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ECOLOGICAL MANAGEMENT

MAHALO GAS FIELD INFRASTRUCTURE ECOLOGICAL IMPACT ASSESSMENT

Report prepared for
Santos QNT Pty Ltd

21 May 2026

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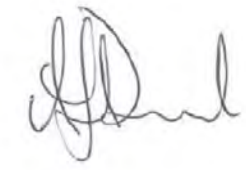


Dr Andrew Daniel
Managing Director

Date: 21 May 2026

Executive Summary

Terrestria Pty Ltd has been engaged by Santos QNT Pty Ltd on behalf of the Mahalo Joint Venture to provide an independent assessment of the potential impacts to ecological values regulated under relevant federal and state legislation for the Infrastructure of the Mahalo Gas Field, Central Queensland (Survey area).

Mahalo Gas Project is located within the Central Highlands Regional Council, approximately 40 km north of Rolleston in Central Queensland. The Project is a joint venture between Santos QNT Pty Ltd and Comet Ridge Mahalo Pty Ltd, comprises two petroleum leases (PL1082 and PL1083) over a combined area of approximately 470 km^2 and will be constructed in two phases.

There is an Environmental Authority (EA) P-EA-100178150 from Department of Environment, Tourism, Science and Innovation (DETSI) over the two leases for a petroleum or GHG storage activity. The EA provides for the construction of up to 190 coal seam gas development wells and 228ha of associated disturbance.

The Survey Area runs NNW to SSE through heavy clay plains of old alluvial surfaces, young alluvial surfaces in the north to black soils derived from basalt flows in the south (**Figure 1.1**). This landscape is fertile and has been heavily cleared for cattle grazing. There are few large patches of remnant native vegetation. The old alluvial soils variously support gilgai formations that have mostly been cleared and often blade ploughed.

The assessment methodology involved a combination of desktop assessment using spatially explicit mapping and databases to define the likely distribution and condition of the survey area's native vegetation communities and associated habitats for federal and state threatened flora and fauna species that are thought likely to occur within the local landscape.

Field surveys were conducted using standard methods from the published guidelines to verify desktop assessments, culminating in the production of field verified project scale spatially explicit mapping of the extant ecological values across the survey area.

Threatened fauna habitat quality was modelled using an adapted version of the State's guide to determining terrestrial habitat quality version 1.3 that scored metrics that define the quality and availability of foraging and shelter habitat and the absence of threats for each threatened species that potential occurs within the landscape.

The resultant spatially explicit maps of federal and state significant ecological values informed Santos' project team's design of the gas infrastructure layout. The layout was designed to avoid or minimise impacts to ecologically significant communities and high/medium value threatened fauna habitats. This work included the addition of construction exclusion zones to avoid impacts to threatened fauna habitats where they occurred on the periphery of the CDF and could be avoided.

The final project construction disturbance footprint was then overlaid onto the field verified ecological values mapping to define the direct impacts to regulated ecological values. These data were then used to inform impact assessments made according to the federal significant impact and state significant residual impact guidelines.

The proposed layout will not directly impact federally threatened ecological communities, whilst there will be an impact to 0.1 ha of endangered RE 11.3.1 that is prescribed regional ecosystem (regulated vegetation) all this impact occurs in linear strips less than 10m wide with a mid-dense (structural category) regional ecosystem[1] and would not result in a significant residual impact. Indeed, impacts to ground-truthed regional ecosystems are very minor and all are less than 10m wide. There are no proposed areas of clearing of state mapped remnant vegetation within the defined distance of a state mapped wetland or watercourse.

No threatened plant species were located within the impact area, and none are predicted to occur.

Impacts to vegetation that may contain threatened fauna habitats are limited to the areas provided in **Table A**, below.

Table A: Area and Habitat Quality Scores for Vegetation within the Construction Disturbance Footprint

Habitat Quality	Squatter Pigeon	Painted Honeyeater	Ornamental/Grey Snake	Yakka Skink	Greater Glider	Koala	South-eastern Long-eared Bat	Painted Snipe	Latham' s Snipe	Sharp-tailed Sandpiper
Low (includes 'Not suitable habitat')	1.6	1.6	3.4	2.9	3.5	3.5	3.5	2.1	2.1	3.5
Medium	1.9	1.9	0.0	0.5	0	0	0	1.4	1.4	0.0
High	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Impacts to mapped native vegetation communities identified as potential threatened fauna habitat through the habitat quality modelling process (**Table A**) were assessed on a patch-by-patch basis to identify where patches mapped as low or medium quality wildlife habitat would qualify as suitable habitat due to the presence of feeding, nesting or breeding habitat or where roosting/shelter habitats are likely to provide at least temporary habitat for a particular species. A patch-by-patch assessment revealed that there will be the following impacts to Wildlife habitat caused by the construction of the gas infrastructure:

Area of habitat disturbed

Squatter pigeon	0.5 ha of low/medium quality
Yakka Skink	0.5 ha of low/medium quality
Koala	0.4 ha of low/medium quality
Echidna	3.5 ha of low/medium quality

[1] DEHP, 2014. Table 1, Section 2.1 Queensland Environmental Offsets Policy, Significant Residual Impact Guideline, Nature Conservation Act 1992 Environmental Protection Act 1994 Marine Parks Act 2004 December 2014

Pre-disturbance surveys for the presence of Yakka skink within 100m of proposed clearing and mistletoe habitat for the Painted Honeyeater are recommended to identify the actual presence of habitat for these species within the CDZ.

Significant residual impact assessments for the proposed disturbance to threatened wildlife habitat reveals that infrastructure is located almost entirely outside of remnant vegetation patches and regrowth that support high threatened fauna habitat values, resulting in no direct impacts to high value habitats and minimal impacts to medium value habitats for any threatened species. Moreover, impacts to these low/medium quality habitats will occur as multiple very small slithers on the edges of larger mapped habitat patches reducing the likelihood of any meaningful impacts.

Investigations into historical gas related impacts within the broader area and their likely role in cumulative impacts to MNES and MSES revealed that whilst 191 ha of previous disturbance has been undertaken nearly all of this has occurred in areas devoid of ecological values of note. The exception being a 0.25 ha patch of mapped remnant RE 11.4.9a that was cleared in 2017 for the construction of a CSG well, Humboldt South-1. Review of the recent aerial imagery shows that there is currently no surface infrastructure present and that in 2023 the area supported a dense cover of grass with emergent brigalow shrubs/trees that has developed over the past 9 years. This vegetation was determined to provide potential medium quality habitat for Painted honeyeater (Vulnerable EPBC and NCA), Ornamental Snake (Vulnerable EPBC and NCA), Grey Snake (Endangered EPBC and NCA), South-eastern Long-eared Bat (Vulnerable EPBC and NCA). Assessments made against the significant residual impact guidelines found that no cumulative significant residual impacts were anticipated.

In summary, it was determined that avoidance through design and available mitigation measures were sufficient to prevent significant residual impacts to the habitat for any of the threatened fauna species modelled to potentially occur within the local landscape or other environmentally sensitive areas. A referral under the EPBC Act for a controlled action is not required for impacts to MNES Threatened Wildlife.

Table B: Project Significant Residual Impacts on MNES and MSES

Matter	Impact	Significant (Residual) Impact	Report Reference
Matters of National Environmental Significance			
World Heritage Properties	0.0	No	Section 4.2 Table 4.4
National Heritage Places	0.0	No	Section 4.2 Table 4.4
Great Barrier Reef Marine Park and Commonwealth Marine Areas	0.0	No	Section 4.2 Table 4.4
Wetlands of International Importance	0.0	No	Section 4.2 Table 4.4
Threatened Ecological Communities	0.0	No	Section 4.2 Table 4.4
Listed Migratory Species	0.0	No	Section 4.2 Table 4.4
Listed Threatened Species			Section 4.1.5 Table 4.1
Birds			
Squatter Pigeon (southern) (*Geophaps scripta scripta*) (Vulnerable)	0.5	No	

Matter	Impact	Significant (Residual) Impact	Report Reference
Red goshawk (*Erythrotriorchis radiatus*) (Endangered)	0.0	No	
White-throated needletail (*Hirundapus caudacutus*) (Vulnerable)	0.0	No	
Painted Honeyeater (*Grantiella picta*) (Vulnerable)	0.0	No	
Australian Painted Snipe (*Rostratula australis*) (Endangered)	0.0	No	
Latham's Snipe (*Gallinago hardwickii*) (Vulnerable)	0.0	No	
Sharp-tailed Sandpiper (*Calidris acuminata* (Vulnerable)	0.0	No	
Reptiles			
Ornamental snake (*Denisonia maculata*) (Vulnerable)	0.0	No	
Grey Snake (*Hemiaspis* dameli)i (Endangered)	0.0	No	
Yakka Skink (*Egernia rugosa*) (Vulnerable)	0.5	No	
Mammals			
Southeastern long-eared bat (*Nyctophilus corbeni*)(Vulnerable)	0.0	No	
Koala (*Phascolarctos cinereums*) (Endangered)	0.4	No	
Greater Glider (southern and central) (*Petauroides volans*) (Endangered)	0.0	No	
Matters of State Environmental Significance			
Regulated Vegetation			
Prescribed RE that is an Endangered or Of Concern RE			Section 4.3 Table 4.5
RE 11.3.1	0.1	No	
Prescribed RE located within the defined distance from the defining banks of a watercourse	0.0	No	Section 4.3 Table 4.5
Clearing in the portion of a RE that lies within a mapped wetland	0.0	No	Section 4.3 Table 4.5
Connectivity Areas			Section 4.3 Table 4.5
Areas of remnant vegetation outside urban areas containing prescribed REs that are required for ecosystem functioning			
RE 11.9.5	0.1	No	

Matter	Impact	Significant (Residual) Impact	Report Reference
Wetlands and Watercourses			Section 4.3 Table 4.5
Wetland in a wetland protection area	0.0	No	
Wetlands of high ecological significance	0.0	No	
Wetland or watercourse in high ecological value waters	0.0	No	
Protected Wildlife Habitat			Section 4.1.5 Table 4.1
Birds			
Squatter Pigeon (southern) (*Geophaps scripta scripta*) (Vulnerable)	0.5	No	
Painted Honeyeater (*Grantiella picta*) (Vulnerable)	0.0	No	
Australian Painted Snipe (*Rostratula australis*) (Vulnerable)	0.0	No	
Red goshawk (*Erythrotriorchis radiatus*) (Endangered)	0.0	No	
Latham's Snipe (*Gallinago hardwickii*) (Vulnerable)	0.0	No	
Sharp-tailed Sandpiper (*Calidris acuminata*) (Vulnerable)	0.0	No	
Reptiles			
Ornamental snake (*Denisonia maculata*) (Vulnerable)	0.0	No	
Grey Snake (*Hemiaspis damelii*) (Endangered)	0.0	No	
Yakka Skink (*Egernia rugosa*) (Vulnerable)	0.5	No	
Mammals			
Southeastern long-eared bat (*Nyctophilus corbeni*) (Vulnerable)	0.0	No	
Koala (*Phascolarctos cinereus*) (Endangered)	0.4	No	
Greater Glider (southern and central) (*Petauroides volans*) (Endangered)	0.0	No	
Short-beaked Echidna (*Tachyglossus aculeatus*) Special Least Concern	3.5	No	
Protected areas	0.0	No	Section 4.1.5 Table 4.1
Waterway providing for fish passage			Section 4.1.5 Table 4.1
Outside of the scope of this report			

MAHALO GAS FIELD INFRASTRUCTURE ECOLOGICAL IMPACT ASSESSMENT

Table of Contents

Figures

Tables

Appendices

Abbreviations

ALA	Atlas of Living Australia
CDF	Construction Disturbance Footprint
DAF	Department of Agriculture and Fisheries
DCCEEW	Department of Climate Change, Energy, the Environment and Water
DETSI	Department of Environment, Tourism, Science and Innovation
EA	Environmental Authority
EO Act (2014)	*Environmental Offsets Act 2014*
EP Act (1994)	*Environmental Protection Act 1994*
EP Reg (2019)	*Environmental Protection Regulation 2019*
EPBC Act (1999)	*Environment Protection and Biodiversity Conservation Act 1999*
EPP (water)	*Environmental Protection (Water and wetland biodiversity) Policy 2019*
ERA	Environmentally relevant activities
ESA	Environmentally Sensitive Area
EVNT	Endangered, vulnerable, near threatened
GPS	Global Positioning System
HES	High Ecological Significance
DA	Development Assessment
MLES	Matters of Local Environmental Significance
MNES	Matters of National Environmental Significance
MSES	Matter of State Environmental Significance
NALL	*Natural Assets Local Law 2003*
NC Act (1992)	*Nature Conservation Act 1992*
NC Reg (2006)	*Nature Conservation (Wildlife Management) Regulation 2006*
P Act (2016)	Planning Act 2016
P Reg	*State Planning Regulation 2017*
PMST	EPBC Act Online Protected Matters Search Tool
QEO Reg (2014)	*Environmental Offsets Regulation 2014*
QEOP (2014)	*Environmental Offset's Policy 2014*
RE	Regional Ecosystem
SDAP	State Development Assessment Provisions
SMP	Species Management Program
SPP	*State Planning Policy 2017*
SPRP	State planning regulatory provisions
TEC	Threatened Ecological Community (EPBC Act)
WoNS	Weeds of National Significance

1.0 Introduction

1.1 Background and Purpose

Terrestria Pty Ltd was engaged by Santos QNT Pty Ltd on behalf of the Mahalo Joint Venture to provide an independent assessment of the potential impacts to ecological values regulated under relevant federal and state legislation for the proposed development infrastructure of the Mahalo Gas Field, Central Queensland (Survey area) (Figure 1.1).

Terrestria Pty Ltd is a specialised ecological consultancy operating in the field of impact assessment for large projects since 2011. The Project assessment was headed up by Dr Daniel a Principal Ecologist with over 30 years' experience in ecological assessment. The field assessment crew was comprised of Mr Sharp an ex-herbarium botanist with over 15 years' experience in ecological consulting and Mr Neville an ecologist with over 20 years' experience in the ecology industry.

This ecological report is based on desktop and field surveys to ground truth the extent and distribution of native vegetation communities and associated fauna habitats that are Matters of National Environmental Significance (MNES) and Matters of State Environmental Significance (MSES). In addition to community and species presence, surveys included habitat condition assessments for threatened[2] species and communities used to inform impact assessments.

Impacts to potential MNES and MSES species habitat, environmentally sensitive areas, MSES communities and Threatened Ecological Communities (TEC) have been defined by intersecting the resulting field-verified spatially explicit habitat quality maps with the construction footprint. The resultant modelled impacts have been assessed against the significant impact[3] and significant residual impact guidelines[4] to determine the potential impacts to State and federally threatened species and communities are anticipated. These significant impact assessments determine whether referral to the Department of Climate Change, Energy, the Environment and Water (DCCEEW) for a controlled action under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC act) is warranted and whether the project will trigger requirements for offsets under the State Offsets Policy[5] administered by the Queensland Department of Environment, Tourism, Science and Innovation (DETSI).

[2] Species listed as threatened under the *Environment Protection and Biodiversity Conservation Act, 1999*, *Environmental Protection Act, 1994* and *Nature Conservation Act, 1992*.
[3] DoE 2013, Matters of National Environmental Significance, Significant impact guidelines 1.1, Environment Protection and Biodiversity Conservation Act 1999.
[4] DEHP, 2014. Queensland Environmental Offsets Policy, Significant Residual Impact Guideline, *Nature Conservation Act 1992 Environmental Protection Act 1994 Marine Parks Act 2004*, December 2014
[5] DES, 2023, Queensland Environmental Offsets Policy, EPP/2015/1658, Version 1.14, Last Reviewed: 29/06/2023

1.2 General Survey Area Description

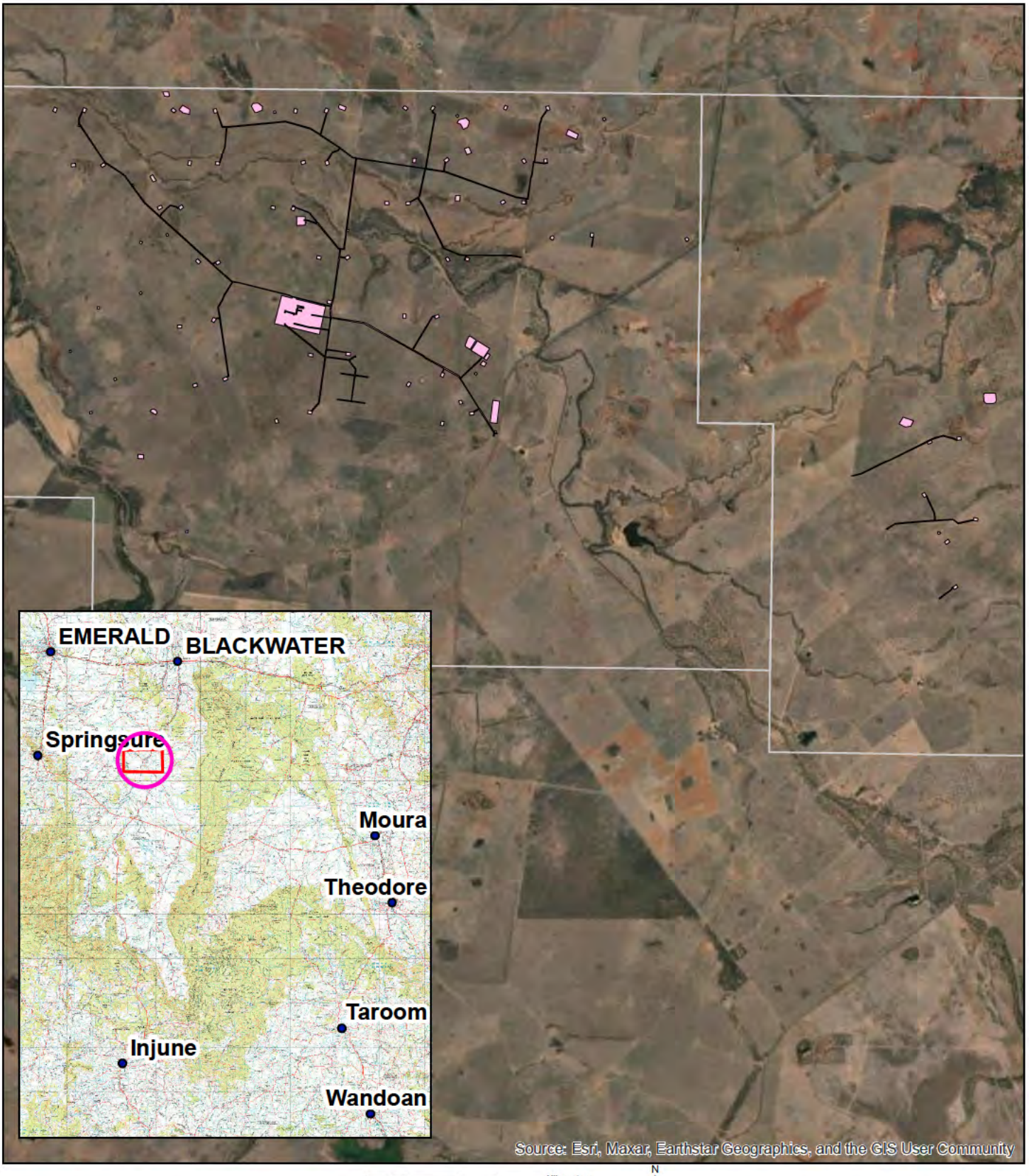
The Survey Area runs NNW to SSE through heavy clay plains of old alluvial surfaces, young alluvial surfaces in the north to black soils derived from basalt flows in the south (**Figure 1.1**). This landscape is fertile and has been heavily cleared for cattle grazing. There are few large patches of remnant native vegetation. The old alluvial soils variously support gilgai formations that have mostly been cleared and often blade ploughed.

1.3 The Project

Mahalo Gas Project is located within the Central Highlands Regional Council, approximately 40 km north of Rolleston in Central Queensland. The Project is a joint venture between Santos QNT Pty Ltd and Comet Ridge Mahalo Pty Ltd, comprises two petroleum leases (PL1082 and PL1083) over a combined area of approximately 470 km^2 and will be constructed in two phases.

There is an Environmental Authority (EA) P-EA-100178150 from Department of Environment, Tourism, Science and Innovation (DETSI) over the two leases for a petroleum or GHG storage activity. The EA provides for the construction of up to 190 coal seam gas development wells and 228ha disturbance. The proposed construction footprint for phase 1 will include:

- 68 gas producing wells;
- Water management infrastructure including brine and produced water storage dams;
- Ancillary linear infrastructure, including gas and water flow lines, access tracks, power and communication lines;
- Laydown areas;
- Accommodation camps; and
- a communication tower.



Legend

- Construction Footprint
- Petroleum_leases

Figure 1.1

Survey Area Location and Extent

Mahalo Gas Field Facilities Infrastructure
Ecological Impact Assessment

AD 12/12/24
Job No. 0237

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2.0 Methodology

Field and desktop assessments were carried out in accordance with the following Santos procedures:

- Methodology for Assessing Ecological Values (0007-650-PRO-0007);
- Procedure for Conducting Vegetation Assessments, Document Number: 0007-650-PRO-0008;
- Procedure for Conducting Preliminary Ecological Desktop Assessments (0007-650-PRO-0009);
- Procedure for Conducting Wetland Assessments (3301-GLNG-4-1.3-0016); and
- Guideline for Conducting Vegetation Community Assessments: A Guide to Using the 'Procedure for Vegetation Community Assessments' (0007-650-GDE-0002).

The field assessment identified the existence of these values on-ground and GIS mapping was used to delineate the extent and distribution of these values across the Survey area. The field survey program was designed to establish likely presence/absence of species and assess the presence, condition and distribution of potential habitat for MNES and MSES threatened wildlife.

Spatially explicit maps depicting the distribution and condition of MNES and MSES communities and habitats were used to determine the likely impacts to these values brought about through the construction of the gas infrastructure. The impacts were then assessed against the impact guidelines[6] to determine whether a significant impact would occur, resulting in an offset liability.

2.1 Suitably Qualified Ecologists

The qualifications and experience of the report author, field assessment and impact assessment teams are provided in Appendix E.

2.2 Desktop Review

The identification of native vegetation communities that are MNES and MSES and/or hold habitat values for MNES and MSES flora and fauna was undertaken through desktop mapping, refined through field surveys. The results of this work have produced spatially explicit maps of likely and possible MNES and MSES communities and habitats. These data have been used to develop a wet-season program that:

- Determines threshold condition criteria within potential Threatened Ecological Communities;
- Determines the presence and condition of communities that are ESAs and/or MSES;
- Adequately surveys for the presence of target MNES and MSES threatened species and
- Defines the quality of habitats that would support these species.

The methods employed in these desktop mapping exercises are described below.

[6] Both, DoE 2013, Matters of National Environmental Significance, Significant impact guidelines 1.1, *Environment Protection and Biodiversity Conservation Act 1999* and DEHP, 2014. Queensland Environmental Offsets Policy, Significant Residual Impact Guideline, *Nature Conservation Act 1992 Environmental Protection Act 1994 Marine Parks Act 2004*, December 2014

2.2.1 Native Vegetation Community Base Mapping

A base map of the likely vegetation communities and associated regional ecosystems was developed within ArcMap. The following State government mapping was downloaded and imported into the GIS platform to provide a basis for polygon attribution.

- Detailed Surface Geology 1:250,000[7] (**Figure 3.1**); and
- DES's VM Act Regional Ecosystem and Remnant Mapping-Version 13.1[8] (**Figure 3.2**).
- High Value Regrowth Mapping (version 13.1.1)[9] (**Figure 3.2**).

Expert desktop mapping was conducted using state mapping layers over recent high quality colour aerial imagery. Line work for the 1:100,000 State mapping was refined, and areas of native vegetation not mapped by the small-scale State mapping were added at a scale of 1:3,000 (linework only). These maps were exported to android tablets for field validation.

2.2.2 Threatened Ecological Community Mapping

The potential occurrence of threatened ecological communities was provided through the PMST search (**Appendix A**). Conservation advice for the threatened ecological communities thought to occur were interrogated to derive a list of regional ecosystem equivalents. Review of the project desktop regional ecosystem mapping (**Section 2.1.1**) highlighted the potential distribution of threatened ecological communities within the Survey area. Review of historical aerial photographs on QGlobe was also used as a tool to assess the likelihood that regrowth communities would exhibit the structural characteristics and age benchmarks to qualify as a threatened ecological community as provided in the relevant published Conservation advice. These data were uploaded onto field tablets to inform field validation surveys.

[7]biodiversity status of 2021 remnant regional ecosystems - Queensland 2024-05-15 (publication) https://qldspatial.information.qld.gov.au/catalogue/custom/search.page?q=detailed+geology
[8] Detailed Geology (surface) Queensland 2025-03-28 (publication) http://qldspatial.information.qld.gov.au/catalogue/custom/search.page?q=%22Biodiversity status of 2021 remnant regional ecosystems - Queensland%22
[9] High value regrowth 2021 – Queensland 2024-05-15 (publication) https://qldspatial.information.qld.gov.au/catalogue/custom/search.page?q=surface+geology

2.2.3 Desktop Gilgai Delineation and Habitat Quality Assessment

Areas of gilgai were mapped using multiple remote imagery sources to identify their distribution and quality. Gilgai quality was assigned using expert interpretation of aerial imagery for the presence of likely micro-habitat features that could support native species and in particular threatened species. The categories assigned to mapped gilgai are provide below:

low quality	Larger and/or deeper in appearance and may hold water for longer periods but does not support shrub layers or fallen woody material, or moderate in dimensions but supports some shrubs/woody material to provide shelter for fauna.
Medium quality	Larger and/or deeper in appearance and support shrub layers or fallen woody mater.
High quality	Gilgais present within well developed open forest

These data were uploaded onto field tablets to inform field surveys.

2.2.4 Identification of Watercourse Crossing Points

Vegetation Management Act 1999 and *Water Act 2000* watercourse crossings were identified using GIS shapefiles sourced from QSpatial. The location of these crossings was identified on field tablets for assessment in the field. The locations of watercourse crossing sites are presented along with site data.

2.2.5 Potential Occurrence of Threatened Species

WildNet database and Protected Matters searches (18/02/2025) with a 20 km radius of the Survey area were conducted to identify threatened flora and fauna species that may potentially occur (**Appendix B**). In addition, a 100 km search (January 2026) for the presence of conservation significant species was also carried out to identify highly mobile species that may also potentially occur (**Appendix Bi**). The desktop assessments have provided a list of target species listed under the EPBC and NC Acts that may occur within the Survey area (target threatened species). Information gained from this phase of the study has been used to:

- Identify threatened species known from the locality;
- Determine which threatened species are likely to occur if suitable habitat is located within the Survey area; and
- Identify likely habitat within the Survey area based on available mapping and aerial photograph interpretation.

The likelihood of occurrence of Listed flora and fauna within the immediate vicinity of the Survey area were assessed using expert knowledge of the micro-habitat features required to sustain these species and detailed knowledge of the presence and distribution of these micro-habitat features within the Survey area. Six (6) categories of fauna and four (4) categories of flora were used to classify the likelihood of a species being present within the Survey area based on the desktop research and existing knowledge of the local environment. Where the possibility of occurrence cannot be ruled out but expert analysis suggests that this possibility is extremely low an extra prefix of “unlikely” has been added to the category, for example unlikely potential visitor.

Categories were defined as:

- Present — confirmed during field assessments
- Likely — suitable habitat observed during field assessments, within known distribution and records of the species occurring within or around the Survey area
- Potential — possibility of suitable habitat, or limited records of the species within the local region
- Potential visitor (fauna only) — possibility of suitable feeding habitat that may be utilised on an infrequent basis or for a limited time
- Potential Fly over (fauna only) — Predominantly aerial species unlikely to land);
- Unlikely — no suitable habitat or not known to occur within the local region

The results of this exercise are presented in Appendix C and D for threatened flora and fauna respectively. This work was used to focus survey efforts and develop field work programs.

2.2.6 Identification of Potential Habitat for Threatened Species

Threatened fauna habitats within the Survey area were mapped using the mapping rules provided for Arcadia gas fields in Boobook (2021) and expert knowledge on habitat requirements applied to the desktop regional ecosystem mapping. Expert profiles of habitat requirements for species known to occur within the locality were undertaken and the likelihood of occurrence assessed (Appendices C and D). Habitat types were identified using the regional ecosystem classification system and habitat condition classes were identified as either remnant or regrowth. It was determined that there was insufficient variation in non-remnant regrowth patches to warrant division into advanced and young regrowth sub-categories. All areas of regrowth were identified as young and highly disturbed.

Desktop assessments were used to identify replicates of similar condition classes for on-ground condition assessment. These data were used to assign threatened species survey and habitat condition sites that incorporated replicate survey sites for all habitat types across the Survey area according to the Terrestrial Habitat Quality Guidelines[10]. The locations of the THQ field-based attribute assessment sites are given in Appendix F. These data were uploaded onto field tablets to inform field survey effort.

2.2.7 Threatened Ecological Community and MSES Regulated Vegetation Condition Assessment

Vegetation communities whose dominant floristics reflect those of threatened ecological communities were identified for field condition assessments to determine whether they meet condition thresholds required to qualify as a Threatened Ecological Community according to the relevant published conservation advice. Historical and contemporary aerial imagery were examined to gain an

[10] DEHP. 2014. Guide to determining terrestrial habitat quality. A toolkit for assessing land based offsets under the Queensland Environmental Offsets Policy. Version 1.3 April 2017

understanding of likely structural and floristic condition. Representative sites for field validation were selected, and the data was exported to field tablets for field validation.

2.2.8 Presence of and Proximity to Environmentally Sensitive Areas

Construction and operation of environmentally relevant activities, requires an assessment of environmental values[11] identified by the State as environmentally sensitive areas[12]. Environmentally sensitive areas include national parks, state forests, world heritage areas, Ramsar wetlands, nationally important wetlands, endangered and of concern regional ecosystems and essential habitat and include feature areas of significant natural and cultural values such as habitat for conservation significant flora and fauna and places of Aboriginal and European cultural heritage.

Gas projects are required to assess the risk that an environmentally relevant activity poses to environmentally sensitive areas [13]. The risks of various petroleum activities are classified and defined as.

- Level1 Petroleum Activities, which are activities considered to have a high risk of causing significant environmental damage and
- Level 2 Petroleum Activities, which are activities considered to have low potential to cause environmental harm

In turn environmentally sensitive areas are also classified according to their sensitivity to environmental impacts into Category A, B and C environmentally sensitive areas.

Category A and B ESAs are defined under the Environmental Protection Regulation (2008). They are also provided within the *draft Code of Environmental Compliance for Level 2 Petroleum activities* (EPA 2008) part of the environmental compliance and condition framework. Level 2 petroleum activities must not cause harm to Category A and B ESAs. Authority for Level 1 petroleum activities may be granted in associated with an approved EM Plan assessed under the EIS framework.

Category C ESAs are listed in the *Draft Code of Environmental Compliance for Level 2 Petroleum Activities*. Category C ESAs are defined under the EA conditions for individual projects. Environmental Sensitive Areas considered in this assessment are provided in Table 2.1, below.

Mapping layers of individual ESAs were sourced from QSpatial and projected within a GIS along with the proposed gas field infrastructure. The resulting map was interrogated for the likely impacts based on the level of impact and the proximity of mapped ESAs to the activity.

[11] Section 9 of the EP Act includes; *a quality or physical characteristic of the environment that is conducive to ecological health, public amenity or safety, as well as any other qualities of the environment identified and declared to be an environmental value under an environmental protection policy or regulation*
[12] Pursuant to sections 125 (for variation and site-specific applications) and section 226 (for amendment applications) of the *Environmental Protection Act 1994* (EP Act)
[13] *Environmental Protection Regulation (2008)*

Table 2.1: Environmental Sensitive Area Types

Category A Protected Areas
National Parks (Aboriginal Land)
National Parks (Torres Strait Islander Land)
National Park, National Park (scientific), National Park (Recovery)
Conservation Park
Forest Reserves
Wet Tropics World Heritage Areas
Greta barrier Reef Marine Park Area
Marine Parks (other than general use zones)
Category B Protected Areas
Coordinated Conservation Areas
Wilderness Areas
Areas of critical habitat, of major interest identified under a conservation plan or subject to an interim conservation order
World Heritage Management Areas
International Agreement Areas
Endangered Regional Ecosystems (Biodiversity Status)
Ramsar Wetlands
Protection of the World Cultural and National Heritage
Conservation of Migratory species
General use Zones of Marine Parks
Place of Cultural Heritage Significance (Registered Place, Protected Areas)
Aboriginal Cultural Heritage Areas
Torres Strait Islander Cultural Heritage Areas
Designated Landscape Areas – other than Stanbroke
Feature Protection Areas, State Forest Park or a Scientific Area
Fish habitat Areas and areas of Marine Plants
An Area to the Seaward Side of the Highest Astronomical Tide
Category C Protected Areas
Of Concern Regional Ecosystems (Biodiversity Status)
Declared areas
Nature refuges and Resource Reserves
Declared Catchment Areas
Declared irrigation Areas
Water supply Areas
Drainage Areas
River Improvement Areas
Stanbroke Designated Landscape Area
State Forests or Timber Reserves
Koala Habitat Area
Essential Habitat
Coastal Management Districts
Aboriginal and Torres Strait Islander owned land and identified interests
Referable wetlands
Reserves under the Land Act 1994
Bureau of Sugar Experimental Stations (research sites)
PI Research Site
Other Environmentally Sensitive Features
EPBC Matters of National Environmental Significance
Flora and Fauna Species Declared under the Nature Conservation Act 1992
Directory of Important Wetlands

2.2.9 Cumulative Impacts – Quantification of Historical Gas Related Impacts to PEMs and MNES

An application to amendment an existing authority[14], or an authority where staging has not been conditioned[15], requires a significant residual impact assessment to assess the cumulative impacts of the entire project on each matter, i.e. impacts proposed in the existing authority and any additional impacts proposed in the amendment.

Activities in PL 1082 and PL 1083 were previously authorised under EPPG00872113 as exploration activities. These PLs were split out into P-EA-100178150 in July 2025. Both PLs contain existing disturbance which must be considered as part of the significant residual impact (SRI) assessment of any prescribed environmental matter (PEM) proposed to be impacted as part of this major amendment.

Quantification of previous ecological impacts brought about by historical gas-related disturbances were quantified within a GIS using available historical and current imagery and contemporary state mapping layers. Shapefiles that describe the existing disturbance of previously installed gas infrastructure associated with Mahalo and Mira exploration and appraisal pilot schemes[16] were supplied by Santos as the extent of known previous disturbance. These shapefiles were overlain onto a high-quality image of the land taken immediately prior to the historical gas-related disturbance. In this instance, the 2012 was used to investigate impacts to state and federally significant ecological values brought about by these prior activities. This image was also overlain with the 2015 (version 10) state regional ecosystem mapping layer as this layer was contemporaneous with the historical gas related disturbance.

This image was interrogated using a 1.5km wide grid-square overlay that facilitated a comprehensive detailed search for non-farming related disturbance, including that which could be attributed to historical gas-related disturbance. This grid was systematically searched, and a shapefile polygon layer was developed that defined areas where previous gas related activities had disturbed native vegetation. This work was undertaken at 1:3000 to provide detailed definition of disturbed areas.

The Santos supplied historical gas-related impact shapefile was also overlain over the high-quality 2023 aerial image. This image was taken after the cessation of the previous gas activities and was used to confirm that gas activities had occurred and that the land had been disturbed. This information was used to identify and quantify the area and type of regulated vegetation disturbed by previous gas related activities. The results of this work are provided in Section 4.1.6, below.

[14] S1.3.2, *Queensland Environmental Offsets Policy* Version 1.17 EPP/2015/1658 1.17 • Last Reviewed: 05/06/2025

[15] S 1.7.4 Queensland Environmental Offsets Policy Version 1.17 EPP/2015/1658 1.17 • Last Reviewed: 05/06/2025

[16] Section 1. Golder and Associates 2019. Mahalo Development Area Ecology Assessment: Report for impacts to matters of National Environmental Significance; Submitted to Australia Pacifica LLNG. Prepared by Golder Associates Pty Ltd. 26 August 2019.

2.3 Field Assessments

Field surveys focusing on the proposed gas infrastructure and immediate surrounds was undertaken on 16–26 March 2025. The qualifications and experience of the field survey ecologists are provided in Appendix E.

2.3.1 Nomenclature and Taxonomy

Scientific names of flora cited in this report follow Bostock and Holland 2017. Common names for plants are used where helpful and are cited before the scientific name where they are used. Fauna nomenclature follows the International Ornithological Committee checklist (for birds) and DETSI's WildNet database taxonomy (for all other fauna), unless otherwise noted. Some notable references include Churchill (2008), Debus (2012), Van dyck et al., (2013), Cogger (2000), Crome and Shields (1992), Marchant and Higgins (1993), Menkhorst and Knight (2004), Pizzey and Knight (2012), Wilsons (2015).

2.3.2 Vegetation Community Survey

Remnant vegetation in Queensland is mapped by DETSI using the regional ecosystem classification system. Regional ecosystems are defined[17] as vegetation communities in a bioregion that are consistently associated with a particular combination of geology, landform and soil. The conservation status (vegetation management class) under the VM Act of regional ecosystems is derived through estimating the proportion remaining since clearing commenced upon European settlement. The Biodiversity Status is assigned using expert driven models that assess pervading factors impacting community condition. The regional ecosystem mapping and classification system provides the basis for the state's ecological conservation framework formalised within the regulation framework and as such is adopted as the mapping system that supports this ecological assessment.

General descriptions of community structure, floristic composition and ecological condition were made within all areas shown in Appendix F Figure. The field assessment was conducted in accordance with the Queensland Herbarium's standard methodology (Neldner *et al*., 2022[18]). Where discrepancies were identified in the field between existing regional ecosystem mapping and field observations, such areas were traversed by foot to confirm the extent of the discrepancy. The field survey used standard floristic survey methods to describe vegetation type, structure and composition, as outlined below. Broad Survey areas were chosen based on an inspection of aerial imagery prior to the site visit. Further sites were selected during the survey based on changes in vegetation composition to ensure accurate characterisation of the vegetation communities present.

[17] Sattler, P.S. and Williams, R.D. (eds) (1999). The Conservation Status of Queensland's Bioregional Ecosystems. Environmental Protection Agency, Brisbane.
[18] Neldner, V.J., Wilson, B.A., Dillewaard, H.A., Ryan, T.S., Butler, D.W., McDonald, W.J.F, Richter, D., Addicott, E.P. and Appelman, C.N. (2022) Methodology for survey and mapping of regional ecosystems and vegetation communities in Queensland. Version 6.0. Updated April 2022. Queensland Herbarium, Queensland Department of Environment and Science, Brisbane.

Survey sites were marked by waypoints on a hand-held GPS and accompanied by photographic evidence and site proformas/observations. Quaternary sites were used to confirm vegetation community types, vegetation community boundaries, land zones, and occurrence of creek lines.

Tertiary Code Sites

Tertiary Code Sites are used to aid in classification and detailed descriptions of regional ecosystems and vegetation communities. Data collected included location, and environmental information such as land zone. Structural information such as height and covers are estimated for all structural layers. Generally, only the dominant or conspicuous species that characterise each layer are recorded. Site dimensions are restricted to a commonly occurring vegetation type and condition.

Quaternary Assessments

Quaternary site assessments were used to rapidly assess REs and vegetation communities, using linear transects. Data was collected at regular intervals along each transect and where regional ecosystems and vegetation communities change in structure and composition.

Opportunistic Observations

In addition to the detailed survey plots, opportunistic flora data was collected while traversing roads and tracks and whilst travelling between the more detailed survey sites. This data was used to assist in confirmation of regional ecosystem mapping and to check relationships between classificatory units (such as vegetation associations, regional ecosystems, photo-patterns) and landscape features.

2.3.3 Threatened Ecological Community Condition Assessments

Threshold criteria provided in the relevant conservation advice were recorded in the field within areas mapped during the desktop dry season assessments as potentially being a threatened ecological community. Condition threshold criteria for vegetation communities that qualify as a Threatened Ecological Community are given in Table 2.2. Data recorded at the THQ field-based attribute sites were used to determine whether communities support values that meet the threshold criteria where patches are thought to possibly meet the criteria. Those patches that 'clearly' do not meet the criteria are documented within the quaternary and RE code site assessments undertaken in the dry-season survey and supplemented by data taken during the wet-season survey.

Table 2.2: Metrics for Threatened Ecological Community Determinations

Threatened Ecological Community	Metrics
Poplar Box Grassy Woodland on Alluvial Plains	• The crown cover of canopy trees in the patch is ≥10%. AND • ≥ 50% of perennial vegetation cover in ground layer** is native. AND EITHER • ≥ 20 perennial native plant species per patch in the ground layer, OR • ≥ 10 mature trees+ per ha with ≥ 30cm dbh*** (and/or hollows) Relevant REs 11.3.2
Brigalow (*Acacia harpophylla* dominant and co-dominant)	• vegetation that has not been comprehensively cleared (not just thinned) within the last 15 years; • vegetation in which exotic perennial plants have less than 50% cover, assessed in a minimum area of 0.5 ha (100 m by 50 m); and, • individual patches of Brigalow that are larger than 0.5 ha19. Relevant REs11.3.1, 11.4.3, 11.4.7, 11.4.8, 11.4.9, 11.4.10, 11.5.16, 11.9.1, 11.9.5, 11.9.6, 11.11.14 and 11.12.21;
Natural Grasslands of the Queensland Central Highlands and northern Fitzroy Basin	• Number of native grass species • Number of tussocks per ha • Woody Shrub canopy cover • % cover of perennial non-woody introduced species
Coolibah - Black Box Woodlands of the Darling Riverine Plains and the Brigalow Belt South Bioregions	Will not be present within Survey area
Weeping Myall Woodlands	Dominance of *Acacia pendula*, native understorey Will not be present within Survey area

2.3.4 Gilgai Field Habitat Quality Assessment

Non-remnant non-functional[20] gilgai habitats have the potential to provide habitat for some of the target threatened species, in particular the grey and ornamental snakes. These species are specialist frog predators and where gilgais still provide functional frog habitat and shelter sites the potential presence of these species requires assessment. Micro-habitat features for threatened snipes and sandpipers were also recorded

[19] Section1.6, Approved Conservation Advice for the Brigalow (*Acacia harpophylla* dominant and co-dominant) ecological community. 17 December 2017.
[20] Procedure for Conducting Vegetation Assessments, Document Number: 0007-650-PRO-0008

Dry season assessments of gilgai quality had recorded the following characteristics of habitat quality:

- Average Gilgai length
- Average Gilgai width
- Average Gilgai depth
- Fallen logs (>10cm diam.)
- Fallen logs (> 30cm)
- Presence of aquatic vegetation
- Soil cracks (ornamental snake)
- Presence of fringing native vegetation
- Estimate of water permanence
- Course litter (>2cm diam.)
- Fine litter (<2cm diameter)
- Bare ground
- Native Grass cover
- Exotic Grass cover
- Stones (20-60cm)
- Shrub layer
- Native Tree layer
- Gilgai density

The combination of these habitat factors was used to categorise gilgai habitat quality into the following three categories. These categories relate to the gilgai's ability to provide functional habitat for threatened species.

low quality	Larger and/or deeper in appearance and may hold water for longer periods but does not support shrub layers or fallen woody material, or moderate in dimensions but supports some shrubs/woody material to provide shelter for fauna.
Medium quality	Larger and/or deeper in appearance and support shrub layers or fallen woody mater.
High quality	Gilgais present within well-developed open forest

Wet-season surveys were undertaken in summer under conditions that favour the detection of gilgai specialist threatened fauna species and additional assessment of gilgai habitat quality. Whilst most of the non-remnant non-functional gilgais were dry or drying out, aquatic plant growth was still present and assessment of gilgai quality was possible.

2.3.5 Watercourse Crossing Surveys

Where state mapped watercourses were located in the field and found to contain some native vegetation a cross-section of the watercourse crossing was sketched, along with the general location size and species of the larger native trees. The proposed location of the watercourse crossing was assessed in relation to the broader riparian values to ascertain whether the proposed location was the most appropriate place in terms of minimising impact to ecological values. Mapped *Vegetation Management Act 1999* watercourses where no discernible channelised flow or riparian vegetation occurred were not surveyed in detail.

2.3.6 Threatened Flora Surveys

There are no areas mapped as High Risk under the Protected Plants Flora Survey Trigger Map and therefore surveys that meet the Flora survey guidelines[21]. Despite that lack of necessity to perform formal

[21] DES, 2020. Flora Survey Guidelines - Protected Plants, Nature Conservation Act 1992. Version 2.01 • Last reviewed: 22 August 2020

threatened flora surveys targeted surveys were undertaken in likely habitats. Prior to the field investigation, Commonwealth and State wildlife databases were interrogated to develop a picture of the likely Threatened flora species occurring within the Project locality. A review of the Threatened species known to occur within the locality (as derived from database searches) was undertaken in light of known on-ground habitat and categories used to identify the likelihood of occurrence (Appendix C). The presence or potential presence of a species, and species habitat was used to provide target areas for threatened flora field surveys and provide a "search image[22]" for the surveying botanist. Threatened flora surveys were conducted during habitat quality and target fauna surveys with ecologists targeting likely habitats as they were encountered.

2.3.7 Threatened Fauna Surveys

A review of the Threatened species known to occur within the locality (as derived from database searches) was undertaken in light of known on-ground habitat. The results of this exercise are presented in **Appendix D**. The result of this exercise produced a list of 'target' threatened fauna species thought to possibly occur within the locality.

Base maps of potential habitat for target threatened fauna were produced according to the methods provided in Section 2.2.6. These maps were used to identify survey sites for the targeted wet season fauna surveys conducted in late summer (13 – 26 March 2025) when conditions were still conducive to high activity of many native amphibians and reptiles.

These surveys were conducted by suitably qualified personnel consistent with federal and state survey guidelines

Incidental surveys for the presence of threatened birds were conducted in the early mornings and later afternoons around permanent water sources. Scat and scratch surveys for the presence of koala were conducted in areas containing canopy eucalypts. The presence feeding Glossy Black-cockatoos were determined by active searches for orts where Allocasuarina specimens were located.

2.3.8 Threatened Species Habitat Condition Assessments

At the site scale, biodiversity indicators are either based on key or 'indicator' species or structural aspects of the vegetation that are known to be important for biodiversity values[23] (**Table 2.3**). The structure and density of these micro-habitat attributes aid in determine habitat quality for the target threatened species that may occur within the project locality and may determine the likelihood of their presence. Estimates of the structural habitat features (from BioCondition) were recorded within RE Code and Habitat Quality assessment plots. These assessments were undertaken in potential habitat patches identified through the methods described in Section 2.2.6.

[22] Tinbergen, L. (1960). The natural control of insects in pine woods I. Factors influencing the intensity of predation by songbirds. Archives Néerlandaises de Zoologie, 13, 265–343.
[23] Lindenmayer et al. 2000; Parkes et al. 2003; McElhinny et al. 2005 in Section 4, page 12. Eyre, T.J., Kelly, A.L, Neldner, V.J., Wilson, B.A., Ferguson, D.J., Laidlaw, M.J. and Franks, A.J. (2015). BioCondition: A Condition Assessment Framework for Terrestrial Biodiversity in Queensland. Assessment Manual. Version 2.2. Queensland Herbarium, Department of Science, Information Technology, Innovation and Arts, Brisbane.

Table 2.3: Indicators of Feeding and Shelter Resources

Vegetation functions	Indicators of function
Provision of reliable foraging resources for wildlife (e.g. nectar, leaves, seeds)	Large trees Shrub cover Tree canopy cover Native perennial grass Coarse woody debris Organic leaf litter Ground cover
Provision of reliable sheltering resources and or breeding sites for wildlife	Large trees and/or hollow-bearing trees Coarse woody debris Tree canopy cover Shrub cover Organic litter Perennial grass cover

2.3.9 Supplementary Habitat Quality Attributes

Field-based species-specific micro-habitat and landscape functional attributes were also measured to further determine habitat quality for the target threatened fauna species. These attributes are divided into three key areas:

- Quality as foraging habitat (Food sources on site and approximate abundance);
- Quality as shelter, breeding habitat (Types and availability of shelter at site); and
- Quality as mobility habitat (Species mobility capacity considerations).

Metrics that inform the quality and abundance of these attributes, were assessed at the THQ field-based attribute sites. The following metrics were recorded at each site.

- Litter cover.
- Hollows in trees & stags >10cm
- Hollows in trees & stags <10cm
- Fallen logs (>10cm diam.)
- Fallen logs (> 30cm)
- Logs with Hollows (>10cm)
- Large trees >18m
- Decorticating bark
- Soil cracks
- Termite mounds
- Termitaries
- Mistletoe
- Course litter (>2cm diam.)
- Fine litter (<2cm diameter)
- Bare ground
- Native Grass cover
- Exotic Grass cover
- Stones (20-60cm)
- Boulders (> 61cm)
- Rocks Embedded
- Rocks Loose
- Rock crevices
- Exfoliating rock
- Shrub layer

The locations of these survey sites are given in **Appendix F Figure.**

2.4 Post-Survey Assessments

Data obtained from field surveys were used to inform site-scale vegetation community (regional ecosystem and threatened ecological community) mapping and threatened fauna habitat base mapping produced within a GIS according to the methods described in Sections 2.2.1 – 2.2.7, above.

2.4.1 Vegetation Community Map Refinements

The site-scale vegetation community mapping was produced using field data and aerial photography interpretation within a GIS platform (see Section 2.2.1). This mapping was used to calculate the areas of regional ecosystems present within the Mahalo Gas Field Survey area. The linework was produced at 1:6,000 scale.

The approach taken was considered conservative in including many patches that may not be structurally remnant or large enough to include on a field scale map. A conservative approach was adopted to include all areas of potential habitat for Threatened species. The habitat qualities of these mapped vegetation communities were investigated as part of the wet-season survey to ascertain whether they provide sufficient micro-habitat values to supported target threatened species.

2.4.2 Threatened Ecological Community Mapping

Site-scale threatened ecological community mapping was produced using field data (see Section 2.3.3 above) and aerial photography interpretation within a GIS platform (see Section 2.2.7 above). This mapping was used to define the distribution of threatened ecological communities within Mahalo Gas Field Survey area.

2.4.3 Gilgai Mapping Refinements

Site-scale gilgai habitat condition mapping was produced using field data (see Section 2.3.4 above) and aerial photography interpretation within a GIS platform (see Section 2.2.3 above). Areas initially mapped and assessed during wet season surveys when aquatic macrophyte growth was most developed to produce gilgai condition mapping.

2.4.4 Threatened Fauna Habitat Quality Mapping

Habitat quality was determined through a modified version of the Terrestrial Habitat Quality Methodology (v 1.3)[24] in which criteria contained within the 'Species habitat attributes' and 'Absence of threats' methods[25] were combined to produce a score for overall habitat quality. Within these methods, the presence of micro-habitat features at a field site (see Section 2.2.6) are scored against a possible total score for:

- Quality and availability of food and habitat required for foraging;
- Quality and availability of habitat required for shelter and breeding; and
- Quality and availability of habitat required for mobility.

The 'absence of threats' (scope and severity) was determined by:

- Loss of suitable habitat through land clearing and pasture improvement;
- Change in ground layer composition as a consequence of livestock grazing;
- Change in ground layer composition as a consequence of inappropriate fire regimes;
- Loss of feeding habitat by introduction of weed species;
- Predation by feral predators (e.g., cats, foxes, wild dogs); and
- Trampling of nests by livestock.

Scores were combined to give a score out of 10. These values were applied to similar habitat types (Regional Ecosystem x Growth Status) for all polygons. to produce maps of habitat quality across the Survey area. This process was repeated for each species where initial evaluation had indicated the possible presence of suitable habitat and the likely presence of the species within the locality. The quality of habitat was then categorised into Five (5) classes depending upon the presence and abundance of micro-habitat features known to be required for the survival and proliferation of each species. These categories are presented in Table 2.4, below. It is noted that all habitats are scored for habitat quality however some habitats are unsuitable for particular species. Habitat quality scores for vegetation communities that are unsuitable habitat are species specific and also dependant on the presence of certain essential micro-habitat attributes. The presence of suitable habitat has therefore been conducted on a patch-by patch and species by species basis during the impact assessment process. A more in-depth review of the characteristics of the habitat models is provided in Section 2.4.5, below.

[24] DES (2020). Guide to determining terrestrial habitat quality. Methods for assessing habitat quality under the Queensland Environmental Offsets Policy, Version 1.3 February 2020
[25] Section 2.4.4. DES (2020). Guide to determining terrestrial habitat quality, Methods for assessing habitat quality under the Queensland Environmental Offsets Policy, Version 1.3 February 2020.

Table 2.4: Threatened Fauna Habitat Quality Classes

Low quality habitat (Includes Unsuitable habitat)	Habitat quality Scores 0 – 4.9	Most micro-habitat features that could support individuals of this species are largely absent. Scores are largely derived from presence of features that facilitate movement between other suitable patches of habitat (corridor values). High presence of threats.
Medium quality	habitat quality Scores 5.0 – 6.5.	Many of the micro-habitat features known to support this species are present but may be sparsely distributed or the habitat is isolated from other habitat patches. Threats are present.
Good **Quality**	habitat quality Sores 6.5 – 8.0	Most micro-habitat features known to support this species are present. Habitat patches are connected to habitat within the broader landscape. Threats are present
High Quality Habitat	habitat quality Sores 8.0 – 9.0	Almost all micro-habitat features known to support this species are present and generally abundant. Habitat patches are well connected to habitat within the broader landscape. Few threats are present
Very High Quality Habitat	habitat quality Sores 9.0 – 10.0	All micro-habitat features known to support this species are present and abundant. Habitat patches are large, well connected to habitat within the broader landscape. Threats are generally absent.

2.4.5 Evaluation of Habitat Quality Scores and Determination of Unsuitable Habitat

Limitations of the habitat quality models

Habitat quality assessments rely on a model that scores the presence and quality of a suite of factors designed to define the overall habitat quality for a particular species. The metrics used to measure the quality of each factor are scored between 0 and 5 and therefore are given similar 'weight' within the model. Whilst many of these factors do assist in defining the overall habitat quality, they are often not essential to the occurrence of the species and can, in the absence of essential habitat factors, produce a habitat quality score for vegetation that is not suitable habitat for a particular species. Furthermore, some habitat factors aren't required to be present within the habitat patch itself but their presence/abundance within the broader landscape can determine whether a species may persist.

Definition of low-quality habitats and the identification of habitats that are unsuitable for a particular species can be particularly problematic and habitat quality scores need to be expertly reviewed often on a patch-by-patch basis. Some artifacts of the current habitat models are discussed below.

Non-essential habitat factors and elevated baseline scores

Scores for the presence of several non-essential habitat factors that do not dictate the presence of suitable habitat for a species can in combination raise the "baseline" habitat quality even in vegetation communities that do not provide habitat for a particular species. For example, micro-habitat metrics that measure species habitat attributes are rarely scored as zero and so base scores of 1.5 plus the absence of threats can be achieved with the absence of habitat features. The addition of absence of threats scores between 0.3 and 0.6 raises the baseline habitat quality score to an average of 2.0 in the absence of any essential or non-essential micro-habitat features.

In the case of all threatened bird species relevant to the current project, mobility scores are given the maximum score (5/5) as all species are known to readily cross open ground. This raises the base habitat quality scores for threatened bird species to 3.5, again without any essential micro-habitat features needing to be present. In the case of the Squatter pigeon the presence of permanent or semi-permanent ponded water within 1 km automatically raises the overall habitat quality score further to 5.0, whilst the local presence of tall trees or low shrubs for shelter raises the score above 5. The combination of these micro-habitat features does not represent habitat for this species per se. In the absence of sufficient native grass cover within the broader landscape these factors do not determine the presence of habitat regardless of the habitat quality score.

Similarly, the presence of some tall canopy trees raises the habitat quality score for the Painted honeyeater to at least 4.5. The presence of tall canopy trees within the northerly margins of this species habitat range does not in itself constitute habitat for this species. In conclusion, habitat quality scores below 4.9 are generally not considered habitat for threatened bird species in the absence of essential habitat features such as the presence of mistletoe (Painted honeyeater) or sufficient native grass cover (Squatter pigeon) within the local landscape.

Habitat quality scores for threatened reptiles are raised to a minimum of 3.0 by low scores (2 out of 5) for the presence of logs/deep litter and continuity of ground cover. The presence of these micro-habitat features at these levels do not determine the presence of suitable habitat for any of the threatened reptiles known to occur per se. The addition of "absence of threats" scores set a baseline of around 3.5 for threatened reptiles without suitable habitat necessarily being present.

Similarly, in the case of local occurring threatened mammals low scores (2 out of 5) for the presence of large trees and wooded habitats raise baseline scores to 3.0. The addition of "absence of threats" scores set a baseline of around 3.5 for threatened mammals without suitable habitat necessarily being present.

Essential micro-habitat factors

In the absence of essential micro-habitat factors that determine a species' ability to feed, nest or breed (e.g. large hollows for Greater Glider or absence of permanent water within 4 km for the Squatter pigeon) less-mobile species are unlikely to occur and more mobile species may only occur in transit. During impact assessment essential micro-habitat factors have been used to determine whether vegetation communities provide suitable habitat regardless of the presence of non-essential micro-habitat features.

In some instances, the presence of non-essential micro-habitat factors such as roosting or resting sites can determine the presence of habitat for migratory animals and those with large home ranges, even in the absence of essential habitat factors. However, these habitats are low-value and the likelihood of occurrence of the focal species then becomes a factor in determining the suitability as habitat. For example, the presence of large trees within the northerly extent of the Painted honeyeater may provide potential temporary refuge but given the very low likelihood of occurrence of this species and the presence of better-quality habitats within the locality (e.g. within tall riparian open-forests that support notable amounts of mistletoe) there is a vanishingly small likelihood that these habitats have any utility. It is also notable that the issue of landscape connectivity is also considered separately under the Significant Residual Impact Guidelines.

The species-specific examples provided above are by no means a comprehensive assessment of all micro-habitat factors in all landscape contexts within the Project area. Whilst model uncertainties can raise questions about the usefulness of the models. The application of the model to all native vegetation communities ensures that potential habitat is not dismissed before assessment. Model uncertainties, and the contextual nature of impacts do therefore require that the overall ability of vegetation communities to provide functional habitat is assessed on a patch-by-patch and species by species basis during impact assessment.

2.4.6 Quantification of Impacts to MNES and PEMs

Impacts to Regulated vegetation[26] were determined in a GIS using the following workflows:

Firstly, the state Regulated vegetation category B endangered or of concern (22 November 2023) mapping layer was intersected with the field verified remnant regional ecosystems layer to produce a resultant mapping layer containing field-verified state mapped remnant cat B vegetation. This mapping layer was then intersected with the construction disturbance footprint to produce an 'Impacted field-verified state mapped remnant cat B vegetation layer.

A second map layer was produced that contains all field verified state mapped remnant vegetation (including Least Concern). This map layer was then then intersected with the field verified version of the state MSES Regulated vegetation intersecting a watercourse shapefile to identify field verified regulated vegetation within the defined distance of a watercourse. The construction disturbance footprint was then used to produce an 'Impacted field-verified state mapped remnant cat B vegetation within the defined distance of a watercourse' map.

A similar process was undertaken by intersecting the state vegetation management wetlands map layer and all field verified state mapped remnant vegetation (including Least Concern). The resultant layer

[26] Regulated vegetation is a 'prescribed regional ecosystem' that:
• is an endangered or of concern regional ecosystem, as defined under the *Vegetation Management Act 1999*; or
• intersects with an area shown on the vegetation management wetlands map, as defined under the *Vegetation Management Act 1999*, to remove doubt this refers to that component of a regional ecosystem that lies within a mapped wetland; or
• is located within the defined distance from the defining banks of a watercourse identified on the vegetation management watercourse map, as defined under the *Vegetation Management Act 1999*.

was then intersected with construction disturbance footprint to produce an 'Impacted regulated regional ecosystem that lies within a mapped wetland.

Finally, Wildlife habitat impact assessment was conducted by projecting the potential Construction Disturbance Footprint (CDF) over the resultant maps of habitat quality (see **Section 2.4.4**) for each target threatened fauna species. Each individual patch of impacted habitat was reviewed within the GIS using recent high quality remote image and associated field data and photographs to assess its ability to provide habitat for the identified threatened fauna species. The habitat quality of the individual patches to be cleared are reviewed in terms of whether these patches provide suitable habitat for each threatened fauna species. These data were exported into excel and the total quantum of potential impact on each habitat type was calculated using pivot tables. The results of this planning exercise informed the assessment of potential significant impacts according to both the federal[27] and state[28] significant impact guidelines.

3.0 Results

The results of this report are based on a combination of desktop and site investigations as detailed in **Section 2.0**, above. Desktop surveys were used to highlight the potential ecological values that may be present within the Survey area and to focus field survey efforts. These surveys included the integration of federal and state databases and current high-quality aerial photography, State regional ecosystem, watercourse, essential habitat and preclearance mapping to gain an understanding of the likely distribution of vegetation communities, associated regional ecosystems and threatened species habitat throughout the Survey area. Basemaps were initially ground-truthed during the dry-season for vegetation community type, condition and micro-habitat features along with opportunistic surveys for the presence of threatened species.

The ground-truthed vegetation community and gilgai mapping were loaded onto tablets and hand-held GPS to inform wet-season field surveys. Results of Threatened Ecological Community assessments and target threatened species habitat quality assessments were used to inform the quantification of impacts to threatened species and communities protected under the EPBC and EP Acts. The quantum of impacts was subsequently reviewed in relation to significant impact and significant residual impact assessment guidelines to determine whether the construction of the proposed gas infrastructure should be referred to the DCCEEW as a potential controlled action or whether State offsets would be required for impacts to MSES.

[27] DoE (2013), Matters of National Environmental Significance, Significant impact guidelines 1.1, *Environment Protection and Biodiversity Conservation Act 1999*.
[28] DEHP (2014), Queensland Environmental Offsets Policy, Significant Residual Impact Guideline, *Nature Conservation Act 1992 Environmental Protection Act 1994 Marine Parks Act 2004*, December 2014.

3.1 Summary of Desktop Results

3.1.1 Geology

The Detailed Surface Geology – Queensland (2015) spatial database mapping layer (**Figure 3.1**) identifies the Survey area as being dominated by quaternary alluvium associated with the local Creeks running in a north-westerly direction across the centre of the Survey area (Qa-QLD) (land zone 3) (**Table 3.1**). Either side of these relatively young soils are soils derived from deeply weathered fluviatile and lacustrine claystone and siltstone, quartzose sandstone, pebbly sandstone, gravel, lignite, oil shale, interbedded basalt (Emerald Formation) that give rise to large flat plains of deep vertosol clays that variously supplied gilgai formations (Land zone 5). There are minor occurrences of soils derived from a tertiary basalt flow that gives rise to a gently undulating landscape of black clay soils Tb-QLD (Land zone 8).

Table 3.1: Major Geology Units Mapped from the Survey Area (source: Detailed Surface Geology – Queensland, 2015)

Map Symbol/Name	Age	Lithology Description	Land Zone
Emerald Formation(w)	Eocene	Deeply weathered fluviatile and lacustrine claystone and siltstone, quartzose sandstone, pebbly sandstone, gravel, lignite, oil shale, interbedded basalt (possibly a correlative of the Duaringa Formation)	9/4
Tb-QLD	Tertiary	Mostly olivine basalt flows and some plugs; some areas of nephelinite, basanite etc	8
Qa-QLD	Quaternary	Clay, silt, sand and gravel; flood-plain alluvium	3

3.1.2 Regional Ecosystem Distribution

The distribution of remnant (VM Act) regional ecosystems as mapped by the Queensland Herbarium (V12.2) at a scale of 1:100,000 is shown in **Figure 3.2**. Descriptions from the Regional Ecosystem Description Database (REDD) (version 13.1) for these regional ecosystems are presented in **Table 3.2.**

The Herbarium 1:100,000 regional ecosystem map shows that most of the Survey area has been cleared and supports exotic grass grazing paddocks. Retained vegetation along the margins of Humbolt Creek support poplar box (RE 11.3.2) and coolabah (RE 11.3.3) woodland communities, whilst strips of River-redgum/Forest red gum (RE 11.3.25) form narrow riparian open-forests along the edge of the Creeks. Minor components of brigalow woodland mixed within these communities are mapped as RE 11.3.1. None of these communities are large enough to map as homogenous polygons at the 1:100,000 scale.

Away from the creek flats minor patches of retained vegetation support brigalow dominated communities (RE 11.4.9a). Where the canopy of these communities supports black-but (*Eucalyptus cambageana*) they are mapped as RE 11.4.8.

In the central northern section where small pockets of Tertiary basalt support black self-mulching clays small areas of silver-leafed ironbark (*Eucalyptus melanophloia*) (RE 11.8.4) and coolibah (*Eucalyptus orgadophila*) (RE 11.8.5) occur and are interspersed by very small areas of grassland (RE 11.8.11). There

are also some small patches of retain poplar box woodland on deeply weathered sandstones mapped as RE 11.5.3.

3.1.3 Desktop Vegetation Community Mapping

Desktop mapping confirmed the likely presence of State mapped regional ecosystems (Table 3.2) and removed heterogenous polygons by assignation of the most likely regional ecosystem based on aerial imagery interpretation. The increase in mapped scale has allowed for the identification of smaller patches of potentially remnant vegetation through production of finer scale linework. This process was conservative in its approach, including many patches that may not be structurally remnant or large enough to include on a field scale map. A conservative approach was adopted in order that no areas of potential habitat for listed species were overlooked. It was anticipated that field assessment would remove many of the patches mapped.

3.1.4 Threatened Ecological Communities

There are five (5) Threatened Ecological Communities (TEC) predicted to occur within the Survey area by the Protected Matters Search Tool (Appendix A):

- Natural Grasslands of the Queensland Central Highlands and northern Fitzroy Basin
- Brigalow (*Acacia harpophylla* dominant and codominant)
- Poplar Box Grassy Woodland on Alluvial Plains
- Semi-evergreen vine thickets of the Brigalow Belt (North and South) and Nandewar Bioregions
- Weeping Myall Woodlands.

The areas of mapped regional ecosystems within the Survey area that possibly qualify as a Threatened ecological community were identified using state regional ecosystem mapping and aerial photograph interpretation. These Threatened ecological community equivalents are:

- Areas mapped as RE 11.3.2 potentially qualify as Poplar Box Grassy Woodland on Alluvial Plains. The occurrence of this TEC is generally limited by the invasion of perennial exotic grasses within the ground layer.
- Areas mapped as RE 11.3.1, 11.4.8, 11.4.9, potentially qualify as Brigalow (*Acacia harpophylla* dominant and codominant)
- Areas mapped as RE 11.4.9a, potentially qualify as Semi-evergreen vine thickets of the Brigalow Belt (North and South) and Nandewar Bioregions

Threshold condition criteria that determine the presence of the threatened ecological communities were measured in the wet-season field survey program to determine the presence of these communities. The relevant threshold criteria measured during the survey program are presented in Table 2.1. The results of these assessments are presented in Section 3.2.4.

Table 3.2: State Mapped Regional Ecosystems within the Survey Area

RE	Biodiversity status	Vegetation Management Act Class	Description
11.3.1	E	E	*Acacia harpophylla* and/or *Casuarina cristata* open forest on alluvial plains
11.3.2	OC	OC	*Eucalyptus populnea* woodland on alluvial plains
11.3.3	OC	OC	*Eucalyptus coolabah* woodland on alluvial plains
11.3.25	OC	LC	*Eucalyptus tereticornis* or *E. camaldulensis* woodland fringing drainage lines
11.4.8	E	E	*Eucalyptus cambageana* woodland to open forest with *Acacia harpophylla* or *A. argyrodendron* on Cainozoic clay plains
11.4.9a	E	E	*Acacia harpophylla, Lysiphyllum carronii +/- Casuarina cristata* open forest to woodland. Occurs on level to gently undulating Cainozoic plains, including weathered basalt. Associated soils are predominantly moderately deep to deep cracking clays that may be brown, red-brown or grey-brown, and with much surface gravel in some areas.
11.5.3	NCP	LC	*Eucalyptus populnea +/- E. melanophloia +/- Corymbia clarksoniana* woodland on Cainozoic sand plains and/or remnant surfaces
11.8.4	NCP	LC	*Eucalyptus melanophloia* woodland to open woodland on Cainozoic igneous rocks.
11.8.5	NCP	LC	*Eucalyptus orgadophila* open woodland on Cainozoic igneous rocks
11.8.11	OC	OC	*Dichanthium sericeum* grassland on Cainozoic igneous rocks
11.9.5	E	E	*Acacia harpophylla* and/or *Casuarina cristata* open forest to woodland on fine-grained sedimentary rocks
11.10.3	NCP	LC	*Acacia shirleyi* or *A. catenulata* open forest on coarse-grained sedimentary rocks. Crests and scarps

E= Endangered, OC = Of Concern, NCP = No Concern at Present, NA = Not applicable.

3.1.5 Desktop Gilgai Delineation and Habitat Quality Assessment

Desktop gilgai mapping was produced during the desktop assessment (see Section 2.2.3 above) and field verified during the dry-season surveys (see Section 2.3.4 above). The results of desktop gilgai mapping highlighted potential areas of habitat for several threatened species including:

- Ornamental snake (*Denisonia maculata*) (Vulnerable EPBC and NC Acts); and
- Grey snake (*Hemiaspis damelii*) (Endangered EPBC and NC Acts);
- Australian painted snipe (*Rostratula australis*) (Endangered EPBC and Vulnerable NC Acts);
- Latham's Snipe (*Gallinago hardwickii*) (Vulnerable EPBC & NC Acts); and
- Sharp-tailed Sandpiper (*Calidris acuminata*) (Vulnerable EPBC & NC Acts).

Most desktop mapped areas were determined to be low quality; being highly disturbed, shallow and supporting almost no native tree or shrub layers.

3.1.6 Characterisation of Watercourse Crossing Points

No Watercourse crossings in the survey area were assessed against the *Vegetation Management Act 1999* and *Water Act 2000* watercourses during the field surveys.

3.1.7 Potential Occurrence of Threatened Flora Species

The results of database searches identified eight (8) threatened[29] flora species as potentially occurring in the Survey area or within a 20 km radius. A complete inventory of Threatened flora species within the databases, together with a review of the possible occurrence of these species within the Survey area (based on extant habitats) is presented in **Appendix C.** Potential habitat was identified using the results of the desktop mapping that provided information on the presence and likely condition of native vegetation communities and associated micro-habitat features that may support these species. The potential presence of threatened species found > 20 km < 100km from the Survey area are not reviewed in detail in Appendix C, rather the list has been reviewed by an expert botanist for CR, E and V species thought to potential occur.The large expanses of heavy clay soils provide potential habitat for several Threatened flora species including:

- *Aristida annua* –on Land Zone 8
- *Cadellia pentastylis* – – Land zone 3, 4 and 9
- *Dichanthium setosum* – Land zone 3, 4 and 9
- *Dichanthium queenslandicum* – Land zone 3, 4 and 9
- *Solanum dissectum*– Land zone 3, 4 and 9
- *Solanum elachophyllum* – Land zone 3, 4 and 9

The highly disturbed nature of the Survey area limits the likelihood of occurrence of all these species, particularly the presence of intensive cattle grazing activities. There is a higher potential for these to occur within road reserves where grazing is limited (Appendix C).

[29] Listed under the provisions of the EPBC Act

3.1.8 Potential Occurrence of Threatened Fauna Species

The results of 20 km database searches and expert local knowledge identified 25 terrestrial vertebrate conservation significant[30] fauna species as potentially occurring in the Survey area or within a 20 km radius. These include no amphibians, 12 birds, six (6) mammals and seven (7) reptiles. The likelihood of these species occurring within the Survey area based on known habitat preferences, contemporary local records, and species ecology are detailed in **Appendix D.**

There are seven (7) birds, three (3) reptiles, and three (3) mammals thought to possibly occur within the Survey area. A review of the likelihood of occurrence has been undertaken using field survey for the presence of essential micro-habitat features undertaken as part of the field surveys. The Threatened fauna species that have the potential to occur within the Survey area are presented in **Table 3.6.**

An additional WildNet database search was performed that included all conservation significant species recorded within 100 km of the Survey area (February 2026). The additional threatened fauna species that occur within 100 km of the survey area are provided in Table 3.3. The likelihood of occurrence f these species is determined in **Appendix D**. None of these species are considered likely to occur.

Table 3.3: Additional Threatened Species that occur within 100 km of the Survey Area

Species	Common Name	NCA Status	EPBC Status
Birds			
Psephotellus pulcherrimus	paradise parrot	PE	EX
Limosa lapponica baueri	Western Alaskan bar-tailed godwit	*E*	*E*
Calyptorhynchus lathami	glossy black-cockatoo	*V*	
Calyptorhynchus lathami erebus	glossy black-cockatoo (northern)	*V*	
Arenaria interpres	ruddy turnstone	*V*	*V*
Reptiles			
Adelotus brevis	tusked frog	V	
Oedura lineata	Arcadia velvet gecko	CR	CE
Mammals			
Antechinus argentus	silver-headed antechinus	E	E
Onychogalea frenata	bridled nailtail wallaby	E	E
Bettongia tropica	northern bettong	E	E
Petaurus australis australis	yellow-bellied glider (southern subspecies)	V	V
Chalinolobus dwyeri	large-eared pied bat	E	E

Abbreviations: Status
NC Act: E=Endangered; V=Vulnerable; NT=Near Threatened; S+ Special Least Concern; LC=Least Concern.
EPBC Act: CE=Critically Endangered; E=Endangered; V=Vulnerable; M=Migratory NL = not listed M = Migratory
Data source
W= DEHP Wildlife Online database; P=Protected Matters Search Tool, NB = No database records
Visual searches ALA records were undertaken within a 300km wide window and individual records queried

[30] Listed as Extinct, Critically Endangered, Endangered, Vulnerable under the provisions of the EPBC Act

3.1.9 Identification of Potential Threatened Fauna Habitat

Areas of mapped regulated vegetation –essential habitat / wildlife habitat are shown in Figure 3.2. Review of this mapping shows that there are large areas of remnant vegetation mapped as essential habitat within the riparian areas of the Comet River in the south-westernmost corner of the Survey area.

Areas of threatened fauna habitat were mapped using the mapping rules provided for Arcadia gas fields in Boobook (2021) and expert knowledge on habitat requirements applied to the baseline field verified regional ecosystem mapping. The resultant maps depict the distribution of potential habitats within the Survey area and were used to inform field survey programs. Regional ecosystems assessed as providing habitat for threatened fauna are given in **Table 3.4**, below.

3.1.10 Presence of and Proximity to Environmentally Sensitive Areas

The presence of and proximity to state mapped environmentally sensitive areas is provided in **Figure 3.4**. Review of the mapped environmentally sensitive areas shows that the proposed Gas Field Infrastructure will not directly impact on any state mapped environmentally sensitive areas.

3.2 Field Results

Field results are based on field surveys undertaken between 13 — 26 March 2025. The qualifications and experience of the Terrestria field crews are provided in Appendix E.

3.2.1 Site Survey Conditions

The wet season surveys were undertaken in late March, at the end of summer, after summer rains when nighttime temperatures remained high. The BOM records for Rolleston airport recorded 220 mm rain in the preceding two months with mean nighttime temperatures of 29.3°C. These conditions were considered ideal for the detection of terrestrial vertebrate fauna and in particular reptiles and amphibians. The Moon Phase on 5th March was a wanning crescent moon moving through its darkest phases to a waxing crescent moon on Saturday 16th March. These conditions are considered ideal for spotlighting surveys.

Table 3.4: General Habitat Types for Threatened Fauna Species that Potentially Occur

Common Name	General Habitat	Essential Habitat
Birds		
Geophaps scripta scripta Squatter Pigeon (southern)	11.3.2, 11.3.3, 11.3.25, 11.4.8, 11.5.3, 11.8.4, 11.8.5, 11.9.5a, 11.10.3	
Hirundapus caudacutus White-throated needletail	11.3.1, 11.3.2, 11.3.3, 11.3.25, 11.3.27b, 11.4.8, 11.4.9a, 11.5.3, 11.8.4, 11.8.5, 11.9.5a, 11.10.3	
Erythrotriorchis radiatus Red Goshawk	11.3.1, 11.3.2, 11.3.3, 11.3.25, 11.3.27b, 11.4.8, 11.4.9a, 11.5.3, 11.8.4, 11.8.5, 11.9.5a, 11.10.3	
Grantiella picta Painted Honeyeater	11.3.1, 11.3.2, 11.3.3, 11.3.25, 11.3.27b, 11.4.8, 11.4.9a, 11.5.3, 11.8.4, 11.8.5, 11.9.5a, 11.10.3	
Rostratula australis Australian painted snipe	11.3.27b, 11.4.8, 11.4.9a gilgai	
Gallinago hardwickii Latham's Snipe, Japanese Snipe	11.3.27b, 11.4.8, 11.4.9a gilgai	
Calidris acuminata Sharp-tailed Sandpiper	11.3.27b, 11.4.8, 11.4.9a gilgai	
Reptiles		
Denisonia maculata Ornamental snake	11.3.1, 11.3.2, 11.3.3, 11.3.25, 11.3.27b, 11.4.8, 11.4.9a	
Egernia rugosa Yakka Skink	11.5.3, 11.8.4, 11.8.5, 11.9.5a, 11.10.3	11.3.1,
Hemiaspis damelii *Grey Snake*	11.3.1, 11.3.2, 11.3.3, 11.3.25, 11.3.27b, 11.4.8, 11.4.9a	
Mammals		
Phascolarctos cinereus Koala	11.4.8, 11.5.3, 11.8.4, 11.8.5, 11.10.3	11.3.2, 11.3.3, 11.3.25,
Nyctophilus corbeni South-eastern long-eared bat	11.3.1, 11.3.2, 11.3.3, 11.3.25, 11.3.27b, 11.4.8, 11.4.9a, 11.5.3, 11.8.4, 11.8.5, 11.9.5a, 11.10.3	
Petauroides volans Greater Glider (southern and central)	11.3.2, 11.3.3, 11.3.25, 11.3.27b, 11.4.8, 11.5.3, 11.8.4, 11.8.5, 11.10.3	

3.2.2 Ground-truthed Regional Ecosystems

Project-scale ground-truthed regional ecosystem mapping generally confirmed the State mapped vegetation with refinement of scale leading to heterogenous polygons being remapped as homogenous polygons of the constituent parts. The distributions of these ecosystems are provided in **Figures 3.4 A1 & A2**. The total areas of each individual regional ecosystem type are provided in **Table 3.5**.

In addition to remnant regional ecosystems the field mapping program identified areas of regrowth vegetation that do not meet the threshold criteria for remnant or 'Santos Functional' regional ecosystems but that may contain some micro-habitat features that could support Threatened flora or fauna species. These areas are not considered to be regulated Environmentally Sensitive Areas (ESA) as they do not possess the minimum ecological values. They may however be considered wildlife habitat if they are shown to support or provide sufficient habitat values to support Threatened species known from the locality. To this end these patches have been included as target areas for Threatened fauna species surveys and their areas are provided along with mapped remnant[31] patches.

3.2.3 Functional Regrowth

Areas of regrowth native vegetation that possessed sufficient attributes to be regarded as functional according to Santos' *Thresholds for Assessing Regional Ecosystem Functionality*[32] were investigated. These functional regrowth patches can also represent an ESA or TEC if they contain the habitat factors for threatened species and possess biodiversity values that are worthy of protection. No areas of regrowth were identified as non-remnant but "functional" according to the Santos methodology however some areas of regrowth were mapped as worthy of investigation with regards to their potential to provide habitat for MNES fauna species. Vegetation community field survey data is presented in **Appendix F** with survey site locations shown on **Appendix F Figure.**

Table 3.5: Ground-truthed Regional Ecosystems within the Survey Area

RE	Biodiversity status	VM Class	Description	State Mapped Area (ha)	Ground-truthed Area (ha)
11.3.1	E	E	*Acacia harpophylla* and/or *Casuarina cristata* open forest on alluvial plains	276.0	561.3
11.3.2	OC	OC	*Eucalyptus populnea* woodland on alluvial plains	838.3	179.4
11.3.25	OC	LC	*Eucalyptus tereticornis* or *E. camaldulensis* woodland fringing drainage lines	1850.3	241.2
11.3.27b	OC	LC	Vegetation ranges from open water +/- aquatics and emergents such as *Potamogeton crispus, Myriophyllum verrucosum, Chara* spp.,	0.0	63.6

[31] Schedule dictionary – *Vegetation Management Act, 1999*
[32] Santos GLNG Upstream, Guideline for Conducting Vegetation Community Assessments (0007-650-GDE-0002).

RE	Biodiversity status	VM Class	Description	State Mapped Area (ha)	Ground-truthed Area (ha)
			Nitella spp. *Nymphaea violacea, Ottelia ovalifolia, Nymphoides indica, N. crenata, Potamogeton tricarinatus, Cyperus difformis, Vallisneria caulescens* and *Hydrilla verticillata*. Often with fringing woodland, commonly Eucalyptus camaldulensis or E. coolabah but also a wide range of other species including *Eucalyptus platyphylla, E. tereticornis, Melaleuca* spp., *Acacia holosericea* or other *Acacia* spp. Occurs on billabongs. Palustrine.		
11.3.3	OC	OC	*Eucalyptus coolabah* woodland on alluvial plains	260.3	65.1
11.4.8	E	E	*Eucalyptus cambageana* woodland to open forest with *Acacia harpophylla* or *A. argyrodendron* on Cainozoic clay plains	1226.1	66.3
11.4.9a	E	E	*Acacia harpophylla, Lysiphyllum carronii* +/- *Casuarina cristata* open forest to woodland. Occurs on level to gently undulating Cainozoic plains, including weathered basalt. Associated soils are predominantly moderately deep to deep cracking clays that may be brown, red-brown or grey-brown, and with much surface gravel in some areas.	84	37.4
11.5.3	NCP	LC	*Eucalyptus populnea* +/- *E. melanophloia* +/- *Corymbia clarksoniana* woodland on Cainozoic sand plains and/or remnant surfaces	160.1	14.0
11.8.11	E	OC	*Dichanthium sericeum* grassland on Cainozoic igneous rocks	3.2	0.0
11.8.4	NCP	LC	*Eucalyptus melanophloia* woodland to open woodland on Cainozoic igneous rocks.	9.5	15.9
11.8.5	NCP	LC	*Eucalyptus orgadophila* open woodland on Cainozoic igneous rocks	3.2	5.4
11.9.4a			Semi-evergreen vine thicket, generally dominated by a low tree layer (5-10m high) which is floristically diverse and variable. Common codominant species include *Croton insularis, Denhamia oleaster*. There is also a tall and low shrub layer (2-6m high) dominated by species such as *Ehretia membranifolia, Capparis anomala, Geijera parviflora, Capparis*	10.6	0.00

RE	Biodiversity status	VM Class	Description	State Mapped Area (ha)	Ground-truthed Area (ha)
			spp., *Croton phebalioides*, *Erythroxylum australe*, *Alectryon diversifolius* and *Carissa ovata*. Emergents (16-25m high) are usually present including species such as *Cadellia pentastylis* and Brachychiton spp. Usually on better sites, and *Eucalyptus orgadophila* and Casuarina cristata on drier, poorer sites. Vines are frequent. The ground layer is very sparse and is most frequently composed of *Ancistrachne* uncinulata and *Eragrostis megalosperma*. Occurs on steep upper and middle slopes where heavy clay soils have formed from sediments. It may grade into *Acacia harpophylla*, softwood spp. (11.9.5a) on the lower slopes. It is prominent on the steep slopes of sandstone ranges, where shale has been exposed, and aspect, rainfall and runoff provide sufficient available water for its development. The soils are generally shallow, brown or grey-brown loams or light clays grading into medium or heavy clays. The soil reaction may become strongly acidic or alkaline at depth, depending on the acidity of parent material. May also occur on deep texture contrast soils, where a thin sandy colluvium overlies the clay subsoil. Loose fragments of sandstone may be present over the soil surface		
11.9.5a	E	E	*Acacia harpophylla* and/or *Casuarina cristata* open forest to woodland on fine-grained sedimentary rocks	93.2	101.1
11.10.3	NCP	LC	Acacia shirleyi or A. catenulata open forest on coarse-grained sedimentary rocks. Crests and scarps	49.3	90.3
Regrowth 11.3.1	NA	NA	See remnant description above	0.0	86.8
Regrowth 11.3.2	NA	NA	See remnant description above		198.1
Regrowth 11.3.3	NA	NA	See remnant description above		29.6

RE	Biodiversity status	VM Class	Description	State Mapped Area (ha)	Ground-truthed Area (ha)
Regrowth 11.4.8	NA	NA	See remnant description above	0.0	95.7
Regrowth 11.9.4a	E	E	See remnant description above	0.0	823.4
Regrowth 11.5.3	NA	NA	See remnant description above		109.7
Regrowth 11.7.2	NA	NA	See remnant description above		13.0
Regrowth 11.8.4	NA	NA	See remnant description above		16.1
non-rem 11.3.2	NA	NA	Scattered relicted canopy trees that do not meet the required 50% canopy cover of the ecologically dominant layer		4.7
non-rem 11.3.3	NA	NA	Scattered relicted canopy trees that do not meet the required 50% canopy cover of the ecologically dominant layer		0.8
non-rem 11.4.8	NA	NA	Scattered relicted canopy trees that do not meet the required 50% canopy cover of the ecologically dominant layer		1.9
non-rem 11.5.3	NA	NA	Scattered relicted canopy trees that do not meet the required 50% canopy cover of the ecologically dominant layer		66.7
non-remnant	NA	NA	Mostly cleared exotic pasture		27160.8

E= Endangered, OC = Of Concern, NCP = No Concern at Present, NA = Not applicable.

3.2.4 Threatened Ecological Communities

Areas of vegetation that meet the definition of "Brigalow (*Acacia harpophylla* dominant and codominant)" were mapped as scattered small patches of Regional Ecosystems 11.3.1, 11.4.8, 11.4.9, 11.9.5 within the Survey area (**Figures 3.4**). The lack of field data dictates that all areas of remnant or HVR regional ecosystem equivalents are mapped as TEC until field assessment has been completed.

Again, areas of remnant or HVR RE 11.3.2 are assumed to meet the condition threshold for the TEC, Poplar Box Grassy Woodland on Alluvial Plains until field assessment has been completed. There were also no areas of Weeping Myall Woodlands and it is highly unlikely that patches of this vegetation community occur.

No areas of regional ecosystem equivalents for:

- Natural Grasslands of the Queensland Central Highlands and northern Fitzroy Basin; and
- Semi-evergreen vine thickets of the Brigalow Belt (North and South) and Nandewar Bioregions.

Potential impacts to Threatened Ecological Communities are discussed in Section 4.2, below.

3.2.5 Gilgai Condition Mapping

Field surveys of gilgai condition were made during the end of the wet seasons and resulted in a map of gilgai condition / habitat quality. Areas of gilgai are presented on the field-verified regional ecosystem maps (Figure 3.4). Patches of high quality gilgai are rare with most having been cleared for grazing. These gilgai areas invariably occur on red clays that do not support significant amounts of deep cracking, fallen woody material is sparse and regrowth brigalow is patchily distributed. Gilgai habitat condition field survey data is presented in Appendix H. Most of the gilgai in mapped regrowth areas provide no or very little habitat values for threatened species known to utilise them.

3.2.6 Watercourse Crossing Surveys

There are a several *Vegetation Management Act, 1999* (MSES) and *Water Act 2000* watercourse sites, where native vegetation disturbance may result in impacts to MNES habitat for either koala, greater glider, ornamental and grey snakes. The locations of these sites are shown on the state regional ecosystem maps (Figures 3.2). It has been established by field verification that avoidance of impacts at these crossing points will avoid direct impacts to MNES threatened wildlife habitat. Many of the potential watercourse crossing points have been chosen as they do support native vegetation. It is understood that the north-south crossing of Humbolt Creek will follow an existing clearing. to avoid removal of native vegetation.

3.2.7 Threatened Flora Species Survey

Conditions were ideal for the growth of annual and perennial herbaceous threatened flora species. High rainfall over the summer, meant high levels of herbaceous growth and the likelihood that these species would detectable was high, if in fact they were present.

No evidence of the Threatened[33] flora species were observed during the field survey program. Habitat quality for threatened flora species was observed to be low, with few of the microhabitat features identified in Appendix C being present and high levels of threat identified due to agricultural activities throughout the Survey area.

3.2.8 Potential Presence of Threatened Fauna

A review of the likelihood of occurrence of the suite of Threatened species that are thought to possibly occur within the Survey area is discussed in light of the known presence of micro-habitat features and connectivity of suitable habitat within the locality, known behavioural and biological characteristics of

[33] *Nature Conservation Act (1992)* or the *Environment Protection and Biodiversity Conservation Act (1999)*

the individual species. The likelihood of occurrence of Threatened fauna is discussed below within the context of:

- Known contemporary records within the locality;
- Presence of essential micro-habitat features within the Survey area; and
- Ability of the species to access the Survey area's habitats.

Appendix D provides an assessment of the occurrence or likely presence/absence of Threatened fauna species.

Fourteen Threatened fauna species occur or are predicted to occur within the locality, including 7 seven (7) birds, three (3) reptiles, and four (4) mammals. Of these species, thirteen fauna are predicted to potentially occur within the Survey area, including seven (7) birds, three (3) reptiles, and three (3) mammals (**Table 3.6**).

Table 3.6: Threatened Fauna Species that may Possibly Occur within the Survey area

Species	NC Act	EPBC Act	Data base	Habitat preference	Likelihood of occurrence
Birds					
Rostratula australis Australian painted snipe	E	E	P	Terrestrial shallow wetlands, ephemeral and permanent, usually freshwater but occasionally brackish. They also use inundated grasslands, saltmarsh, dams, rice crops, sewage farms and bore drains. Most likely in alluvial areas but could also occur in gilgaied areas.	Potential Farm dams within the Survey area provide low quality habitat for this species. The lack of low shrub layers or tall reed beds makes the occurrence of this species less likely. No database records (predicted to occur on EPBC search tool).
Erythrotriorchis radiatus Red goshawk	E	E	P	Endemic to northern and eastern Australia in coastal and subcoastal areas with large home ranges of up to 200 km^2. Occurs in woodlands and forests and prefers mosaic habitats that hold a large population of birds and permanent water. Riparian areas are heavily favoured.	Potential visitor The survey area is dominated by open exotic grasslands that offers poor habitat for this species. There are areas of woodlands and forest particularly along the two main watercourses that provide foraging habitat for this species. Large expanses of timbered country associated with the neighbouring Expedition Ranges offer better quality habitat for this species and it is known to forage widely and the possibility that it could visit the Survey area cannot be ruled out.

Species	NC Act	EPBC Act	Data base	Habitat preference	Likelihood of occurrence
					No database records (predicted to occur on EPBC search tool). This is an extremely uncommon species.
Geophaps scripta scripta Squatter Pigeon (southern)	V	V	W/P	Dry grassy eucalypt woodlands and open forests, also Callitris and Acacia woodlands. Most birds live in sandy sites near permanent water.	**Potential** The presence of semi-permanent water within the two creek lines and open grassy areas provides habitat for this species across the Survey area. The dominance of exotic grasses across most of the Survey area limits the quality of habitat for this species and local records are sparse. No database records (predicted to occur on EPBC search tool). There is a local record on ALA in 1986.
Hirundapus caudacutus White-throated needletail	V	V	100 km	Aerial birds and for a time it was commonly believed that they did not land while in Australia. It has now been observed that birds will roost in trees, and radio-tracking has since confirmed that this is a regular activity	**Potential fly-over** This species potentially feeds in the sky above the Survey area
Grantiella picta Painted Honeyeater	V	V	P	Inhabits Boree/ Weeping Myall (*Acacia pendula*), Brigalow (*A. harpophylla*) and Box-Gum Woodlands and Box-Ironbark Forests.	**Potential** The woodlands of the Survey area provide low quality foraging habitat for this species. This species is very unlikely to breed within the locality. It may however occur as a vagrant especially along creek lines, particularly where mistletoe is abundant. Most of the balance of the Survey area lacks sufficient mature trees and mistletoe to provide good quality habitat for this species. No database records (predicted to occur on EPBC search tool).

Species	NC Act	EPBC Act	Data base	Habitat preference	Likelihood of occurrence
Gallinago hardwickii Latham's Snipe, Japanese Snipe	V	V	P	Occurs in permanent and ephemeral wetlands up to 2000 m above sea-level. They usually inhabit open, freshwater wetlands with low, dense vegetation (e.g. swamps, flooded grasslands or heathlands, around bogs and other water bodies). However, they can also occur in habitats with saline or brackish water, in modified or artificial habitats, and in habitats located close to humans or human activity.	Potential There are low quality habitats mainly associated with non-remnant gilgai areas that may provide temporary feeding habitat for this species. This species is migratory and does not breed in Australia No database records (predicted to occur on EPBC search tool). Records on ALA particularly around Emerald
Calidris acuminata Sharp-tailed Sandpiper	V	V	P	Prefers muddy edges of shallow fresh or brackish wetlands, with inundated or emergent sedges, grass, saltmarsh or other low vegetation. This includes lagoons, swamps, lakes and pools near the coast, and dams, waterholes, soaks, bore drains and bore swamps, saltpans and hypersaline saltlakes inland.	**Potential** There are low quality habitats mainly associated with non-remnant gilgai areas that may provide temporary feeding habitat for this species. This species is migratory and does not breed in Australia No database records (predicted to occur on EPBC search tool). Records on ALA particularly around Emerald
Reptiles					
Denisonia maculata Ornamental snake	V	V	P	In Brigalow (*Acacia harpophylla*), Gidgee (*Acacia cambagei*), Blackwood (*Acacia argyrodendron*) or Coolibah (*Eucalyptus coolabah*)-dominated vegetation communities, or pure grassland associated with gilgais	Potential Habitat for this species occurs within the Survey area. The two large creek systems and expanses of gilgai country that support frog species provide habitat particularly where deep cracking clays are present. This species is known from the locality.
Egernia rugosa Yakka Skink	V	V	NB	A wide variety of vegetation types including poplar box, ironbark, brigalow, white cypress pine, mulga, bendee and lancewood woodlands and open forests. Substrates	Potential There is some average quality habitat for this species associated with Eucalypt woodlands within the survey area. Most of the survey area lacks low shrub

Species	NC Act	EPBC Act	Data base	Habitat preference	Likelihood of occurrence
				include rock, sand, clay and loamy red earth. They can persist in clearings where shelter sites such as tunnel erosion, rabbit warrens and log piles exist.	ground cover and fallen woody material and is dominated heavy clay soils that are often waterlogged limiting habitat quality for this species over much of the Survey area. ALA database records suggest that this species is not common within the locality.
Hemiaspis damelii Grey Snake	E	E	P	Woodlands (typically brigalow *Acacia harpophylla* and belah Casuarina cristata), usually on heavier, cracking clay soils, particularly in association with water bodies or in areas with small gullies and ditches (gilgais)	Potential Habitat for this species occurs within the Survey area. The two large creek systems and expanses of gilgai country that support frog species provide habitat particularly where deep cracking clays are present. No database records (predicted to occur on EPBC search tool). The nearest ALA record (2004) is 50 km north of the Survey area
Mammals					
Phascolarctos cinereus koala	E	E	W/P	Koalas live over a range of open forest and woodland communities. Within the Site, some of the canopy eucalypts are suitable habitat for this species. The presence of main roads and low bushland density within the area makes it unlikely that the koala persists in this landscape	Potential Habitat for this species includes all woodlands and open forests dominated by eucalypts within the Survey area. The better quality habitats and habitat connectivity are provided by the riparian woodlands along the Creek lines. Most of the other woodlands small patches isolated by large expanses of open grassy paddocks that limit habitat quality.
Petauroides volans Greater Glider (southern and central)	E	E	W/P	Feeds exclusively on eucalypt leaves and requires up to 18 large hollows within a 1 – 3ha patch	Potential The riparian woodlands along the Creek lines offer the best quality habitat for this species. Habitat quality in these areas is somewhat limited by the lack of hollow bearing trees.

Species	NC Act	EPBC Act	Data base	Habitat preference	Likelihood of occurrence
					Most of the other woodlands small patches isolated by large expanses of open grassy paddocks that limit habitat quality.
Nyctophilus corbeni South-eastern long-eared bat	V	V	P	Occurs in a variety of dry forest habitats including River Red Gum, open woodland, mallee, brigalow and other arid and semi-arid habitats. The preferred habitat is mallee and Callitris woodlands and habitats that have a distinct canopy with a dense, cluttered understorey. It roosts in tree hollows or under bark. Surveys suggest the species requires large tracts of forest to occur .	Potential Habitat for this species is associated with the riparian woodlands and open forests within the Survey area. No database records (predicted to occur on EPBC search tool).
Tachyglossus aculeatus Short-beaked echidna	SL	NL	100 km	Lives in forests and woodlands, heath, grasslands and arid environments. This species is found in disturbed environments where shelter and termites are present	Likely A very wide ranging and disturbance tolerant species it is likely to occur. Higher quality habitats for this species are associated with remnant woodlands where termite density is higher.

Abbreviations: Status
NC Act: E=Endangered; V=Vulnerable; NT=Near Threatened; S+ Special Least Concern; LC=Least Concern.
EPBC Act: CE=Critically Endangered; E=Endangered; V=Vulnerable; M=Migratory NL = not listed M = Migratory
Data source
W= DEHP Wildlife Online database; P=Protected Matters Search Tool, NB = No database records
Visual searches ALA records were undertaken within a 300km wide window and individual records queried

3.2.9 Threatened Fauna Habitat Mapping

The quality and distribution of habitat for target threatened fauna species identified in **Section 3.2.8** above was determined through assessment of site-based vegetation community structural and floristic attributes and the presence of essential micro-habitat features and absence of threats across the Survey area. The location of THQ field-based attribute sites survey sites is given in **Appendix F Figure**.

Ground-truthed regional ecosystem mapping (**Section 3.2.2**) provided the spatial explicit baseline information on which habitat types were created within a GIS. Mapped remnant vegetation and functional regrowth were considered likely to possess sufficient microhabitat habitat features to support the target threatened fauna species and were the focus of field surveys. In addition, young regrowth was assessed on a patch-by-patch basis in the field when they were encountered to gain an

understanding of how likely they were to provide suitable habitat for MNES fauna species. A summary of the quality and distribution of habitat for the target threatened fauna species is provided in Table 3.7.

This exercise resulted in the mapping of areas of MNES and MSES fauna habitat mainly in association with Comet River in the southwest and Humbolt Creek and its associated alluvial flats running in a north westerly to southeasterly direction across the centre of the Survey area.

Maps for all other target threatened fauna species thought likely to occur within the Survey area are shown on **Figures 3.5 A1 – 3.14 A2.** There was no utility in providing figures for general habitat for Red Goshawk *Erythrotriorchis radiatus*, White-throated needletail *Hirundapus caudacutus* and Echidna *Tachyglossus aculeatus* as habitat is predicted to occur across the entire Survey area and so figures for these species have not been presented.

The total area and quality of habitat for each of the target species contained within the Survey area could not be determined because habitat quality data for the following regional ecosystem types was not available at the time of writing this report:

- Remnant RE 11.3.3;
- Remnant RE 11.4.9a;
- Remnant RE 11.8.4;
- Remnant RE 11.10.3;
- Regrowth RE 11.5.3; and
- Regrowth RE 11.8.4.

It is noted that due to the small number of patches confined to the margins of the Survey area, it is unlikely that these communities and associated fauna habitats are unlikely to be impacted by the project at this stage.

Review of the distribution of potential habitat reveals that habitat quality is low across most of the Survey area. The better-quality habitats are associated with the riparian areas along the Comet River and Humbolt Creek.

Table 3.7: Distribution of Habitat for Target Threatened Fauna Habitat

Species	Availability and Distribution of Habitat
Birds	
Geophaps scripta scripta Squatter Pigeon (southern)	Pasture lands immediately abutting tall native woodland canopies would provide feeding grounds for Squatter pigeon (*Geophaps scripta*). Habitat quality for this species is markedly impacted by the overwhelming dominance of exotic grasses, particularly Buffel. Surveys during the wet season failed to detect this species within the Survey area and whilst its presence cannot be ruled out it appears unlikely that the habitats within the Survey area provide good quality habitat for this species.
Grantiella picta Painted Honeyeater	Painted honeyeater habitats are limited. Lack of large trees and mistletoe in most vegetation patches within the Survey area limit available habitat for this

Species	Availability and Distribution of Habitat
	species. Tall riparian woodland within the Comet River and Humbolt Creek areas provides the only good quality feeding habitats within the Survey area. It is noted that the Survey area is toward the northern likely limit of this species.
Rostratula australis Australian painted snipe	Habitat for this species is associated with the vegetated swamps on the alluvial plains of the Comet River and Humbolt Creek as well as seasonal habitats within flooded gilgai areas. This species is very unlikely to breed within the locality and habitats are limited to seasonal feeding resources only.
Gallinago hardwickii Latham's Snipe, Japanese Snipe	Habitat for this species is associated with the vegetated swamps on the alluvial plains of the Comet River and Humbolt Creek as well as seasonal habitats within flooded gilgai areas. This species does not breed within the locality and habitats are limited to seasonal feeding resources only.
Calidris acuminata Sharp-tailed Sandpiper	Habitat for this species is associated with the vegetated swamps on the alluvial plains of the Comet River and Humbolt Creek as well as seasonal habitats within flooded gilgai areas. This species does not breed within the locality and habitats are limited to seasonal feeding resources only.
Reptiles	
Denisonia maculata Ornamental snake	Present[34]. Habitat for this species include cracking clays associated with brigalow woodland communities including remnant, regrowth and non-remnant vegetation and even low quality gilgais linked to higher quality habitats. Most of the higher quality habitats are associated with the Comet River and Humbolt Creek riparian open forests and woodlands. There are large areas of cleared gilgai country that provide low quality habitat as they are functionally isolated from better quality habitats, do not support significant areas of deep cracking clays, and contain low abundance of shelter sites.
Egernia rugosa Yakka Skink	Communities that support a good ground cover of coarse woody debris, low shrubs and litter provide habitat for Yakka skink (*Egernia rugosa*). These habitats are limited to the higher country in the north and northeast. Most of the survey area is low-lying and subject to seasonal flooding or waterlogging.
Hemiaspis damelii Grey Snake	Habitat for this species include cracking clays associated with brigalow woodland communities including remnant, regrowth and non-remnant vegetation, vegetated palustrine swamps associated with the alluvial flats along the Comet River and Humbolt Creek and even low quality gilgais linked to higher quality habitats.
Mammals	
Phascolarctos cinereus koala	Tall eucalypt open forest canopies that provide potential habitat for Koala (*Phascolarctos cinereus*) are provided by the riparian and alluvial open forests along Comet River and Humbolt Creek with smaller more isolated patches of

[34] Golder Associates 2019. Mahalo Development Area Ecology Assessment. Report for Impacts to Matters of National Environmental Significance. 26 August 2019.

Species	Availability and Distribution of Habitat
	mixed eucalypt woodlands on land zone 5 and 8 scattered across the periphery of the Survey area.
Nyctophilus corbeni South-eastern long-eared bat	Good quality habitat for the South-eastern long-eared bat (*Nyctophilus corbeni*) occurs across most remnant woodland and open forest communities with lower quality habitats associated with regrowth of the same vegetation community types. These habitats are mainly associated with the Comet River and Humbolt Creek with smaller isolated patches scattered across the Survey area.
Petauroides volans Greater Glider (Southern and central)	Tall eucalypt open forest canopies that provide potential habitat for Greater glider (sensu lato) are provided by the riparian and alluvial open forests along Comet River and Humbolt Creek with smaller more isolated patches of mixed eucalypt woodlands on land zone 5 and 8 scattered across the periphery of the Survey area.

3.2.10 Threatened Fauna Species Survey

Opportunistic fauna surveys were undertaken during habitat quality surveys, including bird watching and active searches such as active log rolling and bark peeling for reptiles and amphibians. No threatened fauna species were detected during these surveys.

3.2.11 Review of Survey Adequacy

Regional ecosystem type was assessed accurately by experienced ecologist in the field and sufficient Queensland Herbarium regional ecosystem code sites were undertaken to establish regional ecosystem type for both remnant and regrowth patches. These sites include estimates of median heights and ranges for all structural layers as well as recording of key species within each structural layer. Most of the current field survey has concentrated on the location of infrastructure and so there has been insufficient field data to accurately determine if the regional ecosystem mapping is fit-for-purpose at present.

There have been no meaningful field Threatened fauna assessment surveys undertaken and so the precautionary principal has therefore been employed regarding likely presence. That is, the presence of a threatened species has been assumed where suitable habitat has been established along with knowledge of its presence within the local landscape. This approach is considered adequate given the lack of potential habitats for these species within the Survey area. A targeted field survey program that satisfies the State and federal; survey guidelines is likely to be required where impacts to high and medium quality habitats is likely to occur.

4.0 Post-Survey Assessments

4.1 Degree of Impact to Ecological Values

Ground-truthed project-scale mapping of areas of federal and State ecological value were produced within a GIS using data collected during the wet season survey. This mapping provides the spatially explicit distribution of ecological values and combined with the CDF allows for the identification of impacts resulting from installation and operation of the gas infrastructure. Methods employed to extract the areas of regulated values that will be directly impacted are detailed in **Section 2.4.6**, above. Commitments by the Santos to avoid impacts to identified high quality habitats, including adoption of construction exclusion zones for threatened species and mapped conservation significant vegetation communities means that the total quantum of impacts will be minimised. An assessment of impacts to specific value types is provided below.

4.1.1 Impacts to Threatened Ecological Communities

There will be no direct impacts on areas of threatened ecological communities listed under the EPBC Act, 1999. A referral under the EPBC Act for a controlled action is not required for impacts to MNES Threatened Ecological Communities.

4.1.2 Impacts to State Regulated Vegetation Communities

There will be an impact to 0.1 ha of endangered RE 11.3.1 that is prescribed regional ecosystem (regulated vegetation). It is estimated that all of this clearing occurs in linear strips less than 10m wide with a mid-dense (structural category) regional ecosystem[35]. There are no other impacts to remnant vegetation communities that are regulated as prescribed regional ecosystems

4.1.3 Clearing within a Defined Distance of a Wetland or Watercourse

There are no areas of clearing of state mapped remnant vegetation within the defined distance of a state mapped wetland or watercourse[36].

4.1.4 Impacts to Threatened Flora

No MNES or MSES threatened flora species were found to occur within the Survey area and given the highly disturbed condition throughout impacts to threatened flora are considered very unlikely.

[35] DEHP, 2014. Table 1, Section 2.1 Queensland Environmental Offsets Policy, Significant Residual Impact Guideline, Nature Conservation Act 1992 Environmental Protection Act 1994 Marine Parks Act 2004 December 2014

[36] DEHP, 2014. Table 1, Section 2.1 Queensland Environmental Offsets Policy, Significant Residual Impact Guideline, Nature Conservation Act 1992 Environmental Protection Act 1994 Marine Parks Act 2004 December 2014

4.1.5 Impacts to Threatened Fauna Habitat

Direct impacts from disturbance within the Construction Disturbance Footprint were quantified within a GIS by clipping the Construction Disturbance Footprint to the field verified fauna habitat mapping and exporting the resultant data to excel. The total area and quality of habitat for each of the target species that will be disturbed by the Construction Disturbance Footprint are presented in **Table 4.1**.

Each individual patch of impacted habitat was reviewed within the GIS using recent high quality remote image and associated field data and photographs to assess its ability to provide habitat for the identified threatened fauna species (Table 4.2). Justification of habitat quality scores are provided including provision of the metrics used to define the quality of each micro-habitat criteria in Table 4.2. The habitat quality of the individual patches to be cleared are reviewed in terms of whether these patches provide suitable habitat for each threatened fauna species. These data were used to inform the significant residual impact and significant impact assessments made in **Appendix G**.

Construction exclusion zones identified through this process have been developed and adopted where ecological values including Wildlife habitat is on the margins of the Construction Disturbance Footprint and construction can be implemented without direct disturbance to the values.

In summary, most the vegetation that will be cleared from the Construction Disturbance Footprint is young regrowth that is heavily invaded by buffel with low amounts of fallen woody material and does not contain sufficient micro-habitat features to be considered 'suitable habitat' for any threatened species that potentially occur. They are also generally very small in size with 20 of the 25 patches being less than 0.1 ha in size. The largest patch being 1.1 ha of young regrowth RE 11.4.8.

Significant residual impact and significant impact assessments (**Appendices G** and **H**) determined that there were no significant impacts to any of the MNES and MSES threatened species thought to occur. Infrastructure is located almost entirely outside of remnant vegetation patches and regrowth that support high habitat values, resulting in a vanishingly small amount of directly impacted high value habitats for any threatened species. Similarly, impacts to medium and low-quality habitats are small and occur as multiple tiny transgressions into mapped vegetation communities.

Table 4.1: Area and Quality of Threatened Fauna Habitat within the Construction Disturbance Footprint

Habitat Quality	Squatter Pigeon	Painted Honeyeater	Ornamental/Grey Snake	Yakka Skink	Greater Glider	Koala	South-eastern Long-eared Bat	Painted Snipe	Latham's Snipe	Sharp-tailed Sandpiper
0.4					1.4					
1.3						1.4				
2.3						0.1				
2.4					0.1					
2.9			1.2							
3.3							1.4			
3.4			0.7							
3.5								1.9	1.9	1.9
3.6		1.4		1.3						
3.7										
3.8							0.1			
3.9					1.2					
4.0									0.1	0.1
4.1				1.4				0.1		
4.3						1.2	1.2			
4.4			1.4		0.5					
4.5										1.4
4.6	0.1									
4.8		0.1				0.7	0.6			0
4.9	1.4				0.1					
Total	1.6	1.6	3.4	2.9	3.5	3.5	3.5	2.1	2.1	3.5
5.1				0.5				1.4	1.4	
5.2	1.3									
5.4										
5.5		1.2								
5.6	0.5	0.5								
5.8										
Total	1.9	1.9	0.0	0.5	0	0	0	1.4	1.4	0.0
6.0										
Total	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Low Quality Habitat	Scores 0 – 4.9
Medium Quality Habitat	Scores 5.0 – 6.5
Good Quality Habitat	Sores 6.5 – 8.0
High Quality Habitat	Sores 8.0 – 9.0
Very High Quality Habitat	Sores 9.0 – 10.0

Table 4.2: Assessment of Threatened Fauna Habitat Quality and Quantity Impacted by the Construction Disturbance Footprint

Habitat Quality Metric	Qualitative description of scoring	Observations on proposed habitat clearing
Squatter Pigeon (southern)		
Presence of permanent water nearby	Score based on the presence of permanent or semi-permanent ponded water within 4km. Sliding scale according to proximity to and size of permanent ponded water. Sites > 4 km from ponded water scored 1	**Not considered to be present** Proposed clearing of 1.3 hectares of vegetation with a habitat quality score of 5.2. This clearing is made up of 1.2 ha of regrowth 11.4.8 (**Insert 1**), and 0.3 ha of RE 11.3.1 as a series of 6 patches all less than 0.05 ha each. Proposed disturbance on Land zones 3 and 4 occur on heavy clay soils dominated by buffel grass including gilgai habitats[37] and do not represent habitat for this species, regardless of habitat quality model scores. Proposed clearing of 0.5 hectares of vegetation with a habitat quality score of 5.6. This clearing is made up of seven patches of regrowth RE 11.5.3 all except one less than 0.03ha each. The largest patch being 0.4 ha (Insert 2). Disturbance of the 0.5 ha on land zone 5 represents disturbance of habitat for this species. The significance of this impact is assessed in Appendices G and H. In general, scores lower that 5.0 are not considered suitable habitat for this species.
Presence of native grasses	The abundance by cover of native grasses. Pastures overwhelmingly dominated by buffel scored 1	
Presence of permanent water nearby	Score based on the presence of permanent water within 1 km. Threshold metric score is either 5 or 1	
Tall trees for roosting and shelter	Presence of tall trees qualitatively assessed via density of trees greater than 6m with no tall trees present scoring 1 and remnant open forest or woodland scoring 5.	
Sandy well-drained soils for nesting	Land zone 5 and 7 scored 5, land zone 4 and 9 scored 1. Land zone based on site specific soil type	
Grassy understorey with patchy low shrubs for shelter	The per centage of low shrub cover was used. Patches with no low shrub cover scored 1.	
Mobile species habitat continuity is less important	Scored maximum of 5	
Threats		
Loss of suitable habitat through land clearing and pasture improvement	Remnant vegetation was considered safe from loss by clearing and scored 5. Low young regrowth scored 1	
Change in ground layer composition as a consequence of livestock grazing	Generally considered constant and pervasive threat total score 9/25	
Change in ground layer composition as a consequence of inappropriate fire regimes	Generally considered high for scope and medium to low for severity	
Loss of feeding habitat by introduction of weed species	Generally considered high for scope and medium for severity	
Predation by feral predators (e.g., cats, foxes, wild dogs)	Generally considered high for scope and medium for severity	
Trampling of nests by livestock	Generally considered high for scope and high for severity	

[37]Lloyd, P., Elizabeth R. Williams, Chris Hansen, John M. van Osta, Lindsay Agnew, Mark Sanders, Edward A. Meyer, Steve Marston, Simon Danielsen and Brad Dreis, 2025. Habitat associations of the Southern Squatter Pigeon, *Geophaps scripta scripta* in Queensland. Australian Field Ornithology 2025, 42, 156–167

Habitat Quality Metric	Qualitative description of scoring	Observations on proposed habitat clearing
Painted honeyeater		
Quality and availability of food and habitat required for foraging		Disturbance of 1.2 ha of vegetation with a habitat quality score of 5.5 is comprised of regrowth 11.4.8 (**insert 1**). This habitat generally lacks sufficient mistletoe and there are no large trees and is considered marginal. Proposed clearing of 0.5 hectares of vegetation with a habitat quality score of 5.6. This clearing is made up of five patches of regrowth RE 11.5.3 all except one less than 0.03 ha each. The largest patch being 0.4 ha shown in **Insert 2**. Again, this habitat generally lacks sufficient mistletoe and there are no large trees and is considered marginal These communities are generally devoid of mistletoe and do not support any large trees. They are refuge habitat only and given the presence of higher quality habitats within the local riparian open-forests and the very low likelihood of occurrence these habitats are not considered suitable habitat for this species. Scores lower that 5.0 are not considered suitable habitat for this species. Pre-disturbance surveys for mistletoe habitat within the CDZ are recommended to rule out the presence of potential feeding habitat for this species.
Presence of sufficient density of mature eucalypts	The density of Eucalypts >40cm dbh was used to rate habitat quality with patches containing eucalypts at densities equivalent to the remnant undisturbed benchmark scoring 5 and communities with no Eucalypts scored 1	
Presence and density of mistletoe	The density of mistletoe was qualitatively assessed with abundant scoring 5 and no mistletoe scoring 1	
Quality and availability of habitat required for shelter and breeding		
Presence of sufficient density of canopy trees	The qualitative assessment of canopy trees was assessed with dense stands scoring 5 and no canopy trees scoring 1	
Quality and availability of habitat required for mobility		
Mobile species habitat continuity is less important	Score 5	
Threats		
Loss of suitable habitat through land clearing and cattle grazing	Remnant vegetation was considered safe from loss by clearing and scored 5. Low young regrowth scored 1	
Loss of large mature trees through inappropriate fire regimes	Generally considered constant and pervasive threat with a high scope but relatively low severity	
Loss of large mature trees through selective logging	Generally considered to have a medium to low scope and medium severity.	
Ornamental snake / Grey snake		
Presence of frogs/frog habitat	Qualitative assessment of ponds, creeks, dams or heavy clays soils where water ponding can occur for sufficient lengths of time for frog breeding, presence of frog shelter sites.	Construction exclusion zones prevent the clearing of 0.1 ha with a habitat quality score of 5.4. This clearing would have been made up of a series of 4 patches
Quality and availability of habitat required for shelter and breeding		

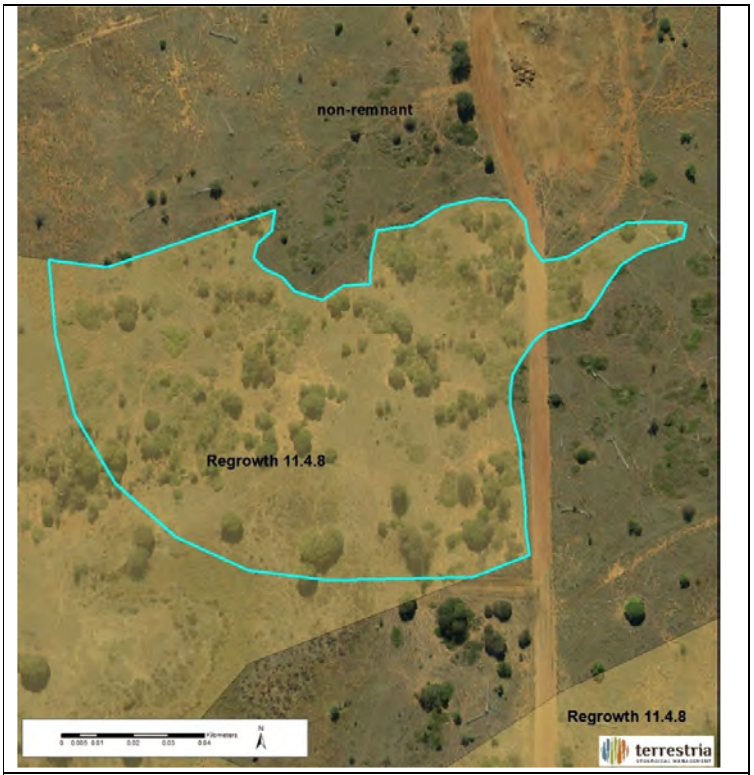
Habitat Quality Metric	Qualitative description of scoring	Observations on proposed habitat clearing
Cracking clay soils or logs/deep leaf litter/low shrubs	Presence of deep cracking clay soils score 5 Abundance/cover of logs/deep litter/low shrubs that potentially provide shelter on soils that do not support deep cracks. Habitats that lack any logs > 10cm diameter or low shrub cover score 1	of RE 11.3.1 all less than 0.02 ha each. No actual impacts to habitat for these species are anticipated. Scores lower that 5.0 are not considered suitable habitat for these species as they lack frog habitats and/or sufficient refuge micro-habitats for these species.
Quality and availability of habitat required for mobility		
Continuity of ground cover	Qualitative assessment of connectivity of the local landscape in terms of the ability of individuals to move safely. Highly connected score 5, no connection score 1	
Threats		
Loss of suitable habitat through land clearing and effects associated with fragmentation of habitat	Remnant vegetation was considered safe from loss by clearing and scored 5. Low young regrowth scored 1	
Destruction of wetland habitat by feral pigs	Only relevant to wetlands and gilgai habitat where it scores high for scope and severity.	
reduction in frog numbers through cattle trampling of wetland margins	Only relevant to wetlands and gilgai habitat where it scores high for scope and severity.	
poisoning resulting from ingestion of cane toads	Considered high in both scope and severity	
Removal of foraging and shelter habitat (e.g., rocks, coarse woody debris, ground litter)	Considered medium to low for both scope and severity	
Yakka Skink		
Quality and availability of food and habitat required for foraging		Clearing of 0.5 ha of vegetation with a habitat quality score of 5.1. This clearing is made up of seven patches of regrowth RE 11.5.3 all except one less than 0.03 ha each. The largest patch being 0.4 ha (Insert 2). These habitats support low amounts of low shrub cover and fallen woody material and are considered low quality habitat for this species. In an overabundance of caution the disturbance of 0.6 ha represents disturbance of habitat for this species. Due to the highly sedentary nature of this species, actual impacts to habitat for this
Presence of low shrub layer and native ground layer	Metric was scored according to per centage cover of low shrub layer and native ground layer flora species.	
Quality and availability of habitat required for shelter and breeding		
Presence of rock, FWM and low shrub layer	Qualitative assessments scored according to per centage cover of rock, FWM and low shrub layer	
Quality and availability of habitat required for mobility		
Continuity of ground cover	Qualitative assessment of connectivity of the local landscape in terms of the ability of individuals to move safely	
Threats		
Loss of suitable habitat through land clearing and cattle grazing	Remnant vegetation was considered safe from loss by clearing and scored 5. Low young regrowth scored 1	
Loss of understorey structure where breeding and shelter occurs.	Generally considered constant and pervasive threat across the survey area	
Alteration of habitat suitability through the	Generally considered constant and pervasive threat across the survey area	

Habitat Quality Metric	Qualitative description of scoring	Observations on proposed habitat clearing
presence and extent of non-native, invasive weeds		species can be assessed during preclearance surveys. The significance of this impact is assessed in Appendices G and H. Scores lower that 5.0 are not considered suitable habitat for this species.
Change in ground layer composition leading to loss of food resources through overgrazing	Generally considered constant and pervasive threat total score 9/25	
Greater Glider		
Quality and availability of food and habitat required for foraging		None of the vegetation that will be cleared contains breeding or shelter habitat for this species due to the lack of suitably sized hollows an essential habitat attribute for the presence of this species. This is a sedentary species that does not travel far from refuge hollows. The species is not present within the disturbed habitat areas and is not likely to occupy this habitat in the near future.
Presence of sufficient density of eucalypts	Sufficient area of tall (> 8m) eucalypts < 30m apart were determined to provide foraging habitat for this species. Habitats with shorter canopies and with trees spaced further apart are not considered to provide sufficient foraging habitat and score 1. Quality of habitat was qualitatively assessed based on the presence, size and density of known preferred food trees.	
Quality and availability of habitat required for shelter and breeding		
presence of sufficient density of large trees or large hollows	Presence of large and mature trees < 30m apart that could support hollows > 10cm scored 5 Absence of eucalypts scored 1	
Quality and availability of habitat required for mobility		
Continuity of canopy trees	Identified presence of patch connectivity to neighbouring functional patches via tall canopy trees that would facilitate dispersal	
Threats		
Loss of suitable habitat through land clearing and cattle grazing	Remnant vegetation was considered safe from loss by clearing and scored 5. Low young regrowth scored 1	
Loss of large hollow bearing trees through too frequent fire regimes	Generally considered constant and pervasive threat with medium scope and severity	
Loss of large hollow bearing trees through selective logging	Generally considered constant and pervasive threat with medium scope and severity	
Predation by feral predators (e.g., cats)	Generally considered constant and pervasive threat with medium scope and severity	
Koala		
Quality and availability of food and habitat required for foraging		Clearing of 0.7 ha of vegetation with a habitat quality score of 4.8. This clearing is made up of a patch of regrowth RE 11.5.3 that is 0.4 ha (**Insert 1**) and three patches of RE 11.3.1 less than
Presence of sufficient density of eucalypts	The density of Eucalypts > 10 cm dbh was used to rate habitat quality with patches containing eucalypts at densities equivalent to the remnant undisturbed benchmark scoring 5 and communities with no Eucalypts scored 1	

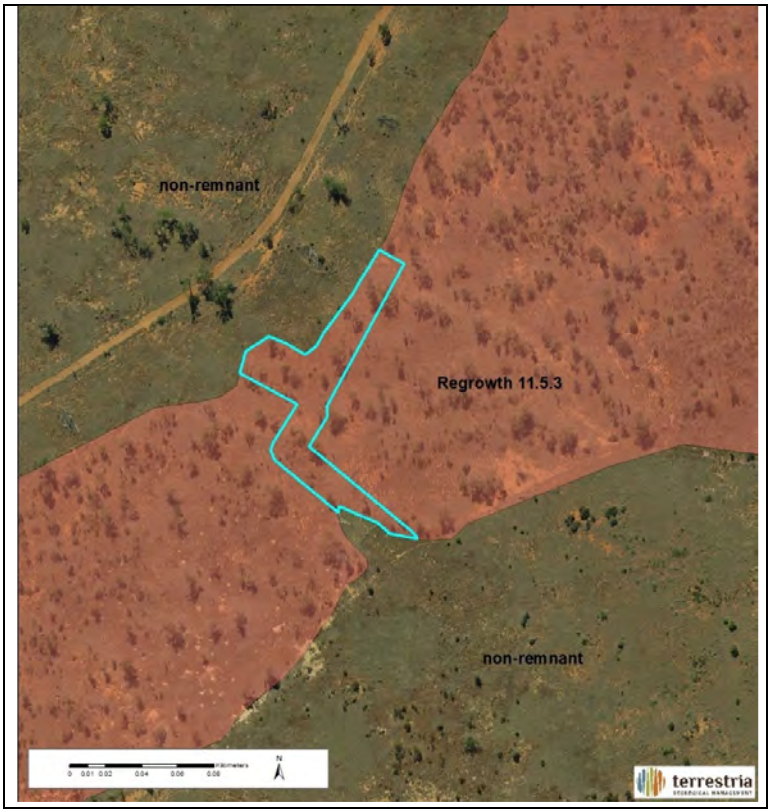
Habitat Quality Metric	Qualitative description of scoring	Observations on proposed habitat clearing
Quality and availability of habitat required for shelter and breeding		0.04 ha each. It is unlikely that the clearing within the patches of RE 11.3.1 will remove any koala food trees, leaving 0.4 ha of very sparse regrowth RE 11.5.3 as the actual impact to habitat for this species. The significance of this impact is assessed in **Appendices G** and **H**. Scores lower that 5.0 are not considered suitable habitat for this species.
Presence of sufficient density of canopy trees	The density of canopy trees that could be used as refuge was used to rate habitat quality with patches containing trees at densities equivalent to the remnant undisturbed benchmark scoring 5 and communities with no tall refuge trees scored 1	
Quality and availability of habitat required for mobility		
Continuity of canopy trees	Identified presence of patch connectivity to neighbouring functional patches via tall canopy trees that would facilitate dispersal	
Threats		
Loss of suitable habitat through land clearing and cattle grazing	Threats of land clearing for regrowth vegetation that is not mapped by the state is considered high	
Loss of habitat connectivity	Generally considered constant and pervasive threat with medium scope and severity	
Predation by feral predators (e.g., cats, foxes, wild dogs)	Generally considered constant and pervasive threat with high scope and medium severity	
Loss of alluvial and riparian habitats through altered fire regimes	Generally considered constant and pervasive threat with medium to low scope and severity	
South-eastern long-eared bat		
Quality and availability of food and habitat required for foraging		Clearing of 0.6 ha of vegetation with a habitat quality score of 4.8 is anticipated. This impact is made up of 4 small patches of sub-optimal foraging habitat. Most of this habitat is young regrowth that does not support sufficient habitat complexity to provide foraging habitat and no roosting or shelter sites to support this species. These communities are 'Not suitable habitat' for this species. Scores lower that 5.0 are not considered suitable habitat for this species.
Mallee and Callitris woodlands and habitats that have a distinct canopy with a dense, cluttered understorey	Qualitative assessment of habitat complexity with remnant structure and mid-dense to dense upper shrub layer scoring 5. Cleared areas scored 1	
Quality and availability of habitat required for shelter and breeding		
Presence of large canopy trees with exfoliating bark	The presence of large mature canopy trees that support decorticating bark was scored qualitatively from abundant (5) to absent (1).	
Quality and availability of habitat required for mobility		
Presence of wooded habitats	Identified presence of patch connectivity to neighbouring functional patches via tall canopy trees that would facilitate dispersal	
Threats		
Loss of suitable habitat through land clearing and cattle grazing	Remnant vegetation was considered safe from loss by clearing and scored 5. Low young regrowth scored 1	
Loss of understorey structure where foraging occurs through clearing	Generally considered constant and pervasive threat with medium scope and severity	
Loss of large trees and understorey structure where foraging occurs	Generally considered constant and pervasive threat with medium scope and severity	

Habitat Quality Metric	Qualitative description of scoring	Observations on proposed habitat clearing
through inappropriate fire regimes		
Loss of large trees through logging	Generally considered constant and pervasive threat with medium scope and severity	
Painted Snipe		
Quality and availability of food and habitat required for foraging		
presence of shallow water with vegetated margins	For non-wetland communities, the presence and density of gilgai is scored qualitatively from absent (zero) to dense and supporting dense vegetated margins (5).	Clearing of 1.4 ha of RE 11.4.9a with a habitat quality score of 5.1. This clearing occurs as five patches ranging from 0.01 to 1.1 ha (one patch) (**Insert 3**). These communities support some gilgais that are largely devoid of marginal vegetation. Given the fact that this species does not breed in Australia and the presence of better-quality habitats within the locality it is very unlikely that this species would occur even for brief periods of rest and refuge. The areas impacted are not considered habitat for this species. Scores lower that 5.1 are not considered suitable habitat for this species.
Quality and availability of habitat required for shelter and breeding		
does not breed in Australia	Scored 1	
Quality and availability of habitat required for mobility		
Highly mobile species	Score 5	
Threats		
Loss of suitable habitat through land clearing and cattle grazing	Remnant vegetation was considered safe from loss by clearing and scored 5. Low young regrowth scored 1	
Latham's Snipe		
Quality and availability of food and habitat required for foraging		Clearing of 1.4 ha of RE 11.4.9a with a habitat quality score of 5.1. This clearing occurs as five patches ranging from 0.01 (5 patches) to 1.1 ha (one patch) (Insert 3). These communities support some gilgais that are largely devoid of marginal vegetation. Given the fact that this species does not breed in Australia and the presence of better-quality habitats within the locality it is
presence of shallow water with vegetated margins	For non-wetland communities, the presence and density of gilgai is scored qualitatively from absent (zero) to dense and supporting dense vegetated margins (5).	
Quality and availability of habitat required for shelter and breeding		
does not breed in Australia	The qualitative assessment of canopy trees was assessed with dense stands scoring 5 and no canopy trees scoring 1	
Quality and availability of habitat required for mobility		
Highly mobile species	Score 5	
Threats		

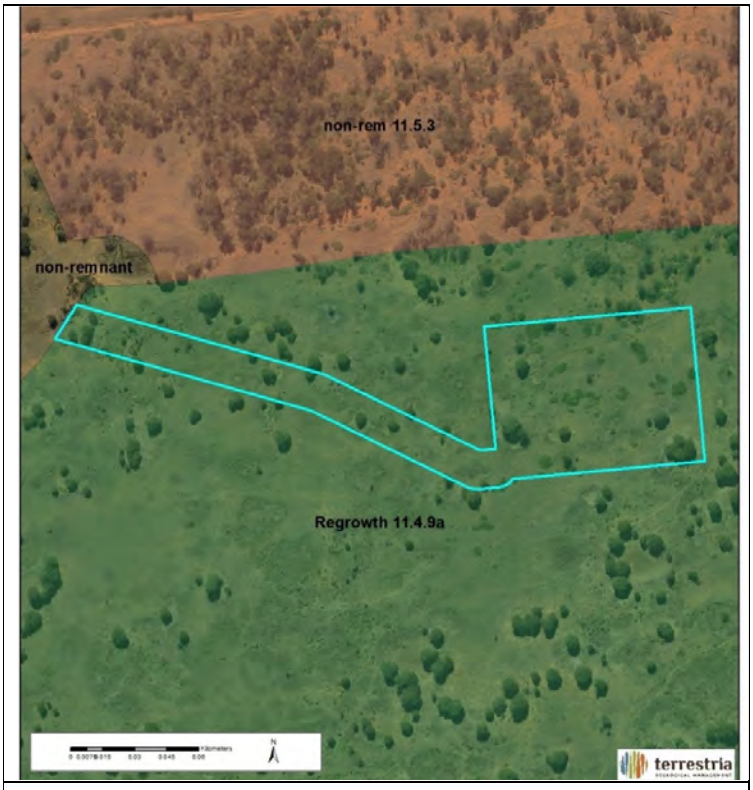
Habitat Quality Metric	Qualitative description of scoring	Observations on proposed habitat clearing
Loss of suitable habitat through land clearing and cattle grazing	Remnant vegetation was considered safe from loss by clearing and scored 5. Low young regrowth scored 1	very unlikely that this species would occur even for brief periods of rest and refuge. The areas impacted are not considered habitat for this species. Scores lower that 5.1 are not considered suitable habitat for this species.
Sharp-tailed Sandpiper		
Quality and availability of food and habitat required for foraging		Clearing of 1.4 ha of RE 11.4.9a with a habitat quality score of 5.1. This clearing occurs as nine patches ranging from 0.01 (5 patches) to 1.1 ha (one patch) (Insert 3). These communities support some gilgais that are largely devoid of marginal vegetation. Given the fact that this species does not breed in Australia and the presence of better-quality habitats within the locality it is very unlikely that this species would occur even for brief periods of rest and refuge. The areas impacted are not considered habitat for this species. Scores lower that 5.1 are not considered suitable habitat for this species.
presence of shallow water	For non-wetland communities, the presence and density of gilgai is scored qualitatively from absent (zero) to dense and supporting dense vegetated margins (5).	
Quality and availability of habitat required for shelter and breeding		
does not breed in Australia		
Quality and availability of habitat required for mobility		
Highly mobile species	Score 5	
Threats		
Loss of suitable habitat through land clearing and cattle grazing	Remnant vegetation was considered safe from loss by clearing and scored 5. Low young regrowth scored 1	
Echidna		
Broad habitat requirements	Habitat quality assessments for the echidna were informally made based on the presence of native understoreys that provide shelter and feeding resources. Communities that possess low amounts lower shrub layer cover, fallen woody material were deemed to be low value	Of the communities impacted by the construction disturbance footprint areas of regrowth REs 11.4.9a, 11.4.8 and 11.3.1 were determined to provide unsuitable habitat for this species. The balance of impacted communities totals 0.8 ha.



Insert 1: 1.2 ha of Regrowth 11.4.8



Insert 2: 0.4 ha of Regrowth 11.5.3



Insert 3: 1.1 ha of Regrowth RE 11.4.9a

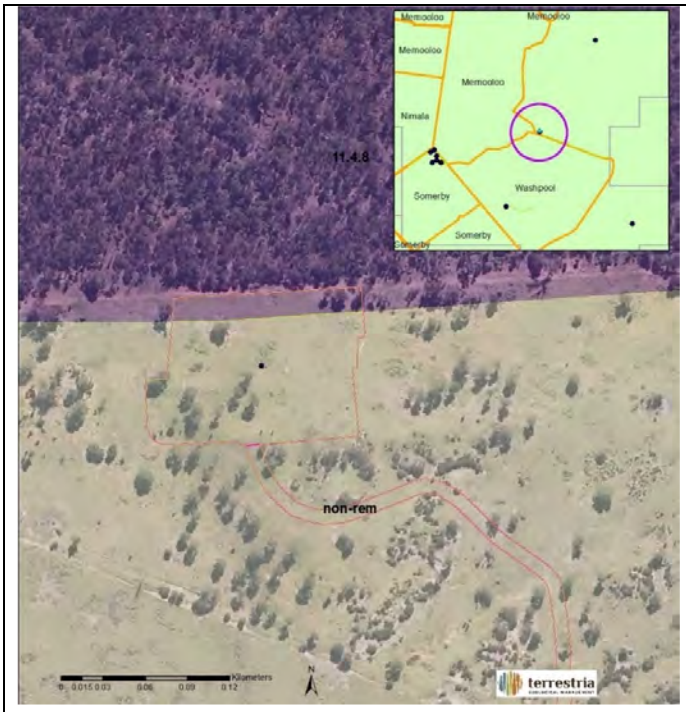
4.1.6 Cumulative Impacts

Historical disturbance polygons provided by Santos contained all historical gas-related activities and the detailed search of the 2012 aerial did not identify any gas-related ground disturbance outside of the historical disturbance polygons provided. Most of the 191 ha of historical gas-related disturbance within the Santos supplied polygons occurred in open grazing paddocks. These disturbances did not impact any areas that supported recognisable ecological values at the time of disturbance.

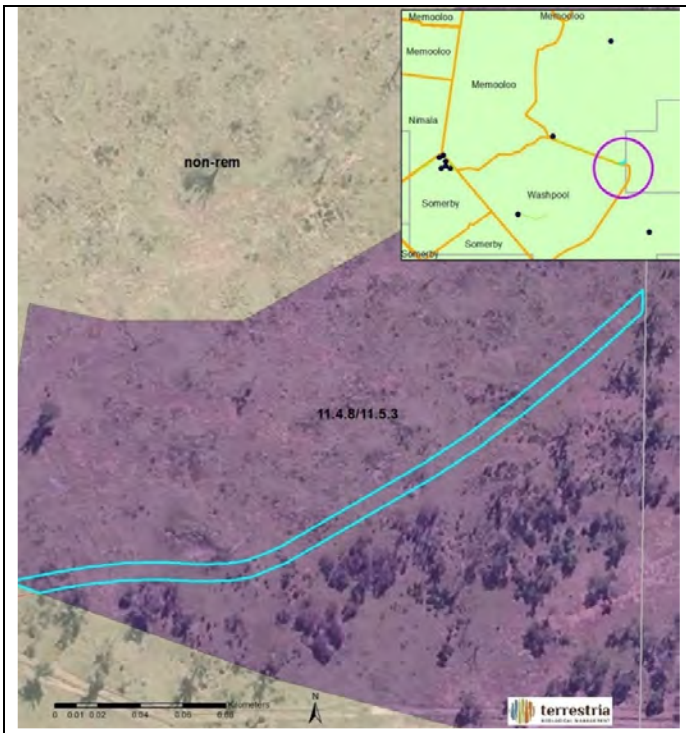
Searches did identify three polygons that intersected with the 2015 (version 10.0) state regional ecosystem mapping. Of these polygons, two patches (**Inserts 4** and **5**) appear to have been devoid of native vegetation of any meaningful ecological value prior to any gas related activities, and no impacts can be attributed to gas-related activities.

The third patch was a 0.25 ha of clearing within mapped remnant RE 11.4.9a (**Insert** 6) related to construction of **a** CSG well, Humboldt South-1. The well was drilled by Comet Ridge Limited as an agent for Santos QNT in August 2017. The well was plugged and abandoned on 6 March 2018[38] after which it was rehabilitated and seeded. Review of the recent aerial imagery shows that there is no surface infrastructure present and that in 2023 the area supported a dense cover of grass with emergent brigalow shrubs/trees (**Insert 6**).

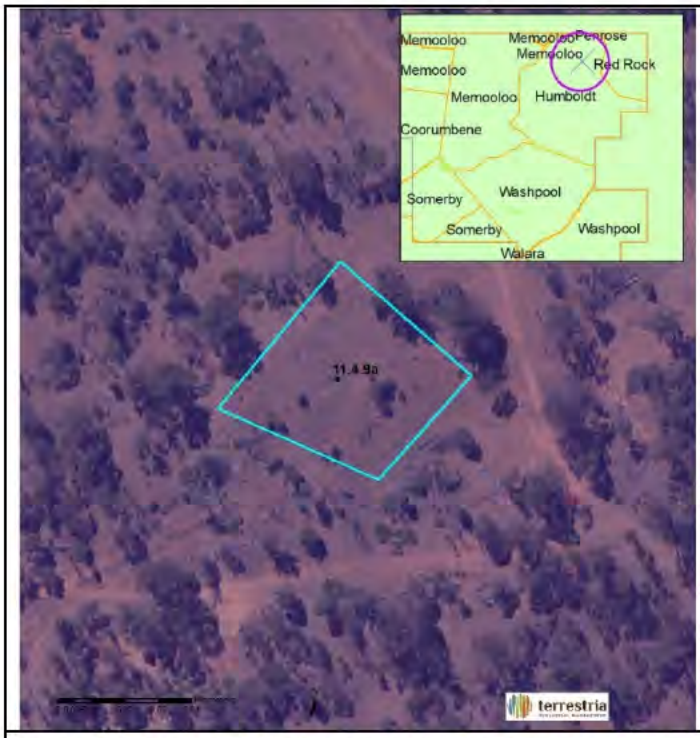
[38] Humboldt South-1 Well Abandonment Report ATP 1191, Bowen Basin Central Queensland. Report Date: 06/03/2018



Insert 4: Mapped patch RE 11.4.8 No clearing for gas Infrastructure appears to have occurred



Insert 5: Mapped patch RE 11.4.8/11.5.3 No clearing for gas Infrastructure appears to have occurred



Insert 6: Mapped patch RE 11.4.9a clearing for gas Infrastructure appears to have occurred

All three impact areas were located in PL 1082, outside of the current ecological assessment survey area and RE 11.4.9a has not been scored for habitat quality. Invoking the precautionary principle, it is assumed that the remnant patch of RE 11.9.4a contains all the micro-habitat factors known to occur within this community type and is considered habitat for the species listed in **Table 4.3** below. Review of the 2018 and 2023 aerial imagery shows that the surrounding community was disturbed by grazing activities, with native shrub and ground layers being sparse to absent lowering habitat values.

Table 4.3: Cumulative Impacts to Threatened Fauna Habitat

Species	Proposed Impact (ha)	Proposed REs Impacted	Historical Impact (ha)	Total Cumulative Impact (ha)
Painted honeyeater	1.7	2 x patches Regrowth RE 11.4.8 7 x patches regrowth 11.5.3 1 x patch remnant RE 11.5.3 5 x patches remnant RE 11.3.1	0.25	2.2
Ornamental Snake	0.0	5 x patches remnant RE 11.3.1	0.25	0.25
Grey Snake	0.0	5 x patches remnant RE 11.3.1	0.25	0.25
South-eastern Long-eared Bat	0.0	None proposed	0.25	0.25

Fulsome assessments of cumulative significant and significant residual impacts are given in **Appendices G** and H, respectively. In summary, the historical clearing of 0.25ha of remnant RE 11.4.9a would not have removed breeding habitat for either the painted honeyeater or the south-eastern long-eared bat. Both of these species forage over very large areas and the impact to feeding resources would have been negligible. The subsequent decommissioning of the well and establishment of shrub and grass cover would have at least partially restored refuge habitat for the ornamental and grey snakes. It is unlikely that the removal of 0.25ha of disturbed remnant RE 11.4.9a that has regenerated over the past 9 years contributes meaningfully to the proposed impacts to Wildlife habitat for these species and a cumulative significant residual impact is not anticipated for any of these species.

4.2 Matters of National Environmental Significance

There are nine MNES protected under the EPBC Act. Any project that will or is likely to have a significant impact on an MNES must refer that project to the Federal Environment Minister for a decision on whether assessment and approval under the EPBC Act is required. MNES relevant to this project are discussed further in **Table** 4.4.

Table 4.4: Matters of National Environmental Significance Relevant to the Project

MNES	Relevance to project
World and National Heritage properties	No World Heritage Properties or National Heritage Places are identified for the Survey area in the EPBC Act Protected Matters Report (DCCEEW 2025, **Appendix A**).
Great Barrier Reef Marine Park and Commonwealth Marine Area	Not relevant – the Survey area is inland and not in proximity to marine areas.
Wetlands of International Importance	No wetlands of International Importance are identified within the project area in the EPBC Act Protected Matters Report (DCCEEW 2025).
Threatened Ecological Communities	The desktop assessment identified the potential occurrence of five Threatened Ecological Communities listed under the EPBC Act. None of these communities was identified within the Survey area.
Threatened Species	No MNES threatened fauna or flora species were detected during the field surveys. No threatened flora species are considered likely to occur within the Survey area. Habitat for thirteen (13) MNES threatened fauna species thought likely to occur was verified as occurring within the Broader Survey Area. These are: **Birds** • Squatter Pigeon (southern) *Geophaps scripta scripta* – Vulnerable • Red goshawk *Erythrotriorchis radiatus* – Endangered • White-throated needletail *Hirundapus caudacutus* – Vulnerable

MNES	Relevance to project
	• Painted Honeyeater *Grantiella picta* Vulnerable • Australian Painted Snipe *Rostratula australis* Endangered • Latham's Snipe *Gallinago hardwickii* Vulnerable • Sharp-tailed Sandpiper *Calidris acuminata* Vulnerable **Reptiles** • Ornamental snake *Denisonia maculata* Vulnerable • Yakka Skink *Egernia rugosa* Vulnerable • Grey Snake *Hemiaspis damelii* Endangered **Mammals** • Southeastern long-eared bat *Nyctophilus corbeni* Vulnerable • koala *Phascolarctos cinereus* Endangered • Greater Glider (southern and central) *Petauroides volans* Endangered **Area of habitat disturbed** Squatter pigeon 0.5 ha of low/medium quality Yakka Skink 0.5 ha of low/medium quality Koala 0.4 ha of low/medium quality.
Migratory Species	There is no substantial migratory species habitat within the Survey area and none of the habitats that do occur will be directly impacted.
Nuclear actions	Not relevant to the Project.
A water resource	Not relevant to this Ecological Impact Assessment.

An assessment of potential impacts to each MNES fauna species recorded, or with potential to occur in the construction disturbance footprint, was conducted in accordance with the following:

- Significant Impact Guidelines 1.1 – Matters of National Environmental Significance, Environment Protection and Biodiversity Act 1999;
- EPBC Act Referral Guidelines for the Vulnerable Koala (combined populations of Queensland, New South Wales and the Australian Capital Territory; and
- draft Referral Guidelines for the nationally listed Brigalow Belt Reptiles.

Impacts resulting from the construction and operation of the pipeline were assessed against the guidelines, the results of these assessments are provided in **Appendix G**. It was determined that none of these species will be significantly impacted by the Project.

Impacts to migratory species was determined to be insignificant given the lack of important migratory species habitat and that the Survey area does not contain:

- habitat utilised by a migratory species occasionally or periodically within a region that supports an ecologically significant proportion of the population of the species; and / or
- habitat that is of critical importance to the species at particular life-cycle stages; and / or

- habitat utilised by a migratory species which is at the limit of the species range; and / or
- habitat within an area where the species is declining.

4.3 Matters of State Environmental Significance

The environmental offsets framework in Queensland includes the *Environmental Offsets Act 2014* (EO Act), the *Environmental Offsets Regulation 2014* (EO Regulation) and the *Queensland Environmental Offsets Policy* (EO Policy). MSES are defined in the EO Regulation and are a component of the biodiversity state interest identified in the *Queensland State Planning Policy* (2017).

The Queensland Environmental Offsets Policy Significant Residual Impact Guideline (2014) is used to determine if a prescribed activity would have a significant residual impact on a MSES. A significant residual impact is defined as an adverse impact, whether direct or indirect, of a prescribed activity on all or part of a prescribed environmental matter that:

> *remains, or will or is likely to remain, (whether temporarily or permanently) despite on-site avoidance and mitigation measures for the prescribed activity; and*
>
> *is, or will or is likely to be significant.*

A number of MSES were identified during the desktop review as potentially occurring within the Survey area. The survey targeted locations containing MSES that intersected the Survey area. The desktop and survey findings on MSES are detailed further in **Table 4.5** and are shown on **Figure 3.10**.

Table 4.5: Matters of State Environmental Significance Located in the Survey area

Prescribed Environmental Matter	Relevance to project
Regulated vegetation	The State mapping identifies: Category B (Endangered and Of Concern RE), Category C (Endangered and Of Concern high value regrowth) and Category R (regrowth within 50 m of a watercourse in the GBR catchment) regulated vegetation within the Survey area. 0.1 ha of endangered RE 11.3.1 will be removed by the project. This clearing is for linear infrastructure and does not trigger an SRI according to the significant residual impact guidelines table 2.1, being less than 10m wide. No other areas of state regulated vegetation will be directly impacted by the proposed gas infrastructure (construction disturbance footprint). No clearing of regulated vegetation within a defined distance of a wetland (50m) or watercourse (5m) will be required and there is no trigger for a significant residual impact[39]

[39] Section 2.1, DEHP, 2014. Queensland Environmental Offsets Policy, Significant Residual Impact Guideline, Nature Conservation Act 1992 Environmental Protection Act 1994 Marine Parks Act 2004, December 2014

Prescribed Environmental Matter	Relevance to project
Connectivity areas	The Project will not have a significant impact on connectivity, The impact 0.1 ha of remnant RE 11.3.1 is below the threshold for an SRI.
Wetlands and watercourses	There are no State mapped MSES wetlands (wetlands of High Ecological Significance) or waters within the Survey area and none will be impacted by the proposed pipeline.
Protected Wildlife Habitat and Essential Habitat	Habitat for twelve confirmed State listed species and two Special Least Concern occurs within the Survey area, including: Birds • Squatter Pigeon (southern) *Geophaps scripta scripta* Vulnerable • Red goshawk *Erythrotriorchis radiatus* Endangered • White-throated needletail *Hirundapus caudacutus* Vulnerable • Painted Honeyeater *Grantiella picta* Vulnerable • Australian Painted Snipe *Rostratula australis* Endangered • Latham's Snipe *Gallinago hardwickii* Vulnerable • Sharp-tailed Sandpiper *Calidris acuminata* Vulnerable Reptiles • Ornamental snake *Denisonia maculata* Vulnerable • Yakka Skink *Egernia rugosa* Vulnerable • Grey Snake *Hemiaspis damelii* Endangered **Mammals** • Southeastern long-eared bat *Nyctophilus corbeni* Vulnerable • koala *Phascolarctos cinereus* Endangered • Greater Glider (southern and central) *Petauroides volans* Endangered Special Least Concern • Short-beaked Echidna *Tachyglossus aculeatus* SLC **Area of habitat disturbed** Squatter pigeon 0.5 ha of low/medium quality Yakka Skink 0.5 ha of low/medium quality Koala 0.4 ha of low/medium quality Echidna 3.5 ha of low/medium quality
Protected plants (High Risk Area)	There are no High Risk Areas mapped by the State within the Survey area. The field surveys did not detect any EVNT flora.

Prescribed Environmental Matter	Relevance to project
Koala Habitat in South-East Queensland	Not relevant as the Survey area is not mapped as koala habitat within an assessable development area under the State Planning Regulatory Provisions.
Protected Areas	There are no Nature Refuges located within the Survey area.
Fish Habitat Areas and Highly Protected Zones of State Marine Parks	Not relevant, as the Survey area does not intercept a marine park or a mapped fish habitat area.
Waterway providing for fish passage	There are several areas where the construction disturbance footprint crosses waterways providing fish passage. Identification of these crossings is outside the scope of this assessment.
Marine Plants	Not relevant as the Survey area is not located in a marine environment.
Legally secured Offset Area	There are no legally secured offset areas within the Survey area.

An assessment of potential impacts to each MSES fauna species recorded, or with potential to occur in the Impact Area, was conducted in accordance with the following the Significant Residual Impact Guidelines[40].

The total areas of remnant and regrowth regional ecosystems and Wildlife habitat impacted by the construction disturbance footprint are given in **Appendix H**. Impacts resulting from the construction and operation of the pipeline were assessed against the guidelines, the results of these assessments are provided in Appendix G. It was determined that there will be no significant residual impacts resulting from the construction and operation of the proposed gas infrastructure.

Impacts to migratory species was determined to be insignificant given the lack of important migratory species habitat and that the Survey area does not contain:

- habitat utilised by a migratory species occasionally or periodically within a region that supports an ecologically significant proportion of the population of the species; and / or
- habitat that is of critical importance to the species at particular life-cycle stages; and / or
- habitat utilised by a migratory species which is at the limit of the species range; and / or
- habitat within an area where the species is declining.

[40] DEHP, 2014. Queensland Environmental Offsets Policy, Significant Residual Impact Guideline, Nature Conservation Act 1992 Environmental Protection Act 1994 Marine Parks Act 2004, December 2014

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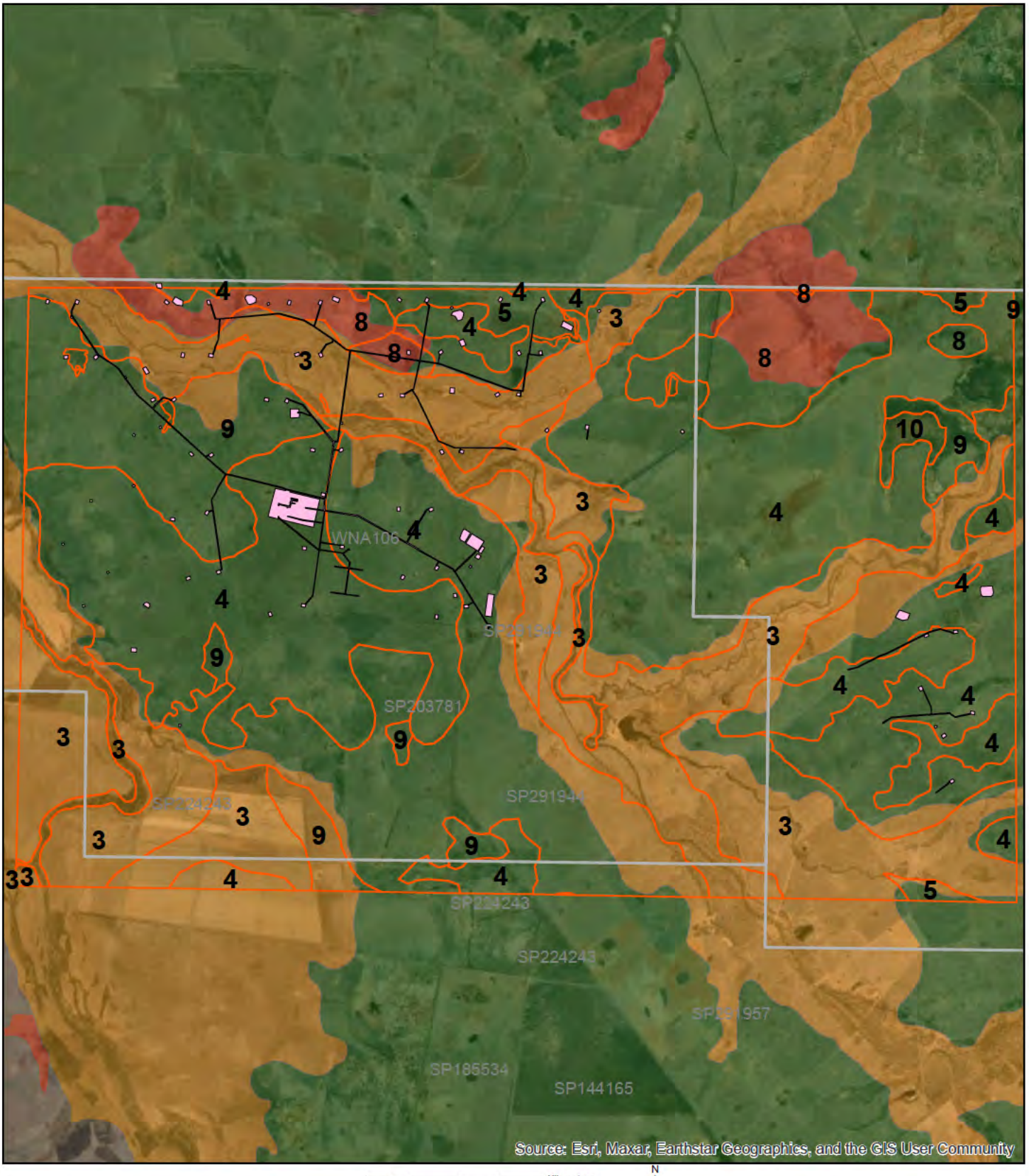


Legend

- Petroleum_Lease_Boundaries
- Construction Footprint
- Emerald Formation(w)
- Qa-QLD
- Tb-QLD

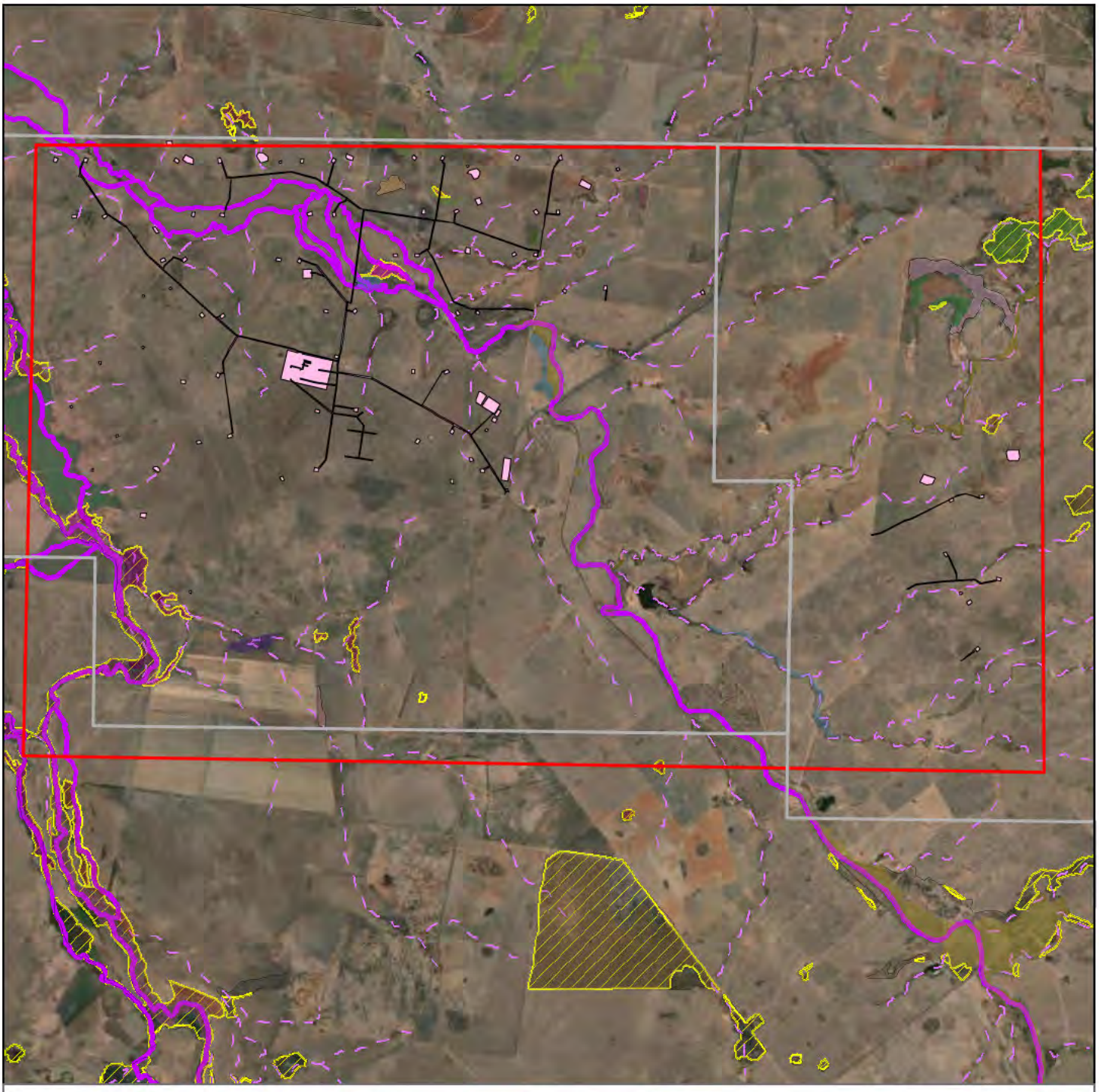
Figure 3.1

State Surface Geology

Mahalo Gas Field Facilities Infrastructure
Ecological Impact Assessment

AD 12/12/24
Job No. 0237

terrestria
ECOLOGICAL MANAGEMENT



Petroleum_Lease_Boundaries
Survey Area
Construction Footprint
Water Act Watercourse
MSES watercourse
Essential_habitat

Figure 3.2

State Regulated Vegetation Mapping

Mahalo Gas Field Facilities Infrastructure
Ecological Impact Assessment

AD 06/03/2026
Job No. 0370

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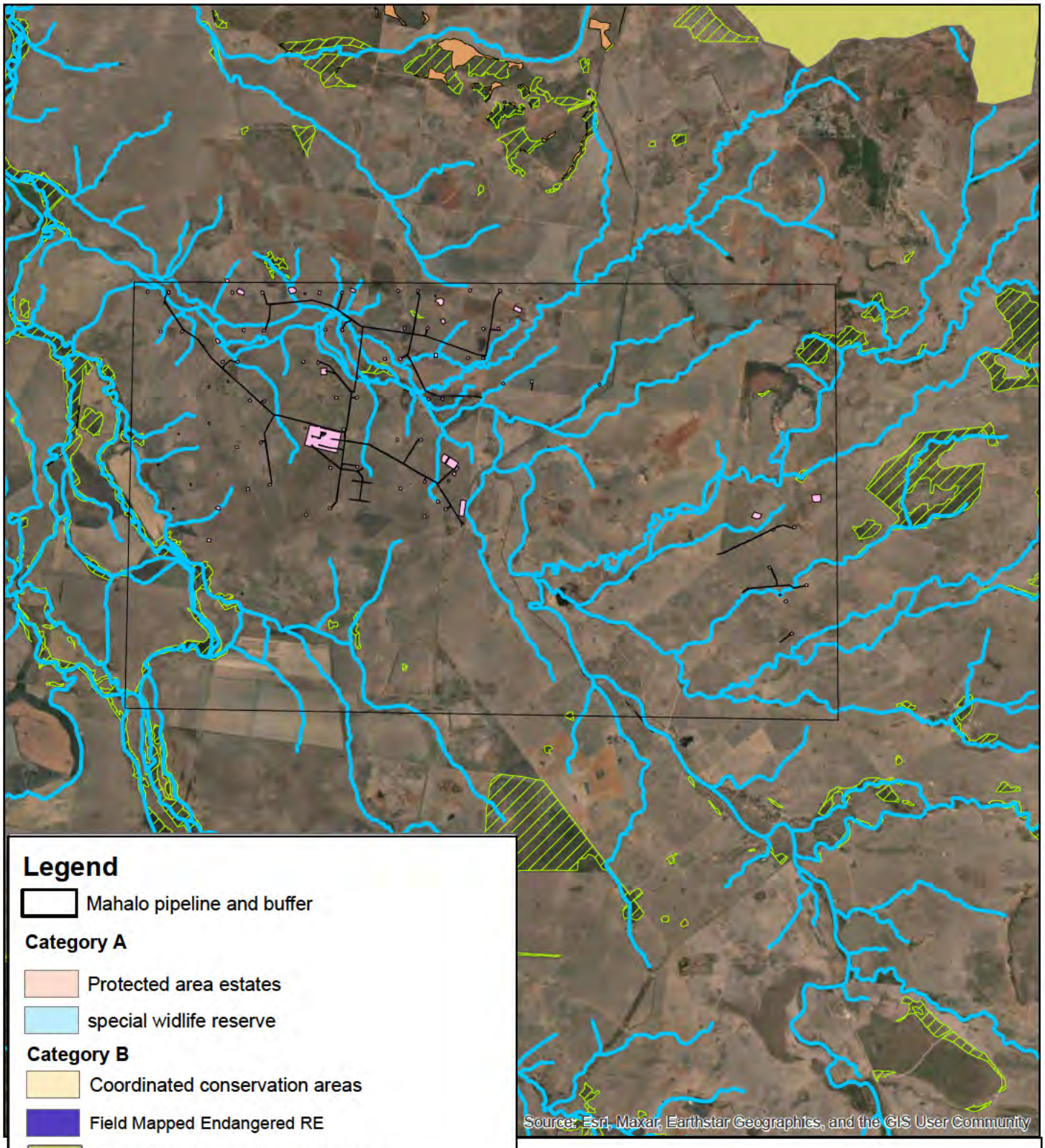


Figure 3.3

Ecologically Sensitive Areas

Mahalo Gas Field Facilities
Infrastructure Ecological
Impact Assessment

0 0.75 1.5 3 4.5 6 Kilometers

N

AD 02/02/2024
Job No. 0237

terrestria
ECOLOGICAL MANAGEMENT

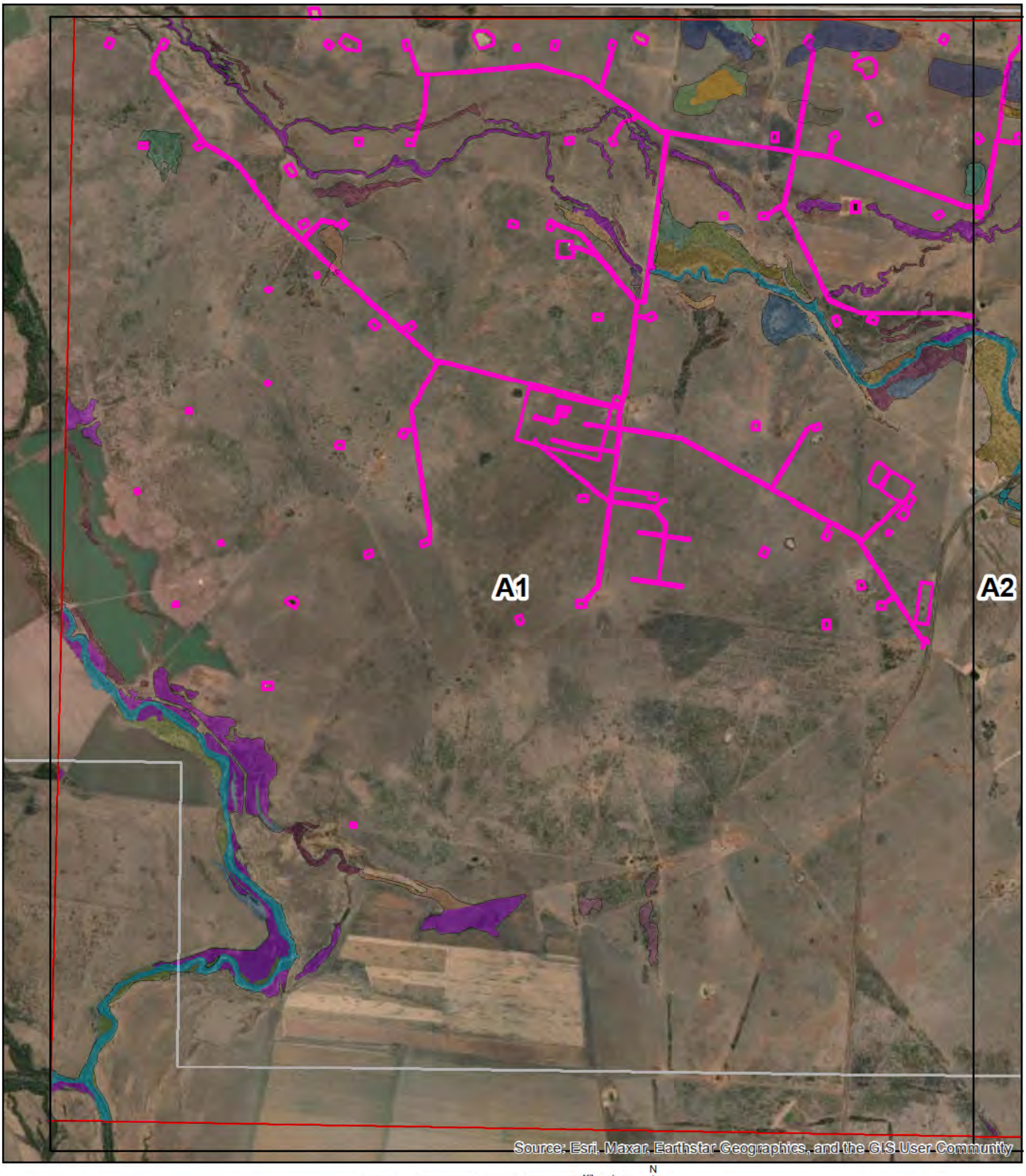


Figure 3.4 A1

Field Verified Regional Ecosystem Mapping

Mahalo Gas Field
Facilities Infrastructure
Ecological Impact Assessment

AD 11/06/25
Job No. 02357

terrestria
ECOLOGICAL MANAGEMENT

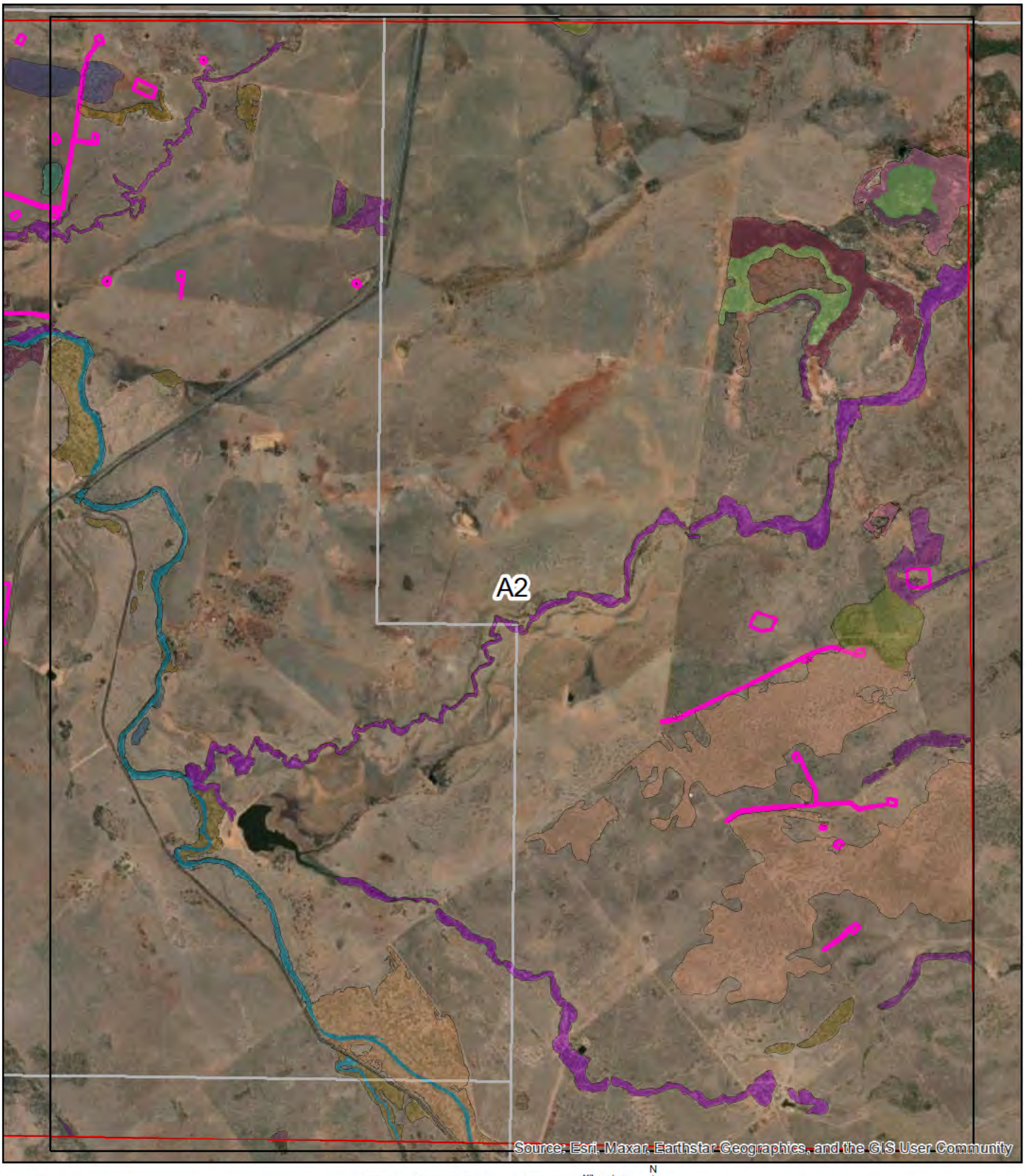


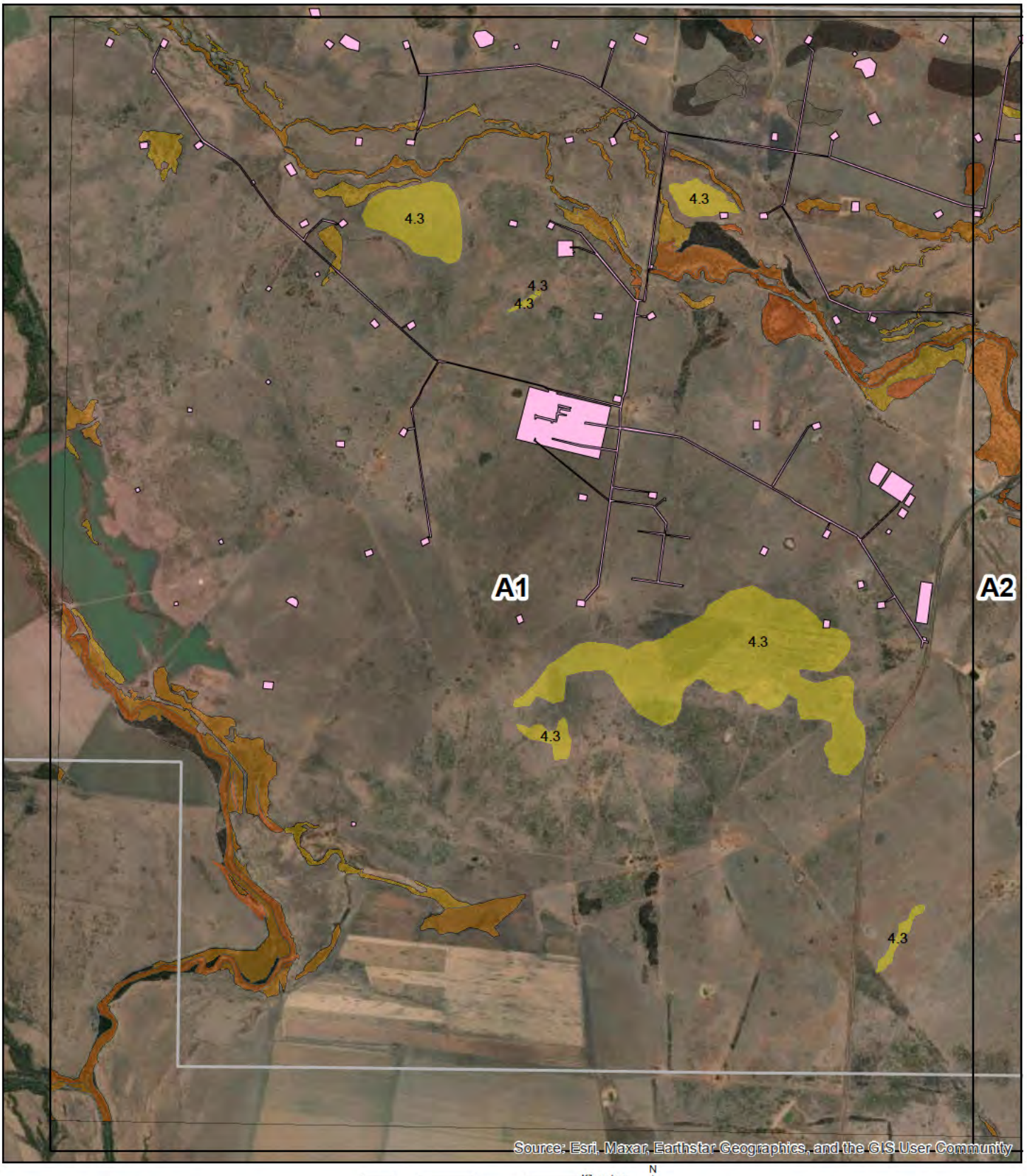
Figure 3.4 A2

Field Verified Regional Ecosystem Mapping

Mahalo Gas Field
Facilities Infrastructure
Ecological Impact Assessment

AD 11/06/25
Job No. 02357

terrestria
ECOLOGICAL MANAGEMENT



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- 5.9, 6.1, 6.3, 99

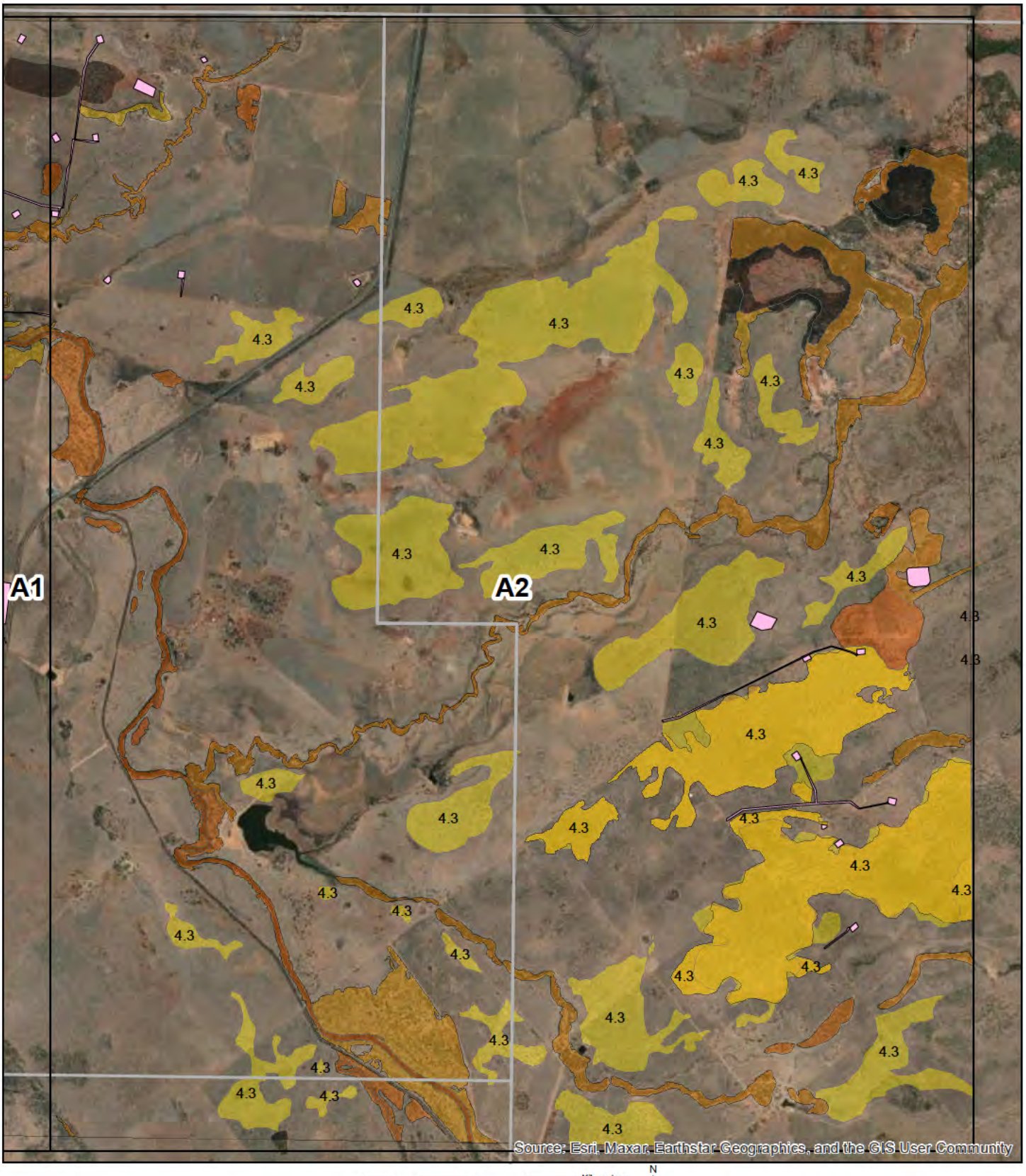
Figure 3.5 A1

Squatter Pigeon Habitat Quality

Mahalo GAs Field Ecological Impact Assessment

AD 11/06/25
Job No. 02357

terrestria
ECOLOGICAL MANAGEMENT



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2.4	3.8	4.6	5.4	99
2.8	3.9	4.8	5.5	
2.9	4.0	4.9	5.6	
3.1	4.1	5	5.8	

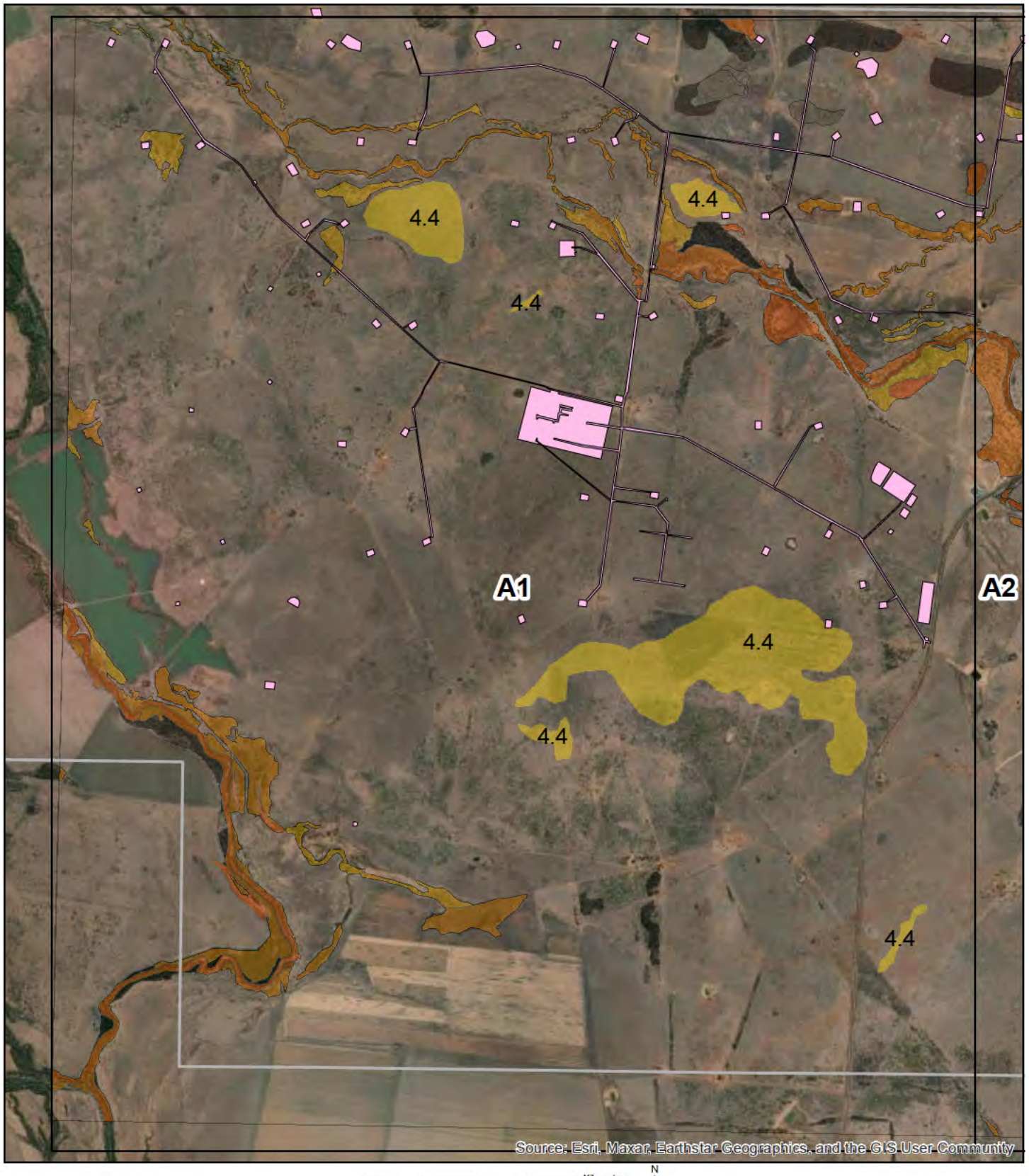
Figure 3.5 A2

Squatter Pigeon Habitat Quality

Mahalo GAs Field Ecological Impact Assessment

AD 11/06/25
Job No. 02357

terrestria
ECOLOGICAL MANAGEMENT



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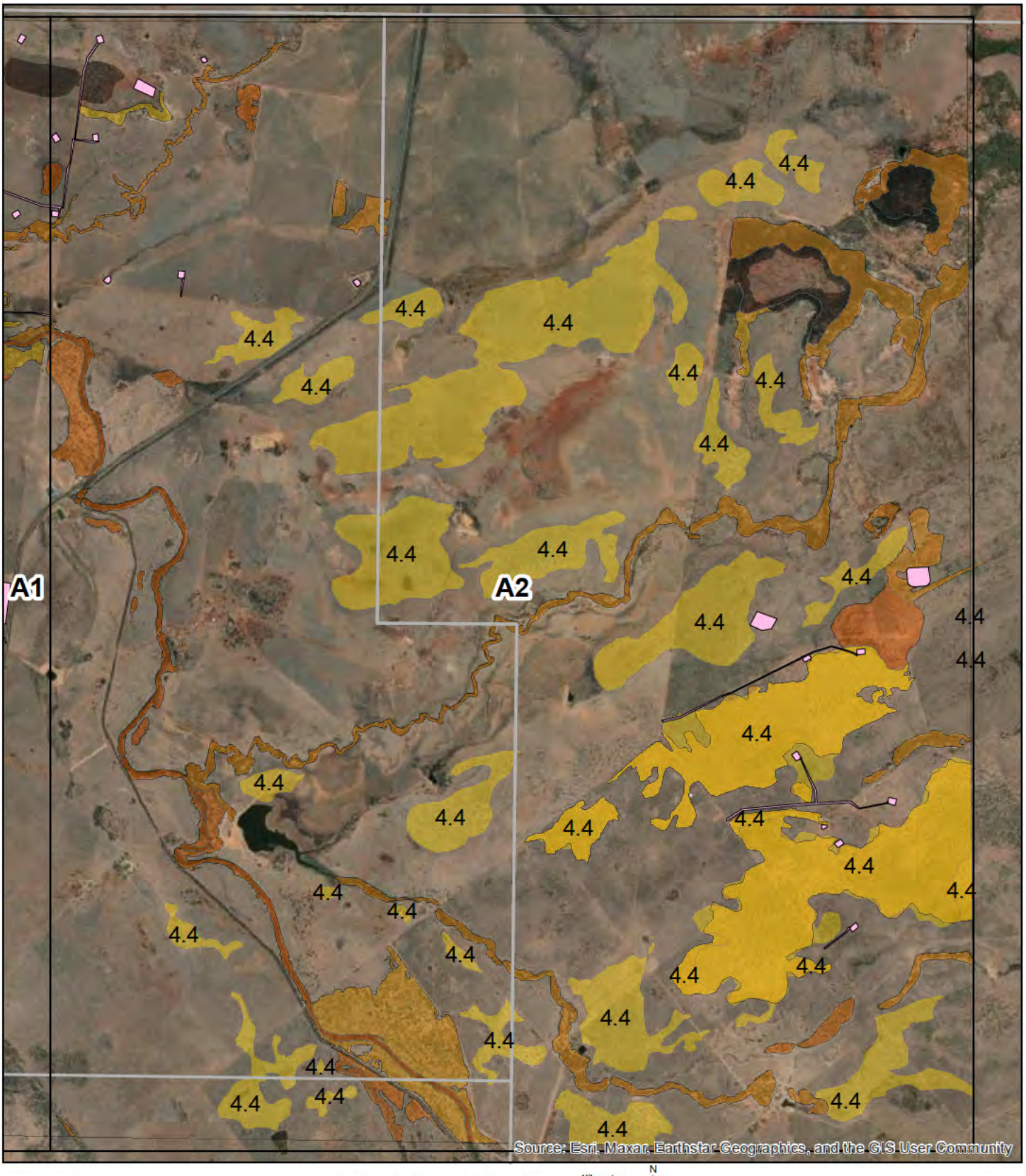
2.9	4.0	4.9	5.6	
3.1	4.1	5	5.8	

Figure 3.6 A1
Ornamental and Grey Snakes Habitat Quality

Mahalo GAs Field Ecological Impact Assessment

AD 11/06/25
Job No. 02357

terrestria
ECOLOGICAL MANAGEMENT



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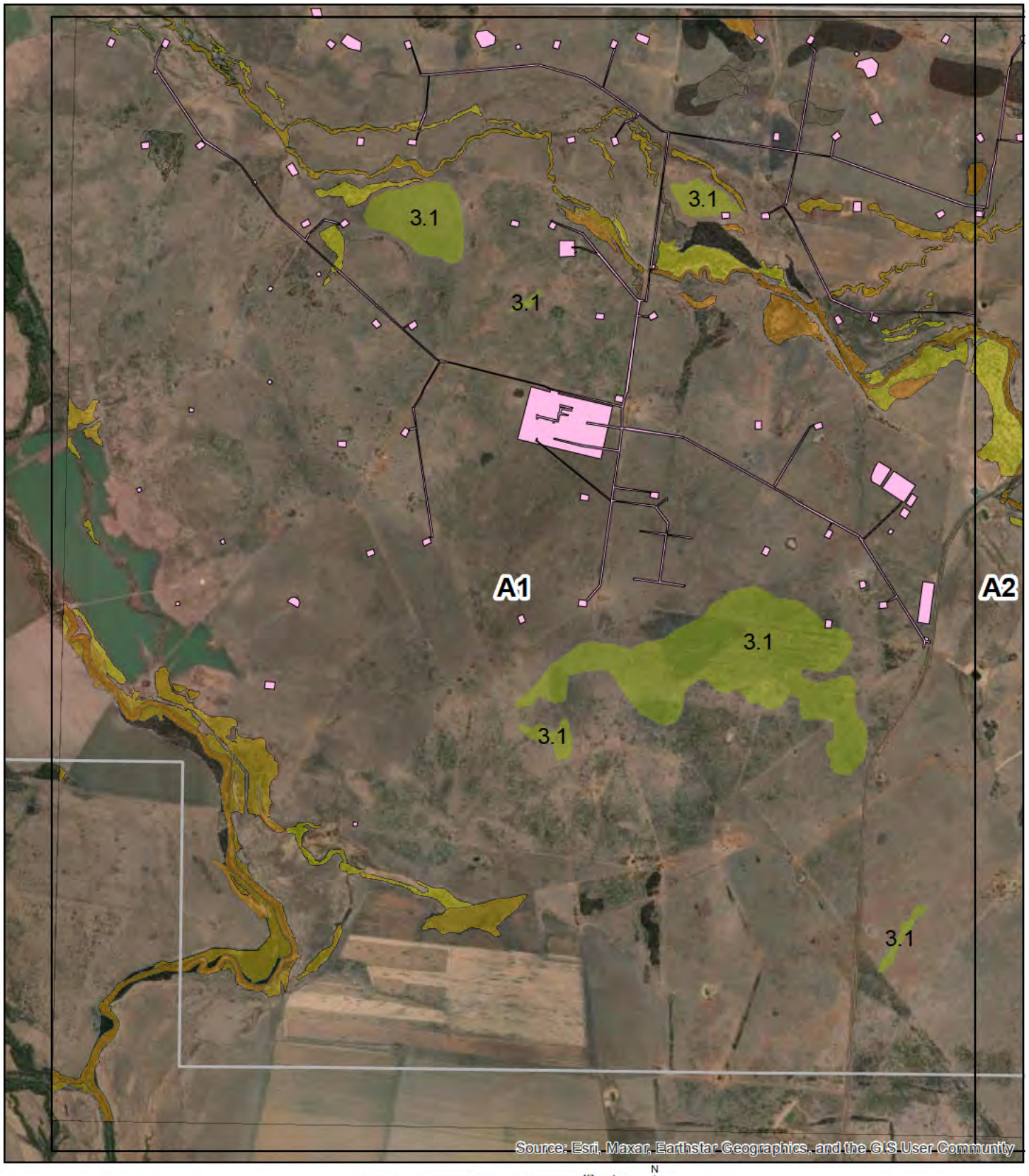
2.8	3.9	4.8	5.5	
2.9	4.0	4.9	5.6	
3.1	4.1	5	5.8	

Figure 3.6 A2
Ornamental and Grey Snakes Habitat Quality

Mahalo GAs Field Ecological Impact Assessment

AD 11/06/25
Job No. 02357

terrestria
ECOLOGICAL MANAGEMENT



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- 4.9
- 5
- 5.1
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- 5.5
- 5.6
- 5.8
- 5.9
- 6.1
- 6.3
- 99

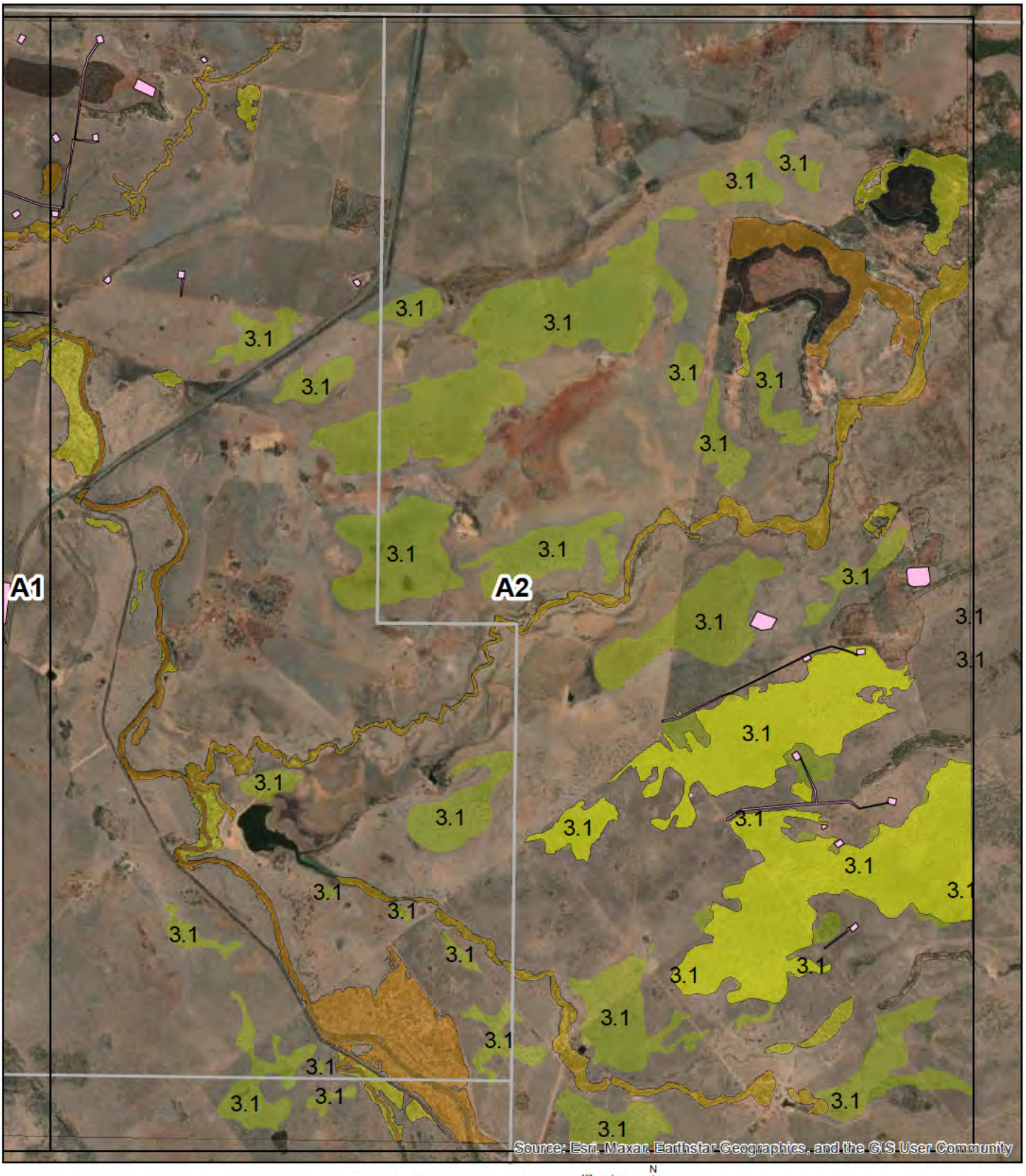
Figure 3.7 A1

Yakka Skink Habitat Quality

Mahalo GAs Field Ecological Impact Assessment

AD 11/06/25
Job No. 02357

terrestria ECOLOGICAL MANAGEMENT



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2.4	3.8	4.6	5.4	99
2.8	3.9	4.8	5.5	
2.9	4.0	4.9	5.6	
3.1	4.1	5	5.8	

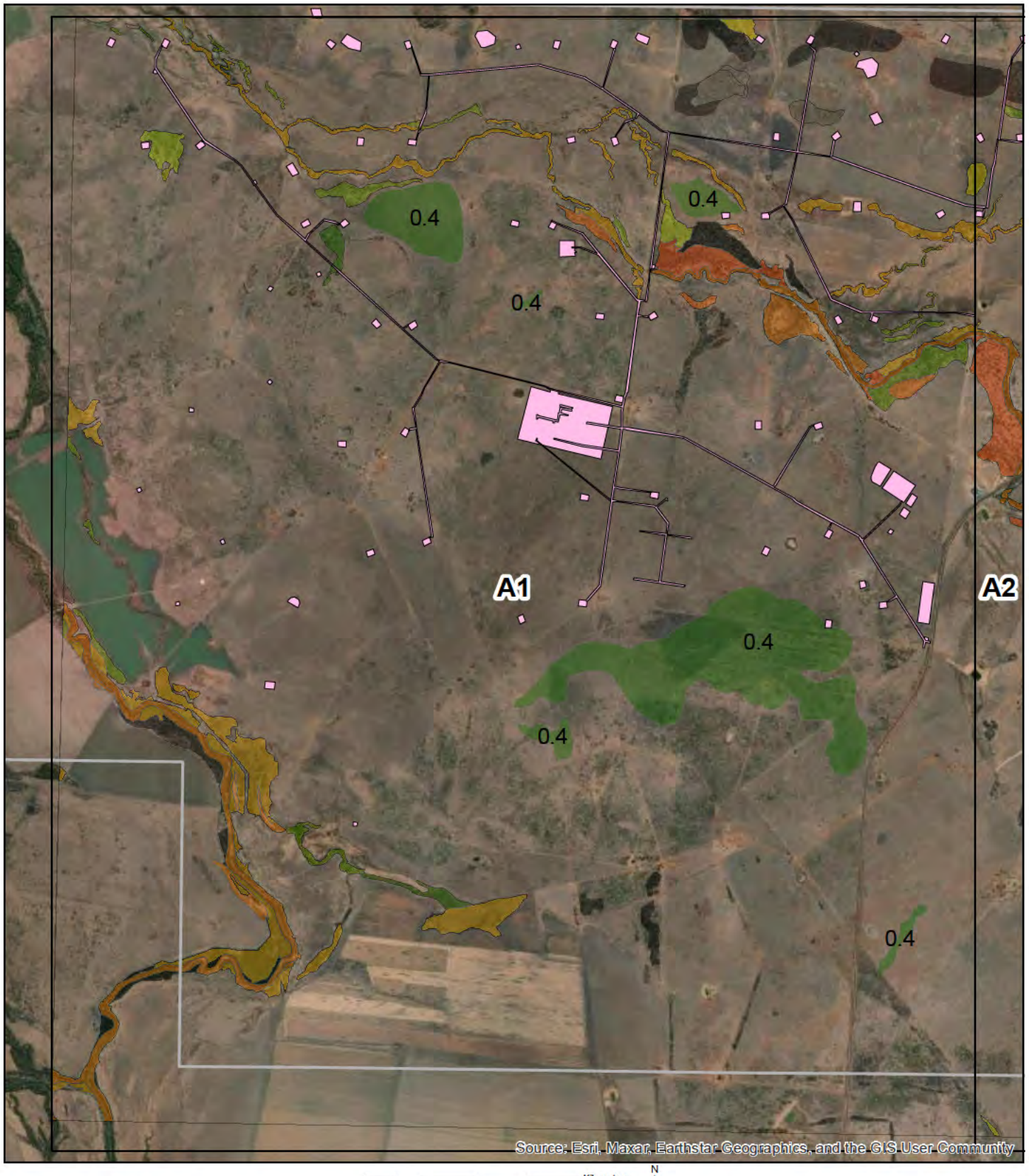
Figure 3.7 A2

Yakka Skink Habitat Quality

Mahalo GAs Field Ecological Impact Assessment

AD 11/06/25
Job No. 02357

terrestria ECOLOGICAL MANAGEMENT



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2.4	3.8	4.6	5.4	99
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2.9	4.0	4.9	5.6	
3.1	4.1	5	5.8	

Figure 3.8 A1

Greater Glider Habitat Quality

Mahalo GAs Field Ecological Impact Assessment

AD 11/06/25
Job No. 02357

terrestria
ECOLOGICAL MANAGEMENT

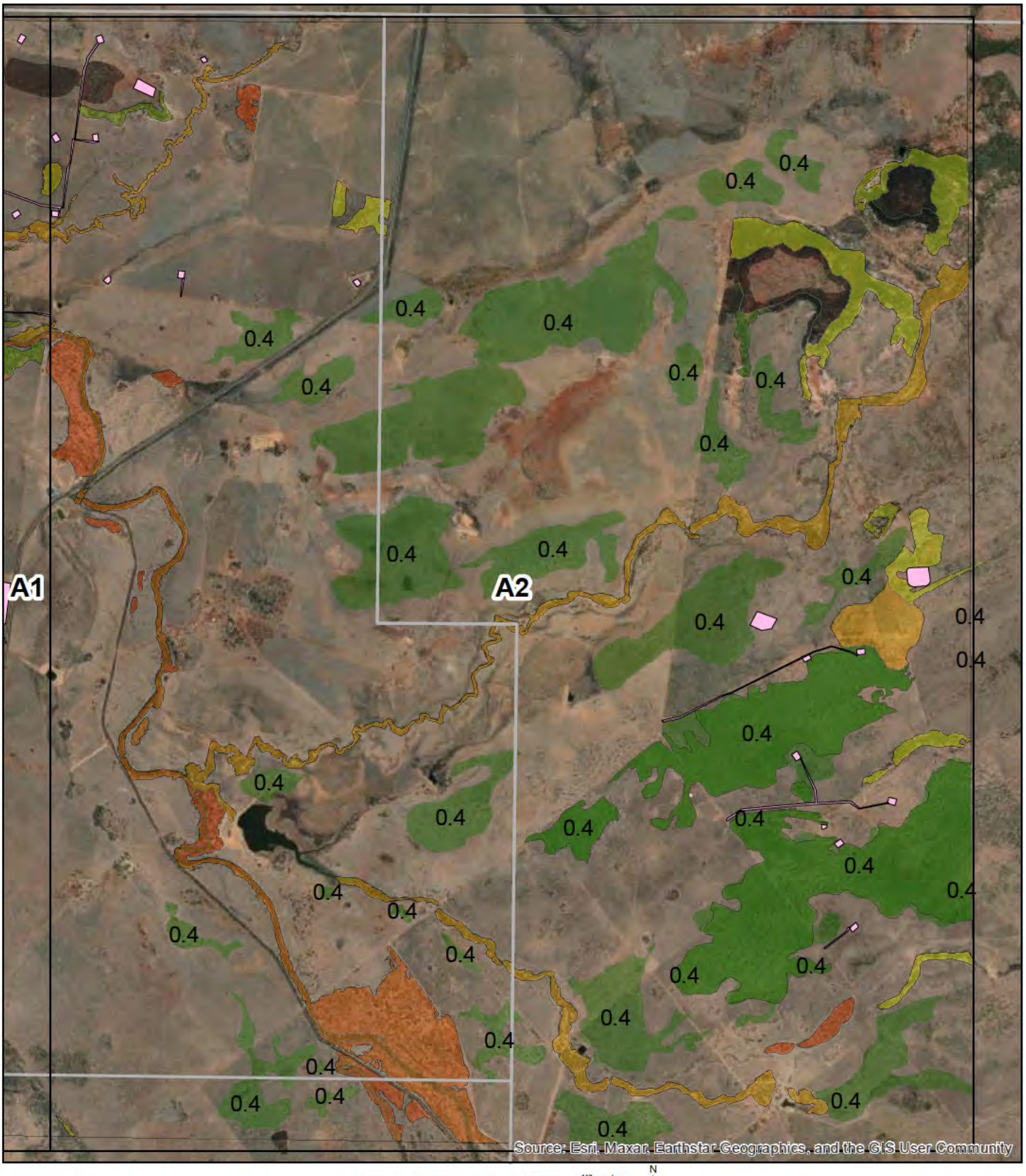

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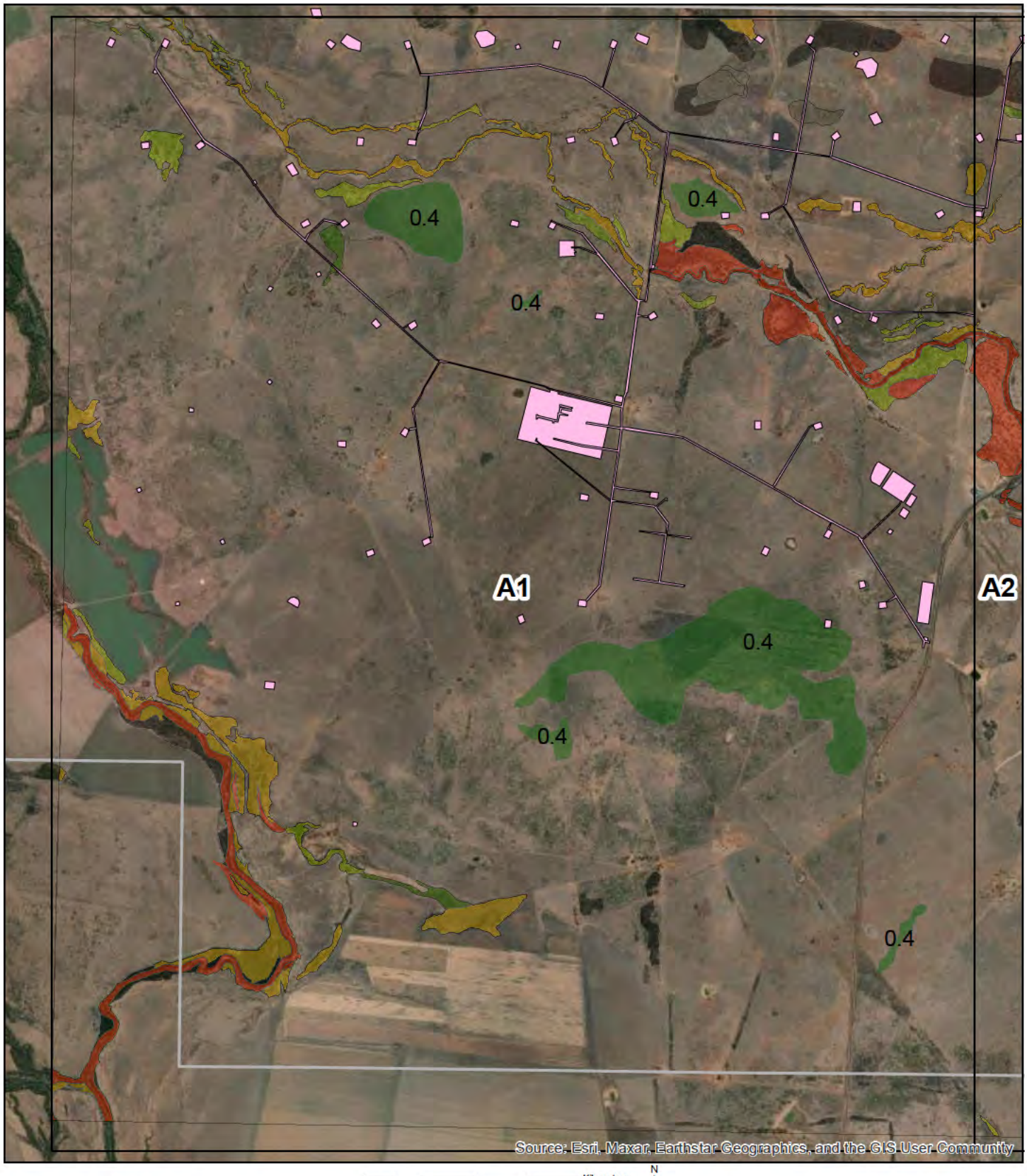
Figure 3.8 A2

Greater Glider Habitat Quality

Mahalo GAs Field Ecological Impact Assessment

AD 11/06/25
Job No. 02357

terrestria ECOLOGICAL MANAGEMENT



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- 5.9
- 6.1
- 6.3
- 99

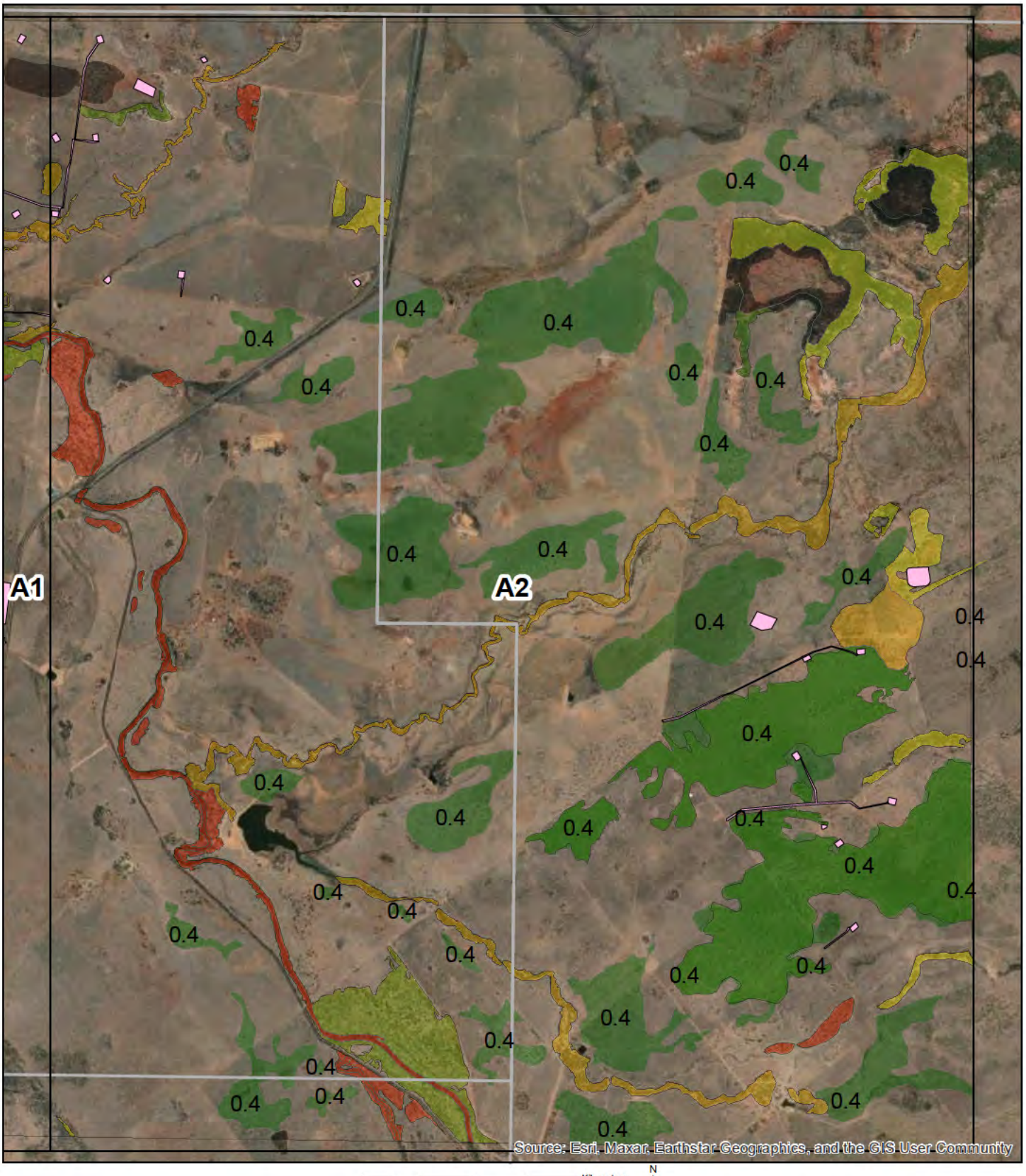
Figure 3.9 A1

Koala
Habitat Quality

Mahalo GAs Field
Ecological
Impact Assessment

AD 11/06/25
Job No. 02357

terrestria
ECOLOGICAL MANAGEMENT



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- 5.9, 6.1, 6.3, 99

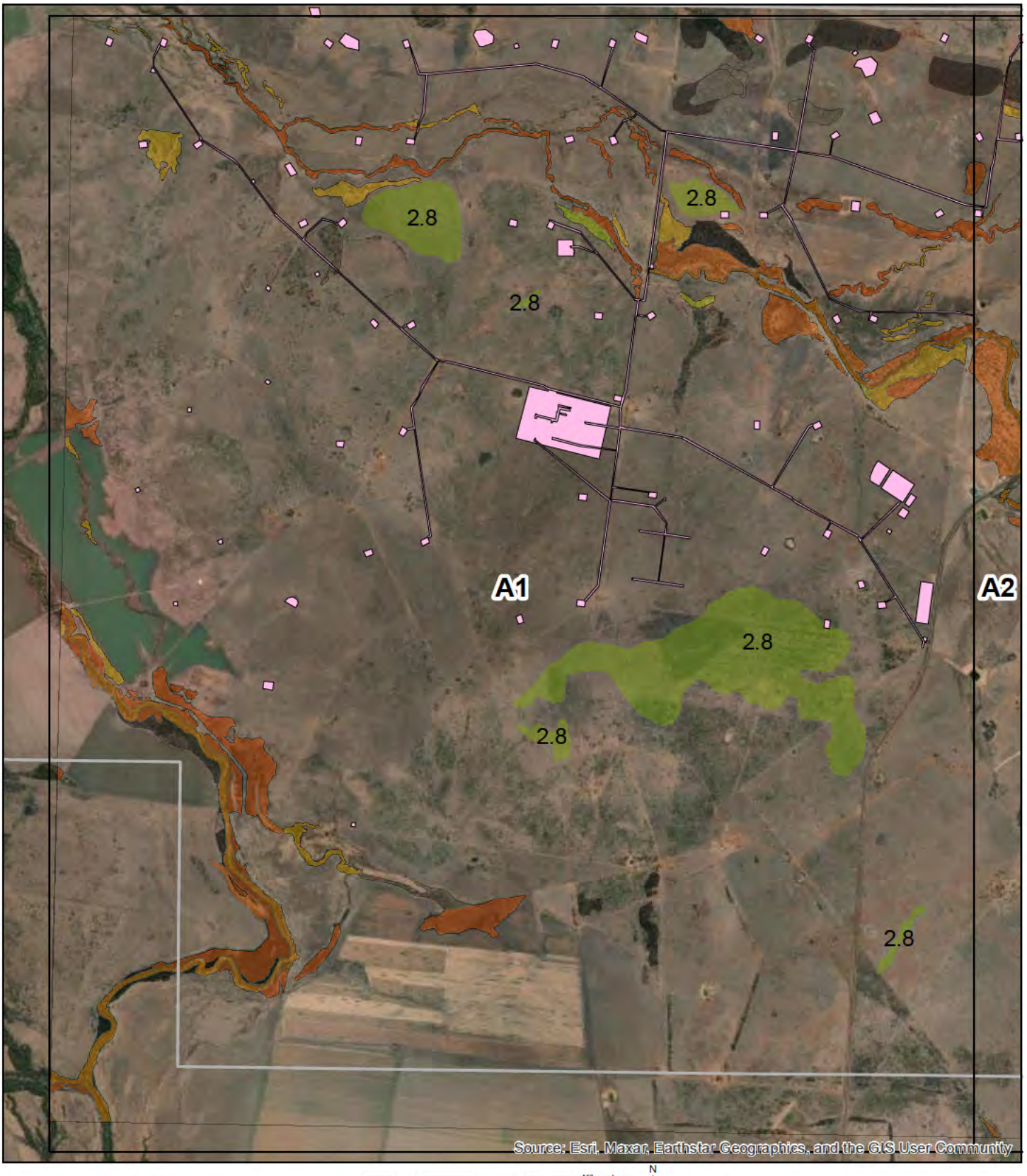
Figure 3.9 A2

Koala
Habitat Quality

Mahalo GAs Field
Ecological
Impact Assessment

AD 11/06/25
Job No. 02357

terrestria
ECOLOGICAL MANAGEMENT



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2.4	3.8	4.6	5.4	99
2.8	3.9	4.8	5.5	
2.9	4.0	4.9	5.6	
3.1	4.1	5	5.8	

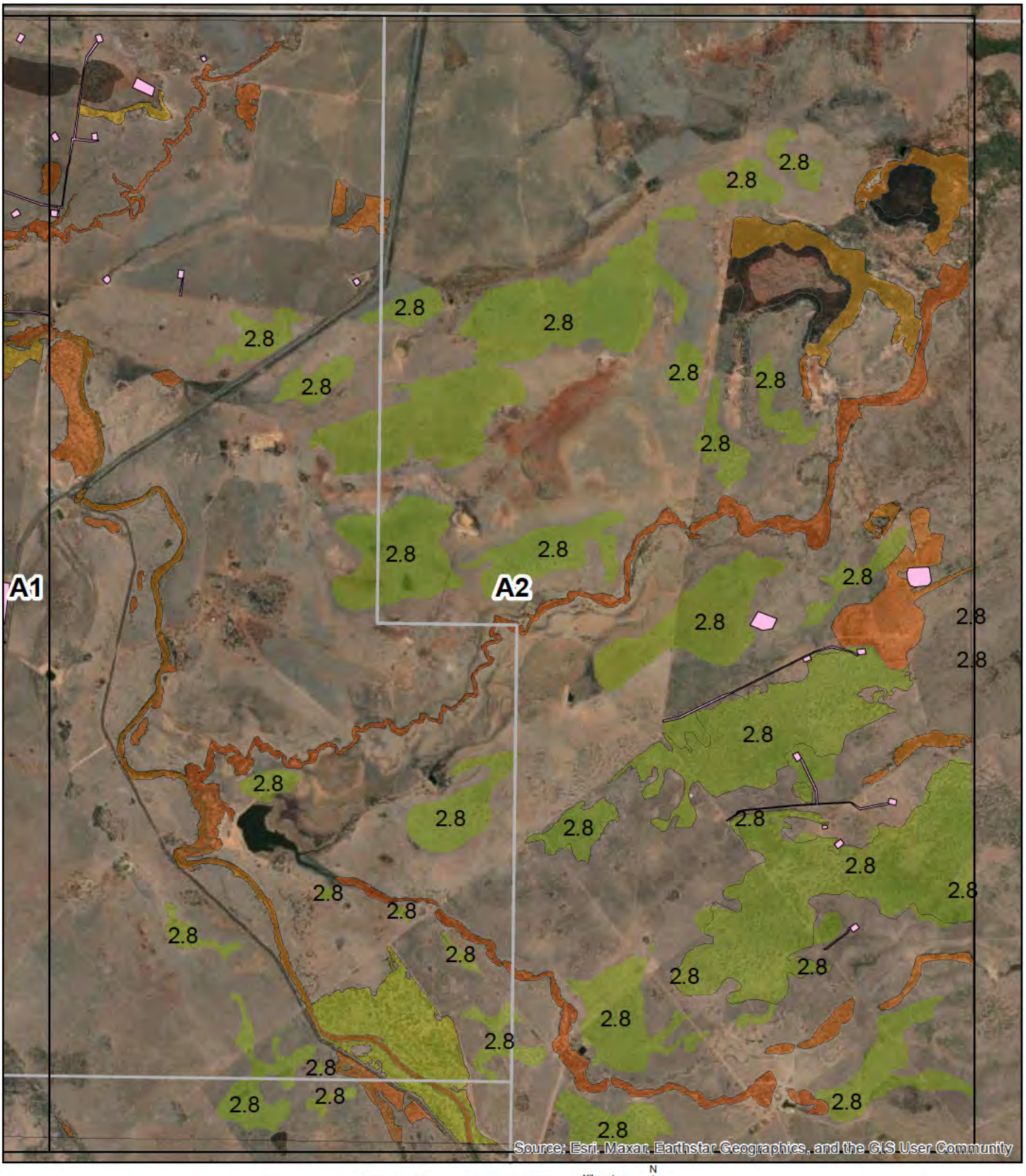
Figure 3.10 A1

Painted Honeyeater Habitat Quality

Mahalo GAs Field Ecological Impact Assessment

AD 11/06/25
Job No. 02357

terrestria
ECOLOGICAL MANAGEMENT



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- 5.9, 6.1, 6.3, 99

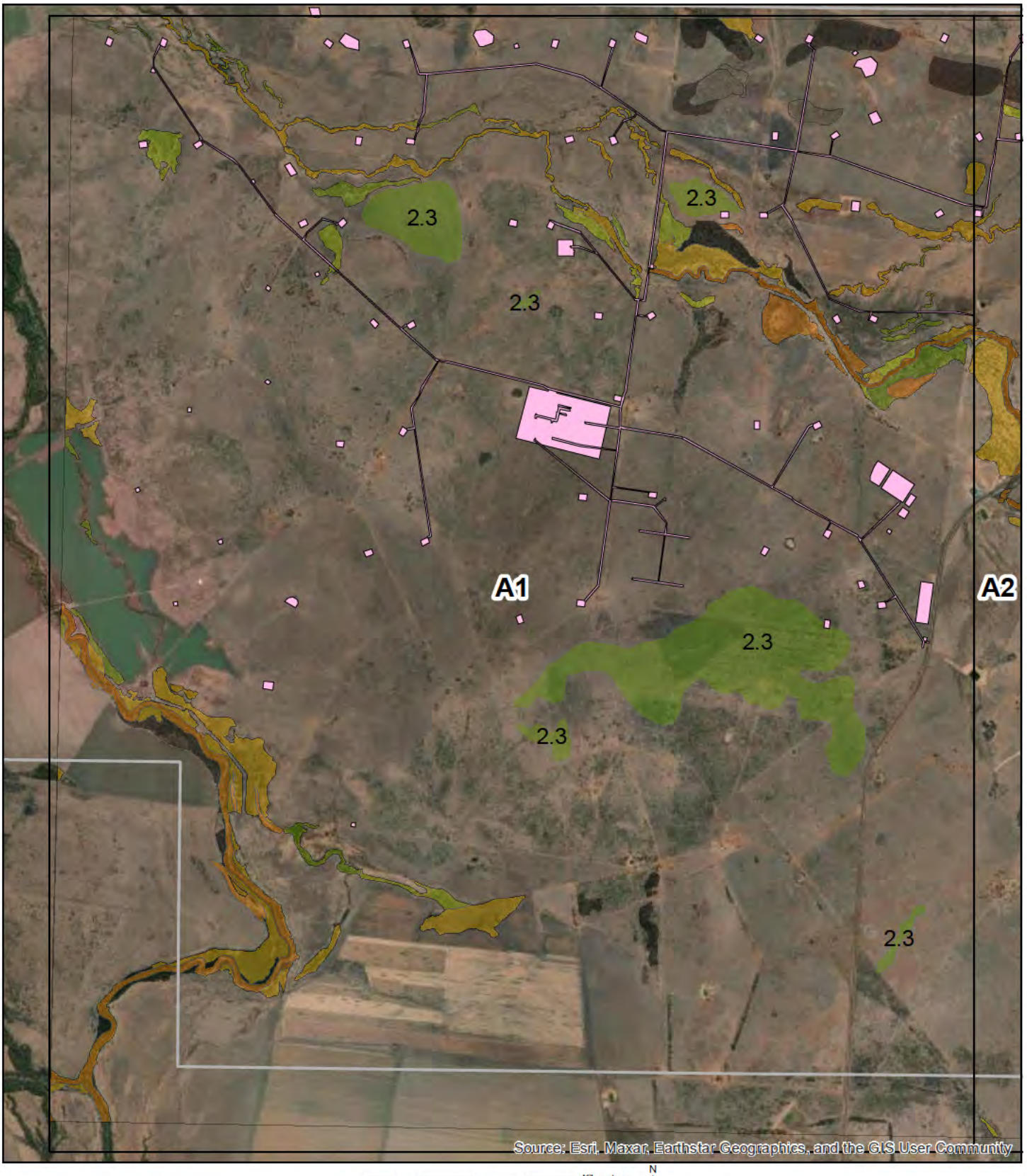
Figure 3.10 A2

Painted Honeyeater Habitat Quality

Mahalo GAs Field Ecological Impact Assessment

AD 11/06/25
Job No. 02357

terrestria ECOLOGICAL MANAGEMENT



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2.3	3.5	4.5	5.3	6.3
2.4	3.8	4.6	5.4	99
2.8	3.9	4.8	5.5	
2.9	4.0	4.9	5.6	
3.1	4.1	5	5.8	

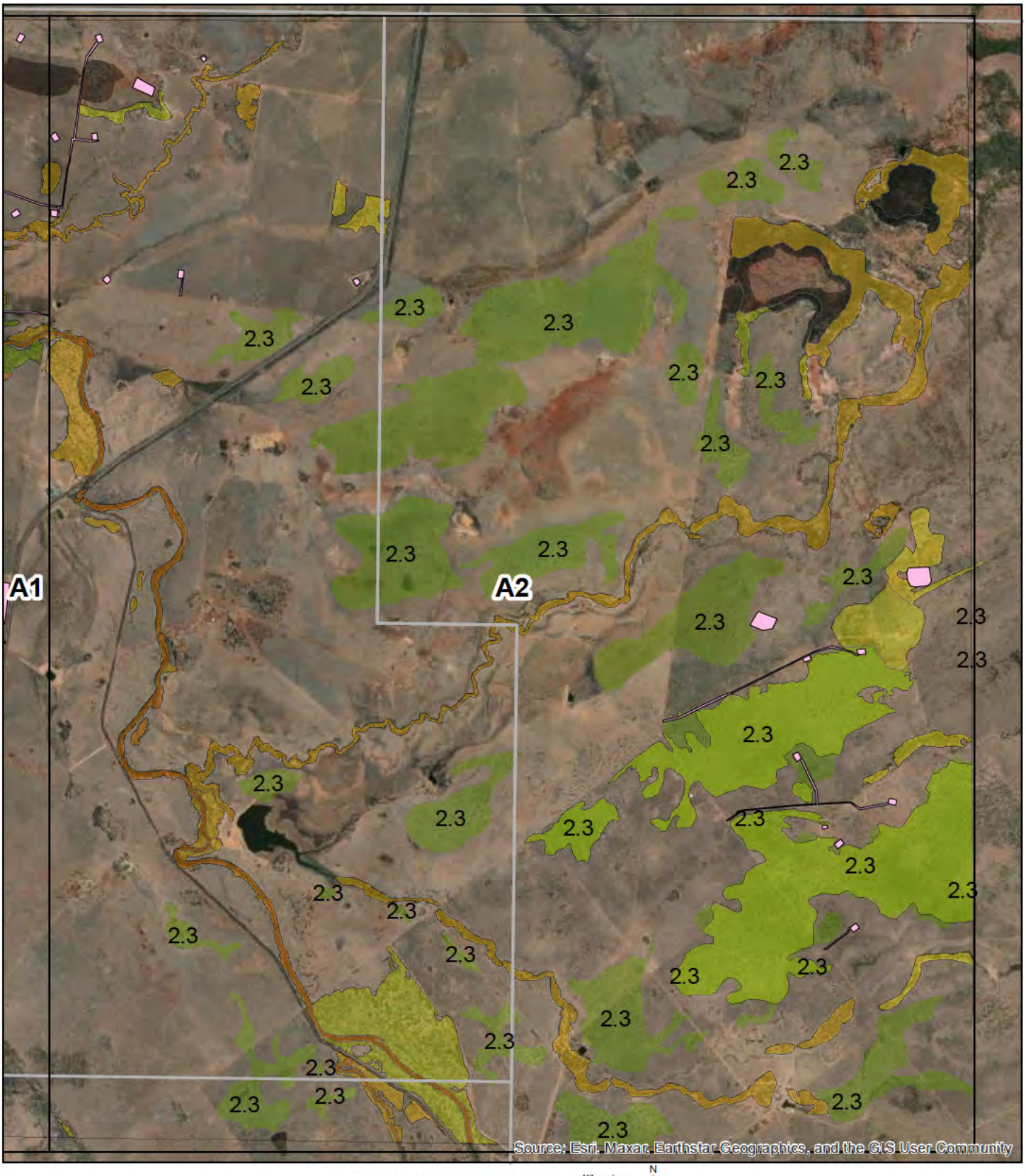
Figure 3.11 A1

South-eastern Long-eared Bat Habitat Quality

Mahalo GAs Field Ecological Impact Assessment

AD 11/06/25
Job No. 02357

terrestria
ECOLOGICAL MANAGEMENT



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2.3	3.5	4.5	5.3	6.3
2.4	3.8	4.6	5.4	99
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2.9	4.0	4.9	5.6	
3.1	4.1	5	5.8	

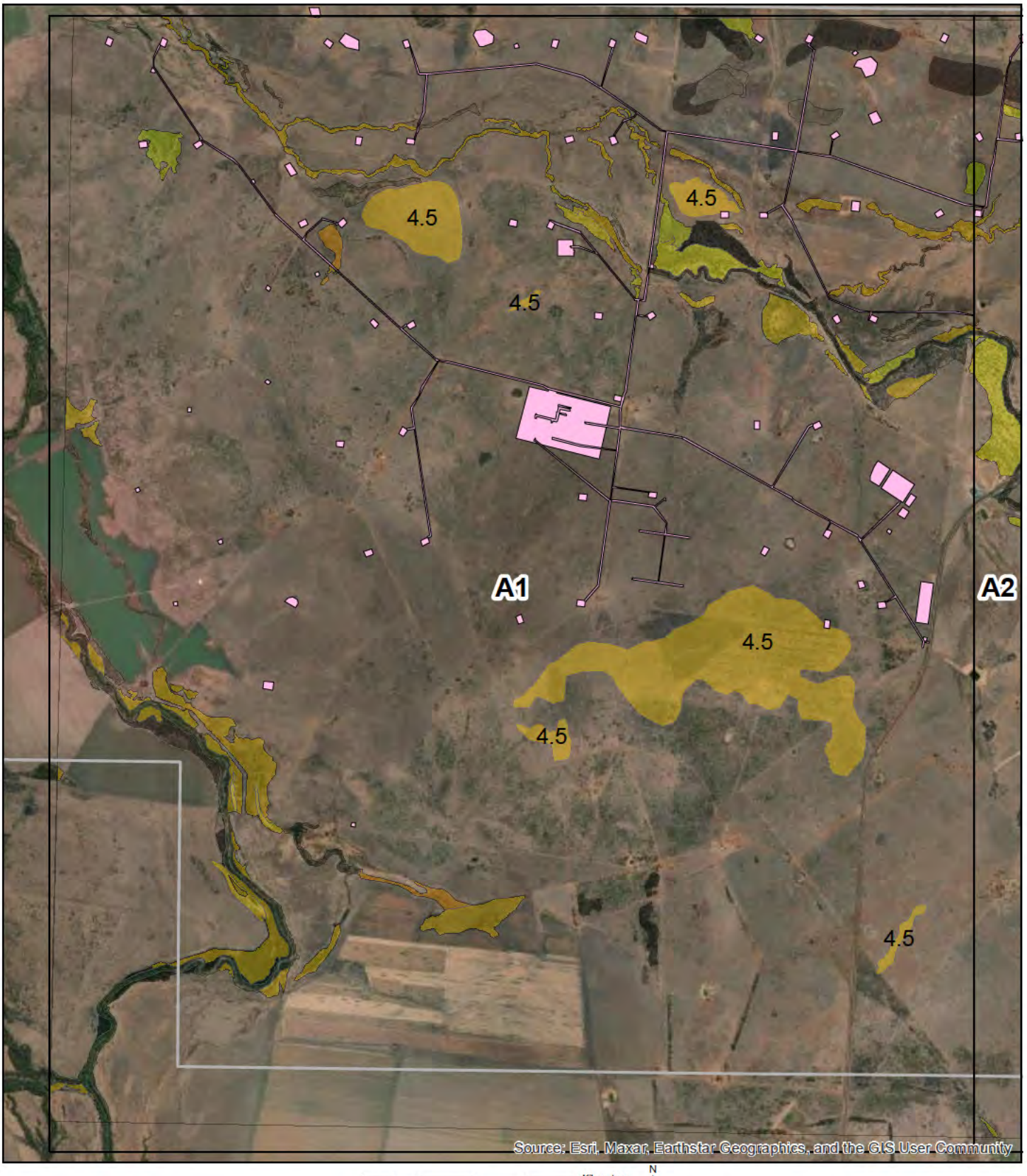
Figure 3.11 A2

South-eastern Long-eared Bat Habitat Quality

Mahalo GAs Field Ecological Impact Assessment

AD 11/06/25
Job No. 02357

terrestria
ECOLOGICAL MANAGEMENT



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2.3	3.5	4.5	5.3	6.3
2.4	3.8	4.6	5.4	99
2.8	3.9	4.8	5.5	
2.9	4.0	4.9	5.6	
3.1	4.1	5	5.8	

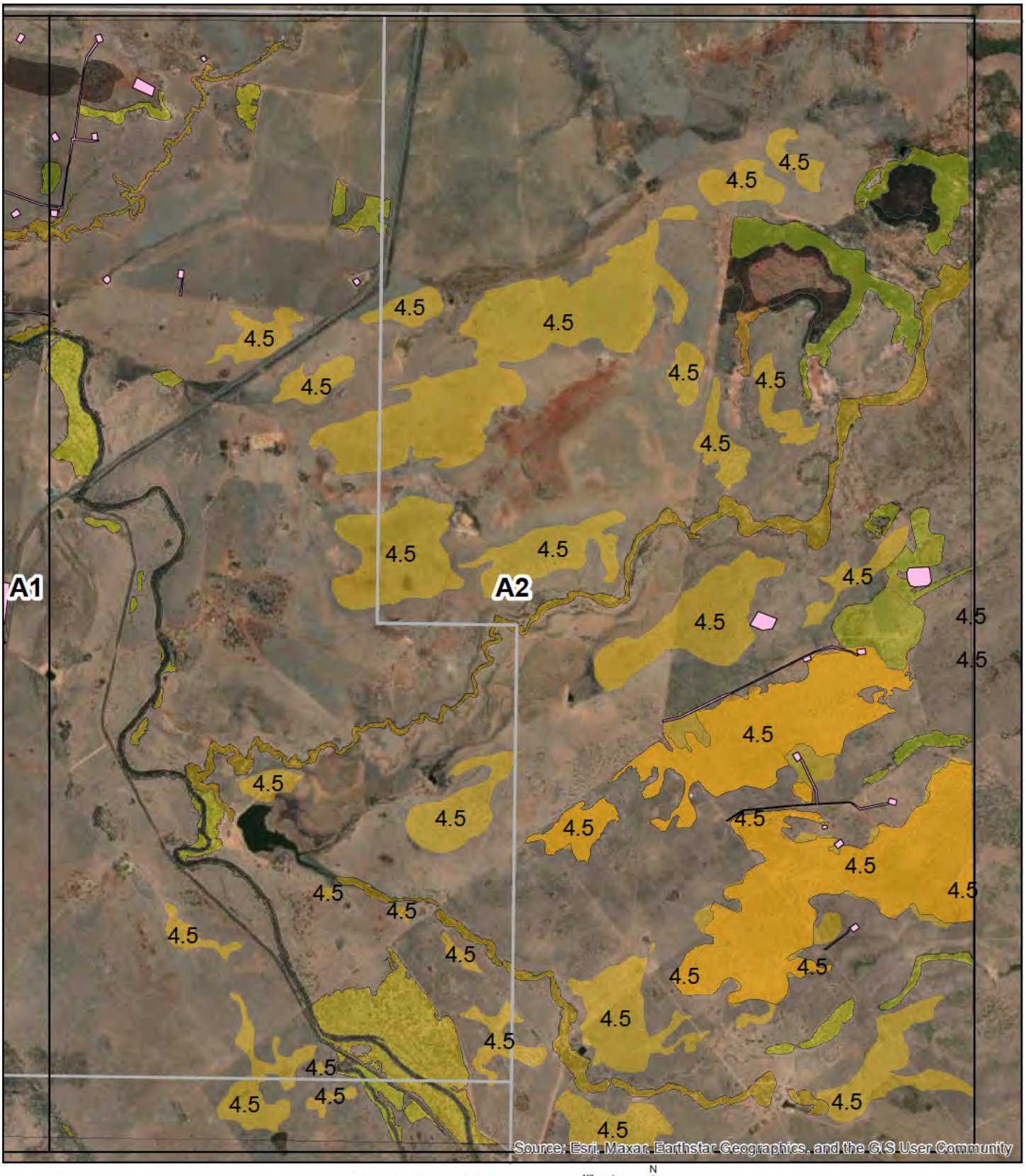
Figure 3.12 A1

Painted Snipe Habitat Quality

Mahalo GAs Field Ecological Impact Assessment

AD 11/06/25
Job No. 02357

terrestria ECOLOGICAL MANAGEMENT



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- 5.1, 5.2, 5.3, 5.4, 5.5, 5.6, 5.8
- 5.9, 6.1, 6.3, 99

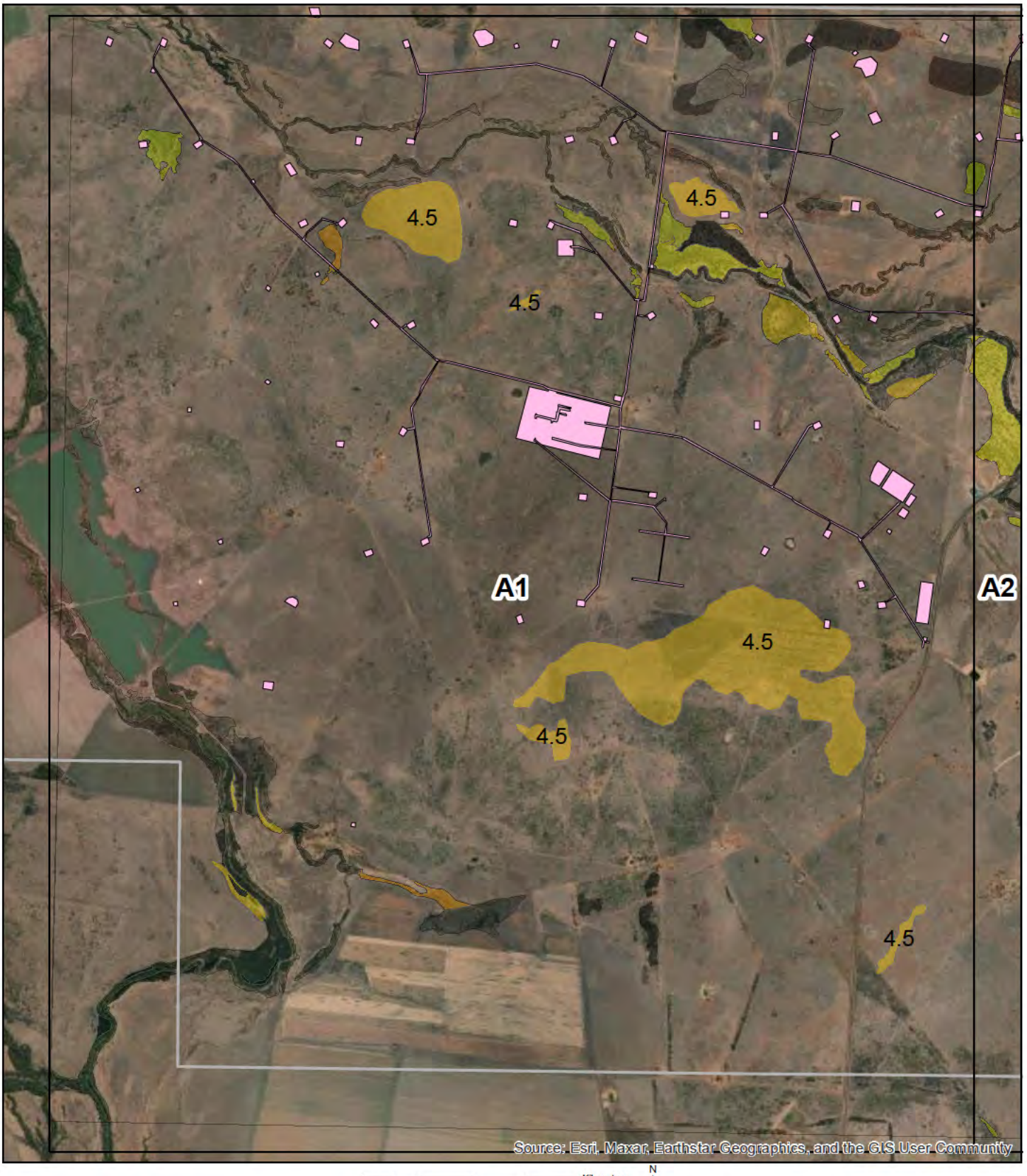
Figure 3.12 A2

Painted Snipe Habitat Quality

Mahalo GAs Field Ecological Impact Assessment

AD 11/06/25
Job No. 02357

terrestria ECOLOGICAL MANAGEMENT



0 0.325 0.65 1.3 1.95 2.6 Kilometers

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Legend

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2.3	3.5	4.5	5.3	6.3
2.4	3.8	4.6	5.4	99
2.8	3.9	4.8	5.5	
2.9	4.0	4.9	5.6	
3.1	4.1	5	5.8	

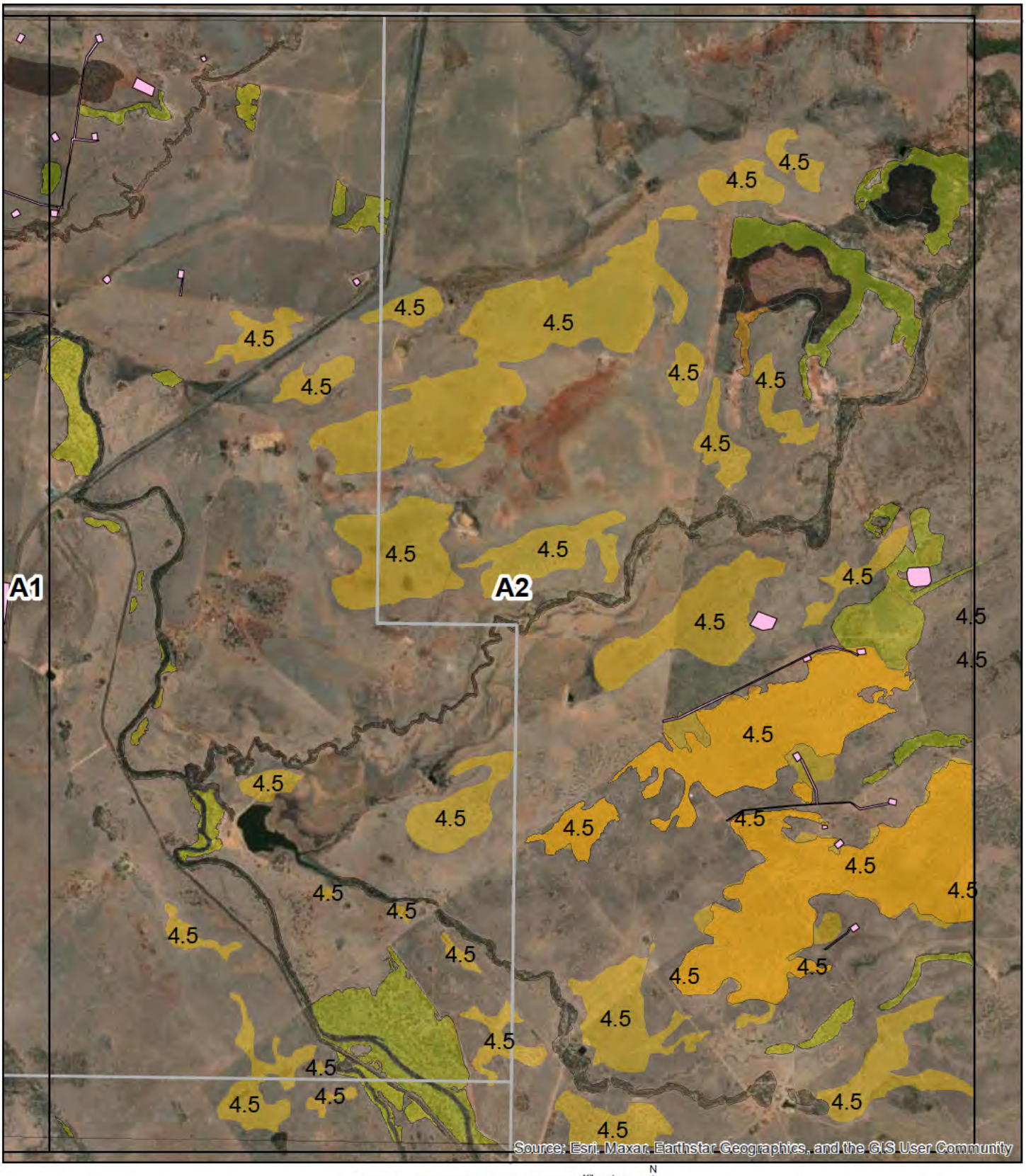
Figure 3.13 A1

Latham's Snipe Habitat Quality

Mahalo GAs Field Ecological Impact Assessment

AD 11/06/25
Job No. 02357

terrestria ECOLOGICAL MANAGEMENT



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2.3	3.5	4.5	5.3	6.3
2.4	3.8	4.6	5.4	99
2.8	3.9	4.8	5.5	
2.9	4.0	4.9	5.6	
3.1	4.1	5	5.8	

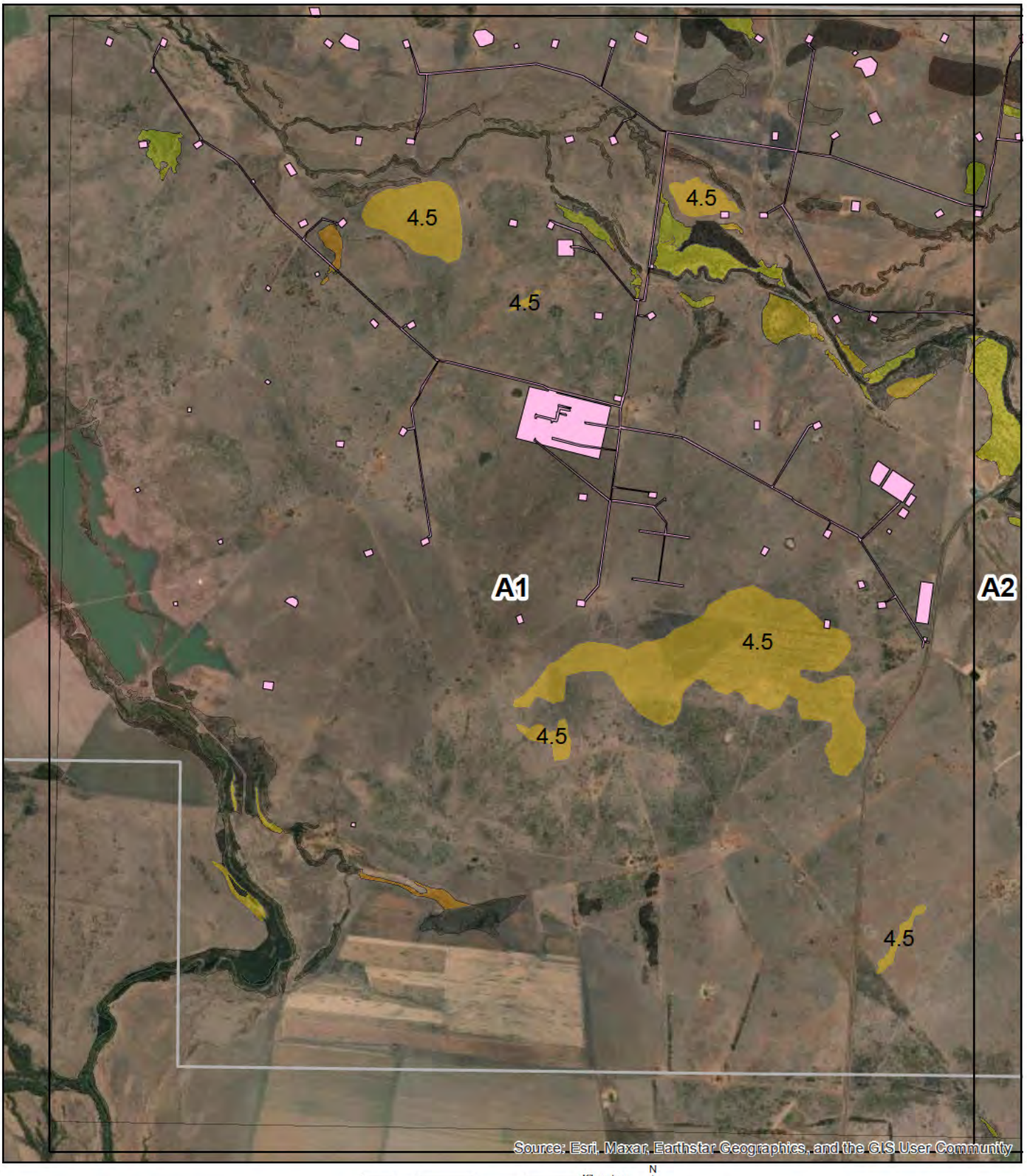
Figure 3.13 A2

Latham's Snipe Habitat Quality

Mahalo GAs Field Ecological Impact Assessment

AD 11/06/25
Job No. 02357

terrestria ECOLOGICAL MANAGEMENT



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2.4	3.8	4.6	5.4	99
2.8	3.9	4.8	5.5	
2.9	4.0	4.9	5.6	
3.1	4.1	5	5.8	

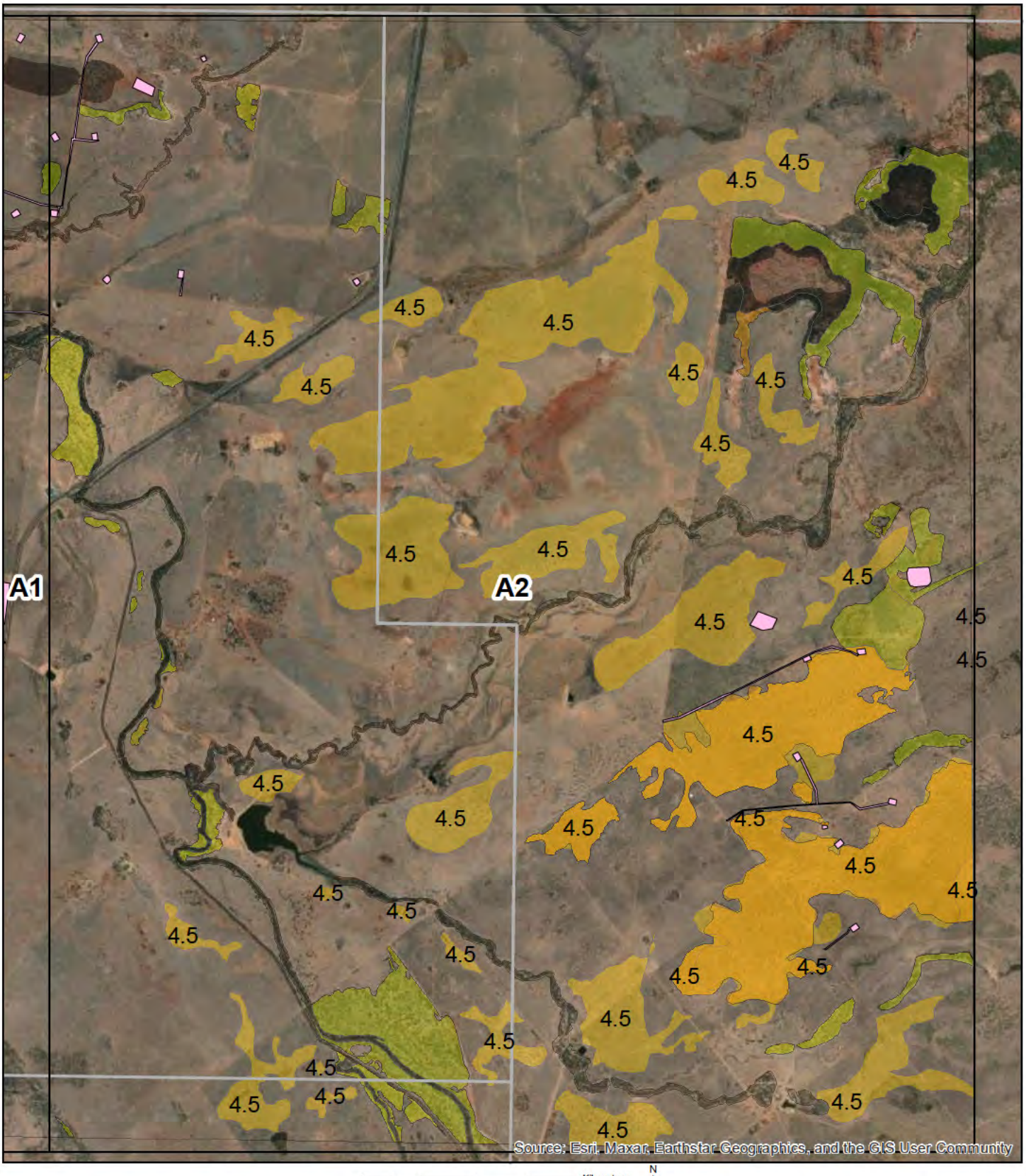
Figure 3.14 A1

Sharp-tailed Sandpiper Habitat Quality

Mahalo GAs Field Ecological Impact Assessment

AD 11/06/25
Job No. 02357

terrestria
ECOLOGICAL MANAGEMENT



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2.3	3.5	4.5	5.3	6.3
2.4	3.8	4.6	5.4	99
2.8	3.9	4.8	5.5	
2.9	4.0	4.9	5.6	
3.1	4.1	5	5.8	

Figure 3.14 A2

Sharp-tailed Sandpiper Habitat Quality

Mahalo GAs Field Ecological Impact Assessment

AD 11/06/25
Job No. 02357

terrestria ECOLOGICAL MANAGEMENT

Appendix A

Protected Matters Search

EPBC Act Protected Matters Report

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

Report created: 18-Feb-2025

Summary

Matters of National Environment Significance

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

World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International Importance (Ramsar	None
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	5
Listed Threatened Species:	29
Listed Migratory Species:	8

Other Matters Protected by the EPBC Act

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

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

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

Commonwealth Lands:	None
Commonwealth Heritage Places:	None
Listed Marine Species:	14
Whales and Other Cetaceans:	None
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	None
Habitat Critical to the Survival of Marine Turtles:	None

Extra Information

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

State and Territory Reserves:	None
Regional Forest Agreements:	None
Nationally Important Wetlands:	None
EPBC Act Referrals:	12
Key Ecological Features (Marine):	None
Biologically Important Areas:	None
Bioregional Assessments:	None
Geological and Bioregional Assessments:	None

Details

Matters of National Environmental Significance

Listed Threatened Ecological Communities [Resource Information]

For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.
Status of Vulnerable, Disallowed and Ineligible are not MNES under the EPBC Act.

Community Name	Threatened Category	Presence Text	Buffer Status
Brigalow (Acacia harpophylla dominant and co-dominant)	Endangered	Community known to occur within area	In feature area
Natural Grasslands of the Queensland Central Highlands and northern Fitzroy Basin	Endangered	Community likely to occur within area	In feature area
Poplar Box Grassy Woodland on Alluvial Plains	Endangered	Community likely to occur within area	In feature area
Semi-evergreen vine thickets of the Brigalow Belt (North and South) and Nandewar Bioregions	Endangered	Community likely to occur within area	In feature area
Weeping Myall Woodlands	Endangered	Community likely to occur within area	In feature area

Listed Threatened Species [Resource Information]

Status of Conservation Dependent and Extinct are not MNES under the EPBC Act.
Number is the current name ID.

Scientific Name	Threatened Category	Presence Text	Buffer Status
BIRD			
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat may occur within area	In feature area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area	In feature area
Erythrotriorchis radiatus Red Goshawk [942]	Endangered	Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
[Falco hypoleucos](#) Grey Falcon [929]	Vulnerable	Species or species habitat may occur within area	In feature area
[Gallinago hardwickii](#) Latham's Snipe, Japanese Snipe [863]	Vulnerable	Species or species habitat may occur within area	In feature area
[Geophaps scripta scripta](#) Squatter Pigeon (southern) [64440]	Vulnerable	Species or species habitat known to occur within area	In feature area
[Grantiella picta](#) Painted Honeyeater [470]	Vulnerable	Species or species habitat may occur within area	In feature area
[Neochmia ruficauda ruficauda](#) Star Finch (eastern), Star Finch (southern) [26027]	Endangered	Species or species habitat likely to occur within area	In feature area
[Poephila cincta cincta](#) Southern Black-throated Finch [64447]	Endangered	Species or species habitat may occur within area	In buffer area only
[Rostratula australis](#) Australian Painted Snipe [77037]	Endangered	Species or species habitat may occur within area	In feature area
[Stagonopleura guttata](#) Diamond Firetail [59398]	Vulnerable	Species or species habitat may occur within area	In feature area
MAMMAL			
[Dasyurus hallucatus](#) Northern Quoll, Digul [Gogo-Yimidir], Wijingadda [Dambimangari], Wiminji [Martu] [331]	Endangered	Species or species habitat likely to occur within area	In feature area
[Macroderma gigas](#) Ghost Bat [174]	Vulnerable	Species or species habitat may occur within area	In feature area
[Nyctophilus corbeni](#) Corben's Long-eared Bat, South-eastern Long-eared Bat [83395]	Vulnerable	Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
[Petauroides volans](#) Greater Glider (southern and central) [254]	Endangered	Species or species habitat likely to occur within area	In feature area
[Phascolarctos cinereus (combined populations of Qld, NSW and the ACT)](#) Koala (combined populations of Queensland, New South Wales and the Australian Capital Territory) [85104]	Endangered	Species or species habitat known to occur within area	In feature area
PLANT			
[Aristida annua](#) [17906]	Vulnerable	Species or species habitat likely to occur within area	In feature area
[Cadellia pentastylis](#) Ooline [9828]	Vulnerable	Species or species habitat likely to occur within area	In feature area
[Dichanthium queenslandicum](#) King Blue-grass [5481]	Endangered	Species or species habitat likely to occur within area	In feature area
[Dichanthium setosum](#) bluegrass [14159]	Vulnerable	Species or species habitat may occur within area	In feature area
[Leichhardtia brevifolia listed as Marsdenia brevifolia](#) [91893]	Vulnerable	Species or species habitat may occur within area	In feature area
[Polianthion minutiflorum](#) [82772]	Vulnerable	Species or species habitat may occur within area	In feature area
[Solanum dissectum](#) [75720]	Endangered	Species or species habitat may occur within area	In buffer area only
REPTILE			
[Delma torquata](#) Adorned Delma, Collared Delma [1656]	Vulnerable	Species or species habitat may occur within area	In feature area
[Denisonia maculata](#) Ornamental Snake [1193]	Vulnerable	Species or species habitat likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Egernia rugosa			
Yakka Skink [1420]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Elseya albagula			
Southern Snapping Turtle, White-throated Snapping Turtle [81648]	Critically Endangered	Species or species habitat likely to occur within area	In feature area
Hemiaspis damelii			
Grey Snake [1179]	Endangered	Species or species habitat may occur within area	In feature area
Rheodytes leukops			
Fitzroy River Turtle, Fitzroy Tortoise, Fitzroy Turtle, White-eyed River Diver [1761]	Endangered	Species or species habitat likely to occur within area	In feature area

Listed Migratory Species			[Resource Information]
Scientific Name	Threatened Category	Presence Text	Buffer Status
Migratory Marine Birds			
Apus pacificus			
Fork-tailed Swift [678]		Species or species habitat likely to occur within area	In feature area
Migratory Terrestrial Species			
Cuculus optatus			
Oriental Cuckoo, Horsfield's Cuckoo [86651]		Species or species habitat may occur within area	In feature area
Motacilla flava			
Yellow Wagtail [644]		Species or species habitat may occur within area	In feature area
Migratory Wetlands Species			
Actitis hypoleucos			
Common Sandpiper [59309]		Species or species habitat may occur within area	In feature area
Calidris acuminata			
Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat may occur within area	In feature area
Calidris ferruginea			
Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Calidris melanotos			
Pectoral Sandpiper [858]		Species or species habitat may occur within area	In feature area
Gallinago hardwickii			
Latham's Snipe, Japanese Snipe [863]	Vulnerable	Species or species habitat may occur within area	In feature area

Other Matters Protected by the EPBC Act

Listed Marine Species			[Resource Information]
Scientific Name	Threatened Category	Presence Text	Buffer Status
Bird			
Actitis hypoleucos			
Common Sandpiper [59309]		Species or species habitat may occur within area	In feature area
Anseranas semipalmata			
Magpie Goose [978]		Species or species habitat may occur within area overfly marine area	In feature area
Apus pacificus			
Fork-tailed Swift [678]		Species or species habitat likely to occur within area overfly marine area	In feature area
Bubulcus ibis as Ardea ibis			
Cattle Egret [66521]		Species or species habitat may occur within area overfly marine area	In feature area
Calidris acuminata			
Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat may occur within area	In feature area
Calidris ferruginea			
Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area overfly marine area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area overfly marine area	In feature area
Chalcites osculans as Chrysococcyx osculans Black-eared Cuckoo [83425]		Species or species habitat likely to occur within area overfly marine area	In feature area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]	Vulnerable	Species or species habitat may occur within area overfly marine area	In feature area
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat likely to occur within area	In feature area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area overfly marine area	In feature area
Motacilla flava Yellow Wagtail [644]		Species or species habitat may occur within area overfly marine area	In feature area
Myiagra cyanoleuca Satin Flycatcher [612]		Species or species habitat likely to occur within area overfly marine area	In feature area
Rostratula australis as Rostratula benghalensis (sensu lato) Australian Painted Snipe [77037]	Endangered	Species or species habitat may occur within area overfly marine area	In feature area

Extra Information

EPBC Act Referrals				[Resource Information]
Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status

Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Blackwater Mine South Coking Coal Project	2022/09279		Assessment	In feature area
Coal Seam Gas Field Development for Natural Gas Liquefaction Park, Curtis Island	2008/4059		Post-Approval	In feature area
Comet Ridge Mahalo North Coal Seam Gas Project	2023/09689		Assessment	In feature area
rail track to link the proposed MIM Rolleston coal mine to existing rail network	2002/637		Post-Approval	In feature area
Controlled action				
Arcturus Coal Project; A combined open cut and underground longwall coal mine	2010/5783	Controlled Action	Completed	In buffer area only
Santos GLNG Gas Field Development Project, QLD	2012/6615	Controlled Action	Post-Approval	In buffer area only
Springsure Creek Coal Project	2010/5782	Controlled Action	Post-Approval	In buffer area only
ZeroGen Integrated Gasification Combined Cycle Power Plant and CO2 Capture, Transport and Storage	2009/5195	Controlled Action	Completed	In feature area
Not controlled action				
Improving rabbit biocontrol: releasing another strain of RHDV, sthrn two thirds of Australia	2015/7522	Not Controlled Action	Completed	In feature area
Mahalo Development Area CSG Project	2019/8534	Not Controlled Action	Completed	In feature area
Not controlled action (particular manner)				
Blackwater to Rolleston 132 kV transmission line	2002/880	Not Controlled Action (Particular Manner)	Post-Approval	In feature area
Clearing of regrowth Brigalow	2003/962	Not Controlled Action (Particular Manner)	Post-Approval	In buffer area only

Caveat

1 PURPOSE

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

The report contains the mapped locations of:

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

2 DISCLAIMER

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

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

3 DATA SOURCES

Threatened ecological communities

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

Threatened, migratory and marine species

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

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

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

4 LIMITATIONS

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

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

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

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

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

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

Acknowledgements

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

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

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

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

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Appendix B

WildNet Database Search

Queensland Government

WildNet species list

Search Criteria: Species List for a Specified Point
Species: All
Type: All
Queensland status: All
Records: All
Date: All
Latitude: -24.129
Longitude: 148.671
Distance: 20
Email: adaniel@terrestria.com.au
Date submitted: Tuesday 18 Feb 2025 12:35:48
Date extracted: Tuesday 18 Feb 2025 12:40:04

The number of records retrieved = 271

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
animals	amphibians	Bufonidae	*Rhinella marina*	cane toad	Y			1
animals	amphibians	Hylidae	*Cyclorana alboguttata*	greenstripe frog		C		2
animals	amphibians	Hylidae	*Cyclorana platycephala*	water holding frog		C		1
animals	amphibians	Hylidae	*Litoria caerulea*	common green treefrog		C		1
animals	amphibians	Hylidae	*Litoria inermis*	bumpy rocketfrog		C		2
animals	amphibians	Hylidae	*Litoria latopalmata*	broad palmed rocketfrog		C		1
animals	amphibians	Hylidae	*Litoria peronii*	emerald spotted treefrog		C		1
animals	amphibians	Hylidae	*Litoria rubella*	ruddy treefrog		C		1
animals	amphibians	Limnodynastidae	*Limnodynastes salmini*	salmon striped frog		C		2
animals	amphibians	Limnodynastidae	*Limnodynastes tasmaniensis*	spotted grassfrog		C		4
animals	amphibians	Limnodynastidae	*Platyplectrum ornatum*	ornate burrowing frog		C		1
animals	birds	Acanthizidae	*Acanthiza apicalis*	inland thornbill		C		1
animals	birds	Acanthizidae	*Gerygone olivacea*	white-throated gerygone		C		2
animals	birds	Acanthizidae	*Smicrornis brevirostris*	weebill		C		3
animals	birds	Accipitridae	*Haliastur sphenurus*	whistling kite		C		3
animals	birds	Accipitridae	*Milvus migrans*	black kite		C		2
animals	birds	Alaudidae	*Mirafra javanica*	Horsfield's bushlark		C		1
animals	birds	Alcedinidae	*Dacelo novaeguineae*	laughing kookaburra		C		3
animals	birds	Alcedinidae	*Todiramphus sanctus*	sacred kingfisher		C		2
animals	birds	Anatidae	*Anas superciliosa*	Pacific black duck		C		1
animals	birds	Anatidae	*Cygnus atratus*	black swan		C		1
animals	birds	Anatidae	*Dendrocygna arcuata*	wandering whistling-duck		C		1
animals	birds	Anhingidae	*Anhinga novaehollandiae*	Australasian darter		C		1
animals	birds	Ardeidae	*Ardea alba modesta*	eastern great egret		C		1
animals	birds	Artamidae	*Artamus leucorynchus*	white-breasted woodswallow		C		1
animals	birds	Artamidae	*Cracticus nigrogularis*	pied butcherbird		C		1
animals	birds	Artamidae	*Cracticus torquatus*	grey butcherbird		C		1
animals	birds	Artamidae	*Gymnorhina tibicen*	Australian magpie		C		2
animals	birds	Artamidae	*Strepera graculina*	pied currawong		C		1
animals	birds	Cacatuidae	*Cacatua galerita*	sulphur-crested cockatoo		C		3
animals	birds	Cacatuidae	*Eolophus roseicapilla*	galah		C		2
animals	birds	Campephagidae	*Coracina novaehollandiae*	black-faced cuckoo-shrike		C		4
animals	birds	Casuariidae	*Dromaius novaehollandiae*	emu		C		2
animals	birds	Charadriidae	*Vanellus miles*	masked lapwing		C		1
animals	birds	Cisticolidae	*Cisticola exilis*	golden-headed cisticola		C		1
animals	birds	Climacteridae	*Climacteris picumnus*	brown treecreeper		C		1
animals	birds	Columbidae	*Geopelia cuneata*	diamond dove		C		1
animals	birds	Columbidae	*Geopelia humeralis*	bar-shouldered dove		C		2
animals	birds	Columbidae	*Geopelia placida*	peaceful dove		C		3
animals	birds	Coraciidae	*Eurystomus orientalis*	dollarbird		C		1
animals	birds	Corcoracidae	*Struthidea cinerea*	apostlebird		C		2
animals	birds	Corvidae	*Corvus coronoides*	Australian raven		C		2
animals	birds	Corvidae	*Corvus orru*	Torresian crow		C		5
animals	birds	Cuculidae	*Centropus phasianinus*	pheasant coucal		C		3
animals	birds	Cuculidae	*Chalcites minutillus barnardi*	Eastern little bronze-cuckoo		C		1
animals	birds	Cuculidae	*Eudynamys orientalis*	eastern koel		C		1

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
animals	birds	Dicaeidae	*Dicaeum hirundinaceum*	mistletoebird		C		3
animals	birds	Estrildidae	*Lonchura castaneothorax*	chestnut-breasted mannikin		C		1
animals	birds	Estrildidae	*Taeniopygia bichenovii*	double-barred finch		C		4
animals	birds	Hirundinidae	*Hirundo neoxena*	welcome swallow		C		2
animals	birds	Locustellidae	*Cincloramphus timoriensis*	tawny grassbird		C		1
animals	birds	Maluridae	*Malurus cyaneus*	superb fairy-wren		C		1
animals	birds	Maluridae	*Malurus melanocephalus*	red-backed fairy-wren		C		4
animals	birds	Meliphagidae	*Entomyzon cyanotis*	blue-faced honeyeater		C		1
animals	birds	Meliphagidae	*Gavicalis virescens*	singing honeyeater		C		2
animals	birds	Meliphagidae	*Manorina melanocephala*	noisy miner		C		1
animals	birds	Meliphagidae	*Melithreptus albogularis*	white-throated honeyeater		C		2
animals	birds	Meliphagidae	*Melithreptus gularis gularis*	black-chinned honeyeater (eastern)		C		1
animals	birds	Meliphagidae	*Nesoptilotis leucotis*	white-eared honeyeater		C		1
animals	birds	Meliphagidae	*Philemon citreogularis*	little friarbird		C		1
animals	birds	Meliphagidae	*Plectorhyncha lanceolata*	striped honeyeater		C		1
animals	birds	Monarchidae	*Grallina cyanoleuca*	magpie-lark		C		3
animals	birds	Monarchidae	*Myiagra inquieta*	restless flycatcher		C		1
animals	birds	Monarchidae	*Myiagra rubecula*	leaden flycatcher		C		2
animals	birds	Oriolidae	*Oriolus sagittatus*	olive-backed oriole		C		1
animals	birds	Pachycephalidae	*Colluricincla harmonica*	grey shrike-thrush		C		1
animals	birds	Pachycephalidae	*Pachycephala rufiventris*	rufous whistler		C		4
animals	birds	Pardalotidae	*Pardalotus striatus*	striated pardalote		C		2
animals	birds	Petroicidae	*Eopsaltria australis*	eastern yellow robin		C		1
animals	birds	Petroicidae	*Microeca fascinans*	jacky winter		C		1
animals	birds	Psittaculidae	*Alisterus scapularis*	Australian king-parrot		C		1
animals	birds	Psittaculidae	*Aprosmictus erythropterus*	red-winged parrot		C		3
animals	birds	Psittaculidae	*Platycercus adscitus*	pale-headed rosella		C		3
animals	birds	Psittaculidae	*Trichoglossus moluccanus*	rainbow lorikeet		C		1
animals	birds	Ptilonorhynchidae	*Chlamydera maculata*	spotted bowerbird		C		2
animals	birds	Recurvirostridae	*Himantopus leucocephalus*	pied stilt		C		1
animals	birds	Rhipiduridae	*Rhipidura albiscapa*	grey fantail		C		3
animals	birds	Rhipiduridae	*Rhipidura leucophrys*	willie wagtail		C		4
animals	birds	Tytonidae	*Tyto javanica*	eastern barn owl		C		1
animals	birds	Zosteropidae	*Zosterops lateralis*	silvereye		C		1
animals	mammals	Bovidae	*Bos taurus*	European cattle	Y			1
animals	mammals	Canidae	*Canis familiaris (dingo)*	dingo				2
animals	mammals	Emballonuridae	*Saccolaimus flaviventris*	yellow-bellied sheathtail bat		C		1
animals	mammals	Macropodidae	*Macropus giganteus*	eastern grey kangaroo		C		2
animals	mammals	Molossidae	*Chaerephon jobensis*	northern freetail bat		C		1
animals	mammals	Muridae	*Hydromys chrysogaster*	water rat		C		1
animals	mammals	Muridae	*Melomys burtoni*	grassland melomys		C		2
animals	mammals	Muridae	*Mus musculus*	house mouse	Y			2
animals	mammals	Muridae	*Pseudomys mimulus*	eastern delicate mouse		C		1
animals	mammals	Muridae	*Rattus sordidus*	canefield rat		C		6/1
animals	mammals	Peramelidae	*Isoodon macrourus*	northern brown bandicoot		C		1
animals	mammals	Phalangeridae	*Trichosurus vulpecula*	common brushtail possum		C		1

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
animals	mammals	Phascolarctidae	*Phascolarctos cinereus*	koala		E	E	6
animals	mammals	Pseudocheiridae	*Petauroides volans volans*	southern greater glider		E	E	3
animals	mammals	Vespertilionidae	*Chalinolobus gouldii*	Gould's wattled bat		C		1
animals	mammals	Vespertilionidae	*Chalinolobus morio*	chocolate wattled bat		C		1
animals	mammals	Vespertilionidae	*Chalinolobus picatus*	little pied bat		C		1
animals	mammals	Vespertilionidae	*Scotorepens balstoni*	inland broad-nosed bat		C		1
animals	ray-finned fishes	Ambassidae	*Ambassis agassizii*	Agassiz's glassfish				7
animals	ray-finned fishes	Anguillidae	*Anguilla reinhardtii*	longfin eel				1
animals	ray-finned fishes	Atherinidae	*Craterocephalus stercusmuscarum*	flyspecked hardyhead				2
animals	ray-finned fishes	Clupeidae	*Nematalosa erebi*	bony bream				4
animals	ray-finned fishes	Eleotridae	*Hypseleotris klunzingeri*	western carp gudgeon				3
animals	ray-finned fishes	Eleotridae	*Hypseleotris sp.*					6
animals	ray-finned fishes	Eleotridae	*Hypseleotris species 1*	Midgley's carp gudgeon				1
animals	ray-finned fishes	Eleotridae	*Mogurnda adspersa*	southern purplespotted gudgeon				4
animals	ray-finned fishes	Eleotridae	*Oxyeleotris lineolata*	sleepy cod				1
animals	ray-finned fishes	Eleotridae	*Philypnodon grandiceps*	flathead gudgeon				1
animals	ray-finned fishes	Melanotaeniidae	*Melanotaenia splendida splendida*	eastern rainbowfish				6
animals	ray-finned fishes	Percichthyidae	*Macquaria ambigua*	golden perch				1
animals	ray-finned fishes	Plotosidae	*Neosilurus hyrtlii*	Hyrtl's catfish				4
animals	ray-finned fishes	Plotosidae	*Tandanus tandanus*	freshwater catfish				1
animals	ray-finned fishes	Terapontidae	*Leiopotherapon unicolor*	spangled perch				6
animals	ray-finned fishes	Terapontidae	*Scortum hillii*	leathery grunter				1
animals	reptiles	Agamidae	*Chlamydosaurus kingii*	frilled lizard		C		1
animals	reptiles	Agamidae	*Intellagama lesueurii*	eastern water dragon		C		1
animals	reptiles	Boidae	*Antaresia maculosa*	spotted python		C		1
animals	reptiles	Boidae	*Morelia spilota*	carpet python		C		1
animals	reptiles	Chelidae	*Chelodina longicollis*	eastern snake-necked turtle		C		1
animals	reptiles	Chelidae	*Emydura macquarii krefftii*	Krefft's river turtle		C		1
animals	reptiles	Chelidae	*Wollumbinia latisternum*	saw-shelled turtle		C		1
animals	reptiles	Colubridae	*Dendrelaphis punctulatus*	green tree snake		C		1
animals	reptiles	Colubridae	*Tropidonophis mairii*	freshwater snake		C		1
animals	reptiles	Diplodactylidae	*Diplodactylus platyurus*	eastern fat-tailed gecko		C		1
animals	reptiles	Diplodactylidae	*Diplodactylus vittatus*	wood gecko		C		1
animals	reptiles	Elapidae	*Hoplocephalus bitorquatus*	pale-headed snake		C		1
animals	reptiles	Gekkonidae	*Gehyra dubia*	dubious dtella		C		2
animals	reptiles	Gekkonidae	*Heteronotia binoei*	Bynoe's gecko		C		2
animals	reptiles	Scincidae	*Carlia pectoralis*	open-litter rainbow skink		C		2
animals	reptiles	Scincidae	*Carlia vivax*	tussock rainbow-skink		C		1
animals	reptiles	Scincidae	*Cryptoblepharus pulcher pulcher*	elegant snake-eyed skink		C		3
animals	reptiles	Scincidae	*Ctenotus ingrami*	unspotted yellow-sided ctenotus		C		1
animals	reptiles	Scincidae	*Ctenotus spaldingi*	straight-browed ctenotus		C		2
animals	reptiles	Scincidae	*Lerista fragilis*	eastern mulch slider		C		2
animals	reptiles	Scincidae	*Lerista punctatovittata*	eastern robust slider		C		2
animals	reptiles	Scincidae	*Morethia boulengeri*	south-eastern morethia skink		C		2
animals	reptiles	Varanidae	*Varanus tristis*	black-tailed monitor		C		1
plants	land plants	Acanthaceae	*Rostellularia adscendens*			C		1

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
plants	land plants	Alismataceae	*Caldesia oligococca*			SL		1/1
plants	land plants	Amaranthaceae	*Achyranthes aspera*			C		1
plants	land plants	Amaranthaceae	*Alternanthera denticulata var. micrantha*			C		1/1
plants	land plants	Amaranthaceae	*Ptilotus polystachyus*			C		1/1
plants	land plants	Amaranthaceae	*Ptilotus psilorhachis*			C		1/1
plants	land plants	Amaranthaceae	*Ptilotus semilanatus*			C		1/1
plants	land plants	Amaryllidaceae	*Crinum flaccidum*	Murray lily		SL		1
plants	land plants	Apocynaceae	*Carissa ovata*	currantbush		C		2
plants	land plants	Aponogetonaceae	*Aponogeton queenslandicus*			SL		1/1
plants	land plants	Aristolochiaceae	*Aristolochia meridionalis subsp. centralis*			C		1/1
plants	land plants	Asteraceae	*Calotis*					1
plants	land plants	Asteraceae	*Calotis dentex*	white burr daisy		C		1/1
plants	land plants	Asteraceae	*Chrysocephalum apiculatum*	yellow buttons		C		1
plants	land plants	Asteraceae	*Eclipta platyglossa subsp. platyglossa*			C		1/1
plants	land plants	Asteraceae	*Minuria leptophylla*			C		1/1
plants	land plants	Asteraceae	*Peripleura hispidula var. setosa*			C		1/1
plants	land plants	Asteraceae	*Verbesina encelioides var. encelioides*		Y			1/1
plants	land plants	Asteraceae	*Vittadinia sulcata*	native daisy		C		1/1
plants	land plants	Bignoniaceae	*Pandorea pandorana*	wonga vine		C		1
plants	land plants	Brassicaceae	*Rorippa dietrichiana*			C		1/1
plants	land plants	Cactaceae	*Opuntia*					2
plants	land plants	Campanulaceae	*Wahlenbergia capillaris*			SL		1/1
plants	land plants	Chenopodiaceae	*Atriplex*					1
plants	land plants	Chenopodiaceae	*Einadia nutans subsp. linifolia*			C		1/1
plants	land plants	Chenopodiaceae	*Enchylaena tomentosa*			C		1
plants	land plants	Chenopodiaceae	*Maireana*					2
plants	land plants	Chenopodiaceae	*Sclerolaena calcarata*	red burr		C		1/1
plants	land plants	Combretaceae	*Terminalia oblongata*			C		1
plants	land plants	Combretaceae	*Terminalia oblongata subsp. oblongata*			C		2/2
plants	land plants	Convolvulaceae	*Evolvulus alsinoides var. villosicalyx*			C		1/1
plants	land plants	Convolvulaceae	*Polymeria calycina*	pink bindweed		C		1/1
plants	land plants	Crassulaceae	*Bryophyllum delagoense*		Y			1/1
plants	land plants	Cyperaceae	*Cyperus betchei subsp. betchei*			C		1/1
plants	land plants	Cyperaceae	*Cyperus concinnus*			C		2/2
plants	land plants	Cyperaceae	*Cyperus difformis*	rice sedge		C		1/1
plants	land plants	Cyperaceae	*Cyperus isabellinus*			C		1/1
plants	land plants	Cyperaceae	*Fimbristylis*					1
plants	land plants	Cyperaceae	*Scleria sphacelata*			C		1/1
plants	land plants	Erythroxylaceae	*Erythroxylum australe*	cocaine tree		C		4/1
plants	land plants	Euphorbiaceae	*Croton phebalioides*	narrow-leaved croton		C		1/1
plants	land plants	Euphorbiaceae	*Euphorbia tannensis subsp. eremophila*			C		1/1
plants	land plants	Goodeniaceae	*Goodenia glabra*			C		1/1
plants	land plants	Hydrocharitaceae	*Ottelia ovalifolia subsp. ovalifolia*			SL		1/1
plants	land plants	Lamiaceae	*Basilicum polystachyon*			C		1/1
plants	land plants	Lamiaceae	*Prostanthera suborbicularis*			C		1/1
plants	land plants	Leguminosae	*Acacia*					1

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
plants	land plants	Leguminosae	*Acacia harpophylla*	brigalow		C		1
plants	land plants	Leguminosae	*Acacia julifera subsp. julifera*			C		1/1
plants	land plants	Leguminosae	*Acacia shirleyi*	lancewood		C		1/1
plants	land plants	Leguminosae	*Aeschynomene indica*	budda pea		C		1/1
plants	land plants	Leguminosae	*Cassia brewsteri*			C		3/2
plants	land plants	Leguminosae	*Heliodendron basalticum*			C		1
plants	land plants	Leguminosae	*Petalostylis labicheoides*			C		2/2
plants	land plants	Leguminosae	*Stylosanthes scabra*		Y			1
plants	land plants	Linderniaceae	*Lindernia procumbens*			C		1/1
plants	land plants	Lythraceae	*Ammannia multiflora*	jerry-jerry		C		2/2
plants	land plants	Lythraceae	*Rotala mexicana*			C		1/1
plants	land plants	Malvaceae	*Abelmoschus ficulneus*	native rosella		C		1/1
plants	land plants	Malvaceae	*Gossypium australe*			C		1/1
plants	land plants	Malvaceae	*Hibiscus divaricatus*			C		1/1
plants	land plants	Malvaceae	*Sida*					3
plants	land plants	Malvaceae	*Sida cordifolia*		Y			1/1
plants	land plants	Malvaceae	*Sida fibulifera*			C		1/1
plants	land plants	Meliaceae	*Owenia acidula*	emu apple		C		1
plants	land plants	Myrtaceae	*Backhousia angustifolia*	narrow-leaved backhousia		C		1/1
plants	land plants	Myrtaceae	*Blakella tessellaris*			C		2
plants	land plants	Myrtaceae	*Corymbia clarksoniana*			C		2
plants	land plants	Myrtaceae	*Eucalyptus camaldulensis*			C		1
plants	land plants	Myrtaceae	*Eucalyptus cambageana*	Dawson gum		C		1
plants	land plants	Myrtaceae	*Eucalyptus melanophloia*			C		2
plants	land plants	Myrtaceae	*Eucalyptus populnea*	poplar box		C		1
plants	land plants	Myrtaceae	*Eucalyptus tereticornis*			C		1
plants	land plants	Myrtaceae	*Eucalyptus thozetiana*			C		3/3
plants	land plants	Myrtaceae	*Lysicarpus angustifolius*	budgeroo		C		1/1
plants	land plants	Myrtaceae	*Micromyrtus capricornia*			C		3/3
plants	land plants	Oleaceae	*Jasminum didymum subsp. didymum*			C		2
plants	land plants	Oxalidaceae	*Oxalis perennans*			C		1/1
plants	land plants	Phrymaceae	*Glossostigma diandrum*			C		1/1
plants	land plants	Phrymaceae	*Peplidium foecundum*			C		1/1
plants	land plants	Phyllanthaceae	*Phyllanthus carpentariae*			C		1/1
plants	land plants	Phyllanthaceae	*Phyllanthus maderaspatensis*			C		1/1
plants	land plants	Picrodendraceae	*Petalostigma pubescens*	quinine tree		C		2
plants	land plants	Pittosporaceae	*Bursaria incana*			C		2/1
plants	land plants	Poaceae	*Ancistrachne uncinulata*	hooky grass		C		1/1
plants	land plants	Poaceae	*Aristida calycina*			C		1
plants	land plants	Poaceae	*Aristida latifolia*	feathertop wiregrass		C		1
plants	land plants	Poaceae	*Aristida ramosa*	purple wiregrass		C		1
plants	land plants	Poaceae	*Bothriochloa ewartiana*	desert bluegrass		C		1
plants	land plants	Poaceae	*Cenchrus ciliaris*		Y			3
plants	land plants	Poaceae	*Chloris divaricata var. divaricata*	slender chloris		C		1
plants	land plants	Poaceae	*Chloris virgata*	feathertop rhodes grass	Y			1
plants	land plants	Poaceae	*Cymbopogon refractus*	barbed-wire grass		C		1

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
plants	land plants	Poaceae	*Dinebra decipiens var. decipiens*			C		1/1
plants	land plants	Poaceae	*Diplachne fusca var. fusca*			C		1/1
plants	land plants	Poaceae	*Enneapogon gracilis*	slender nineawn		C		3/1
plants	land plants	Poaceae	*Enneapogon lindleyanus*			C		1/1
plants	land plants	Poaceae	*Eragrostis*					1
plants	land plants	Poaceae	*Eragrostis sororia*			C		1/1
plants	land plants	Poaceae	*Eriachne mucronata*			C		1
plants	land plants	Poaceae	*Eriachne mucronata forma (Alpha C.E.Hubbard 7882)*			C		1/1
plants	land plants	Poaceae	*Heteropogon contortus*	black speargrass		C		2
plants	land plants	Poaceae	*Megathyrsus maximus var. pubiglumis*		Y			1/1
plants	land plants	Poaceae	*Melinis repens*	red natal grass	Y			2
plants	land plants	Poaceae	*Panicum effusum*			C		1/1
plants	land plants	Poaceae	*Paspalidium*					1
plants	land plants	Poaceae	*Paspalidium caespitosum*	brigalow grass		C		1/1
plants	land plants	Poaceae	*Paspalum*					1
plants	land plants	Poaceae	*Perotis rara*	comet grass		C		1
plants	land plants	Poaceae	*Sporobolus actinocladus*	katoora grass		C		1
plants	land plants	Poaceae	*Sporobolus caroli*	fairy grass		C		1
plants	land plants	Poaceae	*Themeda triandra*	kangaroo grass		C		1
plants	land plants	Poaceae	*Thyridolepis mitchelliana*	mulga mitchell grass		C		1
plants	land plants	Poaceae	*Tragus australianus*	small burr grass		C		1
plants	land plants	Pontederiaceae	*Pontederia cyanea*			C		1/1
plants	land plants	Portulacaceae	*Portulaca oleracea*	pigweed	Y			1
plants	land plants	Proteaceae	*Hakea purpurea*			C		1/1
plants	land plants	Pteridaceae	*Cheilanthes sieberi*			C		1
plants	land plants	Pteridaceae	*Pellaea*					1/1
plants	land plants	Rhamnaceae	*Alphitonia excelsa*	soap tree		C		1
plants	land plants	Rubiaceae	*Everistia vacciniifolia var. vacciniifolia*			C		1/1
plants	land plants	Rubiaceae	*Psydrax odorata forma subnitida*			C		1/1
plants	land plants	Rutaceae	*Flindersia dissosperma*			C		2
plants	land plants	Rutaceae	*Geijera parviflora*	wilga		C		3
plants	land plants	Rutaceae	*Philotheca difformis subsp. difformis*			C		1/1
plants	land plants	Scrophulariaceae	*Eremophila latrobei subsp. glabra*			C		1/1
plants	land plants	Scrophulariaceae	*Eremophila latrobei subsp. latrobei*			C		1/1
plants	land plants	Scrophulariaceae	*Eremophila mitchellii*			C		2
plants	land plants	Solanaceae	*Solanum dissectum*			E	E	1/1
plants	land plants	Solanaceae	*Solanum elachophyllum*			E		2/2
plants	land plants	Sparrmanniaceae	*Corchorus tomentellus*			C		1/1
plants	land plants	Sparrmanniaceae	*Grewia latifolia*	dysentery plant		C		2
plants	land plants	Sterculiaceae	*Brachychiton x turgidulus*			SL		1/1
plants	land plants	Zygophyllaceae	*Roepera apiculata*			C		1/1

CODES

I - Y indicates that the taxon is introduced to Queensland and has naturalised.

Q - Indicates the Queensland conservation status of each taxon under the *Nature Conservation Act 1992.*
The codes are Extinct (EX), Extinct in the Wild (PE), Critically Endangered (CR), Endangered (E), Vulnerable (V), Near Threatened (NT), Special Least Concern (SL) and Least Concern (C).

A - Indicates the Australian conservation status of each taxon under the *Environment Protection and Biodiversity Conservation Act 1999.*
The values of EPBC are Extinct (EX), Extinct in the Wild (XW), Critically Endangered (CE), Endangered (E), Vulnerable (V) and Conservation Dependent (CD).

Records - The first number indicates the total number of records of the taxon (wildlife records and species listings for selected areas).
This number is output as 99999 if it equals or exceeds this value. A second number located after a / indicates the number of specimen records for the taxon.
This number is output as 999 if it equals or exceeds this value.

Appendix Bi

100 km WildNet Database Search

WildNet Search for significant species 100km buffer
Sourced Jan 2026

Family	Scientific name	Common name	NCA status	EPBC status
Psittaculidae	*Psephotellus pulcherrimus*	paradise parrot	PE	EX
Scolopacidae	*Calidris ferruginea*	curlew sandpiper	CR	CE
Chelidae	*Elseya albagula*	white-throated snapping turtle	CR	CE
Diplodactylidae	*Oedura lineata*	Arcadia velvet gecko	CR	CE
Accipitridae	*Erythrotriorchis radiatus*	red goshawk	E	E
Rostratulidae	*Rostratula australis*	Australian painted-snipe	E	E
Scolopacidae	*Limosa lapponica baueri*	Western Alaskan bar-tailed godwit	E	E
Dasyuridae	*Antechinus argentus*	silver-headed antechinus	E	E
Macropodidae	*Onychogalea frenata*	bridled nailtail wallaby	E	E
Phascolarctidae	*Phascolarctos cinereus*	koala	E	E
Potoroidae	*Bettongia tropica*	northern bettong	E	E
Pseudocheiridae	*Petauroides volans volans*	southern greater glider	E	E
Vespertilionidae	*Chalinolobus dwyeri*	large-eared pied bat	E	E
Elapidae	*Hemiaspis damelii*	grey snake	E	E
Eleotridae	*Mogurnda adspersa*	southern purple spotted gudgeon	C	E
Apodidae	*Hirundapus caudacutus*	white-throated needletail	V	V
Columbidae	*Geophaps scripta scripta*	squatter pigeon (southern subspecies)	V	V
Falconidae	*Falco hypoleucos*	grey falcon	V	V
Scolopacidae	*Arenaria interpres*	ruddy turnstone	V	V
Scolopacidae	*Calidris acuminata*	sharp-tailed sandpiper	V	V
Scolopacidae	*Gallinago hardwickii*	Latham's snipe	V	V
Petauridae	*Petaurus australis australis*	yellow-bellied glider (southern subspecies)	V	V
Pseudocheiridae	*Petauroides volans*	greater glider	V	V
Elapidae	*Denisonia maculata*	ornamental snake	V	V
Scincidae	*Egernia rugosa*	yakka skink	V	V
Limnodynastidae	*Adelotus brevis*	tusked frog	V	

Family	Scientific name	Common name	NCA status	EPBC status
Cacatuidae	*Calyptorhynchus lathami*	glossy black-cockatoo	V	
Cacatuidae	*Calyptorhynchus lathami erebus*	glossy black-cockatoo (northern)	V	
Strigidae	*Ninox strenua*	powerful owl	V	
Diplodactylidae	*Strophurus taenicauda*	golden-tailed gecko	NT	
Apodidae	*Apus pacificus*	fork-tailed swift	SL	
Charadriidae	*Pluvialis fulva*	Pacific golden plover	SL	
Hirundinidae	*Hirundo rustica*	barn swallow	SL	
Laridae	*Hydroprogne caspia*	Caspian tern	SL	
Pandionidae	*Pandion haliaetus cristatus*	eastern osprey	SL	
Scolopacidae	*Calidris ruficollis*	red-necked stint	SL	
Scolopacidae	*Tringa stagnatilis*	marsh sandpiper	SL	
Stercorariidae	*Stercorarius pomarinus*	pomarine jaeger	SL	
Threskiornithidae	*Plegadis falcinellus*	glossy ibis	SL	
Ornithorhynchidae	*Ornithorhynchus anatinus*	platypus	SL	
Tachyglossidae	*Tachyglossus aculeatus*	short-beaked echidna	SL	
Flora				
Byttneriaceae	*Androcalva pearnii*		CR	
Myrtaceae	*Homoranthus brevistylis*		CR	
Orchidaceae	*Gastrodia crebriflora*		CR	
Orchidaceae	*Phaius australis*		E	E
Solanaceae	*Solanum dissectum*		E	E
Zamiaceae	*Macrozamia platyrhachis*		E	E
Asteraceae	*Cymbonotus maidenii*		E	
Asteraceae	*Trioncinia retroflexa*		E	
Solanaceae	*Solanum adenophorum*		E	
Solanaceae	*Solanum elachophyllum*		E	
Euphorbiaceae	*Bertya opponens*		C	V
Poaceae	*Dichanthium setosum*		C	V
Brassicaceae	*Lepidium hyssopifolium*		C	E
Apocynaceae	*Leichhardtia brevifolia*		V	V
Poaceae	*Dichanthium queenslandicum*		V	E
Leguminosae	*Daviesia discolor*		V	V
Loganiaceae	*Logania diffusa*		V	V
Myrtaceae	*Eucalyptus raveretiana*	black ironbox	V	V

Family	Scientific name	Common name	NCA status	EPBC status
Poaceae	*Aristida annua*		V	V
Rhamnaceae	*Polianthion minutiflorum*		V	V
Surianaceae	*Cadellia pentastylis*	ooline	V	V
Arecaceae	*Livistona fulva*		V	
Cyperaceae	*Cyperus clarus*		V	
Myrtaceae	*Baeckea trapeza*		V	
Myrtaceae	*Eucalyptus sicilifolia*		V	
Myrtaceae	*Ochrosperma obovatum*		V	
Orchidaceae	*Corunastylis pedersonii*		V	
Orchidaceae	*Corunastylis valida*		V	
Apocynaceae	*Cerbera dumicola*		NT	
Arecaceae	*Livistona nitida*		NT	
Asteraceae	*Rutidosis glandulosa*		NT	
Celastraceae	*Apatophyllum teretifolium*		NT	
Euphorbiaceae	*Bertya pedicellata*		NT	
Lamiaceae	*Coleus blakei*		NT	
Leguminosae	*Acacia spania*		NT	
Leguminosae	*Acacia storyi*		NT	
Leguminosae	*Daviesia quoquoversus*		NT	
Myrtaceae	*Blakella scabrida*		NT	
Myrtaceae	*Melaleuca groveana*		NT	
Myrtaceae	*Melaleuca pearsonii*		NT	
Myrtaceae	*Sannantha brachypoda*		NT	
Picrodendraceae	*Pseudanthus pauciflorus subsp. arenicola*		NT	
Poaceae	*Digitaria porrecta*		NT	
Alismataceae	*Caldesia oligococca*		SL	
Alismataceae	*Damasonium minus*	starfruit	SL	
Amaryllidaceae	*Calostemma luteum*		SL	
Amaryllidaceae	*Crinum flaccidum*	Murray lily	SL	
Amaryllidaceae	*Crinum pedunculatum*	river lily	SL	
Aponogetonaceae	*Aponogeton queenslandicus*		SL	
Arecaceae	*Livistona australis*	cabbage tree palm	SL	
Blechnaceae	*Blechnum ambiguum*		SL	
Blechnaceae	*Blechnum medium*		SL	
Blechnaceae	*Blechnum nudum*	fishbone water fern	SL	

Family	Scientific name	Common name	NCA status	EPBC status
Blechnaceae	*Blechnum orientale*		SL	
Blechnaceae	*Blechnum spinulosum*		SL	
Blechnaceae	*Telmatoblechnum indicum*		SL	
Burmanniaceae	*Burmannia disticha*		SL	
Campanulaceae	*Isotoma axillaris*	australian harebell	SL	
Campanulaceae	*Isotoma gulliveri*		SL	
Campanulaceae	*Lobelia concolor*		SL	
Campanulaceae	*Lobelia quadrangularis*		SL	
Campanulaceae	*Lobelia trigonocaulis*	forest lobelia	SL	
Campanulaceae	*Wahlenbergia capillaris*		SL	
Campanulaceae	*Wahlenbergia gracilis*	sprawling bluebell	SL	
Campanulaceae	*Wahlenbergia graniticola*	granite bluebell	SL	
Campanulaceae	*Wahlenbergia islensis*		SL	
Campanulaceae	*Wahlenbergia queenslandica*		SL	
Campanulaceae	*Wahlenbergia tumidifructa*		SL	
Droseraceae	*Drosera binata*	forked sundew	SL	
Droseraceae	*Drosera burmanni*		SL	
Droseraceae	*Drosera lunata*		SL	
Droseraceae	*Drosera spatulata*		SL	
Droseraceae	*Drosera spatulata var. spatulata*		SL	
Dryopteridaceae	*Lastreopsis tenera*		SL	
Goodeniaceae	*Brunonia australis*	blue pincushion	SL	
Hydrocharitaceae	*Najas tenuifolia*	water nymph	SL	
Hydrocharitaceae	*Ottelia ovalifolia*	swamp lily	SL	
Hydrocharitaceae	*Ottelia ovalifolia subsp. ovalifolia*		SL	
Hydrocharitaceae	*Vallisneria nana*		SL	
Juncaginaceae	*Cycnogeton dubius*		SL	
Juncaginaceae	*Cycnogeton procerus*		SL	
Lentibulariaceae	*Utricularia aurea*	golden bladderwort	SL	
Lentibulariaceae	*Utricularia bifida*		SL	
Lentibulariaceae	*Utricularia blackmanii*		SL	
Lentibulariaceae	*Utricularia uliginosa*	asian bladderwort	SL	
Menyanthaceae	*Nymphoides aurantiaca*		SL	

Family	Scientific name	Common name	NCA status	EPBC status
Menyanthaceae	*Nymphoides crenata*	wavy marshwort	SL	
Menyanthaceae	*Nymphoides geminata*		SL	
Menyanthaceae	*Nymphoides indica*	water snowflake	SL	
Nymphaeaceae	*Nymphaea gigantea*		SL	
Orchidaceae	*Acianthus borealis*		SL	
Orchidaceae	*Caladenia carnea*		SL	
Orchidaceae	*Caladenia catenata*		SL	
Orchidaceae	*Caleana major*	flying duck orchid	SL	
Orchidaceae	*Calochilus campestris*	copper beard orchid	SL	
Orchidaceae	*Chiloglottis trullata*		SL	
Orchidaceae	*Corybas barbarae*	helmet orchid	SL	
Orchidaceae	*Cymbidium canaliculatum*		SL	
Orchidaceae	*Dendrobium speciosum*		SL	
Orchidaceae	*Dendrobium tetragonum*	tree spider orchid	SL	
Orchidaceae	*Diuris luteola*	northern yellow donkeys tails	SL	
Orchidaceae	*Dockrillia bowmanii*	scrub pencil orchid	SL	
Orchidaceae	*Lyperanthus suaveolens*	brown beaks	SL	
Orchidaceae	*Microtis parviflora*	slender onion orchid	SL	
Orchidaceae	*Pterostylis mutica*	midget greenhood	SL	
Orchidaceae	*Pterostylis nutans*		SL	
Orchidaceae	*Pterostylis ophioglossa*		SL	
Orchidaceae	*Pterostylis woollsii*	long-tailed greenhood	SL	
Orchidaceae	*Thelymitra angustifolia*		SL	
Polypodiaceae	*Drynaria rigidula*		SL	
Polypodiaceae	*Platycerium bifurcatum*		SL	
Polypodiaceae	*Platycerium veitchii*	silver elkhorn	SL	
Potamogetonaceae	*Potamogeton crispus*	curly pondweed	SL	
Potamogetonaceae	*Potamogeton octandrus*		SL	
Potamogetonaceae	*Potamogeton tepperi*		SL	
Psilotaceae	*Psilotum nudum*	skeleton fork fern	SL	
Pteridaceae	*Adiantum atroviride*		SL	
Pteridaceae	*Adiantum capillus-veneris*		SL	
Pteridaceae	*Adiantum hispidulum*		SL	
Pteridaceae	*Adiantum hispidulum var. hispidulum*		SL	

Family	Scientific name	Common name	NCA status	EPBC status
Pteridaceae	*Adiantum hispidulum var. hypoglaucum*		SL	
Pteridaceae	*Pellaea falcata*		SL	
Pteridaceae	*Pellaea muelleri*		SL	
Pteridaceae	*Pellaea nana*		SL	
Pteridaceae	*Pteris tremula*		SL	
Pteridaceae	*Pteris vittata*	Chinese bracken	SL	
Santalaceae	*Santalum lanceolatum*		SL	
Sterculiaceae	*Brachychiton australis*	broad-leaved bottle tree	SL	
Sterculiaceae	*Brachychiton bidwillii*	little kurrajong	SL	
Sterculiaceae	*Brachychiton populneus subsp. populneus*		SL	
Sterculiaceae	*Brachychiton populneus subsp. trilobus*		SL	
Sterculiaceae	*Brachychiton rupestris*		SL	
Sterculiaceae	*Brachychiton x turgidulus*		SL	
Stylidiaceae	*Stylidium debile*	frail trigger plant	SL	
Stylidiaceae	*Stylidium eglandulosum*		SL	
Stylidiaceae	*Stylidium eriorhizum*		SL	
Stylidiaceae	*Stylidium laricifolium*	tree trigger plant	SL	
Stylidiaceae	*Stylidium uliginosum*	swamp triggerplant	SL	
Thelypteridaceae	*Christella dentata*	creek fern	SL	
Thelypteridaceae	*Cyclosorus interruptus*		SL	
Thelypteridaceae	*Macrothelypteris torresiana*	pale wood fern	SL	
Thelypteridaceae	*Strophocaulon unitum*		SL	
Xanthorrhoeaceae	*Xanthorrhoea johnsonii*		SL	
Zamiaceae	*Macrozamia moorei*		SL	

Appendix C

Threatened Flora Species Likelihood of Occurrence

Species	NC Act	EPBC Act	Database	Habitat Preference	Assessment of Occurrence
Aristida annua	V	V	P	Grows on black earth, basalt and sandy, red loamy soils. The species occurs in eucalypt woodland with *Eucalyptus orgadophila*. The species also occurs in disturbed sites such as roadsides with pasture grass	**Potential** Suitable habitat for this species occur within the Survey area, particularly on land zone 8. Known to occur in disturbed areas this species may occur.. No database records (predicted to occur on EPBC search tool).
Cadellia pentastylis *ooline*	V	V	P	Occurs on ridge slopes and undulating plains within Brigalow (*Acacia harpophylla*) woodland - open forest and semi-evergreen vine thicket	Potential There are areas of suitable habitat for this species within the Survey area. This species is known from the locality and is often retained as a "paddock" tree. No database records (predicted to occur on EPBC search tool).
Dichanthium setosum	LC	V	P	Associated with heavy basaltic black soils and stony red-brown hard-setting loam with clay subsoil	Potential The large areas of suitable habitat for this species are heavily grazed within the Survey area. No database records (predicted to occur on EPBC search tool).
Dichanthium queenslandicum	V	E	W/P	Occurs in heavy soils (predominantly cracking clays or alluvium, often in gilgai) in woodland or open woodland usually dominated by Acacia (brigalow) and/or Eucalyptus species. The climate is tropical to subtropical and markedly seasonal with the habitat drying out for part of the year	Potential The large areas of suitable habitat for this species are heavily grazed within the Survey area. No database records (predicted to occur on EPBC search tool).
Leichhardtia brevifolia *(Marsdenia brevifloia)*	V	V	P	Grows in artesian springs and wetlands and is threatened by the drainage of this habitat.	**Unlikely** Artesian habitats are absent from the Survey area. No database records (predicted to occur on EPBC search tool).
Solanum dissectum	E	E	P	Occurs in open forest and woodland of brigalow (*Acacia*	Potential

Species	NC Act	EPBC Act	Database	Habitat Preference	Assessment of Occurrence
				harpophylla) or *Eucalyptus thozetiana* on solodic clay soils.	Areas of suitable habitat for this species are heavily grazed within the Survey area.
Solanum elachophyllum	E	NL	W	grows on fertile cracking-clay soils in open forest of Eucalyptus thozetiana, Acacia harpophylla, with understorey of Geijera parviflora, Casuarina cristata, Macropteranthes leichhardtii, Eucalyptus cambageana, or woodland of E. crebra and E. tenuipes (Bean, 2004; Queensland Herbarium, 2012).	**Potential** Areas of suitable habitat for this species are heavily grazed within the Survey area.
Polianthion minutiflorum	V	V	P	Usually found in forest and woodland on sandstone slopes and gullies with skeletal soil, or sometimes deeper sands adjacent to deeply weathered laterite. Associated species and vegetation includes: open woodland of *Acacia shirleyi, Lysicarpus angustifolius, Corymbia aureola*; woodland of *Eucalyptus corynodes, Corymbia trachyphloia, E. cloeziana* on sandy soil over sandstone.; sandstone plateau with *Eucalyptus dura, E. fibrosa, Angophora leiocarpa, E. major*	Unlikely There are no areas of suitable habitat for this species within the Survey area. No database records (predicted to occur on EPBC search tool).

Abbreviations: *Status*
NC Act: E=Endangered; V=Vulnerable; NT=Near Threatened; SL Special Least Concern; LC=Least Concern.
EPBC Act: CE=Critically Endangered; E=Endangered; V=Vulnerable; M=Migratory. NL = not listed *Data source*
W= DEHP Wildlife Online database; P =Protected Matters Search Tool.

Appendix D

Threatened Fauna Species Likelihood of Occurrence

Species	NC Act	EPBC Act	Data base	Habitat preference	Likelihood of occurrence
Birds					
Rostratula australis Australian painted snipe	E	E	P	Terrestrial shallow wetlands, ephemeral and permanent, usually freshwater but occasionally brackish. They also use inundated grasslands, saltmarsh, dams, rice crops, sewage farms and bore drains. Most likely in alluvial areas but could also occur in gilgaied areas.	**Potential** Farm dams within the Survey area provide low quality habitat for this species. The lack of low shrub layers or tall reed beds makes the occurrence of this species less likely. No database records (predicted to occur on EPBC search tool).
Erythrotriorchis radiatus Red goshawk	E	E	P	Endemic to northern and eastern Australia in coastal and subcoastal areas with large home ranges of up to 200 km^2. Occurs in woodlands and forests and prefers mosaic habitats that hold a large population of birds and permanent water. Riparian areas are heavily favoured.	**Potential visitor** The Survey area offers a mosaic of woodlands and forest as foraging habitat for his species. Large expanses of timbered country associated with the neighbouring Expedition Ranges offer better quality habitat for this species. No database records (predicted to occur on EPBC search tool). This is an extremely uncommon species.
Geophaps scripta scripta Squatter Pigeon (southern)	V	V	W/P	Dry grassy eucalypt woodlands and open forests, also Callitris and Acacia woodlands. Most birds live in sandy sites near permanent water.	Potential Habitat for this species occurs across the Survey area and there are within the surrounding landscape. No database records (predicted to occur on EPBC search tool). There is a local record on ALA in 1986.
Neochmia ruficauda ruficauda Star Finch (eastern), Star Finch (southern)	E	E	P	Mainly in grasslands and grassy woodlands that are located close to bodies of fresh water. also occurs in cleared or suburban areas such as along roadsides and in towns	Unlikely Poor quality habitat for this species occurs across the Survey area.

Species	NC Act	EPBC Act	Data base	Habitat preference	Likelihood of occurrence
					No database records (predicted to occur on EPBC search tool). There are records from 1986 close to the survey area This is an extremely uncommon species.
Hirundapus caudacutus White-throated needletail	*V*	*V*	100 km	Aerial birds and for a time it was commonly believed that they did not land while in Australia. It has now been observed that birds will roost in trees, and radio-tracking has since confirmed that this is a regular activity	**Potential** fly-over This species potentially feeds in the sky above the Survey area
Falco hypoleucos Grey Falcon	V	V	P	Widely but sparsely distributed in woodland, shrubland and grassland in the arid and semi-arid zones, especially wooded watercourses, of mainland Australia	Unlikely The Survey area offers limited areas of woodlands and forest as foraging habitat for his species. No database records (predicted to occur on EPBC search tool). This is an extremely uncommon species that usually occurs in drier regions west of the Survey area.
Grantiella picta Painted Honeyeater	V	V	P	Inhabits Boree/ Weeping Myall (*Acacia pendula*), Brigalow (*A. harpophylla*) and Box-Gum Woodlands and Box-Ironbark Forests.	**Potential** The woodlands of the Survey area provide low quality foraging habitat for this species. This species is very unlikely to breed within the locality. It may however occur as a vagrant especially along creek lines. No database records (predicted to occur on EPBC search tool).
Stagonopleura guttata Diamond Firetail	V	V	P	This species has a patchy distribution and generally occupies drier forests and grassy woodlands west of the Great Dividing Range	Unlikely Small areas of low quality habitat for this species occur within the Survey area.

Species	NC Act	EPBC Act	Data base	Habitat preference	Likelihood of occurrence
					No database records (predicted to occur on EPBC search tool). There are undated, unverified records for this species around the Rolleston area extracted from an unknown source by BirdLife Australia. Consider possibly extinct within the region https://datazone.birdlife.org/species/factsheet/diamond-firetail-stagonopleura-guttata
Calidris ferruginea Curlew sandpiper	E	CE	P	Mainly occur on intertidal mudflats in sheltered coastal areas, such as estuaries, bays, inlets and lagoons, and also around non-tidal swamps, lakes and lagoons near the coast, and ponds in saltworks and sewage farms. They are also recorded inland, though less often, including around ephemeral and permanent lakes, dams, waterholes and bore drains, usually with bare edges of mud or sand. They occur in both fresh and brackish waters. Occasionally they are recorded around floodwaters	**Unlikely**. The Survey area offers very low quality habitats for this species No database records (predicted to occur on EPBC search tool).
Poephila cincta cincta Southern Black-throated Finch	E	E	P	Occurs mainly in grassy, open woodlands and forests, typically dominated by Eucalyptus, Corymbia and Melaleuca, and occasionally in tussock grasslands or other habitats (for example freshwater wetlands), often along or near watercourses, or in the vicinity of water	Unlikely The closet record (2004) is 90 km east of the alignment. The survey area is generally too far south for this species. No database records (predicted to occur on EPBC search tool).
Gallinago hardwickii Latham's Snipe, Japanese Snipe	V	V	P	Occurs in permanent and ephemeral wetlands up to 2000 m above sea-level. They usually inhabit open, freshwater wetlands with low, dense vegetation (e.g. swamps, flooded grasslands or heathlands, around bogs and other water bodies). However, they can also occur in habitats	**Potential** There are low quality habitats within the Survey area that may provide temporary feeding habitat for this species.

Species	NC Act	EPBC Act	Data base	Habitat preference	Likelihood of occurrence
				with saline or brackish water, in modified or artificial habitats, and in habitats located close to humans or human activity.	No database records (predicted to occur on EPBC search tool). Records on ALA particularly around Emerald
Calidris acuminata Sharp-tailed Sandpiper	V	V	P	Prefers muddy edges of shallow fresh or brackish wetlands, with inundated or emergent sedges, grass, saltmarsh or other low vegetation. This includes lagoons, swamps, lakes and pools near the coast, and dams, waterholes, soaks, bore drains and bore swamps, saltpans and hypersaline saltlakes inland.	**Potential** There are low quality habitats within the Survey area that may provide temporary feeding habitat for this species. No database records (predicted to occur on EPBC search tool). Records on ALA particularly around Emerald
Additional Species (100km search radius)					
Limosa lapponica baueri Western Alaskan bar-tailed godwit	E	E	W	inhabit tidal mudflats, estuaries, and sandy beaches, where they feed on mollusks, worms, and aquatic insects.	Unlikely Habitat for this species does not occur within the Survey area
Calyptorhynchus lathami glossy black-cockatoo (Sensu lato)	V	NL	W	Feed almost exclusively on the seeds in the cones of she-oak trees, they are most often found in woodlands and open forests	**Unlikely** Only low quality habitat for this species occurs within the Survey area. Not recorded form the locality
Arenaria interpres ruddy turnstone	V	V	W	rocky shorelines, reefs, and beaches with seaweed	Unlikely Habitat for this species does not occur within the Survey area
Reptiles					
Denisonia maculata Ornamental snake	V	V	P	In Brigalow (*Acacia harpophylla*), Gidgee (*Acacia cambagei*), Blackwood (*Acacia argyrodendron*) or Coolibah (*Eucalyptus coolabah*)-dominated vegetation communities, or pure grassland associated with gilgais	**Potential** Habitat for this species occurs within the Survey area. This species is known from the locality.
Egernia rugosa Yakka Skink	V	V	NB	A wide variety of vegetation types including poplar box, ironbark, brigalow, white cypress pine, mulga, bendee and lancewood woodlands and open forests. Substrates include rock,	**Potential** There is some average quality habitat for this species associated with

Species	NC Act	EPBC Act	Data base	Habitat preference	Likelihood of occurrence
				sand, clay and loamy red earth. They can persist in clearings where shelter sites such as tunnel erosion, rabbit warrens and log piles exist.	Eucalypt woodlands within the survey area. ALA database records suggest that this species is not common within the locality.
Strophurus taenicauda golden-tailed gecko	*NT*	*NL*	100 km	Lives in dry open forest and woodlands, especially those with well-developed shrub layer where it shelters in tree hollows and splits, beneath exfoliating bark and within tree fissures on both live and dead timber. The main factors influencing presence and abundance of S. taenicauda were the average basal area of Callitris glaucophylla	Unlikely Poor quality habitat for this species occurs across the Survey area. *Callitris colluminaris* is uncommon. There are local ALA records in better quality habitats near the survey area.
Delma torquata collared delma	*V*	*V*	P	Occupies a range of eucalypt woodlands and open forests; lives under surface rock and large woody debris (Wilson 2015). The Survey area is within the species' known range.	**Unlikely** Habitats for this species are not present within the Survey area. No database records (predicted to occur on EPBC search tool).
Elseya albagula Southern Snapping Turtle, White-throated Snapping Turtle	*CR*	*CE*	P	Found only in Queensland in the Fitzroy, Mary and Burnett Rivers and associated smaller drainages in south eastern Queensland. Permanent flowing water. Prefers clear, flowing, well-oxygenated waters.	**Unlikely** There is no suitable habitat for this species within the Survey area No database records (predicted to occur on EPBC search tool).
Hemiaspis damelii Grey Snake	*E*	*E*	P	Woodlands (typically brigalow *Acacia harpophylla* and belah Casuarina cristata), usually on heavier, cracking clay soils, particularly in association with water bodies or in areas with small gullies and ditches (gilgais)	Potential Habitat for this species occurs within the Survey area No database records (predicted to occur on EPBC search tool). The nearest ALA record (2004) is 50 km north of the Survey area
Rheodytes leukops Fitzroy River Turtle	E	V	P	Occurs in flowing rivers with large deep pools with rocky, gravelly or sandy substrates, connected by shallow riffles	**Unlikely** There is no suitable habitat for this species within the Survey area No database records (predicted to occur on EPBC search tool).

Species	NC Act	EPBC Act	Data base	Habitat preference	Likelihood of occurrence
Additional Species (100km search radius)					
Adelotus brevis tusked frog	V	NL	W	inhabits moist, shaded areas near still or slow-flowing water, including rainforests, wet sclerophyll forests, woodlands, and disturbed habitats like farm dams, ditches, and swamps.	Unlikely Outside of known range
Oedura lineata Arcadia velvet gecko	CR	CE	W	restricted to thick brigalow (Acacia harpophylla) forest, specifically in the Arcadia Valley region of inland eastern Queensland, Australia.	Unlikely Outside of known range
Mammals					
Phascolarctos cinereus koala	E	E	W/P	Koalas live over a range of open forest and woodland communities. Within the Site, some of the canopy eucalypts are suitable habitat for this species. The presence of main roads and low bushland density within the area makes it unlikely that the koala persists in this landscape	**Potential** Habitat for this species includes all woodlands and open forests dominated by eucalypts within the Survey area.
Nyctophilus corbeni eastern long-eared bat	*V*	*V*	P	Occurs in a variety of dry forest habitats including River Red Gum, open woodland, mallee, brigalow and other arid and semi-arid habitats. The preferred habitat is mallee and Callitris woodlands and habitats that have a distinct canopy with a dense, cluttered understorey. It roosts in tree hollows or under bark. Surveys suggest the species requires large tracts of forest to occur .	Potential Habitat for this species is associated with the riparian woodlands and open forests within the Survey area. No database records (predicted to occur on EPBC search tool).
Dasyurus hallucatus Northern quoll	LC	E	P	This mammal occurs in a range of habitats but is most abundant in hilly or rocky areas close to permanent water.	**Unlikely** Poor quality habitat for this species occurs across the Survey area. Over 1 km from potential rock shelter sites. No database records (predicted to occur on EPBC search tool).
Petauroides volans Greater Glider (southern and central)	E	E	W/P	Feeds exclusively on eucalypt leaves and requires up to 18 large hollows within a 1 – 3ha patch	Potential Low quality habitat for this species occurs within the Survey area

Species	NC Act	EPBC Act	Data base	Habitat preference	Likelihood of occurrence
Macroderma gigas Ghost Bat	E	V	W/P	roost in caves, old mine tunnels and in deep cracks in rocks.	Unlikely The Carnarvon and Exhibition Ranges provide roosting sites for this species. No database records (predicted to occur on EPBC search tool). There is a record (1997) for this species at Rolleston
Tachyglossus aculeatus Short-beaked echidna	SL	NL	NB	Lives in forests and woodlands, heath, grasslands and arid environments. This species is found in disturbed environments where shelter and termites are present	**Likely** A very wide ranging and disturbance tolerant species it is likely to occur.
Additional Species (100km search radius)					
Antechinus argentus silver-headed antechinus	E	E	W	known from two isolated subpopulations located in central-eastern Queensland - the plateau at the eastern escarpment of Kroombit Tops National Park, Eucalyptus montivaga (blackbutt) with subdominant Corymbia trachyphloia (brown bloodwood) shrubby tall open-forest. The shrub layer and ground cover of both sites varies in height, cover and species. However, sclerophyllous shrubs and Xanthorrhoea (grass trees) are more prevalent at the southern 'Lookout' site, with grasses and ferns more prevalent at the northern site. At Blackdown Tableland National Park, the silver-headed antechinus occurs in similar wet, altitudinal open forest habitat.	Unlikely Outside of known range
Onychogalea frenata bridled nailtail wallaby	E	E	W	semi-arid, grassy woodlands and dense acacia shrublands in Queensland, Australia, with a strong preference for transitional vegetation between these areas. They are mostly found in habitats with dense brigalow (Acacia harpophylla) regrowth or mature scrub, using hollow logs and thick shrubs for protection. Primarily located at Taunton National Park , with	Unlikely Outside of known range No suitable habitat

Species	NC Act	EPBC Act	Data base	Habitat preference	Likelihood of occurrence
				reintroduced populations at Idalia National Park Avocet Nature Refuge , and Scotia Wildlife Sanctuary	
Bettongia tropica northern bettong			W	inhabit a narrow, highly restricted (500 km²) band of fire-prone, wet-to-dry sclerophyll eucalyptus forests on the western edge of the Wet Tropics rainforests in Far North Queensland. They prefer open, grassy understories at 600–1,200m elevation, requiring specific fungi for food.	**Unlikely** Outside of known range. No suitable habitat
Petaurus australis australis yellow-bellied glider (southern subspecies)	V	V	W	Inhabits tall, mature eucalypt forests with high rainfall and nutrient-rich soils. Moist coastal gullies, wet sclerophyll forests, and high-country forests, along with some drier, mixed forests. Large-diameter, smooth-barked eucalypts for sap-feeding, They rely on deep, large tree hollows within old-growth trees for shelter. Requires an exclusive home range of approximately 50–65 ha (plausible range 25–85 ha). suggest that minimum habitat areas of 180–350 km2 are required to maintain a viable subpopulation, with a minimum of 150 glider groups within a habitat area required to achieve a probability of persistence of 0.95 over 100 years. Eyre (2002) suggests that 320 km² of forest is the minimum area required for subpopulation viability in southern Qld. Kambouris et al. (2013) suggests that approximately 350 km² of suitable habitat available on the Bago Plateau would support over 200 family groups of the subspecies.	**Unlikely** There is a general absence of smooth barked gums within the Survey area providing low quality habitat for this species. No database records within the survey area buffer (predicted to occur on EPBC search tool).
Chalinolobus dwyeri large-eared pied bat	E	E	W	dry open forests, woodlands, and sandstone escarpments, Preferred roosts include roof domes in caves, abandoned mines, tunnels, and occasionally old Fairy Martin nests.	**Unlikely** The survey area supports poor foraging habitat and at least 25 km from suitable sandstone caves.

Species	NC Act	EPBC Act	Data base	Habitat preference	Likelihood of occurrence
				Almost all records of the species are within several kilometres of clifflines or rocky terrain, although extensive trapping and call data indicates that bats do not usually forage in sandstone habitat.	
Additional Migratory					
Motacilla flava Yellow Wagtail	SLC	M	P	primarily inhabiting open, wet, and grassy areas in the north, such as sewage treatment ponds, lagoons, marshes, and cattle pastures.	Unlikely This species is incredibly rare this far south. Wetlands in the survey area offer some very low quality habitat for this species.
Calidris melanotos Pectoral Sandpiper	SLC	M	P	prefer shallow, fresh-to-saline water habitats, including swamps, marshes, flooded pastures, and wet, grassy areas	Unlikely This species is incredibly rare this far north. Wetlands in the survey area offer some very low quality habitat for this species.
Actitis hypoleucos Common Sandpiper	SLC	M	P	Primarily found along the coast (mangroves, rocky coastlines), but also inland around rivers, creeks, and sewage farms. They often prefer sheltered areas, avoiding large, exposed tidal mudflats in favor of narrow margins.	Unlikely This species is generally rare this far south and east. Wetlands in the survey area offer some very low quality habitat for this species.
Apus pacificus Fork-tailed Swift	SLC	M	P	diverse, open habitats including coastal areas, forests, farmland, and urban environments	**Possible fly-over** Rarely alights on the ground
Cuculus optatus Oriental Cuckoo, Horsfield's Cuckoo	SLC	M	P	dense, moist forests, including coniferous, deciduous, and mixed woodlands, as well as mangroves and coastal forests	Unlikely Habitat for this species does not occur within the alignment.

Abbreviations: *Status*
NC Act: E=Endangered; V=Vulnerable; NT=Near Threatened; S+ Special Least Concern; LC=Least Concern.
EPBC Act: CE=Critically Endangered; E=Endangered; V=Vulnerable; M=Migratory NL = not listed M = Migratory
Data source
W= DEHP Wildlife Online database; P=Protected Matters Search Tool, NB = No database records

Appendix E

Suitably Qualified Persons

Dr Andrew Daniel — Principal Ecologist

Project Role: – Flora and Fuana Assessment, Vegetation Community Mapping, Ecological Impact Assessment and Report Writing

Andrew is a Principal Ecologist with over 30 years' experience in providing leadership and technical expertise in environmental impact assessments, environmental legislation, and approvals including many years of experience as an expert witness in the Queensland legal system.

Andrew is highly experienced in flora and fauna survey, mapping and assessments for State and federal environmental impact statements and local government approvals, including both baseline and monitoring studies. Andrew's experience has been gained through work for both State, local governments and private consultancy. Andrew's field experience includes extensive experience within the Northwest Highlands, Mitchell Grass Downs, Central Queensland Coast, Einasleigh Uplands, Desert Uplands, Brigalow Belt and Southeast Queensland bioregions.

Andrew has a long history of preparing monitoring, management and rehabilitation plans, including weed and vegetation management, rehabilitation strategies and management of threatened species and communities as listed under the *Environment Protection and Biodiversity Conservation Act 1999*, *Nature Conservation Act 1992* and *Vegetation Management Act 1999*.

Adrian Caneris — Principal Ecologist

Project Role: – Lead Fauna Survey Consultant

Adrian has extensive experience and expertise in ecological consultancy and specifically vertebrate fauna assessment, assessment of terrestrial habitats, ecological monitoring, wildlife management, biodiversity planning, feral species management and community liaison and facilitation. He has been involved in research, management, consulting, tertiary teaching and community based studies of terrestrial ecology, particularly vertebrate fauna for over 30 years.

Adrian is a recognised ecological expert who has undertaken specialist consultancy work for all levels of government and private organisations. Adrian has provided specialist advice for numerous major infrastructure projects. His commitment to wildlife management solutions is highly valued by policy-makers, land use planners, land managers, community organisations and project managers.

He has been involved in numerous Planning & Environment and Land Court actions and regularly provides advice to Courts as an expert on ecological matters. He also advises clients on their appeals and issues of significance before the court proceedings.

Adrian has worked specifically on numerous major infrastructure projects and advising on relevant legislative and policy requirements and impact mitigation and offset strategies. Adrian's balanced approach and understanding of issues and legislative requirements allows effective timely responses to all aspects of ecological management

Adrian has been involved in over 80 resource related assessments from large scale mining through to small quarry applications, including referral and coordination of project referrals under the EPBC Act.

Conor Neville — Senior Ecologist

Project Role: – Field Flora and Fauna Assessment

Conor has extensive experience in managing environmental matters, demonstrated through his career over the last 20 years in Queensland. Conor has worked on a wide range of conservation projects including Weeds of National Significance, National Heritage Trust Restoring Rainforests, Koala habitat protection, Coxen's Fig Parrot, Glossy Black Cockatoo, Greater Glider, Giant Barred Frog, lung fish, Mary River cod and turtle.

Conor's broad and considerable on-ground knowledge of environmental restoration and his robust understanding of environmental legislation have contributed to being successful in secure over $1 million of developer's contributions for koala offsets, 1,200 hectares of land for environmental purposes, numerous environmental covenants and voluntary conservation agreements and developer land contributions.

Conor's extensive and practical field knowledge has led to the development and implementation of bushfire management plans for protected areas, community bushfire recovery programs and his expertise and practical outlook has been sought to contribute to the development of bushfire overlay mapping and development codes.

Conor has broad field knowledge in the identification of fauna habitats and flora, in particular threatened species. Conor has surveyed vast areas in remote locations for major projects design and continues to provide expert fauna habitat assessments and targeted protected flora surveys.

Conor's broad and well-developed knowledge in environmental planning legislation, his practical on-ground land rehabilitation skills and his fauna habitat and flora identification skills provides a solid foundation on which to base sound environmental decisions.

Donovan Sharp Senior Ecologist

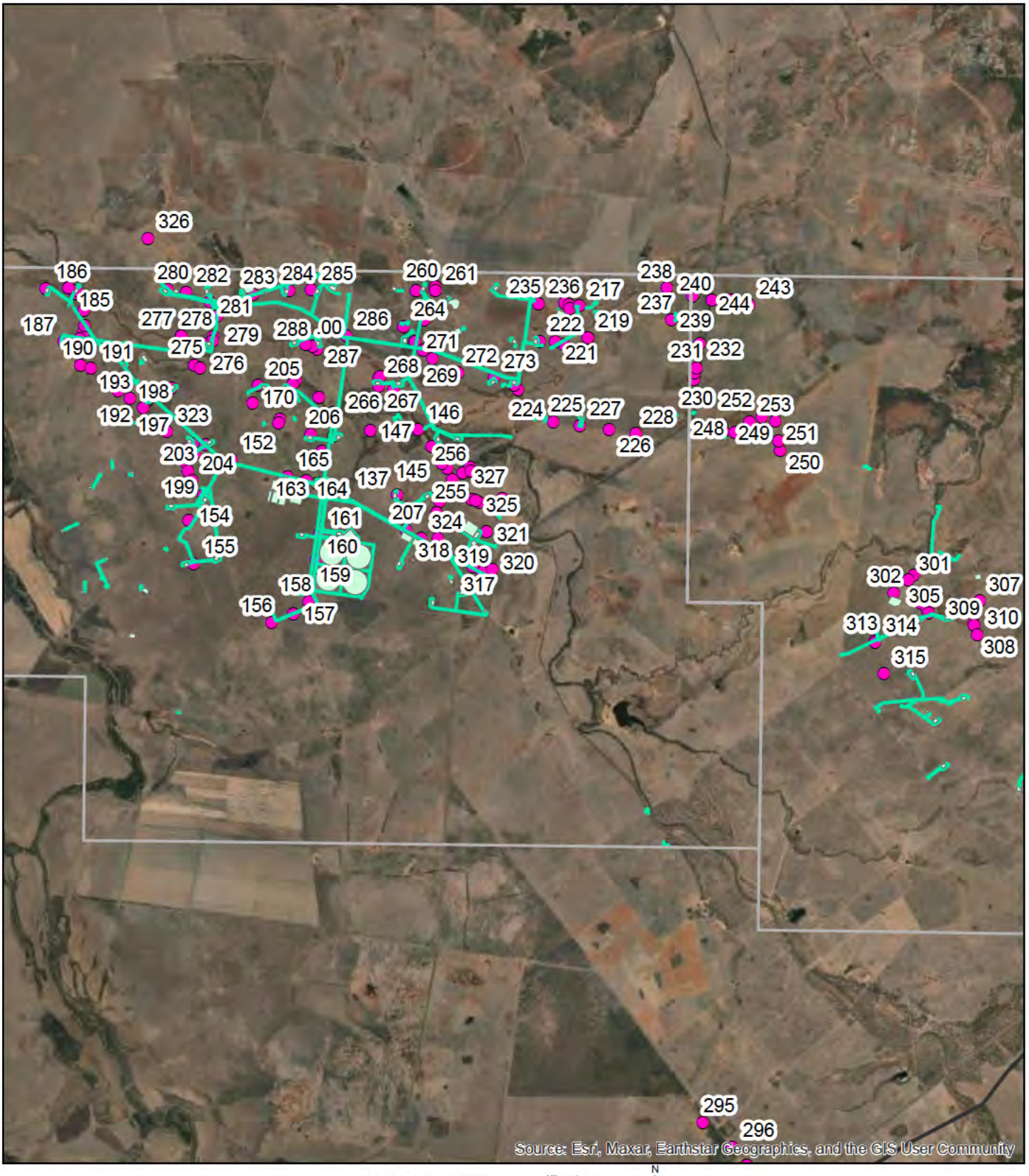
Project Role: – Field Flora and Fauna Assessment

Donovan has very extensive experience in ecological assessment work. His background includes work with the Herbarium as a Queensland Government botanist where he developed botanical keys and conducted plant identification work. He is a co-author of both the AusGrass, computer key to the grasses of Australia, and 'Flora of Stradbroke Island'.

Over the past 15 years Donovan has developed broad and considerable on-ground knowledge of Queensland flora, vegetation communities and fauna habitats, particularly threatened species habitats. This knowledge stretches across the Northwest Highlands, Mitchell Grass Downs, Central Queensland Coast, Einasleigh Uplands, Desert Uplands, Brigalow Belt and Southeast Queensland obtain through assessments conducted for a wide variety of projects, including coal, gas, dams, powerlines, pipelines and rail lines.

Appendix F

Site Survey Data



Legend

- Petroleum_Lease_Boundaries
- Facilities and well pads
- Linear disturbance footprint
- Field survey locations March 2025

Appendix F Figure

Survey Site Locations

Mahalo Gas Field Facilities Infrastructure
Ecological Impact Assessment

AD 12/12/24
Job No. 0237

terrestria
ECOLOGICAL MANAGEMENT

A 3.3 Sheet D – Regional Ecosystem type assessment site

Location

Site No. 136 Recorder: D. Shaf C. Neville Day/Date: 17-3/25

Purpose: Compressor Station

Locality: (inc. distance/direction to nearest town)

GPS: | | | 6 6 6 2 9 2 | 7 3 3 1 6 6 7 | D 136

Vegetation structure

Median height of the EDL is to be measured

Stratum	Median height	Height interval	Est. cover density (D,M,S,V)
E	~~2 2-4 S~~		
T1	2	2-4	S
T2		-	
T3		-	
S1	1	0.5-1.5	S
S2		-	
G	0.3	0-0.4	D

Structural formation: (including height)

Ecologically dominant layer:

Plant species

Record relative (numerical) dominance for each stratum; *d* – dominant; *c* – co-dominant; **s** - subdominant, *a* – associated.

Str.	Rel. dom.	Scientific Name
T1		Atalaya hemiglauca
		E. populnea
		Acacia harpophylla
S1		Carissa ovata
		Senna artemisioides
G		Cenchrus ciliaris

Geology, landform, soils

Geology map/scale/year:

Geology code and rock types:

Land system:

Landform:

Soils:

Field observation and notes:

Landzone:

RE code changes

Existing RE code:

Proposed RE code:

END

Fauna Habitat Characters

Site No. Nil **Recorder:** C Neville D Sharp **Day/Date:** 17/3/25

Purpose Mahala Camp Station

Locality: (inc. distance/direction to nearest town)

GPS coordinates: Zone 5 E 0166792 N 7331667 **Datum:**

Photo Numbers **Waypoint:** ----------

Habitat Description Photos 5833–5837

Paddock - Minor regrowth

Connectivity Patch Characteristics

Abundance Scores: 0 = absent; 1 = 1-5; 2 = 6-20; 3 = 21-50; 4 = 51-75; 5 = 76-100; 6= >100. In a 1 ha area

Hollows in trees & stags >10cm	0	Decorticating bark	0
Hollows in trees & stags <10cm	0	Soil cracks	0
Fallen logs (>10cm diam.)	0	Termite mounds	0
Fallen logs (> 30cm)	0	Termitaries	0
Logs with Hollows (>10cm)	0	Mistletoe	1
Large trees >18m	0		

Density scores: 0 = 0%; 1 = <25%; 2 = 26-50%; 3 = 51-75%; 4 = 75-99%; 5 = 100% abundance.

Course litter (>2cm diam.)	1	Boulders (> 61cm)	0
Fine litter (<2cm diameter)	1	Rocks Embedded	0
Bare ground	1	Rocks Loose	0
Native Grass cover	0	Rock crevices	0
Exotic Grass cover	4	Exfoliating rock	0
Stones (20-60cm)	0	Shrub layer	1

Notes

A 3.3 Sheet D – Regional Ecosystem type assessment site

Location

Site No. 142 Recorder: D. Stanley C. Neville Day/Date: 17-3-25

Purpose Stratum

Locality: (inc. distance/direction to nearest town)

GPS: [ ][ ] 0669127 7331277 D

Vegetation structure

Median height of the EDL is to be measured

Stratum	Median height	Height interval	Est. cover density (D,M,S,V)
E		-	
T1	24	22-25	S
T2	7	6-8	S
T3	7	6-8	
S1	1.5	1-2	VS
S2		-	
G		0-0.2	VS

Structural formation: (including height)

Ecologically dominant layer:

Plant species

Record relative (numerical) dominance for each stratum; ***d*** – dominant; ***c*** – co-dominant; **s** - subdominant, ***a*** – associated.

Str.	Rel. dom.	Scientific Name
T1		E. tereticornis
		E. tessellaris
T2		Callistemon viminalis
		A. excelsa
		Owenia venosa
		Terminalia oblongata
G		Cenchrus ciliaris
		Sida corrugata
		Murdannia micrantha

5849
5850
5851
5852
5853

Geology, landform, soils

Geology map/scale/year:

Geology code and rock types: S1 Cassia brewsteri, Lysiphyllum carronii

Land system:

Landform:

Soils:

Field observation and notes: Pathway Proset

Landzone:

RE code changes

Existing RE code: 11.3.1

Proposed RE code: 11.3.25

END

Fauna Habitat Characters

Site No. 142 **Recorder:** Neville Dalrymple **Day/Date:** 17/3/25

Purpose STRAON

Locality: (inc. distance/direction to nearest town)

GPS coordinates: Zone 55 E 0669127 N 7331277 **Datum:**

Photo Numbers **Waypoint:**

Habitat Description Photos: 5849-5853

1 · RIPARIAN STRIP.

Connectivity Patch Characteristics

Abundance Scores: 0 = absent; 1 = 1-5; 2 = 6-20; 3 = 21-50; 4 = 51-75; 5 = 76-100; 6= >100. In a 1 ha area

Hollows in trees & stags >10cm	2	Decorticating bark	0
Hollows in trees & stags <10cm	2	Soil cracks	0
Fallen logs (>10cm diam.)	2	Termite mounds	0
Fallen logs (> 30cm)	1	Termitaries	0
Logs with Hollows (>10cm)	1	Mistletoe	1
Large trees >18m	0		

Density scores: 0 = 0%; 1 = <25%; 2 = 26-50%; 3 = 51-75%; 4 = 75-99%; 5 = 100% abundance.

Course litter (>2cm diam.)	1	Boulders (> 61cm)	0
Fine litter (<2cm diameter)	1	Rocks Embedded	0
Bare ground	3	Rocks Loose	0
Native Grass cover	1	Rock crevices	0
Exotic Grass cover	2	Exfoliating rock	0
Stones (20-60cm)	0	Shrub layer	1

Notes

A 3.3 Sheet D – Regional Ecosystem type assessment site

Location

Site No . 151 Recorder: _____ Day/Date: 17-5-25

Purpose _____

Locality: (inc. distance/direction to nearest town) _____

GPS: [ ][ ] [6][6][5][3][1][3] [7][3][3][2][9][9] D 151

Vegetation structure

Median height of the EDL is to be measured

Stratum	Median height	Height interval	Est. cover density (D,M,S,V)
E		-	
T1	5	4.5 - 8	S
T2		-	
T3		-	
S1		-	
S2		-	
G	0.4	0 - 0.5	M

Structural formation: (including height)

Ecologically dominant layer:

Plant species

Record relative (numerical) dominance for each stratum; ***d*** – dominant; ***c*** – co-dominant; **s** - subdominant, ***a*** – associated.

Str.	Rel. dom.	Scientific Name
T1		Acacia harpophylla
		Terminalia oblongata
G		Pathinia hysterophora
		Cenchrus ciliaris
		Panicum coloratum
		Guilleminea densa

5868
5869
5870
5871
5872

Geology, landform, soils

Geology map/scale/year:

Geology code and rock types:

Land system:

Landform:

Soils:

Field observation and notes:

Landzone:

RE code changes

Existing RE code: _____

Proposed RE code: _____

END

Gilgai Habitat Quality

Site No. 151 Recorder: _____ Day/Date: 14/3/2025

Purpose _____

Locality: (inc. distance/direction to nearest town) _____

GPS coordinates: Zone 5 E 0645313 N 7533299 Datum: _____

Photo Numbers 5873, 5874 Waypoint: _____

Habitat Description

Connectivity Patch Characteristics

Abundance Scores: 0 = absent; 1 = 1-5; 2 = 6-20; 3 = 21-50; 4 = 51-75; 5 = 76-100; 6= >100. In a 1 ha area

Average Gilgai length	8m	Presence of fringing native vegetation	2
Average Gilgai width	3m		
Average Gilgai depth	0.2m		
Fallen logs (>10cm diam.)	0		
Fallen logs (> 30cm)	0		
Presence of aquatic vegetation	0		
Soil cracks (ornamental snake)	0	Estimate of water permanence	Low

Density scores: 0 = 0%; 1 = <25%; 2 = 26-50%; 3 = 51-75%; 4 = 75-99%; 5 = 100% abundance.

Course litter (>2cm diam.)	0	Shrub layer	0
Fine litter (<2cm diameter)	1	Native Tree layer	1
Bare ground	4	Gilgai density	2
Native Grass cover	0		
Exotic Grass cover	4		
Stones (20-60cm)	0		

Notes

A 3.3 Sheet D – Regional Ecosystem type assessment site

Location

Site No . 176 **Recorder:** .... **Day/Date:** 14/3/25

Purpose ....

Locality: (inc. distance/direction to nearest town) ....

GPS: [ ][ ] 0661060 7334094 **D** 176

Vegetation structure

Median height of the EDL is to be measured

Stratum	Median height	Height interval	Est. cover density (D,M,S,V)
E		-	
T1		-	
T2		-	
T3		-	
S1	1	1 - 1.5	VS
S2	0.8	0 - 1	VS
G	0.6	0 - 0.8	D

Structural formation: (including height)

Ecologically dominant layer:

Plant species

Record relative (numerical) dominance for each stratum; ***d*** – dominant; ***c*** – co-dominant; s - subdominant, ***a*** – associated.

Str.	Rel. dom.	Scientific Name	
		Acacia leptostachya	5917
S1		Atalaya hemiglauca	5918
S2		Carissa ovata	5919
G		Cenchrus ciliaris	5920
		Melinis repens	5921
		Heteropogon contortus	
		Aristida latifolia	

Geology, landform, soils

Geology map/scale/year:

Geology code and rock types:

Land system:

Landform:

Soils:

Field observation and notes: No canopy

Landzone:

RE code changes

Existing RE code: ....

Proposed RE code: ....

END

A 3.3 Sheet D – Regional Ecosystem type assessment site

Location

Site No. 84 Recorder: _____ Day/Date: 14-3-25

Purpose well

Locality: (inc. distance/direction to nearest town) _____

GPS: [ ][ ] 6 6 0 7 6 4 7 3 5 2 9 2 D 84

Vegetation structure

Median height of the EDL is to be measured

Stratum	Median height	Height interval	Est. cover density (D,M,S,V)
E		-	
T1		-	
T2		-	
T3		-	
S1	1	1 - 15	VS
S2		-	
G	0.7	0 - 0.7	

Structural formation: (including height)

Ecologically dominant layer:

Plant species

Record relative (numerical) dominance for each stratum; ***d*** – dominant; ***c*** – co-dominant; **s** - subdominant, ***a*** – associated.

Str.	Rel. dom.	Scientific Name
S1		Acacia hopophylla
G		Cenchrus ciliaris
		Bothriochloa bladhii

Geology, landform, soils

Geology map/scale/year: 5939

Geology code and rock types: 5940

Land system: 5941

Landform: No crops 5942

Soils: 5943

Field observation and notes:

Landzone:

RE code changes

Existing RE code: _____

Proposed RE code: _____

END

A 3.3 Sheet D – Regional Ecosystem type assessment site

Location

Site No . 195 Recorder: _____ Day/Date: 17-7-21

Purpose _____

Locality: (inc. distance/direction to nearest town) _____

GPS: ☐☐ ☐☐☐☐☐☐ ☐☐☐☐☐☐☐ D _____

Vegetation structure

Median height of the EDL is to be measured

Stratum	Median height	Height interval	Est. cover density (D,M,S,V)
E		-	
T1	15	14-17	S
T2	8	6-9	S
T3		-	
S1		-	
S2		-	
G	1	0-1.5	M

Structural formation: (including height)

Ecologically dominant layer:

Plant species

Record relative (numerical) dominance for each stratum; ***d*** – dominant; ***c*** – co-dominant; **s** - subdominant, ***a*** – associated.

Str.	Rel. dom.	Scientific Name
T1		E. Coolabah
T2		Callistemon viminalis
		Terminalia oblongata
G		Leptochloa digitata
		Cenchrus ciliaris
		Eragrostis spp 5952
		Acacia harpophylla
		Parthenium hysterophorus
		Physalis peruviana

5953 5954

Tomato Leaf Vine 5955

5947 5948 5949 5950 5951

Geology, landform, soils

Geology map/scale/year:

Geology code and rock types:

Land system:

Landform:

Soils:

Field observation and notes: ADvanced regrath ?

Landzone:

RE code changes

Existing RE code: 11.3.3

Proposed RE code: _____

END

A 3.3 Sheet D – Regional Ecosystem type assessment site

Location

Site No. 195 Recorder: ______ Day/Date: 18-3-25

Purpose ______

Locality: (inc. distance/direction to nearest town) ______

GPS: | | | 0662767 7333036 D 195

Vegetation structure

Median height of the EDL is to be measured

Stratum	Median height	Height interval	Est. cover density (D,M,S,V)
E	~~10~~	~~9-10~~	
T1	10	9-10	VS-S
T2	4.5	4-5	VS
T3	3.5	3-4	S
S1	1	1-1.5	VS
S2		-	
G	0.4	0-0.4	
Structural formation: (including height)			
Ecologically dominant layer:			

Plant species

Record relative (numerical) dominance for each stratum; ***d*** – dominant; ***c*** – co-dominant; **s** - subdominant, ***a*** – associated.

Str.	Rel. dom.	Scientific Name
T1	D	E. populnea
T2		Eremophila mitchellii
T3		Geijera parviflora
		Santalum lanceolatum
S1		Carissa ovata
G		Cenchrus ciliaris

Geology, landform, soils

Geology map/scale/year:

Geology code and rock types:

Land system:

Landform:

Soils: Advanced regrowth

Field observation and notes:

Landzone:

RE code changes

Existing RE code: ______

Proposed RE code: ______

END

Fauna Habitat Characters

Site No. 195 Recorder: Neville Bilsborough Day/Date: 18/3/25

Purpose STRAHAN

Locality: (inc. distance/direction to nearest town)

GPS coordinates: Zone 55 E 0466767 N 7333036 Datum:

Photo Numbers

Waypoint:

Habitat Description Photo 15979

Poddock

Connectivity Patch Characteristics

Abundance Scores: 0 = absent; 1 = 1-5; 2 = 6-20; 3 = 21-50; 4 = 51-75; 5 = 76-100; 6= >100. In a 1 ha area

Hollows in trees & stags >10cm	0	Decorticating bark	0
Hollows in trees & stags <10cm	0	Soil cracks	0
Fallen logs (>10cm diam.)	0	Termite mounds	0
Fallen logs (> 30cm)	0	Termitaries	0
Logs with Hollows (>10cm)	0	Mistletoe	0
Large trees >18m	0		

Density scores: 0 = 0%; 1 = <25%; 2 = 26-50%; 3 = 51-75%; 4 = 75-99%; 5 = 100% abundance.

Course litter (>2cm diam.)	1	Boulders (> 61cm)	0
Fine litter (<2cm diameter)	1	Rocks Embedded	0
Bare ground	2	Rocks Loose	0
Native Grass cover	1	Rock crevices	0
Exotic Grass cover	3	Exfoliating rock	0
Stones (20-60cm)	1	Shrub layer	0

Notes

Fauna Habitat Characters

Site No. 196 **Recorder:** [illegible] **Day/Date:** 18/3/25

Purpose

Locality: (inc. distance/direction to nearest town)

GPS coordinates: Zone 5 E 0662999 N 7333088 **Datum:**

Photo Numbers 5980 - 5983 **Waypoint:**

Habitat Description

Paddock

Connectivity Patch Characteristics

Abundance Scores: 0 = absent; 1 = 1-5; 2 = 6-20; 3 = 21-50; 4 = 51-75; 5 = 76-100; 6= >100. In a 1 ha area

Hollows in trees & stags >10cm	0	Decorticating bark	0
Hollows in trees & stags <10cm	0	Soil cracks	0
Fallen logs (>10cm diam.)	0	Termite mounds	0
Fallen logs (> 30cm)	0	Termitaries	0
Logs with Hollows (>10cm)	0	Mistletoe	0
Large trees >18m	0		

Density scores: 0 = 0%; 1 = <25%; 2 = 26-50%; 3 = 51-75%; 4 = 75-99%; 5 = 100% abundance.

Course litter (>2cm diam.)	1	Boulders (> 61cm)	0
Fine litter (<2cm diameter)	1	Rocks Embedded	0
Bare ground	2	Rocks Loose	0
Native Grass cover	0	Rock crevices	0
Exotic Grass cover	3	Exfoliating rock	0
Stones (20-60cm)	0	Shrub layer	0

Notes

A 3.3 Sheet D – Regional Ecosystem type assessment site

Location

Site No. 216 Recorder: ~~0671847~~ Day/Date: 20/3/23

Purpose

Locality: (inc. distance/direction to nearest town)

GPS: | | | 0671847 | 7334896 D 216

Vegetation structure

Median height of the EDL is to be measured

Stratum	Median height	Height interval	Est. cover density (D,M,S,V)
E	10	-10	VS
T1	5	4 - 7	S
T2		-	
T3		-	
S1	1	1 - 1.5	S
S2		-	
G	0.3	0 - 0.3	S

Structural formation: (including height)

Ecologically dominant layer:

Plant species

Record relative (numerical) dominance for each stratum; ***d*** – dominant; ***c*** – co-dominant; **s** - subdominant, ***a*** – associated.

Str.	Rel. dom.	Scientific Name
E		C. dallachyana
T1		Ac harpophylla
		Ac. Shirleyii
		Geijera parviflora
S1		Erythroxylum australe
		Carissa ovata
G		Cenchrus ciliaris
		Ruby saltbush
		Enchylaena tomentosa

6021
6022
6023
6024
6025
6026

Geology, landform, soils

Geology map/scale/year:

Geology code and rock types:

Land system:

Landform:

Soils: Can be avoided through

Field observation and notes: buffel paddock
Easily dispersible soils

Landzone:

RE code changes

Existing RE code:

Proposed RE code:

END

Fauna Habitat Characters

Site No. 46 **Recorder:** C Neille D Sharp **Day/Date:** 20/3/25

Purpose STRATA

Locality: (inc. distance/direction to nearest town)

GPS coordinates: Zone 5 E 0671877 N 7334896 **Datum:**

Photo Numbers **Waypoint:**

Habitat Description Photos 6021 – 6025

Lancewood Mallotopa

Connectivity Patch Characteristics

Abundance Scores: 0 = absent; 1 = 1-5; 2 = 6-20; 3 = 21-50; 4 = 51-75; 5 = 76-100; 6= >100. In a 1 ha area

Hollows in trees & stags >10cm	0	Decorticating bark	0
Hollows in trees & stags <10cm	0	Soil cracks	0
Fallen logs (>10cm diam.)	0	Termite mounds	0
Fallen logs (> 30cm)	0	Termitaries	0
Logs with Hollows (>10cm)	0	Mistletoe	0
Large trees >18m	0		

Density scores: 0 = 0%; 1 = <25%; 2 = 26-50%; 3 = 51-75%; 4 = 75-99%; 5 = 100% abundance.

Course litter (>2cm diam.)	1	Boulders (> 61cm)	0
Fine litter (<2cm diameter)	1	Rocks Embedded	0
Bare ground	3	Rocks Loose	0
Native Grass cover	1	Rock crevices	0
Exotic Grass cover	2	Exfoliating rock	0
Stones (20-60cm)	2	Shrub layer	1

Notes

A 3.3 Sheet D – Regional Ecosystem type assessment site

Location

Site No . 219 Recorder: _____ Day/Date: 20-7-25

Purpose _____

Locality: (inc. distance/direction to nearest town) _____

GPS: [ ][ ] [0][6][7][2][2][8][9] [7][7][7][4][2][3][6] D 219

Vegetation structure

Median height of the EDL is to be measured

Stratum	Median height	Height interval	Est. cover density (D,M,S,V)
E	8	10 - 13	VS
T1	8	7 - 9	S
T2		-	
T3		-	
S1		-	
S2		-	
G	0.5?	0 - 0.5	M

Structural formation: (including height)

Ecologically dominant layer:

Plant species

Record relative (numerical) dominance for each stratum; ***d*** – dominant; ***c*** – co-dominant; **s** - subdominant, ***a*** – associated.

Str.	Rel. dom.	Scientific Name
G		~~E canaliculata~~
		C tessellaris
T1		Callitris viminalis
		Terminalia oblongata
		Acacia holosericea
G		Paspalum scrobiculatum
		Megathyrsus maximus
		Cenchrus ciliaris

Geology, landform, soils

Geology map/scale/year: 6031

Geology code and rock types: 6033

Land system: 6034

Landform: 6035

Soils: 6036.

Field observation and notes: Cambogeara on edge

Landzone:

RE code changes

Existing RE code: _____

Proposed RE code: _____

END

Fauna Habitat Characters

Site No. 219 **Recorder:** [illegible] **Day/Date:** 20/3/25

Purpose

Locality: (inc. distance/direction to nearest town)

GPS coordinates: Zone 5 E 0672289 N 7334236 **Datum:**

Photo Numbers **Waypoint:**

Habitat Description 6031 – 6036.

· Riverian Strip

Connectivity Patch Characteristics

Abundance Scores: 0 = absent; 1 = 1-5; 2 = 6-20; 3 = 21-50; 4 = 51-75; 5 = 76-100; 6= >100. In a 1 ha area

Hollows in trees & stags >10cm	2	Decorticating bark	0
Hollows in trees & stags <10cm	1	Soil cracks	0
Fallen logs (>10cm diam.)	2	Termite mounds	0
Fallen logs (> 30cm)	1	Termitaries	0
Logs with Hollows (>10cm)	1	Mistletoe	1
Large trees >18m	0		

Density scores: 0 = 0%; 1 = <25%; 2 = 26-50%; 3 = 51-75%; 4 = 75-99%; 5 = 100% abundance.

Course litter (>2cm diam.)	1	Boulders (> 61cm)	0
Fine litter (<2cm diameter)	1	Rocks Embedded	0
Bare ground	2	Rocks Loose	0
Native Grass cover	0	Rock crevices	6
Exotic Grass cover	2	Exfoliating rock	0
Stones (20-60cm)	0	Shrub layer	1

Notes

A 3.3 Sheet D – Regional Ecosystem type assessment site

Location

Site No. 220 Recorder: _____ Day/Date: 20-3-25

Purpose _____

Locality: (inc. distance/direction to nearest town) _____

GPS: [ ][ ] [0][6][7][1][7][4][4] [7][3][3][4][0][6][9] D 220

Vegetation structure

Median height of the EDL is to be measured

Stratum	Median height	Height interval	Est. cover density (D,M,S,V)
E		-	
T1	10	8 - 12	VS
T2		-	
T3		-	
S1	1.5	1 - 2	VS
S2		-	
G	0.4	0 - 0.4	

Structural formation: (including height)

Ecologically dominant layer:

Plant species

Record relative (numerical) dominance for each stratum; ***d*** – dominant; ***c*** – co-dominant; **s** - subdominant, ***a*** – associated.

Str.	Rel. dom.	Scientific Name
T1		E. Carbangensis
S1		Cassia barringtonii
G		Cenchrus ciliaris
		Panicum coloratum
		Megathyrsus maximus
		Parthenium hysterophorus

Geology, landform, soils

Geology map/scale/year: 6036

Geology code and rock types: 6037

Land system: 6038

Landform: 6039

Soils:

Field observation and notes: 6040

Landzone:

RE code changes

Existing RE code: NA

Proposed RE code: _____

END

Fauna Habitat Characters

Site No. 220 **Recorder:** C Neville D Shrimpton **Day/Date:** 20/3/25

Purpose STRAWN

Locality: (inc. distance/direction to nearest town)

GPS coordinates: Zone 5 E 0671744 N 7334089 **Datum:**

Photo Numbers **Waypoint:**

Habitat Description 6036 - 6040

Buffel paddock w/ scattered trees.

Connectivity Patch Characteristics

Abundance Scores: 0 = absent; 1 = 1-5; 2 = 6-20; 3 = 21-50; 4 = 51-75; 5 = 76-100; 6= >100. In a 1 ha area

Hollows in trees & stags >10cm	0	Decorticating bark	0
Hollows in trees & stags <10cm	0	Soil cracks	0
Fallen logs (>10cm diam.)	1	Termite mounds	0
Fallen logs (> 30cm)	0	Termitaries	0
Logs with Hollows (>10cm)	0	Mistletoe	0
Large trees >18m	0		

Density scores: 0 = 0%; 1 = <25%; 2 = 26-50%; 3 = 51-75%; 4 = 75-99%; 5 = 100% abundance.

Course litter (>2cm diam.)	1	Boulders (> 61cm)	0
Fine litter (<2cm diameter)	1	Rocks Embedded	0
Bare ground	2	Rocks Loose	0
Native Grass cover	0	Rock crevices	0
Exotic Grass cover	4	Exfoliating rock	0
Stones (20-60cm)	0	Shrub layer	0

Notes

Fauna Habitat Characters

Site No. 222 **Recorder:** C Davidson D Sharp **Day/Date:** 20/3/25

Purpose

Locality: (inc. distance/direction to nearest town)

GPS coordinates: Zone 5 E 0677207 N 7334147 **Datum:**

Photo Numbers **Waypoint:**

Habitat Description Photo: 6043, 6044

Paddock.

Connectivity Patch Characteristics

Abundance Scores: 0 = absent; 1 = 1-5; 2 = 6-20; 3 = 21-50; 4 = 51-75; 5 = 76-100; 6= >100. In a 1 ha area

Hollows in trees & stags >10cm	0	Decorticating bark	0
Hollows in trees & stags <10cm	0	Soil cracks	0
Fallen logs (>10cm diam.)	0	Termite mounds	0
Fallen logs (> 30cm)	0	Termitaries	0
Logs with Hollows (>10cm)	0	Mistletoe	0
Large trees >18m	0		

Density scores: 0 = 0%; 1 = <25%; 2 = 26-50%; 3 = 51-75%; 4 = 75-99%; 5 = 100% abundance.

Course litter (>2cm diam.)	1	Boulders (> 61cm)	0
Fine litter (<2cm diameter)	1	Rocks Embedded	0
Bare ground	1	Rocks Loose	0
Native Grass cover	0	Rock crevices	0
Exotic Grass cover	5	Exfoliating rock	0
Stones (20-60cm)	0	Shrub layer	0

Notes

Fauna Habitat Characters

Site No. 223 **Recorder:** Neville Atherton **Day/Date:** 20/3/25

Purpose

Locality: (inc. distance/direction to nearest town)

GPS coordinates: Zone 5 E 0 N **Datum:**

Photo Numbers **Waypoint:**

Habitat Description Photos 6048 W, 6049 N

Paddock

Connectivity Patch Characteristics

Abundance Scores: 0 = absent; 1 = 1-5; 2 = 6-20; 3 = 21-50; 4 = 51-75; 5 = 76-100; 6= >100. In a 1 ha area

Hollows in trees & stags >10cm	0	Decorticating bark	0
Hollows in trees & stags <10cm	0	Soil cracks	0
Fallen logs (>10cm diam.)	0	Termite mounds	~
Fallen logs (> 30cm)	0	Termitaries	0
Logs with Hollows (>10cm)	0	Mistletoe	0
Large trees >18m	0		

Density scores: 0 = 0%; 1 = <25%; 2 = 26-50%; 3 = 51-75%; 4 = 75-99%; 5 = 100% abundance.

Course litter (>2cm diam.)	1	Boulders (> 61cm)	0
Fine litter (<2cm diameter)	1	Rocks Embedded	0
Bare ground	2	Rocks Loose	0
Native Grass cover	0	Rock crevices	0
Exotic Grass cover	4	Exfoliating rock	0
Stones (20-60cm)	0	Shrub layer	0

Notes

A 3.3 Sheet D – Regional Ecosystem type assessment site

Location

Site No ~~225~~ Recorder: .... Day/Date: 20/3/25

Purpose

Locality: (inc. distance/direction to nearest town) ~~067409~~

GPS: 0670047 7233065 D223

Vegetation structure

Median height of the EDL is to be measured

Stratum	Median height	Height interval	Est. cover density (D,M,S,V)
E		-	
T1	4	2-5	V5
T2		-	
T3		-	
S1		-	
S2		-	
G	0.2	0-0.2	M
Structural formation: (including height)			
Ecologically dominant layer:			

Plant species

Record relative (numerical) dominance for each stratum; *d* – dominant; *c* – co-dominant; **s** - subdominant, *a* – associated.

Str.	Rel. dom.	Scientific Name
T1		Lysiphyllum carronii
G		Paspalum [illegible]
		Cenchrus ciliaris

Geology, landform, soils

Geology map/scale/year:

Geology code and rock types:

Land system:

Landform:

Soils:

6048 W
6019 N

Field observation and notes:

Landzone:

RE code changes

Existing RE code:

Proposed RE code:

END

224 0670627
7233162

Gilgai Habitat Quality

Site No. 228 Recorder: Day/Date: 20-3-25

Purpose

Locality: (inc. distance/direction to nearest town)

GPS coordinates: Zone 5 E 0 6 4 3 2 7 5 N 1 3 3 2 0 6 4 Datum: 228

Photo Numbers Waypoint:

Habitat Description

Poor Parthenium & buffel

Connectivity Patch Characteristics

None

Abundance Scores: 0 = absent; 1 = 1-5; 2 = 6-20; 3 = 21-50; 4 = 51-75; 5 = 76-100; 6= >100. In a 1 ha area

Average Gilgai length	10	Presence of fringing native vegetation	0
Average Gilgai width	5		
Average Gilgai depth	20cm		
Fallen logs (>10cm diam.)	1		
Fallen logs (> 30cm)	0		
Presence of aquatic vegetation	0		
Soil cracks (ornamental snake)	0	Estimate of water permanence	

Density scores: 0 = 0%; 1 = <25%; 2 = 26-50%; 3 = 51-75%; 4 = 75-99%; 5 = 100% abundance.

Course litter (>2cm diam.)	0	Shrub layer	1
Fine litter (<2cm diameter)	2	Native Tree layer	0
Bare ground	2	Gilgai density	2
Native Grass cover	0		
Exotic Grass cover	5		
Stones (20-60cm)	0		

Notes

6055 Gilgai N
6056 No Gilgai ~~55~~ S on Mimala

A 3.3 Sheet D – Regional Ecosystem type assessment site

Location

Site No. 229 Recorder: _____ Day/Date: 20-7-25

Purpose _____

Locality: (inc. distance/direction to nearest town) _____

GPS: [ ][ ] [0][0][7][4][6][7][0] [4][3][3][3][2][8][4] D

Vegetation structure

Median height of the EDL is to be measured

Stratum	Median height	Height interval	Est. cover density (D,M,S,V)
E		-	
T1	15	14 - 16	VS
T2		-	
T3		-	
S1	0.5	0.5 - 1	0.75
S2		-	
G	0.15	0 - 0.2	

Structural formation: (including height)

Ecologically dominant layer:

Plant species

Record relative (numerical) dominance for each stratum; ***d*** – dominant; ***c*** – co-dominant; **s** - subdominant, ***a*** – associated.

Str.	Rel. dom.	Scientific Name
T1		E. camaldulensis
S1		Ac. harpophylla
G		Cenchrus ciliaris
		Paspalum scrobiculatum

Geology, landform, soils

Geology map/scale/year: 6057 W

Geology code and rock types: 6058 NW

Land system:

Landform:

Soils:

Field observation and notes:

Landzone:

RE code changes

Existing RE code: NR ?

Proposed RE code: _____

END

Fauna Habitat Characters

Site No. 729 **Recorder:** [illegible signature] **Day/Date:** 20/3/25

Purpose

Locality: (inc. distance/direction to nearest town)

GPS coordinates: Zone 5 E 0674670 N 7333284 **Datum:**

Photo Numbers **Waypoint:** ------------------

Habitat Description Photo 6057 W, 6058 NW

Paddock

Connectivity Patch Characteristics

Abundance Scores: 0 = absent; 1 = 1-5; 2 = 6-20; 3 = 21-50; 4 = 51-75; 5 = 76-100; 6= >100. In a 1 ha area

Hollows in trees & stags >10cm	0	Decorticating bark	0
Hollows in trees & stags <10cm	0	Soil cracks	0
Fallen logs (>10cm diam.)	0	Termite mounds	0
Fallen logs (> 30cm)	0	Termitaries	0
Logs with Hollows (>10cm)	0	Mistletoe	0
Large trees >18m	0		

Density scores: 0 = 0%; 1 = <25%; 2 = 26-50%; 3 = 51-75%; 4 = 75-99%; 5 = 100% abundance.

Course litter (>2cm diam.)	0	Boulders (> 61cm)	0
Fine litter (<2cm diameter)	0	Rocks Embedded	0
Bare ground	1	Rocks Loose	0
Native Grass cover	0	Rock crevices	0
Exotic Grass cover	5	Exfoliating rock	0
Stones (20-60cm)	0	Shrub layer	0

Notes

Fauna Habitat Characters

Site No. 230 **Recorder:** [illegible] **Day/Date:** 20/3/25

Purpose

Locality: (inc. distance/direction to nearest town)

GPS coordinates: Zone 5 E 0 N **Datum:**

Photo Numbers **Waypoint:**

Habitat Description Photo 6055

Paddock

Connectivity Patch Characteristics

Abundance Scores: 0 = absent; 1 = 1-5; 2 = 6-20; 3 = 21-50; 4 = 51-75; 5 = 76-100; 6= >100. In a 1 ha area

Hollows in trees & stags >10cm	0	Decorticating bark	0
Hollows in trees & stags <10cm	0	Soil cracks	0
Fallen logs (>10cm diam.)	0	Termite mounds	0
Fallen logs (> 30cm)	0	Termitaries	0
Logs with Hollows (>10cm)	0	Mistletoe	0
Large trees >18m	0		

Density scores: 0 = 0%; 1 = <25%; 2 = 26-50%; 3 = 51-75%; 4 = 75-99%; 5 = 100% abundance.

Course litter (>2cm diam.)	0	Boulders (> 61cm)	0
Fine litter (<2cm diameter)	0	Rocks Embedded	0
Bare ground	1	Rocks Loose	0
Native Grass cover	0	Rock crevices	0
Exotic Grass cover	5	Exfoliating rock	0
Stones (20-60cm)	0	Shrub layer	0

Notes

A 3.3 Sheet D – Regional Ecosystem type assessment site

Location

Site No. 235 Recorder: _____ Day/Date: 21-3-25

Purpose _____

Locality: (inc. distance/direction to nearest town) _____

GPS: [ ][ ] [0][6][4][1][1][1][0] [7][3][3][4][9][9][5] D 235

Vegetation structure

Median height of the EDL is to be measured

Stratum	Median height	Height interval	Est. cover density (D,M,S,V)
E		-	
T1	8	7 - 10	S
T2	3.5	3 - 5	VS
T3		-	
S1	0.5	0.5 - 1	VI
S2		-	
G	0.4	0 - 0.1	D

Structural formation: (including height)

Ecologically dominant layer:

Plant species

Record relative (numerical) dominance for each stratum; ***d*** – dominant; ***c*** – co-dominant; **s** - subdominant, ***a*** – associated.

Str.	Rel. dom.	Scientific Name
T1		E populnea
T2		Cassia brewsteri
		Terminalia oblongata
S1		Carissa ovata
G		Cenchrus ciliaris
		Flemingia
		Paspalum scrobiculatum

Geology, landform, soils

Geology map/scale/year: 6069

Geology code and rock types: 6070

Land system: 6071

Landform: 6072

Soils: 6073

Field observation and notes: very open advanced regrowth?

Landzone:

RE code changes

Existing RE code: 11.3.2

Proposed RE code: _____

END

Fauna Habitat Characters

Site No. 235 **Recorder:** Adelle D'Hump **Day/Date:** 21/3/25

Purpose

Locality: (inc. distance/direction to nearest town)

GPS coordinates: Zone 5 E 0 N **Datum:**

Photo Numbers **Waypoint:**

Habitat Description Photos 6069-6073.

Populus nigra Woodland.

Connectivity Patch Characteristics

Abundance Scores: 0 = absent; 1 = 1-5; 2 = 6-20; 3 = 21-50; 4 = 51-75; 5 = 76-100; 6= >100. In a 1 ha area

Hollows in trees & stags >10cm	2	Decorticating bark	0
Hollows in trees & stags <10cm	1	Soil cracks	0
Fallen logs (>10cm diam.)	1	Termite mounds	0
Fallen logs (> 30cm)	1	Termitaries	0
Logs with Hollows (>10cm)	1	Mistletoe	0
Large trees >18m	0		

Density scores: 0 = 0%; 1 = <25%; 2 = 26-50%; 3 = 51-75%; 4 = 75-99%; 5 = 100% abundance.

Course litter (>2cm diam.)	1	Boulders (> 61cm)	0
Fine litter (<2cm diameter)	2	Rocks Embedded	0
Bare ground	1	Rocks Loose	0
Native Grass cover	1	Rock crevices	0
Exotic Grass cover	3	Exfoliating rock	0
Stones (20-60cm)	0	Shrub layer	1

Notes

Gilgai Habitat Quality

Site No. 245 Recorder: Day/Date: 21-3-25

Purpose

Locality: (inc. distance/direction to nearest town)

GPS coordinates: Zone 5 E 0677 5 1 4 2 N 7 7 3 2 2 4 5 Datum:

Waypoint: 245

Photo Numbers

Habitat Description

Paddock no cover ~~[illegible]~~ echinochloa Pennisetum ophiuris Juncus Parthenium Buffel Hairyssue

Connectivity Patch Characteristics

Cynodon dactylon occ ased bigger to 1.5m
VVS

Abundance Scores: 0 = absent; 1 = 1-5; 2 = 6-20; 3 = 21-50; 4 = 51-75; 5 = 76-100; 6= >100. In a 1 ha area

Average Gilgai length	20	Presence of fringing native vegetation	0
Average Gilgai width	5		1 [illegible]
Average Gilgai depth	0.2m		
Fallen logs (>10cm diam.)	0		
Fallen logs (> 30cm)	0		
Presence of aquatic vegetation	1		
Soil cracks (ornamental snake)	6	Estimate of water permanence	

Density scores: 0 = 0%; 1 = <25%; 2 = 26-50%; 3 = 51-75%; 4 = 75-99%; 5 = 100% abundance.

Course litter (>2cm diam.)	0	Shrub layer	0
Fine litter (<2cm diameter)	1	Native Tree layer	<2%
Bare ground	1	Gilgai density	2
Native Grass cover	~~[illegible]~~ 1		
Exotic Grass cover	5		
Stones (20-60cm)	1		

Notes
6099
6100
6101
6102
6103

Fauna Habitat Characters

Site No. 249	Recorder:	Day/Date: 21-3-25	
Purpose			
Locality: (inc. distance/direction to nearest town)			
GPS coordinates:	Zone 5	E 0676627 N 7331686	Datum:
Photo Numbers			Waypoint: 249

Habitat Description

Paddock Brigalow regrowth generally 0.5-3m 4-6 around ~~gets~~ some gilgals

Connectivity Patch Characteristics

Buffel Leptochloa digitata Parthenium Cynodon Panicum coloratum Pigsalis

Abundance Scores: 0 = absent; 1 = 1-5; 2 = 6-20; 3 = 21-50; 4 = 51-75; 5 = 76-100; 6= >100. In a 1 ha area

Hollows in trees & stags >10cm	0	Decorticating bark	–
Hollows in trees & stags <10cm	0	Soil cracks	3
Fallen logs (>10cm diam.)		Termite mounds	0
Fallen logs (> 30cm)	0	Termitaries	0
Logs with Hollows (>10cm)	0	Mistletoe	1
Large trees >18m	0		

Density scores: 0 = 0%; 1 = <25%; 2 = 26-50%; 3 = 51-75%; 4 = 75-99%; 5 = 100% abundance.

Course litter (>2cm diam.)	1	Boulders (> 61cm)	0
Fine litter (<2cm diameter)	1	Rocks Embedded	0
Bare ground	1	Rocks Loose	0
Native Grass cover	1	Rock crevices	0
Exotic Grass cover	4	Exfoliating rock	0
Stones (20-60cm)	0	Shrub layer	1

Notes

6106
6107
6108
6109
6110

Gilgai Habitat Quality

Site No. 249 Recorder: _____ Day/Date: 21-3-25

Purpose _____

Locality: (inc. distance/direction to nearest town) _____

GPS coordinates: Zone 5 E 0676627 N 7331686 Datum: _____

Photo Numbers Waypoint: 249

Habitat Description

Grodan Buffel

Paddock vs bigger regrowth 0.5-3m 3-6 round gilgai

Connectivity Patch Characteristics

Abundance Scores: 0 = absent; 1 = 1-5; 2 = 6-20; 3 = 21-50; 4 = 51-75; 5 = 76-100; 6= >100. In a 1 ha area

Average Gilgai length	60	Presence of fringing native vegetation	1
Average Gilgai width	20		
Average Gilgai depth	1m		
Fallen logs (>10cm diam.)	1		
Fallen logs (> 30cm)	0		
Presence of aquatic vegetation	1		
Soil cracks (ornamental snake)	3	Estimate of water permanence	

Density scores: 0 = 0%; 1 = <25%; 2 = 26-50%; 3 = 51-75%; 4 = 75-99%; 5 = 100% abundance.

Course litter (>2cm diam.)	1	Shrub layer	1
Fine litter (<2cm diameter)	1	Native Tree layer	0
Bare ground	1	Gilgai density	1
Native Grass cover	1		
Exotic Grass cover	4		
Stones (20-60cm)	0		

Notes

6106
6107
6108
6109
6110

Gilgai Habitat Quality

Site No. 249 Recorder: _____ Day/Date: 21-3-25

Purpose _____

Locality: (inc. distance/direction to nearest town) _____

GPS coordinates: Zone 5 E 0676627 N 7331686 Datum: _____

Photo Numbers Waypoint: 249

Habitat Description

Grodan Buffel

Paddock vs bigger regrowth 0.5-3m 3-6 round gilgai

Connectivity Patch Characteristics

Abundance Scores: 0 = absent; 1 = 1-5; 2 = 6-20; 3 = 21-50; 4 = 51-75; 5 = 76-100; 6= >100. In a 1 ha area

Average Gilgai length	60	Presence of fringing native vegetation	1
Average Gilgai width	20		
Average Gilgai depth	1m		
Fallen logs (>10cm diam.)	1		
Fallen logs (> 30cm)	0		
Presence of aquatic vegetation	1		
Soil cracks (ornamental snake)	3	Estimate of water permanence	

Density scores: 0 = 0%; 1 = <25%; 2 = 26-50%; 3 = 51-75%; 4 = 75-99%; 5 = 100% abundance.

Course litter (>2cm diam.)	1	Shrub layer	1
Fine litter (<2cm diameter)	1	Native Tree layer	0
Bare ground	1	Gilgai density	1
Native Grass cover	1		
Exotic Grass cover	4		
Stones (20-60cm)	0		

Notes

6106
6107
6108
6109
6110

Gilgai Habitat Quality

Site No. 250 Recorder: _____ Day/Date: 21-3-25

Purpose _____

Locality: (inc. distance/direction to nearest town) _____

GPS coordinates: Zone 5 E 0671593 N 7731889 Datum: _____

Photo Numbers Waypoint: 250

Habitat Description

Paddock Occ bagalow 1-5

Connectivity Patch Characteristics

Leptochloa digitata Buffel
Cynodon dactylon

Abundance Scores: 0 = absent; 1 = 1-5; 2 = 6-20; 3 = 21-50; 4 = 51-75; 5 = 76-100; 6= >100. In a 1 ha area

Average Gilgai length	40	Presence of fringing native vegetation	1
Average Gilgai width	10		
Average Gilgai depth	80cm		
Fallen logs (>10cm diam.)	0		
Fallen logs (> 30cm)	0		
Presence of aquatic vegetation	1		
Soil cracks (ornamental snake)	2	Estimate of water permanence	

Density scores: 0 = 0%; 1 = <25%; 2 = 26-50%; 3 = 51-75%; 4 = 75-99%; 5 = 100% abundance.

Course litter (>2cm diam.)	1	Shrub layer	0
Fine litter (<2cm diameter)	1	Native Tree layer	1
Bare ground	1	Gilgai density	2
Native Grass cover	1		
Exotic Grass cover	4		
Stones (20-60cm)	0		

Notes

6111
6112
6113
6114
6115

A 3.3 Sheet D – Regional Ecosystem type assessment site

Location

Site No. 254 Recorder: _____ Day/Date: 22-8-25

Purpose _____

Locality: (inc. distance/direction to nearest town) _____

GPS: [ ][ ] 0 6 9 4 6 7 7 3 3 1 1 8 8 D 254

Vegetation structure

Median height of the EDL is to be measured

Stratum	Median height	Height interval	Est. cover density (D,M,S,V)
E		-	
T1	25	22 - 25	S
T2	10	8 - 12	M
T3		-	
S1		-	
S2		-	
G	0.6	0 - 1	D

Structural formation: (including height)

Ecologically dominant layer:

Plant species

Record relative (numerical) dominance for each stratum; ***d*** – dominant; ***c*** – co-dominant; **s** - subdominant, ***a*** – associated.

Str.	Rel. dom.	Scientific Name
T1		E. tereticornis
T2		Callistemon viminalis
G		Megathyrsus maximus
		Lomandra longifoli-
		Cenchrus ciliaris

Geology, landform, soils

Geology map/scale/year: 6120

Geology code and rock types: 6121

Land system: 6122

Landform: 6123

Soils: 6124

Field observation and notes:

Landzone:

RE code changes

Existing RE code: _____

Proposed RE code: _____

END

Fauna Habitat Characters

Site No. 254 Recorder: CMaille D Shamp Day/Date: 22/3/25

Purpose

Locality: (inc. distance/direction to nearest town)

GPS coordinates: Zone 5 E 0669467 N 7331188 Datum:

Photo Numbers Waypoint:

Habitat Description Photos 6120, 6121, 6122, 6123, 6124.

RIPARIAN (15m Wide Between Banks)

Connectivity Patch Characteristics

Abundance Scores: 0 = absent; 1 = 1-5; 2 = 6-20; 3 = 21-50; 4 = 51-75; 5 = 76-100; 6= >100. In a 1 ha area

Hollows in trees & stags >10cm	1	Decorticating bark	0
Hollows in trees & stags <10cm	1	Soil cracks	0
Fallen logs (>10cm diam.)	3	Termite mounds	0
Fallen logs (> 30cm)	2	Termitaries	0
Logs with Hollows (>10cm)	2	Mistletoe	2
Large trees >18m	2		

Density scores: 0 = 0%; 1 = <25%; 2 = 26-50%; 3 = 51-75%; 4 = 75-99%; 5 = 100% abundance.

Course litter (>2cm diam.)	1	Boulders (> 61cm)	0
Fine litter (<2cm diameter)	1	Rocks Embedded	0
Bare ground	1	Rocks Loose	0
Native Grass cover	1	Rock crevices	0
Exotic Grass cover	3	Exfoliating rock	0
Stones (20-60cm)	0	Shrub layer	1

Notes

A 3.3 Sheet D – Regional Ecosystem type assessment site

Location

Site No . 256 Recorder: Day/Date: 22-3-25

Purpose

Locality: (inc. distance/direction to nearest town)

GPS: | | | 0 6 6 9 6 4 3 | 7 3 3 1 2 2 9 D 256

Vegetation structure

Median height of the EDL is to be measured

Stratum	Median height	Height interval	Est. cover density (D,M,S,V)
E		-	
T1	13	12 - 14	S
T2	8	6 - 9	S
T3	3	2 - 4	VS
S1	1	0.5 - 1	VS
S2		-	
G	0.2	0 - 0.3	MD

Structural formation: (including height)

Ecologically dominant layer:

Plant species

Record relative (numerical) dominance for each stratum; ***d*** – dominant; ***c*** – co-dominant; **s** - subdominant, ***a*** – associated.

Str.	Rel. dom.	Scientific Name	
T1		E. coolabah	
T2		Ac. harpophylla	
		Cassythium coronii	
T3		Ac harpophylla	6126
			6127
S1		Ac harpophylla	6128
		E. coolabah	6129
			6130

G Cenchrus ciliaris
Parthenium hysterophorus
Paspalum scrobiculatum
Sporobolus caroli
Abutilon ~~Sida~~ oxycarpum
Tragus australianus
Cyperus gracilis
Evolvulus alsinoides

Geology, landform, soils

Geology map/scale/year:

Geology code and rock types:

Land system:

Landform:

Soils:

Field observation and notes:

HVR

Landzone:

RE code changes

Existing RE code:

Proposed RE code:

END

Fauna Habitat Characters

Site No. 256 Recorder: Alaiille Dhuy. Day/Date: 22/3/25

Purpose

Locality: (inc. distance/direction to nearest town)

GPS coordinates: Zone 5 E 0669645 N 7131229 Datum:

Photo Numbers Waypoint:

Habitat Description Photos 6126 - 6130

Woodland

Connectivity Patch Characteristics

Adjacent to Riparian

Abundance Scores: 0 = absent; 1 = 1-5; 2 = 6-20; 3 = 21-50; 4 = 51-75; 5 = 76-100; 6= >100. In a 1 ha area

Hollows in trees & stags >10cm	1	Decorticating bark	0
Hollows in trees & stags <10cm	0	Soil cracks	0
Fallen logs (>10cm diam.)	2	Termite mounds	0
Fallen logs (> 30cm)	2	Termitaries	0
Logs with Hollows (>10cm)	2	Mistletoe	3
Large trees >18m	0		

Density scores: 0 = 0%; 1 = <25%; 2 = 26-50%; 3 = 51-75%; 4 = 75-99%; 5 = 100% abundance.

Course litter (>2cm diam.)	1	Boulders (> 61cm)	0
Fine litter (<2cm diameter)	2	Rocks Embedded	0
Bare ground	2	Rocks Loose	0
Native Grass cover	1	Rock crevices	0
Exotic Grass cover	3	Exfoliating rock	0
Stones (20-60cm)	0	Shrub layer	1

Notes

A 3.3 Sheet D – Regional Ecosystem type assessment site

Location

Site No. 260 Recorder: Day/Date: 22-3-25

Purpose

Locality: (inc. distance/direction to nearest town)

GPS: | | | 0 6 6 8 8 4 4 | 7 3 3 5 3 8 1 | D 260

Vegetation structure

Median height of the EDL is to be measured

Stratum	Median height	Height interval	Est. cover density (D,M,S,V)
E	17	-17	vs
T1	12	8-13	S
T2	4	2-5	S/M
T3		-	
S1		-	
S2		-	
G	0.6	0-0.6	D

Structural formation: (including height)

Ecologically dominant layer:

Plant species

Record relative (numerical) dominance for each stratum; **d** – dominant; **c** – co-dominant; **s** - subdominant, **a** – associated.

Str.	Rel. dom.	Scientific Name
E		E trachyphloia
T1		E melanophloia
		C trachyphloia
		Alphitonia excelsa
T2		Acacia leiocalyx
		Petalostigma pubescens
		Erythroxylum australe
		Hovea lanceolata
G		Heteropogon contortus
		Cardiospermum
		Themeda
		Stylosanthes scabra
		Melinis repens
		~~Dogs Bottle~~
		Grewia latifolia

Geology, landform, soils

Geology map/scale/year:

Geology code and rock types:

Land system:

Landform:

Soils:

Field observation and notes:

Landzone:

6136
6137
6138
6139
6140

RE code changes

Existing RE code:

Proposed RE code:

END

Fauna Habitat Characters

Site No. 260 **Recorder:** C Neville D Sharp **Day/Date:** 22/3/25

Purpose

Locality: (inc. distance/direction to nearest town)

GPS coordinates: Zone 5 E 0668844 N 7335381 **Datum:**

Photo Numbers **Waypoint:** ------------------

Habitat Description Photos 6136 – 6140

B. Leaved IRON BK Woodland.

Connectivity Patch Characteristics

Abundance Scores: 0 = absent; 1 = 1-5; 2 = 6-20; 3 = 21-50; 4 = 51-75; 5 = 76-100; 6= >100. In a 1 ha area

Hollows in trees & stags >10cm	2	Decorticating bark	0
Hollows in trees & stags <10cm	2	Soil cracks	0
Fallen logs (>10cm diam.)	2	Termite mounds	3
Fallen logs (> 30cm)	1	Termitaries	1
Logs with Hollows (>10cm)	1	Mistletoe	0
Large trees >18m	0		

Density scores: 0 = 0%; 1 = <25%; 2 = 26-50%; 3 = 51-75%; 4 = 75-99%; 5 = 100% abundance.

Course litter (>2cm diam.)	1	Boulders (> 61cm)	0
Fine litter (<2cm diameter)	1	Rocks Embedded	0
Bare ground	1	Rocks Loose	0
Native Grass cover	2	Rock crevices	0
Exotic Grass cover	2	Exfoliating rock	0
Stones (20-60cm)	0	Shrub layer	2

Notes

A 3.3 Sheet D – Regional Ecosystem type assessment site

Location

Site No. 265 Recorder: _____ Day/Date: 22-3-23

Purpose _____

Locality: (inc. distance/direction to nearest town) _____

GPS: [ ][ ] [0][6][6][7][5][7][9] [7][3][3][3][1][3][7] D 265

Vegetation structure

Median height of the EDL is to be measured

Stratum	Median height	Height interval	Est. cover density (D,M,S,V)
E		-	
T1	4	3 - 6	VS
T2		-	
T3		-	
S1		-	
S2		-	
G	1.25	0 - 15	D

Structural formation: (including height)

Ecologically dominant layer:

Plant species

Record relative (numerical) dominance for each stratum; ***d*** – dominant; ***c*** – co-dominant; **s** - subdominant, ***a*** – associated.

Str.	Rel. dom.	Scientific Name
T1		A. leptophlebia
G		Megathyrsus maximus
		Cymbopogon sp. 6152
		Sesbania cannabina
		Leptochloa digitata

Geology, landform, soils

Geology map/scale/year:

Geology code and rock types: 6147

Land system: 6148

Landform: 6149

Soils: 6150

Field observation and notes: 6151

Landzone:

RE code changes

Existing RE code: _____

Proposed RE code: _____

END

Fauna Habitat Characters

Site No. 265 **Recorder:** C Nevard D Mayo **Day/Date:** 22/3/25

Purpose

Locality: (inc. distance/direction to nearest town)

GPS coordinates: Zone 5 E 0667578 N 7333137 **Datum:**

Photo Numbers **Waypoint:** ------------------

Habitat Description Photos 6147 – 6151

Gilgai Paddock. Dead trees. Parthenium

Connectivity Patch Characteristics

Abundance Scores: 0 = absent; 1 = 1-5; 2 = 6-20; 3 = 21-50; 4 = 51-75; 5 = 76-100; 6= >100. In a 1 ha area

Hollows in trees & stags >10cm	0	Decorticating bark	0
Hollows in trees & stags <10cm	0	Soil cracks	4
Fallen logs (>10cm diam.)	0	Termite mounds	0
Fallen logs (> 30cm)	0	Termitaries	0
Logs with Hollows (>10cm)	0	Mistletoe	0
Large trees >18m	0		

Density scores: 0 = 0%; 1 = <25%; 2 = 26-50%; 3 = 51-75%; 4 = 75-99%; 5 = 100% abundance.

Course litter (>2cm diam.)	0	Boulders (> 61cm)	0
Fine litter (<2cm diameter)	1	Rocks Embedded	0
Bare ground	1	Rocks Loose	0
Native Grass cover	1	Rock crevices	0
Exotic Grass cover	4	Exfoliating rock	0
Stones (20-60cm)	0	Shrub layer	0

Notes

Fauna Habitat Characters

Site No. 766 Recorder: Neville Dhoop Day/Date: 22/3/25

Purpose

Locality: (inc. distance/direction to nearest town)

GPS coordinates: Zone 5 E 0 N Datum:

Photo Numbers Waypoint:

Habitat Description Photos 6153-6156.

Buffel Paddock w/ Gilgis

Connectivity Patch Characteristics

Abundance Scores: 0 = absent; 1 = 1-5; 2 = 6-20; 3 = 21-50; 4 = 51-75; 5 = 76-100; 6= >100. In a 1 ha area

Hollows in trees & stags >10cm	0	Decorticating bark	0
Hollows in trees & stags <10cm	0	Soil cracks	0
Fallen logs (>10cm diam.)	0	Termite mounds	0
Fallen logs (> 30cm)	0	Termitaries	0
Logs with Hollows (>10cm)	0	Mistletoe	0
Large trees >18m	0		

Density scores: 0 = 0%; 1 = <25%; 2 = 26-50%; 3 = 51-75%; 4 = 75-99%; 5 = 100% abundance.

Course litter (>2cm diam.)	0	Boulders (> 61cm)	0
Fine litter (<2cm diameter)	1	Rocks Embedded	0
Bare ground	2	Rocks Loose	0
Native Grass cover	0	Rock crevices	0
Exotic Grass cover	5	Exfoliating rock	0
Stones (20-60cm)	0	Shrub layer	0

Notes

Gilgis found 2x1x0.2 → 10x2x0.5m RANGING

Gilgai Habitat Quality

Site No. 267 Recorder: ______ Day/Date: 22-3-22

Purpose ______

Locality: (inc. distance/direction to nearest town) ______

GPS coordinates: Zone 5 E 0 6 6 7 6 0 7 N 7 3 3 3 3 5 7 Datum: ______

Photo Numbers Waypoint: 267

Habitat Description

Buffel Eriochloa Leptochloa digitata
Sesbania cunabium megathyrsus
Parthenium

Connectivity Patch Characteristics

Abundance Scores: 0 = absent; 1 = 1-5; 2 = 6-20; 3 = 21-50; 4 = 51-75; 5 = 76-100; 6= >100. In a 1 ha area

Average Gilgai length	30	Presence of fringing native vegetation	1
Average Gilgai width	5m		
Average Gilgai depth	60cm		
Fallen logs (>10cm diam.)	0		
Fallen logs (> 30cm)	0		
Presence of aquatic vegetation	1		
Soil cracks (ornamental snake)	1	Estimate of water permanence	

Density scores: 0 = 0%; 1 = <25%; 2 = 26-50%; 3 = 51-75%; 4 = 75-99%; 5 = 100% abundance.

Course litter (>2cm diam.)	~~3~~ 1	Shrub layer	0-1
Fine litter (<2cm diameter)	2	Native Tree layer	0
Bare ground	1	Gilgai density	1
Native Grass cover	1		
Exotic Grass cover	4		
Stones (20-60cm)	0		

Notes

6158
6159
6160
6161
6162

A 3.3 Sheet D – Regional Ecosystem type assessment site

Location

Site No. 268 Recorder: Day/Date: 22-3-25

Purpose

Locality: (inc. distance/direction to nearest town)

GPS: | | | 6 6 6 8 3 9 3 | 7 3 3 4 1 4 3 | D 268

Vegetation structure

Median height of the EDL is to be measured

Stratum	Median height	Height interval	Est. cover density (D,M,S,V)
E	11	10 - 11	VS
T1		-	
T2		-	
T3		-	
S1	2	0.5 - 3	VS
S2		-	
G	0.4	0 - 0.4	M

Structural formation: (including height)

Ecologically dominant layer:

Plant species

Record relative (numerical) dominance for each stratum; ***d*** – dominant; ***c*** – co-dominant; ***s*** - subdominant, ***a*** – associated.

Str.	Rel. dom.	Scientific Name
E		C. cambageana
S		Ac harpophylla
G		Paterson?
		Digitaria divaricatissima
		Cenchrus ciliaris
		Cynodon dactylon 6163
		Neptunia gracilis 6164

Aristida latifolia 6165

Sporobolus creber 6166

6167

Geology, landform, soils

Geology map/scale/year:

Geology code and rock types:

Land system:

Landform:

Soils:

Field observation and notes: Aerial shows veg
NO veg

Landzone:

RE code changes

Existing RE code:

Proposed RE code:

END

Fauna Habitat Characters

Site No. 268 **Recorder:** Chantelle Dharp **Day/Date:** 22/3/25

Purpose

Locality: (inc. distance/direction to nearest town)

GPS coordinates: Zone 5 E 0668393 N 7334143 **Datum:**

Photo Numbers **Waypoint:** ------------------

Habitat Description Photos 6163 – 6167

Paddock w' Parthenium &

Connectivity Patch Characteristics

Abundance Scores: 0 = absent; 1 = 1-5; 2 = 6-20; 3 = 21-50; 4 = 51-75; 5 = 76-100; 6= >100. In a 1 ha area

Hollows in trees & stags >10cm	0	Decorticating bark	0
Hollows in trees & stags <10cm	0	Soil cracks	0
Fallen logs (>10cm diam.)	0	Termite mounds	0
Fallen logs (> 30cm)	0	Termitaries	0
Logs with Hollows (>10cm)	0	Mistletoe	0
Large trees >18m	0		

Density scores: 0 = 0%; 1 = <25%; 2 = 26-50%; 3 = 51-75%; 4 = 75-99%; 5 = 100% abundance.

Course litter (>2cm diam.)	0	Boulders (> 61cm)	0
Fine litter (<2cm diameter)	1	Rocks Embedded	0
Bare ground	2	Rocks Loose	0
Native Grass cover	1	Rock crevices	0
Exotic Grass cover	4	Exfoliating rock	0
Stones (20-60cm)	0	Shrub layer	1

Notes

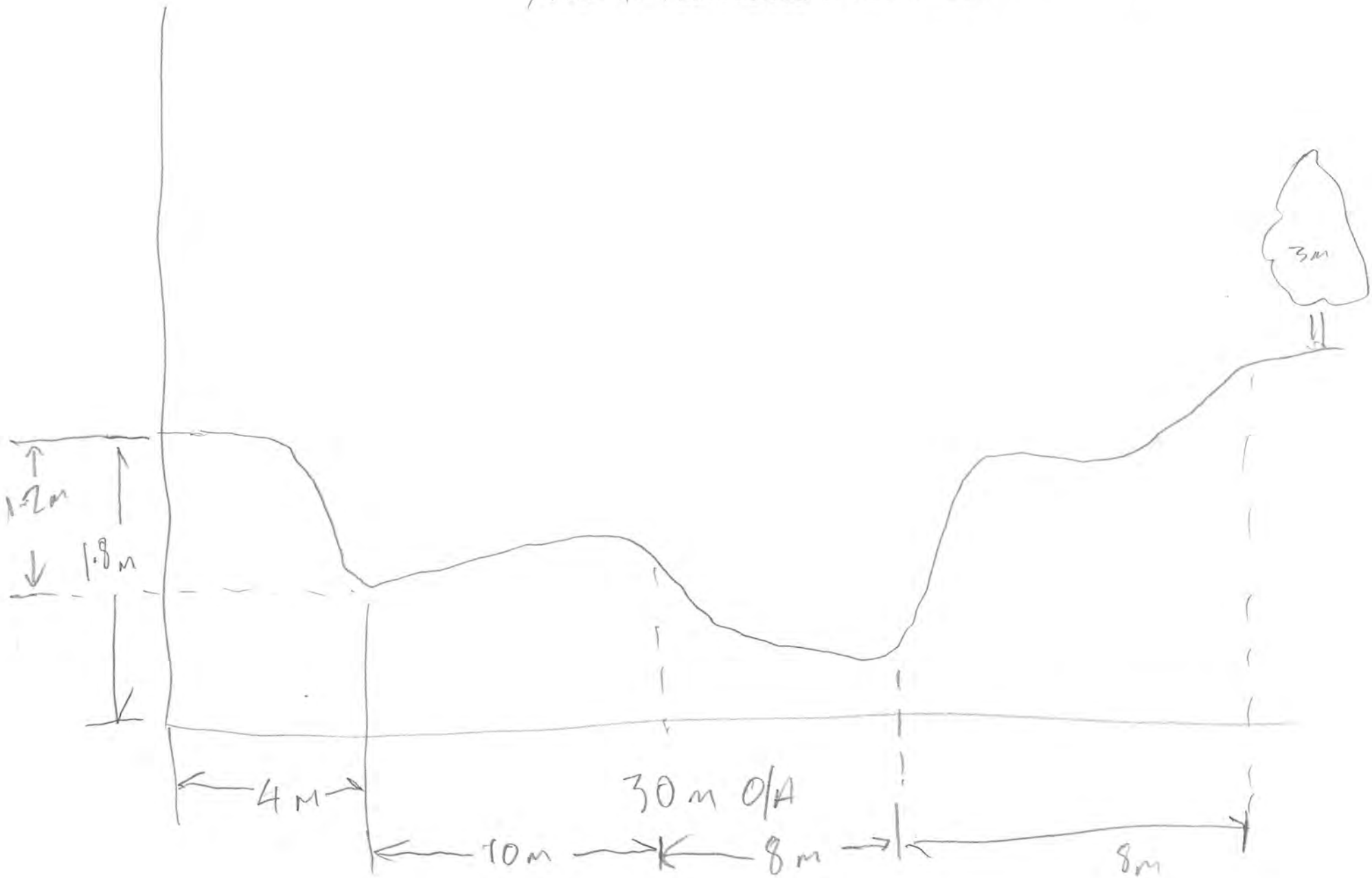
Site: 274

Photo 6181, 82, 83, 84.

Camille Dsharp.

23/3/25

XING AT FENCELINE - CLEARED TO 15m Wide.



A 3.3 Sheet D – Regional Ecosystem type assessment site

Location

Site No. 278 Recorder: _____ Day/Date: 23-3-25

Purpose _____

Locality: (inc. distance/direction to nearest town) _____

GPS: [ ][ ] [0][6][6][3][1][2][5] [7][3][3][4][2][8][2] D 278

Vegetation structure

Median height of the EDL is to be measured

Stratum	Median height	Height interval	Est. cover density (D,M,S,V)
E	~~18~~	~~16 - 18~~	
T1	18	16 - 18	S
T2	10	8 - 10	M
T3		-	
S1		-	
S2		-	
G		0 - 0.4	S

Structural formation: (including height)

Ecologically dominant layer:

Plant species

Record relative (numerical) dominance for each stratum; ***d*** – dominant; ***c*** – co-dominant; **s** - subdominant, ***a*** – associated.

Str.	Rel. dom.	Scientific Name
T1		E. coolabah
T2		Callistemon viminalis
		Terminalia oblongata
		Acacia harpophylla
G		Cenchrus ciliaris
		Eragrostis sp.
		Megathyrsus maximus

6193 S
6190 N
6195 E
6196 W
6197 C

Geology, landform, soils

Geology map/scale/year:

Geology code and rock types:

Land system:

Landform:

Soils:

Field observation and notes:

Landzone:

RE code changes

Existing RE code: _____

Proposed RE code: _____

END

Fauna Habitat Characters

Site No. 278 **Recorder:** Deirdre Dharmy **Day/Date:** 23/3/25

Purpose

Locality: (inc. distance/direction to nearest town)

GPS coordinates: Zone 5 E 0 0 6 3 1 2 5 N 7 3 3 4 2 8 2 **Datum:**

Photo Numbers **Waypoint:**

Habitat Description Photos: 6193–6197.

RIPARIAN (40m – TOB.)

Connectivity Patch Characteristics

Abundance Scores: 0 = absent; 1 = 1-5; 2 = 6-20; 3 = 21-50; 4 = 51-75; 5 = 76-100; 6= >100. In a 1 ha area

Hollows in trees & stags >10cm	2	Decorticating bark	0
Hollows in trees & stags <10cm	2	Soil cracks	0
Fallen logs (>10cm diam.)	3	Termite mounds	0
Fallen logs (> 30cm)	2	Termitaries	2
Logs with Hollows (>10cm)	2	Mistletoe	0
Large trees >18m	2		

Density scores: 0 = 0%; 1 = <25%; 2 = 26-50%; 3 = 51-75%; 4 = 75-99%; 5 = 100% abundance.

Course litter (>2cm diam.)	2	Boulders (> 61cm)	0
Fine litter (<2cm diameter)	1	Rocks Embedded	0
Bare ground	2	Rocks Loose	0
Native Grass cover	0	Rock crevices	0
Exotic Grass cover	2	Exfoliating rock	0
Stones (20-60cm)	0	Shrub layer	1

Notes

A 3.3 Sheet D – Regional Ecosystem type assessment site

Location

Site No. 290 Recorder: .... Day/Date: 23-3-25

Purpose ....

Locality: (inc. distance/direction to nearest town) ....

GPS: 0666406 7334429 D 290

Vegetation structure

Median height of the EDL is to be measured

Stratum	Median height	Height interval	Est. cover density (D,M,S,V)
E	13	12 - 14	VS
T1	6	5 - 7	M
T2		-	
T3		-	
S1	1.5	0.5	VS
S2		-	
G	1	0 - 1.5	S

Structural formation: (including height)

Ecologically dominant layer:

Plant species

Record relative (numerical) dominance for each stratum; **d** – dominant; **c** – co-dominant; **s** - subdominant, **a** – associated.

Str.	Rel. dom.	Scientific Name
E		E. coolabah
T1		Ac harpophylla
		Terminalia oblongata
S1		Ac harpophylla
		Lysiphyllum carronii
G		Cenchrus ciliaris
		Leptochloa fusca
		Aristida calycina

2315
232
2336
234
2356

Geology, landform, soils

Geology map/scale/year:

Geology code and rock types:

Land system:

Landform:

Soils:

Field observation and notes:

Landzone:

RE code changes

Existing RE code: 11.3.1

Proposed RE code:

END

Gilgai Habitat Quality

Site No. 296 Recorder: ______ Day/Date: 23-3-25

Purpose ______

Locality: (inc. distance/direction to nearest town) ______

GPS coordinates: Zone 5 E 0675553 N 7315971 Datum: 296

Photo Numbers Waypoint: 2

Habitat Description

Brigalow 11.4'8'; Cambageana to 10m 4h7m Creepets

Connectivity Patch Characteristics

Buffel ~~opt~~ Diplachne fusca Rhodes

Abundance Scores: 0 = absent; 1 = 1-5; 2 = 6-20; 3 = 21-50; 4 = 51-75; 5 = 76-100; 6= >100. In a 1 ha area

Average Gilgai length	50	Presence of fringing native vegetation	5
Average Gilgai width	20		
Average Gilgai depth	1m		
Fallen logs (>10cm diam.)	2		
Fallen logs (> 30cm)	1		
Presence of aquatic vegetation	1		
Soil cracks (ornamental snake)	2	Estimate of water permanence	

Density scores: 0 = 0%; 1 = <25%; 2 = 26-50%; 3 = 51-75%; 4 = 75-99%; 5 = 100% abundance.

Course litter (>2cm diam.)	1	Shrub layer	~~4~~
Fine litter (<2cm diameter)	1	Native Tree layer	5
Bare ground	3	Gilgai density	3
Native Grass cover	2		
Exotic Grass cover	3		
Stones (20-60cm)	0		

Notes

6245 6246 6247

Gilgai Habitat Quality

Site No. 299 Recorder: _____ Day/Date: 23-3-25

Purpose _____

Locality: (inc. distance/direction to nearest town) _____

GPS coordinates: Zone 5 E 0675914 N 7314820 Datum: _____

Photo Numbers Waypoint: 299

Habitat Description

Connectivity Patch Characteristics

Brigalow 6m regrowth VS Dplachne fusca
Buffel grass Parkinsonia

Abundance Scores: 0 = absent; 1 = 1-5; 2 = 6-20; 3 = 21-50; 4 = 51-75; 5 = 76-100; 6= >100. In a 1 ha area

Average Gilgai length	15	Presence of fringing native vegetation	1
Average Gilgai width	5		
Average Gilgai depth	0-3m		
Fallen logs (>10cm diam.)	1		
Fallen logs (> 30cm)	0		
Presence of aquatic vegetation	0		
Soil cracks (ornamental snake)	1	Estimate of water permanence	

Density scores: 0 = 0%; 1 = <25%; 2 = 26-50%; 3 = 51-75%; 4 = 75-99%; 5 = 100% abundance.

Course litter (>2cm diam.)	1	Shrub layer	1
Fine litter (<2cm diameter)	1	Native Tree layer	2
Bare ground	2	Gilgai density	2
Native Grass cover	1		
Exotic Grass cover	4		
Stones (20-60cm)	0		

Notes

6248
6249
6250

A 3.3 Sheet D – Regional Ecosystem type assessment site

Location

Site No. 300 Recorder: _____ Day/Date: 24-3-23

Purpose _____

Locality: (inc. distance/direction to nearest town) _____

GPS: [ ][ ] [0][6][7][9][6][3][7] [7][3][2][8][6][7][8] D 300

Vegetation structure

Median height of the EDL is to be measured

Stratum	Median height	Height interval	Est. cover density (D,M,S,V)
E		-	
T1	3	2 - 4	VS
T2		-	
T3		-	
S1		-	
S2		-	
G	0.3	0 - 0.3	D

Structural formation: (including height)

Ecologically dominant layer:

Plant species

Record relative (numerical) dominance for each stratum; ***d*** – dominant; ***c*** – co-dominant; **s** - subdominant, ***a*** – associated.

Str.	Rel. dom.	Scientific Name
T1		Lysiphyllum carronii
		Citrus glauca
G		Cenchrus ciliaris

Geology, landform, soils

Geology map/scale/year: 6251

Geology code and rock types: 6252

Land system: 6253

Landform: 6254

Soils: 6255

Field observation and notes:

Landzone:

RE code changes

Existing RE code: _____

Proposed RE code: _____

END

Fauna Habitat Characters

Site No. 300 **Recorder:** C Neville D Sharp **Day/Date:** 24/3/25

Purpose

Locality: (inc. distance/direction to nearest town)

GPS coordinates: Zone 5 E 0679634 N 7328878 **Datum:**

Photo Numbers **Waypoint:**

Habitat Description Photos: 6251 – 6255

Buffel

Connectivity Patch Characteristics

Abundance Scores: 0 = absent; 1 = 1-5; 2 = 6-20; 3 = 21-50; 4 = 51-75; 5 = 76-100; 6= >100. In a 1 ha area

Hollows in trees & stags >10cm	0	Decorticating bark	0
Hollows in trees & stags <10cm	0	Soil cracks	0
Fallen logs (>10cm diam.)	0	Termite mounds	0
Fallen logs (> 30cm)	0	Termitaries	0
Logs with Hollows (>10cm)	0	Mistletoe	0
Large trees >18m	0		

Density scores: 0 = 0%; 1 = <25%; 2 = 26-50%; 3 = 51-75%; 4 = 75-99%; 5 = 100% abundance.

Course litter (>2cm diam.)	0	Boulders (> 61cm)	0
Fine litter (<2cm diameter)	1	Rocks Embedded	0
Bare ground	1	Rocks Loose	0
Native Grass cover	0	Rock crevices	0
Exotic Grass cover	4	Exfoliating rock	0
Stones (20-60cm)	0	Shrub layer	1

Notes

Gilgai Habitat Quality

Site No. 302 Recorder: _____ Day/Date: 24-3-25

Purpose _____

Locality: (inc. distance/direction to nearest town) _____

GPS coordinates: Zone 5 E 0679190 N 7328474 Datum: _____

Photo Numbers Waypoint: 302

Habitat Description

Very shallow highly disturbed

Connectivity Patch Characteristics

Abundance Scores: 0 = absent; 1 = 1-5; 2 = 6-20; 3 = 21-50; 4 = 51-75; 5 = 76-100; 6= >100. In a 1 ha area

Average Gilgai length	7	Presence of fringing native vegetation	0
Average Gilgai width	5		
Average Gilgai depth	20cm		
Fallen logs (>10cm diam.)	0		
Fallen logs (> 30cm)	0		
Presence of aquatic vegetation	0		
Soil cracks (ornamental snake)	0	Estimate of water permanence	

Density scores: 0 = 0%; 1 = <25%; 2 = 26-50%; 3 = 51-75%; 4 = 75-99%; 5 = 100% abundance.

Course litter (>2cm diam.)	0	Shrub layer	1
Fine litter (<2cm diameter)	1	Native Tree layer	1
Bare ground	0	Gilgai density	1
Native Grass cover	0		
Exotic Grass cover	5		
Stones (20-60cm)	0		

Notes

6257
6258

A 3.3 Sheet D – Regional Ecosystem type assessment site

Location

Site No. 304 Recorder: Day/Date: 24-3-25

Purpose

Locality: (inc. distance/direction to nearest town)

GPS: | 0 6 7 9 9 4 1 | 7 3 2 8 1 1 0 | D 304

Vegetation structure

Median height of the EDL is to be measured

Stratum	Median height	Height interval	Est. cover density (D,M,S,V)
E		-	
T1	5	3 - 6	S
T2		-	
T3		-	
S1	1	0.5 - 1	S
S2		-	
G	0.3	0 - 0.4	D

Structural formation: (including height)

Ecologically dominant layer:

Plant species

Record relative (numerical) dominance for each stratum; *d* – dominant; *c* – co-dominant; **s** - subdominant, *a* – associated.

Str.	Rel. dom.	Scientific Name
T1		Ac harpophylla
		Terminalia oblongata
		Cassia brewsteri
S1		Grewia latifolia
		Carissa ovata
		Eremophila maculata ?
		Apophyllum anomalum ?
G		Cenchrus ciliaris
		Aristida calycina
		Themeda

6261
6262
6263
6264
6265

Geology, landform, soils

Geology map/scale/year:

Geology code and rock types:

Land system:

Landform:

Soils:

Field observation and notes:

Landzone:

RE code changes

Existing RE code:

Proposed RE code:

END

Fauna Habitat Characters

Site No. 304 **Recorder:** O'Neille D'Hung	**Day/Date:** 24/3/25
Purpose	
Locality: (inc. distance/direction to nearest town)	
GPS coordinates: Zone 5 E 0679941 N 7328110	**Datum:**
Photo Numbers	**Waypoint:**

Photos 6261 – 6265

Habitat Description

Buffel Paddock w' scattered Brigalow
No CWD's

Connectivity Patch Characteristics

Abundance Scores: 0 = absent; 1 = 1-5; 2 = 6-20; 3 = 21-50; 4 = 51-75; 5 = 76-100; 6= >100. In a 1 ha area

Hollows in trees & stags >10cm	0	Decorticating bark	0
Hollows in trees & stags <10cm	0	Soil cracks	0
Fallen logs (>10cm diam.)	1	Termite mounds	0
Fallen logs (> 30cm)	1	Termitaries	0
Logs with Hollows (>10cm)	1	Mistletoe	0
Large trees >18m	0		

Density scores: 0 = 0%; 1 = <25%; 2 = 26-50%; 3 = 51-75%; 4 = 75-99%; 5 = 100% abundance.

Course litter (>2cm diam.)	1	Boulders (> 61cm)	0
Fine litter (<2cm diameter)	0	Rocks Embedded	0
Bare ground	2	Rocks Loose	0
Native Grass cover	1	Rock crevices	0
Exotic Grass cover	4	Exfoliating rock	0
Stones (20-60cm)	0	Shrub layer	1

Notes

Fauna Habitat Characters

Site No. 307 **Recorder:** Michelle Sharp **Day/Date:** 24/3/25

Purpose

Locality: (inc. distance/direction to nearest town)

GPS coordinates: Zone 5 E 0681132 N 7328284 **Datum:**

Photo Numbers Photos 6270 – 6274 **Waypoint:**

Habitat Description

Buffel Paddock

Connectivity Patch Characteristics

Abundance Scores: 0 = absent; 1 = 1-5; 2 = 6-20; 3 = 21-50; 4 = 51-75; 5 = 76-100; 6= >100. In a 1 ha area

Hollows in trees & stags >10cm	2	Decorticating bark	0
Hollows in trees & stags <10cm	2	Soil cracks	0
Fallen logs (>10cm diam.)	3	Termite mounds	0
Fallen logs (> 30cm)	3	Termitaries	0
Logs with Hollows (>10cm)	2	Mistletoe	0
Large trees >18m	0		

Density scores: 0 = 0%; 1 = <25%; 2 = 26-50%; 3 = 51-75%; 4 = 75-99%; 5 = 100% abundance.

Course litter (>2cm diam.)	0	Boulders (> 61cm)	0
Fine litter (<2cm diameter)	1	Rocks Embedded	0
Bare ground	1	Rocks Loose	0
Native Grass cover	0	Rock crevices	0
Exotic Grass cover	5	Exfoliating rock	0
Stones (20-60cm)	0	Shrub layer	0

Notes

Gilgai Habitat Quality

Site No. 309 Recorder: _____ Day/Date: 24-3-25

Purpose _____

Locality: (inc. distance/direction to nearest town) _____

GPS coordinates: Zone 5 E 0681003 N 7327749 Datum: _____

Photo Numbers Waypoint: 309

Habitat Description

Brigalow Lysiphyllum VS/S to 6m

Connectivity Patch Characteristics

Leptochloa digitata Poaceae

Abundance Scores: 0 = absent; 1 = 1-5; 2 = 6-20; 3 = 21-50; 4 = 51-75; 5 = 76-100; 6= >100. In a 1 ha area

Average Gilgai length	40	Presence of fringing native vegetation	1
Average Gilgai width	10		
Average Gilgai depth	0.5m		
Fallen logs (>10cm diam.)	0		
Fallen logs (> 30cm)	0		
Presence of aquatic vegetation	1		
Soil cracks (ornamental snake)	0	Estimate of water permanence	

Density scores: 0 = 0%; 1 = <25%; 2 = 26-50%; 3 = 51-75%; 4 = 75-99%; 5 = 100% abundance.

Course litter (>2cm diam.)	0	Shrub layer	1
Fine litter (<2cm diameter)	2	Native Tree layer	1
Bare ground	2	Gilgai density	1
Native Grass cover	2		
Exotic Grass cover	3		
Stones (20-60cm)	0		

Notes

6276
6277

A 3.3 Sheet D – Regional Ecosystem type assessment site

Location

Site No. 315 Recorder: _____ Day/Date: 24/3/25

Purpose _____

Locality: (inc. distance/direction to nearest town) _____

GPS: [ ][ ] [0][6][7][8][9][7][4] [7][3][2][6][6][4][4] D 315

Vegetation structure

Median height of the EDL is to be measured

Stratum	Median height	Height interval	Est. cover density (D,M,S,V)
E		-	
T1	8	5 - 9	5
T2		-	
T3		-	
S1	0.5	0.2 - 0.6	VS
S2		-	
G	0.25	0 - 0.3	M/D
Structural formation: (including height)			
Ecologically dominant layer:			

Plant species

Record relative (numerical) dominance for each stratum; ***d*** – dominant; ***c*** – co-dominant; **s** - subdominant, ***a*** – associated.

Str.	Rel. dom.	Scientific Name
T1		Acacia shirleyi
S1		Eremophila longifolia
		Citrus glauca
		Carissa ovata
G		Cenchrus ciliaris
		Sporobolus caroli

6285
6286
6287
6288
6289

Geology, landform, soils

Geology map/scale/year:

Geology code and rock types:

Land system:

Landform:

Soils:

Gatton 5 through Bolgalow regrowth

Field observation and notes: Gilgai Poset

Landzone:

RE code changes

Existing RE code: 11.4.8 Advanced regrowth

Proposed RE code: _____

END

Fauna Habitat Characters

Site No. 315 **Recorder:** C Neville D Hamp **Day/Date:** 24/3/25

Purpose

Locality: (inc. distance/direction to nearest town)

GPS coordinates: Zone 5 E 0678974 N 7326644 **Datum:**

Photo Numbers **Waypoint:** ------------------

Habitat Description Photos 6285 – 6289

Buffel Paddock with Gidgee & A. harp.
No Soil CRACKS

Connectivity Patch Characteristics

Abundance Scores: 0 = absent; 1 = 1-5; 2 = 6-20; 3 = 21-50; 4 = 51-75; 5 = 76-100; 6= >100. In a 1 ha area

Hollows in trees & stags >10cm	0	Decorticating bark	0
Hollows in trees & stags <10cm	0	Soil cracks	0
Fallen logs (>10cm diam.)	2	Termite mounds	0
Fallen logs (> 30cm)	1	Termitaries	0
Logs with Hollows (>10cm)	1	Mistletoe	0
Large trees >18m	0		

Density scores: 0 = 0%; 1 = <25%; 2 = 26-50%; 3 = 51-75%; 4 = 75-99%; 5 = 100% abundance.

Course litter (>2cm diam.)	1	Boulders (> 61cm)	0
Fine litter (<2cm diameter)	1	Rocks Embedded	0
Bare ground	2	Rocks Loose	0
Native Grass cover	1	Rock crevices	0
Exotic Grass cover	4	Exfoliating rock	0
Stones (20-60cm)	0	Shrub layer	1

Notes

Gilgai Habitat Quality

Site No. 318 Recorder: Day/Date: 24-3-25

Purpose

Locality: (inc. distance/direction to nearest town)

GPS coordinates: Zone 5 E 0 6 6 9 4 0 0 N 7 3 2 9 2 1 8 Datum:

Photo Numbers Waypoint: 318

Habitat Description

No canopy Popla ~~Terminalia~~ Brigalow Terminalia

Connectivity Patch Characteristics

Parthenium

Abundance Scores: 0 = absent; 1 = 1-5; 2 = 6-20; 3 = 21-50; 4 = 51-75; 5 = 76-100; 6= >100. In a 1 ha area

Average Gilgai length	100	Presence of fringing native vegetation	0
Average Gilgai width	50		
Average Gilgai depth	10cm		
Fallen logs (>10cm diam.)	0		
Fallen logs (> 30cm)	0		
Presence of aquatic vegetation	1		
Soil cracks (ornamental snake)	0	Estimate of water permanence	

Density scores: 0 = 0%; 1 = <25%; 2 = 26-50%; 3 = 51-75%; 4 = 75-99%; 5 = 100% abundance.

Course litter (>2cm diam.)	0	Shrub layer	1
Fine litter (<2cm diameter)	1	Native Tree layer	0
Bare ground	0	Gilgai density	2
Native Grass cover	1		
Exotic Grass cover	4		
Stones (20-60cm)	0		

Notes

6296 N

no	gps		photo
135	55 J 666545 7332016	Well 100m E Buffel and low regrowth	5832
137	55 J 667988 7330684	Well 100m W regrowth cambageana 6m	5838W
138	55 J 668089 7330221	Low regrowth buffel	5839W 5840E
322	55 J 668877 7330274	Brigalow 200m W	5841E
139	55 J 669846 7330518	Buffel Mapped as watercouse Some sedge present	5842NE
325	55 J 669756 7330551	Power line present Laydown	5843N
140	55 J 669688 7330585	Buffel	5844W 5845E
327	55 J 669496 7330715	Regrowth poplar 7m ~20m wide	5846NE
141	55 J 669339 7330808	Mapped drainage line Buffel sparse poplar 8m not obvious	5847W 5848E
143	55 J 669242 7331030	HVR Poplar melanophloia 8m	5855SE
144	55 J 669005 7331397	Billabong poplar dallachiana 10m fringe of veg 11.3.27?	5856
145	55 J 668767 7331786	HVR poplar tesselaris 13m 11.3.25	5857 W 5858 E

no	gps		photo
146	55 J 668456 7332160	11.3.27 11.3.25	5859 W 5860 E
?		HVR camaldulensis tesselaris 18m 11.3.25	5861 W 5862 E
147	55 J 667382 7332126	Recently cleared HVR after to N	5863 W
148	55 J 666426 7332368	Watercourse	5864 E
149	55 J 666130 7332377	No constraint visible	5865 S
150	55 J 665341 7332389	Low VS regrowth Buffel	5866 S 5867 N
152	55 J 664257 7331484	Low regrowth buffel well on hill ~300m	5875 W
		Mapped watercourse not visible dam to E	5876 E 5877 W
153	55 J 663627 7330688	Low regrowth 1m buffel Buffel low regrowth Advanced regrowth ~100m W poplar 9m	5878 E 5879 W
154	55 J 663287 7330114	Buffel regrowth brigalow 7m well 500m	5880 W
155	55 J 663394 7329138	Well buffel well 500m buffel	5881 W 5882 E
156	55 J 665154 7327802	Well ~400m NE buffel	5883

no	gps		photo
157	55 J 665647 7328001	Mapped as gilgai none visible	5884
158	55 J 665997 7328275	buffel	Well 5885 NW 5886 N 5887 E
159	55 J 666002 7328561	tank	5888
160	55 J 666158 7329208	Buffel low brigalow 1m	5889 N 5890 S
161	55 J 666234 7329785	Buffel buffel low brigalow 1.5m buffel low brigalow 1m	5891 W 5892 E 5893 N
162	55 J 666379 7330877	Cattle trough	5894 N 5895 S
163	55 J 666177 7330938	Well buffel low regrowth Lysiphyllum Cassia 2m flowline	5896 W 5897 N
164	55 J 665941 7330997	Flowline buffel compressor station low regrowth	5898 W 5899 N
165	55 J 665516 7331097	Buffel low regrowth compressor station	5900 N 5901 W
166	55 J 666523 7332538	E. mel E.coolabah C,tesselaris 11.3.3 13m	5903
167	55 J 666223 7332890	11.3.3 13m brigalow present	5904

no	gps		photo
168	55 J 665699 7333274	Advanced regrowth 11.3.2 poplar melanophloia regrowth poplar Lysiphyllum	5905 S 5906 W
169	55 J 665633 7333170	Well buffel Heteropogon Melinis	5907 SW
170	55 J 664727 7332765	Well buffel low regrowth brigalow 2m scattered poplar 6m	5908 NE
171	55 J 664096 7333768	Watercourse 11.3.3 coolabah 12-18m	5909 SW
172	55 J 664289 7333650	Drainage line not visible no gilgai visible	5910 NW
173	55 J 663420 7333619	Watercourse coolabah VS harpophylla Terminalia 12m	5913 NE 5914SW
174	55 J 663536 7333551	No gilgai visible	5915 S
175	55 J 670368 7330598	Well buffel scrobic	5916 NE
177	55 J 660937 7334150		5922 N 5923 S
178	55 J 660947 7334192	Lysiphyllum caronii occ. Harpophylla	5924 N 5925 S 5926 E 5927 W
179	55 J 660909 7334354	Buffel	5928 N 5929 S

no	gps		photo
180	55 J 660934 7334507	Drainage line buffel	5930 N 5931 S 5932 E 5933 W
181	55 J 660925 7334858	Drainage line buffel Leptochloa digitata dense standing water in places	5934 NW 5935 S
182	55 J 660811 7335210	Water well 100m NW no canopy buffel Leptochloa digitata	5936 W 5937 N 5938
183	55 J 660719 7335230	Dry here	
185	55 J 660576 7335361	wet	5939 W 5940 E 5941 S
186	55 J 660071 7335350	Well buffel Melinis spear Stylo hamata no cover	5956 N 5957 S 5958 E 5959 W 5960 G
187	55 J 660472 7334144	Well no cover buffel	5961 N 5962 S 5963 E 5964 W 5965 G
188	55 J 660825 7334224		5966 W 5967 e
189	55 J 660915 7334080	Track along gathering regrowth poplar sparse 10m occ. Relict trees	5968 S 5969 N 5970 E 5971 W
190	55 J 660849 7333613		
191	55 J 661079 7333548	Drainage line not visible	5972 E 5973 W 5974 S 5975 N

no	gps		photo
192	55 J 661692 7333028		5976 SE
193	55 J 661963 7332859		5977 SE
194	55 J 662376 7333018	Well no cover buffel Melinis	5978 Nw
195	55 J 662768 7333036		5979 S
196	55 J 662899 7333088	Well no cover VS brigalow to 2m buffel Parthenium Melinis	5980 N 5981 S 5982 E 5983 W 5984 G
197	55 J 662366 7332825	Buffel on fence	5985 S 5986 N
198	55 J 662263 7332644	Buffel on fence note big bottle	5987 S 5988 N
323	55 J 662798 7332113	Buffel low regrowth archidendropsis	5989 W 5990 E 5991 N
199	55 J 663232 7331414	buffel	5992 N 5993 E 5994 W
200	55 J 663431 7331612	Buffel	5995 S 5996 N
201	55 J 663662 7331827	Gathering@ well Archidendropsis 1-2m VS/S buffel	5997 S 5998 N

no	gps		photo
202	55 J 663361 7331844	Well buffel	5999 W
203	55 J 663278 7331226	Gilgai	6000
204	55 J 663368 7331008		6001 E 6002 W
205	55 J 664856 7333155	Well low poplar VS 4m Cassia buffel Melinis Grewia	6003E
206	55 J 666042 7332061	Well low regrowth Archidendropsis buffel	6004S
207	55 J 668190 7329896	Buffel	6005 W 6006 E
324	55 J 668533 7329706	Small stand of poplar <1/2 Ha	6007 E
208	55 J 668875 7329517	Well Buffel	6008 S
209	55 J 668905 7329710		6009 E 6010 N 6011 W
210	55 J 668979 7330172	Buffel C. intermedia	6012 N
211	55 J 668948 7330529	Well buffel Melinis C. int Atalaya Poplar	6013

no	gps		photo
212	55 J 669671 7330585		6014 N 6015 S
213	55 J 671775 7335342	Well adjacent to dam Panicum coloratum Scrobic Pennisetum sp. Cenchrus ciliaris Surrounding area brigalow regrowth 4-6m VS	6016 S 6017 N
214	55 J 671768 7335018	Flowline N gap between brigalow regrowth	6018 N
215	55 J 671870 7334962	Buffel coloratum photo through gap	6019 N 6020 S
217	55 J 672096 7334947	Flowline to south	6027 S
218	55 J 672303 7334226		6028 NE 6029 SW 6030 NW
221	55 J 671552 7334143	Drainage line no features	6041 N 6042 S
222	55 J 671207 7334147	Well low regrowth brigalow VS ~1.5m buffel Sida Sourghum almum Parthenium	6043 N 6044 S 6045 E 6046 W 6047 G
225	55 J 671515 7332335	Well on Nimala buffel	6050
226	55 J 672768 7332159	buffel	6052 N 6053 S
227	55 J 672106 7332247	Well North buffel	6051

no	gps		photo
228	55 J 673374 7332064	Well S on Nimala	6054
230	55 J 674702 7333428	Current well position Scrobic and Panicum coloratum	6055
231	55 J 674739 7333550	Flowline	6060
232	55 J 674812 7334095	Well west ex-cult coloratum	6061 W 6062 N 6063 S
233	55 J 674686 7335207	Well N ex cult	6066 NW 6067 SW
234	55 J 671027 7335357	Well VS regrowth brigalow Atalaya Cassia 3m buffel	6068 E
237	55 J 674174 7334636	Well hub ex-cult Scrobic rhodes coloratum well NNW same flowlines	6074 E 6075 NNW 6076 S 6077 NE 6078 E 6079 SE
238	55 J 674078 7335358	Well ex cult flowline S	6080 W 6081
239	55 J 674650 7335174	Well ex cult flowline access	6082 NNE 6083 SW 6084 NEr
240	55 J 675088 7335083	Camp NW corner	6085 E 6096 SE 6087 S

no	gps		photo
241	55 J 675335 7335087	NE corner paddock Parthenium heavily grazed	6088 S 6089 SW
242	55 J 675535 7335086	Camp 2 NW corner	6090 E 6091 SE 6092 S
243	55 J 675931 7334973	Camp 2 NE corner	6093 S 6094 SW 6095 W
244	55 J 675017 7334615	Camp 1 corner Coloratum Parthenium Rhodes paddock no cover	6096 N 6097 NE 6098 E
246	55 J 675323 7332204	Small patch brigalow regrowth 6m M/D Gilgai continue	6104 E
247	55 J 675341 7332111	Gilgai continue small	
248	55 J 675597 7332100	No gilgai right here	6105 S
251	55 J 676520 7332344	Gilgai continue	6116
252	55 J 676210 7332445	No gilgai right here	6117 S
253	55 J 675940 7332333	No gilgai right here	6118 S
254	55 J 669468 7331188	Very minor gilgai here	6119S

no	gps		photo
255	55 J 669635 7331314	Watercourse 11.3.3	6125 W
257	55 J 667907 7333059	Well no cover coloratum Sesbania drainage line immediately adjacent	6131E
258	55 J 667888 7333494	Flowline brigalow regrowth 2m sparse	6132 E 6133 NE 6134 W
259	55 J 668421 7335297	Well no cover very occ. Melanophloia shrub 1-2m Ac. campanulata buffel Themeda Stylo	6135 NW
261	55 J 668847 7335297	Gathering S remnant N	6141 S 6142 N
262	55 J 668599 7334633	Mapped as rem 11.5.3 no cover except occ. Dying bottle buffel	6143 S
263	55 J 668946 7334800	Gathering	6144 N 6145 S
264	55 J 668135 7334490	Aerial has veg. No veg present buffel	6146 SE
266	55 J 667567 7333327	Gilgai present	6153 N 6154 S 6155 E 6156 W
269	55 J 668568 7333939	Gathering no cover buffel Dichanthium sericeum	6168 N 6169 S 6170 E
270	55 J 668792 7334124	Well no cover buffel Gathering gathering	6171 NE 6172 NW 6173 SE

no	gps		photo
271	55 J 668783 7333767	Gathering	6174 E 6175 W
272	55 J 669361 7333455	Gathering	6176 W 6177 E
273	55 J 670182 7333324	Well buffel no canopy	6178 SE
274	55 J 663839 7334262	Meroo gathering watercourse regrowth brigalow Lysiphyllum Terminalia Coolabah to 14m gap in existing veg ~30m wide	6181 S 6182 N 6183 W 6184 E
275	55 J 663830 7334159	Gathering	6185 N 6186 W
276	55 J 663597 7334110	Well no cover Psrthenium blade plowed	6187 N 6188 S 6189 E 6190 W 6191 G
277	55 J 663110 7334280	Well 200m other side of creek buffel	6192 S
279	55 J 663931 7334712	Gathering	6198 N 6199 S
280	55 J 662812 7335328	Well buffel Melinis Heteropogon occ. Dallachiana VS	6200 SE
281	55 J 663763 7335047	Gathering	6201 NW 6202 E
282	55 J 663237 7335263	Well buffel Themeda Latifolia Scrobic no canopy Gathering	6203 N 6204 SE

no	gps		photo
283	55 J 664739 7335217	Gathering across paddock to south	6205 SE 6206 SW
284	55 J 665563 7335309	Well buffel VS Ac. deanei to 4m VS brigalow to 4m Gathering runs through paddock to south	6207 N 6208 S 6209 E 6210 W 6211 G 6212 SE 6213 SW
285	55 J 666055 7335311	Well buffel no cover gathering S	6214 N 6215 S 6216 E 6217 W 6218 G
286	55 J 666847 7334267	Gathering	6219 E 6220 W
287	55 J 666184 7333975	Well Parthenium buffel no canopy Gathering from N	6221 N 6222 S 6223 E 6224 W 6225 G
288	55 J 666083 7334040	Can't get to next well 400m E in buffel paddock no cover is HDD gathering so no water crossing required	6226 W 6227N
289	55 J 666411 7334396	Gathering 40m gap in veg here	6228 S 6229 E 6230 W 6236 6237
291	55 J 676411 7314838	Lowesby camp buffel occ. Brigalow 2-4m lots of stags	6238 W
292	55 J 676291 7314995	Buffel occ cambageana 7m	6239 W
293	55 J 676188 7315134	Buffel	6240 W

no	gps		photo
294	55 J 675869 7315560	Buffel	6241 W
295	55 J 674885 7316523	Gravel pit	6244
297	55 J 675872 7315555	Buffel	6243 W
298	55 J 676056 7315313	Buffel	6242 W
301	55 J 679518 7328757	Gathering	6256
303	55 J 679820 7328221	Gathering	6259 S 6260 N
305	55 J 679976 7328018	Gathering	6266 W 6267 E
306	55 J 680531 7328127	Gathering	6268 E 6269 W
307	55 J 681132 7328284	Well no canopy 1 poplar 8m buffel lots of logs and stags	6270 N 6271 S 6272 E 6273 W 6274 G
308	55 J 680991 7327794	Drainage line	6275
310	55 J 681067 7327526	Well buffel brigalow 2-4m VS gilgai present	6278 E

no	gps		photo
311	55 J 679641 7327839	Gathering	6279 W 6280 E
312	55 J 679460 7327748	Gilgai still present	6281
313	55 J 678762 7327411	Gathering	6282 W 6283 E
314	55 J 678771 7327366	Gilgai still present	6284
316	55 J 669697 7329051	Compressor station corner buffel no canopy brigalow low regrowth 0.5-1.5m	6290 N 6291 NW 6292 W
317	55 J 669399 7329217	Compressor station corner buffel no canopy brigalow low regrowth 0.5-1.5m	6293 N 6294 NE 6295 E
319	55 J 669915 7328930	gathering	6297 S 6298 N
320	55 J 670143 7329003	Pipe 1 bottle tree on edge of alignment	6299 W 6300 S
321	55 J 670003 7329846	Compressor station buffel Melinis brigalow low regrowth 0.5-2m VS	6301 S 6302 SW 6303 W

Appendix G

Significant Impact Assessments for MNES Threatened Fauna

Significant residual impact assessment for Squatter Pigeon (southern) *Geophaps scripta scripta* (Vulnerable EPBC & NC Act)	
Significant Impact Guideline Criteria.	**Response**
MNES – lead to a long-term decrease in the size of an Important population of a species	No Significant Impact Most of the survey area occurs on heavy clay soils dominated by a dense cover of exotic grasses, mainly buffel. The lack of tall, wooded areas within close proximity to the CDF, further limits the quality of foraging habitat for this species. The CDF zone and surrounds do not hold good quality habitats for this species. There are no contemporary local records for this species on the old alluvial clay terraces (LZ 4) or quaternary alluvials (LZ 3) that dominate the CDF, and squatter pigeons were not observed during summer or winter surveys. Vegetation community disturbance on brigalow clay soils (RE 11.3.1 and 11.4.8) is not considered habitat for this species (see **Table 4.2**). Disturbance to a further 0.5 ha of medium quality potential habitat is proposed on land zone 5. This disturbance is split over 7 vanishingly small patches with no impacts to connectivity. It is unlikely that this proposed action will lead to a long-term decrease in the size of an important population of this species.
MNES – reduce the area of occupancy of an important population	No Significant Impact There are no contemporary local records for this species on the old alluvial clay terraces (LZ 4) or quaternary alluvials (LZ 3) that dominate the CDF, and it was not observed during summer or winter surveys. This species is not thought to occur and if present would be restricted to small areas of Land zone 5 and 7. Proposed disturbance to a further 0.5 ha of medium quality potential habitat is split over 7 vanishingly small patches with no impacts to connectivity. It is unlikely that the proposed action will reduce the area of occupancy for an important population of this species.
MNES – fragment an existing population into two or more populations	**No Significant Impact** The squatter pigeon is a highly mobile bird species that frequently crosses large expanses of open ground. The proposed action is narrow in extent. It is unlikely that the action will fragment a population of this species.

Significant residual impact assessment for Squatter Pigeon (southern) *Geophaps scripta scripta* (Vulnerable EPBC & NC Act)	
Significant Impact Guideline **Criteria.**	Response
MNES – Adversely affect habitat critical to the survival of a species.	**No Significant Impact** The lack of tall, wooded areas within close proximity to the CDF limits the quality of foraging habitat for this species. The soils are invariably heavy clays throughout and some of the CDF is covered in very dense. Mainly exotic grasses, especially buffel. There are no contemporary local records for this species, and it was not observed during summer or winter surveys. There are no contemporary local records for this species on the old alluvial clay terraces (LZ 4) or quaternary alluvials (LZ 3) that dominate the CDF, and squatter pigeons were not observed during summer or winter surveys. Vegetation community disturbance on brigalow clay soils (RE 11.3.1 and 11.4.8) is not considered habitat for this species (see **Table 4.2**). Disturbance to a further 0.5 ha of medium quality potential habitat is proposed on land zone 5. This disturbance is split over 7 vanishingly small patches with no impacts to connectivity. It is unlikely that the proposed action will adversely affect habitat critical to the survival of a species.
MNES – Disrupt the breeding cycle of an important population.	**No Significant Impact** The lack of tall, wooded areas within close proximity to the CDF limits the quality of foraging habitat for this species. The soils are invariably heavy clays throughout and some of the CDF is covered in very dense. Mainly exotic grasses, especially buffel. There are no contemporary local records for this species, and it was not observed during summer or winter surveys. There are no contemporary local records for this species on the old There are no contemporary local records for this species on the old alluvial clay terraces (LZ 4) or quaternary alluvials (LZ 3) that dominate the CDF, and squatter pigeons were not observed during summer or winter surveys. Vegetation community disturbance on brigalow clay soils (RE 11.3.1 and 11.4.8) is not considered habitat for this species (see **Table 4.2**). Disturbance to a further 0.5 ha of medium quality potential habitat is proposed on land zone 5. This disturbance is split over 7 vanishingly small patches with no impacts to connectivity. It is unlikely that the

Significant residual impact assessment for Squatter Pigeon (southern) *Geophaps scripta scripta* (Vulnerable EPBC & NC Act)	
Significant Impact Guideline Criteria.	Response
	proposed action will disrupt the breeding cycle of an important population of this species.
MNES – Modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline	**No Significant Impact** The lack of tall, wooded areas within close proximity to the CDF limits the quality of foraging habitat for this species. The soils are invariably heavy clays throughout and some of the CDF is covered in very dense. Mainly exotic grasses, especially buffel. There are no contemporary local records for this species, and it was not observed during summer or winter surveys. There are no contemporary local records for this species on the old alluvial clay terraces (LZ 4) or quaternary alluvials (LZ 3) that dominate the CDF, and squatter pigeons were not observed during summer or winter surveys. Vegetation community disturbance on brigalow clay soils (RE 11.3.1 and 11.4.8) is not considered habitat for this species (see **Table 4.2**). Disturbance to a further 0.5 ha of medium quality potential habitat is proposed on land zone 5. This disturbance is split over 7 vanishingly small patches with no impacts to connectivity. It is unlikely that the proposed action will modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that this species is likely to decline.
MNES – Result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat.	No Significant Impact Nearly all the CDF is covered in exotic grasses, mainly buffel. There was evidence of fox, cat and feral dogs across the landscape. With the implementation of feral animal control around the facilities, it is unlikely that the trenching of pipe and construction of well pads will result in the introduction of new invasive species or lead to an increase in existing invasive species that are harmful to this vulnerable species becoming established in the vulnerable species' habitat.
MNES – introduce disease that may cause the species to decline	**No Significant Impact** There are no known diseases that we are aware of that might be introduced by the proposed action.

Significant residual impact assessment for Squatter Pigeon (southern) *Geophaps scripta scripta* (Vulnerable EPBC & NC Act)	
Significant Impact Guideline Criteria.	Response
MNES – interfere substantially with the recovery of the species	**No Significant Impact** The lack of tall, wooded areas within close proximity to the CDF limits the quality of foraging habitat for this species. The soils are invariably heavy clays throughout and some of the CDF is covered in very dense. Mainly exotic grasses, especially buffel. There are no contemporary local records for this species, and it was not observed during summer or winter surveys. There are no contemporary local records for this species on the old alluvial clay terraces (LZ 4) or quaternary alluvials (LZ 3) that dominate the CDF, and squatter pigeons were not observed during summer or winter surveys. Vegetation community disturbance on brigalow clay soils (RE 11.3.1 and 11.4.8) is not considered habitat for this species (see Table 4.2). Disturbance to a further 0.5 ha of medium quality potential habitat is proposed on land zone 5. This disturbance is split over 7 vanishingly small patches with no impacts to connectivity. It is unlikely that the proposed action will interfere substantially with the recovery of this species.

Significant residual impact assessment for Painted Honeyeater *Grantiella picta* (Vulnerable EPBC & NC Act)	
Significant Impact Guideline Criteria.	Response
MNES – lead to a long-term decrease in the size of an Important population of a species	No Significant Impact The impact is made up of 1.7 ha spread over 7 vanishingly small patches of medium quality habitat (2 x patches Regrowth RE 11.4.8 and 5 x patches regrowth 11.5.3 totalling 1.7 ha of medium quality habitat) Whilst habitat quality scores of 5.5 (regrowth 11.4.8) were derived for impacted areas they are bolstered by scores for mobility and the presence of canopy trees rather than essential micro-habitat features such as very large old trees and mistletoe. This habitat is considered marginal at best.

Significant residual impact assessment for Painted Honeyeater *Grantiella picta* (Vulnerable EPBC & NC Act)	
Significant Impact Guideline Criteria.	Response
	Suitable habitat for this species is generally restricted to the riparian open forests of the large creek systems. The low levels of mistletoe and large trees and vanishingly small patches of clearing combine to make it very unlikely that any meaningful impacts to potential habitat for this species will occur and no impacts to connectivity will result. The proposed disturbance will not lead to a long-term decrease in the size of an Important population of this species. Pre-disturbance surveys for mistletoe habitat within the CDZ are recommended to rule out the presence of potential feeding habitat for this species.
	Cumulative Impacts Previous impacts of 0.25 ha of RE 11.4.8a assumed to provide medium quality habitat for this species occurred. Partial rehabilitation of this community has occurred over the ensuing 9 years. The proposed additional impacts of 1.7 ha led to a combined cumulative impact of 1.95 ha. This species is generally unlikely to occur within the locality and if it does only in low numbers for a short-period as a vagrant and is more likely to rely on better quality habitats associated with riparian open-forest of the large creek systems. A cumulative significant impact is not likely to lead to a long-term decrease in the size of an Important population of this species.
MNES – reduce the area of occupancy of an important population	**No Significant Impact** The low levels of mistletoe and vanishingly small patches of clearing combine to make it very unlikely that any meaningful impacts to potential habitat and no impacts to connectivity will result. This is a very wide-ranging nomadic species, and the proposed disturbance will not reduce the area of occupancy of an important population of this species
	An additional previous impact of 0.25 ha of RE 11.4.8a assumed to provide medium quality habitat for this species occurred 9 years ago and is now partially rehabilitated. This species is generally unlikely to occur within the locality and if it does only in low numbers for a short-period as a vagrant and is more

Significant residual impact assessment for Painted Honeyeater *Grantiella picta* (Vulnerable EPBC & NC Act)	
Significant Impact Guideline Criteria.	Response
	likely to rely on better quality habitats associated with riparian open-forest of the large creek systems. This additional impact is unlikely to reduce the area of occupancy of an important population of this species
MNES – fragment an existing population into two or more populations	**No Significant Impact** The Painted Honeyeater is a highly mobile bird species that frequently crosses large expanses of open ground. The species has not been recorded from the Survey area and will only occur as an occasional vagrant if at all. It is unlikely that the action will fragment an existing population into two or more populations.
	Cumulative Impacts An additional previous impact of 0.25 ha of RE 11.4.8a assumed to provide medium quality habitat for this species occurred 9 years ago and is now partially rehabilitated. It is unlikely that this additional impact will combine to cause fragmentation of an existing population of this nomadic bird species
MNES – Adversely affect habitat critical to the survival of a species.	No Significant Impact The impact is made up of 1.7 ha over 7 vanishingly small patches of medium quality habitat (2 x patches Regrowth RE 11.4.8 and 5 x patches regrowth 11.5.3 totalling 1.7 ha of medium quality habitat). The species has not been recorded from the Survey area and will only occur as an occasional vagrant if at all and then most likely in the tall riparian open-forests that wont be impacted by this proposal. The low levels of mistletoe which is a key micro-habitat feature for this species and vanishingly small patches of clearing combine to make it very unlikely that any meaningful impacts to potential habitat for this species will occur and no impacts to connectivity will result. The proposed disturbance will not adversely affect habitat critical to the survival of this species.
	Cumulative Impacts Previous impacts of 0.25 ha of RE 11.4.8a assumed to provide medium quality habitat for this species occurred. Partial rehabilitation of this community has occurred. The proposed additional impacts of 1.7 ha lead to a combined cumulative impact of 1.95 ha.

Significant residual impact assessment for Painted Honeyeater *Grantiella picta* (Vulnerable EPBC & NC Act)	
Significant Impact Guideline Criteria.	Response
	This species is generally unlikely to occur within the locality and if it does only in low numbers for a short-period as a vagrant and is more likely to rely on better quality habitats associated with riparian open-forest of the large creek systems. A cumulative significant impact that adversely affects habitat critical to the survival of this species is unlikely.
MNES – Disrupt the breeding cycle of an important population.	No Significant Impact This species is generally unlikely to occur within the locality and if it does occur will only occur in low numbers for a short-period as a vagrant and is more likely to rely on better quality habitats associated with riparian open-forest of the large creek systems. It is very unlikely to breed this far north. The low levels of mistletoe and vanishingly small patches of clearing combine to make it very unlikely that any meaningful impacts to potential habitat and no impacts to connectivity will result. The proposed disturbance will not disrupt the breeding cycle of a population of this species.
	Cumulative Impacts Previous impacts of 0.25 ha of RE 11.4.8a assumed to provide medium quality habitat for this species occurred. Partial rehabilitation of this community has occurred. The proposed additional impacts of 1.7 ha lead to a combined cumulative impact of 1.95 ha. This species is generally unlikely to occur within the locality and if it does only in low numbers for a short-period as a vagrant and is more likely to rely on better quality habitats associated with riparian open-forest of the large creek systems. This species is very unlikely to breed this far north and a cumulative significant impact that disrupts the breeding cycle of an important population of this species is unlikely.
MNES – Modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline	No Significant Impact The impact is made up of 1.7 ha over 7 vanishingly small patches of medium quality habitat (2 x patches Regrowth RE 11.4.8 and 5 x patches regrowth 11.5.3 totalling 1.7 ha of medium quality habitat) This species is generally unlikely to occur within the locality and if it does only in low numbers for a short-period as a vagrant and is more likely to rely on better quality habitats associated with riparian open-forest of the large creek systems. The low levels of mistletoe and

Significant residual impact assessment for Painted Honeyeater *Grantiella picta* (Vulnerable EPBC & NC Act)	
Significant Impact Guideline Criteria.	Response
	vanishingly small patches of clearing combine to make it very unlikely that the proposal will modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline.
	Previous impacts of 0.25 ha of RE 11.4.8a assumed to provide medium quality habitat for this species occurred. Partial rehabilitation of this community has occurred. The proposed additional impacts of 1.7 ha lead to a combined cumulative impact of 1.95 ha. This species is generally unlikely to occur within the locality and if it does only in low numbers for a short-period as a vagrant and is more likely to rely on better quality habitats associated with riparian open-forest of the large creek systems. A cumulative significant impact that will modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline is unlikely.
MNES – Result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat.	No Significant Impact It is unlikely that the construction and operation of the facilities will result in invasive species that are harmful to this Vulnerable species becoming established in the vulnerable species' habitat.
	Cumulative Impacts It is unlikely that the historical clearing of 0.25 ha of RE 11.4.9a would cumulatively lead to invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat.
MNES – introduce disease that may cause the species to decline	**No Significant Impact** It is unlikely that the action will introduce disease that may cause the species to decline.
	It is unlikely that the historical clearing of 0.25 ha of RE 11.4.9a would cumulatively lead to the introduction of disease that may cause the species to decline
MNES – interfere substantially with the recovery of the species	No Significant Impact impact is made up of 1.7 ha over 7 vanishingly small patches of medium quality habitat (2 x patches Regrowth RE 11.4.8 and 5 x patches regrowth 11.5.3 totalling 1.7 ha of medium quality habitat)

Significant residual impact assessment for Painted Honeyeater *Grantiella picta* (Vulnerable EPBC & NC Act)	
Significant Impact Guideline Criteria.	Response
	This species is generally unlikely to occur within the locality and if it does only in low numbers for a short-period as a vagrant and is more likely to rely on better quality habitats associated with riparian open-forest of the large creek systems. The low levels of mistletoe and vanishingly small patches of clearing combine to make it very unlikely that the proposal will interfere substantially with the recovery of this species
	Cumulative Impacts Previous impacts of 0.25 ha of RE 11.4.8a assumed to provide medium quality habitat for this species occurred. Partial rehabilitation of this community has occurred. The proposed additional impacts of 1.7 ha lead to a combined cumulative impact of 1.95 ha. This species is generally unlikely to occur within the locality and if it does only in low numbers for a short-period as a vagrant and is more likely to rely on better quality habitats associated with riparian open-forest of the large creek systems. A cumulative significant impact on the recovery of this species is unlikely.

Significant residual impact assessment for Ornamental snake *Denisonia maculata* (Vulnerable EPBC & NC Act)	
Significant Impact Guideline Criteria.	Response
MNES – lead to a long-term decrease in the size of an Important population of a species	**No Significant Impact** Exclusion zones placed on a series of 4 patches of RE 11.3.1 all less than 0.02 ha each of medium quality potential habitat for this species prevents direct impacts to habitat. There will be no meaningful impacts to connectivity through construction of buried pipelines and small enclosures for well-heads. The proposed development is unlikely lead to a long-term decrease in the size of an Important population of this species
	Cumulative Impacts An additional previous impact of 0.25 ha of RE 11.4.8a assumed to provide medium quality habitat for this species occurred 9 years ago and is now partially rehabilitated. It is unlikely that the

Significant residual impact assessment for Ornamental snake *Denisonia maculata* (Vulnerable EPBC & NC Act)	
Significant Impact Guideline Criteria.	**Response**
	additional impacts from the current proposal will culminate in a long-term decrease in the size of an Important population of this species.
MNES – reduce the area of occupancy of an important population	**No Significant Impact** Exclusion zones placed on a series of 4 patches of RE 11.3.1 all less than 0.02 ha each of medium quality potential habitat for this species prevents direct impacts to habitat. There will be no meaningful impacts to connectivity through construction of buried pipelines and small enclosures for well-heads. The proposed development is unlikely to reduce the extent of occurrence of the species
	Cumulative Impacts An additional previous impact of 0.25 ha of RE 11.4.8a assumed to provide medium quality habitat for this species occurred 9 years ago and is now partially rehabilitated. It is unlikely that the additional impacts from the current proposal will culminate in a reduced area of occupancy of an important population of this species.
MNES – fragment an existing population into two or more populations	**No Significant Impact** Exclusion zones placed on a series of 4 patches of RE 11.3.1 all less than 0.02 ha each of medium quality potential habitat for this species prevents direct impacts to habitat. Most of the disturbance is temporary and will not interfere with movement of this species. The proposed disturbance will not fragment an existing population into two or more populations of this species.
	An additional previous impact of 0.25 ha of RE 11.4.8a assumed to provide medium quality habitat for this species occurred 9 years ago and is now partially rehabilitated. It is unlikely that the additional impacts from the current proposal will culminate in fragmentation of an existing population into two or more populations of this species
MNES – Adversely affect habitat critical to the survival of a species.	No Significant Impact Exclusion zones placed on a series of 4 patches of RE 11.3.1 all less than 0.02 ha each of medium quality potential habitat for this species prevents direct impacts to habitat. Most of the disturbance

Significant residual impact assessment for Ornamental snake *Denisonia maculata* (Vulnerable EPBC & NC Act)	
Significant Impact Guideline Criteria.	**Response**
	is temporary and will not interfere with movement of this species. The proposed disturbance will not adversely affect habitat critical to the survival of this species.
	An additional previous impact of 0.25 ha of RE 11.4.8a assumed to provide medium quality habitat for this species occurred 9 years ago and is now partially rehabilitated. It is unlikely that the additional impacts from the current proposal will culminate in impacts that will adversely affect habitat critical to the survival of this species.
MNES – Disrupt the breeding cycle of an important population.	**No Significant Impact** Exclusion zones placed on a series of 4 patches of RE 11.3.1 all less than 0.02 ha each of medium quality potential habitat for this species prevents direct impacts to habitat. Most of the disturbance is temporary and will not interfere with movement of this species. The proposed disturbance will not cause the disruption to the breeding cycle of an important population of this species
	An additional previous impact of 0.25 ha of RE 11.4.8a assumed to provide medium quality habitat for this species occurred 9 years ago and is now partially rehabilitated. It is unlikely that the additional impacts from the current proposal will culminate in the disruption of the breeding cycle of an important population of this species.
MNES – Modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline	**No Significant Impact** Exclusion zones placed on a series of 4 patches of RE 11.3.1 all less than 0.02 ha each of medium quality potential habitat for this species prevents direct impacts to habitat. Most of the disturbance is temporary and will not interfere with movement of this species. The proposed disturbance will not modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that this species is likely to decline.
	An additional previous impact of 0.25 ha of RE 11.4.8a assumed to provide medium quality habitat for this species occurred 9 years ago and is now partially rehabilitated. It is unlikely that the additional impacts from the current proposal will culminate in total impacts that will modify, destroy, remove or isolate or decrease the

Significant residual impact assessment for Ornamental snake *Denisonia maculata* (Vulnerable EPBC & NC Act)	
Significant Impact Guideline Criteria.	**Response**
	availability or quality of habitat to the extent that this species is likely to decline.
MNES – Result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat.	**No Significant Impact** It is unlikely that the construction of the facilities will result in invasive species that are harmful to this vulnerable species becoming established in the vulnerable species' habitat.
	Cumulative Impacts An additional previous impact of 0.25 ha of RE 11.4.8a assumed to provide medium quality habitat for this species occurred 9 years ago and is now partially rehabilitated. It is unlikely that the additional impacts from the current proposal will culminate in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat.
MNES – introduce disease that may cause the species to decline	**No Significant Impact** It is unlikely that the construction of the facilities will introduce disease that may cause the species to decline.
	Cumulative Impacts An additional previous impact of 0.25 ha of RE 11.4.8a assumed to provide medium quality habitat for this species occurred 9 years ago and is now partially rehabilitated. It is unlikely that the additional impacts from the current proposal will culminate in introduction of disease that may cause the population to decline.
MNES – interfere substantially with the recovery of the species	**No Significant Impact** Exclusion zones placed on a series of 4 patches of RE 11.3.1 all less than 0.02 ha each of medium quality potential habitat for this species prevents direct impacts to habitat. There will be no meaningful impacts to connectivity. The proposed development is unlikely to interfere substantially with the recovery of this species.
	Cumulative Impacts An additional previous impact of 0.25 ha of RE 11.4.8a assumed to provide medium quality habitat for this species occurred 9 years ago and is now partially rehabilitated. It is unlikely that the

Significant residual impact assessment for Ornamental snake ***Denisonia maculata*** (Vulnerable EPBC & NC Act)	
Significant Impact Guideline Criteria.	**Response**
	additional impacts from the current proposal will culminate in interference to the recovery of this species.

Significant residual impact assessment for Grey snake ***Hemiaspis damelii*** (Endangered EPBC & NC Act)	
Significant Impact Guideline **Criteria.**	Response
MNES – lead to a long-term decrease in the size of an Important population of a species	**No Significant Impact** Exclusion zones placed on a series of 4 patches of RE 11.3.1 all less than 0.02 ha each of medium quality potential habitat for this species prevents direct impacts to habitat. Three will be no meaningful impacts to connectivity through construction of buried pipelines and small enclosures for well-heads. The proposed development is unlikely lead to a long-term decrease in the size of an Important population of this species
	Cumulative Impacts An additional previous impact of 0.25 ha of RE 11.4.8a assumed to provide medium quality habitat for this species occurred 9 years ago and is now partially rehabilitated. It is unlikely that the additional impacts from the current proposal will culminate in a long-term decrease in the size of an Important population of this species.
MNES – reduce the area of occupancy of an important population	**No Significant Impact** Exclusion zones placed on a series of 4 patches of RE 11.3.1 all less than 0.02 ha each of medium quality potential habitat for this species prevents direct impacts to habitat. Three will be no meaningful impacts to connectivity through construction of buried pipelines and small enclosures for well-heads. The proposed

Significant residual impact assessment for Grey snake *Hemiaspis damelii* (Endangered EPBC & NC Act)	
Significant Impact Guideline Criteria.	Response
	development is unlikely to reduce the extent of occurrence of the species
	Cumulative Impacts An additional previous impact of 0.25 ha of RE 11.4.8a assumed to provide medium quality habitat for this species occurred 9 years ago and is now partially rehabilitated. It is unlikely that the additional impacts from the current proposal will culminate in a reduced area of occupancy of an important population of this species.
MNES – fragment an existing population into two or more populations	**No Significant Impact** Exclusion zones placed on a series of 4 patches of RE 11.3.1 all less than 0.02 ha each of medium quality potential habitat for this species prevents direct impacts to habitat. Most of the disturbance is temporary and will not interfere with movement of this species. The proposed disturbance will not fragment an existing population into two or more populations of this species.
	An additional previous impact of 0.25 ha of RE 11.4.8a assumed to provide medium quality habitat for this species occurred 9 years ago and is now partially rehabilitated. It is unlikely that the additional impacts from the current proposal will culminate in fragmentation of an existing population into two or more populations of this species
MNES – Adversely affect habitat critical to the survival of a species.	No Significant Impact Exclusion zones placed on a series of 4 patches of RE 11.3.1 all less than 0.02 ha each of medium quality potential habitat for this species prevents direct impacts to habitat. Most of the disturbance is temporary and will not interfere with movement of this species. The proposed disturbance will not adversely affect habitat critical to the survival of this species.
	An additional previous impact of 0.25 ha of RE 11.4.8a assumed to provide medium quality habitat for this species occurred 9 years ago and is now partially rehabilitated. It is unlikely that the additional impacts from the current proposal will culminate in

Significant residual impact assessment for Grey snake *Hemiaspis damelii* (Endangered EPBC & NC Act)	
Significant Impact Guideline Criteria.	Response
	impacts that will adversely affect habitat critical to the survival of this species.
MNES – Disrupt the breeding cycle of an important population.	No Significant Impact Exclusion zones placed on a series of 4 patches of RE 11.3.1 all less than 0.02 ha each of medium quality potential habitat for this species prevents direct impacts to habitat. Most of the disturbance is temporary and will not interfere with movement of this species. The proposed disturbance will not cause the disruption to the breeding cycle of an important population of this species
	An additional previous impact of 0.25 ha of RE 11.4.8a assumed to provide medium quality habitat for this species occurred 9 years ago and is now partially rehabilitated. It is unlikely that the additional impacts from the current proposal will culminate in the disruption of the breeding cycle of an important population of this species.
MNES – Modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline	No Significant Impact Exclusion zones placed on a series of 4 patches of RE 11.3.1 all less than 0.02 ha each of medium quality potential habitat for this species prevents direct impacts to habitat. Most of the disturbance is temporary and will not interfere with movement of this species. The proposed disturbance will not modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that this species is likely to decline.
	An additional previous impact of 0.25 ha of RE 11.4.8a assumed to provide medium quality habitat for this species occurred 9 years ago and is now partially rehabilitated. It is unlikely that the additional impacts from the current proposal will culminate in total impacts that will modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that this species is likely to decline.
MNES – Result in invasive species that are harmful to a vulnerable species becoming	**No Significant Impact** It is unlikely that the construction of the facilities will result in invasive species that are harmful to this vulnerable species becoming established in the vulnerable species' habitat.

Significant residual impact assessment for Grey snake *Hemiaspis damelii* (Endangered EPBC & NC Act)	
Significant Impact Guideline Criteria.	Response
established in the vulnerable species' habitat.	
MNES – introduce disease that may cause the species to decline	Cumulative Impacts An additional previous impact of 0.25 ha of RE 11.4.8a assumed to provide medium quality habitat for this species occurred 9 years ago and is now partially rehabilitated. It is unlikely that the additional impacts from the current proposal will culminate in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat.
	No Significant Impact It is unlikely that the construction of the facilities will introduce disease that may cause the species to decline.
MNES – interfere substantially with the recovery of the species	**Cumulative Impacts** An additional previous impact of 0.25 ha of RE 11.4.8a assumed to provide medium quality habitat for this species occurred 9 years ago and is now partially rehabilitated. It is unlikely that the additional impacts from the current proposal will culminate in introduction of disease that may cause the population to decline.
	No Significant Impact Exclusion zones placed on a series of 4 patches of RE 11.3.1 all less than 0.02 ha each of medium quality potential habitat for this species prevents direct impacts to habitat. There will be no meaningful impacts to connectivity. The proposed development is unlikely to interfere substantially with the recovery of this species.

Significant residual impact assessment for Yakka Skink *Egernia rugosa* (Vulnerable EPBC & NC Act)	
Significant Impact Guideline **Criteria.**	Response
MNES – lead to a long-term decrease in the size of an Important population of a species	**No Significant Impact** There are a limited number of ALA records for this species within the wider area. This species occurs in open dry sclerophyll forest or woodland, and may persist where shelter sites such as tunnel erosion, rabbit warrens and log piles exist. This species is highly sedentary. Most of the Survey is dominated by unsuitable heavily clay soils and habitat values for this species are restricted to a few discrete and isolated patches within the north of the Survey area. This is a highly sedentary species and pre-disturbance surveys for its presence within 100m of proposed habitat disturbance would be sufficient to rule out its presence. Whilst the habitat model provides that disturbance to 0.5 ha of medium quality habitat (split over 7 vanishingly small patches) will occur, the potential for this species to occur in this landscape is very low. it is unlikely that the very small areas of proposed impact will have any meaningful impact to a population of this species or lead to a long-term decrease in the size of an important population of this species (see **Table 4.2**)
MNES – reduce the area of occupancy of an important population	**No Significant Impact** This is a medium sized reptile that has the potential to cross short spans of open ground when dispersing. Disturbance in most of the CDF is temporary and will not prevent dispersal for this species. The individual impacted areas are very small and extremely unlikely to meaningfully impact a population of this species. The proposed disturbance is very unlikely to reduce the area of occupancy of an important population this species. This is a highly sedentary species and pre-disturbance surveys for its presence within 100m of proposed habitat disturbance would be sufficient to rule out its presence.
MNES – fragment an existing population into two or more populations	**No Significant Impact** This is a medium sized reptile that has the potential to cross short spans of open ground when dispersing. Disturbance in most of the CDF is temporary and occurs in very small patches and will not

Significant residual impact assessment for Yakka Skink *Egernia rugosa* (Vulnerable EPBC & NC Act)	
Significant Impact Guideline Criteria.	Response
	prevent dispersal for this species. The proposed disturbance will not fragment a population of this species.
MNES – Adversely affect habitat critical to the survival of a species.	**No Significant Impact** This is a medium sized reptile that has the potential to cross short spans of open ground when dispersing. Disturbance in most of the CDF is temporary and will not prevent dispersal for this species. The proposed disturbance will not lead to genetically distinct populations forming.
MNES – Disrupt the breeding cycle of an important population.	**No Significant Impact** Whilst disturbance to 0.5 ha of medium quality habitat for this species is proposed split over 7 vanishingly small patches. Land zone 5 habitats are patchy and isolated in a matrix of unsuitable heavy clay soils, and it is unlikely that this species occurs. This disturbance will not cause disruption to breeding cycle of an important population of this species. This is a highly sedentary species and pre-disturbance surveys for its presence within 100m of proposed habitat disturbance would be sufficient to rule out its presence.
MNES – Modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline	No Significant Impact Whilst disturbance to 0.5 ha of medium quality habitat for this species is proposed, split over 7 vanishingly small patches. Land zone 5 habitats are patchy and isolated in a matrix of unsuitable heavy clay soils, and it is unlikely that this species occurs. The proposed disturbance of a very small amount of medium quality habitat over several vanishingly small patches, will not modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that this species is likely to decline. This is a highly sedentary species and pre-disturbance surveys for its presence within 100m of proposed habitat disturbance would be sufficient to rule out its presence.
MNES – Result in invasive species that are harmful to a vulnerable species becoming	No Significant Impact

Significant residual impact assessment for Yakka Skink *Egernia rugosa* (Vulnerable EPBC & NC Act)	
Significant Impact Guideline Criteria.	**Response**
established in the vulnerable species' habitat.	It is unlikely that the construction of the facilities will result in invasive species that are harmful to this vulnerable species becoming established in the vulnerable species' habitat.
MNES – introduce disease that may cause the species to decline	**No Significant Impact** It is unlikely that the construction of the facilities will introduce disease that may cause the species to decline.
MNES – interfere substantially with the recovery of the species	**No Significant Impact** There are a limited number of ALA records for this species within the wider area. This species occurs in open dry sclerophyll forest or woodland, and may persist where shelter sites such as tunnel erosion, rabbit warrens and log piles exist. This species is highly sedentary. Most of the Survey area is dominated by unsuitable heavily clay soils and habitat values for this species are restricted to a few discrete and isolated patches within the north of the Survey area. Whilst the habitat model provides that disturbance to 0.5 ha of medium quality habitat (split over 7 vanishingly small patches) will occur, the low likelihood of occurrence combined with the vanishingly small areas of impact provide that is very likely that this species will be impacted. It is unlikely that the very small areas of proposed impact will interfere substantially with the recovery of this species. This is a highly sedentary species and pre-disturbance surveys for its presence within 100m of proposed habitat disturbance would be sufficient to rule out its presence.

Conservation Advice effective date 29/04/2014

Significant residual impact assessment for Northern Greater Glider (*Petauroides minor*) (Vulnerable) and Central Greater Glider (*Petauroides armillatus*) (Endangered) (Endangered EPBC & NC Act)	
Significant Impact Guideline Criteria.	Response
MNES – a long-term decrease in the size of a population.	**No Significant Impact** No disturbance to potential habitat for this species is proposed, and no impacts to connectivity will result. The proposed disturbance will not lead to a long-term decrease in the size of a population of a species
MNES – reduce the area of occupancy of the species	No Significant Impact No disturbance to potential habitat for this species is proposed, and no impacts to connectivity will result. The proposed disturbance will not reduce the area of occupancy of a population of this species.
MNES – fragment an existing population into two or more populations	**No Significant Impact** No disturbance to potential habitat for this species is proposed, and no impacts to connectivity will result. The proposed disturbance will not fragment an existing population of this species.
MNES – Adversely affect habitat critical to the survival of a species.	**No Significant Impact** No disturbance to potential habitat for this species is proposed, and no impacts to connectivity will result. The proposed disturbance will not adversely affect habitat critical to the survival of this species.
MNES – Disrupt the breeding cycle of an important population.	No Significant Impact No disturbance to potential habitat for this species is proposed and no impacts to connectivity will result. The proposed disturbance will not impact breeding habitat and will not disrupt the breeding cycle of a population of this species.
MNES – Modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline	No Significant Impact No disturbance to potential habitat for this species is proposed, and no impacts to connectivity will result. The proposed disturbance will not modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline.
MNES – result in invasive species that are harmful to a critically endangered or endangered species	No Significant Impact With the implementation of a feral species management plan, it is unlikely that the construction and operation of the facilities will result in

Significant residual impact assessment for Northern Greater Glider (*Petauroides minor*) (Vulnerable) and Central Greater Glider (*Petauroides armillatus*) (Endangered) (Endangered EPBC & NC Act)	
Significant Impact Guideline Criteria.	Response
becoming established in the critically endangered or endangered species' habitat	invasive species that are harmful to this Endangered species becoming established in the vulnerable species' habitat.
MNES – introduce disease that may cause the species to decline	No Significant Impact The construction and operation of the facilities is unlikely to introduce disease that may cause the species to decline.
MNES – Interfere with the recovery of the species.	No Significant Impact No disturbance to potential habitat for this species is proposed, and no impacts to connectivity will result. The proposed disturbance will not interfere substantially with the recovery of the species.

Significant residual impact assessment for Koala *Phascolarctos cinereus* (Endangered EPBC & NC Act)	
Significant Impact Guideline Criteria.	**Response**
MNES – a long-term decrease in the size of a population.	**No Significant Impact** The clearing of 0.7 ha of vegetation with a habitat quality score of 4.8 is made up of a patch of regrowth RE 11.5.3 that is 0.4 ha (**Insert 1**) and three patches of RE 11.3.1 less than 0.04 ha each. It is unlikely that the clearing within the patches of RE 11.3.1 will remove any koala food trees, leaving 0.4 ha of very sparse regrowth RE 11.5.3 impacted with no impacts to connectivity. The home range of koalas outside of riparian open forests within this landscape are large with an average around 70 ha in size. This proposed disturbance will not lead to a long-term decrease in the size of a population of koalas.
MNES – reduce the area of occupancy of the species	**No Significant Impact** The clearing of 0.7 ha of vegetation with a habitat quality score of 4.8 is made up of a patch of regrowth RE 11.5.3 that is 0.4 ha

Significant residual impact assessment for Koala *Phascolarctos cinereus* (Endangered EPBC & NC Act)	
Significant Impact Guideline Criteria.	Response
	(**Insert 1**) and three patches of RE 11.3.1 less than 0.04 ha each. It is unlikely that the clearing within the patches of RE 11.3.1 will remove any koala food trees, leaving 0.4 ha of very sparse regrowth RE 11.4.3 impacted with no impacts to connectivity. The home range of koalas outside of riparian open forests within this landscape are large with an average around 70 ha in size. This proposed disturbance will not lead to reduce area of occupancy of this species
MNES – fragment an existing population into two or more populations	**No significant Impact** Most of the proposed disturbance is temporary and underground. The well heads are small discrete patches in a highly permeably matrix for Koalas. Koalas are known to walk several hundred metres between feed and refuge trees. The proposed disturbance will not fragment an existing population into two or more populations.
MNES – Adversely affect habitat critical to the survival of a species.	**No Significant Impact** The clearing of 0.7 ha of vegetation with a habitat quality score of 4.8 is made up of a patch of regrowth RE 11.5.3 that is 0.4 ha (Insert 1) and three patches of RE 11.3.1 less than 0.04 ha each. It is unlikely that the clearing within the patches of RE 11.3.1 will remove any koala food trees, leaving 0.4 ha of very sparse regrowth RE 11.4.3 impacted. The home range of koalas outside of riparian open forests within this landscape are large with an average around 70 ha in size. The proposed disturbance will not adversely affect habitat critical to the survival of this species.
MNES – Disrupt the breeding cycle of a population.	**No Significant Impact** The clearing of 0.7 ha of vegetation with a habitat quality score of 4.8 is made up of a patch of regrowth RE 11.5.3 that is 0.4 ha (**Insert 1**) and three patches of RE 11.3.1 less than 0.04 ha each. It is unlikely that the clearing within the patches of RE 11.3.1 will remove any koala food trees, leaving 0.4 ha of very sparse regrowth RE 11.4.3 impacted. The home range of koalas outside of riparian open forests within this landscape are large with an average around 70 ha in size. This amount of clearing represents a negligible proportion of a home range for a koala in this landscape. It will not remove breeding habitat or reduce the fitness of an individual. The

Significant residual impact assessment for Koala *Phascolarctos cinereus* (Endangered EPBC & NC Act)	
Significant Impact Guideline Criteria.	Response
	proposed disturbance will not disrupt the breeding cycle of a population of this species.
MNES – Modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline	**No Significant Impact** The clearing of 0.7 ha of vegetation with a habitat quality score of 4.8 is made up of a patch of regrowth RE 11.5.3 that is 0.4 ha (Insert 1) and three patches of RE 11.3.1 less than 0.04 ha each. It is unlikely that the clearing within the patches of RE 11.3.1 will remove any koala food trees, leaving 0.4 ha of very sparse regrowth RE 11.4.3 impacted. This amount of clearing represents a negligible proportion of a home range for a koala in this landscape. It will not remove breeding habitat or reduce the fitness of an individual. The proposed disturbance will not modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that this species is likely to decline.
MNES – result in invasive species that are harmful to a critically endangered or endangered species becoming established in the critically endangered or endangered species' habitat	**No Significant Impact** Foxes and feral dogs are already present within the local landscape and it is unlikely that the construction and operation of the facilities will result in an increase invasive species that are harmful to this vulnerable species becoming established in the vulnerable species' habitat.
MNES – introduce disease that may cause the species to decline	**No Significant Impact** *Chlamydia pneumoniae* and *Chlamydia pecorum* are endemic in wild koala populations and will not be introduced through the proposed construction and operation of the facilities. There are no other known diseases that could be introduced by the construction and operation of the facilities.
MNES – Interfere with the recovery of the species.	No Significant Impact The clearing of 0.7 ha of vegetation with a habitat quality score of 4.8 is made up of a patch of regrowth RE 11.5.3 that is 0.4 ha (Insert 1) and three patches of RE 11.3.1 less than 0.04 ha each. It is unlikely that the clearing within the patches of RE 11.3.1 will remove any koala food trees, leaving 0.4 ha of very sparse regrowth RE 11.4.3 impacted. The home range of koalas outside of riparian

Significant residual impact assessment for Koala *Phascolarctos cinereus* (Endangered EPBC & NC Act)	
Significant Impact Guideline Criteria.	Response
	open forests within this landscape are large with an average around 70 ha in size. This amount of clearing represents a negligible proportion of a home range for a koala in this landscape. It will not remove breeding habitat or reduce the fitness of an individual. The proposed disturbance will not interfere with the recovery of the species.

Conservation Advice effective date 08/07/2015.

Significant residual impact assessment for Southeastern Long-eared Bat *Nyctophilus corbeni* (Vulnerable EPBC & NC Act)	
Significant Impact Guideline **Criteria.**	**Response**
MNES – lead to a long-term decrease in the size of an Important population of a species	**No Significant Impact** No disturbance to potential habitat for this species is proposed and no impacts to connectivity will result and it is unlikely to lead to a long-term decrease in the size of an important population of a species
	Cumulative Impacts An additional previous impact of 0.25 ha of RE 11.4.8a assumed to provide medium quality habitat for this species occurred 9 years ago and is now partially rehabilitated. The current habitat values within this area of impact are similar to the surrounding RE 11.4.9a matrix. It is unlikely that the additional impacts from the current proposal will culminate in a long-term decrease in the size of an important population of this species

Significant residual impact assessment for Southeastern Long-eared Bat *Nyctophilus corbeni* (Vulnerable EPBC & NC Act)	
Significant Impact Guideline Criteria.	Response
MNES – reduce the area of occupancy of an important population	**No Significant Impact** No disturbance to potential habitat for this species is proposed and no impacts to connectivity will result and therefore it is very unlikely to reduce the extent of occurrence of the species
	An additional previous impact of 0.25 ha of RE 11.4.8a assumed to provide medium quality habitat for this species occurred 9 years ago and is now partially rehabilitated. The current habitat values within this area of impact are now similar to the surrounding RE 11.4.9a matrix for this species. It is unlikely that the additional impacts from the current proposal will culminate in a reduced area of occupancy of an important population of this species.
MNES – fragment an existing important population into two or more populations	No Significant Impact No disturbance to potential habitat for this species is proposed and no impacts to connectivity will result. The proposed development will not fragment a population of this species.
	An additional previous impact of 0.25 ha of RE 11.4.8a assumed to provide medium quality habitat for this species occurred 9 years ago and is now partially rehabilitated. The current habitat values within this area of impact are now similar to the surrounding RE 11.4.9a matrix for this species. It is unlikely that the additional impacts from the current proposal will culminate in fragmentation of an existing important population into two or more populations
MNES – Adversely affect habitat critical to the survival of a species.	**No Significant Impact** No disturbance to potential habitat for this species is proposed and no impacts to connectivity will result. The proposed development will not adversely affect habitat critical to the survival of this species.
	An additional previous impact of 0.25 ha of RE 11.4.8a assumed to provide medium quality habitat for this species occurred 9 years ago and is now partially rehabilitated. The current habitat values within this area of impact are now similar to the surrounding RE 11.4.9a matrix for this species. It is unlikely that the additional

Significant residual impact assessment for Southeastern Long-eared Bat *Nyctophilus corbeni* (Vulnerable EPBC & NC Act)	
Significant Impact Guideline Criteria.	Response
	impacts from the current proposal will culminate in impacts that will adversely affect habitat critical to the survival of a species.
MNES – Disrupt the breeding cycle of an important population.	No Significant Impact No disturbance to potential habitat for this species is proposed and no impacts to connectivity will result. The proposed development will not result in the disruption to the breeding cycle of an important population of this species.
	An additional previous impact of 0.25 ha of RE 11.4.8a assumed to provide medium quality habitat for this species occurred 9 years ago and is now partially rehabilitated. The current habitat values within this area of impact are now similar to the surrounding RE 11.4.9a matrix for this species. None of this habitat would have supported trees large enough to provide breeding habitat for this species. It is unlikely that the additional impacts from the current proposal will culminate in disruption to the breeding cycle of an important population.
MNES – Modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline	No Significant Impact No disturbance to potential habitat for this species is proposed and no impacts to connectivity will result. The proposed development will not modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that this species is likely to decline.
	An additional previous impact of 0.25 ha of RE 11.4.8a assumed to provide medium quality habitat for this species occurred 9 years ago and is now partially rehabilitated. The current habitat values within this area of impact are now similar to the surrounding RE 11.4.9a matrix for this species. None of this habitat would have supported trees large enough to provide breeding habitat for this species. It is unlikely that the additional impacts from the current proposal will culminate in an action that will modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline

Significant residual impact assessment for Southeastern Long-eared Bat *Nyctophilus corbeni* (Vulnerable EPBC & NC Act)	
Significant Impact Guideline Criteria.	Response
MNES – Result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat.	**No Significant Impact** It is unlikely that the construction of the facilities will result in invasive species that are harmful to this vulnerable species becoming established in the vulnerable species' habitat.
	Cumulative Impacts An additional previous impact of 0.25 ha of RE 11.4.8a assumed to provide medium quality habitat for this species occurred 9 years ago and is now partially rehabilitated. It is unlikely that these impacts and the additional proposed impacts from the current proposal will culminate in invasive species that are harmful to an endangered or vulnerable species becoming established in this vulnerable species' habitat
MNES – introduce disease that may cause the species to decline	**No Significant Impact** It is unlikely that the construction of the facilities will introduce disease that may cause the species to decline.
	An additional previous impact of 0.25 ha of RE 11.4.8a assumed to provide medium quality habitat for this species occurred 9 years ago and is now partially rehabilitated. It is unlikely that these impacts and the additional proposed impacts from the current proposal will culminate in the introduction of disease that may cause this species to decline
MNES – interfere substantially with the recovery of the species	No Significant Impact No disturbance to potential habitat for this species is proposed and no impacts to connectivity will result. The proposed development will not interfere substantially with the recovery of this species.
	An additional previous impact of 0.25 ha of RE 11.4.8a assumed to provide medium quality habitat for this species occurred 9 years ago and is now partially rehabilitated. It is unlikely that these impacts and the additional proposed impacts from the current proposal will culminate in causing substantial interference with the recovery of this species.

Significant residual impact assessment for White-throated Needletail *Hirundapus caudacutus* (Vulnerable EPBC & NC Act)	
Significant Impact Guideline Criteria.	Response
MNES – lead to a long-term decrease in the size of an Important population of a species	No Significant Impact This is a very highly mobile aerial species that is unlikely to directly utilise the habitats within the CDF. The proposed removal of discrete patches of very low-quality habitat from within landscape that contains very large areas of foraging habitat is unlikely to lead to a long-term decrease in the size of an important population of a species
MNES – reduce the area of occupancy of an important population	No Significant Impact This is a very highly mobile aerial species that is unlikely to directly utilise the habitats within the CDF. It may forage in the skies overhead. The proposed removal of discrete patches of very low-quality habitat from within landscape that contains very large areas of foraging habitat is unlikely to reduce the area of occupancy of an important population.
MNES – fragment an existing population into two or more populations	No Significant Impact The White-throated Needletail is a highly mobile bird species that frequently crosses large expanses of open ground. The proposed removal of discrete patches of very low-quality habitat from within landscape that contains very large areas of foraging habitat is unlikely to fragment a population of this species.
MNES – Adversely affect habitat critical to the survival of a species.	No Significant Impact This is a very highly mobile aerial species that is unlikely to directly utilise the habitats within the CDF. It may forage in the skies overhead. The proposed removal of discrete patches of very low-quality habitat from within landscape that contains very large areas of foraging habitat is unlikely to adversely affect habitat critical to the survival of a species
MNES – Disrupt the breeding cycle of an important population.	**No Significant Impact** This is a very highly mobile aerial species that is unlikely to directly utilise the habitats within the CDF. It may forage in the skies overhead. The proposed removal of discrete patches of very low-quality habitat

Significant residual impact assessment for White-throated Needletail *Hirundapus caudacutus* (Vulnerable EPBC & NC Act)	
Significant Impact Guideline Criteria.	Response
	from within landscape that contains very large areas of foraging habitat is unlikely to disrupt the breeding cycle of an important population
MNES – Modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline	No Significant Impact This is a very highly mobile aerial species that is unlikely to directly utilise the habitats within the CDF. It may forage in the skies overhead. The proposed removal of discrete patches of very low-quality habitat from within landscape that contains very large areas of foraging habitat is unlikely to modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline
MNES – Result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat.	**No Significant Impact** This is a very highly mobile aerial species that is unlikely to directly utilise the habitats within the CDF. If may forage in the skies overhead and is unlikely to land within the CDF. Disturbance to habitat over which this species may forage unlikely to result in an invasive species that are harmful to a vulnerable species becoming established.
MNES – introduce disease that may cause the species to decline	No Significant Impact This is a very highly mobile aerial species that is unlikely to directly utilise the habitats within the CDF. It may forage in the skies overhead but is unlikely to land. It is unlikely to introduce disease that may cause the species to decline
MNES – interfere substantially with the recovery of the species	No Significant Impact This is a very highly mobile aerial species that is unlikely to directly utilise the habitats within the CDF. It may forage in the skies overhead but is unlikely to land. The proposed action is unlikely to interfere substantially with the recovery of the species

Significant residual impact assessment for Australian painted snipe *Rostratula australis* (Endangered EPBC & Vulnerable NC Act)	
Significant Impact Guideline Criteria.	Response
MNES – Lead to a long-term decrease in the size of a population	**No significant Impact** This is a migratory/dispersive species that would only utilise the habitats within the Survey area as a temporary refuge and feeding area when moving to and from their breeding grounds. This species has not been recorded within 75 km (Roma) of the Survey area. The total mapped area of gilgai within the Survey area is 3,035 ha. The loss of 1.4 ha of low quality potential temporary foraging habitat from a very large area of mapped gilgai will not have any meaningful impact on a population of this species. It is unlikely that the proposed action will have any meaningful impact on a population of this species.
MNES – reduce the area of occupancy of the species	**No significant Impact** This is a migratory species that ranges over approximately 1000 km of the eastern states of Australia. It is very unlikely that there are any "resident" individuals of this species within the Survey area. It is unlikely that this species will occur but if ever present they would only use the local habitats as a temporary refuge and feeding area when moving to better habitats. This species has not been recorded within 75 km (Roma) of the Survey area. The total mapped area of gilgai within the Survey area is 3,035 ha. The loss of 1.4 ha of low quality potential temporary foraging habitat from a very large area of mapped gilgai will not have any meaningful impact on this species. It is unlikely that the proposed action will reduce the area of occupancy for a population of this species.
MNES – fragment an existing population into two or more populations	**No significant Impact** This is a migratory bird species capable of moving large distances between habitats. The proposed action is narrow in extent. It is unlikely that the action will fragment a population of this species.
MNES – Adversely affect habitat critical to the survival of a species.	No significant Impact This is a migratory species that would only use the habitats within the Survey area as a temporary refuge and feeding area when moving to and from their breeding grounds. This species is very unlikely to breed within the locality. It is unlikely that this species will occur but if ever present they would only use the local habitats as a temporary refuge and feeding area when moving to better habitats.

Significant residual impact assessment for Australian painted snipe *Rostratula australis* (Endangered EPBC & Vulnerable NC Act)	
Significant Impact Guideline Criteria.	Response
	The total mapped area of gilgai within the Survey area is 3,035 ha. The loss of 1.4 ha of low quality potential temporary foraging habitat from a very large area of mapped gilgai will not have any meaningful impact on this species. It is unlikely that the proposed action will significantly affect habitat critical to the survival of this species.
MNES – Modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline	No significant Impact This is a migratory species that would only use the habitats within the Survey area as a temporary refuge and feeding area when moving to and from their breeding grounds. The total mapped area of gilgai within the Survey area is 3,035 ha. The loss of 1.4 ha of low quality potential temporary foraging habitat from a very large area of mapped gilgai will not have any meaningful impact on this species. It is unlikely that the action will modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that this species is likely to decline.
MNES – result in invasive species that are harmful to a critically endangered or endangered species becoming established in the critically endangered or endangered species' habitat	No significant Impact Foxes and feral cats and dogs are known to occur within the local landscape and it unlikely that the proposed action will lead to an increase in cover or density of any invasive plant species that would materially impact the availability of feeding resources for this species. It is unlikely that the action will lead to any meaningful impact from invasive species on this endangered species.
MNES – introduce disease that may cause the species to decline	**No significant Impact** There are no known diseases that we are aware of that might be introduced by the proposed action and that might cause a decline in a population of this species.
MNES – Interfere with the recovery of the species.	**No significant Impact** This is a migratory species that would only use the habitats within the Survey area as a temporary refuge and feeding area when moving to and from their breeding grounds. Th closet record of this species is 75 km away (Roma) and it is unlikely that a resident population of this species occurs within the locality. The total mapped area of gilgai within the Survey area is 3,035 ha. The loss of 1.4 ha of low quality potential temporary foraging habitat from a

Significant residual impact assessment for Australian painted snipe *Rostratula australis* (Endangered EPBC & Vulnerable NC Act)	
Significant Impact Guideline Criteria.	Response
	very large area of mapped gilgai will not have any meaningful impact on this species. There will be no impacts to connectivity, or breeding habitat and the action will not lead to the introduction of harmful invasive species or disease. It is unlikely that the proposed action will interfere substantially with the recovery of the species.

Significant residual impact assessment for Latham's Snipe *Gallinago hardwickii* (Vulnerable EPBC & SL NC Act)	
Significant Impact Guideline Criteria.	**Response**
MNES – a long-term decrease in the size of a population.	No significant Impact This is a migratory species that would only utilise the habitats within the Survey area as a temporary refuge and feeding area when moving to and from their breeding grounds. The total mapped area of gilgai within the Survey area is 3,035 ha. The loss of 1.4 ha of low quality potential temporary foraging habitat from a very large area of mapped gilgai will not have any meaningful impact on this species. It is unlikely that the proposed action will lead to the long-term decrease in the size of a population on of this species.
MNES – reduce the area of occupancy of an important population	No significant Impact This is a migratory species that flies 1,000 kms between breeding and wintering grounds and does not breed in Australia. This species would only use the habitats within the Survey area as a temporary refuge and feeding area when migrating. It appears unlikely that the loss of temporary refuge wetlands is the main threat to this species. The total mapped area of gilgai within the Survey area is 3,035 ha. The loss of 1.4 ha of low quality potential temporary foraging habitat from a very large area of mapped gilgai will not have any meaningful impact on this species. It is unlikely that the proposed action will reduce the area of occupancy for an important population of this species.

Significant residual impact assessment for Latham's Snipe *Gallinago hardwickii* (Vulnerable EPBC & SL NC Act)	
Significant Impact Guideline Criteria.	Response
MNES – fragment an existing population into two or more populations	**No significant Impact** This is a migratory species that travels vast distances. The proposed action will not directly impact habitat important to this species. It is unlikely that the action will fragment a population of this species.
MNES – Adversely affect habitat critical to the survival of a species.	No significant Impact This is a migratory species that would only use the habitats within the Survey area as a temporary refuge and feeding area when moving to and from their breeding grounds. This species does not breed in Australia. The total mapped area of gilgai within the Survey area is 3,035 ha. The removal of 1.4 ha of medium quality temporary feeding habitat is unlikely to significantly affect habitat critical to the survival of this species.
MNES – Disrupt the breeding cycle of an important population.	**No significant Impact** This species does not breed in Australia. It is unlikely that the proposed action will significantly disrupt the breeding cycle of an important population.
MNES – Modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline	**No significant Impact** This species does not breed in Australia. This species would only use the habitats within the Survey area as a temporary refuge and feeding area when moving to and from their breeding grounds. The total mapped area of gilgai within the Survey area is 3,035 ha. The loss of 1.4 ha of low quality temporary potential foraging habitat from a very large area of mapped gilgai the action will not have any meaningful impact on this species. It is unlikely that the action will modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that this species is likely to decline.
MNES – result in invasive species that are harmful to a critically endangered or endangered species becoming established in the vulnerable species' habitat	**No significant Impact** Foxes and feral cats and dogs are known to occur within the local landscape and it unlikely that the proposed action will lead to an increase in cover or density of any invasive plant species that would materially impact the availability of feeding resources for this species. It

Significant residual impact assessment for Latham's Snipe *Gallinago hardwickii* (Vulnerable EPBC & SL NC Act)	
Significant Impact Guideline Criteria.	Response
	is unlikely that the action will lead to any meaningful impact from invasive species on this species.
MNES – introduce disease that may cause the species to decline	**No significant Impact** There are no known diseases that we are aware of that might be introduced by the proposed action and that might cause a decline in a population of this species.
MNES – interfere substantially with the recovery of the species	No significant Impact This is a migratory species that would only use the habitats within the Survey area as a temporary refuge and feeding area when moving to and from their breeding grounds. The total mapped area of gilgai within the Survey area is 3,035 ha. The loss of 1.4 ha of low quality potential temporary foraging habitat from a very large area of mapped gilgai the action will not have any meaningful impact on this species. There will be no impacts to connectivity, or breeding habitat and the action will not lead to the introduction of harmful invasive species or disease. It is unlikely that the proposed action will interfere substantially with the recovery of this species.

Significant residual impact assessment for Sharp-tailed Sandpiper *Calidris acuminata* (Vulnerable EPBC & SL NC Act)	
Significant Impact Guideline Criteria.	Response
MNES – a long-term decrease in the size of a population.	No significant Impact This is a migratory species that would only utilise the habitats within the Survey area as a temporary refuge and feeding area when moving to and from their breeding grounds. Only low-quality temporary potential foraging habitat will be disturbed from within a very large area (3, 035 ha) of mapped gilgai the action will not have any meaningful impact on

Significant residual impact assessment for Sharp-tailed Sandpiper *Calidris acuminata* (Vulnerable EPBC & SL NC Act)	
Significant Impact Guideline Criteria.	Response
	this species. It is unlikely that the proposed action will lead to a long-term decrease in the size of a population. of this species.
MNES – reduce the area of occupancy of an important population	**No significant Impact** This is a migratory species that flies 1,000 kms between breeding and wintering grounds and does not breed in Australia. This species would only use the habitats within the Survey area as a temporary refuge and feeding area when migrating. Only low-quality temporary potential foraging habitat will be disturbed from within a very large area (3, 035 ha) of mapped gilgai and the action will not have any meaningful impact on this species. It is unlikely that the proposed action will reduce the area of occupancy for a population of this species.
MNES – fragment an existing population into two or more populations	**No significant Impact** This is a migratory species that travels vast distances. The proposed action will not directly impact habitat important to this species. It is unlikely that the action will fragment a population of this species.
MNES – Adversely affect habitat critical to the survival of a species.	No significant Impact This is a migratory species that would only use the habitats within the Survey area as a temporary refuge and feeding area when moving to and from their breeding grounds. This species does not breed in Australia. Only low-quality temporary potential foraging habitat will be disturbed which is unlikely to significantly affect habitat critical to the survival of this species.
MNES – Disrupt the breeding cycle of an important population.	**No significant Impact** This species does not breed in Australia. It is unlikely that the proposed action will significantly disrupt the breeding cycle of an important population.
MNES – Modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline	**No significant Impact** This species does not breed in Australia. This species would only use the habitats within the Survey area as a temporary refuge and feeding area when moving to and from their breeding grounds. Only low quality temporary potential foraging habitat will be disturbed from within a very large area (3, 035 ha) of mapped gilgai and the action will not have any meaningful impact on this species. It is unlikely that the action will

Significant residual impact assessment for Sharp-tailed Sandpiper *Calidris acuminata* (Vulnerable EPBC & SL NC Act)	
Significant Impact Guideline Criteria.	Response
	modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline
MNES – result in invasive species that are harmful to a critically endangered or endangered species becoming established in the vulnerable species' habitat	**No significant Impact** Foxes and feral cats and dogs are known to occur within the local landscape and it unlikely that the proposed action will lead to an increase in cover or density of any invasive plant species that would materially impact the availability of feeding resources for this species. It is unlikely that the action will lead to any meaningful impact from invasive species on this species.
MNES – introduce disease that may cause the species to decline	**No significant Impact** There are no known diseases that we are aware of that might be introduced by the proposed action and that might cause a decline in a population of this species.
MNES – interfere substantially with the recovery of the species	**No significant Impact** This is a migratory species that would only use the habitats within the Survey area as a temporary refuge and feeding area when moving to and from their breeding grounds. It appears unlikely that the Only low quality temporary potential foraging habitat will be disturbed from within a very large area (3, 035 ha) of mapped gilgai and the action will not have any meaningful impact on this species. There will be no impacts to connectivity, or breeding habitat and the action will not lead to the introduction of harmful invasive species or disease. It is unlikely that the proposed action will interfere substantially with the recovery of the species.

CDF = Construction disturbance footprint (17m in width buffer to linear infrastructure)

Appendix H

Significant Impact Assessments for MSES Threatened Fauna

Significant residual impact assessment for Squatter Pigeon (southern) *Geophaps scripta scripta* (Vulnerable EPBC & NC Act)	
Significant Residual Impact Guideline Criteria.	**Response**
MSES – lead to a long-term decrease in the size of a local population.	No Significant Impact Most of the survey area occurs on heavy clay soils dominated by a dense cover of exotic grasses, mainly buffel. The lack of tall, wooded areas within close proximity to the CDF, further limits the quality of foraging habitat for this species. The CDF zone and surrounds do not hold good quality habitats for this species. There are no contemporary local records for this species on the old alluvial clay terraces (LZ 4) or quaternary alluvials (LZ 3) that dominate the CDF, and squatter pigeons were not observed during summer or winter surveys. Vegetation community disturbance on brigalow clay soils (RE 11.3.1 and 11.4.8) is not considered habitat for this species (see Table 4.2). Disturbance to a further 0.5 ha of medium quality potential habitat is proposed on land zone 5. This disturbance is split over 7 vanishingly small patches with no impacts to connectivity. It is unlikely that the proposed action will have any meaningful impact on the Squatter Pigeon population as it is unlikely to be present.
MSES – a reduced extent of occurrence of the species	No Significant Impact There are no contemporary local records for this species on the old alluvial clay terraces (LZ 4) or quaternary alluvials (LZ 3) that dominate the CDF, and it was not observed during summer or winter surveys. This species is not thought to occur and if present would be restricted to small areas of Land zone 5 and 7. Proposed disturbance to a further 0.5 ha of medium quality potential habitat is split over 7 vanishingly small patches with no impacts to connectivity. It is unlikely that the proposed action will reduce the extent of occurrence of this species.
MSES – fragmentation of an existing population	**No Significant Impact** The squatter pigeon is a highly mobile bird species that frequently crosses large expanses of open ground. The proposed action is narrow in extent. It is unlikely that the action will fragment an existing population of this species.

Significant residual impact assessment for Squatter Pigeon (southern) *Geophaps scripta scripta* (Vulnerable EPBC & NC Act)	
Significant Residual Impact **Guideline Criteria.**	Response
MSES – result in genetically distinct populations forming as a result of habitat isolation	**No Significant Impact** The squatter pigeon is a highly mobile bird species that frequently crosses large expanses of open ground. The proposed action is narrow or small in extent. It is unlikely that the action will result in genetically distinct populations forming as a result of habitat isolation.
MSES – cause disruption to ecologically significant locations (breeding, feeding or nesting sites) of a species	No Significant Impact The lack of tall, wooded areas within close proximity to the CDF limits the quality of foraging habitat for this species. The soils are invariably heavy clays throughout and some of the CDF is covered in very dense. Mainly exotic grasses, especially buffel. There are no contemporary local records for this species, and it was not observed during summer or winter surveys. There are no contemporary local records for this species on the old alluvial clay terraces (LZ 4) or quaternary alluvials (LZ 3) that dominate the CDF, and squatter pigeons were not observed during summer or winter surveys. Vegetation community disturbance on brigalow clay soils (RE 11.3.1 and 11.4.8) is not considered habitat for this species (see Table 4.2). Disturbance to a further 0.5 ha of medium quality potential habitat is proposed on land zone 5. This disturbance is split over 7 vanishingly small patches with no impacts to connectivity. It is unlikely that the proposed action will cause disruption to ecologically significant locations (breeding, feeding or nesting sites) of this species
MSES – Result in invasive species that are harmful to an endangered or vulnerable species becoming established in the endangered or vulnerable species' habitat.	No Significant Impact Nearly all the CDF is covered in exotic grasses, mainly buffel. There was evidence of fox, cat and feral dogs across the landscape. With the implementation of feral animal control around the facilities, it is unlikely that the trenching of pipe and construction of well pads will result in the introduction of new invasive species or lead to an increase in existing invasive species that are harmful to this vulnerable species becoming established in the vulnerable species' habitat.
MSES – Introduce disease that may cause the population to decline.	No Significant Impact

Significant residual impact assessment for Squatter Pigeon (southern) *Geophaps scripta scripta* (Vulnerable EPBC & NC Act)	
Significant Residual Impact **Guideline Criteria.**	Response
	There are no known diseases that we are aware of that might be introduced by the proposed action.
MSES – Interfere with the recovery of the species.	**No Significant Impact** The lack of tall, wooded areas within close proximity to the CDF limits the quality of foraging habitat for this species. The soils are invariably heavy clays throughout and some of the CDF is covered in very dense. Mainly exotic grasses, especially buffel. There are no contemporary local records for this species, and it was not observed during summer or winter surveys. There are no contemporary local records for this species on the old alluvial clay terraces (LZ 4) or quaternary alluvials (LZ 3) that dominate the CDF, and squatter pigeons were not observed during summer or winter surveys. Vegetation community disturbance on brigalow clay soils (RE 11.3.1 and 11.4.8) is not considered habitat for this species (see **Table 4.2**). Disturbance to a further 0.5 ha of medium quality potential habitat is proposed on land zone 5. This disturbance is split over 7 vanishingly small patches with no impacts to connectivity. It is unlikely that the proposed action to interfere with the recovery of the species

Significant residual impact assessment for Painted Honeyeater *Grantiella picta* (Vulnerable EPBC & NC Act)	
Significant Residual Impact **Guideline Criteria.**	**Response**
MSES – lead to a long-term decrease in the size of a local population.	No Significant Impact The impact is made up of 1.7 ha over 7 vanishingly small patches of medium quality habitat (2 x patches Regrowth RE 11.4.8 and 5 x patches regrowth 11.5.3 totalling 1.7 ha of medium quality habitat). Whilst habitat quality scores of 5.5 were derived for impacted areas they are bolstered by scores for mobility and the presence of canopy trees rather than essential micro-habitat features such as very large old

Significant residual impact assessment for Painted Honeyeater *Grantiella picta* (Vulnerable EPBC & NC Act)	
Significant Residual Impact Guideline Criteria.	Response
	trees and mistletoe. Suitable habitat for this species is generally restricted to the riparian open forests of the large creek systems. This species is generally unlikely to occur within the locality and if it does occur will only occur in low numbers for a short-period as a vagrant and is more likely to rely on better quality habitats associated with riparian open-forest of the large creek systems. The low levels of mistletoe and vanishingly small patches of clearing combine to make it very unlikely that any meaningful impacts to potential habitat for this species will occur and no impacts to connectivity will result. The proposed disturbance will not lead to a long-term decrease in the size of a local population. Pre-disturbance surveys for mistletoe habitat within the CDZ are recommended to rule out the presence of potential feeding habitat for this species.
	Cumulative Impacts Previous impacts of 0.25 ha of RE 11.4.9a assumed to provide medium quality habitat for this species occurred. Partial rehabilitation of this community has occurred. The proposed additional impacts of 1.7 ha lead to a combined cumulative impact of 1.95 ha. This species is generally unlikely to occur within the locality and if it does only in low numbers for a short-period as a vagrant and is more likely to rely on better quality habitats associated with riparian open-forest of the large creek systems. A cumulative significant residual impact to a local population is unlikely.
MSES – a reduced extent of occurrence of the species	**No Significant Impact** This is a migratory / dispersive species that rarely occurs this far north and does not breed within the locality. The low levels of mistletoe and vanishingly small patches of clearing combine to make it very unlikely that any meaningful impacts to potential habitat and no impacts to connectivity will result. This is a very wide-ranging nomadic species that takes advantage of very large areas of potential feeding habitat and the proposed disturbance will not reduce the extent of occurrence of this species.
	Cumulative Impacts

Significant residual impact assessment for Painted Honeyeater *Grantiella picta* (Vulnerable EPBC & NC Act)	
Significant Residual Impact Guideline Criteria.	Response
	An additional previous impact of 0.25 ha of RE 11.4.9a assumed to provide medium quality habitat for this species occurred 9 years ago and is now partially rehabilitated. This species is generally unlikely to occur within the locality and if it does occur will only occur in low numbers for a short-period as a vagrant and is more likely to rely on better quality habitats associated with riparian open-forest of the large creek systems. This additional impact is unlikely to lead to a reduced extent of occurrence of this species
MSES – fragmentation of an existing population	No Significant Impact The Painted Honeyeater is a highly mobile bird species that frequently crosses large expanses of open ground. The species has not been recorded from the Survey area and will only occur as an occasional vagrant if at all. It is unlikely that the action will fragment a population of this species.
	Cumulative Impacts An additional previous impact of 0.25 ha of RE 11.4.9a assumed to provide medium quality habitat for this species occurred 9 years ago and is now partially rehabilitated. It is unlikely that this additional impact will combine to cause fragmentation of an existing population of this nomadic bird species
MSES – result in genetically distinct populations forming as a result of habitat isolation	**No Significant Impact** The Painted honeyeater is migratory bird species. The proposed action is unlikely to lead to genetically distinct populations forming
	Cumulative Impacts An additional previous impact of 0.25 ha of RE 11.4.9a assumed to provide medium quality habitat for this species occurred 9 years ago and is now partially rehabilitated. It is unlikely that this additional impact will combine to result in genetically distinct populations forming as a result of habitat isolation for this nomadic bird species
MSES – cause disruption to ecologically significant locations (breeding, feeding or nesting sites) of a species	No Significant Impact The impact is made up of 1.7 ha over 7 vanishingly small patches of medium quality habitat (2 x patches Regrowth RE 11.4.8 and 5 x patches regrowth 11.5.3 totalling 1.7 ha of medium quality habitat)

Significant residual impact assessment for Painted Honeyeater *Grantiella picta* (Vulnerable EPBC & NC Act)	
Significant Residual Impact Guideline Criteria.	Response
	Whilst habitat quality scores of 5.5 were derived for impacted areas they are bolstered by scores for mobility and the presence of canopy trees rather than essential micro-habitat features such as very large old trees and mistletoe. The lack of large mature trees and mistletoe infestations limits the quality of feeding and breeding habitats for this species within and surrounding the CDF. This species is also known to be rare in upland environments, and it is unlikely to breed this far north. This species is generally unlikely to occur within the locality and if it does only in low numbers for a short-period as a vagrant and is more likely to rely on better quality habitats associated with riparian open-forest of the large creek systems. The low levels of mistletoe and vanishingly small patches of clearing combine to make it very unlikely that any meaningful impacts to ecologically significant locations (breeding, feeding or nesting sites) of this species will result. Pre-disturbance surveys for mistletoe habitat within the CDZ are recommended to rule out the presence of potential feeding habitat for this species.
	Cumulative Impacts An additional previous impact of 0.25 ha of RE 11.4.9a assumed to provide medium quality habitat for this species occurred 9 years ago and is now partially rehabilitated. It is unlikely that this additional impact will combine to cause disruption to ecologically significant locations (breeding, feeding or nesting sites) to a highly mobile nomadic species that is really unlikely to occur within these habitats.
MSES – Result in invasive species that are harmful to an endangered or vulnerable species becoming established in the endangered or vulnerable species' habitat.	**No Significant Impact** It is unlikely that the construction and operation of the facilities will result in invasive species that are harmful to this Vulnerable species becoming established in the vulnerable species' habitat.
	Cumulative Impacts The historical clearing of 0.25 ha of medium quality habitat that has partially been rehabilitated is unlikely to result in invasive species that are harmful to an endangered or vulnerable species becoming established in the endangered or vulnerable species' habitat.

Significant residual impact assessment for Painted Honeyeater *Grantiella picta* (Vulnerable EPBC & NC Act)	
Significant Residual Impact Guideline Criteria.	Response
MSES – Introduce disease that may cause the population to decline.	**No Significant Impact** It is unlikely that the action will introduce disease that may cause the population to decline.
	Cumulative Impacts The historical clearing of 0.25 ha of medium quality habitat that has partially been rehabilitated is unlikely to introduce disease that may cause the population to decline.
MSES – Interfere with the recovery of the species.	No Significant Impact The impact is made up of 1.7 ha over 7 vanishingly small patches of medium quality habitat (2 x patches Regrowth RE 11.4.8 and 5 x patches regrowth 11.5.3 totalling 1.7 ha of medium quality habitat) Whilst habitat quality scores of 5.5 were derived for impacted areas they are bolstered by scores for mobility and the presence of canopy trees rather than essential micro-habitat features such as very large old trees and mistletoe. The lack of large mature trees and mistletoe infestations limits the quality of feeding and breeding habitats for this species within and surrounding the CDF. This species is also known to be rare in upland environments, and it is unlikely to breed this far north. This species is generally unlikely to occur within the locality and if it does only in low numbers for a short-period as a vagrant and is more likely to rely on better quality habitats associated with riparian open-forest of the large creek systems. The low levels of mistletoe and vanishingly small patches of clearing combine to make it very unlikely that any meaningful impacts to potential habitat and no impacts to connectivity will result. The proposed disturbance will not interfere substantially with the recovery of the species Pre-disturbance surveys for mistletoe habitat within the CDZ are recommended to rule out the presence of potential feeding habitat for this species.
	Cumulative Impacts An additional previous impact of 0.25 ha of RE 11.4.9a assumed to provide medium quality habitat for this species occurred 9 years ago and is now partially rehabilitated. It is unlikely that this additional

Significant residual impact assessment for Painted Honeyeater *Grantiella picta* (Vulnerable EPBC & NC Act)	
Significant Residual Impact Guideline Criteria.	Response
	impact will combine to Interfere with the recovery of to a highly mobile nomadic species that is really unlikely to occur within these habitats.

Conservation Advice effective date 08/07/2015.

Significant residual impact assessment for Ornamental snake *Denisonia maculata* (Vulnerable)	
Significant Residual Impact Guideline Criteria.	**Response**
MSES – lead to a long-term decrease in the size of a local population.	**No Significant Impact** Exclusion zones placed on a series of 4 patches of RE 11.3.1 all less than 0.02 ha each of medium quality potential habitat for this species prevents direct impacts to habitat. There will be no meaningful impacts to connectivity through construction of buried pipelines and small enclosures for well-heads. The proposed development is unlikely to lead to a long-term decrease in the size of a local population of this species
	Cumulative Impacts An additional previous impact of 0.25 ha of RE 11.4.9a assumed to provide medium quality habitat for this species occurred 9 years ago and is now partially rehabilitated. It is unlikely that the additional impacts from the current proposal will culminate in the long-term decrease in the size of a local population.
MSES – a reduced extent of occurrence of the species	**No Significant Impact** Exclusion zones placed on a series of 4 patches of RE 11.3.1 all less than 0.02 ha each of medium quality potential habitat for this species prevents direct impacts to habitat. There will be no meaningful impacts to connectivity through construction of buried pipelines and small enclosures for well-heads. The proposed development is unlikely to reduce the extent of occurrence of this species

Significant residual impact assessment for Ornamental snake *Denisonia maculata* (Vulnerable)	
Significant Residual Impact Guideline Criteria.	**Response**
	Cumulative Impacts An additional previous impact of 0.25 ha of RE 11.4.9a assumed to provide medium quality habitat for this species occurred 9 years ago and is now partially rehabilitated. It is unlikely that the additional impacts from the current proposal will culminate in a reduced extent of occurrence of this species.
MSES – fragmentation of an existing population	**No Significant Impact** Exclusion zones placed on a series of 4 patches of RE 11.3.1 all less than 0.02 ha each of medium quality potential habitat for this species prevents direct impacts to habitat. Most of the disturbance is temporary and will not interfere with movement of this species. The proposed disturbance will not fragment a population of this species.
	Cumulative Impacts An additional previous impact of 0.25 ha of RE 11.4.9a assumed to provide medium quality habitat for this species occurred 9 years ago and is now partially rehabilitated. It is unlikely that the additional impacts from the current proposal will culminate in fragmentation of an existing population of this species
MSES – result in genetically distinct populations forming as a result of habitat isolation	**No Significant Impact** Exclusion zones placed on a series of 4 patches of RE 11.3.1 all less than 0.02 ha each of medium quality potential habitat for this species prevents direct impacts to habitat. There will be no meaningful impacts to connectivity through construction of buried pipelines and small enclosures for well-heads. Most of the disturbance is temporary and will not interfere with movement of this species. The proposed disturbance will not lead to genetically distinct populations forming.
	Cumulative Impacts An additional previous impact of 0.25 ha of RE 11.4.9a assumed to provide medium quality habitat for this species occurred 9 years ago and is now partially rehabilitated. It is unlikely that the additional impacts from the current proposal will culminate in

Significant residual impact assessment for Ornamental snake *Denisonia maculata* (Vulnerable)	
Significant Residual Impact Guideline Criteria.	**Response**
	genetically distinct populations forming as a result of habitat isolation.
MSES – cause disruption to ecologically significant locations (breeding, feeding or nesting sites) of a species	No Significant Impact Exclusion zones placed on a series of 4 patches of RE 11.3.1 all less than 0.02 ha each of medium quality potential habitat for this species prevents direct impacts to habitat. This disturbance will not occur within ecologically significant locations and will have no meaningful impact on breeding, feeding or nesting sites for this species.
	Cumulative Impacts An additional previous impact of 0.25 ha of RE 11.4.9a assumed to provide medium quality habitat for this species occurred 9 years ago and is now partially rehabilitated. It is unlikely that the additional impacts from the current proposal will culminate in disruption to ecologically significant locations (breeding, feeding or nesting sites) of this species
MSES – Result in invasive species that are harmful to an endangered or vulnerable species becoming established in the endangered or vulnerable species' habitat.	**No Significant Impact** It is unlikely that the construction of the facilities will result in invasive species that are harmful to this vulnerable species becoming established in the vulnerable species' habitat.
	Cumulative Impacts An additional previous impact of 0.25 ha of RE 11.4.9a assumed to provide medium quality habitat for this species occurred 9 years ago and is now partially rehabilitated. It is unlikely that the additional impacts from the current proposal will culminate in invasive species that are harmful to this vulnerable species becoming established in the vulnerable species' habitat.
MSES – Introduce disease that may cause the population to decline.	No Significant Impact It is unlikely that the construction of the facilities will introduce disease that may cause the species to decline.
	Cumulative Impacts An additional previous impact of 0.25 ha of RE 11.4.9a assumed to provide medium quality habitat for this species occurred 9 years

Significant residual impact assessment for Ornamental snake *Denisonia maculata* (Vulnerable)	
Significant Residual Impact Guideline Criteria.	**Response**
	ago and is now partially rehabilitated. It is unlikely that the additional impacts from the current proposal will culminate in the introduction of disease that may cause the population to decline.
MSES – Interfere with the recovery of the species.	**No Significant Impact** Exclusion zones placed on a series of 4 patches of RE 11.3.1 all less than 0.02 ha each of medium quality potential habitat for this species prevents direct impacts to habitat. There will be no meaningful impacts to connectivity through construction of buried pipelines and small enclosures for well-heads. Most of the disturbance is temporary . The proposed development is unlikely to interfere with the recovery of this species.
	Cumulative Impacts An additional previous impact of 0.25 ha of RE 11.4.9a assumed to provide medium quality habitat for this species occurred 9 years ago and is now partially rehabilitated. It is unlikely that the additional impacts from the current proposal will culminate in interference to the recovery of this species.

Significant residual impact assessment for Grey snake *Hemiaspis damelii* **(Endangered EPBC & NC Act)**	
Significant Residual Impact Guideline Criteria.	Response
MSES – lead to a long-term decrease in the size of a local population.	**No Significant Impact** Exclusion zones placed on a series of 4 patches of RE 11.3.1 all less than 0.02 ha each of medium quality potential habitat for this species prevents direct impacts to habitat. There will be no meaningful impacts to connectivity through construction of buried pipelines and small enclosures for well-heads. The proposed development is unlikely to lead to a long-term decrease in the size of a local population of this species

Significant residual impact assessment for Grey snake *Hemiaspis damelii* (Endangered EPBC & NC Act)	
Significant Residual Impact Guideline Criteria.	Response
	Cumulative Impacts An additional previous impact of 0.25 ha of RE 11.4.9a assumed to provide medium quality habitat for this species occurred 9 years ago and is now partially rehabilitated. It is unlikely that the additional impacts from the current proposal will culminate in the long-term decrease in the size of a local population.
MSES – a reduced extent of occurrence of the species	No Significant Impact Exclusion zones placed on a series of 4 patches of RE 11.3.1 all less than 0.02 ha each of medium quality potential habitat for this species prevents direct impacts to habitat. There will be no meaningful impacts to connectivity through construction of buried pipelines and small enclosures for well-heads. The proposed development is unlikely to reduce the extent of occurrence of this species
	Cumulative Impacts An additional previous impact of 0.25 ha of RE 11.4.9a assumed to provide medium quality habitat for this species occurred 9 years ago and is now partially rehabilitated. It is unlikely that the additional impacts from the current proposal will culminate in a reduced extent of occurrence of this species.
MSES – fragmentation of an existing population	**No Significant Impact** Exclusion zones placed on a series of 4 patches of RE 11.3.1 all less than 0.02 ha each of medium quality potential habitat for this species prevents direct impacts to habitat. Most of the disturbance is temporary and will not interfere with movement of this species. The proposed disturbance will not fragment a population of this species.
	Cumulative Impacts An additional previous impact of 0.25 ha of RE 11.4.9a assumed to provide medium quality habitat for this species occurred 9 years ago and is now partially rehabilitated. It is unlikely that the additional impacts from the current proposal will culminate in fragmentation of an existing population of this species

Significant residual impact assessment for Grey snake *Hemiaspis damelii* (Endangered EPBC & NC Act)	
Significant Residual Impact Guideline Criteria.	Response
MSES – result in genetically distinct populations forming as a result of habitat isolation	No Significant Impact Exclusion zones placed on a series of 4 patches of RE 11.3.1 all less than 0.02 ha each of medium quality potential habitat for this species prevents direct impacts to habitat. There will be no meaningful impacts to connectivity through construction of buried pipelines and small enclosures for well-heads. Most of the disturbance is temporary and will not interfere with movement of this species. The proposed disturbance will not lead to genetically distinct populations forming.
	Cumulative Impacts An additional previous impact of 0.25 ha of RE 11.4.9a assumed to provide medium quality habitat for this species occurred 9 years ago and is now partially rehabilitated. It is unlikely that the additional impacts from the current proposal will culminate in genetically distinct populations forming as a result of habitat isolation.
MSES – cause disruption to ecologically significant locations (breeding, feeding or nesting sites) of a species	No Significant Impact Exclusion zones placed on a series of 4 patches of RE 11.3.1 all less than 0.02 ha each of medium quality potential habitat for this species prevents direct impacts to habitat. This disturbance will not occur within ecologically significant locations and will have no meaningful impact on breeding, feeding or nesting sites for this species.
	Cumulative Impacts An additional previous impact of 0.25 ha of RE 11.4.9a assumed to provide medium quality habitat for this species occurred 9 years ago and is now partially rehabilitated. It is unlikely that the additional impacts from the current proposal will culminate in disruption to ecologically significant locations (breeding, feeding or nesting sites) of this species
MSES – Result in invasive species that are harmful to an endangered or vulnerable species becoming established in	No Significant Impact It is unlikely that the construction of the facilities will result in invasive species that are harmful to this vulnerable species becoming established in the vulnerable species' habitat.

Significant residual impact assessment for Grey snake *Hemiaspis damelii* (Endangered EPBC & NC Act)	
Significant Residual Impact Guideline Criteria.	Response
the endangered or vulnerable species' habitat.	Cumulative Impacts An additional previous impact of 0.25 ha of RE 11.4.9a assumed to provide medium quality habitat for this species occurred 9 years ago and is now partially rehabilitated. It is unlikely that the additional impacts from the current proposal will culminate in invasive species that are harmful to this vulnerable species becoming established in the vulnerable species' habitat.
MSES – Introduce disease that may cause the population to decline.	No Significant Impact It is unlikely that the construction of the facilities will introduce disease that may cause the species to decline.
	Cumulative Impacts An additional previous impact of 0.25 ha of RE 11.4.9a assumed to provide medium quality habitat for this species occurred 9 years ago and is now partially rehabilitated. It is unlikely that the additional impacts from the current proposal will culminate in the introduction of disease that may cause the population to decline.
MSES – Interfere with the recovery of the species.	No Significant Impact Exclusion zones placed on a series of 4 patches of RE 11.3.1 all less than 0.02 ha each of medium quality potential habitat for this species prevents direct impacts to habitat. There will be no meaningful impacts to connectivity through construction of buried pipelines and small enclosures for well-heads. Most of the disturbance is temporary. The proposed development is unlikely to interfere with the recovery of this species.
	Cumulative Impacts An additional previous impact of 0.25 ha of RE 11.4.9a assumed to provide medium quality habitat for this species occurred 9 years ago and is now partially rehabilitated. It is unlikely that the additional impacts from the current proposal will culminate in interference to the recovery of this species.

Significant residual impact assessment for Yakka Skink *Egernia rugosa* (Vulnerable EPBC & NC Act)	
Significant Residual Impact **Guideline Criteria.**	Response
MSES – lead to a long-term decrease in the size of a local population.	**No Significant Impact** There are a limited number of ALA records for this species within the wider area. This species occurs in open dry sclerophyll forest or woodland, and may persist where shelter sites such as tunnel erosion, rabbit warrens and log piles exist. This species is highly sedentary. Most of the Survey is dominated by unsuitable heavily clay soils and habitat values for this species are restricted to a few discrete and isolated patches within the north of the Survey area. This is a highly sedentary species and pre-disturbance surveys for its presence within 100m of proposed habitat disturbance would be sufficient to rule out its presence. Whilst the habitat model provides that disturbance to 0.5 ha of medium quality habitat (split over 7 vanishingly small patches) will occur, the potential for this species to occur in this landscape is very low. it is unlikely that the very small areas of proposed impact will have any meaningful impact to a population of this species or lead to a long-term decrease in the size of a local population of this species (see Table 4.2)
MSES – a reduced extent of occurrence of the species	No Significant Impact This is a medium sized reptile that has the potential to cross short spans of open ground when dispersing. Disturbance in most of the CDF is temporary and will not prevent dispersal for this species. The individual impacted areas are very small and extremely unlikely to meaningfully impact a population of this species. The proposed disturbance is very unlikely to reduce the extent of occurrence of the species. This is a highly sedentary species and pre-disturbance surveys for its presence within 100m of proposed habitat disturbance would be sufficient to rule out its presence.
MSES – fragmentation of an existing population	**No Significant Impact** This is a medium sized reptile that has the potential to cross short spans of open ground when dispersing. Disturbance in most of the CDF is temporary and occurs in very small patches and will not

Significant residual impact assessment for Yakka Skink *Egernia rugosa* (Vulnerable EPBC & NC Act)	
Significant Residual Impact **Guideline Criteria.**	Response
	prevent dispersal for this species. The proposed disturbance will not fragment a population of this species.
MSES – result in genetically distinct populations forming as a result of habitat isolation	**No Significant Impact** This is a medium sized reptile that has the potential to cross short spans of open ground when dispersing. Disturbance in most of the CDF is temporary and will not prevent dispersal for this species. The proposed disturbance will not lead to genetically distinct populations forming.
MSES – cause disruption to ecologically significant locations (breeding, feeding or nesting sites) of a species	**No Significant Impact** Whilst disturbance to 0.5 ha of medium quality habitat for this species is proposed split over 7 vanishingly small patches. Land zone 5 habitats are patchy and isolated in a matrix of unsuitable heavy clay soils, and it is unlikely that this species occurs. The proposed disturbance of a very small amount of medium quality habitat over several vanishingly small patches, will not cause disruption to ecologically significant locations (breeding, feeding or nesting sites) of this species. This is a highly sedentary species and pre-disturbance surveys for its presence within 100m of proposed habitat disturbance would be sufficient to rule out its presence.
MSES – Result in invasive species that are harmful to an endangered or vulnerable species becoming established in the endangered or vulnerable species' habitat.	No Significant Impact It is unlikely that the construction of the facilities will result in invasive species that are harmful to this vulnerable species becoming established in the vulnerable species' habitat.
MSES – Introduce disease that may cause the population to decline.	No Significant Impact It is unlikely that the construction of the facilities will introduce disease that may cause the population to decline.
MSES – Interfere with the recovery of the species.	No Significant Impact There are a limited number of ALA records for this species within the wider area. This species occurs in open dry sclerophyll forest or

Significant residual impact assessment for Yakka Skink *Egernia rugosa* (Vulnerable EPBC & NC Act)	
Significant Residual Impact **Guideline Criteria.**	Response
	woodland, and may persist where shelter sites such as tunnel erosion, rabbit warrens and log piles exist. This species is highly sedentary. Most of the Survey area is dominated by unsuitable heavily clay soils and habitat values for this species are restricted to a few discrete and isolated patches within the north of the Survey area. Whilst the habitat model provides that disturbance to 0.5 ha of medium quality habitat (split over 7 vanishingly small patches) will occur, the low likelihood of occurrence combined with the vanishingly small areas of impact provide that it is very likely that this species will be impacted. It is unlikely that the very small areas of proposed impact will interfere with the recovery of this species. This is a highly sedentary species and pre-disturbance surveys for its presence within 100m of proposed habitat disturbance would be sufficient to rule out its presence.

Conservation Advice effective date 29/04/2014

Significant residual impact assessment for Northern Greater Glider (*Petauroides minor*) (Vulnerable) and Central Greater Glider (*Petauroides armillatus*) (Endangered) (Endangered EPBC & NC Act)	
Significant Residual Impact Guideline Criteria.	Response
MSES – lead to a long-term decrease in the size of a local population	**No Significant Impact** No disturbance to potential habitat for this species is proposed, and no impacts to connectivity will result. The proposed disturbance will not lead to a long-term decrease in the size of a local population of this species
MSES – a reduced extent of occurrence of the species	**No Significant Impact** No disturbance to potential habitat for this species is proposed, and no impacts to connectivity will result. The proposed disturbance will not reduce the extent of occurrence of this species.

Significant residual impact assessment for Northern Greater Glider (*Petauroides minor*) (Vulnerable) and Central Greater Glider (*Petauroides armillatus*) (Endangered) (Endangered EPBC & NC Act)	
Significant Residual Impact Guideline Criteria.	Response
MSES – fragmentation of an existing population	**No Significant Impact** No disturbance to potential habitat for this species is proposed, and no impacts to connectivity will result. The proposed disturbance will not fragment an existing population of this species.
MSES – result in genetically distinct populations forming as a result of habitat isolation	No Significant Impact No disturbance to potential habitat for this species is proposed, and no impacts to connectivity will result. The proposed disturbance will not result in genetically distinct populations forming as a result of habitat isolation
MSES – cause disruption to ecologically significant locations (breeding, feeding or nesting sites) of a species	No Significant Impact No disturbance to potential habitat for this species is proposed, and no impacts to connectivity will result. The proposed disturbance will not cause disruption to ecologically significant locations (breeding, feeding or nesting sites) of this species.
MSES – Result in invasive species that are harmful to an endangered or vulnerable species becoming established in the endangered or Critically endangered species' habitat.	**No Significant Impact** With the implementation of a feral species management plan, it is unlikely that the construction and operation of the facilities will result in invasive species that are harmful to this Endangered species becoming established in the vulnerable species' habitat.
MSES – Introduce disease that may cause the population to decline.	No Significant Impact The construction and operation of the facilities is unlikely to introduce disease that may cause the population to decline.
MSES – Interfere with the recovery of the species.	**No Significant Impact** No disturbance to potential habitat for this species is proposed, and no impacts to connectivity will result. The proposed disturbance will not interfere substantially with the recovery of this species.

Significant residual impact assessment for Koala *Phascolarctos cinereus* (Endangered EPBC & NC Act)	
Significant Residual Impact Guideline Criteria.	Response
MSES – lead to a long-term decrease in the size of a local	**No Significant Impact** The clearing of 0.7 ha of vegetation with a habitat quality score of 4.8 is made up of a patch of regrowth RE 11.5.3 that is 0.4 ha (Insert 1) and three patches of RE 11.3.1 less than 0.04 ha each. It is unlikely that the clearing within the patches of RE 11.3.1 will remove any koala food trees, leaving 0.4 ha of very sparse regrowth RE 11.5.3 impacted with no impacts to connectivity. The home range of koalas outside of riparian open forests within this landscape are large with an average around 70 ha in size. The proposed disturbance of 0.4 ha of regrowth RE 11.5.3 will not lead to a long-term decrease in the size of a local population of this species.
MSES – a reduced extent of occurrence of the species	No Significant Impact The clearing of 0.7 ha of vegetation with a habitat quality score of 4.8 is made up of a patch of regrowth RE 11.5.3 that is 0.4 ha (**Insert 1**) and three patches of RE 11.3.1 less than 0.04 ha each. It is unlikely that the clearing within the patches of RE 11.3.1 will remove any koala food trees, leaving 0.4 ha of very sparse regrowth RE 11.4.3 impacted with no impacts to connectivity. The home range of koalas outside of riparian open forests within this landscape are large with an average around 70 ha in size. This proposed disturbance of 0.4 ha of regrowth RE 11.4.3 will not reduce the extent of occurrence of this species.
MSES – fragmentation of an existing population	**No Significant Impact** Most of the proposed disturbance is temporary and underground. The well heads are small discrete patches in a highly permeably matrix for Koalas. The proposed disturbance will not fragment an existing population of this species.
MSES – result in genetically distinct populations forming as a result of habitat isolation	**No Significant Impact** Most of the proposed disturbance is temporary and underground. The well heads are small discrete patches in a highly permeably matrix for Koalas. Koalas are known to walk several hundred metres between feed and refuge trees. The proposed disturbance will not

Significant residual impact assessment for Koala *Phascolarctos cinereus* (Endangered EPBC & NC Act)	
Significant Residual Impact Guideline Criteria.	Response
	result in genetically distinct populations forming as a result of habitat isolation
MSES – cause disruption to ecologically significant locations (breeding, feeding or nesting sites) of a species	**No Significant Impact** The clearing of 0.7 ha of vegetation with a habitat quality score of 4.8 is made up of a patch of regrowth RE 11.5.3 that is 0.4 ha (Insert 1) and three patches of RE 11.3.1 less than 0.04 ha each. It is unlikely that the clearing within the patches of RE 11.3.1 will remove any koala food trees, leaving 0.4 ha of very sparse regrowth RE 11.4.3 impacted. The home range of koalas outside of riparian open forests within this landscape are large with an average around 70 ha in size. It is very unlikely that the regrowth RE 11.5.3 would provide breeding habitat. This proposed disturbance of 0.4 ha of regrowth RE 11.4.3 will not cause any meaningful disruption to ecologically significant locations (breeding, feeding or nesting sites) of this species.
MSES – Result in invasive species that are harmful to an endangered or vulnerable species becoming established in the endangered or Critically endangered species' habitat.	No Significant Impact With the implementation of a feral species management plan, it is unlikely that the construction and operation of the facilities will result in invasive species that are harmful to this Endangered species becoming established in the vulnerable species' habitat.
MSES – Introduce disease that may cause the population to decline.	**No Significant Impact** The construction and operation of the facilities is unlikely to introduce disease that may cause the population to decline.
MSES – Interfere with the recovery of the species.	**No Significant Impact** The clearing of 0.7 ha of vegetation with a habitat quality score of 4.8 is made up of a patch of regrowth RE 11.5.3 that is 0.4 ha (**Insert 1**) and three patches of RE 11.3.1 less than 0.04 ha each. It is unlikely that the clearing within the patches of RE 11.3.1 will remove any koala food trees, leaving 0.4 ha of very sparse regrowth RE 11.4.3 impacted. The home range of koalas outside of riparian open forests within this landscape are large with an average around 70 ha in size. It is very unlikely that the regrowth RE 11.5.3 would provide breeding habitat. This proposed disturbance will not

Significant residual impact assessment for Koala *Phascolarctos cinereus* (Endangered EPBC & NC Act)	
Significant Residual Impact Guideline Criteria.	Response
	meaningfully interfere substantially with the recovery of this species.

Significant residual impact assessment for Southeastern Long-eared Bat *Nyctophilus corbeni* (Vulnerable EPBC & NC Act)	
Significant Residual Impact Guideline Criteria.	Response
MSES – lead to a long-term decrease in the size of a local population.	**No Significant Impact** No disturbance to potential habitat for this species is proposed and no impacts to connectivity will result and it is unlikely to lead to a long-term decrease in the size of a local population of a species
	Cumulative Impacts An additional previous impact of 0.25 ha of RE 11.4.9a assumed to provide medium quality habitat for this species occurred 9 years ago and is now partially rehabilitated. The current habitat values within this area of impact are similar to the surrounding RE 11.4.9a matrix. It is unlikely that these impacts and the additional proposed actions arising from the current proposal will culminate in a long-term decrease in the size of a local population.
MSES – a reduced extent of occurrence of the species	**No Significant Impact** No disturbance to potential habitat for this species is proposed and no impacts to connectivity will result. The prosed development is very unlikely to reduce the extent of occurrence of the species
	Cumulative Impacts An additional previous impact of 0.25 ha of RE 11.4.9a assumed to provide medium quality habitat for this species occurred 9 years ago and is now partially rehabilitated. The current habitat values within this area of impact are now similar to the surrounding RE 11.4.9a matrix for this species. It is unlikely that these impacts and

Significant residual impact assessment for Southeastern Long-eared Bat *Nyctophilus corbeni* (Vulnerable EPBC & NC Act)	
Significant Residual Impact Guideline Criteria.	Response
	the additional proposed actions arising from the current proposal will culminate in a reduced extent of occurrence of this species
MSES – fragmentation of an existing population	**No Significant Impact** No disturbance to potential habitat for this species is proposed and no impacts to connectivity will result. This is an agile aerial species, and the construction of gas wells and associated infrastructure will not prevent free movement of this species. The proposed development will not fragment an existing population of this species.
	Cumulative Impacts An additional previous impact of 0.25 ha of RE 11.4.9a assumed to provide medium quality habitat for this species occurred 9 years ago and is now partially rehabilitated. The current habitat values within this area of impact are now similar to the surrounding RE 11.4.9a matrix for this species. It is unlikely that these impacts and the additional proposed actions arising from the current proposal will culminate in fragmentation of an existing population of this species.
MSES – result in genetically distinct populations forming as a result of habitat isolation	No Significant Impact No disturbance to potential habitat for this species is proposed and no fragmentation of habitats will occur. This is an agile aerial species, and the construction of gas wells and associated infrastructure will not prevent free movement of this species. The proposed development will not lead to genetically distinct populations forming.
	Cumulative Impacts An additional previous impact of 0.25 ha of RE 11.4.9a assumed to provide medium quality habitat for this species occurred 9 years ago and is now partially rehabilitated. The current habitat values within this area of impact are now similar to the surrounding RE 11.4.9a matrix for this species. It is unlikely that these impacts and the additional proposed actions arising from the current proposal

Significant residual impact assessment for Southeastern Long-eared Bat *Nyctophilus corbeni* (Vulnerable EPBC & NC Act)	
Significant Residual Impact Guideline Criteria.	Response
	will culminate in genetically distinct populations forming as a result of habitat isolation
MSES – cause disruption to ecologically significant locations (breeding, feeding or nesting sites) of a species	**No Significant Impact** No disturbance to potential habitat for this species is proposed and no fragmentation of habitats will occur. The proposed development will not cause disruption to ecologically significant locations (breeding, feeding or nesting sites) of this species
	Cumulative Impacts An additional previous impact of 0.25 ha of RE 11.4.9a assumed to provide medium quality habitat for this species occurred 9 years ago and is now partially rehabilitated. The current habitat values within this area of impact are similar to the surrounding RE 11.4.9a matrix. It is unlikely that these impacts and the additional proposed actions arising from the current proposal will culminate in disruption to ecologically significant locations (breeding, feeding or nesting sites) of this species.
MSES – result in invasive species that are harmful to an endangered or vulnerable species becoming established in the endangered or vulnerable species' habitat	No Significant Impact It is unlikely that the construction of the facilities will result in invasive species that are harmful to this vulnerable species becoming established in the vulnerable species' habitat.
	Cumulative Impacts An additional previous impact of 0.25 ha of RE 11.4.9a assumed to provide medium quality habitat for this species occurred 9 years ago and is now partially rehabilitated. It is unlikely that these impacts and the additional proposed actions arising from the current proposal will culminate in invasive species that are harmful to an endangered or vulnerable species becoming established in this vulnerable species' habitat
MSES – Introduce disease that may cause the population to decline.	No Significant Impact It is unlikely that the construction of the facilities will introduce disease that may cause the species to decline.
	Cumulative Impacts

Significant residual impact assessment for Southeastern Long-eared Bat *Nyctophilus corbeni* (Vulnerable EPBC & NC Act)	
Significant Residual Impact Guideline Criteria.	Response
	An additional previous impact of 0.25 ha of RE 11.4.9a assumed to provide medium quality habitat for this species occurred 9 years ago and is now partially rehabilitated. It is unlikely that these impacts and the additional proposed actions arising from the current proposal will culminate in the introduction of disease that may cause the population to decline.
MSES – Interfere with the recovery of the species.	**No Significant Impact** Addition of construction exclusion zones will mean that will be no disturbance to functional habitat for this species and no impacts to connectivity will result. The proposed development will not interfere substantially with the recovery of this species.
	Cumulative Impacts An additional previous impact of 0.25 ha of RE 11.4.9a assumed to provide medium quality habitat for this species occurred 9 years ago and is now partially rehabilitated. The current habitat values within this area of impact are similar to the surrounding RE 11.4.9a matrix for this species. It is unlikely that these impacts and the additional proposed actions arising from the current proposal will culminate in interference to the recovery of this species.

Significant residual impact assessment for Short-beaked echidna (*Tachyglossus aculeatus*) (SLC NC Act)	
Significant Residual Impact Guideline Criteria.	Response
MSES – a long-term decrease in the size of a local population	**No Significant Impact** The locality provides large expanses of habitat for this species. Echidnas are highly mobile and have large home ranges and are known to forage

Significant residual impact assessment for Short-beaked echidna (*Tachyglossus aculeatus*) (SLC NC Act)	
Significant Residual Impact Guideline Criteria.	Response
	in highly disturbed habitats as long as their preferred prey of ants and termites are present. The habitat within the CDF is generally low quality habitat for this species and the facilities do not represent a barrier to movement and will not cause fragmentation of habitats. It is unlikely that the proposed action will lead to a long-term decrease in the size of the local population.
MSES – a reduced extent of occurrence of the species	**No Significant Impact** Echidnas are known from almost all habitats across the entire Australian continent. It is one of the most wide-ranging Australian vertebrates. The proposed action iremoves a limited amount of suitable habitat for this species and is unlikely to reduce the extent of occurrence of this species.
MSES – fragmentation of an existing population	**No Significant Impact** Echidnas are highly mobile and have large home ranges and are known to forage in highly disturbed habitats as long as their preferred prey of ants and termites are present. Much of the disturbance is below ground and temporary and the removal of small amounts of discrete patches of habitat will not represent a barrier to movement and will not cause fragmentation of an existing population.
MSES – result in genetically distinct populations forming as a result of habitat isolation	**No Significant Impact** Echidnas are highly mobile and have large home ranges and are known to forage in highly disturbed habitats as long as their preferred prey of ants and termites are present. Much of the disturbance is below ground and temporary and the removal of small amounts of discrete patches of habitat will not represent a barrier to movement and will not result in genetically distinct populations forming as a result of habitat isolation
MSES – disruption to ecologically significant locations (breeding, feeding or nesting sites) of a species	**No Significant Impact** The locality provides large expanses of habitat for this species. Echidnas are highly mobile and have large home ranges and are known to forage in highly disturbed habitats as long as their preferred prey of ants and termites are present.

Significant residual impact assessment for Short-beaked echidna (*Tachyglossus aculeatus*) (SLC NC Act)	
Significant Residual Impact Guideline Criteria.	Response
	The proposed removal of discrete patches of low-quality habitat will not disrupt ecologically significant locations (breeding, feeding or nesting sites) of this species.

Significant residual impact assessment for White-throated Needletail *Hirundapus caudacutus* (Vulnerable EPBC & NC Act)	
Significant Residual Impact Guideline Criteria.	**Response**
MSES – lead to a long-term decrease in the size of a local population.	**No Significant Impact** This is a very highly mobile aerial species that is unlikely to directly utilise the habitats within the CDF. The proposed removal of discrete patches of very low-quality habitat from within landscape that contains very large areas of foraging habitat is unlikely to lead to a long-term decrease in the size of a local population of a species
MSES – a reduced extent of occurrence of the species	**No Significant Impact** This is a very highly mobile aerial species that is unlikely to directly utilise the habitats within the CDF. It may forage in the skies overhead. The proposed removal of discrete patches of very low-quality habitat from within landscape that contains very large areas of foraging habitat is unlikely to reduce the area of occupancy of an important population.
MSES – fragmentation of an existing population	No Significant Impact The White-throated Needletail is a highly mobile bird species that frequently crosses large expanses of open ground. The proposed removal of discrete patches of very low-quality habitat from within landscape that contains very large areas of foraging habitat is unlikely to fragment a population of this species.
MSES – result in genetically distinct populations forming as a result of habitat isolation	**No Significant Impact** The White-throated Needletail is migratory bird species. The proposed removal of discrete patches of very low-quality habitat from within

Significant residual impact assessment for White-throated Needletail *Hirundapus caudacutus* (Vulnerable EPBC & NC Act)	
Significant Residual Impact Guideline Criteria.	Response
	landscape that contains very large areas of foraging habitat is unlikely to lead to genetically distinct populations forming
MSES – cause disruption to ecologically significant locations (breeding, feeding or nesting sites) of a species	No Significant Impact This is a very highly mobile aerial species that is unlikely to directly utilise the habitats within the CDF. It may forage in the skies overhead. The proposed removal of discrete patches of very low-quality habitat from within landscape that contains very large areas of foraging habitat is unlikely to modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline
MSES – Result in invasive species that are harmful to an endangered or vulnerable species becoming established in the endangered or vulnerable species' habitat.	**No Significant Impact** This is a very highly mobile aerial species that is unlikely to directly utilise the habitats within the CDF. If may forage in the skies overhead and is unlikely to land within the CDF. Disturbance to habitat over which this species may forage unlikely to result in an invasive species that are harmful to a vulnerable species becoming established.
MSES – Introduce disease that may cause the population to decline.	No Significant Impact This is a very highly mobile aerial species that is unlikely to directly utilise the habitats within the CDF. It may forage in the skies overhead but is unlikely to land. It is unlikely to introduce disease that may cause the population to decline
MSES – Interfere with the recovery of the species.	**No Significant Impact** This is a very highly mobile aerial species that is unlikely to directly utilise the habitats within the CDF. It may forage in the skies overhead but is unlikely to land. The proposed action is unlikely to interfere substantially with the recovery of the species

Significant residual impact assessment for Australian painted snipe *Rostratula australis* (Endangered EPBC & Vulnerable NC Act)	
Significant Residual Impact Guideline Criteria.	**Response**
MSES – lead to a long-term decrease in the size of a local population.	No significant Impact This is a migratory species that would only utilise the habitats within the Survey area as a temporary refuge and feeding area when moving to and from their breeding grounds. This species has not been recorded within 75 km (Roma) of the Survey area. The total mapped area of gilgai within the Survey area is 3,035 ha. The loss of 1.4 ha of ow quality potential temporary foraging habitat from a very large area of mapped gilgai will not have any meaningful impact on a population of this species. It is unlikely that the proposed action will have any meaningful impact on a local population of this species.
MSES – a reduced extent of occurrence of the species	No significant Impact This is a migratory species that ranges over approximately 1000 km of the eastern states of Australia. It is very unlikely that there are any "resident" individuals of this species within the Survey area. It is unlikely that this species will occur but if ever present they would only use the local habitats as a temporary refuge and feeding area when moving to better habitats. This species has not been recorded within 75 km (Roma) of the Survey area. The total mapped area of gilgai within the Survey area is 3,035 ha. The loss of 1.4 ha of low quality potential temporary foraging habitat from a very large area of mapped gilgai will not have any meaningful impact on this species. It is unlikely that the proposed action will reduce the extent of occurrence of this species.
MSES – fragmentation of an existing population	No significant Impact This is a migratory bird species capable of moving large distances between habitats. The proposed action is narrow in extent. It is unlikely that the action will fragment a population of this species.
MSES – result in genetically distinct populations forming as a result of habitat isolation	**No significant Impact** This is a migratory bird species capable of moving large distances between habitats. The proposed action is narrow in extent. It is unlikely that the action will result in genetically distinct populations forming as a result of habitat isolation.

Significant residual impact assessment for Australian painted snipe *Rostratula australis* (Endangered EPBC & Vulnerable NC Act)	
Significant Residual Impact Guideline Criteria.	Response
MSES – cause disruption to ecologically significant locations (breeding, feeding or nesting sites) of a species	**No significant Impact** This is a migratory/dispersive species that would only use the habitats within the Survey area as a temporary refuge and feeding area when moving to and from their breeding grounds. The total mapped area of gilgai within the Survey area is 3,035 ha. The loss of 1.4 ha of low quality potential temporary foraging habitat from a very large area of mapped gilgai will not have any meaningful impact on this species. It is unlikely that the action will cause disruption to ecologically significant locations (breeding, feeding or nesting sites) of this species.
MSES – Result in invasive species that are harmful to an endangered or vulnerable species becoming established in the endangered or vulnerable species' habitat.	**No significant Impact** Foxes and feral cats and dogs are known to occur within the local landscape and it unlikely that the proposed action will lead to an increase in cover or density of any invasive plant species that would materially impact the availability of feeding resources for this species. It is unlikely that the action will lead to any meaningful impact from invasive species on this endangered species.
MSES – Introduce disease that may cause the population to decline.	No significant Impact There are no known diseases that we are aware of that might be introduced by the proposed action and that might cause a decline in a population of this species.
MSES – Interfere with the recovery of the species.	No significant Impact This is a migratory species that would only use the habitats within the Survey area as a temporary refuge and feeding area when moving to and from their breeding grounds. Th closet record of this species is 75 km away (Roma) and it is unlikely that a resident population of this species occurs within the locality. The total mapped area of gilgai within the Survey area is 3,035 ha. The loss of 1.4 ha of low quality potential temporary foraging habitat from a very large area of mapped gilgai will not have any meaningful impact on this species. There will be no impacts to connectivity, or breeding habitat and the action will not lead to the introduction of harmful invasive species or

Significant residual impact assessment for Australian painted snipe *Rostratula australis* (Endangered EPBC & Vulnerable NC Act)	
Significant Residual Impact Guideline Criteria.	Response
	disease. It is unlikely that the proposed action will interfere substantially with the recovery of the species.

Significant residual impact assessment for Latham's Snipe *Gallinago hardwickii* (Vulnerable EPBC & NC Act)	
Significant Residual Impact Guideline Criteria.	**Response**
MSES – a long-term decrease in the size of a local population	No significant Impact This is a migratory species that would only utilise the habitats within the Survey area as a temporary refuge and feeding area when moving to and from their breeding grounds. The total mapped area of gilgai within the Survey area is 3,035 ha. The loss of 1.4 ha of low quality potential temporary foraging habitat from a very large area of mapped gilgai will not have any meaningful impact on this species It is unlikely that the proposed action will have any meaningful impact on a local population of this species.
MSES – a reduced extent of occurrence of the species	**No significant Impact** This is a migratory species that flies 1,000 kms between breeding and wintering grounds and does not breed in Australia. This species would only use the habitats within the Survey area as a temporary refuge and feeding area when migrating. It appears unlikely that the loss of temporary refuge wetlands is the main threat to this species. The total mapped area of gilgai within the Survey area is 3,035 ha. The loss of 1.4 ha of low quality potential temporary foraging habitat from a very large area of mapped gilgai will not have any meaningful impact on this species. It is unlikely that the proposed action will reduce the extent of occurrence of this species.
MSES – fragmentation of an existing population	**No significant Impact** This is a migratory species that travels vast distances. The proposed action will not directly impact habitat important to this species. It is unlikely that the action will fragment a population of this species.

Significant residual impact assessment for Latham's Snipe *Gallinago hardwickii* (Vulnerable EPBC & NC Act)	
Significant Residual Impact **Guideline Criteria.**	Response
MSES – result in genetically distinct populations forming as a result of habitat isolation	**No significant Impact** This is a migratory species that travels vast distances and does not breed in Australia. The proposed action will not impact habitat important to this species. It is unlikely that the action will result in genetically distinct populations forming as a result of habitat isolation.
MSES – disruption to ecologically significant locations (breeding, feeding or nesting sites) of a species	No significant Impact This species does not breed in Australia. This species would only use the habitats within the Survey area as a temporary refuge and feeding area when moving to and from their breeding grounds. temporary refuge wetlands is the main threat to this species. The total mapped area of gilgai within the Survey area is 3,035 ha. The loss of 1.4 ha of low quality potential temporary foraging habitat from a very large area of mapped gilgai will not have any meaningful impact on this species. It is unlikely that the action will cause disruption to ecologically significant locations (breeding, feeding or nesting sites) of this species.
MSES – Result in invasive species that are harmful to an endangered or vulnerable species becoming established in the endangered or vulnerable species' habitat.	No significant Impact Foxes and feral cats and dogs are known to occur within the local landscape and it unlikely that the proposed action will lead to an increase in cover or density of any invasive plant species that would materially impact the availability of feeding resources for this species. It is unlikely that the action will lead to any meaningful impact from invasive species on this species.
MSES – Introduce disease that may cause the population to decline.	**No significant Impact** There are no known diseases that we are aware of that might be introduced by the proposed action and that might cause a decline in a population of this species.
MSES – Interfere with the recovery of the species.	**No significant Impact** This is a migratory species that would only use the habitats within the Survey area as a temporary refuge and feeding area when moving to and from their breeding grounds. temporary refuge wetlands is the main threat to this species.

Significant residual impact assessment for Latham's Snipe *Gallinago hardwickii* (Vulnerable EPBC & NC Act)	
Significant Residual Impact **Guideline Criteria.**	Response
	The total mapped area of gilgai within the Survey area is 3,035 ha. The loss of 1.4 ha of low quality potential temporary foraging habitat from a very large area of mapped gilgai will not have any meaningful impact on this species There will be no impacts to connectivity, or breeding habitat and the action will not lead to the introduction of harmful invasive species or disease. It is unlikely that the proposed action will interfere substantially with the recovery of the species.

Significant residual impact assessment for Sharp-tailed Sandpiper ***Calidris acuminata*** (Vulnerable EPBC & NC Act)	
Significant Impact and **Significant Residual Impact Guideline Criteria.**	**Response**
MSES – a long-term decrease in the size of a local population	**No significant Impact** This is a migratory species that would only utilise the habitats within the Survey area as a temporary refuge and feeding area when moving to and from their breeding grounds. The loss of 1.4 ha of low quality temporary potential temporary feeding habitat from a very large area of mapped gilgai will not have any meaningful impact on this species. It is unlikely that the proposed action will have any meaningful impact on a local population of this species.
MSES – a reduced extent of occurrence of the species	No significant Impact This is a migratory species that flies 1,000 kms between breeding and wintering grounds and does not breed in Australia. This species would only use the habitats within the Survey area as a temporary refuge and feeding area when migrating. The loss of 1.4 ha of low quality temporary potential foraging habitat from a very large area of mapped gilgai will not have any meaningful impact on this species. It is unlikely

Significant residual impact assessment for Sharp-tailed Sandpiper *Calidris acuminata* (Vulnerable EPBC & NC Act)	
Significant Impact and **Significant Residual Impact Guideline Criteria.**	**Response**
	that the proposed action will reduce the extent of occurrence of this species.
MSES – fragmentation of an existing population	No significant Impact This is a migratory species that travels vast distances. The proposed action will not directly impact habitat important to this species. It is unlikely that the action will fragment a population of this species.
MSES – result in genetically distinct populations forming as a result of habitat isolation	No significant Impact This is a migratory species that travels vast distances and does not breed in Australia. The proposed action will not impact habitat important to this species. It is unlikely that the action will result in genetically distinct populations forming as a result of habitat isolation.
MSES – disruption to ecologically significant locations (breeding, feeding or nesting sites) of a species	**No significant Impact** This species does not breed in Australia. This species would only use the habitats within the Survey area as a temporary refuge and feeding area when moving to and from their breeding grounds. The loss of 1.4 ha of low quality temporary foraging habitat from a very large area of mapped gilgai will not have any meaningful impact on this species. It is unlikely that the action will cause disruption to ecologically significant locations (breeding, feeding or nesting sites) of this species.
MSES – Result in invasive species that are harmful to an endangered or vulnerable species becoming established in the endangered or vulnerable species' habitat.	**No significant Impact** Foxes and feral cats and dogs are known to occur within the local landscape and it unlikely that the proposed action will lead to an increase in cover or density of any invasive plant species that would materially impact the availability of feeding resources for this species. It is unlikely that the action will lead to any meaningful impact from invasive species on this species.
MSES – Introduce disease that may cause the population to decline.	**No significant Impact** There are no known diseases that we are aware of that might be introduced by the proposed action and that might cause a decline in a population of this species.

Significant residual impact assessment for Sharp-tailed Sandpiper *Calidris acuminata* (Vulnerable EPBC & NC Act)	
Significant Impact and **Significant Residual Impact Guideline Criteria.**	**Response**
MSES – Interfere with the recovery of the species.	No significant Impact This is a migratory species that would only use the habitats within the Survey area as a temporary refuge and feeding area when moving to and from their breeding grounds. The loss of 1.4 ha of low quality potential foraging habitat from a very large area of mapped gilgai will not have any meaningful impact on this species. There will be no impacts to connectivity, or breeding habitat and the action will not lead to the introduction of harmful invasive species or disease. It is unlikely that the proposed action will interfere substantially with the recovery of the species.

CDF = Construction disturbance footprint (17m in width buffer to linear infrastructure)