BHP Mitsubishi Alliance

Appendix D

7N5N2N Power line alignment MNES Ecological Report

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7N5N2N Power line Alignment
MNES Ecological Report

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Glossary of Terms

Acronym	Description
ALA	Atlas of Living Australia
BHP	Broken Hill Proprietary Ltd.
Brigalow TEC	Brigalow (*Acacia harpophylla* dominant and co-dominant) Threatened Ecological Community
BMA	BM Alliance Coal Operations
BVG	Broad Vegetation Group
DAWE	Department of Agriculture, Water and the Environment (Cth)
DBH	Diameter at Breast Height
DCCEEW	Department of Climate Change, Energy, the Environment and Water (Cth)
DEE	Department of the Environment and Energy (Cth)
DES	Department of Environment and Science (Qld)
DEWHA	Department of the Environment, Water, Heritage, and the Arts (Cth)
DotE	Department of the Environment (Cth)
DoR	Department of Resources (Qld)
EDL	Ecologically Dominant Layer
EIS	Environmental Impact Statement
EP Act	*Environmental Protection Act 1994* (Qld)
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999* (Cth)
GDTHQ	Guide to Determining Terrestrial Habitat Quality – Version 1.3 (DES, 2020b)
ha	Hectares
HVR	High Value Regrowth
LoO	Likelihood of Occurrence
ML	Mining Lease
MNES	Matter of National Environmental Significance
MP Act	*Marine Parks Act 2004* (Qld)
Natural grasslands TEC	Natural Grasslands of the Queensland Central Highlands and northern Fitzroy Basin Threatened Ecological Community
NRM	Natural Resource Management
PDM	Peak Downs Mine
PMST	Protected Matters Search Tool
Qld	Queensland
RE	Regional Ecosystem
REDD	Regional Ecosystem Description Database
SAT	Spot Assessment Technique

Acronym	Description
SEWPaC	Department of Sustainability, Environment, Water, Population and Communities (Cth)
TEC	Threatened Ecological Community
VM Act	*Vegetation Management Act 1999* (Qld)

1 Introduction

1.1 Background

The Peak Downs Mine (PDM) is an open cut metallurgical coal mine located approximately 30 kilometres (km) south-east of Moranbah and is situated within the Isaac Regional Local Government Area, within the Bowen Basin mining region. The surrounding region contains both remnant and non-remnant woodlands, open forests, natural grasslands and paddocks. Cattle grazing is the primary land use (DES, 2020), with the region in general subject to a history of vegetation clearing and thinning.

Three mine pits, 7 North, 5 North and 2 North (7N, 5N and 2N respectively), are planned to be expanded, with this pit progression requiring the relocation of 66 kV power lines. The proposed alignment of the 7N/5N/2N power line is comprised of three components, with the current proposed alignment of the 7N/5N/2N power line shown in Appendix A-1:

- 7N power line realignment – entirely off lease;
- 5N power line realignment – partly within Mining Lease (ML)70411, partly off lease; and
- 2N power line realignment – ML70411.

For the purposes of this report, the 'Power line Alignment' refers to the 83.45 ha footprint of the proposed 7N/5N/2N power line easement that falls within the Study Area. The total area of the Power line alignment is 86.34 ha, with 2.9 ha within existing clearing and approvals. In order to provide additional context to the Power line Alignment, additional areas outside of the alignment have been mapped, with this area referred to as the 'Study Area'. Details of the Study Area delineation is detailed within Section 2.1.1 and mapping within Appendix A-1.

Previous ecological surveys have been conducted by Ausecology for BM Alliance Coal Operations (BMA) within the Study Area, including those reported within:

- Ausecology (2019) Heyford Power line Ecological Assessment. Report prepared for Epic Environmental. September 2019.
    - This report includes a wider area, a component of which is the 7N component of the 7N/5N/2N power line.
- Ausecology (2022a) 7N Power line Ecological Survey Report. Report prepared for BMA. March 2022.
    - This report relates to the 5N off-lease component of the 7N/5N/2N power line.
- Ausecology (2022b) 7N Power line Ecological Survey Report. Report prepared for BMA. June 2022.
    - This report relates to the assessment of Grassland TEC status and targeted threatened flora species searches within a section of the Study Area.
- Ausecology (2023b) 7N-5N-2N Power line Project Off-lease – MSES Technical Memo. Report prepared for BMA. August 2023.
    - This report relates to the assessment of the MSES within the off-lease component of the Study Area.
- Ausecology (in prep) Peak Downs Mine Continuation Project – Terrestrial Ecological Assessment. Report prepared for Resource Strategies. 2023.
    - This report contributes significantly to the flora and fauna survey efforts within the Power line Alignment, Study Area and surrounding landscape.

Subsequent to the surveys and reporting outlined above, additional surveys and assessment were undertaken by Ausecology to provide additional and updated ecological information for the Study Area.

1.2 Project Scope

Ausecology was engaged by BHP to prepare an Ecological Assessment on the Matters of National Environmental Significance (MNES) applicable to the Study Area and Power line Alignment. Presented within this report is the following information:

- Identification of relevant legislation and policy;
- Survey timing, methodology and effort – including references to relevant guidelines;
- Desktop assessment results;
- Field survey results;
- Potential Project impacts and mitigation;
- MNES Significant impact assessments;
- Identification of MNSES offset requirements.

1.3 Limitations

The information, opinions, recommendations, and conclusions, contained in this document are:

- Limited to the scope of the engagement agreed between Ausecology and BHP;
- Based on information supplied to Ausecology by BHP and government departments;
- Based on Ausecology's prevailing knowledge and approach, and the conditions encountered during field surveys, information reviewed by Ausecology, as at the date of the preparation of this report

The ability to detect and accurately identify fauna and flora species can vary greatly with the surrounding environment, seasonality and the location of a specific survey site. Nonetheless, seasonal conditions were considered to be suitable for the detection of targeted threatened flora and fauna.

Historically, the regional area has been subject to range of land management practices including clearing, woody vegetation poisoning, fire, and grazing. These practices have resulted in large areas of regrowth and non-remnant vegetation. Distinguishing between similar Regional Ecosystems (REs), 11.4.8 – *Eucalyptus cambageana* woodland to open forest with *Acacia harpophylla* or *A. argyrodendron* on Cainozoic clay plains and 11.4.9 - *Acacia harpophylla* shrubby woodland with *Terminalia oblongata* on Cainozoic clay plains, proved unreliable in areas that experienced increased levels of such practices as clearing and grazing. These areas were assigned heterogenous polygon labelling i.e. 11.4.8/11.4.9. For purposes of Habitat Quality Scoring applicable heterogenous areas were scored against the 11.4.9 benchmarks, as the vegetation structure best reflected this RE.

2 Methodology

2.1 Desktop assessment and literature review

A desktop assessment was undertaken entailing the review of environmental databases, maps, and literature, as well as previous ecological reports applicable to the PDM region. Desktop searches were undertaken prior to field investigations, identifying the potential presence of Matter of National Environmental Significance (MNES) prescribed under the *Environment Protection and Biodiversity Conservation* (EPBC) *Act 1999* (Cth). Desktop searches were conducted in accordance with the BHP PRO Queensland Coal Ecological Survey Procedure (BHP, 2020). A summary of databases, mapping and information sources is listed below, with relevant search results provided in Appendix H.

- Commonwealth Protected Matters Search Tool (PMST) (DAWE, 2023) - 20km buffer)
- Species Profile and Threats Database (DAWE, 2021)
- Atlas of Living Australia (ALA, 2023) - 50km buffer
- Wildlife Online Search (DES, 2023) - 10km, 20km and 50km buffer
- Protected Plants Flora Survey Trigger mapping (DNRME, 2021a)
- Regulated Vegetation mapping (DNRME, 2021a)
- Regional Ecosystem (RE) mapping (DNRME, 2021a)
- Property Map of Assessable Vegetation mapping (DNRME, 2021a)
- Essential Habitat mapping (DNRME, 2021a)
- Queensland historical imagery (DoR, 2022)
- Queensland wetland data series (DES, 2013)
- Queensland wetland environmental values mapping (DES, 2013)
- Vegetation Management Act 1999 (VM Act) wetland data (DES, 2013)
- VM Act watercourse data (DNRME, 2021a).
- Watercourse identification map (DES, 2013)
- International Union for Conservation of Nature and Natural Resources Red List (IUCN, 2022)
- Environmental Sensitive Area mapping (DES, 2021a)
- Pre-clearance RE mapping (DNRME, 2021a)

In addition to Ausecology's survey efforts, this report also utilises information obtained by various ecological consultancies, conducted over a series of field surveys. Historical surveys conducted by previous environmental consultancies that help inform this report include:

- Assessment of Koalas and Koala Habitat Use on BMA Peak Downs Mine (FEC, 2009)
- Ausecology (2019) Heyford Power line Ecological Assessment. Report prepared for Epic Environmental. September 2019.
- AECOM (2020) Peak Downs East Mining Lease Terrestrial Ecology Baseline Report. Report prepared for BMA. April 2020.
- Ecology Technical Memo BHP Peak Downs Expansion Project (ERM, 2021)
- Ausecology (2022a) 7N Power line Ecological Survey Report. Report prepared for BMA. March 2022.
- Ausecology (2022b) 7N Power line Ecological Survey Report. Report prepared for BMA. June 2022. This report relates to the assessment of Grassland TEC status and targeted searches for threatened flora species.

- Ausecology (2023a) Ripstone Pit Development Project – Ecological Assessment. Report prepared for Engeny. January 2023.
- Ausecology (in prep) Peak Downs Mine Continuation Project – Terrestrial Ecological Assessment. Report prepared for Resource Strategies. February 2023.
- Eco Logical Australia 2016. Caval Ridge South Circuit Ecological Assessment. Prepared for BHP.
- Eco Logical Australia 2020. Harrow Creek Ecological Assessment. Prepared for BHP.

Field surveys were undertaken in accordance with relevant survey guidelines and recommendations:

- Draft Referral guidelines for the nationally listed Brigalow Belt reptiles (DCCEEW, 2024);
- Recommended survey methods for wetland birds: Bitterns in Survey Guidelines for Australia's Threatened Birds (DEWHA, 2010);
- Survey guidelines for Australia's threatened bats (DEWHA 2010b);
- Survey guidelines for Australia's threatened birds (DEWHA 2010a);
- Survey guidelines for Australia's threatened reptiles (DSEWPC 2011b);
- Survey guidelines for Australia's threatened mammals (DSEWPC 2011a);
- Terrestrial Vertebrate Fauna Survey Guidelines for Queensland (Eyre et al. 2018);
- Targeted species survey guidelines – Ghost Bat, *Macroderma gigas* (Hourigan 2011);
- Targeted species survey guidelines – Yakka Skink, *Egernia rugosa* (Ferguson & Mathieson, 2014);
- Targeted species survey guidelines – Painted honeyeater, *Grantiella picta* (Rowland, 2012);
- Approved Conservation Advice for *Phascolarctos cinereus* (Koala) (DAWE, 2022)
- Referral Guidelines for the Vulnerable Koala (DotE, 2014) (Note - this document became defunct in 12 Feb 2022)
- Conservation Advice for *Petauroides volans* (greater glider (southern and central) (DCCEEW, 2022);
- Approved Conservation Advice for the Brigalow (*Acacia harpophylla* dominant and co-dominant) ecological community (DOE, 2013).
- Commonwealth Listing Advice on Natural Grasslands of the Queensland Central Highlands and the northern Fitzroy Basin (Department of the Environment, Water, Heritage, and the Arts, 2009)
- Flora Survey Guidelines – Protected Plants (DES, 2020a).
- Guide to Determining Terrestrial Habitat Quality, Version 1.3 (DES, 2020b).
- BioCondition – A Condition Assessment Framework for Terrestrial Biodiversity in Queensland, Assessment Manual (Eyre et al., 2015).

2.1.1 The Study Area

In order to provide additional context to the Power line Alignment, additional areas outside of the alignment have been mapped, with this area referred to as the 'Study Area'(Appendix A-1). The Study Area is inclusive of the Power line Alignment, and has been expanded to utilise the Ausecology ground-truthed regional ecosystem (GTRE) mapping, as per Ausecology (2019), Ausecology (2022a), Ausecology (2022b), Ausecology (2023), Ausecology (in prep) and Ausecology (2023b – this report) (Appendix A-4).

2.1.1.1 Flora survey effort

The flora surveys utilised are considered relevant and applicable to the Study Area and Power line Alignment due to connectivity and consistency of vegetation and habitat quality. Therefore the results of flora surveys

(e.g. BioCondition, Quaternary, Tertiary, Habitat assessments and TEC assessments) are considered applicable to the Study Area and Power line Alignment. Flora survey efforts applicable to this report and the Power line Alignment are summarised within Table 2-1 with mapping provided in Appendix A-4.

Table 2-1 Applicable flora survey effort conducted within the Study Area

Assessment Type	Ausecology Survey					Total
	2019	2022a	2022b	2023	In prep	
BioCondition	-	5	-	11	37	53
Habitat	8	6	-	30	80	124
Quaternary	15	15	-	5	188	223
Tertiary	1	-	-	-	6	7
TEC	1	-	4	2	26	33

TEC – Threatened Ecological Community

2.1.1.2 Fauna survey effort

This report utilises fauna survey efforts of the ecological reports listed in Section 2.1, with these reports detailing fauna surveys conducted both within and outside of the Study Area. For the purposes of this report, fauna survey effort sited within this report have been clipped to the Study Area.

The survey efforts and results are considered relevant and applicable to the Power line Alignment due to connectivity and consistency of vegetation and habitat quality. The findings of the Study Area provide increased context and information with regards to threatened species presence. Therefore, the detection of a threatened species within the Study Area is considered a detection for the Power line Alignment regardless of whether it falls directly within the Power line Alignment or not. Ausecology fauna survey efforts applicable to this report are summarised in Table 2-2, with mapping provided in Appendix A-2.

Table 2-2 Applicable fauna survey efforts per company within the Study Area

Survey Type	Ausecology (2019)	Ausecology (in prep)	Total	Units Measured
Active Search	120	250	370	person minutes
Anabat	4	63	67	recorder nights
Cage Trap	8	5	13	days
Call Playback	-	20	20	person minutes
Camera	8	82	90	days
Elliott Trap	176	110	286	days
Funnel Trap	12	48	60	days
Harp trap	4	2	6	trap nights
Modified SAT Survey	-	370	370	person minutes
Pitfall Trap	32	32	64	days
Spotlight	120	395	515	person minutes
Stationary Bird Survey	120	110	230	person minutes

2.2 Taxonomic nomenclature

The descriptions of fauna species follows the taxonomic nomenclature as per QLD Wildlife Data API, 2022 (State of Queensland, 2024). The current accepted scientific names presented in *The Census of Queensland Flora 2021* (Bean, 2024) has been utilised for all flora species referred to within this report. Introduced, exotic species are denoted with an asterisk (*).

2.3 Likelihood of occurrence assessment

The Likelihood of Occurrence (LoO) assessment (Appendix B) leaned heavily upon the assessment contained within Ausecology, in prep – *Peak Downs Mine Continuation Project – Terrestrial Ecological Assessment*, also utilising information within Ausecology, 2019 – *Heyford Power line Ecological Assessment. Report prepared for Epic Environmental.*

Matters identified via the desktop LoO assessment as possibly occurring within the survey area, were assigned a category as per the BHP PRO Queensland (QLD) Coal Ecological Survey Procedure BHP-PRO-0007 Document ID # 000173537 (BHP, 2020), being:

Known[1] – the species or population has been observed within the Study Area

Likely – the Study Area is within the species' known distribution, suitable habitat occurs within the area and the species is known to occur in the region. Species not yet confirmed as occurring within the Study area.

Potential – the Study Area is within the species' known distribution, marginal habitat occurs within the area and the species is known to occur in the region. There are no confirmed species records within 10 km of the Study area; however, there are confirmed species records within 50 km of the Study area.

Unlikely – there is a low probability that the species will occur within the Study Area as it is outside the species known distribution, low quality habitat occurs within the area or the species is not known to occur within the region. There are no confirmed species records within 50 km of the Study area.

No – the species will not occur within the Study Area (e.g. marine species in a terrestrial study site). There is no habitat for the species and the Study Area is outside the species known distribution.

2.4 Field survey timing and conditions

Between the years of 2019 and 2024, a total of 14 flora and six fauna survey field trips were undertaken by Ausecology (Table 2-3). Field surveys were conducted in line with optimal survey times as much as possible, whilst adhering to safe site access and work hours as per BHP mining operational rules and regulations. The relevant species survey guidelines are outlined in Section 2.1.

To ensure the most accurate evaluation of ecosystem quality, surveys were postponed until favourable conditions were present (e.g. after recent, significant rainfall). This was of particular importance when assessing areas highly influenced by seasonal variation e.g. Natural Grasslands of the Queensland Central Highlands and the northern Fitzroy Basin Threatened Ecological Community (TEC).

[1] Category included and defined by Ausecology, as definition not outlined within BHP PRO Queensland (QLD) Coal Ecological Survey Procedure BHP-PRO-0007 Document ID # 000173537 (BHP, 2020).

Table 2-3 Summary of field surveys undertaken by Ausecology

Year	Month	Date Start	Date End
Flora survey			
2019	August	06/08/2019	11/08/2019
2021	December	13/12/2021	17/12/2021
2022	March-April	28/03/2022	2/04/2022
2022	April	25/04/2022	26/04/2022
2022	June	13/06/2022	19/06/2022
2022	August	22/08/2022	27/08/2022
2022	September	19/09/2022	24/09/2022
2022	November	21/11/2022	26/11/2022
2023	March	6/03/2023	10/03/2023
2023	May-June	29/05/2023	02/06/2023
2024	Feb	12/02/2024	16/02/2024
2024	March	18/03/2024	23/03/2024
2024	April	22/04/2024	27/04/2024
2024*	May*	13/05/2024*	19/05/2024*
Fauna survey			
2019	August	06/08/2019	11/08/2019
2021	November	4/11/2021	12/11/2021
2022	March-April	31/03/2022	6/04/2022
2022	April	18/04/2022	24/04/2022
2022	September	8/09/2022	12/09/2022
2023	March	21/03/2023	27/03/2023

**Predicted*

2.5 Flora survey methodology

Fourteen flora surveys were undertaken between 2019 and 2024 across the Study Area, with each survey conducted by two suitably qualified ecologists.

2.5.1 Ground-truthing Regional Ecosystems

Tertiary and Quaternary assessments were conducted as per *the Methodology for Surveying and Mapping Regional Ecosystems and Vegetation Communities in Queensland Version 5, 5.1 and 6.0*[2] (Neldner *et al*., 2019, 2020 & 2022). These assessments collected data on vegetation structure and composition characteristics, broad ecological condition and the extent and classification of Regional Ecosystems (REs). Field survey efforts enabled the ground-truthing and separation, of heterogenous RE polygons as mapped by DoR, to be delineated into homogenous polygons.

2.5.2 Threatened Ecological Communities

Potential TEC present within the Study Area were assessed against approved descriptions, key diagnostic characteristics and condition thresholds, as per the respective approved documents:

- Commonwealth Approved Conservation Advice for the Brigalow (*Acacia harpophylla* dominant and co-dominant) ecological community (Department of the Environment, 2013).

[2]The most current version of *Mapping Regional Ecosystems and Vegetation Communities in Queensland* was utilised at the respective time of each survey period.

- Commonwealth Listing Advice on Natural Grasslands of the Queensland Central Highlands and the northern Fitzroy Basin (DEWHA, 2008).
- Conservation Advice (including listing advice) for the Poplar Box Grassy Woodland on Alluvial Plains (Department of the Environment and Energy, 2019).
- Commonwealth Listing Advice on Weeping Myall Woodland (DEWHA, 2008)

2.5.3 Terrestrial habitat quality assessment

Habitat quality assessment surveys were undertaken in accordance with *Guide to Determining Terrestrial Habitat Quality – Version 1.3* (DES, 2020b) (GDTHQ) and consistent with the *BHP QLD Coal Ecological Survey Procedure* (BHP, 2020). Surveys conducted by Ausecology in 2019, were undertaken in accordance with the methodology current at the time, *Guide to Determining Terrestrial Habitat Quality – Version 1.2* (DES, 2017), with field data collection comparable to current methodology. Habitat assessments were predominately undertaken in conjunction with other surveys. BioCondition surveys were conducted as per *BioCondition – A Condition Assessment Framework for Terrestrial Biodiversity in Queensland, Assessment Manual* (Eyre *et al*., 2015).

2.5.4 Threatened flora surveys

A formal protected plant survey was not required, with the survey area not containing any mapped protected plant flora trigger areas (Appendix H). For species considered potential (Appendix B) to occur within the Study Area based on desktop assessment results, Ausecology conducted targeted opportunistic searches in suitable habitat areas. Targeted flora species namely included *Dichanthium queenslandicum* (king blue grass).

2.6 Fauna survey methodology

Fauna surveys conducted throughout the Study Area included fauna trapping (pitfalls, funnels, Elliotts, cages, harp trapping), bird surveys, diurnal active searches, nocturnal active searches, call playback, modified SAT surveys, spotlighting, baited motion detection cameras and passive microbat echolocation call recording devices. Fauna surveys were undertaken in accordance with relevant Commonwealth and State guidelines and species specific guidelines (Section 2.1). Where no targeted survey guidelines were available, the Queensland Government Terrestrial vertebrate fauna survey guidelines (Eyre et al., 2018) were referred to.

As previously stated, this report utilises previously conducted fauna survey efforts, combining to form the Study Area. The below sections summarise the general methodology employed during Ausecology conducted surveys.

2.6.1 Fauna trapping sites

Fauna trapping sites were established in a variety of representative locations throughout the Study Area, with each site consisting of a 30 m t-shaped drift fence, 4 pitfall buckets, 6 funnels, 20 small Elliot traps, 2 large Elliot traps and one cage trap as per *Terrestrial Vertebrate Fauna Survey Guidelines for Queensland* (Eyre et al., 2018) (Appendix A-2).

2.6.2 Diurnal bird surveys

Diurnal bird surveys involved the visual and acoustic identification of bird species, with time spent at each survey location being recorded, spanning a minimum of 5 person minutes per survey. Surveys were not exclusively co-located with fauna trapping sites (Appendix A-2). Where practical, bird surveys were conducted per site as the following:

- two surveys in the early morning (<2 hrs after sunrise)
- two surveys in mid-morning (2 to 4 hrs after sunrise), and

- the remaining two surveys during less optimal times in the day (i.e. between 4 hrs after sunrise and 2 hrs before sunset).

2.6.3 Diurnal herpetofauna searches

Diurnal herpetofauna searches involved actively searching suitable microhabitat features (e.g. leaf litter, coarse woody debris, under rocks, etc) for fauna within a defined area (~50 m x 50 m). Time spent searching was recorded, averaging 30 person minutes per search. Surveys were not exclusively co-located with fauna trapping sites (Appendix A-2).

2.6.4 Modified SAT Survey

Modified SAT Surveys are based on the those described within *The Spot Assessment Technique: a tool for determining localised levels of habitat use by Koalas* *Phascolarctos cinereus* (Phillips and Callaghan, 2011). Differences from SAT methodology described by Phillips and Callaghan (2011) include; tree species not recorded, centre tree not marked, no maximum or minimum of trees searched, DBH (cm) not recorded and total search time variable at each survey site. Surveys were not exclusively co-located with fauna trapping sites (Appendix A-2).

2.6.5 Spotlighting

Spotlight searches involved traversing through vegetation actively scanning all strata levels for fauna. Suitable binoculars and high-powered LED head-torches and hand torches were used. Time spent searching was recorded, with survey start, end and route GPS tracked utilising Bad Elf GNSS Surveyor devices. Surveys were not exclusively co-located with fauna trapping sites (Appendix A-2).

2.6.6 Camera trapping

Passive infrared camera trapping was undertaken, with one camera and bait tube deployed at each camera trap location. Cameras were installed at ~1.3 m above ground level and angled to ensure the bait tube is within frame, ≤3 m away from the camera. Camera models utilised were the Reconyx Hyperfire HC600 and Browning Patriot BTC FHD. Cameras were set to take a burst of three photos, with a five second delay between photos and no rest period between bursts. Bait tubes were constructed utilising PVC piping (~20 cm long x 5 cm diameter), pinned in place by a metal peg. Tubes were baited with sardines and a mixture of peanut butter, oats, honey and, vanilla essence. Camera traps were typically nested with systematic fauna trap survey sites, however additional locations were also targeted throughout the area (Appendix A-2).

2.6.7 Bat detector recording

One Titley Scientific Anabat (i.e. Anabat Swift or Express) passive detector fitted with an extension cable and Omni-directional ultrasonic microphone was deployed at each location. Anabats were fastened to an appropriate tree, central to suitable detection areas e.g. flyways. Anabats were programmed to operate from dusk to dawn, until collected, and set to a sensitivity of 16 with frequency range of 10kHz – 250kHz. Files were captured in .WAV format at a sample rate of 500ksps, with a max file length of 10 seconds. Anabat data was analysed via the third party, Balance! Environmental (2022). Anabats were typically situated with systematic fauna trap survey sites, however additional locations were also targeted throughout the area (Appendix A-2).

2.6.8 Harp trapping

Harp traps were erected in areas, where natural features acted to concentrate microbat activity, focusing them towards the harp nets to increase the likelihood of capture e.g. within flyways of vegetated areas and creek beds. Harp traps and vegetation was positioned as to limit 'empty space' between the harp trap and the flyway, helping to focus microbats towards the trap. Harp traps were opened after sunset, checked throughout the night and closed prior to sunrise. Upon closure, harp traps were moved out of flyways, with capture bags removed.

Harp traps were deployed at various locations using a Austbat - 2 Bank Harp trap, with net dimensions of ~2 m x ~2 m.

2.6.9 Incidental sightings

Incidental sightings within the Study Area were recorded throughout the survey period.

2.6.10 Fauna habitat assessment

Habitat assessments were predominately conducted in conjunction with other surveys including; fauna survey sites, quaternary sites and BioCondition assessment sites. Habitat assessments included assessments of terrestrial habitat resources and threats guided by species specific literature and expert knowledge. To be consistent with the *BHP QLD Coal Ecological Survey Procedure* (BHP, 2020), at each habitat assessment site, the following attributes were captured:

- Site ID
- Date Observed
- Observer Name
- Validated RE Condition
- Validated RE Code
- Landform Pattern
- Landform Element
- Soil Texture
- Vegetated Groundcover (%)
- Exotic Vegetation Ground Cover (%)
- Native Vegetation Ground Cover (%)
- Flowering Eucalypts Abundance
- Species Name of Eucalypt Species in Flower
- Decorticating Bark
- Small Hollow Log (5-10 centimetres [cm]) Abundance (per ha)
- Medium Hollow Log (11-20 cm) Abundance (per ha)
- Large Hollow Log (More than 20 cm) Abundance (per ha)
- Extra Large Hollow Log (More than 40 cm) Abundance (per ha)
- Hollow Log Length (per ha) Linear metres of medium and large hollow logs
- Hollow Bearing Tree Species
- Hollow Tree Abundance (per ha)
- Hollow Bearing Tree Size (cm)
- Dead Stag Abundance (per ha) Greater than 3m height and 40 cm diameter
- Easting (Geocentric Datum of Australia 1994 [GDA94])
- Soil Crack Presence and abundance
- Gilgai Presence and abundance
- Fallen Woody Debris Abundance
- Leaf Litter Cover (%) and Depth (millimetres [mm])
- Proximity to Water (km)
- Water Type
- Rocky Outcrop
- Roost Sites for Microbats
- Koala Food Trees (Type, Abundance %, Canopy cover %, or NA)
- Koala Food Trees Percentage (%) Compared with non KFT
- Connectivity
- Presence of Threat
- Associated Severity to Threat
- Extra Bat Roosting
- Extra Threats
- Comments
- Northing (GDA94)
- Number of small hollows (2-10 cm) (per ha)[4]
- Number of medium hollows (10-20 cm) (per ha) [4]
- Number of large hollows (20-40 cm) (per ha)[4]
- Number of extra-large hollows (>40 cm) (per ha)[4]
- Mistletoe abundance (per ha)[4]
- Total canopy cover (%)[4]
- Evidence of significant flora species recruitment (e.g. *Eucalyptus* spp., *Allocasuarina* spp., *Casuarina* spp. etc)[4]
- Evidence of fire[3]

2.6.11 Habitat mapping – preferred, suitable and marginal habitat

Habitat categorisation was conducted as per Ausecology, in prep – *Peak Downs Mine Continuation Project – Terrestrial Ecological Assessment*, where habitats were separated into three categories for the fauna included within *Habitat descriptions for 12 threatened species, specific to central Queensland* (Kerswell *et al*., 2020) – preferred, suitable and marginal habitat. Habitat type was not delineated out into categories for species not included within Kerswell *et al*., (2020). Ausecology (in prep) utilised the information pertained within

[3] Additional metric captured by Ausecology not outlined within the *BHP QLD Coal Ecological Survey Procedure* (BHP, 2020)

Kerswell *et al*., (2020) as a baseline for habitat categorisation, sourcing additional information from relevant guidelines, known species records and pers comms. Decision matrix tables that outline the categorisation of habitat quality, subject to area specific context, are located within Appendix F – Table 6-6 to Table 6-9 (Ausecology, in prep).

The habitat categorisations are described in Kerswell *et al*., 2020 as follows:

> **Preferred habitats** are those that are most important to the species and contain the features that are crucial for the species' persistence in an area. It includes habitats in which key activities are undertaken e.g. breeding, roosting and/or where high quality/species limiting foraging resources are found. If the species is present in a region, individuals will usually be found in preferred habitat.
>
> **Suitable habitat** provides resources for the species but is not crucial for its persistence in an area. Individuals may be found in suitable habitat but are not likely to be undertaking key activities such as breeding or roosting. Foraging resources may be lower quality or used opportunistically (rather than being depended upon). If the species is present in a region, individuals may be found in suitable habitat but this habitat type may also remain unoccupied.
>
> **Marginal habitat** provides limited resources for the species and is not crucial for its persistence in an area. Individuals may be occasionally found in marginal habitat but will not be undertaking key activities such as breeding, roosting or extensive foraging. If the species present in a region, individuals would be found in marginal habitat only rarely and this habitat type is likely to be unoccupied most of the time.

2.7 Terrestrial habitat quality assessment

Habitat quality assessment surveys were undertaken as per DES' *Guide to Determining Terrestrial Habitat Quality, Version 1.3* (DES, 2020b) (GTDTHQ), whilst also conforming to the *BHP QLD Coal Ecological Survey Procedure* (BHP, 2020). As per the GTDTHQ, habitat quality was determined based on assessment of both site-based attributes and species habitat attributes as outlined below.

2.7.1 Site-based attributes

Site-based attributes were assessed in accordance with Queensland Herbarium's BioCondition Assessment Version 2.2 (Eyre et al., 2015). Measured attributes (Table 2-4) were compared to relevant BioCondition benchmarks scores to determine habitat quality.

Table 2-4 Site-based attributes

Assessment plot	Attribute	Description
100 m x 50 m plot	Large trees	Number of large trees per hectare (determined by BioCondition benchmarks for relevant RE)
	Tree canopy height	Median canopy height in metres of the ecologically dominant layer (EDL)
	Recruitment (%)	Proportion of canopy EDL species regenerating (<5 cm DBH)
	Tree species richness	Number of native tree species
100 m transect	Tree canopy cover (%)	Vertical projection of living, native tree canopy cover overlapping the transect
	Shrub layer cover (%)	Vertical projection of living, native shrub layer cover overlapping the transect
50 m x 20 m plot	Coarse wood debris	Length of fallen woody logs and other coarse woody debris (>1cm diameter, 0.5 m length) per hectare
50 m x 10m plot	Native plant species richness	Number of species in each of the three-life forms: shrubs, grasses and forbs/other
	Non-native plant cover	Cover of exotic species as a component of overall vegetation cover

Assessment plot	Attribute	Description
Five 1 m x 1 m quadrat	Native perennial grass cover (%)	Average percentage cover of native perennial grass species
	Litter cover	Average percentage cover of fine and coarse organic material such as fallen leaves, twigs and branches <10 cm diameter

BioCondition assessment sites were conducted throughout the Study Area, in representative REs. As per the GTDTHQ, Assessment Units (AUs) consisted of REs exhibiting similar condition characteristics (e.g. remnant, HVR, regrowth or non-remnant), with the number of sampling sites following the recommendations (Table 2-5).

Table 2-5 Guide to number of sampling sites relative to assessment unit size (DES, 2020b)

Assessment Unit size (ha)	Number of sampling sites
0 - 50	≥ 2
50 - 100	3
100 - 500	4
500 - 1000	5
>1000	6

2.7.2 Species habitat attributes

Species habitat attributes were assessed in accordance with the GTDTHQ for species considered likely or known to occur within the Study Area. A combination of BioCondition assessment attributes and fauna habitat assessment data were utilised to assess species habitat attributes per species. As per the GTDTHQ these indicators were determined based on a literature review. A summary of the habitat attributes, threats and associated indicators used for each species is presented in Appendix D.

2.8 Field survey efforts

2.8.1 Flora

As mentioned in Section 2.1, this report utilises flora survey efforts conducted by Ausecology as part of *Peak Downs Mine Continuation Project – Terrestrial Ecological Assessment* (Ausecology, in prep) and *Heyford Power line Ecological Assessment* (Ausecology, 2019) to help form GTRE mapping of the Power line Alignment and Study Area (Appendix A-4). In total the Power line Alignment was found to contain approximately 1.67 ha of infrastructure and roads, and approximately ~81.78 ha of vegetation including remnant, regrowth and cleared vegetated areas.

2.8.2 Fauna

As mentioned in Section 2.1, this report utilises fauna survey efforts conducted by Ausecology and prior consultancies (Table 2-2). Fauna surveys conducted included, fauna trapping (pitfalls, funnels, Elliott traps, cages, harp trapping), avifauna surveys, diurnal active searches, nocturnal active searches, call playback, modified SAT assessments, spotlighting, baited camera trapping and Anabat passive call detection recording. All fauna survey efforts are contained within the Study Area, with some surveys falling within the Power line Alignment (Appendix A-2). The findings of the larger Study Area provide increased context and information with regards to threatened species presence and are applicable to the Power line Alignment due to the connectivity and consistency of habitat.

Fauna surveys for each targeted fauna species aimed to meet the applicable State and Commonwealth survey effort guidelines. As detailed within Ausecology (in prep), in some instances, meeting the recommended survey effort guidelines for some species was considered unfeasible and/or unnecessary. This primarily stemmed when

guidelines were based off survey hours per potential habitat area. This calculation of required survey effort is considered most compatible for smaller scale projects, however, this fixed survey effort ratio becomes impractical for larger scale projects. Ausecology deems the fauna survey effort undertaken to be sufficient, especially when considering the numerous confirmed threatened species records and detailed habitat assessments conducted throughout the Study Area.

A summary of cumulative fauna survey efforts per fauna method per company within the Study Area is presented in Table 2-7. Further details of cumulative Ausecology fauna survey efforts per fauna method per BGV and RE within the Study Area is outlined in Table 2-6 (Ausecology 2019; Ausecology, in prep).

Table 2-6 Cumulative fauna survey efforts per BVG and RE within the Study Area (Ausecology 2019, Ausecology in prep)

BVG (1M)	11a		16a	17a	17b	25a					-	Totals
Regional Ecosystem (RE)	11.8.5		11.3.2	11.5.3	11.9.2	11.4.8	11.4.8/ 11.4.9	11.4.8/ 11.4.9	11.4.9	11.4.9	-	
Condition	Remnant	Regrowth	Remnant	Remnant	Regrowth	HVR	Regrowth	Non Remnant	Regrowth	Non Remnant	Non Remnant	
Fauna Survey Type												
Active Search (person minutes)	120	-	90	20	60	20	-	-	60	-	-	**370**
Anabat (recorder nights)	54	-	2	-	-	-	-	4	2	5	-	**67**
Bird Survey (person minutes)	70	10	60	10	-	10	-	10	60	-	-	**230**
Cage Trap (days)	3	-	4	-	-	-	-	-	4	2	-	**13**
Call Playback (person minutes)	10	-	-	10	-	-	-	-	-	-	-	**20**
Camera trap (days)	3	-	4	-	-	-	-	41	4	38	-	**90**
Elliott Trap (days)	66	-	88	-	-	-	-	-	88	44	-	**286**
Funnel Trap (days)	18	-	6	-	-	-	-		6	30	-	**60**
Harp trap (trap nights)	-	-	2	-	-	-	-	2	2	-	-	**6**
Modified SAT Survey (person minutes)	160	-	60	-	120	-	-	30	-	-	-	**370**
Pitfall Trap (days)	12	-	16	-	-	-	-	-	16	20	-	**64**
Spotlight (person minutes)	-	-	60	-	-	-	120	95	60	-	180	**515**

Table 2-7 Fauna species survey guidelines and Ausecology Study Area Survey Effort

Common Name	Scientific Name	Survey Recommendations					Source(s)	Ausecology survey effort (Ausecology 2019, Ausecology in prep)
		Timing	Technique(s)	Recommended intensity	Duration	Notes		
Reptilia								
Allan's lerista	*Lerista allanae*	Survey during warmer months of the year (September/October – March/April)	a) Raking through leaf litter and surface soil under logs or at the base of trees/bushes b) pitfall and funnel trapping	a) Not specified b) 6 x 20 L buckets over 30 of drift fencing-funnel traps placed at either end. At least 2 replicates per habitat type	a) Not specified b) 4 days/nights	Not specified	Survey guidelines for Australia's threatened reptiles (DEWHA, 2011a) Draft referral guidelines for the nationally listed Brigalow Belt reptiles (DEWHA, 2011b)	Active herpetofauna searches^: 740 pm Pitfall trap: 64 days
Common death adder	*Acanthophis antarcticus*	Spring to early autumn (September to March)	a) Nocturnal vehicle transect b) Pitfall and funnel trapping	a) 2 surveys b) > 100 pitfall and 100 funnel trap nights per ha	a) 2 nights b) extended period required	Driving slowly ~10km/hr, surveying al suitable roads numerous times ~500 km (or all suitable roads surveyed multiple times). Pitfall and funnel trapping could be used in addition to nocturnal vehicle transects. The survey effort is considerable given the highly cryptic nature of the species and possible genuine rarity over much of their distribution.	Common death adder, Acanthophis antarcticus. Targeted species survey guidelines (Rowland and Ferguson, 2012)	Active herpetofauna searches^: 740 pm Elliot trap: 286 days Funnel trap: 60 days Pitfall trap: 64 days Spotlight: 515 pm
##Dunmalls snake	*Furina dunmalli*	Spring to early autumn (September to March) Coolest part of the day >25ºC	a) Diurnal searches b) Transects c) Spotlighting d) Opportunistic road surveys e) Pitfall/funnel traps	a) 1.5-personhours per hectare b) Not specified c) 1.5-personhours per hectare d) Not specified e) 6 x 20 L buckets over 30 of drift fencing-funnel traps placed ateither end. At least 2 replicates per habitat type	a) 3 days b) Not specified c) 3 nights d) Not specified e) 4 days/nights	Especially following heavy rainfall events and during warm evenings for snakes	Draft referral guidelines for thenationally listed Brigalow Belt reptiles (DEWHA, 2011b)	Active herpetofauna searches^: 740 pm Spotlight: 515 pm Elliot trap: 286 days Cage trap: 13 days Funnel trap: 60 days Pitfall trap: 64 days
Ornamental snake	*Denisonia maculata*	Spring to early autumn (September to March) Warm nights. After wet weather.	a) Diurnal searches b) Spotlighting c) Opportunistic surveys of roads d) Pitfall and funnel trapping	a) 1.5-person hours per hectare b) 1.5-person hours per hectare c) Not specified d) 6 x 20 L buckets over 30 of drift fencing. Funnel placed at each end. At least 2 replicates per habitat type	a) 3 days b) 3 nights c) Not specified d) 4 days/nights	Targeting water-inundated gilgais, wetlands, riparian habitats and the surrounding environment (e.g., roads) and large logs between dusk and early morning hours.	Draft referral guidelines for thenationally listed Brigalow Belt reptiles (DEWHA, 2011b)	Active herpetofauna searches^: 740 pm Spotlight: 515 pm Elliot trap: 286 days Cage trap: 13 days Funnel trap: 60 days Pitfall trap: 64 days
Yakka skink	*Egernia rugosa*	Spring to earlyautumn (September toMarch) Coolest part of the day/>25ºC	a) Diurnal searches b) Transects c) Spotlighting d) Elliot and cage traps	a) 1.5-person hours per hectare b) Not specified c) 1.5-person hours per ha d) 1 Elliot and 1 cage trap placed as close as possible to burrow network-checkevery morningand evening	a) 3 days b) Not specified c) 3 night d) 4 days/night	Diurnal searches- searches for burrows or latrine sites. Yakka skinks can be watched using binoculars or a telescope, focusing on burrow systems orlatrine sites. Transects should bestrategically designed/positionedin large habitat patches (>10ha) Spotlighting-targeting water inundated gilgais, wetlands, riparian habitat. More effective on warm and humid nights.	Survey guidelines for Australia's threatened reptiles (DEWHA, 2011a) Draft referral guidelines for thenationally listed Brigalow Belt reptiles (DEWHA, 2011b) Targeted species survey guidelines – *Egernia rugosa* (Ferguson & Mathieson, 2014).	Active herpetofauna searches^: 740 pm Spotlight: 515 pm Elliot trap: 286 days Cage trap: 13 days Funnel trap: 60 days Pitfall trap: 64 days

Common Name	Scientific Name	Survey Recommendations					Source(s)	Ausecology survey effort (Ausecology 2019, Ausecology in prep)
		Timing	Technique(s)	Recommended intensity	Duration	Notes		
Aves								
Australian painted snipe	*Rostratula australis*	Not specified	a) Targeted stationary observations b) Land-based areas searches or line transects for sites of less than 50 ha when wetland holds water but is not flooded.	a) 10 hrs. b) 10 hrs	a) 5 days b) 3 days	Difficult to detect evenwhen present. Thought to be mainly crepuscular but can be detected during the day. Secretive but conspicuous when in the open.	Survey Guidelines for Australia's Threatened Birds (DEWHA, 2010)	Bird Survey: 230 pm Active herpetofauna searches^: 740 pm
Curlew sandpiper	*Calidris ferruginea*	Early August -March	a) Nocturnal survey b) Aerial surveys of foraging habitat	Not specified	Not specified	Nocturnal area or transect spotlight surveys in suitable habitat either on foot or from a slow-moving vehicle. Aerial surveys of foraging habitat in large or remote study areas.	Survey Guidelines for Australia's Threatened Birds (DEWHA, 2010)	Bird Survey: 230 pm Active herpetofauna searches^: 740 pm Spotlight: 515 pm
Painted honeyeater	*Grantiella picta*	Early spring tolate summer	a) Area searches	a) 4 hrs (per 50ha of suitable habitat)	a) 4 days	For example, at least1 hour of surveying per day for a minimum of 4 days. During daylight hours and preferably in the early morning (< 2hrs after sunrise) and late afternoon(<2 hrs before sunset) and avoid inclement weather(i.e. rain and wind)	Painted honeyeater, *Grantiella picta*. Targeted speciessurvey guidelines (Rowland, 2012)	Bird Survey: 230 pm Active herpetofauna searches^: 740 pm
Red goshawk	*Erythrotriorchis radiatus*	Not specified	a) Area searches	a) 80 hrs*	a) 10 days*	Area searches forindividuals and/or distinctive nests. Nest searches in areas with tallest trees, in particular along riverbanks. *effort for 50 ha area is 50 hrs. over 8 days	Survey Guidelines for Australia's Threatened Birds (DEWHA, 2010)	Bird Survey: 230 pm Active herpetofauna searches^: 740 pm
Squatter pigeon (southern)	*Geophaps scripta scripta*	Not specified	a) Areas searches or transect surveys b) Flushing surveys	a) 15 hrs b) 10 hrs	a) 3 days b) 3 days	For areas <50ha	Survey Guidelines for Australia's Threatened Birds (DEWHA, 2010)	Bird Survey: 230 pm Active herpetofauna searches^: 740 pm
White-throated Needletail	*Hirundapus caudacutus*	between October and April in northern and eastern Australia (DotE, 2024)	a) Area searches	Not specified	Not specified	Species is quite distinct, as it is larger than other swifts that occur in Australia. Needletails may occur at very high elevations, where they are visible only as 'specks in the sky'. Difficult to conduct systematic surveys due to its mobility and ability to cover huge distances in a day.	Hirundapus caudacutus in Species Profile and Threats Database (DotE, 2024)	Bird Survey: 210 pm (conducted between October and April)
Mammalia								
Northern quoll	*Dasyurus hallucatus*	May and August to minimise disturbance during the reproductive period.	a) Cage trapping and large Elliot trapping b) Camera trapping c) Diurnal searches d) Spotlighting	a) 20 x Elliot. 10 x Cage traps . Minimum of 2 sites per 5 ha. b) Not specified c) 1 x 100m transect per 5 ha. d) survey at least two 200 metre transects per 5 hectare site (or longer transects for larger sites)	a) 4 consecutive nights b) Not specified c) Not specified d) 2 nights	For areas up to 5 ha. Traps should be baited with oats, sardines and peanut butter Traps should be rebaited at least every second day (baits should be fresh) Trapping to focus in areas with potential denning sites (rocky denning habitat).	Survey guidelines for Australia's threatened mammals (DSEWPC 2011a)	Active herpetofauna searches^: 740 pm Spotlight: 515 pm Camera trapping: 90 days Elliot trap: 286 days Cage trap: 13 days Funnel trap: 60 days Pitfall trap: 64 days

Common Name	Scientific Name	Survey Recommendations					Source(s)	Ausecology survey effort (Ausecology 2019, Ausecology in prep)
		Timing	Technique(s)	Recommended intensity	Duration	Notes		
Central greater glider	*Petauroides armillatus*	Nectar availabilityand monthly lunarphases (i.e. brightmoon can reduce detectability).	a) Spotlight survey b) Scat and scratch search c) Incidental	a) 1 per generic survey site B & c) not specified	a) 30 minutes b & c) not specified	Within 1 ha survey area	Terrestrial Vertebrate Fauna Survey Guidelines for Queensland (Eyre et al., 2018)	Active herpetofauna searches^: 370 pm Spotlight: 515 pm Camera trapping: 90 days Modified SAT: 370 pm
Koala	*Phascolarctos cinereus*	In the inland context, there maybe seasonal variation in koalas'use of different habitat types.	a) Strip transects b) Nocturnal c) Spotlighting d) Call playback e) Camera trap f) Mark resight/mark recapture g) Detection dogs h) Radio/satellitecollars i) Indirect methods; scratches, SAT, KRAM	Not explicitly stated	Not explicitly stated	None specified	Terrestrial Vertebrate Fauna Survey Guidelines for Queensland (Eyre et al., 2018)	Active herpetofauna searches^: 370 pm Spotlight: 515 pm Call playback: 20 pm Camera trapping: 90 days Modified SAT: 370 pm
Ghost bat	*Macroderma gigas*	September and April	a) Harp traps b) Mist nets c) Active monitoring d) Roost searches	a) 8 trap nights b) 8 trap nights c) 8 detection hours d) 2 hours per survey day	a) 4 nights b) 4 nights c) 4 nights d) Not specified	Recommended per 100 ha of Study Area:	Targeted species survey guidelines – Ghost Bat, *Macroderma gigas* (Hourigan, 2011)	Harp trap: 16 trap nights Anabat: 67 recording nights Spotlight: 515 pm
Corben's long-eared bat	*Nyctophilus corbeni*	Warmer nights from October–April.	a) Passive acoustic detection b) Harp traps c) Mist nets	a) Not specified b) 20 trap nights c) 20 trap nights	a) Not specified b) 5 nights c) 5 nights	Trapping details are for project area <50ha. Bat detectors can be used to identify areas used by long-eared bats, even if they cannot be identified to species level. Acoustic detection can then be followed up with an appropriate level of trapping.	Survey Guidelines for Australia's Threatened Bats (DEWHA, 2010)	Harp trap: 16 trap nights Anabat: 67 recording nights Spotlight: 515 pm
Short-beaked echidna	*Tachyglossus aculeatus*	Not specified	a) Active searches	Not specified	Not specified	No species-specific guideline	No species-specific guideline	Active herpetofauna searches^: 740 pm Spotlight: 515 pm Camera trapping: 90 days

pm: person minutes; ^Active herpetofauna searches + modified SAT person minutes

3 Results

3.1 Regional Ecosystems

Survey efforts (Table 2-1) confirmed a total of 7 broad vegetation groups (Neldner et al, 2021) and 9 regional ecosystems (RE) occurring within the Power line Alignment (Table 3-1). Ausecology found the vegetation frequently differed from government regulated vegetation mapping (DoR, 2023). Ausecology updated the status, extent and condition accordingly, with Ausecology's ground-truthed regional ecosystem mapping provided in Appendix A-4.

Table 3-1 Regional Ecosystems (REs) per Broad Vegetation Group (BVGs) present within the Power line Alignment

BVG	RE	VM Act Status	Biodiversity status	Short Description (Qld Herbarium, 2023)	Condition	Power line Alignment Area (ha)
11a	11.8.5	Least concern	No concern at present	*Eucalyptus orgadophila* open woodland on Cainozoic igneous rocks	Remnant	0.37
					Regrowth	7.42
					Non Remnant	4.71
16a	11.3.25	Least concern	Of concern	*Eucalyptus tereticornis* or *E. camaldulensis* woodland fringing drainage lines	Remnant	0.34
					Non Remnant	0.03
16c	11.3.4	Of concern	Of concern	*Eucalyptus tereticornis* and/or *Eucalyptus spp.* woodland on alluvial plains	Remnant	0.01
17a	11.5.3	Least concern	No concern at present	*Eucalyptus populnea +/- E. melanophloia +/- Corymbia clarksoniana* woodland on Cainozoic sand plains and/or remnant surfaces	Remnant	6.83
17b	11.9.2	Least concern	No concern at present	*Eucalyptus melanophloia +/- E. orgadophila* woodland to open woodland on fine-grained sedimentary rocks	Regrowth	2.56
25a	11.4.8/ 11.4.9	Endangered	Endangered	11.4.8: *Eucalyptus cambageana* woodland to open forest with *Acacia harpophylla* or *A. argyrodendron* on Cainozoic clay plains	Regrowth	12.83
					Non Remnant	38.63
	11.4.9	Endangered	Endangered	*Acacia harpophylla* shrubby woodland with *Terminalia oblongata* on Cainozoic clay plains	Regrowth	0.82
					Non Remnant	0.21
30b	11.4.4	Least concern	Of concern	*Dichanthium spp.*, *Astrebla spp.* grassland on Cainozoic clay plains	Remnant	0.89
					Non Remnant	0.14
	11.8.11	Of concern	Of concern	*Dichanthium sericeum* grassland on Cainozoic igneous rocks	Remnant	4.16
					Non Remnant	2.33
					Total	82.28

3.2 Matters of National Environmental Significance

Upon completion of field survey investigations and summation of information, two TECs and 11 threatened fauna species were determined to be likely or known to occur within the Study Area, as summarised in Table 3-2. No MNES threatened flora species were determined to be likely or known to occur. The comprehensive Likelihood of Occurrence (LoO) table, including matters determined unlikely to occur, is provided within Appendix B.

Table 3-2 MNES likelihood of occurrence (LoO) within the Study Area based upon field survey results summary

Scientific name	Common name	NC Act	EPBC Act	Likelihood of Occurrence		Ausecology Field Survey Detection	Post-field survey LoO rationale
				Pre-field survey	Post-field survey		
TEC							
Brigalow (*Acacia harpophylla* dominant and co dominant)	Brigalow TEC	-	E	Known	Known	Detected	Brigalow TEC confirmed to occur within Study Area.
Natural Grasslands of the Queensland Central Highlands and northern Fitzroy Basin	Grassland TEC	-	E	Known	Known	Detected	Grassland TEC confirmed to occur within Study Area.
Fauna							
Aves							
Apus pacificus	fork-tailed swift	SL	Ma/Mi	Known	Known	Not detected	Previously observed flying over Study Area (AECOM, 2020).
Geophaps scripta scripta	squatter pigeon (southern)	V	V	Known	Known	Detected	Known to occur within the Study Area and surrounding region (Ausecology, in prep; ERM 2021; AURECON 2013)
Hirundapus caudacutus	White-throated Needletail	V	V	Likely	Likely	Not detected	Species habitat located within Study Area. Potential for species to utilise airspace above Study Area.
Hydroprogne caspia	Caspian tern	SL	Ma/Mi	Known	Known	Detected	Species detected within large dam immediately adjacent to Study Area (Ausecology, in prep; AECOM 2020).
Rhipidura rufifrons	rufous fantail	SL	Ma/Mi	Known	Known	Not detected	Species detected onsite by previous survey efforts (AECOM, 2020)
Rostratula australis	Australian painted snipe	E	E	Likely	Likely	Not detected	Intermittent foraging habitat present within small, isolated patches of ephemeral wetland. Confirmed record ~2 km north of Study Area (E2M, 2021).

Scientific name	Common name	NC Act	EPBC Act	Likelihood of Occurrence		Ausecology Field Survey Detection	Post-field survey LoO rationale
				Pre-field survey	Post-field survey		
Mammalia							
Petauroides volans	greater glider	E	E	Likely	Known	Detected	Known to occur within the Study Area and surrounding region (AECOM, 2020; Ausecology, 2019)
Phascolarctos cinereus	koala	E	E	Known	Known	Detected	Known to occur within the Study Area and surrounding region (Ausecology, in prep; AECOM, 2020; Ausecology, 2019; FOOTPRINTS, 2009)
Reptilia							
Denisonia maculata	ornamental snake	V	V	Likely	Likely	Not detected	Habitat identified to occur within the Study Area. Species not detected within Study Area. Confirmed record ~3 km south of Study Area (Ausecology, in prep).
Flora							
Dichanthium queenslandicum	king blue-grass	V	E	Likely	Potential	Not detected	Suitable habitat identified to occur within Study Area, however, area severely impacted by cattle grazing, reducing the likelihood of detection.

NC Act: Indicates the Queensland conservation status of each taxon under the *Nature Conservation Act 1992*; Critically Endangered (CR), Endangered (E), Vulnerable (V), Near Threatened (NT), Special Least Concern (SL) and Least Concern (C). EPBC Act: Indicates the Australian conservation status of each taxon under the *Environment Protection and Biodiversity Conservation Act 1999*; Critically Endangered (CE), Endangered (E), Vulnerable (V) and Conservation Dependent (CD)

3.2.1 Threatened Ecological Communities listed under the EPBC Act

Desktop review of databases initially identified five TECs potentially occurring within the Study Area. Ausecology field surveys agreed with the findings of previous consultancies, confirming two TECs within the Power line Alignment. A breakdown of associated area is provided within Table 3-3, and associated mapping within Appendix A-4. A full LoO analysis is provided in Appendix B.

Table 3-3 Ground-truthed TECs within the Power line Alignment

Threatened Ecological Community	TEC Condition	RE	RE Condition	Power line Alignment Area (ha)
Brigalow (*Acacia harpophylla* dominant and co-dominant)	NA	11.4.9	Regrowth	0.02
			Total	0.02
Natural Grasslands of the Queensland Central Highlands and northern Fitzroy Basin	Best	11.4.4	Remnant	0.88
		11.8.11	Remnant	1.12
		11.8.11	Remnant	0.12^
	Good	11.8.11	Remnant	0.44
			Total	2.56

^Continuation of TEC patch into the Powerline Alignment outside of the Study Area

3.2.1.1 Brigalow TEC – Brigalow (Acacia harpophylla dominant and co-dominant) Ecology Community

The condition of the Brigalow TEC varied considerably across the Study Area, predominantly influenced by extensive historical land clearing and grazing practices. As per the conditions outlined within the Commonwealth Approved Conservation Advice for the Brigalow (*Acacia harpophylla* dominant and co-dominant) ecological community (Department of the Environment, 2013), only patches of Brigalow TEC >0.5 ha in size and containing <50% exotic perennial pant cover as a percentage of the total vegetation cover, were mapped as the TEC. Analysis of historical imagery was utilised to confirm that all patches of Brigalow TEC had not been cleared within the last 15 years.

Brigalow TEC within the Power line Alignment was confirmed within the following RE:

- 11.4.9 – *Acacia harpophylla* shrubby woodland with *Terminalia oblongata* on Cainozoic clay plains

Figure 3-1 Edge of a Brigalow TEC patch identified within the Power line Alignment, RE 11.4.9.

3.2.1.2 *Natural Grassland TEC – Natural Grasslands of the Queensland Central Highlands and Northern Fitzroy Basin Ecological Community*

Natural grasslands within the Study Area have been subject to extensive historical levels of livestock grazing, with cattle often present at the time surveys were conducted. Areas of Natural Grassland TEC were dominated by native *Dichanthium sericeum* (Queensland bluegrass) and with the non-native species *Cenchrus ciliaris* (buffel grass) (perennial) common. The invasive annual weed *Parthenium hysterophorus* (parthenium) was also abundant throughout. Natural Grassland TEC identified within the Power line Alignment was found within the following RE's:

- 11.8.11 – *Dichanthium sericeum* grassland on Cainozoic igneous rocks.
- 11.4.4 – *Dichanthium spp*., *Astrebla spp*. grassland on Cainozoic clay plains

The areas of Natural Grassland TEC occurred in four separate patches of approximately 1 ha, 3.5 ha, 1.5 ha and 48 ha, the area of which extending to outside of the Power line Alignment. When assessed against the key diagnostic characteristics and condition thresholds for Natural Grassland TEC as per Approved Conservation Advice for Natural grasslands of the Queensland Central Highlands and the northern Fitzroy Basin (DEWHA, 2009), three patches met the condition class for 'Best Quality' and one 'Good Quality'. A breakdown of the impact on each patch is provided in Table 3-4, with patches depicted within Appendix A-5.

Table 3-4 Natural Grassland TEC impact on patches breakdown

Natural Grassland total TEC patch size (ha)^	TEC Patch Condition	TEC area within Power line Alignment footprint (ha)	Relative %	Impact location
1	Best	0.1	10%	Extremity, does not dissect patch
3.5	Good	0.44	13%	Patch dissected, 30m corridor
1.5	Best	0.12	8%	Patch dissected, 30m corridor
48	Best	1.9	4%	Patch dissected, 50m corridor

^TEC patch area extends outside of the Power line Alignment

Figure 3-2 Natural Grassland TEC identified within the Power line Alignment, RE 11.8.11, featuring Dichanthium sericeum (Queensland bluegrass)

3.2.2 EPBC Act listed flora and fauna

Based upon the results of the desktop assessment, one flora and nine threatened fauna matters were identified under the provisions of the EPBC Act have a likelihood of occurrence of at least 'Likely' within the Study Area (Appendix B). Following field survey efforts, Ausecology determined no flora species and nine EPBC Act listed fauna species have a likelihood of occurrence of at least 'Likely' to occur within the Study Area (Table 3-5).

Table 3-5 EPBC Act listed species

Scientific name	Common name	NC Act	EPBC Act	Post-field survey LoO
Fauna				
Aves				
Apus pacificus	fork-tailed swift	SL	Ma/Mi	Known
Geophaps scripta scripta	squatter pigeon (southern)	V	V	Known
Hirundapus caudacutus	White-throated Needletail	V	V	Likely
Hydroprogne caspia	Caspian tern	SL	Ma/Mi	Known
Rhipidura rufifrons	rufous fantail	SL	Ma/Mi	Known
Rostratula australis	Australian painted snipe	E	E	Likely
Mammalia				
Petauroides volans	greater glider	V	E	Known
Phascolarctos cinereus	koala	V	E	Known
Reptilia				
Denisonia maculata	ornamental snake	V	V	Likely

Species profiles and habitat mapping has been provided below, for the four species determined to be likely or known to occur within the Study Area and where a significant impact is considered likely. These species include; koala (*Phascolarctos cinereus*), greater glider (*Petauroides volans*), ornamental snake (*Denisonia maculata*) and squatter pigeon (southern) (*Geophaps scripta scripta*). The following five species from Table 3-5 are not considered to be significantly impacted by the Project and therefore a profile and habitat mapping is not provided: Australian painted snipe (*Rostratula australis*), rufous fantail (*Rhipidura rufifrons*), Caspian tern (*Hydroprogne caspia*), White-throated Needletail (*Hirundapus caudacutus*) and fork-tailed swift (*Apus pacificus*).

3.2.2.1 Koala (Phascolarctos cinereus)

Koala habitat can be broadly described as woodlands or open forests containing known koala habitat trees. Koala habitat trees are defined as trees of the Corymbia, Melaleuca, Lophostemon, Eucalyptus and Angophora genera (Qld. Gov, 2017). Koalas are obligate folivores with a highly specialised diet, predominately feeding upon trees of the genera Eucalyptus, Corymbia, and Angophora (DAWE, 2022). Koalas are also known to occur in modified or regenerating native vegetation communities, as well as urban and rural landscapes where food trees or shelter trees may be highly scattered (DAWE, 2021). Distribution of koala within north-western Queensland was found to be patchy, and associated with creek-lines correlating with higher leaf-moisture content (Munks et al. 1996 and DAWE, 2022).

General habitat types within the Study Area and surrounding region associated with the koala include; Dry sclerophyll (Eucalypt) woodlands, Open dry sclerophyll (Eucalypt) woodland and fringing watercourse and

riparian vegetation. Within the Study Area, koalas and/or evidence of koala (e.g. scat) were recorded within the following RE's: 11.3.25 and 11.5.3. Areas mapped as habitat within the Study Area and Power line Alignment is shown in Appendix A-7.

Figure 3-3 Koalas (Phascolarctos cinereus) recorded within the surrounding region.

3.2.2.2 Greater glider (Petauroides volans)

Greater gliders are a strictly arboreal, nocturnal species, restricted to tall, expansive eucalyptus forests (Grzimek, 1990). Greater gliders are highly reliant on hollow-bearing trees for shelter and breeding (Eyre et al., 2022; Lindenmayer et al. 1993; Smith et al. 2007). Recent studies have found tree DBH to be an appropriate surrogate for tree hollows, compared to ground-based estimates of hollow bearing trees (Eyre et al., 2022). Eucalypt trees with a DBH >30 cm have been found to be preferentially selected for foraging, with trees >50 cm DBH more likely to contain suitable hollows for sheltering by greater glider (Eyre et al., 2022).

Greater gliders rely upon leaf moisture for their water intake and as a result are generally restricted to watercourses and associated riparian vegetation (DCCEEW, 2022; Melzer et al. 2014), with home ranges of between 1 to 16 ha depending upon forest productivity (Kerswell et al., 2020). Greater gliders are not known to disperse across vegetation that does not contain suitable habitat trees, resulting in an increased reliance on connectivity of suitable vegetation.

General habitat types confirmed within the Study area and surrounding region associated with the greater glider include; dry sclerophyll (Eucalypt) woodlands, open dry sclerophyll (Eucalypt) woodland and fringing watercourse and riparian vegetation. Within the Study Area, greater gliders were recorded within the following RE's: 11.3.25 and 11.5.3. Areas mapped as habitat within the Study Area and Power line Alignment is presented in Appendix A-6.

Figure 3-4 Greater gliders (Petauroides volans) detected within the surrounding region.

3.2.2.3 Ornamental snake (Denisonia maculata)

Ornamental snakes are typically associated with low-lying areas with cracking clay soils, gilgai depressions within proximity to their prey – amphibians (Wilson and Swan 2013; DEE, 2019). Coarse woody debris is also noted as an important microhabitat feature for the ornamental snake (Brigalow Belt Reptiles Workshop 2010).

Ornamental snakes were not recorded within the Study Area, with the nearest record located ~3 km south of the Study Area (Ausecology, in prep). Within the surrounding region, ornamental snakes were recorded within the following REs applicable to the Study Area: 11.3.25 and 11.4.9. Areas of RE 11.4.9 were considered the most suitable habitat, featuring cracking clay soils and gilgai depressions. Within the surrounding region, areas of RE 11.3.25 where ornamental snakes were observed exhibited an abundance of coarse woody debris and were associated with providing connectivity to more typical suitable habitat land zone four RE's, namely, 11.4.8 and 11.4.9.

Detailed habitat assessments conducted throughout the Study Area captured the following habitat features relevant to ornamental snake; gilgai abundance, gilgai depth, soil crack abundance, soil crack depth and coarse woody debris abundance. Areas mapped as habitat within the Study Area and Power line Alignment is presented in Appendix A-8.

Figure 3-5 Ornamental snakes (Denisonia maculata) detected within the surrounding region.

3.2.2.4 *Squatter pigeon (southern) (Geophaps scripta scripta)*

Squatter pigeons typically occur in dry grassy eucalypt woodlands, open-forests and scrub. They are known to also forage along roads, rail lines, homesteads, cattle yards and other highly modified surfaces. Squatter pigeons are often recorded near waterbodies, such as rivers, creeks and waterholes, with open and short grass cover, and are less commonly found on heavy soils with dense grass (Curtis et al. 2012; Higgins & Davies, 1996; Garnett & Crowley, 2000). Habitat is considered to be located on land zones 3, 5, 7, 8, 9 and 10 (Kerswell et al., 2020). Distance to suitable water sources is regarded as a limiting factor to squatter pigeon habitat, with higher quality habitat occurring within 3km of suitable waterbodies (Squatter Pigeon Workshop 2011).Within the Study Area, squatter pigeons was recorded within RE 11.4.8 however, the area was highly degraded, adjacent to a dirt access track and in extreme proximity (~10 m) to the RE boundaries of more suitable RE's 11.3.25 and 11.5.3. Areas mapped as habitat within the Study Area and Power line Alignment is presented in Appendix A-9.

Figure 3-6 Squatter pigeons (southern) (Geophaps scripta scripta) were recorded within the Study Area, however no photos were captured. Examples above are photos by R. Regeer captured as part of another project.

3.3 Introduced flora species

Pest flora was common throughout the Study Area. The *Biosecurity Act 2014* (Qld) imposes a general biosecurity obligation on landholders to manage Biosecurity risks on their land. Four flora species listed as 'Restricted Invasive' flora species listed under the *Biosecurity Act 2014* were recorded within the Study Area (Table 3-6).

Table 3-6 Restricted Biosecurity Act 2014 flora species recorded within the Study Area

Scientific Name	Common Name	Status – Biosecurity Act 2014 (Qld)	Survey Results
Flora			
Harrisia martinii	harrisia cactus	Category 3 Restricted Invasive	Known. Detected on site. Common throughout Study Area.
Opuntia tomentosa	prickly pear	Category 3 Restricted Invasive	Known. Detected on site. Scattered individuals throughout Study Area.
Parthenium hysterophorus	parthenium	Category 3 Restricted Invasive	Known. Detected on site. Abundant throughout Study Area.

Scientific Name	Common Name	Status – Biosecurity Act 2014 (Qld)	Survey Results
Parkinsonia aculeata	parkinsonia	Category 3 Restricted Invasive	Known. Isolated patch detected. One mature individual with approx. nine young saplings.

Furthermore, pest flora species not listed under the *Biosecurity Act 2014* were also abundant throughout the Study Area. *Cenchrus ciliaris* (buffel grass), which is considered an environmental weed, was by far the most prolific non-native grass species, often dominating the ground layer throughout extensive areas of the Study Area. *C. ciliaris* was originally introduced as a pasture grass, but is known to out-compete native pastures (New South Wales Department of Primary Industries, 2012). *C. ciliaris* is also highly flammable, with infested areas capable of burning very hot and known to destroy native woodlands, transforming them into pastures (AuseMade, 2022).

Another notable mention is *Acacia farnesiana* (mimosa bush), which was found scattered throughout the Study Area, sprawling within the ground layer.

Figure 3-7 Examples of pest flora observed within the Study Area, left – Harrisia martinii (harrisia cactus); right – Parkinsonia aculeata (Parkinsonia)

3.4 Introduced fauna species

Pest fauna was common throughout the Study Area, with results equivalent for the Power line Alignment. Four fauna species listed as 'Restricted Invasive' flora species listed under the *Biosecurity Act 2014* were recorded within the Study Area (Table 3-7 and Figure 3-8).

Table 3-7 Restricted Biosecurity Act 2014 fauna species recorded within the Study Area

Scientific Name	Common Name	Status – Biosecurity Act 2014 (Qld)	Survey Results
Fauna			
Canis lupus familiaris	wild dog	Category 3, 4 & 6 Restricted Invasive	Known. Detected throughout Study Area.
Felis catus	feral cat	Category 3, 4 & 6 Restricted Invasive	Known. Detected throughout Study Area.
Oryctolagus cuniculus	European rabbit	Category 3, 4 & 6 Restricted Invasive	Known. Detected throughout Study Area.
Sus scrofa	feral pig	Category 3, 4 & 6 Restricted Invasive	Known. Detected throughout Study Area.

Cattle grazing was common throughout the majority of the Study Area. Areas where cattle activity was particularly concentrated (e.g. watering holes, creek crossings and general cattle tracks) often were subject to a significant increase in bare ground cover when compared to the surrounding vegetation (Figure 3-9).

Figure 3-8 Examples of pest fauna observed within the Study Area. Left to right; wild dog (Canis lupus familiaris), feral cat (Felis catus), feral pig (Sus scrofa) and European rabbit (Oryctolagus cuniculus).

Figure 3-9 Examples of cattle (Bos taurus) trampling found within the Study Area.

3.5 Terrestrial habitat quality

Throughout the Study Area, habitat features were identified as part of detailed habitat assessments and general observations. Habitat features identified as part of survey efforts are outlined within Section 2.6.10, with representative examples presented in Figure 3-10.

Figure 3-10 Example habitat features located within the Study Area – left to right; koala tree canopy cover, hollow log, water holding trough and soil cracks.

3.5.1 Landscape-scale Attributes

Landscape-scale Attributes were calculated for each applicable BC assessment as per GDTHQ version 1.3, with mean results per RE and condition summarised within Table 3-8.

Table 3-8 Mean Landscape-scale Attributes per Regional Ecosystem (RE) and condition

RE	Condition	Mean Connectivity Score (/10)	Mean Site Context (/5)	Mean Size Of Patch (/10)	Mean Total (/25)
11.3.25	**Remnant**	10	4	7	21
11.3.4	**Remnant**	2	4	7	13
11.4.4	**Remnant**	0	4	7	11
	Non Remnant	0	4	7	11
11.4.8/ 11.4.9	**Regrowth**	0	2.7	7	9.7
11.4.9	**Remnant**	2	4	7	13
	Regrowth	0	5	10	15
11.5.3	**Remnant**	0.8	3.6	8.2	12.6
11.8.11	**Remnant**	0.8	4.4	8.2	13.4
	Non Remnant	0.7	1.3	6.3	8.3
11.8.5	**Remnant**	0	4	7	11

RE	Condition	Mean Connectivity Score (/10)	Mean Site Context (/5)	Mean Size Of Patch (/10)	Mean Total (/25)
	HVR	0	4	6	10
	Regrowth	1.3	4	9	14.3
	Non Remnant	0.5	4.25	7.25	12
11.9.2	**Remnant**	0	4	7	11
	Regrowth	0	0	7	7

3.5.2 Habitat Quality Scoring

Habitat Quality Scoring was calculated for those species for which it was determined that the Power line Alignment was most likely to result in a significant impact. Species BioCondition Scores and Species Habitat Scores were calculated as per GDTHQ version 1.3, with results summarised within Table 3-9 with additional breakdown provided in Appendix C.

Table 3-9 Summary table – Habitat Quality Scoring calculated as per GDTHQ v1.3

Matter	Habitat Category	RE Condition	RE Code	Mean decimal BC Score (/1)	Mean Habitat Score (/100)	HQS per Habitat Category		HQS per Entire Matter	
						BC Score (/10)	Species Habitat Score (/10)	BC Score (/10)	Species Habitat Score (/10)
greater glider	Preferred	Remnant	11.3.25	0.65	54.44	5.65	5.17	5.65	5.17
		Remnant	11.3.4	0.71	57.67				
		Remnant	11.5.3	0.56	51.70				
	Suitable	Remnant	11.5.3	0.56	51.70	5.65	5.17		
koala	Preferred	Remnant	11.3.25	0.65	63.50	5.69	5.38	5.13	4.52
		Remnant	11.3.4	0.71	64.00				
		Remnant	11.5.3	0.56	53.22				
	Suitable	Remnant	11.5.3	0.56	53.22	5.65	5.32		
	Marginal	Remnant	11.8.5	0.66	46.00	4.75	3.94		
		Regrowth	11.8.5	0.47	46.50				
		Non-remnant	11.8.5	0.47	16.00				
ornamental snake	Marginal	Regrowth	11.4.9	0.60	28.31	5.97	2.83	5.97	2.83
squatter pigeon	Preferred	Remnant	11.3.25	0.65	55.33	5.17	4.37	5.05	4.70
		Remnant	11.3.4	0.71	69.00				
		Remnant	11.5.3	0.56	32.44				
		Remnant	11.8.5	0.66	54.83				
		Regrowth	11.8.5	0.47	53.00				
	Suitable	Remnant	11.3.25	0.65	55.33	5.18	5.07		
		Remnant	11.5.3	0.56	32.44				
		Regrowth	11.8.5	0.47	53.00				
		Regrowth	11.9.2	0.61	48.29				
		Non-remnant	11.8.5	0.47	59.00				
		Non-remnant	Road	-	-				
	Marginal	Regrowth	11.9.2	0.61	48.29	4.51	5.14		
		Non-remnant	11.3.25	-	-				
		Non-remnant	11.8.5	0.47	59.00				
		Non-remnant	Road	-	-				

3.6 Habitat Mapping

Habitat mapping has been conducted for matters that have been determined to likely result in a significant impact, including:

- greater glider (southern and central) (*Petauroides volans*)
- koala (*Phascolarctos cinereus*)
- ornamental snake (*Denisonia maculata*)
- squatter pigeon (southern) (*Geophaps scripta scripta*)

As previously mentioned in Section 2.6.11, habitat categorisation was conducted as per Ausecology (in prep), with the information within Kerswell et al., (2020) utilised as a baseline for habitat categorisation, sourcing additional information from relevant guidelines, known species records and pers comms. Applicable information pertaining to the above species contained within Kerswell et al. (2020) is outlined below. The decision matrix tables that outline the categorisation of habitat quality, subject to area specific context, are located within Appendix F – Table 8-6 to Table 8-9 (Ausecology, in prep).

3.6.1 Koala (*Phascolarctos cinereus*)

As per Kerswell et al., (2020) v5, prepared January 2023:

"Preferred koala habitat in central Queensland is defined as:

- Contiguous remnant and high-value regrowth Eucalyptus open forest to woodlands on alluvial and/or cracked rock groundwater where palatable food tree species occur frequently (and are usually dominant)
- This specifically includes stream-fringing open forest, open forest or woodland on alluvial terraces where Eucalyptus tereticornis/camaldulensis are dominant or common subdominant elements. Other important food species on the alluvial terraces can include *E. coolabah, E. crebra, E. melanophloia and E. populnea*. These listed Eucalyptus species comprise a subsample of locally important koala habitat trees in the Brigalow Belt across various geological contexts

Preferred habitat areas located where aquifers persist through most drought cycles, substrates have high fertility and food tree species occur at relatively high frequencies have the potential to support moderate to high density koala populations. Preferred habitat areas represented as *Eucalyptus crebra/drepanophylla* tall woodland on hills and ranges with aquifers that persist in most drought cycles (commonly cracked rock aquifers) have the potential to support a low to moderate density koala population e.g. Clarke-Connors Ranges, Minerva Hills.

Suitable koala habitat in central Queensland is defined as:

- Remnant and regrowth Eucalyptus open forest to woodlands with more variable aquifers (often seasonal) and that have connectivity to other areas of suitable or preferred habitat. Must incorporate one or more palatable food tree species of relative abundance.

Marginal koala habitat in central Queensland is defined as:

- All other fragmented and sparsely distributed woodlands and open woodlands, shrub lands and forests, with some food trees and which experience significant seasonal water deficits and/or are subject to periodic high intensity fires.

An example of a marginal habitat type is *Acacia harpophylla* open forest with isolated *Eucalyptus tereticornis/camaldulensis, E. coolabah* and/or *E. populnea*. These areas have the potential to support only very low density koala populations.

NOTE: A landscape across which koalas move, but does not contain (1) palatable tree species, and/or (2) a persistent freshwater aquifer sufficient to maintain leaf moisture at levels sufficient to sustain a resident koala population and/or (3) a habitat structure that provides refuge from predators or the capacity to avoid heat stress, is not considered to provide habitat values for the species."

3.6.2 Greater glider (*Petauroides volans*)

As per Kerswell et al., (2020) v5, prepared January 2023:

"Preferred greater glider habitat in central Queensland is defined as:

- Remnant, connected eucalypt woodlands containing one or more feed tree species and more than two hollow bearing trees/ha, with hollows medium-large in size (> 10 cm entrance), usually on fertile, wetter soils of riparian zones.
- In central Queensland, preferred foraging and den trees include *E. camaldulensis, E. tereticornis, E. fibrosa* and *Corymbia citriodor*a. The species has also been observed in *Angophora floribunda, Eucalyptus cambageana, E. coolabah, E. crebra, E. laevopinea, E. moluccana, E. orgadophila, E. populnea, E. melanophloia* and *C. tessellaris* in which it may use for foraging and/or denning.

Suitable greater glider habitat in central Queensland is defined as:

- Remnant eucalypt woodlands containing one or more feed tree species connected to areas of denning habitat that does not contain more than two hollow bearing trees/ha, medium-large in size (> 10 cm entrance). Generally within ~ 120 m of breeding / denning habitat, reflecting the home range of the species.

Marginal greater glider habitat in central Queensland is defined as:

- Remnant or high value regrowth eucalypt vegetation, adjacent to preferred greater glider habitat where hollows are smaller and/or less frequent. Isolated patches of marginal habitat >100 m from adjacent habitat do not provide habitat for the species due to gliding capabilities.
- Remnant or high value regrowth eucalypt vegetation on low fertility and low moisture soils, regardless of hollow densities."

Supplementary to Kerswell et al., (2020), Ausecology also utilised information as per Eyre et al., (2022), with greater glider habitat and REs in Queensland separated into three categories; habitat, potential habitat and not habitat;

- "Habitat:
    - Regional ecosystems with confirmed greater glider records
    - Contains habitat attributes (but not necessarily all attributes), such as live and dead hollow-bearing trees for denning, feed trees, large trees, habitat connectivity across the landscape
- Potential habitat:
    - Regional ecosystems that do not have confirmed greater glider records but are identified by experts as potential greater glider habitat
    - Contains habitat attributes (but not necessarily all attributes), such as live and dead hollow-bearing trees for denning, feed trees, large trees, habitat connectivity across the landscape
- Not habitat:
    - Regional ecosystems with no confirmed records of greater gliders, and identified by experts as non-habitat

- Does not contain habitat attributes such as live and dead hollow-bearing trees for denning, feed trees, large trees, habitat connectivity across the landscape."

3.6.3 Squatter pigeon (southern; *Geophaps scripta scripta*)

As per Kerswell et al., (2020) v5, prepared January 2023:

"All squatter pigeon habitat is located on low, gently sloping, flat to undulating plains, foothills and plateaus.

Preferred squatter pigeon habitat in central Queensland is defined as:

- Remnant or regrowth grassy open forest to woodland dominated by Eucalyptus, Corymbia, Callitris or Acacia with patchy, relatively sparse ground cover vegetation (33 %) and sparse shrub layer on well-draining sandy, loamy or gravelly soils within 1 km of a suitable permanent34 waterbody.
- Preferred habitat may be located on land zones 3, 5, 7, 8, 9 and 10.

Preferred habitat does not include areas dominated by introduced pasture grasses, in particular *Cenchrus ciliaris*, nor heavily grazed areas but these areas may be included in suitable and marginal habitat as defined below.

Suitable squatter pigeon habitat in central Queensland is defined as:

- Remnant or regrowth grassy open forest to woodland dominated by Eucalyptus, Corymbia, Callitris or Acacia with patchy, relatively sparse ground cover vegetation (<33 %) on well-draining sandy, loamy or gravelly soils between 1 and 3 km of a suitable permanent or seasonal waterbody; and
- Non-remnant areas within 100 m of preferred habitat.
- Suitable habitat may be located on land zones 3, 5, 7, 8, 9 and 10.

Marginal squatter pigeon habitat in central Queensland is defined as:

- Non-remnant areas, regrowth and remnant woodland or forest areas more than 3 km from a permanent or seasonal waterbody that facilities the movement of the species between patches of preferred or suitable habitat."

3.6.4 Ornamental snake (*Denisonia maculata*)

As per Kerswell et al., (2020):

"Preferred ornamental snake habitat in central Queensland is defined as:

- Gilgai depressions (with or without the presence of brigalow or other canopy vegetation), mounds and wetlands on cracking clays (predominantly land zone 4) where essential microhabitat features are present including an abundance of deep soil cracks. Other microhabitat features such as fallen woody debris may or may not be present. Seasonal flooding of habitat areas is a requirement.

Suitable ornamental snake habitat in central Queensland is defined as:

- Dispersal areas within 1 km of preferred habitat, which are currently or previously dominated by brigalow or coolibah communities where gilgais or soil cracks are infrequent and/or shallow, including non-remnant areas.

Marginal ornamental snake habitat in central Queensland is defined as:

- Areas currently or previously dominated by brigalow or coolibah communities where gilgais or soil cracks are infrequent or are shallow or non-remnant areas where threats are high (high abundance of weed incursion and cattle compacting soils) but the species still have potential to occur, especially in times where water is present and prey abundance (frogs) is high."

3.6.5 Habitat Area Calculations

Habitat was confirmed to occur within the Power line Alignment for the koala, greater glider, ornamental snake and squatter pigeon, with habitat areas summarised in Table 3-10 further broken down into associated REs in Appendix C – Table 6-2.

Table 3-10 Habitat area (ha) summary within the Power line Alignment

Matter	Power line Alignment – Habitat Area (ha)			
	Preferred	Suitable	Marginal	Total
greater glider	6.00	0.42	-	6.42
koala	6.72	0.45	10.40	17.57
ornamental Snake	-	-	0.19	0.19
squatter pigeon	13.45	6.39	2.94	22.77

4 Potential impacts

4.1 Native vegetation clearance

The total area of vegetation within the Power line Alignment footprint is ~82 ha. Within the Power line Alignment, habitat has been identified for MNES matters including threatened species and threatened ecological communities:

- 0.01 ha Brigalow TEC
- 2.55 ha Natural Grassland TEC
- 6.42 ha greater glider (southern and central) (*Petauroides volans*)
- 17.57 ha koala (*Phascolarctos cinereus*)
- 0.19 ha ornamental snake (*Denisonia maculata*)
- 22.77 ha squatter pigeon (southern) (*Geophaps scripta scripta*)

4.2 Fauna habitat removal

A total of 9 unique REs were identified within the Power line Alignment, with general floristic structure and composition characteristic of five broader habitat types namely, dry sclerophyll woodlands, open dry sclerophyll woodland, fringing watercourse and riparian vegetation, Acacia dominated woodlands and grasslands.

Within these habitat types, Ausecology identified numerous examples of habitat resources of varying quality, including, but not limited too; gilgais, soil cracks, coarse woody debris, leaf litter, hollow logs, tree hollows and koala food trees.

Ausecology identified a total of 234 unique terrestrial vertebrate fauna species as occurring within the Study Area comprising of amphibians, birds, mammals and reptiles (Table 4-1 and Appendix G).

Table 4-1 Unique fauna species identified by Ausecology as occurring within the Study Area

Fauna class	No. of species
Amphibia	13
Aves	137
Mammalia	44
Reptilia	40
Total	**234**

The required habitat clearing will negatively impact threatened and non-threatened species within the Power line Alignment, through habitat loss and barriers to movement. Vegetation within the easement will be slashed throughout the lifetime of the Power line, therefore removing cover for safe passage of native fauna, increasing the risk of exposure and predation. Clearing activities will likely result in injury and the death of individual fauna within the Power line Alignment. Potential mitigatory actions to reduce these impacts are discussed within Section 5.

4.3 Hydrological changes

The Surrounding Area is located within the Isaac River catchment area. Harrow Creek and various unnamed tributaries occur within the Study Area and represent part of the catchment area for the Isaac River. It is anticipated that watercourses within the Power line Alignment footprint will not be impacted upon. If Power line footings or other structures are required to be erected within close proximity to watercourses, Ausecology

recommends that hydrological experts are consulted to ensure the efficacy of management measures. In general, the following controls are recommended:

- Prompt erection of temporary and permanent erosion and sediment control barriers;
- Barriers preventing the flow of contaminated water and sediment into waterways;
- Diversion of surface water run-off around sensitive areas;
- Utilisation of sediment ponds prior to the release of captured run-off.

4.4 Introduced flora

Invasive flora species were encountered regularly throughout the Power line Alignment. Invasive flora species have the potential to drastically alter the floristic composition and structure of a given native vegetation community, impacting the functioning capacity of an ecosystem. Plant material that can facilitate the spread of an invasive species includes; seeds, fruiting bodies and root systems.

The ground layer will be significantly disturbed during construction and vegetation within the easement will be slashed throughout the lifetime of the Power line. Slashing increases the likelihood of non-native grass seeds being introduced, with the potential to establish and outcompete native grasses, changing the composition of the ground layer. Areas of particular risk include Grassland TECs areas.

The spread of invasive plant material will be an ongoing risk throughout the lifetime of the Power line Alignment. Vegetative material can be transported through a variety of means including; machinery, contaminated fill, vehicles and personnel.

Weed hygiene management procedures are to be implemented to help manage the introduction invasive species, however this will not prevent the spread of non-native grass seed (e.g. *Cenchrus ciliaris*) already present within the area. Mitigation and management measures are further discussed within Section 5.

4.5 Introduced fauna

Non-native invasive fauna including some that are listed under the *Biosecurity Act 2014* (Qld) were encountered regularly throughout the entire Study Area. Non-native fauna identified within the Study Area include (further details outlined in Section 7.7):

- wild dog and/or dingo *(Canis sp.)*
- feral cat (*Felis catus*)
- European rabbit (*Oryctolagus cuniculus*)
- feral pig (*Sus scrofa*)
- cane toad (*Rhinella marina*)
- common myna (*Acridotheres tristis*)
- cattle (*Bos sp.*)

It is anticipated that the non-native fauna located within the Power line Alignment are as equally present within the surrounding landscape. The overall impact of the Power line Alignment on such measures as the abundance, distribution and spread of introduced fauna is anticipated to be minimal.

4.6 Bushfire risk

Large portions of the Power line Alignment span across agricultural paddocks with a high abundance of *Cenchrus ciliaris* (buffel grass), which is known for being highly flammable (AuseMade, 2022). The risk of bushfire will be present during construction and continue throughout the life of the project, with the risk extending to vegetation and properties adjacent to the Power line Alignment. Accidental ignition sources include;

machinery/equipment malfunction, vehicle/machinery radiant heat, vehicle collision, hot works, incorrect disposal of cigarettes, power line wire malfunction. Strict mitigation and management measures will need to be followed throughout the lifetime of the project, with such measures discussed within Section 5.

4.7 Artificial lighting, noise and vibration

An increase of artificial lighting, noise and vibration is anticipated to be present during the construction phase of the Power line Alignment. Artificial lighting, noise and vibration can temporarily and/or permanently disrupt fauna activity (foraging, breeding, roosting) within the vicinity. It is anticipated that some fauna species/individuals will adapt, continuing their activities as per usual, whilst others will avoid the area. Noise and vibrations are known impose an overall negative impact upon fauna with potential impacts including; ear trauma, raised hormone levels, elevated stress levels and forced acoustic adjustment (Dawe and Goosem, 2008). The overall impact of artificial lighting, noise and vibration as a result of the Power line Alignment are anticipated to be minimal.

4.8 Dust

Dust present on the upper and lower surfaces of leaves is known to result in decreased ability of plants to photosynthesis, in turn affecting their growth rate and general health (Thompson, et al., 1984). The negative effects of increased dust deposition on vegetation within the surrounding landscape is not limited to native vegetation. Large portions of the surrounding landscape is comprised of pasture grasses, with their health, condition vital to their function as livestock feed. The overall impact of dust as a result of the Power line Alignment are anticipated to be minimal, provided mitigation and management measures are followed, with such measures discussed within Section 5.

5 Impact avoidance and mitigation measures

The 'avoid, mitigate, offset' approach described within the Environment Protection and Biodiversity Conservation Act 1999 Environmental Offsets Policy (DSEWPC, 2012) requires impacts on environmental matters be avoided in the first instance. If avoidance cannot be reasonably achieved, applicants are required to demonstrate that residual impacts have been mitigated. Where significant residual impacts remain following implementation of mitigation measures, these impacts will require offsetting, which is further detailed in Section 5. This section describes possible measures to avoid and/or mitigate impacts on terrestrial ecology within the Power line Alignment.

5.1 Impact avoidance measures

The nature of the project will require the permanent removal of vegetation where Power line pads and access tracks are placed. Woody vegetation beneath the Power line easement itself will be removed, with the easement subject to slashing throughout the lifetime of the Power line. The placement of the Power line Alignment was not fixed, with the ability to altered – subject to such restraints as financial and engineering.

Following consultation with Ausecology, the Power line Alignment has been adjusted, to avoid MNES as best as practicable. Furthermore, in comparison to the original alignment, the final Power line Alignment stub lines width have been reduced from 50 m to 30 m, reducing the overall impact footprint from 98.5 ha to 83.45 ha, a reduction of 15.05 ha.

This reduction in impact footprint and realignment to avoid MNES as best as practicable, have resulted in the reduction of impact for all impacted MNES fauna and TEC matters (Table 5-1 and Table 5-2).

Table 5-1 Fauna habitat impact areas (ha) comparison – original verse final Power line Alignment

Habitat Category	greater glider		koala		ornamental snake		squatter pigeon	
	Original	Final	Original	Final	Original	Final	Original	Final
Not Suitable	90.03	77.04	79.48	65.88	97.91	83.26	74.22	60.68
Marginal	-	-	9.62	10.40	0.18	0.19	3.05	2.94
Suitable	2.07	0.42	0.45	0.45	-	-	7	6.39
Preferred	6.39	6	8.78	6.72	0.23	-	14.05	13.45
Total habitat Impacted (ha)	8.47	6.42	18.84	17.57	0.41	0.19	24.11	22.77
Total habitat area difference (ha)	-2.05		-1.27		-0.22		-1.34	

Table 5-2 TEC impact areas (ha) comparison – original versus final Power line Alignment

TEC condition	Brigalow (Acacia harpophylla dominant and co-dominant)		Natural Grasslands of the Queensland Central Highlands and northern Fitzroy Basin	
	Original	Final	Original	Final
Good	0.22	0.01	0.72	0.44
Best			2.3	2.11
Total Impacted (ha)	0.22	0.01	3.02	2.55
Total area avoided (ha)	-0.21		-0.47	

5.2 Impact mitigation measures

Impact mitigation measures proposed to be implemented for MNES are detailed in Table 5-3.

Table 5-3 Potential impacts and mitigation measures

Potential Impact	Recommended Mitigation Measure
Vegetation and habitat clearing	▪ Development of rehabilitation program(s) ▪ Prior to disturbance, seed collection of native seed throughout Study Area for use in rehabilitation program ▪ Stockpiling, preservation and reinstating of local topsoil for rehabilitation ▪ Salvaging of hollow logs, hollow trees and other significant habitat features for use in rehabilitation ▪ Clear demarcation of vegetation that is not to be cleared ▪ Clearing advice to be sort from present licensed fauna spotter-catchers
Fauna mortality	▪ Development and implementation of low-risk species management plan(s) ▪ Development and implementation of high-risk species management plan(s) ▪ Development of and implementation of fauna information presentations, made compulsory to all personnel involved in vegetation clearing activities ▪ Licensed fauna spotter-catchers are allocated sufficient time to inspect areas immediately prior to clearing activities ▪ Presence of licensed fauna spotter-catchers during all clearing activities ▪ Site procedures in place for fauna requiring medical attention (vet and/or wildlife carer) ▪ Conducting clearing activities outside of breeding seasons, where practical
Hydrological changes	▪ Consultation with hydrological experts to minimise hydrological changes (including impact upon GDE). ▪ Sediment and erosion controls to be implemented as per management plan
Invasive flora and fauna	▪ Implementation of weed and pest management plans e.g.: o Weed hygiene washdowns conducted by suitably trained staff o Weed hygiene washdowns to be conducted prior to entry and exiting site – including movement between onsite areas of differing contamination levels. o Regular vehicle and machinery weed and seed compliance inspections o Regular surveys of the Power line Alignment identifying areas containing restricted matter (*Biosecurity Act 2014*).

Potential Impact	Recommended Mitigation Measure
	○ Restricted matter (*Biosecurity Act 2014*) within the impact area to be sufficiently treated prior to stripping and storage of topsoil, with topsoil contaminated by restricted matter to be stored separately.
Bushfire risk	▪ Safe fuel loads to be maintained within remaining vegetation ▪ Safe handling, use, storage, transport and disposal of all chemicals as per relevant Safety Data Sheets. ▪ Development of and Emergency Response Plans with consultation of emergency services ▪ Development and maintenance of site access tracks with consultation of emergency services ▪ Frequent machinery/vehicle/equipment maintenance to limit likelihood of equipment failure
Artificial lighting	▪ No installation or temporary use of lighting is proposed
Noise and vibration	▪ Frequent machinery maintenance to limit unnecessary noise and vibration ▪ Operation of equipment at speeds that minimise noise / vibrations
Dust	▪ Active dust suppression as required – watering of exposed surfaces and roadways ▪ Operation of equipment at speeds that minimise dust lift-off ▪ Active monitoring of wind direction and conditions

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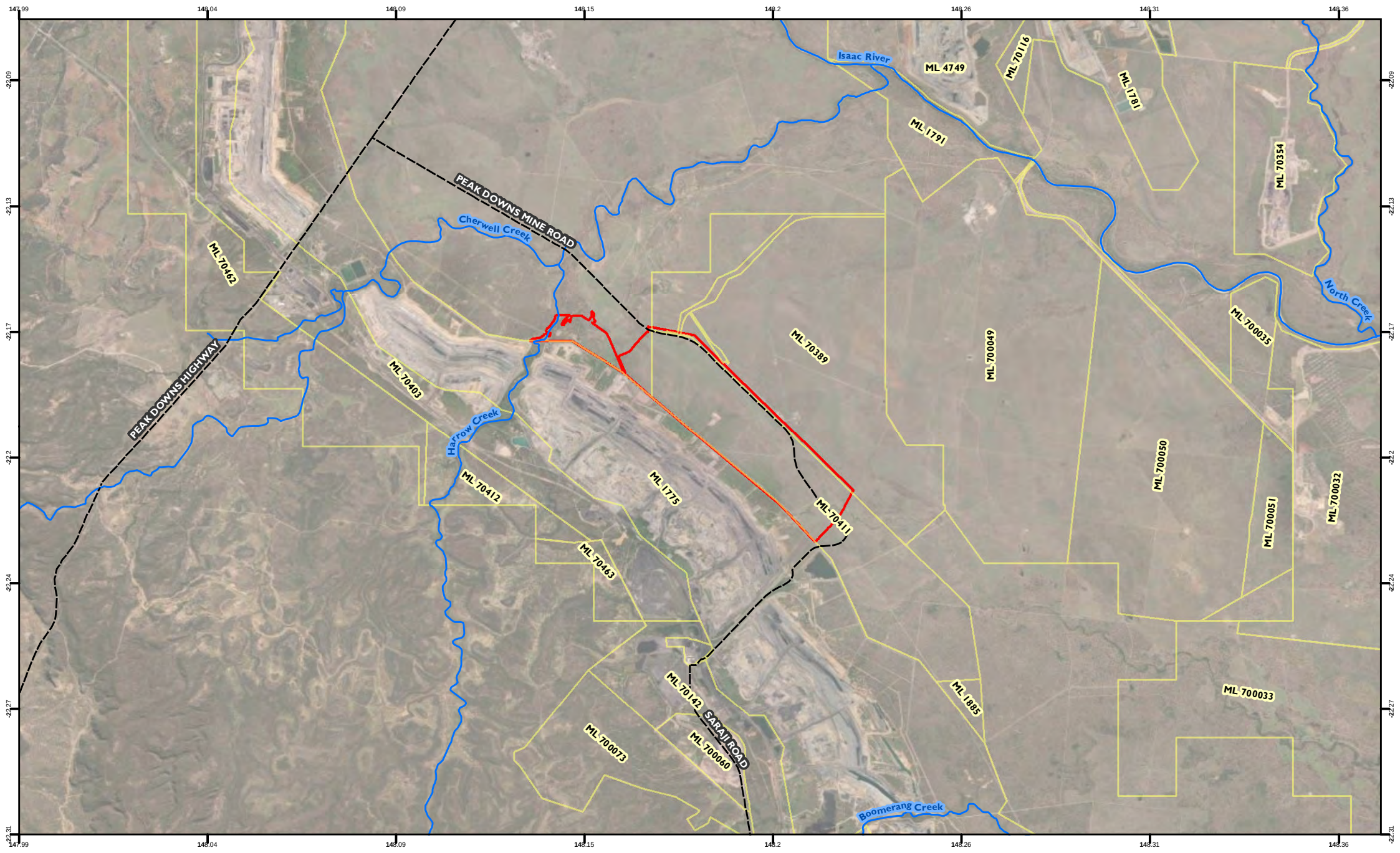
Appendix A – Mapping

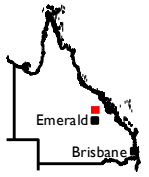


Ausecology

APPENDIX A-1:

Study Area and Power line Alignment
MNES - Peak Down Mine

- Major Roads
- Major Watercourse
- Mining Lease
- Study Area



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SCALE: 1:150,000

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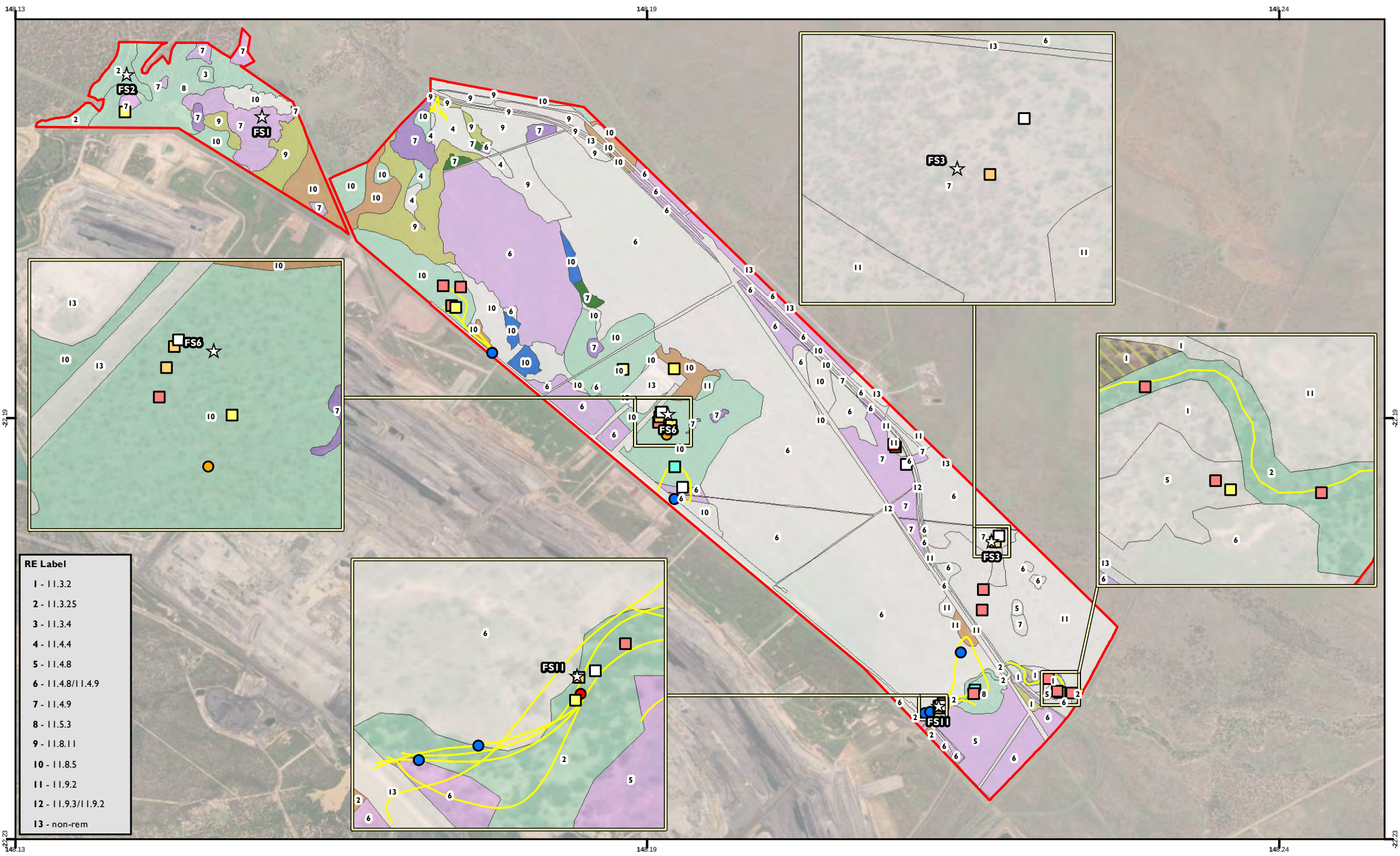


Ausecology

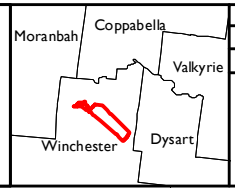
APPENDIX A-2:

Fauna Surveys
MNES - Peak Down Mine

Ausecology Fauna Survey Locations
Spotlight Tracks
Study Area

Survey Type
- Modified SAT
- Anabat
- Stationary Bird Survey
- Call Playback
- Camera
- Harptrap
- Herptofauna Searches
- Spotlight

GTRE (VM Status)
- Remnant - Endangered
- Remnant - Of Concern
- Remnant - Least Concern
- HVR - Endangered
- HVR - Least Concern
- Regrowth - Endangered
- Regrowth - Of Concern
- Regrowth - Least Concern
- Non Remnant



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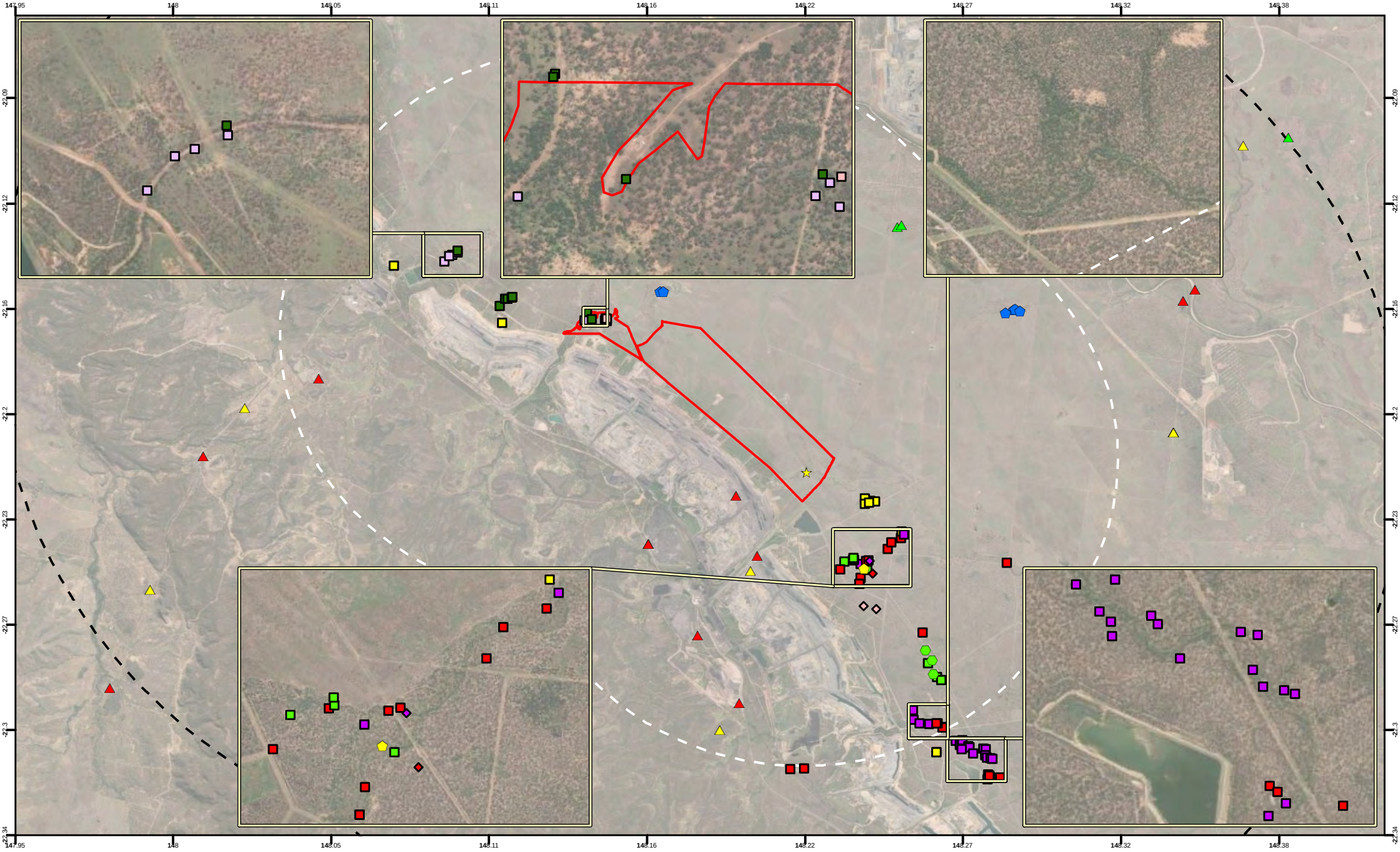

Ausecology

APPENDIX A-3:

EVNT Records Overview
Study Area and Powerline Alignment
MNES - Peak Down Mine

AECOM
- Greater glider (E/E)
- Koala (E/E)
- Koala- Indirect evidence (scat or scratches) (E/E)

ALA
- Koala (E/E)
- Ornamental snake (V/V)
- Squatter pigeon (southern subspecies) (V/V)

Aurecon
- Squatter pigeon (southern subspecies) (V/V)

Ausecology (2019)
- Greater glider (E/E)
- Koala (E/E)
- Koala- Indirect evidence (scat or scratches) (E/E)

Ausecology (in prep)
- Greater glider (E/E)
- Koala (E/E)
- Ornamental snake (V/V)
- Squatter pigeon (southern subspecies) (V/V)

E2M (2021)
- Australian Painted-snipe (E/E)
- Squatter pigeon (southern subspecies) (V/V)

Wildnet
- Ornamental snake (V/V)

REVISION	AUTHOR	REVIEWER	DATE
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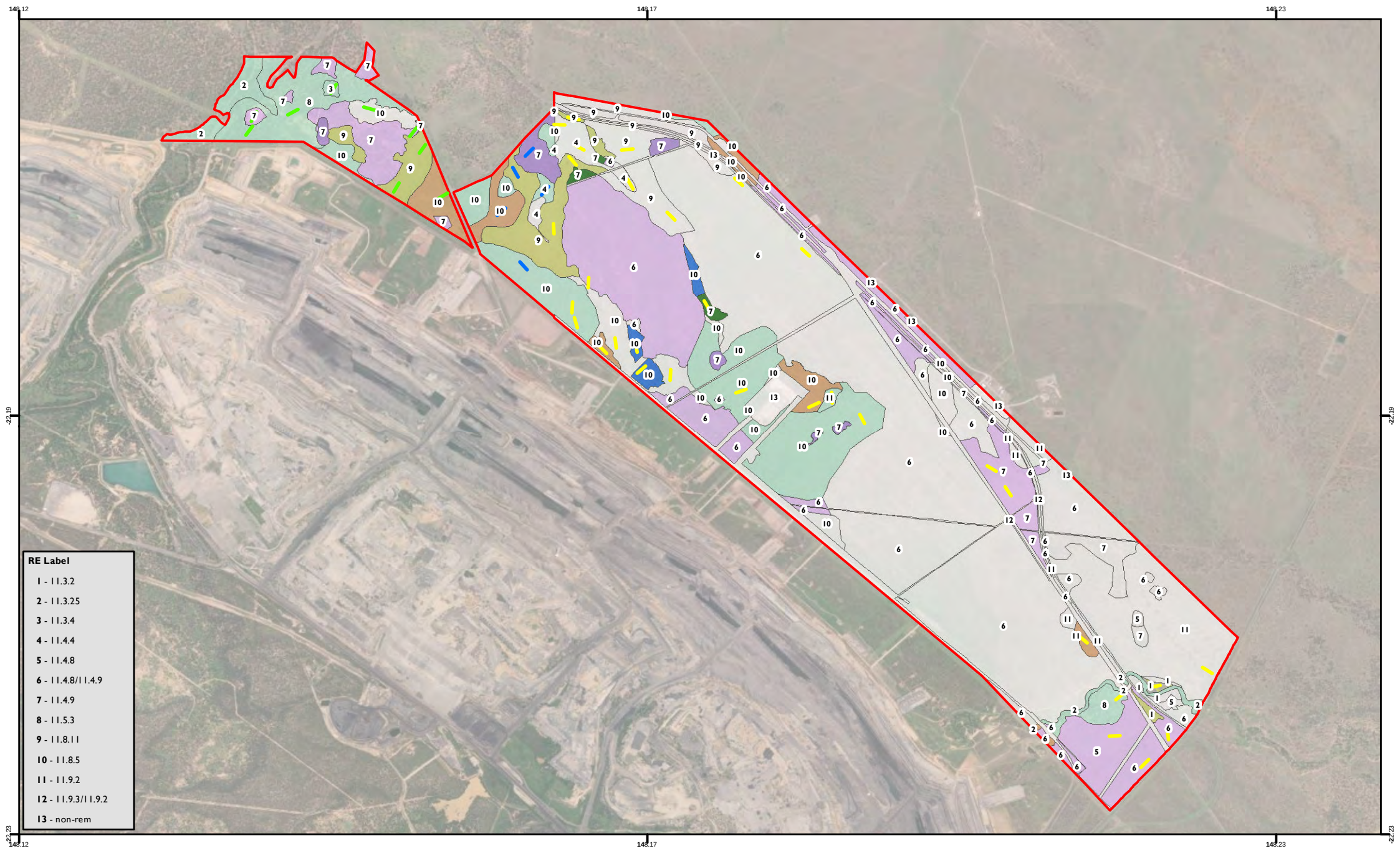


Ausecology

APPENDIX A-4a:

Flora Survey: Bioconditions
Study Area and Powerline Alignment
MNES - Peak Down Mine

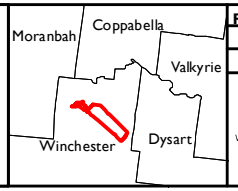
Study Area

Biocondition Surveys

- Ausecology (2022a)
- Ausecology (2023b)
- Ausecology (in prep)

GTRE (VM Status)

- Remnant - Endangered
- Remnant - Of Concern
- Remnant - Least Concern
- HVR - Endangered
- HVR - Least Concern
- Regrowth - Endangered
- Regrowth - Of Concern
- Regrowth - Least Concern
- Non Remnant



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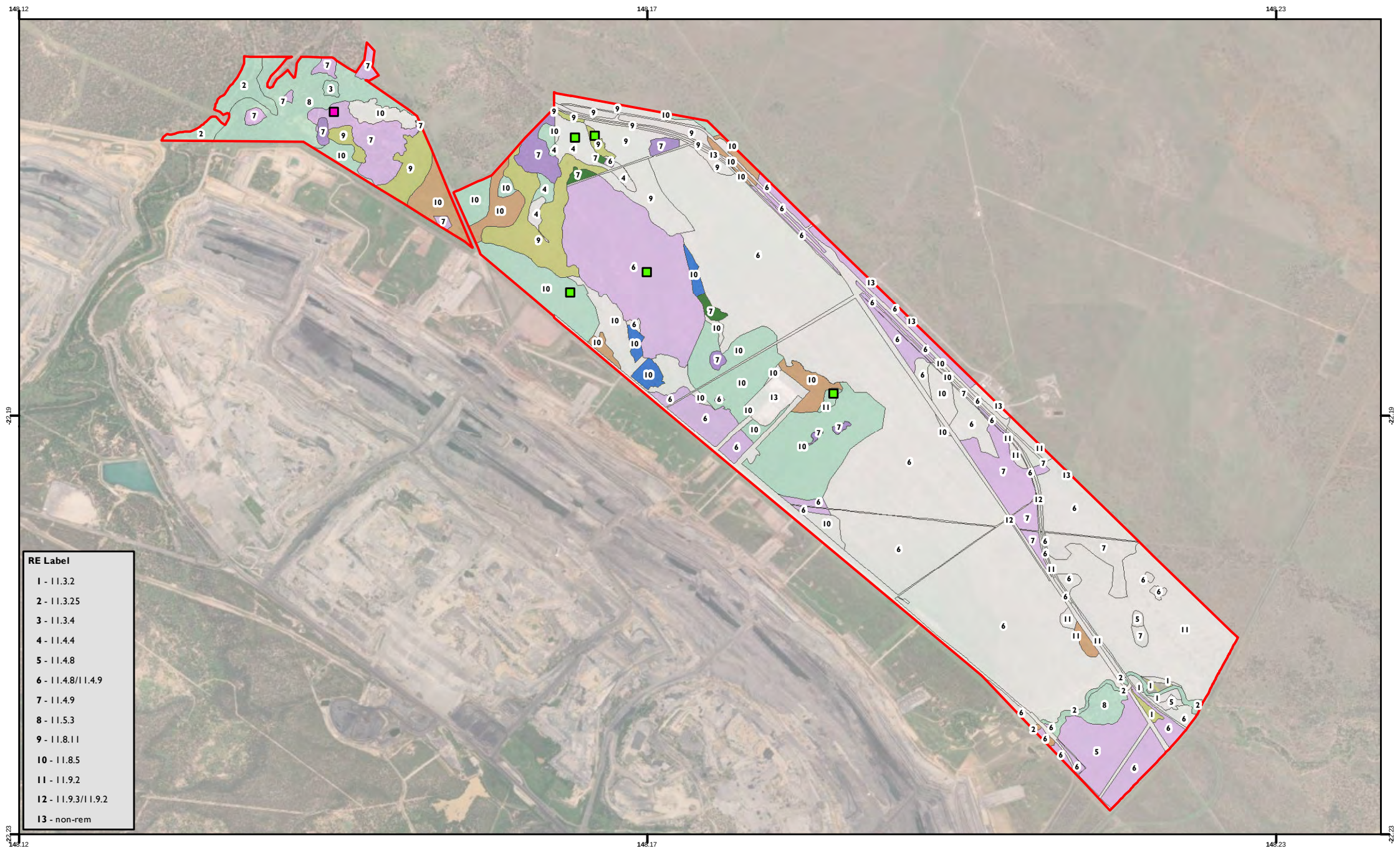


Ausecology

APPENDIX A-4b:

Flora Survey: Tertiary
Study Area and Powerline Alignment
MNES - Peak Down Mine

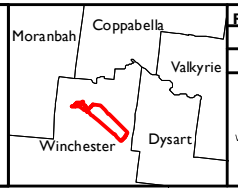
Study Area

Tertiary Surveys

- Ausecology 2019
- Ausecology In Prep

GTRE (VM Status)

- Remnant - Endangered
- Remnant - Of Concern
- Remnant - Least Concern
- HVR - Endangered
- HVR - Least Concern
- Regrowth - Endangered
- Regrowth - Of Concern
- Regrowth - Least Concern
- Non Remnant



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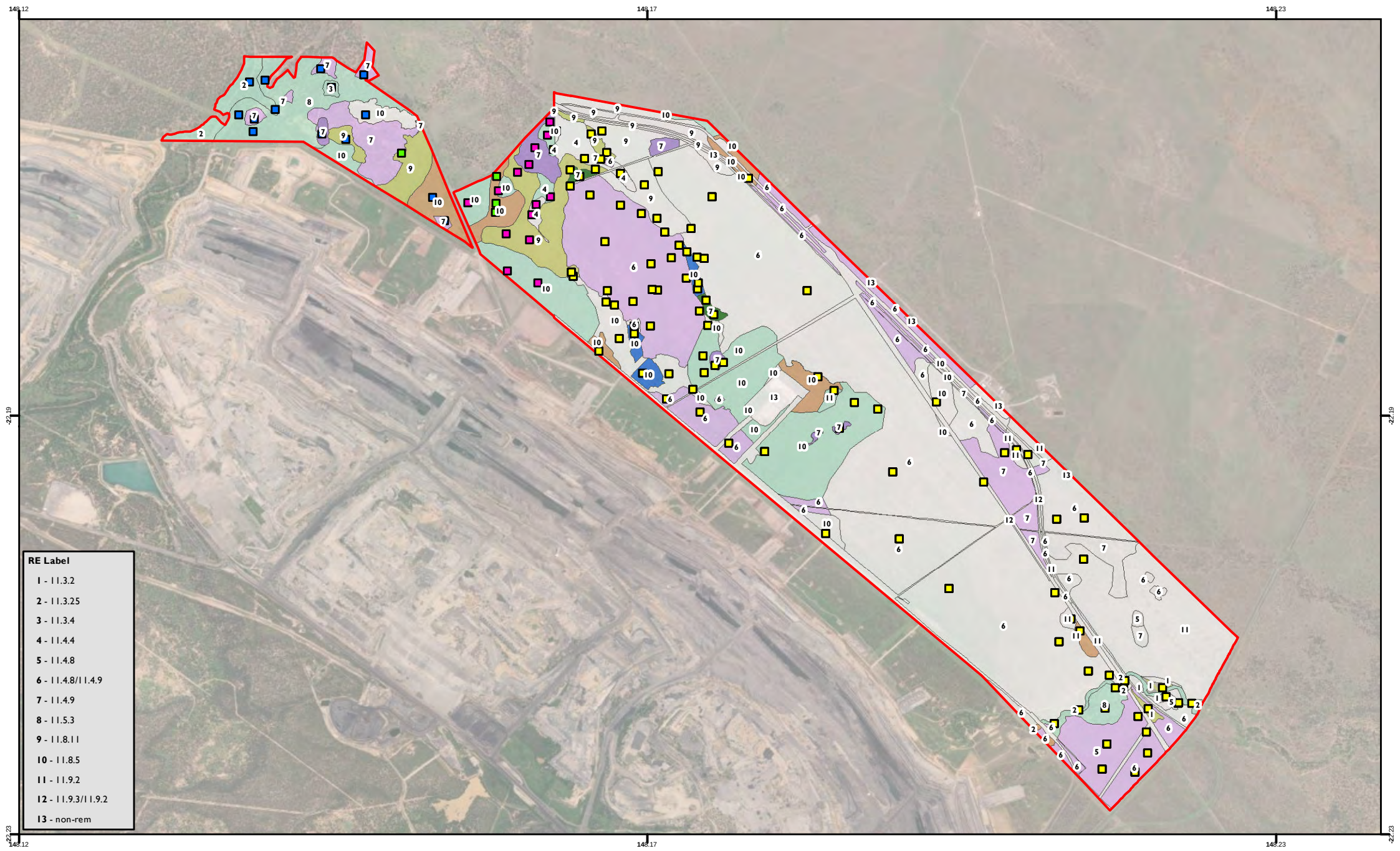


Ausecology

APPENDIX A-4c:

Flora Survey: Quaternary
Study Area and Powerline Alignment
MNES - Peak Down Mine

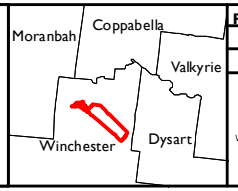
Study Area

Quaternary Surveys

- Ausecology (2019)
- Ausecology (2022a)
- Ausecology (2023b)
- Ausecology (in prep)

GTRE (VM Status)

- Remnant - Endangered
- Remnant - Of Concern
- Remnant - Least Concern
- HVR - Endangered
- HVR - Least Concern
- Regrowth - Endangered
- Regrowth - Of Concern
- Regrowth - Least Concern
- Non Remnant



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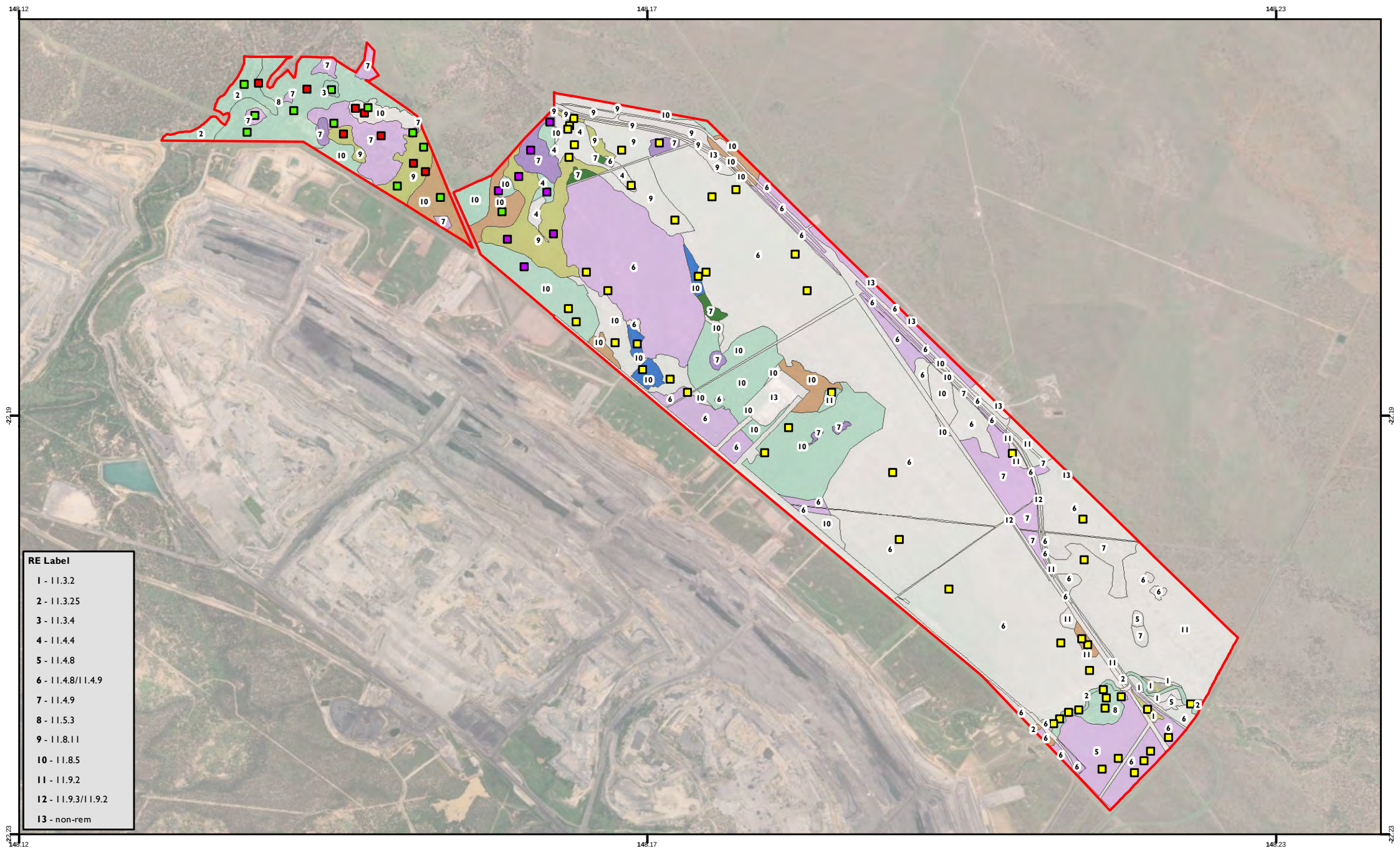


Ausecology

APPENDIX A-4c:

Habitat Assessment Surveys
Study Area and Powerline Alignment
MNES - Peak Down Mine

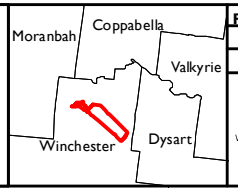
Study Area

Habitat Assessments

- Ausecology (2019)
- Ausecology (2022b)
- Ausecology (2023b)
- Ausecology (in prep)

GTRE (VM Status)

- Remnant - Endangered
- Remnant - Of Concern
- Remnant - Least Concern
- HVR - Endangered
- HVR - Least Concern
- Regrowth - Endangered
- Regrowth - Of Concern
- Regrowth - Least Concern
- Non Remnant



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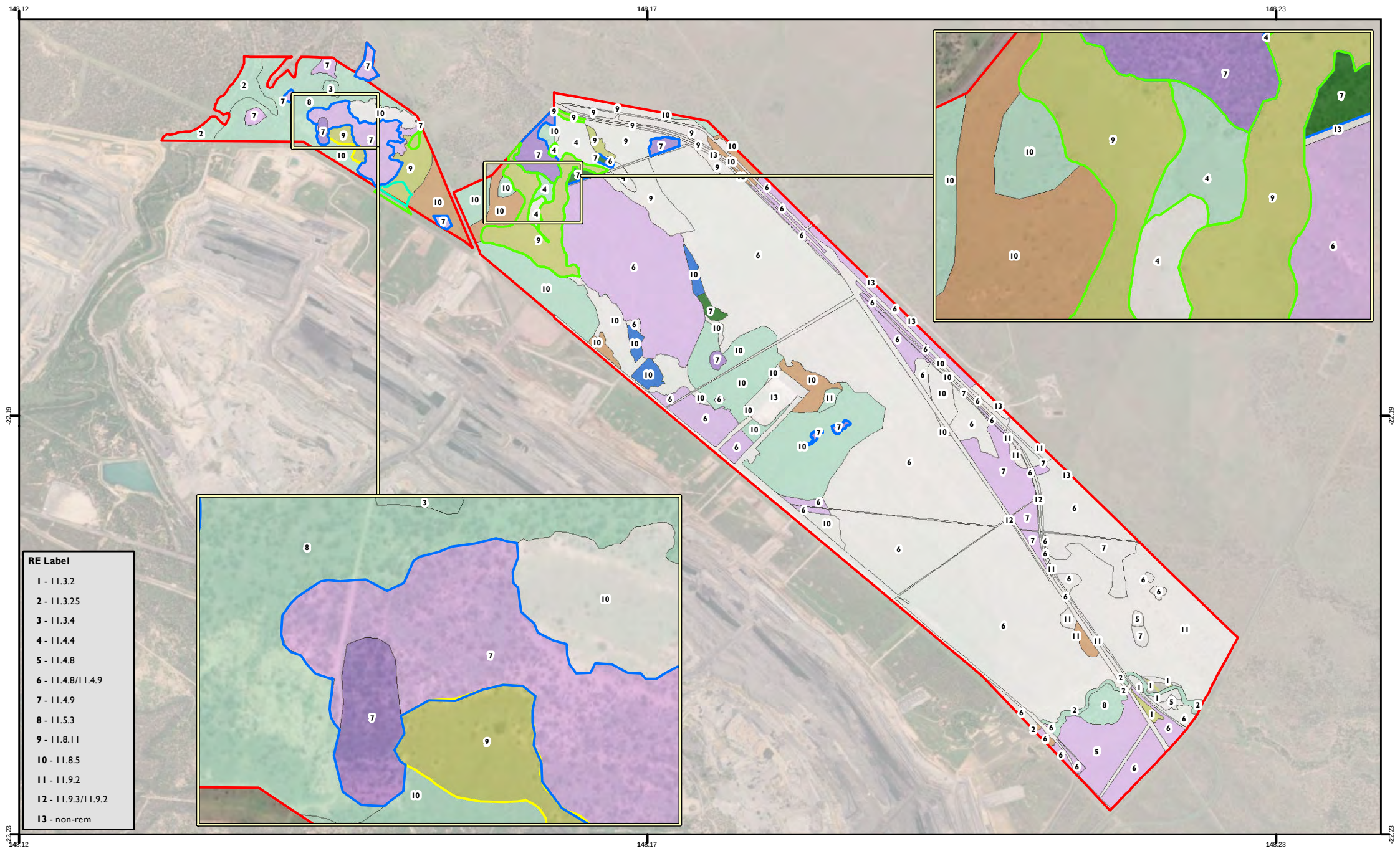


Ausecology

APPENDIX A-5:

GTRE and TEC
Study Area and Powerline Alignment
MNES - Peak Down Mine

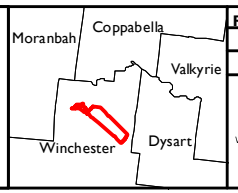
Study Area

Threatened Ecological Communities

- Brigalow (Acacia harpophylla dominant and co-dominant)
- Natural Grasslands of the Queensland Central Highlands and northern Fitzroy Basin - Best
- Natural Grasslands of the Queensland Central Highlands and northern Fitzroy Basin - Good
- Natural Grasslands of the Queensland Central Highlands and northern Fitzroy Basin

GTRE (VM Status)

- Remnant - Endangered
- Remnant - Of Concern
- Remnant - Least Concern
- HVR - Endangered
- HVR - Least Concern
- Regrowth - Endangered
- Regrowth - Of Concern
- Regrowth - Least Concern
- Non Remnant



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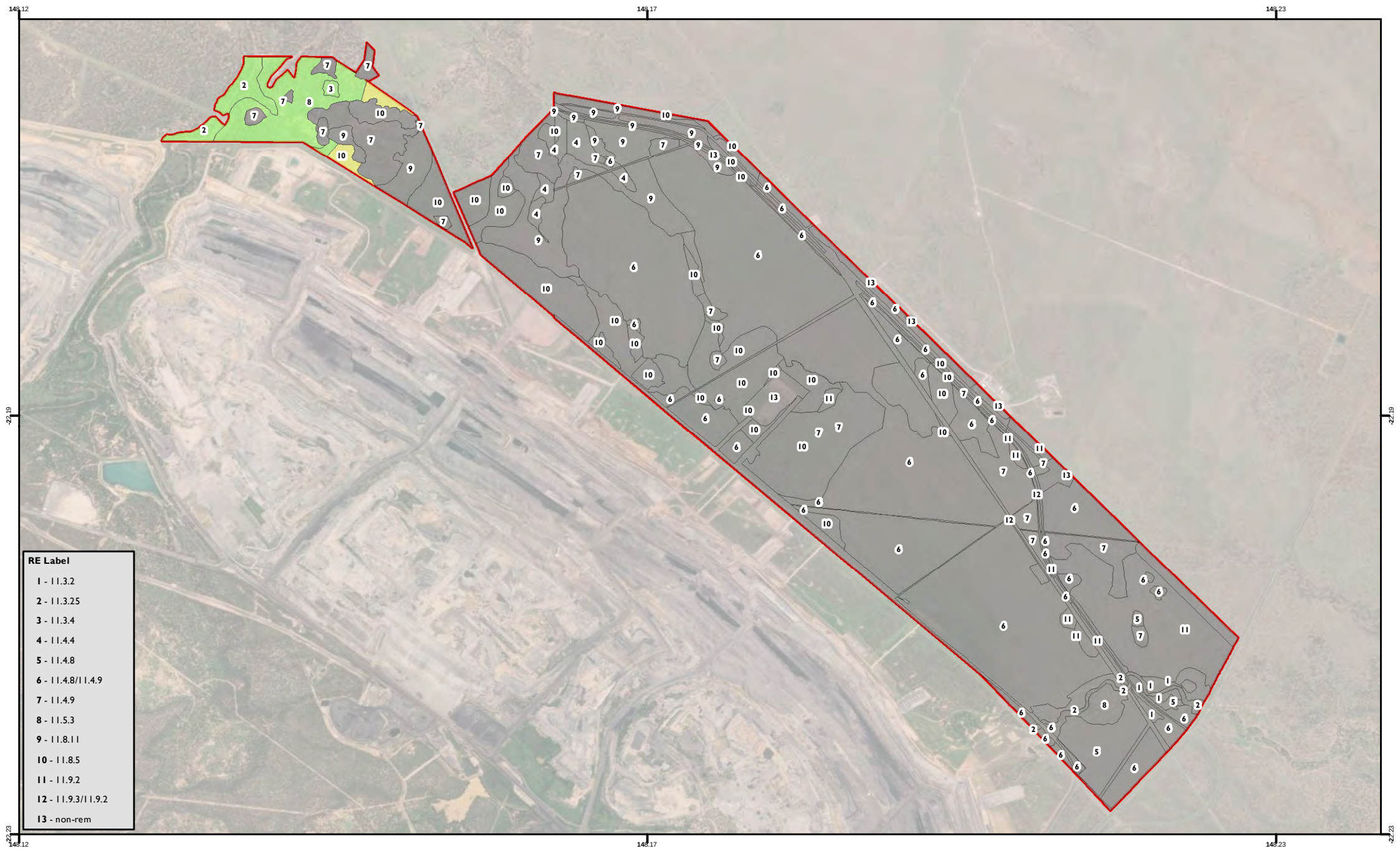


Ausecology

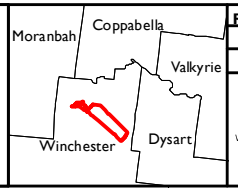
APPENDIX A-6:

Greater Glider
Study Area and Powerline Alignment
MNES - Peak Down Mine

Study Area

Greater Glider Habitat

Preferred
Suitable
Not Suitable



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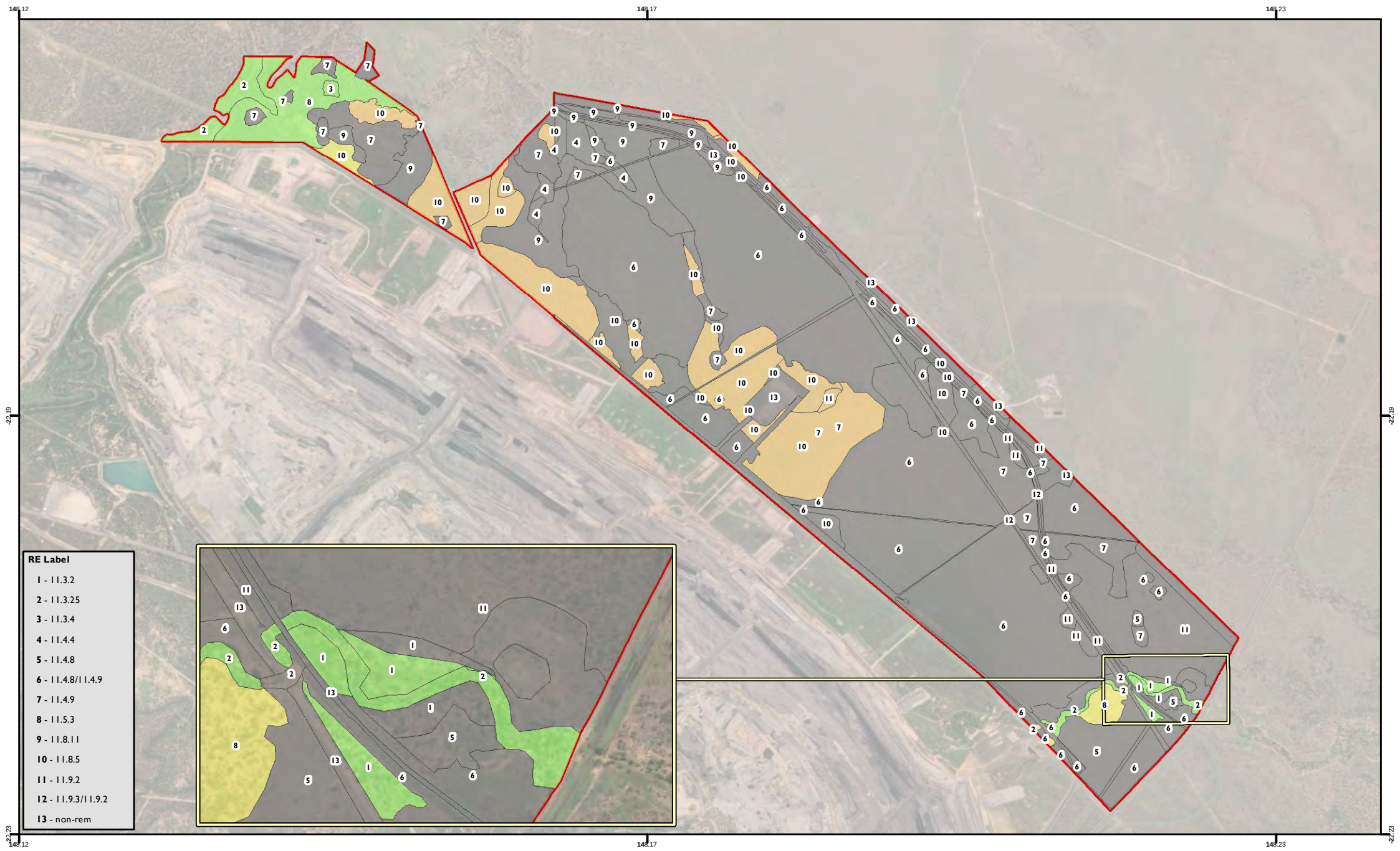


Ausecology

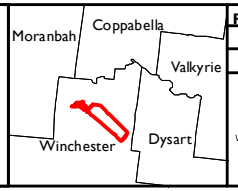
APPENDIX A-7:

Koala Habitat
Study Area and Powerline Alignment
MNES - Peak Down Mine

Study Area

Koala Habitat

- Preferred
- Suitable
- Marginal
- Not Suitable



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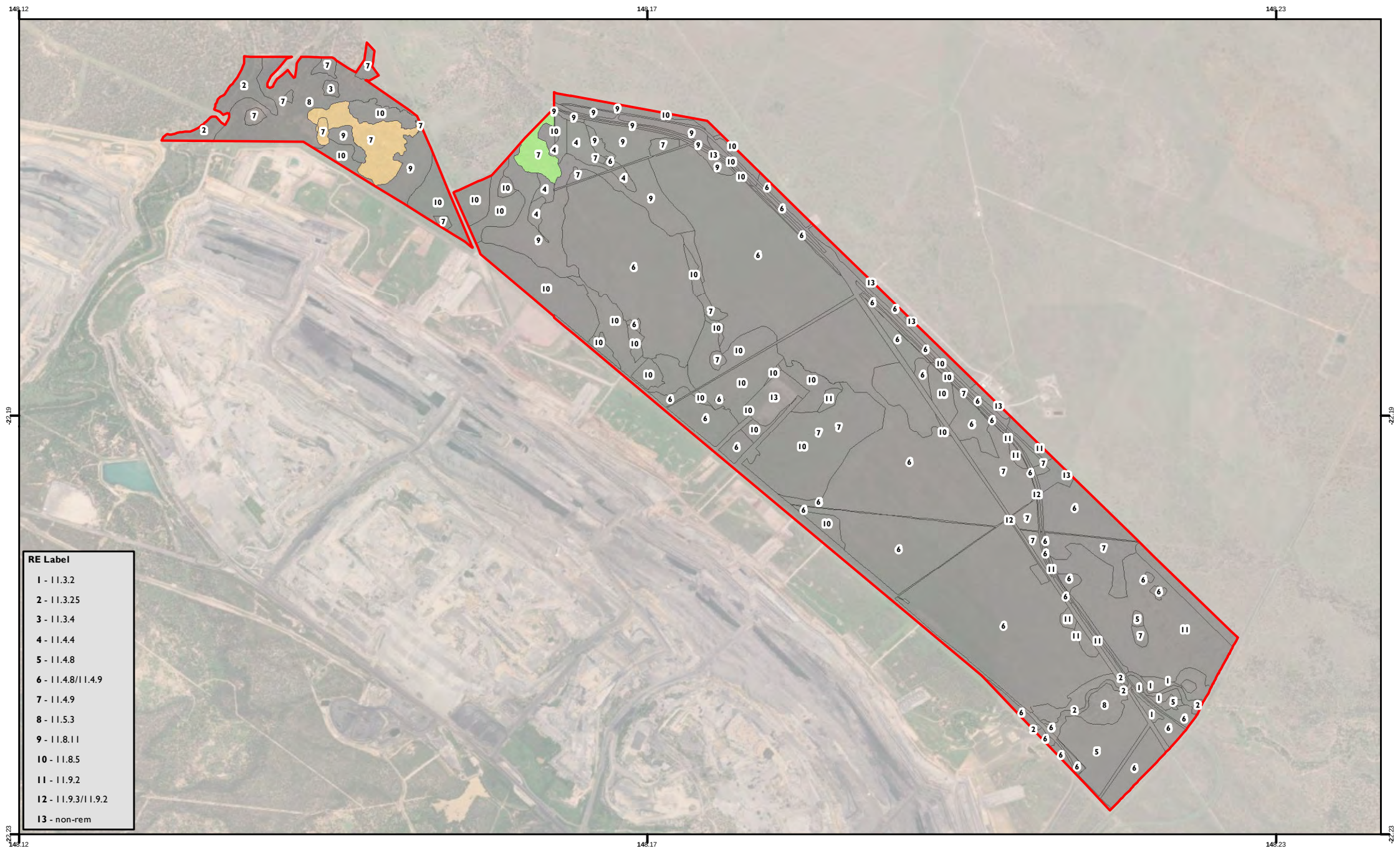


Ausecology

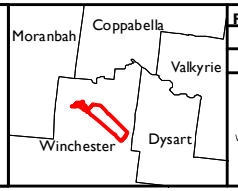
APPENDIX A-8:

Ornamental Snake Habitat
Study Area and Powerline Alignment
MNES - Peak Down Mine

Study Area

Ornamental Snake Habitat

- Preferred
- Suitable
- Marginal
- Not Suitable



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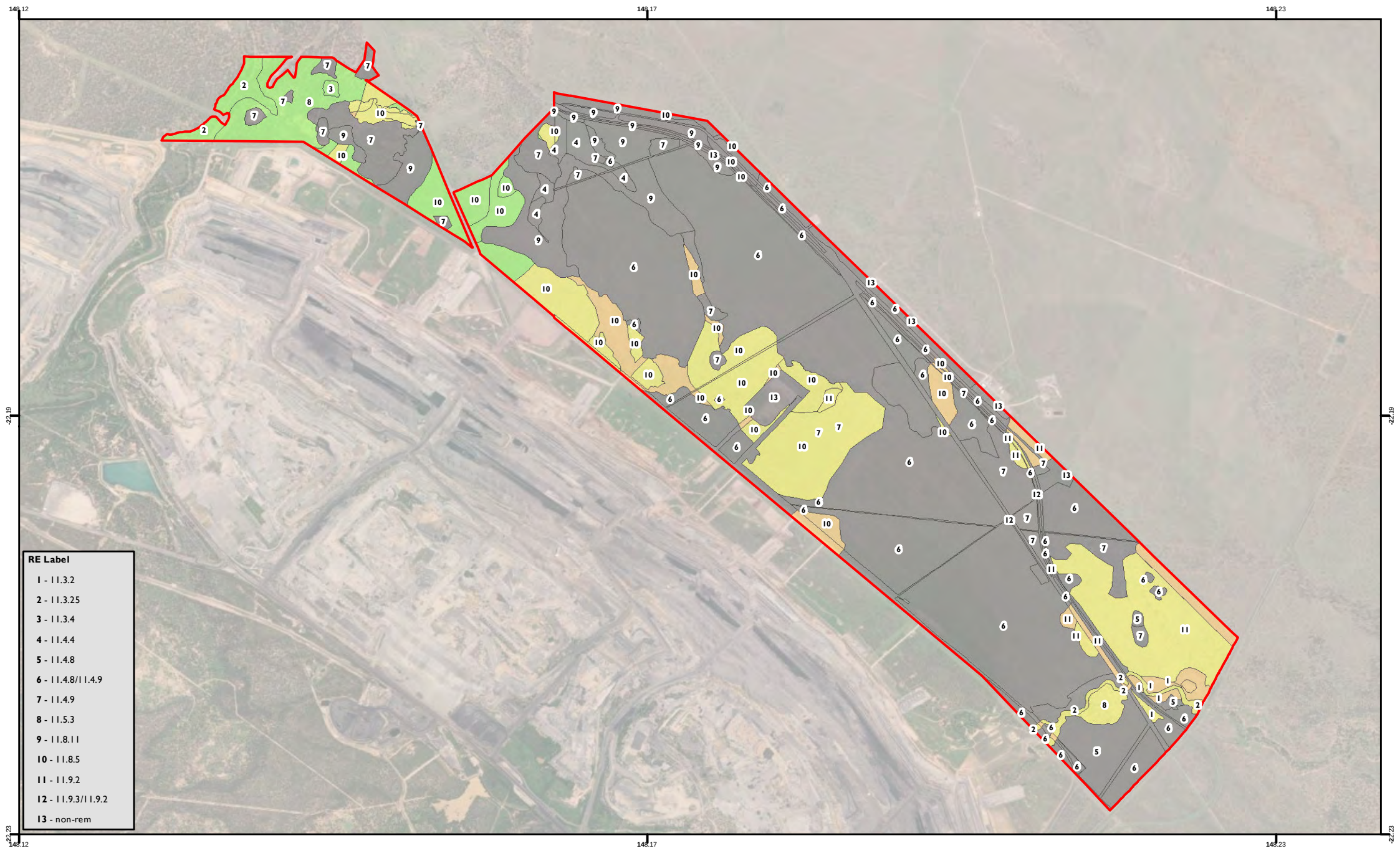


Ausecology

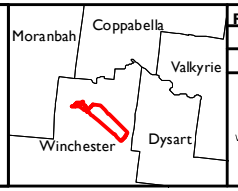
APPENDIX A-9:

Squatter Pigeon Habitat
Study Area and Powerline Alignment
MNES - Peak Down Mine

Study Area

Squatter Pigeon Habitat

- Preferred
- Suitable
- Marginal
- Not Suitable



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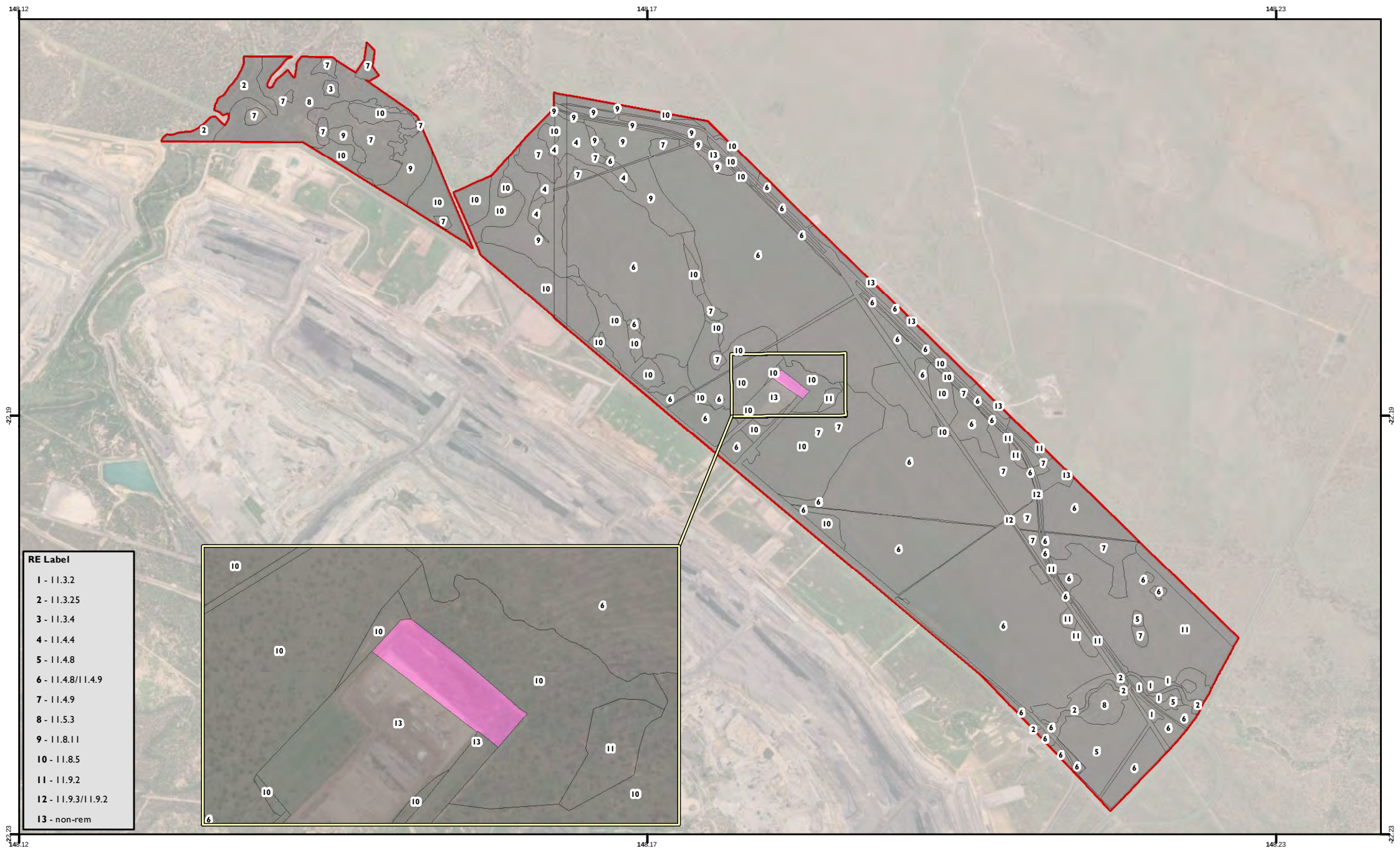


Ausecology

APPENDIX A-10:

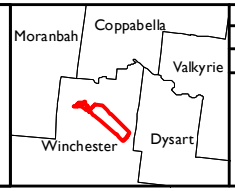
Painted Snipe Habitat
Study Area and Powerline Alignment
MNES - Peak Down Mine

Study Area

Painted Snipe Habitat

Intermittent foraging area

Not Suitable



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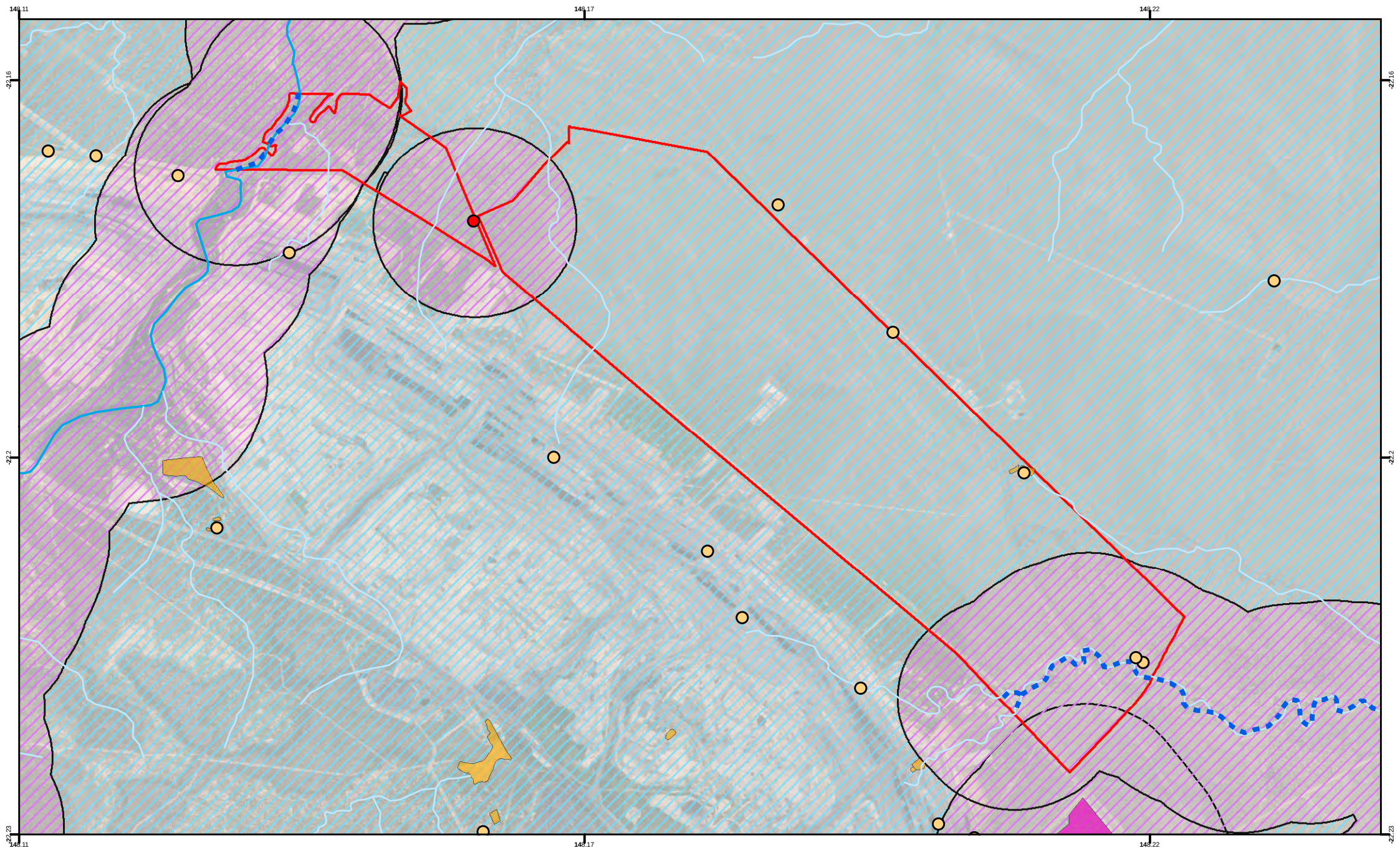
COORDINATE SYSTEM: GCS GDA 1994

SCALE: 1:45,000

N W E S

0 0.5 1

Kilometres



Ausecology

APPENDIX A-11:

Squatter Pigeon Water Sources
Study Area and Powerline Alignment
MNES - Peak Down Mine

- Water Reservoirs
- Water Trough
- RE 11.3.25 Creek Centerline
- Study Area

Vegetation Management Watercourse and Drainage Map

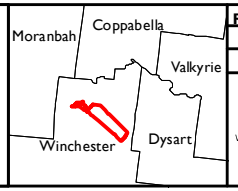
- >=3 Stream Order
- <3 Stream Order

Water Areas

- Mine Dam
- Water Reservoirs

Squatter Pigeon - Watercourse Buffers

- Ephemeral Waterbody
- Permanent Waterbody



REVISION	AUTHOR	REVIEWER	DATE
0	JS	RR	10/08/2023
1	NC	LO	18/04/2024

COORDINATE SYSTEM: GCS GDA 1994
SCALE: 1:50,000
N W E S
0 0.5 1
Kilometres

Appendix B – Likelihood of Occurrence

Table 6-1 Likelihood of Occurrence for MNES within the Study Area

Scientific name	Common name	NC Act	EPBC Act	Preferred Habitat	Desktop analysis		Post field survey			PMST (20km)	ALA (50km)	Wildlife Online			Detection within Study Area of previous survey efforts							
					Likelihood	Rationale	Detection	Likelihood	Rationale			10km	20km	50km	Ausecology in prep	AECOM 2020	AURECON 2013	ELA 2020	Ausecology 2019	ELA 2016	ERM 2021	FEC 2009
Aves																						
Calidris ferruginea	curlew sandpiper	E	CE, Ma/Mi	Summer migrant. Primarily coastal wetlands, estuaries, sandy or muddy intertidal flats, brackish lagoons, and less often they use saltmarshes, rocky shores, exposed coral (Garnet and Baker, 2021) and Van Gils et al., 2020).	Unlikely	Species habitat may occur within the Study Area (DEE, 2021). Outside species known distribution. No confirmed species records within 50km of the Study Area.	Not detected	Unlikely	Outside species known distribution, low quality habitat occurs and no confirmed species records within 50km of the Study Area.	May	-	-	-	-	-	-	-	-	-	-	-	-
Erythrotriorchis radiatus	red goshawk	E	V	Primarily in coastal and subcoastal woodland and tall open forest (including Eucalyptus), and tropica savannas often associated with wooded riparian zones, and along edges of rainforests, usually on fertile soils (Garnett and Baker, 2021). The species generally avoids very densely vegetated or very open habitats, but will hunt along ecotones between such habitats and woodlands or forests (Debus et al., 2020b). Nesting habitat consists of tall stands of trees. All identified nest trees have been within 1 km of permanent water, often adjacent to rivers or clearings, and usually the tallest (mean height = 31 m) and most massive trees (Aumann and Baker-Gabb, 1991; Czechura, 2001).	Unlikely	Species habitat likely to occur within the Study Area (DEE, 2021), but Study Area away from coast. No confirmed species records within 50km of the Study Area.	Not detected	Unlikely	Suitable habitat present, mainly along creek lines. No confirmed species records within 50km of the Study Area.	Likely	-	-	-	-	-	-	-	-	-	-	-	-
Falco hypoleucos	grey falcon	V	V	Typically confined to the arid and semi-arid zone of Australia west or north of the Great Dividing Range (Garnett and Baker, 2021). Timbered lowland plains, particularly acacia shrublands crossed by tree-lined watercourses; found also in other grassland and woodland habitats. The species nests in riparian woodland in the arid zone (Debus, Kirwan & Christie, 2020a).	Unlikely	Species habitat likely to occur within the Study Area (DEE, 2021). No confirmed species records within 50km of the Study Area.	Not detected	Unlikely	Suitable habitat present, mainly along creek lines. No confirmed species records within 50km of the Study Area.	Likely	-	-	-	-	-	-	-	-	-	-	-	-
Geophaps scripta scripta	squatter pigeon (southern)	V	V	Mostly found in dry grassy eucalypt woodlands, open-forests and scrub. It typically forages along roads, rail lines, homesteads, cattle yards and other highly modified surfaces. Often found near permanent water such as rivers, creeks and waterholes, with open and short grass cover. Less commonly found on heavy soils with dense grass. More common in ungrazed land (Curtis et al. 2012; Higgins & Davies, 1996; Garnett & Crowley, 2000).	Known	Species known to occur onsite (ERM, 2021; Aurecon, 2013).	Detected	Known	Identified within Study Area	Known	✓	✓	✓	✓	✓	-	✓	-	-	-	✓	-
Grantiella picta	painted honeyeater	V	V	Strongly associated with the presence of mistletoes (e.g. Amyema spp.) (Higgins et al. 2020). Mostly occurring in box-ironbark eucalypt woodlands and forests on inland foothills of the Great Diving Range; box eucalypt-casuarina woodlands dominated by yellow gum (*E. leucoxylon*) and buloke (Allocasuarina luehmannii) or belah (*Casuarina cristata*); riparian forests of river sheoak (*Casuarina cunninghamiana*); and scattered eucalypts scattered eucalypts or remnant patches of woodland . Occasionally found in patches of *Acacia sp., Callitris spp., E. camaldulensis, E. largiflorens*, mallee woodland and Melaleuca associations with mistletoe.	Unlikely	Species habitat may occur within Study Area (DEE, 2022).	Not detected	Unlikely	Food sources (mistletoes) scarce in the Study Area. No records of species occurring in area.	May	-	-	-	-	-	-	-	-	-	-	-	-
Neochmia ruficauda ruficauda	star finch	E	E	Damp tall grass, sedges (Cyperaceae) and reed beds in swamps, sandflats, rice and sugar-cane fields, and watercourses. Also in open grassy sclerophyll woodland (Van Gils et al. 2020 and Payne, 2019).	Unlikely	Species habitat likely to occur within Study Area (DEE, 2022). However, no confirmed records within 50km of Study Area. The total population of the star finch (eastern) is estimated to consist of <=50 breeding birds, no sightings in the wild since 1995 (DEE, 2021).	Not detected	Unlikely	Species habitat likely to occur within Study Area (DEE, 2022). However, no confirmed records within 50km of Study Area. The total population of the star finch (eastern) is estimated to consist of <=50 breeding birds, no sightings in the wild since 1995 (DEE, 2021).	Likely	-	-	-	-	-	-	-	-	-	-	-	-
Poephila cincta cincta	southern black-throated finch	E	E	Grassy woodland dominated by Eucalypts, paperbarks or Acacias, where there is access to seeding grasses and water. Particularly in north Queensland during the wet season, the species likely needs a mosaic of different habitats in which to forage for seed (Mitchell, 1996).	Unlikely	Species habitat may occur within Study Area (DEE, 2021). However, no confirmed records within 50km of Study Area.	Not detected	Unlikely	Suitable habitat present, however, no confirmed records within 50km of Study Area.	May	-	-	-	-	-	-	-	-	-	-	-	-

Scientific name	Common name	NC Act	EPBC Act	Preferred Habitat	Desktop analysis		Post field survey			PMST (20km)	ALA (50km)	Wildlife Online			Detection within Study Area of previous survey efforts							
					Likelihood	Rationale	Detection	Likelihood	Rationale			10km	20km	50km	Ausecology in prep	AECOM 2020	AURECON 2013	ELA 2020	Ausecology 2019	ELA 2016	ERM 2021	FEC 2009
Rostratula australis	Australian painted snipe	E	E	Shallow freshwater (occasionally brackish) ephemeral and permanent wetlands, including lakes, swamps, pans, inundated or waterlogged grasslands or saltmarshes, dams, rice fields, sewage farms and bore drains with emergent grass, sedges, rushes or reeds, often with scattered Muehlenbeckia, canegrass or Melaleuca spp., and sometimes tree-lined (del Hoyo et al. 2020).	Likely	Species habitat may occur within Study Area (DEE, 2022). The species was not detected within the Study Area, however, the species has been recorded ~2 km north of the Study Area in 2013 by EcoSM (2013) as cited in E2M (2021). Notwithstanding, these records were observed in wetlands considered potential breeding and foraging habitat.	Not detected	Likely	Intermittent foraging habitat present within small, isolated patches of ephemeral wetland. Confirmed record ~2 km north of Study Area (E2M, 2021).	May	✓	-	-	-	-	-	-	-	-	-	-	-
Mammalia																						
Dasyurus hallucatus	northern quoll	C	E	Variety of habitats, including open dry sclerophyll forest and woodland, riparian woodland, low dry vine thicket, the margins of notophyll vineforest, mangroves, sugarcane farms and in urban areas. Most abundant in hilly or rocky areas close to permanent water. Shelter sites are also non-specific and include rocky outcrops, tree hollows, hollow logs, termite mounds, goanna burrows and human dwellings (Oakwood, 2002).	Unlikely	Species habitat likely to occur within Study Area (DEE, 2022). However, no records from within 50 km of the Study Area.	Not detected	Unlikely	Preferred habitat not present, only general habitat present within Study Area. No confirmed records within 50km of Study Area.	Likely	-	-	-	-	-	-	-	-	-	-	-	-
Lasiorhinus krefftii	northern hairy-nosed wombat	CR	CE	Occurs in semi-arid cattle grazing country with deep sandy soils which are required for burrow construction. Burrows are located close to trees where the roots can provide support in the soft, sandy soil and while crowns are able to provide shade (Horsup 1999). The species are found within (R.E) 11.3.7, 11.3.19, 11.3.39 (Horsup, 2004).	Unlikely	Species habitat not known to occur within Study Area. Single sighting ~45km to south of Study Area, dated 1930.	Not detected	Unlikely	General habitat present within survey area, though not specific REs.	-	-	-	-	✓	-	-	-	-	-	-	-	-
Macroderma gigas	ghost bat	E	V	Broad range of habitats, including spinifex hillsides, black soil grasslands, open savannah woodland, tall open forest and tropical rainforest. Ghost bats roost in caves and old mine tunnels (Churchill, 2008).	Unlikely	Species habitat likely to occur within Study Area (DEE, 2022). However, no records from within 50 km of the Study Area.	Not detected	Unlikely	No suitable roosting habitat identified. Suitable general foraging habitat present.	Likely	-	-	-	-	-	-	-	-	-	-	-	-
Nyctophilus corbeni	Corben's long-eared bat	V	V	Preference towards box, ironbark and cypress pine woodlands (Schulz and Lumsden, 2010). Areas of high stem density, particularly those containing dead trees (Law et al. 2016; Law et al. 2018).	Unlikely	Species habitat may occur within Study Area (DEE, 2022). Unknown Nyctophilus species was identified by previous survey efforts (AECOM 2020). Closest record too far from Study Area. Suitable habitat present.	Not detected	Unlikely	Suitable habitat present within the Study Area. However, no records from within 50 km of the Study Area. The northerly limit of *N. corbeni* estimated to be around the Blackdown Tableland National Park, ~180 km south of the Study Area, resulting in *N. Corbeni* being highly unlikely to occur north of the Tropic of Capricorn (pers comms Ford, 2023).	May	-	-	-	-	-	-	-	-	-	-	-	-
Petauroides volans	greater glider	E	E	Restricted to tall, expansive eucalyptus forests (Grzimek, 1990) with large, old living trees with hollows (Lindenmayer et al. 1993; Smith et al. 2007).	Likely	Species habitat known to occur within Study Area (DEE, 2022). Confirmed occurrences within 10km.	Detected	Known	Known to occur within the Study Area	Known	✓	✓	✓	✓	✓	✓	-	-	✓	-	-	-

Scientific name	Common name	NC Act	EPBC Act	Preferred Habitat	Desktop analysis		Post field survey			PMST (20km)	ALA (50km)	Wildlife Online			Detection within Study Area of previous survey efforts							
					Likelihood	Rationale	Detection	Likelihood	Rationale			10km	20km	50km	Ausecology in prep	AECOM 2020	AURECON 2013	ELA 2020	Ausecology 2019	ELA 2016	ERM 2021	FEC 2009
Phascolarctos cinereus	koala	E	E	Eucalypt dominated woodlands. Also known to occur in modified or regenerating native vegetation communities, as well as urban and rural landscapes where food trees or shelter trees may be highly scattered (Department of Agriculture, Water and the Environment, 2021).	Known	Species known to occur within Study Area (Ausecology, 2019; AECOM, 2020). Indirect evidence (scats and scratchings) identified throughout Study Area (Footprints, 2009). Species habitat known to occur throughout Study Area (DEE, 2022).	Detected	Known	Known to occur within the Study Area	Known	✓	✓	✓	✓	✓	✓	-	-	✓	-	-	✓
Pteropus poliocephalus	grey-headed flying-fox	V	V	The species requires habitat for both foraging and roosting. Primary food source - blossoming Eucalypt and related genera. Known to fly as far as 40 km to feed, before returning to their roost the same night (Eby, 1991).	Unlikely	Species habitat likely to occur within Study Area (DEE, 2022). However, no records from within 50 km of the Study Area.	Not detected	Unlikely	Species habitat present onsite, however, no records from within 50 km of the Study Area.	Likely	-	-	-	-	-	-	-	-	-	-	-	-
Actitis hypoleucos	common sandpiper	SL	Ma/Mi	Uncommon summer migrant. Coastal shores, estuaries, saltmarshes, inland wetlands, dams and tidal creeks. (Van Gils et al., 2019d).	Unlikely	Species habitat may occur within Study Area (DEE, 2022). Large dam located in close proximity, with ephemeral wetland areas potentially scattered throughout Study Area. However, no confirmed records within 50km of Study Area.	Not detected	Unlikely	Suitable habitat present within small isolated patches of ephemeral wetland, however, no confirmed records within 50km of Study Area.	May	-	-	-	-	-	-	-	-	-	-	-	-
Apus pacificus	fork-tailed swift	SL	Ma/Mi	Fork-tailed swifts are almost entirely aerial and occur over a vast range of habitats, ranging from inland plains to coastal areas over a wide range of vegetation communities and often seen flying above human habitation. In Australia, there is rare anecdotal evidence of them landing, but in general this is regarded extremely rare. (Chantler et al., 2019; DEE, 2019)	Known	Species identified flying over the Study Area (AECOM, 2020). Species habitat likely to occur within Surrounding Area (DEE, 2022).	Not detected	Known	Previously observed flying over Study Area (AECOM, 2020).	Likely	✓	-	-	-	-	✓	-	-	-	-	-	-
Calidris acuminata	sharp-tailed sandpiper	SL	Ma/Mi	Summer migrant. Wide variety of shallow coastal and inland wetlands (Van Gils et al., 2019c)	Likely	Species habitat known to occur within Study Area (DEE, 2022). Large dam located in close proximity, with ephemeral wetland areas potentially scattered throughout Study Area. Single confirmed record ~5km west, 2001.	Not detected	Potential	Suitable habitat present within small isolated patches of ephemeral wetland.	Known	✓	-	-	-	-	-	-	-	-	-	-	-
Calidris melanotos	pectoral sandpiper	SL	Ma/Mi	Summer migrant. Variety of coastal and inland wetlands (Van Gils et al., 2019e).	Unlikely	Species habitat may occur within Study Area (DEE, 2022). Large dam located directly adjacent to Study Area. However, no confirmed records within 50km of Study Area.	Not detected	Unlikely	Suitable habitat present within small isolated patches of ephemeral wetland.	May	-	-	-	-	-	-	-	-	-	-	-	-
Gallinago hardwickii	Latham's snipe	SL	Ma/Mi	Summer migrant. Inland and coastal permanent or ephemeral freshwater wetlands (Van Gils et al., 2019f).	Unlikely	Species habitat may occur within Study Area (DEE, 2022). Large dam located in close proximity, with ephemeral wetland areas potentially scattered throughout Study Area. However, no confirmed records within 50km of Study Area.	Not detected	Unlikely	Suitable habitat present within small isolated patches of ephemeral wetland, however, no confirmed records within 50km of Study Area.	May	-	-	-	-	-	-	-	-	-	-	-	-

Scientific name	Common name	NC Act	EPBC Act	Preferred Habitat	Desktop analysis		Post field survey			PMST (20km)	ALA (50km)	Wildlife Online			Detection within Study Area of previous survey efforts							
					Likelihood	Rationale	Detection	Likelihood	Rationale			10km	20km	50km	Ausecology in prep	AECOM 2020	AURECON 2013	ELA 2020	Ausecology 2019	ELA 2016	ERM 2021	FEC 2009
Hydroprogne caspia	Caspian tern	SL	Ma/Mi	Mostly found in sheltered, sandy or muddy, coastal embayments (harbours, lagoons, inlets, bays, estuaries and river deltas). Also found on inland wetlands, both natural and artificial (DEE, 2022)	Likely	Species detected ~500m south of Study Area by previous survey efforts (AECOM, 2020; Ausecology, in prep). Species detected within large dam immediately south of Study Area. Dam is not part of impact area, however, suitable habitat would become temporarily available within the Study Area after significant rainfall events.	Not detected	Likely	Dam in which species was detected is not part of the Study Area, however, suitable habitat would become temporarily available within the Study Area after significant rainfall events.	-	✓	-	-	-	✓	✓	-	-	-	-	-	-
Motacilla flava	yellow wagtail	SL	Ma/Mi	Occurs in a variety of damp or wet habitats with low vegetation, from damp meadows, marshes, waterside pastures, sewage farms and bogs. In Australia, records are mainly coastal (Tyler & Christie, 2019).	Unlikely	Species habitat may occur within Study Area (DEE, 2022). However, no confirmed records within 50km of Study Area	Not detected	Unlikely	Suitable habitat present within small isolated patches of ephemeral wetland, however, no confirmed records within 50km of Study Area.	May	-	-	-	-	-	-	-	-	-	-	-	-
Myiagra cyanoleuca	satin flycatcher	SL	Ma/Mi	Predominantly found in heavily vegetated areas, including wet sclerophyll forest and Eucalypt woodlands, preferring tall moist forests at high elevations, often near wetlands. (Gregory, 2020)	Unlikely	Species habitat may occur within Study Area (DEE, 2022). However, no confirmed records within 50km of Study Area	Not detected	Unlikely	Suitable habitat present, however, no confirmed records within 50km.	May	-	-	-	-	-	-	-	-	-	-	-	-
Pandion haliaetus	osprey	SL	Ma/Mi	Shallow fresh, brackish or marine waters with availability of fish close to the surface (Bierregaard *et al.,* 2020).	Unlikely	Species habitat likely to occur within Study Area (DEE, 2022). Creeks likely to not hold water long enough to provide sufficient food source. Large dam south of Study Area may be capable of providing sufficient food source, however, is outside of Study Area.	Not detected	Unlikely	Low quality species habitat occurs within Study Area and no confirmed records within 50km.	Likely	-	-	-	-	-	-	-	-	-	-	-	-
Rhipidura rufifrons	rufous fantail	SL	Ma/Mi	Prefers rainforests, wet sclerophyll forests, mangroves, swamp woodland, often in areas with shade (gullies) and often moving around close to the ground. May occur in more open habitat or urban situations during migration. (Boles and Christie, 2020).	Known	Species detected onsite by previous survey efforts (AECOM, 2020)	Detected	Known	Species detected onsite by previous survey efforts (AECOM, 2020)	-	✓	-	-	-	✓	✓	-	-	-	-	-	-
Tringa nebularia	common greenshank	SL	Ma/Mi	Found in a wide variety of inland wetlands and (sheltered) coastal habitats. Typically found in areas with mudflats, salt marshes, mangroves or seagrass, where it forages in the shallows or edges of wetlands or in soft mud on mudflats. (DEE, 2019; Van Gils et al., 2019b).	Unlikely	Species habitat may occur within Study Area (DEE, 2022).Single confirmed record located within ~5km, however, dates back to 1999. Downgraded to unlikely based off records and species habitat requirements.	Not detected	Unlikely	Low quality habitat present within small isolated patches of ephemeral wetland, however, no recent (<20 years) records within surrounding regions.	May	✓	-	-	-	-	-	-	-	-	-	-	-
Cuculus optatus	oriental cuckoo	C	Mi	Variety of habitats, from open woodland, mulga, scrub, including dry interior, spinifex, coastal saltmarsh. Generally in arid and semi-arid zones. (Payne and Bonan, 2020).	Unlikely	Species habitat may occur within Study Area (DEE, 2022). However, no confirmed records within 50km of Study Area.	Not detected	Unlikely	General species habitat located within Study Area. However, no confirmed records within 50km of Study Area.	May	-	-	-	-	-	-	-	-	-	-	-	-
Hirundapus caudacutus	*white-throated needletail*	V	V/Ma/MI	Almost exclusively aerial, from 1m to 1000m above ground. Recorded in dense tree cover and open clearings. Recorded in small numbers over woodland in Brisbane Forest Park, Australia (Chantler and Kirwan, 2020).	Likely	Species habitat may occur within Study Area. However, one record within 50km of the Study Area (ALA, 2021).	Not detected	Likely	Species habitat located within Study Area. Potential for species to utilise airspace above Study Area.	-	✓	-	-	-	-	-	-	-	-	-	-	-
Flora																						

Scientific name	Common name	NC Act	EPBC Act	Preferred Habitat	Desktop analysis		Post field survey			PMST (20km)	ALA (50km)	Wildlife Online			Detection within Study Area of previous survey efforts							
					Likelihood	Rationale	Detection	Likelihood	Rationale			10km	20km	50km	Ausecology in prep	AECOM 2020	AURECON 2013	ELA 2020	Ausecology 2019	ELA 2016	ERM 2021	FEC 2009
Aristida annua	-	V	V	Restricted to central Queensland in Emerald and Springsure districts. Found within eucalypt woodland, restricted to black clay soils and basalt soils. Associated with the 'Natural Grasslands of the Qld Central Highlands and Northern Fitzroy Basin' EPBC listed ecological community (DES, 2022; DEWHA, 2014).	Unlikely	Species habitat likely to occur within Study Area (DEE, 2022). Single confirmed record approximately 50km to south west of Study Area, 1999.	Not detected	Unlikely	General species habitat present on site, however, outside of restricted distribution. Single confirmed record approximately 50km to south west of Study Area, 1999.	Likely	✓	-	-	✓	-	-	-	-	-	-	-
Dichanthium queenslandicum	king blue-grass	V	E	Dichanthium queenslandicum is mostly confined to natural grassland on the heavy black clay soils (basalt downs, basalt cracking clay, open downs) on undulating plains (Simon, 1982; Fletcher, 2001).	Likely	Species habitat likely to occur within Study Area (DEE, 2022). Two records within 10km located , numerous within 50km. Associated Natural Grasslands of the Queensland Central Highlands and northern Fitzroy Basin found by previous surveys to occur within Study Area (AECOM, 2020; Ausecology, in prep).	Not detected	Potential	Suitable habitat (natural grasslands) identified to occur within Study Area, however, area severely impacted by cattle grazing, reducing the likelihood of detection.	Likely	✓	✓	✓	✓	-	-	-	-	-	-	-	-
Dichanthium setosum	bluegrass	C	V	Dichanthium setosum prefers heavy basaltic black soil and stony red-brown hard-setting loam with a clay subsoil. The extent to which the species can tolerate disturbance is not known. However, it is commonly found in disturbed areas such as cleared woodland, roadside remnants, grazed land and highly disturbed pasture. It is also found on variously grazed pasture where the soil is nutrient-enriched and water-enriched (Ayers et al., 1996).	Unlikely	Species habitat may occur within Study Area (DEE, 2022). However, no records within 50km of the Study Area.	Not detected	Unlikely	Suitable habitat located within Study Area, however, no records within 50km of the Study Area.	Likely	-	-	-	-	-	-	-	-	-	-	-	-
Eucalyptus raveretiana	black ironbox	C	V	Wide distribution in coastal and sub-coastal Queensland, primarily along watercourses. Also found within river flats and open woodlands. Soils varying from sand through to heavy clay (DEWHA, 2008).	Unlikely	Species habitat likely to occur within Study Area (DEE, 2022). However no records within 50km of Study Area.	Not detected	Unlikely	Species habitat located within Study Area, however, no records within 50km of Study Area.	Likely	-	-	-	-	-	-	-	-	-	-	-	-
Samadera bidwillii	quassia	V	V	Occurs in or by waterways on the edges of lowland rainforest and less commonly in open forest and woodland environments (DoE, 2021).	Unlikely	Species habitat may occur within Study Area (DEE, 2022). However, no records within 50km of the Study Area.	Not detected	Unlikely	General species habitat identified within the Study Area, however, no records within 50km.	Likely	-	-	-	-	-	-	-	-	-	-	-	-
Reptilia																						
Denisonia maculata	ornamental snake	V	V	Preferred habitat of low-lying areas with cracking clay soils (Wilson and Swan 2013). within, or close to, habitat that is favoured by its prey – frogs. Often associated with gilgai and depressions. (DEE, 2019).	Likely	Species habitat known to occur within Study Area (DEE, 2022). Habitat identified to occur within the Study Area. Confirmed record ~3 km south of Study Area (Ausecology, in prep).	Detected	Likely	Habitat identified to occur within the Study Area. Confirmed record ~3 km south of Study Area (Ausecology, in prep).	Known	✓	✓	✓	✓	✓	-	-	-	-	-	-	-
Egernia rugosa	yakka skink	V	V	The species is known to occur in woodland, scrub and open dry sclerophyll forest Microhabitat consists of cavities under and between logs or tree stumps, root cavities, abandoned burrows (e.g. rabbit warrens) and under rocks. (DoE, 2021).	Unlikely	Species habitat may occur within Study Area (DEE, 2022). However, no records within 50km of the Study Area.	Not detected	Unlikely	Suitable habitat identified within Study Area, however, no records within 50km of the Study Area.	May	-	-	-	-	-	-	-	-	-	-	-	-
Elseya albagula	southern snapping turtle	E	CE	Flowing waters in Mary, Burnett, Fitzroy-Dawson and associated drainage systems. (Wilson and Swan, 2013).	Unlikely	Species habitat likely to occur within Study Area (DEE, 2022). However, no records withing 50km of Study Area. Only ephemeral creeks within Study Area, no flowing water.	Not detected	Unlikely	Species habitat not detected within Study Area, ephemeral creeks only.	Likely	-	-	-	-	-	-	-	-	-	-	-	-

Scientific name	Common name	NC Act	EPBC Act	Preferred Habitat	Desktop analysis		Post field survey			PMST (20km)	ALA (50km)	Wildlife Online			Detection within Study Area of previous survey efforts							
					Likelihood	Rationale	Detection	Likelihood	Rationale			10km	20km	50km	Ausecology in prep	AECOM 2020	AURECON 2013	ELA 2020	Ausecology 2019	ELA 2016	ERM 2021	FEC 2009
Furina dunmalli	Dunmall's snake	V	V	Favours brigalow (Acacia harpophylla) forest and woodland growing on floodplains of deep-cracking black clay and clay loam soils (DoE, 2014). Thought to seek shelter under fallen timber and in ground litter, and potentially may use cracks in alluvial clay soils (DSEWPAC, 2011).	Unlikely	Species habitat may occur within Study Area (DEE, 2022). However, no records withing 50km of Study Area.	Not detected	Unlikely	Species habitat identified within Study Area, however, no records withing 50km of Study Area.	May	-	-	-	-	-	-	-	-	-	-	-	-
Lerista allanae	Allan's lerista	E	E	Preferred habitat restricted to Capella, Clermont and Logan Downs Station area. Restricted to road verges and other small areas with friable soils, amid pastoral land dominated by heavy soils (Wilson and Swan, 2013).	Unlikely	Species habitat likely to occur within Study Area (DEE, 2022).	Not detected	Unlikely	Suitable habitat present within Survey area, however, no records within 50km of the Study Area.	Likely	-	-	-	-	-	-	-	-	-	-	-	-
Rheodytes leukops	Fitzroy river turtle	V	V	Fitzroy River and its tributaries. Prefers fast flowing clear water. Shelters amongst roots and submerged timber (Wilson and Swan, 2013).	Unlikely	Species habitat likely to occur within Study Area (DEE, 2022). However, no records withing 50km of Study Area. Only ephemeral creeks within Study Area, no flowing water.	Not detected	Unlikely	Species habitat not detected within Study Area, ephemeral creeks only.	Likely	-	-	-	-	-	-	-	-	-	-	-	-
threatened ecological community																						
Brigalow (*Acacia harpophylla* dominant and co dominant)	Brigalow TEC	-	E	Characterised by *Acacia harpophylla* dominant or co-dominant withing the tree layer and in line with additional criteria as per Approved Conservation Advice for the Brigalow (*Acacia harpophylla* dominant and co-dominant) ecological community (DEE, 2013).	Likely	Confirmed to occur within Study Area (Ausecology, in prep).	Detected	Known	Brigalow TEC confirmed to occur within Study Area.	Known	-	-	-	-	✓	-	✓	✓	✓	-	-	-
Natural Grasslands of the Queensland Central Highlands and northern Fitzroy Basin	Grassland TEC	-	E	Typically composed of native perennial grasses, on fine textured soils (often cracking clays) on flat or gently undulating terrain. The projective crown cover must not exceed 10% (DEWHA, 2008)	Known	Confirmed by previous survey efforts to occur within Study Area (ERM, 2021; AECOM 2020; Ausecology, in prep).	Detected	Known	Grassland TEC confirmed to occur within Study Area.	Likely	-	-	-	-	✓	✓	-	-	✓	-	✓	-
Poplar Box Grassy Woodlands TEC	Poplar Box TEC	-	E	Typically a grassy woodland with a canopy dominated by Eucalyptus populnea and understorey of native grasses and herbs/forbs. Occurs on gently undulating to flat landscapes and occasionally on gentle slopes, with alluvial soils (DEE, 2019). Aligns with criteria outlined within Conservation Advice (including listing advice) for the Poplar Box Grassy Woodland on Alluvial Plains (DEE, 2019)	Unlikely	Confirmed to occur ~3.5km south of Study Area by previous survey efforts (Ausecology, in prep).	Not Detected	No	Poplar Box TEC does not occur within the Study Area.	Likely	-	-	-	-	✓	-	-	✓	-	-	✓	-
Semi-evergreen vine thickets of the Brigalow Belt (North and South) and Nandewar Bioregions	SEVT Tec	-	E	RE contained within the listed REs as per Commonwealth Listing Advice on Semi-evergreen vine thickets of the Brigalow Belt (North and South) and Nandewar Bioregions (Threatened Species Scientific Committee, 2001).	Unlikely	Likely to occur within Study Area (DEE, 2022).	Not detected	No	SEVT TEC does not occur within the Study Area	Likely	-	-	-	-	-	-	-	-	-	-	-	-
Weeping Myall Woodlands	Myall Tec	-	E	Occurs on the inland alluvial plains west of the Great Dividing Range in NSW and Queensland (DEE, 2008) . Dominated by Acacia pendula and aligning with additional criteria as per the Commonwealth Listing Advice on Weeping Myall Woodlands (Threatened Species Scientific Committee, 2009)	Unlikely	Likely to occur within Study Area (DEE, 2022).	Not detected	No	Myall TEC does not occur within the Study Area	Likely	-	-	-	-	-	-	-	-	-	-	-	-

NC Act: Indicates the Queensland conservation status of each taxon under the *Nature Conservation Act 1992*; Critically Endangered (CR), Endangered (E), Vulnerable (V), Near Threatened (NT), Special Least Concern (SL) and Least Concern (C). EPBC Act: Indicates the Australian conservation status of each taxon under the *Environment Protection and Biodiversity Conservation Act 1999*; Critically Endangered (CE), Endangered (E), Vulnerable (V) and Conservation Dependent (CD). ^AECOM (2020) ultrasonic detection survey efforts detected *Nyctophilus* sp., however, the Nyctophilus genus cannot be identified to species level through the use of ultrasonic detection alone, with physical capture being the only possible method (DEWHA, 2010). Additional bat trapping survey efforts are required to confirm whether it is the listed species (i.e. *Nyctophilus corbeni*). ToR – Terms of Reference; TBA – To Be Advised; LoO – Likelihood of Occurrence; * – Detection within the Study Area; ✓ – detected within search parameters

Appendix C – Habitat areas and quality calculations

Table 6-2 Habitat area (ha) per Matter within the Power line Alignment

Habitat Category	RE	Condition	greater glider	koala	ornamental snake	squatter pigeon
Preferred	11.3.25	Remnant	0.01	0.32		0.01
	11.3.4	Remnant	0.01	0.01		0.01
	11.5.3	Remnant	5.97	6.39		6.00
	11.8.5	Remnant				0.94
	11.8.5	Regrowth				6.48
	Preferred Total (ha)		6.00	6.72		13.45
Suitable	11.3.25	Remnant				0.31
	11.5.3	Remnant	0.42	0.45		0.84
	11.8.5	Regrowth				0.61
	11.8.5	Non Remnant				2.82
	11.9.2	Regrowth				1.72
	Dirt tracks and grassy verges	Non Remnant				0.10
	Suitable Total (ha)		0.42	0.45		6.39
Marginal	11.3.25	Non Remnant				0.04
	11.4.9	Regrowth			0.19	
	11.8.5	Remnant		0.94		
	11.8.5	Regrowth		7.09		
	11.8.5	Non Remnant		2.37		1.83
	11.9.2	Regrowth				0.84
	Road	Non Remnant				0.23
	Marginal Total (ha)			10.40	0.19	2.94
Total Habitat Area (ha)			6.42	17.57	0.19	22.77
Not Suitable	11.3.25	Remnant	0.31		0.32	
	11.3.25	Non Remnant	0.04	0.04	0.04	
	11.3.4	Remnant			0.01	
	11.4.4	Remnant	0.90	0.90	0.90	0.90
	11.4.4	Non Remnant	0.13	0.13	0.13	0.13
	11.4.8/11.4.9	Regrowth	44.72	44.72	44.72	44.72
	11.4.8/11.4.9	Non Remnant	6.04	6.04	6.04	6.04
	11.4.9	Regrowth	0.84	0.83	0.64	0.83
	11.4.9	Non Remnant	0.22	0.22	0.22	0.22
	11.4.9	High Value Regrowth	0.003	0.003	0.003	0.003
	11.5.3	Remnant	0.45		6.84	
	11.8.11	Remnant	3.99	3.99	3.99	3.99
	11.8.11	Non Remnant	2.34	2.34	2.34	2.34
	11.8.5	Remnant	0.94		0.94	
	11.8.5	Regrowth	7.09		7.09	
	11.8.5	Non Remnant	4.65	2.28	4.65	
	11.9.2	Regrowth	2.55	2.55	2.55	
	Infrastructure	Non Remnant	0.30	0.30	0.30	0.30
	Not Suitable Total (ha)		77.04	65.88	83.26	60.68
Total Area (ha)			83.46	83.46	83.46	83.46

Table 6-3 Habitat Quality Scoring calculated as per GDTHQ v1.3 – BioCondition Scores and Habitat Assessment Scores

Matter	Habitat Category	Validated RE Condition	Validated RE Code	Area (ha)	Area per Habitat Category (ha)	Total Matter Area (ha)	Mean Total BC Score	BC Score Max	Mean decimal BC Score	Mean Habitat Score	Habitat Score Per Habitat Category					Habitat Score Per Entire Matter				
											Area Weighting	Area weighted BC score	Total BC Score (/10)	Area weighted Habitat Score	Total Habitat Score (/10)	Area Weighting	Area weighted BC score	Total BC Score (/10)	Area weighted Habitat Score	Total Habitat Score (/10)
greater glider	Preferred	Remnant	11.3.25	0.01	5.99	6.41	52.00	80	0.65	54.44	0.0013	0.0008	5.65	0.07	5.17	0.0012	0.0008	5.65	0.07	5.17
		Remnant	11.3.4	0.01	5.99	6.41	56.50	80	0.71	57.67	0.0014	0.0010		0.08		0.0013	0.0009		0.07	
		Remnant	11.5.3	5.97	5.99	6.41	45.17	80	0.56	51.70	0.9973	0.5631		51.56		0.9319	0.5261		48.18	
	Suitable	Remnant	11.5.3	0.42	0.42	6.41	45.17	80	0.56	51.70	1.0000	0.5646	5.65	51.70	5.17	0.0656	0.0370		3.39	
koala	Preferred	Remnant	11.3.25	0.32	6.72	17.57	52.00	80	0.65	63.50	0.0476	0.0310	5.69	3.02	5.37	0.0182	0.0118	5.20	1.16	4.53
		Remnant	11.3.4	0.01	6.72	17.57	56.50	80	0.71	64.00	0.0012	0.0009		0.08		0.0005	0.0003		0.03	
		Remnant	11.5.3	6.39	6.72	17.57	45.17	80	0.56	53.22	0.9511	0.5370		50.62		0.3637	0.2054		19.36	
	Suitable	Remnant	11.5.3	0.45	0.45	17.57	45.17	80	0.56	53.22	1.0000	0.5646	5.65	53.22	5.32	0.0256	0.0145		1.36	
	Marginal	Remnant	11.8.5	0.94	10.40	17.57	52.63	80	0.66	46.00	0.0904	0.0595	4.86	4.16	3.95	0.0535	0.0352		2.46	
		Regrowth	11.8.5	7.09	10.40	17.57	37.42	80	0.47	46.50	0.6817	0.3189		31.70		0.4036	0.1888		18.77	
		Non-remnant	11.8.5	2.37	10.40	17.57	37.83	80	0.47	16.00	0.2279	0.1078		3.65		0.1349	0.0638		2.16	
ornamental snake	Marginal	Regrowth	11.4.9	0.19	0.19	0.19	47.75	80	0.60	28.31	1.0000	0.5969	5.97	28.31	2.83	1.0000	0.5969	5.97	28.31	2.83
squatter pigeon	Preferred	Remnant	11.3.25	0.01	13.44	22.78	52.00	80	0.65	55.33	0.0006	0.0004	5.25	0.03	4.40	0.0003	0.0002	5.16	0.02	4.68
		Remnant	11.3.4	0.01	13.44	22.78	56.50	80	0.71	69.00	0.0006	0.0004		0.04		0.0004	0.0003		0.03	
		Remnant	11.5.3	6.00	13.44	22.78	45.17	80	0.56	32.44	0.4466	0.2521		14.49		0.2634	0.1487		8.55	
		Remnant	11.8.5	0.94	13.44	22.78	52.63	80	0.66	54.83	0.0700	0.0460		3.84		0.0413	0.0271		2.26	
		Regrowth	11.8.5	6.48	13.44	22.78	37.42	80	0.47	53.00	0.4823	0.2256		25.56		0.2845	0.1330		15.08	
	Suitable	Remnant	11.3.25	0.31	6.40	22.78	52.00	80	0.65	55.33	0.0484	0.0315	5.21	2.68	5.10	0.0136	0.0088		0.75	
		Remnant	11.5.3	0.84	6.40	22.78	45.17	80	0.56	32.44	0.1313	0.0741		4.26		0.0369	0.0208		1.20	
		Regrowth	11.8.5	0.61	6.40	22.78	37.42	80	0.47	53.00	0.0953	0.0446		5.05		0.0268	0.0125		1.42	
		Regrowth	11.9.2	1.72	6.40	22.78	48.50	80	0.61	48.29	0.2688	0.1629		12.98		0.0755	0.0458		3.65	
		Non-remnant	11.8.5	2.82	6.40	22.78	37.83	80	0.47	59.00	0.4406	0.2084		26.00		0.1238	0.0585		7.30	
		Non-remnant	Road	0.10	6.40	22.78	-	80	-	-	0.0156	-		-		0.0044	-		-	
	Marginal	Regrowth	11.9.2	0.84	2.94	22.78	48.50	80	0.61	48.29	0.2865	0.1737	4.68	13.83	5.05	0.0370	0.0224		1.79	
		Non-remnant	11.3.25	0.04	2.94	22.78	-	80	-	-	0.0136	-		-		0.0018	-		-	
		Non-remnant	11.8.5	1.83	2.94	22.78	37.83	80	0.47	59.00	0.6218	0.2940		36.68		0.0803	0.0380		4.74	
		Non-remnant	Road	0.23	2.94	22.78	-	80	-	-	0.0781	-		-		0.0101	-		-	

Appendix D – Habitat quality indicator questions

Table 6-4 Habitat Quality Scoring Indicator Questions

Scientific name	Common name	Habitat attribute	Indicator	Poor Score (1)	Moderate Score (15)	High Score (25)
Phascolarctos cinereus	koala	1. Quality and availability of food and habitat required for foraging	Canopy cover of koala food trees	Absent	Scattered to common (1-50%)	Abundant (>50%)
		1. Quality and availability of food and habitat required for foraging	Distance to water (riparian corridor, Wetland, Dam etc)	>1km	500m-1km	>500m
		2. Quality and availability of habitat required for shelter and breeding	Canopy cover of koala food trees	Absent	Scattered to common (1-50%)	Abundant (>50%)
		3. Quality and availability of habitat required for mobility	Connectivity	No connectivity	Connected with adjacent remnant vegetation along >10% to <50% of its perimeter **OR** is connected with adjacent remnant vegetation along <10% of its perimeter **AND** is connected with adjacent regrowth native vegetation >25% of its perimeter	Connected with adjacent remnant vegetation >50% of its perimeter
			Severity of vegetation clearing	High to severe (<30% of BM canopy height **and/or** <25% of BM canopy cover)	Moderate (30-69% of BM canopy height **and/or** 25-49% of BM canopy cover) **OR** For grassland REs - grassland meets 2 out of the 3 criteria to meet remnant status	Low to absent (>=70% of BM canopy height **and** >=50% of BM canopy cover)
		4. Absence of threats	Severity of vegetation clearing	High to severe (<30% of BM canopy height **and/or** <25% of BM canopy cover)	Moderate (30-69% of BM canopy height **and/or** 25-49% of BM canopy cover)	Low to absent (>=70% of BM canopy height **and** >=50% of BM canopy cover)
			Likelihood of feral predator presence	No active pest management **AND/OR** High risk of exposure due to low levels of cover/shelter	Low risk of exposure due to high levels of cover/shelter	Active pest management **AND/OR** Low risk of exposure due to high levels of cover/shelter
			Presence of fuel loads	Not inline with RE fire management guidelines **AND** presence of high fuel loads/risk	Not burnt and/or burnt more the RE fire management guidelines	Inline with recommended RE fire management guidelines
			Vehicle strike risk	High	Moderate	Very low to low
Petauroides volans sensu lato	greater glider	1. Quality and availability of food and habitat required for foraging	Presence of large trees (eucalypts and allies)	<50% of the RE benchmark for number of large trees (eucalypts)	≥50% of RE benchmark for number of large trees (eucalypts)	≥50% of RE benchmark for number of large trees (eucalypts) **AND** recruitment of canopy species
			Distance to riparian vegetation	>1km from creek	-	within 1km from creek
			Eucalypts with DBH >=30cm present within RE at sufficient density	No	-	Yes

Scientific name	Common name	Habitat attribute	Indicator	Poor Score (1)	Moderate Score (15)	High Score (25)
		2. Quality and availability of habitat required for shelter and breeding	Number of medium tree hollows and fissures (10-20cm diameter)	Absent to Scattered (0-5)	Common (6-10)	Abundant (>10)
			Number of large tree hollows and fissures (>20cm diameter)	Absent to scattered (0-5)	Common (6-10)	Abundant (>10)
			Eucalypts with DBH >=50cm present within RE at sufficient density	No	-	Yes
		3. Quality and availability of habitat required for mobility	Connectivity	No connectivity	Connected with adjacent remnant vegetation along >10% to <50% of its perimeter **OR** is connected with adjacent remnant vegetation along <10% of its perimeter **AND** is connected with adjacent regrowth native vegetation >25% of its perimeter	Connected with adjacent remnant vegetation >50% of its perimeter
			Average patch size	<25 ha remnant **AND/OR** regrowth	≥25-100 ha remnant **OR** ≥25-200 ha remnant and regrowth **OR** ≥25-200 ha regrowth	≥100 ha remnant **OR** >200 ha remnant and regrowth **OR** >200ha regrowth
		4.Absence of threats	Presence of fuel loads	Not inline with RE fire management guidelines **AND** presence of high fuel loads/risk	Not burnt and/or burnt more the RE fire management guidelines	Inline with recommended RE fire management guidelines
			Barbwire fence easement	Anywhere with a 20 m gap in canopy either side of fence	Anywhere with a 10 m gap in canopy either side of fence	No gap in canopy either side of fenceline
			Barbwire entanglement risk	High (top rung barbed wire) and structurally sound	Moderate (top rung not barbed wire, remaining rungs barbed)	No barbed wire, OR very low to low (no rungs barbed) **OR** in disrepair
			Likelihood of feral predator presence	No active pest management **AND/OR** High risk of exposure due to low levels of cover/shelter	Low risk of exposure due to high levels of cover/shelter	Active pest management **AND/OR** Low risk of exposure due to high levels of cover/shelter
Denisonia maculata	Ornamental Snake	1. Quality and availability of food and habitat required for foraging	Presence of gilgai microrelief	Absent	Rare to Occasional	Common to Abundant
			Gilgai microrelief depth	Absent	Shallow to Diverse	Deep
			Coarse woody debris abundance	Absent	Rare to Occasional	Common to Abundant
		2. Quality and availability of habitat required for shelter and breeding	Soil crack abundance	Absent	Rare to Occasional	Common to Abundant
			Soil crack depth	Absent	Shallow to Diverse	Deep
			Coarse woody debris abundance	Absent	Rare to Occasional	Common to Abundant

Scientific name	Common name	Habitat attribute	Indicator	Poor Score (1)	Moderate Score (15)	High Score (25)
		3.Quality and availability of habitat required for mobility	Connectivity	No connectivity	Connected with adjacent remnant vegetation along >10% to <50% of its perimeter OR is connected with adjacent remnant vegetation along <10% of its perimeter AND is connected with adjacent regrowth native vegetation >25% of its perimeter	Connected with adjacent remnant vegetation >50% of its perimeter
		4. Absence of threats	Severity of vegetation clearing	High to severe (<30% of BM canopy height and/or <25% of BM canopy cover)	Moderate (30-69% of BM canopy height and/or 25-49% of BM canopy cover)	Low to absent (≥70% of BM canopy height and ≥50% of BM canopy cover)
			Vehicle strike risk	High	Moderate	Low to very low
			High impact cattle trampling	High to Severe	Moderate	Absent to Low
Geophaps scripta scripta	squatter pigeon (southern subspecies)	1. Quality and availability of food and habitat required for foraging	Native grass cover	Absent to sparse (0 to <15%)	Very Common to Abundant (>45%)	Scattered to Common (15-45%)
		2. Quality and availability of habitat required for shelter and breeding	Native grass cover	Absent to sparse (0 to <15%)	Very Common to Abundant (>45%)	Scattered to Common (15-45%)
			Distance to water	>3km	1 to 3km	<1km
		3. Quality and availability of habitat required for mobility	Connectivity	No connectivity	Connected with adjacent remnant vegetation along >10% to <50% of its perimeter **OR** is connected with adjacent remnant vegetation along <10% of its perimeter **AND** is connected with adjacent regrowth native vegetation >25% of its perimeter	Connected with adjacent remnant vegetation >50% of its perimeter
			Average patch size	<25 ha remnant **AND/OR** regrowth	≥25-100 ha remnant **OR** ≥25-200 ha remnant and regrowth **OR** ≥25-200 ha regrowth	≥100 ha remnant **OR** >200 ha remnant and regrowth **OR** >200ha regrowth
		4. Absence of threats	Presence of grazing pressure	High to Severe	Moderate	Absent to Low
			Likelihood of pest fauna presence	No active pest management **AND/OR** High risk of exposure due to low levels of cover/shelter	Low risk of exposure due to high levels of cover/shelter	Active pest management **AND/OR** Low risk of exposure due to high levels of cover/shelter

Appendix E – BioCondition field results

Table 6-5 BioCondition Assessment scoring results

Site Data	Site ID	Total BC Score	Max Score for RE	No. Large Eucs (per ha)	No. Large Non-Eucs (per ha)	Total Large Trees (per ha)	EDL Recruitment	Emergent Tree Height	Canopy Tree Height	Subcanopy Tree Height	Mean Tree Height	Emergent Tree Cover	Canopy Tree Cover	Subcanopy Tree Cover	Mean Tree Cover	Shrub Cover	Native Perennial Grass Cover	Litter Cover	Non-native Cover	Native Tree Species Richness	Native Shrub Species Richness	Native Grass Species	Native Forbs & Other Species Richness	CWD (m/ha)
RE Benchmark	**11.3.25 - Remnant**		**80**	**19**	**13**	**32**	**100**	**na**	**23**	**11**	**-**	**na**	**34**	**12**	**-**	**7**	**35**	**21**	**0**	**4**	**4**	**8**	**13**	**473**
Site Data	BC51			4	8	24	100	-	20	12		-	13.6	10.4		3.4	73.6	4	3	0	9	3	2	0
% of BM	BC51			21%	62%	75%	1	-	87%	109%	-	-	40%	87%	-	49%	210%	19%	3%	0%	225%	38%	15%	0%
Site BC Score	BC51	52	80	-	-	10.00	5	-	5	5	5	-	2	5	3.5	3	5	3	10	0	5	2.5	0	0
RE Benchmark	**11.3.4 - Remnant**		**80**	**26**	**9**	**35**	**100**	**na**	**22**	**12**	**-**	**na**	**17**	**5**	**-**	**1**	**43**	**20**	**0**	**4**	**2**	**7**	**10**	**384**
Site Data	BC05			30	0	30	0	0	22.52	11	-	0	79.9	32.9	-	0	31.4	53.6	4	7	3	4	9	417
% of BM	BC05			115%	0%	86%	0%	-	102%	92%	-	-	470%	658%	-	0%	73%	268%	4%	175%	150%	57%	90%	109%
Site BC Score	BC05	56.5	80	-	-	10	0	-	5	5	5	-	3	3	3	0	3	3	10	5	5	2.5	5	5
RE Benchmark	**11.4.4 - Non-remnant**		**35**	**na**	**na**	**na**	**na**	**na**	**na**	**na**	**-**	**na**	**na**	**na**	**-**	**na**	**50**	**21**	**0**	**na**	**1**	**7**	**12**	**na**
Site Data	BC100			-	-	-	-	-	-	-	-	-	-	-	-	-	3.8	11.6	50	-	0	6	7	-
% of BM	BC100			-	-	-	-	-	-	-	-	-	-	-	-	-	8%	55%	50%	-	0%	86%	58%	-
Site BC Score	BC100	13	35	-	-	-	-	-	-	-	-	-	-	-	-	-	0	5	3	-	0	2.5	2.5	-
Site Data	BC102			-	-	-	-	-	-	-	-	-	-	-	-	-	22.4	3.6	85	-	2	3	7	-
% of BM	BC102			-	-	-	-	-	-	-	-	-	-	-	-	-	45%	17%	85%	-	200%	43%	58%	-
Site BC Score	BC102	14	35	-	-	-	-	-	-	-	-	-	-	-	-	-	1	3	0	-	5	2.5	2.5	-
RE Benchmark	**11.4.4 - Remnant**		**35**	**na**	**na**	**na**	**na**	**na**	**na**	**na**	**-**	**na**	**na**	**na**	**-**	**na**	**50**	**21**	**0**	**na**	**1**	**7**	**12**	**na**
Site Data	BC4			-	-	-	-	-	-	-	-	-	-	-	-	-	73.6	4	3	-	0	12	15	-
% of BM	BC4			-	-	-	-	-	-	-	-	-	-	-	-	-	147%	19%	3%	-	0%	171%	125%	-
Site BC Score	BC4	28	35	-	-	-	-	-	-	-	-	-	-	-	-	-	5	3	10	-	0	5	5	-
Site Data	BC46			-	-	-	-	-	-	-	-	-	-	-	-	-	33.8	44.8	4	-	3	6	3	-
% of BM	BC46			-	-	-	-	-	-	-	-	-	-	-	-	-	68%	213%	4%	-	300%	86%	25%	-
Site BC Score	BC46	26	35	-	-	-	-	-	-	-	-	-	-	-	-	-	3	3	10	-	5	2.5	2.5	-
RE Benchmark	**11.4.9 - Regrowth**		**80**	**0**	**47**	**47**	**100**	**na**	**10**	**6**	**-**	**na**	**25**	**11**	**-**	**5**	**16**	**45**	**0**	**2**	**5**	**5**	**10**	**980**
Site Data	BC22			-	0	0	100	-	2.7	0	-	-	0	0	-	2.1	5	16	5	15	10	1	0	45
% of BM	BC22			-	0%	0%	100%	-	27%	0%	-	-	0%	0%	-	42%	31%	36%	5%	750%	200%	20%	0%	5%
Site BC Score	BC22	28.5	80	-	-	0	5	-	3	0	1.5	-	0	0	0	3	1	3	5	5	5	0	0	0
Site Data	BC23			-	0	0	100	-	2.5	0	-	-	0	0	-	6.5	0.4	22.4	18	3	11	1	0	0
% of BM	BC23			-	0%	0%	100%	-	25%	0%	-	-	0%	0%	-	130%	3%	50%	18%	150%	220%	20%	0%	0%
Site BC Score	BC23	29.5	80	-	-	0	5	-	3	0	1.5	-	0	0	0	5	0	3	5	5	5	0	0	0
Site Data	BC40			-	0	0	100	-	0	0	-	-	0	0	-	14.2	4.6	32.4	25	9	8	2	2	1265
% of BM	BC40			-	0%	0%	100%	-	0%	0%	-	-	0%	0%	-	284%	29%	72%	25%	450%	160%	40%	20%	129%
Site BC Score	BC40	34.5	80	-	-	0	5	-	0	0	0	-	0	0	0	3	1	5	3	5	5	2.5	0	5
Site Data	BC03			0	2	2	100	0	7.28	3	-	0	9.5	2.2	-	10.3	3.8	1.2	2	5	2	2	5	46
% of BM	BC03			0%	4%	4%	100%	-	73%	50%	-	-	38%	20%	-	206%	24%	3%	2%	250%	40%	40%	50%	5%
Site BC Score	BC03	42.5	80	-	-	5	5	-	5	3	4	-	2	2	2	3	1	0	10	5	2.5	2.5	2.5	0
Site Data	BC06			0	0	0	100	13.3	6.94	0	-	0	36.8	2.7	-	9.5	1.8	36	2	6	11	6	17	431
% of BM	BC06			0%	0%	0%	100%	-	69%	0%	-	-	147%	25%	-	190%	11%	80%	2%	300%	220%	120%	170%	44%
Site BC Score	BC06	53	80	-	-	0	5	-	3	0	1.5	-	5	2	3.5	5	1	5	10	5	5	5	5	2
RE Benchmark	**11.4.9 - Remnant**		**80**	**na**	**47**	**47**	**100**	**na**	**10**	**6**	**-**	**na**	**25**	**11**	**-**	**5**	**16**	**45**	**0**	**2**	**5**	**5**	**10**	**980**
Site Data	BC5			-	6	12	100	-	11.4	0	-	-	50.9	0	-	14.3	0.2	4.4	4	0	7	10	23	430

Site Data	Site ID	Total BC Score	Max Score for RE	No. Large Eucs (per ha)	No. Large Non-Eucs (per ha)	Total Large Trees (per ha)	EDL Recruitment	Emergent Tree Height	Canopy Tree Height	Subcanopy Tree Height	Mean Tree Height	Emergent Tree Cover	Canopy Tree Cover	Subcanopy Tree Cover	Mean Tree Cover	Shrub Cover	Native Perennial Grass Cover	Litter Cover	Non-native Cover	Native Tree Species Richness	Native Shrub Species Richness	Native Grass Species	Native Forbs & Other Species Richness	CWD (m/ha)
% of BM	BC5			-	13%	26%	100%	-	114%	0%	-	-	204%	0%	-	286%	1%	10%	4%	0%	140%	200%	230%	44%
Site BC Score	BC5	44	80	-	-	5	5	-	5	0	2.5	-	3	0	1.5	3	0	0	10	0	5	5	5	2
RE Benchmark	**11.5.3 - Remnant**		**80**	**9**	**1**	**10**	**100**	**0**	**16**	**0**	**-**	**na**	**20**	**na**	**-**	**3**	**19**	**20**	**0**	**6**	**6**	**6**	**10**	**314**
Site Data	BC02			8	0	8	100	0	19.12	9.52	-	0	30.3	7.9	-	2.6	0	9.4	60	4	5	0	9	183
% of BM	BC02			89%	0%	80%	100%	0%	120%	10%	-	-	152%	-	-	87%	0%	47%	60%	67%	83%	0%	90%	58%
Site BC Score	BC02	45.5	80	-	-	10	5	-	5	0	2.5	-	5	-	5	5	0	3	0	2.5	2.5	0	5	5
Site Data	BC04			0	0	0	50	0	14	8	-	0	10.2	6.1	-	1.3	0.8	26.4	60	14	7	2	4	222
% of BM	BC04			0%	0%	0%	50%	0%	88%	8%	-	-	51%	-	-	43%	4%	132%	60%	233%	117%	33%	40%	71%
Site BC Score	BC04	38.5	80	-	-	0	3	-	5	0	2.5	-	5	-	5	3	0	5	0	5	5	2.5	2.5	5
Site Data	BC901			4	0	4	100	0	14	8.14	-	0	24.4	1	-	23.6	6	3	20	8	14	9	7	74
% of BM	BC901			44%	0%	40%	100%	-	88%	-	-	-	122%	-	-	787%	32%	15%	20%	133%	233%	150%	70%	24%
Site BC Score	BC901	51.5	80	-	-	5	5	-	5	-	5	-	5	-	5	3	1	3	5	5	5	5	2.5	2
RE Benchmark	**11.8.11 - Non-remnant**		**30**	**na**	**na**	**na**	**na**	**na**	**na**	**na**	**na**	**na**	**na**	**na**	**na**	**na**	**43**	**13**	**0**	**na**	**na**	**11**	**17**	**na**
Site Data	BC103			-	-	-	-	-	-	-	-	-	-	-	-	-	0	2.4	90	-	-	2	7	-
% of BM	BC103			-	-	-	-	-	-	-	-	-	-	-	-	-	0%	18%	90%	-	-	18%	41%	-
Site BC Score	BC103	5.5	30	-	-	-	-	-	-	-	-	-	-	-	-	-	0	3	0	-	-	0	2.5	-
Site Data	BC104			-	-	-	-	-	-	-	-	-	-	-	-	-	12	9.8	90	-	-	5	8	-
% of BM	BC104			-	-	-	-	-	-	-	-	-	-	-	-	-	28%	75%	90%	-	-	45%	47%	-
Site BC Score	BC104	11	30	-	-	-	-	-	-	-	-	-	-	-	-	-	1	5	0	-	-	2.5	2.5	-
RE Benchmark	**11.8.11 - Remnant**		**30**	**na**	**na**	**na**	**na**	**na**	**na**	**na**	**na**	**na**	**na**	**na**	**na**	**na**	**43**	**13**	**0**	**na**	**na**	**11**	**17**	**na**
Site Data	BC1			-	-	-	-	-	-	-	-	-	-	-	-	-	65.4	3.8	1.5	-	-	12	22	-
% of BM	BC1			-	-	-	-	-	-	-	-	-	-	-	-	-	152%	29%	2%	-	-	109%	129%	-
Site BC Score	BC1	28	30	-	-	-	-	-	-	-	-	-	-	-	-	-	5	3	10	-	-	5	5	-
Site Data	BC10			-	-	-	-	-	-	-	-	-	-	-	-	-	67.8	3.2	4	1	2	3	2	0
% of BM	BC10			-	-	-	-	-	-	-	-	-	-	-	-	-	158%	25%	4%	1%	2%	27%	12%	0%
Site BC Score	BC10	20.5	30	-	-	-	-	-	-	-	-	-	-	-	-	-	5	3	10	0	0	2.5	0	0
Site Data	BC101			-	-	-	-	-	-	-	-	-	-	-	-	-	73	8.4	9	-	-	13	16	-
% of BM	BC101			-	-	-	-	-	-	-	-	-	-	-	-	-	170%	65%	9%	-	-	118%	94%	-
Site BC Score	BC101	25	30	-	-	-	-	-	-	-	-	-	-	-	-	-	5	5	5	-	-	5	5	-
Site Data	BC105			-	-	-	-	-	-	-	-	-	-	-	-	-	64.8	3.2	3	-	-	12	10	-
% of BM	BC105			-	-	-	-	-	-	-	-	-	-	-	-	-	151%	25%	3%	-	-	109%	59%	-
Site BC Score	BC105	25.5	30	-	-	-	-	-	-	-	-	-	-	-	-	-	5	3	10	-	-	5	2.5	-
Site Data	BC11			-	-	-	-	-	-	-	-	-	-	-	-	-	2.4	4.2	55	1	0	2	4	0
% of BM	BC11			-	-	-	-	-	-	-	-	-	-	-	-	-	6%	32%	55%	1%	0%	18%	24%	0%
Site BC Score	BC11	3	30	-	-	-	-	-	-	-	-	-	-	-	-	-	0	3	0	0	0	0	0	0
Site Data	BC2			-	-	-	-	-	-	-	-	-	-	-	-	-	42.8	6	14	-	-	11	15	-
% of BM	BC2			-	-	-	-	-	-	-	-	-	-	-	-	-	100%	46%	14%	-	-	100%	88%	-
Site BC Score	BC2	20.5	30	-	-	-	-	-	-	-	-	-	-	-	-	-	5	3	5	-	-	5	2.5	-
Site Data	BC2a			-	-	-	-	-	-	-	-	-	-	-	-	-	11	27	0	-	-	11	15	-
% of BM	BC2a			-	-	-	-	-	-	-	-	-	-	-	-	-	26%	208%	0%	-	-	100%	88%	-
Site BC Score	BC2a	21.5	30	-	-	-	-	-	-	-	-	-	-	-	-	-	1	3	10	-	-	5	2.5	-

Site Data	Site ID	Total BC Score	Max Score for RE	No. Large Eucs (per ha)	No. Large Non-Eucs (per ha)	Total Large Trees (per ha)	EDL Recruitment	Emergent Tree Height	Canopy Tree Height	Subcanopy Tree Height	Mean Tree Height	Emergent Tree Cover	Canopy Tree Cover	Subcanopy Tree Cover	Mean Tree Cover	Shrub Cover	Native Perennial Grass Cover	Litter Cover	Non-native Cover	Native Tree Species Richness	Native Shrub Species Richness	Native Grass Species	Native Forbs & Other Species Richness	CWD (m/ha)
RE Benchmark	**11.8.5 - Non-remnant**		**80**	**9**	**0**	**9**	**100**	**0**	**15**	**6**	**-**	**na**	**13**	**3**	**-**	**3**	**59**	**15**	**0**	**3**	**3**	**9**	**8**	**175**
Site Data	BC07			0	0	0	0	0	0	3.5	-	0	0	1.9	-	3.4	51.2	7.6	8	2	3	4	8	97
% of BM	BC07			0%	0%	0%	0%	0%	0%	58%	-	-	0%	63%	-	113%	87%	51%	8%	67%	100%	44%	100%	55%
Site BC Score	BC07	42	80	-	-	0	0	-	0	3	1.5	-	0	5	2.5	5	3	5	5	2.5	5	2.5	5	5
Site Data	BC301			0	-	0	0	-	0	0	-	-	0	0	-	3.2	16.6	8.6	49	2	3	3	7	149
% of BM	BC301			0%	-	0%	0%	-	0%	0%	-	-	0%	0%	-	107%	28%	57%	49%	67%	100%	33%	88%	85%
Site BC Score	BC301	31.5	80	-	-	0	0	-	0	0	0	-	0	0	0	5	1	5	3	2.5	5	2.5	2.5	5
Site Data	BC303			0	0	0	100	-	0	0	-	-	0	0	-	7.2	57.2	12	20	2	6	8	15	789
% of BM	BC303			0%	-	0%	100%	-	0%	0%	-	-	0%	0%	-	240%	97%	80%	20%	67%	200%	89%	188%	451%
Site BC Score	BC303	40	80	-	-	0	5	-	0	0	0	-	0	0	0	3	5	5	5	2.5	5	2.5	5	2
RE Benchmark	**11.8.5 - Regrowth**		**80**	**9**	**0**	**9**	**100**	**0**	**15**	**6**	**-**	**na**	**13**	**3**	**-**	**3**	**59**	**15**	**0**	**3**	**3**	**9**	**8**	**175**
Site Data	BC08			0	0	0	0	0	15.96	8	-	0	8.9	1.6	-	0.4	0	19	75	2	3	1	1	318
% of BM	BC08			0%	0%	0%	0%	0%	106%	133%	-	-	68%	53%	-	13%	0%	127%	75%	67%	100%	11%	13%	182%
Site BC Score	BC08	30.5	80	-	-	0	0	-	5	5	5	-	5	5	5	3	0	5	0	2.5	5	0	0	5
RE Benchmark	**11.8.5 - Non-remnant**		**80**	**9**	**0**	**9**	**100**	**0**	**15**	**6**	**-**	**na**	**13**	**3**	**-**	**3**	**59**	**15**	**0**	**3**	**3**	**9**	**8**	**175**
Site Data	BC09			0	0	0	100	0	16.1	6.4	-	0	5.2	2	-	10.4	35	5.6	50	8	9	6	11	0
% of BM	BC09			0%	0%	0%	100%	0%	107%	107%	-	-	40%	67%	-	347%	59%	37%	50%	267%	300%	67%	138%	0%
Site BC Score	BC09	43	80	-	-	0	5	-	5	5	5	-	2	5	3.5	3	3	3	3	5	5	2.5	5	0
Site Data	BC27			0	0	0	100	-	2.8	0	-	-	0	0	-	13.2	0.6	32.6	70	1	14	1	1	153
% of BM	BC27			0%	-	0%	100%	-	19%	0%	-	-	0%	0%	-	440%	1%	217%	70%	33%	467%	11%	13%	87%
Site BC Score	BC27	23.5	80	-	-	0	5	-	0	0	0	-	0	0	0	3	0	3	0	2.5	5	0	0	5
Site Data	BC18			0	-	0	100	-	8.9	5.3	-	-	8.5	0	-	1.9	0	19.6	60	1	12	1	6	498
% of BM	BC18			0%	-	0%	100%	-	59%	88%	-	-	65%	0%	-	63%	0%	131%	60%	33%	400%	11%	75%	285%
Site BC Score	BC18	33.5	80	-	-	0	5	-	3	5	4	-	5	0	2.5	5	0	5	0	2.5	5	0	2.5	2
Site Data	BC302			0	-	0	100	-	13.18	6.4	-	-	2.8	3.4	-	0.5	16.4	16.6	38	10	10	3	15	461
% of BM	BC302			0%	-	0%	100%	-	88%	107%	-	-	22%	113%	-	17%	28%	111%	38%	333%	333%	33%	188%	263%
Site BC Score	BC302	45	80	-	-	0	5	-	5	5	5	-	2	5	3.5	3	1	5	3	5	5	2.5	5	2
Site Data	BC304			0	-	0	100	-	13.96	7.74	-	-	6.8	0	-	10.3	8.4	13.6	9	7	11	4	18	297
% of BM	BC304			0%	-	0%	100%	-	93%	129%	-	-	52%	0%	-	343%	14%	91%	9%	233%	367%	44%	225%	170%
Site BC Score	BC304	49	80	-	-	0	5	-	5	5	5	-	5	0	2.5	3	1	5	5	5	5	2.5	5	5
RE Benchmark	**11.8.5 - Remnant**		**80**	**9**	**na**	**9**	**100**	**na**	**15**	**6**	**-**	**na**	**13**	**3**	**-**	**3**	**59**	**15**	**0**	**3**	**3**	**9**	**8**	**175**
Site Data	BC3			2	-	4	100	0	15.1	4.4	-	0	25.9	5.1	-	3.9	9	14	25	5	7	9	30	160
% of BM	BC3			22%	-	44%	100%	-	101%	73%	-	-	199%	170%	-	130%	15%	93%	25%	167%	233%	100%	375%	91%
Site BC Score	BC3	59	80	-	-	5	5	-	5	5	5	-	5	5	5	5	1	5	3	5	5	5	5	5
Site Data	BC300			0	-	0	100	-	13.14	7.76	-	-	11.1	3.4	-	7.9	54.2	15.2	12	6	7	5	9	713
% of BM	BC300			0%	-	0%	100%	-	88%	129%	-	-	85%	113%	-	263%	92%	101%	12%	200%	233%	56%	113%	407%
Site BC Score	BC300	52.5	80	-	-	0	5	-	5	5	5	-	5	5	5	3	5	5	5	5	5	2.5	5	2
Site Data	BC56			0	-	0	100	-	12.2	5.8	-	-	15	6.2	-	16.3	42.8	6	14	0	10	5	7	0
% of BM	BC56			0%	-	0%	100%	-	81%	97%	-	-	115%	207%	-	543%	73%	40%	14%	0%	333%	56%	88%	0%
Site BC Score	BC56	38	80	-	-	0	5	-	5	5	5	-	5	3	4	3	3	3	5	0	5	2.5	2.5	0
Site Data	BC3a			2	-	4	100	-	15.1	4.4	-	-	25.9	5.1	-	3.9	8.6	19.6	20	9	7	9	30	303

Site Data	Site ID	Total BC Score	Max Score for RE	No. Large Eucs (per ha)	No. Large Non-Eucs (per ha)	Total Large Trees (per ha)	EDL Recruitment	Emergent Tree Height	Canopy Tree Height	Subcanopy Tree Height	Mean Tree Height	Emergent Tree Cover	Canopy Tree Cover	Subcanopy Tree Cover	Mean Tree Cover	Shrub Cover	Native Perennial Grass Cover	Litter Cover	Non-native Cover	Native Tree Species Richness	Native Shrub Species Richness	Native Grass Species	Native Forbs & Other Species Richness	CWD (m/ha)
% of BM	BC3a			22%	-	44%	100%	-	101%	73%	-	-	199%	170%	-	130%	15%	131%	20%	300%	233%	100%	375%	173%
Site BC Score	BC3a	61	80	-	-	5	5	-	5	5	5	-	5	5	5	5	1	5	5	5	5	5	5	5
RE Benchmark	**11.9.2 - Regrowth**		**80**	**13**	**0**	**13**	**100**	**0**	**15**	**6**	**-**	**na**	**25**	**3**	**-**	**25**	**18**	**30**	**0**	**2**	**10**	**7**	**12**	**366**
Site Data	BC01			0	0	0	100	0	7.54	3.7	-	0	0	3.2	-	8.7	60.8	21.4	8	7	10	10	14	10
% of BM	BC01			0%	0%	0%	100%	0%	50%	62%	-	-	0%	107%	-	35%	338%	71%	8%	350%	100%	143%	117%	3%
Site BC Score	BC01	48.5	80	-	-	0	5	-	3	3	3	-	0	5	2.5	3	5	5	5	5	5	5	5	0
RE Benchmark	**11.9.2 - Remnant**		**80**	**13**	**na**	**13**	**100**	**na**	**15**	**6**	**-**	**na**	**25**	**3**	**-**	**25**	**18**	**30**	**0**	**2**	**10**	**7**	**12**	**366**
Site Data	BC215			0	0	0	50	-	12.7	5.22	-	-	19.1	5.2	-	25.1	2.8	10.8	10	8	8	6	18	151
% of BM	BC215			0%	-	0%	50%	-	85%	87%	-	-	76%	173%	-	100%	16%	36%	10%	400%	80%	86%	150%	41%
Site BC Score	BC215	44	80	-	-	0	3	-	5	5	5	-	5	5	5	5	1	3	5	5	2.5	2.5	5	2

Appendix F – Habitat categorisation matrices

Table 6-6 Greater glider (Petauroides volans) habitat mapping categorisation matrix (Ausecology, in prep)

Attribute				Habitat Category*			
				Preferred	Suitable	Marginal	Not habitat
Assessment unit (RE + Condition) contains Large Trees with DBH >30cm	Compliant RE listed under GG Guide as "Habitat" *+ 11.3.27b, 11.3.2 and 11.4.8 (remnant)*	Within 1km from creek (with suitable connectivity to creek)		✓			
		>1km from creek	Highly connected to habitat *(not 11.3.2)*		✓		
			Highly connected to habitat *(is 11.3.2)*			✓	
			Highly isolated, poor condition patch				✓
	Compliant RE listed under GG Guide as "Potential Habitat"	Within 1km from creek	Confirmed Ausecology records	✓			
			No confirmed Ausecology records		✓		
		>1km from creek	Confirmed Ausecology records		✓		
			No confirmed Ausecology records			✓	
Assessment unit (RE + Condition) contains Large Trees with DBH <30cm							✓
Not listed under GG Guide (*except for 11.3.2 and 11.4.8*)							✓

*All habitat category selections are subject to site-context i.e. an area may be assigned a particular category as per the above work flow, however, site-context may result in the final habitat category differing.
'GG Guide' – *Guide to greater glider habitat in Queensland* (Eyre et al., 2022)

Table 6-7 koala (Phascolarctos cinereus) habitat mapping categorisation matrix (Ausecology, in prep)

Attribute			Habitat Category*			
			Preferred	Suitable	Marginal	Not habitat
Non-juvenile Koala Habitat Trees present	Remnant or regrowth Eucalyptus dominated open forest to woodland	In alluvial areas dominance of important palatable food tree species	✓			
		In areas with seasonal aquifers and some connectivity to areas of Preferred or Suitable habitat		✓		
	Fragmented and sparsely distributed Eucalyptus dominated REs	Reasonable connectivity to areas of Preferred or Suitable habitat		✓		
		Isolated from areas of Preferred or Suitable habitat			✓	
	Acacia harpophylla open forest with isolated *Eucalyptus cambageana* present					✓
Non-juvenile Koala Habitat Trees not present						✓

*All habitat category selections are subject to site-context i.e. an area may be assigned a particular category as per the above work flow, however, site-context may result in the final habitat category differing.

Table 6-8 Ornamental snake (Denisonia maculata) habitat mapping categorisation matrix (Ausecology, in prep)

Attribute					Habitat Category*			
					Preferred	Suitable	Marginal	Not habitat
Compliant RE	Gilgais very evident visible via satellite imagery				✓			
	Gilgais less evident visible via satellite imagery					✓		
	Gilgais not evident visible via satellite imagery	Overall high habitat quality (gilgai abundance, CWD abundance)	RE 11.3.25 associated with LZ4 determined to be habitat			✓		
			RE 11.4.8 or 11.4.9		✓			
			Facilitates dispersal between Preferred/Suitable habitat			✓		
		Overall low habitat quality (gilgai abundance, CWD abundance)	Facilitates dispersal between Preferred/Suitable habitat					✓
			Does not facilitate dispersal between Preferred/Suitable habitat					✓
			Non-remnant RE	Intersecting creek line			✓	
				Not intersecting creek line				✓
Non-compliant RE	Facilitates dispersal between Preferred/Suitable habitat						✓	
	Does not facilitate dispersal between Preferred/Suitable habitat							✓

*All habitat category selections are subject to site-context i.e. an area may be assigned a particular category as per the above work flow, however, site-context may result in the final habitat category differing.

Table 6-9 Squatter pigeon (southern) (Geophaps scripta scripta) habitat mapping categorisation matrix

Attribute					Habitat Category*			
					Preferred	Suitable	Marginal	Not habitat
Compliant RE	Within 3 km from waterbody (stream order ≥1, farm dam etc)	Regrowth or Remnant RE	≤1 km of waterbody	Permanent waterbody (Stream order ≥3, accessible permanent mine dam)	✓			
				Ephemeral waterbody (Stream order <3, small farm mine dam)		✓		
			>1 – 3 km of waterbody	Permanent waterbody (Stream order ≥3, accessible permanent mine dam)		✓		
				Ephemeral waterbody (Stream order <3, small farm mine dam)		✓		
		Non-remnant RE	≤100 m of Preferred habitat			✓		
			>100 m of Preferred habitat and facilitates movement between Preferred and/or Suitable habitat				✓	
			>100 m of Preferred habitat and does not facilitate movement between Preferred and/or Suitable habitat					✓
	>3 km from waterbody (stream order ≥1, farm dam etc)	Facilitates movement between Preferred and/or Suitable habitat					✓	
		Does not facilitate movement between Preferred and/or Suitable habitat						✓
Non-compliant RE								✓

*All habitat category selections are subject to site-context i.e. an area may be assigned a particular category as per the above work flow, however, site-context may result in the final habitat category differing.

Appendix G – Fauna species list

Table 6-10 Fauna species detected per company per survey type within the Study Area

Scientific Name	Common Name	NC Act Status	EPBC Act Status	Total	AECOM		ERM	Ausecology							
					Oct 2018	May 2019	March 2021	Nov 2021	Dec 2021	March 2022	April 2022	Nov 2022	Oct 2022	Sept 2022	March 2023
Amphibia															
Cyclorana alboguttata	Green-striped Burrowing Frog	C	-	1											I(1)
Cyclorana brevipes	superb collared frog	C	-	4				P(3)			S(1)				
Cyclorana cultripes	knife-footed frog	C	-	2				I(1), P(1)							
Cyclorana novaehollandiae	eastern snapping frog	C	-	6							I(1)	I(1)			I(1), P(3)
Limnodynastes fletcheri	barking frog	C	-	3							H(1)		P(2)		
Limnodynastes tasmaniensis	spotted marsh frog	C	-	3				I(1)						S(1)	H(1)
Limnodynastes terraereginae	scarlet sided pobblebonk	C	-	5									P(5)		
Litoria caerulea	common green treefrog	C	-	11				I(1), S(3)			H(1), S(2)			I(1), S(3)	
Litoria peronii	emerald-spotted tree frog	C	-	1										S(1)	
Litoria rubella	ruddy treefrog	C	-	2				S(1)			I(1)				
Platyplectrum ornatum	ornate burrowing frog	C	-	19				P(5), S(3)						S(2)	P(9)
Rhinella marina	cane toad	*	*	29	U(1)	U(1)		H(1), S(10)		CT(5)	H(2), S(1)	I(1)		I(1), S(4)	P(2)
Uperoleia littlejohni	Einasleigh gungan	C	-	1									P(1)		
Aves															
Acanthagenys rufogularis	spiny-cheeked honeyeater	C	-	1					I(1)						
Acanthiza nana	yellow thornbill	C	-	2		U(1)					I(1)				
Accipiter fasciatus	grown goshawk	C	-	3								I(1)		BS(1)	B(1)
Acridotheres tristis	common myna	*	*	28	U(1)	U(1)		I(2)			BS(9)				B(15)
Acrocephalus australis	Australian reed-warbler	C	-	1								I(1)			
Aegotheles cristatus	Australian owlet-nightjar	C	-	4							S(3)			S(1)	
Alisterus scapularis	Australian king-parrot	C	-	1								I(1)			
Anas castanea	Chestnut Teal	C	-	1											I(1)
Anas gracilis	grey teal	C	-	1							BS(1)				
Anas superciliosa	pacific black duck	C	-	4	U(1)	U(1)					BS(1)				I(1)
Anhinga novaehollandiae	Australasian darter	C	-	4		U(1)		I(2)			BS(1)				
Anthus novaeseelandiae	Australasian Pipit	C	-	6	U(1)	U(1)		I(1)	I(1)		BS(1), I(2)				I(1)
Aprosmictus erythropterus	red-winged parrot	C	-	23	U(1)	U(1)		BS(2), I(2)	I(1)		BS(7), I(3)			BS(2)	B(4)
Apus pacificus	fork-tailed swift	SL	-	1	U(1)										
Aquila audax	wedge-tailed eagle	C	-	7	U(1)						BS(1), I(3)	I(2)			
Ardea alba	great egret	C	Ma	2	U(1)	U(1)									
Ardea alba modesta	eastern great egret	C	-	2							I(2)				
Ardea intermedia	intermediate egret	C	-	1							BS(1)				
Ardea pacifica	white-necked heron	C	-	1	U(1)										
Ardeotis australis	Australian bustard	C	-	10		U(1)		I(5)	I(2)			I(1)			I(1)
Artamus cinereus	black-faced woodswallow	C	-	4				I(1)			I(3)				
Artamus cyanopterus	dusky woodswallow	C	-	1							BS(1)				
Artamus leucorynchus	White-breasted Woodswallow	C	-	4				I(3)			BS(1)				
Artamus minor	little woodswallow	C	-	1										I(1)	
Artamus personatus	masked woodswallow	C	-	3	U(1)	U(1)								BS(1)	

Scientific Name	Common Name	NC Act Status	EPBC Act Status	Total	AECOM		ERM	Ausecology							
					Oct 2018	May 2019	March 2021	Nov 2021	Dec 2021	March 2022	April 2022	Nov 2022	Oct 2022	Sept 2022	March 2023
Aviceda subcristata	pacific baza	C	-	1				BS(1)							
Aythya australis	hardhead	C	-	2		U(1)					BS(1)				
Cacatua galerita	sulphur-crested cockatoo	C	-	21	U(1)			I(2)			BS(7), I(2)	I(1)		BS(7), S(1)	
Cacomantis pallidus	pallid cuckoo	C	-	10				BS(3)			BS(4)	I(1)		BS(1), S(1)	
Caligavis chrysops	yellow-faced honeyeater	C	-	1	U(1)										
Centropus phasianinus	pheasant coucal	C	-	13				BS(1), I(2)				I(3)	CT(1)	BS(5)	H(1)
Chalcites basalis	Horsfield's bronze-cuckoo	C	-	4				I(3)						BS(1)	
Chenonetta jubata	Australian wood duck	C	-	2	U(1)	U(1)									
Chlamydera maculata	spotted bowerbird	C	-	12	U(1)	U(1)		I(4)			BS(3), I(5)	I(1)			I(1), B(1)
Chroicocephalus novaehollandiae	silver gull	C	Ma	1				I(1)							
Cincloramphus mathewsi	rufous songlark	C	-	5		U(1)		I(3)						BS(1)	
Climacteris affinis	white-browed treecreeper	C	-	1	U(1)										
Cisticola exilis	Golden-headed Cisticola	C	-	2											I(2)
Colluricincla harmonica	grey shrike-thrush	C	-	12				BS(4), I(2)				I(1)		BS(4)	B(1)
Coracina novaehollandiae	black-faced cuckoo shrike	C	-	24	U(1)	U(1)		BS(2), I(4)			BS(6), I(3)	I(1)		BS(3)	I(3)
Coracina papuensis	white-bellied cuckoo-shrike	C	-	2				BS(1), I(1)							
Corvus coronoides	Australian raven	C	-	6				BS(3), I(3)							
Corvus orru	Torresian crow	C	-	101	U(1)	U(1)		BS(5), CT(2), I(2)	CT(1)	BS(1), CT(40)	BS(27), I(1)	I(2)	CT(1)	BS(9), I(1)	I(1), B(6)
Coturnix pectoralis	stubble quail	C	-	1										S(1)	
Cracticus nigrogularis	pied butcherbird	C	-	40	U(1)	U(1)		BS(3), I(3)			BS(19)			BS(6)	B(7)
Cracticus sp.	butcherbird sp.	C	-	1				CT(1)							
Cracticus torquatus	grey butcherbird	C	-	28	U(1)	U(1)		BS(2), I(2)			BS(5)	I(1)		BS(6)	I(1), B(9)
Cygnus atratus	black swan	C	-	4		U(1)		I(1)			BS(1), I(1)				
Dacelo leachii	blue-winged kookaburra	C	-	14	U(1)						BS(2), I(2), S(1)	I(2)		BS(1)	B(5)
Dacelo novaeguineae	laughing kookaburra	C	-	13	U(1)	U(1)		I(2)			I(1)	I(1)		BS(6)	B(1)
Dendrocygna eytoni	plumed whistling duck	C	-	1		U(1)									
Dicaeum hirundinaceum	mistletoebird	C	-	9	U(1)	U(1)		BS(4), I(2)			I(1)				
Dicrurus bracteatus	spangled drongo	C	-	4				I(2)						I(1)	BS(1)
Dromaius novaehollandiae	emu	C	-	9	U(1)			I(2)	I(1)		I(3)			BS(1)	I(1)
Egretta novaehollandiae	white-faced heron	C	-	3	U(1)							I(1)			B(1)
Elanus axillaris	black-shouldered kite	C	-	2				I(2)							
Elseyornis melanops	black-fronted dotterel	C	-	3				I(1)							I(2)
Entomyzon cyanotis	blue-faced honeyeater	C	-	9	U(1)	U(1)		I(2)						BS(5)	
Eolophus roseicapilla	galah	C	-	16	U(1)			BS(2), I(3)			BS(5), I(1)	I(2)		BS(2)	
Eopsaltria australis	eastern yellow robin	C	-	1										BS(1)	
Ephippiorhynchus asiaticus	black-necked stork	C	-	1	U(1)										
Eudynamys orientalis	eastern koel	C	-	1				I(1)							
Eurystomus orientalis	dollarbird	C	-	16	U(1)			BS(1), I(4)	I(2)			I(3)		BS(1)	I(4)
Falco berigora	brown falcon	C	-	7				I(2)	I(1)		I(2)				I(2)
Falco cenchroides	nankeen kestrel	C	-	13	U(1)			I(3)			BS(7), I(1)	I(1)			

Scientific Name	Common Name	NC Act Status	EPBC Act Status	Total	AECOM		ERM	Ausecology							
					Oct 2018	May 2019	March 2021	Nov 2021	Dec 2021	March 2022	April 2022	Nov 2022	Oct 2022	Sept 2022	March 2023
Gavicalis virescens	singing honeyeater	C	-	17		U(1)		BS(4), I(3)			BS(5), S(1), I(1)			BS(1)	I(1)
Gelochelidon nilotica	gull-billed tern	SL	Ma, Mi	1	U(1)										
Geopelia cuneata	diamond dove	C	-	1							I(1)				
Geopelia humeralis	bar-shouldered dove	C	-	4	U(1)			I(2)						BS(1)	
Geopelia placida	peaceful dove	C	-	8	U(1)	U(1)		I(2)			S(1), I(1)			BS(2)	
Geophaps scripta scripta	squatter pigeon (southern subspecies)	V	V	12			U(1)				I(9)	I(2)			
Gerygone olivacea	white-throated gerygone	C	-	12	U(1)	U(1)		I(2)			BS(2), I(1)	I(1)		BS(2)	B(2)
Grallina cyanoleuca	magpie lark	C	-	25	U(1)	U(1)		BS(1), I(2)		CT(1)	BS(5), I(3)	I(1)	CT(2)	BS(2)	B(6)
Grus rubicunda	brolga	C	-	16				I(2)			I(2)	I(1)			B(6), I(5)
Gymnorhina tibicen	Australian magpie	C	-	51	U(1)	U(1)		BS(2), CT(3), I(2)		CT(4)	BS(15)		CT(3)	BS(5)	B(14), I(1)
Haliaeetus leucogaster	white-bellied sea-eagle	C	Ma	1				I(1)							
Haliastur sphenurus	whistling kite	C	-	18	U(1)	U(1)		BS(2), I(3)			BS(3)	I(1)		BS(2)	I(1), B(4)
Himantopus himantopus	black-winged stilt	C	-	4	U(1)			I(2)			I(1)				
Hirundo neoxena	welcome swallow	C	Ma	6				BS(1), I(2)			BS(2)			BS(1)	
Hydroprogne caspia	Caspian tern	C	Ma, Mi	4	U(1)	U(1)		I(2)							
Lalage leucomela	varied triller	C	-	1	U(1)										
Lalage tricolor	white-winged triller	C	-	3				I(2)						BS(1)	
Lichmera indistincta	brown honeyeater	C	-	8		U(1)								BS(7)	
Malurus lamberti	variegated fairy-wren	C	-	9				BS(2), I(1)			BS(3), I(1)	I(1)			I(1)
Malurus melanocephalus	red-backed fairy-wren	C	-	20	U(1)	U(1)		BS(1), I(3)	I(1)		BS(5), I(1)	I(2)		BS(2)	I(1), B(2)
Malurus sp.	Fairy-wren sp.	C	-	2							BS(2)				
Manorina flavigula	yellow-throated miner	C	-	19		U(1)		BS(4), CT(1), I(2)		BS(1)	BS(10)				
Manorina melanocephala	noisy miner	C	-	23	U(1)	U(1)					BS(4)	I(1)		BS(5)	B(11))
Megalurus timoriensis	tawny grassbird	C	-	3				I(2)							I(1)
Melithreptus albogularis	white-throated honeyeater	C	-	14				BS(1)			I(1)			BS(8)	B(4)
Melithreptus lunatus	white-naped honeyeater	C	-	2	U(1)	U(1)									
Merops ornatus	rainbow bee-eater	C	Ma	20	U(1)	U(1)		BS(3), I(3)	I(1)		I(2)	I(1)		BS(4), I(1)	B(3)
Microcarbo melanoleucos	little pied cormorant	C	-	2	U(1)						BS(1)				
Microeca fascinans	jacky winter	C	-	1										BS(1)	
Milvus migrans	black kite	C	-	8		U(1)		BS(1), I(2)			BS(2)	I(1)		BS(1)	
Mirafra javanica	Horsfield's Bushlark	C	-	2							S(1)			S(1)	
Myiagra inquieta	restless flycatcher	C	-	1	U(1)										
Myiagra rubecula	leaden flycatcher	C	-	10		U(1)		I(1)				I(2)		BS(5), I(1)	
Ninox boobook	southern boobook	C	-	10				S(2)			I(1), S(2)			I(1), S(4)	
Nymphicus hollandicus	cockatiel	C	-	1				I(1)							
Ocyphaps lophotes	crested pigeon	C	-	19	U(1)	U(1)		CT(1), I(3)			BS(11)				B(2)
Oriolus sagittatus	olive-backed oriole	C	-	6				BS(2), I(2)	I(1)			I(1)			
Pachycephala rufiventris	rufous whistler	C	-	16	U(1)			BS(1), I(2)	I(1)		BS(2), I(1)	I(1)		BS(4)	B(3)

Scientific Name	Common Name	NC Act Status	EPBC Act Status	Total	AECOM		ERM	Ausecology							
					Oct 2018	May 2019	March 2021	Nov 2021	Dec 2021	March 2022	April 2022	Nov 2022	Oct 2022	Sept 2022	March 2023
Pardalotus striatus	striated pardalote	C	-	39	U(1)	U(1)				BS(1)	BS(5), I(4)	I(2)		BS(6)	B(19)
Pelecanus conspicillatus	Australian pelican	C	Ma	3	U(1)	U(1)		I(1)							
Petrochelidon ariel	fairy martin	C	-	6				BS(2), I(2)			I(1)			BS(1)	
Petrochelidon nigricans	tree martin	C	-	3				I(2)			I(1)				
Phalacrocorax sulcirostris	black cormorant	C	-	2	U(1)			I(1)							
Phalacrocorax varius	pied cormorant	C	-	2				I(2)							
Phaps chalcoptera	common bronze wing	C	-	6									CT(5)	BS(1)	
Philemon citreogularis	little friarbird	C	-	30	U(1)	U(1)		BS(7), I(3)	I(1)			I(1)		BS(7)	B(9)
Philemon corniculatus	noisy friarbird	C	-	59	U(1)	U(1)		BS(3), I(5)				I(1)		BS(9)	B(39)
Platalea regia	royal spoonbill	C	-	3	U(1)			I(2)							
Platycercus adscitus	pale-headed rosella	C	-	40	U(1)	U(1)		BS(4), CT(2), I(3)	CT(1), I(1)		BS(8), I(10)	I(2)		BS(1)	B(6)
Plectorhyncha lanceolata	striped honeyeater	C	-	17				BS(4), I(2)			BS(3)			BS(1)	B(7)
Podargus strigoides	tawny frogmouth	C	-	38	U(1)	U(1)		I(1), S(1)			I(1), S(23)	I(1)		BS(2), S(7)	
Podiceps cristatus	great crested grebe	C	-	4		U(1)		I(2)			BS(1)				
Pomatostomus halli	Hall's babbler	C	-	1								I(1)			
Pomatostomus temporalis	grey-crowned babbler	C	-	31				BS(3), I(2), CT(3)	I(1)		BS(8), I(4)	I(2)	CT(1)		B(6), I(1)
Rhipidura albiscapa	grey fantail	C	-	2		U(1)					I(1)				
Rhipidura leucophrys	willie wagtail	C	-	35	U(1)			BS(5), I(5)			BS(19), I(2)			BS(1), S(1)	B(1)
Rhipidura rufifrons	rufous fantail	SL	Ma, Mi	1	U(1)										
Scythrops novaehollandiae	channel-billed cuckoo	C	Ma	3				I(2)	I(1)						
Smicrornis brevirostris	weebill	C	-	33	U(1)	U(1)		BS(3), I(1)						BS(6)	B(21)
Strepera graculina	pied currawong	C	-	2										BS(1), I(1)	
Struthidea cinerea	apostlebird	C	-	16	U(1)	U(1)		BS(3), I(2)		CT(1)	I(1), I(1)	I(1)		BS(1), S(1)	B(3)
Synoicus ypsilophorus	brown quail	C	-	41	U(1)			I(3)			BS(4), H(2), S(1), I(7)	I(3)			H(1), B(9)
Tachybaptus novaehollandiae	Australasian grebe	C	-	2							BS(1)				I(1)
Taeniopygia bichenovii	double-barred finch	C	-	13	U(1)	U(1)		BS(1), I(1)			BS(3), I(3)	I(1)		BS(1)	I(1)
Taeniopygia guttata	zebra finch	C	-	6				BS(2), I(2)			BS(1)			BS(1)	
Todiramphus macleayii	forest kingfisher	C	-	2	U(1)	U(1)									
Todiramphus pyrrhopygius	red-backed kingfisher	C	-	1							I(1)				
Todiramphus sanctus	sacred kingfisher	C	-	1										BS(1)	
Trichoglossus moluccanus	rainbow lorikeet	C	-	34	U(1)			BS(1), I(1)			BS(1)			BS(7)	B(23)
Turnix varius	painted button-quail	C	-	2								I(1)		S(1)	
Turnix velox	little button-quail	C	-	1							I(1)				
Vanellus miles	masked lapwing	C	-	3				I(2)				I(1)			
Mammalia															
Aepyprymnus rufescens	rufous bettong	C	-	22	U(1)			I(1)		CT(4)			CT(11)	I(2), S(3)	
Austronomus australis	white-striped freetail bat	C	-	4			U(1)				A(2)			A(1)	

Scientific Name	Common Name	NC Act Status	EPBC Act Status	Total	AECOM		ERM	Ausecology							
					Oct 2018	May 2019	March 2021	Nov 2021	Dec 2021	March 2022	April 2022	Nov 2022	Oct 2022	Sept 2022	March 2023
Bos taurus	cattle	*	*	5	U(1)	U(1)			I(1)	CT(2)					
Canis sp.	dingo/domestic dog	*	*	12	U(2)	U(1)			CT(2), I(1)	CT(2)	I(1), BS(1)	I(1)		S(1)	
Chaerephon jobensis	northern freetail bat	C	-	2574	U(1)			A(246)			A(1026)			A(1301)	
Chalinolobus gouldii	Gould's wattled bat	C	-	241	U(1)		U(1)	A(50)			A(99)			A(90)	
Chalinolobus morio	chocolate wattled bat	C	-	66	U(1)						A(12)			A(53)	
Chalinolobus nigrogriseus	Hoary wattled bat	C	-	6			U(1)				A(3)			A(2)	
Chalinolobus picatus	little pied bat	C	-	37	U(1)						A(21)	A(1)		A(14)	
Felis catus	feral cat	*	*	4	U(1)				CT(3)						
Isoodon macrourus	northern brown bandicoot	C	-	1		U(1)									
Lagorchestes conspicillatus	spectacled hare-wallaby	C	-	2							S(1), S(1)				
Macropus giganteus	eastern grey kangaroo	C	-	144	U(1)	U(1)		CT(35)	CT(5), I(1)	CT(45)	I(5), S(5)	I(1)	CT(40)	I(1), S(3)	H(1)
Macropus rufogriseus	red-necked wallaby	C	-	1	U(1)										
Macropus sp.	macropod sp.	C	-	2				CT(2)							
Rattus rattus	black rat	*	*	4						CT(3)			CT(1)		
Miniopterus orianae	southern bent-wing bat	C	-	10							A(8)			A(2)	
Mormopterus beccarii	Beccari's free-tailed bat	C	-	1			U(1)								
Mormopterus eleryi	hairy-nosed free-tailed bat	C	-	1	U(1)										
Mormopterus lumsdenae	northern free-tailed bat	C	-	1	U(1)										
Mormopterus ridei	ride's free-tailed bat	C	-	2	U(1)		U(1)								
Mus musculus	house mouse	*	*	9						CT(3)	P(2)		P(4)		
Nyctophilus sp.	Nyctophilus sp.	^	^	6	U(1)			A(1)			A(2)			A(2)	
Oryctolagus cuniculus	European rabbit	*	*	9	U(1)	U(1)		I(1), CT(2)		CT(1)	H(1), BS(1)			I(1)	
Ozimops lumsdenae	-	C	-	244				A(94)			A(54)			A(96)	
Ozimops ridei	Ride's Free-tailed Bat	C	-	147				A(17)			A(85)			A(45)	
Petauroides volans	greater glider	E	E	29	U(1)			S(2)			S(1)			I(2), S(23)	
Petaurus breviceps	sugar glider	C	-	20		U(1)		S(3)			I(1), S(9)			S(6)	
Petaurus norfolcensis	squirrel glider	C	-	3				S(1)			S(1)			S(1)	
Phascolarctos cinereus	koala	E	E	7	S(1)				I(1)	CT(3)	I(1)			S(1)	
Pteropus scapulatus	little red flying-fox	C	-	8				S(8)							
Saccolaimus flaviventris	yellow-bellied sheath-tailed bat	C	-	152			U(1)	A(131)			A(11)			A(9)	
Scotorepens balstoni	western broad-nosed bat	C	-	5				A(1)			A(2)			A(2)	
Scotorepens greyii	little broad-nosed bat	C	-	17				A(6)			A(6)			A(5)	
Scotorepens sanborni	northern broad-nosed bat	C	-	54				A(6)			A(28)			A(20)	
Sminthopsis macroura	stripe-faced dunnart	C	-	2							P(2)				
Sus scrofa	feral pig	*	*	29	U(1)	U(1)		CT(6), I(1)	CT(2)		I(1)	I(16)	CT(1)		
Tachyglossus aculeatus	short-beaked echidna	SL	-	12		U(1)				CT(5)	S(1)		CT(2)	I(2)	CT(1)
Taphozous troughtoni	Troughton's sheath-tailed bat	C	-	1										A(1)	
Trichosurus vulpecula	common brushtail possum	C	-	44	U(1)					CT(18)	P(1), S(6)		CT(7)	S(10)	P(1)
Vespadelus pumilus	eastern forest bat	C	-	1			U(1)								
Vespadelus sp.	forest bat sp.	C	-	1							S(1)				
Vespadelus troughtoni	eastern cave bat	C	-	220	U(1)		U(1)	A(14)			A(136)			A(68)	

Scientific Name	Common Name	NC Act Status	EPBC Act Status	Total	AECOM		ERM	Ausecology							
					Oct 2018	May 2019	March 2021	Nov 2021	Dec 2021	March 2022	April 2022	Nov 2022	Oct 2022	Sept 2022	March 2023
Wallabia bicolor	swamp wallaby	C	-	32				CT(2), I(2)	I(2)	CT(14)	S(4)		CT(2)		I(4), CT(2)
Reptilia															
Amphibolurus burnsi	Burns's dragon	C	-	1				P(1)							
Anilios affinis	small-headed blind snake	C	-	1				P(1)							
Anilios unguirostris	claw-snouted blind snake	C	-	1				P(1)							
Carlia munda	shaded-litter rainbow-skink	C	-	12				H(2), P(1)			H(3), I(3)				P(3)
Carlia pectoralis	open-litter rainbow skink	C	-	1	U(1)										
Carlia rubigo	orange-flanked rainbow skink	C	-	29				H(10), P(8)			H(5), I(6)				
Carlia sp.	Carlia sp.	C	-	4							H(2), I(1)				H(1)
Carlia vivax	tussock rainbow-skink	C	-	6	U(1)	U(1)		I(2)							I(2)
Chlamydosaurus kingii	frill-necked lizard	C	-	2					I(1)						P(1)
Cryptoblepharus adamsi	Adams' snake-eyed skink	C	-	6				I(2)			H(2), I(2)				
Cryptoblepharus pulcher pulcher	elegant snake-eyed skink	C	-	1									P(1)		
Cryptoblepharus sp.	Cryptoblepharus sp.	C	-	3				I(2)				I(1)			
Cryptophis boschmai	Carpentaria whip snake	C	-	2							P(2)				
Ctenotus robustus	eastern striped skink	C	-	4				I(1)			H(1), I(1)	I(1)			
Ctenotus spaldingi	straight-browed ctenotus	C	-	1							I(1)				
Ctenotus strauchii	eastern barred wedgesnout ctenotus	C	-	3							H(2)				P(1)
Denisonia maculata	ornamental snake	V	V	7				S(3)				I(1)		S(1)	P(1), H(1)
Diplodactylus conspicillatus	fat-tailed gecko	C	-	1	U(1)										
Diplodactylus platyurus	eastern fat-tailed gecko	C	-	68							P(49), S(14)		P(5)		
Diplodactylus vittatus	eastern stone gecko	C	-	22				S(1)			S(20)			S(1)	
Diporiphora australis	tommy roundhead	C	-	6				I(1)			H(3), I(1)		P(1)		
Gehyra catenata	chain-backed dtella	C	-	71				H(25)			S(45)			S(1)	
Gehyra dubia	dubious dtella	C	-	163	U(1)	U(1)		H(17), S(50)			H(2), I(1), S(88)	I(1)			H(2)
Glaphyromorphus punctulatus	fine-spotted mulch-skink	C	-	1							H(1)				
Heteronotia binoei	Bynoe's gecko	C	-	179		U(1)		H(15), I(2), P(6)			H(64), I(16), P(7), S(49), BS(1)	I(3)	P(2)	S(1)	I(8), P(1), H(4)
Lerista fragilis	eastern mulch-slider	C	-	2							H(2)				
Lucasium steindachneri	box-patterned gecko	C	-	32	U(1)			I(1)			P(2), S(24)		P(4)		
Lygisaurus foliorum	tree-base litter-skink	C	-	8				H(3)			I(2), P(1)		P(2)		
Menetia greyii	common dwarf skink	C	-	10				H(1), I(1), P(2)			H(2), I(2), P(2)				
Morethia boulengeri	south-eastern morethia skink	C	-	4				H(1), P(1)					P(2)		
Morethia taeniopleura	fire-tailed skink	C	-	33				H(1), I(2), P(1)			H(12), I(5), S(1)				I(2), P(7), H(2)
Nephrurus levis	knob-tailed gecko	C	-	10	U(1)										
Oedura monilis	ocellated velvet gecko	C	-	38				H(12)			S(25)				I(1)

Scientific Name	Common Name	NC Act Status	EPBC Act Status	Total	AECOM		ERM	Ausecology							
					Oct 2018	May 2019	March 2021	Nov 2021	Dec 2021	March 2022	April 2022	Nov 2022	Oct 2022	Sept 2022	March 2023
Paradelma orientalis	Brigalow scaly-foot	C	-	1							I(1)				
Pogona barbata	eastern bearded dragon	C	-	2				I(1)					I(1)		
Pseudonaja textilis	eastern brown snake	C	-	1	U(1)										
Pygmaeascincus timlowi	dwarf litter-skink	C	-	4				I(1)			H(1), I(1)				P(1)
Strophurus williamsi	eastern spiny-tailed gecko	C	-	22				H(1)			S(21)				
Tiliqua scincoides	common blue-tongued skink	C	-	1							I(1)				
Varanus tristis	freckled monitor	C	-	3						CT(3)					

Survey type and count (X): Anabat (A), Bird Survey (BS), Camera Trapping (CT), Herpetofauna Search (H), Incidental (I), Pitfall & Elliot Trapping (P), Spotlight (S), Unknown (U).

NC Act: 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).

EPBC Act: Extinct (EX), Extinct in the Wild (XW), Critically Endangered (CE), Endangered (E), Vulnerable (V), Conservation Dependent (CD), Marine (Ma) and Migratory (Mi)

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Appendix H – Desktop assessment search results

resources.QLD.GOV.AU

Vegetation management report

For Lot: 8 Plan: SP277384

03/07/2023

Queensland Government

This publication has been compiled by Operations Support, Department of Resources.

Recent changes

Updated mapping

Updated vegetation mapping was released on 8 September 2022 and includes the most recent Queensland Herbarium scientific updates to the Regulated Vegetation Management Map, regional ecosystems, wetland, high-value regrowth and essential habitat mapping.

The Department of Environment and Science have also updated their protected plant and koala protection mapping to align with the Queensland Herbarium scientific updates.

Overview

Based on the lot on plan details you have supplied, this report provides the following detailed information:

Property details - information about the specified Lot on Plan, lot size, local government area, bioregion(s), subregion(s) and catchment(s);

Vegetation management framework - an explanation of the application of the framework and contact details for the Department of Resources who administer the framework;

Vegetation management framework details for the specified Lot on Plan including:

- the vegetation management categories on the property;
- the vegetation management regional ecosystems on the property;
- vegetation management watercourses or drainage features on the property;
- vegetation management wetlands on the property;
- vegetation management essential habitat on the property;
- whether any area management plans are associated with the property;
- whether the property is coastal or non-coastal; and
- whether the property is mapped as Agricultural Land Class A or B;

Protected plant framework - an explanation of the application of the framework and contact details for the Department of Environment and Science who administer the framework, including:

- high risk areas on the protected plant flora survey trigger map for the property;

Koala protection framework - an explanation of the application of the framework and contact details for the Department of Environment and Science who administer the framework; and

Koala protection framework details for the specified Lot on Plan including:

- the koala district the property is located in;
- koala priority areas on the property;
- core and locally refined koala habitat areas on the property;
- whether the lot is located in an identified koala broad-hectare area; and
- koala habitat regional ecosystems on the property for core koala habitat areas.

This information will assist you to determine your options for managing vegetation under:

- the vegetation management framework, which may include:

- exempt clearing work;
- accepted development vegetation clearing code;
- an area management plan;
- a development approval;

- the protected plant framework, which may include:

- the need to undertake a flora survey;
- exempt clearing;
- a protected plant clearing permit;

- the koala protection framework, which may include:

- exempted development;
- a development approval;
- the need to undertake clearing sequentially and in the presence of a koala spotter.

Other laws

The clearing of native vegetation is regulated by both Queensland and Australian legislation, and some local governments also regulate native vegetation clearing. You may need to obtain an approval or permit under another Act, such as the Commonwealth Government's *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). Section 8 of this guide provides contact details of other agencies you should confirm requirements with, before commencing vegetation clearing.

Table of Contents

1. Property details

1.1 Tenure and title area

All of the lot, plan, tenure and title area information associated with property Lot: 8 Plan: SP277384, are listed in Table 1.

Table 1: Lot, plan, tenure and title area information for the property

Lot	Plan	Tenure	Property title area (sq metres)
8	SP277384	Freehold	176,994,944
A	CNS45	Easement	0.0
K	SP249130	Easement	0.0
PK	SP277384	Easement	57,810
G	CNS400	Easement	8,599
C	CNS151	Easement	0.0
H	SP206091	Easement	70,290
A	CNS44	Easement	14,860
F	CNS400	Easement	0.0
A	SP156917	Easement	0.0
B	GV60	Easement	0.0
A	GV60	Easement	68,898
D	CP906162	Easement	7,260
C	AP17446	Lands Lease	260
A	CNS399	Easement	4,500
J	SP206092	Easement	90,900
B	CNS151	Easement	60,980
N	SP316951	Easement	653,900
M	SP312986	Easement	77,490
D	CNS365	Easement	105,400
E	CNS406	Easement	1,161
EMT	GV62	Easement	72,060
AA	SP277384	Easement	58,060
E	SP208640	Easement	1,110
A	CNS151	Easement	83,210

The tenure of the land may affect whether clearing is considered exempt clearing work or may be carried out under an accepted development vegetation clearing code.

Does this property have a freehold tenure and is in the Wet Tropics of Queensland World Heritage Area?

No, this property is not located in the Wet Tropics of Queensland World Heritage Area.

1.2 Property location

Table 2 provides a summary of the locations for property Lot: 8 Plan: SP277384, in relation to natural and administrative boundaries.

Table 2: Property location details

Local Government(s)
Isaac Regional

Bioregion(s)	Subregion(s)
Brigalow Belt	Northern Bowen Basin
Brigalow Belt	Isaac - Comet Downs

Catchment(s)
Fitzroy

2. Vegetation management framework (administered by the Department of Resources)

The *Vegetation Management Act 1999* (VMA), the Vegetation Management Regulation 2012, the *Planning Act 2016* and the Planning Regulation 2017, in conjunction with associated policies and codes, form the Vegetation Management Framework.

The VMA does not apply to all land tenures or vegetation types. State forests, national parks, forest reserves and some tenures under the *Forestry Act 1959* and *Nature Conservation Act 1992* are not regulated by the VMA. Managing or clearing vegetation on these tenures may require approvals under these laws.

The following native vegetation is not regulated under the VMA but may require permit(s) under other laws:

- grass or non-woody herbage;
- a plant within a grassland regional ecosystem prescribed under Schedule 5 of the Vegetation Management Regulation 2012; and
- a mangrove.

2.1 Exempt clearing work

Exempt clearing work is an activity for which you do not need to notify the Department of Resources or obtain an approval under the vegetation management framework. Exempt clearing work was previously known as exemptions.

In areas that are mapped as Category X (white in colour) on the regulated vegetation management map (see section 4.1), and where the land tenure is freehold, indigenous land and leasehold land for agriculture and grazing purposes, the clearing of vegetation is considered exempt clearing work and does not require notification or development approval under the vegetation management framework. For all other land tenures, contact the Department of Resources before commencing clearing to ensure that the proposed activity is exempt clearing work.

A range of routine property management activities are considered exempt clearing work. A list of exempt clearing work is available at
https://www.qld.gov.au/environment/land/management/vegetation/clearing-approvals/exemptions.

Exempt clearing work may be affected if the proposed clearing area is subject to development approval conditions, a covenant, an environmental offset, an exchange area, a restoration notice, or an area mapped as Category A. Exempt clearing work may require approval under other Commonwealth, State or Local Government laws, or local government planning schemes. Contact the Department of Resources prior to clearing in any of these areas.

2.2 Accepted development vegetation clearing codes

Some clearing activities can be undertaken under an accepted development vegetation clearing code. The codes can be downloaded at
https://www.qld.gov.au/environment/land/management/vegetation/clearing-approvals/codes

If you intend to clear vegetation under an accepted development vegetation clearing code, you must notify the Department of Resources before commencing. The information in this report will assist you to complete the online notification form.

You can complete the online form at
https://apps.dnrm.qld.gov.au/vegetation/

2.3 Area management plans

Area Management Plans (AMP) provide an alternative approval system for vegetation clearing under the vegetation management framework. They list the purposes and clearing conditions that have been approved for the areas covered by the plan. It is not necessary to use an AMP, even when an AMP applies to your property.

On 8 March 2020, AMPs ended for fodder harvesting, managing thickened vegetation and managing encroachment. New notifications cannot be made for these AMPs. You will need to consider options for fodder harvesting, managing thickened vegetation or encroachment under a relevant accepted development vegetation clearing code or apply for a development approval.

New notifications can be made for all other AMPs. These will continue to apply until their nominated end date.

If an Area Management Plan applies to your property for which you can make a new notification, it will be listed in Section 3.6 of this report. Before clearing under one of these AMPs, you must first notify the Department of Resources and then follow the conditions and requirements listed in the AMP.
https://www.qld.gov.au/environment/land/management/vegetation/clearing-approvals/area-management-plans

2.4 Development approvals

If under the vegetation management framework your proposed clearing is not exempt clearing work, or is not permitted under an accepted development vegetation clearing code, or an AMP, you may be able to apply for a development approval. Information on how to apply for a development approval is available at
https://www.qld.gov.au/environment/land/management/vegetation/clearing-approvals/development

2.5. Contact information for the Department of Resources

For further information on the vegetation management framework:
Phone 135VEG (135 834)
Email vegetation@resources.qld.gov.au
Visit https://www.resources.qld.gov.au/?contact=vegetation to submit an online enquiry.

3. Vegetation management framework for Lot: 8 Plan: SP277384

3.1 Vegetation categories

The vegetation categories on your property are shown on the regulated vegetation management map in section 4.1 of this report. A summary of vegetation categories on the subject lot are listed in Table 3. Descriptions for these categories are shown in Table 4.

Table 3: Vegetation categories for subject property. Total area: 17748.31ha

Vegetation category	Area (ha)
Category B	9249.6
Category C	0.0
Category R	4.4
Category X	8494.3

Table 4: Description of vegetation categories

Category	Colour on Map	Description	Requirements / options under the vegetation management framework
A	red	Compliance areas, environmental offset areas and voluntary declaration areas	Special conditions apply to Category A areas. Before clearing, contact the Department of Resources to confirm any requirements in a Category A area.
B	dark blue	Remnant vegetation areas	Exempt clearing work, or notification and compliance with accepted development vegetation clearing codes, area management plans or development approval.
C	light blue	High-value regrowth areas	Exempt clearing work, or notification and compliance with managing Category C regrowth vegetation accepted development vegetation clearing code.
R	yellow	Regrowth within 50m of a watercourse or drainage feature in the Great Barrier Reef catchment areas	Exempt clearing work, or notification and compliance with managing Category R regrowth accepted development vegetation clearing code or area management plans.
X	white	Clearing on freehold land, indigenous land and leasehold land for agriculture and grazing purposes is considered exempt clearing work under the vegetation management framework. Contact the Department of Resources to clarify whether a development approval is required for other State land tenures.	No permit or notification required on freehold land, indigenous land and leasehold land for agriculture and grazing. A development approval may be required for some State land tenures.

Property Map of Assessable Vegetation (PMAV)

The following Property Map of Assessable Vegetation (PMAVs) may be present on this property:

Reference number

2013/003164

2015/003474

Reference number

2009/002508

3.2 Regional ecosystems

The endangered, of concern and least concern regional ecosystems on your property are shown on the vegetation management supporting map in section 4.2 and are listed in Table 5.

A description of regional ecosystems can be accessed online at https://www.qld.gov.au/environment/plants-animals/plants/ecosystems/descriptions/

Table 5: Regional ecosystems present on subject property

Regional Ecosystem	VMA Status	Category	Area (Ha)	Short Description	Structure Category
11.3.1	Endangered	B	16.88	Acacia harpophylla and/or Casuarina cristata open forest on alluvial plains	Mid-dense
11.3.1	Endangered	R	0.38	Acacia harpophylla and/or Casuarina cristata open forest on alluvial plains	Mid-dense
11.3.2	Of concern	B	515.44	Eucalyptus populnea woodland on alluvial plains	Sparse
11.3.2	Of concern	C	less than 0.01	Eucalyptus populnea woodland on alluvial plains	Sparse
11.3.2	Of concern	R	2.01	Eucalyptus populnea woodland on alluvial plains	Sparse
11.3.21	Of concern	B	39.33	Dichanthium sericeum and/or Astrebla spp. grassland on alluvial plains. Cracking clay soils	Grassland Sch 5
11.3.25	Least concern	B	450.91	Eucalyptus tereticornis or E. camaldulensis woodland fringing drainage lines	Sparse
11.3.25	Least concern	R	0.13	Eucalyptus tereticornis or E. camaldulensis woodland fringing drainage lines	Sparse
11.3.27	Least concern	B	19.84	Freshwater wetlands	Other
11.3.3	Of concern	B	35.79	Eucalyptus coolabah woodland on alluvial plains	Sparse
11.3.3	Of concern	R	0.31	Eucalyptus coolabah woodland on alluvial plains	Sparse
11.3.4	Of concern	B	18.35	Eucalyptus tereticornis and/or Eucalyptus spp. woodland on alluvial plains	Sparse
11.3.7	Least concern	B	170.11	Corymbia spp. open woodland on alluvial plains	Very sparse
11.3.7	Least concern	C	less than 0.01	Corymbia spp. open woodland on alluvial plains	Very sparse
11.3.7	Least concern	R	less than 0.01	Corymbia spp. open woodland on alluvial plains	Very sparse
11.4.13	Least concern	B	106.28	Eucalyptus orgadophila open woodland on Cainozoic clay plains	Very sparse
11.4.4	Least concern	B	20.07	Dichanthium spp., Astrebla spp. grassland on Cainozoic clay plains	Grassland Sch 5
11.4.4	Least concern	R	less than 0.01	Dichanthium spp., Astrebla spp. grassland on Cainozoic clay plains	Grassland Sch 5
11.4.8	Endangered	B	36.17	Eucalyptus cambageana woodland to open forest with Acacia harpophylla or A. argyrodendron on Cainozoic clay plains	Sparse
11.4.8	Endangered	R	0.09	Eucalyptus cambageana woodland to open forest with Acacia harpophylla or A. argyrodendron on Cainozoic clay plains	Sparse

Regional Ecosystem	VMA Status	Category	Area (Ha)	Short Description	Structure Category
11.4.9	Endangered	B	303.62	Acacia harpophylla shrubby woodland with Terminalia oblongata on Cainozoic clay plains	Sparse
11.4.9	Endangered	R	0.39	Acacia harpophylla shrubby woodland with Terminalia oblongata on Cainozoic clay plains	Sparse
11.5.12	Least concern	B	26.56	Corymbia clarksoniana woodland and other Corymbia spp. and Eucalyptus spp. on Cainozoic sand plains and/or remnant surfaces	Sparse
11.5.3	Least concern	B	3,687.11	Eucalyptus populnea +/- E. melanophloia +/- Corymbia clarksoniana woodland on Cainozoic sand plains and/or remnant surfaces	Sparse
11.5.3	Least concern	C	less than 0.01	Eucalyptus populnea +/- E. melanophloia +/- Corymbia clarksoniana woodland on Cainozoic sand plains and/or remnant surfaces	Sparse
11.5.3	Least concern	R	0.12	Eucalyptus populnea +/- E. melanophloia +/- Corymbia clarksoniana woodland on Cainozoic sand plains and/or remnant surfaces	Sparse
11.5.9	Least concern	B	56.03	Eucalyptus crebra and other Eucalyptus spp. and Corymbia spp. woodland on Cainozoic sand plains and/or remnant surfaces	Sparse
11.5.9	Least concern	C	less than 0.01	Eucalyptus crebra and other Eucalyptus spp. and Corymbia spp. woodland on Cainozoic sand plains and/or remnant surfaces	Sparse
11.8.11	Of concern	B	878.54	Dichanthium sericeum grassland on Cainozoic igneous rocks	Grassland Sch 4
11.8.11	Of concern	R	0.72	Dichanthium sericeum grassland on Cainozoic igneous rocks	Grassland Sch 4
11.8.13	Endangered	B	17.81	Semi-evergreen vine thicket and microphyll vine forest on Cainozoic igneous rocks	Dense
11.8.5	Least concern	B	1,348.14	Eucalyptus orgadophila open woodland on Cainozoic igneous rocks	Very sparse
11.8.5	Least concern	R	0.23	Eucalyptus orgadophila open woodland on Cainozoic igneous rocks	Very sparse
11.9.2	Least concern	B	1,314.83	Eucalyptus melanophloia +/- E. orgadophila woodland to open woodland on fine-grained sedimentary rocks	Sparse
11.9.2	Least concern	R	0.03	Eucalyptus melanophloia +/- E. orgadophila woodland to open woodland on fine-grained sedimentary rocks	Sparse
11.9.3	Least concern	B	108.07	Dichanthium spp., Astrebla spp. grassland on fine-grained sedimentary rocks	Grassland Sch 4
11.9.5	Endangered	B	79.71	Acacia harpophylla and/or Casuarina cristata open forest to woodland on fine-grained sedimentary rocks	Mid-dense
non-rem	None	X	8,494.31	None	None

Please note:

1. All area and area derived figures included in this table have been calculated via reprojecting relevant spatial features to Albers equal-area conic projection (central meridian = 146, datum Geocentric Datum of Australia 1994). As a result, area figures may differ slightly if calculated for the same features using a different co-ordinate system.

2. If Table 5 contains a Category 'plant', please be aware that this refers to 'plantations' such as forestry, and these areas are considered non-remnant under the VMA.

The VMA status of the regional ecosystem (whether it is endangered, of concern or least concern) also determines if any of the following are applicable:

- exempt clearing work;
- accepted development vegetation clearing codes;
- performance outcomes in State Code 16 of the State Development Assessment Provisions (SDAP).

3.3 Watercourses

Vegetation management watercourses and drainage features for this property are shown on the vegetation management supporting map in section 4.2.

3.4 Wetlands

Vegetation management wetlands are present on this property and are shown on the vegetation management supporting map in section 4.2 of this report.

3.5 Essential habitat

Under the VMA, essential habitat for protected wildlife is native wildlife prescribed under the *Nature Conservation Act 1992* (NCA) as critically endangered, endangered, vulnerable or near-threatened wildlife.

Essential habitat for protected wildlife includes suitable habitat on the lot, or where a species has been known to occur up to 1.1 kilometres from a lot on which there is assessable vegetation. These important habitat areas are protected under the VMA.

Any essential habitat on this property will be shown as blue hatching on the vegetation supporting map in section 4.2.

If essential habitat is identified on the lot, information about the protected wildlife species is provided in Table 6 below. The numeric labels on the vegetation management supporting map can be cross referenced with Table 6 to outline the essential habitat factors for that particular species. There may be essential habitat for more than one species on each lot, and areas of Category A, Category B and Category C can be mapped as Essential Habitat.

Essential habitat is compiled from a combination of species habitat models and buffered species records. Regional ecosystem is a mandatory essential habitat factor, unless otherwise stated. Essential habitat, for protected wildlife, means an area of vegetation shown on the Regulated Vegetation Management Map -

1) that has at least 3 essential habitat factors for the protected wildlife that must include any essential habitat factors that are stated as mandatory for the protected wildlife in the essential habitat database. Essential habitat factors are comprised of - regional ecosystem (mandatory for most species), vegetation community, altitude, soils, position in landscape; or

2) in which the protected wildlife, at any stage of its life cycle, is located.

If there is no essential habitat mapping shown on the vegetation management supporting map for this lot, and there is no table in the sections below, it confirms that there is no essential habitat on the lot.

Category A and/or Category B and/or Category C

Table 6: Essential habitat in Category A and/or Category B and/or Category C

Label	Scientific Name	Common Name	NCA Status	Vegetation Community	Altitude	Soils	Position in Landscape
483	Denisonia maculata	ornamental snake	V	Riparian woodland/open forest and shrub/woodland including Brigalow Acacia harpophylla; into drier habitats in summer.	100-450m.	Cracking clay with gilgai/soil crack microrelief and sandy loam substrates.	Near freshwater waterholes/creeks and low lying poorly drained areas that are frequently inundated by freshwater.

Label	Scientific Name	Common Name	NCA Status	Vegetation Community	Altitude	Soils	Position in Landscape
860	Phascolarctos cinereus	koala	E	Open forests and woodlands containing Eucalyptus, Corymbia, Lophostemon or Melaleuca trees having a trunk of a diameter of more than 10cm at 1.3m above the ground. Tree species used for food and habitat varies across the state and can include: Corymbia citriodora, Corymbia henryi, Corymbia intermedia, Eucalyptus acmenoides, Eucalyptus bancroftii, Eucalyptus biturbinata, Eucalyptus blakelyi, Eucalyptus brownii, Eucalyptus camaldulensis, Eucalyptus carnea, Eucalyptus chloroclada, Eucalyptus coolabah, Eucalyptus crebra, Eucalyptus dealbata, Eucalyptus drepanophylla, Eucalyptus dunnii, Eucalyptus eugenioides, Eucalyptus exserta, Eucalyptus fibrosa, Eucalyptus grandis, Eucalyptus helidonica, Eucalyptus latisinensis, Eucalyptus longirostrata, Eucalyptus major, Eucalyptus melanophloia, Eucalyptus melliodora, Eucalyptus microcarpa, Eucalyptus microcorys, Eucalyptus microtheca, Eucalyptus moluccana, Eucalyptus montivaga, Eucalyptus orgadophila, Eucalyptus papuana, Eucalyptus pilularis, Eucalyptus platyphylla, Eucalyptus populnea, Eucalyptus portuensis, Eucalyptus propinqua, Eucalyptus racemosa, Eucalyptus resinifera, Eucalyptus robusta, Eucalyptus saligna, Eucalyptus seeana, Eucalyptus siderophloia, Eucalyptus sideroxylon, Eucalyptus tereticornis, Eucalyptus thozetiana, Eucalyptus tindaliae, Eucalyptus umbra, Lophostemon confertus, Melaleuca leucadendra, Melaleuca quinquenervia.	Sea level to 1000m.	None	Riparian areas, plains and hill/escarpment slopes.
1785	Geophaps scripta scripta	squatter pigeon (southern subspecies)	V	Dry eucalypt woodland (including poplar box, spotted gum, yellow box, acacia and callitris), with sparse short grass, often on sandy areas near to permanent water; grassy eucalypt woodlands. Nest on ground near or under grass tussock, log or low bush.	None	None	Gravelly ridges, traprock and river flats.
1883	Rostratula australis	Australian painted-snipe	E	Shallow ephemeral and permanent swamps, water meadows and damp lake margins with rushes, long grass and herbage (e.g. lignum, chenopods) in good condition, as well as areas of muddy ground; also uses saltmarsh, samphire flats and waterlogged grasslands with trees present (e.g. Eucalyptus camaldulensis, E. brownii). Nest in shallow grass-lined hollow in damp ground under low shrub or grass tussock near shallow water.	None	None	Associated with wetlands.
2455	Petauroides armillatus	central greater glider	E	Tall mature open wet and dry eucalypt forest (Eucalyptus &/or Corymbia spp.) to low open eucalypt woodland; presence of hollow-bearing trees.	Sea level to 1300m.	Usually on soils of relatively high fertility.	None

Label	Regional Ecosystem (mandatory unless otherwise specified)
483	10.3.2, 10.3.3, 10.3.4, 10.3.7, 10.3.13, 10.3.14, 10.3.15, 10.3.16, 10.3.27, 10.3.30, 10.3.31, 10.4.1, 10.4.2, 10.4.3, 10.4.4, 10.4.5, 10.4.6, 10.4.7, 10.4.8, 10.5.5, 10.9.1. 10.9.6. 10.9.7, 11.3.1, 11.3.2, 11.3.3, 11.3.4, 11.3.6, 11.3.9, 11.3.10, 11.3.12, 11.3.15, 11.3.21, 11.3.23, 11.3.24, 11.3.25, 11.3.27, 11.3.28, 11.3.31, 11.3.34, 11.3.37, 11.3.38, 11.3.40, 11.4.2, 11.4.3, 11.4.4, 11.4.6, 11.4.7, 11.4.8, 11.4.9, 11.4.11, 11.5.2, 11.5.3, 11.5.16, 11.8.11, 11.9.1, 11.9.2, 11.9.3, 11.9.5, 11.9.7, 11.9.11, 11.9.12, 11.9.14, 11.11.15, 11.12.6

Label	Regional Ecosystem (mandatory unless otherwise specified)
860	4.3.1, 4.3.2, 4.3.3, 4.3.4, 4.3.5, 4.3.6, 4.3.8, 4.3.10, 4.3.11, 4.5.3, 4.5.5, 4.5.6, 4.5.8, 4.5.9, 4.7.1, 4.7.7, 4.7.8, 4.9.6, 4.9.10, 4.9.12, 4.9.17, 6.3.1, 6.3.2, 6.3.3, 6.3.4, 6.3.5, 6.3.7, 6.3.8, 6.3.9, 6.3.11, 6.3.12, 6.3.17, 6.3.18, 6.3.22, 6.3.24, 6.3.25, 6.4.1, 6.4.2, 6.4.3, 6.4.4, 6.5.1, 6.5.2, 6.5.3, 6.5.5, 6.5.6, 6.5.7, 6.5.8, 6.5.9, 6.5.10, 6.5.11, 6.5.13, 6.5.14, 6.5.15, 6.5.16, 6.5.17, 6.5.18, 6.5.19, 6.6.2, 6.7.1, 6.7.2, 6.7.5, 6.7.6, 6.7.7, 6.7.9, 6.7.11, 6.7.12, 6.7.13, 6.7.14, 6.7.17, 6.9.3, 7.2.3, 7.2.4, 7.2.7, 7.2.11, 7.3.7, 7.3.8, 7.3.9, 7.3.12, 7.3.13, 7.3.14, 7.3.16, 7.3.19, 7.3.20, 7.3.21, 7.3.25, 7.3.26, 7.3.39, 7.3.40, 7.3.42, 7.3.43, 7.3.44, 7.3.45, 7.3.47, 7.3.48, 7.3.50, 7.5.1, 7.5.2, 7.5.3, 7.5.4, 7.8.7, 7.8.8, 7.8.10, 7.8.15, 7.8.16, 7.8.17, 7.8.18, 7.8.19, 7.11.5, 7.11.6, 7.11.13, 7.11.14, 7.11.16, 7.11.18, 7.11.19, 7.11.20, 7.11.21, 7.11.31, 7.11.32, 7.11.33, 7.11.34, 7.11.35, 7.11.37, 7.11.41, 7.11.42, 7.11.43, 7.11.44, 7.11.45, 7.11.46, 7.11.47, 7.11.48, 7.11.49, 7.11.50, 7.11.51, 7.12.4, 7.12.5, 7.12.17, 7.12.21, 7.12.22, 7.12.23, 7.12.24, 7.12.25, 7.12.26, 7.12.27, 7.12.28, 7.12.29, 7.12.30, 7.12.33, 7.12.34, 7.12.35, 7.12.51, 7.12.52, 7.12.53, 7.12.54, 7.12.55, 7.12.56, 7.12.57, 7.12.58, 7.12.59, 7.12.60, 7.12.61, 7.12.62, 7.12.63, 7.12.65, 7.12.66, 7.12.69, 8.1.5, 8.2.3, 8.2.6, 8.2.7, 8.2.8, 8.2.11, 8.2.12, 8.2.13, 8.2.14, 8.3.1, 8.3.2, 8.3.3, 8.3.5, 8.3.6, 8.3.8, 8.3.10, 8.3.11, 8.3.13, 8.5.1, 8.5.2, 8.5.3, 8.5.5, 8.5.6, 8.5.7, 8.9.1, 8.10.1, 8.11.1, 8.11.3, 8.11.4, 8.11.5, 8.11.6, 8.11.8, 8.11.10, 8.11.12, 8.12.4, 8.12.5, 8.12.6, 8.12.7, 8.12.8, 8.12.9, 8.12.12, 8.12.14, 8.12.20, 8.12.22, 8.12.23, 8.12.25, 8.12.26, 8.12.27, 8.12.29, 8.12.31, 8.12.32, 9.3.1, 9.3.2, 9.3.3, 9.3.4, 9.3.5, 9.3.6, 9.3.7, 9.3.8, 9.3.10, 9.3.11, 9.3.13, 9.3.14, 9.3.15, 9.3.16, 9.3.17, 9.3.19, 9.3.20, 9.3.21, 9.3.22, 9.3.27, 9.4.1, 9.4.2, 9.5.1, 9.5.3, 9.5.4, 9.5.5, 9.5.6, 9.5.7, 9.5.8, 9.5.9, 9.5.10, 9.5.11, 9.5.12, 9.5.15, 9.5.16, 9.5.17, 9.7.1, 9.7.2, 9.7.3, 9.7.4, 9.7.5, 9.7.6, 9.8.1, 9.8.2, 9.8.3, 9.8.4, 9.8.5, 9.8.9, 9.8.10, 9.8.11, 9.8.13, 9.10.1, 9.10.3, 9.10.4, 9.10.5, 9.10.7, 9.10.8, 9.11.1, 9.11.2, 9.11.3, 9.11.4, 9.11.5, 9.11.7, 9.11.10, 9.11.12, 9.11.13, 9.11.14, 9.11.15, 9.11.16, 9.11.17, 9.11.18, 9.11.19, 9.11.21, 9.11.22, 9.11.23, 9.11.24, 9.11.25, 9.11.26, 9.11.28, 9.11.29, 9.11.30, 9.11.31, 9.11.32, 9.12.1, 9.12.2, 9.12.3, 9.12.4, 9.12.5, 9.12.6, 9.12.7, 9.12.10, 9.12.11, 9.12.12, 9.12.13, 9.12.14, 9.12.15, 9.12.16, 9.12.17, 9.12.18, 9.12.19, 9.12.20, 9.12.21, 9.12.22, 9.12.23, 9.12.24, 9.12.25, 9.12.26, 9.12.27, 9.12.28, 9.12.29, 9.12.30, 9.12.31, 9.12.32, 9.12.33, 9.12.35, 9.12.36, 9.12.37, 9.12.38, 9.12.39, 9.12.44, 10.3.2, 10.3.3, 10.3.5, 10.3.6, 10.3.9, 10.3.10, 10.3.11, 10.3.12, 10.3.13, 10.3.14, 10.3.15, 10.3.17, 10.3.20, 10.3.27, 10.3.28, 10.4.3, 10.4.9, 10.5.1, 10.5.2, 10.5.4, 10.5.5, 10.5.7, 10.5.8, 10.5.9, 10.5.10, 10.5.11, 10.5.12, 10.7.1, 10.7.2, 10.7.3, 10.7.4, 10.7.5, 10.7.9, 10.7.10, 10.7.11, 10.7.12, 10.9.2, 10.9.3, 10.9.5, 10.10.1, 10.10.3, 10.10.4, 10.10.5, 10.10.7, 11.2.1, 11.2.5, 11.3.1, 11.3.2, 11.3.3, 11.3.4, 11.3.5, 11.3.6, 11.3.7, 11.3.9, 11.3.10, 11.3.12, 11.3.13, 11.3.14, 11.3.15, 11.3.16, 11.3.17, 11.3.18, 11.3.19, 11.3.21, 11.3.23, 11.3.25, 11.3.26, 11.3.27, 11.3.28, 11.3.29, 11.3.30, 11.3.32, 11.3.33, 11.3.35, 11.3.36, 11.3.37, 11.3.38, 11.3.39, 11.4.2, 11.4.3, 11.4.7, 11.4.8, 11.4.9, 11.4.10, 11.4.12, 11.4.13, 11.5.1, 11.5.2, 11.5.3, 11.5.4, 11.5.5, 11.5.7, 11.5.8, 11.5.9, 11.5.12, 11.5.13, 11.5.14, 11.5.17, 11.5.18, 11.5.20, 11.5.21, 11.7.1, 11.7.2, 11.7.3, 11.7.4, 11.7.6, 11.7.7, 11.8.1, 11.8.2, 11.8.4, 11.8.5, 11.8.8, 11.8.11, 11.8.12, 11.8.14, 11.8.15, 11.9.1, 11.9.2, 11.9.3, 11.9.5, 11.9.6, 11.9.7, 11.9.9, 11.9.10, 11.9.11, 11.9.13, 11.9.14, 11.10.1, 11.10.2, 11.10.3, 11.10.4, 11.10.5, 11.10.6, 11.10.7, 11.10.9, 11.10.11, 11.10.12, 11.10.13, 11.11.1, 11.11.2, 11.11.3, 11.11.4, 11.11.6, 11.11.7, 11.11.8, 11.11.9, 11.11.10, 11.11.11, 11.11.12, 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1785	8.2.1, 8.2.7, 8.2.8, 8.2.12, 8.3.2, 8.3.3, 8.3.5, 8.3.6, 8.3.13, 8.5.2, 8.5.3, 8.5.5, 8.5.6, 8.9.1, 8.11.1, 8.11.3, 8.11.4, 8.11.5, 8.11.6, 8.11.8, 8.12.6, 8.12.7, 8.12.9, 8.12.12, 8.12.14, 8.12.20, 8.12.22, 8.12.23, 8.12.25, 9.3.1, 9.3.2, 9.3.3, 9.3.4, 9.3.5, 9.3.6, 9.3.7, 9.3.8, 9.3.9, 9.3.11, 9.3.13, 9.3.14, 9.3.15, 9.3.16, 9.3.17, 9.3.18, 9.3.19, 9.3.20, 9.3.21, 9.3.22, 9.3.23, 9.4.1, 9.4.2, 9.4.3, 9.5.3, 9.5.4, 9.5.5, 9.5.6, 9.5.7, 9.5.8, 9.5.9, 9.5.10, 9.5.11, 9.5.12, 9.5.16, 9.7.1, 9.7.2, 9.7.3, 9.7.5, 9.7.6, 9.8.1, 9.8.2, 9.8.4, 9.8.5, 9.8.6, 9.8.9, 9.8.10, 9.8.11, 9.10.1, 9.10.3, 9.10.6, 9.10.7, 9.10.8, 9.11.1, 9.11.2, 9.11.3, 9.11.4, 9.11.5, 9.11.7, 9.11.10, 9.11.11, 9.11.12, 9.11.13, 9.11.15, 9.11.16, 9.11.17, 9.11.18, 9.11.19, 9.11.23, 9.11.26, 9.11.28, 9.11.29, 9.11.31, 9.11.32, 9.12.1, 9.12.3, 9.12.4, 9.12.5, 9.12.6, 9.12.7, 9.12.10, 9.12.11, 9.12.12, 9.12.13, 9.12.16, 9.12.17, 9.12.18, 9.12.19, 9.12.20, 9.12.21, 9.12.22, 9.12.23, 9.12.24, 9.12.26, 9.12.28, 9.12.30, 9.12.31, 9.12.33, 9.12.35, 9.12.37, 9.12.39, 10.3.1, 10.3.2, 10.3.3, 10.3.4, 10.3.5, 10.3.6, 10.3.9, 10.3.10, 10.3.11, 10.3.12, 10.3.13, 10.3.14, 10.3.15, 10.3.19, 10.3.20, 10.3.27, 10.3.28, 10.3.30, 10.3.31, 10.4.3, 10.5.1, 10.5.2, 10.5.4, 10.5.5, 10.5.7, 10.5.9, 10.5.10, 10.5.11, 10.5.12, 10.7.2, 10.7.3, 10.7.5, 10.7.11, 10.7.12, 10.9.1, 10.9.2, 10.9.3, 10.9.5, 10.10.1, 10.10.3, 10.10.4, 10.10.5, 10.10.7, 11.2.1, 11.2.5, 11.3.1, 11.3.2, 11.3.3, 11.3.4, 11.3.6, 11.3.7, 11.3.8, 11.3.9, 11.3.10, 11.3.12, 11.3.13, 11.3.14, 11.3.15, 11.3.16, 11.3.17, 11.3.18, 11.3.19, 11.3.23, 11.3.25, 11.3.27, 11.3.28, 11.3.29, 11.3.30, 11.3.35, 11.3.36, 11.3.37, 11.3.38, 11.3.39, 11.4.2, 11.4.3, 11.4.5, 11.4.8, 11.4.10, 11.4.12, 11.4.13, 11.5.1, 11.5.2, 11.5.3, 11.5.4, 11.5.5, 11.5.8, 11.5.9, 11.5.12, 11.5.13, 11.5.14, 11.5.17, 11.5.20, 11.5.21, 11.7.1, 11.7.2, 11.7.4, 11.7.6, 11.7.7, 11.8.1, 11.8.2, 11.8.4, 11.8.5, 11.8.8, 11.8.11, 11.8.12, 11.8.14, 11.8.15, 11.9.2, 11.9.3, 11.9.7, 11.9.9, 11.9.14, 11.10.1, 11.10.4, 11.10.6, 11.10.7, 11.10.11, 11.10.12, 11.10.13, 11.11.1, 11.11.3, 11.11.4, 11.11.6, 11.11.7, 11.11.8, 11.11.9, 11.11.10, 11.11.11, 11.11.15, 11.11.16, 11.11.19, 11.11.20, 11.12.1, 11.12.2, 11.12.3, 11.12.5, 11.12.6, 11.12.7, 11.12.8, 11.12.9, 11.12.10, 11.12.11, 11.12.12, 11.12.13, 11.12.14, 11.12.17, 11.12.20, 12.2.5, 12.2.6, 12.2.7, 12.2.10, 12.2.11, 12.3.3, 12.3.6, 12.3.10, 12.3.12, 12.3.14, 12.3.18, 12.3.19, 12.5.1, 12.5.2, 12.5.4, 12.5.5, 12.5.7, 12.5.8, 12.5.11, 12.5.12, 12.7.1, 12.7.2, 12.8.14, 12.8.16, 12.8.17, 12.8.19, 12.9-10.5, 12.9-10.7, 12.9-10.8, 12.9-10.12, 12.9-10.13, 12.9-10.25, 12.9-10.26, 12.9-10.28, 12.11.5, 12.11.7, 12.11.8, 12.11.14, 12.11.15, 12.11.20, 12.11.21, 12.11.22, 12.11.24, 12.11.25, 12.11.26, 12.11.27, 12.11.28, 12.12.7, 12.12.8, 12.12.9, 12.12.12, 12.12.14, 12.12.21, 12.12.22, 12.12.23, 12.12.24, 12.12.25, 12.12.27, 13.3.1, 13.3.4, 13.3.7, 13.11.1, 13.11.3, 13.11.4, 13.11.8, 13.12.2, 13.12.3, 13.12.5, 13.12.8, 13.12.9, 13.12.10
1883	All regional ecosystems within the stream/wetland buffer as determined by VMA code.
2455	2.10.2, 2.10.3, 2.5.24, 7.3.19, 7.3.26, 7.3.39, 7.3.40, 7.3.42, 7.3.43, 7.5.2, 7.5.4, 7.8.7, 7.8.8, 7.8.10, 7.8.15, 7.8.16, 7.8.17, 7.8.18, 7.8.19, 7.11.35, 7.12.21, 7.12.22, 7.12.24, 7.12.27, 7.12.29, 7.12.30, 7.12.34, 7.12.35, 7.12.51, 7.12.52, 7.12.53, 7.12.61, 7.12.63, 8.3.2, 8.3.5, 8.3.6, 8.3.8, 8.11.3, 8.11.8, 8.12.4, 8.12.5, 8.12.6, 8.12.7, 8.12.8, 8.12.9, 8.12.12, 8.12.20, 8.12.23, 8.12.31, 8.12.32, 9.3.1, 9.3.3, 9.3.8, 9.3.15, 9.3.16, 9.5.5, 9.7.3, 9.8.1, 9.8.4, 9.8.9, 9.11.2, 9.11.4, 9.11.10, 9.11.14, 9.11.16, 9.12.1, 9.12.2, 9.12.17, 9.12.18, 9.12.19, 9.12.20, 9.12.22, 9.12.23, 9.12.26, 10.3.13, 11.3.3, 11.3.4, 11.3.7, 11.3.9, 11.3.14, 11.3.23, 11.3.25, 11.3.26, 11.3.27, 11.3.29, 11.3.35, 11.3.36, 11.3.38, 11.3.39, 11.4.8, 11.4.13, 11.5.1, 11.5.2, 11.5.3, 11.5.8, 11.5.9, 11.5.12, 11.5.20, 11.5.21, 11.7.4, 11.7.6, 11.7.7, 11.8.1, 11.8.2, 11.8.4, 11.8.5, 11.8.8, 11.9.2, 11.9.9, 11.9.13, 11.10.1, 11.10.2, 11.10.4, 11.10.5, 11.10.7, 11.10.13, 11.11.1, 11.11.3, 11.11.4, 11.11.7, 11.11.10, 11.11.15, 11.12.1, 11.12.2, 11.12.3, 11.12.6, 11.12.13, 12.3.2, 12.3.3, 12.3.6, 12.3.7, 12.3.9, 12.3.11, 12.3.14 ,12.3.15 ,12.5.1 ,12.5.2, 12.5.3, 12.5.4, 12.5.6, 12.5.7, 12.5.11, 12.5.12, 12.8.1, 12.8.8, 12.8.10, 12.8.11, 12.8.14, 12.8.16, 12.8.20, 12.8.24, 12.8.25, 12.9-10.1, 12.9-10.2, 12.9-10.3, 12.9-10.4, 12.9-10.5, 12.9-10.7, 12.9-10.11, 12.9-10.12, 12.9-10.14, 12.9-10.17, 12.9-10.18, 12.9-10.19, 12.9-10.20, 12.9-10.21, 12.9-10.23, 12.9-10.24, 12.9-10.26, 12.9-10.27, 12.11.2, 12.11.3, 12.11.5, 12.11.6, 12.11.7, 12.11.9, 12.11.14, 12.11.15, 12.11.16, 12.11.17, 12.11.18, 12.11.19, 12.11.22, 12.11.23, 12.11.24, 12.11.25, 12.11.26, 12.11.27, 12.12.2, 12.12.3, 12.12.4, 12.12.5, 12.12.6, 12.12.7, 12.12.11, 12.12.12, 12.12.14, 12.12.15, 12.12.20, 12.12.22, 12.12.23, 12.12.24, 12.12.25, 12.12.27, 12.12.28, 13.11.3, 13.11.5, 13.11.6, 13.11.8, 13.12.1, 13.12.2

3.6 Area Management Plan(s)

Nil

3.7 Coastal or non-coastal

For the purposes of the accepted development vegetation clearing codes and State Code 16 of the State Development Assessment Provisions (SDAP), this property is regarded as*

Non Coastal

*See also Map 4.3

3.8 Agricultural Land Class A or B

The following can be used to identify Agricultural Land Class A or B areas under the "Managing regulated regrowth vegetation" accepted development vegetation clearing code:

Does this lot contain land that is mapped as Agricultural Land Class A or B in the State Planning Interactive Mapping System?

Class A (with urban areas masked as per SPP): 5000.1ha

No Class B

Note - This confirms Agricultural Land Classes as per the State Planning Interactive Mapping System only. This response does not include Agricultural Land Classes identified under local government planning schemes. For further information, check the Planning Scheme for your local government area.

See Map 4.4 to identify the location and extent of Class A and/or Class B Agricultural land on Lot: 8 Plan: SP277384.

4. Vegetation management framework maps

Vegetation management maps included in this report may also be requested individually at:
https://www.resources.qld.gov.au/qld/environment/land/vegetation/vegetation-map-request-form

Regulated vegetation management map

The regulated vegetation management map shows vegetation categories needed to determine clearing requirements. These maps are updated monthly to show new property maps of assessable vegetation (PMAV).

Vegetation management supporting map

The vegetation management supporting map provides information on regional ecosystems, wetlands, watercourses and essential habitat.

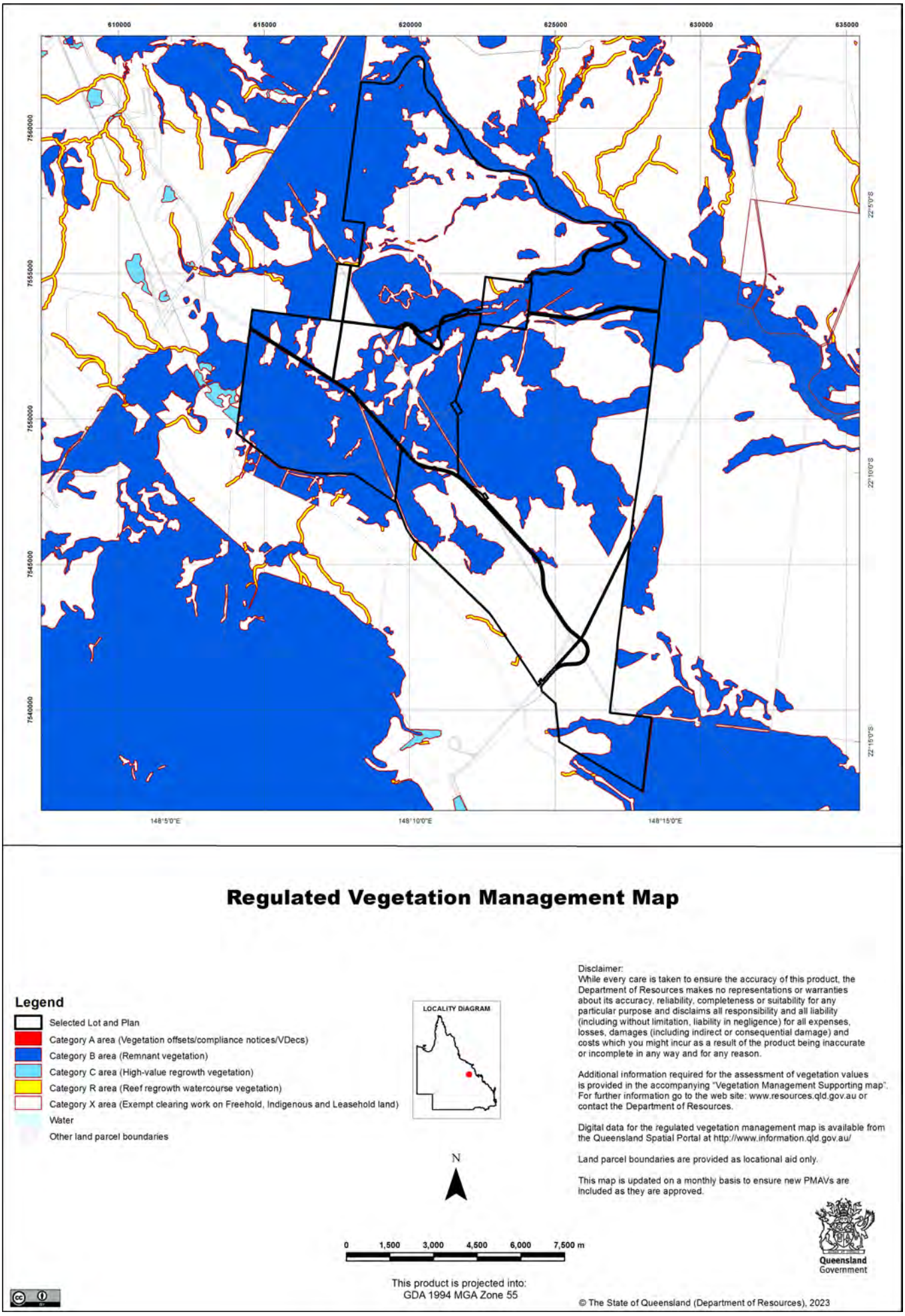
Coastal/non-coastal map

The coastal/non-coastal map confirms whether the lot, or which parts of the lot, are considered coastal or non-coastal for the purposes of the accepted development vegetation clearing codes and State Code 16 of the State Development Assessment Provisions (SDAP).

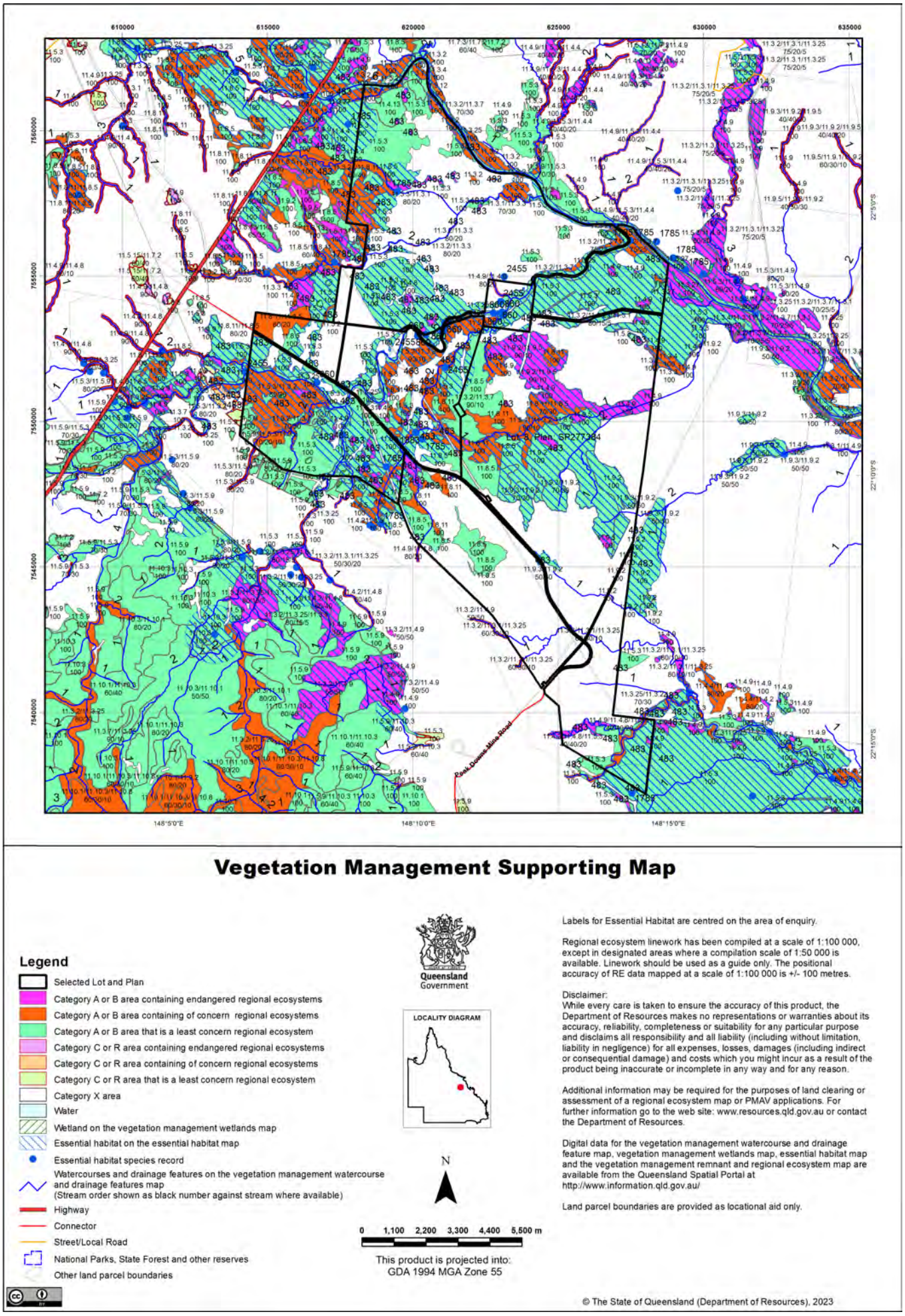
Agricultural Land Class A or B as per State Planning Policy: State Interest for Agriculture

The Agricultural Land Class map confirms the location and extent of land mapped as Agricultural Land Classes A or B as identified on the State Planning Interactive Mapping System. Please note that this map does not include areas identified as Agricultural Land Class A or B in local government planning schemes. This map can be used to identify Agricultural Land Class A or B areas under the "Managing regulated regrowth vegetation" accepted development vegetation clearing code.

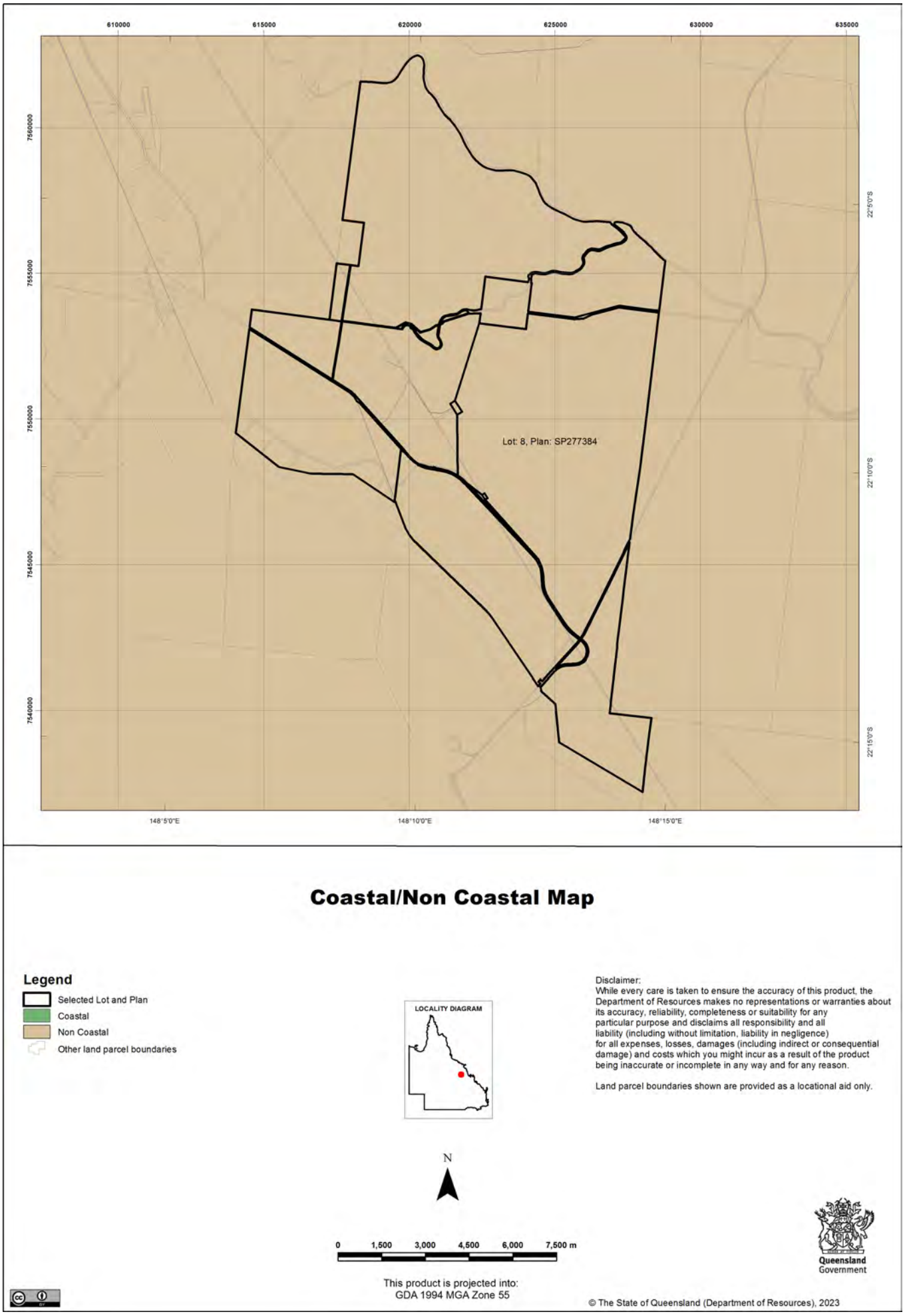
4.1 Regulated vegetation management map



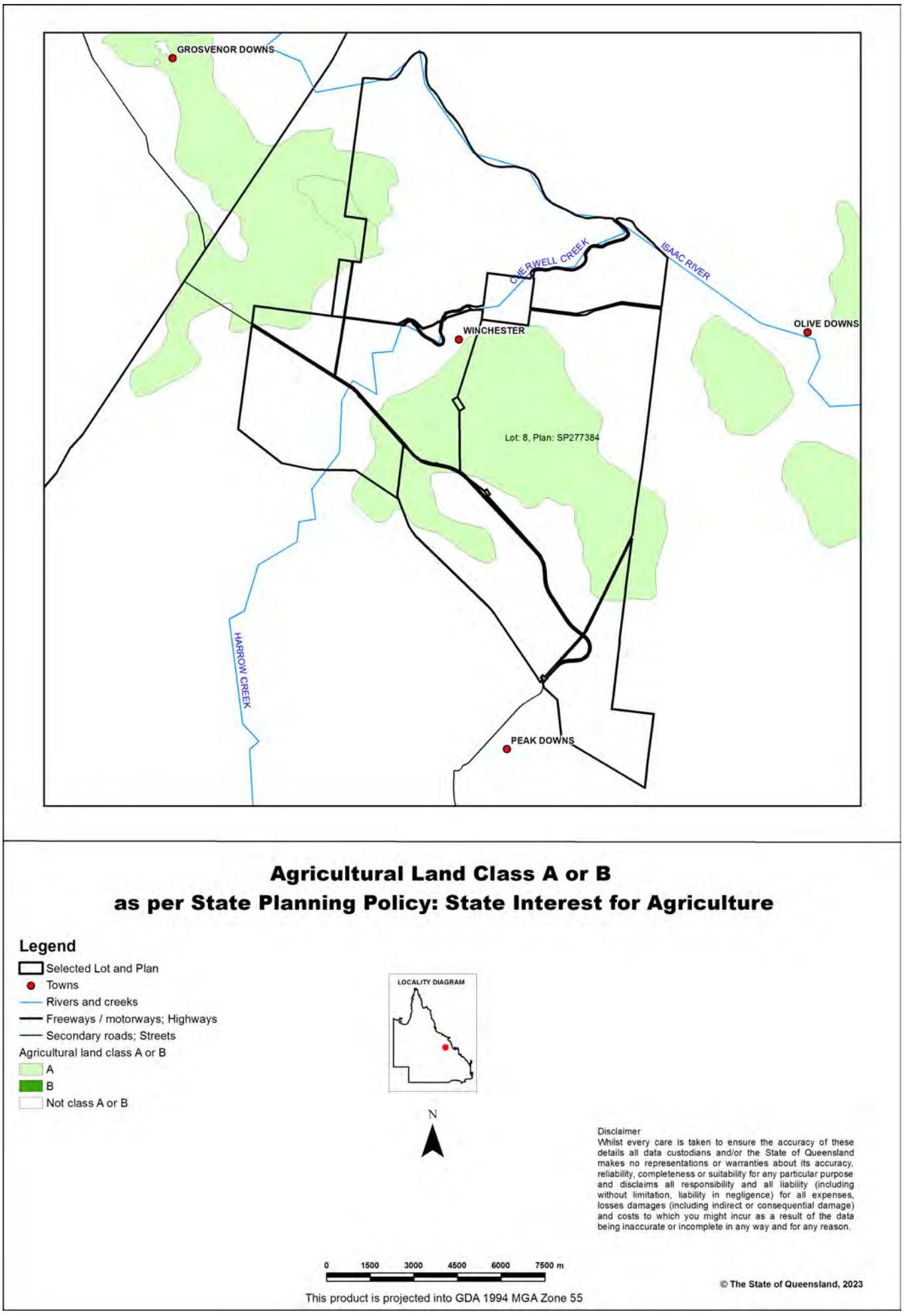
4.2 Vegetation management supporting map



4.3 Coastal/non-coastal map



4.4 Agricultural Land Class A or B as per State Planning Policy: State Interest for Agriculture



5. Protected plants framework (administered by the Department of Environment and Science (DES))

In Queensland, all plants that are native to Australia are protected plants under the *Nature Conservation Act 1992* (NCA). The NCA regulates the clearing of protected plants 'in the wild' (see Operational policy: When a protected plant in Queensland is considered to be 'in the wild') that are listed as critically endangered, endangered, vulnerable or near threatened under the Act.

Please note that the protected plant clearing framework applies irrespective of the classification of the vegetation under the *Vegetation Management Act 1999* and any approval or exemptions given under another Act, for example, the *Vegetation Management Act 1999* or *Planning Regulation 2017*.

5.1 Clearing in high risk areas on the flora survey trigger map

The flora survey trigger map identifies high-risk areas for threatened and near threatened plants. These are areas where threatened or near threatened plants are known to exist or are likely to exist based on the habitat present. The flora survey trigger map for this property is provided in section 5.5.

If you are proposing to clear an area shown as high risk on the flora survey trigger map, a flora survey of the clearing impact area must be undertaken by a suitably qualified person in accordance with the Flora survey guidelines. The main objective of a flora survey is to locate any threatened or near threatened plants that may be present in the clearing impact area.

If the flora survey identifies that threatened or near threatened plants are not present within the clearing impact area or clearing within 100m of a threatened or near threatened plant can be avoided, the clearing activity is exempt from a permit. An exempt clearing notification form must be submitted to the Department of Environment and Science, with a copy of the flora survey report, at least one week prior to clearing.

If the flora survey identifies that threatened or near threatened plants are present in, or within 100m of, the area to be cleared, a clearing permit is required before any clearing is undertaken. The flora survey report, as well as an impact management report, must be submitted with the clearing permit application form.

5.2 Clearing outside high risk areas on the flora survey trigger map

In an area other than a high risk area, a clearing permit is only required where a person is, or becomes aware that threatened or near threatened plants are present in, or within 100m of, the area to be cleared. You must keep a copy of the flora survey trigger map for the area subject to clearing for five years from the day the clearing starts. If you do not clear within the 12 month period that the flora survey trigger map was printed, you need to print and check a new flora survey trigger map.

5.3 Exemptions

Many activities are 'exempt' under the protected plant clearing framework, which means that clearing of native plants that are in the wild can be undertaken for these activities with no need for a flora survey or a protected plant clearing permit. The Information sheet - General exemptions for the take of protected plants provides some of these exemptions.

Some exemptions under the NCA are the same as exempt clearing work (formerly known as exemptions) under the *Vegetation Management Act 1999* (i.e. listed in Schedule 21 of the Planning Regulations 2017) while some are different.

5.4 Contact information for DES

For further information on the protected plants framework:
Phone 1300 130 372 (and select option four)
Email palm@des.qld.gov.au
Visit https://www.qld.gov.au/environment/plants-animals/plants/protected-plants

5.5 Protected plants flora survey trigger map

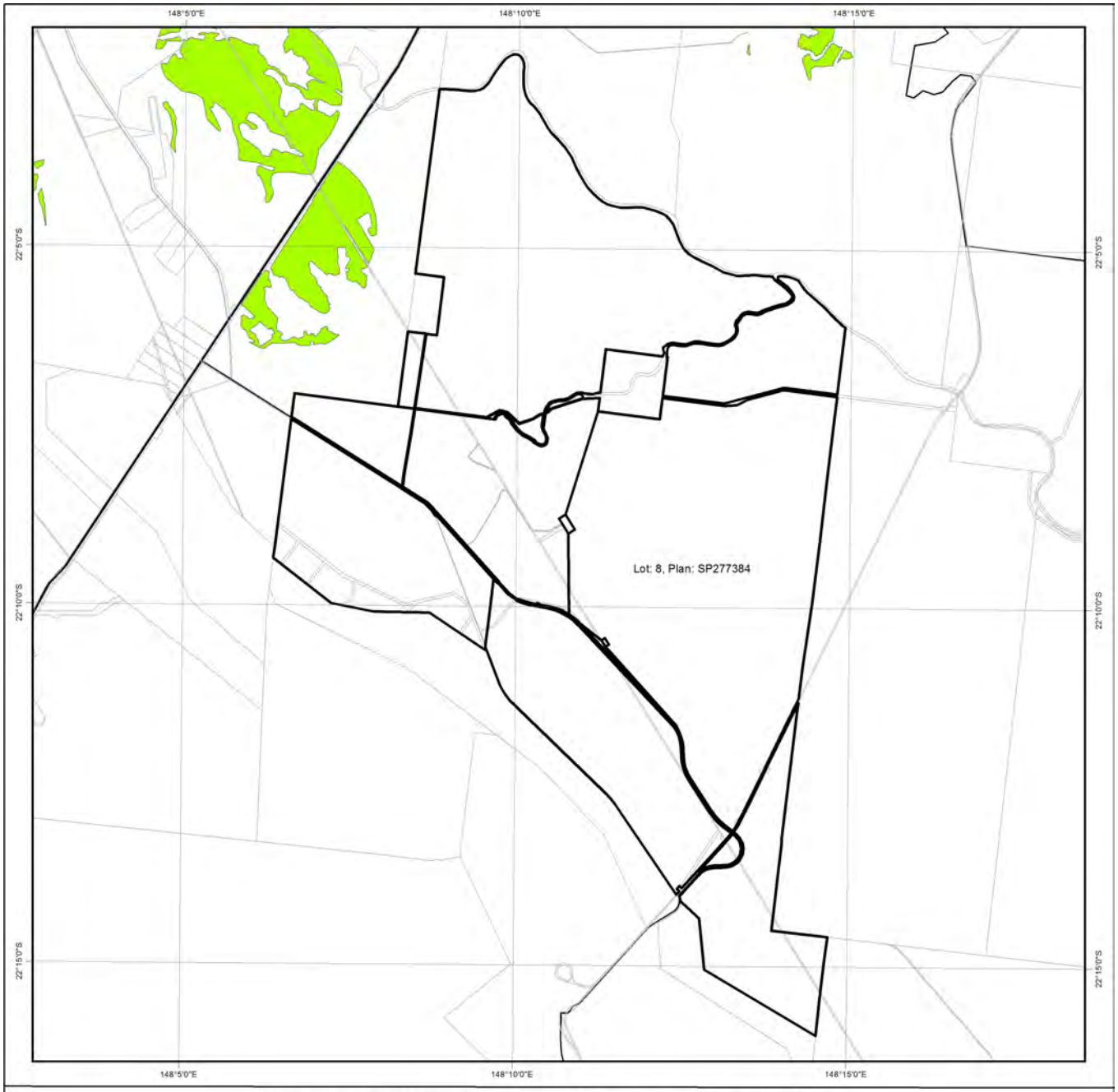
This map included may also be requested individually at: https://apps.des.qld.gov.au/map-request/flora-survey-trigger/.

Updates to the data informing the flora survey trigger map

The flora survey trigger map will be reviewed, and updated if necessary, at least every 12 months to ensure the map reflects the most up-to-date and accurate data available.

Species information

Please note that flora survey trigger maps do not identify species associated with 'high risk areas'. While some species information may be publicly available, for example via the Queensland Spatial Catalogue, the Department of Environment and Science does not provide species information on request. Regardless of whether species information is available for a particular high risk area, clearing plants in a high risk area may require a flora survey and/or clearing permit. Please see the Department of Environment and Science webpage on the clearing of protected plants for more information.



Protected Plants Flora Survey Trigger Map

Legend

- Selected Lot and Plan
- High risk area
- Other land parcel boundaries
- Freeways / motorways / highways
- Secondary roads / streets

N

0 1,000 2,000 3,000 4,000 5,000 m

This product is projected into:
GDA 1994 MGA Zone 55

This map shows areas where particular provisions of the Nature Conservation Act 1992 apply to the clearing of protected plants.

Land parcel boundaries are provided as locational aid only.

This map is produced at a scale relevant to the size of the area selected and should be printed as A4 size in portrait orientation.

For further information or assistance with interpretation of this product, please contact the Department of Environment and Science at palm@des.qld.gov.au

Disclaimer:
While every care is taken to ensure the accuracy of the data used to generate this product, the Queensland Government makes no representations or warranties about its accuracy, reliability, completeness or suitability for any particular purpose and disclaim all responsibility and all liability (including without limitation, liability in negligence) for all expenses, losses, damages (including indirect or consequential damages) and costs which might be incurred as a consequence of reliance on the data, or as a result of the data being inaccurate or incomplete in any way and for any reason.

6. Koala protection framework (administered by the Department of Environment and Science (DES))

The koala (*Phascolarctos cinereus*) is listed in Queensland as endangered by the Queensland Government under *Nature Conservation Act 1992* and by the Australian Government under the *Environment Protection and Biodiversity Conservation Act 1999*.

The Queensland Government's koala protection framework is comprised of the *Nature Conservation Act 1992*, the Nature Conservation (Animals) Regulation 2020, the Nature Conservation (Koala) Conservation Plan 2017, the *Planning Act 2016* and the Planning Regulation 2017.

6.1 Koala mapping

6.1.1 Koala districts

The parts of Queensland where koalas are known to occur has been divided into three koala districts - koala district A, koala district B and koala district C. Each koala district is made up of areas with comparable koala populations (e.g. density, extent and significance of threatening processes affecting the population) which require similar management regimes.

Section 7.1 identifies which koala district your property is located in.

6.1.2 Koala habitat areas

Koala habitat areas are areas of vegetation that have been determined to contain koala habitat that is essential for the conservation of a viable koala population in the wild based on the combination of habitat suitability and biophysical variables with known relationships to koala habitat (e.g. landcover, soil, terrain, climate and ground water). In order to protect this important koala habitat, clearing controls have been introduced into the Planning Regulation 2017 for development in koala habitat areas.

Please note that koala habitat areas only exist in koala district A which is the South East Queensland "Shaping SEQ" Regional Plan area. These areas include the local government areas of Brisbane, Gold Coast, Logan, Lockyer Valley, Ipswich, Moreton Bay, Noosa, Redland, Scenic Rim, Somerset, Sunshine Coast and Toowoomba (urban extent).

There are two different categories of koala habitat area (core koala habitat area and locally refined koala habitat), which have been determined using two different methodologies. These methodologies are described in the document Spatial modelling in South East Queensland.

Section 7.2 shows any koala habitat area that exists on your property.

Under the Nature Conservation (Koala) Conservation Plan 2017, an owner of land (or a person acting on the owner's behalf with written consent) can request to make, amend or revoke a koala habitat area determination if they believe, on reasonable grounds, that the existing determination for all or part of their property is incorrect.

More information on requests to make, amend or revoke a koala habitat area determination can be found in the document Guideline - Requests to make, amend or revoke a koala habitat area determination.

The koala habitat area map will be updated at least annually to include any koala habitat areas that have been made, amended or revoked.

Changes to the koala habitat area map which occur between annual updates because of a request to make, amend or revoke a koala habitat area determination can be viewed on the register of approved requests to make, amend or revoke a koala habitat area available at: https://environment.des.qld.gov.au/wildlife/animals/living-with/koalas/mapping/koalamaps. The register includes the lot on plan for the change, the date the decision was made and the map issued to the landholder that shows areas determined to be koala habitat areas.

6.1.3 Koala priority areas

Koala priority areas are large, connected areas that have been determined to have the highest likelihood of achieving conservation outcomes for koalas based on the combination of habitat suitability, biophysical variables with known relationships to koala habitat (e.g. landcover, soil, terrain, climate and ground water) and a koala conservation cost benefit analysis.

Conservation efforts will be prioritised in these areas to ensure the conservation of viable koala populations in the wild including a focus on management (e.g. habitat protection, habitat restoration and threat mitigation) and monitoring. This includes a prohibition on clearing in koala habitat areas that are in koala priority areas under the Planning Regulation 2017 (subject to some exemptions).

Please note that koala priority areas only exist in koala district A which is the South East Queensland "Shaping SEQ" Regional Plan area. These areas include the local government areas of Brisbane, Gold Coast, Logan, Lockyer Valley,

Ipswich, Moreton Bay, Noosa, Redland, Scenic Rim, Somerset, Sunshine Coast and Toowoomba (urban extent).

Section 7.2 identifies if your property is in a koala priority area.

6.1.4 Identified koala broad-hectare areas

There are seven identified koala broad-hectare areas in SEQ. These are areas of koala habitat that are located in areas committed to meet development targets in the SEQ Regional Plan to accommodate SEQ's growing population including bring-forward Greenfield sites under the Queensland Housing Affordability Strategy and declared master planned areas under the repealed *Sustainable Planning Act 2009* and the repealed *Integrated Planning Act 1997*.

Specific assessment benchmarks apply to development applications for development proposed in identified koala broad-hectare areas to ensure koala conservation measures are incorporated into the proposed development.

Section 7.2 identifies if your property is in an identified koala broad-hectare area.

6.2 Koala habitat planning controls

On 7 February 2020, the Queensland Government introduced new planning controls to the Planning Regulation 2017 to strengthen the protection of koala habitat in South East Queensland (i.e. koala district A).

More information on these planning controls can be found here:
https://environment.des.qld.gov.au/wildlife/animals/living-with/koalas/mapping/legislation-policy.

As a high-level summary, the koala habitat planning controls make:

- development that involves interfering with koala habitat (defined below) in an area that is both a koala priority area and a koala habitat area, prohibited development (i.e. development for which a development application cannot be made);
- development that involves interfering with koala habitat (defined below) in an area that is a koala habitat area but is not a koala priority area, assessable development (i.e. development for which development approval is required); and
- development that is for extractive industries where the development involves interfering with koala habitat (defined below) in an area that is both a koala habitat area and a key resource area, assessable development (i.e. development for which development approval is required).

Interfering with koala habitat means:

1) Removing, cutting down, ringbarking, pushing over, poisoning or destroying in anyway, including by burning, flooding or draining native vegetation in a koala habitat area; but
2) Does not include destroying standing vegetation by stock or lopping a tree.

However, these planning controls do not apply if the development is exempted development as defined in Schedule 24 of the Planning Regulation 2017. More information on exempted development can be found here:
https://environment.des.qld.gov.au/wildlife/animals/living-with/koalas/mapping/legislation-policy.

There are also assessment benchmarks that apply to development applications for:

- building works, operational works, material change of use or reconfiguration of a lot where:
  - the local government planning scheme makes the development assessable;
  - the premises includes an area that is both a koala priority area and a koala habitat area; and
  - the development does not involve interfering with koala habitat (defined above); and

- development in identified koala broad-hectare areas.

The Guideline - Assessment Benchmarks in relation to Koala Habitat in South East Queensland assessment benchmarks outlines these assessment benchmarks, the intent of these assessment benchmarks and advice on how proposed development may meet these assessment benchmarks.

6.3 Koala Conservation Plan clearing requirements

Section 10 and 11 of the Nature Conservation (Koala) Conservation Plan 2017 prescribes requirements that must be met when clearing koala habitat in koala district A and koala district B.

These clearing requirements are independent to the koala habitat planning controls introduced into the Planning Regulation 2017, which means they must be complied with irrespective of any approvals or exemptions offered under other legislation.

Unlike the clearing controls prescribed in the Planning Regulation 2017 that are to protect koala habitat, the clearing requirements prescribed in the Nature Conservation (Koala) Conservation Plan 2017 are in place to prevent the injury or death of koalas when koala habitat is being cleared.

6.4 Contact information for DES

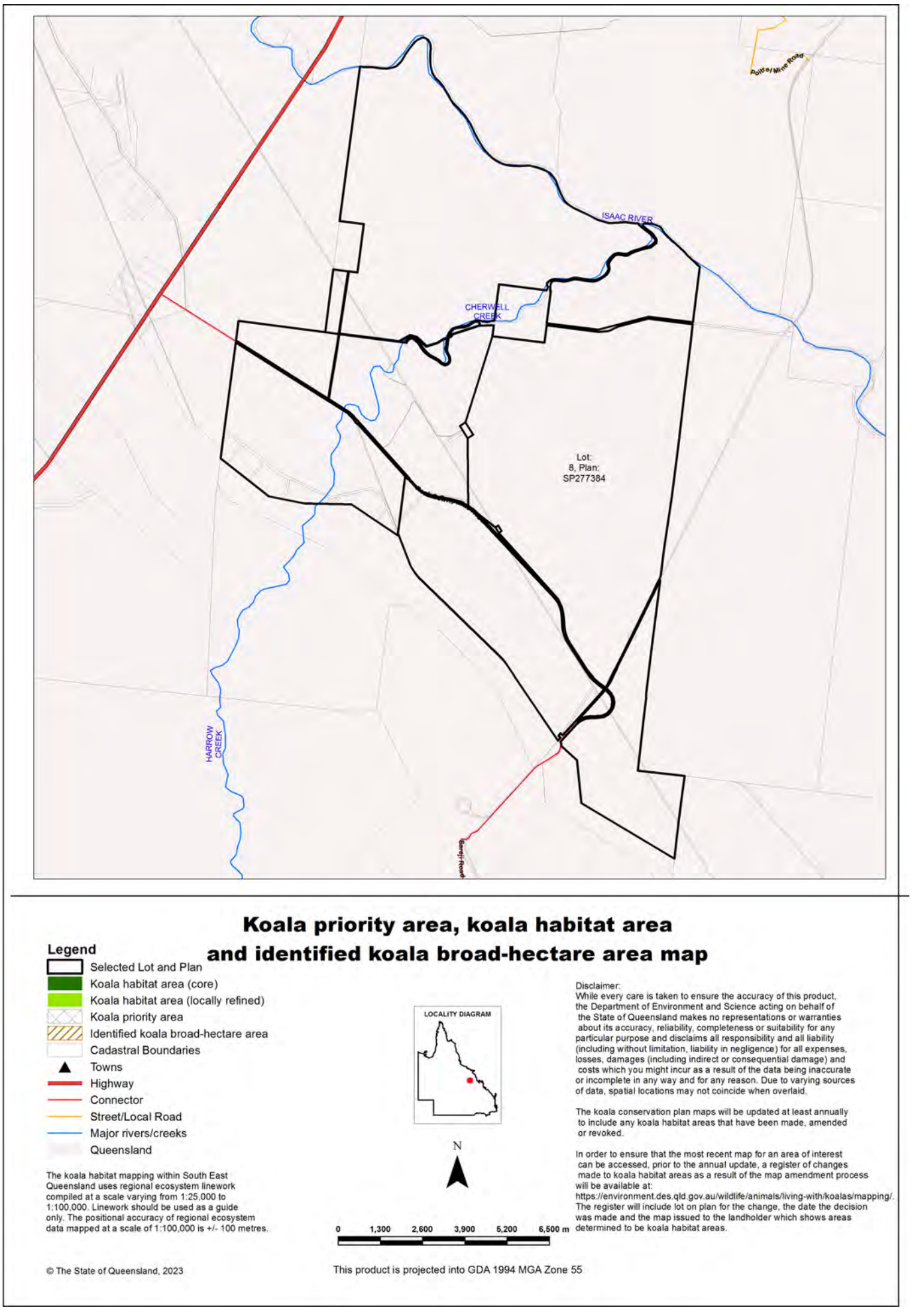
For further information on the koala protection framework:
Phone 13 QGOV (13 74 68)
Email koala.assessment@des.qld.gov.au
Visit https://environment.des.qld.gov.au/wildlife/animals/living-with/koalas/mapping

7. Koala protection framework details for Lot: 8 Plan: SP277384

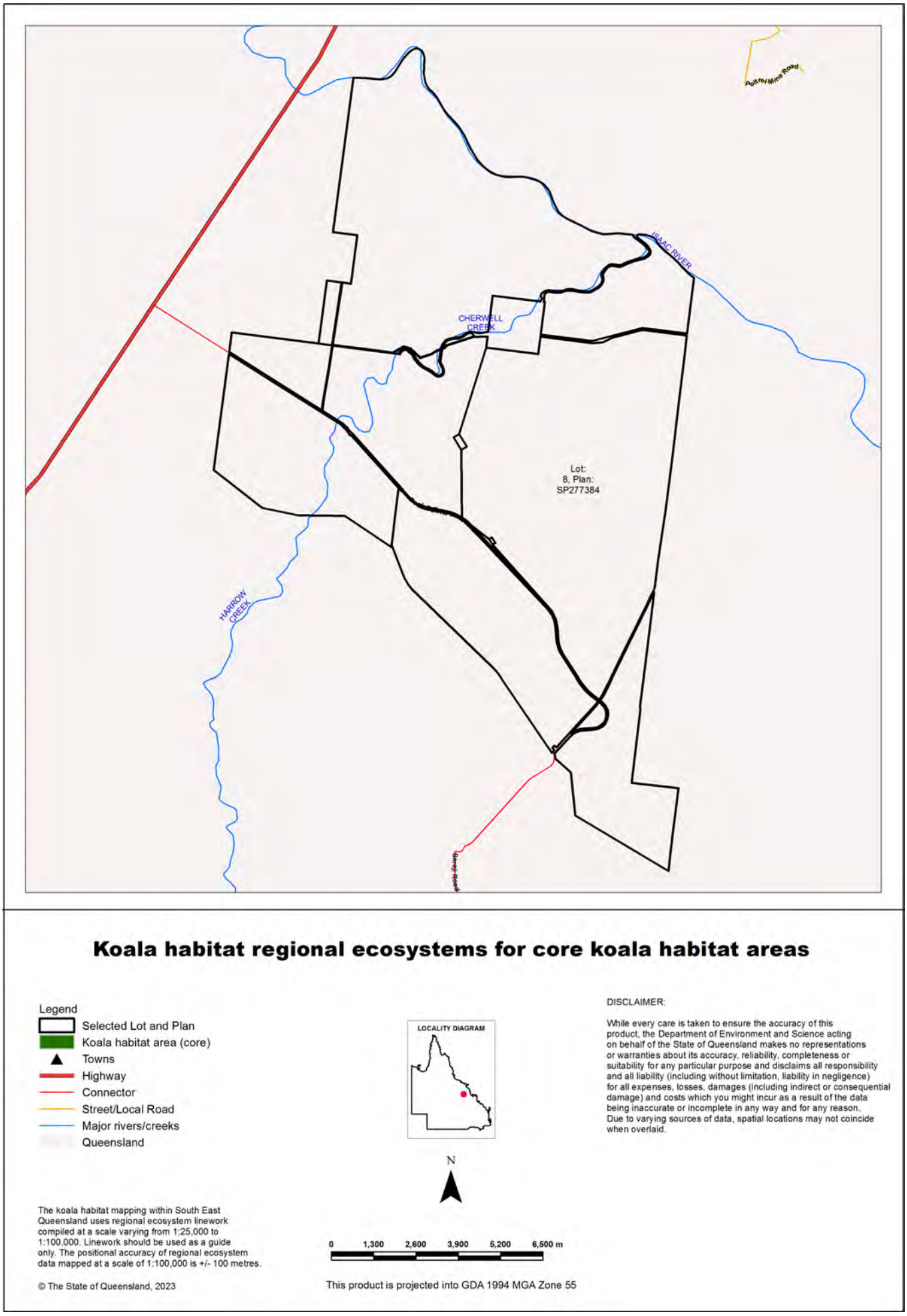
7.1 Koala districts

Koala District C

7.2 Koala priority area, koala habitat area and identified koala broad-hectare area map



7.3 Koala habitat regional ecosystems for core koala habitat areas



8. Other relevant legislation contacts list

Activity	Legislation	Agency	Contact details
• Interference with overland flow • Earthworks, significant disturbance	*Water Act 2000* *Soil Conservation Act 1986*	Department of Regional Development, Manufacturing and Water (Queensland Government) Department of Resources (Queensland Government)	Ph: 13 QGOV (13 74 68) www.rdmw.qld.gov.au www.resources.qld.gov.au
• Indigenous Cultural Heritage	*Aboriginal Cultural Heritage Act 2003* *Torres Strait Islander Cultural Heritage Act 2003*	Department of Seniors, Disability Services and Aboriginal and Torres Strait Islander Partnerships	Ph: 13 QGOV (13 74 68) www.datsip.qld.gov.au
• Mining and environmentally relevant activities • Infrastructure development (coastal) • Heritage issues	*Environmental Protection Act 1994* *Coastal Protection and Management Act 1995* *Queensland Heritage Act 1992*	Department of Environment and Science (Queensland Government)	Ph: 13 QGOV (13 74 68) www.des.qld.gov.au
• Protected plants and protected areas	*Nature Conservation Act 1992*	Department of Environment and Science (Queensland Government)	Ph: 1300 130 372 (option 4) palm@des.qld.gov.au www.des.qld.gov.au
• Koala mapping and regulations	*Nature Conservation Act 1992*	Department of Environment and Science (Queensland Government)	Ph: 13 QGOV (13 74 68) Koala.assessment@des.qld.gov.au
• Interference with fish passage in a watercourse, mangroves • Forestry activities on State land tenures	*Fisheries Act 1994* *Forestry Act 1959*	Department of Agriculture and Fisheries (Queensland Government)	Ph: 13 QGOV (13 74 68) www.daf.qld.gov.au
• Matters of National Environmental Significance including listed threatened species and ecological communities	*Environment Protection and Biodiversity Conservation Act 1999*	Department of Agriculture, Water and the Environment (Australian Government)	Ph: 1800 803 772 www.environment.gov.au
• Development and planning processes	*Planning Act 2016* *State Development and Public Works Organisation Act 1971*	Department of State Development, Infrastructure, Local Government and Planning (Queensland Government)	Ph: 13 QGOV (13 74 68) www.dsdmip.qld.gov.au
• Local government requirements	*Local Government Act 2009* *Planning Act 2016*	Department of State Development, Infrastructure, Local Government and Planning (Queensland Government)	Ph: 13 QGOV (13 74 68) Your relevant local government office
• Harvesting timber in the Wet Tropics of Qld World Heritage area	*Wet Tropics World Heritage Protection and Management Act 1993*	Wet Tropics Management Authority	Ph: (07) 4241 0500 www.wettropics.gov.au

Queensland Government

WildNet species list

Search Criteria: Species List for a Specified Point
Species: All
Type: Native
Queensland status: Rare and threatened species
Records: All
Date: Since 1980
Latitude: -22.1881
Longitude: 148.1875
Distance: 15
Email: loverton@ausecology.com
Date submitted: Thursday 03 Aug 2023 12:19:56
Date extracted: Thursday 03 Aug 2023 12:20:04

The number of records retrieved = 6

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
animals	birds	Columbidae	*Geophaps scripta scripta*	squatter pigeon (southern subspecies)		V	V	5
animals	mammals	Phascolarctidae	*Phascolarctos cinereus*	koala		E	E	40
animals	mammals	Pseudocheiridae	*Petauroides armillatus*	central greater glider		E	E	35
animals	reptiles	Elapidae	*Denisonia maculata*	ornamental snake		V	V	17
plants	land plants	Poaceae	*Dichanthium queenslandicum*			V	E	3/3
plants	land plants	Solanaceae	*Solanum adenophorum*			E		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.

Queensland Government

WildNet species list

Search Criteria: Species List for a Specified Point
Species: All
Type: Native
Queensland status: Rare and threatened species
Records: All
Date: Since 1980
Latitude: -22.1881
Longitude: 148.1875
Distance: 25
Email: loverton@ausecology.com
Date submitted: Thursday 03 Aug 2023 12:20:58
Date extracted: Thursday 03 Aug 2023 12:30:09

The number of records retrieved = 10

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
animals	birds	Columbidae	*Geophaps scripta scripta*	squatter pigeon (southern subspecies)		V	V	29
animals	mammals	Phascolarctidae	*Phascolarctos cinereus*	koala		E	E	87
animals	mammals	Pseudocheiridae	*Petauroides armillatus*	central greater glider		E	E	107
animals	reptiles	Elapidae	*Acanthophis antarcticus*	common death adder		V		1
animals	reptiles	Elapidae	*Denisonia maculata*	ornamental snake		V	V	42
plants	land plants	Amaranthaceae	*Ptilotus uncinellus*			E		2/2
plants	land plants	Euphorbiaceae	*Bertya pedicellata*			NT		11/3
plants	land plants	Poaceae	*Dichanthium queenslandicum*			V	E	3/3
plants	land plants	Solanaceae	*Solanum adenophorum*			E		1/1
plants	land plants	Solanaceae	*Solanum elachophyllum*			E		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.

Queensland Government

WildNet species list

Search Criteria: Species List for a Specified Point
Species: All
Type: Native
Queensland status: Rare and threatened species
Records: All
Date: Since 1980
Latitude: -22.1881
Longitude: 148.1875
Distance: 55
Email: loverton@ausecology.com
Date submitted: Thursday 03 Aug 2023 12:20:29
Date extracted: Thursday 03 Aug 2023 12:30:03

The number of records retrieved = 26

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
animals	birds	Cacatuidae	*Calyptorhynchus lathami erebus*	glossy black-cockatoo (northern)		V		4
animals	birds	Columbidae	*Geophaps scripta scripta*	squatter pigeon (southern subspecies)		V	V	82
animals	birds	Phaethontidae	*Phaethon rubricauda*	red-tailed tropicbird		V		1
animals	mammals	Emballonuridae	*Taphozous australis*	coastal sheathtail bat		NT		4
animals	mammals	Phascolarctidae	*Phascolarctos cinereus*	koala		E	E	157
animals	mammals	Pseudocheiridae	*Petauroides armillatus*	central greater glider		E	E	154
animals	mammals	Pseudocheiridae	*Petauroides volans sensu lato*	greater glider		V	V	1
animals	mammals	Vespertilionidae	*Chalinolobus dwyeri*	large-eared pied bat		E	V	6
animals	reptiles	Elapidae	*Acanthophis antarcticus*	common death adder		V		1
animals	reptiles	Elapidae	*Denisonia maculata*	ornamental snake		V	V	86
plants	land plants	Amaranthaceae	*Ptilotus uncinellus*			E		5/5
plants	land plants	Apocynaceae	*Cerbera dumicola*			NT		9/6
plants	land plants	Asteraceae	*Trioncinia patens*			CR		1/1
plants	land plants	Asteraceae	*Trioncinia retroflexa*			E		1/1
plants	land plants	Capparaceae	*Capparis humistrata*			E		1/1
plants	land plants	Combretaceae	*Macropteranthes leiocaulis*			NT		2/2
plants	land plants	Euphorbiaceae	*Bertya pedicellata*			NT		26/18
plants	land plants	Leguminosae	*Acacia arbiana*			NT		3/3
plants	land plants	Leguminosae	*Acacia castorum*	Peak Range wattle		V		2/2
plants	land plants	Leguminosae	*Acacia spania*			NT		1/1
plants	land plants	Poaceae	*Aristida annua*			V	V	1/1
plants	land plants	Poaceae	*Dichanthium queenslandicum*			V	E	12/12
plants	land plants	Poaceae	*Digitaria porrecta*			NT		1/1
plants	land plants	Solanaceae	*Solanum adenophorum*			E		3/3
plants	land plants	Solanaceae	*Solanum elachophyllum*			E		1/1
plants	land plants	Solanaceae	*Solanum orgadophilum*	Capella potato bush		CR	CE	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).

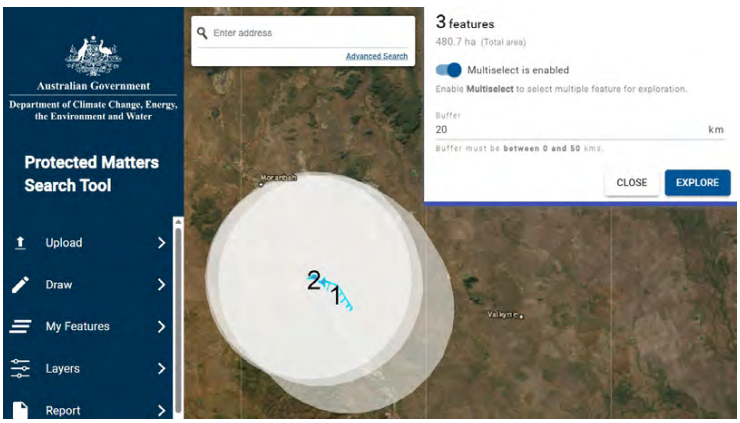
A - Indicates the Australian conservation status of each taxon under the *Environment Protection and Biodiversity Conservation Act 1999.*
The values of EPBC are Extinct (EX), Extinct in the Wild (XW), Critically Endangered (CE), Endangered (E), Vulnerable (V) and Conservation Dependent (CD).

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.

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: 04-Aug-2023



Central coords: -22.1881, 148.1875
20km Polygon Buffer
Search location manually added by Ausecology, 2023

Summary

Matters of National Environment Significance

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

World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International Importance (Ramsar	None
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	5
Listed Threatened Species:	26
Listed Migratory Species:	10

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:	15
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:	45
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 buffer area only
Weeping Myall Woodlands	Endangered	Community likely to occur within area	In buffer area only

Listed Threatened Species [Resource Information]

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

Scientific Name	Threatened Category	Presence Text	Buffer Status
BIRD			
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area	In feature area
Erythrotriorchis radiatus Red Goshawk [942]	Endangered	Species or species habitat may occur within area	In feature area
Falco hypoleucos Grey Falcon [929]	Vulnerable	Species or species habitat likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
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 feature area
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
Petauroides volans Greater Glider (southern and central) [254]	Endangered	Species or species habitat known 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

Scientific Name	Threatened Category	Presence Text	Buffer Status
PLANT			
Denhamia megacarpa Large-fruited Denhamia [91342]	Endangered	Species or species habitat may occur within area	In buffer area only
Dichanthium queenslandicum King Blue-grass [5481]	Endangered	Species or species habitat known to occur within area	In feature area
Dichanthium setosum bluegrass [14159]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Eucalyptus raveretiana Black Ironbox [16344]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Samadera bidwillii Quassia [29708]	Vulnerable	Species or species habitat likely to occur within area	In feature area
REPTILE			
Denisonia maculata Ornamental Snake [1193]	Vulnerable	Species or species habitat known to occur within area	In feature area
Egernia rugosa Yakka Skink [1420]	Vulnerable	Species or species habitat may occur within area	In feature area
Elseya albagula Southern Snapping Turtle, White-throated Snapping Turtle [81648]	Critically Endangered	Species or species habitat may occur within area	In feature area
Furina dunmalli Dunmall's Snake [59254]	Vulnerable	Species or species habitat may occur within area	In feature area
Hemiaspis damelii Grey Snake [1179]	Endangered	Species or species habitat may occur within area	In feature area
Lerista allanae Allan's Lerista, Retro Slider [1378]	Endangered	Species or species habitat likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Rheodytes leukops			
Fitzroy River Turtle, Fitzroy Tortoise, Fitzroy Turtle, White-eyed River Diver [1761]	Vulnerable	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]		Species or species habitat known to occur within area	In feature area
Calidris ferruginea			
Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area	In feature area
Calidris melanotos			
Pectoral Sandpiper [858]		Species or species habitat may occur within area	In feature area
Gallinago hardwickii			
Latham's Snipe, Japanese Snipe [863]		Species or species habitat may occur within area	In feature area
Pandion haliaetus			
Osprey [952]		Species or species habitat likely to occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Tringa nebularia			
Common Greenshank, Greenshank [832]		Species or species habitat may occur within area	In buffer area only

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]		Species or species habitat known to occur within area	In feature area
Calidris ferruginea			
Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area 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 may occur within area overfly marine area	In feature area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]		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 known 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
Pandion haliaetus Osprey [952]		Species or species habitat likely to occur within area	In buffer area only
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
Tringa nebularia Common Greenshank, Greenshank [832]		Species or species habitat may occur within area overfly marine area	In buffer area only

Extra Information

EPBC Act Referrals				[Resource Information]
Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Carmichael Coal Mine and Rail Project	2010/5736		Post-Approval	In buffer area only
Caval Ridge Mine Horse Pit Extension, Bowen Basin	2021/9031		Assessment	In buffer area only
Isaac Downs coal mine project, near Moranbah, Qld	2019/8413		Post-Approval	In buffer area only
Isaac River Coal Mine Project	2021/8980		Post-Approval	In buffer area only
Lake Vermont Meadowbrook Coal Mine Project, Qld	2019/8485		Assessment	In buffer area only
Olive Downs Project Mine Site and Access Road	2017/7867		Post-Approval	In buffer area only
Peak Downs Mine Continuation Project	2022/09350		Referral Decision	In feature area
Saraji East Mining Lease Project, Qld	2016/7791		Assessment	In buffer area only
Vulcan Coal Mine ? Matilda Pit and Ancillary Infrastructure	2022/09361		Assessment	In buffer area only
Winchester South Project Mine Site and Access Road, near Moranbah, Qld	2019/8460		Assessment	In feature area
Controlled action				
7 North Dam Extension Project - Peak Downs Mine	2012/6260	Controlled Action	Completed	In buffer area only
Alpha Coal Project - Mine and Rail Development	2008/4648	Controlled Action	Post-Approval	In buffer area only
Arrow Bowen Pipeline (CSG), QLD	2012/6459	Controlled Action	Post-Approval	In buffer area only
Bowen Gas Project	2012/6377	Controlled Action	Post-Approval	In feature area
Caval Ridge Open Cut Coal Mine Project	2008/4417	Controlled Action	Post-Approval	In feature area
Develop an Open Cut Coal Mine at Daunia	2008/4418	Controlled Action	Post-Approval	In buffer area only

Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Controlled action				
Eagle Downs Coal Mine Central Queensland	2008/3945	Controlled Action	Post-Approval	In feature area
Establishment of Galilee Coal Mine and Associated Infrastructure	2009/4737	Controlled Action	Post-Approval	In buffer area only
Extension to the exisiting Isaac Plains Mine, near Moranbah, Qld	2016/7827	Controlled Action	Post-Approval	In buffer area only
install & operate gas pipeline	2005/2059	Controlled Action	Post-Approval	In buffer area only
Millenium Open Cut Coal Mine Expansion Project, QLD	2009/4821	Controlled Action	Post-Approval	In buffer area only
Moranbah South Project Coal Mine, QLD	2012/6337	Controlled Action	Post-Approval	In feature area
New Saraji Coal Mine Project	2007/3845	Controlled Action	Completed	In buffer area only
Olive Downs Project Electricity Transmission Line	2017/7869	Controlled Action	Post-Approval	In buffer area only
Olive Downs Project Rail Spur	2017/7870	Controlled Action	Post-Approval	In buffer area only
Olive Downs Project Water Pipeline	2017/7868	Controlled Action	Post-Approval	In buffer area only
Open Cut Coal Mining	2004/1770	Controlled Action	Post-Approval	In feature area
Relocation of approximately 16km of Dysart Road and associated service infrastructure	2013/6868	Controlled Action	Post-Approval	In feature area
The Grosvenor Coal Mine Project	2007/3785	Controlled Action	Post-Approval	In buffer area only
Vulcan Complex Project	2020/8676	Controlled Action	Post-Approval	In buffer area only
Winchester South Project Electricity Transmission Line, near Moranbah, Qld	2019/8458	Controlled Action	Assessment Approach	In feature area
Winchester South Project Water Pipeline, near Moranbah, Qld	2019/8459	Controlled Action	Assessment Approach	In feature area
Not controlled action				
Broadlea North Coal Project open cut mine and associated infrastructure	2005/2179	Not Controlled Action	Completed	In buffer area only
Carborough Downs mine extension	2006/3085	Not Controlled Action	Completed	In buffer area only

Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Not controlled action				
construction and operation of Carborough Downs Mine	2005/2064	Not Controlled Action	Completed	In buffer area only
Eagle-1 Exploration Drilling, North West Shelf, WA	2019/8578	Not Controlled Action	Completed	In buffer area only
Improving rabbit biocontrol: releasing another strain of RHDV, sthrn two thirds of Australia	2015/7522	Not Controlled Action	Completed	In feature area
Integrated Isaac Plains Project	2006/3043	Not Controlled Action	Completed	In buffer area only
Olive Downs Project	2005/2377	Not Controlled Action	Completed	In buffer area only
Open cut coal mine 7km NE of Moranbah (Isaac Plains)	2005/2070	Not Controlled Action	Completed	In buffer area only
Vulcan Bulk Sample Project	2019/8504	Not Controlled Action	Completed	In buffer area only
Water pipeline	2006/2595	Not Controlled Action	Completed	In buffer area only
Not controlled action (particular manner)				
Moranbah South Feasibility Seismic Survey	2010/5497	Not Controlled Action (Particular Manner)	Post-Approval	In buffer area only
Moranbah South Project 2013 Seismic Exploration Program, Qld	2013/6814	Not Controlled Action (Particular Manner)	Post-Approval	In buffer area only
Referral decision				
Expansion of open cut coal mine and diversion of creeks in existing mine operati	2006/2845	Referral Decision	Completed	In buffer area only

Caveat

1 PURPOSE

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

The report contains the mapped locations of:

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

2 DISCLAIMER

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

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

3 DATA SOURCES

Threatened ecological communities

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

Threatened, migratory and marine species

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

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

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

4 LIMITATIONS

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

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

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

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

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

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

Acknowledgements

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-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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