TERRESTRIAL VERTEBRATE FAUNA ASSESSMENT - EAST PILBARA GENERATION HUB

Fortescue Ltd

ecoscape

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TABLE OF CONTENTS

FIGURES

TABLES

MAPS

IMAGES

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- Mimi d'Auvergne and Jesse Harper for coordinating the field surveys, data provision and project management.

EXECUTIVE SUMMARY

Fortescue Limited (Fortescue) is currently investigating development opportunities in relation to its proposed Eastern Pilbara Generation Hub (EPGH) project in the Pilbara Region of Western Australia. Ecoscape was appointed by Fortescue to undertake the terrestrial vertebrate fauna assessment of the EPGH survey area incorporating a second phase Detailed survey and targeted searches for conservation-listed fauna species. The survey was required to provide further information on existing fauna and fauna habitat information to inform future approval processes. The survey area comprises 142,467.2 ha and includes sections that have been subject to previous surveys. The results of previous fauna surveys were taken into consideration and incorporated into the survey design and results where possible.

The likelihood assessment based on database searches and previous survey results identified that nine conservation-listed fauna species have previously been recorded from within the survey area and another two are 'Likely' to occur.

The Detailed vertebrate fauna assessment compromised six field events:

- 3-18 April 2022: Detailed vertebrate survey of the corridor area
- 13-18 June 2022: Detailed vertebrate survey of the primary development corridor
- 17-23 October 2023 encompassing targeted searches for conservation-listed species and habitat suitable to support them. Audio recording units (ARUs), ultrasonic bat recorders and motion cameras were deployed during this field event.
- 12-15 December 2023: equipment deployed during the October field event was collected
- 21-31 March 2024: first systematic (trapping) field event of phase 2 (Detailed survey)
- 22 April- 2 May 2024: second systematic field event of phase 2.

From the combined surveys, 205 terrestrial vertebrate fauna species (33 mammals, 92 birds, 75 reptiles and five amphibians) were recorded, including five introduced species (cat, cattle, camel, rabbit and horse) and the following seven conservation-listed species:

- *Dasyurus hallucatus* (Northern Quoll); EN EPBC status and BC status
- *Falco hypoleucos* (Grey Falcon); VU EPBC status and BC status
- *Macrotis lagotis* (Bilby); VU EPBC status and BC status
- *Liasis olivaceous barroni* (Pilbara Olive Python); VU EPBC and BC status
- *Rhinonicteris aurantia* (Pilbara Leaf-nosed Bat); VU EPBC status and BC status
- *Dasycercus blythi* (Brush-tailed Mulgara); P4 DBCA status
- *Pseudomys chapmani* (Western Pebble-mound Mouse); P4 DBCA status.

Seven fauna habitat types were recorded during the field survey:

- Drainage Line/River/Creek (Major) (7,781.7 ha), occurring intermittently and providing significant habitat for Bilby, Northern Quoll and Pilbara Leaf-nosed Bat
- Drainage Line/River/Creek (Minor) (6,878,4 ha), scattered and mostly occupying only narrow, linear areas, providing habitat for Bilby and Northern Quoll
- Rocky Escarpment/ Ridges/Mesa (2,135.9 ha), occurring in scattered occurrences
- Hills/Ranges/Plateaux (51,482.5 ha), mostly occupying large, contiguous areas but interspersed by minor drainage lines. This habitat provides significant denning and foraging areas for Northern Quoll (including in the gorges microhabitat type) and suitable substrate for Western Pebble-mound Mouse burrows.
- Plain (Boulders) (25,080.5 ha), occurring mostly in the eastern portion of the survey area although these are some areas in the western portion, providing habitat for Bilby, Brush-tailed Mulgara and Western Pebble-mound Mouse
- Plain (Sand) (32,883.3 ha), occurring as an extensive, single area although dissected by major and minor drainage lines, providing burrowing habitat for Bilbys
- Plain (Stony/Gibber) (16,056.6 ha), occurring on valley floors below hills and ranges, and providing suitable habitat for Western Pebble-mound Mouse.

ACRONYMS AND ABBREVIATIONS

Table 1: Acronyms and abbreviations

Acronyms	
ALA	Atlas of Living Australia
ARU	Audio recording unit
BC Act	Western Australian *Biodiversity Conservation Act 2016*
BoM	Bureau of Meteorology
CD	Conservation Dependent (fauna; specially protected species under the Western Australian BC Act)
CR	Critically Endangered (listed under Commonwealth EPBC Act and/or Western Australian BC Act)
DAWE	Commonwealth Department of Agriculture, Water and Environment (2020-2022, now DCCEEW)
DBCA	Western Australian Department of Biodiversity, Conservation and Attractions
DCCEEW	Commonwealth Department of Climate Change, Energy, the Environment and Water
DEC	Western Australian Department of Environment and Conservation (2006-2013, now DBCA)
DEWHA	Commonwealth Department of the Environment, Water, Heritage and the Arts (2007-2010, now DCCEEW)
DPaW	Western Australian Department of Parks and Wildlife (2013-2017, now DBCA)
DoE	Commonwealth Department of the Environment (2013-2016, now DCCEEW)
DotEE	Commonwealth Department of the Environment and Energy (2016-2020)
DPIRD	Western Australian Department of Primary Industries and Regional Development
DSEWPaC	Commonwealth Department of Sustainability, Environment, Water, Population and Communities (2010-2013, now DCCEEW)
DWER	Western Australian Department of Water and Environmental Regulation
EIA	Environmental Impact Assessment
EN	Endangered (listed under Commonwealth EPBC Act and/or Western Australian BC Act)
Ecoscape	Ecoscape (Australia) Pty Ltd
EP Act	Western Australian *Environmental Protection Act 1986*
EPA	Western Australian Environmental Protection Authority
EPBC Act	Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*
EPGH	Eastern Pilbara Generation Hub
ESA	Environmentally Sensitive Area
Fortescue	Fortescue Limited
GDA 94	Geographic Datum of Australia 1994
GIS	Geographic Information System
GPS	Global Positioning System
ha	hectare/hectares
IBRA	Interim Biogeographic Regionalisation for Australia
IUCN	International Union for Conservation of Nature and Natural Resources
km	kilometre/kilometres
m	metre/metres
MGA	Map Grid of Australia
MA	Marine species (fauna; protected under international agreements and EPBC Act)
MI	Migratory species (fauna; specially protected species under the Western Australian BC Act, also EPBC Act)
MNES	Matters of National Environmental Significance
OS	Other specially protected species (fauna; specially protected species under the Western Australian BC Act)
P; P1, P2, P3, P4, P5	Priority Flora and Fauna species rankings (P1-P4) or Priority Ecological Communities (P1-P5)
PMST	Protected Matters Search Tool (hosted by DCCEEW, used to search for MNES)
sp.	Species (generally referring to an unidentified taxon or when a phrase name has been applied)
S1	Schedule 1 Fauna species listed under the BC Act
TSSC	Threatened Species Scientific Committee
VU	Vulnerable (listed under Commonwealth EPBC Act and/or Western Australian BC Act)

1 INTRODUCTION

1.1 BACKGROUND

Fortescue Limited (Fortescue) operates mine sites in two areas of the Pilbara Region: the Chichester Hub in the Chichester Range (Cloudbreak, Christmas Creek and Nullagine mine sites) and the Western Hub (Solomon and Eliwana Mines), as well as supporting infrastructure including port and rail facilities. Fortescue Iron Bridge Limited, a subsidiary of Fortescue, is currently developing the North Star Magnetite Project. Fortescue also holds exploration tenements in other parts of Australia as well as overseas. In addition, Fortescue is investigating renewable energy generation opportunities as part of its commitment to decarbonise its mining operations in the Pilbara region of Western Australia.

Fortescue is currently undertaking environmental investigation in the Pilbara for its Eastern Pilbara Generation Hub (EPGH) windfarm project. A key environmental factor for environmental impact assessments (EIAs) is terrestrial fauna. Ecoscape was engaged by Fortescue to undertake the terrestrial vertebrate fauna assessment of the EPGH survey area incorporating data from the previously completed phase one survey (SLR 2022) and the completion a second phase Detailed survey. The assessment was required to establish information of key fauna and fauna habitat aspects of the survey area that may be impacted by Fortescue's future developments and subsequently inform future environmental approvals.

1.2 SURVEY AREA

The EPGH project area, known as the 'survey area' in this report, is located within the Shire of East Pilbara in the Pilbara region, approximately 15 km south of Marble Bar (**Figure 1**). The survey area covers 142,467.2 ha and has an approximately 119 km east-west and 35 km north-south span. It is situated on Nyamal and Palyku country.

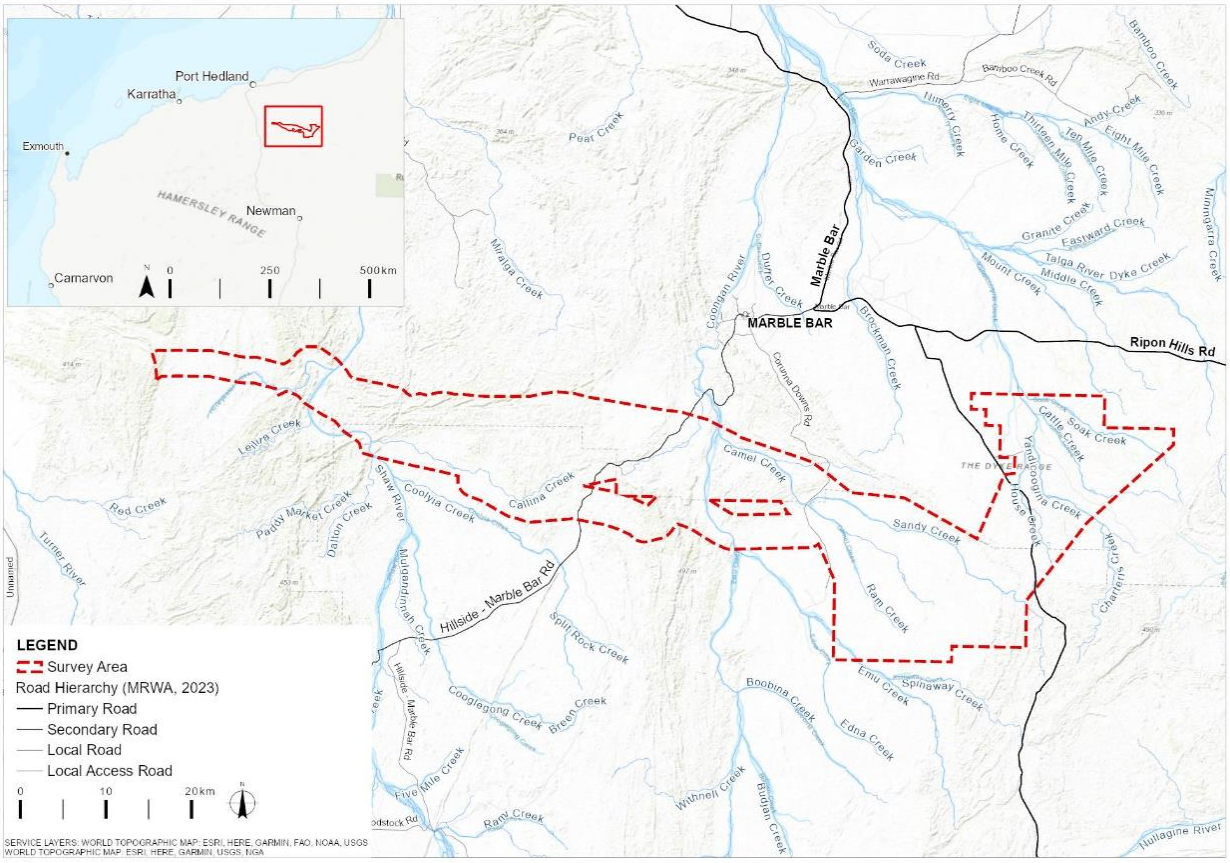


Figure 1: Survey area location

1.3 SURVEY OBJECTIVES

Fortescue engaged Ecoscape to complete the Detailed terrestrial vertebrate fauna assessment of the EPGH survey area.

The requirements of the assessment were to:

- document the terrestrial vertebrate fauna assemblage that occurs within the survey area, using previous survey data and a variety of field survey methods suitable for different fauna groups
- conduct fauna habitat assessments to define and map fauna habitats including critical habitat for conservation-listed species known or likely to occur within the survey area
- undertake targeted searches for conservation-listed species to confirm presence/absence, population estimates and distribution within the survey area.

1.4 COMPLIANCE

This environmental assessment was conducted in accordance with Commonwealth and State legislation and guidelines:

- Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act)
- Western Australian *Environmental Protection Act 1986* (EP Act)
- Western Australian *Biodiversity Conservation Act 2016* (BC Act)
- Western Australian *Biodiversity Conservation Regulations 2018*
- Western Australian *Animal Welfare Act 2002*
- Department of Environment, Water, Heritage and the Arts (DEWHA 2009) *Matters of National Environmental Significance. Significant impact guidelines 1.1 - Environment Protection and Biodiversity Conservation Act 1999*
- Department of Sustainability Environment Water Population and Communities (DSEWPaC 2011a) *Survey guidelines for Australia's threatened mammals*
- DSEWPaC (2011b) *Survey guidelines for Australia's threatened reptiles*
- DEWHA (2010a) *Survey guidelines for Australia's threatened bats*
- DEWHA (2010b) *Survey guidelines for Australia's threatened birds*
- Threatened Species Scientific Committee (TSSC 2005) *Commonwealth Listing Advice on Northern Quoll (Dasyurus hallucatus)*
- Commonwealth of Australia (2016) *EPBC Act referral guidelines for the endangered Northern Quoll Dasyurus hallucatus*
- Department of Biodiversity Conservation and Attractions (DBCA 2018) *Guidelines for surveys to detect the presence of bilbies, and assess the importance of habitat in Western Australia*
- TSSC (2016a) *Conservation Advice Macrotis lagotis*
- Department of Parks and Wildlife (DPaW 2017) *Interim Guideline for Preliminary Surveys of Night Parrot (Pezoporus occidentalis) in Western Australia*
- DBCA (2024a) *Guidelines for determining the likely presence habitat usage of Night Parrot (Pezoporus occidentalis) in Western Australia*
- TSSC (2016b) *Conservation Advice Pezoporus occidentalis.*

Summaries of the main Acts under which this assessment was conducted, and related criteria and definitions, are available in **Appendix One**.

As well as those listed above, the assessment complied with Environmental Protection Authority (EPA) requirements for environmental survey and reporting in Western Australia, as outlined in:

- EPA (2020) *Technical Guidance – Terrestrial vertebrate fauna surveys for environmental impact assessment*, known herein as the Fauna Technical Guidance
- EPA (2016a) *Environmental Factor Guideline – Terrestrial Fauna*
- EPA (2018) *Environmental Factor Guideline – Landforms*

- EPA (2016b) *Environmental Factor Guideline – Terrestrial Environmental Quality*
- EPA (2021) *Statement of environmental principles, factors, objectives and aims of EIA*.

Additional details (definitions and criteria) relevant to these works are available in **Appendix One**.

2 ENVIRONMENTAL CONTEXT

2.1 BIOGEOGRAPHIC REGION

Biogeographic regions are delineated on the basis of similar climate, geology, landforms, vegetation and fauna and are defined in the Interim Biogeographical Regionalisation for Australia (IBRA) (DAWE 2020).

The survey area is located in the Pilbara IBRA region in the Chichester subregion (PIL01) (Kendrick & McKenzie 2001) described as:

> The Chichester subregion (PIL 1) comprises the northern section of the Pilbara Craton. Undulating Archaean granite and basalt plains include significant areas of basaltic ranges. Plains support a shrub steppe characterised by *Acacia inaequilatera* over *Triodia wiseana* (formerly *Triodia pungens*) hummock grasslands, while *Eucalyptus leucophloia* tree steppes occur on ranges. The climate is Semi-desert tropical and receives 300 mm of rainfall annually. Drainage occurs to the north via numerous rivers (e.g. De Grey, Oakover, Nullagine, Shaw, Yule, Sherlock). Subregional area is 9,044,560 ha.

2.2 CLIMATE

The survey area is located within the Pilbara region, which includes two broad climatic zones. Coastal areas, as well as some higher rainfall inland areas, have a semi-desert tropical climate which experience 9-11 months of dry weather, with hot humid summers and warm winters. Inland areas have a dry desert climate, typically with higher temperatures and lower rainfall, and often experience up to 12 months of dry weather, with hot dry summers and mild winters (Leighton 2004). The survey area is within the dry inland area.

According to the Köppen-Geiger climate classification, the survey area has a hot arid desert (Class BWh) (Peel, Finlayson & McMahon 2007). This classification is considered to represent a desert climate where annual rainfall is generally less than 200 mm or the region loses more water via evapotranspiration than it receives as rain, generally a result of hot, sunny weather without significant cloud. The mean average temperature exceeds 18°C, and summer temperatures are frequently over 40°C.

The closest Bureau of Meteorology (BoM) station with long-term records is Marble Bar (BoM 2024 station no. 4106, operating since 2000) which is located approximately 11 km north-west of the survey area. The mean annual rainfall is 389.8 mm predominantly falling during the summer months.

January is the hottest month with a mean maximum temperature of 40.9°C and minimum of 26.5°C. July is the coldest month with a mean maximum of 27.7°C and minimum of 12.1°C.

Figure 2 shows the average rainfall and temperatures of the survey area.

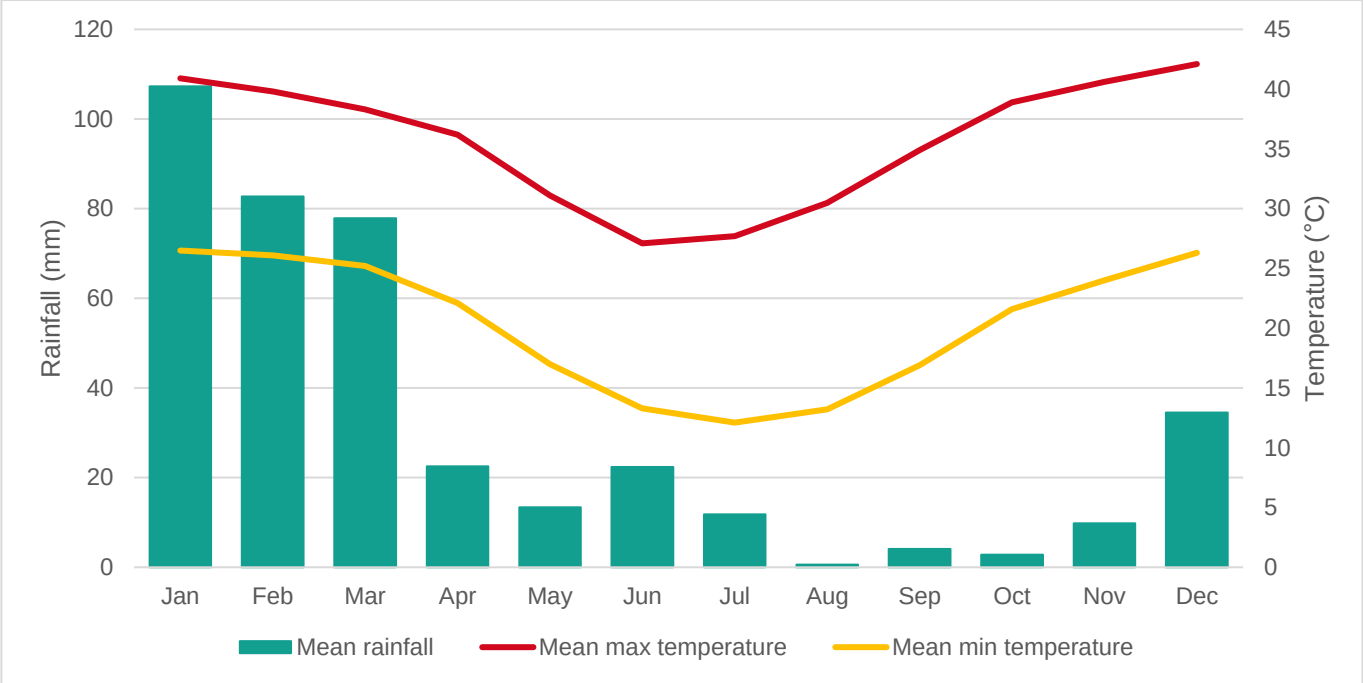


Figure 2: Rainfall and temperature data for the survey area (BoM 2024)

2.3 LAND SYSTEMS

According to the Department of Primary Industries and Regional Development (DPIRD 2019a) soil landscape mapping, the following 17 land systems intersect the survey area (**Table 2** and **Map 1**). The Macroy land system is the most widespread, occupying 63,223.10 (44.38%) of the survey area, followed by the Rocklea land system (49,722.0 ha, 34.90%). These land systems consist of stony plains with occasional granite tor fields and basalt hills, plateaux and slopes.

Table 2: Land systems (DPIRD 2019a)

Land system	Description	Extent (ha)	%
Boolgeeda system	Stony lower slopes and plains below hill systems supporting hard and soft spinifex grasslands or mulga shrublands	2189.9	1.54
Black system	Linear ridges of dolerite or basalt supporting hard spinifex grasslands, with unvegetated boulder slopes and rock piles along summits	139.1	0.10
Calcrete system	Low calcrete platforms and plains supporting shrubby hard spinifex grasslands	465.0	0.33
Capricorn system	Rugged sandstone hills, ridges, stony footslopes and interfluves supporting low acacia shrublands or hard spinifex grasslands with scattered shrubs	8,892.5	6.24
Granitic system	Rugged granitic hills supporting shrubby hard and soft spinifex grasslands	1,379.4	0.97
Macroy system	Stony plains and occasional tor fields based on granite supporting hard and soft spinifex shrubby grasslands	3,114.2	2.19
Platform system	Dissected slopes and raised plains supporting shrubby hard spinifex grasslands	1,455.0	1.02
River system	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	2,536.3	1.78
Rocklea system	Basalt hills, plateaux, lower slopes and minor stony plains supporting hard spinifex and occasionally soft spinifex grasslands with scattered shrubs	49,722.0	34.90
Satirist system	Stony plains and low rises supporting hard spinifex grasslands, and gilgai plains supporting tussock grasslands	1,018.2	0.71
Talga system	Hills and ridges of greenstone and chert and stony plains supporting hard and soft spinifex grasslands	3,787.3	2.66
Taylor system	Stony plains and isolated low hills of sedimentary rocks supporting hard and soft spinifex shrubby grasslands	95.1	0.07
Black system	Linear ridges of dolerite or basalt supporting hard spinifex grasslands, with unvegetated boulder slopes and rock piles along summits	965.1	0.68
Granitic system	Rugged granitic hills supporting shrubby hard and soft spinifex grasslands	2,080.8	1.46

Land system	Description	Extent (ha)	%
Macroy system	Stony plains and occasional tor fields based on granite supporting hard and soft spinifex shrubby grasslands	63,223.1	44.38
River system	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	1,013.4	0.71
Talga system	Hills and ridges of greenstone and chert and stony plains supporting hard and soft spinifex grasslands	390.6	0.27

2.4 GEOLOGY

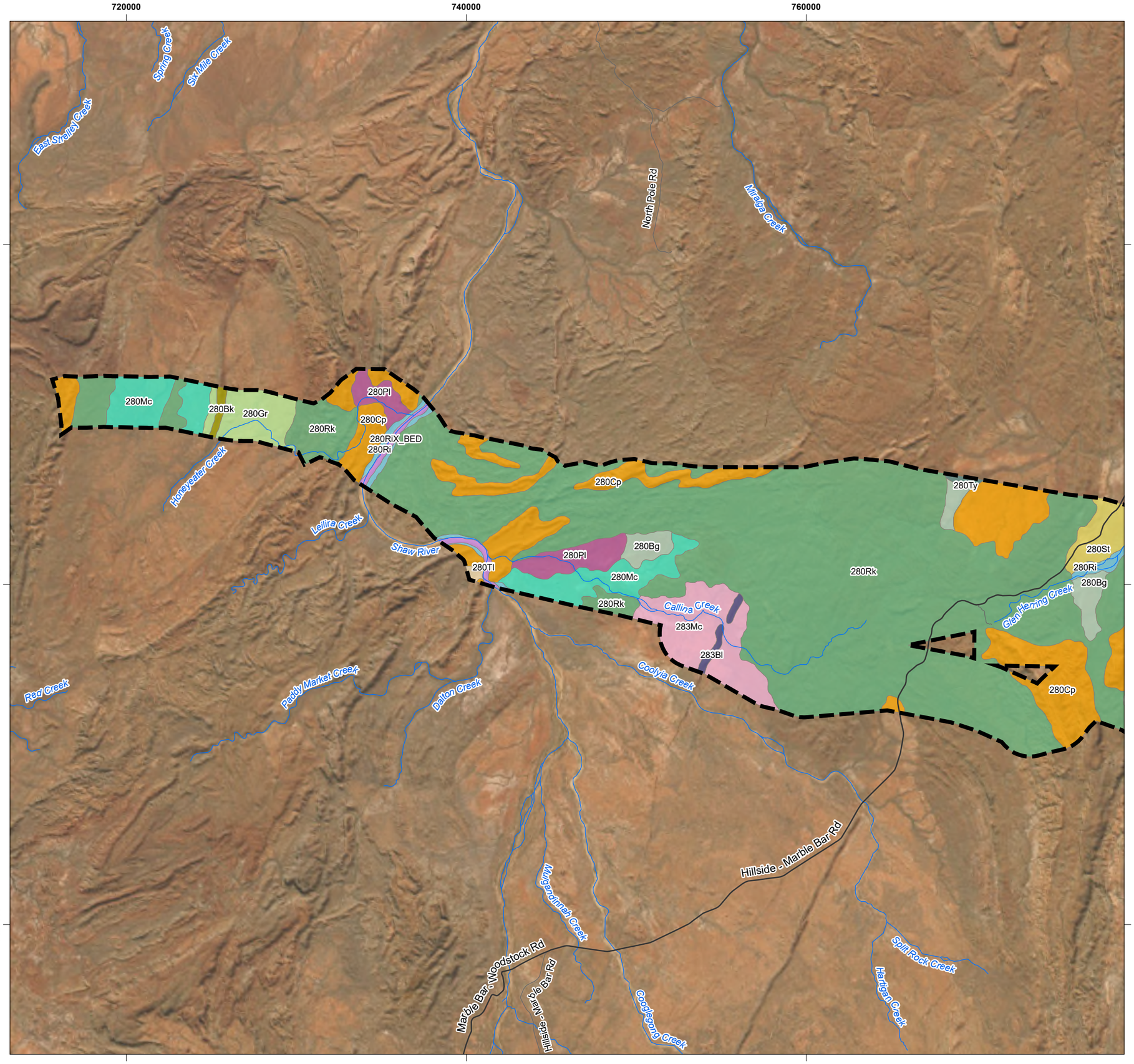
According to Geoscience Australia's (Raymond et al. 2012) surface geology mapping, there are 35 geological units that intersect the survey area (**Table 3** and **Map 2**). The geology in the survey area is diverse and single units do not cover significant extents. *Colluvium 38491* is the most abundant unit with a cover of 24,094.47 ha (16.80%). Fifteen units have < 1% cover of the survey area and another 13 units cover 1-5% of the survey area.

Table 3: Geology (Raymond et al 2012)

Mapping unit	Geological unit	Description	Extent (ha)	%
Qa	Alluvium 38485	Channel and flood plain alluvium; gravel, sand, silt, clay; may be locally calcreted	3,124.89	2.18
Cza	Alluvium 38494	Reworked or incised alluvium in older stream channels; alluvial terraces above younger alluvium; alluvial and colluvial outwash deposits not in defined channel systems; lateritised alluvium; sand, silt, gravel, clay, evaporites	17.59	0.01
Ageb	Bishop Creek Monzogranite	Biotite monzogranite to granodiorite and syenogranite; fine- to coarse-grained; locally seriate and porphyritic; rare pegmatite dykes; weakly metamorphosed.	196.30	0.14
Czk	Calcrete 38497	Calcrete, travertine; calcareous cementing of bedrock and transported materials; pisolitic to nodular or massive; as low mounds, in playa lakes, valley calcrete, or in subsurface; may contain intercalated chalcedony; locally dissected and karstified	1,602.75	1.12
Agur	Carbana Monzogranite	Monzogranite, leucogranite, syenogranite, granodiorite, metagranite, granitic orthoschist; local mafic xenoliths; minor pegmatitic granitoid as dykes and small intrusions in amphibolite.	13,775.61	9.60
Qrc	Colluvium 38491	Colluvium and/or residual deposits, sheetwash, talus, scree; boulder, gravel, sand; may include minor alluvial or sand plain deposits, local calcrete and reworked laterite	24,094.47	16.80
Agcc	Coolyia Creek Granodiorite	Hornblende tonalite to granodiorite; metamorphosed and foliated	15.45	0.01
Avwc	Coongan Subgroup	Felsic volcanic rocks, felsic schist, basalt, dacite, andesite, sandstone, conglomerate, amphibolite, komatiite, peridotite, chert, psammitic and pelitic schist, mafic schist, wacke, shale, iron formation, ultramafic schist.	6,900.06	4.81
Asc	Croydon Group	Siltstone, shale, iron formation, sandstone, pebbly sandstone, pebble to boulder conglomerate; lesser mafic and felsic volcanic rock; metamorphosed. Deposited as a series of submarine fans.	1,763.70	1.23
Adda	Dalton Suite	Gabbro, dolerite, dunite, peridotite, serpentine-chlorite schist, serpentinite, metaleucogabbro, metapyroxenite, ultramafic schist; metamorphosed.	330.39	0.23
Agu	Emu Pool Supersuite	Monzogranite, hornblende-biotite monzogranite, syenogranite, tonalite, granodiorite, mafic tonalite, quartz diorite	1,716.37	1.20
Abke	Euro Basalt	Basalt, chert, dolerite, komatiitic basalt, komatiite, amphibolite, basaltic fragmental rock, gabbro, ultramafic to mafic schist, carbonate rock, felsic tuff, shale, sandstone, quartzite, metapyroxenite, serpentinite	14,088.98	9.82
Antf	Fig Tree Gneiss	Banded tonalite, granodiorite, and local trondhjemite, monzogranite and syenogranite, gneiss and migmatite.	2,692.87	1.88
Acg	Gorge Creek Group	Chert, ferruginous chert, banded iron formation, jaspilite; minor siltstone, shale, sandstone, pebbly sandstone, quartzite, polymictic conglomerate, felsic volcaniclastic rock, basalt, ultramafic schist, mafic schist	745.85	0.52
Awfh	Hardey Formation	Sandstone, siltstone, shale, lithic wacke, mudstone, arkose, calcareous beds, conglomerate; porphyry, porphyry breccia;	1,781.23	1.24

Mapping unit	Geological unit	Description	Extent (ha)	%
		quartzite; dacitic to rhyolitic lavas; quartz-feldspar-mica schist; boulder breccia; basalt; felsic pyroclastics, ultramafic lava.		
Aguj	Joorina Granodiorite	Biotite granodiorite, locally includes tonailte and monzogranite; medium- to coarse-grained; locally seriate and porphyritic; weakly to moderately foliated; mafic xenoliths; metamorphosed.	8,803.77	6.14
Awk	Kelly Group	Felsic tuffaceous sandstone, quartz sandstone, siltstone, shale, chert, banded iron formation, schist, tuff, conglomerate, rhyolite, basalt, serpentinised peridotite; local dolerite sills; intrusive porphyry and microgranite; metamorphosed	1,670.09	1.16
Aguk	Kennell Granodiorite	Biotite-hornblende granodiorite, locally includes monzogranite and tonalite; medium-grained; seriate, weakly foliated; small mafic xenoliths and schleren locally common; metamorphosed.	11,663.98	8.13
Abfk	Kylena Formation	Basalt, andesite, dacite, high-Mg basalt, rhyolite; basaltic agglomerate; dolerite; grey carbonate rock with microbial laminations and stromatolites; sandstone; pillow breccia; tuff, limestone, conglomerate	14,353.27	10.01
Atp	Metamorphosed mafic rocks 74327	Metamorphosed mafic rocks; metabasalt, metagabbro, metadolerite, amphibolite, mafic schist; minor metamorphosed ultramafic rocks and metasedimentary rocks; amphibolite schist; quartz-sericite schist, volcaniclastic rocks, local granitic dykes and veins	30.03	0.02
Agrd	Mondana Monzogranite	Massive leucocratic monzogranite; very fine- to medium-grained; quartz-rich, minor biotite; equigranular to sparsely feldspar-phyric; metamorphosed.	275.33	0.19
Abfr	Mount Roe Basalt	Massive, porphyritic, vesicular, amygdaloidal and doleritic basalt; some high-Mg basalt, agglomerate, volcanic breccia, tuff, mafic wacke, shale, polymictic conglomerate and sandstone, siliceous limestone and dolomite.	12,819.46	8.94
Aguna	Nandingarra Granodiorite	An elliptical body of fine- to coarse-grained, equigranular biotite granodiorite, with lesser tonalite and monzogranite	1,067.63	0.74
Agco	North Shaw Tonalite	Hornblende tonalite to diorite	1,339.64	0.93
Asfp	Pear Creek Formation	Polymictic conglomerate, matrix-supported clasts of Fortescue Group basalt and older chert, felsic rock and granitic rock.	1,997.96	1.39
Avws	Salgash Subgroup	Banded iron formation, shale, felsic volcaniclastics, chert, jaspilite, agglomerate, dolerite, basalt, ultramafic rocks, basaltic andesite, amphibolite, chlorite schist, felsic schist, komatiitic basalt, siliciclastic rocks; metamorphosed	5,745.26	4.00
Awo	Soanesville Group	Conglomerate, arkosic sandstone, greywacke, lithic arenite, banded iron formation, shale, silicified shale (chert), sandstone, siltstone, quartzite, schist, basalt, mudstone, dacite, tuff, quartz-sericite schist; mafic schist	2,120.69	1.48
Aget	Strelley Monzogranite	Hornblende-biotite monzogranite, granophyric monzogranite, and subvolcanic granitoid intrusions; metamorphosed.	2,642.47	1.84
Awu	Sulphur Springs Group	Felsic to mafic volcanics and volcaniclastic rocks, chert, volcaniclastic sandstone, greywacke, shale, basalt, komatiitic basalt, amphibolite, mafic and ultramafic schist, banded iron formation, quartz-carbonate rock, siltstone.	1,119.96	0.78
Adu	Sulphur Springs Group - metadolerite	Metadolerite	453.07	0.32
Avwt	Talga Talga Subgroup	Amphibolite, carbonated-altered basalt, chert, mafic schist, ultramafic schist, komatiitic basalt, banded iron formation, felsic volcanic rocks, siliciclastic rocks, serpentinised peridotite, metadunite, dolerite, interlayered amphibolite and granite.	787.12	0.55
Agt	Tambina Supersuite	Felsic intrusives; granodiorite, granite, monzogranite, syenogranite, quartz diorite, tonalitic orthogneiss, leucogranite, pegmatite, tonalite, schlieric leucogranite and diatexite	330.76	0.23
Agutb	Triberton Granodiorite	Biotite-hornblende granodiorite to tonalite; medium to coarse grained, feldspar porphyritic; common mafic xenoliths; minor porphyritic monzogranite.	52.07	0.04
Ancu	Underwood Gneiss	Banded tonalite, granodiorite and monzogranite, gneiss and migmatite; strongly sheared; S-C mylonite fabric.	976.79	0.68

Mapping unit	Geological unit	Description	Extent (ha)	%
Atw	Warrawoona Group - ultramafic and mafic rocks	Interlayered mafic and ultramafic schist, amphibolite, talc-serpentine-tremolite-carbonate rock, basalt, high-Mg basalt	2,360.71	1.65



LEGEND

- Survey Area
- Drainage Line

Road Hierarchy

- Secondary Road
- Local Road

Soil Land Systems

- 280Bg: Boolgeeda system
- 280Bk: Black system
- 280Cp: Capricorn system
- 280Gr: Granitic system
- 280Mc: Macroy system
- 280Pl: Platform system
- 280Ri: River system
- 280RiX_BED: River bed phase
- 280Rk: Rocklea system
- 280St: Satirist system
- 280Tl: Talga system
- 280Ty: Taylor system
- 283Bl: Black system
- 283Mc: Macroy system

DATA SOURCES:
SOURCE DATA: SOIL-LANDSCAPE MAPPING WESTERN AUSTRALIA – BEST AVAILABLE SOILS (DPIRD-027) (DPIRD, 2022), SURFACE HYDROLOGY LINES (NATIONAL) (GEOSCIENCE AUSTRALIA 2015), ROAD HIERARCHY (MRWA 2023) AND TOWNS (STREETPRO 2009).
IMAGERY: ESRI WORLD (MAXAR 2023)
SERVICE LAYERS: WORLD TOPOGRAPHIC MAP: ESRI, HERE, GARMIN, FAO, NOAA, USGS
WORLD IMAGERY: EARTHSTAR GEOGRAPHICS

ecoscape

SOIL LANDSCAPE UNITS

DETAILED TERRESTRIAL VERTEBRATE FAUNA SURVEY
EAST PILBARA GENERATION HUB

FORTESCUE

COORDINATE SYSTEM: GDA 1994 MGA ZONE 50
PROJECTION: TRANSVERSE MERCATOR
DATUM: GDA 1994
UNITS: METER

N

SCALE: 1:225,000 @ A3

0 2 4 6 8 km

PROJECT NO: 4867-23

REV	AUTHOR	APPROVED	DATE
0	SB	LC	14/08/2024
1	KP	LC	03/12/2024
2	NW	LA	11/03/2025

MAP 1-1

Path: X:\01_Projects\4867-23 EPGH Fauna Survey\Maps\APRXs\Report_Desktop_Maps_4867.aprx

780000 800000 820000

7660000 7640000 7620000

MARBLE BAR
Limestone - Marble Bar Rd
Ripon Hills Rd
Marble Bar Rd
Hillside - Marble Bar Rd
Corunna Downs Rd

Coongan River
Duffer Creek
Brockman Creek
Eastward Creek
Mount Creek
Middle Creek
Dyke Creek
Talga River
Chinaman Creek
Brockman Hay Cutting Creek
Glen Herring Creek
Camel Creek
Ram Creek
Spinaway Creek
Emu Creek
Edna Creek
Boobina Creek
Bidgian Creek
Withnell Creek
Soak Creek
Cattle Creek
House Creek
Yandicoogina Creek
Charlies Creek
Sandy Creek
Murphee Creek

280Rk
280St
280Ri
280Bg
280Ca
280Tl
280Cp
283Ri
283Tl
283Bl
283Mc
283Gr

LEGEND

- Survey Area
- Minor Town
- Drainage Line

Road Hierarchy

- Primary Road
- Secondary Road
- Local Road

Soil Land Systems

- 280Bg: Boolgeeda system
- 280Ca: Calcrete system
- 280Cp: Capricorn system
- 280Ri: River system
- 280Rk: Rocklea system
- 280St: Satirist system
- 280Tl: Talga system
- 283Bl: Black system
- 283Gr: Granitic system
- 283Mc: Macroy system
- 283Ri: River system
- 283Tl: Talga system

DATA SOURCES:
SOURCE DATA: SOIL-LANDSCAPE MAPPING WESTERN AUSTRALIA – BEST AVAILABLE SOILS (DPIRD-027) (DPIRD, 2022), SURFACE HYDROLOGY LINES (NATIONAL) (GEOSCIENCE AUSTRALIA 2015), ROAD HIERARCHY (MRWA 2023) AND TOWNS (STREETPRO 2009).
IMAGERY: ESRI WORLD (MAXAR 2023)
SERVICE LAYERS: WORLD TOPOGRAPHIC MAP: ESRI, HERE, GARMIN, FAO, NOAA, USGS
WORLD IMAGERY: EARTHSTAR GEOGRAPHICS

ecoscape

SOIL LANDSCAPE UNITS

DETAILED TERRESTRIAL VERTEBRATE FAUNA SURVEY EAST PILBARA GENERATION HUB

FORTESCUE

COORDINATE SYSTEM: GDA 1994 MGA ZONE 50
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0 2 4 6 8 km

PROJECT NO: 4867-23

REV	AUTHOR	APPROVED	DATE
0	SB	LC	14/08/2024
1	KP	LC	03/12/2024
2	NW	LA	11/03/2025

MAP 1-2

Path: X:\01_Projects\4867-23 EPGH Fauna Survey\Maps\APRXs\Report_Desktop_Maps_4867.aprx

720000 730000 740000 750000 760000 770000

7670000 7660000 7650000 7640000 7630000 7620000

East Strelley Creek
Spring Creek
Six Mile Creek
Mirdiga Creek
Honeyeater Creek
Leilira Creek
Shaw River
Callina Creek
Glen Herring Creek
Red Creek
Paddy Market Creek
Dalton Creek
Coolyia Creek
Mulgarrinna Creek
Shaw Patch Creek
Googlegong Creek
Split Rock Creek
Harrigan Creek

Awo Awu Adda Abke Qrc Adu Aget Acg Awo Awu Qa Avws Abke Avwc Abfr Asc Abke Czk Agco Agt Qrc Agcc Avwt Qrc Asfp Awfh Abfk Awfh Abfr Avwc Asc Qrc Abke Acg Qa

LEGEND

Survey Area

Drainage Lines

Roads (MRWA, 2023)

Geology

- Abfk: Basalt, andesite, dacite, high-Mg basalt, rhyolite; basaltic agglomerate; dolerite; grey carbonate rock with microbial laminations and stromatolites; sandstone; pillow breccia; tuff, limestone, conglomerate
- Abfr: Massive, porphyritic, vesicular, amygdaloidal and doleritic basalt; some high-Mg basalt, agglomerate, volcanic breccia, tuff, mafic wacke, shale, polymictic conglomerate and sandstone, siliceous limestone and
- Abke: Basalt, chert, dolerite, komatiitic basalt, komatiite, amphibolite, basaltic fragmental rock, gabbro, ultramafic to mafic schist, carbonate rock, felsic tuff, shale, sandstone, quartzite, metapyroxenite,
- Acg: Chert, ferruginous chert, banded iron formation, jaspilite; minor siltstone, shale, sandstone, pebbly sandstone, quartzite, polymictic conglomerate, felsic volcaniclastic rock, basalt, ultramafic schist, mafic
- Adda: Gabbro, dolerite, dunite, peridotite, serpentine-chlorite schist, serpentinite, metaleucogabbro, metapyroxenite, ultramafic schist; metamorphosed.
- Adu: Metadolerite
- Agcc: Hornblende tonalite to granodiorite; metamorphosed and foliated
- Agco: Hornblende tonalite to diorite
- Aget: Hornblende-biotite monzogranite, granophyric monzogranite, and subvolcanic granitoid intrusions; metamorphosed.
- Agt: Felsic intrusives; granodiorite, granite, monzogranite, syenogranite, quartz diorite, tonalitic orthogneiss, leucogranite, pegmatite, tonalite, schlieric leucogranite and diatexite
- Asc: Siltstone, shale, iron formation, sandstone, pebbly sandstone, pebble to boulder conglomerate; lesser mafic and felsic volcanic rock; metamorphosed. Deposited as a series of submarine fans.
- Asfp: Polymictic conglomerate, matrix-supported clasts of Fortescue Group basalt and older chert, felsic rock and granitic rock.
- Avwc: Felsic volcanic rocks, felsic schist, basalt, dacite, andesite, sandstone, conglomerate, amphibolite, komatiite, peridotite, chert, psammitic and pelitic schist, mafic schist, wacke, shale, iron formation, ultramafic
- Avws: Banded iron formation, shale, felsic volcaniclastics, chert, jaspilite, agglomerate, dolerite, basalt, ultramafic rocks, basaltic andesite, amphibolite, chlorite schist, felsic schist, komatiitic basalt, siliciclastic rocks; metamorphosed
- Avwt: Amphibolite, carbonated-altered basalt, chert, mafic schist, ultramafic schist, komatiitic basalt, banded iron formation, felsic volcanic rocks, siliciclastic rocks, serpentinised peridotite, metadunite, dolerite, interlayered amphibolite and granite.
- Awfh: Sandstone, siltstone, shale, lithic wacke, mudstone, arkose, calcareous beds, conglomerate; porphyry, porphyry breccia; quartzite; dacitic to rhyolitic lavas; quartz-feldspar-mica schist; boulder breccia; basalt; felsic pyroclastics, ultramafic lava.
- Awo: Conglomerate, arkosic sandstone, greywacke, lithic arenite, banded iron formation, shale, silicified shale (chert), sandstone, siltstone, quartzite, schist, basalt, mudstone, dacite, tuff, quartz-sericite schist;
- Awu: Felsic to mafic volcanics and volcaniclastic rocks, chert, volcaniclastic sandstone, greywacke, shale, basalt, komatiitic basalt, amphibolite, mafic and ultramafic schist, banded iron formation, quartz-carbonate
- Czk: Calcrete, travertine; calcareous cementing of bedrock and transported materials; pisolitic to nodular or massive; as low mounds, in playa lakes, valley calcrete, or in subsurface; may contain intercalated chalcedony; locally dissected and karstified
- Qa: Channel and flood plain alluvium; gravel, sand, silt, clay; may be locally calcreted
- Qrc: Colluvium and/or residual deposits, sheetwash, talus, scree; boulder, gravel, sand; may include minor alluvial or sand plain deposits, local calcrete and reworked laterite

DATA SOURCES:
SOURCE DATA: ROAD NETWORK (MRWA, 2023). GEOLOGY (GEOLOGY AUSTRALIA 2012). SURFACE HYDROLOGY LINES (NATIONAL) (GEOSCIENCE AUSTRALIA 2015).
IMAGERY: ESRI BASEMAP
SERVICE LAYERS: WORLD TOPOGRAPHIC MAP: ESRI, HERE, GARMIN, FAO, NOAA, USGS
WORLD IMAGERY: EARTHSTAR GEOGRAPHICS

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GEOLOGY

DETAILED TERRESTRIAL VERTEBRATE FAUNA SURVEY
EAST PILBARA GENERATION HUB

FORTESCUE

COORDINATE SYSTEM: GDA 1994 MGA ZONE 50
PROJECTION: TRANSVERSE MERCATOR
DATUM: GDA 1994
UNITS: METER

SCALE: 1:225,000 @ A3

0 2 3 5 6 8 km

PROJECT NO: 4867-23

REV	AUTHOR	APPROVED	DATE
0	SB	LC	14/08/2024
1	KP	LC	03/12/2024

MAP 2-1

Path: X:\01_Projects\4867-23 EPGH Fauna Survey\Maps\APRXs\Report_Desktop_Maps_4867.aprx

780000 790000 800000 810000 820000 830000

7660000 7650000 7640000 7630000 7620000 7610000

MARBLE BAR

Coongan River
Differ Creek
Brockman Creek
Eastward Creek
Mount Creek
Middle Creek
Dyke Creek
Talga River
Soak Creek
Glen Herring Creek
Chinaman Creek
Brockman Hay Cutting Creek
Cattle Creek
Yandicoogina Creek
House Creek
Camel Creek
Sandy Creek
Ram Creek
Charlie's Creek
Spinaway Creek
Boobina Creek
Emu Creek
Edna Creek
Burjan Creek
Mophee Creek

Asfp Awfh Abfk Qa Czk Awk Abke Acg Qrc Asc Avwc Abke Abfr Aguna Avws Qa Agur Ageb Aguj Aguk Qrc Antf Qrc Abke Avwc Ancu Agur Avws Atw Agutb Qa Agur Agu Cza Atp Agrd

LEGEND

- Survey Area
- Drainage Lines
- Roads (MRWA, 2023)

Geology

- Abfk: Basalt, andesite, dacite, high-Mg basalt, rhyolite; basaltic agglomerate; dolerite; grey carbonate rock with microbial laminations and stromatolites; sandstone; pillow breccia; tuff, limestone, conglomerate
- Abfr: Massive, porphyritic, vesicular, amygdaloidal and doleritic basalt; some high-Mg basalt, agglomerate, volcanic breccia, tuff, mafic wacke, shale, polymictic conglomerate and sandstone, siliceous limestone and
- Abke: Basalt, chert, dolerite, komatiitic basalt, komatiite, amphibolite, basaltic fragmental rock, gabbro, ultramafic to mafic schist, carbonate rock, felsic tuff, shale, sandstone, quartzite, metapyroxenite,
- Acg: Chert, ferruginous chert, banded iron formation, jaspilite; minor siltstone, shale, sandstone, pebbly sandstone, quartzite, polymictic conglomerate, felsic volcaniclastic rock, basalt, ultramafic schist, mafic
- Ageb: Biotite monzogranite to granodiorite and syenogranite; fine- to coarse-grained; locally seriate and porphyritic; rare pegmatite dykes; weakly metamorphosed.
- Agrd: Massive leucocratic monzogranite; very fine- to medium-grained; quartz-rich, minor biotite; equigranular to sparsely feldspar-phyric; metamorphosed.
- Agu: Monzogranite, hornblende-biotite monzogranite, syenogranite, tonalite, granodiorite, mafic tonalite, quartz diorite
- Aguj: Biotite granodiorite, locally includes tonailte and monzogranite; medium- to coarse-grained; locally seriate and porphyritic; weakly to moderately foliated; mafic xenoliths; metamorphosed.
- Aguk: Biotite-hornblende granodiorite, locally includes monzogranite and tonalite; medium-grained; seriate, weakly foliated; small mafic xenoliths and schleren locally common; metamorphosed.
- Aguna: An elliptical body of fine- to coarse-grained, equigranular biotite granodiorite, with lesser tonalite and monzogranite
- Agur: Monzogranite, leucogranite, syenogranite, granodiorite, metagranite, granitic orthoschist; local mafic xenoliths; minor pegmatitic granitoid as dykes and small intrusions in amphibolite.
- Agutb: Biotite-hornblende granodiorite to tonalite; medium to coarse grained, feldspar porphyritic; common mafic xenoliths; minor porphyritic monzogranite.
- Ancu: Banded tonalite, granodiorite and monzogranite, gneiss and migmatite; strongly sheared; S-C mylonite fabric.
- Antf: Banded tonalite, granodiorite, and local trondhjemite, monzogranite and syenogranite, gneiss and
- Asc: Siltstone, shale, iron formation, sandstone, pebbly sandstone, pebble to boulder conglomerate; lesser mafic and felsic volcanic rock; metamorphosed. Deposited as a series of submarine fans.
- Asfp: Polymictic conglomerate, matrix-supported clasts of Fortescue Group basalt and older chert, felsic rock and granitic rock.
- Atp: Metamorphosed mafic rocks; metabasalt, metagabbro, metadolerite, amphibolite, mafic schist; minor metamorphosed ultramafic rocks and metasedimentary rocks; amphibolite schist; quartz-sericite schist, volcaniclastic rocks, local granitic dykes and veins
- Atw: Interlayered mafic and ultramafic schist, amphibolite, talc-serpentine-tremolite-carbonate rock, basalt, high-Mg basalt
- Avwc: Felsic volcanic rocks, felsic schist, basalt, dacite, andesite, sandstone, conglomerate, amphibolite, komatiite, peridotite, chert, psammitic and pelitic schist, mafic schist, wacke, shale, iron formation, ultramafic
- Avws: Banded iron formation, shale, felsic volcaniclastics, chert, jaspilite, agglomerate, dolerite, basalt, ultramafic rocks, basaltic andesite, amphibolite, chlorite schist, felsic schist, komatiitic basalt, siliciclastic rocks; metamorphosed
- Awfh: Sandstone, siltstone, shale, lithic wacke, mudstone, arkose, calcareous beds, conglomerate; porphyry, porphyry breccia; quartzite; dacitic to rhyolitic lavas; quartz-feldspar-mica schist; boulder breccia; basalt; felsic pyroclastics, ultramafic lava.
- Awk: Felsic tuffaceous sandstone, quartz sandstone, siltstone, shale, chert, banded iron formation, schist, tuff, conglomerate, rhyolite, basalt, serpentinised peridotite; local dolerite sills; intrusive porphyry and microgranite; metamorphosed
- Cza: Reworked or incised alluvium in older stream channels; alluvial terraces above younger alluvium; alluvial and colluvial outwash deposits not in defined channel systems; lateritised alluvium; sand, silt, gravel,
- Czk: Calcrete, travertine; calcareous cementing of bedrock and transported materials; pisolitic to nodular or massive; as low mounds, in playa lakes, valley calcrete, or in subsurface; may contain intercalated chalcedony; locally dissected and karstified
- Qa: Channel and flood plain alluvium; gravel, sand, silt, clay; may be locally calcreted
- Qrc: Colluvium and/or residual deposits, sheetwash, talus, scree; boulder, gravel, sand; may include minor alluvial or sand plain deposits, local calcrete and reworked laterite

DATA SOURCES:
SOURCE DATA: ROAD NETWORK (MRWA, 2023). GEOLOGY (GEOLOGY AUSTRALIA 2012). SURFACE HYDROLOGY LINES (NATIONAL) (GEOSCIENCE AUSTRALIA 2015).
IMAGERY: ESRI BASEMAP
SERVICE LAYERS: WORLD TOPOGRAPHIC MAP: ESRI, HERE, GARMIN, FAO, NOAA, USGS
WORLD IMAGERY: EARTHSTAR GEOGRAPHICS

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GEOLOGY

DETAILED TERRESTRIAL VERTEBRATE FAUNA SURVEY
EAST PILBARA GENERATION HUB

FORTESCUE

COORDINATE SYSTEM: GDA 1994 MGA ZONE 50
PROJECTION: TRANSVERSE MERCATOR
DATUM: GDA 1994
UNITS: METER

SCALE: 1:225,000 @ A3

0 2 3 5 6 8 km

PROJECT NO: 4867-23

REV	AUTHOR	APPROVED	DATE
0	SB	LC	14/08/2024
1	KP	LC	03/12/2024

MAP 2-2

Path: X:\01_Projects\4867-23 EPGH Fauna Survey\Maps\APRXs\Report_Desktop_Maps_4867.aprx

2.5 PRE-EUROPEAN VEGETATION

During the 1970s, John Beard and associates conducted a systematic survey of native vegetation, describing the vegetation systems in Western Australia at a scale of 1:250,000 in the south-west and at a scale of 1:1,000,000 in less developed areas.

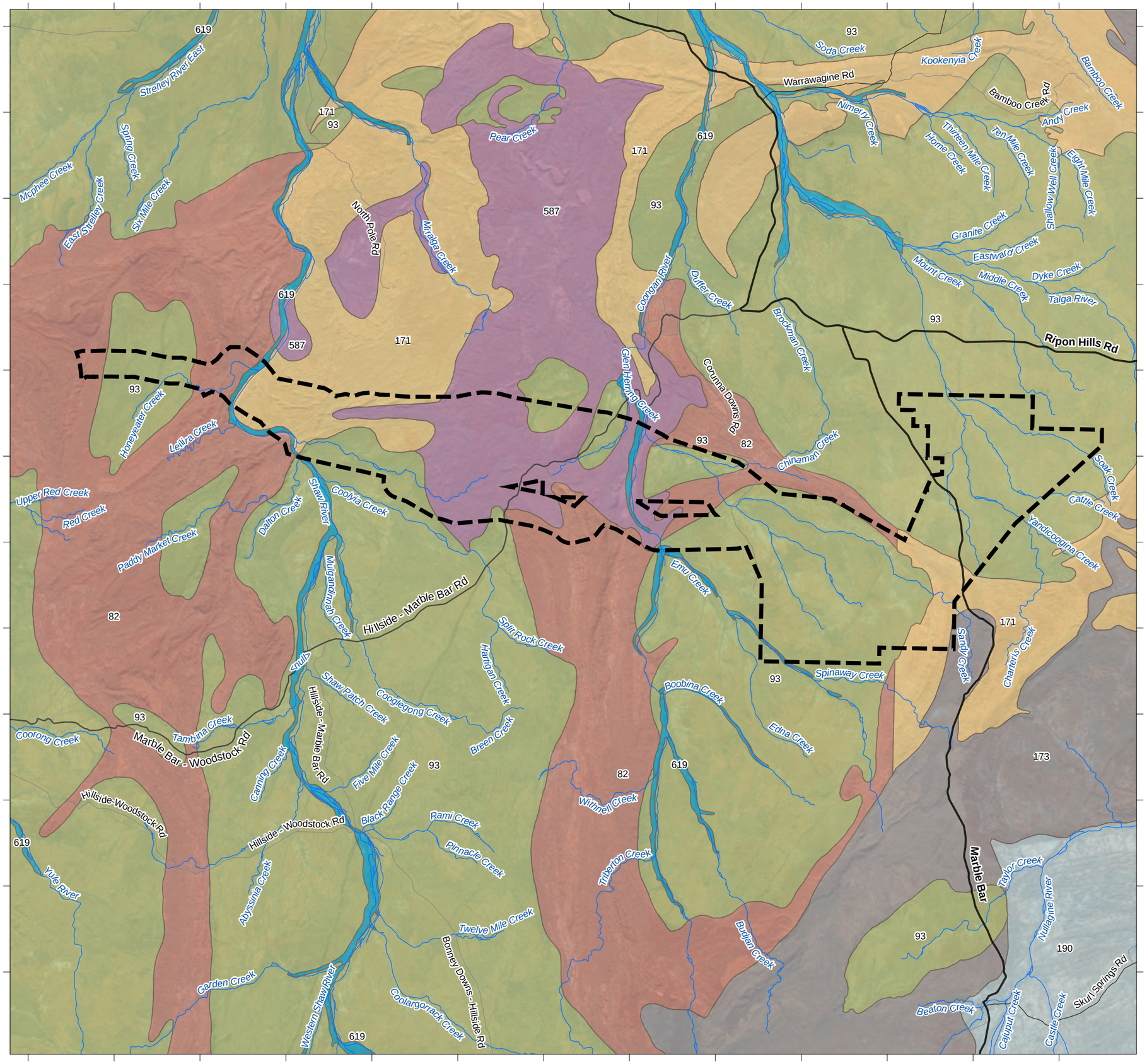
Beard's vegetation maps attempted to depict the native vegetation as it was presumed to be at the time of settlement and is known as the pre-European vegetation type and extent. Beard's vegetation maps have since been developed in digital form by Shepherd, Beeston & Hopkins (2002), updated by DPIRD (2019b) and published by the DBCA (2019). This mapping indicates that the survey area intersects the following five pre-European vegetation units:

- Association 82: described as hummock grasslands, low tree steppe; Snappy Gum over *Triodia wiseana*
- Association 93: described as hummock grasslands, shrub steppe; Kanji over soft Spinifex
- Association 171 described as hummock grasslands, low tree steppe; Snappy Gum over soft Spinifex and *Triodia brizoides*
- Association 587 described as a Mosaic: hummock grasslands, open low tree-steppe; Snappy Gum over *Triodia wiseana* / hummock grasslands, shrub-steppe, Kanji over *Triodia pungens*
- Association 619 described as medium woodland; River Gum (*Eucalyptus camaldulensis).*

The pre-European vegetation associations identified from the survey area and their pre-European and current extents are listed in **Table 4** and shown on **Map 3**.

Table 4: Pre-European vegetation association representation (DBCA 2019)

Region	Vegetation association	Original extent (ha)	Current extent (ha)	% remaining
Western Australia	82	2,565,901.28	2,553,206.19	99.51
	93			
	171	331,951.73	330,643.09	99.61
	587	580,728.60	580,696.99	99.99
	619	119,373.78	118,205.01	99.02
IBRA biogeographic region (Pilbara)	82	2,563,583.23	2,550,888.14	99.50
	93	3,042,114.27	3,038,471.67	99.88
	171	331,307.41	330,026.24	99.61
	587	580,728.60	580,696.99	99.99
	619	118,920.31	118,116.78	99.32
IBRA biogeographic sub-region (Chichester (PIL01))	82	360,666.90	360,322.69	99.90
	93	2,940,348.04	2,936,731.54	99.88
	171	331,307.41	330,026.24	99.61
	587	570,997.04	570,965.44	99.99
	619	85,543.15	85,520.95	99.97
LGA (Shire of East Pilbara)	82	927,709.76	919,072.17	99.07
	93	1,709,522.24	1,706,780.57	99.84
	171	331,951.73	330,643.09	99.61
	587	111,906.06	111,874.46	99.97
	619	52,765.30	52,763.69	100.00



LEGEND

- Survey Area
- Drainage Lines

Roads (MRWA, 2023)

- Primary Road
- Secondary Road
- Local Road
- Local Access Road

Pre European Vegetation (DPIRD-006)

- 171: Hummock grasslands, low tree steppe; snappy gum over soft spinifex & *Triodia brizioides*
- 173: Hummock grasslands, shrub steppe; kanji over soft spinifex & *Triodia wiseana* on basalt
- 190: Hummock grasslands, sparse shrub steppe; *Acacia bivenosa* & *A. trachycarpa* over hard spinifex, *Triodia wiseana*, Very poor rocky country on gneiss
- 587: Mosaic: Hummock grasslands, open low tree-steppe; snappy gum over *Triodia wiseana* / Hummock grasslands, shrub-steppe; kanji over *Triodia pungens*
- 619: Medium woodland; river gum (*Eucalyptus camaldulensis*)
- 82: Hummock grasslands, low tree steppe; snappy gum over *Triodia wiseana*
- 93: Hummock grasslands, shrub steppe; kanji over soft spinifex

DATA SOURCES:
SOURCE DATA: ROAD NETWORK (MRWA 2023). PRE_EUROPEAN VEGETATION (DPIRD-006)(2017).
SURFACE HYDROLOGY LINES (NATIONAL) (GEOSCIENCE AUSTRALIA 2015).
BASEMAP: ESRI WORLD IMAGERY
SERVICE LAYERS: WORLD TOPOGRAPHIC MAP: ESRI, HERE, GARMIN, FAO, USGS
WORLD IMAGERY: EARTHSTAR GEOGRAPHICS

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PRE-EUROPEAN VEGETATION

DETAILED TERRESTRIAL VERTEBRATE FAUNA SURVEY
EAST PILBARA GENERATION HUB

FORTESCUE

COORDINATE SYSTEM: GDA 1994 MGA ZONE 50
PROJECTION: TRANSVERSE MERCATOR
DATUM: GDA 1994
UNITS: METER

SCALE: 1:450,000 @ A3

0 0 4 7 11 14 18 km

PROJECT NO: 4867-23

REV	AUTHOR	APPROVED	DATE
0	SB	LC	14/08/2024
1	KP	LC	03/12/2024

MAP 3

Path: X:\01_Projects\4867-23 EPGH Fauna Survey\Maps\APRXs\Report_Desktop_Maps_4867.aprx

2.6 SIGNIFICANT AREAS

2.6.1 WETLANDS AND DRAINAGE

The survey area is situated in the De Grey River catchment (Department of Water and Environmental Regulation (DWER) 2018). The survey area is intersected by the Shaw and Coongan River and several off their branching minor drainage lines (Geoscience Australia 2015). The survey area does not intersect any wetlands; the closest important wetland is approximately 70 km north of the eastern portion of the survey area and is associated with the De Grey River (DBCA 2018b). The closest wetland proposed for addition to the Ramsar list is associated with the Fortescue Marsh located approximately 105 km south of the survey area (DBCA 2017).

2.6.2 ENVIRONMENTALLY SENSITIVE AREAS

Environmentally Sensitive Areas (ESAs) are declared by DWER to identify areas of high environmental (i.e. Threatened Ecological Communities, wetlands) or heritage value. The survey area does not intersect any mapped ESAs (DWER 2021). The nearest ESA is approximately 70 km north of the survey area and is associated with the De Grey River.

2.6.3 CONSERVATION LANDS

The survey area does not intersect any legislated conservation lands or waters or lands of conservation interest (DBCA 2021, DAWE 2021). The closest land of conservation interest (proposed for conservation) is associated with ex-Meentheena Station, approximately 3 km east of the survey area at the closest point. The closest conservation land is Mungaroona Range Nature Reserve, located approximately 75 km south-east of the survey area.

3 METHODS

3.1 GUIDING PRINCIPLES

The Detailed vertebrate fauna assessment was conducted according to the Fauna Technical guidance (EPA 2020). The EPA recommends a Detailed survey:

- should be conducted to gather quantitative data on species, assemblages and habitats
- requires a comprehensive survey design including at least two survey phases
- is conducted during the appropriate season of maximum activity of relevant fauna
- uses techniques to maximise the likelihood that a survey will detect the majority of species that occur
- uses techniques that are quantitative and standardised
- includes at least one trapping site per habitat type to permit analysis and comparison of data.

Targeted searches were also conducted in areas of habitat suitable for conservation-listed fauna as identified during the desktop assessment and based on previous surveys. The EPA (2020) recommends that a Targeted Survey should include:

- confirmation of the presence/absence of a significant species likely to occur within the survey area
- determining the distribution and abundance of significant species within the survey area
- determining species movement and habitat use
- describing and mapping habitat or features that are critical to significant species/faunal assemblages, such as for breeding, foraging and/or dispersal
- determining monitoring requirements for significant species/assemblages and/or critical habitat.

3.2 DESKTOP ASSESSMENT

3.2.1 DATABASE SEARCHES

The following database searches (**Table 5**) were searched and the results are incorporated in the desktop assessment (**Table 18** in **Appendix Three**).

Table 5: Details of database searches

Database	Custodian	Details	Buffer
Protected Matters Search Tool (PMST)	DCCEEW	06/02/2024	30 km
Threatened Fauna Database	DBCA	13/10/2024 reference: 7965	30 km
Djandoo	DBCA	19/11/2024	50 km
Atlas of Living Australia	National Research Infrastructure for Australia (NCRIS) / Commonwealth Scientific and Industrial Research Organisation (CSIRO) / Global Biodiversity Information Facility (GBIF)	19/11/2024	30 km
Fortescue Internal Database	Fortescue	01/10/2024	65 km

3.2.2 LITERATURE REVIEW

The following documents have been identified as having relevance to the current survey and results were incorporated into the desktop assessment (**Table 18** in **Appendix Three**).

Table 6: Relevant survey reports and other documents

Report Title	Survey level	Survey timing	Distance from survey area
SLR Consulting (2022) East Pilbara Generation Hub Detailed Terrestrial Vertebrate Fauna Assessment.	Detailed	13-18 May, 13-28 June 2022	0 km
Biologic (2021) Sanjiv Ridge Stage 2 Development Area Consolidated Terrestrial Fauna Survey	Targeted	14-19 May 2020	0-30 km
Biologic (2020) McPhee Creek: Consolidated Terrestrial Fauna Report	Targeted	31 March - 8 April 2020, 15-25 June 2020, 25-30 August 2020, 26 March – 1 April 2020	20 km
Biologic (2019a) Warrawoona Targeted Bat Assessment	Targeted	5-10 April 2019	0-3 km
Biologic (2019b) Warrawoona Gold Project: Conservation Significant Vertebrate Fauna Impact Assessment	Impact Assessment, Review	October 2019	0-3 km
Ecologia (2012) North Star Project Level 2 Terrestrial Vertebrate Fauna Assessment	Baseline and Targeted	Autumn, Spring 2011-12	30 km
Biologic (2019c) Warrawoona Gold Project – VHF Bat Foraging Studies August 2019	Targeted	5-10 April 2019	0-3 km
Biologic (2019d) Warrawoona Gold Project – 2019 Significant Species Monitoring	Targeted	April 2019	0-3 km
Biologic (2017) Warrawoona Targeted Bat Assessment September 2017	Targeted	September 2017	0-3 km
MWH (2018)Corunna Downs Project: Terrestrial Vertebrate Fauna Survey	Baseline	24 February – 7 March 2014, 22 September – 5 October 2016	0 km
Outback Ecology (2012) Abydos East Link Road Terrestrial Fauna Impact Assessment	Desktop analysis	n/a	12 km
Biologic (2020) Miralga Creek Project: Conservation Significant Vertebrate Fauna Impact Assessment	Impact analysis on Baseline and other surveys	May-July 2019	13 km
Landscope (2000) Rock Pools and Rugged Ranges – Wildlife of the Nullagine River	Detailed	22-31 May 2000	12 km
Rapallo (2021) Flora and Vertebrate Fauna Assessment of the Big Schist Pipeline Corridor	Basic	16-21 March 2021	6 km

3.2.3 THREATENED AND PRIORITY FAUNA LIKELIHOOD ASSESSMENT

The likelihood of conservation-listed fauna species, as identified by the database and literature searches, occurring within the survey area was assessed using the following criteria:

- suitability of habitat types likely to be present within the survey area
- distance between previous record of conservation-listed species and the survey area
- frequency and number of records in the region
- date of record of conservation-listed species (recent or historical)
- the record is naturally occurring (not from a sanctuary or translocated population).

The following were also taken into consideration during the assessment:

- sufficiency of information
- behavioural and ecological characteristics such as cryptic behaviours, size and mobility of species
- record certainty.

The categories of likelihood of occurrence, assessed using the above criteria, are shown in **Table 7** below.

Table 7: Categories for likelihood of occurrence of conservation-listed fauna

Likelihood Category	Criteria
Known to occur	Species previously recorded within the survey area within 25 years.
Likely to occur	Suitable habitat is expected to occur within the survey area and records of the species within 25 years exist within close proximity*
May occur	Suitable habitat is expected to occur within the survey area and historic records of the species exist within close proximity* OR Suitable habitat is expected to occur within the survey area and recent (<25yrs) records exist within the database search buffer but not in close proximity*
Unlikely to occur	Suitable habitat is expected to occur within the survey area however previous records are limited and/or historic and/or not in proximity** OR Suitable habitat is not expected to occur within the survey area and recent (<25yrs) records do not occur in close proximity*
Very Unlikely to occur	Suitable habitat is not expected to occur in the survey area AND/OR previous records are limited and/or historic and/or not in proximity**

* close proximity = 7.5 km (¼ of the distance of the database search buffer)
** proximity = 15 km (½ of the distance of the database search buffer)

The likelihood of species occurring within the survey area is indicated in **Table 18** in **Appendix Three**.

Likelihood of occurrence does not take into consideration factors such as frequency that a species occurs (or may occur), the duration that such species occupies (or may occupy) the survey area or dependence on habitat or resources within the survey area. Highly mobile species potentially only occur within (or for birds, overflying) the survey area for very brief periods and/or on very infrequent intervals. If a previous observation included in the database search records corresponds with this event it is listed as 'Recorded'; if such a transient visitation is possible in the future the likelihood of such species occurring is likely listed as 'Likely'.

Following the field survey, when actual survey area characteristics were better understood and the level of survey effort was considered, the likelihood of occurrence was re-evaluated. The post-survey likelihood is also incorporated into this table and discussed further in **Section 5.3.2**, including providing an indication of dependence of species on the habitat and resources available within the survey area.

3.3 FIELD SURVEY

3.3.1 FIELD SURVEY TIMING

The survey area is located within the Eremaean climatic region based on Beard's botanical provinces. Fauna activity and therefore detectability is linked to weather conditions and the Fauna Technical Guidance (2020) recommends the following survey timing for different faunal groups:

- Reptiles – September-April
- Amphibians – immediately after larger rainfall events (most commonly occurring in summer and autumn)
- Birds – immediately after rainfall events
- Mammals – no preferred timing.

The vertebrate fauna assessment was completed over two phases with additional targeted surveys (detailed in **Table 8**). Due to the size of the survey area, each phase of the Detailed survey was completed over two separate events.

Table 8: Field survey details

Survey Objective	Company	Details	Dates
Detailed Survey phase 1a	SLR	Detailed vertebrate fauna survey of the corridor area	3-18 April 2022
Detailed Survey phase 1b	SLR	Detailed vertebrate fauna survey of the primary development envelope	13-28 June 2022
Targeted Survey 1a	Ecoscape	Targeted searches for conservation-listed species or habitat likely to support them and site selection for the phase 2 survey	17-23 October 2023
Targeted Survey 1b	Ecoscape	Collection of motion cameras and ARUs (bat and bird) deployed during October	12-15 Dec 2023
Detailed Survey phase 2a	Ecoscape	Detailed vertebrate fauna survey of the revised development envelope area	21-31 March 2024
Detailed Survey phase 2b	Ecoscape	Detailed vertebrate fauna survey of the revised development envelope area	22 April – 2 May 2024

3.3.2 SURVEY CONDITIONS

Rainfall is often considered a driver of fauna activity and abundance. Rainfall up to 6 months prior to field surveys can influence the abundance and diversity of the fauna assemblage within the survey area. **Figure 3** summarizes the climatic conditions prior to the field surveys as outlined in **Table 8** as observed at the closest BoM station in Marble Bar (**Section 2.2**).

Significant rainfall was recorded in February 2022 (280 mm), 2 months prior to the first phase 1 Detailed fauna survey, and also in May 2022 (78 mm), 1 month prior to the second phase 1 Detailed fauna survey, which indicates that the survey timing was suitable for detecting a high proportion of the fauna assemblage of the survey area.

The weather during and just prior to the Targeted survey in October 2023 and December 2023 was slightly warmer than average (maximum temperature), with no rainfall recorded. Lack of rainfall in this period is not uncommon due to high rainfall variability and, as October is within the acknowledged dry season, is not likely to affected the ability to detect conservation-listed species. Rainfall recorded during the previous wet season January – April 2023) was above average indicating that the conditions were suitable for detection of conservation-listed species.

Significant rainfall occurred in early March 2024 (171 mm) resulting in good survey conditions for both phase 2 Detailed surveys. Average minimum and maximum temperatures for the months of the survey largely correspond to the long-term averages recorded in Marble Bar. The monthly average minimum temperature during all field survey months was slightly above the mean indicating slightly warmer than average survey conditions.

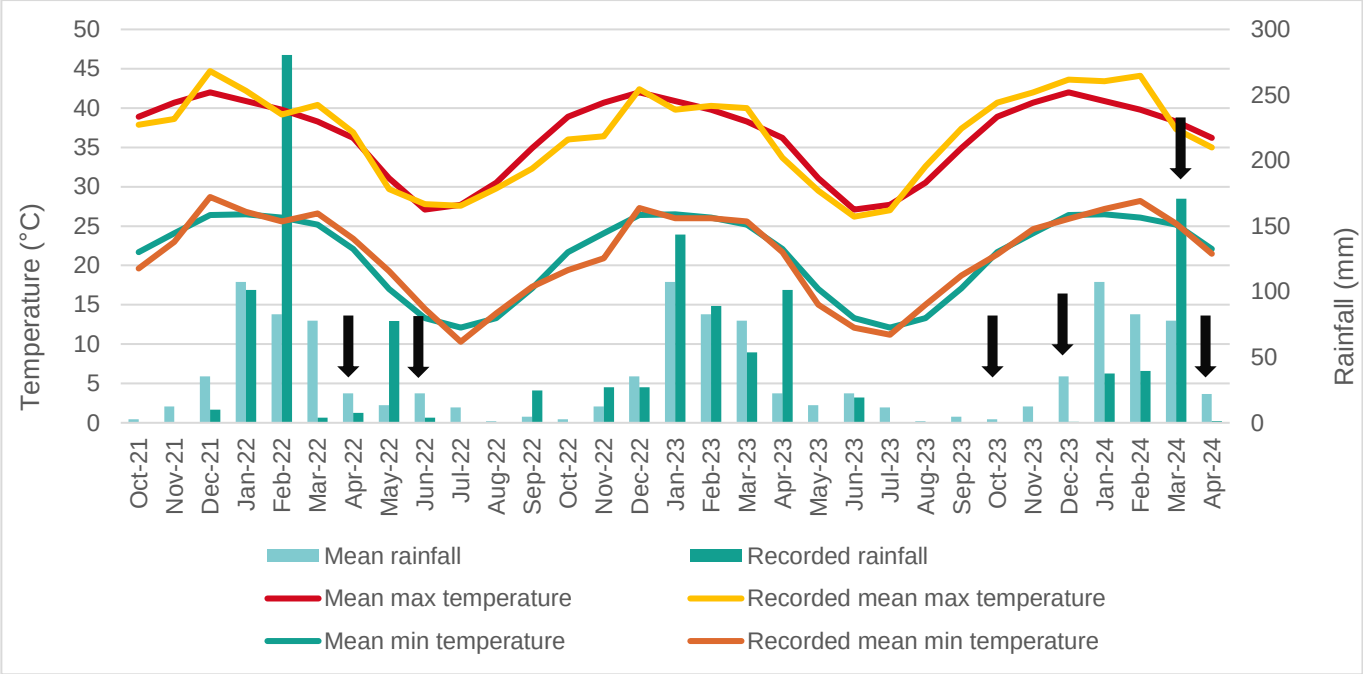


Figure 3: Survey weather conditions (black arrows indicate the timing of the field events)

3.3.3 SURVEY TEAMS AND LICENCES

The terrestrial vertebrate fauna assessment was completed over two phases. The first phase was completed by SLR (2022) under Fauna Taking (Biological Assessment) License – Regulation 27 (BA27000632) and an Authorization to Take or Disturb Threatened Species under Section 40 of the BC Act (TFA 2022-048). The second phase was completed by Ecoscape under Fauna Taking (Biological Assessment) Licence Number BA27001054 and Authorisation to Take or Disturb Threatened Species TFA 2324-0240. Details of the project teams is presented below in **Table 9**.

Table 9: Survey personnel

Project Team	Role	Years experience	Field survey
SLR (Phase 1)			
Dr. Michael Lohr	Principal Ecologist (Field Lead)	11 years	Detailed Survey 1a & 1b
Dr. Jon-Paul Emery	Senior Zoologist	10 years	Detailed Survey 1a & 1b
Evan Webb	Senior Zoologist (Field Lead)	6 years	Detailed Survey 1a & 1b
Christina Walker	Ecologist	3 years	Detailed Survey 1a & 1b
Lukas Geidans	Ecologist	3 years	Detailed Survey 1a
Lachlan Crossley	Ecologist	4 years	Detailed Survey 1a
Simon Girando	Ecologist	3 years	Detailed Survey 1b
Lewis Berry	Zoologist	1 year	Detailed Survey 1b
Ecoscape (Targeted and Phase 2)			
Bruce Turner	Principal Zoologist	39 years	Targeted Survey 1a & 1b, Detailed Survey 2a & 2b
Roberth Hemsworth	Senior Zoologist	17 years	Targeted Survey 1a & 1b, Detailed Survey 2a & 2b
Samantha Lostrom	Senior Zoologist	10 years	Detailed Survey 2a & 2b
Tracy de Vetter	Ecologist	3 years	Detailed Survey 2a & 2b
Dakota Scrimshaw	Graduate Zoologist	2 years	Detailed Survey 2a & 2b
Sebastian Chadwick	Graduate Zoologist	1 years	Detailed Survey 2a & 2b

3.3.4 DETERMINATION OF SURVEY DESIGN

A Detailed fauna survey required a comprehensive methodology to obtain quantitative data for as many fauna suites as possible, from all habitat types within the survey area. Factors that influenced the survey design are outlined below in **Table 10**.

Table 10: Justification for survey design

Factor	Relevance to survey design
Bioregion – level of existing survey/knowledge of the region and associated ability to predict accurately.	The Pilbara bioregion has been subject to extensive surveys of varying detail over the past decade. Knowledge and data is readily available and is adequate to predict the likely fauna habitat types, the general fauna assemblage and conservation-listed species likely to occur within the survey area.
Landform special characteristics/specific fauna/specific context of the landform characteristics and their distribution and rarity in the region.	The landforms from the survey area, consists of sandy/stony plains, hills including ridge lines and plateaux, minor/major drainage lines and floodplains. All landforms are considered to be present outside of the survey area and common in the wider Pilbara region.
Lifeforms, life cycles, types of assemblages and seasonality (e.g. migration) of species likely to be present.	The Pilbara is considered to have a dry/hot desert climate and the life cycles of many species are influenced by rainfall, which commonly falls during the summer months. Rainfall can result in species abundance increases, and attract nomadic fauna including migratory species to the survey area. Temperature can also influence the activity and therefore detectability of different fauna groups i.e. reptile activity is higher during the summer months and warmer periods at other times, and therefore individuals are easier to detect.
Level of existing knowledge and results of previous regional sampling.	Fourteen documents (**Table 6**), mainly survey reports of varying level (Basic, Detailed or Targeted) and environmental review documents within 30 km of the survey area were available for review during the desktop assessment stage, which encompasses the majority of the current survey area. Existing knowledge was readily available on habitat and species expected to be present within the survey area.
Number of different habitats or degree of similarity between habitats within a study area.	Based on the review of nearby survey reports, soil landscape and pre-European vegetation mapping, eight habitat types were expected to be found during the surveys. Due to the size of the survey area, a variety of habitat types were expected to occur, including sand plains, rocky hills and major drainage lines.
Climatic constraints (e.g. temperature or rainfall that preclude certain sampling methods).	Climate was not considered a constraint. Average climate conditions for the region and leading up to the field events are discussed in more detail in **Sections 2.2** and **3.3.1.** The field events occurred during the optimum survey season for fauna groups within the Pilbara region (EPA 2020). Portions of the survey have been subject to recent fires, however, that fauna displaced by fire have likely been recorded from unburnt sections within the survey area.
Sensitivity of the environment to the proposed activities.	The general habitat types from within the survey area are understood to be well represented outside of the survey area and common in the Pilbara region. Micro-habitats i.e. permanent water or outcrops are significant as they provide critical habitat to some conservation-listed species. The proposed windfarm development is not expected to require clearing of large areas (limited to road infrastructure, turbine pads and other infrastructure).
Scale and impact of the proposal.	The proposed windfarm will be focused within the eastern half of the study area with transmission infrastructure being located along the western half. The vertebrate fauna survey covered the whole potential development envelope with particular focus on the areas associated with the windfarm development area.

3.3.5 SYSTEMATIC TRAPPING SITES

The phase 1 field survey design (SLR 2022) consisted of 20 trap sites installed within areas of suitable and representative habitat, with each site consisting of two trap lines spaced roughly 50 m apart to account for the possibility that fauna assemblages can be distributed unevenly within a given habitat. Individual trap lines were roughly 30 m long and comprised a 30 cm tall flywire drift fence passing over five pitfall traps (20 L buckets and 150 mm PVC pipes) with six funnel traps attached to the drift fence in pairs. Five Elliot traps were positioned adjacent to each pitfall trap line approximately 10 m away from the pitfall traps.

Methods during the phase 2 field survey consisted of 16 trap sites within the five habitat types identified during the phase 1 survey (SLR 2022). Each trap site consisted of 10 trap lines which was 10 m long and comprised of a 30 cm tall flywire drift fence passing over one pitfall trap (20 L bucket) with a Fraser-type funnel trap placed at one end. Funnel traps were covered by industrial insulation shades to reduce the likelihood of animals suffering from heat or exposure. Bird surveys were conducted as per Birdlife Australia's standard methodology.

Trap site layouts during phase 1 and 2 sureys are outlined in **Figure 4** and **Figure 5** respectively. Survey effort for systematic trapping sites is summarised in **Table 19** in **Appendix Four**. Systematic trapping effort is summarised in **Table 20**.

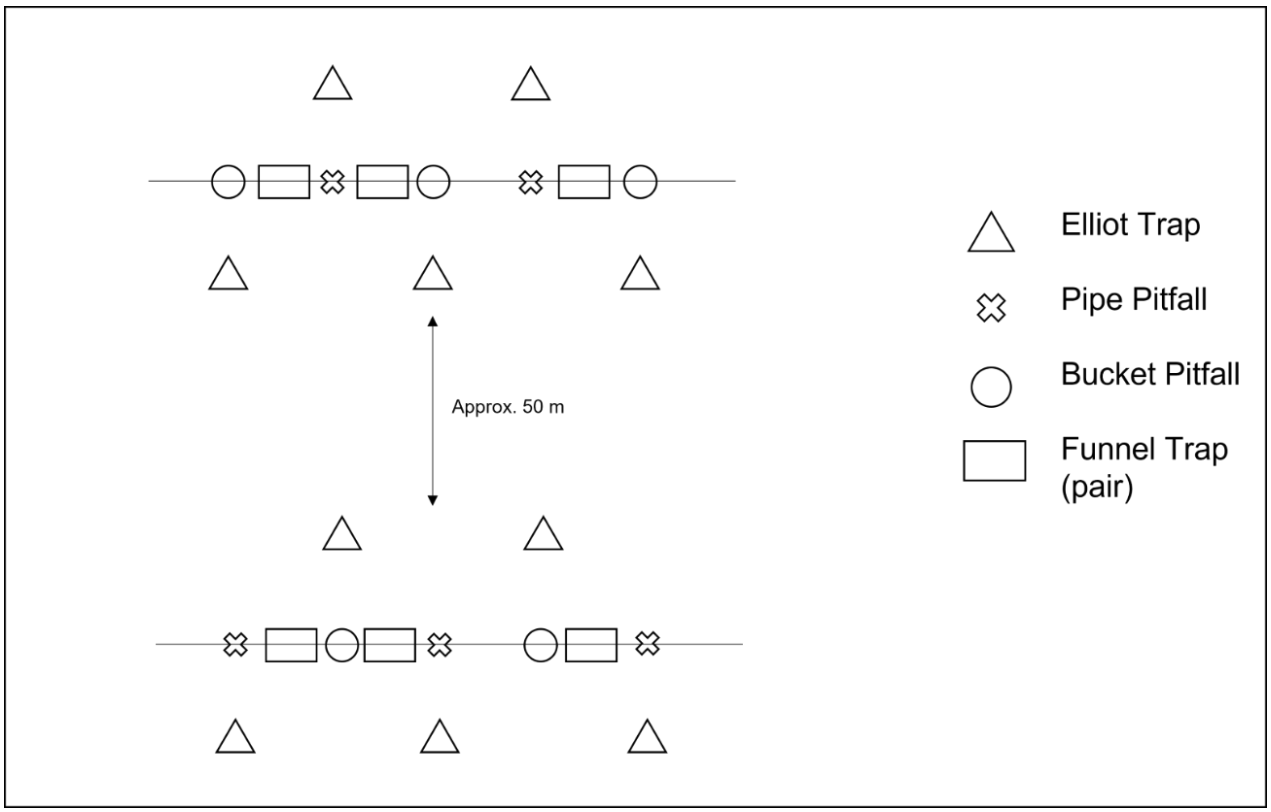


Figure 4: Trap site layout during phase 1 (SLR 2022)

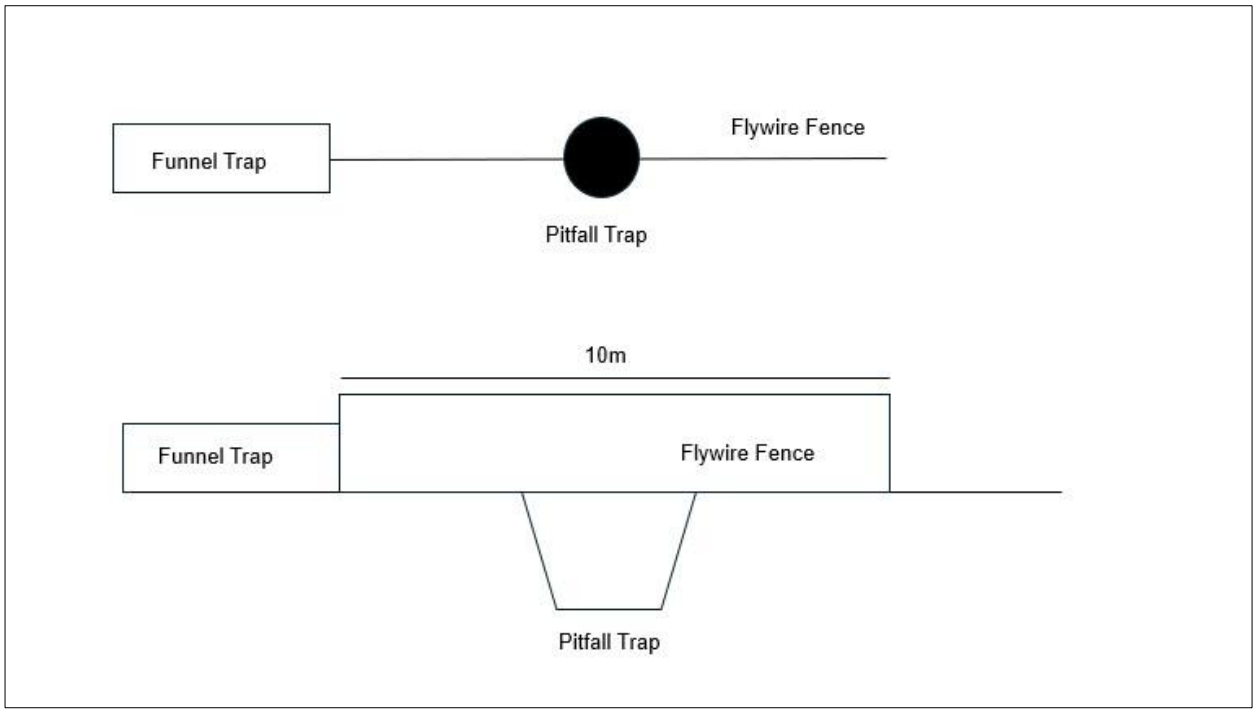


Figure 5: Trap site layout during phase 2

3.3.6 ACTIVE SURVEY METHODS

- **Reptiles and Amphibians**: microhabitats favoured by reptiles and amphibians were actively searched, including raking of leaf litter and soil in favoured habitats, searching in rock pile and under and inside fallen timber.
- **Birds**: all bird species opportunistically observed inside the survey area were recorded. Bird surveys were conducted at most systematic trapping and in other suitable locations by an experienced ornithologist. Surveys were conducted during optimal periods of bird detectability (early morning and late afternoon) as per Birdlife Australia's standard methodology.
- **Mammals**: mammals were recorded opportunistically. Tracks, scats and other traces of mammals were noted and identified where possible.
- **Targeted Fauna Searches**: habitat that may support conservation-listed or otherwise significant fauna species potentially occurring in the survey area (as identified by database searches) were targeted during the survey. Specific details are provided below.
- **Motion Cameras**: Reconyx 500 motion cameras were deployed throughout the survey area and within habitat considered likely to be suitable for conservation-listed fauna species. Cameras were left *in situ* for at least 4 consecutive nights.
- **Bats**: Bat echolocation recording units/Acoustic Recording Units (ARUs; Anabat Swifts and Rangers) were deployed to capture bat (generic and conservation-listed) species present within the survey area. Bat recorders were left *in situ* for at least 4 consecutive nights.

3.3.7 TARGETED SURVEY METHODS

3.3.7.1 Motion Cameras

In addition to motion cameras deployed at the systematic trapping sites, baited motion cameras were deployed at 56 other sites (29 sites during phase 1 (SLR 20220) and 27 sites during phase 2) targeting conservation-listed species in suitable habitat (effort is detailed in **Table 21** in **Appendix Four**).

3.3.7.2 Acoustic Recording Units

Acoustic Recording Units (ARUs), both audio and ultrasonic, were deployed in habitat likely to support conservation-listed bird and bat species (survey effort is outlined in **Table 22** in **Appendix Four**). In total, 27 units were deployed: 13 during phase 1 (SLR 2022) and 14 during phase 2.

Night Parrot Surveys

The phase 1 survey was conducted under the *Interim guideline for preliminary surveys of night parrots (Pezoporus occidentalis) in Western Australia* (DPaW 2017) ARUs were deployed in likely habitat (near water sources or old growth Spinifex) for a minimum of 6 nights (SLR 2022). ARUs were deployed for 50 nights during the October-December 2023 Targeted survey.

The phase 2 survey was also conducted under the 2017 guideline (targeted surveys). The updated *Guidelines for determining the likely presence and habitat usage of night parrot (Pezoporus occidentalis) in Western Australia* (DBCA 2024a) were used for discussion only.

The survey area is located within the high priority survey region for the Night Parrot (DBCA 2024a). Long-term stable roost sites are characterized by long unburnt and structurally complex hummocks, in particular species that are ring-forming i.e. *Triodia longiceps*. Foraging habitat is associated with floodplains and run-off areas rich in forbs, grasses and Chenopods (*ibid*.).

3.3.7.3 Active Bilby Searches

Active searches focussing on the detection of the Bilby (Southgate et al. 2017) were undertaken at 22 locations (11 during phase 1 (SLR 2022) and 11 during phase 2).

Survey effort is outlined in **Table 23** in **Appendix Four**.

3.3.8 FAUNA HABITAT ASSESSMENT AND MAPPING

The majority of the current survey area was mapped during the phase 1 survey by SLR (2022). This mapping was retained where feasible, refined where applicable and extended into areas which were not within the phase 1 survey area. Fauna habitats were described as an area which is distinguishable from its surrounding area by its landform, vegetation and fauna assemblage occupying the area. In addition, its likelihood to harbour specialised fauna species which are not found in adjacent areas was taken into consideration.

The following information was used to identify and map all fauna habitats within the survey area:

- previous fauna habitat mapping
- land systems
- vegetation type and condition
- aerial imagery
- landforms
- soil characteristics
- fauna assemblage information.

The composition and characteristics of each fauna habitat type were recorded, including noting suitability for various fauna suites or conservation-listed species. Habitat types were delineated in the field and digitised upon return from the field survey.

3.3.9 IDENTIFICATION AND TAXONOMY

Terrestrial vertebrate fauna taxa were identified in the field and released at capture sites. Data recorded by ultrasonic / audio recording units was analysed by bat specialist Dr Kyle Armstrong (Specialised Zoological) (phase 2 data), Robert Bullen from Bat Call WA (phase 1 data (SLR 2022)) and Night Parrot expert Dr Nick Leseberg (Adaptive National Resource Management).

Taxonomy and nomenclature in this report follows the Western Australian Museum Checklist (June 2024) where relevant.

3.3.10 STATISTICAL ANALYSIS

3.3.10.1 Habitat Analysis

Fauna habitat mapping is the categorization of habitat within the survey area based on the characteristics outlined in **Section 3.3.8**. Analysing data collected within each habitat type may provide an insight into how similar or distinct the fauna assemblages between different habitat types are. PATN© software (Blatant Fabrications Pty Ltd 2013) was used to undertake the habitat analyses. PATN offers a range of choice of data transformation and analysis options. A hierarchical clustering option was chose using the Bray-Curtis index.

3.3.10.2 Adequacy of Sampling

In order to demonstrate adequacy of sampling, a species accumulation curve was generated by the software, Species Diversity and Richness IV (Pisces Conservation Ltd 2010) using five random selections of sample order, using trap site data (from phase 1 and 2) only. Species accumulation curves illustrate the expected accumulation of species over time i.e. trap sites or bird surveys.

4 RESULTS

4.1 DESKTOP ASSESSMENT

4.1.1 VERTEBRATE FAUNA ASSEMBLAGE

Regional information from previous surveys were reviewed to identify the terrestrial vertebrate fauna likely to be present within the survey area is presented in **Table 11**.

Table 11: Local survey results

Source	Mammals	Birds	Reptiles	Amphibians	Total Vertebrates	Conservation-listed Species[1]
SLR Consulting (2022) East Pilbara Generation Hub Detailed Terrestrial Vertebrate Fauna Assessment.	33 (5 introduced)	68	54	3	158	5 NQ, PLNB, POP, WPM,
Biologic (2021) Sanjiv Ridge Stage 2 Development Area Consolidated Terrestrial Fauna Survey	9	12		2	23	3 (Survey Area) NQ, GB, PLNB 4 (Study Area) POP, WPM Spectacled Hare-wallaby, Peregrine Falcon
Biologic (2020) McPhee Creek: Consolidated Terrestrial Fauna Report	31 (5 introduced)	70	60	3	164	8 NQ, B, PLNB, GB, WPM, POP Lond-tailed Dunnart, Fork-tailed Swift,
Biologic (2019a) Warrawoona Targeted Bat Assessment	2				2	2 PLNB, GB
Biologic (2019b) Warrawoona Gold Project: Conservation Significant Vertebrate Fauna Impact Assessment	5		1		6	6 NQ, POP, PLNB, GB, WPM, Brush-tailed Mulgara,
Ecologia (2012) North Star Project Level 2 Terrestrial Vertebrate Fauna Assessment	22 (3 introduced)	81	75	6	184	8 PLNB, NQ, POP, WPM, GB Fork-tailed Swift, Long-tailed Dunnart, Grey Falcon
Rapallo (2020) Flora and Vertebrate Fauna Assessment of the Moolyella Pipeline	12	63	16	1	92	2 PLNB, Common Sandpiper
Biologic (2019c) Warrawoona Gold Project – VHF Bat Foraging Studies August 2019	2				2	2 PLNB, GB

[1] NQ = Northern Quoll, *Dasyurus hallucatus*; PLNB=Pilbara Leaf-nosed Bat, *Rhinonicteris aurantia* (Pilbara form); POP=Pilbara Olive Python, *Liasis olivaceus barroni*; WPM=Western Pebble-mound Mouse, *Pseudomys chapmanii*; GB=Ghost Bat, *Macroderma gigas*; B=Bilby, *Macrotis lagotis*

Source	Mammals	Birds	Reptiles	Amphibians	Total Vertebrates	Conservation-listed Species[1]
Biologic (2019d) Warrawoona Gold Project – 2019 Significant Species Monitoring	2	20	1		24	3 NQ, POP, Brush-tailed Mulgara
Biologic (2017) Warrawoona Targeted Bat Assessment September 2017	2				2	2 PLNB, GB
MWH (2018)Corunna Downs Project: Terrestrial Vertebrate Fauna Survey	32 (4 introduced)	71	66	4	172	8 NQ, PLNB, GB, POP, WPM Peregrine Falcon, Spectacled Hare-wallaby
Outback Ecology (2012) Abydos East Link Road Terrestrial Fauna Impact Assessment	30 (5 introduced)	93	55	5	185	No field component Very likely or known: NQ, PLNB, GB, Brush-tailed Mulgara, Peregrine Falcon, *Ramphotyphlops ganei,* Spectacled Hare-wallaby,
Biologic (2020) Miralga Creek Project: Conservation Significant Vertebrate Fauna Impact Assessment	5	2			7	7 GB, PLNP, NQ, WPM Grey falcon, Peregrine Falcon,
Landscope (2000) Rock Pools and Rugged Ranges – Wildlife of the Nullagine River	26 (7 introduced)		25	5	56	3 NQ, B, WPM
Rapallo (2021) Flora and Vertebrate Fauna Assessment of the Big Schist Pipeline Corridor	12 (2 introduced)	34	8		54	4 PLNB, GB, NQ, Grey Falcon

Species likely to occur, based on Fortescue data which is inclusive of the species recorded from surveys it has commissioned (including those listed above in **Table 11** – intersecting the survey area only) and from other database searches are listed in **Table 17** in **Appendix Two**.

The combined database searches (*Dandjoo Species List Export* (DBCA 2024b) – 50 km buffer, ALA – *Atlas of Living Australia* (ALA 2024) – 30 km buffer, IUCN (2024) *The IUCN Red List of Threatened Species (Map Search)* – 30 km buffer, FMG – Fortescue Ltd-supplied data – 65 km buffer) identified that the following have been recorded from within the survey area and/or within the applied buffers. However, it should be noted that the number of taxa are exaggerated as some are attributed only to species level with many also duplicated by the addition of subspecies, and many obsolete names are still listed by the data holders (e.g. *Demansia reticulata* also being listed as *Demansia psammophis* and *Demansia psammophis cupreisceps*).

The database searches identified 442 taxa consisting of:

- 65 mammalian taxa (mammals) including:
  - 49 that have been recorded from within the survey area
- 219 avian taxa (birds) including:

  - 34 that have been recorded from within the survey area
- 146 reptilian taxa (reptiles) including:
  - 119 that have been recorded from within the survey area
- 12 amphibians including:
  - 10 that have been recorded from within the survey area.

These taxa are considered to be the potential fauna assemblage.

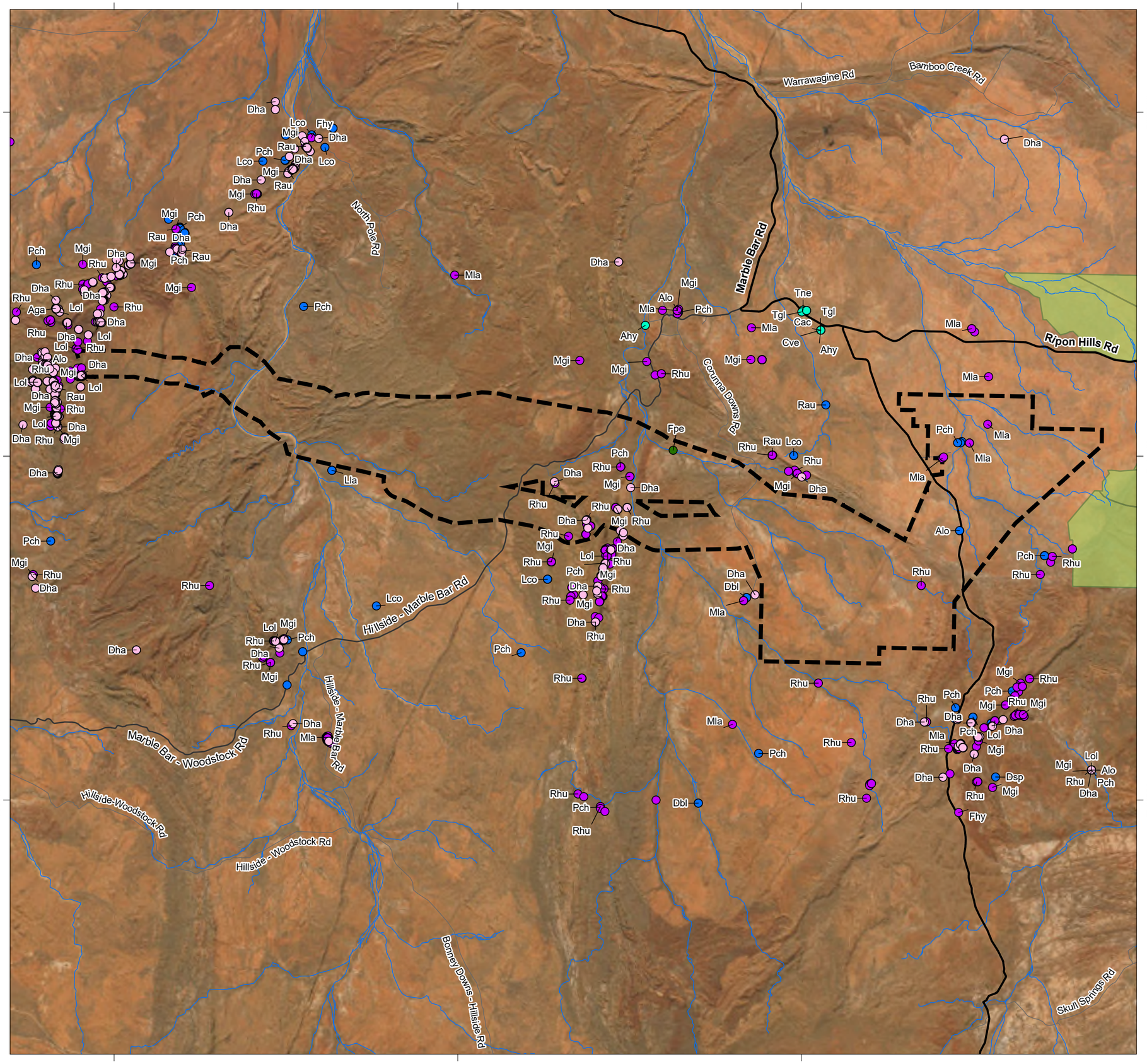
4.1.2 CONSERVATION-LISTED FAUNA

The reviewed database searches (**Section 3.2.1**) and literature review (**Section 3.2.2**) resulted in 28 conservation-listed species (nine mammals, 14 birds and five reptiles) being identified from the local region (**Table 18** in **Appendix Three**). Results, where data is available, are displayed on **Map 4** and **Map 5**.

The likelihood assessment identified nine conservation-listed species (Northern Quoll, Ghost Bat, Bilby, Western Pebble-mound Mouse, Pilbara Leaf-nosed Bat, Long-tailed Dunnart, Peregrine Falcon and Pilbara Olive Python) that have previously been recorded from within the survey area ('Known to occur'), and another two (Spectacled Hare Wallaby and Lakeland Downs Mouse) as 'Likely' to occur.

Night Parrot was considered as 'Unlikely to occur' in the survey area for a number of reasons including that the phase 1 survey did not record them nor was the habitat considered suitable for them (SLR 2022), and the lack of reliable records indicating that they had occurred in the survey area at any time (the only record suggesting they may have occurred was undated, but listing Meenthena Station as the only identifying location (ALA 2024)).

However, since the phase 1 survey additional information regarding their habitat requirements has become available and, on request, Night Parrots were targeted for survey.



LEGEND

- Survey Area
- Primary Road
- Secondary Road
- Local Road
- Drainage Line
- DBCA Lands of Interest

Conservation Significant Fauna

- Endangered
- Vulnerable
- Migratory Species
- Other Specially Protected
- Priority 1
- Priority 4

Code	Taxon	Status
Ahy	*Actitis hypoleucos*	MI
Aga	*Anilios ganei*	P1
Alo	*Antechinomys longicaudatus*	P4
Apa	*Apus pacificus*	MI
Cac	*Calidris acuminata*	MI
Cve	*Charadrius veredus*	MI
Cni	*Ctenotus nigrilineatus*	P1
Dbl	*Dasycercus blythi*	P4
Dsp	*Dasycercus* sp.	P4
Dha	*Dasyurus hallucatus*	EN
Fhy	*Falco hypoleucos*	VU
Fpe	*Falco peregrinus*	OS
Lco	*Lagorchestes conspicillatus leichardti*	P4
Lla	*Leggadina lakedownensis*	P4
Lol	*Liasis olivaceus barroni*	VU
Mgi	*Macroderma gigas*	VU
Mla	*Macrotis lagotis*	VU
Pch	*Pseudomys chapmani*	P4
Rau	*Rhinonicteris aurantia*	P4
Rhu	*Rhinonicteris aurantia* (Pilbara form)	VU
Tgl	*Tringa glareola*	MI
Tne	*Tringa nebularia*	MI

DATA SOURCES:
SOURCE DATA: CONSERVATION SIGNIFICANT FAUNA (DBCA 2023), DBCA - LANDS OF INTEREST (DBCA-012) (DBCA 2024), ROAD HIERARCHY (MRWA 2023) AND SURFACE HYDROLOGY LINES (NATIONAL) (GEOSCIENCE AUSTRALIA 2015).
IMAGERY: ESRI WORLD (MAXAR 2023)
SERVICE LAYERS: WORLD IMAGERY: EARTHSTAR GEOGRAPHICS

ecoscape

DBCA DATABASE SEARCH RESULTS - FAUNA

DETAILED TERRESTRIAL VERTEBRATE FAUNA SURVEY EAST PILBARA GENERATION HUB

FORTESCUE

COORDINATE SYSTEM: GDA 1994 MGA ZONE 50
PROJECTION: TRANSVERSE MERCATOR
DATUM: GDA 1994
UNITS: METER

N

SCALE: 1:450,000 @ A3

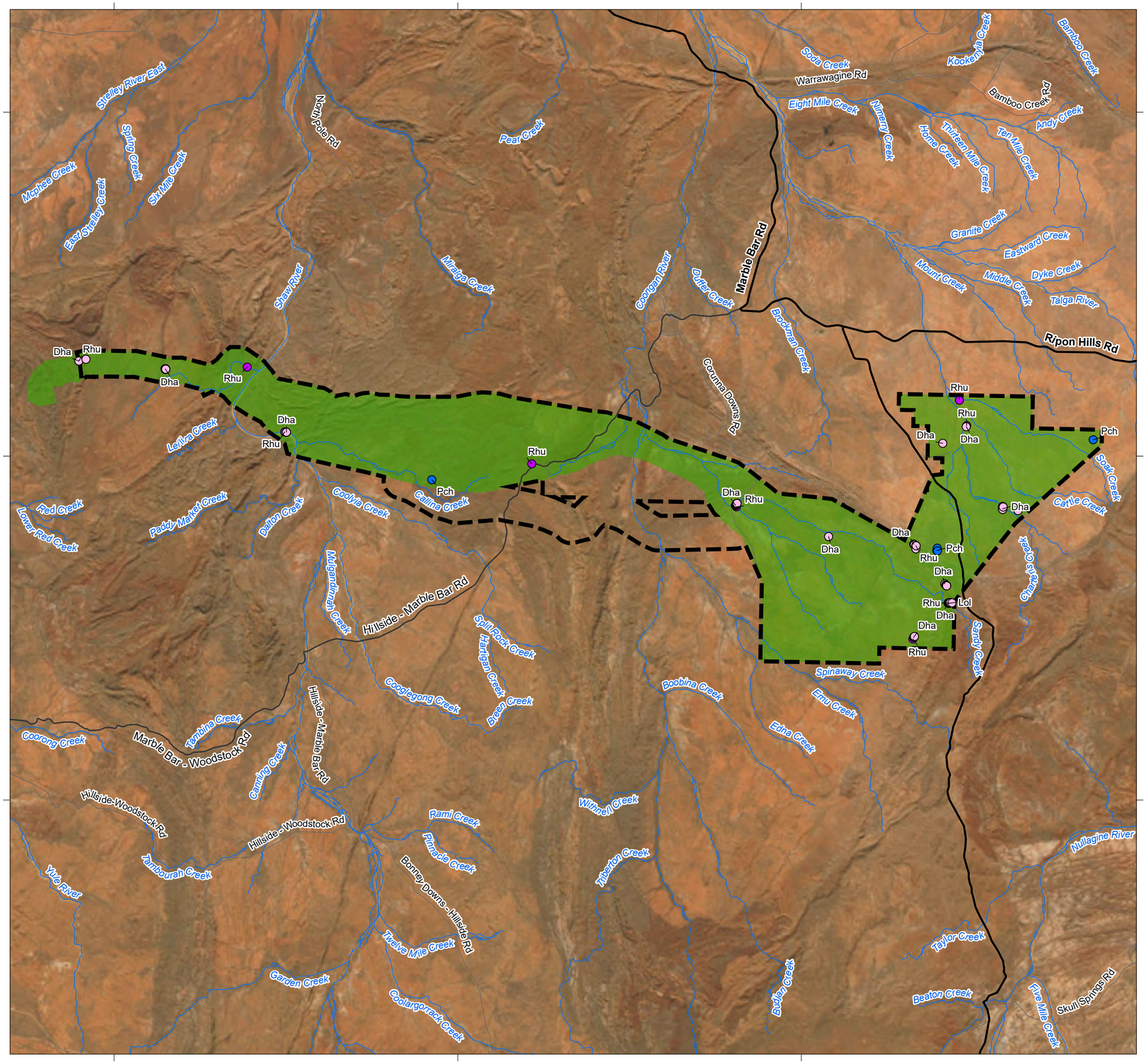
0 5 10 15 km

PROJECT NO: 4867-23

REV	AUTHOR	APPROVED	DATE
0	SB	LC	14/08/2024
1	KP	LC	03/12/2024
2	NW	LA	11/03/2025

MAP 4

Path: X:\01_Projects\4867-23 EPGH Fauna Survey\Maps\APRXs\Report_Desktop_Maps_4867.aprx



LEGEND

- Survey Area
- Primary Road
- Secondary Road
- Local Road
- Drainage Line

360 Environmental (2022)

Conservation Significant Fauna

- Endangered
- Priority 4
- Vulnerable
- EPGH Detailed Terrestrial Vertebrate Fauna Assessment (360 Environmental 2022)

Code	Taxon	Status
Dha	*Dasyurus hallucatus*	EN
Lol	*Liasis olivaceus barroni*	VU
Pch	*Pseudomys chapmani*	P4
Rhu	*Rhinonicteris aurantia* (Pilbara form)	VU

DATA SOURCES:
SOURCE DATA: CONSERVATION SIGNIFICANT FAUNA (360 ENVIRONMENTAL 2022), ROAD HIERARCHY (MRWA 2023) AND SURFACE HYDROLOGY LINES (NATIONAL) (GEOSCIENCE AUSTRALIA 2015).
IMAGERY: ESRI WORLD (MAXAR 2023)
SERVICE LAYERS: WORLD IMAGERY: EARTHSTAR GEOGRAPHICS

ecoscape

PREVIOUS SURVEYS

DETAILED TERRESTRIAL VERTEBRATE FAUNA SURVEY
EAST PILBARA GENERATION HUB

FORTESCUE

COORDINATE SYSTEM: GDA 1994 MGA ZONE 50
PROJECTION: TRANSVERSE MERCATOR
DATUM: GDA 1994
UNITS: METER

N

SCALE: 1:450,000 @ A3

0 5 10 15 km

PROJECT NO: 4867-23

REV	AUTHOR	APPROVED	DATE
0	SB	LC	14/08/2024
1	NW	LA	12/03/2025

MAP 5

Path: X:\01_Projects\4867-23 EPGH Fauna Survey\Maps\APRXs\Report_Desktop_Maps_4867.aprx

4.2 SURVEY RESULTS

4.2.1 FAUNA HABITAT

Habitat types were defined by completing 93 habitat assessment points in the field (displayed on the **Map 6** series) at which a set of notes relating to the factors as per **Section 3.3.8** were recorded.

Subsequent desktop review of field notes, review of previous survey reports within or in close proximity to the survey area, and aerial imagery led to the definition of seven distinct habitat types (further discussed in **Table 12** and displayed on the **Map 6** series:

- Drainage Line/River/Creek (Major)
- Drainage Line/River/Creek (Minor)
- Hills/Ranges
- Plain (Boulders)
- Plain (Sand)
- Plain (Stony/Gibber)
- Rocky Escarpments/Ridges/Mesa.

A further four micro-habitat types were identified; they are also displayed on the **Map 6** series as point locations:

- Caves
- Gorges
- Permanent water body
- Woodland.

Ecoscape has retained the habitat types and names from the phase 1 results for consistency (SLR 2022). Habitat mapping was refined during the field events based on habitat assessments and other field notes. The quality of each habitat type was based on the field surveyor's experience and takes into consideration the level of disturbance to habitats from weeds, the amount of native vegetation, vegetation cover (density) and the context of the habitat with the surrounding landscape.

Table 12: Fauna habitat types

Habitat type	Description	Photograph
Drainage Line/River/Creek (Major)	Areas of drainage consisting of multiple braided channels or broad individual channels. Overstorey Eucalypt, *Acacia* and *Melaleuca* trees over mixed shrubs, hummock grasses, reeds and Buffel grass (*Cenchrus ciliaris*). No pools were observed during the surveys, however, ephemeral pools may form after heavy rainfall. Major drainage lines had medium grained soils (sand). Litter cover ranged from absent (drainage channel) to abundant (near the banks). Fringing vegetation provides shelter, breeding sites, foraging resources and routes for dispersal for a wide range of fauna species. Major drainage lines can provide critical habitat for Pilbara Olive Pythons where permanent or semi-permanent pools form, provide dispersal and foraging habitat for Northern Quolls and foraging habitat for Pilbara Leaf-nosed Bats. Large trees can provide nest sites for Grey and Peregrine Falcons. **Disturbance:** Low – High **Fire age:** > 5 years to >10 years **Extent**: 7,781.7 ha; 5.46%	

Habitat type	Description	Photograph
Drainage Line/River/Creek (Minor)	Areas of drainage consisting of narrow individual channels or areas where water flow is evident, however, fully formed channels are absent. *Eucalyptus/Corymbia* trees over mixed shrubs, hummock grasses and Buffel grass (*Cenchrus ciliaris*). Riverbeds are covered in medium grained soils (sand) or rocks. Water retention in small rock pools is evident in some areas. Litter cover is variable (low to abundant). Fringing vegetation provides shelter, breeding sites and foraging for a wide range of fauna species. Minor drainage lines can provide critical habitat for Pilbara Olive Pythons where permanent or semi-permanent pools form, provide dispersal and foraging habitat for Northern Quolls and foraging habitat for Pilbara Leaf-nosed bats. **Disturbance:** Low – High **Fire age:** Recent to >10 years **Extent**: 6,878.4 ha; 4.83%	
Hills/Ranges /Plateaux	These consisted of rocky crests (photo background), hills and outcropping (Granitic, Basalt or Banded Ironstone) with associated undulating low hills and scree slopes. The vegetation was *Eucalyptus* trees and scattered mixed shrubs over hummock grasses and mixed herbs at varying densities. Litter cover was low. Rocky sites, including minor caves and crevices, form suitable habitat for a range of reptiles and small mammals including Western Pebble-mound Mouse. **Disturbance:** Low **Fire age:** >10 years **Extent**: 51,482.5 ha; 36.14%	
Plain (Boulders)	Boulder plains are characterised by flats or lower slopes of fine to coarse grained soils, with outcropping or boulder piles often of granitic nature. The vegetation in this habitat consisted of hummock (*Triodia* spp.) grassland with scattered *Acacia* and *Grevillea* shrubs and trees. Litter cover is variable (low to abundant). The boulder piles provide shelter for a range of fauna species, particularly reptiles. The interspersing areas, which are frequently sandy, are suitable for digging and burrowing species with the hummock grasses providing shelter. Bilby and Brush-tailed Mulgara may utilise this habitat type. **Disturbance**: varying low to high **Fire age**: 1 - >10 years prior **Extent**: 25,080.5 ha; 17.60%	

Habitat type	Description	Photograph
Plain (Sand)	Hummock grassland (*Triodia* spp.) on fine to medium grained red soil (clay to sand) with scattered trees and shrubs. Occasional open shrubland growing over hummock grassland (*Triodia* spp.). Litter cover is variable (low to abundant). The sandy surface is suitable for a range of digging and burrowing species. *Triodia* hummocks provide shelter for smaller fauna and, seasonally, significant food (seeds) for granivorous species. This habitat type is significant for Bilby and Brush-tailed Mulgara. **Disturbance:** Low - high **Fire age:** Recent to >10 years **Extent**: 32,883.3 ha; 23.08%	
Plain (Stony/Gibber)	Stony plains were flat areas with gravel veneer over fine grain soils (clay to sandy clay). The vegetation was generally sparse, however, occasional hummock grassland with scattered shrubs on varying density was present at some locations. Litter cover was absent. The open spacing of shrubs and hummock grasses reduces its significance for foraging, however, where present, the vegetation provides shelter for a range of small reptiles and mammals. The Western Pebble-mound Mouse may utilise this habitat type. **Disturbance**: Low to High **Fire Age:** 1 to >5 years **Extent**: 16,056.6 ha; 11.27%	
Rocky Escarpments /Ridges/Mesa	Rocky escarpments often of granitic nature characterised by large rock outcrops, cliffs, ridges, crests, or a mesa. The vegetation was primarily hummock grasses (*Triodia* spp.) around the base with the occasional tree or shrub. Litter cover is variable (low to abundant). Clayey sands - rocky soils. The rocky escarpments provides habitat for a range of small to medium-sized fauna species, particularly favouring reptiles and small mammals that shelter in crevices and caves. Northern Quolls may den in larger caves and crevices. **Disturbance:** Low **Fire age:** >10 years **Extent**: 2,135.9 ha; 1.5%	

4.2.1.1 Micro Habitats

Four micro-habitats were identified during the survey, however, occurred at a scale too small to map. Point locations are displayed on the **Map 6** series.

Table 13: Micro Habitats

Habitat type	Description	Photograph
Caves	Caves were found in the mid-slope of rocky hills. Caves were contiguous and vegetation was absent. Soil varied from sandy to rocky. Most recent fire in and around the caves was estimated to have occurred over 10 years prior to the survey. Disturbance was low to moderate. The caves had a high level of cover as there were rocky crevices and occasional channels. This micro-habitat is suitable for denning by Northern Quolls and (for larger caves) may be suitable for Pilbara Leaf-nosed Bats and Ghost Bats. **Disturbance:** absent **Fire age:** >10 years	
Gorges	Gorges were found in the Hills/ Ranges habitat type. The vegetation was similar across all identified habitats overstorey was comprised of *Eucalyptus* and *Melaleuca* trees with a mid-storey mixed shrubs composed of *Acacia* spp., *Eucalyptus* spp., *Melaleuca* spp., and various other species. Understory was grasses and/or reeds. Litter cover was generally low; however, natural cover was abundant. Soil varied from fine clay to gravel. A large range of fauna species would take advantage of the water and shelter available in gorges, particularly during the hotter part of the year. Water has potential to be available for longer periods in gorges than in more open drainage areas, and this would attract mobile species including larger reptiles and mammals, as well as birds, on a seasonal basis. This micro-habitat is particularly important for Pilbara Olive Python. Northern Quoll have potential to den in caves that form in gorges. **Disturbance:** Low – Moderate **Fire age:** >10 years	
Permanent water body	Open depressions filled with water from drainage lines. *Eucalyptus* trees growing in and around the depression with Hummock grass (*Triodia* spp.) on the edge; mid-storey was absent. Ground was stones/gravel over fine grained soil (clay), and litter was absent. An overall high level of cover for vertebrate fauna species to seek refuge, primarily from rocky crevices. Permanent water attracts a large range of fauna (for drinking) and supports the fringing vegetation, including large trees, that provide nesting and foraging resources. Amphibians are likely to occur more frequently in this micro-habitat than areas with less consistent moisture. This micro-habitat is particularly important for Pilbara Olive Python. **Disturbance:** Low **Fire age:** <5 years	

Habitat type	Description	Photograph
Woodland	Woodlands were seldom found and were only associated with drainage lines. Overstorey was comprised of *Eucalyptus* spp. and understorey consisted of a mixed assortment of shrubs and grasses. Soils were sandy and litter cover was moderate (50%). Woodlands had a high level of natural cover for vertebrate fauna species as hollow logs and other natural shelters were widespread. Hollow logs may provide shelter for a range of species including Northern Quoll, which would also utilise this habitat for foraging. **Disturbance:** Low **Fire age:** >10 years	

4.2.1.2 Fauna Habitat Analysis

The similarity or dissimilarity between the fauna assemblages in different habitat types was analysed via cluster analysis as outlined in **Section 3.3.10.1**. Data included in the analysis consisted of phase 1 and 2 data obtained from the systematic trapping sites. **Figure 6** illustrates the similarity of fauna assemblages recorded at the different trap sites. The letters in brackets behind the sites stand for the different habitat types (H=Hills/Ranges, PS=Plain (Stony/Gibber). PSa= Plain (Sand), PB= Plain (Boulder), R= Rocky Escarpments, DMa (Drainage Line Major) and DMi= Drainage Line Minor).

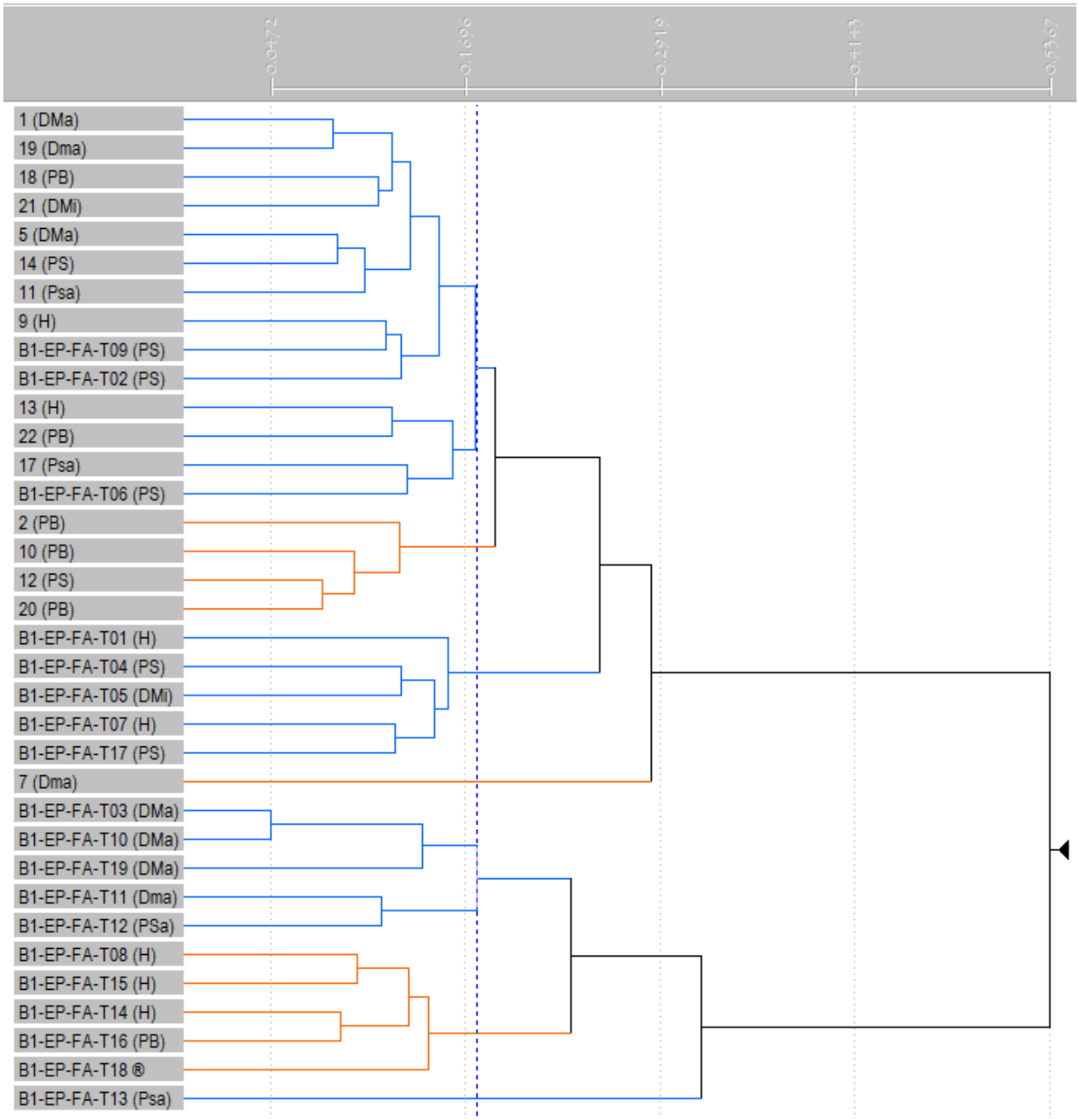


Figure 6: Fauna habitat analysis dendrogram

720000 725000 730000

7655000 7650000 7645000

17
HH-4142
(Unknown)
(Unknown)
HAB45
HK-3435
HI-1784
S4a16210
HH-0663
(Unknown)
EP-T01b
EP-T01a
S4u14278
HK-2921
MC64
BS30
MC22
MC43
BS29
MC92
HAB46
MC10
BS28
S4a17478
GR02
GR01
GR03
3
(Unknown)
EP-T02b
PC040
Scout
HAB48
MC70
BS09
BS13
MC71
BS10
HAB47
BS11
MC05
EP-T02a

720000 725000 730000

LEGEND

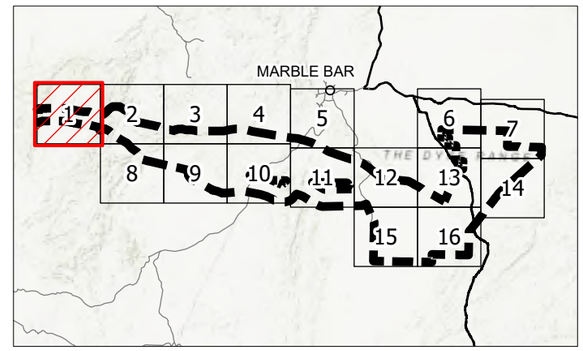
- Survey_Area
- Survey Track

Fauna Sites

- Habitat Assessment Point
- Motion Camera Site
- Ornithological Survey Location
- Systematic Trap Site
- 360/SLR Sample Location

Fauna Habitat Types

- Drainage line/river/creek (major)
- Drainage line/river/creek (minor)
- Hills/ranges/plateaux
- Plain (boulders)
- Plain (stony/gibber)
- Rocky escarpments/ridges/mesa



DATA SOURCES:
SOURCE DATA: FAUNA SITES AND FAUNA HABITAT (ECOSCAPE 2024), 360/SLR SAMPLING LOCATIONS (360 ENVIRONMENTAL 2022), ROAD HIERARCHY (MRWA 2023) AND SURFACE HYDROLOGY LINES (NATIONAL) (GEOSCIENCE AUSTRALIA 2015).
IMAGERY: ESRI WORLD (MAXAR 2023)
SERVICE LAYERS: WORLD IMAGERY: MAXAR
WORLD TOPOGRAPHIC MAP: ESRI, HERE, GARMIN, FAO, USGS, NGA

ecoscape

FAUNA HABITAT

DETAILED TERRESTRIAL VERTEBRATE FAUNA SURVEY
EAST PILBARA GENERATION HUB

FORTESCUE

COORDINATE SYSTEM: GDA 1994 MGA ZONE 50
PROJECTION: TRANSVERSE MERCATOR
DATUM: GDA 1994
UNITS: METER

N

SCALE: 1:55,000 @ A3

0 1 2 km

PROJECT NO: 4867-23

REV	AUTHOR	APPROVED	DATE
0	SB	KP	15/08/2024
1	KP	LC	6/12/2024
2	NW	LA	11/03/2025

MAP
6-1

Path: X:\01_Projects\4867-23 EPGH Fauna Survey\Maps\APRXs\Report_Maps_4867.aprx

735000 740000 745000

7655000 7650000 7645000

HAB41 HAB40 HAB39 HAB38 HAB37

15DCL 24158 72919 32675 (Unknown) 24283 S4u11790 32678 32670 24G 83156 83163

BS05 HAB42 HAB44 HAB43

LEGEND

- Survey_Area
- Survey Track

Fauna Sites

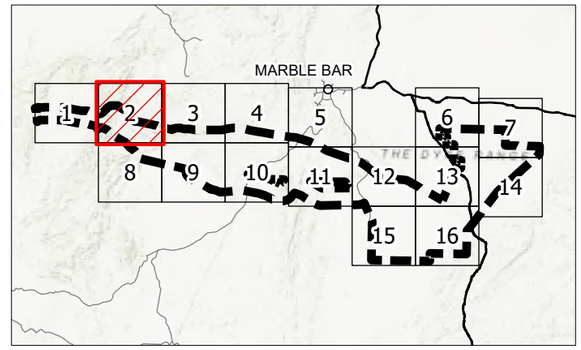
- Habitat Assessment Point
- Ornithological Survey Location
- 360/SLR Sample Location

Habitat Features (Micro Habitats)

- Waterbody

Fauna Habitat Types

- Drainage line/river/creek (major)
- Drainage line/river/creek (minor)
- Hills/ranges/plateaux
- Plain (stony/gibber)
- Rocky escarpments/ridges/mesa



DATA SOURCES:
SOURCE DATA: FAUNA SITES AND FAUNA HABITAT (ECOSCAPE 2024), 360/SLR SAMPLING LOCATIONS (360 ENVIRONMENTAL 2022), ROAD HIERARCHY (MRWA 2023) AND SURFACE HYDROLOGY LINES (NATIONAL) (GEOSCIENCE AUSTRALIA 2015).
IMAGERY: ESRI WORLD (MAXAR 2023)
SERVICE LAYERS: WORLD IMAGERY: MAXAR
WORLD TOPOGRAPHIC MAP: ESRI, HERE, GARMIN, FAO, USGS, NGA

ecoscape

FAUNA HABITAT

DETAILED TERRESTRIAL VERTEBRATE FAUNA SURVEY
EAST PILBARA GENERATION HUB

FORTESCUE

COORDINATE SYSTEM: GDA 1994 MGA ZONE 50
PROJECTION: TRANSVERSE MERCATOR
DATUM: GDA 1994
UNITS: METER

N

SCALE: 1:55,000 @ A3

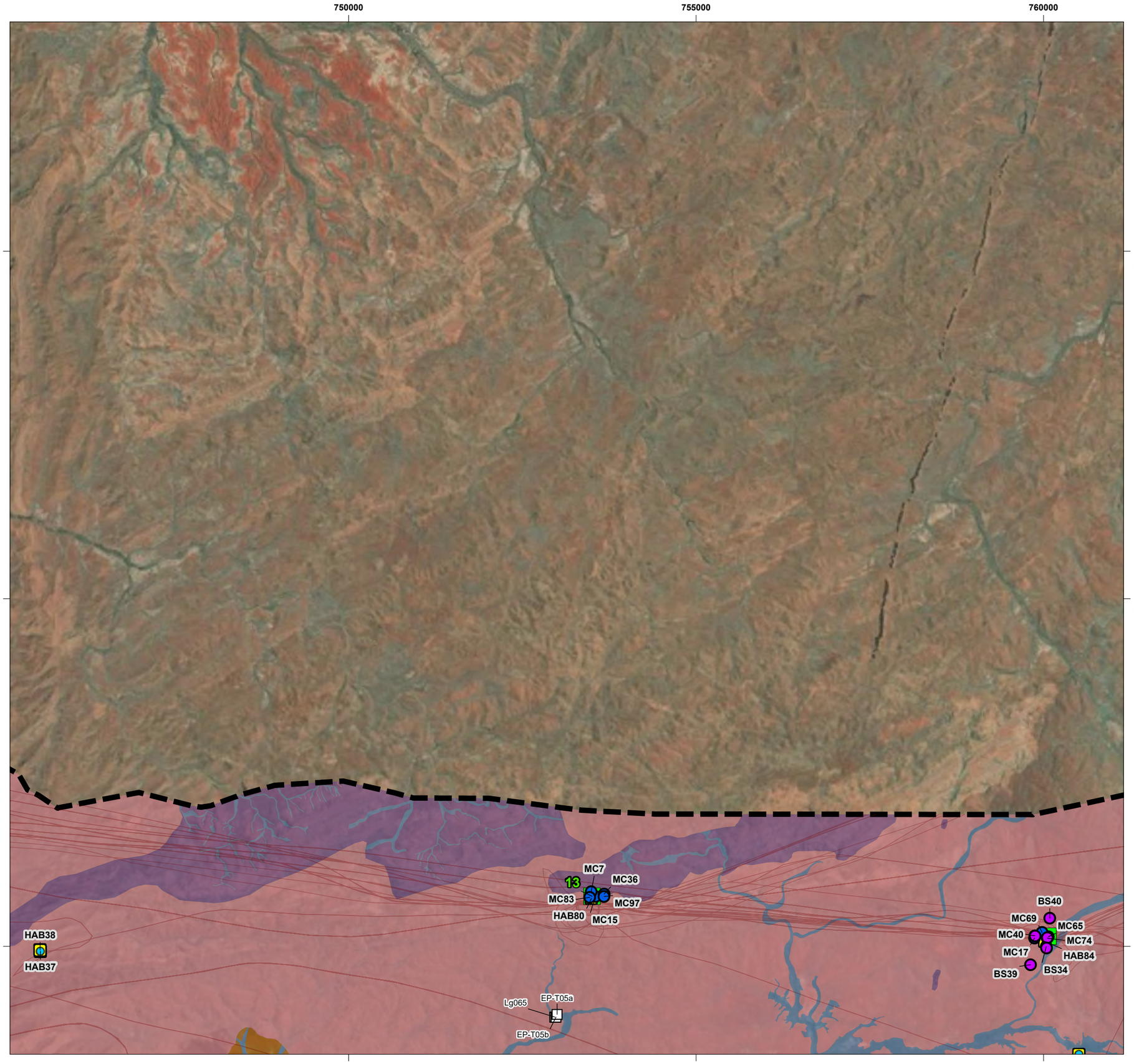
0 1 2 km

PROJECT NO: 4867-23

REV	AUTHOR	APPROVED	DATE
0	SB	KP	15/08/2024
1	KP	LC	6/12/2024
2	NW	LA	11/03/2025

MAP 6-2

Path: X:\01_Projects\4867-23 EPGH Fauna Survey\Maps\APRXs\Report_Maps_4867.aprx



LEGEND

- Survey_Area
- Survey Track

Fauna Sites

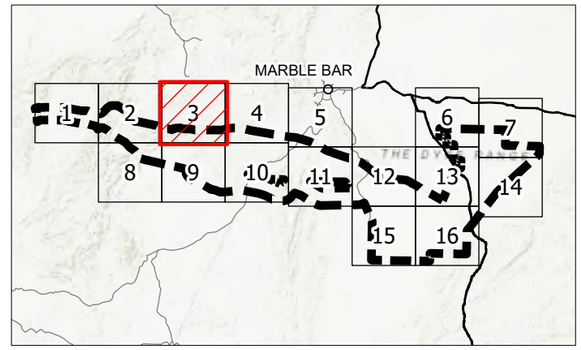
- Habitat Assessment Point
- Motion Camera Site
- Ornithological Survey Location
- Systematic Trap Site
- 360/SLR Sample Location

Habitat Features (Micro Habitats)

- Waterbody

Fauna Habitat Types

- Drainage line/river/creek (minor)
- Hills/ranges/plateaux
- Plain (stony/gibber)
- Rocky escarpments/ridges/mesa



DATA SOURCES:
SOURCE DATA: FAUNA SITES AND FAUNA HABITAT (ECOSCAPE 2024), 360/SLR SAMPLING LOCATIONS (360 ENVIRONMENTAL 2022), ROAD HIERARCHY (MRWA 2023) AND SURFACE HYDROLOGY LINES (NATIONAL) (GEOSCIENCE AUSTRALIA 2015).
IMAGERY: ESRI WORLD (MAXAR 2023)
SERVICE LAYERS: WORLD IMAGERY: MAXAR
WORLD TOPOGRAPHIC MAP: ESRI, HERE, GARMIN, FAO, USGS, NGA

ecoscape

FAUNA HABITAT

DETAILED TERRESTRIAL VERTEBRATE FAUNA SURVEY
EAST PILBARA GENERATION HUB

FORTESCUE

COORDINATE SYSTEM: GDA 1994 MGA ZONE 50
PROJECTION: TRANSVERSE MERCATOR
DATUM: GDA 1994
UNITS: METER

N

SCALE: 1:55,000 @ A3

0 1 2 km

PROJECT NO: 4867-23

REV	AUTHOR	APPROVED	DATE
0	SB	KP	15/08/2024
1	KP	LC	6/12/2024
2	NW	LA	11/03/2025

MAP 6-3

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765000
770000
775000
7655000
7650000
7645000
MC87
HAB34
MC45
MC95
MC57
MC485
14

LEGEND

Survey_Area
Survey Track

Fauna Sites

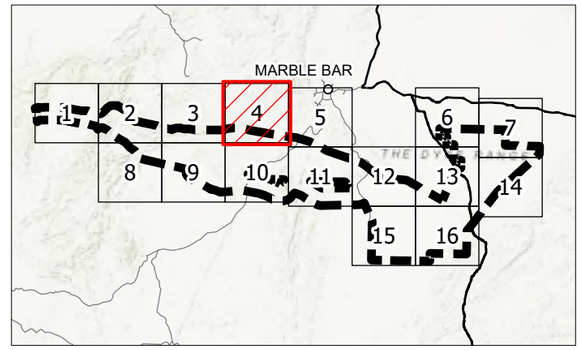
Habitat Assessment Point
Motion Camera Site
Ornithological Survey Location
Systematic Trap Site

Habitat Features (Micro Habitats)

Waterbody

Fauna Habitat Types

Drainage line/river/creek (major)
Drainage line/river/creek (minor)
Hills/ranges/plateaux
Plain (stony/gibber)



DATA SOURCES:
SOURCE DATA: FAUNA SITES AND FAUNA HABITAT (ECOSCAPE 2024), 360/SLR SAMPLING LOCATIONS (360 ENVIRONMENTAL 2022), ROAD HIERARCHY (MRWA 2023) AND SURFACE HYDROLOGY LINES (NATIONAL) (GEOSCIENCE AUSTRALIA 2015).
IMAGERY: ESRI WORLD (MAXAR 2023)
SERVICE LAYERS: WORLD IMAGERY: MAXAR
WORLD TOPOGRAPHIC MAP: ESRI, HERE, GARMIN, FAO, USGS, NGA

ecoscape

FAUNA HABITAT

DETAILED TERRESTRIAL VERTEBRATE FAUNA SURVEY
EAST PILBARA GENERATION HUB

FORTESCUE

COORDINATE SYSTEM: GDA 1994 MGA ZONE 50
PROJECTION: TRANSVERSE MERCATOR
DATUM: GDA 1994
UNITS: METER

N
SCALE: 1:55,000 @ A3
0 1 2 km

PROJECT NO: 4867-23

REV	AUTHOR	APPROVED	DATE
0	SB	KP	15/08/2024
1	KP	LC	6/12/2024
2	NW	LA	11/03/2025

MAP
6-4

Path: X:\01_Projects\4867-23 EPGH Fauna Survey\Maps\APRXs\Report_Maps_4867.aprx

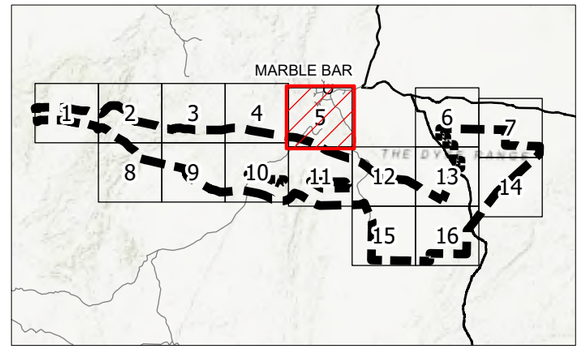
780000
785000
790000
7655000
7650000
7645000
Garden Rd
Marble Bar Pool Rd
Limestone - Marble Bar Rd
Marble Bar Bypass Rd
Hillside - Marble Bar Rd
Coruna Downs Rd

LEGEND

- Survey_Area
- Survey Track

Fauna Habitat Types

- Drainage line/river/creek (major)
- Drainage line/river/creek (minor)
- Hills/ranges/plateaux
- Plain (stony/gibber)
- Cleared



DATA SOURCES:
SOURCE DATA: FAUNA SITES AND FAUNA HABITAT (ECOSCAPE 2024), 360/SLR SAMPLING LOCATIONS (360 ENVIRONMENTAL 2022), ROAD HIERARCHY (MRWA 2023) AND SURFACE HYDROLOGY LINES (NATIONAL) (GEOSCIENCE AUSTRALIA 2015).
IMAGERY: ESRI WORLD (MAXAR 2023)
SERVICE LAYERS: WORLD IMAGERY: MAXAR
WORLD TOPOGRAPHIC MAP: ESRI, HERE, GARMIN, FAO, USGS, NGA

ecoscape

FAUNA HABITAT

DETAILED TERRESTRIAL VERTEBRATE FAUNA SURVEY
EAST PILBARA GENERATION HUB

FORTESCUE

COORDINATE SYSTEM: GDA 1994 MGA ZONE 50
PROJECTION: TRANSVERSE MERCATOR
DATUM: GDA 1994
UNITS: METER

N

SCALE: 1:55,000 @ A3

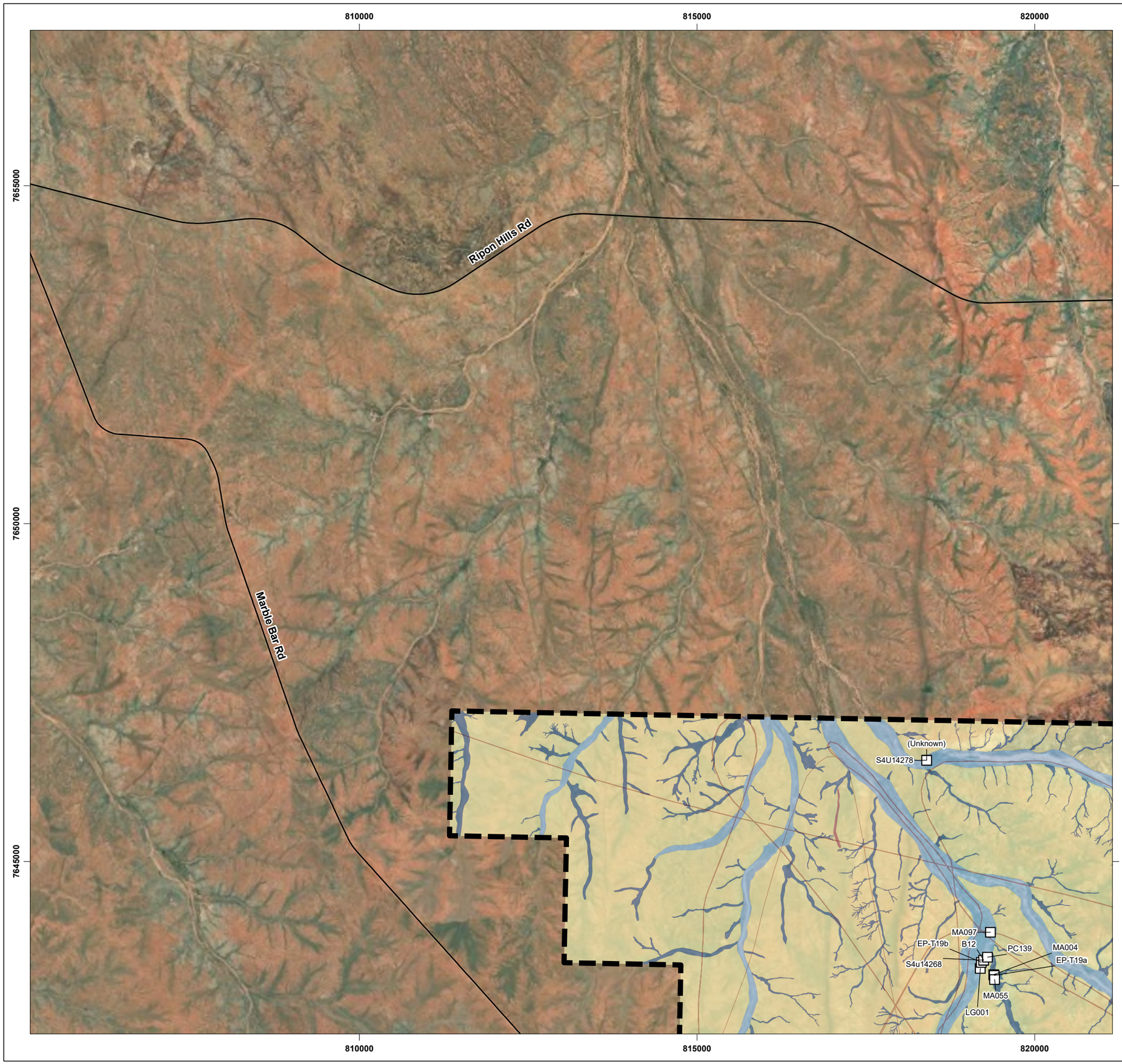
0 1 2 km

PROJECT NO: 4867-23

REV	AUTHOR	APPROVED	DATE
0	SB	KP	15/08/2024
1	KP	LC	6/12/2024
2	NW	LA	11/03/2025

MAP 6-5

Path: X:\01_Projects\4867-23 EPGH Fauna Survey\Maps\APRXs\Report_Maps_4867.aprx

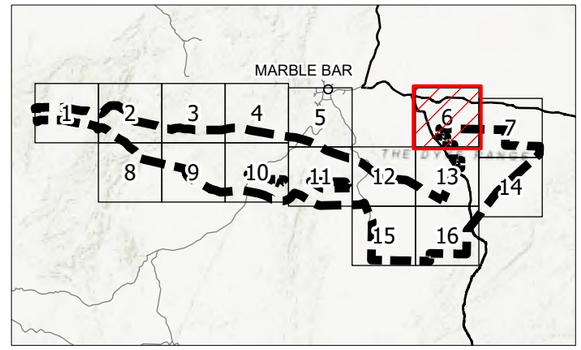


LEGEND

- Survey_Area
- Survey Track
- 360/SLR Sample Location

Fauna Habitat Types

- Drainage line/river/creek (major)
- Drainage line/river/creek (minor)
- Hills/ranges/plateaux
- Plain (boulders)



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IMAGERY: ESRI WORLD (MAXAR 2023)
SERVICE LAYERS: WORLD IMAGERY: MAXAR
WORLD TOPOGRAPHIC MAP: ESRI, HERE, GARMIN, FAO, USGS, NGA

ecoscape

FAUNA HABITAT

DETAILED TERRESTRIAL VERTEBRATE FAUNA SURVEY EAST PILBARA GENERATION HUB

FORTESCUE

COORDINATE SYSTEM: GDA 1994 MGA ZONE 50
PROJECTION: TRANSVERSE MERCATOR
DATUM: GDA 1994
UNITS: METER

N

SCALE: 1:55,000 @ A3

0 1 2 km

PROJECT NO: 4867-23

REV	AUTHOR	APPROVED	DATE
0	SB	KP	15/08/2024
1	KP	LC	6/12/2024
2	NW	LA	11/03/2025

MAP 6-6

Path: X:\01_Projects\4867-23 EPGH Fauna Survey\Maps\APRXs\Report_Maps_4867.aprx

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7650000 7645000 7640000

Ripon Hills Rd

S4A17476

MC16 BS17 BS16 19 MC82 HAB81 HAB90

BS21 MC62 20 BS20 BS23 HAB83 BS24

HAB62 HAB63 HAB61

HAB56 HAB59 HAB58 HAB57 HAB60 BS03 (Unknown)

LEGEND

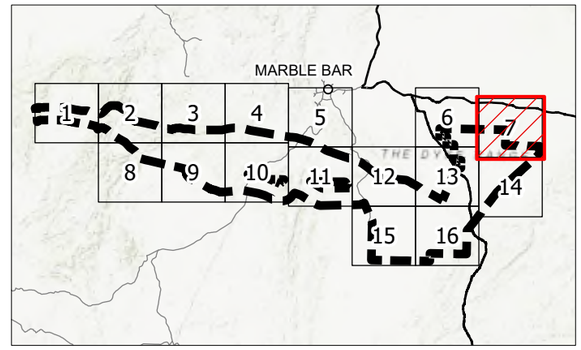
- Survey_Area
- Survey Track

Fauna Sites

- Habitat Assessment Point
- Motion Camera Site
- Ornithological Survey Location
- Systematic Trap Site
- 360/SLR Sample Location

Fauna Habitat Types

- Drainage line/river/creek (major)
- Drainage line/river/creek (minor)
- Plain (boulders)
- Rocky escarpments/ridges/mesa



DATA SOURCES:
SOURCE DATA: FAUNA SITES AND FAUNA HABITAT (ECOSCAPE 2024), 360/SLR SAMPLING LOCATIONS (360 ENVIRONMENTAL 2022), ROAD HIERARCHY (MRWA 2023) AND SURFACE HYDROLOGY LINES (NATIONAL) (GEOSCIENCE AUSTRALIA 2015).
IMAGERY: ESRI WORLD (MAXAR 2023)
SERVICE LAYERS: WORLD IMAGERY: MAXAR
WORLD TOPOGRAPHIC MAP: ESRI, HERE, GARMIN, FAO, USGS, NGA

ecoscape

FAUNA HABITAT

DETAILED TERRESTRIAL VERTEBRATE FAUNA SURVEY EAST PILBARA GENERATION HUB

FORTESCUE

COORDINATE SYSTEM: GDA 1994 MGA ZONE 50
PROJECTION: TRANSVERSE MERCATOR
DATUM: GDA 1994
UNITS: METER

N

SCALE: 1:55,000 @ A3

0 1 2 km

PROJECT NO: 4867-23

REV	AUTHOR	APPROVED	DATE
0	SB	KP	15/08/2024
1	KP	LC	6/12/2024
2	NW	LA	11/03/2025

MAP 6-7

Path: X:\01_Projects\4867-23 EPGH Fauna Survey\Maps\APRXs\Report_Maps_4867.aprx

735000 740000 745000

7640000 7635000 7630000

Hh-4214 M11 PC139 B13 EP-T03b Hk-3145 Hh-4293 B10 EP-T03a SMM04 S4U142986 B8 BCE404 BCE16 HAB15 HAB13 HAB16 M8 S4A17476 (Unknown)

LEGEND

- Survey_Area
- Survey Track

Fauna Sites

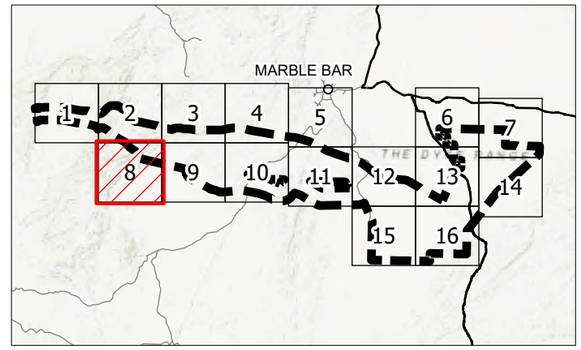
- Habitat Assessment Point
- Motion Camera Site
- Sound Recorder Site
- 360/SLR Sample Location

Habitat Features (Micro Habitats)

- Woodland

Fauna Habitat Types

- Drainage line/river/creek (major)
- Drainage line/river/creek (minor)
- Hills/ranges/plateaux
- Plain (stony/gibber)
- Rocky escarpments/ridges/mesa



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SOURCE DATA: FAUNA SITES AND FAUNA HABITAT (ECOSCAPE 2024), 360/SLR SAMPLING LOCATIONS (360 ENVIRONMENTAL 2022), ROAD HIERARCHY (MRWA 2023) AND SURFACE HYDROLOGY LINES (NATIONAL) (GEOSCIENCE AUSTRALIA 2015).
IMAGERY: ESRI WORLD (MAXAR 2023)
SERVICE LAYERS: WORLD IMAGERY: MAXAR
WORLD TOPOGRAPHIC MAP: ESRI, HERE, GARMIN, FAO, USGS, NGA

ecoscape

FAUNA HABITAT

DETAILED TERRESTRIAL VERTEBRATE FAUNA SURVEY
EAST PILBARA GENERATION HUB

FORTESCUE

COORDINATE SYSTEM: GDA 1994 MGA ZONE 50
PROJECTION: TRANSVERSE MERCATOR
DATUM: GDA 1994
UNITS: METER

N

SCALE: 1:55,000 @ A3

0 1 2 km

PROJECT NO: 4867-23

REV	AUTHOR	APPROVED	DATE
0	SB	KP	15/08/2024
1	KP	LC	6/12/2024
2	NW	LA	11/03/2025

MAP 6-8

Path: X:\01_Projects\4867-23 EPGH Fauna Survey\Maps\APRXs\Report_Maps_4867.aprx

750000 755000 760000

7640000 7635000 7630000

EP-T05b EP-T05a Lg065

HAB36 HAB35 HAB52

B1 B5 31984 B3 98 B9 EP- EP-T07a B11 B12

(Unknown) (Unknown) Ma119 EP-T04a EP-T04b

EP-T06b HAB51 HAB50 MA097 EP-T06a S4A17507 HAB55

(Unknown)

BCE45 BCE45 HAB32 HAB30

HAB49 HAB33

LEGEND

- Survey_Area
- Survey Track

Fauna Sites

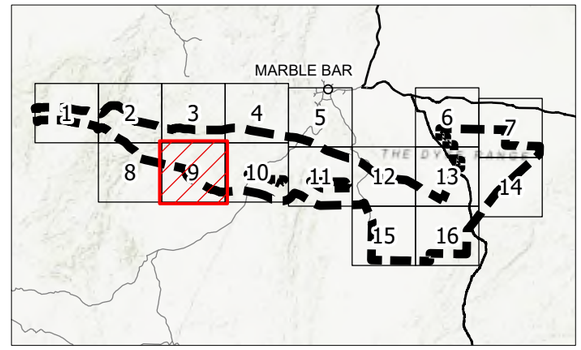
- Habitat Assessment Point
- Motion Camera Site
- 360/SLR Sample Location

Habitat Features (Micro Habitats)

- Waterbody

Fauna Habitat Types

- Drainage line/river/creek (major)
- Drainage line/river/creek (minor)
- Hills/ranges/plateaux
- Plain (stony/gibber)
- Rocky escarpments/ridges/mesa



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WORLD TOPOGRAPHIC MAP: ESRI, HERE, GARMIN, FAO, USGS, NGA

ecoscape

FAUNA HABITAT

DETAILED TERRESTRIAL VERTEBRATE FAUNA SURVEY EAST PILBARA GENERATION HUB

FORTESCUE

COORDINATE SYSTEM: GDA 1994 MGA ZONE 50
PROJECTION: TRANSVERSE MERCATOR
DATUM: GDA 1994
UNITS: METER

N

SCALE: 1:55,000 @ A3

0 1 2 km

PROJECT NO: 4867-23

REV	AUTHOR	APPROVED	DATE
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1	KP	LC	6/12/2024
2	NW	LA	11/03/2025

MAP 6-9

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765000 770000 775000

7640000

7635000

7630000

MC485 MC95 14

HAB36

HAB35

B9 B1 98 EP-T07a B3 EP-T07b B11 B12 B5 31984

Hi-2418 LG001 MA092 S4u14268 MA004 HI2568 Hk-2917 EP-T08b Hk-4292 Ma055 HI-1847 Hk-3533 MA034 EP-T08a S4U14268

HAB53

HAB54

MC18 HAB67 HAB66 ABS04 HAB93 MC66 HAB68 HAB65

HAB69

BCE3 BCE03 BCE18 BCE18 HAB18 HAB11 MC038

BS02 HAB31 SMM01

ABS01 MC62 MC62 MC20 HAB17 MC20 SMM06

Hillside - Marble Bar Rd

765000 770000 775000

LEGEND

Survey_Area
Survey Track

Fauna Sites

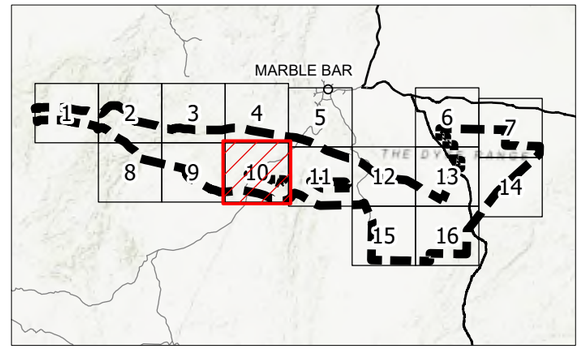
Habitat Assessment Point
Motion Camera Site
Ornithological Survey Location
Sound Recorder Site
Systematic Trap Site
360/SLR Sample Location

Habitat Features (Micro Habitats)

Cave
Gorge/Waterbody
Waterbody
Woodland

Fauna Habitat Types

Drainage line/river/creek (major)
Drainage line/river/creek (minor)
Hills/ranges/plateaux
Plain (stony/gibber)
Rocky escarpments/ridges/mesa
Cleared



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IMAGERY: ESRI WORLD (MAXAR 2023)
SERVICE LAYERS: WORLD IMAGERY: MAXAR
WORLD TOPOGRAPHIC MAP: ESRI, HERE, GARMIN, FAO, USGS, NGA

ecoscape

FAUNA HABITAT

DETAILED TERRESTRIAL VERTEBRATE FAUNA SURVEY EAST PILBARA GENERATION HUB

FORTESCUE

COORDINATE SYSTEM: GDA 1994 MGA ZONE 50
PROJECTION: TRANSVERSE MERCATOR
DATUM: GDA 1994
UNITS: METER

N

SCALE: 1:55,000 @ A3

0 1 2 km

PROJECT NO: 4867-23

REV	AUTHOR	APPROVED	DATE
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1	KP	LC	6/12/2024
2	NW	LA	11/03/2025

MAP 6-10

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780000
785000
790000
7640000
7635000
7630000

Hillside-Marble Bar Rd
Coonana Downs Rd

BS32 HAB85 MC16 MC09 BS31 BS33 MC66 7

HAB72
HAB73
HAB70
HAB71 MC55 MC5 BS01
HAB74
HAB23 HAB28

MC054 SMM02 HAB19 MC058 SMM05 MC080 MC004 MC80 B23 EP-T09b
MC21 ABS02 MC021 MC3 MC003

LEGEND

- Survey_Area
- Survey Track

Fauna Sites

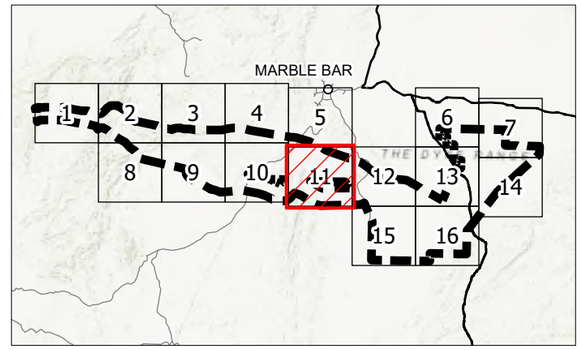
- Habitat Assessment Point
- Motion Camera Site
- Ornithological Survey Location
- Sound Recorder Site
- Systematic Trap Site
- 360/SLR Sample Location

Habitat Features (Micro Habitats)

- Waterbody

Fauna Habitat Types

- Drainage line/river/creek (major)
- Drainage line/river/creek (minor)
- Hills/ranges/plateaux
- Plain (sand)
- Plain (stony/gibber)
- Rocky escarpments/ridges/mesa
- Cleared



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WORLD TOPOGRAPHIC MAP: ESRI, HERE, GARMIN, FAO, USGS, NGA

ecoscape

FAUNA HABITAT

DETAILED TERRESTRIAL VERTEBRATE FAUNA SURVEY
EAST PILBARA GENERATION HUB

FORTESCUE

COORDINATE SYSTEM: GDA 1994 MGA ZONE 50
PROJECTION: TRANSVERSE MERCATOR
DATUM: GDA 1994
UNITS: METER

N
SCALE: 1:55,000 @ A3
0 1 2 km

PROJECT NO: 4867-23

REV	AUTHOR	APPROVED	DATE
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1	KP	LC	6/12/2024
2	NW	LA	11/03/2025

MAP
6-11

Path: X:\01_Projects\4867-23 EPGH Fauna Survey\Maps\APRXs\Report_Maps_4867.aprx

795000 800000 805000

7640000 7635000 7630000

Corunna Downs Rd

BS07 MC68 MC99 MC41 11 HAB79 MC29 MC11

B31 B29 B30 B27 LG033 S4u14299 B26 HK2916 B28 B25 B24 B21 B22 EP-T10b EP-T10a B27 (Unknown) (Unknown)

MC058 MC054 HAB19 EP-T09b EP-T09a B23

MC82 MC18 MC100 17 MC81A MC79

S4A17524

Hlp-2671 Hlp-0715 Hlp-2643 EP-T11a B4 M11 B02 EP-T11b B22 272916 B1 231984 272921

MC21 MC021 ABS02 MC003 MC3

(Unknown) (Unknown)

795000 800000 805000

LEGEND

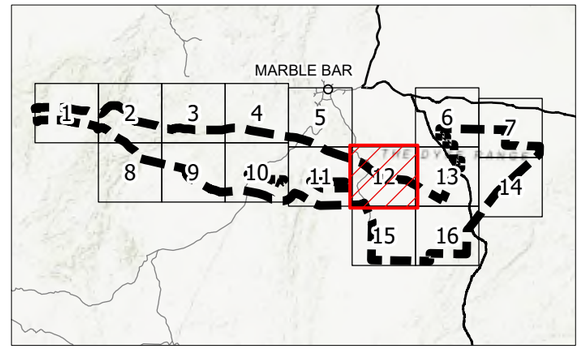
- Survey_Area
- Survey Track

Fauna Sites

- Habitat Assessment Point
- Motion Camera Site
- Ornithological Survey Location
- Sound Recorder Site
- Systematic Trap Site
- 360/SLR Sample Location

Fauna Habitat Types

- Drainage line/river/creek (major)
- Drainage line/river/creek (minor)
- Hills/ranges/plateaux
- Plain (sand)
- Plain (stony/gibber)
- Rocky escarpments/ridges/mesa
- Cleared



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WORLD TOPOGRAPHIC MAP: ESRI, HERE, GARMIN, FAO, USGS, NGA

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FAUNA HABITAT

DETAILED TERRESTRIAL VERTEBRATE FAUNA SURVEY
EAST PILBARA GENERATION HUB

FORTESCUE

COORDINATE SYSTEM: GDA 1994 MGA ZONE 50
PROJECTION: TRANSVERSE MERCATOR
DATUM: GDA 1994
UNITS: METER

N

SCALE: 1:55,000 @ A3

0 1 2 km

PROJECT NO: 4867-23

REV	AUTHOR	APPROVED	DATE
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1	KP	LC	6/12/2024
2	NW	LA	11/03/2025

MAP 6-12

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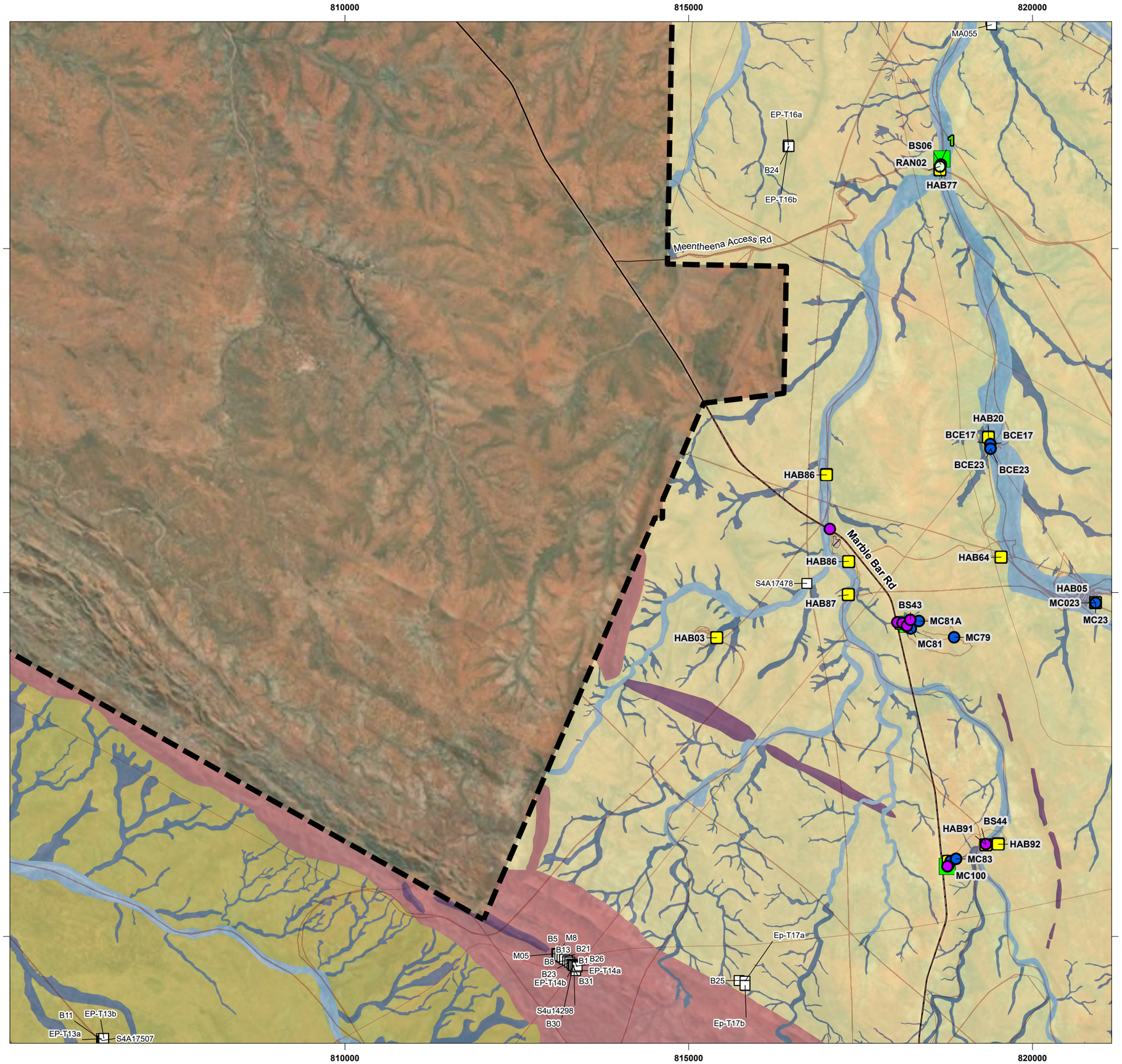


LEGEND

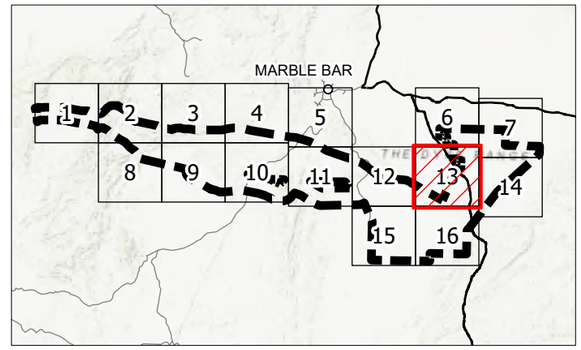
- Survey_Area
- Survey Track

Fauna Sites

- Habitat Assessment Point
- Motion Camera Site
- Ornithological Survey Location
- Sound Recorder Site
- Systematic Trap Site
- 360/SLR Sample Location

Fauna Habitat Types

- Drainage line/river/creek (major)
- Drainage line/river/creek (minor)
- Hills/ranges/plateaux
- Plain (boulders)
- Plain (sand)
- Rocky escarpments/ridges/mesa
- Cleared



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IMAGERY: ESRI WORLD (MAXAR 2023)
SERVICE LAYERS: WORLD IMAGERY: MAXAR
WORLD TOPOGRAPHIC MAP: ESRI, HERE, GARMIN, FAO, USGS, NGA

ecoscape

FAUNA HABITAT

DETAILED TERRESTRIAL VERTEBRATE FAUNA SURVEY
EAST PILBARA GENERATION HUB

FORTESCUE

COORDINATE SYSTEM: GDA 1994 MGA ZONE 50
PROJECTION: TRANSVERSE MERCATOR
DATUM: GDA 1994
UNITS: METER

N

SCALE: 1:55,000 @ A3

0 1 2 km

PROJECT NO: 4867-23

REV	AUTHOR	APPROVED	DATE
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1	KP	LC	6/12/2024
2	NW	LA	11/03/2025

MAP
6-13

Path: X:\01_Projects\4867-23 EPGH Fauna Survey\Maps\APRXs\Report_Maps_4867.aprx

825000 830000 835000

7640000 7635000 7630000

BS21 20 BS22 BS24 MC62 BS19 HAB83

EP-T20b EP-T20a B09

MC22 MC10 HAB82 2

18

(Unknown)

BS04 RAN01 MC92 HAB78 10 MC96

HAB10 HAB06 HAB09 MC14 MC014

HAB05 MC023 MC23

HAB26

98 B7 M4 S4A16210 (Unknown) PC040 (Unknown)

HAB08 HAB04 MC47 HAB02 HAB01 MC047

LEGEND

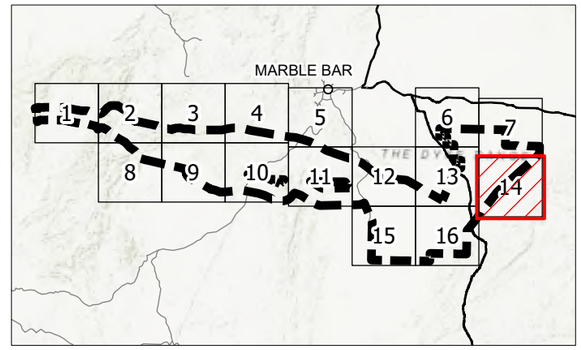
- Survey_Area
- Survey Track

Fauna Sites

- Habitat Assessment Point
- Motion Camera Site
- Ornithological Survey Location
- Sound Recorder Site
- Systematic Trap Site
- 360/SLR Sample Location

Fauna Habitat Types

- Drainage line/river/creek (major)
- Drainage line/river/creek (minor)
- Hills/ranges/plateaux
- Plain (boulders)
- Rocky escarpments/ridges/mesa
- Cleared



DATA SOURCES:
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SERVICE LAYERS: WORLD IMAGERY: MAXAR
WORLD TOPOGRAPHIC MAP: ESRI, HERE, GARMIN, FAO, USGS, NGA

ecoscape

FAUNA HABITAT

DETAILED TERRESTRIAL VERTEBRATE FAUNA SURVEY EAST PILBARA GENERATION HUB

FORTESCUE

COORDINATE SYSTEM: GDA 1994 MGA ZONE 50
PROJECTION: TRANSVERSE MERCATOR
DATUM: GDA 1994
UNITS: METER

N

SCALE: 1:55,000 @ A3

0 1 2 km

PROJECT NO: 4867-23

REV	AUTHOR	APPROVED	DATE
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1	KP	LC	6/12/2024
2	NW	LA	11/03/2025

MAP 6-14

Path: X:\01_Projects\4867-23 EPGH Fauna Survey\Maps\APRXs\Report_Maps_4867.aprx

795000 800000 805000

7625000

7620000

7615000

Corunna Downs Rd

(Unknown)

EP-T12b

S4a17524

B3

EP-T12a

(Unknown)

HAB27

HAB25

LEGEND

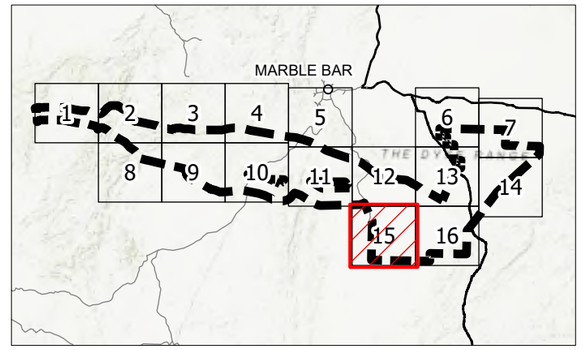
- Survey_Area
- Survey Track

Fauna Sites

- Habitat Assessment Point
- 360/SLR Sample Location

Fauna Habitat Types

- Drainage line/river/creek (major)
- Drainage line/river/creek (minor)
- Hills/ranges/plateaux
- Plain (sand)
- Cleared



DATA SOURCES:
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IMAGERY: ESRI WORLD (MAXAR 2023)
SERVICE LAYERS: WORLD IMAGERY: MAXAR
WORLD TOPOGRAPHIC MAP: ESRI, HERE, GARMIN, FAO, USGS, NGA

ecoscape

FAUNA HABITAT

DETAILED TERRESTRIAL VERTEBRATE FAUNA SURVEY EAST PILBARA GENERATION HUB

FORTESCUE

COORDINATE SYSTEM: GDA 1994 MGA ZONE 50
PROJECTION: TRANSVERSE MERCATOR
DATUM: GDA 1994
UNITS: METER

N

SCALE: 1:55,000 @ A3

0 1 2 km

PROJECT NO: 4867-23

REV	AUTHOR	APPROVED	DATE
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1	KP	LC	6/12/2024
2	NW	LA	11/03/2025

MAP 6-15

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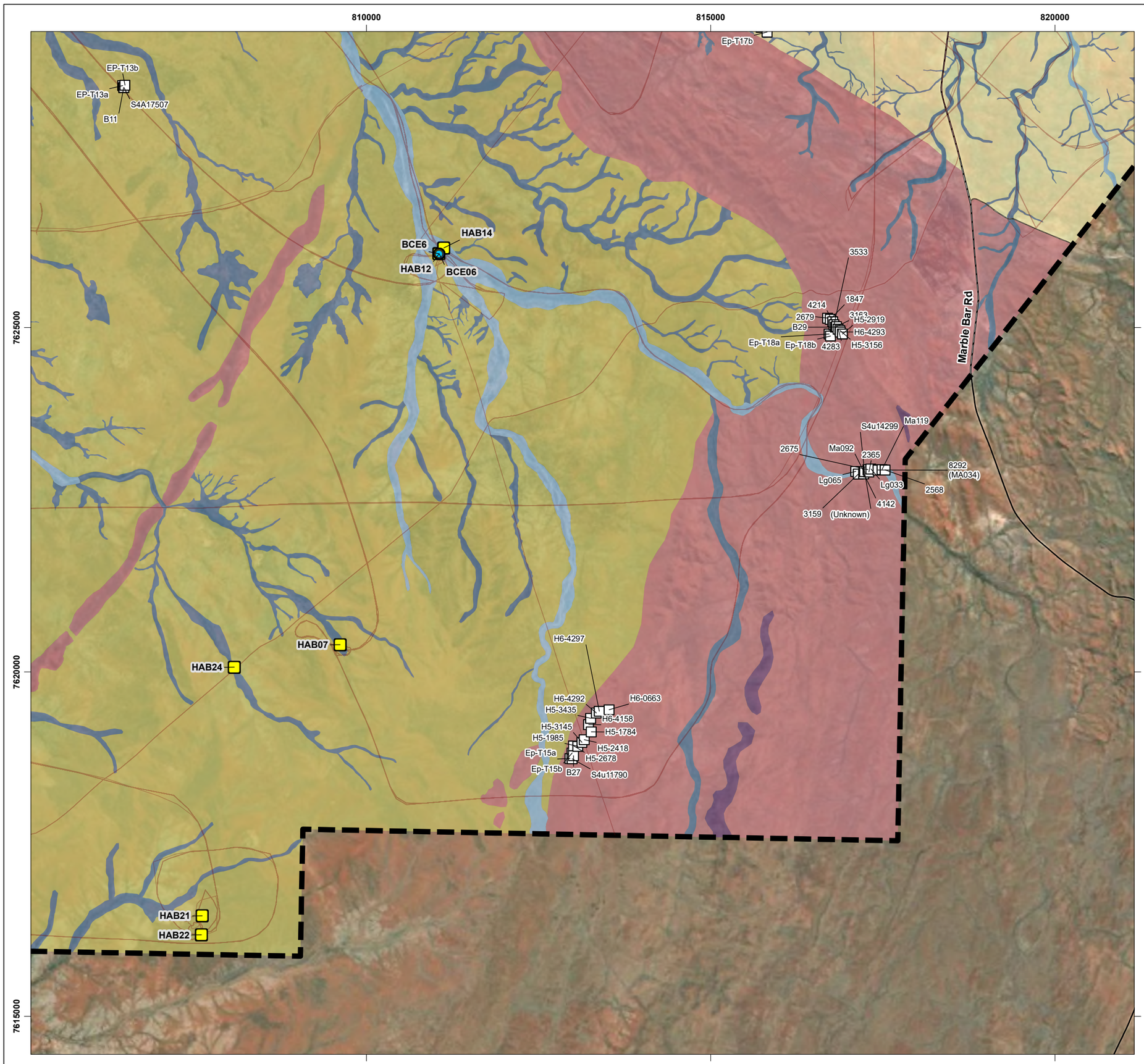


LEGEND

- Survey_Area
- Survey Track

Fauna Sites

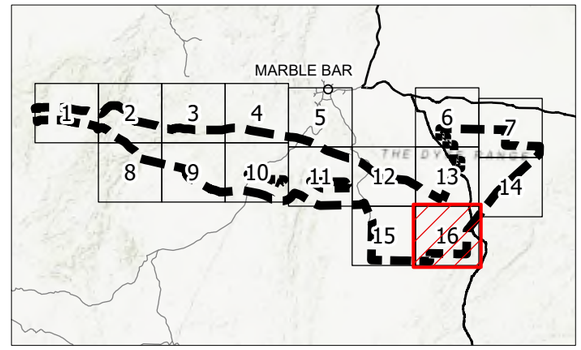
- Habitat Assessment Point
- Motion Camera Site
- 360/SLR Sample Location

Habitat Features (Micro Habitats)

- Waterbody

Fauna Habitat Types

- Drainage line/river/creek (major)
- Drainage line/river/creek (minor)
- Hills/ranges/plateaux
- Plain (boulders)
- Plain (sand)
- Rocky escarpments/ridges/mesa
- Cleared



DATA SOURCES:
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IMAGERY: ESRI WORLD (MAXAR 2023)
SERVICE LAYERS: WORLD IMAGERY: MAXAR
WORLD TOPOGRAPHIC MAP: ESRI, HERE, GARMIN, FAO, USGS, NGA

ecoscape

FAUNA HABITAT

DETAILED TERRESTRIAL VERTEBRATE FAUNA SURVEY
EAST PILBARA GENERATION HUB

FORTESCUE

COORDINATE SYSTEM: GDA 1994 MGA ZONE 50
PROJECTION: TRANSVERSE MERCATOR
DATUM: GDA 1994
UNITS: METER

N

SCALE: 1:55,000 @ A3

0 1 2 km

PROJECT NO: 4867-23

REV	AUTHOR	APPROVED	DATE
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1	KP	LC	6/12/2024
2	NW	LA	11/03/2025

MAP
6-16

Path: X:\01_Projects\4867-23 EPGH Fauna Survey\Maps\APRXs\Report_Maps_4867.aprx

4.2.2 FAUNA ASSEMBLAGE

A total of 205 terrestrial vertebrate fauna species were recorded during the phase 1 and 2 surveys (listed in **Table 24** in **Appendix Four**), consisting of:

- 33 mammals (five introduced, noting that herein dingo is not considered as introduced)
- 92 birds
- 75 reptiles
- five amphibians.

Three fish, none conservation-listed, were also recorded during the phase 1 survey (SLR 2022).

Of these, seven are conservation-listed and are further discussed below (**Section 4.2.3**):

- *Dasyurus hallucatus* (Northern Quoll); EN EPBC status and BC status
- *Falco hypoleucos* (Grey Falcon); VU EPBC status and BC status
- *Macrotis lagotis* (Bilby); VU EPBC status and BC status
- *Liasis olivaceous barroni* (Pilbara Olive Python); VU EPBC and BC status
- *Rhinonicteris aurantia* (Pilbara Leaf-nosed Bat); VU EPBC status and BC status
- *Dasycercus blythi* (Brush-tailed Mulgara); P4 DBCA status
- *Pseudomys chapmani* (Western Pebble-mound Mouse); P4 DBCA status.

4.2.3 SIGNIFICANT FAUNA

The significant fauna species observed during the field survey are discussed below with respect to each species' habitat requirements, taking into consideration the findings of the field survey and survey effort. Records of conservation-listed species are displayed on the **Map 7** series.

4.2.3.1 *Dasyurus hallucatus* (Northern Quoll); EN EPBC status and BC status

Northern Quoll habitat in Western Australia is variable, but most commonly associated with rocky areas for denning and woodland/drainage lines for foraging (DCCEEW 2024).

Northern Quolls were recorded during both phase 1 (SLR 2022) and phase 2 of the survey. They were identified by motion camera imagery (**Image 1**) or secondary evidence (scats, diggings) from one location in the gorge (microhabitat within the broader hills/ranges/plateaux habitat) during the phase 2 survey.

SLR recorded Northern Quoll from scattered locations widely spread within the survey area from hills/ranges/plateaux and drainage line habitat types. Analysis of spot patterns based on the phase 1 imagery revealed that at least 18 individual quolls inhabit the survey aera (SLR 2022).

Image 1: Motion camera image of a Northern Quoll

4.2.3.2 *Falco hypoleucos* (Grey Falcon); VU EPBC status and BC status

Grey Falcons occur in the arid and semi-arid regions of Australia, hunt in *Acacia* shrublands, open plains, tussock grasslands and open woodlands, and nest in trees along drainage lines (TSSC 2020).

Grey Falcons were recorded from four locations within the survey area during the October 2023 field event. All observations took place while the species were in flight over the Plain (Sand) habitat type, vegetated with *Acacia* shrubs and hummock grasses (*Triodia* spp.), and both the minor and major Drainage Line habitat type. The locations were mostly towards the eastern (main windfarm) area.

4.2.3.3 *Macrotis lagotis* (Bilby); VU EPBC status and BC status

Bilby habitat is variable and ranges from grasslands to open woodlands, particularly where it is characterised by sandy soils suitable for burrowing (DCCEEW 2024).

Bilby individuals or evidence was recorded 28 times during the phase 2 survey only. Records of the Bilby were captured by motion camera (**Image 2**) and from identification of burrows (**Image 3**) or diggings at the base of known foraging plants (*Acacia trachycarpa*). Areas of high Bilby activity were associated with the banks of the Yandicoogina Creek extending to House creek and the adjacent Plains.

Active and inactive burrows, as well as old and new diggings, were amongst the identified Bilby evidence. Bilby were captured on camera on nine temporally separate events.

All Bilby evidence was recorded from the Plain (Sand or Boulder) and Drainage Line habitat types in the eastern (main windfarm) section of the survey area.

Image 2: Motion camera image of a Bilby

Image 3: Bilby burrow

4.2.3.4 *Liasis olivaceous barroni* (Pilbara Olive Python); VU EPBC and BC status

The Pilbara Olive Python prefers rocky habitat in proximity to permanent water (DCCEEW 2024).

Remains of a single Pilbara Olive Python were recorded during the phase 1 survey from the western (transmission corridor) section of the survey area (SLR 2022).

4.2.3.5 *Rhinonicteris aurantia* (Pilbara Leaf-nosed Bat); VU EPBC status and BC status

The Pilbara Leaf-nosed Bat occupies underground roosts in deep complex caves and disused mines with warm, humid microclimates. They forage over a wide range of habitats (TSSC 2016c).

Pilbara Leaf-nosed Bat calls were recorded from locations within the Drainage Line (Major) and Hills/Ranges habitat type within the survey area during phase 1 and 2 of the survey. All vocalisations were detected well after sunset and well before sunrise.

Bats are likely to be only foraging within the survey area with roosts in caves or mine shafts outside of the survey area. However, there may be a previously unknown roost within the survey area in close proximity to the Shaw River (SLR 2022).

4.2.3.6 *Dasycercus blythi* (Brush-tailed Mulgara); P4 DBCA status

Brush-tailed Mulgara habitat is variable though often associated with *Triodia* spp. hummock grasses and assorted tussock grassed on sandy to stony clay soils in central arid regions (Van Dyck & Strahan 2008).

A single Brush-tailed Mulgara was recorded on motion camera (MC10; **Image 4**) deployed within the Plain (Boulder) habitat type during the phase 2 survey, towards the western (transmission corridor) portion of the survey area.

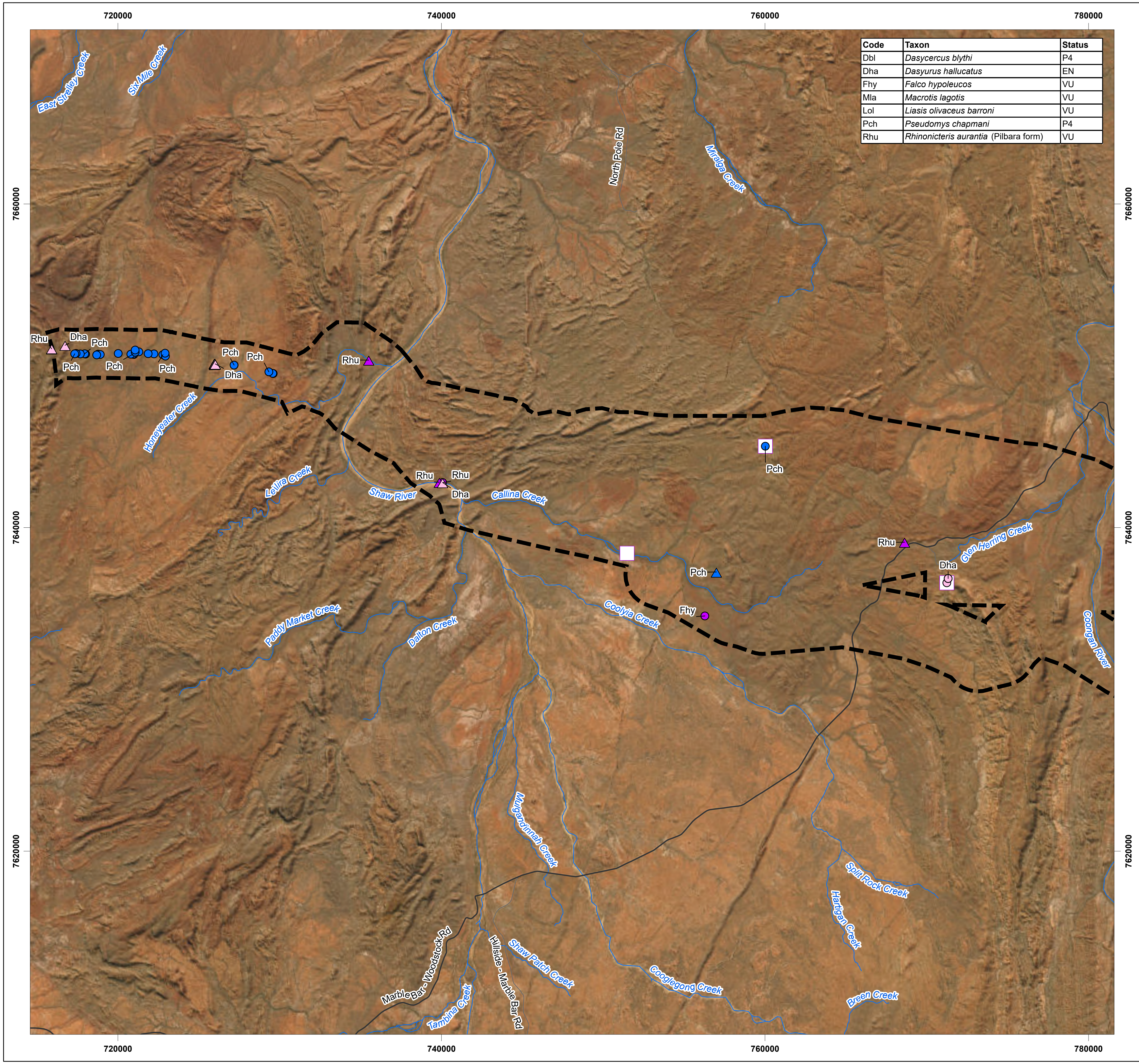
Image 4: Motion camera image of the Brush-tailed Mulgara

4.2.3.7 *Pseudomys chapmani* (Western Pebble-mound Mouse); P4 DBCA status

Pseudomys chapmani (Western Pebble-mound Mouse (PMM)) is endemic to the Pilbara. Individuals can be difficult to observe, however, the presence of this species can be confirmed by their characteristic pebble mounds which individuals construct and burrow in (Start 2023).

PMM was recorded during the phase 1 and phase 2 surveys. Mounds were recorded from a total of 35 locations within the survey area. Six inactive mounds were identified by SLR (2022), 27 could not be verified by Ecoscape as they were recorded and provided to Ecoscape by Fortescue Heritage Officers, all other mounds were also classified as inactive.

PMM mounds were recorded from the Hills/Ranges/Plateaux habitat type, the Plain (Stony/Gibber) habitat type and the Plain (Boulder) habitat type. A single live PMM was captured at EP-T17 by SLR (2022) from the eastern (main windfarm) portion of the survey area.



Code	Taxon	Status
Dbl	*Dasycercus blythi*	P4
Dha	*Dasyurus hallucatus*	EN
Fhy	*Falco hypoleucos*	VU
Mla	*Macrotis lagotis*	VU
Lol	*Liasis olivaceus barroni*	VU
Pch	*Pseudomys chapmani*	P4
Rhu	*Rhinonicteris aurantia* (Pilbara form)	VU

LEGEND

- Survey Area
- Secondary Road
- Local Road
- Drainage Line
- Bilby Burrow/Digging (VU)

Ecoscape (2024)

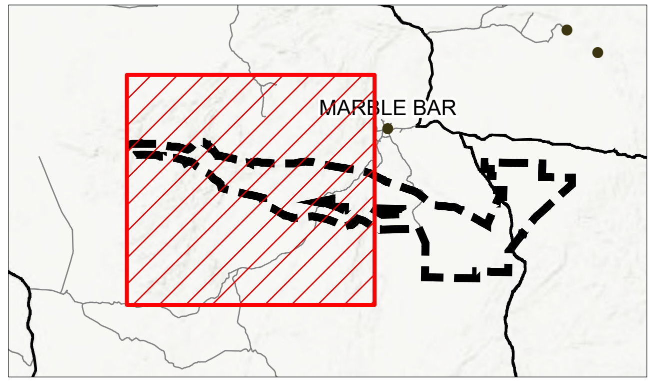
Conservation-Listed Fauna

- Endangered
- Vulnerable
- Priority 4

360 Environmental (2022)

Conservation Significant Fauna

- Endangered
- Vulnerable
- Priority 4



DATA SOURCES:
SOURCE DATA: CONSERVATION-LISTED FAUNA AND BILBY EVIDENCE (ECOSCAPE 2024), CONSERVATION-LISTED FAUNA (360 ENVIRONMENTAL 2022), ROAD HIERARCHY (MRWA 2023) AND SURFACE HYDROLOGY LINES (NATIONAL) (GEOSCIENCE AUSTRALIA 2015).
IMAGERY: ESRI WORLD (MAXAR 2023)
SERVICE LAYERS: WORLD TOPOGRAPHIC MAP: ESRI, HERE, GARMIN, FAO, USGS
WORLD IMAGERY: EARTHSTAR GEOGRAPHICS

ecoscape

CONSERVATION-LISTED FAUNA

DETAILED TERRESTRIAL VERTEBRATE FAUNA SURVEY EAST PILBARA GENERATION HUB

FORTESCUE

COORDINATE SYSTEM: GDA 1994 MGA ZONE 50
PROJECTION: TRANSVERSE MERCATOR
DATUM: GDA 1994
UNITS: METER

N

SCALE: 1:230,000 @ A3

0 2 4 6 8 km

PROJECT NO: 4867-23

REV	AUTHOR	APPROVED	DATE
0	SB	KP	15/08/2024
1	KP	LC	03/12/2024
2	NW	LA	12/03/2025

MAP 7-1

Path: X:\01_Projects\4867-23 EPGH Fauna Survey\Maps\APRXs\Report_Desktop_Maps_4867.aprx

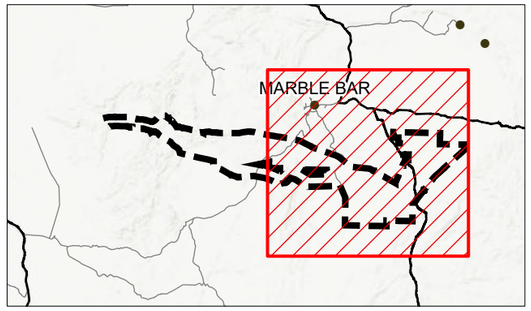
780000 800000 820000

7660000 7640000 7620000

Code	Taxon	Status
Dbl	*Dasycercus blythi*	P4
Dha	*Dasyurus hallucatus*	EN
Fhy	*Falco hypoleucos*	VU
Mla	*Macrotis lagotis*	VU
Lol	*Liasis olivaceus barroni*	VU
Pch	*Pseudomys chapmani*	P4
Rhu	*Rhinonicteris aurantia* (Pilbara form)	VU

Coongan River
Driffer Creek
Limestone - Marble Bar Rd
Stockman Creek
Dyke Creek
Ripon Hills Rd
Coruna Downs Rd
Marble Bar Rd
Hillside - Marble Bar Rd
Glen Herring Creek
Camel Creek
Brockman Hay Cutting Creek
Chinaman Creek
Soak Creek
Cattle Creek
Sandy Creek
House Creek
Yandicoogina Creek
Chaney's Creek
Ram Creek
Boobina Creek
Spinaway Creek
Emu Creek
Edna Creek

Rhu Dha Rhu Dha Fhy Pch Fhy Dbl Mla Mla Mla Pch Mla Mla Mla Dha Dha Dha Mla Dha Rhu Rhu Fhy Sandy Creek Dha Dha Dha Rhu Pch Dha Pch Dha Lol Dha Rhu Mla Rhu Dha



LEGEND

- Survey Area
- Primary Road
- Secondary Road
- Local Road
- Drainage Line
- Bilby Burrow/Digging (VU)

Ecoscape (2024)

Conservation-Listed Fauna

- Endangered
- Vulnerable
- Priority 4

360 Environmental (2022)

Conservation Significant Fauna

- Endangered
- Vulnerable
- Priority 4

DATA SOURCES:
SOURCE DATA: CONSERVATION-LISTED FAUNA AND BILBY EVIDENCE (ECOSCAPE 2024), CONSERVATION-LISTED FAUNA (360 ENVIRONMENTAL 2022), ROAD HIERARCHY (MRWA 2023) AND SURFACE HYDROLOGY LINES (NATIONAL) (GEOSCIENCE AUSTRALIA 2015).
IMAGERY: ESRI WORLD (MAXAR 2023)
SERVICE LAYERS: WORLD TOPOGRAPHIC MAP: ESRI, HERE, GARMIN, FAO, USGS
WORLD IMAGERY: EARTHSTAR GEOGRAPHICS

ecoscape

CONSERVATION-LISTED FAUNA

DETAILED TERRESTRIAL VERTEBRATE FAUNA SURVEY
EAST PILBARA GENERATION HUB

FORTESCUE

COORDINATE SYSTEM: GDA 1994 MGA ZONE 50
PROJECTION: TRANSVERSE MERCATOR
DATUM: GDA 1994
UNITS: METER

N

SCALE: 1:230,000 @ A3

0 2 4 6 8 km

PROJECT NO: 4867-23

REV	AUTHOR	APPROVED	DATE
0	SB	KP	15/08/2024
1	KP	LC	03/12/2024
2	NW	LA	12/03/2025

MAP 7-2

Path: X:\01_Projects\4867-23 EPGH Fauna Survey\Maps\APRXs\Report_Desktop_Maps_4867.aprx

4.2.4 SURVEY ADEQUACY

Adequacy of the survey can be demonstrated using a species accumulation curve: it is considered that most species are likely to have been recorded from the survey area if the curve has reached an asymptote. Species accumulation curves were plotted using the statistical software program *Species Diversity and Richness 4* (Pisces Conservation Ltd 2010). The number of trapped species (**Figure 7**) and the number of species observed during bird surveys (**Figure 8**) were plotted against the total estimated species richness in the survey area, determined from the species richness estimator Bootstrap.

The species accumulation curve suggests that most trappable species have been recorded during the fauna field survey, as the curve has almost reached an asymptote (**Figure 7**). This trend, however, is not observed in the bird survey accumulation curve as an asymptote has not yet been reached and the curve continues to increase (**Figure 8**).

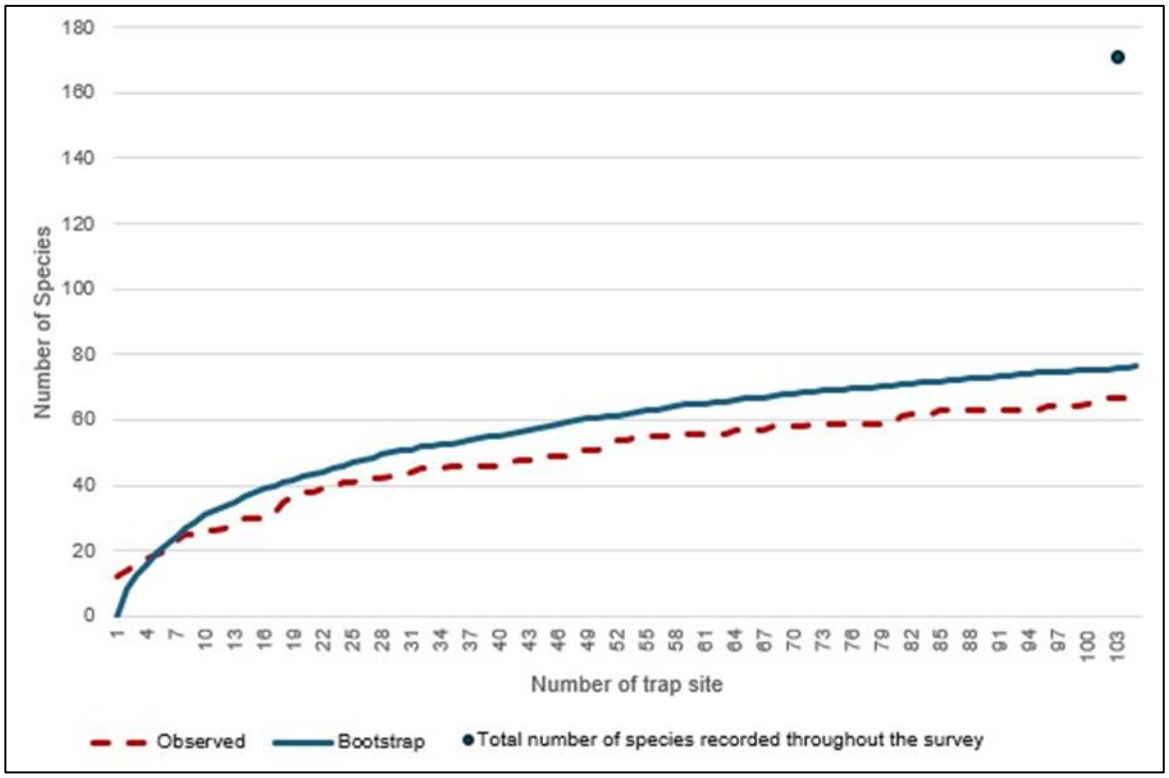


Figure 7: Species accumulation curve of trapped species

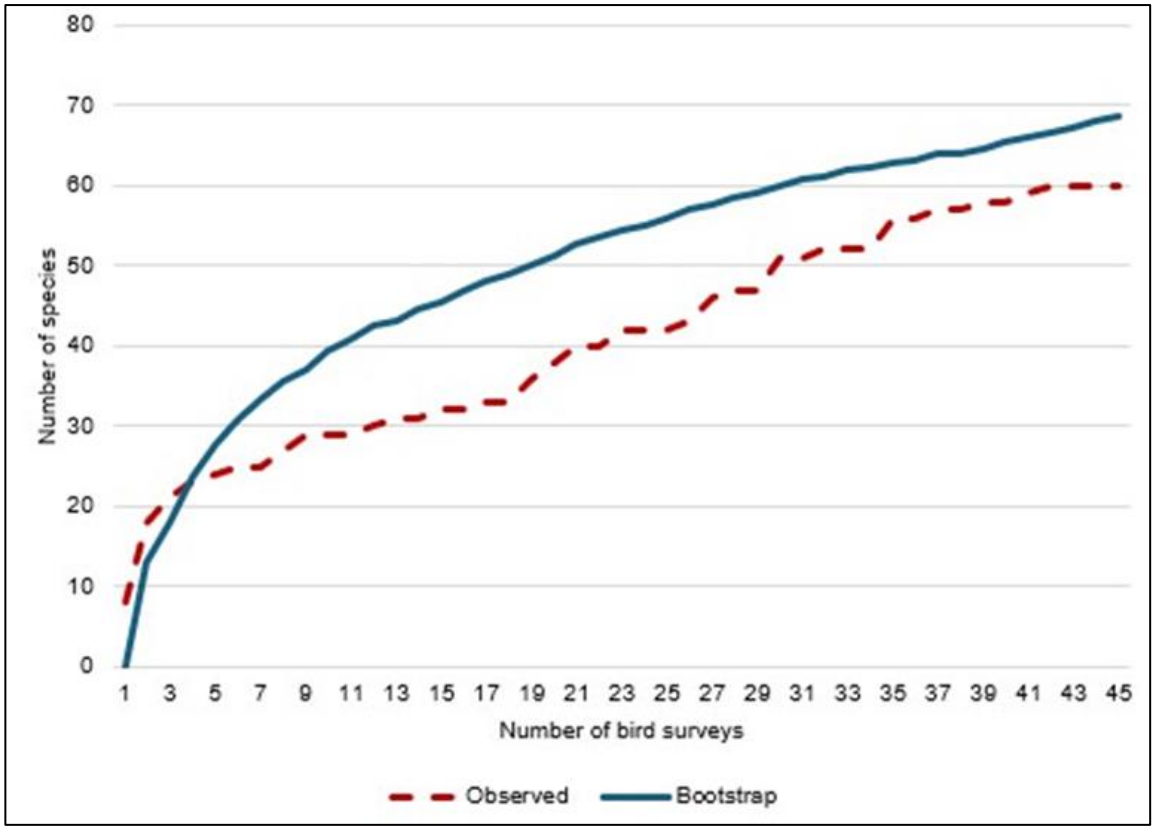


Figure 8: Species accumulation curve of bird surveys

Survey effort, interpreted by comparing species numbers from the field survey results, data held by Fortescue for the survey area and combined database searches (as per **Table 17** in **Appendix Two** and indicated in **Figure 9**) suggests that both phases of the survey were approximately equivalent in terms of results (157 species from phase 1, being 76.59% of the combined total and 178 species from phase 2, being 86.83% of the combined total of 205 terrestrial species). Compared to existing Fortescue data (which included a 65 km buffer in addition to the survey area), 96.70% of the Fortescue species list was recorded indicating that the combined surveys were adequate to describe the fauna of the survey area.

Comparison against all database searches (including *Dandjoo* (DBCA 2024b), ALA (2024) and IUCN (2024)), however, does not indicate that the combined surveys were adequate, however, it must be noted (as per **Section 4.1.1**) that:

- the database searches included buffers which would identify additional species (noting that including buffers is a standard method in desktop assessment, which is used as a guide to identify species that may be present)
- the databases record species to different taxonomic levels (e.g. species recorded at both species and subspecies levels, where only one subspecies is present), which artificially inflate the number of species present
- current and outdated names have been retained for some taxa in the databases, artificially inflating the number of species.

Survey effort per taxonomic group (Class), when compared with existing Fortescue data, indicates that the surveys identified significantly more bird species than held in existing Fortescue records (270.59%), but less of the other taxonomic groups (67.35% of mammals, 63.30% pf birds and 50.00% of amphibians). Survey adequacy, particularly for birds, is likely to be adequate despite the species accumulation curve (**Figure 8**) suggesting otherwise. Opportunistic bird observations not included in the species accumulation analysis may also have bolstered this interpretation of adequacy.

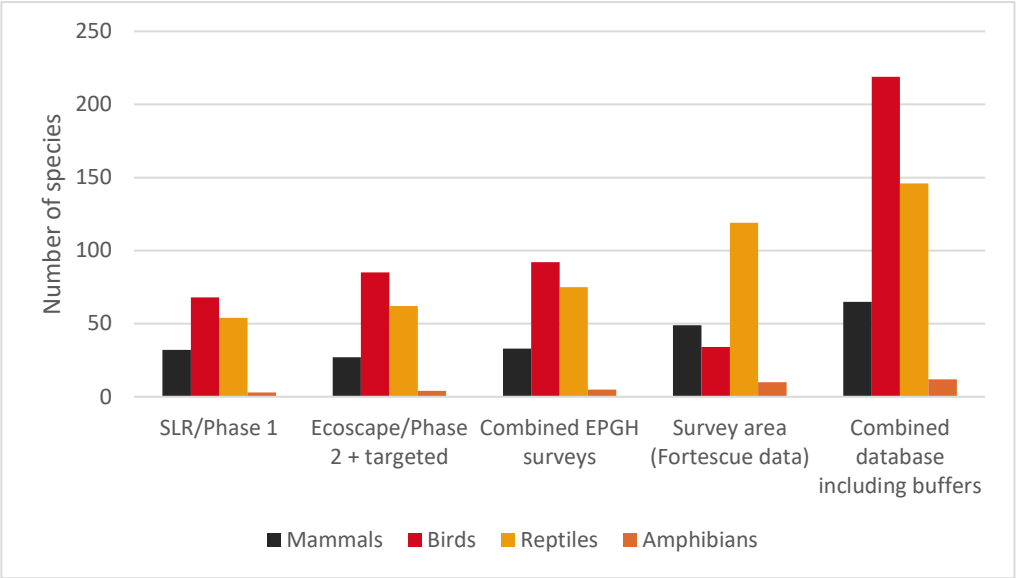


Figure 9: Survey effort (number of recorded species)

4.2.5 FAUNA SURVEY LIMITATIONS

Table 14: Fauna survey limitations

Possible limitations	Constraints (yes/no): Significant, moderate or negligible	Comment
Availability of contextual information at a regional and local scale	No	Previous fauna survey reports intersecting the current survey area or in close proximity were readily available to provide good local and regional context. Fauna specific information i.e. local records and/or species ecology and distribution are readily available, along with survey guidelines.
Competency/experience of the survey team, including bioregion experience	No	The lead zoologist (Bruce Turner) has over 35 years' experience in conducting fauna assessments throughout Western Australia. All team leaders are sufficiently experienced with fauna survey methods used and identification of habitat and species.
Scope of survey e.g. excluded fauna groups	No	All fauna groups included within the survey scope (terrestrial vertebrate mammals, birds and reptiles) were adequately sampled through various field survey techniques.
Timing, weather, season	No	Due to six field events across two years (April 2022 - April/May 2024) during different seasons, there were no restrictions due to timing or weather.
Disturbances that may have affected results	No	No significant disturbances were observed or encountered that could have negatively affected survey results.
Proportion of fauna identified, recorded, or collected	No	The majority of fauna species that are expected to occur within the project area were recorded, as indicated by Species Accumulation Curves. All captured species were identified.
Adequacy of survey intensity and proportion of survey achieved	No	All fauna groups were adequately represented through the use of different survey methods.
Access restrictions within the survey area	Negligible	Access within the survey area was subject to a Land Use Certificate. Some areas could not be accessed due to heritage or third-party restrictions, however, the habitat could be sampled elsewhere in the survey area. A helicopter was provided by Fortescue during all field events to enable access to permitted areas across the survey area and confirm if restricted habitat types occurred in restricted areas.
Data and analysis issues including sampling biases	No	No data analysis issues were encountered, and sampling bias was removed through the consistent trapping protocols across surveys and the experience of field staff. Some interpretation of results may have had some constraints due to the accuracy of data, however, in broad terms this did not provide a constraint to the results or invalidate the survey effort.

5 DISCUSSION

5.1 FAUNA HABITATS

Seven fauna habitat types were recorded during the field survey (**Section 4.2.1**):

- Drainage Line/River/Creek (Major) – 7,781.7 ha
- Drainage Line/River/Creek (Minor) – 6,878,4 ha
- Rocky Escarpment/ Ridges/Mesa – 2,135.9 ha
- Hills/Ranges/Plateaux – 51,482.5 ha
- Plain (Boulders) – 25,080.5 ha
- Plain (Sand) – 32,883.3 ha
- Plain (Stony/Gibber) – 16,056.6 ha.

An additional four microhabitats were recorded: caves, gorges, permanent water and woodland. These occupied only small extents but likely provided resources for fauna that differed from their surrounding habitats or provided refuges (shelter, water, food) over longer periods.

These habitat types were suitable to support a wide range of conservation-listed vertebrate fauna species, including:

- the drainage lines, both major and minor, provided habitat potentially suitable for Northern Quolls (foraging and dispersal) and Pilbara Olive Pythons, and the fringing vegetation in parts would be suitable for Grey and Peregrine Falcon nests
- the plain (stony/gibber habitat) is suitable for Western Pebble-mound Mouse to construct mounds, and may also be used by Brush-tailed Mulgara
- the plain (sand) habitat has substrate required by Bilby to burrow and forage for food, and is also suitable for Brush-tailed Mulgara
- the rocky crevice and outcropping rock provide shelter for Northern Quoll to seek refuge in
- the caves microhabitat is potentially suitable for Northern Quoll denning and, if of sufficient size, could house Ghost and Pilbara Leaf-nosed Bat.

As described in **Section 4.1.3**, species were rarely isolated to a single habitat type, rather, utilised multiple habitat types to forage, disperse and seek refuge.

Locally, the broader fauna habitats within the survey area exhibit variability (e.g. depth of litter, abundance of natural cover, soil grain size), however, this variation occurred at a scale too small to be mapped. For example, the majority of observed plain (sand) habitat had a uniform medium soil grain size (sand), however, isolated pockets were found covered in stone-size quartz fragments.

The fauna habitat types were contiguous and transitions between habitat types were often short. Furthermore, microhabitats within broader habitats (i.e. riparian woodlands adjacent to Drainage lines) supported additional species, increasing the richness of the overall area.

None of the habitat types were considered to be locally or regionally restricted, with all occurring widely, as observed during regional traverses including travelling to and from various parts of the Pilbara. Microhabitat types were very small in extent and as such were not mappable at the scale of the survey area; these are uncommon but also not restricted to the local area.

5.2 FAUNA ASSEMBLAGE

The combined phase 1, targeted and phase 2 surveys identified 205 terrestrial vertebrate species, consisting of:

- 33 mammals, including:
  - five introduced species (European cattle, camel, cat, horse and rabbit, noting that, herein, dingo is not considered as introduced)

  - five conservation-listed species (Northern Quoll, Bilby, Pilbara Leaf-nosed Bat, Brush-tailed Mulgara, Western Pebble-Mound Mouse), discussed below
- 92 birds, including:
  - one conservation-listed species (Grey Falcon), discussed below
- 75 reptiles, including:
  - one conservation-listed species (Pilbara Olive Python), discussed below
- five amphibians.

Three fish were also recorded during the phase 1 survey, none of which are conservation-listed or of other significance.

Except for birds, the species accumulation curves were approaching an asymptote, suggesting that while further trapping effort would have yielded additional taxa, a high proportion of the taxa present at sampling locations during the field survey had been recorded. The fauna assemblages recorded during the phase 2 fauna survey are comparable to those recorded by the Phase 1 survey, and are a representative subset of the overall assemblage that occurs within the survey area.

Comparison with data held by Fortescue for the survey area and desktop database searches (*Dandjoo* (DBCA 2024b), ALA (2024) and IUCN (2024), which all include buffers, suggests that additional survey effort may have resulted in more species being recorded. However, these data have inherent inaccuracies (see **Sections 4.1.1** and **4.2.4**) and can only be interpreted broadly. Despite limitations, the bird survey results (in comparison to Fortescue data) suggest that the bird surveys were adequate to describe the assemblage present.

Overall, and in particular given the extent of the survey area and variety of fauna habitats, the combined survey results indicate that the trapping survey effort, combined with opportunistic observations, was adequate to represent the fauna assemblage present.

5.3 FAUNA SIGNIFICANCE

5.3.1 RECORDED CONSERVATION-LISTED SPECIES

5.3.1.1 Threatened Species

***Dasyurus hallucatus* (Northern Quoll); EN EPBC status and BC status**

Dasyurus hallucatus (Northern Quoll) is a medium-sized carnivorous, nocturnal marsupial that favours rocky areas, taking refuge in rock crevices and uses gullies and drainage lines for foraging and dispersal. They have relatively large home-range sizes of up to 150 ha for males and 35 ha for females. Males can move up to 1.85 km between den sites in one night (Oakwood 2000). Northern Quolls reproduce once a year, averaging seven young per litter(Commonwealth of Australia 2016). The species can be locally common, but its former range has contracted considerably due to the introduction of the cane toad (Van Dyck & Strahan 2008; Woinarski et al. 2008).

The rocky escarpments/ridges/mesa habitat type provides denning, shelter and foraging habitat for the species, while drainage line/river/creek (major and minor) and hills/ranges/plateaux habitats are primarily used for dispersal. These habitats are considered to represent habitat critical for the survival of the species by the EPBC Referral Guidelines (Commonwealth of Australia 2016). The plain (boulders) habitat may also provide the species with suitable areas to shelter in areas where granite boulders have formed small cavities. All other habitats may be used for dispersal or foraging.

Northern Quolls were recorded during both phases of survey, occupying the Rocky Escarpment/ Ridges/Mesa and Hills/Ranges/Plateaux habitats over much of the survey area. Presence was confirmed by camera images, with the phase 1 survey identifying at least 18 individuals (SLR 2022). It is likely that these habitats support stable populations due to their extent and connectivity, confirmed by the number of images recorded.

***Falco hypoleucos* (Grey Falcon); VU EPBC status and BC status**

Falco hypoleucos (Grey Falcon) is a resident or nomadic visitor to inland parts of all mainland states. They have been recorded from a range of habitats but are mainly found where annual rainfall is <500 mm, except when wet years are followed by drought and then they are more widespread (Garnett, Szabo & Dutson 2011). Nesting has been recorded from River Red Gum (*Eucalyptus camaldulensis*) and Coolibah (*E. coolabah*) trees up to 15 m above the ground(Garnett, Szabo & Dutson 2011; Johnstone & Storr 1998).

The DBCA threatened fauna database has four records of the Grey Falcon, recorded between 1994 and 2019. The survey area consists of trees suitable for nesting, and foraging habitat is available across the survey area.

The species was recorded four times from four locations during the survey, flying over different habitat types. Three of these observations were in the eastern (main windfarm) portion of the survey area.

***Macrotis lagotis* (Bilby); VU EPBC status and BC status**

Macrotis lagotis (Bilby) preferred habitat is open tussock grassland on upland/hills, Mulga woodland/shrubland growing on ridges/rises and hummock grassland in plains and alluvial areas (Woinarski, Burbidge & Harrison 2014). The main threats to its survival are predation by introduced species (i.e. fox and cat), habitat fragmentation and loss, and changes to fire regimes (TSSC 2016b).

Bilby has been consistently recorded from the survey area over several decades, suggesting that the survey area has the resources necessary to support a population of the species.

They were recorded during the phase 2 survey only, from three habitat types. Two 'plains' habitat types (sand and boulder) are considered critical as they provide essential breeding and foraging habitat. The Drainage Line habitat types (major and, less likely, minor) are also considered important foraging habitat, although some (higher) sandy embankments may be used for denning.

The majority of the survey records are from the eastern (main windfarm) where there are several historical and recent (2001) records from within 4-5 km. Other records from the southern portion of the main windfarm and central survey area (eastern transmission corridor, near Sandy Creek) locations are further from previous records (over 10 km) and may constitute new populations as Bilby home ranges are approximately 0.18 km^2 (females) and 3.16 km^2 (males) (TSSC 2016b).

***Liasis olivaceous barroni* (Pilbara Olive Python); VU EPBC and BC status**

The Pilbara Olive Python is a large python that occurs in the ranges of the Pilbara, typically in escarpments and gorges where water is present. It shelters under rock piles or spinifex (Pearson 1993, 2003). It is threatened due to its relatively small and patchy distribution, low population densities, and it may be affected by habitat disturbances such as grazing, fire and changes to hydrology resulting in reduced water availability in otherwise suitable habitat. This species is known to frequent water bodies where it ambushes prey.

The phase 1 survey recorded the remains of a Pilbara Olive Python from within the survey area (SLR 2022), towards the eastern side of the main windfarm area. Critical habitat for this species is associated with Rocky Escarpments/Ridges/Mesa, Hill/Ranges/Plateaux and the Drainage Line (Major) habitat types, and in particular the Gorge microhabitat type. Habitat suitability is enhanced by permanent water which provides essential foraging grounds.

***Rhinonicteris aurantia* (Pilbara Leaf-nosed Bat); VU EPBC status and BC status**

This species requires warm (28-32 ºC) and highly humid (96-100 %) roost sites in caves and/or mine shafts due to their limited ability to conserve heat and water (Armstrong 2001). Such caves are relatively uncommon in the Pilbara (Armstrong 2001; Armstrong & Anstee 2000), which limits the availability of diurnal roosts for this species. The few known roosts of this species are concentrated in mine shafts in the eastern Pilbara and at Barlee Range Nature Reserve (Threatened Species Scientific Committee 2016c), which are thought to contain most of the region's populations.

They were recorded during both the phase 1 and phase 2 surveys in major drainage and rocky escarpment habitats. The phase 1 survey identified a possible new roosting site on the Shaw River in the transmission corridor (yet to be actually identified) (SLR 2022). The phase 2 survey recorded foraging calls along drainage line habitat in the southern corridor west of the Sanjiv Ridge mine site (formerly the Corunna Downs mine); bats are assumed to be from the Corunna Downs roost (CA-CO-01).

The Rocky Escarpment/Ridges/Mesa habitat type with the potential of caves (including the caves microhabitat type) for roost sites is critical for this species within the survey area. The Plain and Drainage line habitat types provide important foraging resources.

5.3.1.2 Priority-listed Species

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

Brush-tailed Mulgara habitat is variable though often associated with *Triodia* spp. hummock grasses and assorted tussock grasses on sandy to stony clay soils in central arid regions (DSEWPaC 2011a). One Brush-tailed Mulgara was recorded on a motion camera (MC10) during phase 2 of the survey from within the Plain (Boulder) habitat type within the main windfarm area.

The Plain (Sand and Bouler) habitat types with *Triodia* spp. are essential breeding habitat.

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

Western Pebble-mound Mouse mounds were recorded 35 times across three habitat types: Hills/Ranges/Plateaux, Plain (Stony/Gibber), and Plain (Boulder). The former two habitat types were expected to support this species as they typically have readily available stones that are suitable for mound construction (Dunlop & Pound 1981). The Plain (Boulder) habitat does not meet the typical description of Western Pebble-mound Mouse habitat as this habitat often had only loose pebbles/stones scattered over the ground surface rather than the usual consistently covered ground that is usual for mound construction. However, the available stones must have been of sufficient quantity and of suitable physical characteristics to enable them to construct mounds and reside in the area.

Western Pebble-mound Mouse were recorded most frequently at the far western (transmission corridor) and eastern (main windfarm) portions of the survey area, although there are isolated records from other areas of suitable habitat.

5.3.2 POST-SURVEY LIKELIHOOD ASSESSMENT

The post-survey likelihood assessment is incorporated into **Table 18** in **Appendix Three**.

Conservation-listed fauna species identified during the desktop assessment as having previously been 'Recorded' from within the survey area or having a High likelihood of occurring (i.e.' Likely to occur') that were not recorded during the field survey are discussed below with respect to each species' habitat requirements, taking into consideration the findings of the field survey and survey effort.

5.3.2.1 'Known' Species

***Macroderma gigas* (Ghost Bat); VU EPBC & BC status**

The Ghost Bat is listed as Vulnerable under both the EPBC and BC Acts. Ghost Bats once existed in connected subpopulations across the arid zones of Australia; distribution of this species has reduced and become separated and disconnected (TSSC 2018). At present, populations exist in the Pilbara, Kimberley, northern Queensland and north Northern Territory (Armstrong & Anstee 2000). Ghost Bats continue to be threatened by the loss of roost and foraging sites, barbed wire fences, changes in water regimes, changes in fire regimes, and acoustic masking from loud noise and vibration (Cramer et al. 2022).

As numerous recent records (<5 years ago) from the DBCA threatened and priority fauna database are within the survey area, close to the Sanjiv Ridge mine site, the species' likelihood of occurring is therefore retained as 'Known' to occur.

***Antechinomys longicaudatus* (Long-tailed Dunnart); P4 DBCA status**

The Long-tailed Dunnart is a small, carnivorous marsupial, distinguished from *Sminthopsis* species by the length of its brush-tipped tail which is more than twice the head-body length (Burbidge, McKenzie & Fuller 2008; Westerman, Umbrello & Woolley 2023). It feeds on arthropods such as beetles, ants, spiders, cockroaches, centipedes, grasshoppers and larvae. Its long tail is muscular at the base, allowing it to be held in a variety of positions, probably acting as a counterweight; this, along with striated foot pads, suggest it is adapted to climbing. The species is a habitat specialist in rocky scree and plateau areas (Burbidge, McKenzie & Fuller 2008).

Two records from the DBCA threatened and priority fauna database are within the survey area in the wind farm area close to the Marble Bar-Nullagine Road. The records are, however, 21 years old and the species, although retaining a 'Known' category of occurrence, are likely to be locally sparse in distribution and restricted, possibly as a result of introduced predators.

***Falco peregrinus* (Peregrine Falcon); OS BC status**

This nomadic or sedentary falcon is widespread in many parts of Australia and some of its continental islands but absent from most deserts and the Nullarbor Plain. The species is considered to be moderately common in the Stirling Range, uncommon in the Kimberley, Hamersley and Darling Ranges, and rare or scarce elsewhere (Johnstone & Storr 1998). The Peregrine Falcon occurs most commonly near cliffs along coasts, rivers and ranges, and around wooded watercourses and lakes.

The surveys did not record this species. The DBCA threatened and priority fauna database shows one record within the survey area close to Emu Creek north of the Sanjiv Ridge mine site from 2001.

Although retaining a 'Known' category of occurrence, and that suitable habitat for nesting is present within the survey area, the species is likely to be a transient visitor only.

5.3.2.2 'Likely' Species

***Lagorchestes conspicillatus leichhardtii* (Spectacled Hare-wallaby (Mainland)); P4 DBCA status**

The Spectacled Hare-wallaby primarily inhabits tussock and hummock grasslands where it spends the daytime in tunnels below hummocks (Menkhorst & Knight 2010). In the Pilbara region, the taxon has declined dramatically. This may be due to a combination of fox predation and the loss of large spinifex hummocks due to frequent burning (Van Dyck & Strahan 2008).

The DBCA threatened and priority fauna database records are recent and within 5 km of the survey area. The species is, therefore, Likely to be present as suitable habitat exists.

***Leggadina lakedownensis* (Lakeland Downs Mouse); P4 DBCA status**

The Lakeland Downs Mouse has a broad distribution across much of northern Australia and occurs in a range of habitat types including 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 also occurs on stony hummock grassland. It is generally rare, with scattered populations, and very little is known of its biology (*ibid*.).

The DBCA threatened and priority fauna database includes a record from 2005 of a vouchered specimen within 1 km of the survey area boundary where the Shaw River intersects the survey area. The species is therefore Likely to be present as suitable habitat exists.

5.3.3 NIGHT PARROT

***Pezoporus occidentalis* (Night Parrot); EN EPBC status and CR BC status**

The survey area is located within a High Priority Survey Bioregion according to the current (DBCA 2024a) survey guidelines. For this reason, the likelihood of Night Parrot occurring in the survey area is discussed herein.

Suitable Night Parrot habitat is defined by three characteristic features: suitable roosting habitat with foraging habitat and a free-standing water source (artificial or natural) in close proximity, generally considered to be approximately 10 km (*ibid.).*

Suitable roosting habitat is described as being structurally complex, ring-form *Triodia* with few shrubs or trees, in a long unburnt state, situated on flat or very gently sloping lands. Foraging habitat is usually considered to be chenopod shrubland, although they forage in other floodplain and run-on areas with grasses and other forbs and herbs (*ibid*.).

The desktop review to determine the presence of the suitable Night Parrot habitat resulted in:

- landforms potentially supporting suitable roosting habitat (plains and undulating low slopes with few to no emergent shrubs or trees) may be present in the eastern section of the survey area
- structurally complex mainly ring-forming *Triodia* with few trees and shrubs in a long unburnt state is limited in extent. Review of aerial imagery and on ground observations indicate that the survey area is frequently impacted by fire (**Map 8**, which displays the Plain (sand) habitat type that is most suitable for roosting habitat – discussed below). Older *Triodia* can be found in between drainage lines where it is protected from frequent fire, however, it lacks the complex structure required for roosting.
- significant areas of foraging habitat were not identified from within the survey area.

The fire history (Charles Darwin University 2024) of the habitat type most likely to support Night Parrot roosting habitat (Plain (sand)) was reviewed (**Map 8**). Approximately 1,770.9 ha of this habitat type has not been burnt at least once within the last 25 years, however, this does not equate to the amount of potentially suitable habitat occurring.

No vegetation type mapping was available to inform this analysis; such mapping would likely have identified areas of tall *Triodia* as the most likely suitable habitat (usually *Triodia longiceps* which is readily detected using aerial imagery as it has a distinctive grey colouration). Typically, this species occurs in patches and does not occupy the majority of the landscape, with *Triodia epactia* being more typical on sandplains.

Fire age, as identifiable using the available data (*ibid.),* can only be assessed from 2000 onwards, with no information available with regard to older fires. The age that *Triodia* becomes sufficiently large and suitably complex in structure to be suitable for Night Parrot roosting is variable over Australia and may require more than 40 years (Burbidge & Leseberg 2024), however, the time required is not known for local conditions. Therefore, even the oldest identified areas (>25 years old) may not result in sufficiently mature conditions for Night Parrots. Additionally, the *Triodia* species, vegetation structure (both hummock structure and low proportions of shrubs and trees) and landform (flat, or near-flat) in the small unburnt patches may not be suitable for roosting, as well as distances to suitable foraging habitat and proximity to permanent drinking water.

It is considered that, given the fire history, natural variability in vegetation and the other factors as above, there would be little, if any, suitable roosting habitat for Night Parrots.

ARUs were deployed in different habitat types (**Table 22** in **Appendix Four**) throughout the survey area during the phase 1 and phase 2 surveys. Night Parrot calls were not detected during the recorder analysis.

It is considered Unlikely that Night Parrots occur in the survey area due to the lack of suitable roosting and foraging habitat.

790000
800000
810000
7640000
7630000
7620000

Camel Creek
Brockman Hay Cutting Creek
Brockman Creek
Chinaman Creek
Marble Bar Rd
House Creek
Corunna Downs Rd
Sandy Creek
Emu Creek
Coongan River
Ram Creek
Edna Creek
Spinaway Creek
Boobina Creek

LEGEND

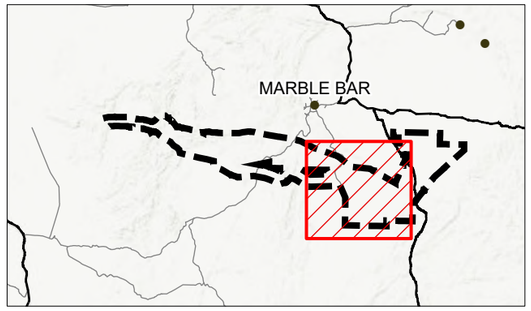
- Survey Area
- Primary Road
- Local Road
- Drainage Line

Fauna Habitat Type

- Plain (sand)

Fire Group

- <10 years
- 10-20 years
- 20-25 years
- unburnt since 2000



DATA SOURCES:
SOURCE DATA: FIRE SCAR (NORTHERN AUSTRALIA FIRE INFORMATION 2024), FAUNA HABITAT (ECOSCAPE 2024), ROAD HIERARCHY (MRWA 2023) AND SURFACE HYDROLOGY LINES (NATIONAL) (GEOSCIENCE AUSTRALIA 2015).
IMAGERY: ESRI WORLD (MAXAR 2023)
SERVICE LAYERS: WORLD TOPOGRAPHIC MAP: ESRI, HERE, GARMIN, FAO, USGS
WORLD IMAGERY: EARTHSTAR GEOGRAPHICS

ecoscape

FIRE AGE OF POTENTIAL NIGHT PARROT HABITAT

DETAILED TERRESTRIAL VERTEBRATE FAUNA SURVEY
EAST PILBARA GENERATION HUB

FORTESCUE

COORDINATE SYSTEM: GDA 1994 MGA ZONE 50
PROJECTION: TRANSVERSE MERCATOR
DATUM: GDA 1994
UNITS: METER

N

SCALE: 1:120,000 @ A3

0 1 2 3 4 km

PROJECT NO: 4867-23

REV	AUTHOR	APPROVED	DATE
0	NW	LA	13/03/2025

MAP 8

Path: X:\01_Projects\4867-23 EPGH Fauna Survey\Maps\APRXs\Report_Desktop_Maps_4867.aprx

6 CONCLUSIONS

The vertebrate fauna assemblage of the EPGH survey area was assessed by a two phase Detailed fauna survey plus additional targeted fauna surveys, which met requirements outlined in the terrestrial fauna assessment guidelines (EPA 2020) and other requirements of targeted surveys (DoE 2016; DPaW 2017; DSEWPaC 2011b, 2011a; DEWHA 2010b; Southgate et al. 2017).

The Detailed vertebrate fauna survey detected 33 mammal, 92 bird, 75 reptile and five amphibian species which constitute 96.70% of the potential trappable species based on a list of species recorded from Fortescue-commissioned surveys from within 65 km of the survey area, including 270.59% of the potential bird fauna assemblage identified from the Fortescue data. Species accumulation curves determined that the majority of fauna species were recorded, except for birds, however, comparison with Fortescue's database of previous survey results indicates that the bird survey was adequate to describe the species likely to be present in the survey area.

Habitat assessments identified seven fauna habitats which are all considered to be common and widespread across the Pilbara region, and four microhabitat types which were very small in extent (not mappable at the scale of the survey) but provided significant local resources.

The most common habitat types were Hills/Ranges/Plateaux (36.14%) which is suitable for a wide range of unlisted fauna species as well as Northern Quolls (denning in caves and forging), and the Plain (Sand) (23.08%) and Plain (Boulder) (17.60%) habitat types which are for suitable habitat for Bilby and Brush-tailed Mulgara. The habitat types associated with drainage lines – major (5.46% of the survey area) and minor (4.83%) rivers and creeks, and the gorge and permanent water microhabitat types – are significant for Northern Quoll (denning, foraging and dispersal), Pilbara Leaf-nosed Bat (foraging) and Pilbara Olive Python (habitat).

Seven conservation-listed significant fauna species were recorded from the EPGH survey area during the phase 1 and 2 and targeted assessments:

- Northern Quoll (*Dasyurus hallucatus*); EN EPBC status and BC status, identified through motion capture cameras and secondary evidence
- Grey Falcon (*Falco hypoleucos*); VU EPBC status and BC status, observed overflying the survey area
- Bilby (*Macrotis lagotis*); VU EPBC status and BC status, identified through motion capture cameras and secondary evidence
- Pilbara Olive Python (*Liasis olivaceous barroni*); VU EPBC and BC status – secondary evidence only
- Pilbara Leaf-nosed Bat (*Rhinonicteris aurantia*); VU EPBC status and BC status, recorded by ARUs
- Bush-tailed Mulgara (*Dasycercus blythi*); P4 DBCA status, recorded by motion capture camera
- Western pebble-mound Mouse (*Pseudomys chapmani*); P4 DBCA status – secondary evidence only.

A further five species, not recorded during the field surveys, are considered to occur (i.e. are 'Known') or are Likely to occur:

- Ghost Bat (*Macroderma gigas*); VU EPBC & BC status, considered to occur due to recent DBCA records of their presence
- Long-tailed Dunnart (*Antechinomys longicaudatus*); P4 DBCA status, considered to occur due to DBCA records from the survey area, although they are likely to be sparse in distribution
- Peregrine Falcon (*Falco peregrinus*); OS BC status, considered to occur although as a transient visitor only
- Spectacled Hare-wallaby (Mainland) (*Lagorchestes conspicillatus leichhardtii*); P4 DBCA status, Likely to be present
- Lakeland Downs Mouse (*Leggadina lakedownensis*); P4 DBCA status; likely to occur as suitable habitat is present.

Overall survey limitations including contextual information, competency of the survey team, animal identification issues, survey effort and timing were considered suitable to describe the survey area accurately.

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APPENDIX ONE LEGISLATIVE CONTEXT, DEFINITIONS AND CRITERIA

COMMONWEALTH ENVIRONMENT PROTECTION AND BIODIVERSITY CONSERVATION ACT 1999

The EPBC Act is a legal framework to protect and manage matters of national environmental significance (MNES) including important flora, fauna, ecological communities and heritage areas listed under the Act.

Threatened taxa (flora and fauna) are protected under the EPBC Act, which lists species and ecological communities that have been assessed as meeting the criteria to be listed as Critically Endangered, Endangered, Vulnerable, Conservation Dependant, Extinct, or Extinct in the Wild, as detailed in **Table 15**.

Threatened Ecological Communities protected under the EPBC Act are categorised as Critically Endangered, Endangered or Vulnerable, also detailed in this table.

Migratory species subject to international agreements are also protected under the EPBC Act. The definition of a migratory species under the Act follows that prescribed by the Convention on the Conservation of Migratory Species of Wild Animals (Bonn Convention) (DCCEEW 2023). The list of migratory species established under section 209 of the EPBC Act comprises:

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

Table 15: EPBC Act categories for flora, fauna and ecological communities

Category	Threatened species	Threatened Ecological Communities
Extinct	A native species is eligible to be included in the extinct category at a particular time if, at that time, there is no reasonable doubt that the last member of the species has died.	n/a
Extinct in the wild	A native species is eligible to be included in the extinct in the wild category at a particular time if, at that time: (a) it is known only to survive in cultivation, in captivity or as a naturalised population well outside its past range; or (b) it has not been recorded in its known and/or expected habitat, at appropriate seasons, anywhere in its past range, despite exhaustive surveys over a time frame appropriate to its life cycle and form.	n/a
Critically Endangered (CR)	A native species is eligible to be included in the *critically endangered* category at a particular time if, at that time, it is facing an extremely high risk of extinction in the wild in the immediate future, as determined in accordance with the prescribed criteria.	An ecological community is eligible to be included in the *critically endangered* category at a particular time if, at that time, it is facing an extremely high risk of extinction in the wild in the immediate future, as determined in accordance with the prescribed criteria
Endangered (EN)	A native species is eligible to be included in the *endangered* category at a particular time if, at that time: (a) it is not critically endangered; and (b) it is facing a very high risk of extinction in the wild in the near future, as determined in accordance with the prescribed criteria.	An ecological community is eligible to be included in the *endangered* category at a particular time if, at that time: (a) it is not critically endangered; and (b) it is facing a very high risk of extinction in the wild in the near future, as determined in accordance with the prescribed criteria.

Category	Threatened species	Threatened Ecological Communities
Vulnerable (VU)	A native species is eligible to be included in the *vulnerable* category at a particular time if, at that time: (a) it is not critically endangered or endangered; and (b) it is facing a high risk of extinction in the wild in the medium term future, as determined in accordance with the prescribed criteria.	An ecological community is eligible to be included in the *vulnerable* category at a particular time if, at that time: (a) it is not critically endangered or endangered; and (b) it is facing a high risk of extinction in the wild in the medium term future, as determined in accordance with the prescribed criteria.
Conservation Dependent	A native species is eligible to be included in the conservation dependent category at a particular time if, at that time: (a) the species is the focus of a specific conservation program the cessation of which would result in the species becoming vulnerable, endangered or critically endangered; or (b) the following subparagraphs are satisfied: (i) the species is a species of fish; (ii) the species is the focus of a plan of management that provides for management actions necessary to stop the decline of, and support the recovery of, the species so that its chances of long-term survival in nature are maximised; (iii) the plan of management is in force under a law of the Commonwealth or of a State or Territory; (iv) cessation of the plan of management would adversely affect the conservation status of the species.	n/a

WESTERN AUSTRALIAN ENVIRONMENTAL PROTECTION ACT 1986

The Western Australian EP Act was created to provide for an Environmental Protection Authority (the EPA) that has the responsibility for:

- prevention, control and abatement of pollution and environmental harm
- conservation, preservation, protection, enhancement and management of the environment
- matters incidental to or connected with the above.

The EPA is responsible for providing the guidance and policy under which environmental assessments are conducted. It conducts environmental impact assessments (based on the information provided by the proponent), initiates measures to protect the environment and provides advice to the Minister responsible for environmental matters.

WESTERN AUSTRALIAN BIODIVERSITY CONSERVATION ACT 2016

The Western Australian BC Act provides for the conservation, protection and ecologically sustainable use of biodiversity and biodiversity components in Western Australia.

Threatened Species

Threatened species (both flora and fauna) and ecological communities (see below) that meet the categories listed within the BC Act are protected under this legislation and require authorisation by the Minister to take or disturb. These are known as Threatened Flora, Threatened Fauna and Threatened Ecological Communities. The conservation categories of Critically Endangered, Endangered and Vulnerable are detailed in **Table 16**; these categories align with those of the EPBC Act. Some State-listed threatened species and ecological communities are provided with additional protection as they are also listed under the Commonwealth EPBC Act (see **Table 15** for conservation status category descriptions).

The most recent Western Australian flora and fauna listings were published in the Government Gazette on 6 October 2023 (Western Australian Government 2023a) and ecological communities listings on 26 May 2023 (Western Australian Government 2023b).

Priority-Listed Species

Flora are listed as PF where populations are geographically restricted or threatened by local processes, or where there is insufficient information to formally assign them to TF categories. Whilst PF are not specifically listed in the BC Act, some may qualify as being of special conservation interest and thereby have a greater level of protection than unlisted species.

There are three categories covering Western Australian-listed TF and four categories covering PF species which are outlined in **Table 16**. PF for Western Australia are regularly reviewed by the DBCA whenever new information becomes available, with species status altered or removed from the list when data indicates that they no longer meet these requirements.

Conservation significant fauna species are listed by the DBCA as Priority Fauna where populations are geographically restricted or threatened by local processes, or where there is insufficient information to formally assign them to threatened fauna categories. Whilst Priority Fauna are not specifically listed in the BC Act, these have a greater level of significance than other native species. The categories covering Priority Fauna species are outlined in **Table 16**.

Flora and fauna species may be listed as being of special conservation interest if they have a naturally low population, have a restricted natural range, are subject to or recovering from a significant population decline or reduction of range or are of special interest, and the Minister considers that taking may result in depletion of the species. Migratory species and those subject to international agreement are also listed under the Act. These are known as 'specially protected species' in the BC Act.

Table 16: Conservation category definitions for Western Australian flora and fauna (DBCA 2023)

Conservation Category Definitions for Western Australian Fauna and Flora	
Threatened, Extinct and Specially Protected fauna or flora[1] are species[2] which have been adequately searched for and are deemed to be, in the wild, threatened, extinct or in need of special protection, and have been gazetted as such. **Categories of Threatened, Extinct and Specially Protected fauna and flora are:**	
T	**Threatened species** Listed by order of the Minister as Threatened in the category of critically endangered, endangered or vulnerable under section 19(1), or is a rediscovered species to be regarded as threatened species under section 26(2) of the *Biodiversity Conservation Act 2016* (BC Act). **Threatened fauna** is the species of fauna that are listed as critically endangered, endangered or vulnerable threatened species. **Threatened flora** is the species of flora that are listed as critically endangered, endangered or vulnerable threatened species. The assessment of the conservation status of threatened species is in accordance with the BC Act listing criteria and the requirements of Ministerial Guideline Number 1 and Ministerial Guideline Number 2 that adopts the use of the International Union for Conservation of Nature (IUCN) Red List of Threatened Species Categories and Criteria[3], and is based on the national distribution of the species.

Conservation Category Definitions for Western Australian Fauna and Flora	
CR	*Critically endangered species* Threatened species considered to be "*facing an extremely high risk of extinction in the wild in the immediate future, as determined in accordance with criteria set out in the ministerial guidelines*". Listed as critically endangered undersection 19(1)(a) of the BC Act in accordance with the criteria set out in section 20 and the ministerial guidelines.
EN	*Endangered species* Threatened species considered to be "*facing a very high risk of extinction in the wild in the near future, as determined in accordance with criteria set out in the ministerial guidelines*". Listed as endangered under section 19(1)(b) of the BC Act in accordance with the criteria set out in section 21 and the ministerial guidelines.
VU	*Vulnerable species* Threatened species considered to be "*facing a high risk of extinction in the wild in the medium-term future, as determined in accordance with criteria set out in the ministerial guidelines*". Listed as vulnerable undersection 19(1)(c) of the BC Act in accordance with the criteria set out in section 22 and the ministerial guidelines.
Extinct species **Listed by order of the Minister as extinct under section 23(1) of the BC Act as extinct or extinct in the wild.**	
EX	*Extinct species* Species where "*there is no reasonable doubt that the last member of the species has died*", and listing is otherwise in accordance with the ministerial guidelines (section 24 of the BC Act).
EW	*Extinct in the wild species* Species that "*is known only to survive in cultivation, in captivity or as a naturalised population well outside its past range; and it has not been recorded in its known habitat or expected habitat, at appropriate seasons, anywhere in its past range, despite surveys over a time frame appropriate to its life cycle and form*", and listing is otherwise in accordance with the ministerial guidelines (section 25of the BC Act). Currently there are no fauna or flora species listed as extinct in the wild.
Specially protected species Listed by order of the Minister as specially protected under section 13(1) of the BC Act. Meeting one or more of the following categories: species of special conservation interest; migratory species; cetaceans; species subject to international agreement; or species otherwise in need of special protection. Species that are listed as threatened species (critically endangered, endangered or vulnerable) or extinct species under the BC Act cannot also be listed as specially Protected species.	
MI	*Migratory species* Fauna that periodically or occasionally visit Australia or an external Territory or the exclusive economic zone; or the species is subject of an international agreement that relates to the protection of migratory species and that binds the Commonwealth; and listing is otherwise in accordance with the ministerial guidelines (section 15 of the BC Act). Includes birds that are subject to an agreement between the government of Australia and the governments of Japan (JAMBA)[4], China (CAMBA)[5] and The Republic of Korea (ROKAMBA)[6], and fauna subject to the *Convention on the Conservation of Migratory Species of Wild Animals* (Bonn Convention)[7], an environmental treaty under the United Nations Environment Program. Migratory species listed under the BC Act are a subset of the migratory animals that are known to visit Western Australia, protected under the international agreements or treaties, excluding species that are listed as Threatened species.
CD	*Species of special conservation interest (conservation dependent)* Species of special conservation need that are dependent on ongoing conservation intervention to prevent it becoming eligible for listing as threatened, and listing is otherwise in accordance with the ministerial guidelines (section 14 of the BC Act). Currently only fauna are listed as species of special conservation interest.
OS	*Other specially protected species* Fauna otherwise in need of special protection to ensure their conservation, and listing is otherwise in accordance with the ministerial guidelines (section 18 of the BC Act). Currently only fauna are listed as species otherwise in need of special protection.

Conservation Category Definitions for Western Australian Fauna and Flora	
P	**Priority species** Priority is not a listing category under the BC Act. All fauna and flora are protected in WA following the provisions in Part 10 of the BC Act. The protection applies even when a species is not listed as threatened or specially protected, and regardless of land tenure (State managed land (Crown land), private land, or Commonwealth land). Species that may possibly be threatened species that do not meet the criteria for listing under the BC Act because of insufficient survey or are otherwise data deficient, are added to the Priority Fauna or Priority Flora Lists under Priorities 1, 2 or 3. These three categories are ranked in order of prioritisation for survey and evaluation of conservation status so that consideration can be given to potential listing as threatened. Species that are adequately known, meet criteria for near threatened, or are rare but not threatened, or that have been recently removed from the threatened species list or conservation dependent or other specially protected fauna lists for other than taxonomic reasons, are placed in Priority 4. These species require regular monitoring. Assessment of priority status is based on the Western Australian distribution of the species, unless the distribution in WA is part of a contiguous population extending into adjacent States, as defined by the known spread of locations.
1	*Priority 1: Poorly-known species – known from few locations, none on conservation lands* Species that are known from one or a few locations (generally five or less) which are potentially at risk. All occurrences are either: very small; or on lands not managed for conservation, for example, agricultural or pastoral lands, urban areas, road and rail reserves, gravel reserves and active mineral leases; or otherwise under threat of habitat destruction or degradation. Species may be included if they are comparatively well known from one or more locations but do not meet adequacy of survey requirements and appear to be under immediate threat from known threatening processes. These species are in urgent need of further survey.
2	*Priority 2: Poorly-known species – known from few locations, some on conservation lands* Species that are known from one or a few locations (generally five or less), some of which are on lands managed primarily for nature conservation, for example, national parks, conservation parks, nature reserves and other lands with secure tenure being managed for conservation. Species may be included if they are comparatively well known from one or more locations but do not meet adequacy of survey requirements for threatened listing and appear to be under threat from known threatening processes. These species are in urgent need of further survey.
3	*Priority 3: Poorly-known species – known from several locations* Species that are known from several locations and the species does not appear to be under imminent threat or from few but widespread locations with either large population size or significant remaining areas of apparently suitable habitat, much of it not under imminent threat. Species may be included if they are comparatively well known from several locations but do not meet adequacy of survey requirements and known threatening processes exist that could affect them. These species need further survey.
4	*Priority 4: Rare, Near Threatened and other species in need of monitoring* (a) Rare. Species that are considered to have been adequately surveyed, or for which sufficient knowledge is available, and that are considered not currently threatened or in need of special protection but could be if present circumstances change. These species are usually represented on conservation lands. (b) Near Threatened. Species that are considered to have been adequately surveyed and that are close to qualifying for vulnerable but are not listed as Conservation Dependent. (c) Species that have been removed from the list of threatened species during the past five years for reasons other than taxonomy. (d) Other species in need of monitoring.

[1] The definition of flora includes algae, fungi and lichens.

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

[3] Western Australia has assigned species to threat categories using the *IUCN Red List of Threatened Species Categories and Criteria* since 1996 (referencing all criteria).

[4] JAMBA - first included in the WA migratory species list in 1980.

[5] CAMBA - first included in the WA migratory species list in 2010.

[6] ROKAMBA - first included in the WA migratory species list in 2010.

[7] Bonn Convention (Birds) - first included in the WA migratory species list in 2015.

APPENDIX TWO POTENTIALLY OCCURING SPECIES

Table 17: Known species from within the survey area ('SA') and/or buffer (database searches as applicable, below)

Class	Species	Common name	Cons status	SA	Dandjoo*	ALA*	IUCN*	FMG*	Other*
Mammalia	*Antechinomys longicaudata*	Long-tailed Dunnart	P4			x	x		
Mammalia	*Austronomus australis*	White-striped Free-tailed Bat		Y			x	x	
Mammalia	*Bos primigenius taurus*	European Cattle		Y				x	
Mammalia	*Camelus dromedarius*	Dromedary, Camel, One-humped Camel		Y		x		x	
Mammalia	*Canis familiaris*	Dingo; Dog				x			
Mammalia	*Canis familiaris dingo*	Common Dog		Y	x			x	
Mammalia	*Chaerephon jobensis*	Greater Northern Free-tailed Bat; Northern Mastiff Bat		Y	x	x	x		
Mammalia	*Chaerephon jobensis colonicus*	Greater Northern Free-tailed Bat; Northern Mastiff Bat		Y				x	
Mammalia	*Chalinolobus gouldii*	Gould's Wattled Bat		Y	x	x	x	x	
Mammalia	*Chalinolobus morio*	Chocolate wattled bat		Y			x		
Mammalia	*Dasycercus blythi*	Brush-tailed Mulgara	P4			x			
Mammalia	*Dasykaluta rosamondae*	Kaluta, Little Red Kaluta, Little Red Antechinus		Y	x	x	x	x	
Mammalia	*Dasyurus hallucatus*	Northern Quoll, Digul	EPBC EN, BC EC	Y		x	x	x	
Mammalia	*Felis catus*	Cat		Y		x	x	x	
Mammalia	*Lagorchestes conspicillatus*	Spectacled Hare-wallaby		Y	x		x		
Mammalia	*Lagorchestes conspicillatus leichardti*	Spectacled Hare-wallaby (mainland)				x			
Mammalia	*Leggadina lakedownensis*	Lakeland Downs Mouse	P4	Y		x	x		
Mammalia	*Macroderma gigas*	Ghost Bat	EPBC VU, BC VU	Y		x	x		x
Mammalia	*Macropus fuliginosus*	Western Grey Kangaroo		Y		x			
Mammalia	*Macropus fuliginosus melanops*	Western Grey Kangaroo		Y			x	x	
Mammalia	*Macropus robustus*	Biggada; Euro			x				
Mammalia	*Macrotis lagotis*	Bilby	EPBC VU, BC VU	Y		x	x		x
Mammalia	*Mormopterus beccarii*	Northern Free-tailed Bat			x				
Mammalia	*Mus musculus*	House Mouse		Y	x	x	x		
Mammalia	*Ningaui timealeyi*	Pilbara Ningaui		Y	x	x	x	x	
Mammalia	*Notomys alexis*	Spinifex Hopping-mouse		Y		x	x		
Mammalia	*Notomys alexis alexis*	Spinifex Hopping-mouse		Y			x	x	
Mammalia	*Nyctophilus geoffroyi*	Lesser Long-eared Bat		Y	x		x		
Mammalia	*Nyctophilus geoffroyi geoffroyi*	Lesser Long-eared Bat		Y				x	
Mammalia	*Oryctolagus cuniculus*	Rabbit		Y				x	
Mammalia	*Osphranter robustus*	Common wallaroo		Y			x		
Mammalia	*Osphranter robustus erubescens*	Euro, Biggada		Y	x	x		x	
Mammalia	*Osphranter robustus robustus*	Eastern Wallaroo				x			
Mammalia	*Osphranter rufus*	Red Kangaroo, Marlu		Y		x	x	x	
Mammalia	*Ozimops lumsdenae*	Northern Free-tailed Bat		Y			x	x	
Mammalia	*Petrogale rothschildi*	Rothschild's Rock-wallaby		Y	x	x	x	x	

Class	Species	Common name	Cons status	SA	Dandjoo*	ALA*	IUCN*	FMG*	Other*
Mammalia	*Planigale ingrami*	Long-tailed Planigale			x				
Mammalia	*Planigale Mt Tom Price*	Cracking-clay Pilbara Planigale			x				
Mammalia	*Planigale sp.1*	Orange-headed Pilbara Planigale			x				
Mammalia	*Planigale species 1'*	Pilbara Planigale		Y				x	
Mammalia	*Pseudantechinus roryi*	Rory's Pseudantechinus			x				
Mammalia	*Pseudantechinus macdonnellensis*	Fat-tailed Pseudantechinus				x			
Mammalia	*Pseudantechinus roryi*	Rory Cooper's false antechinus		Y			x		
Mammalia	*Pseudantechinus woolleyae*	Woolley's Pseudantechinus		Y	x	x	x	x	
Mammalia	*Pseudomys chapmani*	Western Pebble-mound Mouse	P4	Y		x	x	x	
Mammalia	*Pseudomys delicatulus*	Delicate Mouse	EPBC VU	Y	x	x	x		
Mammalia	*Pseudomys desertor*	Desert Mouse		Y	x	x	x	x	
Mammalia	*Pseudomys hermannsburgensis*	Sandy Inland Mouse		Y	x	x	x	x	
Mammalia	*Pteropus alecto*	Black flying fox		Y			x		
Mammalia	*Pteropus scapulatus*	Little Red Flying-fox				x	x		
Mammalia	*Rhinonicteris aurantia*	Orange Leaf-nosed Bat	EPBC VU, BC VU	Y		x	x		
Mammalia	*Rhinonicteris aurantia Pilbara form*	Pilbara Leaf-nosed Bat	EPBC VU, BC VU	Y				x	x
Mammalia	*Saccolaimus flaviventris*	Yellow-bellied Sheath-tailed Bat		Y	x		x		
Mammalia	*Scotorepens greyii*	Little Broad-nosed Bat		Y	x	x	x	x	
Mammalia	*Sminthopsis dolichura*	Little Long-tailed Dunnart		Y				x	
Mammalia	*Sminthopsis macroura*	Stripe-faced Dunnart		Y	x	x	x	x	
Mammalia	*Sminthopsis youngsoni*	Lesser Hairy-footed Dunnart			x	x	x		
Mammalia	*Tachyglossus aculeatus*	Echidna, Short-beaked Echidna		Y	x		x	x	
Mammalia	*Tachyglossus aculeatus acanthion*	Echidna, Short-beaked Echidna				x			
Mammalia	*Taphozous georgianus*	Common Sheath-tailed Bat		Y	x	x	x	x	
Mammalia	*Taphozous hilli*	Hill's Sheath-tailed Bat		Y		x	x	x	
Mammalia	*Vespadelus caurinus*	Northern Cave Bat				x			
Mammalia	*Vespadelus finlaysoni*	Finlayson's Cave Bat		Y	x	x	x	x	
Mammalia	*Vulpes vulpes*	Red Fox		Y			x		
Mammalia	*Zyzomys argurus*	Common Rock-rat		Y	x	x	x	x	
Aves	*Acanthagenys rufogularis*	Spiny-cheeked Honeyeater				x		x	
Aves	*Acanthiza robustirostris*	Slaty-backed Thornbill				x			
Aves	*Acanthiza uropygialis*	Chestnut-rumped Thornbill				x			
Aves	*Accipiter cirrocephalus*	Collared Sparrowhawk				x		x	
Aves	*Accipiter fasciatus*	Brown Goshawk			x	x		x	
Aves	*Acrocephalus australis*	Australian Reed Warbler	MI			x			
Aves	*Actitis hypoleucos*	Common Sandpiper				x		x	
Aves	*Aegotheles chrisoptus*	Owlet Nightjar						x	
Aves	*Aegotheles cristatus*	Australian Owlet-nightjar			x	x			
Aves	*Amytornis striates*	Striated Grasswren		Y				x	

Class	Species	Common name	Cons status	SA	Dandjoo*	ALA*	IUCN*	FMG*	Other*
Aves	*Amytornis striatus*	Striated Grasswren			x	x			
Aves	*Amytornis whitei whitei*	Pilbara Grasswren				x		x	
Aves	*Anas castanea*	Chestnut Teal				x			
Aves	*Anas gracilis*	Grey Teal				x		x	
Aves	*Anas superciliosa*	Pacific Black Duck				x		x	
Aves	*Anhinga novaehollandiae*	Australasian Darter				x		x	
Aves	*Anthus australis*	Australian Pipit	MI		x	x			
Aves	*Anthus novaeseelandiae*	Australasian Pipit						x	
Aves	*Apus pacificus*	Fork-tailed Swift				x		x	
Aves	*Aquila audax*	Wedge-tailed Eagle			x	x		x	
Aves	*Ardea alba*	Great Egret				x			
Aves	*Ardea alba modesta*	Eastern Cattle Egret				x		x	
Aves	*Ardea intermedia*	Intermediate Egret				x		x	
Aves	*Ardea pacifica*	White-faced Heron			x	x		x	
Aves	*Ardeotis australis*	Australian Bustard			x	x		x	
Aves	*Artamus cinereus*	Black-faced Woodswallow		Y	x	x		x	
Aves	*Artamus cinereus melanops*	Inland Black-faced Woodswallow				x			
Aves	*Artamus leucorynchus*	White-breasted Woodswallow				x		x	
Aves	*Artamus minor*	Little Woodswallow		Y	x	x		x	
Aves	*Artamus personatus*	Masked Woodswallow			x	x		x	
Aves	*Aythya australis*	Hardhead				x			
Aves	*Barnardius zonarius*	Australian Ringneck		Y	x			x	
Aves	*Barnardius zonarius zonarius*	Port Lincoln Parrot			x	x			
Aves	*Burhinus grallarius*	Bush Stone-curlew			x	x		x	
Aves	*Cacatua roseicapilla*	Galah		Y	x	x		x	
Aves	*Cacatua sanguinea*	Little Corella			x	x		x	
Aves	*Calidris acuminata*	Sharp-tailed Sandpiper	EPBC CR, BC CR			x			
Aves	*Calidris ferruginea*	Curlew Sandpiper				x			
Aves	*Calidris minuta*	Little Stint	MI			x			
Aves	*Calidris ruficollis*	Red-necked Stint	MI			x			
Aves	*Calidris subminuta*	Long-toed Stint	EPBC VU, BC MI			x			
Aves	*Centropus phasianinus*	Pheasant Coucal		Y	x	x		x	
Aves	*Certhionyx variegatus*	Pied Honeyeater				x		x	
Aves	*Chalcites basalis*	Horsfield's Bronze-cuckoo				x			
Aves	*Chalcites osculans*	Black-eared Cuckoo				x			
Aves	*Charadrius melanops*	Black-fronted Dotterel			x				
Aves	*Charadrius ruficapillus*	Red-capped Plover	MI			x			
Aves	*Charadrius veredus*	Oriental Plover				x		x	
Aves	*Chenonetta jubata*	Australian Wood Duck				x			

Class	Species	Common name	Cons status	SA	Dandjoo*	ALA*	IUCN*	FMG*	Other*
Aves	*Cheramoeca leucosterna*	White-backed Swallow				x			
Aves	*Chlamydera guttata*	Western Bowerbird				x			
Aves	*Chlidonias hybrida*	Whiskered Tern				x		x	
Aves	*Chrysococcyx basalis*	Horsefield's Bronze Cuckoo			x			x	
Aves	*Cincloramphus cruralis*	Brown Songlark			x	x		x	
Aves	*Cincloramphus mathewsi*	Rufous Songlark			x	x		x	
Aves	*Circus approximans*	Swamp Harrier				x		x	
Aves	*Circus assimilis*	Spotted Harrier			x	x		x	
Aves	*Climacteris melanurus*	Black-tailed Treecreeper			x	x			
Aves	*Colluricincla harmonica*	Grey Shrike-thrush		Y	x	x		x	
Aves	*Conopophila rufogularis*	Rufous-throated Honeyeater				x			
Aves	*Coracina maxima*	Ground Cuckooshrike			x	x		x	
Aves	*Coracina novaehollandiae*	Black-faced Cuckoo-shrike		Y	x	x		x	
Aves	*Corvus bennetti*	Little Crow			x	x		x	
Aves	*Corvus orru*	Torresian Crow		Y	x	x		x	
Aves	*Corvus orru cecilae*	Australian Torresian Crow, Western Crow				x			
Aves	*Cracticus nigrogularis*	Pied Butcherbird		Y	x	x		x	
Aves	*Cracticus nigrogularis picatus*	Western Pied Butcherbird				x			
Aves	*Cracticus torquatus*	Grey Butcherbird		Y		x		x	
Aves	*Cygnus atratus*	Black Swan				x		x	
Aves	*Dacelo leachii*	Blue-winged Kookaburra			x	x		x	
Aves	*Daphoenositta chrysoptera*	Varied Sittella				x			
Aves	*Dicaeum hirundinaceum*	Mistletoebird			x	x			
Aves	*Dromaius novaehollandiae*	Emu				x			
Aves	*Egretta garzetta*	Little Egret				x			
Aves	*Egretta novaehollandiae*	White-faced Heron			x	x		x	
Aves	*Elanus axillaris*	Black-shouldered Kite	P4			x		x	
Aves	*Elanus scriptus*	Letter-winged Kite				x			
Aves	*Elseyornis melanops*	Black-fronted Dotterel				x		x	
Aves	*Emblema pictum*	Painted Finch		Y	x	x		x	
Aves	*Ephippiorhynchus asiaticus*	Black-necked Stork			x	x		x	
Aves	*Epthianura aurifrons*	Orange Chat				x			
Aves	*Epthianura tricolor*	Crimson Chat			x	x		x	
Aves	*Eremiornis carteri*	Spinifexbird			x				
Aves	*Erythrogonys cinctus*	Red-kneed Dotterel				x		x	
Aves	*Eurostopodus argus*	Spotted Nightjar		Y	x	x		x	
Aves	*Falco berigora*	Brown Falcon			x	x		x	
Aves	*Falco cenchroides*	Australian Kestrel			x	x		x	
Aves	*Falco hypoleucos*	Grey Falcon	OS			x		x	

Class	Species	Common name	Cons status	SA	Dandjoo*	ALA*	IUCN*	FMG*	Other*
Aves	*Falco longipennis*	Australian Hobby	EPBC VU, BC VU		x	x		x	
Aves	*Falco peregrinus*	Peregrine Falcon				x		x	
Aves	*Falco subniger*	Black Falcon				x			
Aves	*Fulica atra*	Eurasian Coot				x			
Aves	*Gavicalis virescens*	Singing Honeyeater			x	x			
Aves	*Gavicalis virescens forresti*	Inland Singing Honeyeater				x			
Aves	*Gavicalus virescens*	Singing Honeyeater		Y	x			x	
Aves	*Geopelia cuneata*	Diamond Dove		Y	x	x		x	
Aves	*Geopelia humeralis*	Bar-shouldered Dove				x			
Aves	*Geopelia placida*	Peaceful Dove				x		x	
Aves	*Geopelia placida clelandi*	Pilbara Peaceful Dove				x			
Aves	*Geopelia striata*	Zebra Dove			x				
Aves	*Geophaps plumifera*	Spinifex Pigeon		Y	x	x		x	
Aves	*Geophaps plumifera ferruginea*	Pilbara Spinifex Pigeon				x			
Aves	*Gerygone fusca*	Western Gerygone	MI			x			
Aves	*Glareola maldivarum*	Oriental Pratincole				x			
Aves	*Grallina cyanoleuca*	Magpie-lark		Y	x	x		x	
Aves	*Gymnorhina tibicen*	Australian Magpie			x	x		x	
Aves	*Gymnorhina tibicen longirostris*	Pilbara Australian Magpie				x			
Aves	*Haliaeetus leucogaster*	White-bellied Sea-eagle				x			
Aves	*Haliastur sphenurus*	Whistling Kite			x	x		x	
Aves	*Hamirostra melanosternon*	Black-breasted Buzzard				x			
Aves	*Heteroscenes pallidus*	Pallid Cuckoo			x	x		x	
Aves	*Hieraaetus morphnoides*	Little Eagle			x	x		x	
Aves	*Himantopus himantopus*	Black-winged Stilt				x		x	
Aves	*Himantopus himantopus leucocephalus*	Pied Stilt				x			
Aves	*Hirundo ariel*	Fairy Martin			x				
Aves	*Hirundo neoxena*	Welcome Swallow	MI			x		x	
Aves	*Hirundo nigricans*	Tree Martin			x				
Aves	*Hydroprogne caspia*	Caspian Tern				x			
Aves	*Hypotaenidia philippensis*	Buff-banded Rail				x			
Aves	*Lalage tricolor*	White-winged Triller		Y	x	x		x	
Aves	*Lichenostomus keartlandi*	Grey-headed Honeyeater		Y				x	
Aves	*Lichmera indistincta*	Brown Honeyeater			x	x		x	
Aves	*Lichmera indistincta indistincta*	Western Brown Honeyeater				x			
Aves	*Lophoictinia isura*	Square-tailed Kite				x		x	
Aves	*Malacorhynchus membranaceus*	Pink-eared Duck				x			
Aves	*Malurus assimilis*	Purple-backed Fairy-wren			x	x		x	
Aves	*Malurus assimilis assimilis*	Inland Purple-backed Fairy-wren				x			

Class	Species	Common name	Cons status	SA	Dandjoo*	ALA*	IUCN*	FMG*	Other*
Aves	*Malurus lamberti*	Bernier Is. Varigated Fairy-wren		Y		x		x	
Aves	*Malurus leucopterus*	White-winged Fairy-wren			x	x		x	
Aves	*Malurus leucopterus leuconotus*	Mainland White-winged Fairy-wren			x	x			
Aves	*Malurus splendens splendens*	Western Splendid Fairy-wren				x			
Aves	*Manorina flavigula*	Yellow-throated Miner		Y	x	x		x	
Aves	*Manorina flavigula lutea*	Northern Yellow-throated Miner				x			
Aves	*Manorina flavigula wayensis*	Inland Yellow-throated Miner				x			
Aves	*Manorina melanocephala*	Noisy Miner				x			
Aves	*Melanodryas cucullata*	Hooded Robin				x		x	
Aves	*Melithreptus gularis*	Black-chinned Honeyeater		Y	x	x		x	
Aves	*Melithreptus gularis laetior*	Golden-backed Honeyeater				x			
Aves	*Melopsittacus undulatus*	Budgerigar			x	x		x	
Aves	*Merops ornatus*	Rainbow Bee-eater		Y	x	x		x	
Aves	*Microcarbo melanoleucos*	Little Pied Cormorant			x	x			
Aves	*Milvus migrans*	Black Kite				x		x	
Aves	*Mirafra javanica*	Horsfield's Bushlark			x	x		x	
Aves	*Mirafra javanica woodwardi*	Pilbara Horsfield's Bushlark				x			
Aves	*Neochmia ruficauda*	Star Finch				x		x	
Aves	*Neopsephotus bourkii*	Bourke's Parrot				x			
Aves	*Ninox boobook boobook*	South-eastern Boobook			x	x			
Aves	*Ninox connivens*	Barking Owl				x			
Aves	*Ninox connivens connivens*	Southern Barking Owl				x			
Aves	*Ninox novaeseelandiae*	Boobook Owl						x	
Aves	*Nycticorax caledonicus*	Nankeen Night-heron				x			
Aves	*Nymphicus hollandicus*	Cockatiel			x	x		x	
Aves	*Ocyphaps lophotes*	Crested Pigeon			x	x		x	
Aves	*Oreoica gutturalis*	Crested Bellbird		Y	x	x		x	
Aves	*Pachycephala rufiventris*	Rufous Whistler			x	x		x	
Aves	*Pachycephala rufiventris rufiventris*	Southern Rufous Whistler				x			
Aves	*Pardalotus rubricatus*	Red-browed Pardalote		Y	x	x		x	
Aves	*Pardalotus rubricatus rubricatus*	Inland Red-browed Pardalote				x			
Aves	*Pardalotus striatus*	Striated Pardalote			x	x			
Aves	*Pavo cristatus*	Indian Peafowl				x			
Aves	*Pelecanus conspicillatus*	Australian Pelican				x		x	
Aves	*Petrochelidon ariel*	Fairy Martin		Y		x		x	
Aves	*Petrochelidon nigricans*	Tree Martin				x			
Aves	*Petrochelidon nigricens*	Tree Martin						x	
Aves	*Petroica goodenovii*	Red-capped Robin	EPBC EN, BC CR			x			
Aves	*Pezoporus occidentalis*	Night Parrot				x			

Class	Species	Common name	Cons status	SA	Dandjoo*	ALA*	IUCN*	FMG*	Other*
Aves	*Phalacrocorax carbo*	Great Cormorant				x			
Aves	*Phalacrocorax sulcirostris*	Little Black Cormorant				x		x	
Aves	*Phalacrocorax varius*	Pied Cormorant				x			
Aves	*Phaps chalcoptera*	Common Bronzewing		Y	x	x		x	
Aves	*Phaps histrionica*	Flock Bronzewing				x			
Aves	*Platalea flavipes*	Yellow-billed Spoonbill	MI			x			
Aves	*Platalea regia*	Royal Spoonbill				x			
Aves	*Plegadis falcinellus*	Glossy Ibis				x			
Aves	*Podargus strigoides*	Tawny Frogmouth			x	x		x	
Aves	*Podiceps cristatus*	Great Crested Grebe				x			
Aves	*Poephila cincta*	Black-throated Finch				x			
Aves	*Poliocephalus poliocephalus*	Hoary-headed Grebe				x			
Aves	*Pomatostomus superciliosus*	White-browed Babbler				x			
Aves	*Pomatostomus temporalis*	Grey-crowned Babbler			x	x		x	
Aves	*Pomatostomus temporalis rubeculus*	Red-breasted Babbler				x			
Aves	*Poodytes carteri*	Spinifexbird		Y	x	x		x	
Aves	*Poodytes gramineus*	Little Grassbird				x			
Aves	*Porphyrio porphyrio*	Purple Swamphen				x			
Aves	*Porphyrio porphyrio melanotus*	Australasian Purple Swamphen				x			
Aves	*Psephotellus varius*	Mulga Parrot				x			
Aves	*Ptilonorhynchus guttatus*	Western Bowerbird		Y	x			x	
Aves	*Ptilonorhynchus maculatus*	Spotted Bowerbird			x				
Aves	*Ptilotula keartlandi*	Grey-headed Honeyeater			x	x			
Aves	*Ptilotula penicillata*	White-plumed Honeyeater				x			
Aves	*Ptilotula penicillata carteri*	Western White-plumed Honeyeater				x			
Aves	*Ptilotula penicillatus*	White-plumed Honeyeater		Y	x			x	
Aves	*Ptilotula plumula*	Grey-fronted Honeyeater				x			
Aves	*Purnella albifrons*	White-fronted Honeyeater				x			
Aves	*Purpureicephalus spurius*	Red-capped Parrot			x				
Aves	*Recurvirostra novaehollandiae*	Red-necked Avocet				x			
Aves	*Rhipidura albiscapa*	Grey Fantail				x			
Aves	*Rhipidura leucophrys*	Willie Wagtail		Y	x	x		x	
Aves	*Smicrornis brevirostris*	Weebill			x	x		x	
Aves	*Smicrornis brevirostris ochrogaster*	Western Weebill				x			
Aves	*Stiltia isabella*	Australian Pratincole				x		x	
Aves	*Stipiturus ruficeps*	Rufous-crowned Emu-wren			x	x			
Aves	*Sugomel niger*	Black Honeyeater			x	x			
Aves	*Sugomel nigrum*	Black Honeyeater						x	
Aves	*Synoicus ypsilophora*	(a Quail)				x		x	

Class	Species	Common name	Cons status	SA	Dandjoo*	ALA*	IUCN*	FMG*	Other*
Aves	*Tachybaptus novaehollandiae*	Australasian Grebe				x			
Aves	*Taeniopygia castanotis*	Zebra Finch		Y	x	x		x	
Aves	*Threskiornis moluccus*	Australian White Ibis				x			
Aves	*Threskiornis spinicollis*	Straw-necked Ibis				x			
Aves	*Todiramphus pyrrhopygius*	Red-backed Kingfisher		Y	x	x		x	
Aves	*Todiramphus sanctus*	Sacred Kingfisher		Y	x	x		x	
Aves	*Todiramphus sanctus sanctus*	Australian Sacred Kingfisher				x			
Aves	*Tribonyx ventralis*	Black-tailed Native-hen	EPBC EN, WA MI			x			
Aves	*Tringa glareola*	Wood Sandpiper				x		x	
Aves	*Tringa nebularia*	Common Greenshank	MI			x		x	
Aves	*Turnix velox*	Little Button-quail			x	x		x	
Aves	*Tyto javanica*	Eastern Barn Owl				x			
Aves	*Vanellus miles*	Masked Lapwing				x			
Aves	*Zapornia tabuensis*	Spotless Crake				x			
Reptilia	*Acanthophis pyrrhus*	Desert Death Adder		Y	x		x		
Reptilia	*Acanthophis wellsi*	Pilbara Death Adder		Y	x	x	x	x	
Reptilia	*Amphibolurus longirostris*	Long-nosed Dragon			x				
Reptilia	*Anilios ammodytes*	Sand-diving Blind Snake, Pilbara Blind Snake		Y	x	x	x	x	
Reptilia	*Anilios ganei*	Gane's Blind Snake	P1			x			
Reptilia	*Anilios grypus*	Long-beaked Blind Snake, Hook-nosed Blind Snake		Y	x	x	x	x	
Reptilia	*Anilios hamatus*	Pale-headed blind snake		Y			x		
Reptilia	*Anilios pilbarensis*	Pilbara Blind Snake		Y		x			x
Reptilia	*Antaresia childreni*	Children's Python		Y		x	x	x	
Reptilia	*Antaresia perthensis*	Pygmy Python		Y	x	x	x	x	
Reptilia	*Antaresia stimsoni*	Stimson's Python		Y			x		
Reptilia	*Aspidites melanocephalus*	Black-headed python		Y			x		
Reptilia	*Aspidites ramsayi*	Woma python		Y			x		
Reptilia	*Brachyurophis approximans*	North-western Shovel-nosed Snake		Y	x	x	x		
Reptilia	*Brachyurophis fasciolatus*	Narrow-Banded Shovel-Nosed Snake		Y			x		
Reptilia	*Carlia munda*	Shaded-litter Rainbow-skink		Y	x	x	x	x	
Reptilia	*Carlia triacantha*	Desert Rainbow Skink		Y	x	x	x		
Reptilia	*Chelodina steindachneri*	Flat-shelled Turtle, Steindachner's Turtle		Y		x	x	x	
Reptilia	*Crenadactylus pilbarensis*	Pilbara Clawless Gecko		Y			x		
Reptilia	*Cryptoblepharus buchananii*	Buchanan's Snake-Eyed Skink		Y			x		
Reptilia	*Cryptoblepharus ustulatus*	Russet Snake-eyed Skink		Y		x	x		
Reptilia	*Ctenophorus caudicinctus*	Western Ring-tailed Dragon, Ring-tailed Dragon		Y	x	x	x	x	
Reptilia	*Ctenophorus isolepis*	Central Military Dragon; Crested Dragon		Y	x	x	x	x	
Reptilia	*Ctenophorus nuchalis*	Central Netted Dragon		Y	x	x	x	x	
Reptilia	*Ctenophorus reticulatus*	Western Netted Dragon		Y	x		x		

Class	Species	Common name	Cons status	SA	Dandjoo*	ALA*	IUCN*	FMG*	Other*
Reptilia	*Ctenophorus scutulatus*				x				
Reptilia	*Ctenotus atlas*	Southern Mallee Ctenotus					x		
Reptilia	*Ctenotus duricola*	Pilbara Ctenotus, Eastern Pilbara Lined Ctenotus		Y	x	x	x	x	
Reptilia	*Ctenotus grandis*	Grand Ctenotus, Giant Desert Ctenotus		Y	x	x	x	x	
Reptilia	*Ctenotus hanloni*	Nimble Ctenotus		Y			x	x	
Reptilia	*Ctenotus helenae*	Dusky Ctenotus, Clay-soil Ctenotus		Y	x	x	x		
Reptilia	*Ctenotus inornatus*	Bar-shouldered Ctenotus				x			
Reptilia	*Ctenotus leonhardii*	Leonhardi's skink or Common desert ctenotus		Y	x		x		
Reptilia	*Ctenotus nigrilineatus*	Pin-striped Finesnout Ctenotus	P1	Y		x	x		
Reptilia	*Ctenotus pantherinus*	Leopard Ctenotus		Y	x	x	x	x	
Reptilia	*Ctenotus piankai*	Coarse Sands Ctenotus, Eastern Pilbara Lined Ctenotus		Y	x		x		
Reptilia	*Ctenotus quattuordecimlineatus*	Fourteen-lined Ctenotus		Y			x		
Reptilia	*Ctenotus robustus*	Robust Ctenotus, Eastern Striped Skink			x	x			
Reptilia	*Ctenotus rubicundus*	Ruddy Ctenotus		Y	x	x	x	x	
Reptilia	*Ctenotus rutilans*	Rusty-shouldered Ctenotus		Y	x		x		
Reptilia	*Ctenotus saxatilis*	Rock Ctenotus, Stony-soil Ctenotus		Y	x	x	x	x	
Reptilia	*Ctenotus schomburgkii*	Barred Wedge-snout Ctenotus		Y			x		
Reptilia	*Ctenotus serventyi*	North-western Sandy-loam Ctenotus		Y	x	x	x		
Reptilia	*Ctenotus superciliaris*	Sharp-browed Ctenotus		Y			x		
Reptilia	*Ctenotus uber*	Rich Ctenotus, Spotted Ctenotus		Y		x	x		
Reptilia	*Cyclodomorphus melanops*	Northern Slender Blue-tongue, Spinifex Slender Blue-tongue		Y	x	x	x	x	
Reptilia	*Delma butleri*	Neck-Barred Delma, Unbanded Delma		Y	x		x		
Reptilia	*Delma desmosa*	Banded Delma		Y			x		
Reptilia	*Delma elegans*	Pilbara Delma		Y	x	x	x		
Reptilia	*Delma nasuta*	Sharp-snouted Delma		Y	x	x	x	x	
Reptilia	*Delma pax*	Peace Delma		Y	x	x	x	x	
Reptilia	*Delma tincta*	Excitable Delma, Peace Delma		Y	x	x	x		
Reptilia	*Demansia psammophis*	Yellow-faced Whipsnake			x				
Reptilia	*Demansia psammophis cupreiceps*	Reticulated Whipsnake			x				
Reptilia	*Demansia reticulata*	Yellow-faced Whipsnake, Reticulated whipsnake		Y		x	x	x	
Reptilia	*Demansia rufescens*	Rufous Whipsnake		Y	x	x	x	x	
Reptilia	*Demansia shinei*	Shine's whipsnake					x		
Reptilia	*Diplodactylus bilybara*	Western Fat-tailed Gecko		Y		x	x	x	
Reptilia	*Diplodactylus conspicillatus*	Variable Fat-tailed Gecko			x				
Reptilia	*Diplodactylus galaxias*	Northern Pilbara Beak-faced Gecko				x			
Reptilia	*Diplodactylus laevis*	Desert Fat-tailed Gecko		Y	x	x	x		
Reptilia	*Diplodactylus savagei*	Southern Pilbara Beak-faced Gecko		Y	x	x	x	x	
Reptilia	*Diporiphora paraconvergens*	Grey-striped Western Desert Dragon		Y			x		

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Reptilia	*Diporiphora pindan*	Pindan Two-Line Dragon		Y			x		
Reptilia	*Diporiphora vescus*	Northern Pilbara tree dragon		Y			x		
Reptilia	*Egernia cygnitos*	Western Pilbara spiny-tailed skink					x		
Reptilia	*Egernia depressa*	Pygmy Spiny-tailed Skink			x	x			
Reptilia	*Egernia epsisolus*	Eastern Pilbara Spiny-tailed Skink		Y		x	x	x	
Reptilia	*Egernia formosa*	Goldfields Crevice-skink		Y	x	x	x		
Reptilia	*Egernia pilbarensis*	Pilbara crevice-skink		Y		x	x		
Reptilia	*Eremiascincus isolepis*	Northern Bar-Lipped Skink		Y			x		
Reptilia	*Eremiascincus musivus*	Mosaic Desert Skink		Y			x		
Reptilia	*Eremiascincus pallidus*	Western Narrow-Banded Skink					x		
Reptilia	*Eremiascincus richardsonii*	Broad-banded Sand-swimmer		Y		x	x	x	
Reptilia	*Furina ornata*	Moon Snake		Y	x	x	x	x	
Reptilia	*Gehyra incognita*	Northern Pilbara Cryptic Gehyra			x	x			
Reptilia	*Gehyra kimberleyi*	Robust Termitaria Gecko, Kimberley dtella				x	x		
Reptilia	*Gehyra macra*	Large Pilbara Rock Gehyra		Y	x	x	x	x	
Reptilia	*Gehyra media*	Medium Pilbara Spotted Rock Gehyra		Y	x	x	x	x	
Reptilia	*Gehyra micra*	Small Pilbara Spotted Rock Gehyra			x	x			
Reptilia	*Gehyra montium*	Centralian Dtella, Central Rock Dtella		Y	x	x	x		
Reptilia	*Gehyra pilbara*	Pilbara Dtella		Y	x	x	x	x	
Reptilia	*Gehyra punctata*	Spotted Pilbara Rock Dtella, Spotted Dtella		Y	x	x	x	x	
Reptilia	*Gehyra purpurascens*	Purplish Dtella		Y		x	x		
Reptilia	*Gehyra variegata*	Variegated Gehyra, Tree Dtella		Y	x	x	x	x	
Reptilia	*Gowidon longirostris*	Long-nosed Dragon		Y	x	x	x	x	
Reptilia	*Heteronotia binoei*	Bynoe's Gecko		Y	x	x	x	x	
Reptilia	*Heteronotia spelea*	Desert Cave Gecko		Y	x	x	x		
Reptilia	*Hydrelaps darwiniensis*	Black-ringed Mangrove Snake				x			
Reptilia	*Lerista bipes*	Western Two-toed Slider, Two-toed Lerista, North-western Sandslider		Y	x	x	x	x	
Reptilia	*Lerista clara*	Sharp-Blazed Three-Toed Slider		Y		x	x		
Reptilia	*Lerista flammicauda*	Pilbara Flame-Tailed Slider		Y			x		
Reptilia	*Lerista jacksoni*	Jackson's three-toed slide, Jackson's Lerista		Y	x	x	x		
Reptilia	*Lerista labialis*	Southern Sandslider		Y			x		
Reptilia	*Lerista muelleri*	Wood Mulch-slider		Y	x	x	x	x	
Reptilia	*Lerista timida*	Dwarf Three-toed Slider, Timid Slider		Y	x		x		
Reptilia	*Lerista verhmens*	Powerful Lerista, Powerful three-toed slider		Y	x	x	x		
Reptilia	*Lialis burtonis*	Burton's Snake-lizard		Y	x	x	x	x	
Reptilia	*Liasis olivaceus*	Olive python		Y			x		
Reptilia	*Liasis olivaceus barroni*	Pilbara Olive Python		Y		x	x	x	
Reptilia	*Liopholis striata*	Night skink		Y			x		
Reptilia	*Lophognathus longirostris*	Long-nosed Water Dragon		Y	x		x		

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Reptilia	*Lucasium squarrosus*				x				
Reptilia	*Lucasium stenodactylus*	Southern Crowned Sand-Plain Gecko, Western Sandplain Gecko, Crowned Gecko		Y	x	x	x	x	
Reptilia	*Lucasium wombeyi*			Y	x	x	x	x	
Reptilia	*Lucasium woodwardi*	Pilbara Ground Gecko			x	x			
Reptilia	*Menetia greyii*	Grey's Menetia, Common Dwarf Skink		Y	x	x	x	x	
Reptilia	*Menetia surda*	Western Dwarf Skink		Y	x	x	x	x	
Reptilia	*Morethia ruficauda*	Fire-tailed Skink, Lined Fire-tailed Skink, Lined Firetail Skink		Y	x	x	x	x	
Reptilia	*Nephrurus cinctus*	Northern Banded Knob-tailed Gecko			x	x			
Reptilia	*Nephrurus levis*	Common Knob-tailed Gecko, Three-lined Knob-tail		Y	x		x		
Reptilia	*Nephrurus wheeleri*	Wheeler's knobtail gecko		Y			x		
Reptilia	*Notoscincus ornatus*	Ornate Soil-crevice Skink, Desert Glossy Skink		Y	x	x	x	x	
Reptilia	*Oedura fimbria*	Oedura fimbria		Y			x		
Reptilia	*Oedura marmorata*				x				
Reptilia	*Pogona minor minor*	Western Bearded Dragon, Dwarf Bearded Dragon		Y	x	x	x		
Reptilia	*Pogona minor mitchelli*	North-west Bearded Dragon				x			
Reptilia	*Proablepharus reginae*	Western Soil-crevice Skink, Spinifex Snake-eyed Skink, Silvereye Skink		Y	x	x	x	x	
Reptilia	*Pseudechis australis*	Mulga snake		Y	x	x	x		
Reptilia	*Pseudonaja mengdeni*	Western Brown Snake		Y	x	x	x	x	
Reptilia	*Pseudonaja modesta*	Ringed Brown Snake		Y	x	x	x	x	
Reptilia	*Pseudonaja nuchalis*	Dugite			x				
Reptilia	*Pygopus nigriceps*	Western Hooded Scaly-foot		Y	x	x	x	x	
Reptilia	*Ramphotyphlops ammodytes*	Sand-diving Blind Snake			x				
Reptilia	*Ramphotyphlops grypus*				x				
Reptilia	*Ramphotyphlops hamatus*	Northern Hook-snouted Blind Snake			x				
Reptilia	*Rhynchoedura ornata*	Western Beaked Gecko		Y	x	x	x		
Reptilia	*Simoselaps anomalus*	Northern desert banded snake		Y			x		
Reptilia	*Strophurus ciliaris*	Northern spiny-tailed gecko		Y			x		
Reptilia	*Strophurus elderi*	Jewelled Gecko		Y	x	x	x		
Reptilia	*Strophurus jeanae*	Southern phasmid gecko		Y			x		
Reptilia	*Suta fasciata*	Rosen's Snake		Y	x	x	x		
Reptilia	*Suta punctata*	Spotted snake		Y			x		
Reptilia	*Tiliqua multifasciata*	Central Blue-tongue, Central Blue-tongue Skink, Centralian Blue-tongue		Y	x	x	x	x	
Reptilia	*Tympanocryptis fortescuensis*	Fortescue Pebble-mimic Dragon		Y			x		
Reptilia	*Varanus acanthurus*	Spiny-tailed Goanna; Spiny-tailed Monitor, Ridge-tailed Monitor		Y	x	x	x	x	
Reptilia	*Varanus brevicauda*	Short-tailed Pygmy Goanna; Short-tailed Pygmy Monitor		Y	x	x	x		

Class	Species	Common name	Cons status	SA	Dandjoo*	ALA*	IUCN*	FMG*	Other*
Reptilia	*Varanus caudolineatus*	Stripe-tailed goanna		Y			x		
Reptilia	*Varanus eremius*	Pygmy Desert Goanna; Pygmy Desert Monitor		Y	x	x	x	x	
Reptilia	*Varanus giganteus*	Perentie		Y	x	x	x		
Reptilia	*Varanus gilleni*	Pygmy Mulga Monitor		Y		x	x		
Reptilia	*Varanus gouldii*	Sand goanna		Y			x		
Reptilia	*Varanus panoptes (rubidus in WA)*	Yellow-spotted monitor		Y	x	x	x		
Reptilia	*Varanus pilbarensis*	Northern Pilbara Rock Goanna; Pilbara Rock Monitor		Y	x	x	x	x	
Reptilia	*Varanus tristis*	Black-headed Monitor, Racehorse Goanna		Y	x		x	x	
Reptilia	*Vermicella snelli*	Pilbara Bandy-bandy		Y	x	x	x		
Amphibia	*Cyclorana australis*	Giant Frog		Y		x	x		
Amphibia	*Cyclorana maini*	Main's Frog		Y	x	x	x		
Amphibia	*Cyclorana occidentalis*	Western Water-holding Frog		Y			x		
Amphibia	*Litoria caerulea*	Green Tree Frog				x			
Amphibia	*Litoria rubella*	Little Red Tree Frog		Y	x	x	x	x	
Amphibia	*Neobatrachus sudelli (sudellae)*	Sudell's Frog		Y			x		
Amphibia	*Notaden nichollsi*	Desert Spadefoot		Y	x	x	x		
Amphibia	*Platyplectrum spenceri*	Spencer's Burrowing Frog, Centralian Burrowing Frog		Y	x	x	x	x	
Amphibia	*Uperoleia glandulosa*	Glandular Toadlet		Y			x		
Amphibia	*Uperoleia micromeles*	Tanami Toadlet		Y			x		
Amphibia	*Uperoleia russelli*	Northwest Toadlet			x				
Amphibia	*Uperoleia saxatilis*	Pilbara Toadlet		Y	x	x	x	x	

*Sources:

- *Dandjoo Species List Export* (DBCA 2024b) – 50 km buffer
- ALA – *Atlas of Living Australia* (ALA 2024) – 30 km buffer
- IUCN (2024) *The IUCN Red List of Threatened Species (Map Search)* – 30 km buffer
- FMG – Fortescue Ltd-supplied data – 65 km buffer
- 'other' – unknown.

APPENDIX THREE CONSERVATION-LISTED FAUNA LIKELIHOOD ASSESSMENT

Table 18: Fauna database results and likelihood assessments

Species	Common name	Conservation status		Habitat	Source						Likelihood of occurrence	
		EPBC Act	WA		PMST	DBCA	Djandoo	ALA	Fortescue	Previous Surveys	Desktop	Post-survey
Mammals												
Antechinomys longicaudatus	Long-tailed Dunnart		P4	Rocky screes with hummock grasses and shrubs		X	X			X	Known	Likely
Dasycercus blythi	Brush-tailed Mulgara		P4	Spinifex grasslands of arid zones, burrows in flats between low sand dunes		X	X			X	Unlikely	Recorded
Dasyurus hallucatus	Northern Quoll	EN	EN	Rocky outcrops and breakaways.	Known	X	X	X	X	X	Known	Recorded
Lagorchestes conspicillatus leichardti	Spectacled Hare Wallaby (mainland)		P4	Acacia shrubland and Spinifex grassland, mosaic fire history		X	X				Likely	Likely
Leggadina lakedownensis	Lakeland Downs Mouse		P4	Tropical coast to semiarid Spinifex and tussock grasslands, tropical savannah on clay		X					Likely	Likely
Macroderma gigas	Ghost Bat	VU	VU	Rainforest, deciduous vine thicket, open woodland, spinifex and black soil grasslands. Roosts in caves, boulder piles, shallow escarpments and mines	Known	X	X	X		X	Known	Known
Macrotis lagotis	Bilby	VU	VU	Sandplain or sand-dune with spinifex, *Acacia* shrubland, also Mulga and tussock grass country	Known	X	X	X		X	Known	Recorded
Pseudomys chapmani	Western Pebble-mound Mouse		P4	Stony hillsides with hummock grassland		X	X			X	Known	Recorded
Rhinonicteris aurantia (Pilbara form)	Pilbara Leaf-nosed Bat	VU	VU	Forages in gorges and gullies, over pools, Spinifex hummock grasslands. Roosts in warm humid caves and mine adits	Known	X	X	X	X	X	Known	Recorded
Birds												
Actitis hypoleucos	Common Sandpiper	MI	MI	Inland wetlands and sheltered coastal areas, utilises permanent and ephemeral wetlands		X		X			May	Unlikely
Amytornis striatus striatus	Striated grasswren (sandplain)		P4	Open mallee over shrubs and spinifex						X	Known	Known
Apus pacificus	Fork-tailed Swift	MI	MI	Aerial specialist		X				X	Unlikely	Unlikely
Calidris acuminata	Sharp-tailed Sandpiper	VU, MI	MI	Inland wetlands and sheltered coastal areas, utilises permanent and ephemeral wetlands	Known	X		X			May	Unlikely

Species	Common name	Conservation status		Habitat	Source						Likelihood of occurrence	
		EPBC Act	WA		PMST	DBCA	Djandoo	ALA	Fortescue	Previous Surveys	Desktop	Post-survey
Calidris ferruginea	Curlew Sandpiper	CR, MI	MI	Inland wetlands and sheltered coastal areas, utilises permanent and ephemeral wetlands	May			X			Unlikely	Unlikely
Charadrius veredus	Oriental Plover	MI	MI	Open grasslands, flat inland plains, short grasses with hard ground and arid/semi-arid zones. Pastures and lakeshore flats		X					Unlikely	Unlikely
Erythrotriorchis radiatus	Red Goshawk	EN	VU	Forests and woodlands, particularly favouring the boundary between two types of forest. Mosaic of vegetation types preferred, and favours woodland/forests dominated by eucalypts or paperbark. Avoids very dense and very open habitats	May						Unlikely	Unlikely
Falco hypoleucos	Grey Falcon	VU	VU	Triodia grassland, *Acacia* shrubland and open arid woodland	Known	X	X	X		X	Unlikely	Recorded
Falco peregrinus	Peregrine Falcon		OS	Cliffs and gorges, inland drainage systems, lowland plains, *Acacia* shrublands intersected by water courses		X	X				Known	Known
Merops ornatus	Rainbow Bee-eater	MA		Open forests, woodlands and shrublands, cleared areas, usually near water	May						May	Recorded
Pezoporus occidentalis	Night Parrot	EN	CR	Old-growth, ring-forming Triodia grasslands and/or chenopod shrublands in arid and semi-arid zones	Likely			X			Unlikely	Unlikely
Rostratula australis	Australian Painted Snipe	EN	EN	Shallow terrestrial freshwater (to brackish) wetlands, temporary or permanent lakes, swamps and claypans	May						Unlikely	Unlikely
Tringa glareola	Wood Sandpiper	MI	MI	Inland wetlands and sheltered coastal areas, utilises permanent and ephemeral wetlands.		X					May	Unlikely
Tringa nebularia	Common Greenshank	MI	MI	Estuaries and mudflats, mangrove swamps and lagoons, billabongs, swamps, sewage farms, and flooded crops		X		X			May	Unlikely
Reptiles												
Anilios ganei	Gane's Blind Snake (Pilbara)		P1	Pilbara grasslands		X					May	May
Ctenotus nigrilineatus	Pin-striped Finesnout Ctenotus		P1	Spinifex plains adjacent to granite outcrops and watercourses near Woodstock, Meentheena and Nullagine		X					May	Unlikely

Species	Common name	Conservation status		Habitat	Source						Likelihood of occurrence	
		EPBC Act	WA		PMST	DBCA	Djandoo	ALA	Fortescue	Previous Surveys	Desktop	Post-survey
Ctenotus uber johnstonei	Spotted Ctenotus (northeast)		P2	Chenopod shrubland at the base of sandstone hill near Balgo, northeast interior of WA			X				Very unlikely	Very unlikely
Liasis olivaceus barroni	Pilbara Olive Python	VU	VU	Near permanent water in gorges and escarpments of the Pilbara and Gascoyne	Likely	X	X			X	Known	Known
Liopholis kintorei	Great Desert Skink	VU	VU	Arid sand-flats and clay-based loamy soils vegetated with spinifex	May						Unlikely	Unlikely

APPENDIX FOUR FIELD SURVEY RESULTS

Table 19: Systematic trapping site survey effort

Site	Location (in GDA94)										
Phase 1	**Datum**	**Easting**	**Northing**	**Habitat**	**Nights Open**	**Pitfall**	**Funnel**	**Elliott**	**Camera Traps # (TNs)**	**Bird Survey (mins)**	**Bat ARU (nights)**
EP-T01	50k	715917	7651034	Hills/ranges/plateaux, and the adjacent rocky escarpments/ridges/mesa	7	70	84	70	5 (27)	60	7
EP-T02	50k	724355	7649800	Plain (stony/gibber)	7	70	84	70	1 (7)	60	
EP-T03	50k	739838	7642840	Drainage line/river/creek (major)	7	70	84	70	12 (53)	60	7
EP-T04	50k	749516	7640183	Plain (stony/gibber)	7	70	84	70	1 (7)	60	
EP-T05	50k	753001	7644022	Drainage line/river/creek (minor) adjacent hills/ranges/plateaux	7	70	84	70	1 (7)	60	
EP-T06	50k	753674	7638296	Plain (stony/gibber)	7	70	84	70	1 (7)	60	
EP-T07	50k	760698	7640919	Hills/ranges/plateaux	7	70	84	70	8 (46)	60	
EP-T08	50k	768650	7639055	Hills/ranges/plateaux adjacent to Rocky escarpments/ridges/mesa	7	70	84	70	11 (57)	60	7
EP-T09	50k	790668	7632962	Plain (stony/gibber)	7	70	84	70	1 (7)	60	
EP-T10	50k	792475	7634104	Drainage line/river/creek (major)	7	70	84	70	13 (78)	60	7
EP-T11	50k	796569	7630740	Drainage line/river/creek (major)	7	70	84	70	11 (57)	60	
EP-T12	50k	802282	7623482	Plain (sand)	7	70	84	70	1 (7)	60	
EP-T13	50k	806461	7628515	Plain (sand)	7	70	84	70	1 (7)	60	
EP-T14	51k	191304	7618824	Hills/ranges/plateaux	7	70	84	70	11 (59)	60	7
EP-T15	51k	191291	7629594	Hills/ranges/plateaux	7	70	84	70	11 (57)	60	7
EP-T16	51k	193758	7629534	Plain (boulders)	7	70	84	70	1 (7)	60	
EP-T17	51k	193923	7641703	Plain (stony/gibber)	7	70	84	70	1 (7)	60	
EP-T18	51k	194829	7625129	Rocky escarpments/ridges/mesa	7	70	84	70	10 (50)	60	
EP-T19	51k	196805	7643622	Drainage line/river/creek (major/minor)	7	70	84	70	6 (33)	60	7
EP-T20	51k	200050	7639870	Plain (boulders)	7	70	84	70	1 (7)	60	

Site	Location (in GDA94)										
Phase 2	Datum	Easting	Northing	Habitat	Nights Open	Pitfall	Funnel	Elliott	Camera Traps # (TNs)	Bird Survey (mins)	Bat ARU (nights)
Site 1	50k	818683	7641299	Drainage line/river/creek (major)	2	20	20			30	7
Site 2	50k	821695	7638805	Plain (boulders)	7	70	70		2 (14)		
Site 5	50k	722027	7651224	Drainage line/river/creek (major)	7	70	70		5 (35)	90	
Site 7	50k	782242	7642023	Drainage line/river/creek (major)	7	70	70		3 (18)	90	7
Site 9	50k	760066	7645143	Hills/ranges/plateaux	7	70	70		5 (40)	210	
Site 10	50k	823632	7635586	Plain (boulders)	7	70	70		2 (16)	30	7
Site 11	50k	795027	7635703	Plain (sand)	7	70	70		5 (35)	30	
Site 12	50k	722306	7649164	Plain (stony/gibber)	7	70	70		5 (30)	150	
Site 13	50k	753503	7645721	Hills/ranges/plateaux	7	70	70		5 (40)		
Site 14	50k	769653	7644276	Plain (stony/gibber)	7	70	70		5 (30)		
Site 17	50k	797540	7633372	Plain (sand)	7	70	70		5 (30)		
Site 18	50k	822627	7637403	Plain (boulders)	7	70	70				
Site 19	50k	822251	7641256	Drainage line/river/creek (major)	7	70	70		2 (14)	60	
Site 20	50k	826320	7640726	Plain (boulders)	7	70	70		2 (14)	180	
Site 21	50k	818185	7634540	Drainage line/river/creek (minor)	7	70	70		3 (21)	120	
Site 22	50k	818761	7631019	Plain (boulders)	7	70	70		2 (16)	30	

Table 20: Summary of systematic trapping effort

Phase	# trap sites	# nights	Trap nights	Pitfall		Funnel		Elliott		Camera		Bird survey	Bat ARU
				# traps	TN	# traps	TN	# traps	TN	# traps	TN	# minutes	# nights
Phase 1	20	7	140	10	1,400	12	1,680	10	1,400	108	587	1,200	49
Phase 2	16	7*	107	10*	1,070	10*	1,070	-	-	101*	353	1,020	21*
		(*except site 1 = 2 nights)		(*except site 1 = 2 traps)						(*over 14 sites)			(*over 3 sites)

Table 21: Motion camera locations

Site	Location (in GDA 94)					
Phase 1	**Datum**	**Easting**	**Northing**	**Habitat**	**Nights Open**	**Deployment date**
EP-NQ01-01	50K	735205	7650537	Drainage line/river/creek (major)	4	15/05/22
EP-NQ01-02	50K	735311	7650460	Drainage line/river/creek (major)	4	
EP-NQ01-03	50K	735357	7650434	Drainage line/river/creek (major)	4	
EP-NQ01-04	50K	735447	7650392	Drainage line/river/creek (major)	4	
EP-NQ01-05	50K	735555	7650359	Drainage line/river/creek (major)	4	
EP-NQ01-06	50K	735624	7650322	Drainage line/river/creek (major)	4	
EP-NQ01-07	50K	735669	7650342	Drainage line/river/creek (major)	4	
EP-NQ01-08	50K	735709	7650309	Drainage line/river/creek (major)	4	
EP-NQ01-09	50K	735739	7650294	Drainage line/river/creek (major)	4	
EP-NQ01-10	50K	735774	7650286	Hills/ranges/plateaux	4	
EP-NQ02-01	51K	195291	7623150	Hills/ranges/plateaux	5	25/06/22
EP-NQ02-02	51K	195329	7623114	Drainage line/river/creek (major)	5	
EP-NQ02-03	51K	195408	7623119	Drainage line/river/creek (major)	5	
EP-NQ02-04	51K	195408	7623152	Drainage line/river/creek (major)	5	
EP-NQ02-05	51K	195418	7623154	Drainage line/river/creek (major)	5	
EP-NQ02-06	51K	195468	7623182	Drainage line/river/creek (major)	5	
EP-NQ02-07	51K	195509	7623194	Drainage line/river/creek (major)	5	
EP-NQ02-08	51K	195613	7623183	Drainage line/river/creek (major)	5	
EP-NQ02-09	51K	195671	7623192	Drainage line/river/creek (major)	5	
EP-NQ02-10	51K	195716	7623187	Drainage line/river/creek (major)	5	
EP-NQ03-01	51K	201186	7634609	Plain (boulders)	5	25/06/22
EP-NQ03-02	51K	201193	7634269	Plain (boulders)	5	
EP-NQ03-03	51K	201211	7634389	Plain (boulders)	5	
EP-NQ03-04	51K	201243	7634551	Drainage line/river/creek (major)	5	
EP-NQ04-01	50K	725953	7650139	Plain (boulders)	5	15/05/22
EP-NQ04-02	50K	725959	7650078	Plain (boulders)	5	
EP-NQ04-03	50K	725983	7650164	Plain (boulders)	5	
EP-NQ04-04	50K	726016	7650110	Plain (boulders)	5	
EP-NQ04-05	50K	726029	7650099	Plain (boulders)	5	
Phase 2						
S01-NQ-MC21	50	790525	7630488	Hills/ranges/plateaux	50	20/10/2023
S01-NQ-MC3	50	790236.5	7630189	Hills/ranges/plateaux	50	
S02-NQ-MC54	50	790356.7	7633192	Rocky escarpments/ridges/mesa	50	
S02-NQ-MC58	50	790365.1	7633224	Rocky escarpments/ridges/mesa	50	
S03-BY-MC004	50	790210.9	7632958	Plain (sand)	50	
S03-BY-MC80	50	790249.6	7633004	Plain (sand)	50	
S04-BY-MC18	50	797615.1	7633517	Drainage line/river/creek (major)	8	25/03/2024
S04-BY-MC66	50	771319.4	7636848	Drainage line/river/creek (major)	5	27/04/2024
S05-BY-BCE3	50	769047.6	7635252	Drainage line/river/creek (major)	50	20/10/2023
S05-BY-BCE10	50	769065.1	7635237	Drainage line/river/creek (major)	50	
S05-BY-BCE18	50	769262.3	7635200	Drainage line/river/creek (major)	50	
S05-BY-MC38	50	769211.9	7635145	Drainage line/river/creek (major)	50	
S07-BY-BCE45	50	754947	7636506	Drainage line/river/creek (major)	50	25/10/2023
S07-BY-BCE45	50	754947	7636506	Drainage line/river/creek (major)	50	23/10/2023
S08-BY-BCE16	50	739994.1	7642796	Drainage line/river/creek (major)	50	20/10/2023

Site	Location (in GDA 94)					
S08-BY-BCE404	50	740180.6	7642762	Drainage line/river/creek (major)	50	
S10-BY-MC20	50	771665.6	7633700	Drainage line/river/creek (major)	50	
S10-BY-MC62	50	771612.7	7633728	Drainage line/river/creek (major)	50	
S11-BY-MC5	50	780671.1	7635879	Drainage line/river/creek (major)	5	27/04/2024
S11-BY-MC55	50	780709.8	7635931	Drainage line/river/creek (major)	5	
S12-BY-BCE6	50	811058.1	7626071	Drainage line/river/creek (major)	50	20/10/2023
S15-BY-MC47	50	821936.7	7632379	Drainage line/river/creek (major)	50	19/10/2023
S16-NQ-MC79	50	818859.9	7634350	Plain (boulders)	1	1/05/2024
S17-BY-BCE17	50	819386.5	7637158	Drainage line/river/creek (major)	50	21/10/2023
S17-BY-BCE23	50	819389	7637092	Drainage line/river/creek (major)	50	
S08-NQ-MC014	50	826521.2	7635922	Plain (boulders)	50	19/10/2023
S22-NQ-MC23	50	820917.7	7634850	Plain (boulders)	50	

Table 22: ARU locations

Site	Location					
Phase 1	**datum**	**easting**	**northing**	**Habitat**	**Nights Open**	**Deployment date**
EP-Bird01	50K	721111	7650403	Plain (boulders)	6	9/05/2022
EP-Bird02	50K	743288	7641274	Plain (stony/gibber)	6	9/05/2022
EP-Bird03	50K	800402	7631941	Plain (stony/gibber)	7	9/05/2022
EP-Bird04	51K	194436	7635346	Drainage line/river/creek (major)	7	19/06/2022
EP-Bird05	51K	201663	7634472	Plain (boulders)	7	19/06/2022
EP-Bird06	51K	202463	7644140	Plain (boulders)	7	19/06/2022
EP-T01	50k	715917	7651034	Hills/ranges/plateaux, and the adjacent rocky escarpments/ridges/mesa	6	
EP-T06	50k	753674	7638296	Plain (stony/gibber)	7	
EP-T12	50k	802282	7623482	Plain (sand)	7	
EP-T13	50k	806461	7628515	Plain (sand)	7	
EP-Bat01	51K	195684	7646766	Drainage line/river/creek (major)	7	19/06/2022
EP-Quoll01	50K	735500	7650354	Drainage line/river/creek (major)	6	9/05/2022
EP-Quoll02	51K	195418	7623154	Drainage line/river/creek (major)	6	19/06/2022
Phase 2						
SMM01	50K	766368	7635022	Drainage line/river/creek (minor)	50	23/10/2023
SMM02	50K	790364	7633180	Rocky escarpments/ridges/mesa	50	20/10/2023
SMM03	50K	769008	7635254	Drainage line/river/creek (minor)	50	20/10/2023
SMM04	50K	740093	7642777	Drainage line/river/creek (major)	50	20/10/2023
SMM05	50K	790238	7632987	Plain (sand)	50	20/10/2023
SMM06	50K	771604	7633706	Drainage line/river/creek (minor)	50	20/10/2023
ABS01	50K	771603	7633704	Hills/ranges/plateaux	50	20/10/2023
ABS02	50K	790451	7630385	Plain (sand)	50	20/10/2023
ABS03	50K	740069	7642782	Drainage line/river/creek (major)	50	20/10/2023
ABS04	50K	769242	7635181	Hills/ranges/plateaux	50	20/10/2023
ABS04	50K	771326	7636837	Drainage line/river/creek (minor)	5	27/04/2024
RAN01	50K	823651	7635710	Plain (boulders)	8	24/04/2024
RAN02	50K	818654	7641193	Drainage line/river/creek (major)	7	26/04/2024
SMM03	50K	782167	7642120	Drainage line/river/creek (major)	8	26/03/2024

Table 23: Active search locations

Site		Location (in GDA 94)				
Phase 1	**Datum**	**Easting**	**Northing**	**Habitat**	**Search area (ha)**	**Search date**
EP-Bilby01		720781	7652119	Plain (boulders)	2	13/05/2022
EP-Bilby02		756994	7637221	Hills/ranges/plateaux	2	13/05/2022
EP-Bilby03		797562	7618730	Plain (stony/gibber)	2	23/06/2022
EP-Bilby04		800075	7627925	Plain (sand)	2	26/06/2022
EP-Bilby05		803165	7630468	Plain (stony/gibber)	2	26/06/2022
EP-Bilby06		204588	7638330	Plain (boulders)	2	21/06/2022
EP-Bilby07		211389	7642716	Plain (boulders)	2	21/06/2022
EP-Bilby08		791959	7633295	Plain (stony/gibber)	2	13/05/2022
EP-Bilby09		743182	7639738	Plain (stony/gibber)	2	14/05/2022
EP--Bilby10		748049	7640270	Plain (stony/gibber)	2	14/05/2022
EP-Bilby11		794713	7634440	Plain (stony/gibber)	2	14/05/2022
Phase 2						
B_01	50K	819385	7637157	Drainage line/river/creek (major)	2	19/10/2023
B_02	50K	817404.9	7634930	Drainage line/river/creek (major)	2	28/04/2024
B_03	50K	821798.3	7632566	Plain (boulders)	2	26/04/2024
B_04	50K	818938.9	7634218	Plain (boulders)	2	1/05/2024
B_05	50K	820916	7634851	Plain (boulders)	2	28/04/2024
B_06	50K	771237.8	7636585	Drainage line/river/creek (minor)	2	28/04/2024
B_07	50K	821954.8	7633769	Plain (boulders)	2	26/04/2024
B_08	50K	821755.6	7632918	Drainage line/river/creek (minor)	2	19/10/2023
B_09	50K	808076.1	7620067	Drainage line/river/creek (minor)	2	24/04/2024
B_10	50K	807594.7	7616482	Plain (sand)	2	25/04/2024
B_11	50K	751471.3	7638410	Drainage line/river/creek (major)	2	28/04/2024

Table 24: Fauna inventory

Species	Common Name	EPBC Act	WA status	EP-T01	EP-T02	EP-T03	EP-T04	EP-T05	EP-T06	EP-T07	EP-T08	EP-T09	EP-T10	EP-T11	EP-T12	EP-T13	EP-T14	EP-T15	EP-T16	EP-T17	EP-T18	EP-T19	EP-T20	Site 1	Site 2	Site 5	Site 7	Site 9	Site 10	Site 11	Site 12	Site 13	Site 14	Site 17	Site 18	Site 19	Site 20	Site 21	Site 22	Other*	Total**
MAMMALS																																							
Bovidae																																							
Bos primigenius taurus	European Cattle					2						1	1	2								2																	55	63
Camelidae																																							
Camelus dromedarius	Dromedary, Camel																																						56	56
Canidae																																							
Canis familiaris	Dingo, Dog					4																4																	24	32
Dasyuridae																																							
Dasycercus blythi	Bush-Tailed Mulgara		P4																																			1	1
Dasykaluta rosamondae	Kaluta				1	1					1		1										1							1								1	1
Dasyurus hallucatus	Northern Quoll	EN	EN			1							3				1	1	1		1	1																33	42
Ningaui timealeyi	Pilbara Ningaui			3	4	6	2	1	7	1	5			1	2	2		1			1							2					1						39
Planigale sp.	Pilbara Planigale					1		1					1				1	1		1																			6
Pseudantechinus woolleyae	Woolley's False Antechinus			1			1				1						8	6		1	6																	2	26
Sminthopsis macroura	Stripe-faced Dunnart								1		1																												2
Emballonuridae																																							
Saccolaimus flaviventris	Yellow-bellied Sheath-tailed Bat																					1																	3	4
Taphozous georgianus	Common Sheath-Tailed Bat			1		1					1																											4	7
Taphozous hili	Hill's Sheath-tailed Bat																1	1																					1	3
Equidae																																							
Equus ferus caballus	Horse																																						1	1
Felidae																																							
Felis catus	Cat												4									4																	9	17
Leporidae																																							
Oryctolagus cuniculus	Rabbit																																						1	1
Macropodidae																																							
Osphranter robustus erubescens	Euro, Biggada																																						10	10
Osphranter rufus	Red Kangaroo					3				2			1				2					1																	1	10
Petrogale rothschildi	Rothschild's Rock-wallaby																2	3			5																		11	20
Molossidae																																							
Austronomus australis	White-striped Free-tailed Bat																					1																	2	3
Chaerephon jobensis	Greater Northern Free-tailed Bat			1		1					1		1									1																	6	11
Ozimops lumsdenae	Northern Free-tailed Bat					1																																	1	2
Muridae																																							
Notomys alexis	Spinifex Hopping Mouse																																						4	4
Pseudomys chapmani	Western Pebble-mound Mouse		P4																		1																	35	36
Pseudomys desertor	Desert Mouse				6		1									1		1																						9
Pseudomys hermannsburgensis	Sandy Inland Mouse					4															1															1			5

Species	Common Name	EPBC Act	WA status	EP-T01	EP-T02	EP-T03	EP-T04	EP-T05	EP-T06	EP-T07	EP-T08	EP-T09	EP-T10	EP-T11	EP-T12	EP-T13	EP-T14	EP-T15	EP-T16	EP-T17	EP-T18	EP-T19	EP-T20	Site 1	Site 2	Site 5	Site 7	Site 9	Site 10	Site 11	Site 12	Site 13	Site 14	Site 17	Site 18	Site 19	Site 20	Site 21	Site 22	Other*	Total**
Zyzomys argurus	Common Rock Rat			1	3					2	5		1				3	4	2		9																		9	39
Rhinonycteridae																																							
Rhinonicteris aurantia	Pilbara Leaf-nosed Bat	VU	VU			1		1			1		1				1	1				1																	5	12
Tachyglossidae																																							
Tachyglossus aculeatus	Echidna																						1																4	5
Thylacomyidae																																							
Macrotis lagotis	Bilby	VU	VU																																			24	
Vespertilionidae																																							
Chalinolobus gouldii	Gould's Wattled Bat			1		1					1		1				1	1				1																	6	13
Nyctophilus geoffroyi geoffroyi	Lesser Long-eared Bat					1																																	1	2
Scotorepens greyii	Little Broad-Nosed Bat					1					1		1				1	1				1																	6	12
Vespadelus finlaysoni	Finlayson's Cave Bat			1		1					1		1				1	1				1																	6	13
BIRDS																																							
Accipitridae																																							
Accipter cirrocephalus	Collared Sparrowhawk																																					2	2
Accipiter fasciatus	Brown Goshawk																																					1	1
Aquila audax	Wedge-tailed Eagle																																					6	
Circus approximans	Swamp Harrier																																					1	1
Circus assimilis	Spotted Harrier																																					4	4
Elanus axillaris	Black-shouldered Kite																																					1	1
Haliaeetus leucogaster	White-bellied Sea Eagle																																					1	1
Haliastur sphenurus	Whistling Kite																																					15	15
Hamirostra melanosternon	Black-breasted Buzzard																																					1	1
Acanthizidae																																							
Smicrornis brevirostris	Weebill																																					3	3
Aegothelidae																																							
Aegotheles cristatus	Australian Owlet-Nightjar																																					2	
Alaudidae																																							
Mirafra javanica	Horsfield's Bush Lark																																					1	1
Alcedinidae																																							
Dacelo leachii	Blue-winged Kookaburra																																					11	11
Todiramphus pyrrhopygius	Red-Backed Kingfisher																																					5	5
Todiramphus sanctus	Sacred Kingfisher																																					4	4
Anatidae																																							
Anas gracilis	Grey Teal																																					23	23
Anas superciliosa	Pacific Black Duck																																					30	30
Malacorhynchus membranaceus	Pink-eared Duck																																					1	1
Ardeidae																																							
Ardea pacifica	White-necked Heron												1																										10	11

Species	Common Name	EPBC Act	WA status	EP-T01	EP-T02	EP-T03	EP-T04	EP-T05	EP-T06	EP-T07	EP-T08	EP-T09	EP-T10	EP-T11	EP-T12	EP-T13	EP-T14	EP-T15	EP-T16	EP-T17	EP-T18	EP-T19	EP-T20	Site 1	Site 2	Site 5	Site 7	Site 9	Site 10	Site 11	Site 12	Site 13	Site 14	Site 17	Site 18	Site 19	Site 20	Site 21	Site 22	Other*	Total**
Egretta novaehollandiae	White-faced Heron					2							7									2																19	30
Nycticorax caledonicus	Nankeen Night Heron																																					2	2
Artamidae																																							
Artamus cinereus	Black-faced Woodswallow																																					16	16
Artamus minor	Little Woodswallow																																					4	4
Cracticus nigrogularis	Pied Butcherbird																					1																34	35
Cracticus torquatus	Grey Butcherbird													1																									1
Gymnorhina tibicen	Australian Magpie																																					10	10
Burhinidae																																							
Burhinus grallarius	Bush Stone-curlew														1																							7	8
Cacatuidae																																							
Cacatua sanguinea	Little Corella												4																									487	491
Eolophus roseicapilla	Galah													1																								48	49
Nymphicus hollandicus	Cockatiel																																					81	81
Campephagidae																																							
Coracina novaehollandiae	Black-faced Cuckooshrike																																					24	24
Caprimulgidae																																							
Eurostopodus argus	Spotted Nightjar																																					6	6
Casuariidae																																							
Dromaius novaehollandiae	Emu												1																									9	10
Campephagidae																																							
Lalage tricolor	White-winged Triller																																					1	1
Charadriidae																																							
Elseyornis melanops	Black-fronted Dotterel					1							2									1																43	47
Ciconiidae																																							
Ephippiohynchus asiaticus	Black-necked Stork					2							2																									2	6
Cinclosomatidae																																							
Cinclosoma marginatum	Western quail thrush																																					1	1
Columbidae																																							
Geopelia cuneata	Diamond Dove												1		7																							58	66
Geopelia striata placida	Peaceful Dove												3																									35	38
Geophaps plumifera	Spinifex Pigeon									3			1																									69	73
Ocyphaps lophotes	Crested Pigeon													4																								26	30
Phaps chalcoptera	Common Bronzewing												8																									2	10
Corvidae																																							
Corvus bennetti	Little Crow																																					4	4
Corvus orru	Torresian Crow					8					15						14		1	2		2																27	69
Cuculidae																																							
Chalcites basalis	Horsfield's Bronze Cuckoo																																					14	14
Heteroscenes pallidus	Pallid Cuckoo																																					7	7
Centropus phasianinus	Pheasant Coucal																																					1	1
Estrildidae																																							

Species	Common Name	EPBC Act	WA status	EP-T01	EP-T02	EP-T03	EP-T04	EP-T05	EP-T06	EP-T07	EP-T08	EP-T09	EP-T10	EP-T11	EP-T12	EP-T13	EP-T14	EP-T15	EP-T16	EP-T17	EP-T18	EP-T19	EP-T20	Site 1	Site 2	Site 5	Site 7	Site 9	Site 10	Site 11	Site 12	Site 13	Site 14	Site 17	Site 18	Site 19	Site 20	Site 21	Site 22	Other*	Total**
Emblema pictum	Painted Finch											9																										86	95
Taeniopygia castanotis	Australian Zebra Finch												5		8																								172	185
Falconidae																																							
Falco berigora	Brown Falcon																																					18	18
Falco cenchroides	Australian/Nankeen Kestrel																																					8	8
Falco hypoleucos	Grey Falcon	VU	VU																																			4	4
Falco subniger	Black Falcon																																					1	1
Hirundinidae																																							
Petrochelido ariel	Fairy Martin																																					45	45
Petrochelidon nigricans	Tree Martin																																					13	13
Locustellidae																																							
Cincloramphus cruralis	Brown Songlark																																					3	3
Cincloramphus mathewsi	Rufous Songlark																																					4	4
Poodytes carteri	Spinifexbird																																					5	5
Maluridae																																							
Amytornis whitei whitei	Pilbara Grasswren																																					5	5
Malurus assimilis	Purple-backed Fairywren																																					5	5
Malurus leucopterus	White-winged Fairywren																																					1	1
Malurus splendens	Splendid Fairywren																																					1	1
Stipiturus ruficeps	Rufous-crowned Emu-wren																																					4	4
Meliphagidae																																							
Acanthagenys rufogularis	Spiny-cheeked Honeyeater																																					1	1
Epthianura tricolor	Crimson Chat																																					1	1
Gavicalis virescens	Singing Honeyeater																																					32	32
Lichmera indistincta	Brown Honeyeater																					1																12	13
Manorina flavigula	Yellow-throated Miner																					2																49	51
Melithreptus gularis	Black-chinned Honeyeater																																					2	2
Ptilotula keartlandi	Grey-headed Honeyeater																	1			1																	8	10
Ptilotula penicillata	White-plumed Honeyeater																																					50	50
Meropidae																																							
Merops ornatus	Rainbow Bee-eater																																					51	51
Monarchidae																																							
Grallina cyanoleuca	Magpie-lark					6				1			3	6	2		1					4																60	83
Oreoicidae																																							
Oreoica gutturalis	Crested Bellbird																																					15	15
Otididae																																							
Ardeotis australis	Australian Bustard																					1																15	16
Pachycephalidae																																							
Colluricincla harmonica	Grey Shrikethrush			1																																		6	7
Pachycephala rufiventris	Rufous Whistler																																					3	3

Species	Common Name	EPBC Act	WA status	EP-T01	EP-T02	EP-T03	EP-T04	EP-T05	EP-T06	EP-T07	EP-T08	EP-T09	EP-T10	EP-T11	EP-T12	EP-T13	EP-T14	EP-T15	EP-T16	EP-T17	EP-T18	EP-T19	EP-T20	Site 1	Site 2	Site 5	Site 7	Site 9	Site 10	Site 11	Site 12	Site 13	Site 14	Site 17	Site 18	Site 19	Site 20	Site 21	Site 22	Other*	Total**
Pardalotidae																																							
Pardolotus rubricatus	Red-browed Pardalote																																					13	13
Pelecanidae																																							
Pelecanus conspicillatus	Australian Pelican					1																																31	32
Phalacrocoracidae																																							
Microcarbo melanoleucos	Little Pied Cormorant																																					2	2
Phalacrocorax sulcirostris	Little Black Cormorant																																					2	2
Phasianidae																																							
Synoicus ypsilophorus	Brown Quail																																					7	7
Pomatostomidae																																							
Pomatostomus temporalis	Grey-crowned Babbler												1	1																								43	45
Psittaculidae																																							
Barnardius zonarius	Australian Ringneck																																					25	25
Melopsittacus undulatus	Budgerigar														5																							941	946
Ptilonorhynchidae																																							
Chlamydera guttata	Western Bowerbird																																					4	4
Rhipiduridae																																							
Rhipidura leucophrys	Willie Wagtail												2		1																								25	28
Strigidae																																							
Ninox boobook	Southern Boobook																																					5	5
Ninox connivens	Barking Owl																																					3	3
Threskiornithidae																																							
Platalea regia	Royal Spoonbill																																					1	1
Threskiornis spinicollis	Straw-necked Ibis					2																																5	7
Turnicidae																																							
Turnix velox	Little Buttonquail						1					1	1	2		2		1														1						34	43
Tytonidae																																							
Tyto javanica	Eastern Barn Owl																																					1	1
REPTILES																																							
Agamidae																																							
Ctenophorus caudicinctus	Western Ring-Tailed Dragon			1			2	1	1	4	1		1				1		2	2	1					1		5			1						2	26	52
Ctenophorus isolepis isolepis	Central Military Dragon																						4		9					4			2		1		1	23	44
Ctenophorus nuchalis	Central Netted Dragon																									1				2								1	4
Gowidon longirostris	Long-nosed Dragon			2	4	5							5	2								3	1	5														27	54
Diporiphora vescus	Northern Pilbara Tree Dragon																							1															1
Pogona minor	Western Bearded Dragon																	1														1	1		1				4
Chelidae																																							
Chelodina steindachneri	Flat-shelled Turtle																																					4	4
Diplodactylidae																																							
Diplodactylus bilybara	Western Fat-tailed Gecko												1							2						2				1		1					4	11

Species	Common Name	EPBC Act	WA status	EP-T01	EP-T02	EP-T03	EP-T04	EP-T05	EP-T06	EP-T07	EP-T08	EP-T09	EP-T10	EP-T11	EP-T12	EP-T13	EP-T14	EP-T15	EP-T16	EP-T17	EP-T18	EP-T19	EP-T20	Site 1	Site 2	Site 5	Site 7	Site 9	Site 10	Site 11	Site 12	Site 13	Site 14	Site 17	Site 18	Site 19	Site 20	Site 21	Site 22	Other*	Total**
Diplodactylus laevis	Desert Fat-tailed Gecko																								1	1				3	1	1	1	2	4		11	1			26
Diplodactylus pulcher	Fine-Faced Gecko																														1										1
Diplodactylus savagei	Southern Pilbara Beak-faced Gecko						1										1				1																				3
Lucasium wombeyi								1	1					5												1		5			1	8	1	2							25
Lucasium woodwardi	Pilbara Ground Gecko					1							1													5						5		2							14
Rhynchoedura ornata	Western Beaked Gecko																												4				1			1				6
Strophurus elderi	Jewelled Gecko																											1							1					2
Elapidae																																								
Acanthopis wellsi	Pilbara Death Adder																																					2	2
Demansia reticulata	Yellow-faced Whipsnake			1	2												1		1			1	2																1	9
Demansia rufescens	Rufous Whipsnake										1						1															1	1						4
Furina ornata	Moon Snake				1																								1									2	4
Pseudechis australis	Mulga Snake																																					1	1
Pseudonaja mengdeni	Western Brown Snake																	1																			1			2
Pseudonaja modesta	Ringed Brown Snake							1							1																								1	3
Pseudonaja nuchalis	Northern Brown Snake																																		2					2
Gekkonidae																																								
Gehyra crypta	Western Cryptic Gehyra																							1																1	1
Gehyra media	Medium Pilbara Spotted Rock Gehyra																									5					5	1	1				1		1	12	29
Gehyra micra	Small Pilbara Spotted Rock Gehyra																																		4					1	5
Gehyra montium	Centralian Dtella																																1				1			2
Gehyra pilbara	Pilbara Dtella																																					2		2	4
Gehyra punctata	Spotted Pilbara Rock Gehyra																									2	1								3					3	9
Gehyra variegata	Variegated Gehyra																							2		4	1	1		1				1		1				1	13
Heteronotia binoei	Bynoe's Gecko						1				1						1							4		6	3	2		3	3		1		1	5	1	13			45
Pygopodidae																																								
Delma elegans	Pilbara Delma																									1														1	1
Delma nasuta	Sharp-snouted Delma						1				1						1																								3
Delma pax	Peace Delma			2	1			1					2											1		1		1		1			1				1				12
Lialis burtonis	Burton's Legless Lizard											1																1													2
Pygopus nigriceps	Western Hooded Scaly-foot							1																																	1
Pythonidae																																								
Antaresia childreni	Children's Python																																						2	2
Anataresia perthensis	Pygmy Python																																						1	1
Liasis olivaceus barroni	Pilbara Olive Python	VU	VU																																				1	1
Scincidae																																								

Species	Common Name	EPBC Act	WA status	EP-T01	EP-T02	EP-T03	EP-T04	EP-T05	EP-T06	EP-T07	EP-T08	EP-T09	EP-T10	EP-T11	EP-T12	EP-T13	EP-T14	EP-T15	EP-T16	EP-T17	EP-T18	EP-T19	EP-T20	Site 1	Site 2	Site 5	Site 7	Site 9	Site 10	Site 11	Site 12	Site 13	Site 14	Site 17	Site 18	Site 19	Site 20	Site 21	Site 22	Other*	Total**
Carlia munda	Shaded-Litter Rainbow-Skink					2		3						1							1	2																3	19
Cryptoblepharus ustulatus	Russet Snake-Eyed Skink																												1										1
Ctenotus duricola	Eastern Pilbara Lined Ctenotus					3						1								2			1		1		3		8		2	1	4		2	3		3	1	35
Ctenotus grandis	Grand Ctenotus			1	10	1						4	9	1	2								2			2	3	1						1	1		13	4	1	56
Ctenotus hanloni	Nimble Ctenotus				2										1											1											2	1		7
Ctenotus helenae	Clay-Soil Ctenotus																												6			1	2						9
Ctenotus pallasotus	Western Pilbara Lined Ctenotus																												1		1								2
Ctenotus pantherinus	Leopard Skink				1		3		1	1		2								5				2			2	1	3	2	1		3	5		1		5	38
Ctenotus piankai	Eastern Pilbara Lined Ctenotus																											1						2					3
Ctenotus rubicundus	Ruddy Ctenotus									1	1																											4	6
Ctenotus saxatilis	Rock Ctenotus			3	3	2	1	9		2	11	1	5											6		3		7	3		2	3	1			6	5	1	2	7	83
Ctenotus severus	Stern Rock Ctenotus																														1								1
Cyclodomorphus melanops	Spinifex Slender Blue-Tongue								1												1							1		1					2	1				7
Egernia cygnitos	Western Pilbara Spiny-Tailed Skink																																				2	1	3
Egernia epsisolus	Eastern Pilbara Spiny-Tailed Skink																																					6	6
Eremiascincus richardsonii	Broad-banded Sand Swimmer					1																																	1
Lerista amicorum	Fortescue Three-Toed Slider																																		1				1
Lerista bipes	North-Western Sandslider			2	2	1				2			2							2				14	6	3			3	8	1				4	24	1	25	8	1	109
Lerista clara	Sharp-Blazed Three-Toed Slider																													1									1
Lerista muelleri	Wood Mulch-Slider				1																					1					1	1						1	5
Menetia greyii	Common Dwarf Skink								1			1					1					1	1												1				1	7
Menetia surda	Western Dwarf Skink								1												1																		2
Morethia ruficauda ruficauda	Lined Fire-Tailed Skink			1	1	1	1	1					1																	1					1	3			10	21
Notoscincus ornatus ornatus	Ornate Soil-Crevice Skink							1		1	1	3						1							1	2		2	1	1		2	7	3			2	1	2	4	35
Proablepharus reginae	Western Soil-crevice Skink			1					2																														3
Tiliqua multifasciata	Central Blue Tongue																								1														2	2
Typhlopidae																																							
Anilios ammodytes	Pilbara Blind Snake								1															3	1						1	1		1	2	4	4				18
Anilios grypus	Long Beaked Blind Snake								1	2		1												2		3		2	1		2		1			6	2	1			24
Anilios pilbarensis	Pilbara Blind Snake																							1										1			1	1	2		5
Varanidae																																							
Varanus acanthurus	Spiny-tailed Goanna								1																			3	1			1			1	1	1		3	5	17
Varanus eremius	Pygmy Desert Goanna					1		1																						1										3
Varanus giganteus	Perentie								1								2													1									6	10

Species	Common Name	EPBC Act	WA status	EP-T01	EP-T02	EP-T03	EP-T04	EP-T05	EP-T06	EP-T07	EP-T08	EP-T09	EP-T10	EP-T11	EP-T12	EP-T13	EP-T14	EP-T15	EP-T16	EP-T17	EP-T18	EP-T19	EP-T20	Site 1	Site 2	Site 5	Site 7	Site 9	Site 10	Site 11	Site 12	Site 13	Site 14	Site 17	Site 18	Site 19	Site 20	Site 21	Site 22	Other*	Total**
Varanus gouldii	Bungarra or Sand Goanna																													1									2	3
Varanus panoptes	Panoptes																																						1	1
Varanus pilbarensis	Northern Pilbara Rock Goanna									2							1	1																					2	6
Varanus tristis	Racehorse Goanna					1																																	1	2
AMPHIBIANS																																								
Limnodynastidae																																								
Platyplectrum spenceri	Centralian Burrowing Frog			4										1										17		6	9	1		1										39
Myobatrachidae																																								
Uperoleia glandulosa	Glandular Toadlet																							2			4													6
Uperoleia saxatilis	Pilbara Toadlet					30																																		30
Pelodryadidae																																								
Cyclorana maini	Sheep Frog																							5		1	14	1								8		4			33
Litoria rubella	Little Red Tree Frog					2						1	4									4		1			6						1						2	21
FISH																																								
Melanotaeniidae																																								
Melanotaenia australis	Western Rainbow Fish																																						1	1
Plotosidae																																								
Neosilurus sp.	Pilbara Tandan																																						1	1
Terapontidae																																								
Leiopotherapon unicolor	Spangled Perch																																						11	11

Table 25: Fauna sites (GDA94, Zone 50)

Site Name	Site Type	Easting	Northing
HAB01	Habitat Assessment	821940.1	7632377
HAB02	Habitat Assessment	821908	7632379
HAB03	Habitat Assessment	815408.5	7634343
HAB04	Habitat Assessment	821839.6	7632848
HAB05	Habitat Assessment	820918.6	7634852
HAB06	Habitat Assessment	826664.5	7636062
HAB07	Habitat Assessment	809619.1	7620396
HAB08	Habitat Assessment	821754.1	7632918
HAB09	Habitat Assessment	826523.9	7635918
HAB10	Habitat Assessment	826516.5	7635938
HAB11	Habitat Assessment	769209.8	7635153
HAB12	Habitat Assessment	811054.1	7626071
HAB13	Habitat Assessment	740182.5	7642767
HAB14	Habitat Assessment	811124.9	7626156
HAB15	Habitat Assessment	740071	7642780
HAB16	Habitat Assessment	740199.1	7642738
HAB17	Habitat Assessment	771601.4	7633718
HAB18	Habitat Assessment	769065.6	7635237
HAB19	Habitat Assessment	790248.4	7633002
HAB20	Habitat Assessment	819359.2	7637257
HAB21	Habitat Assessment	807615.6	7616460
HAB22	Habitat Assessment	807605	7616183
HAB23	Habitat Assessment	787268.3	7630023
HAB24	Habitat Assessment	808082	7620070
HAB25	Habitat Assessment	802707.9	7617728
HAB26	Habitat Assessment	824531.6	7634896
HAB27	Habitat Assessment	802803.8	7617820
HAB28	Habitat Assessment	787335.6	7629966
HAB29	Habitat Assessment	766342.2	7635042
HAB30	Habitat Assessment	755508.1	7636415
HAB31	Habitat Assessment	766394.9	7635008
HAB32	Habitat Assessment	755596.6	7636433
HAB33	Habitat Assessment	756233.5	7633543
HAB34	Habitat Assessment	768959.2417	7644412.4
HAB35	Habitat Assessment	760451.644	7642935.306
HAB36	Habitat Assessment	760509.8421	7643445.249
HAB37	Habitat Assessment	745565.6429	7644930.42
HAB38	Habitat Assessment	745560.8326	7644947.439
HAB39	Habitat Assessment	744166.444	7644996.766
HAB40	Habitat Assessment	738113.1773	7649612.327
HAB41	Habitat Assessment	735136.1038	7651301.201
HAB42	Habitat Assessment	735243.0902	7648388.68
HAB43	Habitat Assessment	735130.8654	7648264.196
HAB44	Habitat Assessment	735036.0914	7648300.143

Site Name	Site Type	Easting	Northing
HAB45	Habitat Assessment	720170.3494	7651625.887
HAB46	Habitat Assessment	72144x0.9278	7650706.769
HAB47	Habitat Assessment	722278.7068	7649146.044
HAB48	Habitat Assessment	729466.3116	7649325.523
HAB49	Habitat Assessment	753672.0861	7634397.261
HAB50	Habitat Assessment	751591.7903	7638440.805
HAB51	Habitat Assessment	751521.5994	7638389.657
HAB52	Habitat Assessment	751225.3168	7642013.028
HAB53	Habitat Assessment	765669.0122	7638407.064
HAB54	Habitat Assessment	761940.4864	7636673.949
HAB55	Habitat Assessment	758002.581	7638273.005
HAB56	Habitat Assessment	833201.5743	7642921.367
HAB57	Habitat Assessment	831763.1493	7641972.203
HAB58	Habitat Assessment	831290.4964	7641883.937
HAB59	Habitat Assessment	831085.4267	7641783.371
HAB60	Habitat Assessment	831044.4641	7641748.95
HAB61	Habitat Assessment	830010.4467	7641318.188
HAB62	Habitat Assessment	828811.6188	7640980.838
HAB63	Habitat Assessment	828834.1477	7641018.948
HAB64	Habitat Assessment	819544.5009	7635512.927
HAB65	Habitat Assessment	771306.0314	7636801.079
HAB66	Habitat Assessment	771260.3203	7636883.589
HAB67	Habitat Assessment	771307.5961	7636978.831
HAB68	Habitat Assessment	771141.6933	7636421.274
HAB69	Habitat Assessment	774177.3562	7635873.468
HAB70	Habitat Assessment	778432.9232	7636257.478
HAB71	Habitat Assessment	780685.6647	7636111.527
HAB72	Habitat Assessment	777180.1491	7639237.766
HAB73	Habitat Assessment	783372.4359	7638277.14
HAB74	Habitat Assessment	785719.8255	7635856.364
HAB75	Habitat Assessment	818087.751	7634551.658
HAB76	Habitat Assessment	818775.7234	7631093.657
HAB77	Habitat Assessment	818654.8374	7641142.174
HAB78	Habitat Assessment	823633.0533	7635586.11
HAB79	Habitat Assessment	795091.7756	7635762.619
HAB80	Habitat Assessment	753494.572	7645692.683
HAB81	Habitat Assessment	822272.8947	7641066.156
HAB82	Habitat Assessment	821759.7651	7638860.725
HAB83	Habitat Assessment	826472.0245	7640547.154
HAB84	Habitat Assessment	760018.0463	7645070.58
HAB85	Habitat Assessment	782151.5465	7642257.412
HAB86	Habitat Assessment	817326.8246	7635451.922
HAB86	Habitat Assessment	817005.433	7636711.247
HAB87	Habitat Assessment	817322.1511	7634966.842

Site Name	Site Type	Easting	Northing
HAB90	Habitat Assessment	822316.0636	7640875.491
HAB91	Habitat Assessment	819324.1266	7631334.976
HAB92	Habitat Assessment	819502.3527	7631342.876
HAB93	Habitat Assessment	771117.4503	7636651.167
BS01	Bird Survey	766370.0452	7635031.665
BS02	Bird Survey	782143.5765	7642261.945
BS03	Bird Survey	722341.3958	7649245.384
BS04	Bird Survey	760039.1155	7644998.151
BS05	Bird Survey	721978.498	7651034.943
BS06	Bird Survey	722404.1874	7649132.416
BS07	Bird Survey	722297.2701	7649148.4
BS08	Bird Survey	721837.4642	7651101.156
BS09	Bird Survey	760089.383	7645405.81
BS10	Bird Survey	722294.5259	7649154.821
BS11	Bird Survey	721866.9943	7651127.072
BS12	Bird Survey	760056.5451	7645124.412
BS13	Bird Survey	760054.9348	7645125.013
BS14	Bird Survey	759812.6126	7644735.648
BS15	Bird Survey	735162.1373	7648382.707
BS16	Bird Survey	760043.1164	7644976.497
BS17	Bird Survey	722751.5213	7649367.064
BS18	Bird Survey	759878.4504	7645149.063
BS19	Bird Survey	782089.5837	7642121.395
BS20	Bird Survey	782185.0406	7642081.105
BS21	Bird Survey	794660.7607	7636077.513
BS22	Bird Survey	826439.8103	7640663.985
BS23	Bird Survey	818034.6448	7634567.938
BS24	Bird Survey	825162.2823	7640569.042
BS25	Bird Survey	822213.9392	7641242.236
BS26	Bird Survey	818668.3564	7641221.336
BS27	Bird Survey	822187.1255	7641283.121
BS28	Bird Survey	818111.4798	7634557.067
BS29	Bird Survey	826463.9718	7640632.82
BS30	Bird Survey	780676.0198	7635856.515
BS31	Bird Survey	785559.3529	7656022.923
BS32	Bird Survey	785559.8012	7656023.004
BS33	Bird Survey	826463.1166	7640597.811
BS34	Bird Survey	818173.9909	7634516.745
BS35	Bird Survey	823704.2296	7635753.298
BS36	Bird Survey	826474.3551	7640550.987
BS37	Bird Survey	826475.1097	7640550.285
BS38	Bird Survey	826474.8492	7640549.724
BS39	Bird Survey	828744.8067	7640937.532
BS40	Bird Survey	831062.1425	7641755.997

Site Name	Site Type	Easting	Northing
BS41	Bird Survey	818763.7929	7631020.734
BS42	Bird Survey	818223.4448	7634602.923
BS43	Bird Survey	817052.3179	7635923.656
BS44	Bird Survey	819321.0855	7631342.815
BS45	Bird Survey	766370.0452	7635031.665