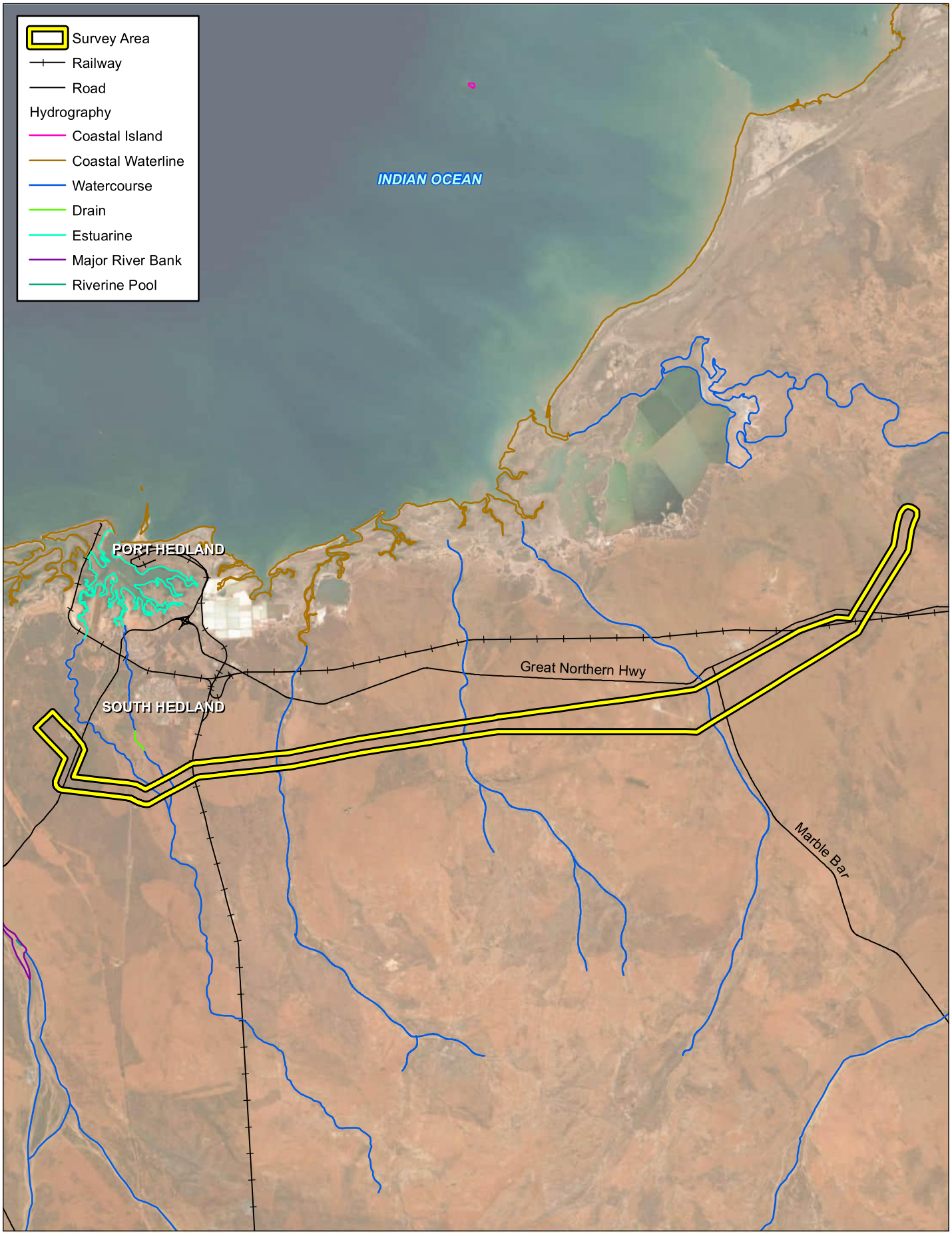

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Coordinate System: GDA 1994 MGA Zone 50 @ A4

Scale	: 1:350,000 @ A4
Project Number	: 072189
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Atlas Ridley Magnetite Project Connection
Flora and Fauna Survey Technical Report

Hydrography
MAP 4

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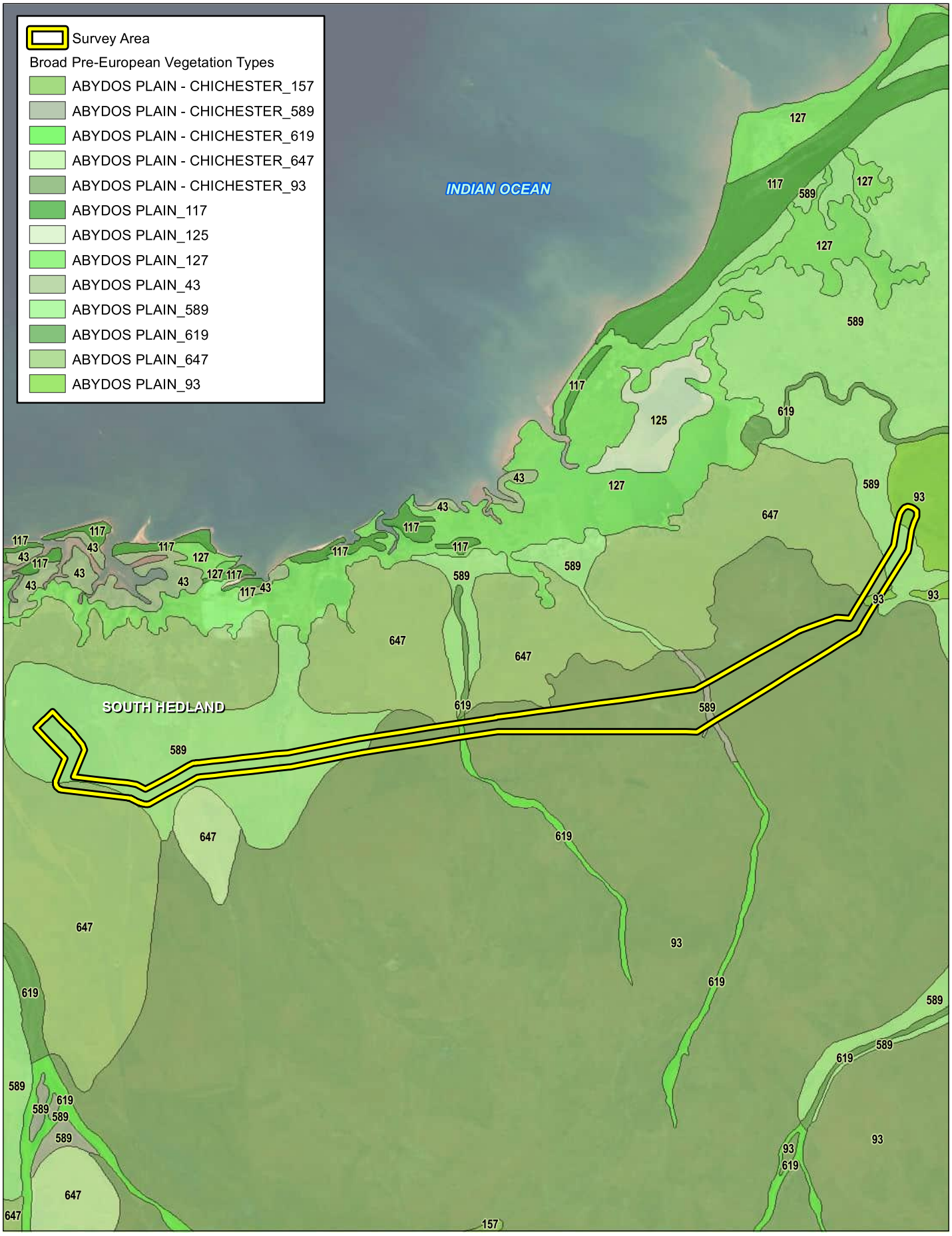

N 0 3.75 7.5 15 km

Service Layer Credits: Landgate / SLIP

Coordinate System: GDA 1994 MGA Zone 50 @ A4

Scale	: 1:350,000 @ A4
Project Number	: 072189
Date Drawn	: 25/06/2024
Drawn By	: Environmaps
Reviewed By	: GB

Horizon Power

Atlas Ridley Magnetite Project Connection

Flora and Fauna Survey Technical Report

Broad Pre-European Vegetation Types

MAP 5

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N 0 3.75 7.5 15 km

Service Layer Credits: Landgate / SLIP

Coordinate System: GDA 1994 MGA Zone 50 @ A4

Scale	: 1:400,000 @ A4
Project Number	: 072189
Date Drawn	: 5/07/2024
Drawn By	: Environmaps
Reviewed By	: GB

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Horizon Power

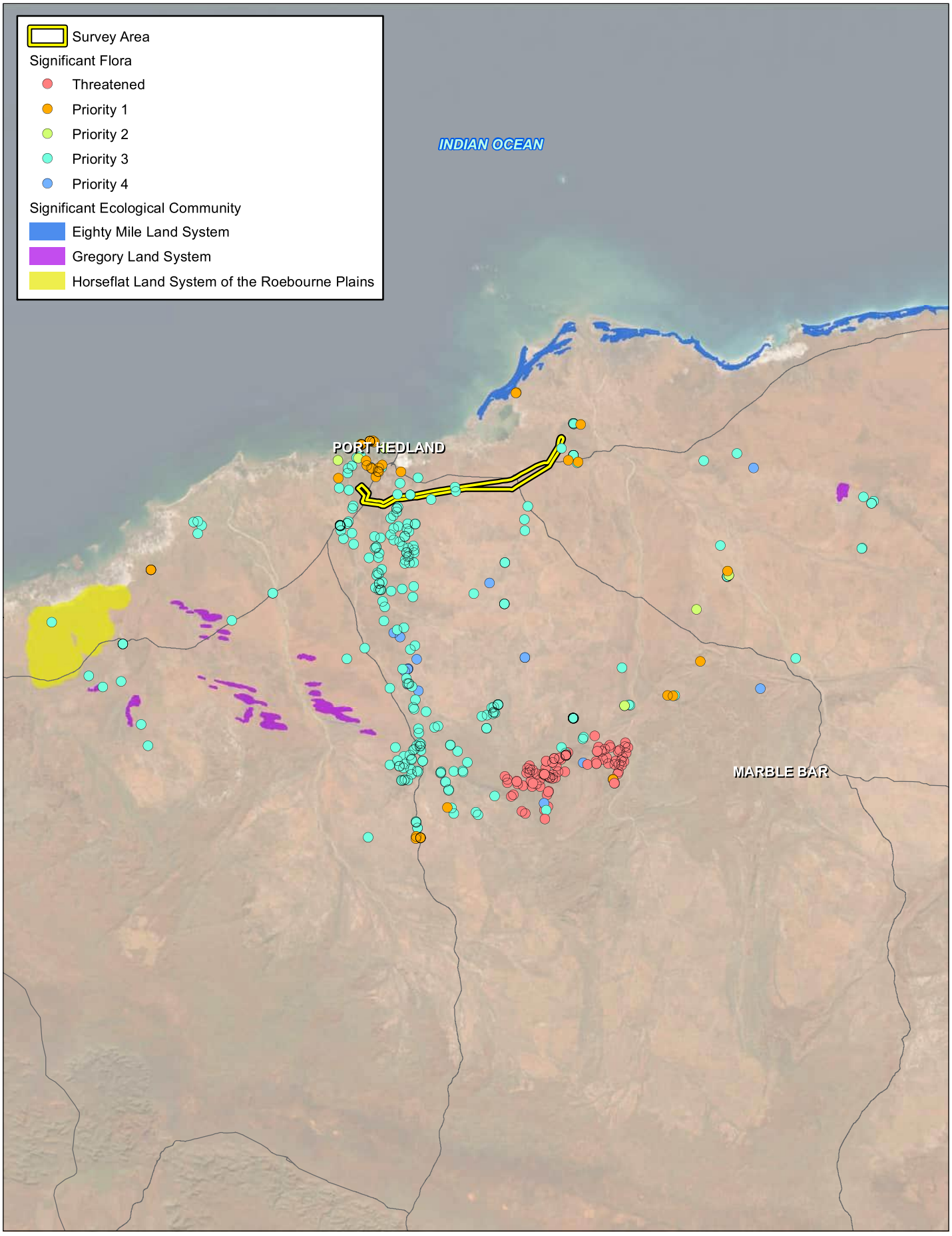
Atlas Ridley Magnetite Project Connection

Flora and Fauna Survey Technical Report

ESAs and Conservation Areas

MAP 6

C:\GIS\Jobs\360\072189 - Atlas Ridley - Flora and Fauna Survey Tech Rpt\Figures\072189_M06 ESAs and Conservation Areas_240705.mxd



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N 0 15 30 60 km

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Coordinate System: GDA 1994 MGA Zone 50 @ A4

Scale	: 1:1,500,000 @ A4
Project Number	: 072189
Date Drawn	: 26/06/2024
Drawn By	: Environmaps
Reviewed By	: GB

Horizon Power

Atlas Ridley Magnetite Project Connection

Flora and Fauna Survey Technical Report

Significant Flora and Ecological Community Database Search Results MAP 7

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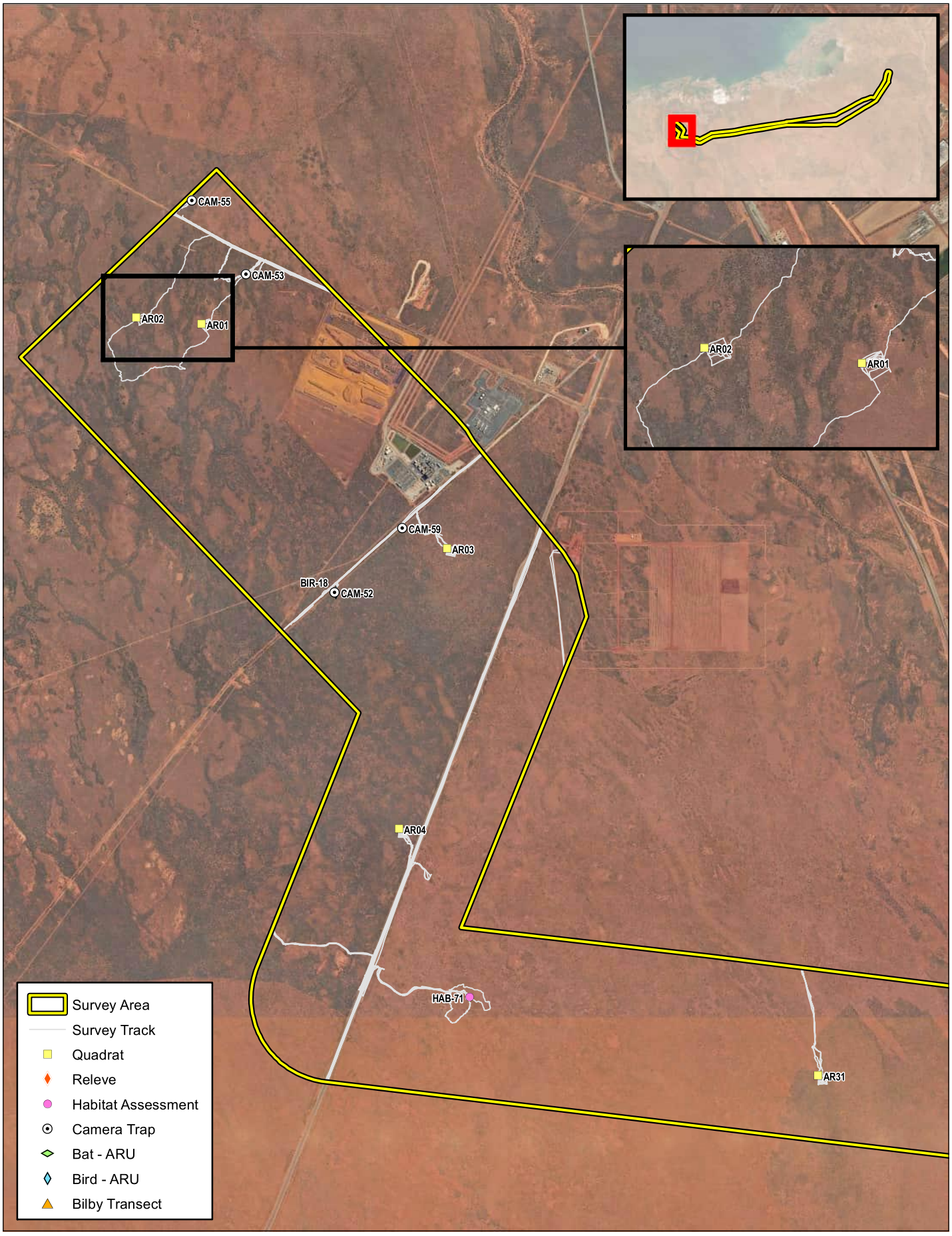

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Service Layer Credits: Landgate / SLIP

Coordinate System: GDA 1994 MGA Zone 50 @ A4

Scale	: 1:30,000 @ A4
Project Number	: 072189
Date Drawn	: 4/07/2024
Drawn By	: Environmaps
Reviewed By	: GB

Horizon Power
Atlas Ridley Magnetite Project Connection
Flora and Fauna Survey Technical Report

Survey Effort
MAP 08a

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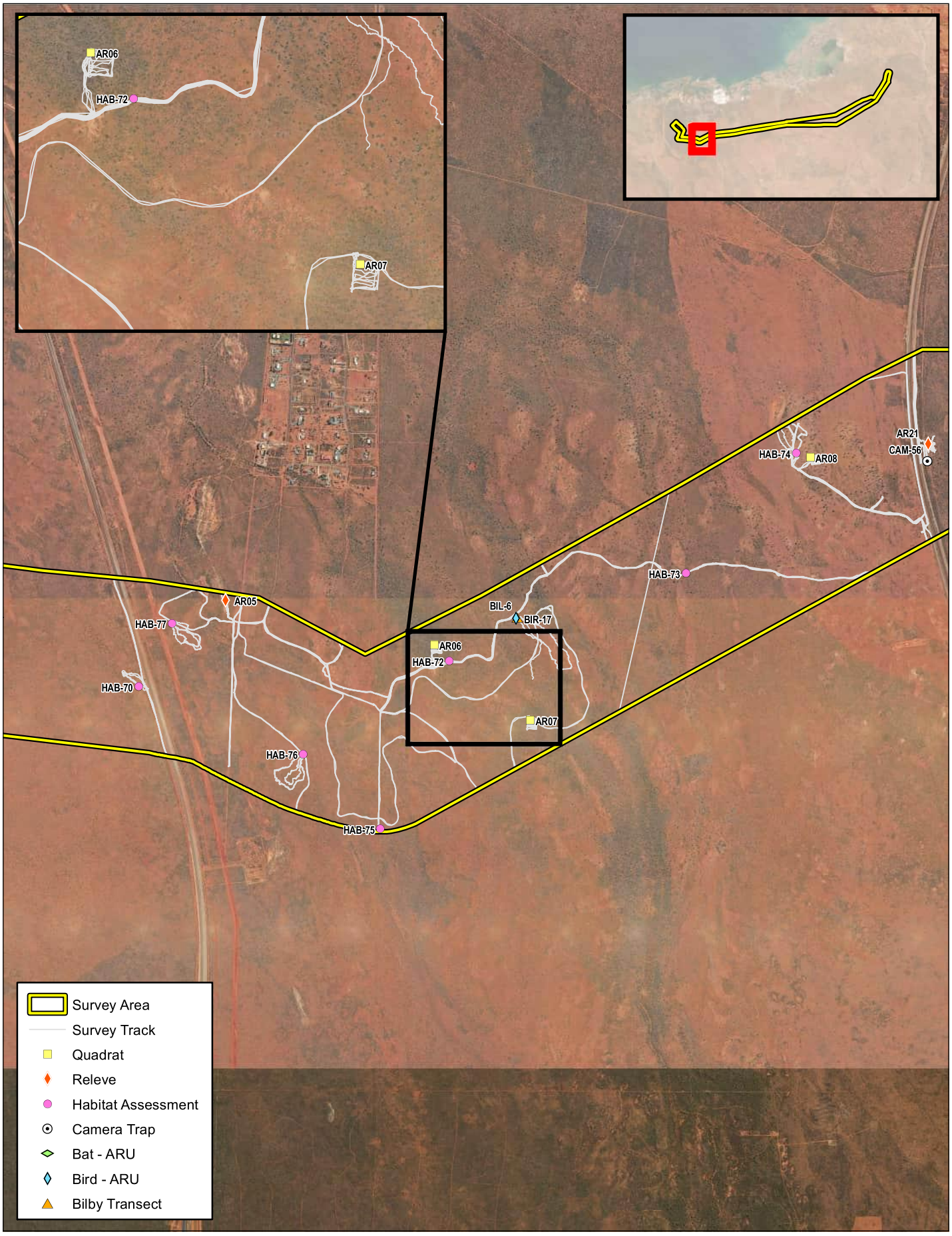

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Coordinate System: GDA 1994 MGA Zone 50 @ A4

Scale	: 1:30,000 @ A4
Project Number	: 072189
Date Drawn	: 4/07/2024
Drawn By	: Environmaps
Reviewed By	: GB

Horizon Power

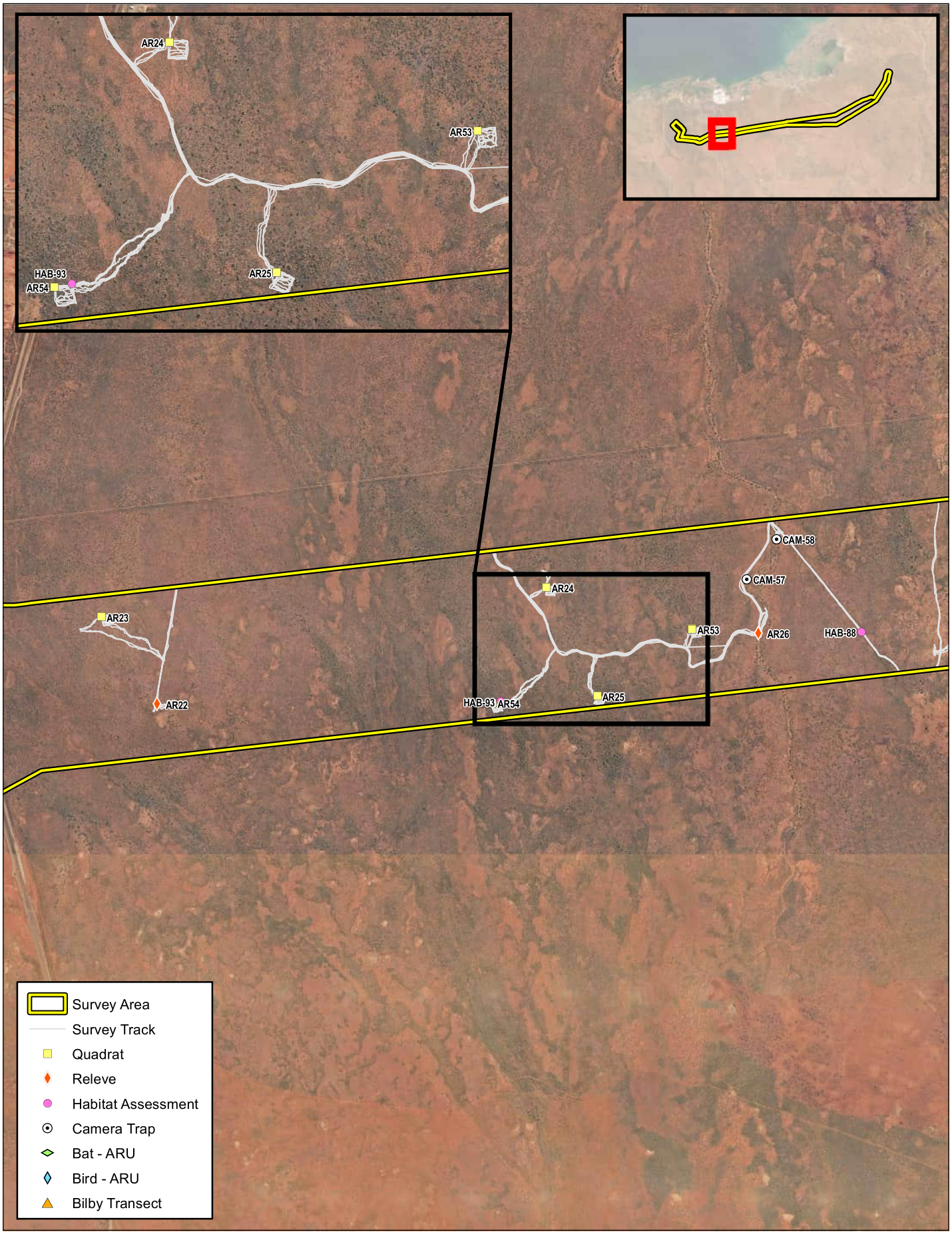
Atlas Ridley Magnetite Project Connection

Flora and Fauna Survey Technical Report

Survey Effort

MAP 08b

C:\GIS\Jobs\360\072189 - Atlas Ridley - Flora and Fauna Survey Tech Rpt\Figures\072189_M08b Survey Effort_240704.mxd



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N 0 0.25 0.5 1 km

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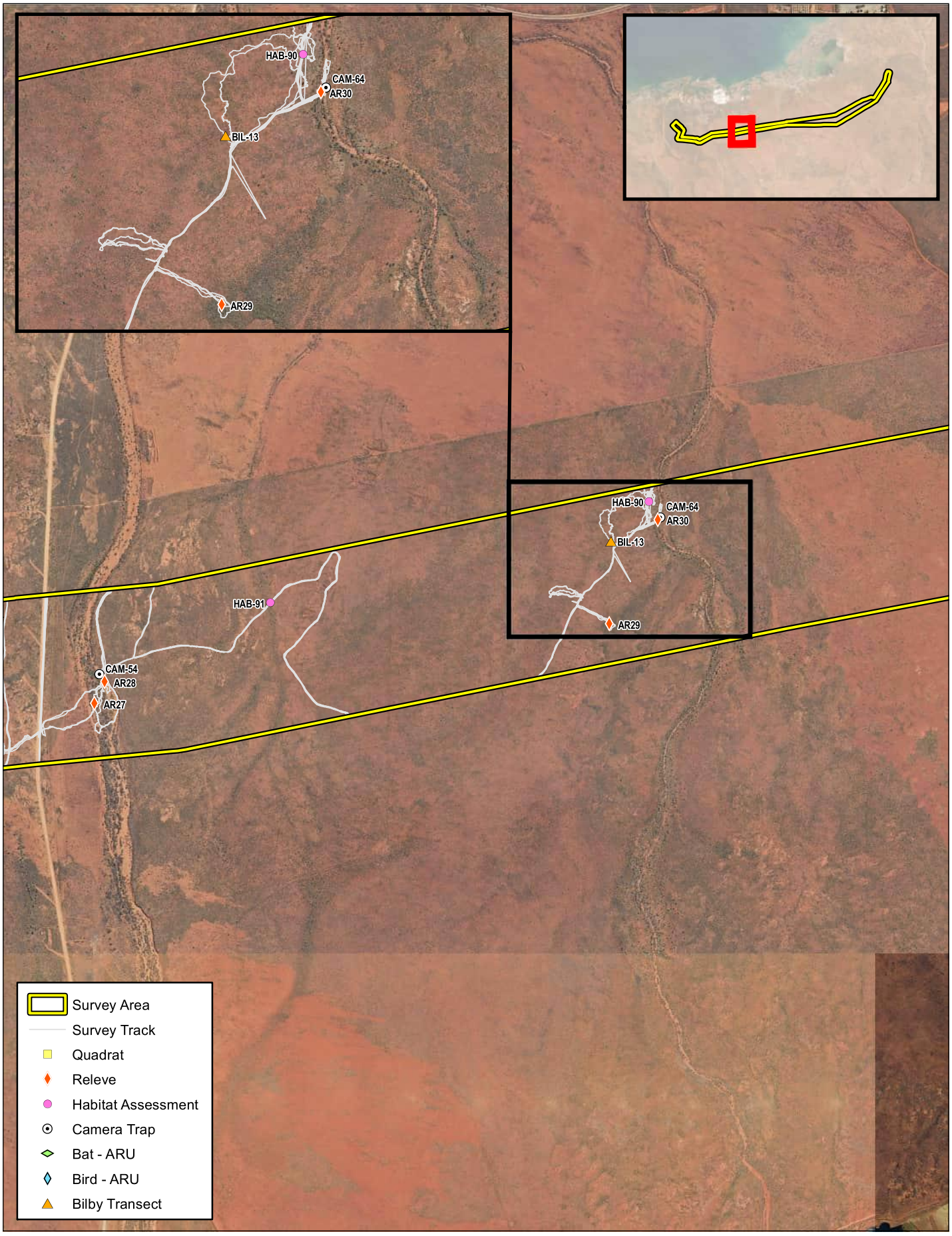
Coordinate System: GDA 1994 MGA Zone 50 @ A4
Scale : 1:30,000 @ A4
Project Number : 072189
Date Drawn : 4/07/2024
Drawn By : Environmaps
Reviewed By : GB

Horizon Power
Atlas Ridley Magnetite Project Connection
Flora and Fauna Survey Technical Report

Survey Effort
MAP 08c

C:\GIS\Jobs\360\072189 - Atlas Ridley - Flora and Fauna Survey Tech Rpt\Figures\072189_M08c Survey Effort_240704.mxd



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Scale	: 1:30,000 @ A4
Project Number	: 072189
Date Drawn	: 4/07/2024
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Horizon Power

Atlas Ridley Magnetite Project Connection

Flora and Fauna Survey Technical Report

Survey Effort

MAP 08d

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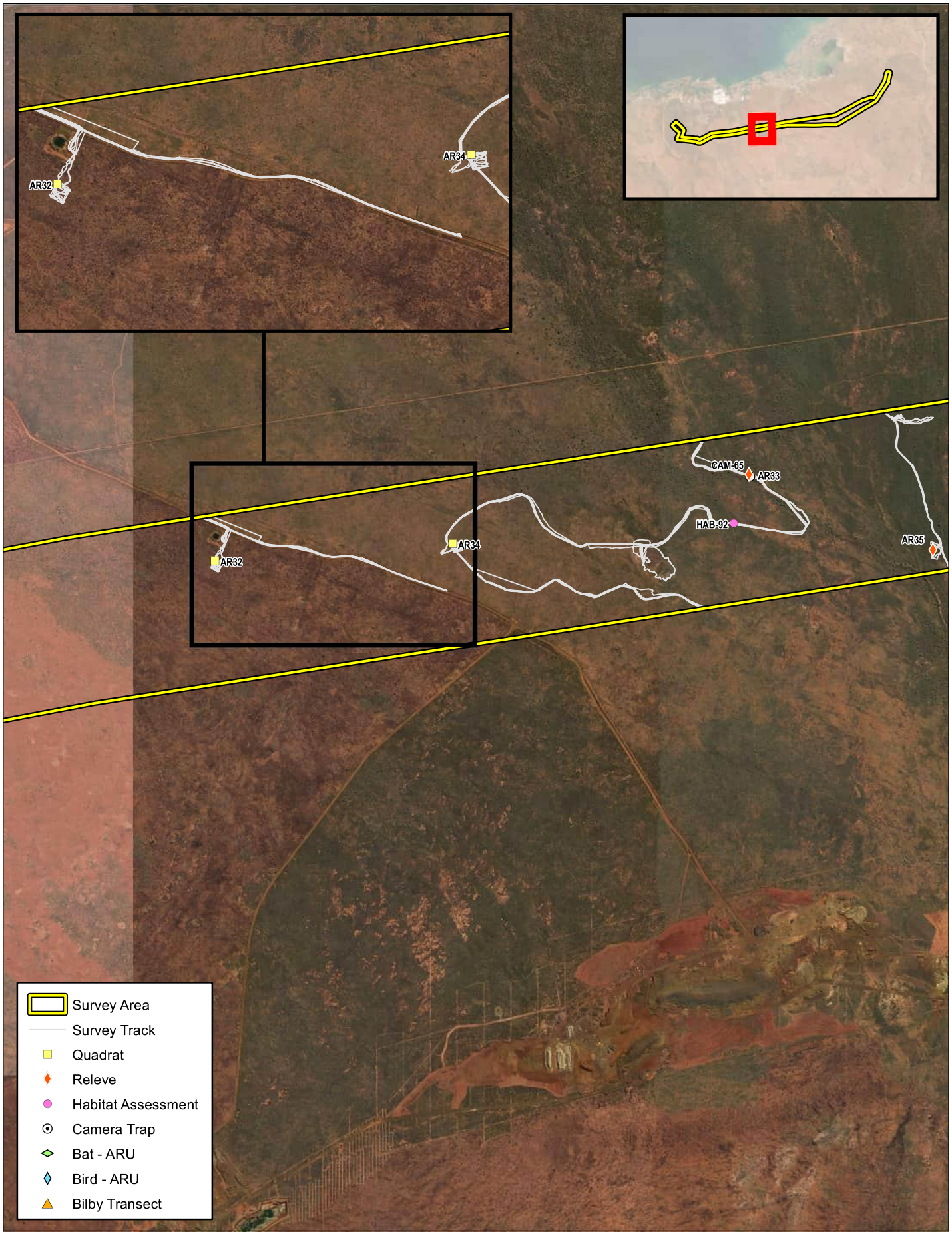

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Scale	: 1:30,000 @ A4
Project Number	: 072189
Date Drawn	: 4/07/2024
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Atlas Ridley Magnetite Project Connection

Flora and Fauna Survey Technical Report

Survey Effort

MAP 08e

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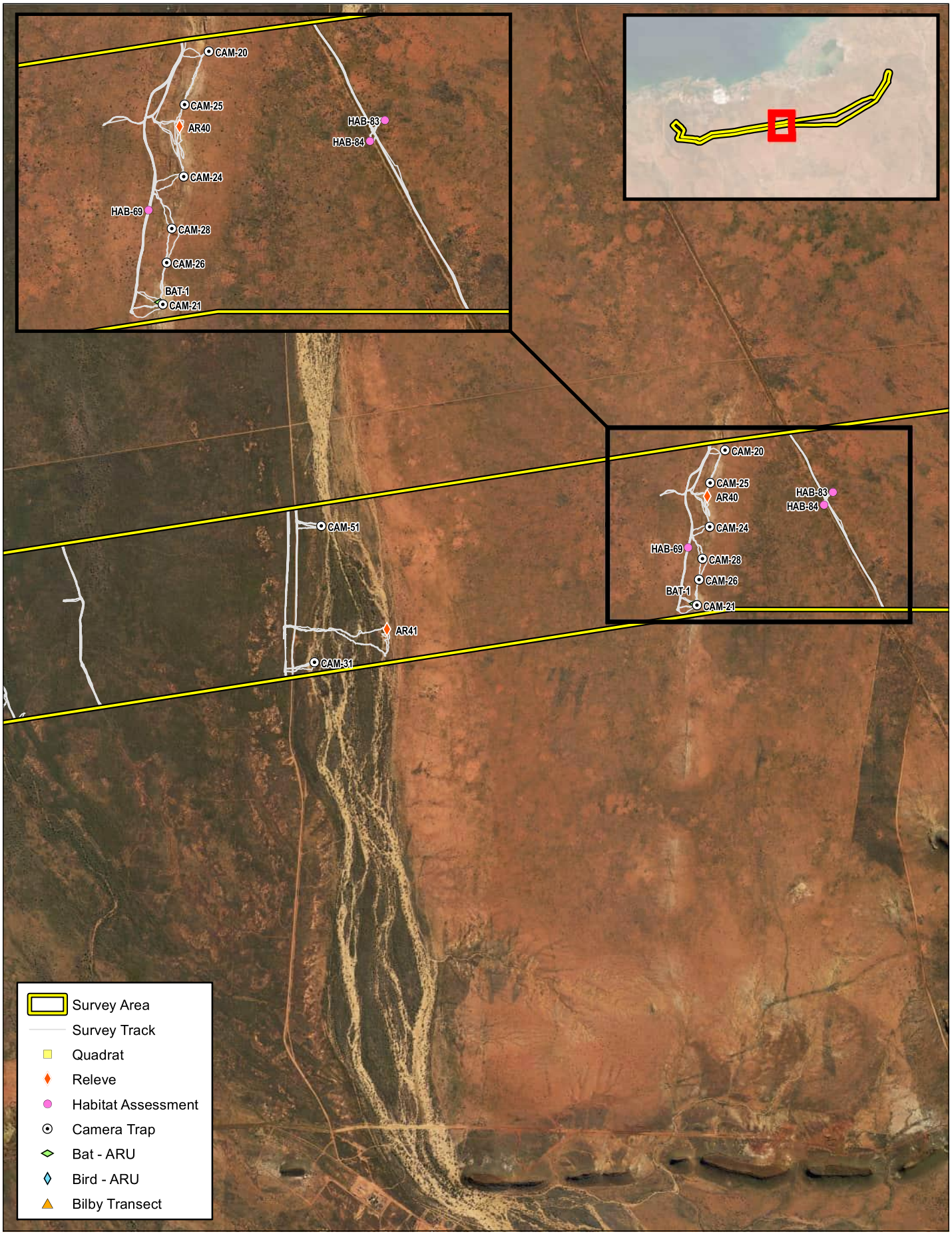

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Scale	: 1:30,000 @ A4
Project Number	: 072189
Date Drawn	: 4/07/2024
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Reviewed By	: GB

Horizon Power

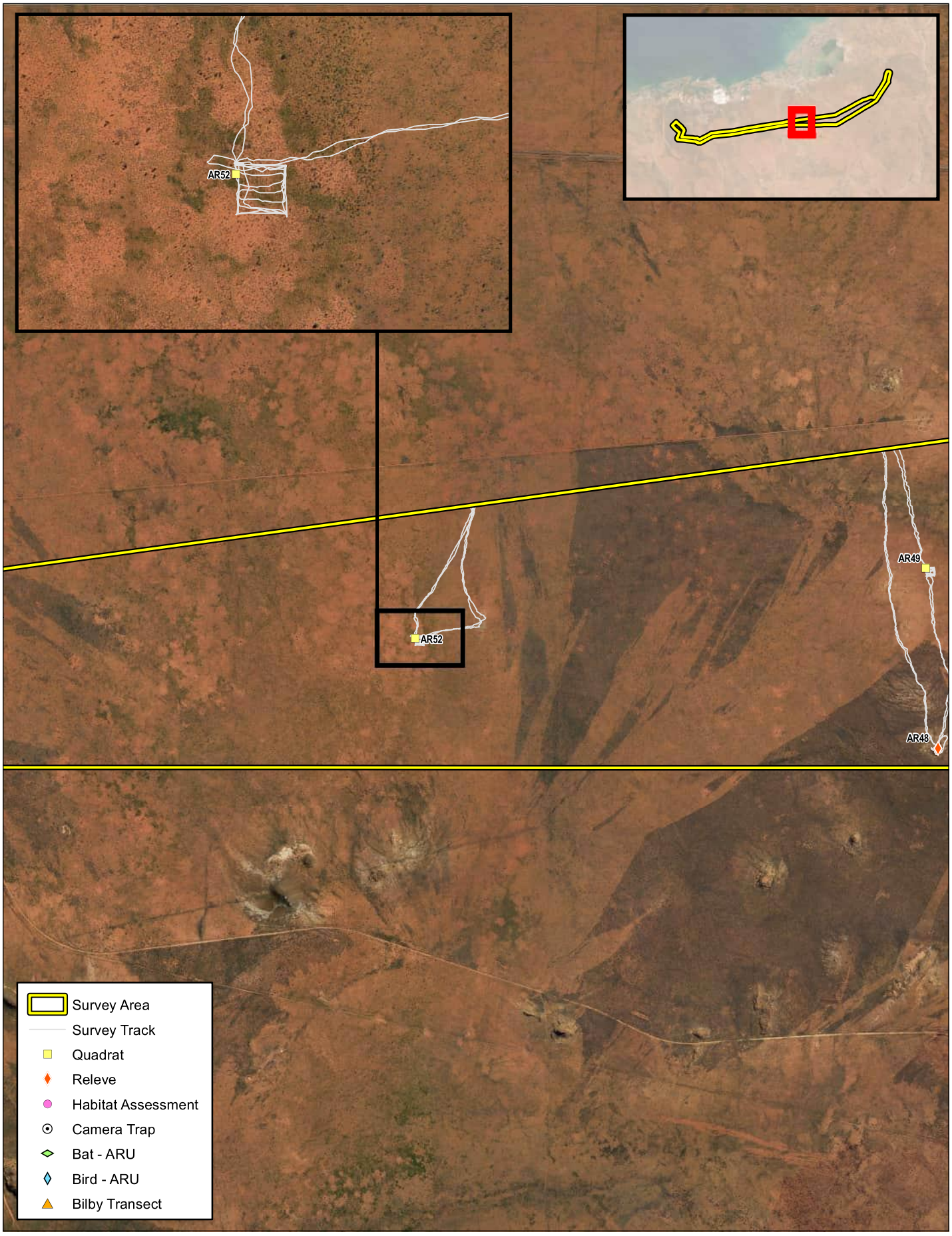
Atlas Ridley Magnetite Project Connection

Flora and Fauna Survey Technical Report

Survey Effort

MAP 08f

C:\GIS\Jobs\360\072189 - Atlas Ridley - Flora and Fauna Survey Tech Rpt\Figures\072189_M08f Survey Effort_240704.mxd



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Atlas Ridley Magnetite Project Connection

Flora and Fauna Survey Technical Report

Survey Effort

MAP 08g

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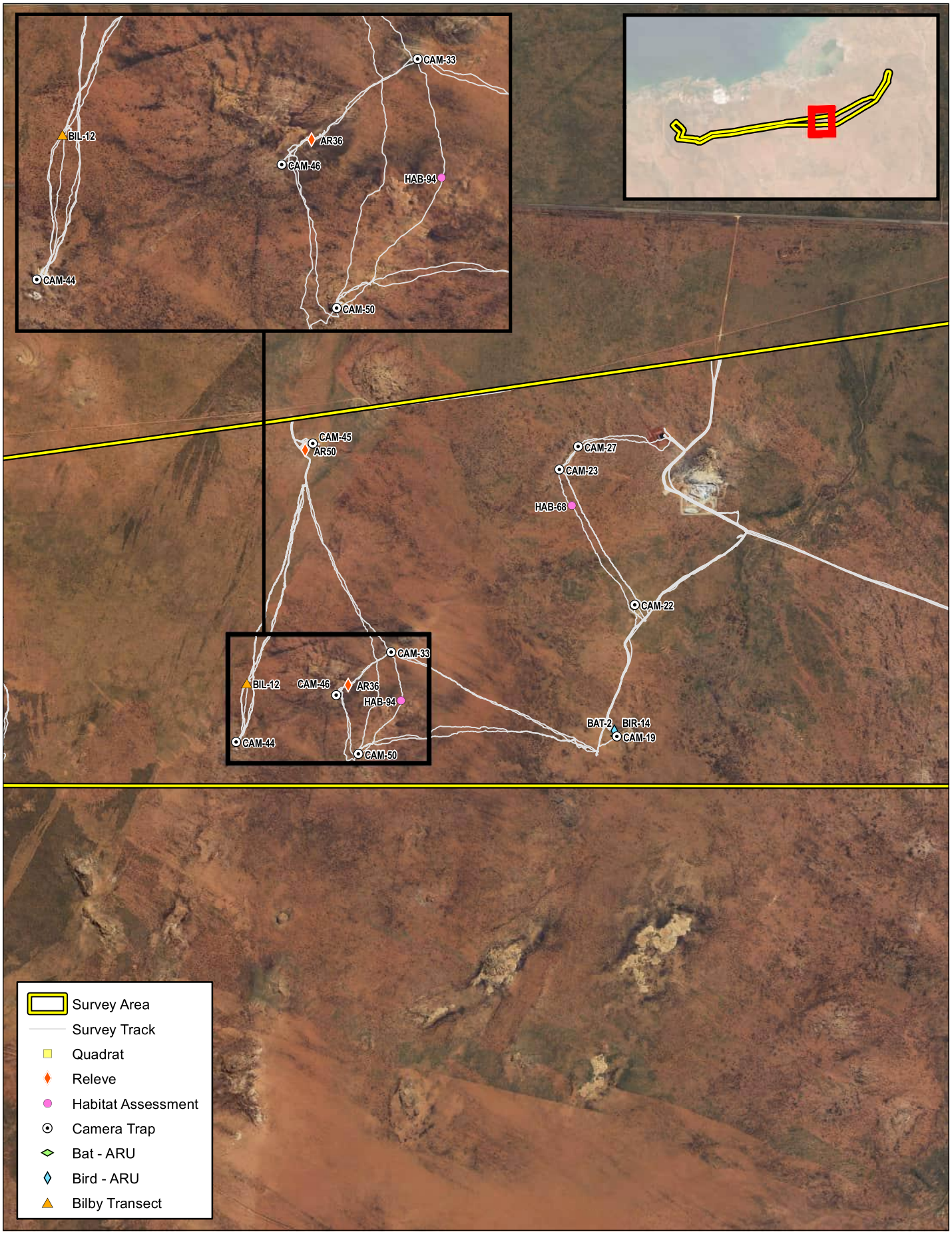

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Scale	: 1:30,000 @ A4
Project Number	: 072189
Date Drawn	: 4/07/2024
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Horizon Power
Atlas Ridley Magnetite Project Connection
Flora and Fauna Survey Technical Report

Survey Effort
MAP 08h

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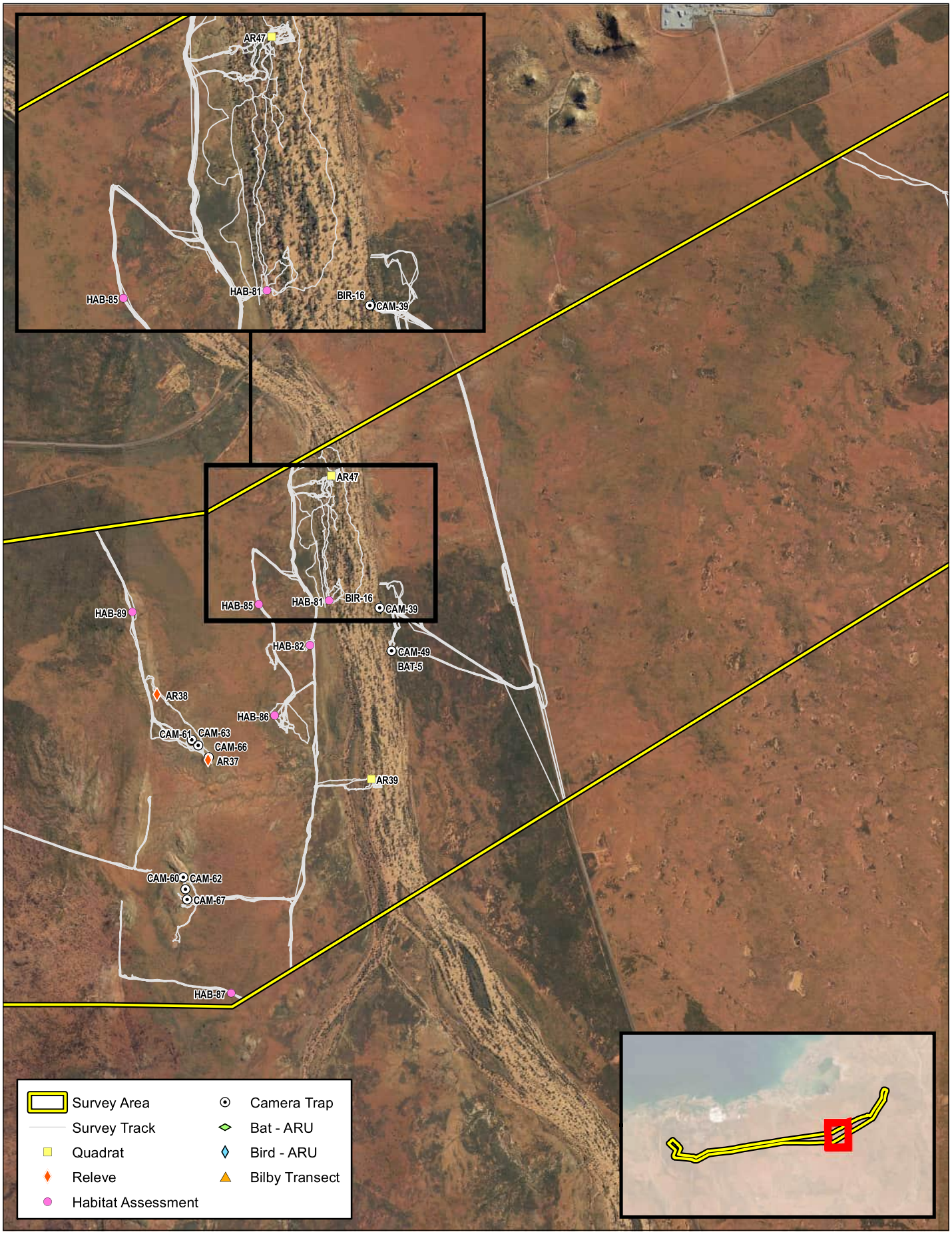

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Scale	: 1:30,000 @ A4
Project Number	: 072189
Date Drawn	: 4/07/2024
Drawn By	: Environmaps
Reviewed By	: GB

Horizon Power

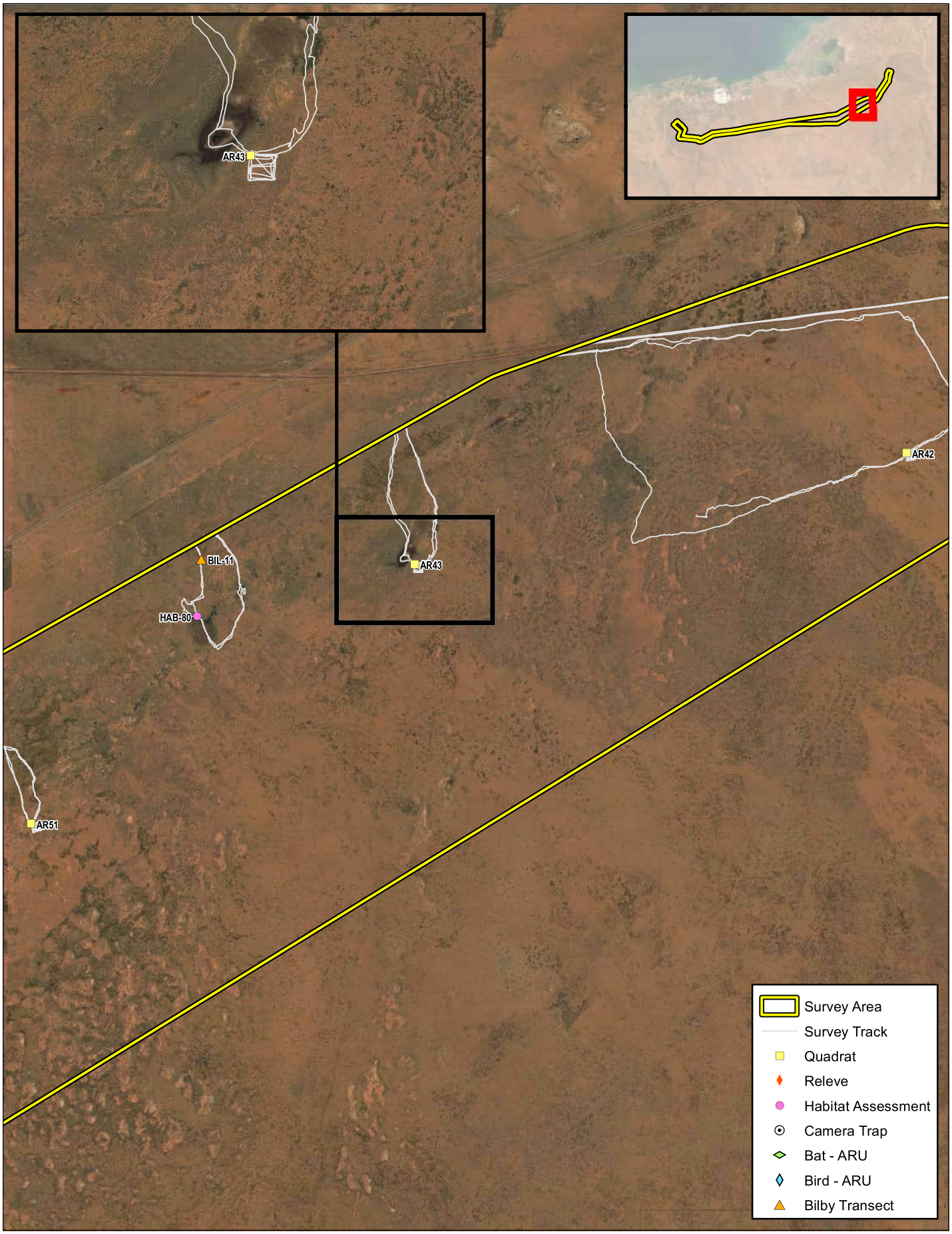
Atlas Ridley Magnetite Project Connection

Flora and Fauna Survey Technical Report

Survey Effort

MAP 08i

C:\GIS\Jobs\360\072189 - Atlas Ridley - Flora and Fauna Survey Tech Rpt\Figures\072189_M08i Survey Effort_240704.mxd



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Coordinate System: GDA 1994 MGA Zone 50 @ A4

Scale	: 1:30,000 @ A4
Project Number	: 072189
Date Drawn	: 4/07/2024
Drawn By	: Environmaps
Reviewed By	: GB

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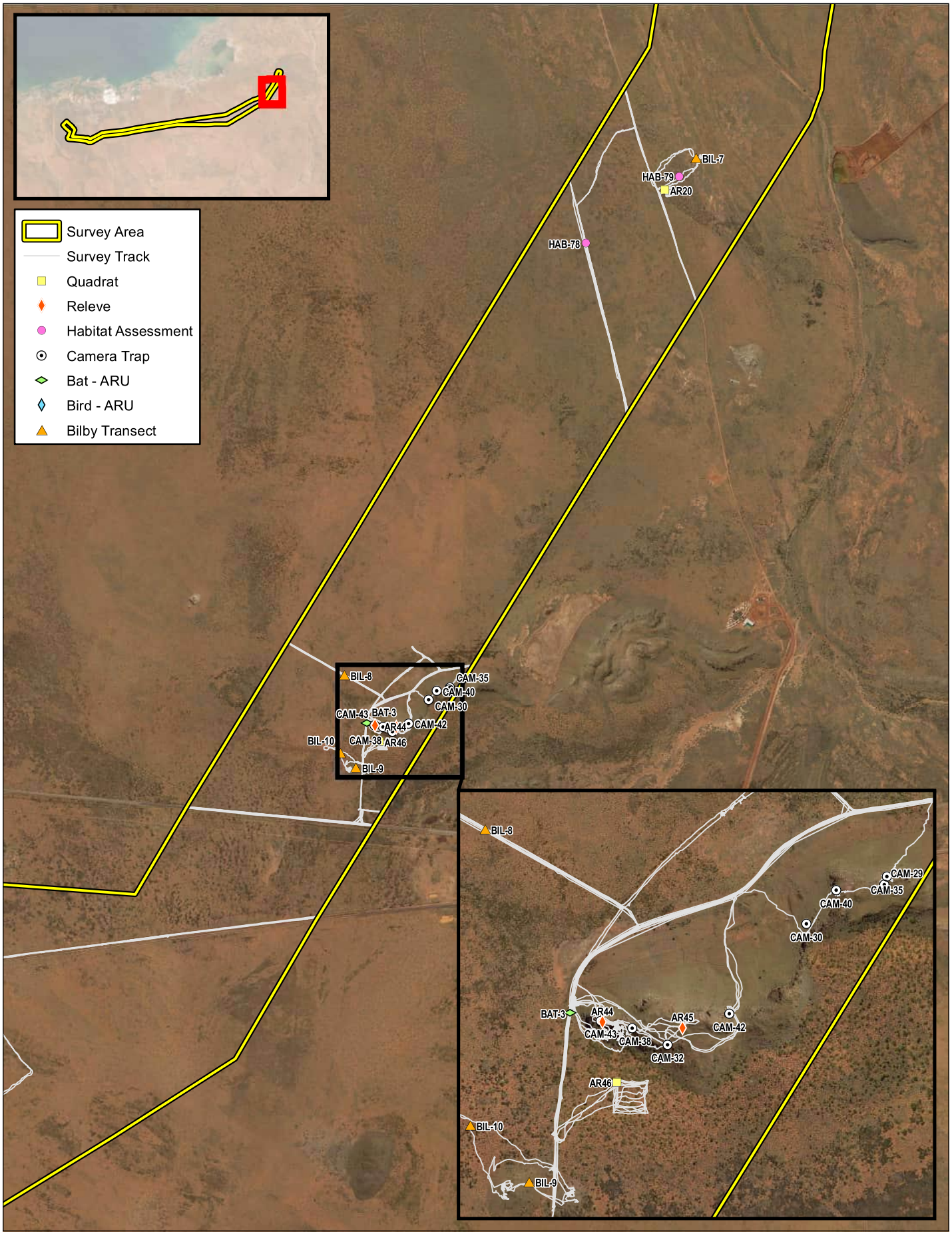
Atlas Ridley Magnetite Project Connection

Flora and Fauna Survey Technical Report

Survey Effort

MAP 08j

C:\GIS\Jobs\360\072189 - Atlas Ridley - Flora and Fauna Survey Tech Rpt\Figures\072189_M08j Survey Effort_240704.mxd



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Scale	: 1:30,000 @ A4
Project Number	: 072189
Date Drawn	: 4/07/2024
Drawn By	: Environmaps
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Atlas Ridley Magnetite Project Connection

Flora and Fauna Survey Technical Report

Survey Effort

MAP 08k

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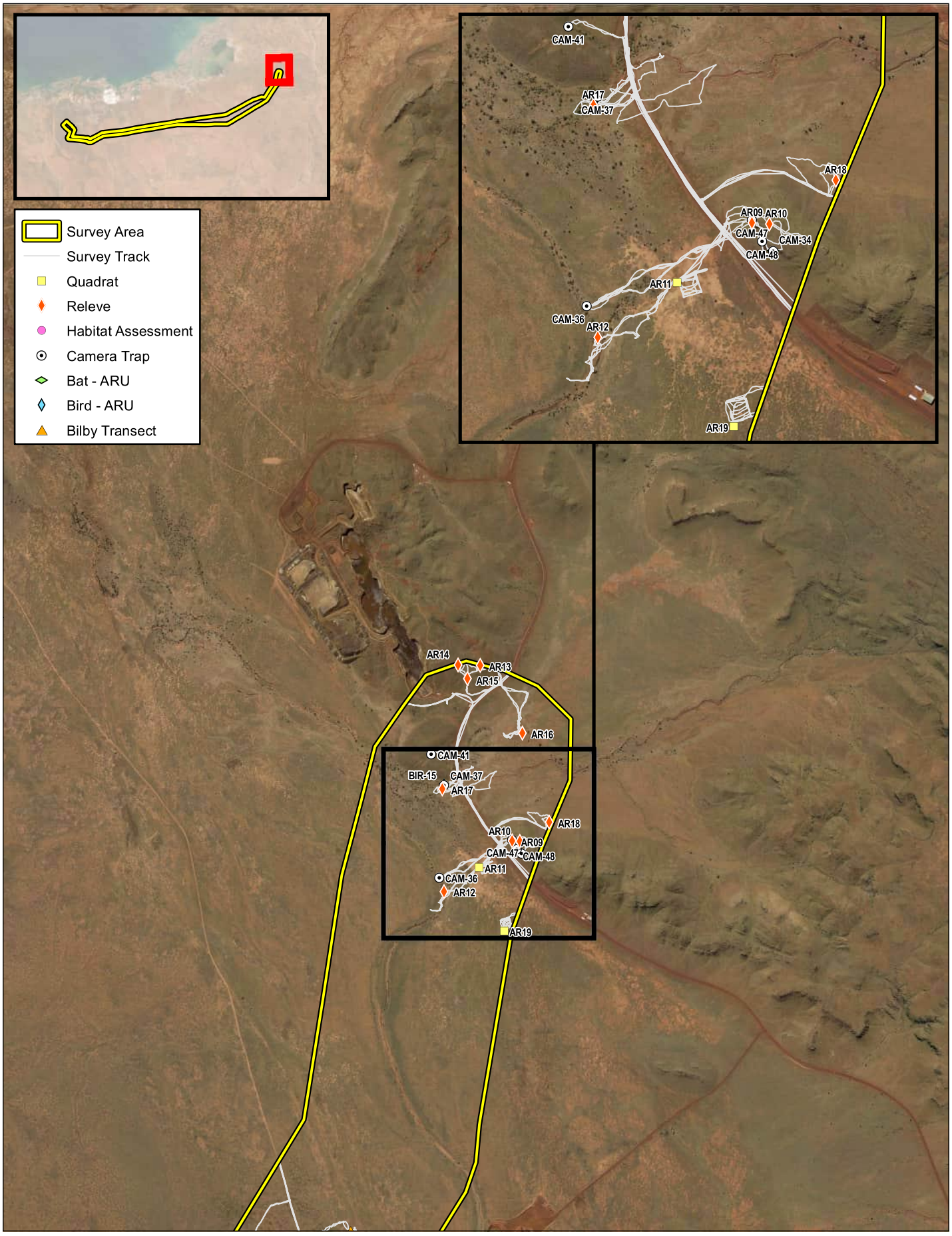

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Project Number	: 072189
Date Drawn	: 4/07/2024
Drawn By	: Environmaps
Reviewed By	: GB

Horizon Power

Atlas Ridley Magnetite Project Connection

Flora and Fauna Survey Technical Report

Survey Effort

MAP 08l

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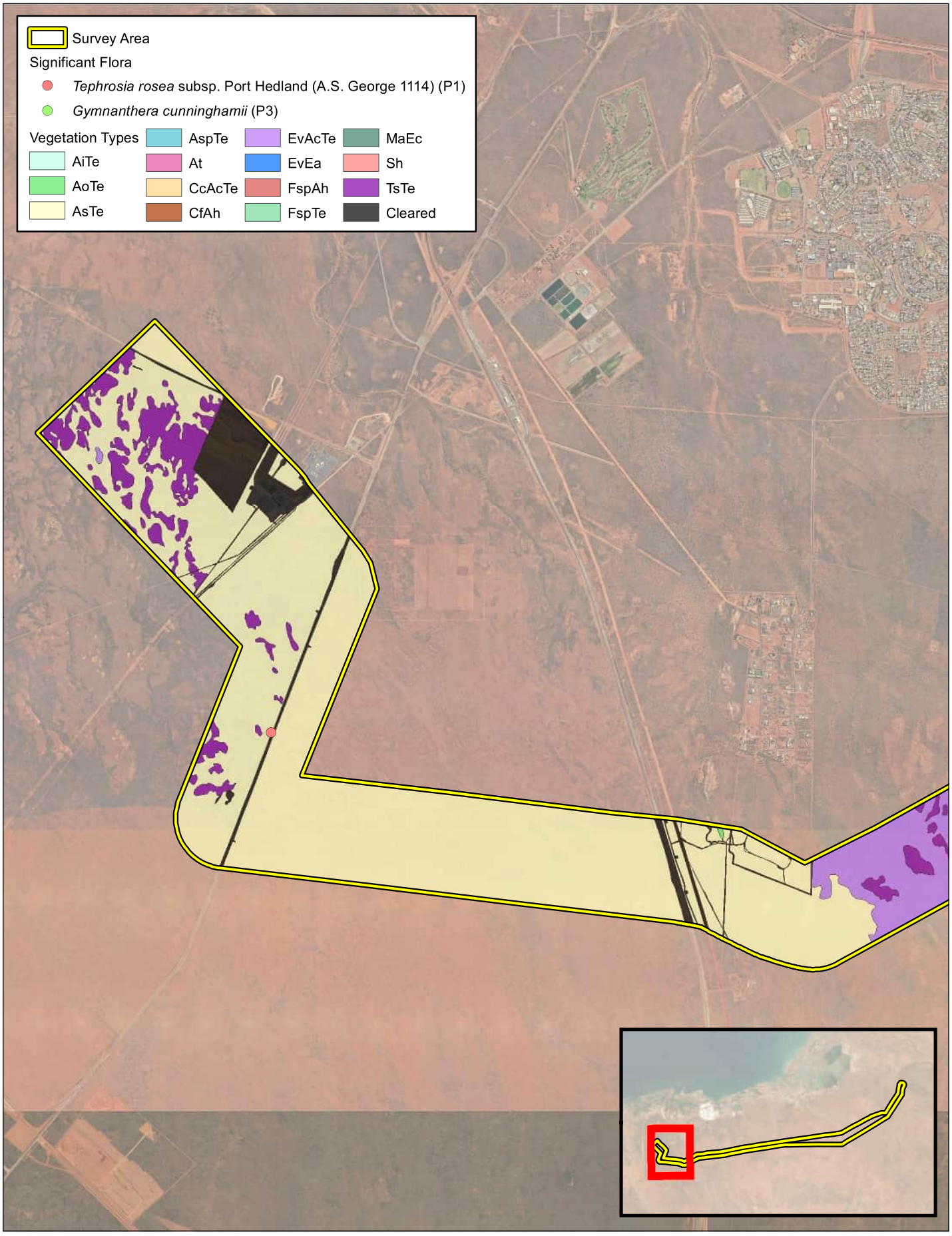

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N 0 0.5 1 2 km

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Coordinate System: GDA 1994 MGA Zone 50 @ A4

Scale	: 1:50,000 @ A4
Project Number	: 072189
Date Drawn	: 26/06/2024
Drawn By	: Environmaps
Reviewed By	: GB

Horizon Power
Atlas Ridley Magnetite Project Connection
Flora and Fauna Survey Technical Report

Vegetation Types and Significant Flora in the Survey Area
MAP 09a

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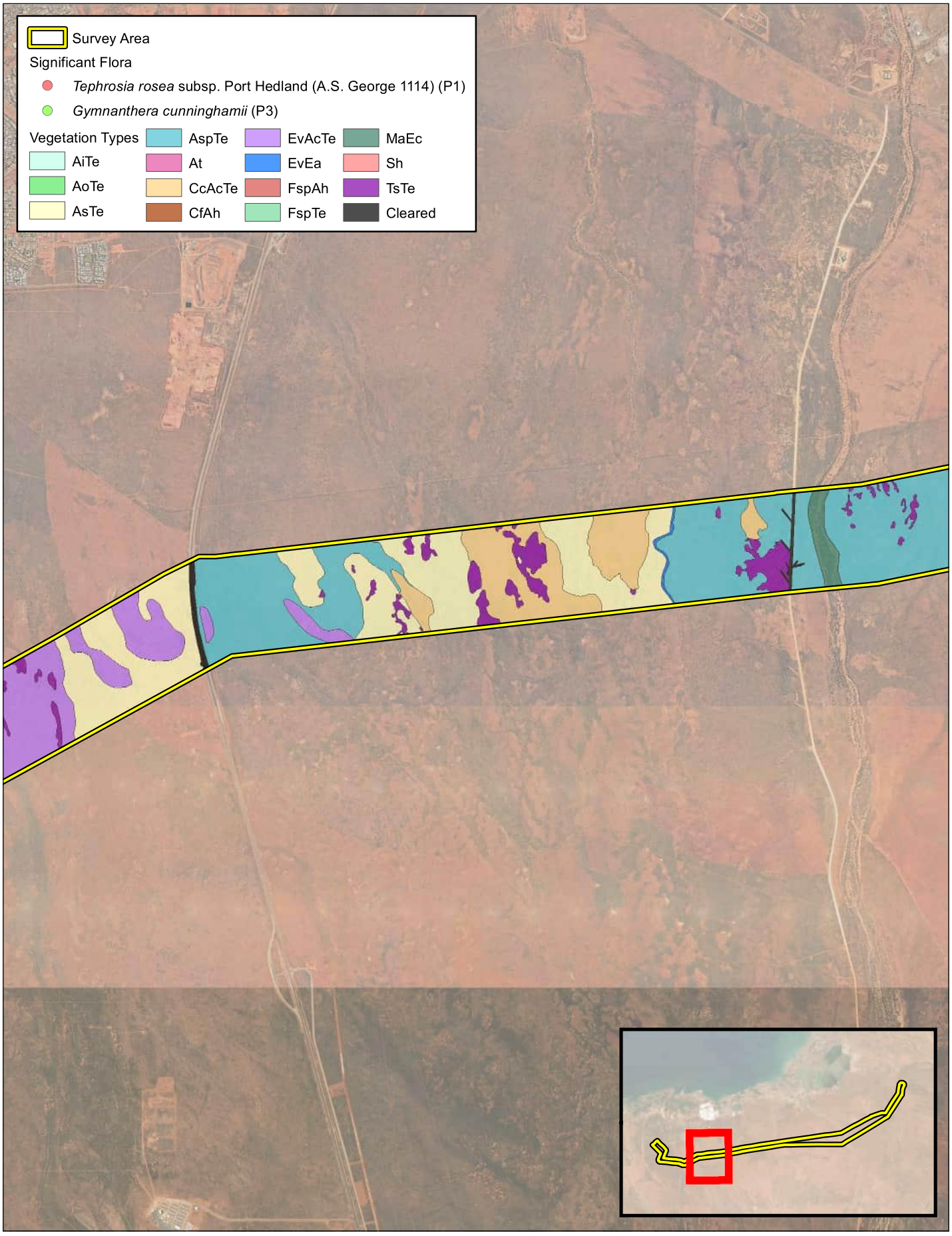

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Scale	: 1:50,000 @ A4
Project Number	: 072189
Date Drawn	: 26/06/2024
Drawn By	: Environmaps
Reviewed By	: GB

Horizon Power
Atlas Ridley Magnetite Project Connection
Flora and Fauna Survey Technical Report

Vegetation Types and Significant Flora in the Survey Area
MAP 09b

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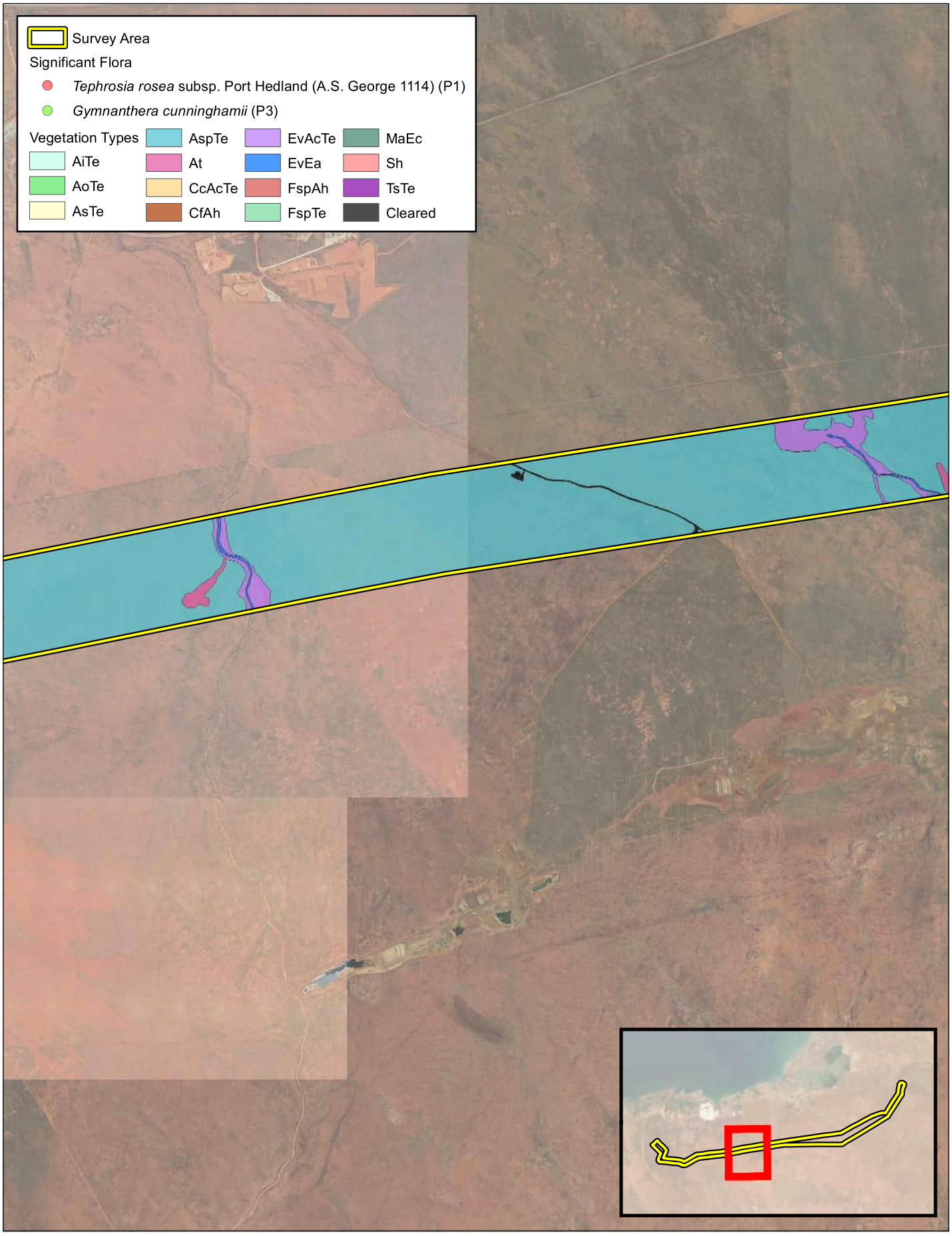

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Coordinate System: GDA 1994 MGA Zone 50 @ A4

Scale	: 1:50,000 @ A4
Project Number	: 072189
Date Drawn	: 26/06/2024
Drawn By	: Environmaps
Reviewed By	: GB

Horizon Power
Atlas Ridley Magnetite Project Connection
Flora and Fauna Survey Technical Report

Vegetation Types and Significant Flora in the Survey Area
MAP 09c

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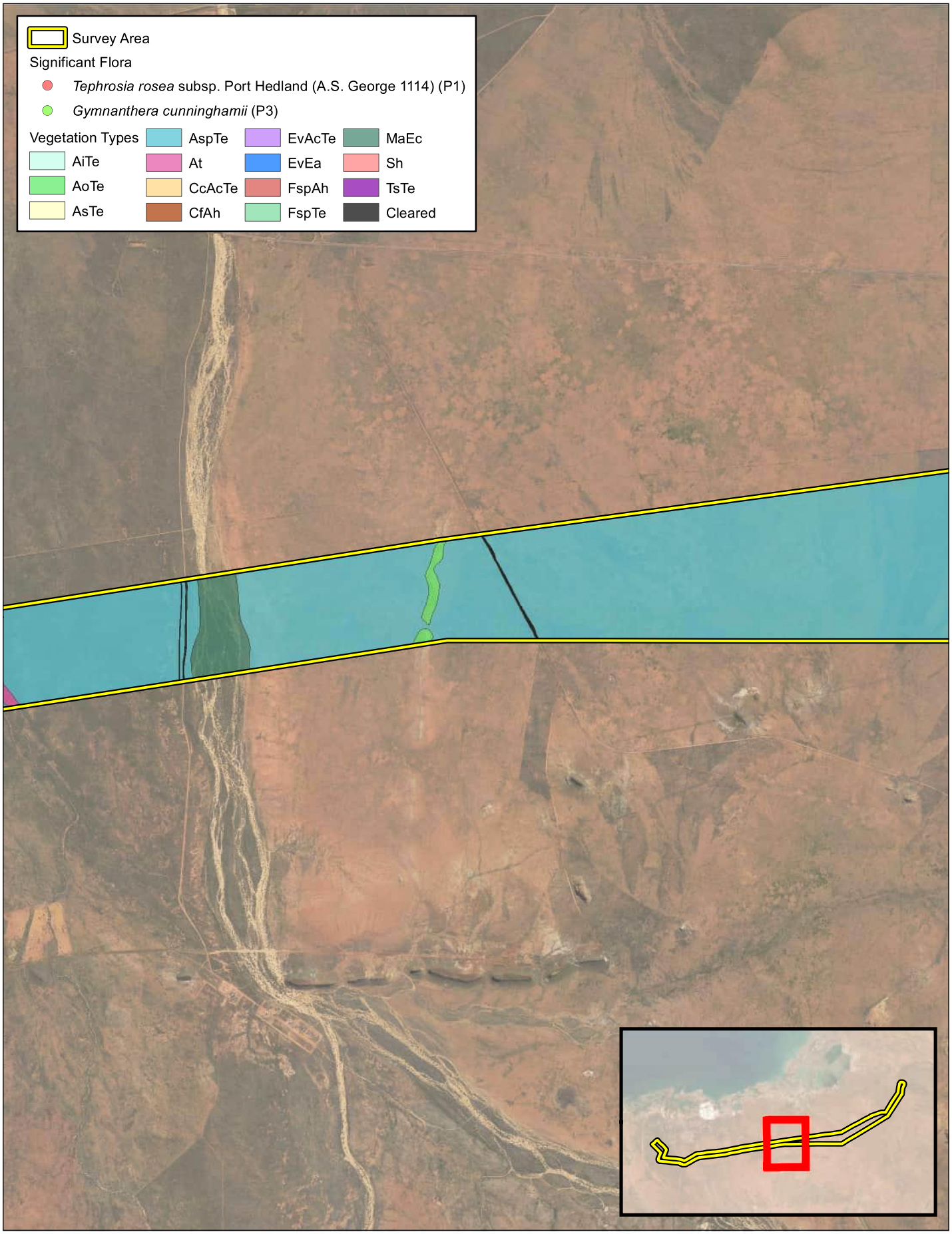

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N 0 0.5 1 2 km

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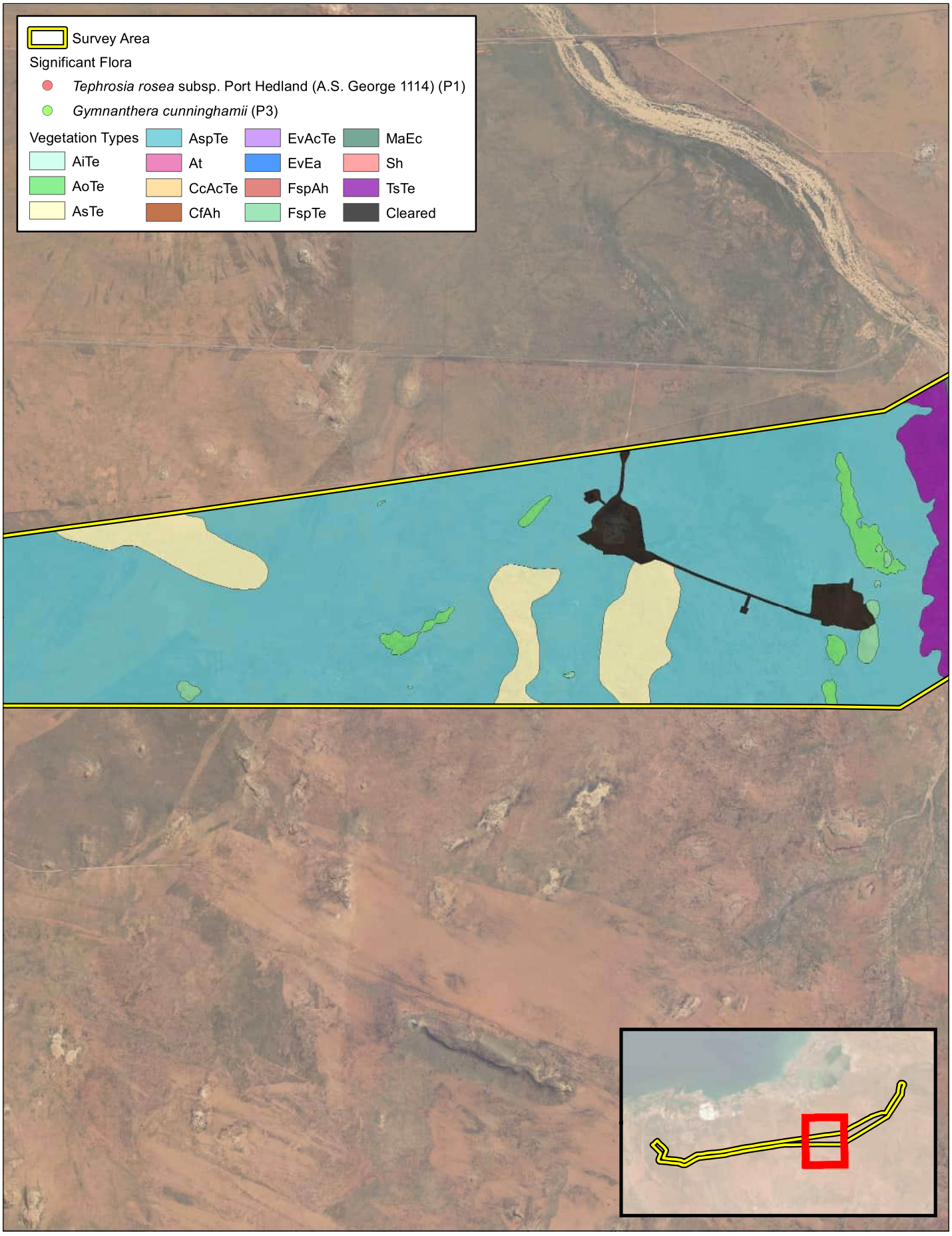
Scale	: 1:50,000 @ A4
Project Number	: 072189
Date Drawn	: 26/06/2024
Drawn By	: Environmaps
Reviewed By	: GB

Horizon Power
Atlas Ridley Magnetite Project Connection
Flora and Fauna Survey Technical Report

Vegetation Types and Significant Flora in the Survey Area
MAP 09d

C:\GIS\Jobs\360\072189 - Atlas Ridley - Flora and Fauna Survey Tech Rpt\Figures\072189_M09d Vegetation Types and Significant Flora in the Survey Area_240625.mxd



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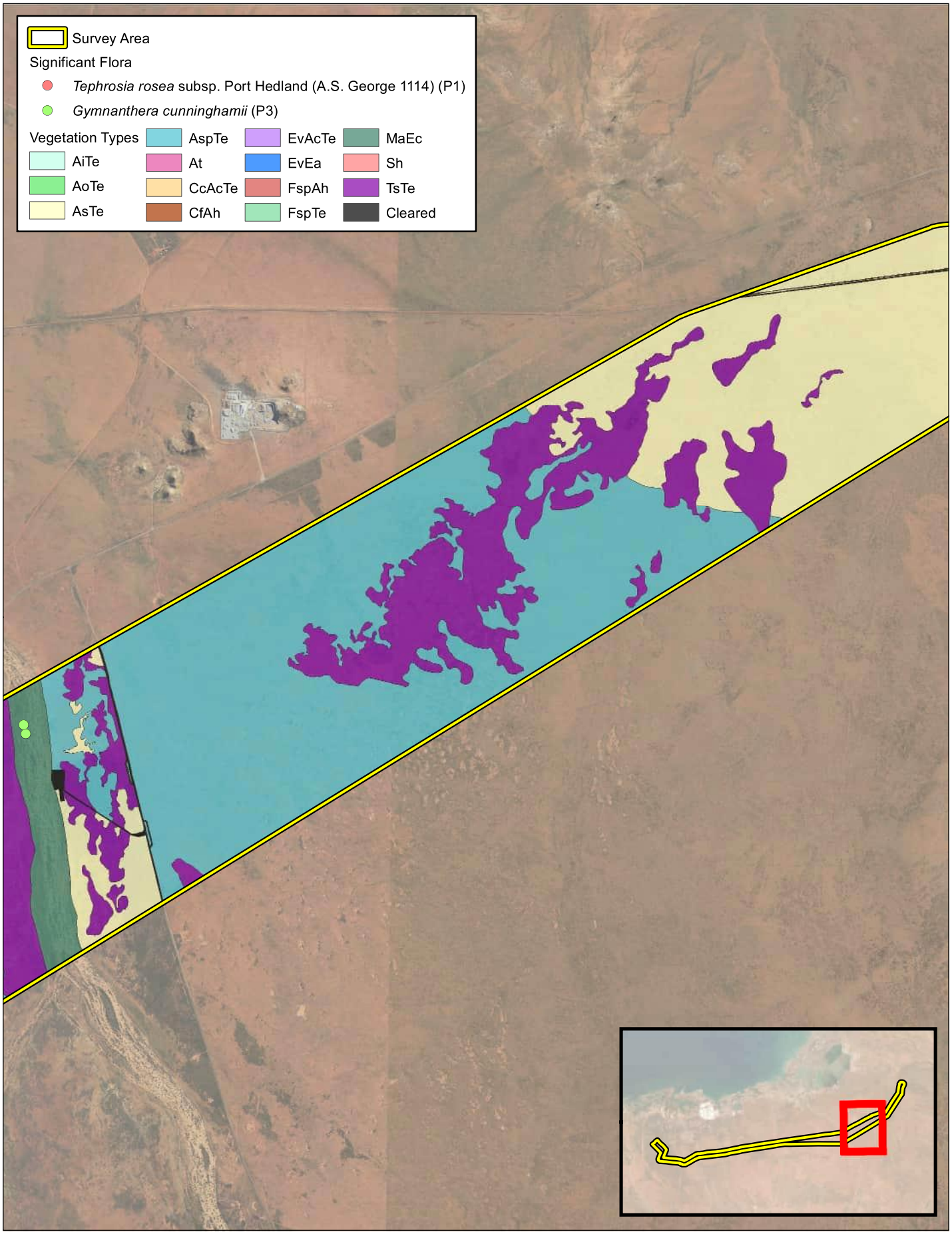
Scale	: 1:50,000 @ A4
Project Number	: 072189
Date Drawn	: 26/06/2024
Drawn By	: Environmaps
Reviewed By	: GB

Horizon Power
Atlas Ridley Magnetite Project Connection
Flora and Fauna Survey Technical Report

Vegetation Types and Significant Flora in the Survey Area
MAP 09e

C:\GIS\Jobs\360\072189 - Atlas Ridley - Flora and Fauna Survey Tech Rpt\Figures\072189_M09e Vegetation Types and Significant Flora in the Survey Area_240625.mxd



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Scale	: 1:50,000 @ A4
Project Number	: 072189
Date Drawn	: 26/06/2024
Drawn By	: Environmaps
Reviewed By	: GB

Horizon Power

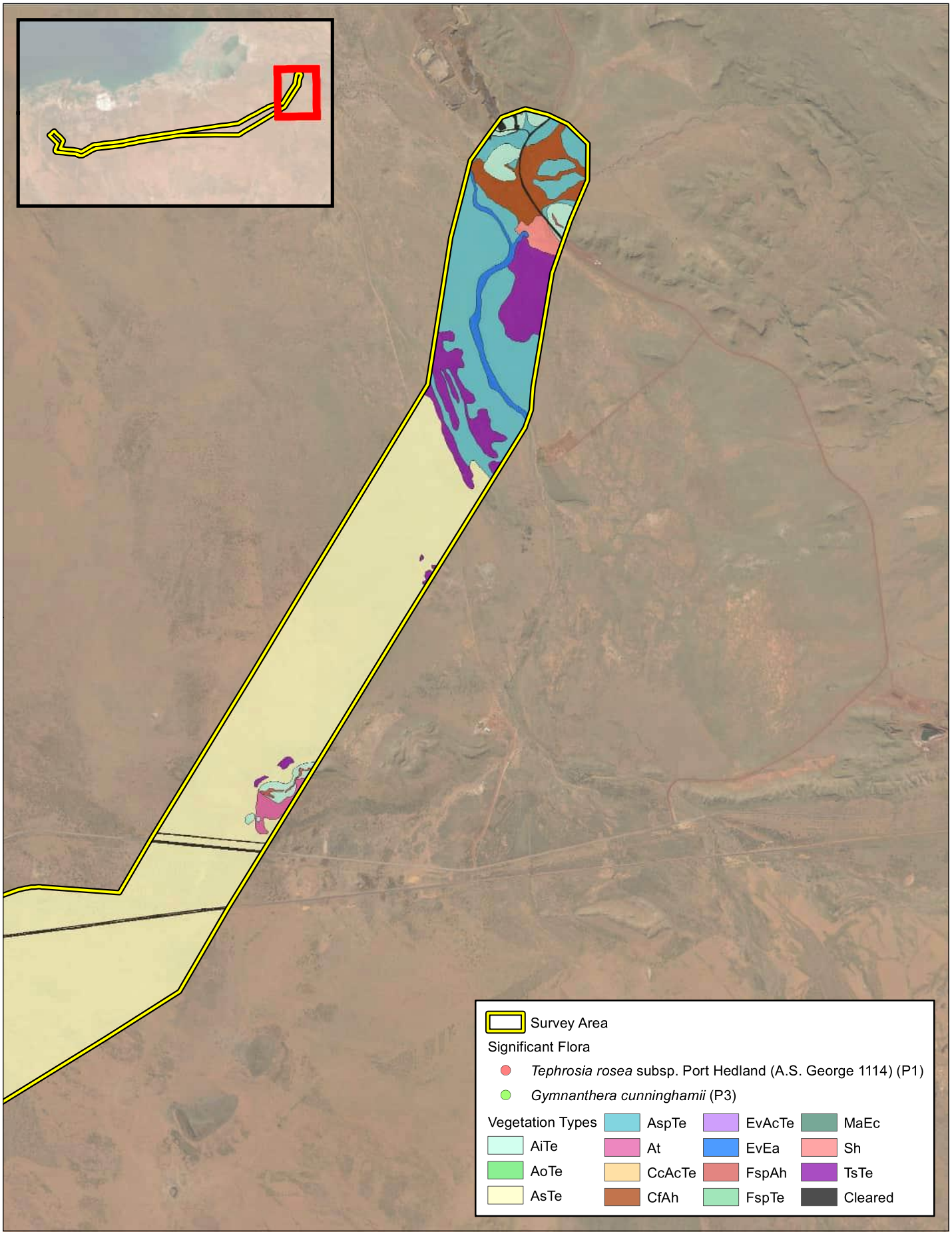
Atlas Ridley Magnetite Project Connection

Flora and Fauna Survey Technical Report

Vegetation Types and Significant Flora in the Survey Area

MAP 09f

C:\GIS\Jobs\360\072189 - Atlas Ridley - Flora and Fauna Survey Tech Rpt\Figures\072189_M09f Vegetation Types and Significant Flora in the Survey Area_240625.mxd



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Scale : 1:50,000 @ A4
Project Number : 072189
Date Drawn : 26/06/2024
Drawn By : Environmaps
Reviewed By : GB

Horizon Power
Atlas Ridley Magnetite Project Connection
Flora and Fauna Survey Technical Report

Vegetation Types and Significant Flora in the Survey Area
MAP 09g

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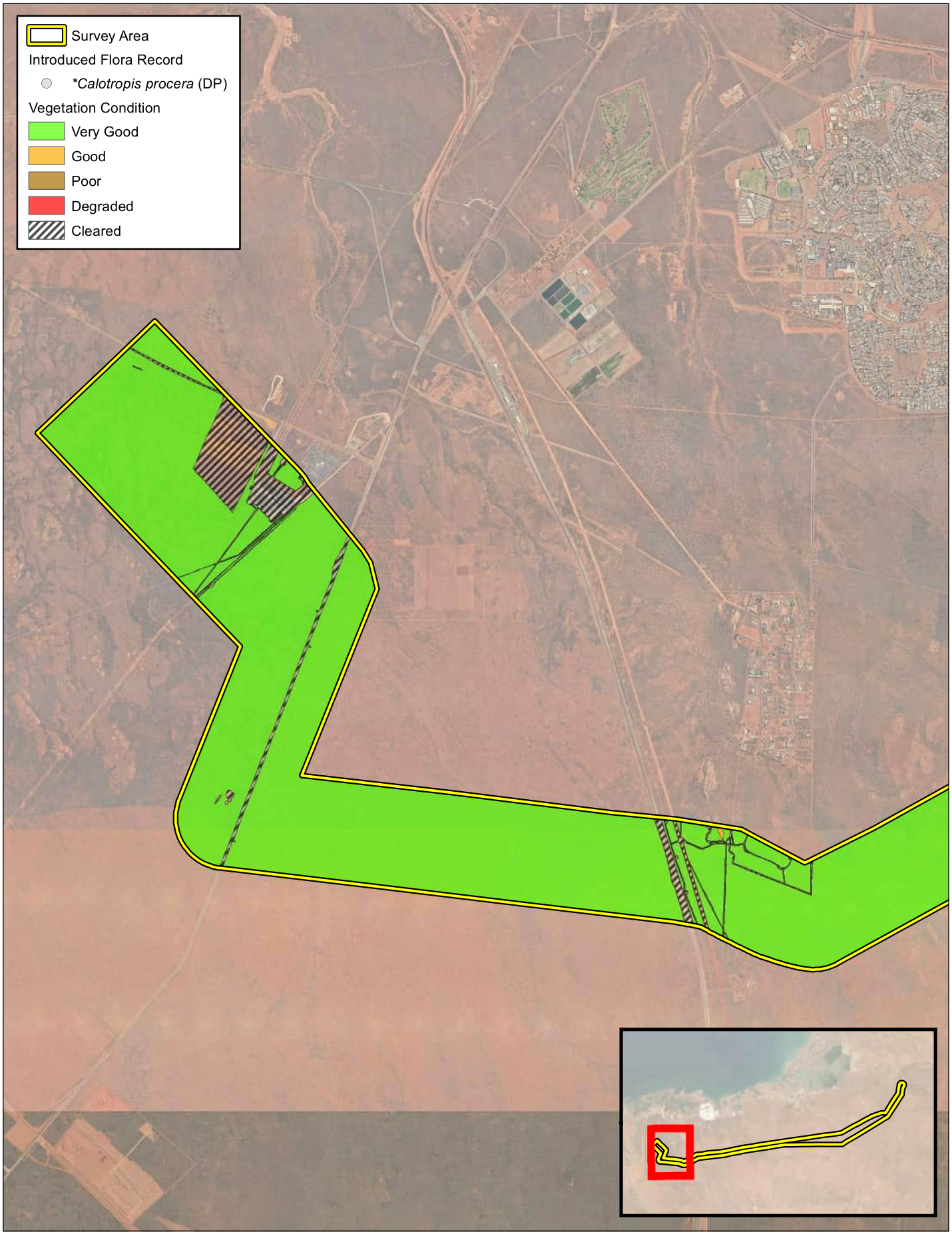

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Coordinate System: GDA 1994 MGA Zone 50 @ A4

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Project Number	: 072189
Date Drawn	: 8/07/2024
Drawn By	: Environmaps
Reviewed By	: GB

Horizon Power
Atlas Ridley Magnetite Project Connection
Flora and Fauna Survey Technical Report

Vegetation Condition and Introduced Flora Records MAP 10a

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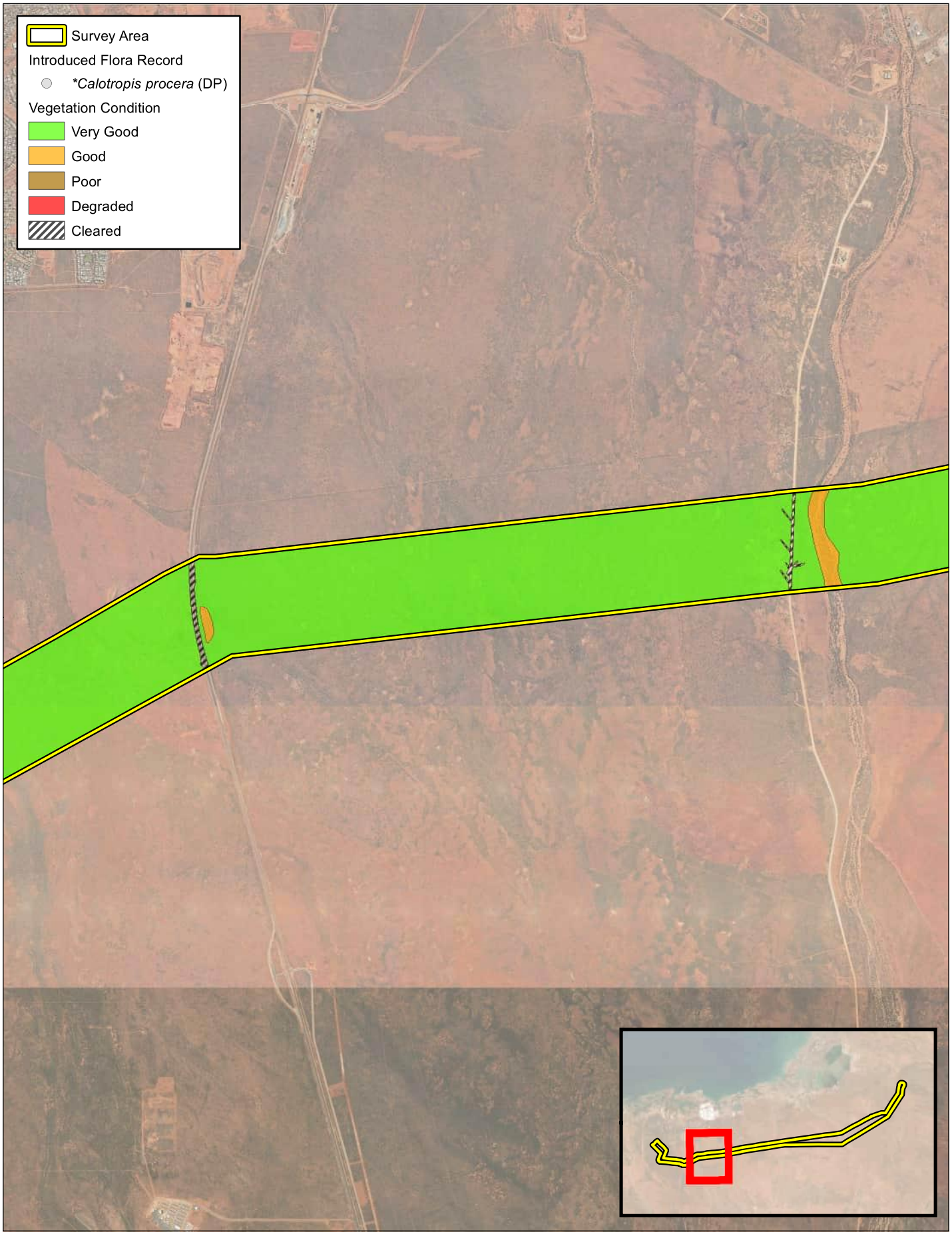

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Scale	: 1:50,000 @ A4
Project Number	: 072189
Date Drawn	: 26/06/2024
Drawn By	: Environmaps
Reviewed By	: GB

Horizon Power

Atlas Ridley Magnetite Project Connection

Flora and Fauna Survey Technical Report

Vegetation Condition and Introduced Flora Records MAP 10b

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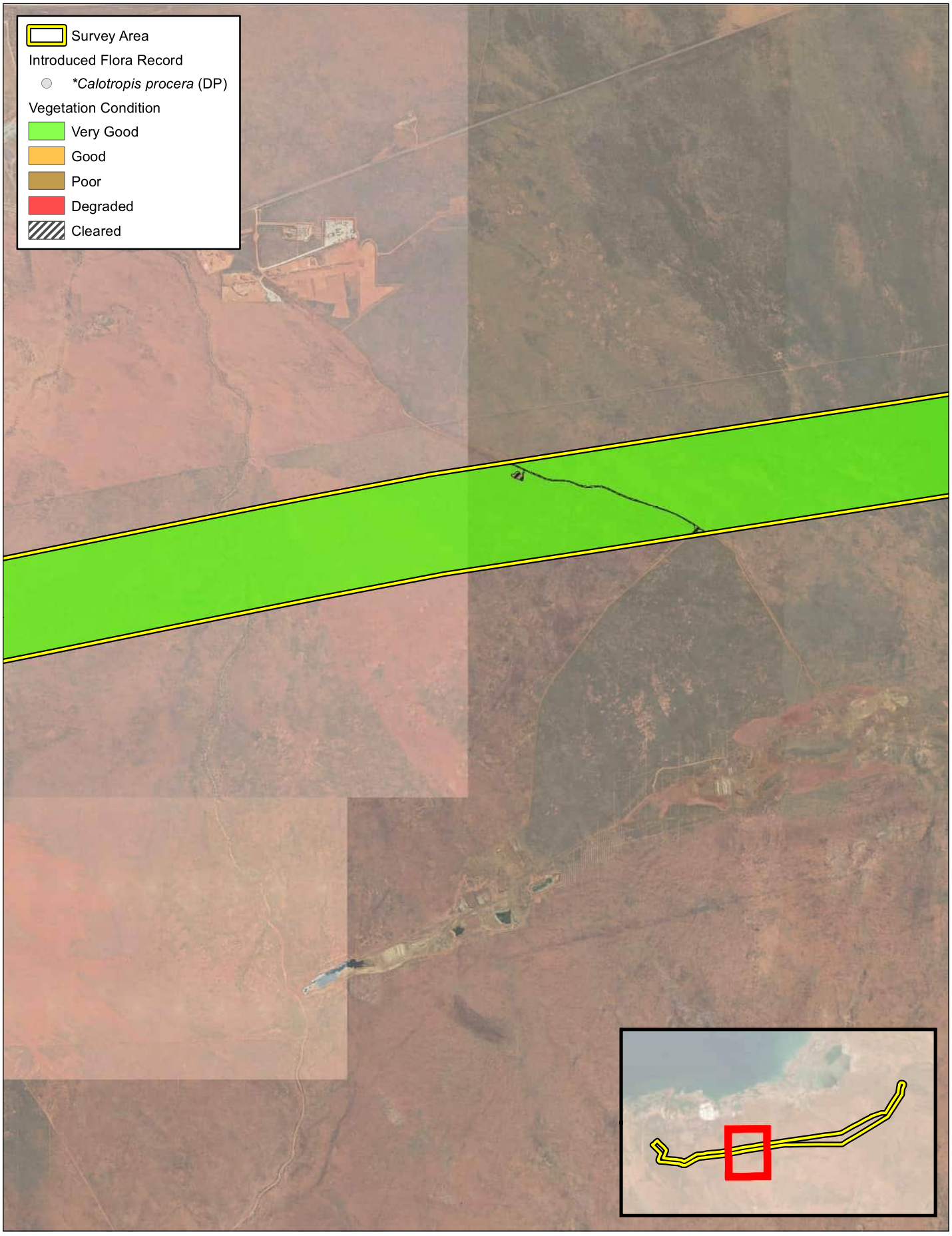

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Coordinate System: GDA 1994 MGA Zone 50 @ A4

Scale	: 1:50,000 @ A4
Project Number	: 072189
Date Drawn	: 26/06/2024
Drawn By	: Environmaps
Reviewed By	: GB

Horizon Power

Atlas Ridley Magnetite Project Connection

Flora and Fauna Survey Technical Report

Vegetation Condition and Introduced Flora Records MAP 10c

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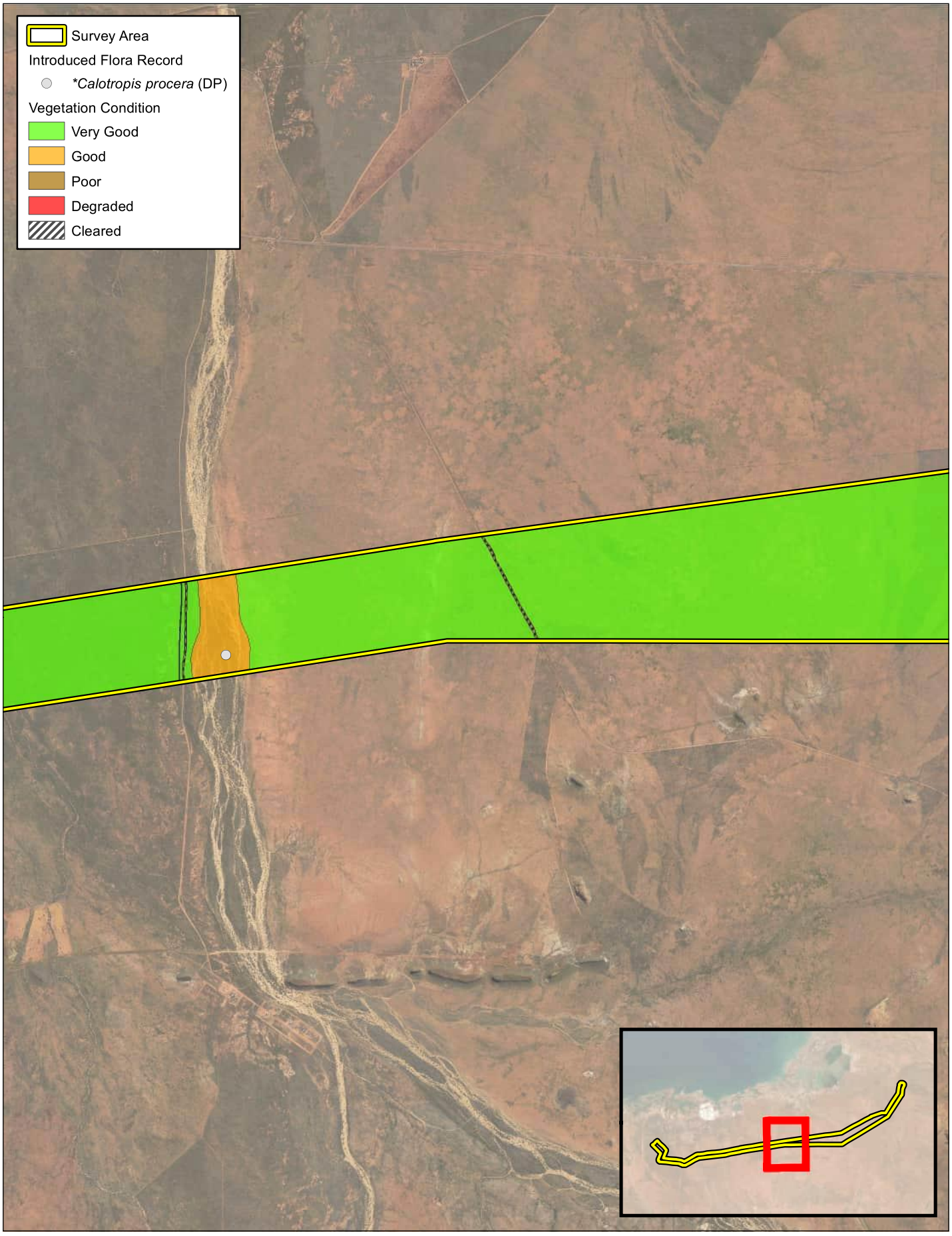

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Project Number	: 072189
Date Drawn	: 26/06/2024
Drawn By	: Environmaps
Reviewed By	: GB

Horizon Power

Atlas Ridley Magnetite Project Connection

Flora and Fauna Survey Technical Report

Vegetation Condition and Introduced Flora Records MAP 10d

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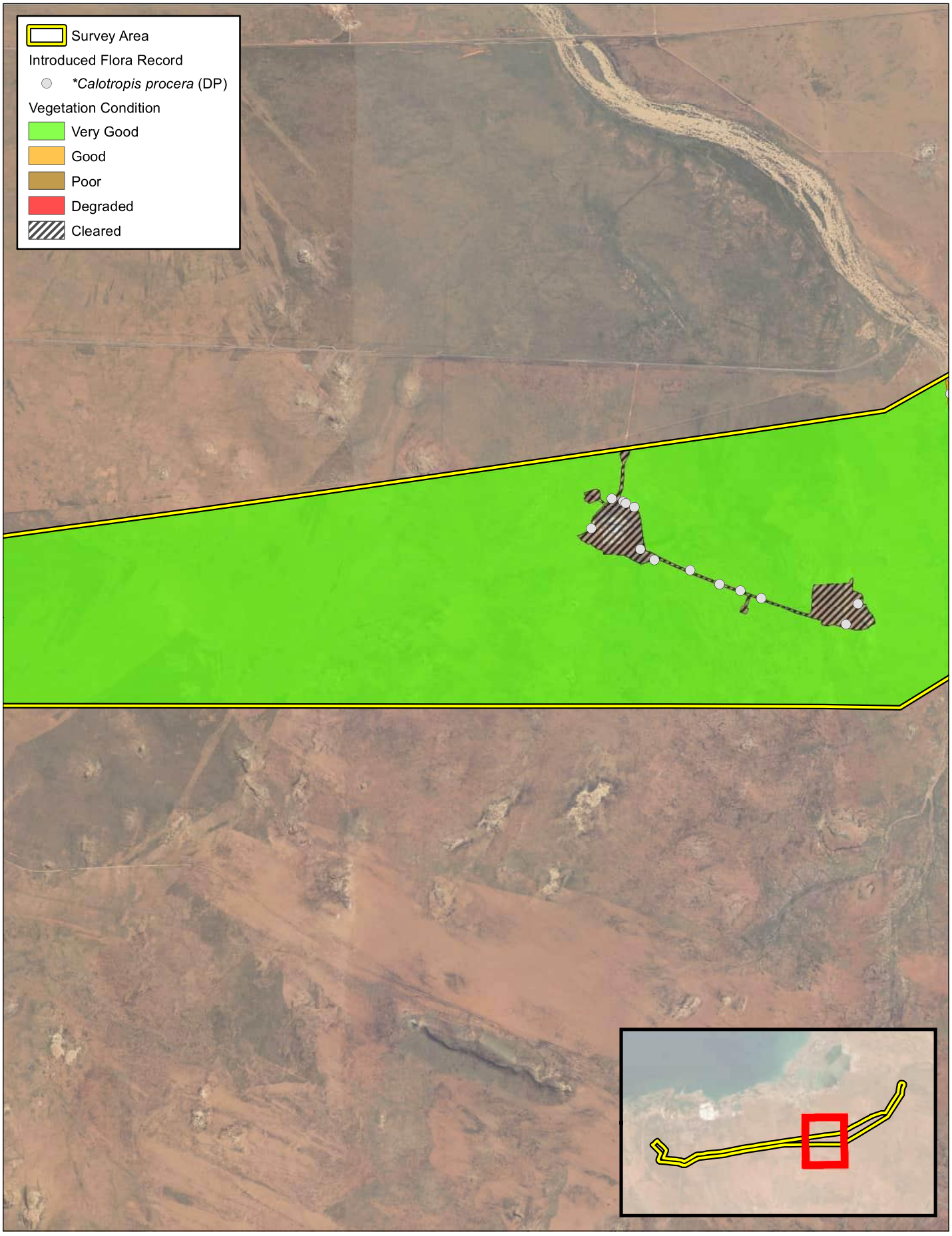

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Date Drawn	: 26/06/2024
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Horizon Power
Atlas Ridley Magnetite Project Connection
Flora and Fauna Survey Technical Report

Vegetation Condition and Introduced Flora Records MAP 10e

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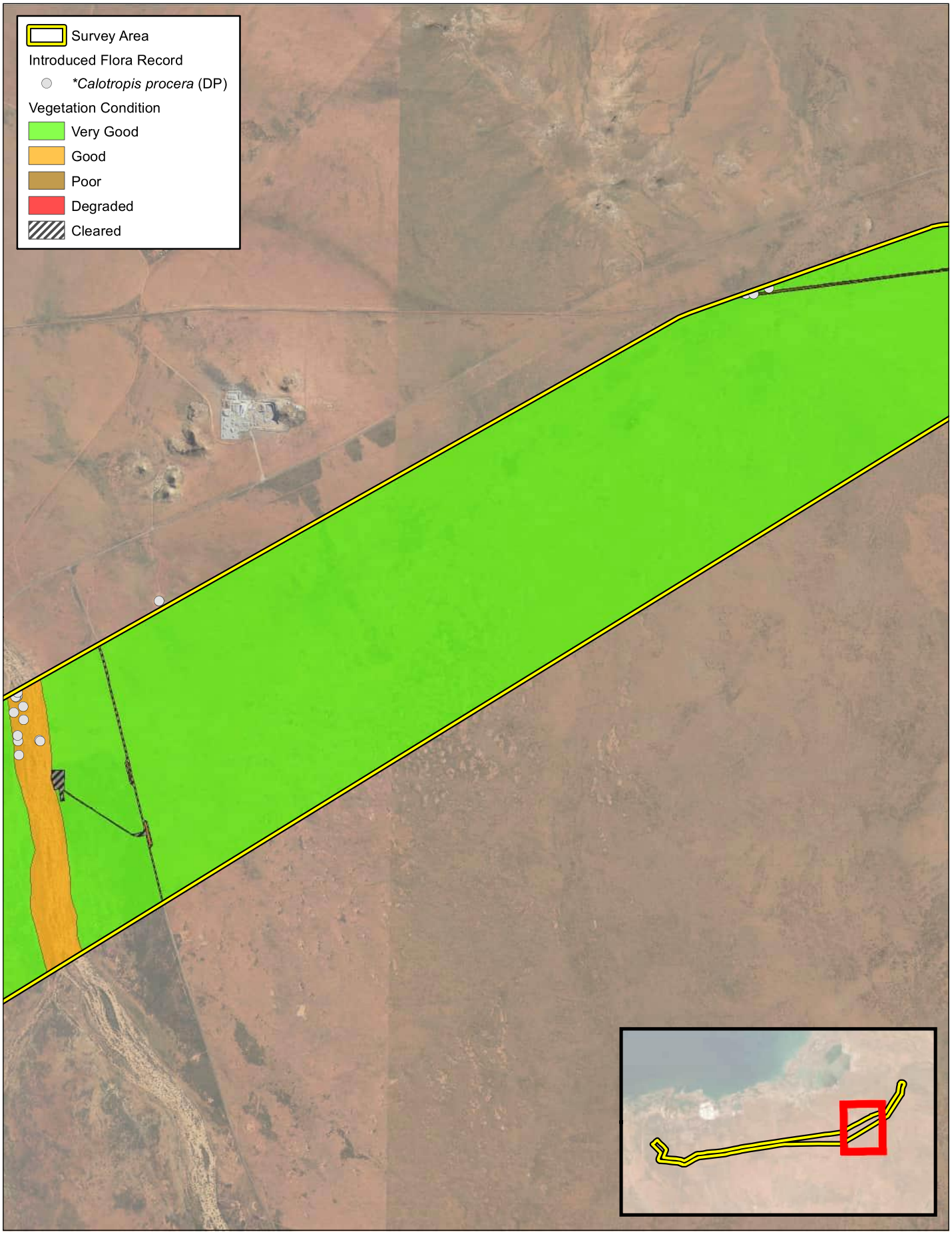

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Scale	: 1:50,000 @ A4
Project Number	: 072189
Date Drawn	: 26/06/2024
Drawn By	: Environmaps
Reviewed By	: GB

Horizon Power
Atlas Ridley Magnetite Project Connection
Flora and Fauna Survey Technical Report

Vegetation Condition and Introduced Flora Records MAP 10f

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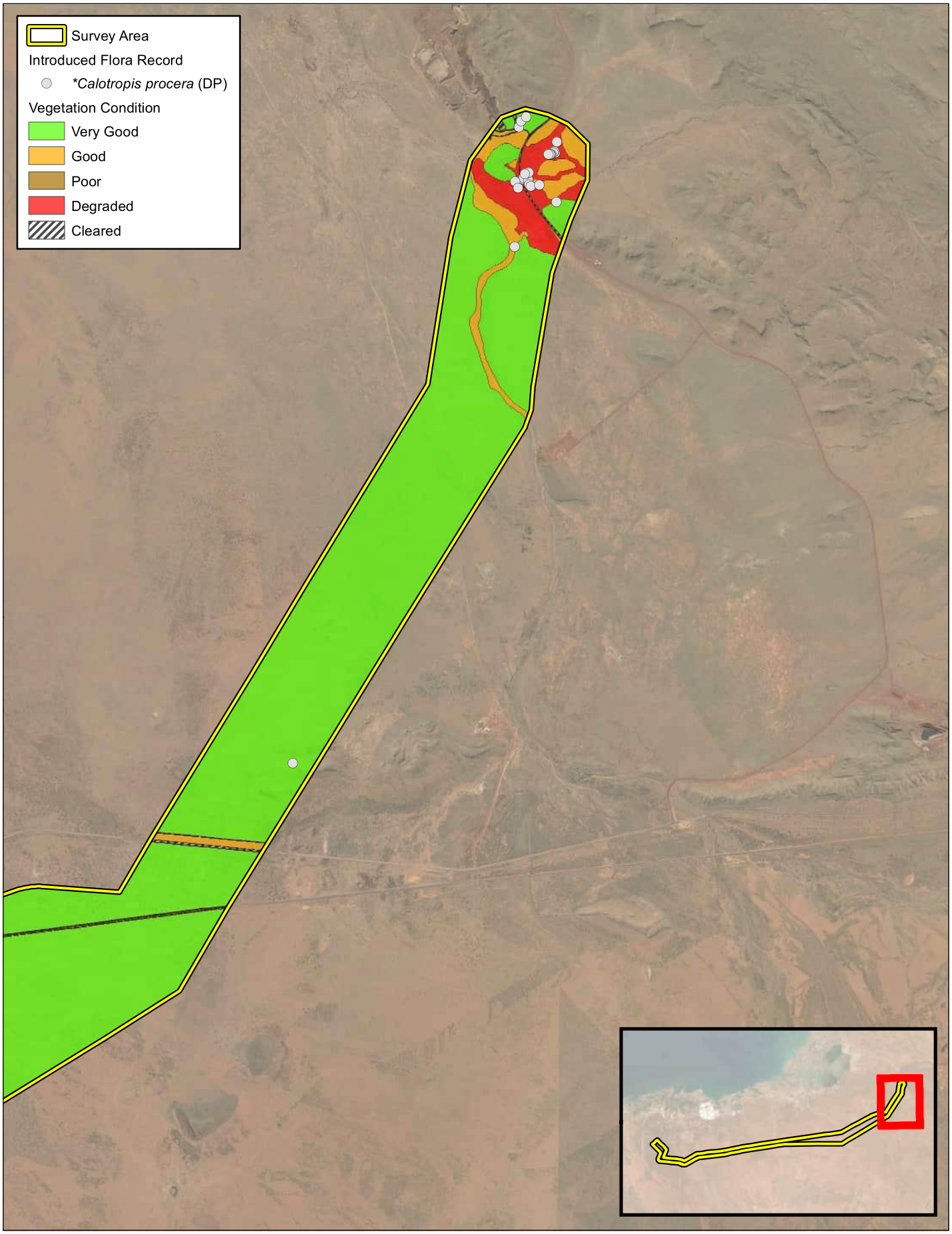

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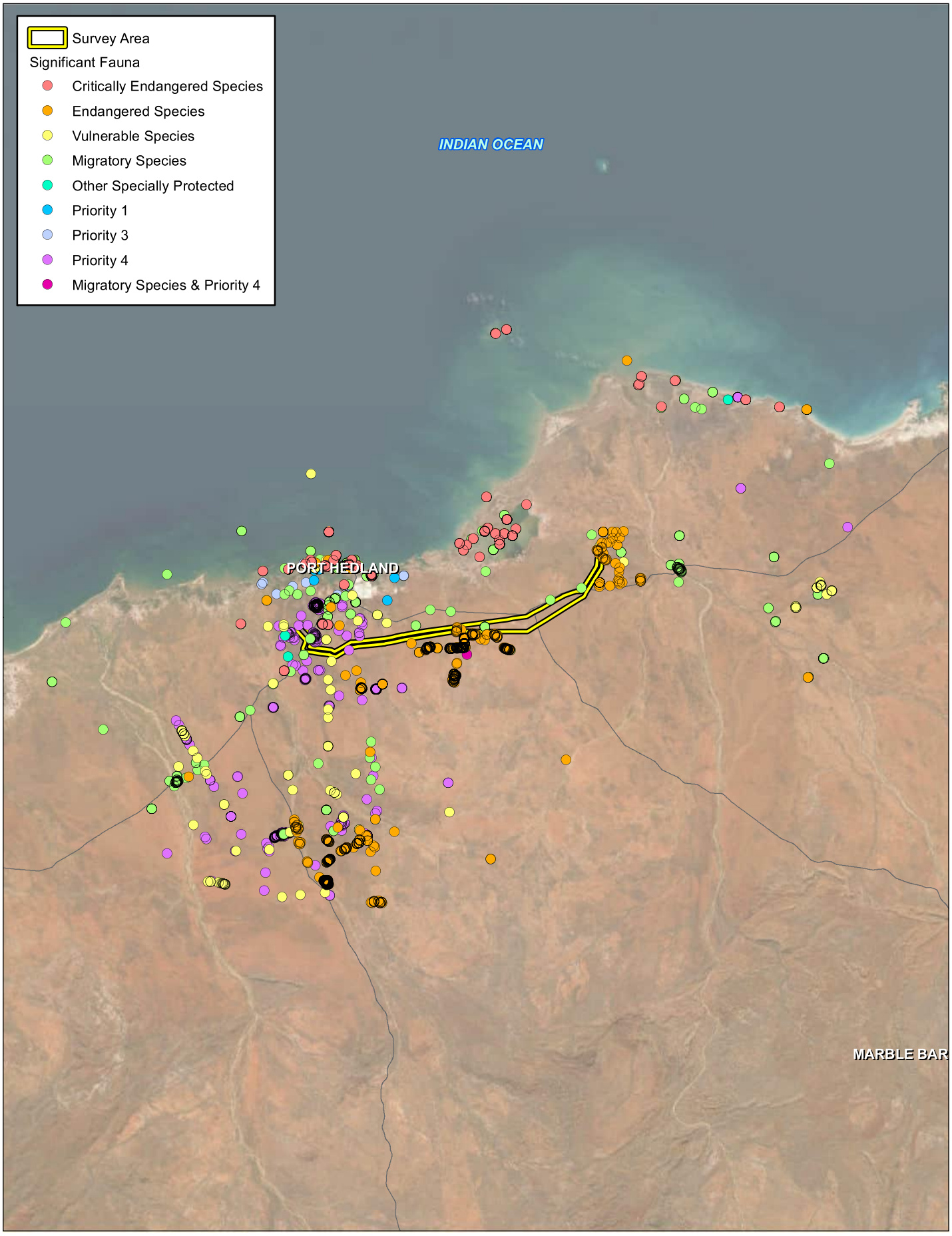
Scale : 1:50,000 @ A4
Project Number : 072189
Date Drawn : 26/06/2024
Drawn By : Environmaps
Reviewed By : GB

Horizon Power
Atlas Ridley Magnetite Project Connection
Flora and Fauna Survey Technical Report

Vegetation Condition and Introduced Flora Records MAP 10g

C:\GIS\Jobs\360\072189 - Atlas Ridley - Flora and Fauna Survey Tech Rpt\Figures\072189_M10g Vegetation Condition and Introduced Flora Records_240625.mxd



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Project Number	: 072189
Date Drawn	: 25/06/2024
Drawn By	: Environmaps
Reviewed By	: GB

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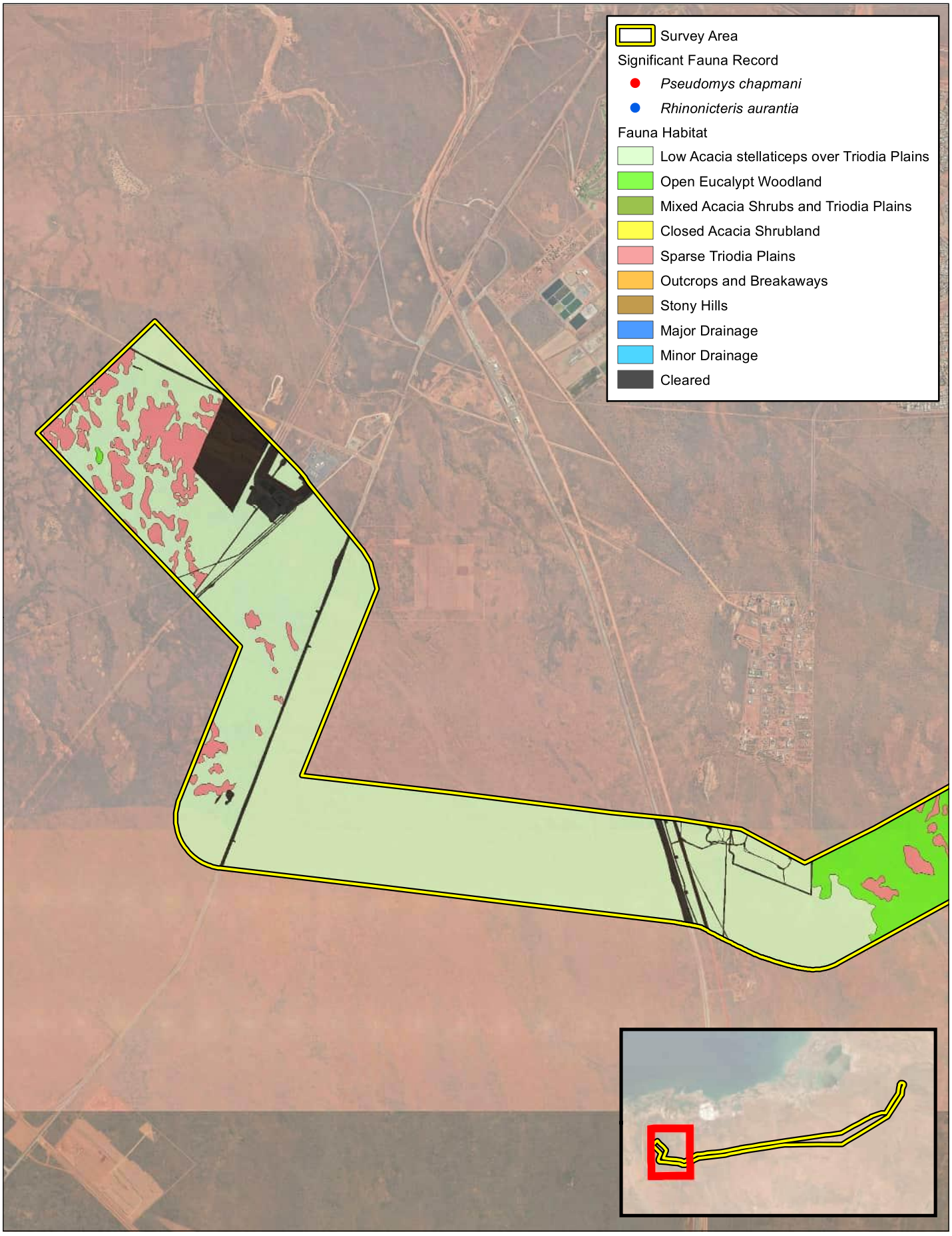
Atlas Ridley Magnetite Project Connection
Flora and Fauna Survey Technical Report

Significant Fauna
Database Search Results
MAP 11

C:\GIS\Jobs\360\072189 - Atlas Ridley - Flora and Fauna Survey Tech Rpt\Figures\072189_M11 Significant Fauna Database Search Results_240625.mxd



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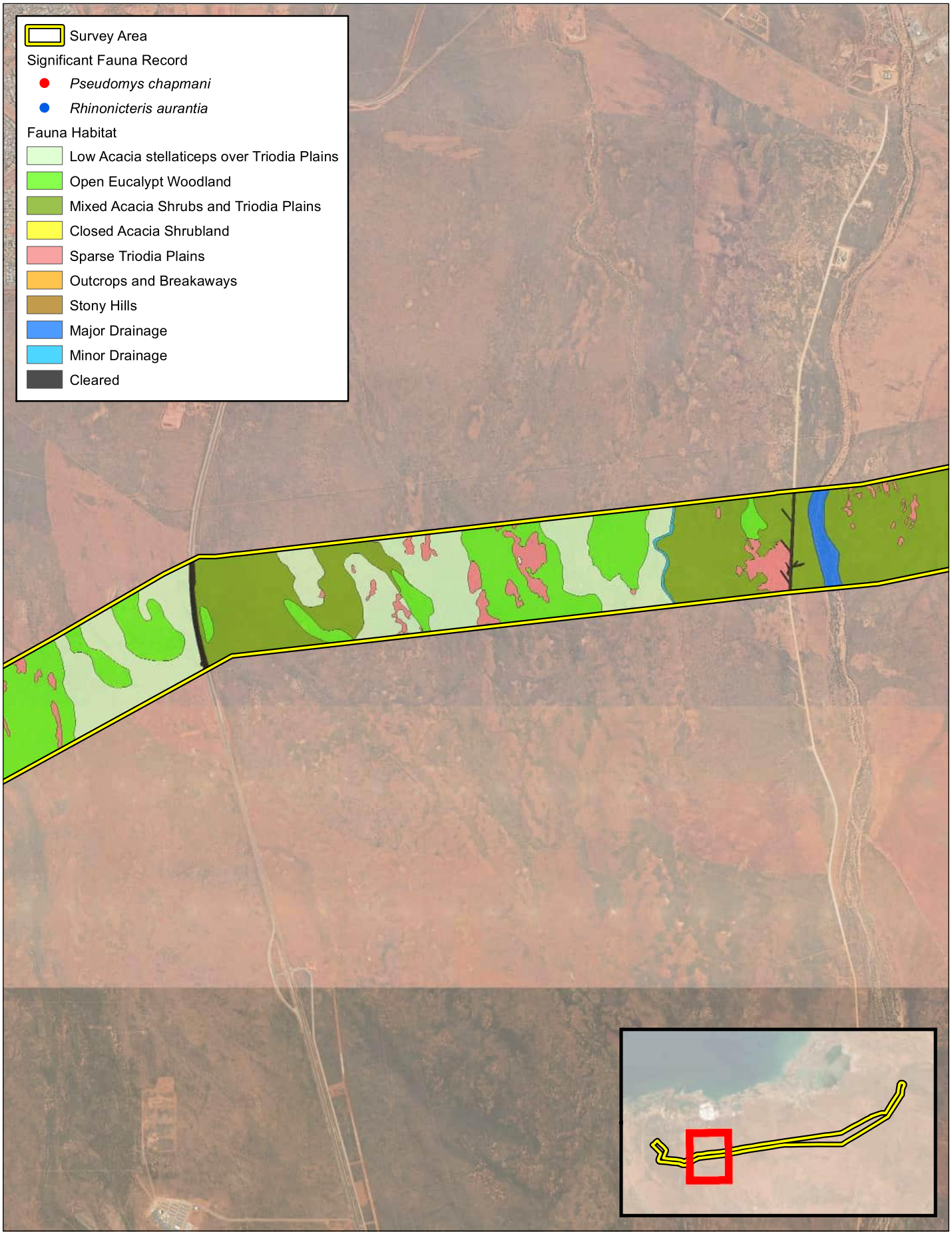
Project Number : 072189
Date Drawn : 26/06/2024
Drawn By : Environmaps
Reviewed By : GB

Horizon Power
Atlas Ridley Magnetite Project Connection
Flora and Fauna Survey Technical Report

Fauna Habitat and Significant Fauna Records MAP 12a

C:\GIS\Jobs\360\072189 - Atlas Ridley - Flora and Fauna Survey Tech Rpt\Figures\072189_M12a Fauna Habitat and Significant Fauna Records_240625.mxd



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Project Number	: 072189
Date Drawn	: 26/06/2024
Drawn By	: Environmaps
Reviewed By	: GB

Horizon Power

Atlas Ridley Magnetite Project Connection

Flora and Fauna Survey Technical Report

Fauna Habitat and Significant Fauna Records MAP 12b

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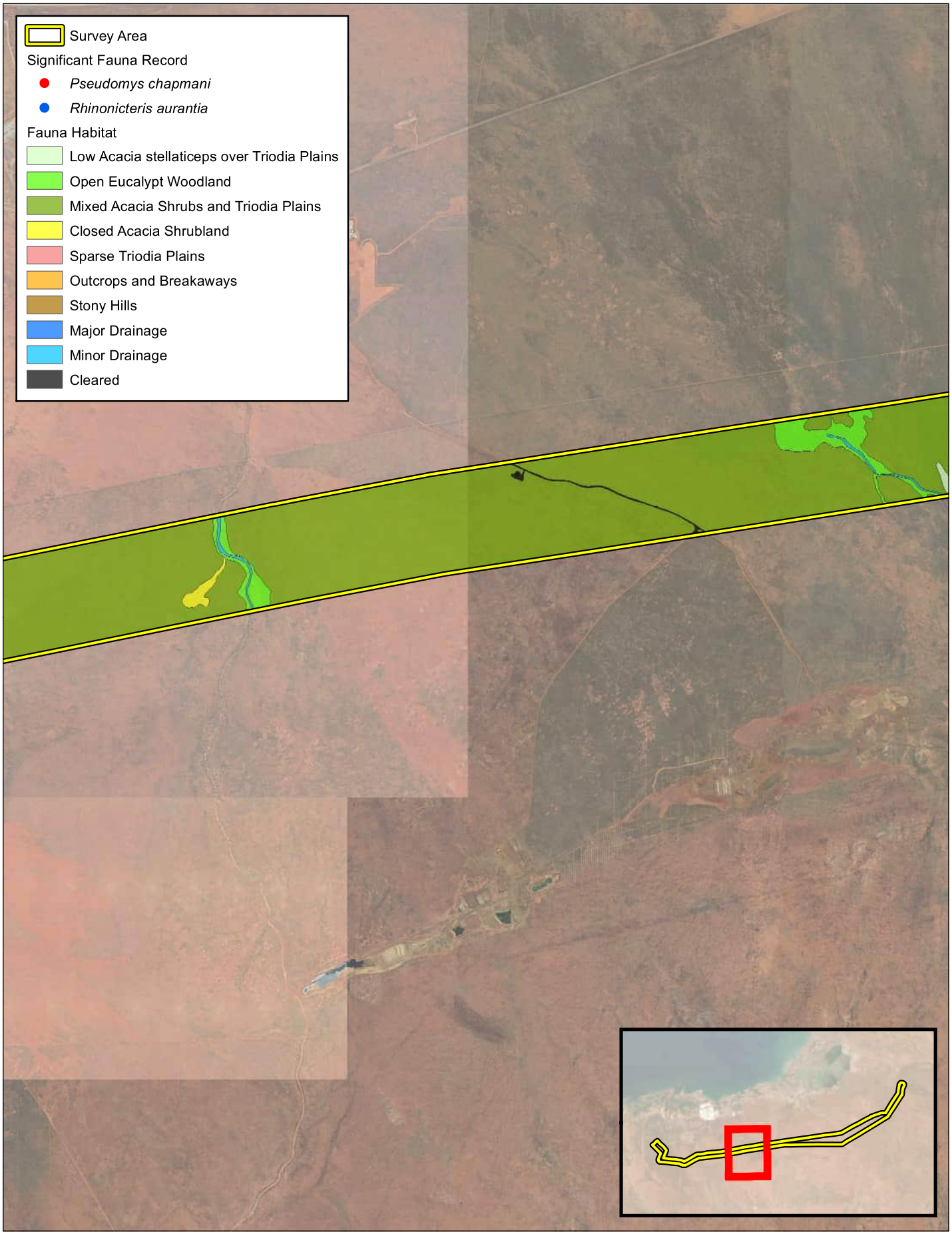

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Scale	: 1:50,000 @ A4
Project Number	: 072189
Date Drawn	: 26/06/2024
Drawn By	: Environmaps
Reviewed By	: GB

Horizon Power

Atlas Ridley Magnetite Project Connection

Flora and Fauna Survey Technical Report

Fauna Habitat and Significant Fauna Records MAP 12c

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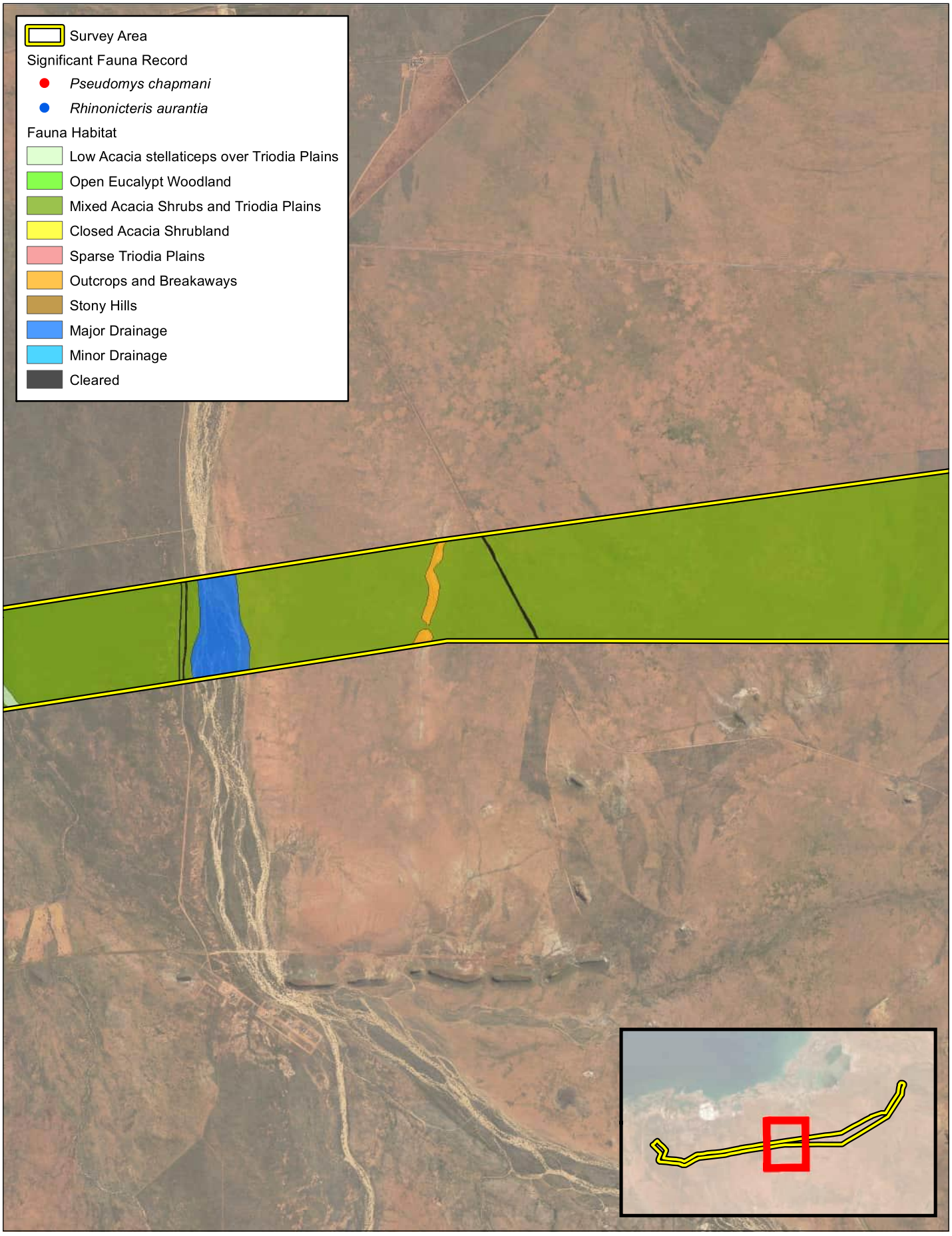

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Project Number	: 072189
Date Drawn	: 26/06/2024
Drawn By	: Environmaps
Reviewed By	: GB

Horizon Power

Atlas Ridley Magnetite Project Connection

Flora and Fauna Survey Technical Report

Fauna Habitat and Significant Fauna Records MAP 12d

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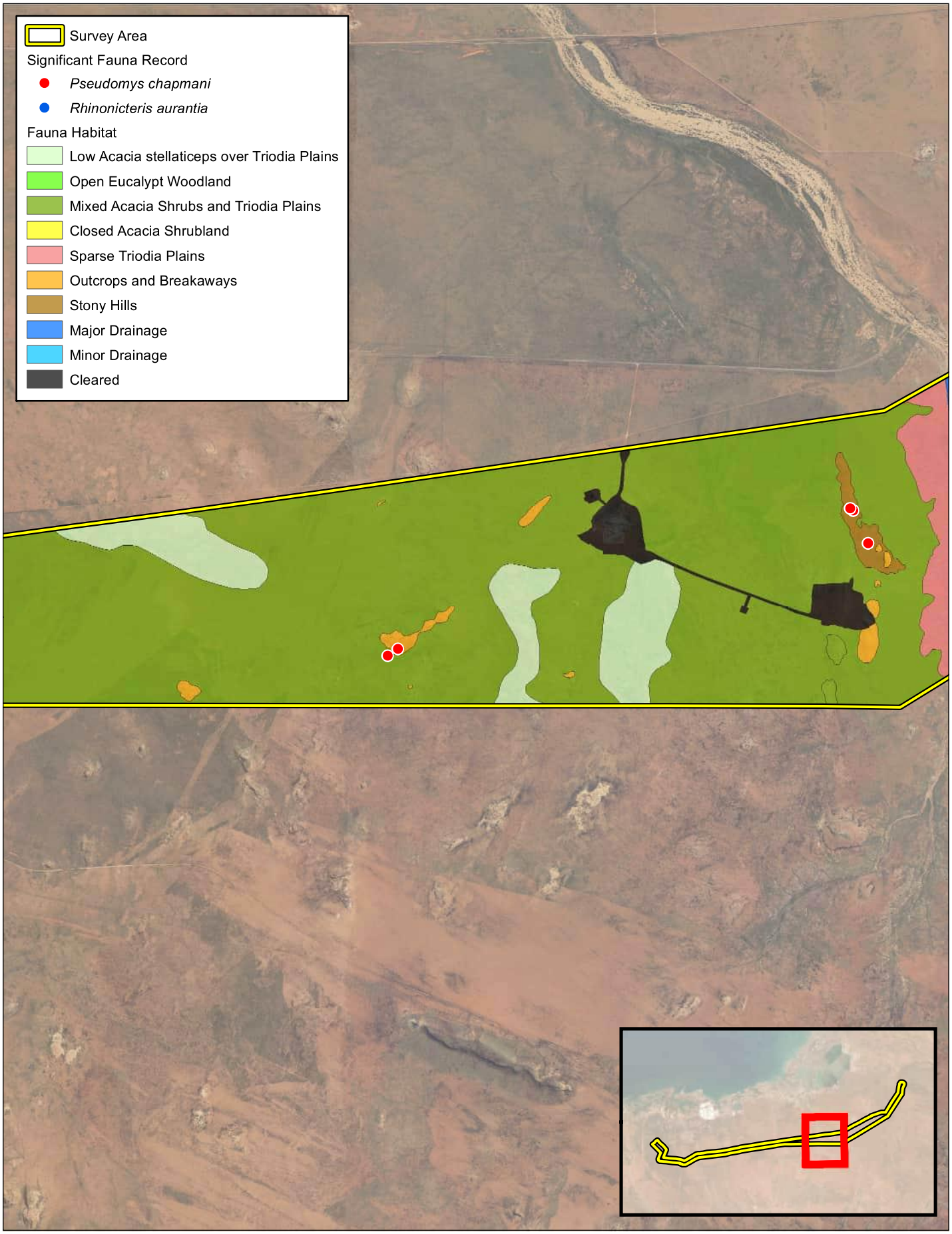

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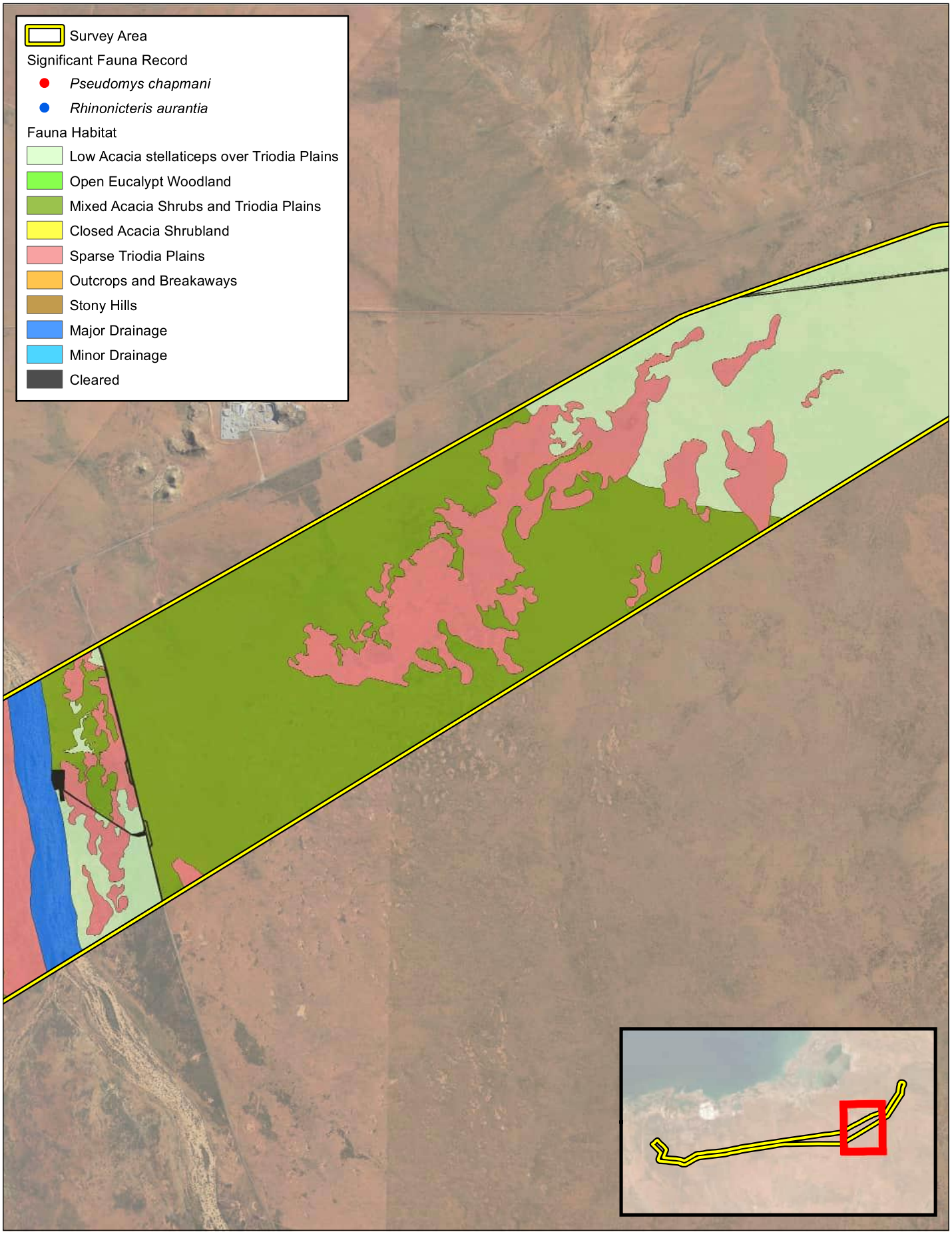
Project Number : 072189
Date Drawn : 26/06/2024
Drawn By : Environmaps
Reviewed By : GB

Horizon Power
Atlas Ridley Magnetite Project Connection
Flora and Fauna Survey Technical Report

Fauna Habitat and Significant Fauna Records MAP 12e

C:\GIS\Jobs\360\072189 - Atlas Ridley - Flora and Fauna Survey Tech Rpt\Figures\072189_M12e Fauna Habitat and Significant Fauna Records_240625.mxd



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Scale	: 1:50,000 @ A4
Project Number	: 072189
Date Drawn	: 26/06/2024
Drawn By	: Environmaps
Reviewed By	: GB

Horizon Power

Atlas Ridley Magnetite Project Connection

Flora and Fauna Survey Technical Report

Fauna Habitat and Significant Fauna Records MAP 12f

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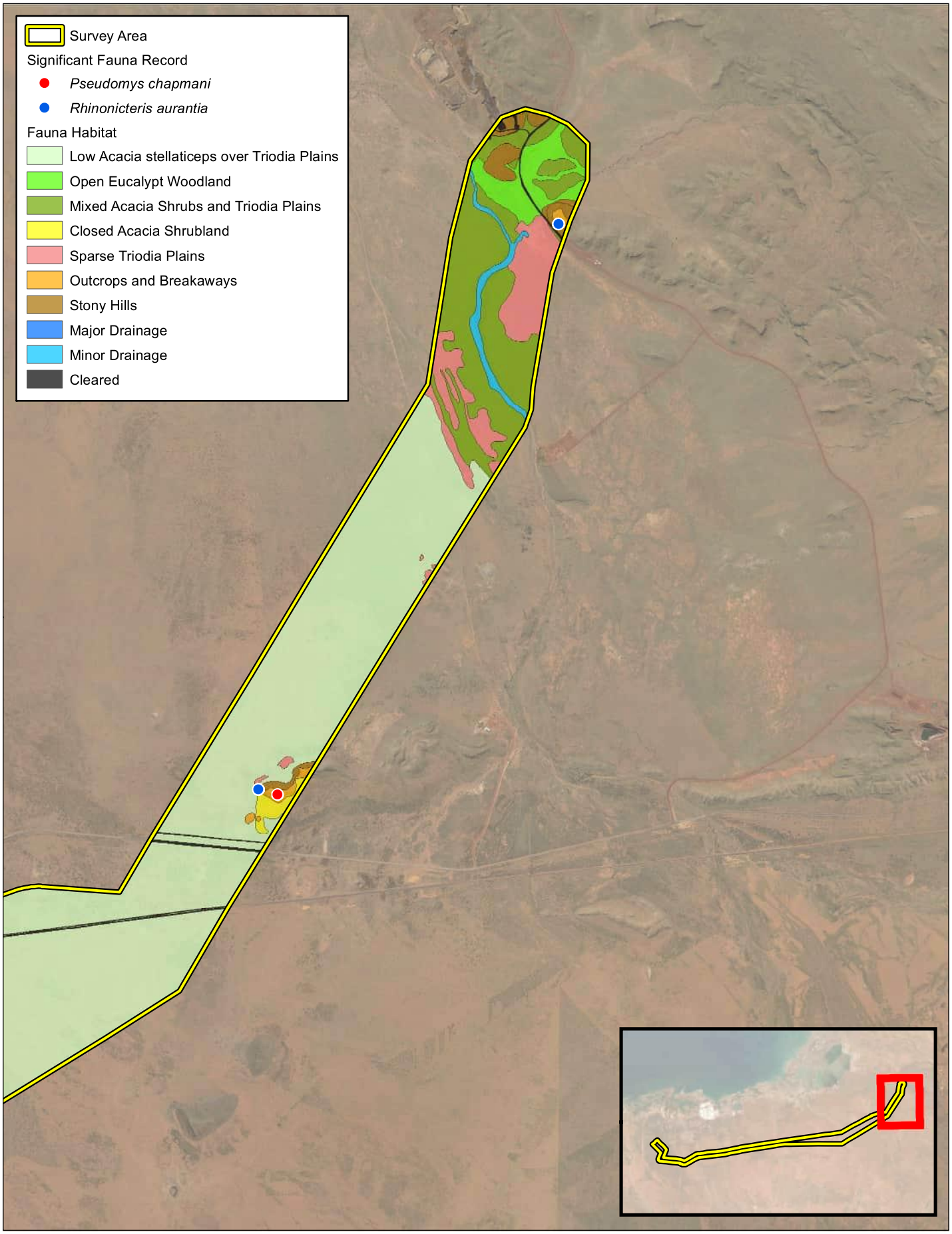

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Drawn By	: Environmaps
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Horizon Power

Atlas Ridley Magnetite Project Connection

Flora and Fauna Survey Technical Report

Fauna Habitat and Significant Fauna Records MAP 12g

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Appendix B Literature Review Summary

Atlas Ridley Magnetite Project Connection

Flora and Fauna Survey Technical Report

Horizon Power

SLR Project No.: 675.072189.00001

29 July 2024

Report	Project Area	Survey Timing	Survey Effort	Conservation Significant Ecological Communities	Conservation Significant Flora	Introduced Flora
Detailed Flora and Vegetation Assessment, Ridley Magnetite Project (Focused Vision 2023)	Assessment intersects the current survey area	May, June, July 2022, and June, August 2023	Detailed flora and vegetation assessment	Presence of the Eighty Mile Land System PEC (P3)	• *Atriplex eremitis* (P1) • *Tephrosia rosea* var. Port Hedland (A.S. George 1114) (P1) • *Euphorbia inappendiculata* var. *queenslandica* (P2) • *Rothia indica* subsp. *australis* (P3)	• **Calotropis procera* • **Parkinsonia aculeata*
De Grey South Borefield Biological Surveys (SLR Consulting, 2023),	10 km east of the Survey Area.	July 2023	Detailed flora and basic fauna vegetation assessment	None recorded	None recorded	• **Calotropis procera* • **Cenchrus ciliaris* • **Cenchrus setiger* • **Chloris barbata* • **Vachellia farnesiana*
Flora and Vegetation Assessment, Port Hedland Regional (ENV Australia 2011)	Directly west of the current survey area	April – May 2011, June – July 2011	Detailed flora and vegetation assessment	None recorded	• *Abutilon* sp. Pritzelianum (S. van Leeuwen 5095) (P3) • *Euploca muticum* (P3) • *Tephrosia rosea* var. Port Headland (A.S. George 1114) • *Gomphrena pusilla* (P2)	• **Aerva javinica* • **Cenchrus ciliaris* • **Citrulus colocynthis* • **Cucumis melo* subsp. *agrestis* • **Eragrostis curvula* • **Flaveria trinerva* • **Indigofera sessiliflora* • **Physalis angulate* • **Portulaca oleracea* • **Stylosanthes hamata* • Vaccaria hispanica • **Vachellia farnesiana*
Flora and Vegetation Assessment, Corunna Downs Intersection Works (Woodman Environmental 2017)	Approximately 90 km southeast of the survey area	April 2017	Reconnaissance Flora and Vegetation Survey	None recorded	None recorded	• **Aerva javanica* • **Cenchrus ciliaris*

Report	Project Area	Survey Timing	Survey Effort	Conservation Significant Ecological Communities	Conservation Significant Flora	Introduced Flora
Corunna Downs Project, Level 2 Flora and Vegetation Assessment (Woodman Environmental 2016)	Approximately 90 km southeast of the survey area	March – April 2014, April – May 2014, and May 2016	Detailed Flora and Vegetation Survey	None recorded	• *Cochlospermum macnamarae* (P1) • *Rothia indica* subsp. *australis* (P3) • *Schoenus coultasii* (P1) • *Stylidium weeliwolli* (P3) • *Acacia levata* (P3) • *Eragrostis crateriformis* (P3) • *Heliotropium murinum* (P3) • *Nicotiana umbratical*(P3) • *Rostellularia adscendens* var. *latifolia* (P3) • *Swainsona thompsoniana* (P3) • *Ptilotus mollis* (P4)	• **Aerva javanica* • **Argemone ochrileuca* subsp. *ochroleuca* • **Calotropis procera* • **Cenchrus ciliaris* • **Cenchrus setiger* • **Chloris barbata* • **Cynodon dactylon* • **Echonochloa colona* • **Flaveria trinerva* • **Malvastrum Americanum* • **Passiflora foetida* var. *hispida* • **Portulaca pilosa* • **Setaria verticillata* • **Solanum nigrum* • **Sonchus oleraceus* • **Tribulus terrestris* • **Vachellia farnesiana*
Wodgina Gas Pipeline, Detailed Flora and Vegetation Survey (360 Environmental 2018)	Approximately 30 km southeast of the survey area	June 2018	Detailed Flora and Vegetation Survey	None recorded	• *Euphorbia clementii* (P3)	• **Aerva javanica* • **Malvastrum americanum* • **Cenchrus ciliaris*
Roy Hill Port Facility Power Line Port Hedland, Ecological Assessment (GHD 2016)	Approximately 15 km north of the survey area	June 2016	Reconnaissance Flora and Vegetation Survey	None recorded	None recorded	• **Aerva javanica* • **Cenchrus ciliaris*
Flora and Fauna survey Port Hedland International Airport – Highway Precinct	Approximately 10 km north of the survey area	November 2018	Reconnaissance Flora and Vegetation Survey	None recorded	• *Gomphrena leptophylla* (P3)	• **Washingtonia filifera* • **Aerva javanica* • **Calatropis procera* • **Cenchrus ciliaris*

Report	Project Area	Survey Timing	Survey Effort	Conservation Significant Ecological Communities	Conservation Significant Flora	Introduced Flora
2 (Emerge Associates 2019)						• **Cenchrus setiger*
Flora and Vegetation Reconnaissance Survey of Spoilbank Marina Project Area (Strategen-JBS&G 2020)	Approximately 15 km north of the survey area		Reconnaissance Flora and Vegetation Survey	None recorded	None recorded	• **Aerva javanica* • **Calatropis procera* • **Cenchrus ciliaris* • **Spathodea campanulate* • **Stylosanthes hamata* • **Tamarix aphylla*

ID	Report	Project Area	Survey Timing	Survey Effort	Significant Fauna Recorded Onsite	Fauna Habitats
Lit A	Ridley Detailed Terrestrial Vertebrate Fauna Survey (Biota, 2024)	Overlaps with the eastern section of the Survey Area	June 2022 – June 2023	Detailed fauna survey	• Far Eastern Curlew (*Numenius madagascariensis*) – CR (BC Act & EPBC); MI (EPBC Act) • Northern Quoll (*Dasyurus hallucatus*) – EN (BC & EPBC Act) • Pilbara Leaf-nosed Bat (*Rhinonicteris aurantia* Pilbara form) – VU (BC & EPBC Act) • Ghost Bat (*Macroderma gigas*) – VU (BC & EPBC Act) • Pilbara Olive Python (*Liasis olivaceus barroni*) – VU (BC & EPBC Act) • Brush-tailed Mulgara (*Dasycercus blythi*) – P4 (DBCA) • Western Pebble-mound Mouse (*Pseudomys chapmani*) – P4 (DBCA) • Pacific Swift (*Apus pacificus*) – MI (BC & EPBC) • Australian Tern (*Gelochelidon macrotarsa*) – Mi (BC & EPBC Act) • Peregrine Falcon (*Falco peregrinus*) – OS (BC Act)	Seven fauna habitats were identified: • Acacia shrubland over spinifex sandplain • Rocky hills • Major drainage line • Spinifex and saltbush flat • Medium drainage line • Tussock grassland • Cleared areas

ID	Report	Project Area	Survey Timing	Survey Effort	Significant Fauna Recorded Onsite	Fauna Habitats
Lit B	Ridley Services Corridors Basic and Targeted Fauna Survey (Biota, 2023)	Overlaps the Survey Area	June 2023	Basic and Targeted fauna survey	• Bar-tailed Godwit (*Limosa lapponica*) – CR (BC Act & EPBC Act); MI (EPBC Act) • Northern Quoll (*Dasyurus hallucatus*) – EN (BC & EPBC Act) • Brush-tailed Mulgara (*Dasycercus blythi*) – P4 (DBCA) • Western Pebble-mound Mouse (*Pseudomys chapmani*) – P4 (DBCA) • Eurasian Whimbrel (*Numenius phaeopus*) – MI (BC & EPBC Act) • Sanderling (*Calidris alba*) – MI (BC & EPBC Act) • Australian Tern (*Gelochelidon macrotarsa*) – MI (BC & EPBC Act) • Common Gull-billed Tern (*Gelochelidon nilotica*) – MI (BC & EPBC Act) • Caspian Tern (*Hydroprogne caspia*) – MI (BC & EPBC Act) • Greater Crested Tern (*Thalasseus bergii*) – MI (BC & EPBC Act) • Little Tern (*Sternula albifrons*) – MI (BC & EPBC Act)	Eleven fauna habitats were identified: • Acacia shrubland over spinifex sandplain • Tussock grassland • Spinifex sandplain • Spinifex and saltbush flat • Open eucalypt woodland • Rocky hills • Medium drainage line • Major drainage line • Coastal dunes • Sandy beach • Cleared areas

ID	Report	Project Area	Survey Timing	Survey Effort	Significant Fauna Recorded Onsite	Fauna Habitats
Lit C	Detailed terrestrial fauna and targeted Bilby survey for the Port Hedland Solar Farm Project (Pheonix Environmental, 2022)	Overlaps the western section of the Survey Area	March – October, 2021	Detailed fauna, Targeted Bilby, and SRE survey	• Bilby (*Macrotis lagotis*) – VU (BC Act & EPBC Act) • Brush-tailed Mulgara (Dasycercus blythi) – P4 (DBCA)	Eleven fauna habitats were identified: • Beach/Dune • Tidal Flats • Mangroves • Riverine • Sandplain • Billabong • Low Hill • Granite Tor/Isolated Rockpile • Quartz Hill • Ocean • Disturbed
Lit D	Wodgina Gas Pipeline targeted Fauna Survey (360 Environmental Pty Ltd, 2018)	Approx. 20 km southwest of the Survey Area	June 2018	Targeted fauna survey	• Bilby (*Macrotis lagotis*) – VU (BC Act & EPBC Act) • Pilbara Leaf-nosed Bat (*Rhinonicteris aurantia* Pilbara form) – VU (BC Act & EPBC Act)	Five fauna habitats were identified: • Grassland • Low woodland • Low-lying habitat • Major drainage lines
Lit E	Wodgina Project: Level 1 Fauna Survey, Targeted Conservation Significant Fauna Survey and Desktop Assessment (Stantec Australia Pty Ltd, 2018)	Approx 80 km south of the Survey Area	July 2018	Basic Fauna Survey Targeted Fauna Survey	• Northern Quoll (*Dasyurus hallucatus*) – EN (BC Act & EPBC Act) • Pilbara Leaf-nosed Bat (*Rhinonicteris aurantia* Pilbara form) – VU (BC Act & EPBC Act)	Six fauna habitats were identified: • Ironstone ridge top • Rocky ridge and gorge • Rocky foothills • Stony Rise • Spinifex stony plain • Drainage line

ID	Report	Project Area	Survey Timing	Survey Effort	Significant Fauna Recorded Onsite	Fauna Habitats
					• Ghost Bat (*Macroderma gigas*) – VU (BC Act & EPBC Act) • Western Pebble-mound Mouse (*Pseudomys chapmani*) – P4 (BC Act)	
Lit F	Pardoo Stage 3 Irrigation Project and 80 Mile Beach Ramsar Site Fauna Assessment (Bamford Consulting Ecologists, 2017b)	Approx. 100 km east of Survey Area	12 -14 July 2016, 18 - 21 Sept 2017	Basic fauna survey Targeted fauna survey	• Fork-tailed Swift *(Apus pacificus*) - MI (BC Act), MI & MA (EPBC Act) • Oriental Plover (*Charadrius veredus*) - MI (BC Act), MI & MA (EPBC Act) • Brush-tailed Mulgara (*Dasycercus blythi*) – P4 (DBCA) • Bilby (Macrotis lagotis) – VU (BC Act & EPBC Act)	Six fauna habitats were identified: • Pindan shrublands • Coastal plain thickets and shrublands • Coastal plain grasslands and low shrublands • Salt pans • Low limestone ridges • Completely degraded area associated with agricultural structures.
Lit G	Assessment of the Bilby Macrotis lagotis Pardoo Station; Stage 2 areas (Bamford Consulting Ecologists, 2017a)	Approx. 100 km east of Survey Area	28 - 30 June 2017	Targeted fauna survey	• Bilby (*Macrotis lagotis*) – VU (BC Act & EPBC Act)	One fauna habitat was identified: • Pindan shrublands
Lit H	Supplementary Flora and Vegetation Survey and Terrestrial Fauna Survey for the Balla Balla Infrastructure Group Ltd (Phoenix Environmental, 2018)	Approx 100 km west of the Survey Area	June 2017	Basic Fauna Survey Targeted Fauna Survey	• Northern Quoll (Dasyurus hallucatus) – EN (BC Act & EPBC Act) • Bilby (Macrotis lagotis) – VU (BC Act & EPBC Act)	Seven fauna habitats were identified: • Hummock and tussock grassland • Minor creek and drainage line • Open and closed shrubland • Rocky hill slope

ID	Report	Project Area	Survey Timing	Survey Effort	Significant Fauna Recorded Onsite	Fauna Habitats
						• Woodland • Gully Sandplain
Lit I	Assessment of the Bilby Macrotis lagotis Pardoo Station; Stage 2 and 3 project areas (Bamford Consulting Ecologists, 2016)	Approx. 100 km east of Survey Area	12 - 14 July 2016	Targeted fauna survey	• Brush-Tailed Mulgara (*Dasycercus blythi*) – P4 (BC Act)	One fauna habitat was identified: • Pindan shrublands
Lit J	Terrestrial Fauna Surveys for the Balla Balla Railway Project (Phoenix Environmental, 2014)	Approx 100 km west of the Survey Area	June – July 2014	Targeted Fauna Survey	• Northern Quoll (Dasyurus hallucatus) – EN (BC Act & EPBC Act) • Western Pebble-mound mouse (Pseudomys chapmani) – P4 (BC Act))	Eight fauna habitats were identified: • Hummock and tussock grassland • Open and closed shrubland • Rocky hill slope • Minor creek and drainage line • Woodland • Gully • Isolated sand dunes

Appendix C Flora Desktop Assessment Results and Likelihood of Occurrence

Atlas Ridley Magnetite Project Connection

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SLR Project No.: 675.072189.00001

29 July 2024

Summary of results of the database searches (numbers represent counts of records within 50 km of the Survey Area).

Taxon	NatureMap	TPFL[^]	WAH[+]
T			
Quoya zonalis		71	22
P1			
Acacia cyperophylla var. *omearana*			1
Acacia leeuweniana		1	7
Atriplex eremitis	✓	1	1
Corchorus sp. Yarrie (J. Bull & D. Roberts CAL 01.05)			3
Euploca parviantrum	✓		1
Tephrosia rosea var. Port Hedland (A.S. George 1114)	✓		27
Themeda sp. Panorama (J. Nelson et al. NS 102)			3
Triodia degreyensis			1
Triodia sp. De Grey River (M.D. Barrett & B.M. Anderson MDB 4432)			1
P2			
Euphorbia inappendiculata var. *inappendiculata*			3
Gomphrena pusilla	✓		5
P3			
Abutilon sp. Pritzelianum (S. van Leeuwen 5095)	✓	1	37
Acacia levata		1	2
Dolichocarpa sp. Hamersley Station (A.A. Mitchell PRP 1479)			1
Eragrostis crateriformis	✓	2	22
Euphorbia clementii	✓	5	25
Euploca mutica	✓		71
Gomphrena cucullata	✓	1	1
Gomphrena leptophylla	✓		2
Goodenia obscurata			1
Gymnanthera cunninghamii	✓	2	12
Heliotropium murinum			3
Indigofera ammobia		1	1
Nicotiana umbratica			7
Phyllanthus hebecarpus			4
Rothia indica subsp. *australis*	✓		14
Stylidium weeliwolli			2
Terminalia supranitifolia			5
Triodia basitricha			3
Triodia chichesterensis	✓		28
Vigna triodiophila			5
P4			
Bulbostylis burbidgeae	✓	2	17
Ptilotus mollis	✓		4

[^]Department of Biodiversity Conservation and Attractions. (2024e). Threatened and Priority Flora List (TPFL) database request (custom search). [+]Department of Biodiversity Conservation and Attractions. (2024f). Western Australia Herbarium Flora Database (custom search).

Community*	TEC/PEC
P3	
Eighty Mile Land System	15
Gregory Land System	21
Horseflat Land System of the Roebourne Plains	3

*Department of Biodiversity Conservation and Attractions. (2024c). Threatened and Priority Ecological Communities database request (custom search).

Appendix C: Assessment of the Likelihood of Occurrence of Threatened and Priority Flora as per Desktop Assessment Database Searches surrounding the Survey Area

Distance to Nearest Record from the Survey Area is based on a distance analysis undertaken against 2024 DBCA database. High = Suitable habitat present and records less than 20 km from the Survey Area, Medium = Suitable habitat present and records between 20 km and 40 km from the Survey Area, and Low = No suitable habitat present and/or records greater than 40 km from the Survey Area, Unknown = Insufficient information available to classify . CR= Listed as Critically Endangered under the EPBC Act, EN = Listed as Endangered under the EBPC Act, VU = listed as Vulnerable under the EBPC Act. T = Threatened under the BC Act, P = Priority Listed, Ranked and Listed by the DBCA. Likelihoods are assessed both pre and post survey based on knowledge of the Survey Area, nearest known records, known flowering period of flora taxa and knowledge gained from the survey effort during ground truthing. 1: Department of Biodiversity, Conservation and Attractions (2024). FloraBase - TheWestern Australian Flora. https://florabase.dpaw.wa.gov.au/

Species	Conservation Status		Source			Distance to Nearest Record (km)	Flowering Period	Prefered Habitat	Pre-Survey Likelihood of Occurrence	Habitat Occurs in Survey Area?	Post-Survey Likelihood of Occurrence
	DBCA	EPBC	NatureMap	PMST	DBCA						
Threatened											
Quoya zonalis	T	EN			X	77.53	Aug	Rocky ironstone or granite or conglomerate steep hill slopes.[1]	Low	No	Low
Priority 1											
Acacia cyperophylla var. *omearana*	P1				X	73.40	Mar - Apr	Stony and gritty alluvium. Along drainage lines.[1]	Low	No	Low
Acacia leeuweniana	P1				X	91.78	Apr - May	Gritty, skeletal red-grey sandy loam, light orange-brown gravelly sand, granite. In rock fissures in outcrops, among boulders.[1]	Low	No	Low
Atriplex eremitis	P1		X		X	18.78	Aug	Tussock grassland associated with *Eragrostis xerophila* and the introduced *Cenchrus ciliaris* occurring as a component of a sub-unit of the Anna land system composed of level sand plains and a mosaic of saline plains.[1]	Low	No	Low
Corchorus sp. Yarrie (J. Bull & D. Roberts CAL 01.05)	P1				X	61.34	Jun	Drainage line, ironstone, loamy soil.[1]	Low	Yes	Low
Euploca parviantrum	P1		X		X	6.87	-	Sandy soils. Flats, plains, rocky slopes.[1]	High	Yes	Medium
Tephrosia rosea var. Port Hedland (A.S. George 1114)	P1		X		X	3.83	Jul - Sep	Pale red/yellow/brown sand. Sand plains.[1]	High	Yes	Recorded
Themeda sp. Panorama (J. Nelson et al. NS 102)	P1				X	85.41	-	Skeletal soils, red clay loam. Rock gullies, steep rocky slopes, high in the landscape.[1]	Low	No	Low
Triodia degreyensis	P1				X	6.18	-	Skeletal soils, ironstone outcropping. [1]	Low	Yes	Low
Priority 2											
Euphorbia inappendiculata var. *inappendiculata*	P2				X	60.93	May, Aug	Red, brown clay or loam. Plains.[1]	Low	Yes	Medium
Gomphrena pusilla	P2		X		X	8.05	Mar - Apr	Fine beach sand. Behind foredune, on limestone.[1]	Low	No	Low
Priority 3											

[1] Department of Agriculture, Water and Environment (2024) [2]Western Australian Herbarium (2024)

Abutilon sp. Pritzelianum (S. van Leeuwen 5095)	P3		X		X	3.03	Jun, Aug - Sep	Sandy plains.[1]	High	Yes	Medium
Acacia levata	P3				X	98.73	May	Sand or sandy loam over granite. Hillslopes.[1]	Low	Yes	Low
Dolichocarpa sp. Hamersley Station (A.A. Mitchell PRP 1479)	P3				X	72.70	May - Jul or Sep	Brown sandy clay, or medium clay. Claypans, drainage lines, cracking clays, crabhole plains.[1]	Low	No	Low
Eragrostis crateriformis	P3		X		X	0.15	Jan - May or Jul	Clayey loam or clay. Creek banks, depressions.[1]	High	Yes	High
Euphorbia clementii	P3		X		X	6.19	Jun	Gravelly hillsides, stony grounds.[1]	High	Yes	Medium
Euploca mutica	P3		X		X	0.08	Aug	Flat sand plains.[1]	High	Yes	High
Gomphrena cucullata	P3		X		X	47.87	Feb - Apr	Red sandy loam, clayey sand. Open floodplains.[1]	Low	Yes	Low
Gomphrena leptophylla	P3		X		X	6.31	Mar - Sep	Sand, sandy to clayey loam, granite, quartzite. Open flats, sandy creek beds, edges salt pans and marshes, stony hillsides.[1]	High	No	Low
Goodenia obscurata	P3				X	75.95	-	Stony soils on hills.[1]	Low	Yes	Low
Gymnanthera cunninghamii	P3		X		X	6.87	Jan - Dec	Sandy soils.[1]	High	Yes	Recorded
Heliotropium murinum	P3				X	55.50	May or Sep	Red sand. Plains.[1]	Low	Yes	Low
Indigofera ammobia	P3				X	94.15	Sep	Red sand. Sand dunes.[1]	Low	No	Low
Nicotiana umbratica	P3				X	72.04	Apr - Jun	Shallow soils. Rocky outcrops.[1]	Low	Yes	Low
Phyllanthus hebecarpus	P3				X	86.93	-	Granite boulders, granite outcrop, rock land, slopes.[1]	Low	Yes	Low
Rothia indica subsp. *australis*	P3		X		X	Occurs within survey boundary	Apr - Aug	Sandy soils. Sandhills and sandy flats.[1]	High	Yes	Medium
Stylidium weeliwolli	P3				X	53.32	Aug - Sep	Gritty sand soil, sandy clay. Edge of watercourses.[1]	Low	Yes	Low
Terminalia supranitifolia	P3				X	76.29	May or Jul or Dec	Sand. Among basalt rocks. Hill tops.[1]	Low	No	Low
Triodia basitricha	P3				X	77.78	-	Stony ground, gravelly hill, crests, hills, in gorges.[1]	Low	Yes	Low
Triodia chichesterensis	P3		X		X	9.67	Feb - Apr, Aug	Flat plains, light sandy soil, hill slopes, stony soil.[1]	High	Yes	Low
Vigna triodiophila	P3				X	66.94	Mar - May	Stony red-brown clay loam. Among boulders, steep slopes.[1]	Low	No	Low
Priority 4											

[1] Department of Agriculture, Water and Environment (2024) [2]Western Australian Herbarium (2024)

Bulbostylis burbidgeae	P4		X		X	5.85	Mar or Jun - Aug	Granitic soils. Granite outcrops, cliff bases.[1]	High	Yes	Medium
Ptilotus mollis	P4		X		X	20.05	May or Sep	Stony hills and screes.[1]	Low	No	Low

[1] Department of Agriculture, Water and Environment (2024) [2]Western Australian Herbarium (2024)

Appendix D Flora Recorded During the Survey

Atlas Ridley Magnetite Project Connection

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Appendix A: Flora Inventory

Family	Taxa	Status
Aizoaceae	*Trianthema triquetrum*	
Amaranthaceae	*Aerva javanica*	Weed
	Alternanthera nana	
	Ptilotus astrolasius	
	Ptilotus axillaris	
	Ptilotus exaltatus	
	Ptilotus fusiformis	
	Ptilotus murrayi	
	Ptilotus sp.	
Apocynaceae	*Calotropis procera*	Weed (DP)
	Carissa lanceolata	
	Cynanchum floribundum	
	Cynanchum viminale subsp. *australe*	
	Gymnanthera cunninghamii	P3
Asteraceae	*Pluchea dentex*	
	Pluchea ferdinandi-muelleri	
	Pluchea rubelliflora	
	Streptoglossa sp.	
Bignoniaceae	*Dolichandrone occidentalis*	
Boraginaceae	*Euploca cunninghamii*	
	Trichodesma zeylanicum var. *zeylanicum*	
Campanulaceae	*Wahlenbergia tumidifructa*	
Capparaceae	*Capparis spinosa* subsp. *nummularia*	
	Capparis umbonata	
Chenopodiaceae	*Maireana melanocoma*	
	Salsola australis	
	Sclerolaena hostilis	
Cleomaceae	*Arivela viscosa*	
Combretaceae	*Terminalia circumulata*	
Convolvulaceae	*Bonamia alatisemina*	
	Bonamia erecta	
	Bonamia linearis	
	Bonamia pilbarensis	
	Evolvulus sp.	
	Ipomoea muelleri	
	Operculina aequisepala	
	Polymeria ambigua	
Cucurbitaceae	*Cucumis variabilis*	
Cyperaceae	*Bulbostylis barbata*	
	Cyperus conicus	
	Cyperus sp.	
	Cyperus vaginatus	
Elatinaceae	*Bergia trimera*	
Euphorbiaceae	*Euphorbia australis* var. *subtomentosa*	
	Euphorbia tannensis subsp. *eremophila*	
	Euphorbia trigonosperma	
	Microstachys chamaelea	

Appendix A: Flora Inventory

Family	Taxa	Status
Fabaceae	*Acacia acradenia*	
	Acacia adoxa var. *adoxa*	
	Acacia ampliceps	
	Acacia ancistrocarpa	
	Acacia bivenosa	
	Acacia colei var. *colei*	
	Acacia coriacea subsp. *pendens*	
	Acacia inaequilatera	
	Acacia orthocarpa	
	Acacia pyrifolia var. *pyrifolia*	
	Acacia sericophylla	
	Acacia sp.	
	Acacia sphaerostachya	
	Acacia stellaticeps	
	Acacia synchronicia	
	Acacia trachycarpa	
	Acacia trachycarpa x tumida var. *pilbarensis*	
	Acacia tumida var. *pilbarensis*	
	Cajanus pubescens	
	Crotalaria cunninghamii subsp. *sturtii*	
	Crotalaria ramosissima	
	Cullen leucanthum	
	Indigofera hirsuta	
	Indigofera linnaei	
	Indigofera monophylla	
	Indigofera oblongifolia	Weed
	Isotropis atropurpurea	
	Neptunia dimorphantha	
	Neptunia sp.	
	Petalostylis cassioides	
	Petalostylis labicheoides	
	Rhynchosia minima	
	Senna artemisioides subsp. *helmsii*	
	Senna glutinosa subsp. *glutinosa*	
	Senna notabilis	
	Senna symonii	
	Senna venusta	
	Sesbania formosa	
	Tephrosia ?supina	
	Tephrosia rosea subsp. Port Hedland (A.S. George 1114)	P1
	Tephrosia rosea var. *clementii*	
	Tephrosia rosea var. Fortescue creeks (M.I.H. Brooker 2186)	
	Tephrosia sp. Bungaroo Creek (M.E. Trudgen 11601)	
	Vachellia farnesiana	Weed
	Vigna lanceolata var. *lanceolata*	
Goodeniaceae	*Goodenia lamprosperma*	
	Goodenia muelleriana	

Appendix A: Flora Inventory

Family	Taxa	Status
Goodeniaceae	*Goodenia stobbsiana*	
	Scaevola browniana	
	Scaevola spinescens	
Gyrostemonaceae	*Codonocarpus cotinifolius*	
Gyrostemonaceae	*Gyrostemon tepperi*	
Hemerocallidaceae	*Corynotheca sp.*	
Lauraceae	*Cassytha capillaris*	
Malvaceae	*Abutilon lepidum*	
	Corchorus incanus subsp. *incanus*	
	Corchorus laniflorus	
	Corchorus sp.	
	Hibiscus austrinus var. *austrinus*	
	Malvaceae sp.	
	Malvastrum americanum	Weed
	Sida clementii	
	Sida sp.	
	Sida sp. Pilbara (A.A. Mitchell PRP 1543)	
	Sida sp. Pindan (B.G. Thomson 3398)	
	Triumfetta clementii	
	Triumfetta sp.	
	Waltheria indica	
Meliaceae	*Azadirachta indica*	Weed
	Owenia reticulata	
Menispermaceae	*Tinospora smilacina*	
Molluginaceae	*Glinus lotoides*	
Moraceae	*Ficus aculeata* var. *indecora*	
	Ficus brachypoda	
	Ficus aculeata	
Myrtaceae	*Corymbia candida* subsp. *candida*	
	Corymbia candida subsp. *indet.*	
	Corymbia deserticola	
	Corymbia flavescens	
	Corymbia hamersleyana	
	Corymbia zygophylla	
	Eucalyptus camaldulensis subsp. *refulgens*	
	Eucalyptus victrix	
	Melaleuca argentea	
	Melaleuca glomerata	
Nyctaginaceae	*Boerhavia repleta*	
	Boerhavia sp.	
Passifloraceae	*Passiflora foetida*	Weed
Phyllanthaceae	*Nellica maderaspatensis*	
	Notoleptopus decaisnei	
Plantaginaceae	*Stemodia grossa*	
	Stemodia viscosa	
Poaceae	*Aristida holathera* var. *holathera*	
	Cenchrus ciliaris	Weed

Appendix A: Flora Inventory

Family	Taxa	Status
Poaceae	*Chrysopogon fallax*	
	Cymbopogon ambiguus	
	Cymbopogon sp.	
	Eragrostis eriopoda	
	Eragrostis speciosa	
	Eriachne lanata	
	Eriachne mucronata	
	Eriachne obtusa	
	Eulalia aurea	
	Paraneurachne muelleri	
	Poaceae sp.	
	Sporobolus australasicus	
	Themeda triandra	
	Triodia epactia	
	Triodia secunda	
	Triodia sp.	
	Triodia wiseana	
Proteaceae	*Grevillea pyramidalis* subsp. *leucadendron*	
	Grevillea wickhamii subsp. *hispidula*	
	Hakea lorea subsp. *lorea*	
Pteridaceae	*Cheilanthes* sp.	
Rubiaceae	*Dentella asperata*	
Santalaceae	*Santalum lanceolatum*	
Sapindaceae	*Atalaya hemiglauca*	
Scrophulariaceae	*Eremophila longifolia*	
Solanaceae	*Solanum diversiflorum*	
	Solanum horridum	
	Solanum lasiophyllum	
	Solanum sp.	
Violaceae	*?Afrohybanthus* sp.	
	Afrohybanthus aurantiacus	

Appendix E Threatened and Priority Flora Report Forms

Atlas Ridley Magnetite Project Connection

Flora and Fauna Survey Technical Report

Horizon Power

SLR Project No.: 675.072189.00001

29 July 2024

Department of **Biodiversity, Conservation and Attractions**

Threatened and Priority Flora Report Form

Version 1.3 August 2017

Please complete as much of the form as possible, with emphasis on those sections bordered in black. For information on how to complete the form please refer to the Threatened & Priority Flora Report Form (TPRF) manual on the DBCA website at http://dpaw.wa.gov.au/ under *Standard Report Forms*

TAXON: Gymnanthera cunninghamii **TPFL Pop. No:** ____

OBSERVATION DATE: 10/03/2024 **CONSERVATION STATUS:** P3 New population ☐

OBSERVER/S: Jack Hardie, Grant Buller **PHONE:** ____

ROLE: Botanists **ORGANISATION:** SLR Consulting

DESCRIPTION OF LOCATION (Provide at least nearest town/named locality, and the distance and direction to that place):

Devil Creek, 37km east of South Hedland

Reserve No: ____

DBCA DISTRICT: Pilbara **LGA:** Port Hedland Land manager present: ☐

DATUM: GDA94 / MGA94 ☒ AGD84 / AMG84 ☐ WGS84 ☐ Unknown ☐

COORDINATES: (If UTM coords provided, **Zone** is also required) DecDegrees ☐ DegMinSec ☐ UTMs ☒

Lat / Northing: 705557

Long / Easting: 7743392

ZONE: 50

METHOD USED: GPS ☒ Differential GPS ☐ Map ☐

No. satellites: ____ Map used: ____

Boundary polygon captured: ☐ Map scale: ____

LAND TENURE:

Nature reserve ☐	Timber reserve ☐	Private property ☐	Rail reserve ☐	Shire road reserve ☐
National park ☐	State forest ☐	Pastoral lease ☒	MRWA road reserve ☐	Other Crown reserve ☐
Conservation park ☐	Water reserve ☐	UCL ☐	SLK/Pole ____ to ____	Specify other: ____

AREA ASSESSMENT: Edge survey ☐ Partial survey ☒ Full survey ☐ Area observed (m²): ____

EFFORT: Time spent surveying (minutes): ____ No. of minutes spent / 100 m²: ____

POP'N COUNT ACCURACY: Actual ☒ Extrapolation ☐ Estimate ☐ Count method: (Refer to field manual for list) Actual count - individuals

WHAT COUNTED: Plants ☒ Clumps ☐ Clonal stems ☐

TOTAL POP'N STRUCTURE:

	Mature:	Juveniles:	Seedlings:	Totals:
Alive		3		3
Dead				

Area of pop (m²): ____

Note: Pls record count as numbers (not percentages) for database.

QUADRATS PRESENT: No. ____ Size ____ Data attached ☐ Total area of quadrats (m²): ____

Summary Quad. Totals: Alive				

REPRODUCTIVE STATE: Clonal ☐ Vegetative ☒ Flowerbud ☐ Flower ☐ Immature fruit ☐ Fruit ☐ Dehisced fruit ☐ Percentage in flower: ____%

CONDITION OF PLANTS: Healthy ☒ Moderate ☐ Poor ☐ Senescent ☐

COMMENT:

THREATS - type, agent and supporting information: Eg clearing, too frequent fire, weed, disease. Refer to field manual for list of threats & agents. **Specify agent** where relevant. Rate current and potential threat impact: N=Nil, L=Low, M=Medium, H=High, E=Extreme. Estimate time to potential impact: S=Short (<12mths), M=Medium (<5yrs), L=Long (5yrs+)	**Current impact (N-E)**	**Potential Impact (L-E)**	**Potential Threat Onset (S-L)**
• Pastoralism/livestock	N	M	L
• Clearing (clearing was observed on the eastern bank several hundred metres south of record location)	N	L	L
•	____	____	____

Please return completed form to **Species And Communities Branch** DBCA,
Locked Bag 104, BENTLEY DELIVERY CENTRE WA 6983 **OR** email to: flora.data@dbca.wa.gov.au
RECORDS: Please forward to **Flora Administrative Officer.** Species and Communities Branch.

Department of Biodiversity, Conservation and Attractions

GOVERNMENT OF WESTERN AUSTRALIA

Threatened and Priority Flora Report Form

Version 1.3 August 2017

HABITAT INFORMATION:

LANDFORM:
Crest ☐
Hill ☐
Ridge ☐
Outcrop ☐
Slope ☐
Flat ☒
Open depression ☐
Drainage line ☒
Closed depression ☐
Wetland ☐

ROCK TYPE:
Granite ☐
Dolerite ☐
Laterite ☐
Ironstone ☐
Limestone ☐
Quartz ☐
Specify other: ____

LOOSE ROCK:
(on soil surface; eg gravel, quartz fields)
0-10% ☐
10-30% ☐
30-50% ☐
50-100% ☐

SOIL TYPE:
Sand ☒
Sandy loam ☐
Loam ☐
Clay loam ☐
Light clay ☐
Peat ☐
Specify other: ____

SOIL COLOUR:
Red ☐
Brown ☐
Yellow ☒
White ☐
Grey ☐
Black ☐
Specify other: ____

DRAINAGE:
Well drained ☐
Seasonally inundated ☐
Permanently inundated ☐
Tidal ☐

Specific **Landform** Element: ____
(Refer to field manual for additional values)

CONDITION OF SOIL: Dry ☐ Moist ☐ Waterlogged ☐ Inundated ☐

VEGETATION CLASSIFICATION*:
Eg: **1.** Banksia woodland (B. attenuata, B. ilicifolia); **2.** Open shrubland (Hibbertia sp., Acacia spp.) ; **3.** Isolated clumps of sedges (Mesomelaena tetragona)

1. Eucalyptus camaldulensis subsp. refulgens, Melaleuca argentea low open woodland
2. Acacia trachycarpa, Melaleuca glomerata mid isolated shrubs
3. Eulalia aurea, *Cenchrus ciliaris low isolated clumps of grasses
4.

ASSOCIATED SPECIES:
Other (non-dominant) spp

* Please record up to four of the most representative vegetation layers (with up to three dominant species in each layer). Structural Formations should follow 2009 *Australian Soil and Land Survey Field Handbook* guidelines – refer to field manual for further information and structural formation table.

CONDITION OF HABITAT: Pristine ☐ Excellent ☐ Very good ☐ Good ☒ Degraded ☐ Completely degraded ☐

COMMENT: ____

FIRE HISTORY: **Last Fire:** Season/Month: ____ Year: ____ **Fire Intensity:** High ☐ Medium ☐ Low ☐ No signs of fire ☐

FENCING: Not required ☐ Present ☐ Replace / repair ☐ Required ☐ Length req'd: ____

ROADSIDE MARKERS: Not required ☐ Present ☐ Replace / reposition ☐ Required ☒ Quantity req'd: ____

OTHER COMMENTS: (Please include recommended management actions and/or implemented actions - include date. Also include details of additional data available, and how to locate it.)

DRF PERMIT/ LICENCE No: Note if only observing plants (i.e. no specimens or plant matieral is taken) then no permit/licence is required. For further information on permit and licening requirements see the Threatened Flora and Wildlife Licensing pages on DBCA's website. Any actions carried out under licence/permit should be recorded above in the OTHER COMMENTS section.

SPECIMEN: Collectors No: ____ WA Herb. ☐ Regional Herb. ☐ District Herb. ☐ Other: ____

ATTACHED: Map ☐ Mudmap ☐ Photo ☐ GIS data ☐ Field notes ☐ Other: ____

COPY SENT TO: Regional Office ☐ District Office ☐ Other: ____

Submitter of Record: Grant Buller Role: Senior Botanist Signed: ____ Date: 8/07/2024

Please return completed form to **Species And Communities Branch** DBCA,
Locked Bag 104, BENTLEY DELIVERY CENTRE WA 6983 **OR** email to: flora.data@dbca.wa.gov.au
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Department of **Biodiversity, Conservation and Attractions**

Threatened and Priority Flora Report Form

Version 1.3 August 2017

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TAXON: Tephrosia rosea subsp. Port Hedland (A.S. George 1114) **TPFL Pop. No:** ____

OBSERVATION DATE: 2/03/2024 **CONSERVATION STATUS:** P1 New population ☐

OBSERVER/S: Jack Hardie, Grant Buller **PHONE:** ____

ROLE: Botanists **ORGANISATION:** SLR Consulting

DESCRIPTION OF LOCATION (Provide at least nearest town/named locality, and the distance and direction to that place):

Road verge, Great Northern Highway, south of Boodarie/South Hedland

Reserve No: ____

DBCA DISTRICT: Pilbara **LGA:** Port Hedland Land manager present: ☐

DATUM: GDA94 / MGA94 ☒; AGD84 / AMG84 ☐; WGS84 ☐; Unknown ☐

COORDINATES: (If UTM coords provided, **Zone** is also required) DecDegrees ☐ DegMinSec ☐ UTMs ☒

Lat / Northing: 661261

Long / Easting: 7737710

ZONE: 50

METHOD USED: GPS ☒ Differential GPS ☐ Map ☐

No. satellites: ____ Map used: ____

Boundary polygon captured: ☐ Map scale: ____

LAND TENURE:

Nature reserve ☐	Timber reserve ☐	Private property ☐	Rail reserve ☐	Shire road reserve ☐
National park ☐	State forest ☐	Pastoral lease ☐	MRWA road reserve ☒	Other Crown reserve ☐
Conservation park ☐	Water reserve ☐	UCL ☐	SLK/Pole 1595 to 1596	Specify other: ____

AREA ASSESSMENT: Edge survey ☐ Partial survey ☐ Full survey ☐ Area observed (m²): ____

EFFORT: Time spent surveying (minutes): ____ No. of minutes spent / 100 m²: ____

POP'N COUNT ACCURACY: Actual ☒ Extrapolation ☐ Estimate ☐ Count method: (Refer to field manual for list) Actual count - individuals

WHAT COUNTED: Plants ☒ Clumps ☐ Clonal stems ☐

TOTAL POP'N STRUCTURE:

	Mature:	Juveniles:	Seedlings:	Totals:
Alive				2
Dead				

Area of pop (m²): ____

Note: Pls record count as numbers (not percentages) for database.

QUADRATS PRESENT: No. ____ Size ____ Data attached ☐ Total area of quadrats (m²): ____

Summary Quad. Totals: Alive			

REPRODUCTIVE STATE: Clonal ☐ Vegetative ☒ Flowerbud ☐ Flower ☐ Immature fruit ☐ Fruit ☐ Dehisced fruit ☐ Percentage in flower: ____%

CONDITION OF PLANTS: Healthy ☐ Moderate ☐ Poor ☐ Senescent ☐

COMMENT: ____

THREATS - type, agent and supporting information: Eg clearing, too frequent fire, weed, disease. Refer to field manual for list of threats & agents. **Specify agent** where relevant. Rate current and potential threat impact: N=Nil, L=Low, M=Medium, H=High, E=Extreme Estimate time to potential impact: S=Short (<12mths), M=Medium (<5yrs), L=Long (5yrs+)	**Current impact (N-E)**	**Potential Impact (L-E)**	**Potential Threat Onset (S-L)**
• Clearing for road verge	N	H	M
•	____	____	____
•	____	____	____

Please return completed form to **Species And Communities Branch** DBCA,
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Department of Biodiversity, Conservation and Attractions

GOVERNMENT OF WESTERN AUSTRALIA

Threatened and Priority Flora Report Form

Version 1.3 August 2017

HABITAT INFORMATION:

LANDFORM:
Crest ☐
Hill ☐
Ridge ☐
Outcrop ☐
Slope ☐
Flat ☒
Open depression ☐
Drainage line ☐
Closed depression ☐
Wetland ☐

ROCK TYPE:
Granite ☐
Dolerite ☐
Laterite ☐
Ironstone ☐
Limestone ☐
Quartz ☐
Specify other: ____

LOOSE ROCK: (on soil surface; eg gravel, quartz fields)
0-10% ☐
10-30% ☐
30-50% ☐
50-100% ☐

SOIL TYPE:
Sand ☒
Sandy loam ☐
Loam ☐
Clay loam ☐
Light clay ☐
Peat ☐
Specify other: ____

SOIL COLOUR:
Red ☐
Brown ☒
Yellow ☒
White ☐
Grey ☐
Black ☐
Specify other: ____

DRAINAGE:
Well drained ☐
Seasonally inundated ☐
Permanently inundated ☐
Tidal ☐

Specific **Landform** Element: ____
(Refer to field manual for additional values)

CONDITION OF SOIL: Dry ☐ Moist ☐ Waterlogged ☐ Inundated ☐

VEGETATION CLASSIFICATION*:
Eg: **1.** Banksia woodland (B. attenuata, B. ilicifolia); **2.** Open shrubland (Hibbertia sp., Acacia spp.) ; **3.** Isolated clumps of sedges (Mesomelaena tetragona)

1. Acacia stellaticeps low open shrubland
2. Triodia epactia low hummock grassland
3.
4.

ASSOCIATED SPECIES:

Other (non-dominant) spp

* Please record up to four of the most representative vegetation layers (with up to three dominant species in each layer). Structural Formations should follow 2009 *Australian Soil and Land Survey Field Handbook* guidelines – refer to field manual for further information and structural formation table.

CONDITION OF HABITAT: Pristine ☐ Excellent ☐ Very good ☐ Good ☐ Degraded ☒ Completely degraded ☐

COMMENT: Recorded in roadside drain, surrounding habitat in Very Good condition

FIRE HISTORY: **Last Fire:** Season/Month: _____ Year: _____ **Fire Intensity:** High ☐ Medium ☐ Low ☐ No signs of fire ☐

FENCING: Not required ☐ Present ☐ Replace / repair ☐ Required ☐ Length req'd: ____

ROADSIDE MARKERS: Not required ☐ Present ☐ Replace / reposition ☐ Required ☒ Quantity req'd: ____

OTHER COMMENTS: (Please include recommended management actions and/or implemented actions - include date. Also include details of additional data available, and how to locate it.)

DRF PERMIT/ LICENCE No: Note if only observing plants (i.e. no specimens or plant matieral is taken) then no permit/licence is required. For further information on permit and licening requirements see the Threatened Flora and Wildlife Licensing pages on DBCA's website. Any actions carried out under licence/permit should be recorded above in the OTHER COMMENTS section.

SPECIMEN: Collectors No: _____ WA Herb. ☐ Regional Herb. ☐ District Herb. ☐ Other: _____

ATTACHED: Map ☐ Mudmap ☐ Photo ☐ GIS data ☐ Field notes ☐ Other: _____

COPY SENT TO: Regional Office ☐ District Office ☐ Other:

Submitter of Record: Grant Buller Role: Senior Botanist Signed: _____ Date: 8/07/2024

Please return completed form to **Species And Communities Branch** DBCA,
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RECORDS: Please forward to **Flora Administrative Officer.** Species and Communities Branch.

Appendix F Flora Site Sheets

Atlas Ridley Magnetite Project Connection

Flora and Fauna Survey Technical Report

Horizon Power

SLR Project No.: 675.072189.00001

29 July 2024

FLORA SITE SHEET

Project Name	Atlas Ridley Biological Survey			
Site:	AR01			
Location	MGA 50	660017 **mE**	7740884 **mN**	
Described by:	GB,JH			
Date:	1-03-2024			
Type:	QUADRAT			
Landform:	PlainFlat			
Slope:	N/A			
Rock Type:	N/A			
Soil Type:	Sand			
Soil Colour:	Orange			

Vegetation: *Pluchea ferdinandi-muelleri and P. dentex low isolated shrubs over Triodia epactia and T. secunda low open hummock grassland.*

Condition:	Very Good	**Disturbance Type:**	Infrastructure
Fire Age:	>10 years		

SPECIES LIST

Taxon	Height (cm)	Cover (%)	Notes
Pluchea dentex	20	0.1	
Pluchea ferdinandi-muelleri	50	0.1	
Triodia epactia	30	40	
Triodia secunda	30	5	

FLORA SITE SHEET

Project Name Atlas Ridley Biological Survey
Site: AR02
Location MGA 50 659628 **mE** 7740921 **mN**

Described by: GB,JH
Date: 1-03-2024
Type: QUADRAT

Landform: PlainsFlat
Slope: N/A
Rock Type: N/A
Soil Type: Sand
Soil Colour: Orange

Vegetation: *Eucalyptus victrix and Corymbia candida subsp. candida low isolated trees over Acacia stellaticeps, A. colei var. colei and Hakea lorea subsp. lorea low sparse shrubland over Triodia epactia low open hummock grassland.*

Condition: Excellent **Disturbance Type:** None
Fire Age: >10 years

SPECIES LIST

Taxon	Height (cm)	Cover (%)	Notes
Acacia colei var. colei	160	0.1	
Acacia stellaticeps	45	20	
Cassytha capillaris	10	0.1	
Corymbia candida subsp. candida	250	0.1	
Eucalyptus victrix	500	0.1	
Hakea lorea subsp. lorea	60	0.1	
Pluchea dentex	30	0.1	
Sida sp. Pilbara (A.A. Mitchell PRP 1543)	30	0.1	
Triodia epactia	30	31	

FLORA SITE SHEET

Project Name Atlas Ridley Biological Survey
Site: AR03
Location MGA 50 661481 **mE** 7739545 **mN**

Described by: GB,JH
Date: 2-03-2024
Type: QUADRAT

Landform: Plains Flat
Slope: N/A
Rock Type: N/A
Soil Type: Sand
Soil Colour: Orange

Vegetation: *Acacia tumida var. pilbarensis mid sparse shrubland over Acacia stellaticeps low sparse shrubland over Triodia epactia open hummock grassland.*

Condition: Very Good **Disturbance Type:** Infrastructure
Fire Age: >10 years

SPECIES LIST

Taxon	Height (cm)	Cover (%)	Notes
Acacia stellaticeps	60	10	
Acacia tumida var. pilbarensis	170	10	
Cassytha capillaris	30	0.1	
Corchorus sp.	30	0.1	
Cymbopogon sp.	50	0.1	
Eragrostis eriopoda	20	0.1	
Hakea lorea subsp. lorea	140	0.1	
Paraneurachne muelleri	30	0.1	
Poaceae sp.	30	2	
Sida sp.	30	0.1	
Solanum sp.	20	0.1	
Triodia epactia	40	29	

FLORA SITE SHEET

Project Name	Atlas Ridley Biological Survey			
Site:	AR04			
Location	MGA 50	661194 **mE**	7737874 **mN**	
Described by:	GB,JH			
Date:	2-03-2024			
Type:	QUADRAT			
Landform:	PlainsFlat			
Slope:	N/A			
Rock Type:	N/A			
Soil Type:	Sand			
Soil Colour:	Orange			

Vegetation: *Acacia stellaticeps low sparse shrubland over Triodia epactia and Triodia sp. low open hummock grassland.*

Condition:	Very Good	**Disturbance Type:**	Fauna tracks/scats,Infrastructure
Fire Age:	>10 years		

SPECIES LIST

Taxon	Height (cm)	Cover (%)	Notes
Acacia stellaticeps	60	20	
Acacia tumida var. pilbarensis	200	0.1	
Eragrostis eriopoda	20	0.1	
Poaceae sp.	20	0.1	
Sida sp. Pilbara (A.A. Mitchell PRP 1543)	20	0.1	
Triodia epactia	40	31	
Triodia sp.	20	0.5	

FLORA SITE SHEET

Project Name Atlas Ridley Biological Survey
Site: AR05
Location MGA 50 665737 **mE** 7736737 **mN**

Described by: GB,JH
Date: 2-03-2024
Type: RELEVE

Landform: Low hill crestGentle
Slope: N/A
Rock Type: Quartzite
Soil Type: Clay,Loam
Soil Colour: Brown,Orange

Vegetation: *Acacia orthocarpa and A. tumida var. pilbarensis Mid open shrubland over Triodia epactia low open hummock grassland.*

Condition: Good **Disturbance Type:** Vehicle tracks,Litter,Infrastructure
Fire Age: >10 years

SPECIES LIST

Taxon	Height (cm)	Cover (%)	Notes
Acacia ancistrocarpa	180	0.1	
Acacia inaequilatera	160	0.1	
Acacia orthocarpa	200	25	
Acacia sp	200	0.1	
Acacia tumida var. pilbarensis	200	0.5	
Eriachne lanata	20	0.1	
Goodenia stobbsiana	20	0.1	
Grevillea pyramidalis subsp. leucadendron	250	0.1	
Hakea lorea subsp. lorea	20	0.1	
Triodia epactia	30	25	

FLORA SITE SHEET

Project Name	Atlas Ridley Biological Survey			
Site:	AR06			
Location	MGA 50	666981 **mE**	7736472 **mN**	
Described by:	GB,JH			
Date:	2-03-2024			
Type:	QUADRAT			
Landform:	PlainsFlat			
Slope:	N/A			
Rock Type:	N/A			
Soil Type:	Clay,Loam			
Soil Colour:	Brown,Orange			

Vegetation: *Corymbia hamersleyana and Eucalyptus victrix low open woodland over Acacia colei var. colei and A. synchronicia mid sparse shrubland over Eulalia aurea low open tussock grassland.*

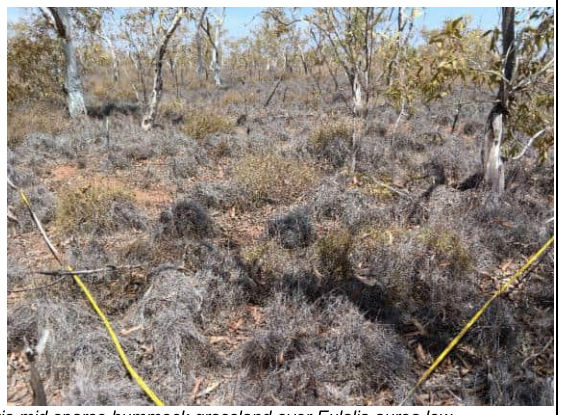
Condition: Very Good **Disturbance Type:** Litter
Fire Age: >10 years

SPECIES LIST

Taxon	Height (cm)	Cover (%)	Notes
Eucalyptus victrix	500	3	
Acacia colei var. colei	250	15	
Cassytha capillaris	20	0.1	
Corymbia hamersleyana	200	15	
Acacia synchronicia	50	0.5	
Eulalia aurea	30	40	
Triodia epactia	30	0.5	

FLORA SITE SHEET

Project Name	Atlas Ridley Biological Survey			
Site:	AR07			
Location	MGA 50	667553 **mE**	7736022 **mN**	
Described by:	GB,JH			
Date:	2-03-2024			
Type:	QUADRAT			
Landform:	PlainFlat			
Slope:	N/A			
Rock Type:	N/A			
Soil Type:	Clay,Loam,Sand			
Soil Colour:	Brown,Orange			



Vegetation: *Eucalyptus victrix low open woodland over Triodia epactia mid sparse hummock grassland over Eulalia aurea low open tussock grassland.*

Condition: Very Good **Disturbance Type:** None
Fire Age: > 15 years

SPECIES LIST

Taxon	Height (cm)	Cover (%)	Notes
Acacia colei var. colei	250	3	
Acacia synchronicia	140	0.1	
Acacia tumida var. pilbarensis	140	0.1	
Cassytha capillaris	50	0.1	
Eucalyptus victrix	550	10	
Eulalia aurea	30	20	
Pluchea dentex	30	0.1	
Triodia epactia	50	20	

FLORA SITE SHEET

Project Name Atlas Ridley Biological Survey
Site: AR08
Location MGA 50 669224 **mE** 7737589 **mN**

Described by: GB,JH
Date: 2-03-2024
Type: QUADRAT

Landform: PlainsFlat
Slope: N/A Photo: unavailable
Rock Type: N/A
Soil Type: Clay,Loam,Sand
Soil Colour: Beige

Vegetation: *Eucalyptus victrix mid isolated clumps of trees over Triodia epactia low open hummock grassland over Eulalia aurea low isolated clumps of tussock grasses.*

Condition: Very Good **Disturbance Type:** Litter
Fire Age: 1-5 years

SPECIES LIST

Taxon	Height (cm)	Cover (%)	Notes
Acacia colei var. colei	50	0.1	
Acacia stellaticeps	10	0.1	
Corchorus sp.	20	0.1	
Eucalyptus victrix	1000	5	
Eulalia aurea	20	0.5	
Senna notabilis	20	0.1	
Sida sp. Pilbara (A.A. Mitchell PRP 1543)	20	0.1	
Triodia epactia	30	25	

FLORA SITE SHEET

Project Name Atlas Ridley Biological Survey
Site: AR09
Location MGA 50 719898 **mE** 7755031 **mN**

Described by: GB,JH
Date: 3-03-2024
Type: RELEVE

Landform: Ironstone ridgeSteep
Slope: N/A
Rock Type: Ironstone
Soil Type: Clay
Soil Colour: Brown,Red

Vegetation: *Atalaya hemiglauca tall isolated clumps of shrubs over Ficus brachypoda, Acacia colei var. colei and Afrohybanthus aurantiacus low isolated clumps of shrubs over *Cenchrus ciliaris, Triodia epactia and Cymbopogon ambiguus low sparse grassland*

Condition: Very Good **Disturbance Type:** Weeds
Fire Age: >10 years

SPECIES LIST

Taxon	Height (cm)	Cover (%)	Notes
Acacia colei var. colei	100	0.1	
Afrohybanthus aurantiacus	20	0.1	
Atalaya hemiglauca	350	3	
Boerhavia sp.	2	0.1	
**Cenchrus ciliaris*	30	4	
Cucumis variabilis	20	0.1	
Cymbopogon ambiguus	40	0.1	
Eriachne mucronata	20	0.1	
Ficus brachypoda	170	1	
Notoleptopus decaisnei	5	0.1	
Ptilotus sp.	20	0.1	
Senna venusta	25	0.1	
Triodia epactia	30	4	

FLORA SITE SHEET

Project Name Atlas Ridley Biological Survey
Site: AR10
Location MGA 50 719944 **mE** 7755028 **mN**

Described by: GB,JH
Date: 3-03-2024
Type: RELEVE

Landform: Ironstone hilltopGentle
Slope: N/A
Rock Type: Ironstone
Soil Type: Clay
Soil Colour: Brown,Red

Vegetation: *Triodia epactia low open hummock grassland.*

Condition: Very Good **Disturbance Type:** Weeds,Fauna tracks/scats
Fire Age: >10 years

SPECIES LIST

Taxon	Height (cm)	Cover (%)	Notes
**Cenchrus ciliaris*	20	0.1	
Ptilotus sp.	5	0.1	
Triodia epactia	20	50	

FLORA SITE SHEET

Project Name Atlas Ridley Biological Survey
Site: AR11
Location MGA 50 719701 **mE** 7754874 **mN**

Described by: GB,JH
Date: 3-03-2024
Type: QUADRAT

Landform: FloodplainFlat
Slope: N/A
Rock Type: N/A
Soil Type: Clay,Sand
Soil Colour: Brown

Vegetation: *Cyperus sp. Low isolated clumps of sedges over Sclerolaena hostilis low sparse forbland.*

Condition: Degraded
Fire Age: Unknown
Disturbance Type: Weeds,Grazing,Litter,Fauna tracks/scats

SPECIES LIST

Taxon	Height (cm)	Cover (%)	Notes
Boerhavia repleta	30	0.1	
**Calotropis procera*	50	0.1	
Crotalaria ramosissima	30	0.1	
Cyperus conicus	20	0.1	
Cyperus sp.	50	1	
Goodenia lamprosperma	20	0.1	
Ipomoea muelleri	20	0.1	
Neptunia sp.	5	0.1	
Poaceae sp.	20	0.1	
Polymeria ambigua	5	0.1	
Sclerolaena hostilis	30	10	
Trianthema triquetrum	2	0.1	
Triodia epactia	20	0.1	

FLORA SITE SHEET

Project Name Atlas Ridley Biological Survey
Site: AR12
Location MGA 50 719492 **mE** 7754730 **mN**

Described by: GB,JH
Date: 3-03-2024
Type: RELEVE

Landform: DrainageFlat
Slope: N/A
Rock Type: N/A
Soil Type: Sand
Soil Colour: Brown,Orange

Vegetation: *Eucalyptus victrix low isolated clumps of trees over Acaciea colei var. colei tall isolated clumps of shrubs over Eulalia aurea low isolated clumps of tussock grasses.*

Condition: Good **Disturbance Type:** Weeds,Grazing,Fauna tracks/scats
Fire Age: >10 years

SPECIES LIST

Taxon	Height (cm)	Cover (%)	Notes
Acacia colei var. colei	300	0.5	
Afrohybanthus aurantiacus	10	0.1	
Boerhavia repleta	10	0.1	
**Calotropis procera*	80	0.1	
Corchorus incanus subsp. incanus	30	0.1	
Cyperus conicus	20	0.1	
Cyperus vaginatus	50	1	
Eucalyptus victrix	900	5	
Eulalia aurea	30	2	
Euploca cunninghamii	10	0.1	
Goodenia lamprosperma	30	0.1	
Ipomoea muelleri	10	0.1	
Poaceae sp.	20	0.1	
Polymeria ambigua	10	0.1	
Sporobolus australasicus	20	0.1	
Triodia epactia	30	0.1	
**Vachellia farnesiana*	180	0.1	

FLORA SITE SHEET

Project Name Atlas Ridley Biological Survey
Site: AR13
Location MGA 50 719707 **mE** 7756078 **mN**

Described by: GB,JH
Date: 3-03-2024
Type: RELEVE

Landform: Ironstone HilltopGentle
Slope: N/A
Rock Type: Ironstone
Soil Type: Clay
Soil Colour: Brown

Vegetation: *Triodia epactia low open hummock grassland.*

Condition: Very Good **Disturbance Type:** Infrastructure
Fire Age: >10 years

SPECIES LIST

Taxon	Height (cm)	Cover (%)	Notes
Bonamia pilbarensis	2	0.1	
Isotropis atropurpurea	5	0.1	
Sida sp. Pilbara (A.A. Mitchell PRP 1543)	60	0.1	
Solanum diversiflorum	30	0.1	
Triodia epactia	20	40	

FLORA SITE SHEET

Project Name	Atlas Ridley Biological Survey		
Site:	AR14		
Location	MGA 50	719576 **mE**	7756081 **mN**
Described by:	GB,JH		
Date:	3-03-2024		
Type:	RELEVE		
Landform:	Ironstone ridgeSteep		
Slope:	N/A		
Rock Type:	Ironstone		
Soil Type:	Clay		
Soil Colour:	Brown		

Vegetation: *Ficus brachypoda, Ficus aculeata and Atalaya hemiglauca low isolated clumps of trees over Acacia colei var. colei mid isolated clumps of shrubs over Triodia epactia low isolated clumps of hummock grasses.*

Condition:	Very Good	**Disturbance Type:**	Weeds,Grazing
Fire Age:	>10 years		

SPECIES LIST

Taxon	Height (cm)	Cover (%)	Notes
Acacia colei var. colei	200	0.5	
Atalaya hemiglauca	250	2	
Boerhavia sp.	3	0.1	
**Cenchrus ciliaris*	20	0.5	
Cymbopogon ambiguus	30	0.1	
Eriachne mucronata	20	0.1	
Ficus brachypoda	300	0.5	
Ficus aculeata	200	0.5	
Senna venusta	30	0.1	
Triodia epactia	30	5	

FLORA SITE SHEET

Project Name Atlas Ridley Biological Survey
Site: AR15
Location MGA 50 719631 **mE** 7755998 **mN**

Described by: GB,JH
Date: 3-03-2024
Type: RELEVE

Landform: Between two hillsGentle
Slope: N/A
Rock Type: Ironstone
Soil Type: Clay
Soil Colour: Brown

Vegetation: *Acacia colei var. colei tall sparse shrubland over Acacia bivenosa mid isolated clumps of shrubs over Triodia epactia low sparse hummock grassland.*

Condition: Very Good **Disturbance Type:** Grazing,Fauna tracks/scats
Fire Age: >10 years

SPECIES LIST

Taxon	Height (cm)	Cover (%)	Notes
Acacia acradenia	100	0.1	
Acacia bivenosa	120	0.5	
Acacia colei var. colei	300	20	
Boerhavia repleta	10	0.1	
Indigofera monophylla	30	0.1	
Isotropis atropurpurea	10	0.1	
Rhynchosia minima	10	0.1	
Triodia epactia	30	30	
Triumfetta clementii	5	0.1	

FLORA SITE SHEET

Project Name Atlas Ridley Biological Survey
Site: AR16
Location MGA 50 719958 **mE** 7755674 **mN**

Described by: GB,JH
Date: 3-03-2024
Type: RELEVE

Landform: Low lying flood plain (look up better word)Flat
Slope: N/A
Rock Type: N/A
Soil Type: Clay,Sand
Soil Colour: Brown,Orange

Vegetation: *Corymbia flavescens, Atalaya hemiglauca and Ficus aculeata low open woodland over Dolichandrone occidentalis and *Indigofera oblongifolia tall isolated clumps of shrubs over Eulalia aurea low isolated clumps of tussock grasses.*

Condition: Degraded **Disturbance Type:** Weeds,Grazing,Fauna tracks/scats
Fire Age: >10 years

SPECIES LIST

Taxon	Height (cm)	Cover (%)	Notes
Acacia bivenosa	200	0.1	
Corymbia flavescens	700	5	
Boerhavia repleta	10	0.1	
**Calotropis procera*	300	0.1	
Atalaya hemiglauca	400	1	
Dolichandrone occidentalis	400	2	
Ficus aculeata	300	1	
**Indigofera oblongifolia*	200	2	
Eulalia aurea	30	2	
Pluchea dentex	20	0.1	
Terminalia circumulata	300	0.1	

FLORA SITE SHEET

Project Name Atlas Ridley Biological Survey
Site: AR17
Location MGA 50 719480 **mE** 7755341 **mN**

Described by: GB,JH
Date: 3-03-2024
Type: RELEVE

Landform: Drainage and shoulder Flat
Slope: N/A
Rock Type: N/A
Soil Type: Clay,Loam
Soil Colour: Brown,Orange

Vegetation: *Corymbia flavescens and Eucalyptus victrix low open woodland over Acacia colei var. colei tall sparse shrubland over Eulalia aurea low isolated clumps of tussock grasses.*

Condition: Degraded **Disturbance Type:** Weeds,Grazing,Fauna tracks/scats
Fire Age: >10 years

SPECIES LIST

Taxon	Height (cm)	Cover (%)	Notes
Acacia colei var. colei	300	8	
Atalaya hemiglauca	200	0.1	
**Calotropis procera*	200	0.1	
Carissa lanceolata	200	0.1	
**Cenchrus ciliaris*	30	2	
Corymbia flavescens	700	4	
Cyperus sp.	20	0.1	
Eucalyptus victrix	700	2	
Eulalia aurea	40	2	
Ficus aculeata	200	0.1	
Vigna lanceolata var. lanceolata	20	0.1	

FLORA SITE SHEET

Project Name Atlas Ridley Biological Survey
Site: AR18
Location MGA 50 720119 **mE** 7755143 **mN**

Described by: GB,JH
Date: 3-03-2024
Type: RELEVE

Landform: Edge of foothillFlat
Slope: N/A
Rock Type: N/A
Soil Type: Clay,Sand
Soil Colour: Brown,Orange

Vegetation: *Acacia colei var. colei tall sparse shrubland over Acacia inequilatera low isolated clumps of shrubs over Triodia epactia low open hummock grassland.*

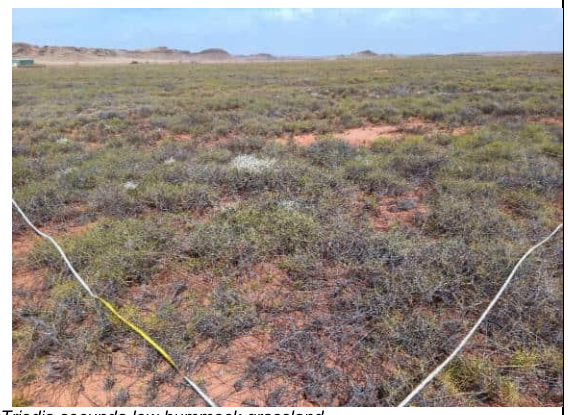
Condition: Very Good **Disturbance Type:** Grazing,Fauna tracks/scats
Fire Age: >10 years

SPECIES LIST

Taxon	Height (cm)	Cover (%)	Notes
Acacia colei var. colei	250	20	
Acacia inaequilatera	200	4	
Pluchea dentex	20	0.1	
Pluchea ferdinandi-muelleri	40	0.1	
Triodia epactia	40	30	

FLORA SITE SHEET

Project Name	Atlas Ridley Biological Survey			
Site:	AR19			
Location	MGA 50	719850 **mE**	7754495 **mN**	
Described by:	GB,JH			
Date:	3-03-2024			
Type:	QUADRAT			
Landform:	FloodplainFlat			
Slope:	N/A			
Rock Type:	N/A			
Soil Type:	Clay,Loam,Sand			
Soil Colour:	Beige,Brown			



Vegetation: *Sclerolaena hostilis low isolated clumps of shrubs over Triodia secunda low hummock grassland.*

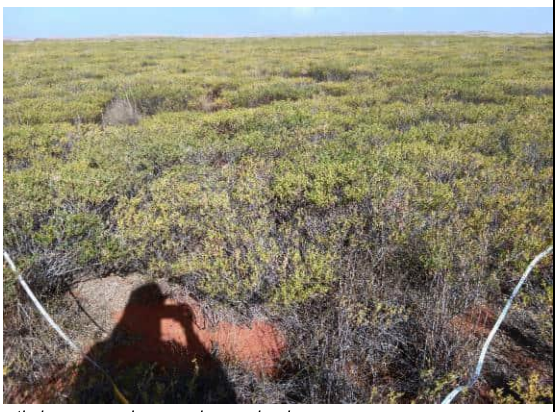
Condition:	Good	**Disturbance Type:**	Grazing,Fauna tracks/scats
Fire Age:	>10 years		

SPECIES LIST

Taxon	Height (cm)	Cover (%)	Notes
Maireana melanocoma	10	0.1	
Sclerolaena hostilis	20	1	
Triodia secunda	20	71	

FLORA SITE SHEET

Project Name	Atlas Ridley Biological Survey			
Site:	AR20			
Location	MGA 50	718747 **mE**	7752516 **mN**	
Described by:	GB,JH			
Date:	3-03-2024			
Type:	QUADRAT			
Landform:	PlainsFlat			
Slope:	N/A			
Rock Type:	N/A			
Soil Type:	Sand			
Soil Colour:	Orange			



Vegetation: *Acacia stellaticeps low closed shrubland over Triodia epactia low sparse hummock grassland*

Condition:	Very Good	**Disturbance Type:**	Litter,Fauna tracks/scats
Fire Age:	>10 years		

SPECIES LIST

Taxon	Height (cm)	Cover (%)	Notes
Acacia stellaticeps	50	85	
Cassytha capillaris	30	0.1	
Triodia epactia	30	8	

FLORA SITE SHEET

Project Name	Atlas Ridley Biological Survey		
Site:	AR21		
Location	MGA 50	669928 **mE**	7737669 **mN**
Described by:	GB,JH		
Date:	4-03-2024		
Type:	RELEVE		
Landform:	Plains		
Slope:	Flat		
Rock Type:	N/A		
Soil Type:	Loam,Sand		
Soil Colour:	Brown,Orange		

Vegetation: *Eucalyptus victrix low open woodland over Acacia colei var. colei tall isolated clumps of shrubs over Triodia epactia mid sparse hummock grassland.*

Condition:	Good	**Disturbance Type:**	Grazing,Litter,Fauna tracks/scats
Fire Age:	>10 years		

SPECIES LIST

Taxon	Height (cm)	Cover (%)	Notes
Acacia ampliceps	350	0.1	
Eucalyptus victrix	900	7	
Acacia coriacea subsp. pendens	200	0.1	
Carissa lanceolata	160	0.1	
Acacia colei var. colei	250	0.5	
Cyperus sp.	20	0.1	
Triodia epactia	60	15	
Hakea lorea subsp. lorea	150	0.1	
Pluchea dentex	30	0.1	
Chrysopogon fallax	40	2	

FLORA SITE SHEET

Project Name	Atlas Ridley Biological Survey		
Site:	AR22		
Location	MGA 50	670914 **mE**	7737642 **mN**
Described by:	GB,JH		
Date:	4-03-2024		
Type:	RELEVE		
Landform:	Plains		
Slope:	Flat		
Rock Type:	N/A		
Soil Type:	Loam,Sand		
Soil Colour:	Brown,Orange		

Vegetation: *Eucalyptus victrix low open woodland over Acacia colei var. colei tall isolated clumps of shrubs over Triodia epactia and T. sp. low sparse hummock grassland.*

Condition:	Very Good	**Disturbance Type:**	Grazing,Fauna tracks/scats,Infrastructure
Fire Age:	>10 years		

SPECIES LIST

Taxon	Height (cm)	Cover (%)	Notes
Acacia ancistrocarpa	140	0.1	
Eucalyptus victrix	900	7	
Acacia inaequilatera	200	0.1	
Acacia tumida var. pilbarensis	150	0.1	
Carissa lanceolata	160	0.1	
Acacia colei var. colei	250	0.5	
Corchorus sp.	20	0.1	
Corymbia candida subsp. indet.	250	0.1	
Triodia epactia	60	15	
Hakea lorea subsp. lorea	150	0.1	
Melaleuca glomerata	140	0.1	
Pluchea dentex	30	0.1	
Chrysopogon fallax	40	2	
Triodia sp.	20	3	

FLORA SITE SHEET

Project Name	Atlas Ridley Biological Survey			
Site:	AR23			
Location	MGA 50	670584 **mE**	7738164 **mN**	
Described by:	GB,JH			
Date:	4-03-2024			
Type:	QUADRAT			
Landform:	Plains			
Slope:	Flat			
Rock Type:	N/A			
Soil Type:	Clay,Sand			
Soil Colour:	Brown,Orange			

Vegetation: *Corymbia hamersleyana low open woodland over Melaleuca glomerata, Acacia colei var. colei and Carissa lanceolata mid sparse shrubland over Triodia epactia and T. sp. low sparse hummock grassland.*

Condition:	Very Good	**Disturbance Type:**	Infrastructure
Fire Age:	> 5 years,>10 years		

SPECIES LIST

Taxon	Height (cm)	Cover (%)	Notes
Acacia ancistrocarpa	150	0.1	
Acacia colei var. colei	200	0.5	
Acacia coriacea subsp. pendens	140	0.1	
Acacia inaequilatera	170	0.1	
Carissa lanceolata	200	0.5	
Corymbia hamersleyana	200	9	
Melaleuca glomerata	200	5	
Hakea lorea subsp. lorea	40	0.1	
Acacia stellaticeps	40	1	
Triodia epactia	30	12	
Triodia sp.	20	8	

FLORA SITE SHEET

Project Name	Atlas Ridley Biological Survey			
Site:	AR24			
Location	MGA 50	673238 **mE**	7738339 **mN**	
Described by:	GB,JH			
Date:	4-03-2024			
Type:	QUADRAT			
Landform:	Alluvial flat			
Slope:	Flat			
Rock Type:	N/A			
Soil Type:	Loam,Sand			
Soil Colour:	Brown,Orange			

Vegetation: *Triodia epactia and T. secunda low open hummock grassland.*

Condition:	Very Good	**Disturbance Type:**	Fauna tracks/scats
Fire Age:	>10 years		

SPECIES LIST

Taxon	Height (cm)	Cover (%)	Notes
Acacia colei var. colei	170	0.1	
Chrysopogon fallax	5	0.1	
Triodia epactia	40	30	
Triodia secunda	20	10	

FLORA SITE SHEET

Project Name	Atlas Ridley Biological Survey		
Site:	AR25		
Location	MGA 50	673541 **mE**	7737691 **mN**
Described by:	GB,JH		
Date:	4-03-2024		
Type:	QUADRAT		
Landform:	Plains		
Slope:	Flat		
Rock Type:	N/A		
Soil Type:	Clay,Sand		
Soil Colour:	Brown,Orange		

Vegetation: *Corymbia candida subsp. candida low isolated clumps of trees over Acacia colei var. colei tall sparse shrubland over Triodia epactia low open hummock grassland.*

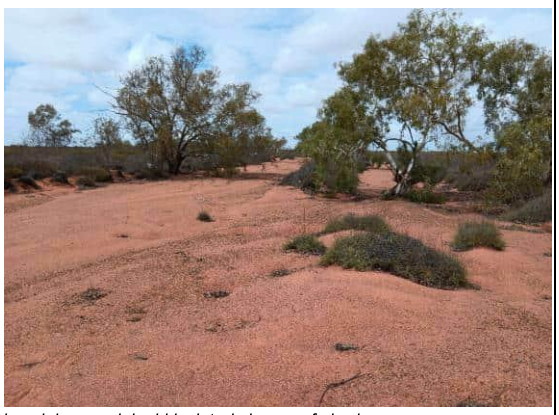
Condition:	Very Good	**Disturbance Type:**	Weeds,Fauna tracks/scats
Fire Age:	> 15 years		

SPECIES LIST

Taxon	Height (cm)	Cover (%)	Notes
Acacia colei var. colei	400	12	
Acacia inaequilatera	160	0.1	
Carissa lanceolata	170	0.1	
**Cenchrus ciliaris*	20	0.1	
Chrysopogon fallax	20	0.1	
Corymbia candida subsp. candida	900	5	
Dolichandrone occidentalis	30	0.1	
Malvaceae sp.	10	0.1	
Melaleuca glomerata	250	0.1	
Paraneurachne muelleri	10	0.1	
Triodia epactia	40	31	

FLORA SITE SHEET

Project Name	Atlas Ridley Biological Survey		
Site:	AR26		
Location	MGA 50	674502 **mE**	7738067 **mN**
Described by:	GB,JH		
Date:	4-03-2024		
Type:	RELEVE		
Landform:	Minor drainage		
Slope:	Flat		
Rock Type:	N/A		
Soil Type:	Sand		
Soil Colour:	Beige		



Vegetation: *Eucalyptus victrix low isolated clumps of trees over Acacia colei var. colei mid isolated clumps of shrubs over Triodia epactia low sparse hummock grassland.*

Condition:	Very Good	**Disturbance Type:**	Litter
Fire Age:	>10 years		

SPECIES LIST

Taxon	Height (cm)	Cover (%)	Notes
Acacia colei var. colei	250	0.5	
Afrohybanthus aurantiacus	5	0.1	
Bonamia linearis	5	0.1	
Carissa lanceolata	120	0.1	
Cassytha capillaris	10	0.1	
Chrysopogon fallax	20	0.5	
Corchorus incanus subsp. incanus	30	0.1	
Eucalyptus victrix	800	5	
Tinospora smilacina	30	0.1	
Triodia epactia	30	10	

FLORA SITE SHEET

Project Name Atlas Ridley Biological Survey
Site: AR27
Location MGA 50 676097 **mE** 7738235 **mN**

Described by: GB,JH
Date: 4-03-2024
Type: RELEVE

Landform: Drainage shoulder
Slope: Flat
Rock Type: N/A
Soil Type: Clay,Sand
Soil Colour: Brown,Orange

Vegetation: *Melaleuca glomerata and Acacia trachycarpa tall open shrubland over *Cenchrus ciliaris low sparse tussock grassland over Triodia epactia low isolated clumps of hummock grassland.*

Condition: Degraded **Disturbance Type:** Weeds,Grazing,Litter,Fauna tracks/scats
Fire Age: >10 years

SPECIES LIST

Taxon	Height (cm)	Cover (%)	Notes
Acacia trachycarpa	250	3	
**Aerva javanica*	30	0.1	
Afrohybanthus aurantiacus	10	0.1	
Carissa lanceolata	200	0.1	
**Cenchrus ciliaris*	40	20	
Corchorus incanus subsp. incanus	20	0.1	
Cucumis variabilis	30	0.1	
Melaleuca glomerata	300	20	
Triodia epactia	40	3	
Waltheria indica	10	0.1	

FLORA SITE SHEET

Project Name Atlas Ridley Biological Survey
Site: AR28
Location MGA 50 676159 **mE** 7738365 **mN**

Described by: GB,JH
Date: 4-03-2024
Type: RELEVE

Landform: Drainage
Slope: Flat
Rock Type: N/A
Soil Type: Sand
Soil Colour: Orange

Vegetation: *Eucalyptus victrix low isolated clumps of trees over Melaleuca glomerata and Crotalaria cunninghamii subsp. sturtii mid isolated clumps of shrubs over Triodia epactia low isolated clumps of hummock grasses.*

Condition: Good **Disturbance Type:** Weeds,Grazing,Fauna tracks/scats
Fire Age: >10 years

SPECIES LIST

Taxon	Height (cm)	Cover (%)	Notes
Afrohybanthus aurantiacus	20	0.1	
Arivela viscosa	30	0.1	
Cajanus pubescens	80	0.1	
**Cenchrus ciliaris*	30	0.1	
Corchorus incanus subsp. incanus	20	0.1	
Crotalaria cunninghamii subsp. sturtii	100	0.5	
Cynanchum floribundum	30	0.1	
Eucalyptus victrix	900	4	
Euphorbia tannensis subsp. eremophila	20	0.1	
Euphorbia trigonosperma	40	0.1	
Evolvulus sp.	5	0.1	
Ipomoea muelleri	20	0.1	
Melaleuca glomerata	180	1	
Polymeria ambigua	2	0.1	
Rhynchosia minima	20	0.1	
Senna notabilis	20	0.1	
Tephrosia rosea var. Fortescue creeks (M.I.H. Brooke	80	0.1	
Tinospora smilacina	20	0.1	
Triodia epactia	40	1	

FLORA SITE SHEET

Project Name	Atlas Ridley Biological Survey		
Site:	AR29		
Location	MGA 50	679167 **mE**	7738712 **mN**
Described by:	GB,JH		
Date:	4-03-2024		
Type:	RELEVE		
Landform:	Plains		
Slope:	Flat		
Rock Type:	N/A		
Soil Type:	Clay,Loam		
Soil Colour:	Orange		

Vegetation: *Acacia tumida var. pilbarensis and Grevillea wickhamii subsp. hispidula tall open shrubland over Acacia stellaticeps low isolated clumps of shrubs over Triodia epactia low sparse hummock grassland.*

Condition:	Very Good	**Disturbance Type:**	Fauna tracks/scats
Fire Age:	>10 years		

SPECIES LIST

Taxon	Height (cm)	Cover (%)	Notes
Acacia inaequilatera	200	0.1	
Grevillea wickhamii subsp. hispidula	400	4	
Acacia trachycarpa x tumida var. pilbarensis	300	0.1	
Acacia tumida var. pilbarensis	300	30	
Acacia stellaticeps	40	0.5	
Eulalia aurea	40	0.5	
Hakea lorea subsp. lorea	200	0.1	
Pluchea dentex	30	0.1	
Triodia epactia	40	10	

FLORA SITE SHEET

Project Name Atlas Ridley Biological Survey
Site: AR30
Location MGA 50 679457 **mE** 7739332 **mN**

Described by: GB,JH
Date: 4-03-2024
Type: RELEVE

Landform: Minor drainage
Slope: Flat
Rock Type: N/A
Soil Type: Sand
Soil Colour: Brown

Vegetation: *Eucalyptus victrix low open woodland over Acacia trachycarpa tall sparse shrubland over Triodia epactia isolated clumps of hummock grasses.*

Condition: Very Good **Disturbance Type:** Grazing,Fauna tracks/scats
Fire Age: >10 years

SPECIES LIST

Taxon	Height (cm)	Cover (%)	Notes
Acacia colei var. colei	200	0.1	
Acacia trachycarpa	350	6	
Afrohybanthus aurantiacus	20	0.1	
Cajanus pubescens	20	0.1	
Carissa lanceolata	140	0.1	
Cassytha capillaris	20	0.1	
Corymbia hamersleyana	200	0.1	
Crotalaria cunninghamii subsp. sturtii	20	0.1	
Cynanchum floribundum	20	0.1	
Eucalyptus victrix	800	5	
Eulalia aurea	40	0.5	
Euphorbia trigonosperma	20	0.1	
Ficus aculeata var. indecora	200	0.1	
Grevillea wickhamii subsp. hispidula	180	0.1	
Hakea lorea subsp. lorea	200	0.1	
Melaleuca glomerata	300	0.1	
Tephrosia rosea var. Fortescue creeks (M.I.H. Brooke	20	0.1	
Themeda triandra	30	0.1	
Triodia epactia	30	1	

FLORA SITE SHEET

Project Name	Atlas Ridley Biological Survey		
Site:	AR31		
Location	MGA 50	663695 **mE**	7736402 **mN**
Described by:	GB,JH		
Date:	5-03-2024		
Type:	QUADRAT		
Landform:	Plains		
Slope:	Flat		
Rock Type:	N/A		
Soil Type:	Sand		
Soil Colour:	Orange		

Vegetation: *Acacia stellaticeps low open shrubland over Triodia epactia low sparse hummock grassland.*

Condition:	Very Good	**Disturbance Type:**	None
Fire Age:	>10 years		

SPECIES LIST

Taxon	Height (cm)	Cover (%)	Notes
Acacia ancistrocarpa	180	0.1	
Acacia stellaticeps	50	31	
Triodia epactia	40	20	

FLORA SITE SHEET

Project Name	Atlas Ridley Biological Survey			
Site:	AR32			
Location	MGA 50	682436 **mE**	7739814 **mN**	
Described by:	GB,JH			
Date:	5-03-2024			
Type:	QUADRAT			
Landform:	Plains			
Slope:	Flat			
Rock Type:	N/A			
Soil Type:	Clay,Sand			
Soil Colour:	Orange			

Vegetation: *Acacia inaequilatera tall isolated clumps of shrubs over Acacia stellaticeps mid isolated clumps of shrubs over Triodia epactia low open hummock grassland.*

Condition:	Good	**Disturbance Type:**	Litter,Fauna tracks/scats,Infrastructure
Fire Age:	>10 years		

SPECIES LIST

Taxon	Height (cm)	Cover (%)	Notes
Acacia inaequilatera	250	3	
Acacia sericophylla	170	0.1	
Acacia stellaticeps	150	0.5	
Acacia tumida var. pilbarensis	70	0.1	
Bonamia erecta	20	0.1	
Chrysopogon fallax	20	0.5	
Hakea lorea subsp. lorea	30	0.1	
Pluchea dentex	30	0.1	
Triodia epactia	40	31	

FLORA SITE SHEET

Project Name Atlas Ridley Biological Survey
Site: AR33
Location MGA 50 685620 **mE** 7740326 **mN**

Described by: GB,JH
Date: 5-03-2024
Type: RELEVE

Landform: Minor drainage
Slope: Flat
Rock Type: N/A
Soil Type: Sand
Soil Colour: Brown,Orange

Vegetation: *Eucalyptus victrix and Corymbia candida subsp. candida low isolated clumps of trees over Acacia colei var. colei mid isolated clumps of shrubs over Triodia epactia low sparse hummock grassland.*

Condition: Very Good **Disturbance Type:** Vehicle tracks,Fauna tracks/scats
Fire Age: >10 years

SPECIES LIST

Taxon	Height (cm)	Cover (%)	Notes
Acacia colei var. colei	350	0.5	
Acacia pyrifolia var. pyrifolia	180	0.1	
Aristida holathera var. holathera	10	0.1	
Atalaya hemiglauca	450	0.1	
Carissa lanceolata	180	0.1	
Cassytha capillaris	100	0.1	
Corchorus laniflorus	40	0.1	
Corchorus sp.	40	0.1	
Corymbia candida subsp. candida	700	0.5	
Eremophila longifolia	100	0.1	
Eucalyptus victrix	900	1	
Eulalia aurea	30	8	
Euphorbia australis var. subtomentosa	10	0.1	
Indigofera linnaei	10	0.1	
Ipomoea muelleri	10	0.1	
Nellica maderaspatensis	20	0.1	
Triodia epactia	30	10	

FLORA SITE SHEET

Project Name	Atlas Ridley Biological Survey			
Site:	AR34			
Location	MGA 50	683853 **mE**	7739914 **mN**	
Described by:	GB,JH			
Date:	5-03-2024			
Type:	QUADRAT			
Landform:	Plains			
Slope:	Flat			
Rock Type:	N/A			
Soil Type:	Loam,Sand			
Soil Colour:	Orange			

Vegetation: *Acacia inaequilatera and A. bivenosa mid sparse shrubland over Acacia stellaticeps low isolated clumps of shrubs over Triodia epactia and T. sp. low open hummock grasses.*

Condition:	Very Good	**Disturbance Type:**	Infrastructure
Fire Age:	>10 years		

SPECIES LIST

Taxon	Height (cm)	Cover (%)	Notes
Acacia ancistrocarpa	160	0.1	
Acacia bivenosa	160	4	
Acacia inaequilatera	180	4	
Acacia stellaticeps	50	1	
Bonamia erecta	20	0.1	
Hakea lorea subsp. lorea	50	0.1	
Triodia epactia	40	31	
Triodia sp.	20	2	

FLORA SITE SHEET

Project Name	Atlas Ridley Biological Survey		
Site:	AR35		
Location	MGA 50	686718 **mE**	7739877 **mN**
Described by:	GB,JH		
Date:	5-03-2024		
Type:	RELEVE		
Landform:	Plains		
Slope:	Flat		
Rock Type:	N/A		
Soil Type:	Clay,Loam,Sand		
Soil Colour:	Brown		

Vegetation: *Acacia tumida var. pilbarensis and A. ancistrocarpa tall open shrubland over Triodia epactia low sparse hummock grassland over Eulalia aurea and Chrysopogon fallax low isolated clumps of tussock grasses.*

Condition:	Very Good	**Disturbance Type:**	Fauna tracks/scats
Fire Age:	>10 years		

SPECIES LIST

Taxon	Height (cm)	Cover (%)	Notes
Acacia ancistrocarpa	300	2	
Acacia inaequilatera	250	0.1	
Acacia tumida var. pilbarensis	350	20	
Chrysopogon fallax	50	1	
Corymbia flavescens	350	0.1	
Dolichandrone occidentalis	140	0.1	
Eulalia aurea	40	5	
Goodenia lamprosperma	10	0.1	
Pluchea dentex	30	0.1	
Sida sp. Pilbara (A.A. Mitchell PRP 1543)	50	0.1	
Stemodia grossa	30	0.5	
Triodia epactia	30	10	

FLORA SITE SHEET

Project Name	Atlas Ridley Biological Survey		
Site:	AR36		
Location	MGA 50	700023 **mE**	7741014 **mN**
Described by:	GB,JH		
Date:	6-03-2024		
Type:	RELEVE		
Landform:	Granite quartz outcropping		
Slope:	Moderate		
Rock Type:	Granite,Quartzite		
Soil Type:	Clay,Loam		
Soil Colour:	Brown		

Vegetation: *Acacia tumida var. pilbarensis, Grevillea pyramidalis subsp. leucadendron and G. wickhamii subsp. hispidula mid isolated clumps of shrubs over Acacia ancistrocarpa low isolated clumps of shrubs over Triodia epactia low open hummock grassland.*

Condition: Excellent **Disturbance Type:** None

Fire Age: >10 years

SPECIES LIST

Taxon	Height (cm)	Cover (%)	Notes
Acacia ancistrocarpa	100	0.5	
Acacia pyrifolia var. pyrifolia	50	0.1	
Acacia tumida var. pilbarensis	200	0.5	
acaicia adoxa var adoxa	20	0.1	
Corymbia hamersleyana	170	0.1	
Grevillea pyramidalis subsp. leucadendron	170	0.5	
Grevillea wickhamii subsp. hispidula	150	0.5	
Triodia epactia	30	25	

FLORA SITE SHEET

Project Name	Atlas Ridley Biological Survey			
Site:	AR37			
Location	MGA 50	704815 **mE**	7741870 **mN**	
Described by:	GB,JH			
Date:	6-03-2024			
Type:	RELEVE			
Landform:	Granite outcropping			
Slope:	Moderate			
Rock Type:	Orange			
Soil Type:	Gravel			
Soil Colour:	Orange			

Vegetation: *Acacia inaequilatera and Eremophila longifolia mid isolated clumps of shrubs over Triodia epactia low sparse hummock grassland.*

Condition:	Very Good	**Disturbance Type:**	Weeds,Infrastructure
Fire Age:	>10 years		

SPECIES LIST

Taxon	Height (cm)	Cover (%)	Notes
Abutilon lepidum	30	0.1	
Acacia colei var. colei	30	0.1	
Acacia inaequilatera	150	0.5	
Cajanus pubescens	60	0.1	
**Cenchrus ciliaris*	20	0.1	
Eremophila longifolia	150	0.5	
Senna artemisioides subsp. helmsii	50	0.1	
Senna venusta	30	0.1	
Solanum sp.	20	0.1	
Tinospora smilacina	180	0.1	
Triodia epactia	15	15	
Triumfetta sp.	30	0.1	

FLORA SITE SHEET

Project Name Atlas Ridley Biological Survey
Site: AR38
Location MGA 50 704511 **mE** 7742260 **mN**

Described by: GB,JH
Date: 6-03-2024
Type: RELEVE

Landform: Quartz ridge
Slope: Gentle
Rock Type: Granite,Quartzite
Soil Type: Gravel
Soil Colour: Orange

Vegetation: *Acacia inaequilatera mid isolated clumps of shrubs over A. orthocarpa low isolated clumps of shrubs over Triodia epactia low sparse hummock grassland.*

Condition: Very Good **Disturbance Type:** Infrastructure
Fire Age: 1-5 years

SPECIES LIST

Taxon	Height (cm)	Cover (%)	Notes
Acacia inaequilatera	180	2	
Acacia orthocarpa	50	2	
Grevillea pyramidalis subsp. leucadendron	70	0.1	
Petalostylis labicheoides	30	0.1	
Sida sp. Pilbara (A.A. Mitchell PRP 1543)	30	0.1	
Triodia epactia	20	20	

FLORA SITE SHEET

Project Name Atlas Ridley Biological Survey
Site: AR39
Location MGA 50 705789 **mE** 7741757 **mN**

Described by: GB,JH
Date: 6-03-2024
Type: QUADRAT

Landform: Major drainage
Slope: Flat
Rock Type: N/A
Soil Type: Sand
Soil Colour: Beige

Vegetation: *Eucalyptus camaldulensis subsp. refulgens and Melaleuca argentea low isolated clumps of trees over Acacia trachycarpa and A. colei var. colei tall sparse shrubland over Triodia epactia low isolated clumps of grasses.*

Condition: Very Good **Disturbance Type:** Litter,Fauna tracks/scats
Fire Age: >10 years

SPECIES LIST

Taxon	Height (cm)	Cover (%)	Notes
Acacia colei var. colei	250	0.5	
Acacia trachycarpa	350	6	
Cassytha capillaris	100	0.1	
Corchorus laniflorus	30	0.1	
Crotalaria cunninghamii subsp. sturtii	120	0.1	
Cymbopogon ambiguus	30	0.1	
Cynanchum floribundum	50	0.1	
Cyperus vaginatus	50	0.1	
Eucalyptus camaldulensis subsp. refulgens	900	1	
Eulalia aurea	70	0.1	
Euphorbia australis var. subtomentosa	10	0.1	
Euphorbia trigonosperma	50	0.1	
Goodenia lamprosperma	20	0.1	
Goodenia muelleriana	20	0.1	
Melaleuca argentea	700	4	
Melaleuca glomerata	40	0.1	
Microstachys chamaelea	50	0.1	
**Passiflora foetida*	30	0.1	
Triodia epactia	40	0.5	
Waltheria indica	20	0.1	

FLORA SITE SHEET

Project Name	Atlas Ridley Biological Survey		
Site:	AR40		
Location	MGA 50	690947 **mE**	7741096 **mN**
Described by:	GB,JH		
Date:	6-03-2024		
Type:	RELEVE		
Landform:	Quartz ridge		
Slope:	Moderate		
Rock Type:	Quartzite		
Soil Type:	Gravel		
Soil Colour:	Orange		

Vegetation: *Acacia orthocarpa and A. tumida var. pilbarensis mid isolated clumps of shrubs over Triodia epactia low open hummock grassland.*

Condition:	Very Good	**Disturbance Type:**	Infrastructure
Fire Age:	>10 years		

SPECIES LIST

Taxon	Height (cm)	Cover (%)	Notes
Acacia adoxa var. adoxa	30	0.1	
Acacia ancistrocarpa	200	0.1	
Acacia inaequilatera	180	0.1	
Acacia orthocarpa	140	3	
Acacia sericophylla	60	0.1	
Acacia tumida var. pilbarensis	100	0.5	
Bulbostylis barbata	10	0.1	
Corymbia hamersleyana	150	0.1	
Corymbia zygophylla	100	0.1	
Grevillea wickhamii subsp. hispidula	180	0.1	
Petalostylis labicheoides	50	0.1	
Triodia epactia	20	25	

FLORA SITE SHEET

Project Name Atlas Ridley Biological Survey
Site: AR41
Location MGA 50 689036 **mE** 7740301 **mN**

Described by: GB,JH
Date: 6-03-2024
Type: RELEVE

Landform: Major drainage
Slope: Flat
Rock Type: N/A
Soil Type: Sand
Soil Colour: Beige

Vegetation: *Eucalyptus victrix, E. camaldulensis subsp. refulgens and Melaleuca argentea low isolated clumps of trees over Acacia trachycarpa and M. glomerata tall isolated clumps of shrubs over Triodia epactia low isolated clumps of hummock grasses.*

Condition: Good **Disturbance Type:** Grazing,Litter,Fauna tracks/scats
Fire Age: >10 years

SPECIES LIST

Taxon	Height (cm)	Cover (%)	Notes
Acacia ampliceps	100	0.1	
Acacia pyrifolia var. pyrifolia	100	0.1	
Eucalyptus camaldulensis subsp. refulgens	800	0.5	
Cassytha capillaris	100	0.1	
Cyperus vaginatus	50	0.1	
Eucalyptus victrix	800	1	
Melaleuca argentea	450	1	
Eulalia aurea	50	0.1	
Acacia trachycarpa	250	1	
Melaleuca glomerata	250	1	
Microstachys chamaelea	30	0.1	
Stemodia viscosa	40	0.1	
Triodia epactia	40	1	

FLORA SITE SHEET

Project Name	Atlas Ridley Biological Survey			
Site:	AR42			
Location	MGA 50	714592 **mE**	7747015 **mN**	
Described by:	GB,JH			
Date:	7-03-2024			
Type:	QUADRAT			
Landform:	Plains			
Slope:	Flat			
Rock Type:	N/A			
Soil Type:	Clay,Loam,Sand			
Soil Colour:	Brown,Orange			

Vegetation: *Acacia stellaticeps low isolated clumps of shrubs over Triodia epactia low open hummock grassland.*

Condition:	Very Good	**Disturbance Type:**	Grazing,Fauna tracks/scats
Fire Age:	1-5 years		

SPECIES LIST

Taxon	Height (cm)	Cover (%)	Notes
Acacia stellaticeps	50	5	
Bonamia alatisemina	10	0.1	
Pluchea ferdinandi-muelleri	60	0.1	
Triodia epactia	40	40	

FLORA SITE SHEET

Project Name	Atlas Ridley Biological Survey		
Site:	AR43		
Location	MGA 50	711657 **mE**	7746351 **mN**
Described by:	GB,JH		
Date:	7-03-2024		
Type:	QUADRAT		
Landform:	Alluvial flat		
Slope:	Flat		
Rock Type:	N/A		
Soil Type:	Clay,Sand		
Soil Colour:	Brown,Orange		

Vegetation: *Pluchea ferdinandi-muelleri low isolated shrubs over Triodia secunda and T. epactia low open hummock grassland.*

Condition:	Good	**Disturbance Type:**	Grazing,Fauna tracks/scats,Infrastructure
Fire Age:	1-5 years		

SPECIES LIST

Taxon	Height (cm)	Cover (%)	Notes
Bonamia linearis	20	0.1	
Eriachne obtusa	10	0.5	
Pluchea ferdinandi-muelleri	50	0.5	
Triodia epactia	20	0.5	
Triodia secunda	20	40	

FLORA SITE SHEET

Project Name	Atlas Ridley Biological Survey		
Site:	AR44		
Location	MGA 50	717019 **mE**	7749321 **mN**
Described by:	GB,JH		
Date:	7-03-2024		
Type:	RELEVE		
Landform:	Ironstone ridge		
Slope:	Steep		
Rock Type:	Ironstone		
Soil Type:	Gravel		
Soil Colour:	Brown		

Vegetation: *Ficus brachypoda low isolated clumps of trees over Triodia epactia low sparse hummock grassland.*

Condition:	Very Good	**Disturbance Type:**	Weeds
Fire Age:	>10 years		

SPECIES LIST

Taxon	Height (cm)	Cover (%)	Notes
Acacia colei var. colei	200	0.1	
Acacia tumida var. pilbarensis	200	0.1	
Carissa lanceolata	200	0.1	
**Cenchrus ciliaris*	30	0.1	
Cheilanthes sp.	10	0.1	
Eriachne mucronata	30	0.1	
Ficus brachypoda	350	0.5	
Solanum horridum	30	0.1	
Triodia epactia	30	15	

FLORA SITE SHEET

Project Name	Atlas Ridley Biological Survey		
Site:	AR45		
Location	MGA 50	717145 **mE**	7749312 **mN**
Described by:	GB,JH		
Date:	7-03-2024		
Type:	RELEVE		
Landform:	Ironstone hilltop		
Slope:	Moderate		
Rock Type:	Ironstone		
Soil Type:	Gravel		
Soil Colour:	Orange		

Vegetation: *Acacia inaequilatera tall isolated clumps of shrubs over A. stellaticeps low isolated clumps of shrubs over Triodia epactia low open hummock grassland.*

Condition:	Very Good	**Disturbance Type:**	Infrastructure
Fire Age:	>10 years		

SPECIES LIST

Taxon	Height (cm)	Cover (%)	Notes
Acacia inaequilatera	350	0.5	
Acacia stellaticeps	30	0.5	
Acacia tumida var. pilbarensis	100	0.1	
Triodia epactia	30	29	

FLORA SITE SHEET

Project Name	Atlas Ridley Biological Survey			
Site:	AR46			
Location	MGA 50	717042 **mE**	7749227 **mN**	
Described by:	GB,JH			
Date:	7-03-2024			
Type:	QUADRAT			
Landform:	Foothills			
Slope:	Gentle			Photo: unavailable
Rock Type:	N/A			
Soil Type:	Clay,Sand			
Soil Colour:	Orange			

Vegetation: *Acacia tumida var. pilbarensis mid sparse shrubland over Triodia epactia low sparse hummock grassland.*

Condition:	Very Good	**Disturbance Type:**	Infrastructure
Fire Age:	1-5 years		

SPECIES LIST

Taxon	Height (cm)	Cover (%)	Notes
Acacia tumida var. pilbarensis	200	15	
Bonamia erecta	20	0.1	
Corynotheca sp.	30	0.1	
Eragrostis eriopoda	30	0.1	
?Afrohybanthus sp	10	0.1	
Grevillea pyramidalis subsp. leucadendron	20	0.1	
Ipomoea muelleri	10	0.1	
Triodia epactia	30	20	

FLORA SITE SHEET

Project Name Atlas Ridley Biological Survey
Site: AR47
Location MGA 50 705551 **mE** 7743565 **mN**

Described by: GB,JH
Date: 7-03-2024
Type: QUADRAT

Landform: Major drainage
Slope: Flat
Rock Type: N/A
Soil Type: Sand
Soil Colour: Beige

Vegetation: *Melaleuca argentea and Eucalyptus camaldulensis subsp. refulgens low open woodland over Acacia ampliceps, A. trachycarpa and M. glomerata mid isolated clumps of shrubs over Eulalia aurea and *Cenchrus ciliaris low isolated clumps of tussock grasses.*

Condition: Good **Disturbance Type:** Weeds,Grazing,Litter,Infrastructure
Fire Age: >10 years

SPECIES LIST

Taxon	Height (cm)	Cover (%)	Notes
Acacia ampliceps	200	0.5	
Acacia colei var. colei	200	0.1	
Acacia trachycarpa	200	0.5	
Aristida holathera var. holathera	15	0.1	
Arivela viscosa	20	0.1	
Cassytha capillaris	30	0.5	
**Cenchrus ciliaris*	30	2	
Corchorus laniflorus	50	0.1	
Crotalaria cunninghamii subsp. sturtii	70	0.1	
Cynanchum floribundum	30	0.1	
Cyperus vaginatus	30	0.1	
Eucalyptus camaldulensis subsp. refulgens	900	1	
Eulalia aurea	50	2	
Euphorbia australis var. subtomentosa	10	0.1	
Euphorbia trigonosperma	10	0.1	
Bonamia linearis	10	0.1	
Goodenia lamprosperma	30	0.1	
Indigofera linnaei	10	0.1	
Melaleuca argentea	500	15	
Melaleuca glomerata	200	0.5	
Microstachys chamaelea	40	0.1	
Operculina aequisepala	30	0.1	
**Passiflora foetida*	30	0.1	
Ptilotus fusiformis	30	0.1	
Rhynchosia minima	30	0.1	
Stemodia viscosa	30	0.1	
Tinospora smilacina	5	0.1	
Trichodesma zeylanicum var. zeylanicum	70	0.1	
Triodia epactia	30	1	
Vigna lanceolata var. lanceolata	20	0.1	
Wahlenbergia tumidifructa	10	0.1	
Waltheria indica	40	0.1	

FLORA SITE SHEET

Project Name	Atlas Ridley Biological Survey		
Site:	AR48		
Location	MGA 50	697923 **mE**	7740531 **mN**
Described by:	GB,JH		
Date:	8-03-2024		
Type:	RELEVE		
Landform:	Outcropping		
Slope:	Moderate		
Rock Type:	Granite		
Soil Type:	Gravel		
Soil Colour:	Brown,Orange		

Vegetation: *Acacia ancistrocarpa and A.inaequilatera mid isolated clumps of shrubs over Triodia epactia low open hummock grassland.*

Condition: Excellent **Disturbance Type:** None
Fire Age: >10 years

SPECIES LIST

Taxon	Height (cm)	Cover (%)	Notes
Acacia ancistrocarpa	200	0.5	
Acacia colei var. colei	200	0.1	
Acacia inaequilatera	200	0.5	
Acacia stellaticeps	30	0.1	
Capparis spinosa subsp. nummularia	50	0.1	
Corymbia hamersleyana	200	0.1	
Ficus brachypoda	200	0.1	
Hakea lorea subsp. lorea	150	0.1	
Scaevola spinescens	100	0.1	
Senna glutinosa subsp. glutinosa	50	0.1	
Senna symonii	30	0.1	
Triodia epactia	20	25	

FLORA SITE SHEET

Project Name	Atlas Ridley Biological Survey			
Site:	AR49			
Location	MGA 50	697849 **mE**	7741607 **mN**	
Described by:	GB,JH			
Date:	8-03-2024			
Type:	QUADRAT			
Landform:	Plains			
Slope:	Flat			
Rock Type:	N/A			
Soil Type:	Clay,Sand			
Soil Colour:	Brown,Orange			

Vegetation: *Acacia inaequilatera and A. ancistrocarpa mid isolated clumps of shrubs over A. stellaticeps low isolated clumps of shrubs over Triodia wiseana and T.epactia low open hummock grassland.*

Condition:	Excellent	**Disturbance Type:**	None
Fire Age:	>10 years		

SPECIES LIST

Taxon	Height (cm)	Cover (%)	Notes
Acacia adoxa var. adoxa	30	0.1	
Acacia ancistrocarpa	150	2	
Acacia inaequilatera	180	3	
Acacia stellaticeps	30	0.5	
Triodia epactia	30	3	
Triodia wiseana	30	28	

FLORA SITE SHEET

Project Name	Atlas Ridley Biological Survey		
Site:	AR50		
Location	MGA 50	699765 **mE**	7742416 **mN**
Described by:	GB,JH		
Date:	8-03-2024		
Type:	RELEVE		
Landform:	Granite outcrop		
Slope:	Steep		
Rock Type:	Granite		
Soil Type:	Gravel		
Soil Colour:	Beige		

Vegetation: *Atalaya hemiglauca mid isolated clumps of shrubs over Triodia epactia low open hummock grassland.*

Condition:	Excellent	**Disturbance Type:**	None
Fire Age:	>10 years		

SPECIES LIST

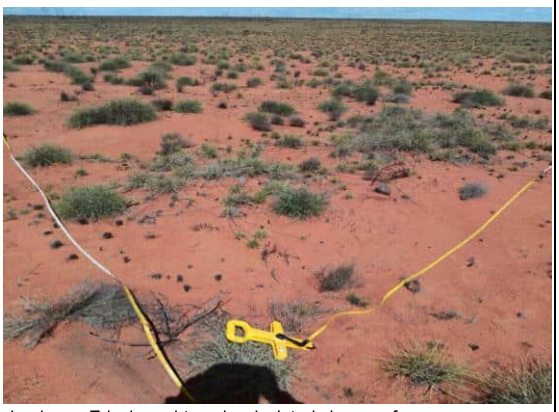
Taxon	Height (cm)	Cover (%)	Notes
Acacia ancistrocarpa	200	0.1	
Acacia colei var. colei	200	0.1	
Acacia inaequilatera	200	0.5	
Acacia orthocarpa	170	0.1	
Acacia stellaticeps	40	0.1	
Atalaya hemiglauca	140	1	
Capparis umbonata	120	0.1	
Cyperus sp.	20	0.1	
Ficus brachypoda	200	0.1	
Hakea lorea subsp. lorea	140	0.1	
Senna glutinosa subsp. glutinosa	170	0.1	
Tinospora smilacina	20	0.1	
Triodia epactia	30	28	

FLORA SITE SHEET

Project Name Atlas Ridley Biological Survey
Site: AR51
Location MGA 50 709368 **mE** 7744803 **mN**

Described by: GB,JH
Date: 8-03-2024
Type: QUADRAT

Landform: Alluvial flat
Slope: Flat
Rock Type: N/A
Soil Type: Clay,Sand
Soil Colour: Orange



Vegetation: *Triodia epactia and T. secunda low open hummock grassland over Eriachne obtusa low isolated clumps of tussock grasses.*

Condition: Very Good **Disturbance Type:** Grazing,Fauna tracks/scats
Fire Age: 1-5 years

SPECIES LIST

Taxon	Height (cm)	Cover (%)	Notes
Eriachne obtusa	10	1	
Pluchea dentex	30	0.1	
Triodia epactia	20	19	
Triodia secunda	20	10	

FLORA SITE SHEET

Project Name	Atlas Ridley Biological Survey			
Site:	AR52			
Location	MGA 50	694803 **mE**	7741190 **mN**	
Described by:	GB,JH			
Date:	9-03-2024			
Type:	QUADRAT			
Landform:	Plains			
Slope:	Flat			
Rock Type:	N/A			
Soil Type:	Clay,Sand			
Soil Colour:	Orange			

Vegetation: *Acacia inaequilatera mid isolated clumps of shrubs over A. stellaticeps low isolated clumps of shrubs over Triodia epactia low open hummock grassland.*

Condition:	Very Good	**Disturbance Type:**	Grazing,Fauna tracks/scats
Fire Age:	> 5 years		

SPECIES LIST

Taxon	Height (cm)	Cover (%)	Notes
Acacia inaequilatera	190	1	
Acacia stellaticeps	50	0.5	
Triodia epactia	30	31	

FLORA SITE SHEET

Project Name Atlas Ridley Biological Survey
Site: AR53
Location MGA 50 674107 **mE** 7738089 **mN**

Described by: GB,JH
Date: 9-03-2024
Type: QUADRAT

Landform: Plains
Slope: Flat
Rock Type: N/A
Soil Type: Clay,Sand
Soil Colour: Brown,Orange

Vegetation: *Corymbia candida subsp. candida and C. hamersleyana low open woodland over Acacia tumida var. pilbarensis and A. colei var. colei tall sparse shrubland over Triodia epactia low sparse hummock grassland.*

Condition: Very Good **Disturbance Type:** Grazing,Fauna tracks/scats
Fire Age: >10 years

SPECIES LIST

Taxon	Height (cm)	Cover (%)	Notes
Corymbia candida subsp. candida	600	3	
Acacia inaequilatera	150	0.1	
Acacia sericophylla	200	0.1	
Corymbia hamersleyana	400	3	
Acacia tumida var. pilbarensis	300	5	
Cassytha capillaris	100	0.1	
Corchorus sp.	20	0.1	
Acacia colei var. colei	200	5	
Carissa lanceolata	180	0.5	
Eulalia aurea	40	5	
Triodia epactia	40	15	

FLORA SITE SHEET

Project Name	Atlas Ridley Biological Survey		
Site:	AR54		
Location	MGA 50	672915 **mE**	7737650 **mN**
Described by:	GB,JH		
Date:	9-03-2024		
Type:	QUADRAT		
Landform:	Plains		
Slope:	Flat		
Rock Type:	N/A		
Soil Type:	Clay,Sand		
Soil Colour:	Brown,Orange		

Vegetation: *Corymbia candida subsp. candida low isolated clumps of trees over Acacia colei var. colei and A. tumida var. pilbarensis tall sparse shrubland over Triodia epactia low open hummock grassland.*

Condition:	Very Good	**Disturbance Type:**	Grazing,Fauna tracks/scats
Fire Age:	>10 years		

SPECIES LIST

Taxon	Height (cm)	Cover (%)	Notes
Acacia colei var. colei	200	10	
Acacia tumida var. pilbarensis	300	3	
Cassytha capillaris	30	0.1	
Corchorus sp.	20	0.1	
Corymbia candida subsp. candida	600	2	
Eulalia aurea	40	5	
Grevillea wickhamii subsp. hispidula	250	0.1	
Triodia epactia	40	35	

Appendix G Flora Statistical Analysis

Atlas Ridley Magnetite Project Connection

Flora and Fauna Survey Technical Report

Horizon Power

SLR Project No.: 675.072189.00001

29 July 2024

Selected inputs and outputs of the floristic cluster analysis: taxa omitted from analysis.

Taxon	Site Count	Status
?Afrohybanthus sp.	1	Omitted: Singleton
Abutilon lepidum	1	Omitted: Singleton
Acacia acradenia	1	Omitted: Singleton
Acacia sp.	1	Omitted: Singleton; may represent multiple species
Acacia trachycarpa x *tumida* var. *pilbarensis*	1	Omitted: Singleton
Aerva javanica	1	Omitted: Singleton
Boerhavia sp.	2	Omitted: May represent multiple species
Bonamia alatisemina	1	Omitted: Singleton
Bonamia pilbarensis	1	Omitted: Singleton
Bulbostylis barbata	1	Omitted: Singleton
Calotropis procera	4	Omitted: Introduced taxon
Capparis spinosa subsp. *nummularia*	1	Omitted: Singleton
Capparis umbonata	1	Omitted: Singleton
Cheilanthes sp.	1	Omitted: Singleton
Corchorus sp.	6	Omitted: May represent multiple species
Corymbia candida subsp. *indet.*	1	Omitted: Singleton; may represent multiple species
Corymbia zygophylla	1	Omitted: Singleton
Corynotheca sp.	1	Omitted: Singleton
Crotalaria ramosissima	1	Omitted: Singleton
Cymbopogon sp.	1	Omitted: Singleton
Cyperus sp.	4	Omitted: May represent multiple species
Eriachne lanata	1	Omitted: Singleton
Euphorbia tannensis subsp. eremophila	1	Omitted: Singleton
Euploca cunninghamii	1	Omitted: Singleton
Evolvulus sp.	1	Omitted: Singleton
Ficus aculeata var. indecora	1	Omitted: Singleton
Goodenia muelleriana	1	Omitted: Singleton
Goodenia stobbsiana	1	Omitted: Singleton
Indigofera monophylla	1	Omitted: Singleton
Indigofera oblongifolia	1	Omitted: Singleton; introduced species
Maireana melanocoma	1	Omitted: Singleton
Malvaceae sp.	1	Omitted: Singleton
Nellica maderaspatensis	1	Omitted: Singleton
Neptunia sp.	1	Omitted: Singleton
Notoleptopus decaisnei	1	Omitted: Singleton
Operculina aequisepala	1	Omitted: Singleton
Passiflora foetida	2	Omitted: Introduced taxon
Poaceae sp.	4	Omitted: May represent multiple species
Ptilotus fusiformis	1	Omitted: Singleton
Ptilotus sp.	2	Omitted: May represent multiple species
Scaevola spinescens	1	Omitted: Singleton
Senna artemisioides subsp. helmsii	1	Omitted: Singleton
Senna symonii	1	Omitted: Singleton
Sida sp.	1	Omitted: Singleton
Solanum diversiflorum	1	Omitted: Singleton
Solanum horridum	1	Omitted: Singleton
Solanum sp.	2	Omitted: May represent multiple species
Sporobolus australasicus	1	Omitted: Singleton
Stemodia grossa	1	Omitted: Singleton
Terminalia circumulata	1	Omitted: Singleton
Themeda triandra	1	Omitted: Singleton
Trianthema triquetrum	1	Omitted: Singleton
Trichodesma zeylanicum var. *zeylanicum*	1	Omitted: Singleton
Triodia sp.	4	Omitted: May represent multiple species
Triodia wiseana	1	Omitted: Singleton
Triumfetta clementii	1	Omitted: Singleton
Triumfetta sp.	1	Omitted: Singleton
Vachellia farnesiana	1	Omitted: Singleton; introduced species
Wahlenbergia tumidifructa	1	Omitted: Singleton

Appendix H Fauna Database Search Results

Atlas Ridley Magnetite Project Connection

Flora and Fauna Survey Technical Report

Horizon Power

SLR Project No.: 675.072189.00001

29 July 2024

Conservation Status: State - Listed under Biodiversity Conservation Act 2016 or Department of Biodiversity, Conservation and Attractions Conservation, Commonwealth - Listed under Environmental Protection and Biodiversity Conservation Act 1999. CR - Critically Endangered, EN - Endangered, VU - Vulnerable, MI - Migratory, CD - Conservation Dependent fauna, OS - Other Specially Protected fauna, MA - Marine, P - Listed as Priority by DBCA.
Database: NM - NatureMap, PMST - EPBC Protected Matters Search Tool, DBCA - DBCA Threatened and Priority Fauna database search, Field - Recorded during the current field survey.
Literature: A - Ridley Detailed Terrestrial Vertebrate Fauna Survey (Biota, 2024)

Literature: B - Ridley Services Corridors Basic and Targeted Fauna Survey (Biota, 2023)

Literature: C - Detailed terrestrial fauna and targeted Bilby survey for the Port Hedland Solar Farm Project (Pheonix Environmental, 2022)

Literature: D - Wodgina Gas Pipeline targeted Fauna Survey (360 Environmental Pty Ltd, 2018)

Literature: E - Wodgina Project: Level 1 Fauna Survey, Targeted Conservation Significant Fauna Survey and Desktop Assessment (Stantec Australia Pty Ltd, 2018)

Literature: F - Pardoo Stage 3 Irrigation Project and 80 Mile Beach Ramsar Site Fauna Assessment (Bamford Consulting Ecologists, 2017b)

Literature: G - Assessment of the Bilby Macrotis lagotis Pardoo Station; Stage 2 areas (Bamford Consulting Ecologists, 2017a)

Literature: H - Supplementary Flora and Vegetation Survey and Terrestrial Fauna Survey for the Balla Balla Infrastructure Group Ltd (Phoenix Environmental, 2018)

Literature: I - Assessment of the Bilby Macrotis lagotis Pardoo Station; Stage 2 and 3 project areas (Bamford Consulting Ecologists, 2016)

Literature: J - Terrestrial Fauna Surveys for the Balla Balla Railway Project (Phoenix Environmental, 2014)

Family	Scientific Name	Common Name	Conservation Status		Database			Field	Literature									
			State	Commonwealth	NM	PMST	DBCA		A	B	C	D	E	F	G	H	I	J
Amphibia																		
Limnodynastidae	*Neobatrachus aquilonius*	Northern Burrowing Frog	-	-	x				x		x							
Limnodynastidae	*Neobatrachus sutor*	Shoemaker Frog	-	-	x													
Limnodynastidae	*Notaden nichollsi*	Desert Spadefoot	-	-	x				x		x							
Limnodynastidae	*Platyplectrum spenceri*	Centralian Burrowing Frog	-	-	x				x		x							
Myobatrachidae	*Uperoleia glandulosa*	Glandular Toadlet	-	-	x						x							
Myobatrachidae	*Uperoleia micromeles*	Tanami Toadlet	-	-	x													
Myobatrachidae	*Uperoleia russelli*	Northwest Toadlet	-	-	x													
Myobatrachidae	*Uperoleia saxatilis*	Pilbara Toadlet	-	-	x													
Myobatrachidae	*Uperoleia talpa*	Ratcheting Toadlet	-	-	x													
Pelodryadidae	*Cyclorana australis*	Giant Frog	-	-	x				x									
Pelodryadidae	*Cyclorana maini*	Sheep Frog	-	-	x				x		x							
Pelodryadidae	*Litoria caerulea*	Green Tree Frog	-	-	x													
Pelodryadidae	*Litoria ridibunda*	Western Laughing Tree Frog	-	-	x													
Pelodryadidae	*Litoria rubella*	Little Red Tree Frog	-	-	x				x		x							x
Aves																		
Acanthizidae	*Acanthiza chrysorrhoa*	Yellow-rumped Thornbill	-	-	x													
Acanthizidae	*Gerygone fusca*	Western Gerygone	-	-	x				x	x								
Acanthizidae	*Gerygone tenebrosa*	Dusky Gerygone	-	-	x													
Acanthizidae	*Smicrornis brevirostris*	Weebill	-	-	x				x									x
Accipitridae	*Accipiter cirrocephalus*	Collared Sparrowhawk	-	-	x				x	x								
Accipitridae	*Accipiter fasciatus*	Brown Goshawk	-	MA	x				x									x
Accipitridae	*Aquila audax*	Wedge-tailed Eagle	-	-	x			x	x	x			x					x
Accipitridae	*Circus approximans*	Swamp Harrier	-	MA	x													x
Accipitridae	*Circus assimilis*	Spotted Harrier	-	-	x				x	x								x
Accipitridae	*Elanus axillaris*	Black-shouldered Kite	-	-	x				x									
Accipitridae	*Erythrotriorchis radiatus*	Red Goshawk	VU	EN		x												
Accipitridae	*Haliaeetus leucogaster*	White-bellied Sea-eagle	-	MA	x	x			x	x								
Accipitridae	*Haliastur indus*	Brahminy Kite	-	MA	x				x		x							
Accipitridae	*Haliastur sphenurus*	Whistling Kite	-	MA	x				x	x			x					
Accipitridae	*Hamirostra melanosternon*	Black-breasted Buzzard	-	-	x				x				x					
Accipitridae	*Hieraaetus morphnoides*	Little Eagle	-	-	x				x									x
Accipitridae	*Lophoictinia isura*	Square-tailed Kite	-	-	x													
Accipitridae	*Milvus migrans*	Black Kite	-	-	x			x					x					x
Acrocephalidae	*Acrocephalus australis*	Australian Reed Warbler	-	MA	x													
Aegothelidae	*Aegotheles cristatus*	Australian Owlet-nightjar	-	-	x				x	x								x
Alaudidae	*Mirafra javanica*	Horsfield's Bush Lark	-	-	x			x	x	x	x							x

Alcedinidae	*Dacelo leachii*	Blue-winged Kookaburra	-	-	x				x				x					x
Alcedinidae	*Todiramphus chloris (Wallacea transition point from T. sordidus)*	Collared Kingfisher	-	-	x													
Alcedinidae	*Todiramphus pyrrhopygius*	Red-backed Kingfisher	-	-	x				x	x			x					x
Alcedinidae	*Todiramphus sanctus*	Sacred Kingfisher	-	MA	x			x	x									x
Alcedinidae	*Todiramphus sordidus pilbara*	Pilbara Collared Kingfisher	-	-	x													
Anatidae	*Anas gracilis*	Grey Teal	-	-	x				x	x								
Anatidae	*Anas superciliosa*	Pacific Black Duck	-	-	x				x	x								x
Anatidae	*Aythya australis*	Hardhead	-	-	x					x								
Anatidae	*Chenonetta jubata*	Australian Wood Duck, Wood Duck, Maned Duck	-	-	x													
Anatidae	*Cygnus atratus*	Black Swan	-	-	x													x
Anatidae	*Dendrocygna arcuata*	Wandering Whistling Duck, Chestnut Whistling Duck	-	MA	x													
Anatidae	*Dendrocygna eytoni*	Plumed Whistling Duck	-	-	x					x								
Anatidae	*Malacorhynchus membranaceus*	Pink-eared Duck	-	-	x													
Anatidae	*Spatula rhynchotis*	Australasian Shoveler	-	-	x													
Anatidae	*Tadorna tadornoides*	Australian Shelduck, Mountain Duck	-	-						x								
Anhingidae	*Anhinga melanogaster*	Oriental Darter	-	-	x													
Anhingidae	*Anhinga novaehollandiae*	Australasian Darter	-	-	x				x									
Apodidae	*Apus pacificus*	Pacific Swift, Fork-tailed Swift	MI	MI, MA	x	x	x		x					x				
Ardeidae	*Ardea alba*	Great Egret, Eastern Great Egret	-	MA	x					x								
Ardeidae	*Ardea intermedia*	Intermediate Egret	-	MA	x													
Ardeidae	*Ardea pacifica*	White-necked Heron	-	-	x				x				x					x
Ardeidae	*Bubulcus coromandus*	Eastern Cattle Egret	-	-	x	x												
Ardeidae	*Butorides striata*	Striated Heron Mangrove Heron	-	-	x													
Ardeidae	*Egretta garzetta*	Little Egret	-	MA	x													x
Ardeidae	*Egretta novaehollandiae*	White-faced Heron	-	-	x				x	x								x
Ardeidae	*Egretta sacra*	Eastern Reef Heron, Pacific Reef Heron	-	MA	x													
Ardeidae	*Nycticorax caledonicus*	Nankeen Night Heron, Rufous Night Heron	-	MA	x													x
Artamidae	*Artamus cinereus*	Black-faced Woodswallow	-	-	x			x	x	x	x		x					
Artamidae	*Artamus cyanopterus*	Dusky Woodswallow	-	-	x													
Artamidae	*Artamus leucorynchus*	White-breasted Woodswallow	-	-	x				x	x								
Artamidae	*Artamus minor*	Little Woodswallow	-	-	x				x									x
Artamidae	*Artamus personatus*	Masked Woodswallow	-	-	x				x									x
Artamidae	*Artamus superciliosus*	White-browed Woodswallow	-	-	x													
Artamidae	*Cracticus nigrogularis*	Pied Butcherbird	-	-	x			x	x	x								x
Artamidae	*Cracticus torquatus*	Grey Butcherbird	-	-	x													
Artamidae	*Gymnorhina tibicen*	Australian Magpie	-	-	x			x										x
Burhinidae	*Burhinus grallarius*	Bush Stone-curlew, Bush Thick-knee	-	-	x													
Burhinidae	*Esacus magnirostris*	Beach Stone-curlew, Beach Thick-knee	-	MA	x													
Cacatuidae	*Cacatua galerita*	Sulphur-crested Cockatoo	-	-	x			x										
Cacatuidae	*Cacatua sanguinea*	Little Corella	-	-	x			x	x	x			x					x
Cacatuidae	*Eolophus roseicapilla*	Galah	-	-	x			x	x	x	x		x					x
Cacatuidae	*Nymphicus hollandicus*	Cockatiel	-	-	x				x	x	x							x
Campephagidae	*Coracina novaehollandiae*	Black-faced Cuckooshrike	-	MA	x			x	x	x	x		x					x
Campephagidae	*Lalage tricolor*	White-winged Triller	-	-	x				x									x
Caprimulgidae	*Eurostopodus argus*	Spotted Nightjar	-	MA	x				x				x					x
Casuariidae	*Dromaius novaehollandiae*	Emu	-	-	x			x										x
Charadriidae	*Charadrius leschenaultii*	Greater Sand Plover	VU	VU, MI, MA	x	x	x											
Charadriidae	*Charadrius mongolus*	Lesser Sand Plover	EN	EN, MI, MA	x	x	x											
Charadriidae	*Charadrius ruficapillus*	Red-capped Plover	-	MA	x	x				x								

Charadriidae	*Charadrius veredus*	Oriental Plover	MI	MI, MA	x	x	x							x				
Charadriidae	*Elseyornis melanops*	Black-fronted Dotterel	-	-	x				x	x								x
Charadriidae	*Erythrogonys cinctus*	Red-kneed Dotterel	-	-	x					x								
Charadriidae	*Pluvialis fulva*	Pacific Golden Plover	MI	MI, MA	x	x	x											
Charadriidae	*Pluvialis squatarola*	Grey Plover	MI	VU, MI, MA	x	x	x											
Charadriidae	*Vanellus miles*	Masked Lapwing	-	-	x					x								
Charadriidae	*Vanellus tricolor*	Banded Lapwing	-	-	x				x	x								
Ciconiidae	*Ephippiorhynchus asiaticus*	Black-necked Stork	-	-	x				x	x	x							
Cinclosomatidae	*Cinclosoma marginatum*	Western Quail-thrush	-	-	x													
Climacteridae	*Climacteris melanurus*	Black-tailed Treecreeper	-	-	x				x									
Columbidae	*Columba livia*	Domestic Pigeon, Rock Dove	-	-	x			x										
Columbidae	*Geopelia cuneata*	Diamond Dove	-	-	x			x	x	x	x		x					x
Columbidae	*Geopelia humeralis*	Bar-shouldered Dove	-	-	x													
Columbidae	*Geopelia striata*	Zebra Dove	-	-	x													
Columbidae	*Geophaps plumifera*	Spinifex Pigeon	-	-	x			x	x	x			x					x
Columbidae	*Ocyphaps lophotes*	Crested Pigeon	-	-	x			x	x	x	x		x					x
Columbidae	*Phaps chalcoptera*	Common Bronzewing	-	-	x						x							x
Columbidae	*Phaps histrionica*	Flock Bronzewing, Flock Pigeon	-	-	x				x	x								
Corvidae	*Corvus bennetti*	Little Crow	-	-	x				x	x								
Corvidae	*Corvus coronoides*	Australian Raven	-	-	x													
Corvidae	*Corvus orru*	Torresian Crow	-	-	x			x	x	x	x		x					x
Cuculidae	*Centropus phasianinus*	Pheasant Coucal	-	-	x				x									
Cuculidae	*Chalcites basalis*	Horsfield's Bronze Cuckoo	-	MA	x				x	x								
Cuculidae	*Chalcites osculans*	Black-eared Cuckoo	-	MA	x	x												
Cuculidae	*Cuculus saturatus optatus*	Horsfield's Cuckoo	MI (as *C. optatus*)	MI (*C. saturatus MA*)		x												
Cuculidae	*Heteroscenes pallidus*	Pallid Cuckoo	-	MA	x				x	x								
Dicaeidae	*Dicaeum hirundinaceum*	Mistletoebird	-	-	x													
Estrildidae	*Emblema pictum*	Painted Finch	-	-	x				x	x			x					x
Estrildidae	*Heteromunia pectoralis*	Pictorella Mannikin	-	-	x													
Estrildidae	*Neochmia ruficauda*	Star Finch	-	-	x				x	x								
Estrildidae	*Taeniopygia castanotis*	Australian Zebra Finch	-	-	x			x	x	x	x		x					x
Falconidae	*Falco berigora*	Brown Falcon	-	-	x			x	x	x	x							x
Falconidae	*Falco cenchroides*	Nankeen Kestral	-	MA	x			x	x	x	x		x					x
Falconidae	*Falco hypoleucos*	Grey Falcon	VU	VU	x	x	x											
Falconidae	*Falco longipennis*	Australian Hobby	-	-	x				x	x								x
Falconidae	*Falco peregrinus*	Peregrine Falcon	OS	-	x		x		x									
Fregatidae	*Fregata ariel*	Lesser Frigatebird	MI	MI, MA	x	x	x											
Fregatidae	*Fregata minor*	Greater Frigatebird	MI	MI, MA		x												
Glareolidae	*Glareola maldivarum*	Oriental Pratincole	MI	MI, MA	x	x	x											
Glareolidae	*Stiltia isabella*	Australian Pratincole	-	MA	x	x			x	x								
Gruidae	*Antigone rubicunda*	Brolga	-	-	x					x								
Haematopodidae	*Haematopus fuliginosus*	Sooty Oystercatcher	-	-	x													
Haematopodidae	*Haematopus longirostris*	Pied Oystercatcher	-	-	x					x								
Hirundinidae	*Cheramoeca leucosterna*	White-backed Swallow	-	-	x				x									
Hirundinidae	*Hirundo neoxena*	Welcome Swallow	-	MA	x				x									
Hirundinidae	*Hirundo rustica*	Barn Swallow	MI	MI, MA	x	x	x											
Hirundinidae	*Petrochelidon ariel*	Fairy Martin	-	-	x				x	x	x							x
Hirundinidae	*Petrochelidon nigricans*	Tree Martin	-	MA	x				x	x								x
Laridae	*Anous stolidus*	Common Noddy, Brown Noddy	MI	MI, MA		x												
Laridae	*Chlidonias hybrida*	Whiskered Tern	-	MA	x													
Laridae	*Chlidonias leucopterus*	White-winged Black Tern	MI	MI, MA	x		x											
Laridae	*Chroicocephalus novaehollandiae*	Silver Gull	-	-	x					x								
Laridae	*Gelochelidon macrotarsa*	Australian Gull-billed Tern	-	-	x				x	x								
Laridae	*Gelochelidon nilotica*	Gull-billed Tern	MI	MI, MA	x		x			x								
Laridae	*Hydroprogne caspia*	Caspian Tern	MI	MI, MA	x	x	x			x								
Laridae	*Onychoprion anaethetus*	Bridled Tern	MI	MI, MA	x		x											

Laridae	*Sterna dougallii*	Roseate Tern	MI	MI, MA		x	x											
Laridae	*Sterna hirundo*	Common Tern	MI	MI, MA	x		x											
Laridae	*Sternula albifrons*	Little Tern	MI	MI, MA	x	x	x			x								
Laridae	*Sternula nereis nereis*	Fairy Tern	VU	VU, MA	x		x											
Laridae	*Thalasseus bengalensis*	Lesser Crested Tern	-	MA	x	x				x								
Laridae	*Thalasseus bergii*	Greater Crested Tern, Crested Tern	MI	MI, MA	x		x			x								
Locustellidae	*Cincloramphus cruralis*	Brown Songlark	-	-	x				x	x								
Locustellidae	*Cincloramphus mathewsi*	Rufous Songlark	-	-	x				x	x			x					
Locustellidae	*Poodytes carteri*	Spinifexbird	-	-	x				x	x	x		x					x
Maluridae	*Amytornis whitei*	Rufous Grasswren	-	-	x													
Maluridae	*Malurus assimilis*	Purple-backed Fairywren	-	-	x			x	x	x								x
Maluridae	*Malurus leucopterus*	White-winged Fairywren	-	-	x			x	x	x	x							
Maluridae	*Stipiturus ruficeps*	Rufous-crowned Emu-wren	-	-	x													
Meliphagidae	*Acanthagenys rufogularis*	Spiny-cheeked Honeyeater	-	-	x													
Meliphagidae	*Certhionyx variegatus*	Pied Honeyeater	-	-	x				x									
Meliphagidae	*Epthianura aurifrons*	Orange Chat	-	-	x													
Meliphagidae	*Epthianura tricolor*	Crimson Chat	-	-	x				x									
Meliphagidae	*Gavicalis virescens*	Singing Honeyeater	-	-	x			x	x	x	x		x					x
Meliphagidae	*Lichmera indistincta*	Brown Honeyeater	-	-	x			x	x	x			x					x
Meliphagidae	*Manorina flavigula*	Yellow-throated Miner	-	-	x			x	x	x	x		x					x
Meliphagidae	*Melithreptus gularis*	Black-chinned Honeyeater	-	-	x				x									
Meliphagidae	*Philemon citreogularis*	Little Friarbird	-	-	x													
Meliphagidae	*Ptilotula keartlandi*	Grey-headed Honeyeater	-	-	x				x				x					x
Meliphagidae	*Ptilotula penicillata*	White-plumed Honeyeater	-	-	x			x	x	x	x		x					x
Meliphagidae	*Sugomel nigrum*	Black Honeyeater	-	-	x													
Meropidae	*Merops ornatus*	Rainbow Bee-eater	-	MA	x	x		x	x	x	x		x					x
Monarchidae	*Grallina cyanoleuca*	Magpie-lark	-	MA	x			x	x	x	x		x					x
Motacillidae	*Anthus australis*	Australian Pipit	-	MA (as *A. novaeseelandiae*)	x			x	x	x								
Motacillidae	*Motacilla cinerea*	Grey Wagtail	MI	MI, MA		x												
Motacillidae	*Motacilla tschutschensis*	Eastern Yellow Wagtail	MI	MI, MA	x	x	x											
Neosittidae	*Daphoenositta chrysoptera*	Varied Sittella	-	-	x													
Oceanitidae	*Oceanites oceanicus*	Wilson's Storm Petrel	MI	MI, MA	x		x											
Oreoicidae	*Oreoica gutturalis*	Crested Bellbird	-	-	x					x								
Otididae	*Ardeotis australis*	Australian Bustard	-	-	x			x	x	x								x
Pachycephalidae	*Colluricincla harmonica*	Grey Shrikethrush	-	-	x				x									x
Pachycephalidae	*Pachycephala lanioides*	White-breasted Whistler	-	-	x													
Pachycephalidae	*Pachycephala melanura*	Mangrove Golden Whistler	-	-	x													
Pachycephalidae	*Pachycephala rufiventris*	Rufous Whistler	-	-	x													x
Pandionidae	*Pandion haliaetus*	Osprey	MI	MI, MA	x	x	x											
Pardalotidae	*Pardalotus rubricatus*	Red-browed Pardalote	-	-	x				x	x								x
Pardalotidae	*Pardalotus striatus*	Striated Pardalote	-	-	x													x
Passeridae	*Passer montanus*	Eurasian Tree Sparrow	-	-	x													
Pelecanidae	*Pelecanus conspicillatus*	Australian Pelican	-	MA	x				x	x								x
Petroicidae	*Melanodryas cucullata*	Hooded Robin	-	-	x													x
Petroicidae	*Peneothello pulverulenta*	Mangrove Robin	-	-	x													
Petroicidae	*Petroica goodenovii*	Red-capped Robin	-	-	x													
Phaethontidae	*Phaethon lepturus*	White-tailed Tropicbird	MI	MI, MA		x												
Phaethontidae	*Phaethon rubricauda*	Red-tailed Tropicbird	MI, P4	MI, MA		1												
Phalacrocoracidae	*Microcarbo melanoleucos*	Little Pied Cormorant	-	-	x													x
Phalacrocoracidae	*Phalacrocorax carbo*	Great Cormorant	-	-	x													
Phalacrocoracidae	*Phalacrocorax sulcirostris*	Little Black Cormorant	-	-	x													
Phalacrocoracidae	*Phalacrocorax varius*	Pied Cormorant, Australian Pied Cormorant	-	-	x					x								
Phasianidae	*Coturnix pectoralis*	Stubble Quail	-	MA	x				x	x								
Phasianidae	*Synoicus ypsilophorus*	Brown Quail	-	-	x				x	x								x
Podargidae	*Podargus strigoides*	Tawny Frogmouth	-	-	x				x									
Podicipedidae	*Podiceps cristatus*	Great Crested Grebe	-	-	x													

Podicipedidae	*Poliocephalus poliocephalus*	Hoary-headed Grebe	-	-	x													
Podicipedidae	*Tachybaptus novaehollandiae*	Australasian Grebe, Black-throated Grebe	-	-	x			x	x	x								
Pomatostomidae	*Pomatostomus superciliosus*	White-browed Babbler	-	-	x													
Pomatostomidae	*Pomatostomus temporalis*	Grey-crowned Babbler	-	-	x				x				x					x
Procellariidae	*Calonectris leucomelas*	Streaked Shearwater	MI	MI, MA		x												
Procellariidae	*Macronectes giganteus*	Southern Giant Petrel	MI	EN, MI, MA		x												
Psittaculidae	*Barnardius zonarius*	Australian Ringneck	-	-	x			x	x	x								x
Psittaculidae	*Melopsittacus undulatus*	Budgerigar	-	-	x				x	x	x		x					x
Psittaculidae	*Pezoporus occidentalis*	Night Parrot	CR	EN		x												
Psittaculidae	*Purpureicephalus spurius*	Red-capped Parrot	-	-	x													
Ptilonorhynchidae	*Chlamydera guttata*	Western Bowerbird	-	-	x				x	x								x
Ptilonorhynchidae	*Chlamydera maculata*	Spotted Bowerbird	-	-	x													
Rallidae	*Fulica atra*	Eurasian Coot	-	-	x													
Rallidae	*Hypotaenidia philippensis*	Buff-banded Rail	-	MA	x													
Rallidae	*Porphyrio melanotus*	Australasian Swamphen	-	MA	x													
Rallidae	*Porzana fluminea*	Australian Spotted Crake, Australian Crake	-	-	x													
Rallidae	*Tribonyx ventralis*	Black-tailed Native-hen	-	-	x													
Recurvirostridae	*Cladorhynchus leucocephalus*	Banded Stilt	-	-	x													
Recurvirostridae	*Himantopus himantopus*	Black-winged Stilt	-	MA	x	x				x								
Recurvirostridae	*Recurvirostra novaehollandiae*	Red-necked Avocet	-	MA	x	x												
Rhipiduridae	*Rhipidura albiscapa*	Grey Fantail	-	-	x													
Rhipiduridae	*Rhipidura leucophrys*	Willie Wagtail	-	-	x			x	x	x	x		x					x
Rhipiduridae	*Rhipidura phasiana*	Mangrove Grey Fantail, Mangrove Fantail	-	-	x													
Rostratulidae	*Rostratula australis*	Australian Painted Snipe	EN	EN, MA	x	x												
Scolopacidae	*Actitis hypoleucos*	Common Sandpiper	MI	MI, MA	x	x	x											
Scolopacidae	*Arenaria interpres*	Ruddy Turnstone	MI	VU, MI, MA	x	x	x											
Scolopacidae	*Calidris acuminata*	Sharp-tailed Sandpiper	MI	VU, MI, MA	x	x	x											
Scolopacidae	*Calidris alba*	Sanderling	MI	MI, MA	x	x	x			x								
Scolopacidae	*Calidris canutus*	Red Knot	EN	VU, MI, MA	x	x	x											
Scolopacidae	*Calidris falcinellus*	Broad-billed Sandpiper	MI	MI, MA	x	x	x											
Scolopacidae	*Calidris ferruginea*	Curlew Sandpiper	CR	CE, MI, MA	x	x	x											
Scolopacidae	*Calidris melanotos*	Pectoral Sandpiper	MI	MI, MA	x	x	x											
Scolopacidae	*Calidris pugnax*	Ruff	MI	MI, MA (as *P. pugnax*)	x		x											
Scolopacidae	*Calidris ruficollis*	Red-necked Stint	MI	MI, MA	x	x	x											
Scolopacidae	*Calidris subminuta*	Long-toed Stint	MI	MI, MA	x	x	x											
Scolopacidae	*Calidris tenuirostris*	Great Knot	CR	VU, MI, MA	x	x	x											
Scolopacidae	*Gallinago megala*	Swinhoe's Snipe	MI	MI, MA	x		x											
Scolopacidae	*Gallinago stenura*	Pin-tailed Snipe	MI	MI, MA	x		x											
Scolopacidae	*Limnodromus semipalmatus*	Asian Dowitcher	MI	VU, MI, MA	x	x	x											
Scolopacidae	*Limosa lapponica*	Bar-tailed Godwit	MI (*L. l. bauerii* VU; *L. l. menzbieri* CR)	MI, MA (*L. lapponica bauerii* Chris. Is. EN; *L. lapponica menzbieri* EN)	x	x	x			x								
Scolopacidae	*Limosa limosa*	Black-tailed Godwit	MI	EN, MI, MA	x	x	x											
Scolopacidae	*Numenius madagascariensis*	Far Eastern Curlew, Eastern Curlew	CR	CE, MI, MA	x	x	x		x									
Scolopacidae	*Numenius minutus*	Little Curlew	MI	MI, MA	x	x	x											
Scolopacidae	*Numenius phaeopus*	Whimbrel	MI	MI, MA	x	x	x			x								
Scolopacidae	*Phalaropus lobatus*	Red-necked Phalarope	MI	MI, MA	x	x	x											
Scolopacidae	*Tringa brevipes*	Grey-tailed Tattler	MI, P4	MI, MA	x	x	x											
Scolopacidae	*Tringa glareola*	Wood Sandpiper	MI	MI, MA	x	x	x											
Scolopacidae	*Tringa nebularia*	Common Greenshank	MI	EN, MI, MA	x	x	x											
Scolopacidae	*Tringa stagnatilis*	Marsh Sandpiper	MI	MI, MA	x	x	x											
Scolopacidae	*Xenus cinereus*	Terek Sandpiper	MI	VU, MI, MA	x	x	x											
Strigidae	*Ninox boobook*	Boobook Owl	-	(*N. boobook boobook* MA)	x				x				x					

Strigidae	*Ninox connivens*	Barking Owl	(*N. connivens connivens* SW subpop. P3)	-	x													
Sulidae	*Sula leucogaster*	Brown Booby	MI	MI, MA	x	x	x											
Threskiornithidae	*Platalea flavipes*	Yellow-billed Spoonbill	-	-	x													
Threskiornithidae	*Platalea regia*	Royal Spoonbill	-	-	x													
Threskiornithidae	*Plegadis falcinellus*	Glossy Ibis	MI	MI, MA	x		x											
Threskiornithidae	*Threskiornis molucca*	Australian White Ibis	-	MA	x													
Threskiornithidae	*Threskiornis spinicollis*	Straw-necked Ibis	-	MA	x					x								
Turnicidae	*Turnix pyrrhothorax*	Red-chested Buttonquail	-	-	x													
Turnicidae	*Turnix velox*	Little Buttonquail	-	-	x				x	x	x		x					
Tytonidae	*Tyto javanica*	Eastern Barn Owl	-	-	x				x									
Zosteropidae	*Zosterops luteus*	Yellow White-eye, Canary White-eye	-	-	x				x	x								
Mammalia																		
Bovidae	*Bos primigenius taurus*	European Cattle	-	-	x			x	x	x	x		x					x
Bovidae	*Capra aegagrus hircus*	Goat	-	-	x													
Bovidae	*Ovis aries*	Sheep	-	-						x								
Camelidae	*Camelus dromedarius*	Dromedary Camel	-	-						x								x
Canidae	*Canis familiaris*	Dingo / Dog	-	-	x				x	x	x		x					
Canidae	*Vulpes vulpes*	Red Fox	-	-	x				x		x		x					x
Dasyuridae	*Antechinomys laniger*	Kultarr	-	-	x													
Dasyuridae	*Dasycercus blythi*	Brush-tailed Mulgara, Ampurta	P4	-	x		x		x	x	x	x		x	x		x	
Dasyuridae	*Dasycercus cristicauda*	Crest-tailed Mulgara	P4	-	x		x											
Dasyuridae	*Dasykaluta rosamondae*	Kaluta	-	-	x				x		x	x	x					
Dasyuridae	*Dasyurus hallucatus*	Northern Quoll	EN	EN	x	x	x		x	x			x			x		x
Dasyuridae	*Ningaui timealeyi*	Pilbara Ningaui	-	-	x			x	x									x
Dasyuridae	*Planigale ingrami*	Long-tailed Planigale	-	-	x													
Dasyuridae	*Planigale kendricki*	Orange-headed Pilbara Planigale	-	-					x									
Dasyuridae	*Planigale tealei*	Cracking-clay Pilbara Planigale	-	-	x													
Dasyuridae	*Pseudantechinus roryi*	Rory's False Antechinus	-	-	x													
Dasyuridae	*Pseudantechinus woolleyae*	Woolley's Pseudantechinus	-	-	x				x									
Dasyuridae	*Sminthopsis macroura*	Stripe-faced Dunnart	-	-	x			x	x				x					
Dasyuridae	*Sminthopsis youngsoni*	Lesser Hairy-footed Dunnart	-	-	x				x		x							
Emballonuridae	*Saccolaimus flaviventris*	Yellow-bellied Sheath-tailed Bat	-	-	x				x	x								x
Emballonuridae	*Taphozous georgianus*	Common Sheath-tailed Bat	-	-	x			?	x	x			x					x
Equidae	*Equus ferus caballus*	Horse	-	-	x													
Felidae	*Felis catus*	Cat	-	-	x			x	x	x	x	x	x					x
Leporidae	*Oryctolagus cuniculus*	Rabbit	-	-	x													
Macropodidae	*Lagostrophus fasciatus fasciatus*	Banded Hare-wallaby	VU	VU	x		x											
Macropodidae	*Osphranter robustus*	Common Wallaroo	-	-	x			x	x	x			x					x
Macropodidae	*Osphranter rufus*	Red Kangaroo, Marlu	-	-	x			x	x	x	x							
Macropodidae	*Petrogale rothschildi*	Rothschild's Rock-wallaby	-	-	x								x					x
Megadermatidae	*Macroderma gigas*	Ghost Bat	VU	VU	x	x	x		x				x					
Molossidae	*Austronomus australis*	White-striped Free-tailed Bat	-	-	x				x	x			x					
Molossidae	*Chaerephon jobensis colonicus*	Greater Northern Free-tailed Bat	-	-	x			x	x	x	x							x
Molossidae	*Ozimops cobourgianus*	Northern Coastal Free-tailed Bat	P1	-	x		x											
Molossidae	*Ozimops lumsdenae*	Northern Free-tailed Bat	-	-					x									
Muridae	*Leggadina lakedownensis*	Short-tailed Mouse	P4	-	x		x											
Muridae	*Mus musculus*	House Mouse	-	-	x													
Muridae	*Notomys alexis alexis*	Spinifex Hopping-mouse	-	-	x				x		x	x	x					x
Muridae	*Pseudomys chapmani*	Western Pebble-mound Mouse	P4	-	x		x	x	x	x			x					x
Muridae	*Pseudomys delicatulus*	Delicate Mouse	-	-	x				x									

Muridae	*Pseudomys desertor*	Desert Mouse	-	-	x			x	x									x
Muridae	*Pseudomys hermannsburgensis*	Sandy Inland Mouse	-	-	x				x		x							
Muridae	*Pseudomys nanus nanus*	Western Chestnut Mouse	-	-	x													
Muridae	*Rattus rattus*	Black Rat	-	-	x													
Muridae	*Zyzomys argurus*	Common Rock-rat	-	-	x				x				x					x
Pteropodidae	*Pteropus alecto gouldii*	Black Flying-fox	-	-					x									
Pteropodidae	*Pteropus scapulatus*	Little Red Flying-fox	-	-	x				x									
Rhinonycteridae	*Rhinonicteris aurantia Pilbara form*	Pilbara Leaf-nosed Bat	VU	VU	x	x	x	x	x			x	x					
Suidae	*Sus scrofa*	Pig	-	-					x									
Tachyglossidae	*Tachyglossus aculeatus acanthion*	Short-beaked Echidna	-	-	x				x				x					x
Thylacomyidae	*Macrotis lagotis*	Bilby, Dalgyte	VU	VU	x	x	x		x		x	x		x		x		
Vespertilionidae	*Chalinolobus gouldii*	Gould's Wattled Bat	-	-	x			x	x	x	x		x					x
Vespertilionidae	*Nyctophilus arnhemensis*	Arnhem Long-eared Bat	-	-	x													
Vespertilionidae	*Nyctophilus geoffroyi geoffroyi*	Lesser Long-eared Bat	-	-	x				x	x								
Vespertilionidae	*Scotorepens greyii*	Little Broad-nosed Bat	-	-	x			x	x	x	x		x					x
Vespertilionidae	*Vespadelus finlaysoni*	Finlayson's Cave Bat	-	-	x			x	x	x	x		x					x
Reptilia																		
Agamidae	*Ctenophorus caudicinctus*	Western Ring-tailed Dragon	-	-	x			x	x	x			x					x
Agamidae	*Ctenophorus isolepis*	Central Military Dragon	-	-	x			x	x	x	x		x					x
Agamidae	*Ctenophorus nuchalis*	Central Netted Dragon	-	-	x				x	x	x							x
Agamidae	*Ctenophorus reticulatus*	Western Netted Dragon	-	-	x													
Agamidae	*Diporiphora paraconvergens*	Grey-striped Western Desert Dragon	-	-	x													
Agamidae	*Diporiphora pindan*	Pindan Dragon	-	-	x													
Agamidae	*Diporiphora valens*	Southern Pilbara Tree Dragon	-	-	x													
Agamidae	*Diporiphora vescus*	Northern Pilbara Tree Dragon	-	-	x													
Agamidae	*Gowidon longirostris*	Long-nosed Dragon	-	-	x			x	x	x	x							x
Agamidae	*Lophognathus gilberti*	Top End Ta-ta Dragon	-	-	x													
Agamidae	*Pogona minor*	Western Bearded Dragon	-	-	x				x									x
Agamidae	*Tympanocryptis cephalus*	Coastal Pebble-mimic Dragons	-	-														x
Carphodactylidae	*Nephrurus levis*	Smooth knob-tailed gecko	-	-	x						x							
Chelidae	*Chelodina steindachneri*	Flat-shelled Turtle	-	-	x				x									
Diplodactylidae	*Diplodactylus bilybara*	Western Fat-tailed Gecko	-	-					x		x							
Diplodactylidae	*Diplodactylus conspicillatus*	Variable Fat-tailed Gecko	-	-	x													x
Diplodactylidae	*Diplodactylus laevis*	Desert Fat-tailed Gecko	-	-					x									
Diplodactylidae	*Lucasium woodwardi*	Pilbara Ground Gecko	-	-	x				x		x							x
Diplodactylidae	*Oedura fimbria*	Western Marbled Velvet Gecko	-	-														x
Diplodactylidae	*Rhynchoedura ornata*	Western Beaked Gecko	-	-	x				x		x							x
Diplodactylidae	*Strophurus ciliaris aberrans*	-	-	-	x													
Diplodactylidae	*Strophurus ciliaris ciliaris*	-	-	-	x				x		x							
Diplodactylidae	*Strophurus elderi*	Jewelled Gecko	-	-	x													
Diplodactylidae	*Strophurus jeanae*	Southern Phasmid Gecko	-	-	x													
Elapidae	*Acanthophis pyrrhus*	Desert Death Adder	-	-	x				x	x								
Elapidae	*Acanthophis wellsi*	Pilbara Death Adder	-	-	x													
Elapidae	*Brachyurophis approximans*	North-western Shovel-nosed Snake	-	-	x													
Elapidae	*Demansia reticulata*	Reticulated Whipsnake	-	-	x			x	x									
Elapidae	*Demansia rufescens*	Rufous Whipsnake	-	-	x				x		x							
Elapidae	*Furina ornata*	Moon Snake	-	-	x				x									
Elapidae	*Pseudechis australis*	Mulga Snake	-	-	x			x	x		x							
Elapidae	*Pseudonaja mengdeni*	Western Brown Snake	-	-	x			x	x		x							
Elapidae	*Pseudonaja modesta*	Ringed Brown Snake	-	-	x				x									
Elapidae	*Pseudonaja nuchalis*	Gwardar; Northern Brown Snake	-	-	x													

Elapidae	*Simoselaps anomalus*	Desert Banded Snake	-	-	x				x									
Elapidae	*Suta punctata*	Spotted Snake	-	-	x				x									
Gekkonidae	*Gehyra incognita*	Northern Pilbara Crytpic Gehyra	-	-					x									
Gekkonidae	*Gehyra macra*	Large Pilbara Rock Gehyra	-	-					x									
Gekkonidae	*Gehyra media*	Medium Pilbara Spotted Rock Gehyra	-	-					x	x								
Gekkonidae	*Gehyra montium*	-	-	-					x									
Gekkonidae	*Gehyra pilbara*	Pilbara Dtella	-	-	x				x									x
Gekkonidae	*Gehyra punctata*	Spotted Pilbara Rock Dtella	-	-	x													x
Gekkonidae	*Gehyra purpurascens*	-	-	-	x													
Gekkonidae	*Gehyra variegata*	Variegated Gehyra	-	-	x				x		x							x
Gekkonidae	*Hemidactylus frenatus*	Asian House Gecko	-	-	x													
Gekkonidae	*Heteronotia binoei*	Bynoe's Gecko	-	-	x				x		x							x
Gekkonidae	*Heteronotia spelea*	Pilbara Cave Gecko	-	-	x													
Homalopsidae	*Fordonia leucobalia*	White-bellied Mangrove Snake	-	-	x													
Pygopodidae	*Delma borea*	Rusty-topped Delma	-	-	x													
Pygopodidae	*Delma butleri*	Spinifex Delma	-	-	x				x									
Pygopodidae	*Delma desmosa*	-	-	-	x				x									
Pygopodidae	*Delma nasuta*	Sharp-snouted Delma	-	-	x													
Pygopodidae	*Delma pax*	Peaceful Delma	-	-	x				x		x							x
Pygopodidae	*Delma tincta*	Excitable Delma	-	-	x				x		x							
Pygopodidae	*Lialis burtonis*	Burton's Snake-lizard	-	-	x			x	x									x
Pygopodidae	*Pygopus nigriceps*	Western Hooded Scaly-foot	-	-	x				x									
Pythonidae	*Antaresia childreni*	Children's Python	-	-	x				x									x
Pythonidae	*Antaresia perthensis*	Pygmy Python	-	-	x				x									
Pythonidae	*Aspidites melanocephalus*	Black-headed Python	-	-	x				x	x	x							
Pythonidae	*Aspidites ramsayi*	Woma	P1 (southwest subpop.)	-	x													
Pythonidae	*Liasis olivaceus barroni*	Pilbara Olive Python	VU	VU	x	x	x		x									
Scincidae	*Carlia munda*	Shaded-litter Rainbow-skink	-	-	x													x
Scincidae	*Carlia triacantha*	Desert Rainbow Skink	-	-	x				x		x							x
Scincidae	*Cryptoblepharus buchananii*	Buchanan's Snake-eyed Skink	-	-	x													
Scincidae	*Cryptoblepharus plagiocephalus*	Péron's Snake-eyed Skink	-	-	x													x
Scincidae	*Cryptoblepharus ustulatus*	Russet Snake-eyed Skink	-	-	x													
Scincidae	*Ctenotus angusticeps*	Northwestern Coastal Ctenotus	P3	-	x		x											
Scincidae	*Ctenotus duricola*	Eastern Pilbara Lined Ctenotus	-	-	x				x	x	x							
Scincidae	*Ctenotus dux*	-	-	-	x													
Scincidae	*Ctenotus grandis*	Grand Ctenotus	-	-	x			x	x	x	x							x
Scincidae	*Ctenotus hanloni*	Nimble Ctenotus	-	-	x				x		x							
Scincidae	*Ctenotus helenae*	Clay-soil Ctenotus	-	-	x				x		x							x
Scincidae	*Ctenotus pantherinus*	Leopard Ctenotus	-	-	x				x	x	x							x
Scincidae	*Ctenotus piankai*	Coarse Sands Ctenotus	-	-	x				x		x							
Scincidae	*Ctenotus rufescens*	Rufous Finesnout Ctenotus	-	-	x						x							
Scincidae	*Ctenotus saxatilis*	Rock Ctenotus	-	-	x			x	x	x	x							x
Scincidae	*Ctenotus schomburgkii*	Barred Wedge-snouted Ctenotus	-	-					x									
Scincidae	*Ctenotus serventyi*	North-western Sandy-loam Ctenotus	-	-	x			x	x		x							
Scincidae	*Ctenotus superciliaris*	Sharp-browed Ctenotus	-	-					x									
Scincidae	*Cyclodomorphus melanops*	Spinifex Slender Blue-tongue	-	-					x									x
Scincidae	*Egernia cygnitos*	Western Pilbara Spiny-tailed Skink	-	-	x													
Scincidae	*Egernia depressa*	Southern Pygmy Spiny-tailed Skink	-	-	x													

Scincidae	*Egernia epsisolus*	Eastern Pilbara Spiny-tailed Skink	-	-	x			x	x	x								
Scincidae	*Eremiascincus isolepis*	Northern Bar-lipped Skink	-	-	x													
Scincidae	*Eremiascincus musivus*	Mosaic Desert Skink	-	-	x													
Scincidae	*Eremiascincus pallidus*	Western Narrow-banded Skink	-	-	x													
Scincidae	*Eremiascincus richardsonii*	Broad-banded Sand Swimmer	-	-	x													
Scincidae	*Lerista bipes*	North-western Sandslider	-	-	x				x		x							x
Scincidae	*Lerista clara*	Sharp-blazed Three-toed Slider	-	-	x				x									
Scincidae	*Lerista jacksoni*	Jackson's Three-toed Slider	-	-	x													
Scincidae	*Lerista muelleri*	Wood Mulch-slider	-	-	x													x
Scincidae	*Lerista timida*	Timid Slider	-	-					x									
Scincidae	*Menetia greyii*	Common Dwarf Skink	-	-	x				x		x							x
Scincidae	*Menetia surda*	Western Dwarf Skink	-	-					x									
Scincidae	*Morethia ruficauda exquisita*	Lined Fire-tailed Skink	-	-	x													x
Scincidae	*Morethia ruficauda ruficauda*	Lined Fire-tailed Skink	-	-	x			x	x		x		x					
Scincidae	*Notoscincus butleri*	Lined Soil-crevice Skink	P4	-														x
Scincidae	*Notoscincus ornatus ornatus*	Ornate Soil-crevice Skink	-	-	x													x
Scincidae	*Proablepharus reginae*	Western Soil-crevice Skink	-	-	x													x
Scincidae	*Tiliqua multifasciata*	Central Blue-tongue	-	-	x			x	x	x								x
Typhlopidae	*Anilios ammodytes*	Pilbara Blind Snake	-	-	x				x									
Typhlopidae	*Anilios grypus*	Long-beaked Blind Snake	-	-	x				x		x							
Typhlopidae	*Anilios pilbarensis*	Pilbara Hook-snouted Blind Snake	-	-	x						x							
Varanidae	*Varanus acanthurus*	Spiny-tailed Goanna	-	-	x			x	x		x							x
Varanidae	*Varanus brevicauda*	Short-tailed Pygmy Goanna	-	-	x				x		x							x
Varanidae	*Varanus bushi*	Pilbara Mulga Goanna	-	-	x													
Varanidae	*Varanus eremius*	Pygmy Desert Goanna	-	-	x				x		x							x
Varanidae	*Varanus giganteus*	Perentie	-	-	x				x				x					
Varanidae	*Varanus gouldii*	Bungarra Or Sand Goanna	-	-	x			x	x		x							x
Varanidae	*Varanus panoptes*	Yellow-Spotted Monitor	-	-	x			x			x							x
Varanidae	*Varanus pilbarensis*	Northern Pilbara Rock Goanna	-	-	x				x									x
Varanidae	*Varanus tristis*	Racehorse Goanna	-	-														x

Appendix I Fauna Site Sheets

Atlas Ridley Magnetite Project Connection

Flora and Fauna Survey Technical Report

Horizon Power

SLR Project No.: 675.072189.00001

29 July 2024

675.072189-BAT-1

Project:	675.072189				
Date	1-03-2024		**Sample Type**	ARU	
Zone	50	**Easting**	690876	**Northing**	7740452

Landform and Soil		**Rock**	
Landform	Outcrop/breakaway	**Rock type/s**	Quartz
Aspect	West	**Surface stone cover**	75 - 100%
Soil type	Sand	**Surface stone size classes present**	Pebbles (<0.6 cm), Small Stones (0.6 - 2 cm), Stones (2 - 6 cm), Small Rocks (6 - 20 cm), Rocks (20 - 60 cm), Big Rocks (60 cm - 2 m), Boulders (>2 m)
Soil colour	Red		
Condition		**Habitat Features**	
Quality	Very good	**Water Source**	Absent
Fire History	Little or no fire evidence (>5 years)	**Microhabitats**	Exfoliating rock, Hummocks, Rock crevices
Disturbance	None observed		
Introduced fauna	None observed	**Ground Cover**	76-100%

Vegetation			
Upper stratum	Absent		
Mid stratum	Low (0.5-1 m)	Sparse shrubland and/or heathland (0.25-20%)	*Acacia colei*
Ground stratum	Low (>0.5 m)	Sparse hummock grassland (0.25-20%)	*Triodia sp.*

Fulcrum photo ID	3e20cbbb-6a6b-4f2b-8d6a-e7865c62b5f0

675.072189-BAT-2

Project:	675.072189				
Date	1-03-2024		**Sample Type**	ARU	
Zone	50	**Easting**	701623	**Northing**	7740708.5

Landform and Soil		**Rock**	
Landform	Plain	**Rock type/s**	Granite
Aspect	Negligible	**Surface stone cover**	75 - 100%
Soil type	Sand	**Surface stone size classes present**	Pebbles (<0.6 cm), Small Stones (0.6 - 2 cm), Stones (2 - 6 cm), Rocks (20 - 60 cm), Big Rocks (60 cm - 2 m), Boulders (>2 m), Small Rocks (6 - 20 cm)
Soil colour	Orange		
Condition		**Habitat Features**	
Quality	High quality	**Water Source**	Absent
Fire History	Burnt (1-5 years)	**Microhabitats**	Exfoliating rock, Hummocks, Leaf litter, Rock crevices, Termite mounds, Woody debris
Disturbance	None observed		
Introduced fauna	None observed	**Ground Cover**	26-50%

Vegetation			
Upper stratum	Absent		
Mid stratum	Mid (1-2 m)	Sparse shrubland and/or heathland (0.25-20%)	*Acacia sp.*
Ground stratum	Low (>0.5 m)	Closed hummock grassland (>80%)	*Triodia epactia*

Fulcrum photo ID	62505859-d69d-424a-b438-073c23ab4962

675.072189-BAT-3

Project:	675.072189				
Date	2-03-2024		**Sample Type**	ARU	
Zone	50	**Easting**	716968	**Northing**	7749334

Landform and Soil		**Rock**	
Landform	Outcrop/breakaway	**Rock type/s**	Granite, Ironstone, Quartz
Aspect	North	**Surface stone cover**	50 - 75%
Soil type	Sand	**Surface stone size classes present**	Small Stones (0.6 - 2 cm), Stones (2 - 6 cm), Small Rocks (6 - 20 cm), Rocks (20 - 60 cm), Big Rocks (60 cm - 2 m)
Soil colour	Red		
Condition		**Habitat Features**	
Quality	Good	**Water Source**	Absent
Fire History	Little or no fire evidence (>5 years)	**Microhabitats**	Caves, Exfoliating rock, Hummocks, Rock crevices
Disturbance	Overgrazing		
Introduced fauna	Cattle	**Ground Cover**	

Vegetation			
Upper stratum	Absent		
Mid stratum	Absent		
Ground stratum	Low (>0.5 m)	Open hummock grassland (20-50%)	*Triodia epactia*

Fulcrum photo ID	86a89a3c-39c7-47cb-9440-9df6551d1eea

675.072189-BAT-4

Project:	675.072189				
Date	2-03-2024		**Sample Type**	ARU	
Zone	50	**Easting**	719953	**Northing**	7754956.3

Landform and Soil		**Rock**	
Landform	Outcrop/breakaway	**Rock type/s**	Granite
Aspect	West	**Surface stone cover**	75 - 100%
Soil type	Rock	**Surface stone size classes present**	Pebbles (<0.6 cm), Small Stones (0.6 - 2 cm), Stones (2 - 6 cm), Rocks (20 - 60 cm), Big Rocks (60 cm - 2 m), Boulders (>2 m), Small Rocks (6 - 20 cm)
Soil colour	Orange		
Condition		**Habitat Features**	
Quality	High quality	**Water Source**	Absent
Fire History	Burnt (1-5 years)	**Microhabitats**	Caves, Exfoliating rock, Hummocks, Leaf litter, Peeling bark, Rock crevices, Woody debris
Disturbance	None observed		
Introduced fauna	None observed	**Ground Cover**	11-25%

Vegetation			
Upper stratum	Low (<10 m)	Isolated trees (<0.25%)	*Atalaya hemiglauca and Ficus brachypoda*
Mid stratum	Low (0.5-1 m)	Open shrubland and/or heathland (20-50%)	*Atalaya hemiglauca and Ficus brachypoda*
Ground stratum	Low (>0.5 m)	Sparse hummock grassland (0.25-20%)	*Triodia sp.*

Fulcrum photo ID	7b5335c9-98ff-40b2-8b96-9c27e29db566

675.072189-BAT-5

Project:	675.072189				
Date	2-03-2024		**Sample Type**	ARU	
Zone	50	**Easting**	705916	**Northing**	7742518

Landform and Soil		Rock	
Landform	Drainage line	**Rock type/s**	None
Aspect	Negligible	**Surface stone cover**	
Soil type	Sand	**Surface stone size classes present**	
Soil colour	Red		
Condition		**Habitat Features**	
Quality	Good	**Water Source**	Absent
Fire History	Little or no fire evidence (>5 years)	**Microhabitats**	Hummocks, Leaf litter
Disturbance	None observed		
Introduced fauna	None observed	**Ground Cover**	

Vegetation			
Upper stratum	Low (<10 m)	Open woodland (0.25-20%)	*Eucalyptus melaleuca*
Mid stratum	Mid (1-2 m)	Open shrubland and/or heathland (20-50%)	*Acacia sp.*
Ground stratum	Low (>0.5 m)	Open hummock grassland (20-50%)	*Triodia epactia*

Fulcrum photo ID	39731cc9-60a3-4bcd-936c-6e4f11664eb3

675.072189-BIL-6

Project:	675.072189				
Date	3-03-2024		**Sample Type**	Bilby Search	
Zone	50	**Easting**	667478	**Northing**	7736632.3

Landform and Soil		Rock	
Landform	Plain	**Rock type/s**	None
Aspect	Negligible	**Surface stone cover**	
Soil type	Sandy loam	**Surface stone size classes present**	
Soil colour	Orange		
Condition		**Habitat Features**	
Quality	Very good	**Water Source**	Absent
Fire History	Little or no fire evidence (>5 years)	**Microhabitats**	Caves, Hollows - logs, Hollows - trees, Hummocks, Leaf litter, Peeling bark, Woody debris
Disturbance	Vehicle tracks		
Introduced fauna	None observed	**Ground Cover**	51-75%

Vegetation			
Upper stratum	Low (<10 m)	Open woodland (0.25-20%)	*Eucalyptus victrix*
Mid stratum	Mid (1-2 m)	Sparse shrubland and/or heathland (0.25-20%)	*Eucalyptus victrix*
Ground stratum	Low (>0.5 m)	Open hummock grassland (20-50%)	*Triodia epactia*

Fulcrum photo ID	3ac6a6bf-cb3f-4392-8979-f6ce998c7fe5

675.072189-BIL-7

Project:	675.072189				
Date	4-03-2024		**Sample Type**	Bilby Search	
Zone	50	**Easting**	718934	**Northing**	7752705

Landform and Soil		**Rock**	
Landform	Plain	**Rock type/s**	None
Aspect	Negligible	**Surface stone cover**	
Soil type	Sand	**Surface stone size classes present**	
Soil colour	Red		
Condition		**Habitat Features**	
Quality	Good	**Water Source**	Present
Fire History	Little or no fire evidence (>5 years)	**Microhabitats**	Hummocks
Disturbance	None observed		
Introduced fauna	Cattle	**Ground Cover**	51-75%

Vegetation			
Upper stratum	Absent		
Mid stratum	Absent		
Ground stratum	Low (>0.5 m)	Hummock grassland (50-80%)	*Triodia secunda Acacia stellaticeps*

Fulcrum photo ID	107d370e-5367-4d15-b434-84d3e61495b5,e61fe2c6-8666-467b-

675.072189-BIL-8

Project:	675.072189				
Date	4-03-2024		**Sample Type**	Bilby Search	
Zone	50	**Easting**	716835	**Northing**	7749621.6

Landform and Soil		**Rock**	
Landform	Plain	**Rock type/s**	None
Aspect	Negligible	**Surface stone cover**	
Soil type	Sand	**Surface stone size classes present**	
Soil colour	Red		
Condition		**Habitat Features**	
Quality	Disturbed	**Water Source**	Absent
Fire History	Little or no fire evidence (>5 years)	**Microhabitats**	Hummocks, Leaf litter
Disturbance	Overgrazing,Vehicle tracks		
Introduced fauna	Cattle	**Ground Cover**	51-75%

Vegetation			
Upper stratum	Absent		
Mid stratum	Absent		
Ground stratum	Mid (0.5-1 m)	Open hummock grassland (20-50%)	*Triodia epactia and Acacia stellaticeps*

Fulcrum photo ID	12fabc39-ac9a-4cd9-9c9c-242da5192f05,3955ed23-f85c-4187-80bf-

675.072189-BIL-9

Project:	675.072189				
Date	4-03-2024		**Sample Type**	Bilby Search	
Zone	50	**Easting**	716904	**Northing**	7749069

Landform and Soil		Rock	
Landform	Outcrop/breakaway	**Rock type/s**	Ironstone
Aspect	North	**Surface stone cover**	50 - 75%
Soil type	Rock	**Surface stone size classes present**	Pebbles (<0.6 cm), Small Stones (0.6 - 2 cm), Stones (2 - 6 cm), Small Rocks (6 - 20 cm), Rocks (20 - 60 cm), Big Rocks (60 cm - 2 m)
Soil colour	Black, Brown, Red		
Condition		**Habitat Features**	
Quality	Good	**Water Source**	Absent
Fire History	Little or no fire evidence (>5 years)	**Microhabitats**	Hummocks, Rock crevices
Disturbance	None observed		
Introduced fauna	None observed	**Ground Cover**	

Vegetation			
Upper stratum	Absent		
Mid stratum	Mid (1-2 m)	Sparse shrubland and/or heathland (0.25-20%)	*Grevillea sp. or Hakea sp., and Acacia inaequilatera*
Ground stratum	Low (>0.5 m)	Open hummock grassland (20-50%)	*Triodia sp.*

Fulcrum photo ID	63b1a5ff-a1c5-400b-ae5e-a1fe522158e7,a7ed4d92-313f-4e46-a1ae-

675.072189-BIL-10

Project:	675.072189				
Date	4-03-2024		**Sample Type**	Bilby Search	
Zone	50	**Easting**	716811	**Northing**	7749157.6

Landform and Soil		Rock	
Landform	Dune crest	**Rock type/s**	None
Aspect	North	**Surface stone cover**	
Soil type	Sand	**Surface stone size classes present**	
Soil colour	Red		
Condition		**Habitat Features**	
Quality	Good	**Water Source**	Absent
Fire History	Little or no fire evidence (>5 years)	**Microhabitats**	Hummocks, Leaf litter
Disturbance	Overgrazing		
Introduced fauna	Cattle	**Ground Cover**	

Vegetation			
Upper stratum	Absent		
Mid stratum	Mid (1-2 m)	Sparse shrubland and/or heathland (0.25-20%)	*Acacia colei*
Ground stratum	Low (>0.5 m)	Open hummock grassland (20-50%)	*Triodia epactia and Acacia stellaticeps*

Fulcrum photo ID	e559afca-a53d-4f53-9bd2-3252e55333f8,6be2d548-40a0-4677-9f99-

675.072189-BIL-11

Project:	675.072189				
Date	4-03-2024		**Sample Type**	Bilby Search	
Zone	50	**Easting**	710384	**Northing**	7746378

Landform and Soil		**Rock**	
Landform	Plain	**Rock type/s**	None
Aspect	Negligible	**Surface stone cover**	
Soil type	Sand	**Surface stone size classes present**	
Soil colour	Red		
Condition		**Habitat Features**	
Quality	Disturbed	**Water Source**	Present
Fire History	Recently burnt (<1 year)	**Microhabitats**	Hummocks
Disturbance	None observed		
Introduced fauna	None observed	**Ground Cover**	<10%

Vegetation			
Upper stratum	Absent		
Mid stratum	Absent		
Ground stratum	Low (>0.5 m)	Open hummock grassland (20-50%)	*Triodia epactia*

Fulcrum photo ID	2ea4fc1c-d3b8-4425-890f-c342fa984582,6cb20729-91ad-4f24-9955-

675.072189-BIL-12

Project:	675.072189				
Date	7-03-2024		**Sample Type**	Bilby Search	
Zone	50	**Easting**	699416	**Northing**	7741024.8

Landform and Soil		**Rock**	
Landform	Plain	**Rock type/s**	None
Aspect	Negligible	**Surface stone cover**	
Soil type	Sand	**Surface stone size classes present**	
Soil colour	Red		
Condition		**Habitat Features**	
Quality	Very good	**Water Source**	Absent
Fire History	Little or no fire evidence (>5 years)	**Microhabitats**	Hummocks
Disturbance	None observed		
Introduced fauna	None observed	**Ground Cover**	51-75%

Vegetation			
Upper stratum	Absent		
Mid stratum	Low (0.5-1 m)	Isolated shrubs and/or heath shrubs (<0.25%)	*Acacia Inaequilatera*
Ground stratum	Low (>0.5 m)	Open hummock grassland (20-50%)	*Triodia epactia*

Fulcrum photo ID	b0f6bf39-7835-4d22-9e57-6830de2458c4

675.072189-BIL-13

Project:	675.072189				
Date	9-03-2024		**Sample Type**	Bilby Search	
Zone	50	**Easting**	679178	**Northing**	7739203

Landform and Soil		**Rock**	
Landform	Plain	**Rock type/s**	None
Aspect	Negligible	**Surface stone cover**	
Soil type	Sand	**Surface stone size classes present**	
Soil colour	Red		
Condition		**Habitat Features**	
Quality	Very good	**Water Source**	Absent
Fire History	Little or no fire evidence (>5 years)	**Microhabitats**	Hummocks, Termite mounds
Disturbance	None observed		
Introduced fauna	None observed	**Ground Cover**	51-75%

Vegetation			
Upper stratum	Absent		
Mid stratum	Mid (1-2 m)	Sparse shrubland and/or heathland (0.25-20%)	*Acacia Inaequilatera*
Ground stratum	Low (>0.5 m)	Open hummock grassland (20-50%)	*Triodia epactia*

Fulcrum photo ID	06ed5988-2a43-4f6c-8520-577b3d99220f,c5972ade-3dd7-4efd-9645-

675.072189-BIR-14

Project:	675.072189				
Date	1-03-2024		**Sample Type**	ARU	
Zone	50	**Easting**	701609	**Northing**	7740740.9

Landform and Soil		**Rock**	
Landform	Plain	**Rock type/s**	Granite
Aspect	Negligible	**Surface stone cover**	75 - 100%
Soil type	Sand	**Surface stone size classes present**	Pebbles (<0.6 cm), Small Stones (0.6 - 2 cm), Stones (2 - 6 cm), Rocks (20 - 60 cm), Big Rocks (60 cm - 2 m), Boulders (>2 m), Small Rocks (6 - 20 cm)
Soil colour	Orange		
Condition		**Habitat Features**	
Quality	High quality	**Water Source**	Absent
Fire History	Burnt (1-5 years)	**Microhabitats**	Exfoliating rock, Hummocks, Leaf litter, Rock crevices, Termite mounds, Woody debris
Disturbance	None observed		
Introduced fauna	None observed	**Ground Cover**	26-50%

Vegetation			
Upper stratum	Absent		
Mid stratum	Mid (1-2 m)	Sparse shrubland and/or heathland (0.25-20%)	*Acacia sp.*
Ground stratum	Low (>0.5 m)	Closed hummock grassland (>80%)	*Triodia epactia*

Fulcrum photo ID	918fae2c-2e93-42c0-89df-a62a9f546241

675.072189-BIR-15

Project:	675.072189				
Date	2-03-2024		**Sample Type**	ARU	
Zone	50	**Easting**	719490	**Northing**	7755363

Landform and Soil		**Rock**	
Landform	Drainage line	**Rock type/s**	None
Aspect	Negligible	**Surface stone cover**	
Soil type	Sand	**Surface stone size classes present**	
Soil colour	Red		

Condition		**Habitat Features**	
Quality	Disturbed	**Water Source**	Absent
Fire History	Little or no fire evidence (>5 years)	**Microhabitats**	Hummocks, Leaf litter, Peeling bark, Woody debris
Disturbance	Overgrazing,Weeds		
Introduced fauna	Cattle	**Ground Cover**	

Vegetation			
Upper stratum	Low (<10 m)	Open woodland (0.25-20%)	*Corymbia flavescens*
Mid stratum	Mid (1-2 m)	Sparse shrubland and/or heathland (0.25-20%)	*Acacia colei*
Ground stratum	Low (>0.5 m)	Open hummock grassland (20-50%)	*Triodia epactia*

Fulcrum photo ID	8dc6f329-c8be-45ac-bace-216d4a90a599

675.072189-BIR-16

Project:	675.072189				
Date	2-03-2024		**Sample Type**	ARU	
Zone	50	**Easting**	705845	**Northing**	7742778.4

Landform and Soil		**Rock**	
Landform	Drainage line	**Rock type/s**	None
Aspect	North	**Surface stone cover**	
Soil type	Sand	**Surface stone size classes present**	
Soil colour	White, Yellow		

Condition		**Habitat Features**	
Quality	Disturbed	**Water Source**	
Fire History	Unknown	**Microhabitats**	Hollows - logs, Hollows - trees, Hummocks, Leaf litter, Woody debris
Disturbance	Vehicle tracks		
Introduced fauna	None observed	**Ground Cover**	26-50%

Vegetation			
Upper stratum	Low (<10 m)	Woodland (20-50%)	*Acacia cyperophylla, Paper bark*
Mid stratum	Mid (1-2 m)	Open shrubland and/or heathland (20-50%)	*Acacia sp.*
Ground stratum	Low (>0.5 m)	Open hummock grassland (20-50%)	*Triodia epactia*

Fulcrum photo ID	c196bc9b-894b-419b-ae7d-93e67e56c67d

675.072189-BIR-17

Project:	675.072189				
Date	3-03-2024		**Sample Type**	ARU	
Zone	50	**Easting**	667469	**Northing**	7736627

Landform and Soil		Rock	
Landform	Plain	**Rock type/s**	None
Aspect	Negligible	**Surface stone cover**	
Soil type	Sandy loam	**Surface stone size classes present**	
Soil colour	Orange		
Condition		**Habitat Features**	
Quality	Very good	**Water Source**	Absent
Fire History	Little or no fire evidence (>5 years)	**Microhabitats**	Caves, Hollows - logs, Hollows - trees, Hummocks, Leaf litter, Peeling bark, Woody debris
Disturbance	Vehicle tracks		
Introduced fauna	None observed	**Ground Cover**	51-75%

Vegetation			
Upper stratum	Low (<10 m)	Open woodland (0.25-20%)	*Eucalyptus victrix*
Mid stratum	Mid (1-2 m)	Sparse shrubland and/or heathland (0.25-20%)	*Eucalyptus victrix*
Ground stratum	Low (>0.5 m)	Open hummock grassland (20-50%)	*Triodia epactia*

Fulcrum photo ID	8a790cc8-8976-4ae5-86e2-5d4a357a349a,e210a7b2-e529-4ea1-ae00-

675.072189-BIR-18

Project:	675.072189				
Date	3-03-2024		**Sample Type**	ARU	
Zone	50	**Easting**	660818	**Northing**	7739279.4

Landform and Soil		Rock	
Landform	Plain	**Rock type/s**	None
Aspect	Negligible	**Surface stone cover**	
Soil type	Sand	**Surface stone size classes present**	
Soil colour	Orange		
Condition		**Habitat Features**	
Quality	Good	**Water Source**	Absent
Fire History	Little or no fire evidence (>5 years)	**Microhabitats**	Hummocks, Leaf litter, Woody debris, Logs > 10 cm
Disturbance	Litter,Vehicle tracks		
Introduced fauna	None observed	**Ground Cover**	51-75%

Vegetation			
Upper stratum	Low (<10 m)	Open woodland (0.25-20%)	*Eucalyptus sp.*
Mid stratum	Low (0.5-1 m)	Open shrubland and/or heathland (20-50%)	*Acacia stellaticeps*
Ground stratum	Low (>0.5 m)	Open hummock grassland (20-50%)	*Triodia epactia*

Fulcrum photo ID	1eca219b-fa86-4ffa-bbf8-21f7f6639f0e

675.072189-CAM-19

Project:	675.072189				
Date	1-03-2024		**Sample Type**	Camera Trap	
Zone	50	**Easting**	701625	**Northing**	7740707

Landform and Soil		Rock	
Landform	Plain	**Rock type/s**	Granite
Aspect	Negligible	**Surface stone cover**	75 - 100%
Soil type	Sand	**Surface stone size classes present**	Pebbles (<0.6 cm), Small Stones (0.6 - 2 cm), Stones (2 - 6 cm), Rocks (20 - 60 cm), Big Rocks (60 cm - 2 m), Boulders (>2 m), Small Rocks (6 - 20 cm)
Soil colour	Orange		

Condition		Habitat Features	
Quality	High quality	**Water Source**	Absent
Fire History	Burnt (1-5 years)	**Microhabitats**	Exfoliating rock, Hummocks, Leaf litter, Rock crevices, Termite mounds, Woody debris
Disturbance	None observed		
Introduced fauna	None observed	**Ground Cover**	26-50%

Vegetation			
Upper stratum	Absent		
Mid stratum	Mid (1-2 m)	Sparse shrubland and/or heathland (0.25-20%)	*Acacia sp.*
Ground stratum	Low (>0.5 m)	Closed hummock grassland (>80%)	*Triodia epactia*

Fulcrum photo ID	cc87c3e1-4dc6-48a7-af7f-47c76f0b4aa2

675.072189-CAM-20

Project:	675.072189				
Date	1-03-2024		**Sample Type**	Camera Trap	
Zone	50	**Easting**	691054	**Northing**	7741368.9

Landform and Soil		Rock	
Landform	Outcrop/breakaway	**Rock type/s**	Quartz
Aspect	Negligible	**Surface stone cover**	75 - 100%
Soil type	Sand	**Surface stone size classes present**	Pebbles (<0.6 cm), Small Stones (0.6 - 2 cm), Stones (2 - 6 cm), Small Rocks (6 - 20 cm), Rocks (20 - 60 cm), Big Rocks (60 cm - 2 m), Boulders (>2 m)
Soil colour	Orange		

Condition		Habitat Features	
Quality	High quality	**Water Source**	Absent
Fire History	Burnt (1-5 years)	**Microhabitats**	Exfoliating rock, Hummocks, Leaf litter, Peeling bark, Rock crevices, Woody debris
Disturbance	None observed		
Introduced fauna	None observed	**Ground Cover**	26-50%

Vegetation			
Upper stratum	Absent		
Mid stratum	Low (0.5-1 m)	Open shrubland and/or heathland (20-50%)	*Acacia orthocarpa*
Ground stratum	Low (>0.5 m)	Sparse hummock grassland (0.25-20%)	*Triodia epactia*

Fulcrum photo ID	14c27e77-be77-4ef4-8bc9-2727770ca39b

675.072189-CAM-21

Project:	675.072189				
Date	1-03-2024		**Sample Type**	Camera Trap	
Zone	50	**Easting**	690886	**Northing**	7740445

Landform and Soil		Rock	
Landform	Outcrop/breakaway	**Rock type/s**	Quartz
Aspect	East	**Surface stone cover**	75 - 100%
Soil type	Sand	**Surface stone size classes present**	Pebbles (<0.6 cm), Small Stones (0.6 - 2 cm), Stones (2 - 6 cm), Small Rocks (6 - 20 cm), Rocks (20 - 60 cm), Big Rocks (60 cm - 2 m), Boulders (>2 m)
Soil colour	Red		
Condition		**Habitat Features**	
Quality	Very good	**Water Source**	Absent
Fire History	Little or no fire evidence (>5 years)	**Microhabitats**	Exfoliating rock, Hummocks, Rock crevices
Disturbance	None observed		
Introduced fauna	None observed	**Ground Cover**	76-100%

Vegetation			
Upper stratum	Absent		
Mid stratum	Low (0.5-1 m)	Sparse shrubland and/or heathland (0.25-20%)	*Acacia orthocarpa*
Ground stratum	Low (>0.5 m)	Sparse hummock grassland (0.25-20%)	*Triodia epactia*

Fulcrum photo ID	5094ed45-c28f-4cae-b618-0ad0a297cc6c

675.072189-CAM-22

Project:	675.072189				
Date	1-03-2024		**Sample Type**	Camera Trap	
Zone	50	**Easting**	701732	**Northing**	7741492.9

Landform and Soil		Rock	
Landform	Plain	**Rock type/s**	Granite
Aspect	Negligible	**Surface stone cover**	75 - 100%
Soil type	Rock	**Surface stone size classes present**	Pebbles (<0.6 cm), Small Stones (0.6 - 2 cm), Stones (2 - 6 cm), Small Rocks (6 - 20 cm), Rocks (20 - 60 cm), Big Rocks (60 cm - 2 m), Boulders (>2 m)
Soil colour	Orange		
Condition		**Habitat Features**	
Quality	High quality	**Water Source**	Absent
Fire History	Burnt (1-5 years)	**Microhabitats**	Exfoliating rock, Hummocks, Leaf litter, Peeling bark, Rock crevices, Woody debris
Disturbance	None observed		
Introduced fauna	None observed	**Ground Cover**	26-50%

Vegetation			
Upper stratum	Absent		
Mid stratum	Mid (1-2 m)	Open shrubland and/or heathland (20-50%)	*Acacia sp.*
Ground stratum	Low (>0.5 m)	Open hummock grassland (20-50%)	*Triodia epactia*

Fulcrum photo ID	914e5902-fb78-4ed0-81cc-ac92a6fa6136

675.072189-CAM-23

Project:	675.072189				
Date	1-03-2024		**Sample Type**	Camera Trap	
Zone	50	**Easting**	701282	**Northing**	7742299

Landform and Soil		**Rock**	
Landform	Outcrop/breakaway	**Rock type/s**	Quartz
Aspect	North	**Surface stone cover**	75 - 100%
Soil type	Sand	**Surface stone size classes present**	Pebbles (<0.6 cm), Small Stones (0.6 - 2 cm), Stones (2 - 6 cm), Small Rocks (6 - 20 cm), Rocks (20 - 60 cm)
Soil colour	Red		
Condition		**Habitat Features**	
Quality	High quality	**Water Source**	Absent
Fire History	Little or no fire evidence (>5 years)	**Microhabitats**	Exfoliating rock, Hummocks, Rock crevices
Disturbance	None observed		
Introduced fauna	None observed	**Ground Cover**	51-75%

Vegetation			
Upper stratum	Absent		
Mid stratum	Low (0.5-1 m)	Isolated shrubs and/or heath shrubs (<0.25%)	*Acacia colei, and Acacia ancistrocarpa*
Ground stratum	Low (>0.5 m)	Open hummock grassland (20-50%)	*Triodia epactia*

Fulcrum photo ID	ac269577-2f11-472c-9570-873aea8b91ea,986ce288-c86b-4447-a998-

675.072189-CAM-24

Project:	675.072189				
Date	1-03-2024		**Sample Type**	Camera Trap	
Zone	50	**Easting**	690962	**Northing**	7740912.2

Landform and Soil		**Rock**	
Landform	Outcrop/breakaway	**Rock type/s**	Quartz
Aspect	Negligible	**Surface stone cover**	75 - 100%
Soil type	Sand	**Surface stone size classes present**	Pebbles (<0.6 cm), Small Stones (0.6 - 2 cm), Stones (2 - 6 cm), Small Rocks (6 - 20 cm), Rocks (20 - 60 cm), Big Rocks (60 cm - 2 m), Boulders (>2 m)
Soil colour	Orange		
Condition		**Habitat Features**	
Quality	High quality	**Water Source**	Absent
Fire History	Burnt (1-5 years)	**Microhabitats**	Exfoliating rock, Hummocks, Leaf litter, Peeling bark, Rock crevices, Woody debris
Disturbance	None observed		
Introduced fauna	None observed	**Ground Cover**	26-50%

Vegetation			
Upper stratum	Absent		
Mid stratum	Low (0.5-1 m)	Open shrubland and/or heathland (20-50%)	*Acacia orthocarpa*
Ground stratum	Low (>0.5 m)	Sparse hummock grassland (0.25-20%)	*Triodia epactia*

Fulcrum photo ID	38f0ec07-46bc-44c3-8048-cfd5aaa24ef9

675.072189-CAM-25

Project:	675.072189				
Date	1-03-2024		**Sample Type**	Camera Trap	
Zone	50	**Easting**	690965	**Northing**	7741174

Landform and Soil		Rock	
Landform	Outcrop/breakaway	**Rock type/s**	Quartz
Aspect	Negligible	**Surface stone cover**	75 - 100%
Soil type	Sand	**Surface stone size classes present**	Pebbles (<0.6 cm), Small Stones (0.6 - 2 cm), Stones (2 - 6 cm), Small Rocks (6 - 20 cm), Rocks (20 - 60 cm), Big Rocks (60 cm - 2 m), Boulders (>2 m)
Soil colour	Orange		

Condition		Habitat Features	
Quality	High quality	**Water Source**	Absent
Fire History	Burnt (1-5 years)	**Microhabitats**	Exfoliating rock, Hummocks, Leaf litter, Peeling bark, Rock crevices, Woody debris
Disturbance	None observed		
Introduced fauna	None observed	**Ground Cover**	26-50%

Vegetation			
Upper stratum	Absent		
Mid stratum	Low (0.5-1 m)	Open shrubland and/or heathland (20-50%)	*Acacia orthocarpa*
Ground stratum	Low (>0.5 m)	Sparse hummock grassland (0.25-20%)	*Triodia epactia*

Fulcrum photo ID	cc62e386-69ff-4ac8-bdcb-d03ae4b940a7

675.072189-CAM-26

Project:	675.072189				
Date	1-03-2024		**Sample Type**	Camera Trap	
Zone	50	**Easting**	690899	**Northing**	7740597.4

Landform and Soil		Rock	
Landform	Outcrop/breakaway	**Rock type/s**	Quartz
Aspect	West	**Surface stone cover**	75 - 100%
Soil type	Sand	**Surface stone size classes present**	Pebbles (<0.6 cm), Small Stones (0.6 - 2 cm), Stones (2 - 6 cm), Small Rocks (6 - 20 cm), Rocks (20 - 60 cm), Big Rocks (60 cm - 2 m), Boulders (>2 m)
Soil colour	Red		

Condition		Habitat Features	
Quality	Very good	**Water Source**	Absent
Fire History	Little or no fire evidence (>5 years)	**Microhabitats**	Exfoliating rock, Hummocks, Rock crevices
Disturbance	None observed		
Introduced fauna	None observed	**Ground Cover**	76-100%

Vegetation			
Upper stratum	Absent		
Mid stratum	Low (0.5-1 m)	Sparse shrubland and/or heathland (0.25-20%)	*Acacia orthocarpa*
Ground stratum	Low (>0.5 m)	Sparse hummock grassland (0.25-20%)	*Triodia epactia*

Fulcrum photo ID	21c18e9a-8324-4f4f-b97f-febc0b456b88

675.072189-CAM-27

Project:	675.072189				
Date	1-03-2024		**Sample Type**	Camera Trap	
Zone	50	**Easting**	701393	**Northing**	7742438

Landform and Soil		Rock	
Landform	Outcrop/breakaway	**Rock type/s**	Quartz
Aspect	Negligible	**Surface stone cover**	75 - 100%
Soil type	Sand	**Surface stone size classes present**	Pebbles (<0.6 cm), Small Stones (0.6 - 2 cm), Stones (2 - 6 cm), Small Rocks (6 - 20 cm), Rocks (20 - 60 cm), Big Rocks (60 cm - 2 m), Boulders (>2 m)
Soil colour	Red		
Condition		**Habitat Features**	
Quality	High quality	**Water Source**	Absent
Fire History	Little or no fire evidence (>5 years)	**Microhabitats**	Exfoliating rock, Hummocks, Rock crevices
Disturbance	None observed		
Introduced fauna	None observed	**Ground Cover**	51-75%

Vegetation			
Upper stratum	Absent		
Mid stratum	Absent		
Ground stratum	Low (>0.5 m)	Open hummock grassland (20-50%)	*Triodia epactia*

Fulcrum photo ID	137a23d4-2c27-43c5-a596-c06dc20abb81

675.072189-CAM-28

Project:	675.072189				
Date	1-03-2024		**Sample Type**	Camera Trap	
Zone	50	**Easting**	690919	**Northing**	7740721.9

Landform and Soil		Rock	
Landform	Outcrop/breakaway	**Rock type/s**	Quartz
Aspect	East	**Surface stone cover**	75 - 100%
Soil type	Sand	**Surface stone size classes present**	Pebbles (<0.6 cm), Small Stones (0.6 - 2 cm), Stones (2 - 6 cm), Small Rocks (6 - 20 cm), Rocks (20 - 60 cm), Big Rocks (60 cm - 2 m), Boulders (>2 m)
Soil colour	Red		
Condition		**Habitat Features**	
Quality	Very good	**Water Source**	Absent
Fire History	Little or no fire evidence (>5 years)	**Microhabitats**	Exfoliating rock, Hummocks, Rock crevices
Disturbance	None observed		
Introduced fauna	None observed	**Ground Cover**	76-100%

Vegetation			
Upper stratum	Absent		
Mid stratum	Low (0.5-1 m)	Sparse shrubland and/or heathland (0.25-20%)	*Acacia orthocarpa*
Ground stratum	Low (>0.5 m)	Sparse hummock grassland (0.25-20%)	*Triodia epactia*

Ground stratum	Low (<0.5 m)	Sparse hummock grassland (0.25-20%)	*Triodia epactia*	**Fulcrum photo ID**	687c5795-6f29-49e5-9162-f914d6de9c19

675.072189-CAM-29

Project:	675.072189				
Date	2-03-2024		**Sample Type**	Camera Trap	
Zone	50	**Easting**	717460	**Northing**	7749535

Landform and Soil		**Rock**	
Landform	Outcrop/breakaway	**Rock type/s**	Granite
Aspect	North	**Surface stone cover**	75 - 100%
Soil type	Sand	**Surface stone size classes present**	Small Stones (0.6 - 2 cm), Stones (2 - 6 cm), Small Rocks (6 - 20 cm), Rocks (20 - 60 cm), Big Rocks (60 cm - 2 m), Boulders (>2 m), Pebbles (<0.6 cm)
Soil colour	Orange		
Condition		**Habitat Features**	
Quality	Very good	**Water Source**	
Fire History	Little or no fire evidence (>5 years)	**Microhabitats**	Caves, Exfoliating rock, Hummocks, Leaf litter, Rock crevices, Woody debris, Peeling bark
Disturbance	Vehicle tracks		
Introduced fauna	Cattle	**Ground Cover**	11-25%

Vegetation			
Upper stratum	Absent		
Mid stratum	Mid (1-2 m)	Isolated shrubs and/or heath shrubs (<0.25%)	*Atalaya hemiglauca and Ficus brachypoda*
Ground stratum	Low (>0.5 m)	Sparse hummock grassland (0.25-20%)	*Triodia epactia*

Fulcrum photo ID	fcd9014c-e753-4a9c-9f78-cc1eacee77a7

675.072189-CAM-30

Project:	675.072189				
Date	2-03-2024		**Sample Type**	Camera Trap	
Zone	50	**Easting**	717338	**Northing**	7749473.6

Landform and Soil		**Rock**	
Landform	Outcrop/breakaway	**Rock type/s**	Granite
Aspect	North	**Surface stone cover**	75 - 100%
Soil type	Sand	**Surface stone size classes present**	Small Stones (0.6 - 2 cm), Stones (2 - 6 cm), Small Rocks (6 - 20 cm), Rocks (20 - 60 cm), Big Rocks (60 cm - 2 m), Boulders (>2 m), Pebbles (<0.6 cm)
Soil colour	Orange		
Condition		**Habitat Features**	
Quality	Very good	**Water Source**	
Fire History	Little or no fire evidence (>5 years)	**Microhabitats**	Caves, Exfoliating rock, Hummocks, Leaf litter, Rock crevices, Woody debris, Peeling bark
Disturbance	Vehicle tracks		
Introduced fauna	Cattle	**Ground Cover**	11-25%

Vegetation			
Upper stratum	Absent		
Mid stratum	Mid (1-2 m)	Isolated shrubs and/or heath shrubs (<0.25%)	*Acacia sp.*
Ground stratum	Low (>0.5 m)	Sparse hummock grassland (0.25-20%)	*Triodia epactia*

Fulcrum photo ID	d0f9985a-ea40-45dd-a604-b9fa9ecaec25

675.072189-CAM-31

Project:	675.072189				
Date	2-03-2024		**Sample Type**	Camera Trap	
Zone	50	**Easting**	688604	**Northing**	7740105

Landform and Soil		**Rock**	
Landform	Drainage line	**Rock type/s**	None
Aspect	North	**Surface stone cover**	
Soil type	Sand	**Surface stone size classes present**	
Soil colour	Orange		
Condition		**Habitat Features**	
Quality	Very good	**Water Source**	Absent
Fire History	Little or no fire evidence (>5 years)	**Microhabitats**	Hollows - logs, Hollows - trees, Hummocks, Leaf litter, Peeling bark, Woody debris
Disturbance	None observed		
Introduced fauna	Cattle	**Ground Cover**	51-75%

Vegetation			
Upper stratum	Low (<10 m)	Open woodland (0.25-20%)	*Melaleuca argentea*
Mid stratum	Mid (1-2 m)	Open shrubland and/or heathland (20-50%)	*Acacia colei*
Ground stratum	Low (>0.5 m)	Sparse hummock grassland (0.25-20%)	*Triodia epactia*

Fulcrum photo ID	2b6ed36d-8b93-49c0-96a3-53c4a052bd72

675.072189-CAM-32

Project:	675.072189				
Date	2-03-2024		**Sample Type**	Camera Trap	
Zone	50	**Easting**	717120	**Northing**	7749284.4

Landform and Soil		**Rock**	
Landform	Outcrop/breakaway	**Rock type/s**	Granite, Ironstone, Quartz
Aspect	North	**Surface stone cover**	50 - 75%
Soil type	Sand	**Surface stone size classes present**	Small Stones (0.6 - 2 cm), Stones (2 - 6 cm), Small Rocks (6 - 20 cm), Rocks (20 - 60 cm), Big Rocks (60 cm - 2 m)
Soil colour	Red		
Condition		**Habitat Features**	
Quality	Good	**Water Source**	Absent
Fire History	Little or no fire evidence (>5 years)	**Microhabitats**	Caves, Exfoliating rock, Hummocks, Rock crevices
Disturbance	Overgrazing		
Introduced fauna	Cattle	**Ground Cover**	

Vegetation			
Upper stratum	Absent		
Mid stratum	Absent		
Ground stratum	Low (>0.5 m)	Open hummock grassland (20-50%)	*Triodia epactia*

Fulcrum photo ID	98f2686f-85ac-41de-b1d4-48f52118eeb6

675.072189-CAM-33

Project:	675.072189				
Date	2-03-2024		**Sample Type**	Camera Trap	
Zone	50	**Easting**	700279	**Northing**	7741209

Landform and Soil		**Rock**	
Landform	Outcrop/breakaway	**Rock type/s**	Quartz
Aspect	South	**Surface stone cover**	75 - 100%
Soil type	Sand	**Surface stone size classes present**	Small Stones (0.6 - 2 cm), Stones (2 - 6 cm), Small Rocks (6 - 20 cm), Rocks (20 - 60 cm), Big Rocks (60 cm - 2 m)
Soil colour	Red		
Condition		**Habitat Features**	
Quality	Very good	**Water Source**	Absent
Fire History	Little or no fire evidence (>5 years)	**Microhabitats**	Exfoliating rock, Hummocks, Rock crevices
Disturbance	None observed		
Introduced fauna	None observed	**Ground Cover**	26-50%

Vegetation			
Upper stratum	Absent		
Mid stratum	Absent		
Ground stratum		Sparse hummock grassland (0.25-20%)	*Triodia epactia*

Fulcrum photo ID	035e4c7c-491f-40f4-8188-f9d8d8800288

675.072189-CAM-34

Project:	675.072189				
Date	2-03-2024		**Sample Type**	Camera Trap	
Zone	50	**Easting**	719953	**Northing**	7754955.9

Landform and Soil		**Rock**	
Landform	Outcrop/breakaway	**Rock type/s**	Granite
Aspect	West	**Surface stone cover**	75 - 100%
Soil type	Rock	**Surface stone size classes present**	Pebbles (<0.6 cm), Small Stones (0.6 - 2 cm), Stones (2 - 6 cm), Rocks (20 - 60 cm), Big Rocks (60 cm - 2 m), Boulders (>2 m), Small Rocks (6 - 20 cm)
Soil colour	Orange		
Condition		**Habitat Features**	
Quality	High quality	**Water Source**	Absent
Fire History	Burnt (1-5 years)	**Microhabitats**	Caves, Exfoliating rock, Hummocks, Leaf litter, Peeling bark, Rock crevices, Woody debris
Disturbance	None observed		
Introduced fauna	None observed	**Ground Cover**	11-25%

Vegetation			
Upper stratum	Low (<10 m)	Isolated trees (<0.25%)	*Atalaya hemiglauca and Ficus brachypoda*
Mid stratum	Low (0.5-1 m)	Open shrubland and/or heathland (20-50%)	*Atalaya hemiglauca and Ficus brachypoda*
Ground stratum	Low (>0.5 m)	Sparse hummock grassland (0.25-20%)	*Triodia sp.*

Fulcrum photo ID	9e49a70e-39b9-465b-8b41-210a96dbe7b8,ff149b68-2dae-46d8-

675.072189-CAM-35

Project:	675.072189				
Date	2-03-2024		**Sample Type**	Camera Trap	
Zone	50	**Easting**	717464	**Northing**	7749547

Landform and Soil		Rock	
Landform	Outcrop/breakaway	**Rock type/s**	Granite
Aspect	North	**Surface stone cover**	75 - 100%
Soil type	Sand	**Surface stone size classes present**	Small Stones (0.6 - 2 cm), Stones (2 - 6 cm), Small Rocks (6 - 20 cm), Rocks (20 - 60 cm), Big Rocks (60 cm - 2 m), Boulders (>2 m), Pebbles (<0.6 cm)
Soil colour	Orange		
Condition		**Habitat Features**	
Quality	Very good	**Water Source**	
Fire History	Little or no fire evidence (>5 years)	**Microhabitats**	Caves, Exfoliating rock, Hummocks, Leaf litter, Rock crevices, Woody debris, Peeling bark
Disturbance	Vehicle tracks		
Introduced fauna	Cattle	**Ground Cover**	11-25%

Vegetation			
Upper stratum	Absent		
Mid stratum	Mid (1-2 m)	Isolated shrubs and/or heath shrubs (<0.25%)	*Atalaya hemiglauca and Ficus brachypoda*
Ground stratum	Low (>0.5 m)	Sparse hummock grassland (0.25-20%)	*Triodia epactia*

Fulcrum photo ID	733fb305-7279-411f-91a1-1b42b3359bd6,e4896b6a-3a8b-4bac-b0b1-

675.072189-CAM-36

Project:	675.072189				
Date	2-03-2024		**Sample Type**	Camera Trap	
Zone	50	**Easting**	719462	**Northing**	7754811.4

Landform and Soil		Rock	
Landform	Drainage line	**Rock type/s**	None
Aspect	Negligible	**Surface stone cover**	
Soil type	Sand	**Surface stone size classes present**	
Soil colour	Red		
Condition		**Habitat Features**	
Quality	Disturbed	**Water Source**	Absent
Fire History	Little or no fire evidence (>5 years)	**Microhabitats**	Hummocks, Leaf litter, Logs > 10 cm, Peeling bark
Disturbance	Overgrazing,Weeds		
Introduced fauna	Cattle	**Ground Cover**	51-75%

Vegetation			
Upper stratum	Low (<10 m)	Open woodland (0.25-20%)	*Eucalyptus victrix*
Mid stratum	Mid (1-2 m)	Sparse shrubland and/or heathland (0.25-20%)	*Acacia colei*
Ground stratum	Low (>0.5 m)	Open hummock grassland (20-50%)	*Triodia epactia and Eulalia aurea*

Fulcrum photo ID	4e0eaea2-878e-4141-b397-3151d77f0f17

675.072189-CAM-37

Project:	675.072189				
Date	2-03-2024		**Sample Type**	Camera Trap	
Zone	50	**Easting**	719490	**Northing**	7755363

Landform and Soil		**Rock**	
Landform	Drainage line	**Rock type/s**	None
Aspect	Negligible	**Surface stone cover**	
Soil type	Sand	**Surface stone size classes present**	
Soil colour	Red		
Condition		**Habitat Features**	
Quality	Disturbed	**Water Source**	Absent
Fire History	Little or no fire evidence (>5 years)	**Microhabitats**	Hummocks, Leaf litter, Peeling bark, Woody debris
Disturbance	Overgrazing,Weeds		
Introduced fauna	Cattle	**Ground Cover**	

Vegetation			
Upper stratum	Low (<10 m)	Open woodland (0.25-20%)	*Corymbia flavescens*
Mid stratum	Mid (1-2 m)	Sparse shrubland and/or heathland (0.25-20%)	*Acacia colei*
Ground stratum	Low (>0.5 m)	Open hummock grassland (20-50%)	*Triodia epactia*

Fulcrum photo ID	f177ae7e-15f1-4550-af34-ef6b7519d370

675.072189-CAM-38

Project:	675.072189				
Date	2-03-2024		**Sample Type**	Camera Trap	
Zone	50	**Easting**	717065	**Northing**	7749310.3

Landform and Soil		**Rock**	
Landform	Outcrop/breakaway	**Rock type/s**	Granite, Ironstone, Quartz
Aspect	North	**Surface stone cover**	50 - 75%
Soil type	Sand	**Surface stone size classes present**	Small Stones (0.6 - 2 cm), Stones (2 - 6 cm), Small Rocks (6 - 20 cm), Rocks (20 - 60 cm), Big Rocks (60 cm - 2 m)
Soil colour	Red		
Condition		**Habitat Features**	
Quality	Good	**Water Source**	Absent
Fire History	Little or no fire evidence (>5 years)	**Microhabitats**	Caves, Exfoliating rock, Hummocks, Rock crevices
Disturbance	Overgrazing		
Introduced fauna	Cattle	**Ground Cover**	

Vegetation			
Upper stratum	Absent		
Mid stratum	Absent		
Ground stratum	Low (>0.5 m)	Open hummock grassland (20-50%)	*Triodia epactia*

Fulcrum photo ID	88ac542d-9fc3-4340-9fb7-7e5f6f50eef1

675.072189-CAM-39

Project:	675.072189				
Date	2-03-2024		**Sample Type**	Camera Trap	
Zone	50	**Easting**	705838	**Northing**	7742778

Landform and Soil		**Rock**	
Landform	Drainage line	**Rock type/s**	None
Aspect	North	**Surface stone cover**	
Soil type	Sand	**Surface stone size classes present**	
Soil colour	White, Yellow		
Condition		**Habitat Features**	
Quality	Disturbed	**Water Source**	
Fire History	Unknown	**Microhabitats**	Hollows - logs, Hollows - trees, Hummocks, Leaf litter, Woody debris
Disturbance	Vehicle tracks		
Introduced fauna	None observed	**Ground Cover**	26-50%

Vegetation			
Upper stratum	Low (<10 m)	Woodland (20-50%)	*Acacia cyperophylla, Paper bark*
Mid stratum	Mid (1-2 m)	Open shrubland and/or heathland (20-50%)	*Acacia sp.*
Ground stratum	Low (>0.5 m)	Open hummock grassland (20-50%)	*Triodia epactia*

Fulcrum photo ID	2259cceb-db1c-4f76-869e-73319d6085c0

675.072189-CAM-40

Project:	675.072189				
Date	2-03-2024		**Sample Type**	Camera Trap	
Zone	50	**Easting**	717385	**Northing**	7749526.3

Landform and Soil		**Rock**	
Landform	Outcrop/breakaway	**Rock type/s**	Granite
Aspect	North	**Surface stone cover**	75 - 100%
Soil type	Sand	**Surface stone size classes present**	Small Stones (0.6 - 2 cm), Stones (2 - 6 cm), Small Rocks (6 - 20 cm), Rocks (20 - 60 cm), Big Rocks (60 cm - 2 m), Boulders (>2 m), Pebbles (<0.6 cm)
Soil colour	Orange		
Condition		**Habitat Features**	
Quality	Very good	**Water Source**	
Fire History	Little or no fire evidence (>5 years)	**Microhabitats**	Caves, Exfoliating rock, Hummocks, Leaf litter, Rock crevices, Woody debris, Peeling bark
Disturbance	Vehicle tracks		
Introduced fauna	Cattle	**Ground Cover**	11-25%

Vegetation			
Upper stratum	Absent		
Mid stratum	Mid (1-2 m)	Isolated shrubs and/or heath shrubs (<0.25%)	*Atalaya hemiglauca and Ficus brachypoda*
Ground stratum	Low (>0.5 m)	Sparse hummock grassland (0.25-20%)	*Triodia epactia*

Fulcrum photo ID	e3ce36af-bbbc-48db-ae7a-c6ca62b1e724

675.072189-CAM-41

Project:	675.072189				
Date	2-03-2024		**Sample Type**	Camera Trap	
Zone	50	**Easting**	719414	**Northing**	7755547

Landform and Soil		Rock	
Landform	Drainage line	**Rock type/s**	Granite
Aspect	East	**Surface stone cover**	0 - 5%
Soil type	Clay loam	**Surface stone size classes present**	Pebbles (<0.6 cm), Small Stones (0.6 - 2 cm), Stones (2 - 6 cm)
Soil colour	Orange		
Condition		**Habitat Features**	
Quality	Good	**Water Source**	Absent
Fire History	Burnt (1-5 years)	**Microhabitats**	Hummocks, Leaf litter, Logs > 10 cm, Peeling bark, Woody debris
Disturbance	Vehicle tracks		
Introduced fauna	Cattle	**Ground Cover**	26-50%

Vegetation			
Upper stratum	Low (<10 m)	Woodland (20-50%)	*Acacia sp.*
Mid stratum	Mid (1-2 m)	Open shrubland and/or heathland (20-50%)	*Acacia sp.*
Ground stratum	Low (>0.5 m)	Open hummock grassland (20-50%)	*Triodia epactia*

Fulcrum photo ID	8c6ce9d3-f756-46c1-a2fb-2ef3762f9c68,dbbb467d-7fe1-466c-9112-

675.072189-CAM-42

Project:	675.072189				
Date	2-03-2024		**Sample Type**	Camera Trap	
Zone	50	**Easting**	717217	**Northing**	7749332.8

Landform and Soil		Rock	
Landform	Outcrop/breakaway	**Rock type/s**	Granite, Ironstone, Quartz
Aspect	North	**Surface stone cover**	50 - 75%
Soil type	Sand	**Surface stone size classes present**	Small Stones (0.6 - 2 cm), Stones (2 - 6 cm), Small Rocks (6 - 20 cm), Rocks (20 - 60 cm), Big Rocks (60 cm - 2 m)
Soil colour	Red		
Condition		**Habitat Features**	
Quality	Good	**Water Source**	Absent
Fire History	Little or no fire evidence (>5 years)	**Microhabitats**	Caves, Exfoliating rock, Hummocks, Rock crevices
Disturbance	Overgrazing		
Introduced fauna	Cattle	**Ground Cover**	

Vegetation			
Upper stratum	Absent		
Mid stratum	Absent		
Ground stratum	Low (>0.5 m)	Open hummock grassland (20-50%)	*Triodia epactia*

Fulcrum photo ID	75932079-4849-4db7-8de1-078b9c1ba833

675.072189-CAM-43

Project:	675.072189				
Date	2-03-2024		**Sample Type**	Camera Trap	
Zone	50	**Easting**	717016	**Northing**	7749322

Landform and Soil		**Rock**	
Landform	Outcrop/breakaway	**Rock type/s**	Granite, Ironstone, Quartz
Aspect	North	**Surface stone cover**	50 - 75%
Soil type	Sand	**Surface stone size classes present**	Small Stones (0.6 - 2 cm), Stones (2 - 6 cm), Small Rocks (6 - 20 cm), Rocks (20 - 60 cm), Big Rocks (60 cm - 2 m)
Soil colour	Red		
Condition		**Habitat Features**	
Quality	Good	**Water Source**	Absent
Fire History	Little or no fire evidence (>5 years)	**Microhabitats**	Caves, Exfoliating rock, Hummocks, Rock crevices
Disturbance	Overgrazing		
Introduced fauna	Cattle	**Ground Cover**	

Vegetation			
Upper stratum	Absent		
Mid stratum	Absent		
Ground stratum	Low (>0.5 m)	Open hummock grassland (20-50%)	*Cenchrus ciliaris and Triodia sp.*

Fulcrum photo ID	38ebb745-6181-4852-aaca-db0cd870262e

675.072189-CAM-44

Project:	675.072189				
Date	2-03-2024		**Sample Type**	Camera Trap	
Zone	50	**Easting**	699355	**Northing**	7740673.2

Landform and Soil		**Rock**	
Landform	Outcrop/breakaway	**Rock type/s**	Unknown
Aspect	West	**Surface stone cover**	25 - 50%
Soil type	Sand	**Surface stone size classes present**	Boulders (>2 m), Small Rocks (6 - 20 cm)
Soil colour	Orange, Grey		
Condition		**Habitat Features**	
Quality	Good	**Water Source**	Absent
Fire History	Recently burnt (<1 year)	**Microhabitats**	Exfoliating rock, Hummocks, Leaf litter, Peeling bark, Woody debris, Rock crevices
Disturbance	None observed		
Introduced fauna	None observed	**Ground Cover**	51-75%

Vegetation			
Upper stratum	Low (<10 m)		*Acacia Inaequilatera*
Mid stratum	Absent		
Ground stratum	Mid (0.5-1 m)	Hummock grassland (50-80%)	*Triodia epactia*

Fulcrum photo ID	c33ec222-b009-4b8c-abcb-18e83bfb6c8d

675.072189-CAM-45

Project:	675.072189				
Date	2-03-2024		**Sample Type**	Camera Trap	
Zone	50	**Easting**	699811	**Northing**	7742455

Landform and Soil		**Rock**	
Landform	Outcrop/breakaway	**Rock type/s**	Laterite
Aspect	North	**Surface stone cover**	50 - 75%
Soil type	Sand	**Surface stone size classes present**	Small Stones (0.6 - 2 cm), Stones (2 - 6 cm), Small Rocks (6 - 20 cm), Rocks (20 - 60 cm), Big Rocks (60 cm - 2 m)
Soil colour	Red		
Condition		**Habitat Features**	
Quality	Good	**Water Source**	Absent
Fire History	Little or no fire evidence (>5 years)	**Microhabitats**	Exfoliating rock, Hummocks, Rock crevices
Disturbance	None observed		
Introduced fauna	Cat	**Ground Cover**	11-25%

Vegetation			
Upper stratum	Absent		
Mid stratum	Absent		
Ground stratum	Low (>0.5 m)	Sparse hummock grassland (0.25-20%)	*Triodia epactia*

Fulcrum photo ID	59f639d9-84d6-4d1d-a4de-78789c5fa00d

675.072189-CAM-46

Project:	675.072189				
Date	2-03-2024		**Sample Type**	Camera Trap	
Zone	50	**Easting**	699950	**Northing**	7740952.4

Landform and Soil		**Rock**	
Landform	Outcrop/breakaway	**Rock type/s**	Quartz
Aspect	North	**Surface stone cover**	75 - 100%
Soil type	Sand	**Surface stone size classes present**	Small Stones (0.6 - 2 cm), Stones (2 - 6 cm), Small Rocks (6 - 20 cm), Rocks (20 - 60 cm), Big Rocks (60 cm - 2 m)
Soil colour	Red		
Condition		**Habitat Features**	
Quality	Very good	**Water Source**	Absent
Fire History	Little or no fire evidence (>5 years)	**Microhabitats**	Exfoliating rock, Hummocks, Rock crevices
Disturbance	None observed		
Introduced fauna	None observed	**Ground Cover**	26-50%

Vegetation			
Upper stratum	Absent		
Mid stratum	Absent		
Ground stratum		Sparse hummock grassland (0.25-20%)	*Triodia epactia*

Fulcrum photo ID	6e392ed3-6d9b-4f9b-b747-180ea692fc5b

675.072189-CAM-47

Project:	675.072189				
Date	2-03-2024		**Sample Type**	Camera Trap	
Zone	50	**Easting**	719897	**Northing**	7755038

Landform and Soil		**Rock**	
Landform	Outcrop/breakaway	**Rock type/s**	Granite
Aspect	West	**Surface stone cover**	75 - 100%
Soil type	Rock	**Surface stone size classes present**	Pebbles (<0.6 cm), Small Stones (0.6 - 2 cm), Stones (2 - 6 cm), Rocks (20 - 60 cm), Big Rocks (60 cm - 2 m), Boulders (>2 m), Small Rocks (6 - 20 cm)
Soil colour	Orange		
Condition		**Habitat Features**	
Quality	High quality	**Water Source**	Absent
Fire History	Burnt (1-5 years)	**Microhabitats**	Caves, Exfoliating rock, Hummocks, Leaf litter, Peeling bark, Rock crevices, Woody debris
Disturbance	None observed		
Introduced fauna	None observed	**Ground Cover**	11-25%

Vegetation			
Upper stratum	Low (<10 m)	Isolated trees (<0.25%)	*Atalaya hemiglauca and Ficus brachypoda*
Mid stratum	Low (0.5-1 m)	Open shrubland and/or heathland (20-50%)	*Atalaya hemiglauca and Ficus brachypoda*
Ground stratum	Low (>0.5 m)	Sparse hummock grassland (0.25-20%)	*Triodia sp.*

Fulcrum photo ID	26a50f4a-3047-4a39-a0b5-f88901e8ac73

675.072189-CAM-48

Project:	675.072189				
Date	2-03-2024		**Sample Type**	Camera Trap	
Zone	50	**Easting**	719924	**Northing**	7754981.1

Landform and Soil		**Rock**	
Landform	Outcrop/breakaway	**Rock type/s**	Granite
Aspect	West	**Surface stone cover**	75 - 100%
Soil type	Rock	**Surface stone size classes present**	Pebbles (<0.6 cm), Small Stones (0.6 - 2 cm), Stones (2 - 6 cm), Rocks (20 - 60 cm), Big Rocks (60 cm - 2 m), Boulders (>2 m), Small Rocks (6 - 20 cm)
Soil colour	Orange		
Condition		**Habitat Features**	
Quality	High quality	**Water Source**	Absent
Fire History	Burnt (1-5 years)	**Microhabitats**	Caves, Exfoliating rock, Hummocks, Leaf litter, Peeling bark, Rock crevices, Woody debris
Disturbance	None observed		
Introduced fauna	None observed	**Ground Cover**	11-25%

Vegetation			
Upper stratum	Low (<10 m)	Isolated trees (<0.25%)	*Atalaya hemiglauca and Ficus brachypoda*
Mid stratum	Low (0.5-1 m)	Open shrubland and/or heathland (20-50%)	*Atalaya hemiglauca and Ficus brachypoda*
Ground stratum	Low (>0.5 m)	Sparse hummock grassland (0.25-20%)	*Triodia sp.*

Fulcrum photo ID	7bb66d9b-c078-45f3-b984-0a4d117589d9

675.072189-CAM-49

Project:	675.072189				
Date	2-03-2024		**Sample Type**	Camera Trap	
Zone	50	**Easting**	705911	**Northing**	7742520

Landform and Soil		Rock	
Landform	Drainage line	**Rock type/s**	None
Aspect	Negligible	**Surface stone cover**	
Soil type	Sand	**Surface stone size classes present**	
Soil colour	Red		
Condition		**Habitat Features**	
Quality	Good	**Water Source**	Absent
Fire History	Little or no fire evidence (>5 years)	**Microhabitats**	Hummocks, Leaf litter
Disturbance	None observed		
Introduced fauna	None observed	**Ground Cover**	

Vegetation			
Upper stratum	Low (<10 m)	Open woodland (0.25-20%)	*Eucalyptus Melaleuca*
Mid stratum	Mid (1-2 m)	Open shrubland and/or heathland (20-50%)	*Acacia sp.*
Ground stratum	Low (>0.5 m)	Open hummock grassland (20-50%)	*Triodia epactia*

Fulcrum photo ID	d5f208b1-8392-402d-99db-2c93a19190b1

675.072189-CAM-50

Project:	675.072189				
Date	2-03-2024		**Sample Type**	Camera Trap	
Zone	50	**Easting**	700083	**Northing**	7740603.2

Landform and Soil		Rock	
Landform	Outcrop/breakaway	**Rock type/s**	Granite, Quartz
Aspect	South	**Surface stone cover**	75 - 100%
Soil type	Sand	**Surface stone size classes present**	Small Stones (0.6 - 2 cm), Stones (2 - 6 cm), Small Rocks (6 - 20 cm), Rocks (20 - 60 cm), Big Rocks (60 cm - 2 m), Boulders (>2 m)
Soil colour	Red		
Condition		**Habitat Features**	
Quality	Very good	**Water Source**	Absent
Fire History	Little or no fire evidence (>5 years)	**Microhabitats**	Exfoliating rock, Hummocks, Rock crevices
Disturbance	None observed		
Introduced fauna	None observed	**Ground Cover**	

Vegetation			
Upper stratum	Absent		
Mid stratum	Low (0.5-1 m)	Sparse shrubland and/or heathland (0.25-20%)	*Acacia colei*
Ground stratum	Low (>0.5 m)	Open hummock grassland (20-50%)	*Triodia epactia*

Fulcrum photo ID	c37f032a-62d5-4ba2-be27-fcaeed61eeb5,491b6f84-f553-459e-b48c-

675.072189-CAM-51

Project:	675.072189				
Date	2-03-2024		**Sample Type**	Camera Trap	
Zone	50	**Easting**	688646	**Northing**	7740917

Landform and Soil		**Rock**	
Landform	Drainage line	**Rock type/s**	Granite, Quartz
Aspect	Negligible	**Surface stone cover**	5 - 25%
Soil type	Sand	**Surface stone size classes present**	Pebbles (<0.6 cm), Small Stones (0.6 - 2 cm), Stones (2 - 6 cm), Small Rocks (6 - 20 cm), Rocks (20 - 60 cm)
Soil colour	Red		
Condition		**Habitat Features**	
Quality	Very good	**Water Source**	Absent
Fire History	Little or no fire evidence (>5 years)	**Microhabitats**	Exfoliating rock, Hummocks, Leaf litter, Logs > 10 cm, Rock crevices
Disturbance	None observed		
Introduced fauna	None observed	**Ground Cover**	

Vegetation			
Upper stratum	Absent		
Mid stratum	Low (0.5-1 m)	Sparse shrubland and/or heathland (0.25-20%)	*Eucalyptus camaldulensis, Melaleuca argentea*
Ground stratum	Low (>0.5 m)	Open hummock grassland (20-50%)	*Triodia epactia*

Fulcrum photo ID	0eec3229-f671-4024-bd6a-abca79c89446

675.072189-CAM-52

Project:	675.072189				
Date	3-03-2024		**Sample Type**	Camera Trap	
Zone	50	**Easting**	660811	**Northing**	7739282.7

Landform and Soil		**Rock**	
Landform	Plain	**Rock type/s**	None
Aspect	Negligible	**Surface stone cover**	
Soil type	Sand	**Surface stone size classes present**	
Soil colour	Orange		
Condition		**Habitat Features**	
Quality	Good	**Water Source**	Absent
Fire History	Little or no fire evidence (>5 years)	**Microhabitats**	Hummocks, Leaf litter, Woody debris, Logs > 10 cm
Disturbance	Litter,Vehicle tracks		
Introduced fauna	None observed	**Ground Cover**	51-75%

Vegetation			
Upper stratum	Low (<10 m)	Open woodland (0.25-20%)	*Eucalyptus sp.*
Mid stratum	Low (0.5-1 m)	Open shrubland and/or heathland (20-50%)	*Acacia stellaticeps*
Ground stratum	Low (>0.5 m)	Open hummock grassland (20-50%)	*Triodia epactia*

Fulcrum photo ID	bff234e9-d528-446b-bca8-7a22918c02e3

675.072189-CAM-53

Project:	675.072189				
Date	3-03-2024		**Sample Type**	Camera Trap	
Zone	50	**Easting**	660281	**Northing**	7741179

Landform and Soil		**Rock**	
Landform	Plain	**Rock type/s**	None
Aspect	Negligible	**Surface stone cover**	
Soil type	Sand	**Surface stone size classes present**	
Soil colour	Red		
Condition		**Habitat Features**	
Quality	Good	**Water Source**	Absent
Fire History	Little or no fire evidence (>5 years)	**Microhabitats**	Hummocks, Leaf litter, Peeling bark, Woody debris
Disturbance	Vehicle tracks,Weeds		
Introduced fauna	None observed	**Ground Cover**	51-75%

Vegetation			
Upper stratum	Low (<10 m)	Open woodland (0.25-20%)	*Eucalyptus sp.*
Mid stratum	Mid (1-2 m)	Sparse shrubland and/or heathland (0.25-20%)	*Acacia stellaticeps*
Ground stratum	Low (>0.5 m)	Open hummock grassland (20-50%)	*Triodia epactia and Acacia stellaticeps*

Fulcrum photo ID	2aee6c94-03d3-45cd-9f0b-887bd5cb9ba6

675.072189-CAM-54

Project:	675.072189				
Date	5-03-2024		**Sample Type**	Camera Trap	
Zone	50	**Easting**	676125	**Northing**	7738409.0

Landform and Soil		**Rock**	
Landform	Drainage line	**Rock type/s**	None
Aspect	North	**Surface stone cover**	
Soil type	Sand	**Surface stone size classes present**	
Soil colour	Orange, Grey		
Condition		**Habitat Features**	
Quality		**Water Source**	Absent
Fire History	Little or no fire evidence (>5 years)	**Microhabitats**	Burrows, Peeling bark, Leaf litter, Hummocks, Woody debris
Disturbance	None observed		
Introduced fauna	Cattle	**Ground Cover**	26-50%

Vegetation			
Upper stratum	Low (<10 m)	Open woodland (0.25-20%)	*Eucalyptus camaldulensis*
Mid stratum	Mid (1-2 m)	Open shrubland and/or heathland (20-50%)	*Acacia trachycarpa*
Ground stratum	Low (>0.5 m)	Hummock grassland (50-80%)	*Triodia epactia*

Fulcrum photo ID	2e66357f-17cd-4e40-bf01-1e6d2670e225

675.072189-CAM-55

Project:	675.072189				
Date	5-03-2024		**Sample Type**	Camera Trap	
Zone	50	**Easting**	659959	**Northing**	7741619

Landform and Soil		**Rock**	
Landform	Plain	**Rock type/s**	None
Aspect	Negligible	**Surface stone cover**	
Soil type	Sandy loam	**Surface stone size classes present**	
Soil colour	Orange		
Condition		**Habitat Features**	
Quality	Very good	**Water Source**	Absent
Fire History	Little or no fire evidence (>5 years)	**Microhabitats**	Burrows, Hummocks, Leaf litter, Peeling bark, Woody debris
Disturbance	None observed		
Introduced fauna	None observed	**Ground Cover**	51-75%

Vegetation			
Upper stratum	Low (<10 m)	Isolated trees (<0.25%)	*Eucalyptus camaldulensis*
Mid stratum	Low (0.5-1 m)	Isolated shrubs and/or heath shrubs (<0.25%)	*Eucalyptus camaldulensis*
Ground stratum	Low (>0.5 m)	Hummock grassland (50-80%)	*Triodia epactia and Acacia stellaticeps*

Fulcrum photo ID	1bcb9feb-46a2-4c8c-90af-55a580050845

675.072189-CAM-56

Project:	675.072189				
Date	5-03-2024		**Sample Type**	Camera Trap	
Zone	50	**Easting**	669924	**Northing**	7737566.3

Landform and Soil		**Rock**	
Landform	Plain	**Rock type/s**	None
Aspect	Negligible	**Surface stone cover**	
Soil type	Sandy loam	**Surface stone size classes present**	
Soil colour	Orange		
Condition		**Habitat Features**	
Quality	Good	**Water Source**	
Fire History	Little or no fire evidence (>5 years)	**Microhabitats**	
Disturbance	Vehicle tracks,Clearing,Infrastructure		
Introduced fauna	None observed	**Ground Cover**	26-50%

Vegetation			
Upper stratum	Low (<10 m)	Open woodland (0.25-20%)	*Eucalyptus victrix*
Mid stratum	Absent		
Ground stratum	Low (>0.5 m)	Open hummock grassland (20-50%)	*Triodia epactia and Acacia stellaticeps*

Fulcrum photo ID	bb2a0241-da1c-46c4-b2f4-1c8a572272f8

675.072189-CAM-57

Project:	675.072189				
Date	5-03-2024		**Sample Type**	Camera Trap	
Zone	50	**Easting**	674434	**Northing**	7738387

Landform and Soil		**Rock**	
Landform	Drainage line	**Rock type/s**	
Aspect	West	**Surface stone cover**	25 - 50%
Soil type	Sand	**Surface stone size classes present**	Pebbles (<0.6 cm), Small Stones (0.6 - 2 cm), Stones (2 - 6 cm)
Soil colour	Red		
Condition		**Habitat Features**	
Quality	Very good	**Water Source**	Absent
Fire History	Little or no fire evidence (>5 years)	**Microhabitats**	Hummocks, Leaf litter, Logs > 10 cm
Disturbance	None observed		
Introduced fauna	None observed	**Ground Cover**	

Vegetation			
Upper stratum	Low (<10 m)	Open woodland (0.25-20%)	*Eucalyptus victrix*
Mid stratum	Mid (1-2 m)	Sparse shrubland and/or heathland (0.25-20%)	*Eucalyptus victrix and Acacia colei*
Ground stratum	Low (>0.5 m)	Open hummock grassland (20-50%)	*Triodia epactia*

Fulcrum photo ID	571cfc56-b200-4dab-a59d-b9ab5757ad46

675.072189-CAM-58

Project:	675.072189				
Date	5-03-2024		**Sample Type**	Camera Trap	
Zone	50	**Easting**	674610	**Northing**	7738626.1

Landform and Soil		**Rock**	
Landform	Drainage line	**Rock type/s**	Other
Aspect	West	**Surface stone cover**	25 - 50%
Soil type	Sand	**Surface stone size classes present**	Pebbles (<0.6 cm), Small Stones (0.6 - 2 cm), Stones (2 - 6 cm)
Soil colour	Red		
Condition		**Habitat Features**	
Quality	Very good	**Water Source**	Absent
Fire History	Little or no fire evidence (>5 years)	**Microhabitats**	Hummocks, Leaf litter, Logs > 10 cm
Disturbance	None observed		
Introduced fauna	None observed	**Ground Cover**	

Vegetation			
Upper stratum	Low (<10 m)	Open woodland (0.25-20%)	*Eucalyptus victrix*
Mid stratum	Mid (1-2 m)	Sparse shrubland and/or heathland (0.25-20%)	*Eucalyptus victrix, Acacia colei*
Ground stratum	Low (>0.5 m)	Open hummock grassland (20-50%)	Triodia epactia

Fulcrum photo ID	1949a106-8148-4f67-ad36-413a6f6230cd,e04c6456-a64c-4c94-9ba3-

675.072189-CAM-59

Project:	675.072189				
Date	5-03-2024		**Sample Type**	Camera Trap	
Zone	50	**Easting**	661215	**Northing**	7739665

Landform and Soil		**Rock**	
Landform	Plain	**Rock type/s**	None
Aspect	Negligible	**Surface stone cover**	
Soil type	Sand	**Surface stone size classes present**	
Soil colour	Orange		
Condition		**Habitat Features**	
Quality	Good	**Water Source**	Absent
Fire History	Little or no fire evidence (>5 years)	**Microhabitats**	Hummocks, Leaf litter, Woody debris, Logs > 10 cm
Disturbance	Litter,Vehicle tracks		
Introduced fauna	None observed	**Ground Cover**	51-75%

Vegetation			
Upper stratum	Low (<10 m)	Open woodland (0.25-20%)	*Eucalyptus sp.*
Mid stratum	Low (0.5-1 m)	Open shrubland and/or heathland (20-50%)	*Acacia stellaticeps*
Ground stratum	Low (>0.5 m)	Open hummock grassland (20-50%)	*Triodia epactia*

Fulcrum photo ID	e7e80357-8660-41be-b5bd-a825c9839883

675.072189-CAM-60

Project:	675.072189				
Date	6-03-2024		**Sample Type**	Camera Trap	
Zone	50	**Easting**	704681	**Northing**	7741098.3

Landform and Soil		**Rock**	
Landform	Outcrop/breakaway	**Rock type/s**	Granite
Aspect	East	**Surface stone cover**	75 - 100%
Soil type	Sand	**Surface stone size classes present**	Pebbles (<0.6 cm), Small Stones (0.6 - 2 cm), Stones (2 - 6 cm), Small Rocks (6 - 20 cm), Boulders (>2 m)
Soil colour	Red		
Condition		**Habitat Features**	
Quality	Good	**Water Source**	Absent
Fire History	Little or no fire evidence (>5 years)	**Microhabitats**	Exfoliating rock, Hummocks, Rock crevices
Disturbance	Infrastructure,Vehicle tracks		
Introduced fauna	None observed	**Ground Cover**	

Vegetation			
Upper stratum	Absent		
Mid stratum	Absent		
Ground stratum	Low (>0.5 m)	Sparse hummock grassland (0.25-20%)	*Triodia epactia*

Fulcrum photo ID	82216676-483d-41d4-9a66-14081df56566

675.072189-CAM-61

Project:	675.072189				
Date	6-03-2024		**Sample Type**	Camera Trap	
Zone	50	**Easting**	704756	**Northing**	7741958

Landform and Soil		**Rock**	
Landform	Outcrop/breakaway	**Rock type/s**	Granite
Aspect	Negligible	**Surface stone cover**	75 - 100%
Soil type	Peat	**Surface stone size classes present**	Boulders (>2 m), Big Rocks (60 cm - 2 m), Rocks (20 - 60 cm), Pebbles (<0.6 cm), Small Stones (0.6 - 2 cm), Small Rocks (6 - 20 cm), Stones (2 - 6 cm)
Soil colour	Orange		
Condition		**Habitat Features**	
Quality	Good	**Water Source**	Absent
Fire History	Burnt (1-5 years)	**Microhabitats**	Caves, Exfoliating rock, Hummocks, Leaf litter, Rock crevices
Disturbance	Vehicle tracks		
Introduced fauna	None observed	**Ground Cover**	11-25%

Vegetation			
Upper stratum	Absent		
Mid stratum	Absent		
Ground stratum	Low (>0.5 m)	Sparse hummock grassland (0.25-20%)	*Triodia epactia*

Fulcrum photo ID	a7158cd1-c512-4eef-8979-1a6a2a060a49

675.072189-CAM-62

Project:	675.072189				
Date	6-03-2024		**Sample Type**	Camera Trap	
Zone	50	**Easting**	704668	**Northing**	7741169.1

Landform and Soil		**Rock**	
Landform	Outcrop/breakaway	**Rock type/s**	Granite
Aspect	East	**Surface stone cover**	75 - 100%
Soil type	Sand	**Surface stone size classes present**	Pebbles (<0.6 cm), Small Stones (0.6 - 2 cm), Stones (2 - 6 cm), Small Rocks (6 - 20 cm), Boulders (>2 m)
Soil colour	Red		
Condition		**Habitat Features**	
Quality	Good	**Water Source**	Absent
Fire History	Little or no fire evidence (>5 years)	**Microhabitats**	Exfoliating rock, Hummocks, Rock crevices
Disturbance	Infrastructure,Vehicle tracks		
Introduced fauna	None observed	**Ground Cover**	

Vegetation			
Upper stratum	Absent		
Mid stratum	Absent		
Ground stratum	Low (>0.5 m)	Sparse hummock grassland (0.25-20%)	*Triodia epactia*

Fulcrum photo ID	f228013c-d7c9-4663-a671-8d5e4ce882cd

675.072189-CAM-63

Project:	675.072189				
Date	6-03-2024		**Sample Type**	Camera Trap	
Zone	50	**Easting**	704720	**Northing**	7741989

Landform and Soil		**Rock**	
Landform	Outcrop/breakaway	**Rock type/s**	Granite
Aspect	Negligible	**Surface stone cover**	75 - 100%
Soil type	Peat	**Surface stone size classes present**	Boulders (>2 m), Big Rocks (60 cm - 2 m), Rocks (20 - 60 cm), Pebbles (<0.6 cm), Small Stones (0.6 - 2 cm), Small Rocks (6 - 20 cm), Stones (2 - 6 cm)
Soil colour	Orange		
Condition		**Habitat Features**	
Quality	Good	**Water Source**	Absent
Fire History	Burnt (1-5 years)	**Microhabitats**	Caves, Exfoliating rock, Hummocks, Leaf litter, Rock crevices
Disturbance	Vehicle tracks		
Introduced fauna	None observed	**Ground Cover**	11-25%

Vegetation			
Upper stratum	Absent		
Mid stratum	Absent		
Ground stratum	Low (>0.5 m)	Sparse hummock grassland (0.25-20%)	*Triodia epactia*

Fulcrum photo ID	48ee0618-4efc-4a5f-8222-fc06022a9b57

675.072189-CAM-64

Project:	675.072189				
Date	6-03-2024		**Sample Type**	Camera Trap	
Zone	50	**Easting**	679471	**Northing**	7739344.0

Landform and Soil		**Rock**	
Landform	Drainage line	**Rock type/s**	Granite, Quartz
Aspect	North	**Surface stone cover**	5 - 25%
Soil type	Sand	**Surface stone size classes present**	Small Stones (0.6 - 2 cm), Stones (2 - 6 cm), Pebbles (<0.6 cm)
Soil colour	Orange		
Condition		**Habitat Features**	
Quality	Good	**Water Source**	Absent
Fire History	Unknown	**Microhabitats**	
Disturbance	Vehicle tracks		
Introduced fauna	Cattle	**Ground Cover**	26-50%

Vegetation			
Upper stratum	Low (<10 m)	Open woodland (0.25-20%)	*Eucalyptus victrix*
Mid stratum	Mid (1-2 m)	Open shrubland and/or heathland (20-50%)	*Acacia trachycarpa*
Ground stratum	Low (>0.5 m)	Sparse hummock grassland (0.25-20%)	*Triodia epactia and Eulalia aurea*

Fulcrum photo ID	410638c5-b2ae-47df-a28b-e36fde476284

675.072189-CAM-65

Project:	675.072189				
Date	6-03-2024		**Sample Type**	Camera Trap	
Zone	50	**Easting**	685627	**Northing**	7740314

Landform and Soil		**Rock**	
Landform	Drainage line	**Rock type/s**	None
Aspect	Negligible	**Surface stone cover**	
Soil type	Sand	**Surface stone size classes present**	
Soil colour	Red		
Condition		**Habitat Features**	
Quality	Very good	**Water Source**	Absent
Fire History	Little or no fire evidence (>5 years)	**Microhabitats**	Hummocks, Leaf litter, Peeling bark, Woody debris
Disturbance	Vehicle tracks		
Introduced fauna	None observed	**Ground Cover**	76-100%

Vegetation			
Upper stratum	Low (<10 m)	Open woodland (0.25-20%)	*Eucalyptus victrix*
Mid stratum	Mid (1-2 m)	Sparse shrubland and/or heathland (0.25-20%)	*Acacia colei*
Ground stratum	Low (>0.5 m)	Hummock grassland (50-80%)	*Triodia epactia*

Fulcrum photo ID	85812315-bd62-428d-871f-6697e215792a

675.072189-CAM-66

Project:	675.072189				
Date	6-03-2024		**Sample Type**	Camera Trap	
Zone	50	**Easting**	704820	**Northing**	7741885.2

Landform and Soil		**Rock**	
Landform	Outcrop/breakaway	**Rock type/s**	Granite
Aspect	Negligible	**Surface stone cover**	75 - 100%
Soil type	Peat	**Surface stone size classes present**	Boulders (>2 m), Big Rocks (60 cm - 2 m), Rocks (20 - 60 cm), Pebbles (<0.6 cm), Small Stones (0.6 - 2 cm), Small Rocks (6 - 20 cm), Stones (2 - 6 cm)
Soil colour	Orange		
Condition		**Habitat Features**	
Quality	Good	**Water Source**	Absent
Fire History	Burnt (1-5 years)	**Microhabitats**	Caves, Exfoliating rock, Hummocks, Leaf litter, Rock crevices
Disturbance	Vehicle tracks		
Introduced fauna	None observed	**Ground Cover**	11-25%

Vegetation			
Upper stratum	Absent		
Mid stratum	Absent		
Ground stratum	Low (>0.5 m)	Sparse hummock grassland (0.25-20%)	*Triodia epactia*

Fulcrum photo ID	2f8b118d-628f-427b-a65c-ebef497c98c7

675.072189-CAM-67

Project:	675.072189				
Date	6-03-2024		**Sample Type**	Camera Trap	
Zone	50	**Easting**	704691	**Northing**	7741038

Landform and Soil		**Rock**	
Landform	Outcrop/breakaway	**Rock type/s**	Granite
Aspect	East	**Surface stone cover**	75 - 100%
Soil type	Sand	**Surface stone size classes present**	Pebbles (<0.6 cm), Small Stones (0.6 - 2 cm), Stones (2 - 6 cm), Small Rocks (6 - 20 cm), Boulders (>2 m)
Soil colour	Red		
Condition		**Habitat Features**	
Quality	Good	**Water Source**	Absent
Fire History	Little or no fire evidence (>5 years)	**Microhabitats**	Exfoliating rock, Hummocks, Rock crevices
Disturbance	Infrastructure,Vehicle tracks		
Introduced fauna	None observed	**Ground Cover**	

Vegetation			
Upper stratum	Absent		
Mid stratum	Absent		
Ground stratum	Low (>0.5 m)	Sparse hummock grassland (0.25-20%)	*Triodia epactia*

Fulcrum photo ID	34fa4921-e688-4e88-bdea-9e4f6569a9d6

675.072189-HAB-68

Project:	675.072189				
Date	1-03-2024		**Sample Type**	Habitat Assessment	
Zone	50	**Easting**	701356	**Northing**	7742084.8

Landform and Soil		**Rock**	
Landform	Plain	**Rock type/s**	Quartz
Aspect	Negligible	**Surface stone cover**	5 - 25%
Soil type	Sand	**Surface stone size classes present**	Pebbles (<0.6 cm), Small Stones (0.6 - 2 cm), Stones (2 - 6 cm), Small Rocks (6 - 20 cm), Rocks (20 - 60 cm)
Soil colour	Red		
Condition		**Habitat Features**	
Quality	Very good	**Water Source**	Absent
Fire History	Little or no fire evidence (>5 years)	**Microhabitats**	Exfoliating rock
Disturbance	None observed		
Introduced fauna	None observed	**Ground Cover**	

Vegetation			
Upper stratum	Absent		
Mid stratum	Low (0.5-1 m)	Sparse shrubland and/or heathland (0.25-20%)	*Acacia colei, and Acacia ancistrocarpa*
Ground stratum	Low (>0.5 m)	Open hummock grassland (20-50%)	*Triodia epactia*

Fulcrum photo ID	c50509c0-8cd5-4de2-af2e-6da2faa7e947

675.072189-HAB-69

Project:	675.072189				
Date	1-03-2024		**Sample Type**	Habitat Assessment	
Zone	50	**Easting**	690832	**Northing**	7740789

Landform and Soil		**Rock**	
Landform	Plain	**Rock type/s**	None
Aspect	Negligible	**Surface stone cover**	
Soil type	Sand	**Surface stone size classes present**	
Soil colour	Red		
Condition		**Habitat Features**	
Quality	Good	**Water Source**	Absent
Fire History	Unknown	**Microhabitats**	Hummocks, Leaf litter
Disturbance	Vehicle tracks		
Introduced fauna		**Ground Cover**	

Vegetation			
Upper stratum	Absent		
Mid stratum	Low (0.5-1 m)	Sparse shrubland and/or heathland (0.25-20%)	*Acacia orthocarpa*
Ground stratum	Low (>0.5 m)	Hummock grassland (50-80%)	*Triodia epactia*

Fulcrum photo ID	ef75bb0c-759a-4764-95c7-25ccffca6fa7

675.072189-HAB-70

Project:	675.072189				
Date	3-03-2024		**Sample Type**	Habitat Assessment	
Zone	50	**Easting**	665218	**Northing**	7736221.6

Landform and Soil		**Rock**	
Landform	Plain	**Rock type/s**	None
Aspect	Negligible	**Surface stone cover**	
Soil type	Sandy clay	**Surface stone size classes present**	
Soil colour	Red		
Condition		**Habitat Features**	
Quality	Good	**Water Source**	Absent
Fire History	Little or no fire evidence (>5 years)	**Microhabitats**	Hummocks
Disturbance	Vehicle tracks		
Introduced fauna	None observed	**Ground Cover**	51-75%

Vegetation			
Upper stratum	Absent		
Mid stratum	Low (0.5-1 m)	Open shrubland and/or heathland (20-50%)	*Acacia stellaticeps*
Ground stratum	Low (>0.5 m)	Open hummock grassland (20-50%)	*Triodia epactia*

Fulcrum photo ID	07de4620-1d52-4e86-98b7-2accbf3dacd3

675.072189-HAB-71

Project:	675.072189				
Date	3-03-2024		**Sample Type**	Habitat Assessment	
Zone	50	**Easting**	661616	**Northing**	7736868

Landform and Soil		**Rock**	
Landform	Plain	**Rock type/s**	None
Aspect	Negligible	**Surface stone cover**	
Soil type	Sand	**Surface stone size classes present**	
Soil colour	Red		
Condition		**Habitat Features**	
Quality	Disturbed	**Water Source**	Absent
Fire History	Burnt (1-5 years)	**Microhabitats**	Leaf litter
Disturbance	Vehicle tracks		
Introduced fauna	None observed	**Ground Cover**	

Vegetation			
Upper stratum	Absent		
Mid stratum	Absent		
Ground stratum	Low (>0.5 m)	Sparse hummock grassland (0.25-20%)	*Acacia stellaticeps*

Fulcrum photo ID	3f48a051-89d5-48e0-b71e-33b4c2afcb69,cecfda48-79b0-4be5-a6c0-

675.072189-HAB-72

Project:	675.072189				
Date	3-03-2024		**Sample Type**	Habitat Assessment	
Zone	50	**Easting**	667071	**Northing**	7736372.8

Landform and Soil		**Rock**	
Landform	Plain	**Rock type/s**	None
Aspect	North	**Surface stone cover**	
Soil type	Sandy clay	**Surface stone size classes present**	
Soil colour	Red		
Condition		**Habitat Features**	
Quality	Good	**Water Source**	Absent
Fire History	Little or no fire evidence (>5 years)	**Microhabitats**	Hummocks, Leaf litter, Woody debris
Disturbance	Vehicle tracks		
Introduced fauna	None observed	**Ground Cover**	51-75%

Vegetation			
Upper stratum	Absent		
Mid stratum	Tall (>2 m)	Shrubland and/or heathland (50-80%)	*Eucalyptus victrix and Acacia colei*
Ground stratum	Mid (0.5-1 m)	Open hummock grassland (20-50%)	*Triodia epactia*

Fulcrum photo ID	a247a3af-beb6-4d0c-99b1-8a09dce8cadb,89dab242-cff0-4f60-86eb-

675.072189-HAB-73

Project:	675.072189				
Date	3-03-2024		**Sample Type**	Habitat Assessment	
Zone	50	**Easting**	668481	**Northing**	7736896

Landform and Soil		**Rock**	
Landform	Plain	**Rock type/s**	None
Aspect	Negligible	**Surface stone cover**	
Soil type	Sand	**Surface stone size classes present**	
Soil colour	Red		
Condition		**Habitat Features**	
Quality	Disturbed	**Water Source**	Absent
Fire History	Little or no fire evidence (>5 years)	**Microhabitats**	Hummocks, Leaf litter, Woody debris
Disturbance	Overgrazing,Vehicle tracks		
Introduced fauna	Cattle	**Ground Cover**	51-75%

Vegetation			
Upper stratum	Low (<10 m)	Isolated trees (<0.25%)	*Eucalyptus victrix*
Mid stratum	Low (0.5-1 m)	Sparse shrubland and/or heathland (0.25-20%)	*Acacia stellaticeps*
Ground stratum	Low (>0.5 m)	Open hummock grassland (20-50%)	*Triodia epactia*

Fulcrum photo ID	b6d8fe73-2ebd-46f2-8e68-3e9c88129d1a,f76312d8-eee6-4f22-8c06-

675.072189-HAB-74

Project:	675.072189				
Date	3-03-2024		**Sample Type**	Habitat Assessment	
Zone	50	**Easting**	669140	**Northing**	7737612.4

Landform and Soil		**Rock**	
Landform	Plain	**Rock type/s**	None
Aspect	Negligible	**Surface stone cover**	
Soil type	Sand	**Surface stone size classes present**	
Soil colour	Red, White		
Condition		**Habitat Features**	
Quality	Disturbed	**Water Source**	Absent
Fire History	Burnt (1-5 years)	**Microhabitats**	Hummocks, Woody debris
Disturbance	Litter,Overgrazing,Vehicle tracks		
Introduced fauna	None observed	**Ground Cover**	

Vegetation			
Upper stratum	Mid (10-30 m)	Open woodland (0.25-20%)	*Eucalyptus victrix*
Mid stratum	Mid (1-2 m)	Sparse shrubland and/or heathland (0.25-20%)	Eucalyptus sp.
Ground stratum	Low (>0.5 m)	Open hummock grassland (20-50%)	*Triodia epactia*

Fulcrum photo ID	d0e91653-48e9-48dd-9fdc-336960fb95f8

675.072189-HAB-75

Project:	675.072189				
Date	3-03-2024		**Sample Type**	Habitat Assessment	
Zone	50	**Easting**	666659	**Northing**	7735372

Landform and Soil		**Rock**	
Landform	Plain	**Rock type/s**	None
Aspect	Negligible	**Surface stone cover**	
Soil type	Sandy clay	**Surface stone size classes present**	
Soil colour	Red		
Condition		**Habitat Features**	
Quality	Disturbed	**Water Source**	Absent
Fire History	Little or no fire evidence (>5 years)	**Microhabitats**	Hummocks, Leaf litter, Woody debris
Disturbance	Litter,Vehicle tracks		
Introduced fauna	None observed	**Ground Cover**	51-75%

Vegetation			
Upper stratum	Absent		
Mid stratum	Tall (>2 m)	Open shrubland and/or heathland (20-50%)	*Acacia colei*
Ground stratum	Low (>0.5 m)	Open hummock grassland (20-50%)	*Triodia epactia*

Fulcrum photo ID	e7b3cc6d-2a22-4db7-8442-7e977a24141e,fe44216f-a511-43a7-91b9-

675.072189-HAB-76

Project:	675.072189				
Date	3-03-2024		**Sample Type**	Habitat Assessment	
Zone	50	**Easting**	666199	**Northing**	7735818.3

Landform and Soil		**Rock**	
Landform	Plain	**Rock type/s**	None
Aspect	Negligible	**Surface stone cover**	
Soil type	Sand	**Surface stone size classes present**	
Soil colour	Red		
Condition		**Habitat Features**	
Quality	Very good	**Water Source**	Absent
Fire History	Little or no fire evidence (>5 years)	**Microhabitats**	Hummocks
Disturbance	Vehicle tracks		
Introduced fauna	None observed	**Ground Cover**	

Vegetation			
Upper stratum	Absent		
Mid stratum	Mid (1-2 m)	Sparse shrubland and/or heathland (0.25-20%)	*Acacia inaequilatera*
Ground stratum	Low (>0.5 m)	Open hummock grassland (20-50%)	*Triodia epactia*

Fulcrum photo ID	3d37cc13-4576-4865-9762-127dec7d92f1

675.072189-HAB-77

Project:	675.072189				
Date	3-03-2024		**Sample Type**	Habitat Assessment	
Zone	50	**Easting**	665425	**Northing**	7736606
Landform and Soil			**Rock**		
Landform	Plain		**Rock type/s**	None	
Aspect	Negligible		**Surface stone cover**		
Soil type	Sand		**Surface stone size classes present**		
Soil colour	Red				
Condition			**Habitat Features**		
Quality	Very good		**Water Source**	Absent	
Fire History	Little or no fire evidence (>5 years)		**Microhabitats**	Hummocks, Leaf litter	
Disturbance	Vehicle tracks				
Introduced fauna	None observed		**Ground Cover**	76-100%	
Vegetation					
Upper stratum	Absent				
Mid stratum	Mid (1-2 m)	Open shrubland and/or heathland (20-50%)		*Acacia Inaequilatera*	
Ground stratum	Low (>0.5 m)	Hummock grassland (50-80%)		*Triodia sp. and Acacia stellaticeps*	

Fulcrum photo ID	99f98150-3f3a-4280-84c1-945d78d4c716,204ca89d-09a2-4423-be67-

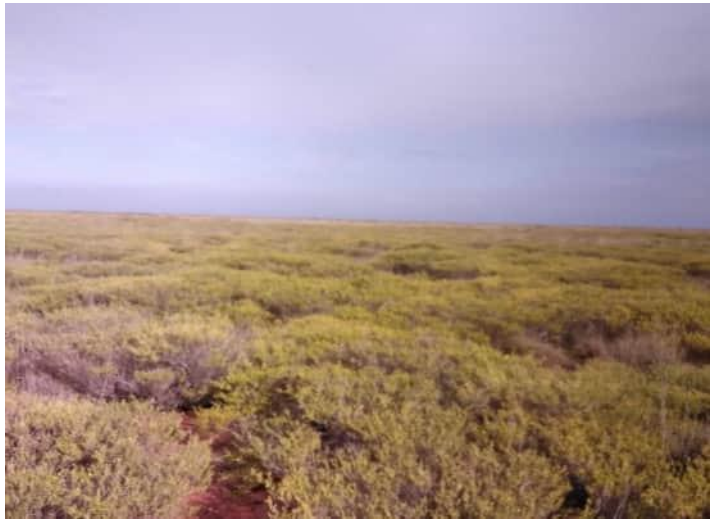
675.072189-HAB-78

Project:	675.072189				
Date	4-03-2024		**Sample Type**	Habitat Assessment	
Zone	50	**Easting**	718275	**Northing**	7752198.4
Landform and Soil			**Rock**		
Landform	Plain		**Rock type/s**	None	
Aspect	Negligible		**Surface stone cover**		
Soil type	Sandy loam		**Surface stone size classes present**		
Soil colour	Orange				
Condition			**Habitat Features**		
Quality	Disturbed		**Water Source**	Absent	
Fire History	Burnt (1-5 years)		**Microhabitats**	Hummocks, Woody debris, Leaf litter	
Disturbance	Overgrazing,Vehicle tracks,Infrastructure				
Introduced fauna	Cattle		**Ground Cover**	51-75%	
Vegetation					
Upper stratum	Absent				
Mid stratum	Absent				
Ground stratum	Low (>0.5 m)	Hummock grassland (50-80%)		*Triodia epactia and Acacia stellaticeps*	

Fulcrum photo ID	195f0c46-5f59-4828-b746-1620954b17e8

675.072189-HAB-79

Project:	675.072189				
Date	4-03-2024		**Sample Type**	Habitat Assessment	
Zone	50	**Easting**	718832	**Northing**	7752593
Landform and Soil			**Rock**		
Landform	Plain		**Rock type/s**	None	
Aspect	Negligible		**Surface stone cover**		
Soil type	Sand		**Surface stone size classes present**		
Soil colour	Red				
Condition			**Habitat Features**		
Quality	Very good		**Water Source**	Absent	
Fire History	Little or no fire evidence (>5 years)		**Microhabitats**	Hummocks, Leaf litter	
Disturbance	None observed				
Introduced fauna	None observed		**Ground Cover**	76-100%	
Vegetation					
Upper stratum	Absent				
Mid stratum	Absent				
Ground stratum	Low (>0.5 m)	Hummock grassland (50-80%)		*Triodia epactia and Acacia stellaticeps*	



Fulcrum photo ID	ef609770-6009-4211-a976-92a3de6f130f,234034f5-7be2-43e4-9acb-

675.072189-HAB-80

Project:	675.072189				
Date	4-03-2024		**Sample Type**	Habitat Assessment	
Zone	50	**Easting**	710356	**Northing**	7746038.1
Landform and Soil			**Rock**		
Landform	Plain		**Rock type/s**	None	
Aspect	Negligible		**Surface stone cover**		
Soil type	Sand		**Surface stone size classes present**		
Soil colour	Red				
Condition			**Habitat Features**		
Quality	Disturbed		**Water Source**	Present	
Fire History	Recently burnt (<1 year)		**Microhabitats**	Hummocks	
Disturbance	None observed				
Introduced fauna	None observed		**Ground Cover**	11-25%	
Vegetation					
Upper stratum	Absent				
Mid stratum	Mid (1-2 m)	Open shrubland and/or heathland (20-50%)		*Acacia colei*	
Ground stratum	Low (>0.5 m)	Sparse hummock grassland (0.25-20%)		*Triodia epactia and Acacia stellaticeps*	

Fulcrum photo ID	611ef857-d727-424d-a700-26128af248d3,79a8c89e-68ba-40d3-adcc-

675.072189-HAB-81

Project:	675.072189				
Date	4-03-2024		**Sample Type**	Habitat Assessment	
Zone	50	**Easting**	705537	**Northing**	7742821

Landform and Soil		**Rock**	
Landform	Drainage line	**Rock type/s**	
Aspect	Negligible	**Surface stone cover**	0 - 5%
Soil type	Sand	**Surface stone size classes present**	Pebbles (<0.6 cm)
Soil colour	Red		
Condition		**Habitat Features**	
Quality	Disturbed	**Water Source**	Absent
Fire History	Little or no fire evidence (>5 years)	**Microhabitats**	Hollows - logs, Hollows - trees, Leaf litter, Woody debris
Disturbance	Vehicle tracks		
Introduced fauna	Cattle	**Ground Cover**	26-50%

Vegetation			
Upper stratum	Mid (10-30 m)	Woodland (20-50%)	*Eucalyprtus camaldulensis or Eucalyptus victrix*
Mid stratum	Tall (>2 m)	Open shrubland and/or heathland (20-50%)	*Acacia sp.*
Ground stratum	Low (>0.5 m)	Sparse hummock grassland (0.25-20%)	*Triodia epactia*

Fulcrum photo ID	1b92d4e6-66cd-409f-8dec-f08a1eab90f3,0d1ed0b0-d8f7-4830-bac0-

675.072189-HAB-82

Project:	675.072189				
Date	4-03-2024		**Sample Type**	Habitat Assessment	
Zone	50	**Easting**	705422	**Northing**	7742554.8

Landform and Soil		**Rock**	
Landform	Plain	**Rock type/s**	Granite
Aspect	Negligible	**Surface stone cover**	75 - 100%
Soil type	Rock	**Surface stone size classes present**	Pebbles (<0.6 cm), Small Stones (0.6 - 2 cm), Stones (2 - 6 cm)
Soil colour	Red		
Condition		**Habitat Features**	
Quality	Disturbed	**Water Source**	Absent
Fire History	Little or no fire evidence (>5 years)	**Microhabitats**	Hummocks, Leaf litter
Disturbance	Overgrazing,Vehicle tracks		
Introduced fauna	Cattle	**Ground Cover**	

Vegetation			
Upper stratum	Absent		
Mid stratum	Absent		
Ground stratum	Low (>0.5 m)	Sparse hummock grassland (0.25-20%)	*Triodia sp.*

Fulcrum photo ID	b7032231-71ca-4a0e-865f-9a336edd1e68

675.072189-HAB-83

Project:	675.072189				
Date	5-03-2024		**Sample Type**	Habitat Assessment	
Zone	50	**Easting**	691697	**Northing**	7741118
Landform and Soil			**Rock**		
Landform	Plain		**Rock type/s**	None	
Aspect	Negligible		**Surface stone cover**		
Soil type	Clay loam		**Surface stone size classes present**		
Soil colour	Orange				
Condition			**Habitat Features**		
Quality	Very good		**Water Source**	Absent	
Fire History	Little or no fire evidence (>5 years)		**Microhabitats**	Termite mounds, Woody debris, Peeling bark, Logs > 10 cm, Hummocks, Burrows	
Disturbance	Vehicle tracks				
Introduced fauna	None observed		**Ground Cover**	26-50%	
Vegetation					
Upper stratum	Low (<10 m)	Isolated trees (<0.25%)		*Eucalyptus sp.*	
Mid stratum	Mid (1-2 m)	Sparse shrubland and/or heathland (0.25-20%)		Acacia sp.	
Ground stratum	Absent	Open hummock grassland (20-50%)		*Triodia epactia and Acacia stellaticeps*	

Fulcrum photo ID	4134a2fe-344e-4d09-808c-aac01b61eb87

675.072189-HAB-84

Project:	675.072189				
Date	5-03-2024		**Sample Type**	Habitat Assessment	
Zone	50	**Easting**	691642	**Northing**	7741041.5
Landform and Soil			**Rock**		
Landform	Plain		**Rock type/s**	None	
Aspect	Negligible		**Surface stone cover**		
Soil type	Sand		**Surface stone size classes present**		
Soil colour	Red				
Condition			**Habitat Features**		
Quality	Good		**Water Source**	Absent	
Fire History	Little or no fire evidence (>5 years)		**Microhabitats**	Hummocks, Leaf litter	
Disturbance	Vehicle tracks				
Introduced fauna	None observed		**Ground Cover**	26-50%	
Vegetation					
Upper stratum	Absent				
Mid stratum	Mid (1-2 m)	Sparse shrubland and/or heathland (0.25-20%)		*Acacia sp.*	
Ground stratum	Mid (0.5-1 m)	Open hummock grassland (20-50%)		*Triodia epactia and Acacia stellaticeps*	

Fulcrum photo ID	37c81848-687d-4378-94be-50fd47d021bb

675.072189-HAB-85

Project:	675.072189				
Date	5-03-2024		**Sample Type**	Habitat Assessment	
Zone	50	**Easting**	705117	**Northing**	7742798

Landform and Soil		**Rock**	
Landform	Plain	**Rock type/s**	Granite
Aspect	Negligible	**Surface stone cover**	0 - 5%
Soil type	Sand	**Surface stone size classes present**	Stones (2 - 6 cm), Small Rocks (6 - 20 cm)
Soil colour	Red		
Condition		**Habitat Features**	
Quality	Very good	**Water Source**	Present
Fire History	Little or no fire evidence (>5 years)	**Microhabitats**	Hummocks, Rock crevices
Disturbance	None observed		
Introduced fauna	None observed	**Ground Cover**	26-50%

Vegetation			
Upper stratum	Absent		
Mid stratum	Mid (1-2 m)	Sparse shrubland and/or heathland (0.25-20%)	*Acacia Inaequilatera*
Ground stratum	Low (>0.5 m)	Open hummock grassland (20-50%)	*Triodia secunda*

Fulcrum photo ID	0a608e4d-4291-4c1f-9b20-83715219d02b,ff897837-e14a-4972-902a-

675.072189-HAB-86

Project:	675.072189				
Date	5-03-2024		**Sample Type**	Habitat Assessment	
Zone	50	**Easting**	705211	**Northing**	7742135.1

Landform and Soil		**Rock**	
Landform	Outcrop/breakaway	**Rock type/s**	Granite
Aspect	Negligible	**Surface stone cover**	75 - 100%
Soil type	Sandy clay	**Surface stone size classes present**	Pebbles (<0.6 cm), Small Stones (0.6 - 2 cm), Stones (2 - 6 cm), Small Rocks (6 - 20 cm), Rocks (20 - 60 cm), Big Rocks (60 cm - 2 m), Boulders (>2 m)
Soil colour	Red		
Condition		**Habitat Features**	
Quality	Very good	**Water Source**	Absent
Fire History	Little or no fire evidence (>5 years)	**Microhabitats**	Exfoliating rock, Hummocks, Rock crevices
Disturbance	None observed		
Introduced fauna	None observed	**Ground Cover**	11-25%

Vegetation			
Upper stratum	Absent		
Mid stratum	Mid (1-2 m)	Sparse shrubland and/or heathland (0.25-20%)	*Acacia Inaequilatera*
Ground stratum	Low (>0.5 m)	Open hummock grassland (20-50%)	*Triodia epactia*

Fulcrum photo ID	cac9779f-3811-4ec8-af64-3172769c40bb,7fbb166e-dd1e-4bdf-8e07-

675.072189-HAB-87

Project:	675.072189				
Date	5-03-2024		**Sample Type**	Habitat Assessment	
Zone	50	**Easting**	704953	**Northing**	7740478

Landform and Soil		**Rock**	
Landform	Plain	**Rock type/s**	None
Aspect	Negligible	**Surface stone cover**	
Soil type	Sand	**Surface stone size classes present**	
Soil colour	Red		
Condition		**Habitat Features**	
Quality	Good	**Water Source**	Present
Fire History	Unknown	**Microhabitats**	Hummocks
Disturbance	Vehicle tracks		
Introduced fauna	None observed	**Ground Cover**	51-75%

Vegetation			
Upper stratum	Absent		
Mid stratum	Mid (1-2 m)	Open shrubland and/or heathland (20-50%)	*Acacia Inaequilatera*
Ground stratum	Low (>0.5 m)	Open hummock grassland (20-50%)	*Triodia epactia*

Fulcrum photo ID	34cd996e-aee1-4dde-841e-f06e1997b8e0,2a0032c7-b59d-471e-b5a1

675.072189-HAB-88

Project:	675.072189				
Date	5-03-2024		**Sample Type**	Habitat Assessment	
Zone	50	**Easting**	675117	**Northing**	7738072.3

Landform and Soil		**Rock**	
Landform	Plain	**Rock type/s**	None
Aspect	Negligible	**Surface stone cover**	
Soil type	Sand	**Surface stone size classes present**	
Soil colour	Red		
Condition		**Habitat Features**	
Quality	Very good	**Water Source**	Present
Fire History	Unknown	**Microhabitats**	Hummocks, Leaf litter
Disturbance	None observed		
Introduced fauna	None observed	**Ground Cover**	51-75%

Vegetation			
Upper stratum	Absent		
Mid stratum	Tall (>2 m)	Open shrubland and/or heathland (20-50%)	*Eucalyptus sp.*
Ground stratum	Low (>0.5 m)	Hummock grassland (50-80%)	*Triodia epactia and Acacia stellaticeps*

Fulcrum photo ID	7060878e-b139-4f8b-a60a-bc28c44f1e23,4c7dd966-0377-4479-a764-

675.072189-HAB-89

Project:	675.072189				
Date	6-03-2024		**Sample Type**	Habitat Assessment	
Zone	50	**Easting**	704362	**Northing**	7742751
Landform and Soil			**Rock**		
Landform	Undulating plain		**Rock type/s**	Granite, Quartz	
Aspect	Negligible		**Surface stone cover**	75 - 100%	
Soil type	Sand		**Surface stone size classes present**	Pebbles (<0.6 cm), Small Stones (0.6 - 2 cm), Stones (2 - 6 cm), Small Rocks (6 - 20 cm)	
Soil colour	Red				
Condition			**Habitat Features**		
Quality	Good		**Water Source**	Present	
Fire History	Burnt (1-5 years)		**Microhabitats**	Hummocks, Termite mounds	
Disturbance	Vehicle tracks				
Introduced fauna	None observed		**Ground Cover**	11-25%	
Vegetation					
Upper stratum	Absent				
Mid stratum	Low (0.5-1 m)	Sparse shrubland and/or heathland (0.25-20%)		*Acacia Inaequilatera*	
Ground stratum	Low (>0.5 m)	Sparse hummock grassland (0.25-20%)		*Triodia epactia*	

Fulcrum photo ID	834a9930-49b9-499c-aaf1-bb053e9db2d9,a4c77984-9b15-4a74-a417-

675.072189-HAB-90

Project:	675.072189				
Date	6-03-2024		**Sample Type**	Habitat Assessment	
Zone	50	**Easting**	679404	**Northing**	7739440.1
Landform and Soil			**Rock**		
Landform	Plain		**Rock type/s**	Limestone, Quartz	
Aspect	Negligible		**Surface stone cover**	75 - 100%	
Soil type	Sand		**Surface stone size classes present**	Pebbles (<0.6 cm), Small Stones (0.6 - 2 cm), Stones (2 - 6 cm), Small Rocks (6 - 20 cm)	
Soil colour	Red				
Condition			**Habitat Features**		
Quality	Good		**Water Source**	Absent	
Fire History	Little or no fire evidence (>5 years)		**Microhabitats**	Hummocks	
Disturbance	Vehicle tracks				
Introduced fauna	None observed		**Ground Cover**	51-75%	
Vegetation					
Upper stratum	Absent				
Mid stratum	Mid (1-2 m)	Sparse shrubland and/or heathland (0.25-20%)		*Acacia Inaequilatera*	
Ground stratum	Low (>0.5 m)	Open hummock grassland (20-50%)		*Triodia epactia*	

Fulcrum photo ID	5b7b119e-1d32-4d8a-91db-bad4e76792b3,3ba5136a-8e32-4406-

675.072189-HAB-91

Project:	675.072189				
Date	6-03-2024		**Sample Type**	Habitat Assessment	
Zone	50	**Easting**	677145	**Northing**	7738837

Landform and Soil		**Rock**	
Landform	Drainage line	**Rock type/s**	
Aspect	Negligible	**Surface stone cover**	0 - 5%
Soil type	Sand	**Surface stone size classes present**	Pebbles (<0.6 cm), Small Stones (0.6 - 2 cm), Stones (2 - 6 cm)
Soil colour	Red		
Condition		**Habitat Features**	
Quality	Very good	**Water Source**	Absent
Fire History	Little or no fire evidence (>5 years)	**Microhabitats**	Hummocks, Leaf litter
Disturbance	None observed		
Introduced fauna	None observed	**Ground Cover**	51-75%

Vegetation			
Upper stratum	Low (<10 m)	Open woodland (0.25-20%)	*Eucalyptus victrix*
Mid stratum	Mid (1-2 m)	Sparse shrubland and/or heathland (0.25-20%)	*Eucalyptus sp.*
Ground stratum	Mid (0.5-1 m)	Hummock grassland (50-80%)	*Triodia epactia*

Fulcrum photo ID	c3a16e9e-7c1b-4dbf-bc6b-de14f56f4f25,ced3c877-84ea-45e7-9429-

675.072189-HAB-92

Project:	675.072189				
Date	8-03-2024		**Sample Type**	Habitat Assessment	
Zone	50	**Easting**	685527	**Northing**	7740034.9

Landform and Soil		**Rock**	
Landform	Plain	**Rock type/s**	None
Aspect	Negligible	**Surface stone cover**	
Soil type	Sand	**Surface stone size classes present**	
Soil colour	Red		
Condition		**Habitat Features**	
Quality	Very good	**Water Source**	Absent
Fire History	Little or no fire evidence (>5 years)	**Microhabitats**	Hummocks, Leaf litter
Disturbance	None observed		
Introduced fauna	None observed	**Ground Cover**	26-50%

Vegetation			
Upper stratum	Absent		
Mid stratum	Mid (1-2 m)	Open shrubland and/or heathland (20-50%)	*Acacia inaequilatera, and Acacia colei*
Ground stratum	Low (>0.5 m)	Open hummock grassland (20-50%)	*Triodia epactia and Acacia stellaticeps*

Fulcrum photo ID	0b422a7b-016e-4cd4-a1ff-bb7d066ae838,2ab5d530-c840-4c56-8ec2-

675.072189-HAB-93

Project:	675.072189				
Date	9-03-2024		**Sample Type**	Habitat Assessment	
Zone	50	**Easting**	672963	**Northing**	7737657
Landform and Soil			**Rock**		
Landform	Plain		**Rock type/s**	None	
Aspect	Negligible		**Surface stone cover**		
Soil type	Sand		**Surface stone size classes present**		
Soil colour	Red				
Condition			**Habitat Features**		
Quality	Very good		**Water Source**	Absent	
Fire History	Little or no fire evidence (>5 years)		**Microhabitats**	Hummocks, Leaf litter	
Disturbance	None observed				
Introduced fauna	None observed		**Ground Cover**	51-75%	
Vegetation					
Upper stratum	Low (<10 m)	Open woodland (0.25-20%)	*Corymbia candida*		
Mid stratum	Tall (>2 m)	Shrubland and/or heathland (50-80%)	*Acaica colei*		
Ground stratum	Low (>0.5 m)	Open hummock grassland (20-50%)	*Triodia epactia, Eulalia sp.*		

Fulcrum photo ID	9ede5cf7-3991-448c-af54-15bb8bea5c0d,76baa306-8dc5-40bb-9d7f-

675.072189-HAB-94

Project:	675.072189				
Date	0-01-1900		**Sample Type**	Habitat Assessment	
Zone	50	**Easting**	700338	**Northing**	7740919.7
Landform and Soil			**Rock**		
Landform	Plain		**Rock type/s**	None	
Aspect	Negligible		**Surface stone cover**		
Soil type	Sand		**Surface stone size classes present**		
Soil colour	Red				
Condition			**Habitat Features**		
Quality	Very good		**Water Source**	Absent	
Fire History	Little or no fire evidence (>5 years)		**Microhabitats**	Hummocks	
Disturbance	None observed				
Introduced fauna	None observed		**Ground Cover**	51-75%	
Vegetation					
Upper stratum	Absent				
Mid stratum	Low (0.5-1 m)	Isolated shrubs and/or heath shrubs (<0.25%)	*Acacia Inaequilatera*		
Ground stratum	Low (>0.5 m)	Open hummock grassland (20-50%)	*Triodia epactia*		

Fulcrum photo ID	cff17ceb-7bc8-4bbb-ae8d-dd119bd8296c

Appendix J Fauna Recorded During the Survey

Atlas Ridley Magnetite Project Connection

Flora and Fauna Survey Technical Report

Horizon Power

SLR Project No.: 675.072189.00001

29 July 2024

Conservation Status: State - Listed under Biodiversity Conservation Act 2016, Federal - Listed under Environmental Protection and Biodiversity Conservation Act 1999. CR - Critically Endangered, EN - Endangered, VU - Vulnerable, MI/IA - Migratory, CD - Conservation Dependent fauna, OS - Other Specially Protected fauna, MA - Marine, P - Listed as Priority by DBCA.

Family	Scientific Name	Common Name	Conservation Status		Method							
			State	Federal	Call	Sighting	Scat	Tracks	Remains	Mound	ARU	Camera Trap
Aves												
Accipitridae	*Aquila audax*	Wedge-tailed Eagle				1						
Alaudidae	*Mirafra javanica*	Horsfield's Bush Lark				1						1
Alcedinidae	*Todiramphus sanctus*	Sacred Kingfisher		MA		1						
Artamidae	*Gymnorhina tibicen*	Australian Magpie				1						
Artamidae	*Artamus cinereus*	Black-faced Woodswallow				3	1					
Artamidae	*Cracticus nigrogularis*	Pied Butcherbird				1						
Cacatuidae	*Eolophus roseicapilla*	Galah				4						
Cacatuidae	*Cacatua sanguinea*	Little Corella				2						
Cacatuidae	*Cacatua galerita*	Sulphur-crested Cockatoo				1						
Campephagidae	*Coracina novaehollandiae*	Black-faced Cuckooshrike		MA		4						1
Casuariidae	*Dromaius novaehollandiae*	Emu						1				
Columbidae	*Ocyphaps lophotes*	Crested Pigeon				6						1
Columbidae	*Geophaps plumifera*	Spinifex Pigeon				7						4
Columbidae	*Geopelia cuneata*	Diamond Dove				1						6
Corvidae	*Corvus orru*	Torresian Crow			1	3						4
Estrildidae	*Taeniopygia castanotis*	Australian Zebra Finch			4	6						3
Falconidae	*Falco berigora*	Brown Falcon				3						
Falconidae	*Falco cenchroides*	Nankeen Kestral		MA		4						
Maluridae	*Malurus leucopterus*	White-winged Fairywren		MA		2						
Meliphagidae	*Gavicalis virescens*	Singing Honeyeater			1	4						
Meliphagidae	*Lichmera indistincta*	Brown Honeyeater				1						
Meliphagidae	*Ptilotula penicillata*	White-plumed Honeyeater				1						
Meliphagidae	*Manorina flavigula*	Yellow-throated Miner										2
Meropidae	*Merops ornatus*	Rainbow Bee-eater		MA	1	4						
Monarchidae	*Grallina cyanoleuca*	Magpie-lark		MA		1						2
Motacillidae	*Anthus australis*	Australian Pipit		MA		3						
Otididae	*Ardeotis australis*	Australian Bustard				1			1			
Podicipedidae	*Tachybaptus novaehollandiae*	Australasian Grebe, Black-throated Grebe				1						

Family	Scientific Name	Common Name	Conservation Status		Method							
			State	Federal	Call	Sighting	Scat	Tracks	Remains	Mound	ARU	Camera Trap
Psittaculidae	*Barnardius zonarius*	Australian Ringneck				1						
Rhipiduridae	*Rhipidura leucophrys*	Willie Wagtail			3							
Mammalia												
Bovidae	*Bos primigenius taurus*	European Cattle				3	9	3	1			2
Dasyuridae	*Sminthopsis macroura*	Stripe-faced Dunnart										2
Felidae	*Felis catus*	Cat				1		2				1
Macropodidae	*Osphranter rufus*	Red Kangaroo, Marlu				4						2
Macropodidae	*Osphranter robustus*	Common Wallaroo										2
Molossidae	*Chaerephon jobensis colonicus*	Greater Northern Free-tailed Bat									23	
Muridae	*Pseudomys chapmani*	Western Pebble-mound Mouse	P4							6		
Rhinonycteridae	*Rhinonicteris aurantia Pilbrara Form*	Pilbara Leaf-nosed Bat	VU	VU							7	
Vespertilionidae	*Chalinolobus gouldii*	Gould's Wattled Bat									29	
Vespertilionidae	*Scotorepens greyii*	Little Broad-nosed Bat									14	
Vespertilionidae	*Vespadelus finlaysoni*	Finlayson's Cave Bat									23	
Reptilia												
Agamidae	*Gowidon longirostris*	Long-nosed Dragon										1
Agamidae	*Ctenophorus caudicinctus*	Western Ring-tailed Dragon				3						2
Agamidae	*Ctenophorus isolepis*	Central Military Dragon										1
Elapidae	*Pseudonaja mengdeni*	Western Brown Snake										2
Scincidae	*Ctenotus saxatilis*	Rock Ctenotus										29
Scincidae	*Egernia epsisolus*	Eastern Pilbara Spiny-tailed Skink										5
Scincidae	*Tiliqua multifasciata*	Central Blue-tongue										1
Scincidae	*Morethia ruficauda*	Lined Fire-tailed Skink										1
Varanidae	*Varanus gouldii*	Bungarra Or Sand Goanna				1						4
Varanidae	*Varanus panoptes*	Argus Monitor										3
Varanidae	*Varanus acanthurus*	Spiny-tailed Goanna										9

Appendix K Significant Fauna Likelihood of Occurrence

Atlas Ridley Magnetite Project Connection

Flora and Fauna Survey Technical Report

Horizon Power

SLR Project No.: 675.072189.00001

29 July 2024

Family	Scientific Name	Conservation Status		Habitat	Previous Records	Likelihood of Occurrence
		State	Commonwealth			
Birds						
Accipitridae	*Erythrotriorchis radiatus* Red Goshawk	VU	EN	Tropical and subtropical open-forests and woodlands dominated by eucalypts and paperbarks along streams and near wetlands (Menkhorst et al., 2017).	No nearby records identified from the database searches or literature.	**Low** No nearby records.
Apodidae	*Apus pacificus* Pacific Swift, Fork-tailed Swift	MI	MI, MA	Low to very high airspace over varied habitat (Pizzey and Knight, 2012).	The DBCA database identified six records within 50 km of the Survey Area, including one record 3.5 km east in 2007 and two records approximately 38 km south in 2022 (DBCA, 2024d).	**Medium** Multiple historic records. Taxon may utilise airspace over the Survey Area.
Charadriidae	*Charadrius leschenaultii* Greater Sand Plover	VU	VU, MI, MA	Wide, sandy, or shelly beaches; sandspits, tidal mudflats, reefs, sand cays, mangroves, saltmarsh, dune wilderness, bare paddocks; seldom far inland (Pizzey and Knight, 2012).	The DBCA database identified 55 records within 50 km of the Survey Area, including two records 15 km north in 2016 and 2017 (DBCA, 2024d).	**Low** No suitable habitat within the Survey Area.

Family	Scientific Name	Conservation Status		Habitat	Previous Records	Likelihood of Occurrence
		State	Commonwealth			
Charadriidae	*Charadrius mongolus* Lesser Sand Plover	EN	EN, MI, MA	Tidal mudflats and sandflats; gently sloping sandy and shelly beaches; saltmarsh, estuaries, atolls, reefs, mangroves, airfield. Occasionally inland on freshwater lakes, swamps, bore drains (Pizzey and Knight, 2012).	The DBCA database identified 34 records within 50 km of the Survey Area, including two records 15 km north in 2016 and 2017 (DBCA, 2024d).	**Low** No suitable habitat within the Survey Area.
Charadriidae	*Charadrius veredus* Oriental Plover	MI	MI, MA	Open plains; bare, rolling country, often far from water; ploughed land; muddy or sandy wastes near inland swamps or tidal flats; bare claypans; margins of coastal marshes; grassy airfields, sports fields, lawns (Pizzey and Knight, 2012).	The DBCA database identified 18 records within 50 km of the Survey Area, including two records 14 km north in 2015 and 2016 (DBCA, 2024d).	**High** Nearby records, and suitable habitat within the Survey Area.

Family	Scientific Name	Conservation Status		Habitat	Previous Records	Likelihood of Occurrence
		State	Commonwealth			
Charadriidae	*Pluvialis fulva* Pacific Golden Plover	MI	MI, MA	Estuaries, mudflats, saltmarshes, mangroves; rocky reefs and stranded seaweed on ocean shores; margins of shallow open inland swamps; sewage ponds, short-grass paddocks, sportsground, airfield, ploughed land (Pizzey and Knight, 2012).	The DBCA database identified 24 records within 50 km of Survey Area, including two records 15 km north in 2016 and 2017 (DBCA, 2024d).	**Low** No suitable habitat within the Survey Area.
Charadriidae	*Pluvialis squatarola* Grey Plover	MI	VU, MI, MA	Mudflats, saltmarsh; tidal reefs and estuaries, rarely inland (Pizzey and Knight, 2012).	The DBCA database identified 30 records within 50 km of the Survey Area, including two records 15 km north in 2016 and 2017 (DBCA, 2024d).	**Low** No suitable habitat within the Survey Area.
Cuculidae	*Cuculus saturatus optatus* Horsfield's Cuckoo	MI	MI, MA	Monsoon forest, rainforest edges; leafy trees in paddocks; river flats, roadsides, mangroves, islands (Pizzey and Knight, 2012).	No nearby records identified from the database searches or literature.	**Low** No nearby records.

Family	Scientific Name	Conservation Status		Habitat	Previous Records	Likelihood of Occurrence
		State	Commonwealth			
Falconidae	*Falco hypoleucos* Grey Falcon	VU	VU	Open plains with treed watercourses in arid inland (Menkhorst et al., 2017).	The DBCA database identified nine records within 50 km of the Survey Area, including 2.9 km north in 2016 and 9 km southwest in 2018 (DBCA, 2024d).	**High** Nearby records, and suitable treed waterourses in arid inland habitat within the Survey Area
Falconidae	*Falco peregrinus* Peregrine Falcon	OS	–	Most environments with suitable nest sites: cliff faces preferred, including man-made ones, commonly uses stick nests built by other species (Menkhorst et al., 2017).	The DBCA database identified seven records within 50 km of the Survey Area, including two records 2.5 and 3 km west in 2012 (DBCA, 2024d).	**High** Nearby Records, and suitable habitat within the Survey Area. May use Survey Area for Hunting.
Fregatidae	*Fregata ariel* Lesser Frigatebird	MI	MI, MA	Oceanic, breed on islands (Pizzey and Knight, 2012).	The DBCA database identified 17 records within 50 km of the Survey Area, including two records 13 and 15 km north in 2016 (DBCA, 2024d).	**Low** No suitable habitat within the Survey Area.
Fregatidae	*Fregata minor* Greater Frigatebird	MI	MI, MA	Oceanic, breed on islands (Pizzey and Knight, 2012).	No nearby records identified from the database searches or literature.	**Low** No nearby records and no suitable habitat within the Survey Area.

Family	Scientific Name	Conservation Status		Habitat	Previous Records	Likelihood of Occurrence
		State	Commonwealth			
Glareolidae	*Glareola maldivarum* Oriental Pratincole	MI	MI, MA	Plains; shallow wet and dry edges of open bare wetlands; tidal mudflats, beaches (Pizzey and Knight, 2012).	The DBCA database identified 29 records within 50 km of the Survey Area, including one record within the Survey Area in 2004 and 0.2 km from the Survey area in 2013 (DBCA, 2024d).	**Previously Recorded** Recorded within the Survey Area in 2004 and limited suitable open plains and seasonal wetland habitat within the Survey Area.
Hirundinidae	*Hirundo rustica* Barn Swallow	MI	MI, MA	Open country; agricultural land, especially near water; railyards, towns, overhead wires (Pizzey and Knight).	The DBCA database identified 20 records within 50 km of the Survey Area, including 14 km north in 2015 and 8 km north in 2014 (DBCA, 2024d).	**High** Nearby records, and suitable open country and seasonal wetland habitat within the Survey Area.
Laridae	*Anous stolidus* Common Noddy, Brown Noddy	MI	MI, MA	Oceanic; cays, reefs, buoys and piles (Pizzey and Knight, 2012).	No nearby records identified from the database searches or literature.	**Low** No nearby records and no suitable habitat within the Survey Area.
Laridae	*Chlidonias leucopterus* White-winged Black Tern	MI	MI, MA	Large coastal and inland wetland; saltfields, sewage ponds, estuaries, coastal waters (Pizzey and Knight, 2012).	The DBCA database identified 44 records within 50 km of the Survey Area, including 15 km north in 2016 and 3 km north in 2010 (DBCA, 2024d).	**Medium** Nearby records and limited seasonal wetland habitat within the Survey Area.

Family	Scientific Name	Conservation Status		Habitat	Previous Records	Likelihood of Occurrence
		State	Commonwealth			
Laridae	*Gelochelidon nilotica* Gull-billed Tern	MI	MI, MA	Coastal, offshore waters; beaches, mudflats, estuaries, larger rivers, reserviors, lakes (Pizzey and Knight, 2012).	The DBCA database identified 45 records within 50 km of the Survey Area, including 0.7 km south in 2004 and 15 km north in 2017 (DBCA, 2024d).	**Medium** Limited major drainage habitat within the Survey Area.
Laridae	*Hydroprogne caspia* Caspian Tern	MI	MI, MA	Coastal, offshore waters; beaches, mudflats, estuaries, larger rivers, reservoirs, lakes. Sometimes found inland (Pizzey and Knight, 2012).	The DBCA database identified 119 records within 50 km of the Survey Area, including two records 3 km north in 2007 and 15 km north in 2017 (DBCA, 2024d).	**Medium** Limited major drainage habitat within the Survey Area.
Laridae	*Onychoprion anaethetus* Bridled Tern	MI	MI, MA	Oceanic, rarely coastal (Pizzey and Knight, 2012).	The DBCA database identified two records within 50 km of the Survey Area, 11.3 km north in 1995 and 13.1 km north in 1995 (DBCA, 2024d).	**Low** No suitable habitat within the Survey Area.
Laridae	*Sterna dougallii* Roseate Tern	MI	MI, MA	Offshore waters, islands, coral reefs, sand cays, beaches, tidal inlets (Pizzey and Knight).	The DBCA database identified one record within 50 km of the Survey Area, including 18 km north in 2015 and 12 km north in 2014 (DBCA, 2024d).	**Low** No suitable habitat within the Survey Area.

Family	Scientific Name	Conservation Status		Habitat	Previous Records	Likelihood of Occurrence
		State	Commonwealth			
Laridae	*Sterna hirundo* Common Tern	MI	MI, MA	Offshore waters, beaches, reefs, bays, estuaries, sandflats, saltfields, sewage ponds, freshwater wetlands (Pizzey and Knight, 2012).	The DBCA database identified 12 records within 50 km of the Survey Area, including 12.3 km north in 2014 and 12.7 km north in 2004 (DBCA, 2024d).	**Medium** Limited seasonal wetland habitat within the Survey Area.
Laridae	*Sternula albifrons* Little Tern	MI	MI, MA	Coastal waters, bays, inlets, saline or brackish lakes, saltfields, sewage ponds near coast (Pizzey and Knight, 2012).	The DBCA database identified 28 records within 50 km of the Survey Area, including two records 15 km north in 2016 and 2017 (DBCA, 2024d).	**Low** No suitable habitat within the Survey Area.
Laridae	*Sternula nereis nereis* Fairy Tern	VU	VU, MA	Coastal, bays, inlets, beaches, salt ponds and lakes (Morcombe, 2003).	The DBCA database identified two records within 50 km of the Survey Area, including 11.3 km north in 1995 and 12.6 km north in 2008 (DBCA, 2024d).	**Low** No suitable habitat within the Survey Area.
Laridae	*Thalasseus bergii* Greater Crested Tern, Crested Tern	MI	MI, MA	Coastal, offshore waters; beaches, bays, inlets, tidal rivers, salt swamps, lakes, larger rivers (Pizzey and Knight, 2012).	The DBCA database identified 37 records within 50 km of the Survey Area, including two records 15 km north in 2016 and 2017, and 3 km east in 2007 (DBCA, 2024d).	**Low** No suitable habitat within the Survey Area.

Family	Scientific Name	Conservation Status		Habitat	Previous Records	Likelihood of Occurrence
		State	Commonwealth			
Maluridae	*Amytornis whitei whitei* Rufous Grasswren	P4	–	Spinifex associated with mallee, acacias, though prefer tall dense spinifex hummocks; rocky slopes, and ridges; *A. whitei whitei* also inhabit coastal shrubs (Pizzey and Knight, 2012; Menkhorst et al. 2017).	Two NatureMap records were identified (DBCA, 2024b).	**Medium** Two records within desktop study area. Suitable habitat present within the Survey Area.
Motacillidae	*Motacilla cinerea* Grey Wagtail	MI	MI, MA	Running water near disused quarries; sandy, rocky streams in escarpments; sewage ponds, ploughed fields, airfields (Pizzey and Knight 2012).	No nearby records identified from the database searches or literature.	**Low** Limited seasonal damp grassland habitat within the Survey Area but no recent record.
Motacillidae	*Motacilla tschutschensis* Eastern Yellow Wagtail	MI	MI, MA	Short grass and bare ground; swamp margins, sewage ponds, saltmarshes, ploughed fields, airfields, lawns (Pizzey and Knight, 2012).	The DBCA databse identified two records within 50 km of the Survey Area, both 13.7 km north in 1982 (DBCA, 2024d).	**Low** Limited seasonal damp grassland habitat within the Survey Area but no recent record.

Family	Scientific Name	Conservation Status		Habitat	Previous Records	Likelihood of Occurrence
		State	Commonwealth			
Pandionidae	*Pandion haliaetus* Osprey	MI	MI, MA	Coasts, estuaries, bays, inlets; islands and surrounding waters; coral atolls, reefs, lagoons, rock cliffs, stacks; larger rivers (Pizzey and Knight, 2012).	The DBCA database identified 87 records within 50 km of the Survey Area, including 15 km north in 2017 and 5.0 km north in 2013 (DBCA, 2024d).	**High** Nearby and recent records and suitable major drainage line habitat within the Survey Area.
Psittaculidae	*Pezoporus occidentalis* Night Parrot	CR	EN	Seeding spinifex on stony rises, breakaway country, sandy lowlands; shrubby glasswort, chenopods; succulents on flats around salt lakes; flooded claypans, saltbush, bluebush, bassia associations (Pizzey and Knight, 2012).	No nearby records identified from the database searches or literature.	**Low** No suitable habitat within the Survey Area.

Family	Scientific Name	Conservation Status		Habitat	Previous Records	Likelihood of Occurrence
		State	Commonwealth			
Scolopacidae	*Actitis hypoleucos* Common Sandpiper	MI	MI, MA	Shallow, pebbly, muddy, or sandy sedges of rivers and streams, coastal to far inland; dams, lakes, sewage ponds; margins of tidal rivers; waterways in mangroves or saltmarsh; mudflats; rocky or sandy beaches; causeways, riverside lawns, drains, street gutters (Pizzey and Knight, 2012).	The DBCA database identified 90 records within 50 km of the Survey Area, including two records 15 km north in 2017 and 3 km north in 2014 (DBCA, 2024d).	**Medium** Nearby records and limited seasonal wetland habitat within the Survey Area.
Scolopacidae	*Arenaria interpres* Ruddy Turnstone	MI	VU, MI, MA	Tidal reefs and pools; weed-covered rocks; pebbly, shelly and sandy shores with stranded seaweed; mudflats; occasionally inland on shallow waters; sewage ponds, commercial saltflats, open or ploughed ground (Pizzey and Knight, 2012).	The DBCA database identified 104 records within 50 km of the Survey Area, including two records 3 km north in 2010 and 15 km north in 2017 (DBCA, 2024d).	**Low** No suitable habitat within the Survey Area.

Family	Scientific Name	Conservation Status		Habitat	Previous Records	Likelihood of Occurrence
		State	Commonwealth			
Scolopacidae	*Calidris acuminata* Sharp-tailed Sandpiper	MI	VU, MI, MA	Tidal mudflats, saltmarshes, mangroves; shallow fresh, brackish or saline inland wetlands; muddy edges of lagoons, swamps, lakes, floodwaters, dams, irrigated patures and crops; sewage ponds, saltfields (Morcombe, 2003; Pizzey and Knight, 2012).	The DBCA database identified 48 records within 50 km of the Survey Area, including two records 3 km north in 2014, and 15 km north in 2017 (DBCA, 2024d).	**Medium** Nearby records and limited suitable habitat present within the Survey Area.
Scolopacidae	*Calidris alba* Sanderling	MI	MI, MA	Broad ocean beaches of firm sand with seaweed; often near river mouths; also, inlets, tidal mudflats, coastal lagoons (Pizzey and Knight, 2012).	The DBCA database identified 24 records within 50 km of the Survey Area, including one record within the Survey Area in 1981 and 15 km north in 2017 (DBCA, 2024d).	**Previously Recorded** One historic record inside the Survey Area and nearby recent records. Suitable tidal mudflat habitats 10 km north have connectivity to the Survey Area.

Family	Scientific Name	Conservation Status		Habitat	Previous Records	Likelihood of Occurrence
		State	Commonwealth			
Scolopacidae	*Calidris canutus* Red Knot	EN	VU, MI, MA	Tidal mudflats, sandflats, beaches, saltmarshes, flooded pastures, ploughed lands (Pizzey and Knight, 2012).	The DBCA database identified 20 records within 50 km of the Survey Area, including three records 13 km north in 2014 and 15 km north in 2016 (DBCA, 2024d).	**Medium** Limited seasonal floodwater habitat within the Survey Area.
Scolopacidae	*Calidris falcinellus* Broad-billed Sandpiper	MI	MI, MA	Tidal mudflats, estuaries, reefs, saltmarsh, freshwater wetlands and lakes, near-coastal salt lakes; sewage ponds; favours muddy ooze (Morcombe, 2003; Pizzey and Knight, 2012).	The DBCA database identified 24 records within 50 km of the Survey Area, including two records 15 km north in 2016 and 2017(DBCA, 2024d).	**Medium** Limited seasonal wetland habitat within the Survey Area.

Family	Scientific Name	Conservation Status		Habitat	Previous Records	Likelihood of Occurrence
		State	Commonwealth			
Scolopacidae	*Calidris ferruginea* Curlew Sandpiper	CR	CR, MI, MA	Inter-tidal mudflats of estuaries, lagoons, mangrove channel; saltmarsh, saltfields; fresh, brackish, or saline wetlands; flooded saltbush surrounds of inland lakes; dams, floodwaters, sewage ponds (Morcombe, 2003; Pizzey and Knight, 2012).	The DBCA database identified 47 records within 50 km of the Survey Area, including two records 3 km north in 2010, and two records 15 km north in 2016 and 2017 (DBCA, 2024d).	**Medium** Nearby records and limited seasonal floodwater habitat within the Survey Area.
Scolopacidae	*Calidris melanotos* Pectoral Sandpiper	MI	MI, MA	Shallow fresh waters, often with low grass or other herbage; swamp margins, flooded pastures, sewage ponds; occasionally tidal areas, saltmarshes (Pizzey and Knight, 2012).	The DBCA database identified two records within 50 km of the Survey Area, including 7.5 km north in 2014 and 17.2 km north in 1988 (DBCA, 2024d).	**Medium** Nearby record and limited seasonal floodwater habitat within the Survey Area.
Scolopacidae	*Calidris pugnax* Ruff	MI	MI, MA	Fresh, brackish, and saline wetlands; tidal mudflats, saltfields, sewage farms (Pizzey and Knight, 2012).	The DBCA database identified two records within 50 km of the Survey Area, including 5.5 km south in 1979 and 15.0 km north in 2017 (DBCA, 2024d).	**Medium** Limited seasonal wetland habitat within the Survey Area.

Family	Scientific Name	Conservation Status		Habitat	Previous Records	Likelihood of Occurrence
		State	Commonwealth			
Scolopacidae	*Calidris ruficollis* Red-necked Stint	MI	MI, MA	Tidal mudflats, saltmarshes, sandy or shelly beaches; saline and freshwater wetlands, salt fields, sewage ponds (Pizzey and Knight, 2012).	The DBCA database identified 84 records within 50 km of the Survey Area, including 3 km north in 2014 and two records 15 km north in 2016 and 2017 (DBCA, 2024d).	**Medium** Nearby record and limited seasonal wetland habitat within the Survey Area.
Scolopacidae	*Calidris subminuta* Long-toed Stint	MI	MI, MA	Tussocky, weedy margins of shallow wetlands, coastal and inland; sewage ponds, weed on tideline, tidal mudflats (Pizzey and Knight, 2012).	The DBCA database identified 13 records within 50 km of the Survey Area, including two records 3 km north in 2010 and one record 15 km north in 2015 (DBCA, 2024d).	**Medium** Nearby record and limited seasonal wetland habitat within the Survey Area.
Scolopacidae	*Calidris tenuirostris* Great Knot	CR	VU, MI, MA	Tidal mudflats; sandy ocean and bay shores; estuaries; shallow saline and freshwater wetlands (Pizzey and Knight, 2012).	The DBCA database identified 38 records within 50 km of the Survey Area, including two records 15 km north in 2016 and 2017, and one record 12 km north in 2014 (DBCA, 2024d).	**Medium** Limited seasonal wetland habitat within the Survey Area.
Scolopacidae	*Gallinago megala* Swinhoe's Snipe	MI	MI, MA	Wet grassy ground; edges of reedy swamps (Pizzey and Knight, 2012).	The DBCA database identified one record within 50 km of the Survey Area, 43.0 km east in 1977 (DBCA, 2024d).	**Low** No suitable habitat within the Survey Area.

Family	Scientific Name	Conservation Status		Habitat	Previous Records	Likelihood of Occurrence
		State	Commonwealth			
Scolopacidae	*Gallinago stenura* Pin-tailed Snipe	MI	MI, MA	Boggy edges of vegetated wetlands; sewage and other ponds; stubbles, grasslands with shrubs, pastures (Pizzey and Knight, 2012).	The DBCA database identified three records within 50 km of the Survey Area, including 6.8 km north in 2014 and 13.7 km north in 1976 (DBCA, 2024d).	**Medium** Limited seasonal floodwater habitat within the Survey Area.
Scolopacidae	*Limnodromus semipalmatus* Asian Dowitcher	MI	VU, MI, MA	Beaches, mudflats, commercial saltfields, and sewage ponds (Pizzey and Knight, 2012).	The DBCA database identified 15 records within 50 km of the Survey Area, including 12.8 km north in 1994 and 15.0 km north in 2017 (DBCA, 2024d).	**Low** No suitable habitat within the Survey Area.
Scolopacidae	*Limosa lapponica* Bar-tailed Godwit	MI	MI, MA	Tidal mudflats, estuaries, sewage ponds, shallow river margins, brackish or saline inland lakes, flooded pastures, airfields (Pizzey and Knight, 2012).	The DBCA database identified 71 records within 50 km of the Survey Area, including two records 12 km north in 2014, and two records 15 km north in 2016 and 2017 (DBCA, 2024d).	**Medium** Limited seasonal flooded paddock and river margin habitat within the Survey Area.

Family	Scientific Name	Conservation Status		Habitat	Previous Records	Likelihood of Occurrence
		State	Commonwealth			
Scolopacidae	*Limosa limosa* Black-tailed Godwit	MI	EN, MI, MA	Tidal mudflats, estuaries, sandspits, shallow river margins, sewage ponds; inland on large shallow fresh or brackish waters (Pizzey and Knight, 2012).	The DBCA database identified 12 records within 50 km of the Survey Area, including two records 15 km north in 2013 and 2016 (DBCA, 2024d).	**Medium** Nearby records, and seasonal wetland habitat within the Survey Area.
Scolopacidae	*Numenius madagascariensis* Far Eastern Curlew, Eastern Curlew	CR	CR, MI, MA	Estuaries, tidal mudflats, sandspits, saltmarshes, mangroves; occasionally fresh or brackish lakes; bare grasslands near water (Pizzey and Knight, 2012).	The DBCA database identified 49 records within 50 km of the Survey Area, including 12 km north in 2014 and 13 km north in 2017 (DBCA, 2024d).	**Low** No suitable habitat within the Survey Area.
Scolopacidae	*Numenius minutus* Little Curlew	MI	MI, MA	Dry grasslands, floodplains, margins of drying swamps; tidal mudflats, airfields, playing fields, crops, commercial saltfields, sewage ponds (Pizzey and Knight, 2012).	The DBCA database identified 30 records within 50 km of the Survey Area, including two records 3 km north in 2010, and one record 14 km north in 2016 (DBCA, 2024d).	**High** Nearby records, and suitable dry grassland plains within the Survey Area

Family	Scientific Name	Conservation Status		Habitat	Previous Records	Likelihood of Occurrence
		State	Commonwealth			
Scolopacidae	*Numenius phaeopus* Whimbrel	MI	MI, MA	Estuaries, mangroves, tidal flats, coral cays, exposed reefs, flooded paddocks, sewage ponds, bare grasslands, sport grounds, lawns (Pizzey and Knight, 2012).	The DBCA database identified 80 records within 50 km of the Survey Area, including 12 km north in 2015 and 13 km north in 2017 (DBCA, 2024d).	**Medium** Limited seasonal flooded paddock habitat within the Survey Area.
Scolopacidae	*Phalaropus lobatus* Red-necked Phalarope	MI	MI, MA	Shallow pools, tidal mudflats, beaches, saltmarshes, freshwater wetlands; commercial saltfields (Pizzey and Knight, 2012).	The DBCA database identified 11 records within 50 km of the Survey Area, including four records within the Survey Area in 1981 and 15 km north in 2017 (DBCA, 2024d).	**Previously Recorded** Limited seasonal wetland habitat within the Survey Area.
Scolopacidae	*Tringa brevipes* Grey-tailed Tattler	MI, P4	MI, MA	Estuaries, tidal mudflats, mangroves; wave-washed rocks and reefs; shallow margins of coastal or inland rivers (Pizzey and Knight, 2012).	The DBCA database identified 74 records within 50 km of the Survey Area, including two records 15 km north in 2016 and 2017, and one record 11 km north in 2014 (DBCA, 2024d).	**Medium** Limited minor and major drainage habitats within the Survey Area.

Family	Scientific Name	Conservation Status		Habitat	Previous Records	Likelihood of Occurrence
		State	Commonwealth			
Scolopacidae	*Tringa glareola* Wood Sandpiper	MI	MI, MA	Muddy margins of wetlands with emergent sedges and taller fringing vegetation; tidal mangroves; margins of tidal mudflats; saltmarshes, sewage pond (Pizzey and Knight, 2012; Menkhorst et al., 2017).	The DBCA database identified 37 records within 50 km of the Survey Area, including one record 3 km north and four records 8 km north in 2014 (DBCA, 2024d).	**Medium** Nearby records and limited seasonal wetland habitat within the Survey Area.
Scolopacidae	*Tringa nebularia* Common Greenshank	MI	EN, MI, MA	Mudflats, estuaries, saltmarshes, swamps, margins of lakes, muddy shallows of lagoons; permanent and temporary wetlands, claypans; commercial saltfield, irrigated crops, sewage ponds (Morcombe, 2003; Pizzey and Knight, 2012).	The DBCA database identified 92 records within 50 km of the Survey Area, including two records 3 km north in 2010, and two records15 km north in 2016 and 2017 (DBCA, 2024d).	**High** Nearby records and suitable habitat within the Survey Area.

Family	Scientific Name	Conservation Status		Habitat	Previous Records	Likelihood of Occurrence
		State	Commonwealth			
Scolopacidae	*Tringa stagnatilis* Marsh Sandpiper	MI	MI, MA	Fresh, brackish, and saline wetlands; sewage ponds, commercial saltfields, bore drains, mangroves, tidal mudflats, estuaries (Pizzey and Knight, 2012).	The DBCA database identified 35 records within 50 km of the Survey Area, including one record within the Survey Area in 1981 and 12 km north in 2014 (DBCA, 2024d).	**Previously Recorded** Limited seasonal wetland habitat within the Survey Area.
Scolopacidae	*Xenus cinereus* Terek Sandpiper	MI	VU, MI, MA	Tidal mudflats, estuaries; shores and reefs of islands; coastal swamps, commercial saltfields (Pizzey and Knight, 2012).	The DBCA database identified 32 records within 50 km of the Survey Area, including 13 km north in 2015 and 15 km north in 2017 (DBCA, 2024d).	**Low** No suitable habitat within the Survey Area.
Sulidae	*Sula leucogaster* Brown Booby	MI	MI, MA	Nests on islands. Rarely on shoreline, only to perch on pylons/piers (Menkhorst et al., 2017).	The DBCA database identified two records within 50 km of the Survey Area, including 19.2 km north in 1979 and 45.5 km north in 1984 (DBCA, 2024d).	**Low** No suitable habitat within the Survey Area.

Family	Scientific Name	Conservation Status		Habitat	Previous Records	Likelihood of Occurrence
		State	Commonwealth			
Threskiornithidae	*Plegadis falcinellus* Glossy Ibis	MI	MI, MA	Well-vegetated wetlands, wet pastures, ricefields, flooded waters, floodplains; brackish or occasionally saline wetlands, mangroves, mudflats, occasionally dry grasslands (Pizzey and Knight, 2012).	The DBCA database identified 13 records within 50 km of the Survey Area, including 14 km north in 2013 and 15 km east in 2011 (DBCA, 2024d).	**Medium** Nearby records, and seasonal wetland and dry grassland habitat within the Survey Area.
Mammals						
Dasyuridae	*Dasycercus blythi* Brush-tailed Mulgara, Ampurta	P4	–	Hummock grasslands (e.g. *Triodia* spp.) and shrublands on sandy soils (Menkhorst and Knight, 2010).	The DBCA database identified 287 records within 50 km of the Survey Area, including 15 records within the Survey Area in 2012 (DBCA, 2024d).	**Previously Recorded** Recorded within the Survey Area in 2012, and suitable habitat within the Survey Area.
Dasyuridae	*Dasycercus cristicauda* Crest-tailed Mulgara	P4	–	Outside the distribution of the species.	The DBCA database identified three records within 50 km of the Survey Area in 2009 (DBCA, 2024d).	**Low** The records are most likely the result of misidentification, as the Survey Area is well outside of the species' historical and extant distribution.

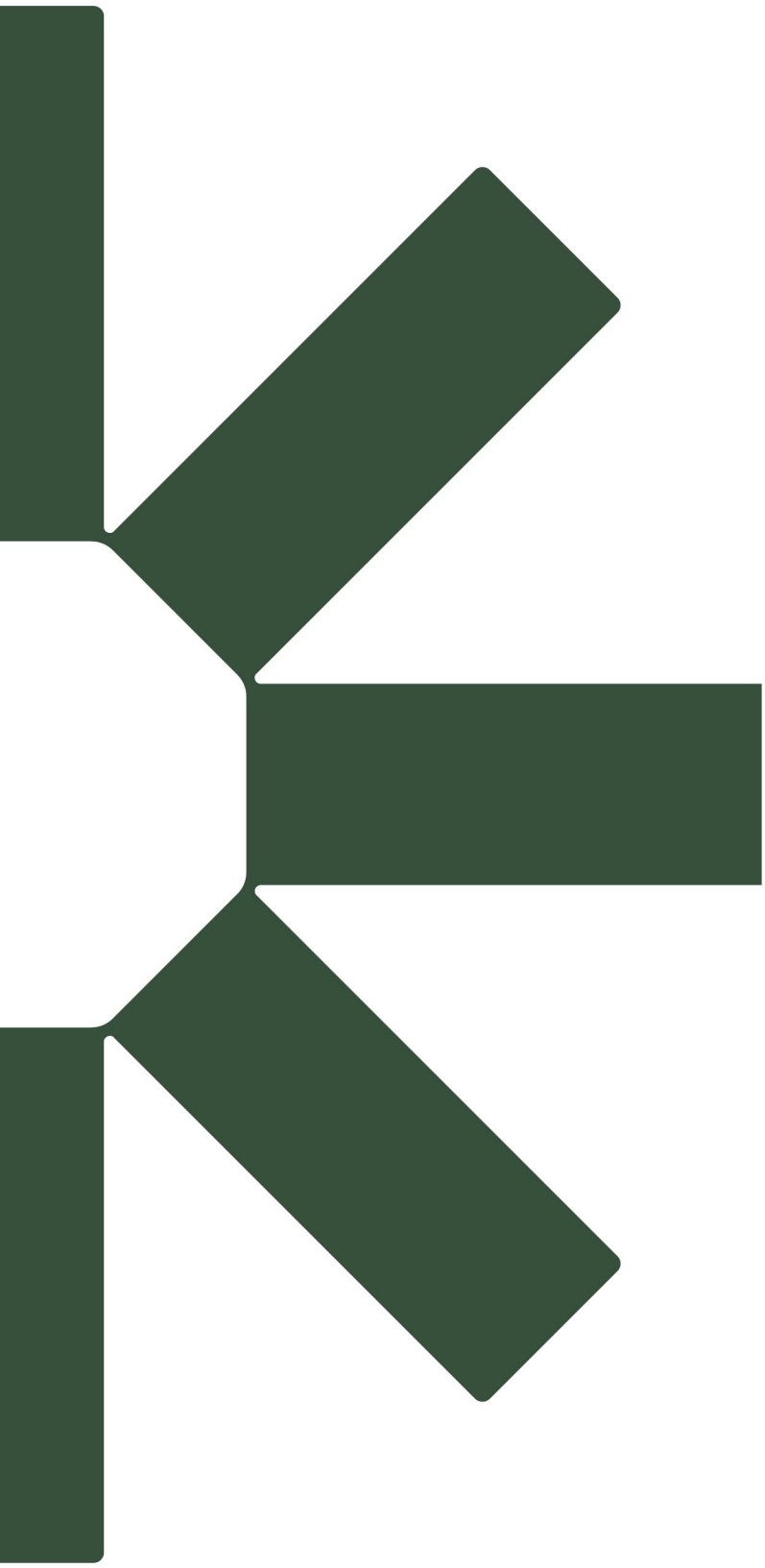
Family	Scientific Name	Conservation Status		Habitat	Previous Records	Likelihood of Occurrence
		State	Commonwealth			
Dasyuridae	*Dasyurus hallucatus* Northern Quoll	EN	EN	Dissected rocky escarpments; eucalypt forest and woodland; human settlements; occasionally in rainforest patches or on beaches (Van Dyck, Gynther and Baker, 2013).	The DBCA database identified 1282 records within 50 km of the Survey Area, including nine records within the Survey Area in 2012 and 2014 (DBCA, 2024d).	**Previously Recorded** Recorded within the Survey Area in 2012, and suitable habitat within the Survey Area.
Macropodidae	*Lagostrophus fasciatus fasciatus* Banded Hare-wallaby	VU	VU	Dense thickets of *Acacia* and *Alectryon* scrub on the sandplains, and *Diplolaena* and *Acacia* on the dunes (Van Dyck, Gynther and Baker, 2013).	The DBCA database identified one historical record 8.5 km north of the Survey Area (DBCA, 2024d).	**Low** No recent records, outside known distribution.
Megadermatidae	*Macroderma gigas* Ghost Bat	VU	VU	Deep caves and mines, and occasionally rock fissures and boulder piles occurring within a widespread but patchy distribution across northern Australia from the arid Pilbara to the lush rainforests of north Queensland (Baker and Gynther, 2023).	The DBCA database identified 65 records within 50 km of the Survey Area, including 38 km south in 2022, 3 km south in 2017, and 63 records less than 4.0 km south in 2009 (DBCA, 2024d).	**High** Recent and nearby records. Suitable rock fissures and boulder piles within the Survey Area.

Family	Scientific Name	Conservation Status		Habitat	Previous Records	Likelihood of Occurrence
		State	Commonwealth			
Molossidae	*Ozimops cobourgianus* Northern Coastal Free-tailed Bat	P1	–	Mangroves, monsoon and paperbark forests, eucalypt forests and woodland. Use hollows and crevices in mangroves as nesting sits (Van Dyck, Gynther and Baker, 2013). Restricted to mangrove habitat in north-west coastal WA (McKenzie, Bullen and Gibson, 2020).	The DBCA database identified seven records within 50 km of the Survey Area, including two records 13 km north in 2008 and 2009 (DBCA, 2024d).	**Low** No suitable habitats within the Survey Area.
Muridae	*Leggadina lakedownensis* Short-tailed Mouse	P4	–	Monsoon tropical coast to semiarid areas in spinifex and tussock grasslands, samphire, sedgelands, Acacia shrublands, tropical eucalypt and Melaleuca woodlands and stony ranges (Van Dyck, Gynther and Baker, 2013).	The DBCA database identified 10 records within 50 km of the Survey Area, including two records 30.4 km east in 2006 (DBCA, 2024d).	**Medium** Multiple historic records. Suitable habitats present within the Survey Area.

Family	Scientific Name	Conservation Status		Habitat	Previous Records	Likelihood of Occurrence
		State	Commonwealth			
Muridae	*Pseudomys chapmani* Western Pebble-mound Mouse	P4	–	Gentler slopes of rocky ranges covered by stony mulch and hard spinifex, often with a sparse overstorey of eucalypts and scattered shrubs (Van Dyck, Gynther and Baker, 2013).	The DBCA database identified 93 records within 50 km of the Survey Area, including 27 records within 36 km in 2022, and 4 records 3 km south in 2009 (DBCA, 2024d).	**Recorded** Recorded during the field survey.
Rhinonycteridae	*Rhinonicteris aurantia Pilbara form* Pilbara Leaf-nosed Bat	VU	VU	Most easily observed foraging in gorges and gullies, often over pools, also spinifex hummock grasslands. Roosts in relatively deep, warm, and humid caves and mine adits (Van Dyck, Gynther and Baker, 2013).	The DBCA database identified 12 records within 50 km of the Survey Area, including 3 records 3 km south in 2009, and one record 35 km south in 2019 (DBCA, 2024d).	**Recorded** Recorded during the field survey.

Family	Scientific Name	Conservation Status		Habitat	Previous Records	Likelihood of Occurrence
		State	Commonwealth			
Thylacomyidae	*Macrotis lagotis* Bilby, Dalgyte	VU	VU	Mitchell grass and stony downs country of cracking clays, desert sandplains and dune fields sometimes containing laterite, hummock grassland and massive red earths with *Acacia* shrubland (Van Dyck, Gynther and Baker, 2013).	A total of 95 DBCA records were identified. These include 3 records within 2 km of the Survey Area from 2018 to 2019; 4 records within 10 km of the Survey Area from 2010 to 2019, and a further 19 records within 50 km of the Survey Area from 2021 to 2022 (DBCA, 2024d).	**Previously Recorded** Previous records identified from the literature review occur inside the Survey Area. Suitable habitat is present.
Reptiles						
Pythonidae	*Liasis olivaceus barroni* Pilbara Olive Python	VU	VU	Associated with open water, watercourses, and rock pools especially those close to rocky areas. Often found in rocky hills, escarpments, and plains dominated by dense grassy vegetation such as *Triodia* (Wilson and Swan, 2021).	The DBCA database identified five records within 50 km of the Survey Area, including 1.5 km east in 2013 and 3.5 km east in 2007 (DBCA, 2024d).	**High** Nearby records, and limited watercourses close to rocky areas within the Survey Area. May travel through the Survey Area along Drainage Line habitats.

Family	Scientific Name	Conservation Status		Habitat	Previous Records	Likelihood of Occurrence
		State	Commonwealth			
Scincidae	*Ctenotus angusticeps* Northwestern Coastal Ctenotus	P3	–	Mainland population inhabits coastal mudflats vegetated with samphire, sometimes sheltering in crab holes on intertidal zone (Wilson and Swan, 2021).	The DBCA database identified 16 records within 50 km of the Survey Area, including two records 7.8 km north in 2012 (DBCA, 2024d).	**Low** No suitable habitat within the Survey Area.
Scincidae	*Notoscincus butleri* Lined Soil-crevice Skink	P4	–	Arid, rocky, near coastal Pilbara. Associated with spinifex-dominated areas near creek and river margins (Wilson and Swan, 2021).	One record from literature, 100 km west of the Survey Area in 2014 (Phoenix Environmental Sciences, 2014).	**Low** No nearby records, and limited spinifex-dominated areas near river margin habitat within the Survey Area.



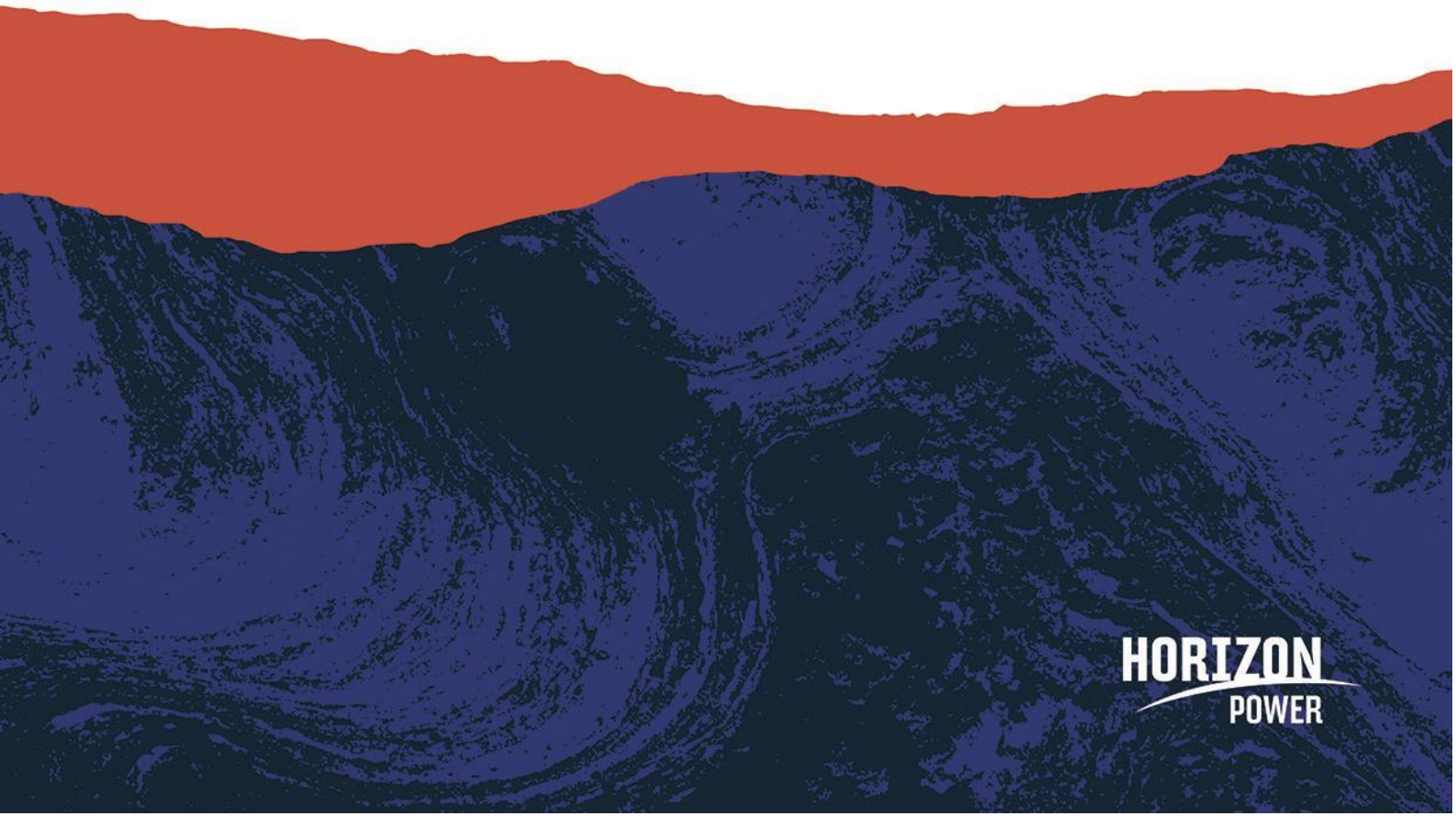
Making Sustainability Happen

Appendix B: Construction Environmental Management Plan

East Pilbara Connection Project

Construction Environmental Management Plan

August 2024



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1 Introduction

1.1 Project Context and Scope

Regional Power Corporation, trading as (T/A) Horizon Power, is a Western Australian (WA) Government Trading Enterprise (GTE) and the state's regional and remote energy provider. Horizon Power operates under the *Electricity Corporations Act 2005* and is governed by a Board of Directors accountable to the Minister for Energy.

Horizon Power is proposing to construct a 220 kV dual circuit common use transmission line connecting the South Hedland Terminal to the proposed Atlas Ridley Magnetite Mine, in the Pilbara region in Western Australia (the Project). The estimated length of the Transmission Line is 70.2 km comprising of mono poles, with an average height of 40 m. The Project is also likely to consist of access tracks along the pole route, geotechnical investigations and laydown areas for construction.

The Project involves the following permanent elements which will require up to 60.6 ha of permanent clearing:

– Approximately 70.2 km long 220 kV overhead transmission line
– Approximately 201 poles with a 20 x 20 m clearing footprint
– Permanent cleared access tracks (approximately 4 m wide).

The Project involves the following temporary elements which will require up to 40.2 ha of temporary clearing:

– Laydown area
– Geotechnical investigations
– Sites to facilitate stringing and winching of the transmission line.

1.2 Scope and purpose

This Construction Environmental Management Plan (CEMP) has been developed to outline environmental management measures to be implemented by Horizon Power and its contractors during the construction of the Project. This includes, but is not limited to, measures to manage dust, erosion and spread of weeds during clearing of native vegetation.

Figure 1 | Project Location and Development Envelope

N

0 2.5 5 10 Kilometers

Scale: 1:250,000

HORIZON POWER

2 Description of the Activity

2.1 Activity Overview

The project requires geotechnical survey works, which will consist of mainly incidental clearing (driving over and parking on native vegetation) for vehicle / machinery access to test sites. The Project also requires construction of the overhead transmission line including poles and permanent access tracks which will be used for maintenance.

2.2 Clearing of Native Vegetation

The proposed clearing will occur within the Development Envelope (Figure 1) which is 10,363 ha in size. No more than 100.8 ha of clearing is proposed, as shown in Table 1.

Clearing of native vegetation within the DE will only be undertaken as specified by the Clearing Permit, including the extent and method of clearing to be undertaken and any specific management measures outlined in the permit conditions.

Table 1 Clearing estimated within the DE

Proposed clearing	Clearing breakdown
100.8 ha	– Permanent clearing: 60.6 ha – Temporary clearing: 40.2 ha

3 Avoidance Measures

Initial avoidance and minimisation was undertaken during route selection and a large area was surveyed to allow for further refinement after the biological survey, to remove environmental constraints from the DE. The following avoidance measures have been applied:

- A 20 m avoidance buffer has been placed around Priority species recorded during the SLR (2024) survey, including:
  - *Gymnanthera cunninghamii*
  - *Tephrosia rosea* var. Port Hedland (A.S. George 1114).
- Avoidance areas have been placed around Stony Hills and Rocky Outcrops and Breakaways fauna habitat types. These will be avoided for all project activities.
- Avoidance areas have been placed around the Minor Drainage and Major Drainage habitat types. These will not be impacted by permanent clearing, there may be minor temporary impacts to this habitat type in the form of vehicles driving over these habitat types during stringing.
- Avoidance areas have been placed around the MaEc vegetation type, which is also associated with the major drainage fauna habitat type. There may still be minor temporary clearing in the form of vehicles driving over this vegetation type during stringing.

4 Management Measures

The management measures listed in Table 2 will be implemented during geotechnical investigations and construction of this Project. Clearing of native vegetation will occur as per the conditions in the NVCP issued by DWER.

Table 2 Management Measures to be Implemented During Geotechnical Investigations and Construction

Aspect	Management Measure
Geotechnical works	
Extent of Clearing	– No clearing is permitted outside the DE (Figure 1)

Aspect	Management Measure
	– Where possible, pre-existing access tracks will be used and vehicles and machinery will exit the DE along the same route used for access. – Avoidance areas will be clearly communicated prior to geotechnical investigations commencing and no more than 35.2 ha of clearing will be undertaken for geotechnical investigations. – Clearing will be minimised where possible through placement of geotechnical tests in existing cleared locations. – Mechanical clearing for the development of formal access tracks is not proposed during geotechnical works. – Works will be undertaken systematically to minimise re-run and compaction of access tracks. – The clearing locations are to be demarcated with flagging tape, GPS or similar prior to clearing activities. – A pre-clearing toolbox will be held so all staff are aware of their responsibilities under the permit and the application of the avoidance areas. – Clearing areas are to be checked by an Environmental Specialist or Site Supervisor prior to clearing to ensure avoidance areas are correctly applied.
Flora and vegetation	– Areas that are degraded, sparsely vegetated and/or previously cleared will be used preferentially for geotechnical tests, laydown and access. – Mechanically cleared areas will be restored, as follows: • Topsoil will be stockpiled separately to other excavated materials. • On completion of test pit works, excavated materials will be placed back into the test pits. Topsoil from the test pit will then be respread over the surface. • Recontouring of soil within the test pit and laydown areas will be undertaken to prevent compaction. – The clearing area allows for driving over vegetation to access geotechnical sites. Driving on vegetation will be kept to the minimum required to perform the works. – Movement of vehicles and machinery will be in convoy along access tracks/ routes and will not go into adjacent vegetation. – No permanent clearing in drainage lines is permitted, including permanent access tracks
Fauna	– Clearing of native vegetation will be undertaken in a slow, progressive manner in one direction to allow fauna to move away from the clearing area. – Construction personnel will not touch, feed or otherwise directly interact with fauna. – Vehicle and machinery speeds within the DE will be restricted to reduce the likelihood of fauna strike.
Weeds	– All vehicles and machinery will arrive clean on site. – Movement of vehicles and machinery will be restricted to the DE or established tracks and roads.
Soils and erosion	– Standard construction measures regarding erosion and sediment control will be implemented during clearing and geotechnical works. – Designated access tracks will be applied to prevent additional disturbance.
Dust	– Standard construction dust control and mitigation measures will be implemented during clearing. This may include the use of a water trucks, or similar. – Ground disturbance and clearing of vegetation will be restricted during high winds if dust cannot be adequately controlled. – Reduced vehicle speed limits will be applied in areas of unconsolidated soil. – Use of defined routes for machinery/ vehicles travelling on unsealed roads.
Noise	– The contractor will comply with the Environmental Protection (Noise) Regulations 1997 – Complaints regarding noise will be recorded and investigated by Horizon Power.
Waste	– Rubbish will be disposed of in appropriate containers and all waste will be removed from the site.

Aspect	Management Measure
Hydrocarbons and chemicals	– Hydrocarbons and chemicals will be appropriately managed on site to prevent spills, including maintaining equipment in good working order in accordance with manufacturers specifications. – No refuelling will be undertaken within 50 m of a waterway, drain or drainage line. – Hydrocarbons will be appropriately stored at least 50 m away from drainage lines and stored in an appropriate bunded container. – Refuelling will be undertaken on hardstand or using catch trays only. Uncontrolled refuelling is not permitted. – Chemicals will be appropriately stored.
Heritage	– Should aboriginal cultural heritage materials be uncovered during construction works, works are to stop immediately within 20 m of the find. The Contractor is to contact the Horizon Project Manager and an incident will be raised. The area will be cordoned off and no access permitted to the area by people until the incident is investigated and resolved.
Construction	
Extent of Clearing	– No clearing is permitted outside the DE (Figure 1) – Clearing will be minimised where possible through placement of assets and access tracks in existing cleared locations where possible. – The clearing locations are to be demarcated prior to clearing activities. – Clearing areas are to be checked by an Environmental Specialist or Site Supervisor prior to clearing to ensure no more than 100.8 ha of clearing is undertaken for the Project (including the 35.2 ha of clearing required for geotechnical investigations detailed above). – A pre-clearing toolbox will be held so all staff are aware of their responsibilities under the permit and application of avoidance areas. – Avoidance areas will be applied to prevent impacts to Priority flora and critical fauna habitat.
Flora and vegetation	– Areas that are degraded, sparsely vegetated and/or previously cleared will be used preferentially for laydown and access tracks. – Works will be undertaken systematically to minimise re-run and compaction of access tracks. – Any clearing required for temporary purposes, and not required for ongoing maintenance, will be rehabilitated upon completion of construction including re-laying of soil and recontouring to prevent compaction.
Fauna	– Clearing of native vegetation will be undertaken in a slow, progressive manner in one direction to allow fauna to move away from the clearing area. – Construction personnel will not touch, feed or otherwise directly interact with fauna. – Vehicle and machinery speeds within the DE will be restricted to reduce the likelihood of fauna strike.
Weeds	– The Contractor will ensure that no weed-affected soil, mulch, fill or other material is brought into the DE. – Vehicles and machinery will arrive clean, and weed control will be undertaken at the site post-construction as required. – Movement of vehicles and machinery will be restricted to the DE or established tracks and roads to prevent the spread of weeds.
Erosion and soils	– Standard construction measures regarding erosion and sediment control will be implemented during construction works. – Designated access tracks will be applied to prevent additional disturbance. – Acid sulphate soils will be managed in accordance with the ASSMP (if required pending geotechnical investigations, in accordance with the *Treatment and management of soils and water in acid sulfate soil landscapes* (DER, 2015b[1]).

[1] Department of Environment Regulation 2015b, Treatment and management of soils and water in acid sulfate soil landscapes, May 2015, Perth, Western Australia

Aspect	Management Measure
Dust	– Standard construction dust control and mitigation measures will be implemented during clearing. This may include the use of a water trucks, or similar. – Ground disturbance and clearing of vegetation will be restricted during high winds if dust cannot be adequately controlled. – Reduced vehicle speed limits will be applied in areas of unconsolidated soil.
Noise	– The contractor will comply with the Environmental Protection (Noise) Regulations 1997 – Complaints regarding noise will be recorded and investigated by Horizon Power.
Waste	– Rubbish will be disposed of in appropriate containers and all waste will be removed from the site.
Hydrocarbons and chemicals	– Hydrocarbons and chemicals will be appropriately managed on site to prevent spills, including maintaining equipment in good working order in accordance with manufacturers specifications. – No refuelling will be undertaken within 50 m of a waterway, drain or drainage line. – Hydrocarbons will be appropriately stored at least 50 m away from drainage lines and stored in an appropriate bunded container. – Refuelling will be undertaken on hardstand or using catch trays only. Uncontrolled refuelling is not permitted. – Chemicals will be appropriately stored.
Heritage	– Should aboriginal cultural heritage materials be uncovered during construction works, works are to stop immediately within 20 m of the find. The Contractor is to contact the Horizon Project Manager and an incident will be raised. The area will be cordoned off and no access permitted to the area by people until the incident is investigated and resolved.

Appendix C: Significant Fauna Likelihood of Occurrence Assessment

Table 8: Significant fauna likelihood of occurrence assessment for species that are known, likely or may occur within the Development Envelope

Fauna Species	Status	Likelihood of occurrence	Suitable habitat within the DE
Northern Quoll (*Dasyurus hallucatus*)	Endangered under BC Act and EPBC Act	**Known to occur** The Northern Quoll favours dissected rocky escarpments, utilising a variety of den sites, including rocky crevices, tree hollows, log and termite mounds. It favours rocky areas, taking refuge in rock crevices and utilising gullies and drainage lines. This species was not recorded during the field survey (SLR, 2024). However, a recent survey that intersects the eastern section of the DE recorded the Northern Quoll (Biota, 2024). There are also abundant (1,282) previous records within the DE (DBCA, 2023), with most of the records within the Outcrops and Breakaways habitat type. Therefore, the Northern Quoll is known to occur within the DE.	1. **Outcrops and Breakaways**: This habitat may be used for denning and foraging and is considered habitat critical to the survival of the Northern Quoll as they are rocky areas that provide prime habitat for the species (Hill & Ward, 2010). Avoidance areas have been applied around this habitat type to mitigate impacts to the Northern Quoll. 2. **Stony Hills:** This habitat may be used for denning and foraging is considered habitat critical to the survival of the Northern Quoll as they are rocky areas that provide prime habitat for the species (Hill & Ward, 2010). Avoidance areas have been applied around this habitat type to mitigate impacts to the Northern Quoll. 3. **Major Drainage** and **Minor Drainage:** After significant rainfall events these habitats will provide valuable and water sources for this species. Avoidance areas have been placed around these drainage habitats for permanent clearing. There may still be temporary clearing in the form of vehicles driving over these habitat types. 4. **Open Eucalypt Woodland, Low *Acacia stellaticeps* over *Triodia,* Mixed *Acacia* Shrubs and *Triodia* Plains and Sparse *Triodia* Plains**: This is suitable foraging and dispersal habitat for the Northern Quoll. Up to 100.8 ha may be cleared for the Project.
Pilbara Leaf-nosed Bat (*Rhinonicteris aurantia*) (Pilbara form)	Vulnerable under BC Act and EPBC Act	**Known to occur** The Pilbara Leaf-nosed Bat is restricted to areas with suitable day roosts, which are typically deep caves that retain humidity or disused underground mines (Cramer et al., 2016). The Pilbara Leaf-nosed Bat was recorded seven times within the Outcrops and Breakaways and Low *Acacia stellaticeps* over *Triodia* adjacent to the Outcrops and Breakaways habitat (SLR, 2024). Further, this species was recorded in a recent survey that intersects the eastern section of the DE (Biota, 2024). Therefore the Pilbara Leaf-nosed Bat is known to occur within the DE.	5. **Outcrops and Breakaways**: The caves in the Outcrops and Breakaways provide ideal roosting habitat for the Pilbara Leaf-nosed Bat and this habitat type is considered habitat critical to the survival of the species as the conservation advice (TSSC, 2016) defines transitory diurnal roosts as critical habitat. Avoidance areas have been applied around this habitat type to mitigate impacts to the Pilbara Leaf-nosed Bat. 6. **Major Drainage** and **Minor Drainage**: the Pilbara Leaf-nosed Bat may use these habitats for foraging and dispersal. Avoidance areas have been placed around these drainage habitats for permanent clearing. There may still be temporary clearing in the form of vehicles driving over these habitat types.

Fauna Species	Status	Likelihood of occurrence	Suitable habitat within the DE
			7. **Stony Hills**: the Pilbara Leaf-nosed Bat may use these habitats for foraging and dispersal. Potential foraging habitat surrounding known or suspected roost sites can be critical to the survival of the Pilbara Leaf-nosed Bat (TSSC, 2016). The Stony Hills habitat type was mapped as surrounding sites where the Pilbara Leaf-nosed Bat was recorded in the SLR (2024) survey. Therefore, this is considered critical habitat for the species. Avoidance areas have been applied around these habitat types to mitigate impacts to the Pilbara Leaf-nosed Bat. 8. **Low *Acacia stellaticeps* over *Triodia,* Mixed *Acacia* Shrubs and *Triodia* Plains, Sparse *Triodia* Plains** and **Open Eucalypt Woodland**: the Pilbara Leaf-nosed Bat may use these habitats for foraging and dispersal. Potential foraging habitat surrounding known or suspected roost sites can be critical to the survival of the Pilbara Leaf-nosed Bat (TSSC, 2016). Each of these habitat types were mapped as surrounding sites where the Pilbara Leaf-nosed Bat was recorded in the SLR (2024) survey. Therefore, they are considered critical habitat for the species. Up to 100.8 ha of this suitable foraging and dispersal habitat may be cleared for the Project.
Bilby (*Macrotis lagotis*)	Vulnerable under BC Act and EPBC Act	**Known to occur** The Bilby is described as occupying a wide range of vegetation types, including open tussock grasslands on upland hills. Mulga woodland/shrubland growing on ridges and rises and spinifex growing on sandplains and dunes, drainage systems, salt lake systems and other alluvial areas. Targeted Bilby searches were undertaken throughout the survey (SLR, 2024) in areas of suitable Bilby habitat with no Bilbies recorded. Further, a targeted assessment for the Bilby by GHD in 2022 (which intersects the DE) did not record the species. However, Bilby have been recorded within the western portion of the DE in previous studies (Phoenix, 2022). The species was previously recorded in the Low *Acacia stellaticeps* over *Triodia* and Sparse *Triodia* Plains habitats. Therefore, the Bilby is known to occur within the DE.	9. **Low *Acacia stellaticeps* over *Triodia*** and **Sparse *Triodia* Plains**: The Bilby has been previously recorded in these habitats and may use them for denning, foraging and dispersal. Critical habitat for the Bilby includes suitable habitats where the species is likely to occupy (DCCEEW, 2023b). Therefore, these habitats are critical habitat for the Bilby and up to 100.8 ha of may be cleared. 10. **Major Drainage, Minor Drainage, Mixed *Acacia* Shrubs and *Triodia* Plains** and **Open Eucalypt Woodland:** Based on habitat preferences for the Bilby as described in their recovery plan (DCCEEW, 2023b), they may occur within these habitat types, however were not recorded here during the SLR (2024) survey.
Western Pebble-mound Mouse (*Pseudomys chapmani*)	Priority 4 under DBCA list	**Known to occur** The Western Pebble-mound Mouse is endemic to the Pilbara and their mounds are usually found on gentle slopes and spurs that are often	11. **Stony Hills**: the Western Pebble-mound mouse was recorded three times within this habitat and it is highly likely that mounds are currently occupied (SLR, 2024). This habitat is considered suitable burrowing, refuge, and foraging habitat for the Western Pebble-mound Mouse and is therefore considered critical habitat. Avoidance areas have been

Fauna Species	Status	Likelihood of occurrence	Suitable habitat within the DE
		vegetated by hard spinifex (Ford and Johnson, 2007; Van Dyck and Strahan, 2008). Western Pebble-mound Mouse mounds were recorded three times within the Stony Hills habitat, and twice within the Outcrops and Breakaways habitat (SLR, 2024). However, studies have shown that not all mounds in an area are occupied by a Pebble-mound Mouse at any one time (Anstee, 1996). Further, given the presence of an entrance hole and the lack of debris around the entrance, it is highly unlikely that the mounds are currently occupied (SLR, 2024). This species was recorded once within the Mixed *Acacia* Shrubs and *Triodia* Plains habitat, however, the record is 40 m away from the Outcrops and Breakaways habitat, therefore it is considered dispersal habitat for the species. The Low *Acacia stellaticeps* over *Triodia* habitat, Open Eucalypt Woodland and Sparse *Triodia* Plans are also considered dispersal habitat for the species. This species was also recorded during the Atlas Ridley Mine survey, adjacent to the DE (Biota, 2024). Therefore, the Western Pebble-mound Mouse is known to occur within the DE.	applied around this habitat type to mitigate impacts to the to the Western Pebble-mound Mouse. 12. **Outcrops and Breakaways**: the Western Pebble-mound mouse was recorded twice within this habitat and it is highly likely that mounds are currently occupied (SLR, 2024). This habitat is considered suitable burrowing, refuge, and foraging habitat for the Western Pebble-mound Mouse and is therefore considered critical habitat. Avoidance areas have been applied around this habitat type to mitigate impacts to the to the Western Pebble-mound Mouse. 13. **Mixed *Acacia* Shrubs and *Triodia* Plains, Low *Acacia stellaticeps* over *Triodia,* Open Eucalypt Woodland** and **Sparse *Triodia* Plains**: Based on habitat preferences, these habitats may be used as foraging and dispersal habitat by the Western Pebble-mound Mouse. Up to 100.8 ha of this suitable foraging and dispersal habitat may be cleared for the Project.
Grey Falcon (*Falco hypoleucos*)	Vulnerable under BC Act and EPBC Act	**Likely to occur** This species favours lightly timbered and untimbered lowland plains that are crossed with tree-lined watercourses, but also can be found in grassland and sand dune habitats. The DE has two Drainage habitats with eucalypt trees along the riverbanks, which constitutes suitable nesting habitat. The plains surrounding the Major Drainage and Minor Drainage habitats is likely to supporting habitat used for foraging. Therefore, the Grey Falcon is likely to occur within the DE.	14. **Major Drainage** and **Minor Drainage**: The eucalypt trees along the drainage habitats are suitable nesting habitat for the Grey Falcon. Breeding habitat is important to the survival of a species, however critical habitat has not been defined for the Grey Falcon. Avoidance areas have been placed around these drainage habitats for permanent clearing. There may still be temporary clearing in the form of vehicles driving over these habitat types. 15. **Low *Acacia stellaticeps* over *Triodia,* Mixed *Acacia* Shrubs and *Triodia* Plains, Open Eucalypt Woodland** and **Sparse *Triodia* Plains**: Based on habitat preferences for the Grey Falcon, these habitat types surrounding the Major and Minor Drainage habitats are suitable foraging and dispersal habitats. Up to 100.8 ha of this suitable foraging and dispersal habitat may be cleared for the Project.
Oriental Pratincole (*Glareola maldivarum*)	Migratory under BC Act and EPBC Act	**Likely to occur** This species prefers plains, shallow wet and dry edges of open bare wetlands and tidal mudflats and beach habitat. This species does not breed in Australia.	16. **Low *Acacia stellaticeps* over *Triodia*, Mixed *Acacia* Shrubs and *Triodia* Plains, Major Drainage, Minor Drainage, Open Eucalypt Woodland** and **Sparse *Triodia* Plains**: These habitats are suitable foraging habitat for the Oriental Pratincole. Avoidance areas have been placed around the Major Drainage and Minor Drainage habitats for permanent clearing. There may still be temporary clearing in the form of vehicles

Fauna Species	Status	Likelihood of occurrence	Suitable habitat within the DE
		The Oriental Pratincole was previously recorded within the DE in 2004 (DBCA, 2023) within the Low *Acacia stellaticeps* over *Triodia* habitat, which has the potential to become inundated during the wet season, providing suitable habitat used for foraging. Due to the species preference for open plains and seasonal wetland habitat, it is also considered that the Oriental Pratincole may use the Mixed *Acacia* Shrubs and *Triodia* Plains, Major Drainage, Minor Drainage, Open Eucalypt Woodland and Sparse *Triodia* Plains habitats within the DE. Therefore, the Oriental Pratincole is likely to occur within the DE.	driving over these drainage habitat types. Up to 100.8 ha of the remaining suitable foraging habitat may be cleared for the Project.
Common Greenshank (*Tringa nebularia*)	Endangered under EPBC Act Migratory under BC Act and EPBC Act	**Likely to occur** This species is found in coastal areas, riverbanks and coastal to freshwater wetlands. This species has been recorded frequently and recently within the desktop study (SLR, 2024) and likely occurs within the DE. The Low *Acacia stellaticeps* over *Triodia*, Mixed *Acacia* Shrubs and *Triodia* Plains, Sparse *Triodia* Plains, Major Drainage and Minor Drainage habitats constitute supporting habitat for this species. This species is considered likely to occur within the DE and if present will occur between August and March. Therefore, the Common Greenshank is likely to occur within the DE.	17. **Low *Acacia stellaticeps* over *Triodia,* Mixed *Acacia* Shrubs and *Triodia* Plains, Sparse *Triodia* Plains, Major Drainage** and **Minor Drainage**: These habitat types have the potential to inundated after significant rain events and are therefore suitable foraging habitats. Foraging habitat is defined as habitat critical to the survival of the species (DCCEEW, 2024e). Avoidance areas have been placed around the Major Drainage and Minor Drainage habitats for permanent clearing. There may still be temporary clearing in the form of vehicles driving over these drainage habitat types. Up to 100.8 ha of the remaining critical habitat may be cleared for the Project.
Barn Swallow (*Hirundo rustica*)	Migratory under BC Act and EPBC Act	**Likely to occur** This species is typically observed in close proximity to urban water bodies and coastal wetlands. This species has been recorded frequently within the desktop study (SLR, 2024) and likely occurs within the DE. The Major and Minor Drainage habitats constitute supporting habitat for this species for their value as foraging, roosting and dispersal habitat. Additionally, the Low *Acacia stellaticeps* over *Triodia*, Mixed *Acacia* Shrubs and *Triodia* Plains and Sparse *Triodia* Plains have the potential to inundated after significant rain events and therefore may also be suitable habitat. This species is considered likely to occur and if present will occur between Spring and Summer.	18. **Low *Acacia stellaticeps* over *Triodia,* Mixed *Acacia* Shrubs and *Triodia* Plains, Sparse *Triodia* Plains, Major Drainage** and **Minor Drainage**: These habitat types have the potential to inundated after significant rain events and are therefore suitable foraging, roosting and dispersal habitats. Habitat critical for the survival of the Barn Swallow has not been defined. Avoidance areas have been placed around the Major Drainage and Minor Drainage habitat types for permanent clearing. There may still be temporary clearing in the form of vehicles driving over these drainage habitat types. Up to 100.8 ha of the remaining potential foraging, roosting and dispersal habitats may be cleared for the Project.
Little Curlew (*Numenius minutus*)	Migratory under BC Act and EPBC Act	**Likely to occur** This species forages within short, dry grassland and sedgeland, including dry floodplains and blacksoil plains, which have scattered, shallow	19. **Low *Acacia stellaticeps* over *Triodia,* Mixed *Acacia* Shrubs and *Triodia* Plains, Sparse *Triodia* Plains, Major Drainage, Minor Drainage** and **Open Eucalypt Woodland:** These habitats are suitable foraging habitat

Fauna Species	Status	Likelihood of occurrence	Suitable habitat within the DE
		freshwater pools or areas seasonally inundated. Open woodlands with grassy or burnt understorey, dry saltmarshes, coastal swamps, mudflats or sandflats of estuaries or beaches on sheltered coasts, mown lawns, gardens, recreational areas, ovals, racecourses and verges of roads, and airstrips are also used. This species has been recorded frequently and recently within the desktop study area (SLR, 2024). The Low *Acacia stellaticeps* over *Triodia*, Mixed *Acacia* Shrubs and *Triodia* Plains, Sparse *Triodia* Plains, Major Drainage, Minor Drainage and Open Eucalypt Woodland habitats constitute supporting habitat for the species. If present, the species will occur in the DE between October and April. Therefore, the Little Curlew is likely to occur within the DE.	for the Little Curlew. Habitat critical for the survival of the Little Curlew has not been defined. Avoidance areas have been placed around the Major Drainage and Minor Drainage habitat types for permanent clearing. There may still be temporary clearing in the form of vehicles driving over these drainage habitat types. Up to 100.8 ha of the remaining suitable foraging habitat may be cleared for the Project.
Oriental Plover (*Charadrius veredus*)	Migratory under BC Act and EPBC Act	**Likely to occur** This species typically prefers grasslands and thinly vegetated plains, and open areas such as recently burnt country and heavily grazed pastures. This species has been recorded recently within the desktop study area (SLR, 2024). The Low *Acacia stellaticeps* over *Triodia*, Mixed *Acacia* Shrubs and *Triodia* Plains, Sparse *Triodia* Plains, Major Drainage and Minor Drainage constitute supporting habitat for the species as they may become inundated after significant rain events. This species is considered likely to occur during potential flooding events, and if present, will occur within the DE between mid-September and April. Therefore, the Oriental Plover is likely to occur within the DE.	20. **Low *Acacia stellaticeps* over *Triodia,* Mixed *Acacia* Shrubs and *Triodia* Plains, Sparse *Triodia* Plains, Major Drainage** and **Minor Drainage**: These habitat types have the potential to inundated after significant rain events and are therefore suitable foraging habitat. Habitat critical for the survival of the Oriental Plover has not been defined. Avoidance areas have been placed around the Major Drainage and Minor Drainage habitat types for permanent clearing. There may still be temporary clearing in the form of vehicles driving over these drainage habitat types. Up to 100.8 ha of the remaining suitable foraging habitat may be cleared for the Project.
Osprey (*Pandion haliaetus*)	Migratory under BC Act and EPBC Act	**Likely to occur** This species requires extensive areas of open fresh, brackish or saline water for foraging. They are mostly found in coastal areas but occasionally travel inland along major rivers. They frequent a variety of wetland habitats including inshore waters, reefs, bays, coastal cliffs, beaches, estuaries, mangrove swamps, broad rivers, reservoirs and large lakes and waterholes. This species has been recorded recently within the desktop study area (SLR, 2024). The Major and Minor Drainage habitats constitute critical habitat for the Osprey because of their value for hunting and dispersal. Therefore, the Osprey is likely to occur within the DE during flooding events.	21. **Major Drainage** and **Minor Drainage**: SLR (2024) defined these habitats as critical to the survival of the Osprey due to their value for hunting and dispersal. Avoidance areas have been placed around these drainage habitats for permanent clearing. There may still be temporary clearing in the form of vehicles driving over these habitat types.

Fauna Species	Status	Likelihood of occurrence	Suitable habitat within the DE
Peregrine Falcon (*Falco peregrinus*)	Other specially protected under DBCA list	**Likely to occur** This species mainly occurs along rivers and ranges as well as wooded watercourses and lakes. It nests primarily on cliffs and granite outcrops and quarries. This species was not observed during the field survey (SLR, 2024), however has been previously recorded twice within 3 km of the DE in recent years (DBCA, 2023). The trees in the Open Eucalypt Woodland, Major Drainage and Minor Drainage habitats within the DE and surrounds may provide suitable habitat used for nesting and hunting. Therefore, the Peregrine Falcon is likely to occur within the DE.	22. **Open Eucalypt Woodland, Major Drainage** and **Minor Drainage:** These are suitable nesting, dispersal and foraging habitat for the Peregrine Falcon. Critical habitat for the Peregrine Falcon has not been defined, however breeding habitat is considered important. Avoidance areas have been placed around the Major Drainage and Minor Drainage habitats for permanent clearing. There may still be temporary clearing in the form of vehicles driving over these drainage habitat types. Up to 100.8 ha of the remaining suitable foraging, dispersal and nesting habitat may be cleared for the Project.
Ghost Bat (*Macroderma gigas*)	Vulnerable under BC Act and EPBC Act	**Likely to occur** This species requires undisturbed roost caves or mineshafts. There are suitable roosting caves for Ghost Bats in the vicinity of the DE. The species was not recorded during the field survey of the DE (SLR, 2024), however was recorded during the Biota (2024) survey outside of the transmission line DE. The Ghost Bat may utilise suitable rock fissures and boulder piles within the DE. The Major and Minor Drainage habitats also constitute moderate value habitat as they may be used as foraging and dispersal habitat. Therefore, the Ghost Bat is likely to occur within the DE.	23. **Outcrops and Breakaways:** Habitat critical to the survival of the Ghost Bat isn't defined, however, Biota (2024) defined the rocky hills habitat within their survey area (which intersects the DE) as potential critical habitat for the Ghost Bat (Biota, 2024). This habitat is considered similar to the Outcrops and Breakaways habitat and is therefore considered critical habitat as well. Avoidance areas have been applied around this habitat type to mitigate impacts to the Ghost Bat. 24. **Major Drainage** and **Minor Drainage:** the Ghost Bat may use these habitats for foraging and dispersal. Avoidance areas have been placed around these drainage habitats for permanent clearing. There may still be temporary clearing in the form of vehicles driving over these habitat types.
Brush-tailed Mulgara (*Dasycercus blythi*)	Priority 4 under DBCA list	**Likely to occur** The Brush-tailed Mulgara is associated with hummock spinifex grasslands, but also uses other vegetation types (often sandplains, grasslands and woodlands) when mixed with or adjacent to hummock grasslands. This species was previously recorded within the DE (Biota, 2024; Phoenix, 2022). The Low *Acacia stellaticeps* over *Triodia* habitat and the Mixed *Acacia* Shrubs and *Triodia* habitat would support this species. Approximately 83% of the DE consists of these two habitat types, which indicates the species may be able to persist throughout the majority of the DE. Therefore, the Brush-tailed Mulgara is likely to occur within the DE.	25. **Low *Acacia stellaticeps* over *Triodia*** and **Mixed *Acacia* Shrubs and *Triodia* Plains**: The Brush-tailed Mulgara may use these habitat types for burrowing, foraging and dispersal. The species was not recorded in the DE and habitat critical to the survival of the species has not been defined. Therefore up to 100.8 ha of supporting habitat in the form of burrowing, foraging and dispersal habitat may be cleared for the Project.

Fauna Species	Status	Likelihood of occurrence	Suitable habitat within the DE
Pilbara Olive Python (*Liasis olivacea barroni*)	Vulnerable under BC Act and EPBC Act	**Likely to occur** This species generally shelters under rock piles, or under spinifex and often basks on stop of rocks. This species is known to frequent water bodies. The Pilbara Olive Python has been previously recorded within the DE, however preferred habitat is not within the DE. If present, the species likely utilises the Minor and Major drainage habitats and the Outcrops and Breakaways habitat within the DE as supporting habitat. Therefore, the Pilbara Olive Python is likely to occur within the DE.	26. **Outcrops and Breakaway**: The Pilbara Olive Python may use this habitat for dispersal. Critical habitat is not defined for this species (DEWHA, 2008). However, Biota (2024) defined the rocky hills habitat they recorded within the Atlas Iron survey area as potential critical habitat for the species. The Outcrops and Breakaway habitat is similar and therefore potentially critical habitat for the species. Avoidance areas have been applied around this habitat type to mitigate impacts to the Pilbara Olive Python. 27. **Major Drainage and Minor Drainage**: The Pilbara Olive Python may use this habitat for foraging. Avoidance areas have been placed around these drainage habitats for permanent clearing. There may still be temporary clearing in the form of vehicles driving over these habitat types.
Pilbara Grasswren (*Amytornus whitei whitei*)	Priority 4 under DBCA List	**May occur** This species is restricted to spinifex associations on rocky slopes and ridges, with or without shrubs or light tree cover, preferring areas with tall dense spinifex hummocks. This species has been recorded within the desktop study area (SLR, 2024). The Sparse *Triodia* Plains and Stony Hills habitats constitute critical habitat for this species due to their value for foraging and shelter. Therefore, the Pilbara Grasswren may occur within the DE.	28. **Sparse *Triodia* Plains** and **Stony Hills**: the Pilbara Grasswren may use these habitats for foraging and shelter. Critical habitat for this species has not been defined however SLR defined these habitats as critical habitat because of their value for foraging and shelter (SLR, 2024). Avoidance areas have been applied around the Stony Hills habitat type. However, up to 100.8 ha of critical habitat in the form of Sparse *Triodia* Plains may be cleared as a result of the Project.
Glossy Ibis (*Plegadis falcinellus*)	Migratory under BC Act and EPBC Act	**May occur** The preferred foraging and breeding habitat of this species includes freshwater marshes at the edges of lakes and rivers, lagoons, floodplains, wet meadows, swamps, reservoirs, sewage pongs, rice-fields and cultivated areas under irrigation. This species builds a platform nest of sticks in trees or shrubs above water. This species was recorded within the desktop study areas (SLR, 2024) and may occur within the DE. There are several habitats which may flood and provide suitable habitat for the species. Additionally dry grassland habitat is suitable for this species. Therefore, the Glossy Ibis may occur within the DE on a sporadic basis during flooding events.	29. **Low *Acacia stellaticeps* over *Triodia,* Mixed *Acacia* Shrubs and *Triodia* Plains, Sparse *Triodia* Plains, Major Drainage** and **Minor Drainage**: These habitat types have the potential to inundated after significant rain events and are therefore suitable foraging and breeding habitats. There is no critical habitat defined for this species. Avoidance areas have been placed around the Major Drainage and Minor Drainage habitats for permanent clearing. There may still be temporary clearing in the form of vehicles driving over these drainage habitat types. Up to 100.8 ha of the remaining potential foraging and breeding habitat may be cleared for the Project.

Fauna Species	Status	Likelihood of occurrence	Suitable habitat within the DE
Fork-tailed Swift (*Apus pacificus*)	Migratory under BC Act and EPBC Act	**May occur** This species is almost exclusively aerial over varied habitats, ranging from rainforests to semi-deserts. This species has been recorded within the desktop study area (SLR, 2024). All habitats within the DE may potentially be utilised as supporting habitat for foraging and dispersal. Therefore, the Fork-tailed Swift may occur within the DE.	**30. Closed *Acacia* Shrubland, Low *Acacia stellaticeps* over *Triodia*, Major Drainage, Minor Drainage, Mixed *Acacia* Shrubs and *Triodia* Plains, Open Eucalypt Woodland, Outcrops and Breakaways, Sparse *Triodia* Plains** and **Stony Hills:** All habitats within the DE may be used as foraging and dispersal habitat for the Fork-tailed Swift. There is no critical habitat defined for this species. **31.** Avoidance areas have been applied around the Outcrops and Breakaways and Stony Hills habitat types. **32.** Avoidance areas have been placed around the Major Drainage and Minor Drainage habitats for permanent clearing. There may still be temporary clearing in the form of vehicles driving over these drainage habitat types. **33.** Up to 100.8 ha of the remaining potential foraging and dispersal habitat may be cleared for the Project.
Short-tailed Mouse (*Leggadina lakedownensis*)	Priority 4 under DBCA List	**May occur** This species uses spinifex and *Acacia* on seasonally inundated sandy-clay soils as well as sandy soils and cracking clays to build burrows which they shelter during the day. In the Pilbara, it occurs on stony hummock grassland. This species was recorded within the desktop study area (SLR, 2024). The Sparse *Triodia* Plains and Stony Hills habitat constitute critical habitat for the species because of their value for foraging and shelter. Therefore, the Short-tailed Mouse may occur within the DE.	34. **Sparse *Triodia* Plains** and **Stony Hills**: SLR (2024) defined these habitats as critical habitat for the Short-tailed Mouse because of their value for foraging and shelter. Avoidance areas have been applied around the Stony Hills habitat type. However up to 100.8 ha of the remaining potential foraging and shelter habitat may be cleared for the Project.
Curlew Sandpiper (*Calidris ferruginea*)	Critically Endangered under the BC Act and EPBC Act Migratory under EPBC Act	**May occur** There are records of these species in proximity to the DE, however there are limited suitable habitats for the species within the DE. There are suitable tidal flats < 10 km north of the DE, and there are drainage habitats that connect these flats to the DE. Therefore, there is an opportunity for these species to occur within the DE in the Major Drainage and Minor Drainage habitats after significant rain events that would flood these habitats.	**35. Major Drainage** and **Minor Drainage**: The bird species may use this habitat for foraging and dispersal after flooding events. This is considered critical habitat for the Curlew Sandpiper, Great Knot, Red Knot, Sharp-tailed Sandpiper and Black-tailed Godwit as any foraging habitat is considered critical habitat for these species (DCCEEW, 2023; DCCEEW, 2024a, DCCEEW, 2024b; DCCEEW, 2024c; DCCEEW, 2024d). Avoidance areas have been placed around the Major Drainage and Minor Drainage habitats for permanent clearing. There may still be
Great Knot (*Calidris tenuirostris*)	Critically Endangered under the BC Act		

Fauna Species	Status	Likelihood of occurrence	Suitable habitat within the DE
	Vulnerable and Migratory under EPBC Act	These habitats would likely be used as foraging and dispersal habitat only, and do not constitute important habitat for any of the species. Therefore, these species may occur within the DE.	temporary clearing in the form of vehicles driving over these drainage habitat types.
Red Knot (*Calidris canutus*)	Endangered under the BC Act Vulnerable and Migratory under the EPBC Act		
Grey-tailed Tattler (*Tringa brevipes*)	Priority 4 listed by DBCA Migratory under BC Act and EPBC Act		
White-winged Black Tern *(Chlidonias leucopterus)*	Migratory under BC Act and EPBC Act		
Gull-billed Tern (*Gelochelidon nilotica*)	Migratory under BC Act and EPBC Act		
Caspian Tern (*Hydroprogne caspia*)	Migratory under BC Act and EPBC Act		
Common Tern (*Sterna hirundo*)	Migratory under BC Act and EPBC Act		
Common Sandpiper *(Actitis hypoleucos)*	Migratory under BC Act and EPBC Act		
Sharp-tailed Sandpiper (*Calidris acuminata*)	Vulnerable under EPBC Act		

Fauna Species	Status	Likelihood of occurrence	Suitable habitat within the DE
	Migratory under BC Act and EPBC Act		
Sanderling (*Calidris alba*)	Migratory under BC Act and EPBC Act		
Broad-billed Sandpiper (*Calidris falcinellus*)	Migratory under BC Act and EPBC Act		
Pectoral Sandpiper (*Calidris melanotos*)	Migratory under BC Act and EPBC Act		
Ruff (*Calidris pugnax*)	Migratory under BC Act and EPBC Act		
Red-necked Stint (*Calidris ruficollis*)	Migratory under BC Act and EPBC Act		
Long-toed Stint (*Calidris subminuta*)	Migratory under BC Act and EPBC Act		
Pin-tailed Snipe (*Gallinago stenura*)	Migratory under BC Act and EPBC Act		
Bar-tailed Godwit (*Limosa lapponica*)	Migratory under BC Act and EPBC Act		
Black-tailed Godwit (*Limosa limosa*)	Migratory under BC Act and EPBC Act		

Fauna Species	Status	Likelihood of occurrence	Suitable habitat within the DE
	Endangered under EPBC Act		
Whimbrel (*Numenius phaeopus*)	Migratory under BC Act and EPBC Act		
Red-necked Phalarope (*Phalaropus lobatus*)	Migratory under BC Act and EPBC Act		
Wood Sandpiper (*Tringa glareola*)	Migratory under BC Act and EPBC Act		
Marsh Sandpiper (*Tringa stagnatilis*)	Migratory under BC Act and EPBC Act		

Appendix D: Significant Flora Likelihood of Occurrence Assessment

Table 9: Significant flora likelihood of occurrence assessment for species that are known, likely or may occur within the Development Envelope

Flora Species	Status	Likelihood of occurrence
Tephrosia rosea var. Port Hedland (A.S. George 1114)	Priority 1 under DBCA list	**Known to occur** Two individuals of *Tephrosia rosea* subsp. Port Hedland were recorded opportunistically from one location in the AsTe vegetation type.
Gymnanthera cunninghamii	Priority 3 under DBCA list	**Known to occur** Six individuals of *Gymnanthera cunninghamii* across four locations were opportunistically recorded in the MaEc vegetation type.
Eragrostis crateriformis	Priority 3 under DBCA list	**Likely to occur** There are records of this species nearby to the DE, with the closest record being 0.15 km away. This species' preferred habitat is clayey loam or clay, creek banks and depressions (SLR, 2024).
Euploca mutica	Priority 3 under DBCA list	**Likely to occur** There are records of this species nearby to the DE, with the closest record being 0.08 km away. This species' preferred habitat is flat sand plains (SLR, 2024).
Euploca parviantrum	Priority 1 under DBCA list	**May occur** There are records of this species nearby to the DE, with the closest record being 6.87 km away. This species' preferred habitat is sandy soils, flats, plains and rocky slopes (SLR, 2024).
Euphorbia inappendiculata var. *inappendiculata*	Priority 2 under DBCA list	**May occur** There are records of this species nearby to the DE, with the closest record being 60.93 km away. This species' preferred habitat is red, brown clay or loam and plains (SLR, 2024).
Abutilon sp. Pritzelianum (S. van Leeuwen 5095)	Priority 3 under DBCA list	**May occur** There are records of this species nearby to the DE, with the closest record being 3.03 km away. This species' preferred habitat is sandy plains (SLR, 2024).
Euphorbia clementii	Priority 3 under DBCA list	**May occur** There are records of this species nearby to the DE, with the closest record being 6.19 km away. This species' preferred habitat is gravelly hillsides and stony grounds (SLR, 2024).
Rothia indica subsp. *australis*	Priority 3 under DBCA list	**May occur**

Flora Species	Status	Likelihood of occurrence
		This species has previously been recorded within the DE. This species' preferred habitat is sandy soils, sandhills and sandy flats (SLR, 2024).
Bulbostylis burbidgeae	Priority 4 under DBCA list	**May occur** There are records of this species nearby to the DE, with the closest record being 5.85 km away. This species' preferred habitat is granitic soils, granite outcrops and cliff bases (SLR, 2024).