Appendices

Appendix 1 - Matters of State Environmental Significance (MSES) methodology

MSES mapping is a regional-scale representation of the definition for MSES under the State Planning Policy (SPP). The compiled MSES mapping product is a guide to assist planning and development assessment decision-making. Its primary purpose is to support implementation of the SPP biodiversity policy. While it supports the SPP, the mapping does not replace the regulatory mapping or environmental values specifically called up under other laws or regulations. Similarly, the SPP biodiversity policy does not override or replace specific requirements of other Acts or regulations.

The Queensland Government's "Method for mapping - matters of state environmental significance for use in land use planning and development assessment" can be downloaded from:

http://www.ehp.qld.gov.au/land/natural-resource/method-mapping-mses.html .

Appendix 2 - Source Data

The datasets listed below are available on request from:

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- Matters of State environmental significance

Note: MSES mapping is not based on new or unique data. The primary mapping product draws data from a number of underlying environment databases and geo-referenced information sources. MSES mapping is a versioned product that is updated generally on a twice-yearly basis to incorporate the changes to underlying data sources. Several components of MSES mapping made for the current version may differ from the current underlying data sources. To ensure accuracy, or proper representation of MSES values, it is strongly recommended that users refer to the underlying data sources and review the current definition of MSES in the State Planning Policy, before applying the MSES mapping.

Individual MSES layers can be attributed to the following source data available at QSpatial:

MSES layers	**current QSpatial data (http://qspatial.information.qld.gov.au)**
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Legally secured offsets	Vegetation Management Act property maps of assessable vegetation. For offset register data-contact DES
Regulated Vegetation Map	Vegetation management - regulated vegetation management map

Appendix 3 - Acronyms and Abbreviations

AOI	- Area of Interest
DES	- Department of Environment and Science
EP Act	- *Environmental Protection Act 1994*
EPP	- Environmental Protection Policy
GDA94	- Geocentric Datum of Australia 1994
GEM	- General Environmental Matters
GIS	- Geographic Information System
MSES	- Matters of State Environmental Significance
NCA	- *Nature Conservation Act 1992*
RE	- Regional Ecosystem
SPP	- State Planning Policy
VMA	- *Vegetation Management Act 1999*

Queensland Government

Department of Environment and Science

Environmental Reports

Matters of State Environmental Significance

For the selected area of interest
Lot: 8 Plan: SP104503

Environmental Reports - General Information

The Environmental Reports portal provides for the assessment of selected matters of interest relevant to a user specified location, or area of interest (AOI). All area and derivative figures are relevant to the extent of matters of interest contained within the AOI unless otherwise stated. Please note, if a user selects an AOI via the "central coordinates" option, the resulting assessment area encompasses an area extending for a 2km radius from the point of interest.

All area and area derived figures included in this report 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.

Figures in tables may be affected by rounding.

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The information presented in this report should be considered as a guide only and field survey may be required to validate values on the ground.

Please direct queries about these reports to: Planning.Support@des.qld.gov.au

Disclaimer

Whilst every care is taken to ensure the accuracy of the information provided in this report, the Queensland Government makes no representations or warranties about its accuracy, reliability, completeness, or suitability, for any particular purpose and disclaims all responsibility and all liability (including without limitation, liability in negligence) for all expenses, losses, damages (including indirect or consequential damage) and costs which the user may incur as a consequence of the information being inaccurate or incomplete in any way and for any reason.

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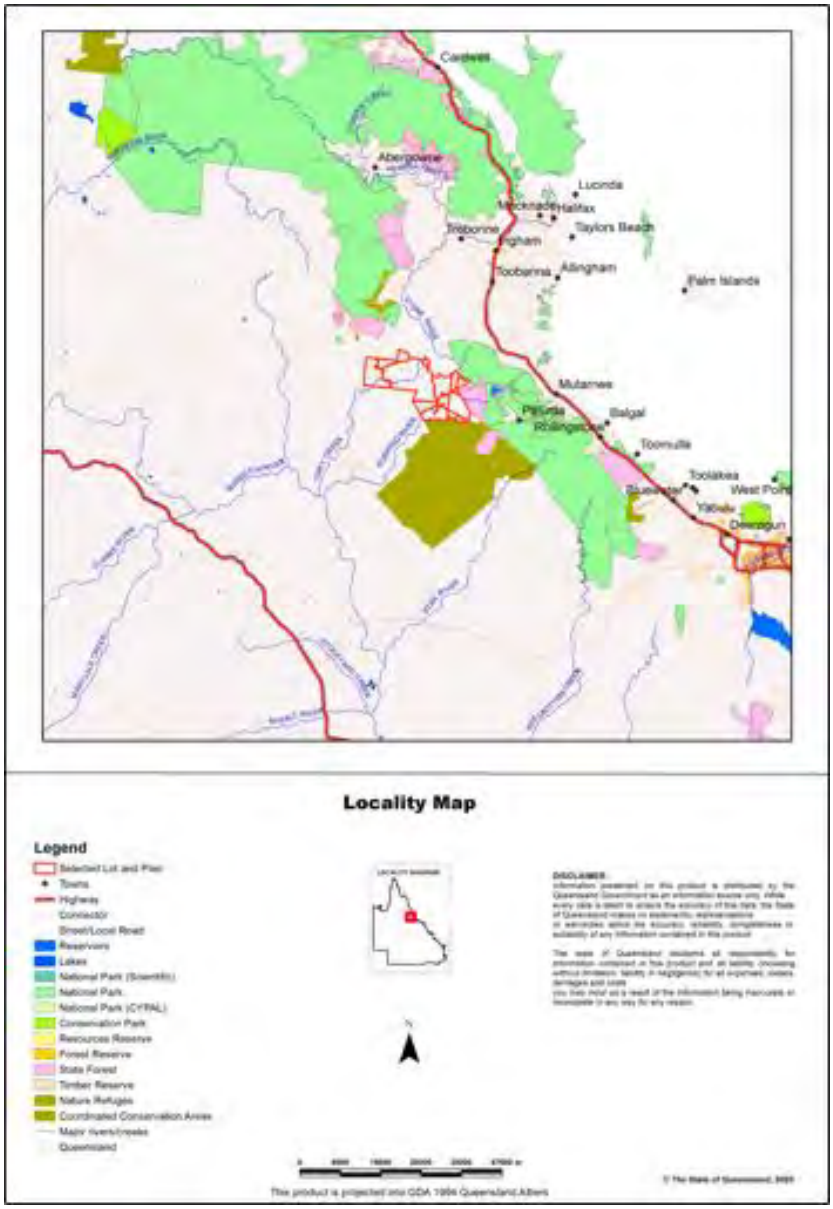
Assessment Area Details

The following table provides an overview of the area of interest (AOI) with respect to selected topographic and environmental values.

Table 1: Summary table, details for AOI Lot: 8 Plan: SP104503

Size (ha)	21,345.35
Local Government(s)	Charters Towers Regional
Bioregion(s)	Einasleigh Uplands, Wet Tropics
Subregion(s)	Paluma - Seaview, Broken River
Catchment(s)	Herbert, Burdekin



Matters of State Environmental Significance (MSES)

MSES Categories

Queensland's State Planning Policy (SPP) includes a biodiversity State interest that states:

'The sustainable, long-term conservation of biodiversity is supported. Significant impacts on matters of national or state environmental significance are avoided, or where this cannot be reasonably achieved; impacts are minimised and residual impacts offset.'

The MSES mapping product is a guide to assist planning and development assessment decision-making. Its primary purpose is to support implementation of the SPP biodiversity policy. While it supports the SPP, the mapping does not replace the regulatory mapping or environmental values specifically called up under other laws or regulations. Similarly, the SPP biodiversity policy does not override or replace specific requirements of other Acts or regulations.

The SPP defines matters of state environmental significance as:

- Protected areas (including all classes of protected area except coordinated conservation areas) under the *Nature Conservation Act 1992* ;

- Marine parks and land within a 'marine national park', 'conservation park', 'scientific research', 'preservation' or 'buffer' zone under the *Marine Parks Act 2004* ;

- Areas within declared fish habitat areas that are management A areas or management B areas under the Fisheries Regulation 2008;

- Threatened wildlife under the *Nature Conservation Act 1992* and special least concern animals under the Nature Conservation (Wildlife) Regulation 2006;

- Regulated vegetation under the *Vegetation Management Act 1999* that is:

    • Category B areas on the regulated vegetation management map, that are 'endangered' or 'of concern' regional ecosystems;

    • Category C areas on the regulated vegetation management map that are 'endangered' or 'of concern' regional ecosystems;

    • Category R areas on the regulated vegetation management map;

    • Regional ecosystems that intersect with watercourses identified on the vegetation management watercourse and drainage feature map;

    • Regional ecosystems that intersect with wetlands identified on the vegetation management wetlands map;

- Strategic Environmental Areas under the *Regional Planning Interests Act 2014* ;

- Wetlands in a wetland protection area of wetlands of high ecological significance shown on the Map of Queensland Wetland Environmental Values under the Environment Protection Regulation 2019;

- Wetlands and watercourses in high ecological value waters defined in the Environmental Protection (Water) Policy 2009, schedule 2;

- Legally secured offset areas.

MSES Values Present

The MSES values that are present in the area of interest are summarised in the table below:

Table 2: Summary of MSES present within the AOI

1a Protected Areas- estates	0.0 ha	0.0 %
1b Protected Areas- nature refuges	0.0 ha	0.0 %
2 State Marine Parks- highly protected zones	0.0 ha	0.0 %
3 Fish habitat areas (A and B areas)	0.0 ha	0.0 %
4 Strategic Environmental Areas (SEA)	0.0 ha	0.0 %
5 High Ecological Significance wetlands on the map of Referable Wetlands	0.0 ha	0.0 %
6a High Ecological Value (HEV) wetlands	0.0 ha	0.0 %
6b High Ecological Value (HEV) waterways **	0.0 km	Not applicable
7a Threatened (endangered or vulnerable) wildlife	3957.5 ha	18.5%
7b Special least concern animals	986.72 ha	4.6%
7c i Koala habitat area - core (SEQ)	0.0 ha	0.0 %
7c ii Koala habitat area - locally refined (SEQ)	0.0 ha	0.0 %
8a Regulated Vegetation - Endangered/Of concern in Category B (remnant)	3971.91 ha	18.6%
8b Regulated Vegetation - Endangered/Of concern in Category C (regrowth)	74.53 ha	0.3%
8c Regulated Vegetation - Category R (GBR riverine regrowth)	34.06 ha	0.2%
8d Regulated Vegetation - Essential habitat	3736.83 ha	17.5%
8e Regulated Vegetation - intersecting a watercourse **	430.3 km	Not applicable
8f Regulated Vegetation - within 100m of a Vegetation Management Wetland	16.33 ha	0.1%
9a Legally secured offset areas- offset register areas	0.0 ha	0.0 %
9b Legally secured offset areas- vegetation offsets through a Property Map of Assessable Vegetation	0.0 ha	0.0 %

Additional Information with Respect to MSES Values Present

MSES - State Conservation Areas

1a. Protected Areas - estates

(no results)

1b. Protected Areas - nature refuges

(no results)

2. State Marine Parks - highly protected zones

(no results)

3. Fish habitat areas (A and B areas)

(no results)

Refer to **Map 1 - MSES - State Conservation Areas** for an overview of the relevant MSES.

MSES - Wetlands and Waterways

4. Strategic Environmental Areas (SEA)

(no results)

5. High Ecological Significance wetlands on the Map of Queensland Wetland Environmental Values

(no results)

6a. Wetlands in High Ecological Value (HEV) waters

(no results)

6b. Waterways in High Ecological Value (HEV) waters

(no results)

Refer to **Map 2 - MSES - Wetlands and Waterways** for an overview of the relevant MSES.

MSES - Species

7a. Threatened (endangered or vulnerable) wildlife

Values are present

7b. Special least concern animals

Values are present

7c i. Koala habitat area - core (SEQ)

Not applicable

7c ii. Koala habitat area - locally refined (SEQ)

Not applicable

Threatened (endangered or vulnerable) wildlife habitat suitability models

Species	Common name	NCA status	Presence
Boronia keysii		V	None
Calyptorhynchus lathami	Glossy black cockatoo	V	None
Casuarius casuarius johnsonii	Sthn population cassowary	E	Core
Crinia tinnula	Wallum froglet	V	None
Denisonia maculata	Ornamental snake	V	None
Litoria freycineti	Wallum rocketfrog	V	None
Litoria olongburensis	Wallum sedgefrog	V	None
Melaleuca irbyana		E	None
Petaurus gracilis	Mahogany Glider	E	None
Petrogale persephone	Proserpine rock-wallaby	E	None
Phascolarctos cinereus	Koala - outside SEQ*	V	None
Pezoporus wallicus wallicus	Eastern ground parrot	V	None
Taudactylus Pleione	Kroombit tinkerfrog	E	None
Xeromys myoides	Water Mouse	V	None

**For koala model, this includes areas outside SEQ. Check 7c SEQ koala habitat for presence/absence.*

Threatened (endangered or vulnerable) wildlife species records

Scientific name	Common name	NCA status	EPBC status	Migratory status
Corymbia leptoloma		V	V	
Marsdenia brevifolia		V	V	
Petauroides volans	greater glider	V	V	
Bettongia tropica	northern bettong	E	E	
Geophaps scripta scripta	squatter pigeon (southern subspecies)	V	V	
Calyptorhynchus lathami	glossy black-cockatoo	V		
Aristida granitica		E	E	
Petrogale sharmani	Sharman's rock-wallaby	V	V	
Homoranthus porteri		V	V	
Glossocardia orthochaeta		E		
Pseudophryne covacevichae	magnificent broodfrog	V	V	

Special least concern animal species records

Scientific name	Common name	Migratory status
Ornithorhynchus anatinus	platypus	

**Nature Conservation Act 1992 (NCA) Status- Endangered (E), Vulnerable (V) or Special Least Concern Animal (SL). Environment Protection and Biodiversity Conservation Act 1999 (EPBC) status: Critically Endangered (CE) Endangered (E), Vulnerable (V)*

Migratory status (M) - China and Australia Migratory Bird Agreement (C), Japan and Australia Migratory Bird Agreement (J), Republic of Korea and Australia Migratory Bird Agreement (R), Bonn Migratory Convention (B), Eastern Flyway (E)

To request a species list for an area, or search for a species profile, access Wildlife Online at:

https://www.qld.gov.au/environment/plants-animals/species-list/

Refer to **Map 3a - MSES - Species - Threatened (endangered or vulnerable) wildlife and special least concern animals** and **Map 3b - MSES - Species - Koala habitat area (SEQ)** for an overview of the relevant MSES.

MSES - Regulated Vegetation

For further information relating to regional ecosystems in general, go to:

https://www.qld.gov.au/environment/plants-animals/plants/ecosystems/

For a more detailed description of a particular regional ecosystem, access the regional ecosystem search page at:

https://environment.ehp.qld.gov.au/regional-ecosystems/

8a. Regulated Vegetation - Endangered/Of concern in Category B (remnant)

Regional ecosystem	Vegetation management polygon	Vegetation management status
7.12.66b	O-dom	rem_oc
7.5.4b	O-dom	rem_oc
7.5.1a	O-dom	rem_oc
7.5.3a	O-dom	rem_oc
7.5.4a	O-dom	rem_oc
7.3.43a	O-dom	rem_oc
9.12.26/9.12.1d	O-dom	rem_oc
7.5.2c	O-dom	rem_oc
7.3.19a	O-dom	rem_oc
7.3.26a	O-dom	rem_oc
7.11.16a	O-dom	rem_oc
7.11.44	O-dom	rem_oc
7.12.47a	O-dom	rem_oc
7.3.39a	O-dom	rem_oc
7.12.63	O-dom	rem_oc
7.12.51b	O-dom	rem_oc
7.11.14a	O-dom	rem_oc
9.12.26	O-dom	rem_oc
7.3.28b	O-dom	rem_oc
7.3.28a	O-dom	rem_oc

Regional ecosystem	Vegetation management polygon	Vegetation management status
7.11.31c	O-dom	rem_oc
7.12.51a	O-dom	rem_oc
7.12.57a	O-dom	rem_oc
7.3.39c	O-dom	rem_oc

8b. Regulated Vegetation - Endangered/Of concern in Category C (regrowth)

Regional ecosystem	Vegetation management polygon	Vegetation management status
7.5.3a	O-dom	hvr_oc
7.3.43a	O-dom	hvr_oc
7.3.26a	O-dom	hvr_oc
9.12.26/9.12.1d	O-dom	hvr_oc
9.12.26	O-dom	hvr_oc

8c. Regulated Vegetation - Category R (GBR riverine regrowth)

Regulated vegetation map category	Map number	RVM rule
R	8060	4
R	8160	4
R	8159	4

8d. Regulated Vegetation - Essential habitat

Values are present

8e. Regulated Vegetation - intersecting a watercourse**

A vegetation management watercourse is mapped as present

8f. Regulated Vegetation - within 100m of a Vegetation Management wetland

Regulated vegetation map category	Map number	RVM rule
B	8160	2

Refer to **Map 4 - MSES - Regulated Vegetation** for an overview of the relevant MSES.

MSES - Offsets

9a. Legally secured offset areas - offset register areas

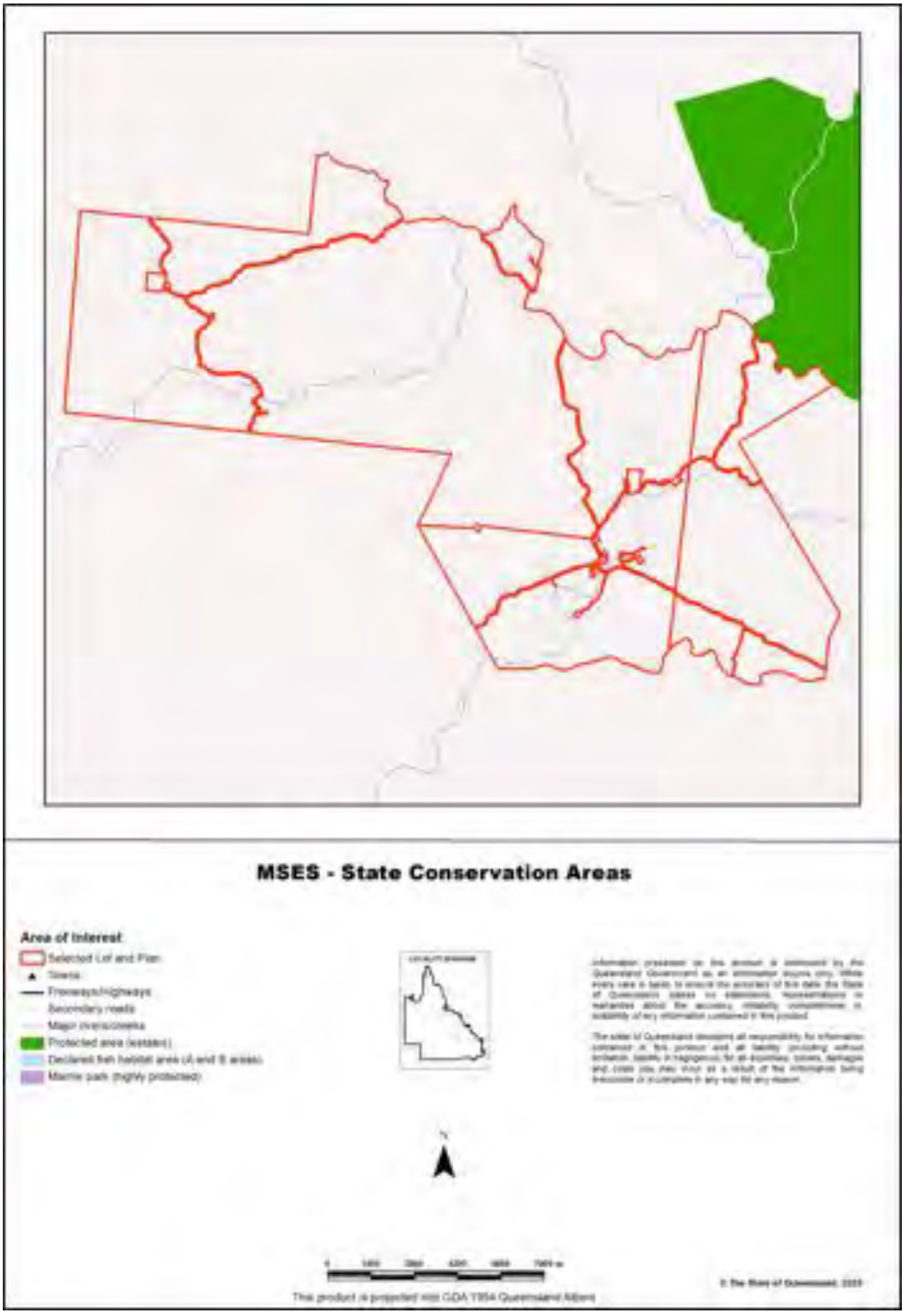
(no results)

9b. Legally secured offset areas - vegetation offsets through a Property Map of Assessable Vegetation

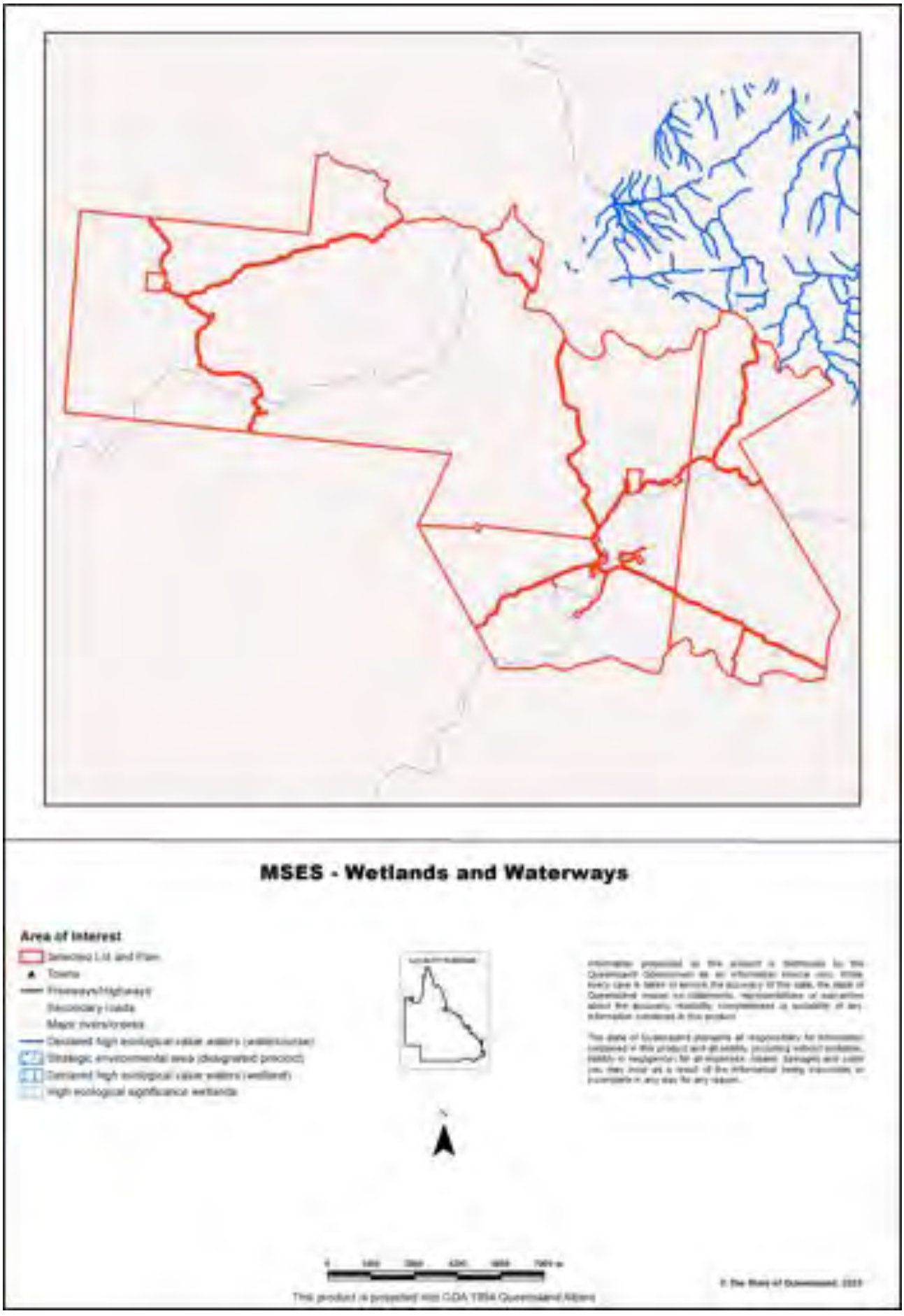
(no results)

Refer to **Map 5 - MSES - Offset Areas** for an overview of the relevant MSES.

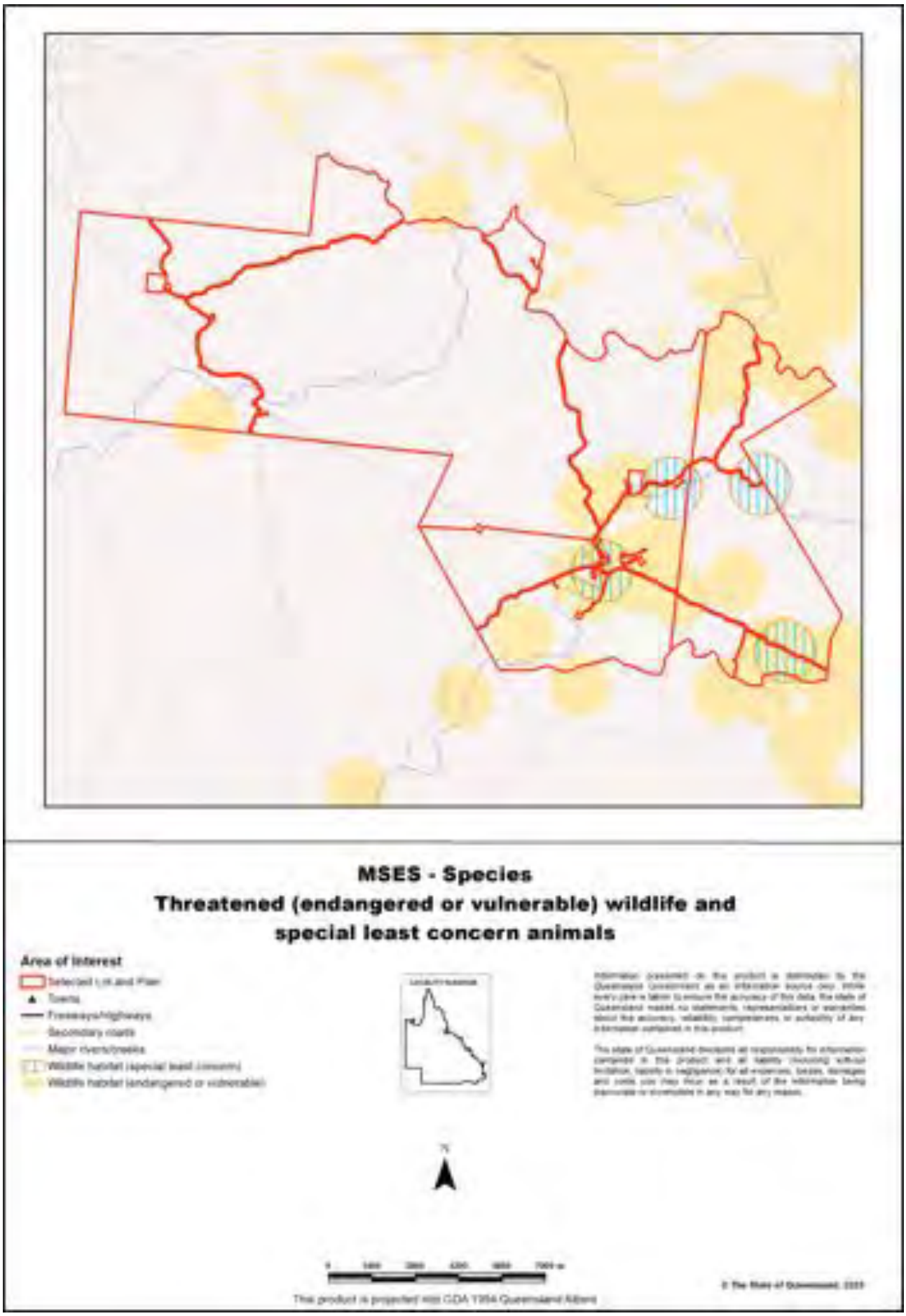
Map 1 - MSES - State Conservation Areas



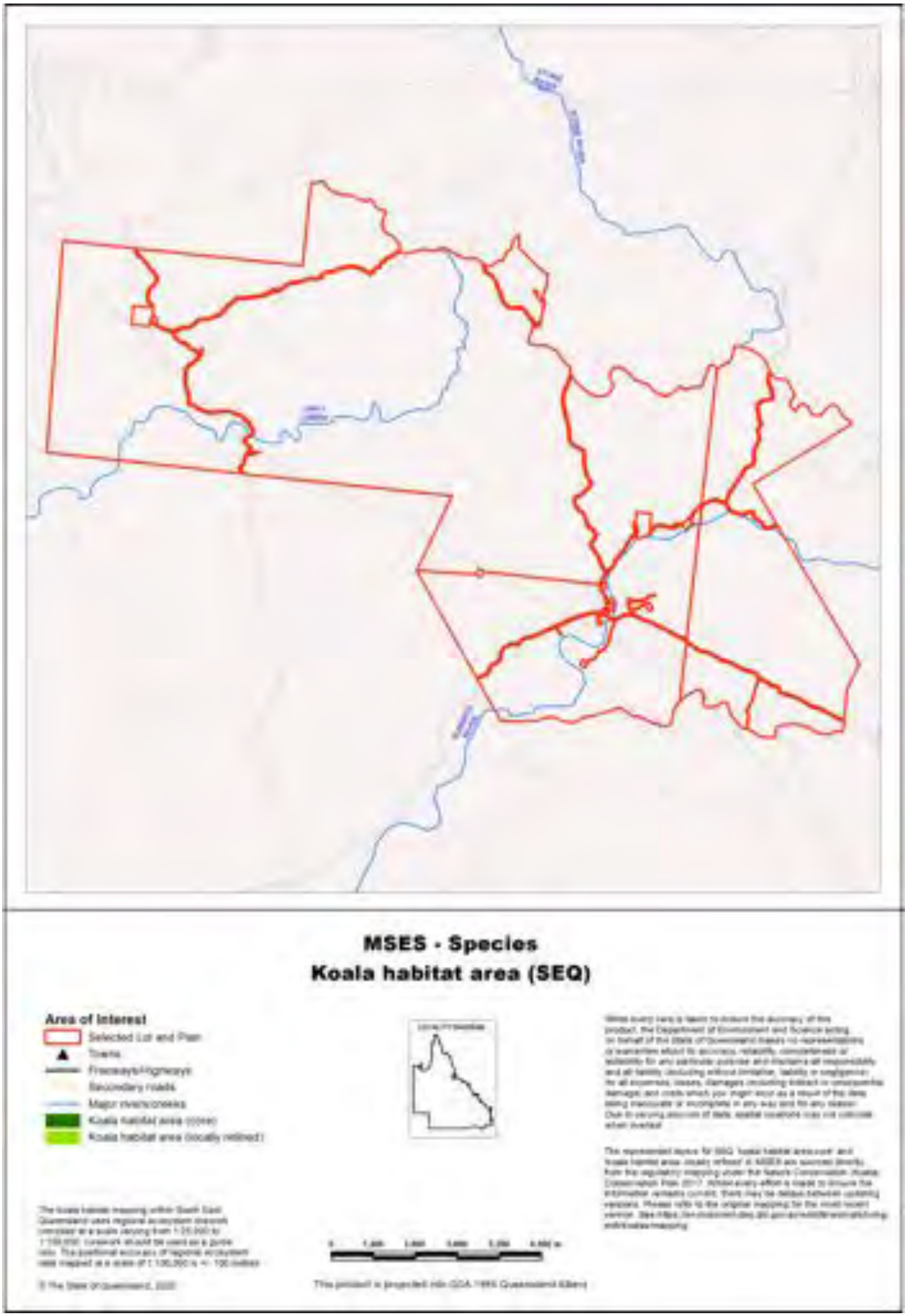
Map 2 - MSES - Wetlands and Waterways



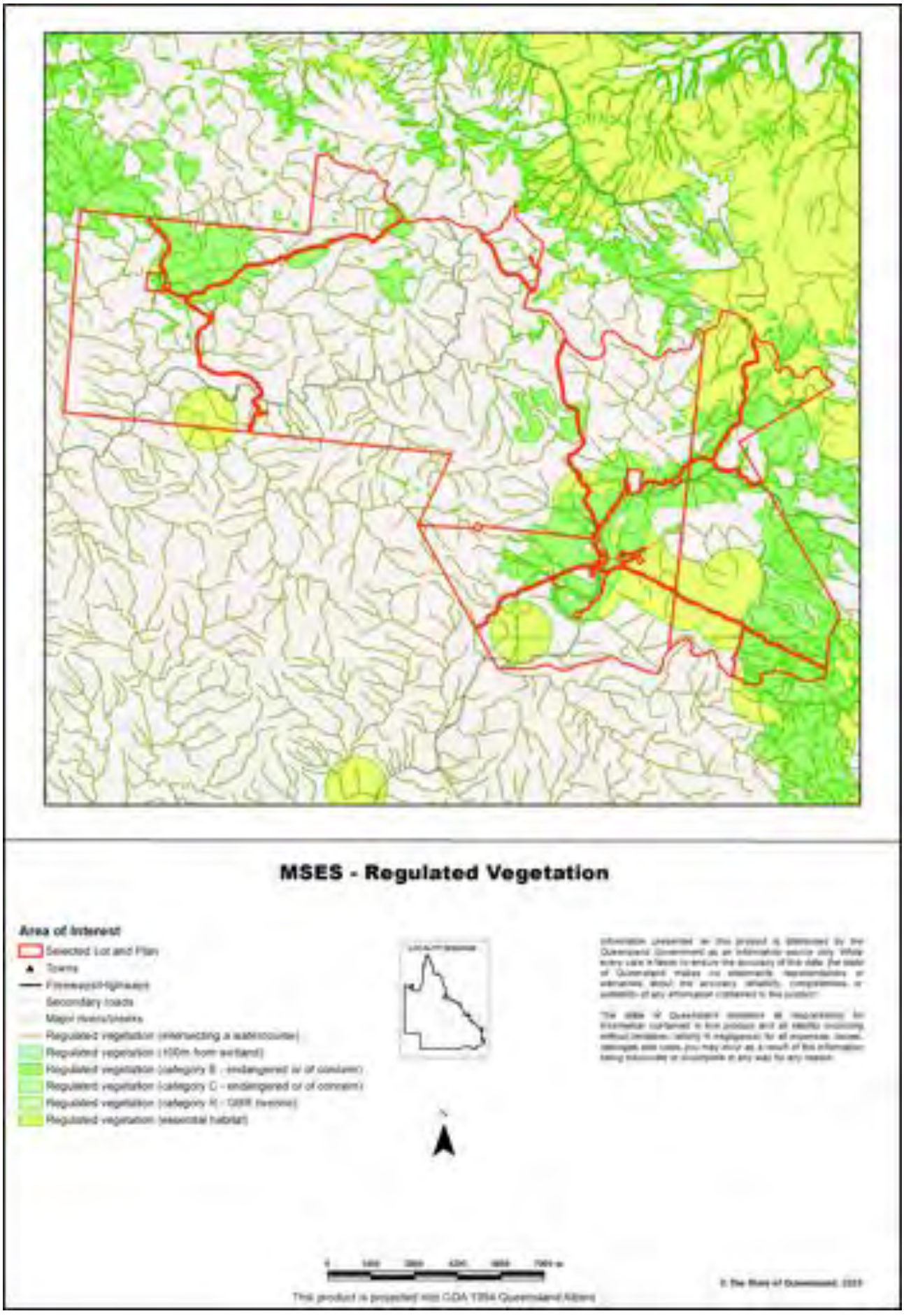
Map 3a - MSES - Species - Threatened (endangered or vulnerable) wildlife and special least concern animals



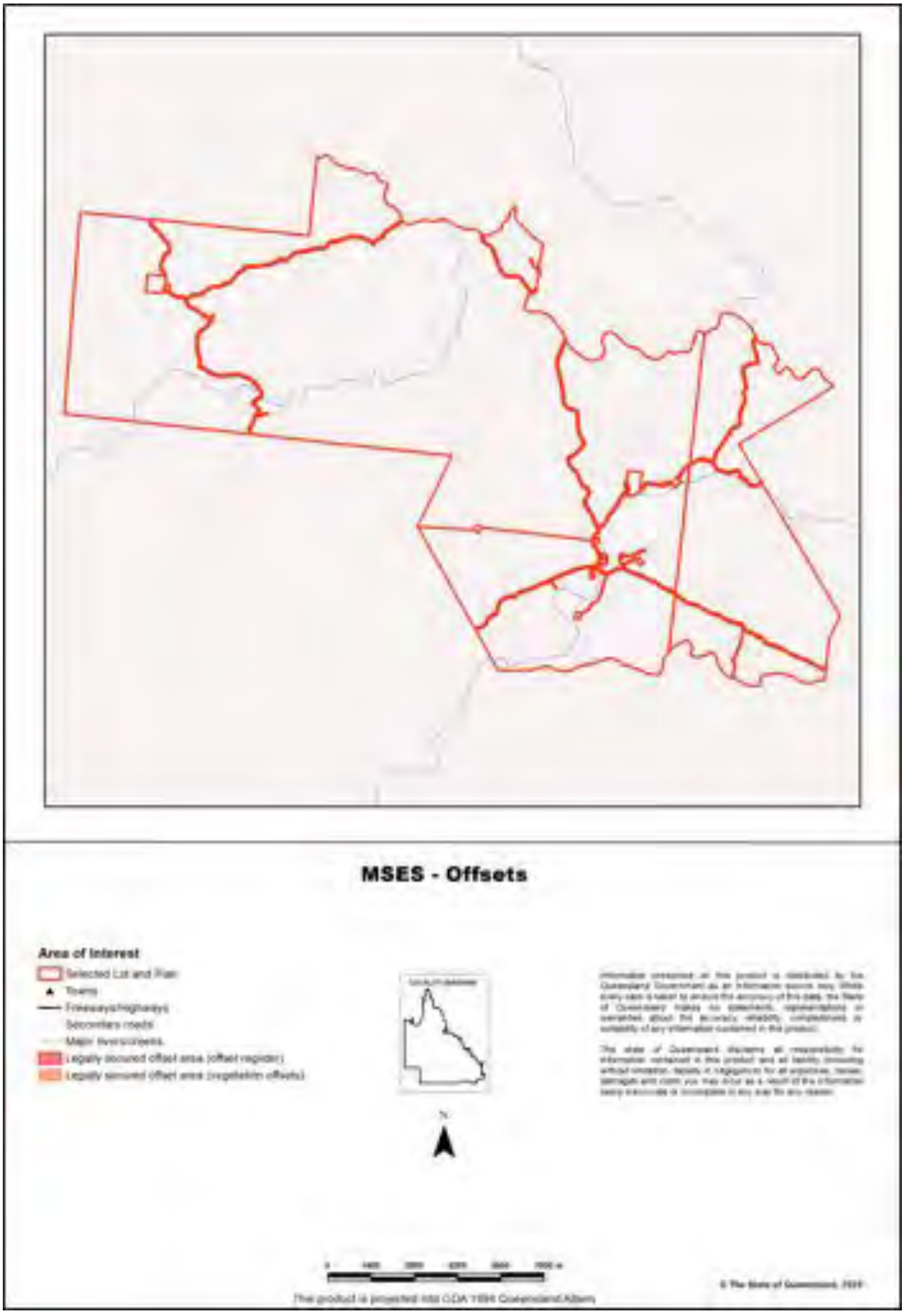
Map 3b - MSES - Species - Koala habitat area (SEQ)



Map 4 - MSES - Regulated Vegetation



Map 5 - MSES - Offset Areas



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VMA	- *Vegetation Management Act 1999*

Queensland Government

Department of Environment and Science

Environmental Reports

Regional Ecosystems

Biodiversity Status

For the selected area of interest
Lot: 3198 Plan: PH2177

Environmental Reports - General Information

The Environmental Reports portal provides for the assessment of selected matters of interest relevant to a user specified location, or area of interest (AOI). All area and derivative figures are relevant to the extent of matters of interest contained within the AOI unless otherwise stated. Please note, if a user selects an AOI via the "central coordinates" option, the resulting assessment area encompasses an area extending for a 2km radius from the input coordinates.

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The information presented in this report should be considered as a guide only and field survey may be required to validate values on the ground.

Important Note to User

Information presented in this report is based upon the Queensland Herbarium's Regional Ecosystem framework. The Biodiversity Status has been used to depict the extent of "Endangered", "Of Concern" and "No Concern at Present" regional ecosystems in all cases, rather than the classes used for the purposes of the *Vegetation Management Act 1999* (VMA). Mapping and figures presented in this document reflect the Queensland Herbarium's Remnant and Pre-clearing Regional Ecosystem Datasets, and not the certified mapping used for the purpose of the VMA.

For matters relevant to vegetation management under the VMA, please refer to the Department of Natural Resources, Mines and Energy website

https://www.dnrme.qld.gov.au/

Please direct queries about these reports to: Queensland.Herbarium@dsiti.qld.gov.au

Disclaimer

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Summary Information

The following table provides an overview of the AOI with respect to selected topographic and environmental themes. Refer to **Map 1** for locality information.

Table 1: Area of interest details: Lot: 3198 Plan: PH2177

Size (ha)	51,794.36
Local Government(s)	Charters Towers Regional
Bioregion(s)	Einasleigh Uplands, Wet Tropics
Subregion(s)	Paluma - Seaview, Herberton - Wairuna, Broken River
Catchment(s)	Herbert, Burdekin

The table below summarizes the extent of remnant vegetation classed as "Endangered", "Of concern" and "No concern at present" regional ecosystems classified by Biodiversity Status within the area of interest (AOI).

Table 2: Summary table, biodiversity status of regional ecosystems within the AOI

Biodiversity Status	Area (Ha)	% of AOI
Endangered	89.39	0.17
Of concern	2,506.03	4.84
No concern at present	47,866.20	92.42
Total remnant vegetation	50,461.61	97.43

Refer to **Map 2** for further information.

Regional Ecosystems

1. Introduction

Regional ecosystems are vegetation communities in a bioregion that are consistently associated with particular combinations of geology, landform and soil (Sattler and Williams 1999). Descriptions of Queensland's Regional ecosystems are available online from the Regional Ecosystem Description Database (REDD). Descriptions are compiled from a broad range of information sources including vegetation, land system and geology survey and mapping and detailed vegetation site data. The regional ecosystem classification and descriptions are reviewed as new information becomes available. A number of vegetation communities may form a single regional ecosystem and are usually distinguished by differences in dominant species, frequently in the shrub or ground layers and are denoted by a letter following the regional ecosystem code (e.g. a, b, c). Vegetation communities and regional ecosystems are amalgamated into a higher level classification of broad vegetation groups (BVGs).

A published methodology for survey and mapping of regional ecosystems across Queensland (Neldner et al 2017) provides further details on regional ecosystem concepts and terminology.

This report provides information on the type, status, and extent of vegetation communities, regional ecosystems and broad vegetation groups present within a user specified area of interest. Please note, for the purpose of this report, the Biodiversity Status is used. This report has not been developed for application of the *Vegetation Management Act 1999* (VMA). Additionally, information generated in this report has been derived from the Queensland Herbarium's Regional Ecosystem Mapping, and not the regulated mapping certified for the purposes of the VMA. If your interest/matter relates to regional ecosystems and the VMA, users should refer to the Department of Natural Resources, Mines and Energy website.

https://www.dnrme.qld.gov.au/

With respect to the Queensland Biodiversity Status,

"Endangered" regional ecosystems are described as those where:

- remnant vegetation is less than 10 per cent of its pre-clearing extent across the bioregion; or 10-30% of its pre-clearing extent remains and the remnant vegetation is less than 10,000 hectares, or
- less than 10 per cent of its pre-clearing extent remains unaffected by severe degradation and/or biodiversity loss*, or
- 10-30 per cent of its pre-clearing extent remains unaffected by severe degradation and/or biodiversity loss and the remnant vegetation is less than 10,000 hectares; or
- it is a rare** regional ecosystem subject to a threatening process.***

"Of concern" regional ecosystems are described as those where:

- the degradation criteria listed above for 'Endangered' regional ecosystems are not met and,
- remnant vegetation is 10-30 per cent of its pre-clearing extent across the bioregion; or more than 20 per cent of its pre-clearing extent remains and the remnant extent is less than 10,000 hectares, or
- 10-30 percent of its pre-clearing extent remains unaffected by moderate degradation and/or biodiversity loss.****

and "No concern at present" regional ecosystems are described as those where:

- remnant vegetation is over 30 per cent of its pre-clearing extent across the bioregion, and the remnant area is greater than 10,000 hectares, and
- the degradation criteria listed above for 'Endangered' or 'Of concern' regional ecosystems are not met.

**Severe degradation and/or biodiversity loss is defined as: floristic and/or faunal diversity is greatly reduced but unlikely to recover within the next 50 years even with the removal of threatening processes; or soil surface is severely degraded, for example, by loss of A horizon, surface expression of salinity; surface compaction, loss of organic matter or sheet erosion.*

***Rare regional ecosystem: pre-clearing extent (1000 ha); or patch size (100 ha and of limited total extent across its range).*

****Threatening processes are those that are reducing or will reduce the biodiversity and ecological integrity of a regional ecosystem. For example, clearing, weed invasion, fragmentation, inappropriate fire regime or grazing pressure, or infrastructure development.*

*****Moderate degradation and/or biodiversity loss is defined as: floristic and/or faunal diversity is greatly reduced but unlikely to recover within the next 20 years even with the removal of threatening processes; or soil surface is moderately degraded.*

2. Remnant Regional Ecosystems

The following table identifies the remnant regional ecosystems and vegetation communities mapped within the AOI and provides their short descriptions, Biodiversity Status, and remnant extent within the selected AOI. Please note, where heterogeneous vegetated patches (mixed patches of remnant vegetation mapped as containing multiple regional ecosystems) occur within the AOI, they have been split and listed as individual regional ecosystems (or vegetation communities where present) for the purposes of the table below. In such instances, associated area figures have been generated based upon the estimated proportion of each regional ecosystem (or vegetation community) predicted to be present within the larger mixed patch.

Table 3: Remnant regional ecosystems, description and status within the AOI

Regional Ecosystem	Short Description	BD Status	Area (Ha)	% of AOI
11.12.13a	Eucalyptus crebra, Corymbia spp., E. acmenoides woodland on igneous rocks. Coastal hills	No concern at present	36.41	0.07
7.12.10b	Notophyll vine forest with emergent Araucaria cunninghamii of the moist and dry foothills and uplands on granites and rhyolites of the Seaview and Paluma Ranges	Of concern	0.98	less than 0.01
7.12.16a	Simple to complex notophyll vine forest, including small areas of Araucaria bidwillii, of cloudy wet and moist uplands and highlands on granites and rhyolites	No concern at present	3.24	0.01
7.12.21a	Eucalyptus grandis open forest to woodland, or Corymbia intermedia, E. pellita, and E. grandis, open forest to woodland, (or vine forest with these species as emergents) on granite and rhyolite	Endangered	0.9	less than 0.01
7.12.21b	Eucalyptus grandis open forest to woodland, or Corymbia intermedia, E. pellita, and E. grandis, open forest to woodland, (or vine forest with these species as emergents) on granite and rhyolite	Endangered	2.94	0.01
7.12.24a	Eucalyptus portuensis and Corymbia intermedia open forest to woodland (or vine forest with E. portuensis and C. intermedia emergents) on foothills and uplands on granite and rhyolite	No concern at present	222.01	0.43
7.12.29a	Corymbia intermedia and/or Lophostemon suaveolens open forest to woodland +/- areas of Allocasuarina littoralis and A. torulosa on uplands on granite and rhyolite	No concern at present	274.67	0.53
7.12.29b	Corymbia intermedia and/or Lophostemon suaveolens open forest to woodland +/- areas of Allocasuarina littoralis and A. torulosa on uplands on granite and rhyolite	No concern at present	1,415.74	2.73
7.12.30a	Corymbia citriodora +/- Eucalyptus portuensis woodland to open forest on granite and rhyolite	No concern at present	714.72	1.38
7.12.34	Eucalyptus portuensis and/or E. drepanophylla, +/- C. intermedia +/- C. citriodora, +/- E. granitica open woodland to open forest on uplands on granite	No concern at present	1,202.69	2.32
7.12.61a	Eucalyptus tereticornis +/- E. granitica woodland to open forest of foothills and uplands on granite and rhyolite	Of concern	5.83	0.01

Regional Ecosystem	Short Description	BD Status	Area (Ha)	% of AOI
7.12.65b	Rock pavement or areas of skeletal soil, on granite and rhyolite of dry western or southern areas +/- shrublands to closed forests of Acacia spp. and/or Lophostemon suaveolens and/or Allocasuarina littoralis and/or Eucalyptus lockyeri subsp. exuta	Of concern	47.87	0.09
7.12.65c	Rock pavement or areas of skeletal soil, on granite and rhyolite of dry western or southern areas +/- shrublands to closed forests of Acacia spp. and/or Lophostemon suaveolens and/or Allocasuarina littoralis and/or Eucalyptus lockyeri subsp. exuta	Of concern	77.83	0.15
7.12.65k	Rock pavement or areas of skeletal soil, on granite and rhyolite of dry western or southern areas +/- shrublands to closed forests of Acacia spp. and/or Lophostemon suaveolens and/or Allocasuarina littoralis and/or Eucalyptus lockyeri subsp. exuta	Of concern	0.12	less than 0.01
7.12.66b	Lophostemon confertus low shrubland or low closed forest on exposed rocky slopes on granite and rhyolite	Of concern	0.81	less than 0.01
7.12.69b	Eucalyptus drepanophylla and/or E. granitica +/- Corymbia clarksoniana +/- C. erythrophloia woodland on uplands on granite and rhyolite	Of concern	13.56	0.03
7.3.19a	Corymbia intermedia or C. tessellaris +/- Eucalyptus tereticornis open forest (or vine forest with these species as emergents) on well-drained alluvium	Of concern	5.88	0.01
7.3.26a	Casuarina cunninghamiana woodland to open forest on alluvium fringing streams	Endangered	27.47	0.05
7.3.28d	Rivers and streams including riparian herbfield and shrubland on river and stream bed alluvium and rock within stream beds	Endangered	2.27	less than 0.01
7.3.39a	Eucalyptus tereticornis +/- E. platyphylla +/- Corymbia intermedia +/- Lophostemon suaveolens open woodland to open forest, and associated sedgelands and grasslands on broad drainage depressions of uplands	Endangered	1.35	less than 0.01
7.3.43a	Eucalyptus tereticornis open forest to woodland on uplands on well-drained alluvium	Endangered	30.37	0.06
7.3.49a	Notophyll vine forest on rubble terraces of streams	Of concern	3.11	0.01
7.5.2a	Eucalyptus portuensis +/- Corymbia intermedia, open forest to woodland of uplands on weathered soils of a remnant surface	Of concern	272.45	0.53
7.5.2b	Eucalyptus portuensis +/- Corymbia intermedia, open forest to woodland of uplands on weathered soils of a remnant surface	Of concern	59.23	0.11
7.5.2c	Eucalyptus portuensis +/- Corymbia intermedia, open forest to woodland of uplands on weathered soils of a remnant surface	Of concern	131.3	0.25
7.5.2d	Eucalyptus portuensis +/- Corymbia intermedia, open forest to woodland of uplands on weathered soils of a remnant surface	Of concern	126.0	0.24
7.5.2f	Eucalyptus portuensis +/- Corymbia intermedia, open forest to woodland of uplands on weathered soils of a remnant surface	Of concern	4.0	0.01

Regional Ecosystem	Short Description	BD Status	Area (Ha)	% of AOI
7.5.3a	Eucalyptus portuensis, Corymbia citriodora, and E. drepanophylla woodland to open forest of uplands on weathered soils of a remnant surface	Endangered	24.08	0.05
7.5.4a	Corymbia intermedia or Melaleuca viridiflora woodland to open forest of uplands on weathered soils of a remnant surface	Of concern	76.53	0.15
7.5.4b	Corymbia intermedia or Melaleuca viridiflora woodland to open forest of uplands on weathered soils of a remnant surface	Of concern	200.86	0.39
7.5.4c	Corymbia intermedia or Melaleuca viridiflora woodland to open forest of uplands on weathered soils of a remnant surface	Of concern	18.36	0.04
7.5.4f	Corymbia intermedia or Melaleuca viridiflora woodland to open forest of uplands on weathered soils of a remnant surface	Of concern	45.57	0.09
7.8.18a	Corymbia intermedia and/or Lophostemon suaveolens +/- Allocasuarina torulosa open forest to woodland on basalt	Of concern	78.81	0.15
7.8.18c	Corymbia intermedia and/or Lophostemon suaveolens +/- Allocasuarina torulosa open forest to woodland on basalt	Of concern	91.19	0.18
9.11.1a	Eucalyptus melanophloia low woodland on skeletal soils on metamorphics hills	No concern at present	126.79	0.24
9.11.2a	Eucalyptus crebra (or several other ironbark species) +/- Corymbia spp. woodland on shallow texture contrast soils on low metamorphic hills and lowlands	No concern at present	12,117.96	23.4
9.11.4a	Eucalyptus crebra, Corymbia clarksoniana, C. citriodora subsp. citriodora +/- E. portuensis open forest on shallow soils on metamorphic hills and ranges	No concern at present	1,903.26	3.67
9.11.5	Eucalyptus persistens +/- E. crebra woodland on low metamorphic hills	No concern at present	5,022.86	9.7
9.12.19	Eucalyptus crebra or E. granitica +/- Corymbia citriodora subsp. citriodora +/- E. portuensis mixed woodland on igneous hills	No concern at present	2,990.72	5.77
9.12.1a	Eucalyptus crebra and/or E. xanthoclada and/or E. drepanophylla low open woodland on igneous rocks	No concern at present	5,688.80	10.98
9.12.2	Eucalyptus portuensis, Corymbia citriodora subsp. citriodora, E. granitica or E. crebra, C. intermedia or C. clarksoniana mixed woodland on steep hills and ranges on igneous hills close to Wet Tropics boundary	No concern at present	7,574.46	14.62
9.12.22	Eucalyptus drepanophylla, Corymbia clarksoniana or C. intermedia and C. dallachiana woodland on steep rugged igneous ranges	No concern at present	4,885.53	9.43
9.12.23	Eucalyptus drepanophylla or E. crebra, Corymbia leichhardtii and C. lamprophylla low open woodland on igneous rocks	No concern at present	234.16	0.45
9.12.8a	Semi-evergreen vine thicket on rocky outcrops and shallow soils of igneous rocks	No concern at present	20.24	0.04

Regional Ecosystem	Short Description	BD Status	Area (Ha)	% of AOI
9.3.1	Eucalyptus camaldulensis and/or E. tereticornis +/- Melaleuca spp. +/- Casuarina cunninghamiana fringing woodland on channels and levees	Of concern	455.31	0.88
9.3.12a	River beds and associated waterholes on major rivers and channels	Of concern	81.63	0.16
9.3.13	Melaleuca spp., Eucalyptus camaldulensis and Casuarina cunninghamiana fringing open forest on streams and channels	Of concern	20.08	0.04
9.3.22a	Eucalyptus crebra or E. cullenii +/- Corymbia spp. open woodland on alluvial levees and terraces	Of concern	38.1	0.07
9.3.6a	Eucalyptus platyphylla +/- Eucalyptus spp. +/- Corymbia spp. woodland on alluvial plains	No concern at present	1,420.38	2.74
9.5.5a	Corymbia clarksoniana, Eucalyptus portuensis, E. crebra and C. citriodora subsp. citriodora in mixed open forests on red kandosols on Tertiary surfaces	Of concern	498.44	0.96
9.5.5b	Corymbia clarksoniana, Eucalyptus portuensis, E. crebra and C. citriodora subsp. citriodora in mixed open forests on red kandosols on Tertiary surfaces	Of concern	53.81	0.1
9.5.5c	Corymbia clarksoniana, Eucalyptus portuensis, E. crebra and C. citriodora subsp. citriodora in mixed open forests on red kandosols on Tertiary surfaces	Of concern	34.65	0.07
9.5.5f	Corymbia clarksoniana, Eucalyptus portuensis, E. crebra and C. citriodora subsp. citriodora in mixed open forests on red kandosols on Tertiary surfaces	Of concern	52.68	0.1
9.7.3a	Eucalyptus crebra or E. portuensis +/- Corymbia clarksoniana woodland on lateritised surfaces and edges of Tertiary surfaces	No concern at present	190.85	0.37
9.7.3b	Eucalyptus crebra or E. portuensis +/- Corymbia clarksoniana woodland on lateritised surfaces and edges of Tertiary surfaces	No concern at present	256.08	0.49
9.8.13	Iseilema spp. and/or Dichanthium spp. tussock grassland on basalt plains	No concern at present	24.0	0.05
9.8.1a	Eucalyptus crebra +/- Corymbia dallachiana +/- E. leptophleba open woodland on plains and rocky rises of basalt geologies	No concern at present	10.19	0.02
9.8.4a	Eucalyptus crebra and/or E. tereticornis open woodland on basalt plains	No concern at present	1,517.80	2.93
9.8.4b	Eucalyptus crebra and/or E. tereticornis open woodland on basalt plains	No concern at present	12.1	0.02
9.8.4c	Eucalyptus crebra and/or E. tereticornis open woodland on basalt plains	No concern at present	0.54	less than 0.01
9.8.7	Semi-evergreen vine thicket on cones, craters and rocky basalt flows with little soil development	Of concern	11.02	0.02
non-rem	None	None	1,297.07	2.5
water	None	None	34.95	0.07

Refer to **Map 2** for further information. **Map 3** also provides a visual estimate of the distribution of regional ecosystems present before clearing.

Table 4 provides further information in regards to the remnant regional ecosystems present within the AOI. Specifically, the extent of remnant vegetation remaining within the bioregion, the 1:1,000,000 broad vegetation group (BVG) classification, whether the regional ecosystem is identified as a wetland, and extent of representation in Queensland's Protected Area

Estate. For a description of the vegetation communities within the AOI and classified according to the 1:1,000,000 BVG, refer to **Table 6**.

Table 4: Remnant regional ecosystems within the AOI, additional information

Regional Ecosystem	Remnant Extent	BVG (1 Million)	Wetland	Representation in protected estate
11.12.13a	Pre-clearing 43000 ha; Remnant 2017 40000 ha	10a	None	High
7.12.10b	Pre-clearing 2000 ha; Remnant 2017 2000 ha	5b	None	High
7.12.16a	Pre-clearing 242000 ha; Remnant 2017 230000 ha	6b	None	High
7.12.21a	Pre-clearing 16000 ha; Remnant 2017 16000 ha	8a	None	High
7.12.21b	Pre-clearing 16000 ha; Remnant 2017 16000 ha	8a	None	High
7.12.24a	Pre-clearing 33000 ha; Remnant 2017 32000 ha	9d	None	High
7.12.29a	Pre-clearing 88000 ha; Remnant 2017 87000 ha	9c	None	High
7.12.29b	Pre-clearing 88000 ha; Remnant 2017 87000 ha	9c	None	High
7.12.30a	Pre-clearing 43000 ha; Remnant 2017 43000 ha	10b	None	High
7.12.34	Pre-clearing 52000 ha; Remnant 2017 51000 ha	9d	None	High
7.12.61a	Pre-clearing 26000 ha; Remnant 2017 25000 ha	9c	None	High
7.12.65b	Pre-clearing 16000 ha; Remnant 2017 16000 ha	29b	None	High
7.12.65c	Pre-clearing 16000 ha; Remnant 2017 16000 ha	9d	None	High
7.12.65k	Pre-clearing 16000 ha; Remnant 2017 16000 ha	29b	None	High
7.12.66b	Pre-clearing 5000 ha; Remnant 2017 5000 ha	28e	None	High
7.12.69b	Pre-clearing 700 ha; Remnant 2017 700 ha	13c	None	High
7.3.19a	Pre-clearing 6000 ha; Remnant 2017 4000 ha	9e	None	High
7.3.26a	Pre-clearing 5000 ha; Remnant 2017 4000 ha	16a	Riverine wetland or fringing riverine wetland.	High
7.3.28d	Pre-clearing 8000 ha; Remnant 2017 7000 ha	16d	Riverine wetland or fringing riverine wetland.	High
7.3.39a	Pre-clearing 2000 ha; Remnant 2017 1000 ha	9e	Floodplain (other than floodplain wetlands).	Medium
7.3.43a	Pre-clearing 3000 ha; Remnant 2017 2000 ha	9e	Contains palustrine wetland (e.g. in swales).	High
7.3.49a	Pre-clearing 800 ha; Remnant 2017 800 ha	22c	Riverine wetland or fringing riverine wetland.	High

Regional Ecosystem	Remnant Extent	BVG (1 Million)	Wetland	Representation in protected estate
7.5.2a	Pre-clearing 6000 ha; Remnant 2017 6000 ha	9d	None	Low
7.5.2b	Pre-clearing 6000 ha; Remnant 2017 6000 ha	9d	None	Low
7.5.2c	Pre-clearing 6000 ha; Remnant 2017 6000 ha	9d	None	Low
7.5.2d	Pre-clearing 6000 ha; Remnant 2017 6000 ha	9d	None	Low
7.5.2f	Pre-clearing 6000 ha; Remnant 2017 6000 ha	13c	None	Low
7.5.3a	Pre-clearing 300 ha; Remnant 2017 300 ha	10b	None	No representation
7.5.4a	Pre-clearing 6000 ha; Remnant 2017 5000 ha	9e	None	Low
7.5.4b	Pre-clearing 6000 ha; Remnant 2017 5000 ha	9e	None	Low
7.5.4c	Pre-clearing 6000 ha; Remnant 2017 5000 ha	9e	None	Low
7.5.4f	Pre-clearing 6000 ha; Remnant 2017 5000 ha	9e	None	Low
7.8.18a	Pre-clearing 2000 ha; Remnant 2017 1000 ha	9c	None	High
7.8.18c	Pre-clearing 2000 ha; Remnant 2017 1000 ha	9c	None	High
9.11.1a	Pre-clearing 161000 ha; Remnant 2017 159000 ha	17b	None	Low
9.11.2a	Pre-clearing 364000 ha; Remnant 2017 357000 ha	13c	None	Low
9.11.4a	Pre-clearing 42000 ha; Remnant 2017 41000 ha	13c	None	High
9.11.5	Pre-clearing 390000 ha; Remnant 2017 386000 ha	19d	None	Low
9.12.19	Pre-clearing 41000 ha; Remnant 2017 41000 ha	13c	None	No representation
9.12.1a	Pre-clearing 866000 ha; Remnant 2017 821000 ha	13c	None	Low
9.12.2	Pre-clearing 117000 ha; Remnant 2017 115000 ha	9d	None	High
9.12.22	Pre-clearing 64000 ha; Remnant 2017 64000 ha	13c	None	Medium
9.12.23	Pre-clearing 39000 ha; Remnant 2017 39000 ha	13c	None	No representation
9.12.8a	Pre-clearing 13000 ha; Remnant 2017 13000 ha	7a	None	High
9.3.1	Pre-clearing 92000 ha; Remnant 2017 90000 ha	16a	Riverine wetland or fringing riverine wetland.	Low
9.3.12a	Pre-clearing 59000 ha; Remnant 2017 58000 ha	16d	Riverine wetland or fringing riverine wetland.	Low

Regional Ecosystem	Remnant Extent	BVG (1 Million)	Wetland	Representation in protected estate
9.3.13	Pre-clearing 104000 ha; Remnant 2017 102000 ha	22c	Riverine wetland or fringing riverine wetland.	Low
9.3.22a	Pre-clearing 99000 ha; Remnant 2017 96000 ha	16c	Contains riverine wetland.	Low
9.3.6a	Pre-clearing 20000 ha; Remnant 2017 19000 ha	16c	Contains palustrine wetland (e.g. in swales).	Medium
9.5.5a	Pre-clearing 208000 ha; Remnant 2017 199000 ha	10b	None	High
9.5.5b	Pre-clearing 208000 ha; Remnant 2017 199000 ha	18b	None	High
9.5.5c	Pre-clearing 208000 ha; Remnant 2017 199000 ha	13d	None	High
9.5.5f	Pre-clearing 208000 ha; Remnant 2017 199000 ha	9e	None	High
9.7.3a	Pre-clearing 42000 ha; Remnant 2017 42000 ha	12b	None	High
9.7.3b	Pre-clearing 42000 ha; Remnant 2017 42000 ha	12b	None	High
9.8.13	Pre-clearing 169000 ha; Remnant 2017 166000 ha	30b	None	Low
9.8.1a	Pre-clearing 1070000 ha; Remnant 2017 1060000 ha	11b	None	Medium
9.8.4a	Pre-clearing 129000 ha; Remnant 2017 122000 ha	11b	None	Low
9.8.4b	Pre-clearing 129000 ha; Remnant 2017 122000 ha	11b	None	Low
9.8.4c	Pre-clearing 129000 ha; Remnant 2017 122000 ha	13d	None	Low
9.8.7	Pre-clearing 87000 ha; Remnant 2017 87000 ha	7a	Contains palustrine wetland (e.g. in swales).	High
non-rem	None	None	None	None
water	None	None	None	None

Representation in Protected Area Estate: High greater than 10% of pre-clearing extent is represented; Medium 4 - 10% is represented; Low less than 4% is represented, No representation.

The distribution of mapped wetland systems within the area of interest is displayed in **Map 6**.

The following table lists known special values associated with a regional ecosystem type.

Table 5: Remnant regional ecosystems within the AOI, special values

Regional Ecosystem	Special Values
11.12.13a	Potential habitat for NCA listed species: Aristida granitica, Bertya sharpeana, Sannantha papillosa
7.12.10b	Habitat for Parsonsia lenticellata, a restricted endemic plant species.

Regional Ecosystem	Special Values
7.12.16a	Habitat of threatened plant species including: Albizia sp. (Windsor Tableland B.Gray 2181), Argophyllum cryptophlebum, Ctenopteris walleri, Eidothea zoexylocarya, Elaeocarpus thelmae, Endiandra jonesii, Endiandra phaeocarpa, Helicia grayi, Helicia lewisensis, Phlegmariurus spp., Diteilis simmondsii, Litsea granitica, Phaleria biflora, Stenocarpus davallioides, , Symplocos graniticola and Xylosma sp. (Mt Lewis G.Sankowsky+ 1108). Habitat for near threatened plant species Aceratium ferrugineum, Aglaia brassii, Austrobuxus megacarpus, Bubbia queenslandiana subsp. queenslandiana, Glochidion pungens, Goodyera viridiflora, Diospyros granitica, Polyalthia submontana subsp. submontana, Helicia recurva, Medicosma glandulosa, Prumnopitys ladei, Pteridoblechnum acuminatum, Sarcopteryx montana, Symplocos ampulliformis and Wendlandia connata. Habitat of many endemic species of fauna and flora. Other species of local significance include Diospyros hemicycloides, Elaeocarpus johnsonii, Solanum dimorphispinum and Steganthera cooperorum.
7.12.21a	Habitat for arboreal mammals. Habitat for plant species of limited distribution including Bertya polystigma, Pityrodia salviifolia, Pomaderris argyrophylla, Dodonaea uncinata, Phebalium longifolium and Persoonia tropica.
7.12.21b	Habitat for arboreal mammals. Habitat for plant species of limited distribution including Bertya polystigma, Pityrodia salviifolia, Pomaderris argyrophylla, Dodonaea uncinata, Phebalium longifolium and Persoonia tropica.
7.12.24a	Potential habitat for NCA listed species: Arytera dictyoneura, Corymbia leptoloma, Marsdenia rara, Plectranthus gratus
7.12.29a	Potential habitat for NCA listed species: Corybas cerasinus, Corymbia leptoloma, Dodonaea uncinata
7.12.29b	Potential habitat for NCA listed species: Corybas cerasinus, Corymbia leptoloma, Dodonaea uncinata
7.12.30a	Potential habitat for NCA listed species: Acacia longipedunculata, Acacia purpureopetala, Acacia tingoorensis, Corymbia rhodops, Diuris oporina, Dodonaea uncinata, Grevillea glossadenia, Homoranthus porteri, Melaleuca sylvana, Micromyrtus delicata, Plectr 7.12.30d: Habitat for several locally restricted and disjunct species. Threatened plant species include Micromyrtus delicata, Melaleuca sylvana, Diuris oporina, Homoranthus porteri, Grevillea glossadenia, Acacia purpureopetala, Corymbia rhodops and Prostanthera clotteniana. Other species of local significance are Eucalyptus lockyeri.
7.12.34	Potential habitat for NCA listed species: Acacia longipedunculata, Calochlaena villosa, Croton densivestitus, Grevillea glossadenia, Homoranthus porteri, Plectranthus amoenus, Solanum angustum, Zieria obovata
7.12.61a	Potential habitat for NCA listed species: Arthraxon hispidus, Cucumis costatus, Dendrobium bigibbum, Dendrobium johannis, Dodonaea uncinata, Plectranthus gratus

Regional Ecosystem	Special Values
7.12.65b	Potential habitat for NCA listed species: Acacia purpureopetala, Buckinghamia ferruginiflora, Corymbia leptoloma, Corymbia rhodops, Diuris oporina, Dodonaea uncinata, Grevillea glossadenia, Homoranthus porteri, Melaleuca sylvana, Melaleuca uxorum, Micromy 7.12.65k: Habitat for several locally restricted and disjunct species. Threatened species include Micromyrtus delicata, Melaleuca sylvana, Melaleuca uxorum, Diuris oporina, Homoranthus porteri, Grevillea glossadenia, Acacia purpureopetala, Corymbia rhodops and Prostanthera clotteniana. Other species of local significance are Eucalyptus lockyeri.
7.12.65c	Potential habitat for NCA listed species: Acacia purpureopetala, Buckinghamia ferruginiflora, Corymbia leptoloma, Corymbia rhodops, Diuris oporina, Dodonaea uncinata, Grevillea glossadenia, Homoranthus porteri, Melaleuca sylvana, Melaleuca uxorum, Micromy 7.12.65k: Habitat for several locally restricted and disjunct species. Threatened species include Micromyrtus delicata, Melaleuca sylvana, Melaleuca uxorum, Diuris oporina, Homoranthus porteri, Grevillea glossadenia, Acacia purpureopetala, Corymbia rhodops and Prostanthera clotteniana. Other species of local significance are Eucalyptus lockyeri.
7.12.65k	Potential habitat for NCA listed species: Acacia purpureopetala, Buckinghamia ferruginiflora, Corymbia leptoloma, Corymbia rhodops, Diuris oporina, Dodonaea uncinata, Grevillea glossadenia, Homoranthus porteri, Melaleuca sylvana, Melaleuca uxorum, Micromy 7.12.65k: Habitat for several locally restricted and disjunct species. Threatened species include Micromyrtus delicata, Melaleuca sylvana, Melaleuca uxorum, Diuris oporina, Homoranthus porteri, Grevillea glossadenia, Acacia purpureopetala, Corymbia rhodops and Prostanthera clotteniana. Other species of local significance are Eucalyptus lockyeri.
7.12.66b	None
7.12.69b	Potential habitat for NCA listed species: Dendrobium bigibbum
7.3.19a	Potential habitat for NCA listed species: Peristylus banfieldii
7.3.26a	Important wildlife corridors in cleared landscapes.
7.3.28d	An important component of stream ecology and structure influencing substrate types, depth gradients, flow characteristics and flooding characteristics.
7.3.39a	Potential habitat for NCA listed species: Oenanthe javanica
7.3.43a	None
7.3.49a	Potential habitat for NCA listed species: Buckinghamia ferruginiflora, Gymnostoma australianum, Hollandaea riparia, Sphaerantia chartacea
7.5.2a	None
7.5.2b	None
7.5.2c	None
7.5.2d	None
7.5.2f	None
7.5.3a	None
7.5.4a	None
7.5.4b	None
7.5.4c	None

Regional Ecosystem	Special Values
7.5.4f	None
7.8.18a	None
7.8.18c	None
9.11.1a	None
9.11.2a	Potential habitat for NCA listed species: Corchorus subargenteus, Cycas couttsiana, Cycas platyphylla, Eucalyptus paedoglauca, Grevillea glossadenia
9.11.4a	None
9.11.5	Potential habitat for NCA listed species: Leptospermum pallidum, Lepturus minutus
9.12.19	Old growth of this regional ecosystem is significant for a number of species including arboreal mammals.
9.12.1a	Potential habitat for NCA listed species: Eucalyptus paedoglauca, Solanum angustum
9.12.2	Old growth of this ecosystem is significant for a number of species including arboreal mammals. Habitat for vulnerable flora species including Corymbia rhodops
9.12.22	Potential habitat for NCA listed species: Oldenlandia polyclada
9.12.23	Potential habitat for NCA listed species: Acacia longipedunculata, Corchorus subargenteus, Marsdenia brevifolia, Solanum graniticum
9.12.8a	The endangered species Glossocardia orthochaeta is associated with this regional ecosystem in the far east of the bioregion.
9.3.1	Significant habitat as drought refuge, wildlife corridors and for arboreal animals.
9.3.12a	Significant habitat as drought refuge, wildlife corridors and for arboreal animals.
9.3.13	Significant habitat as drought refuge, wildlife corridors and for arboreal animals.
9.3.22a	Potential habitat for NCA listed species: Macropteranthes montana
9.3.6a	Includes seasonal wetlands important for water bird feeding. 9.3.6a: Includes seasonal wetlands important for water bird feeding.
9.5.5a	Old growth stands of this regional ecosystem are particularly significant for arboreal mammals. Further survey required to verify faunal values.
9.5.5b	Old growth stands of this regional ecosystem are particularly significant for arboreal mammals. Further survey required to verify faunal values.
9.5.5c	Old growth stands of this regional ecosystem are particularly significant for arboreal mammals. Further survey required to verify faunal values.
9.5.5f	Old growth stands of this regional ecosystem are particularly significant for arboreal mammals. Further survey required to verify faunal values.
9.7.3a	None
9.7.3b	None
9.8.13	Potential habitat for NCA listed species: Dichanthium queenslandicum

Regional Ecosystem	Special Values
9.8.1a	Potential habitat for NCA listed species: Cycas cairnsiana, Cycas desolata
9.8.4a	None
9.8.4b	None
9.8.4c	None
9.8.7	Habitat for near threatened and threatened flora species. Important seasonal wetland habitats associated with this ecosystem. Lava tunnels with endemic fauna and significant bat maternity sites.
non-rem	None
water	None

3. Remnant Regional Ecosystems by Broad Vegetation Group

BVGs are a higher-level grouping of vegetation communities. Queensland encompasses a wide variety of landscapes across temperate, wet and dry tropics and semi-arid climatic zones. BVGs provide an overview of vegetation communities across the state or a bioregion and allow comparison with other states. There are three levels of BVGs which reflect the approximate scale at which they are designed to be used: the 1:5,000,000 (national), 1:2,000,000 (state) and 1:1,000,000 (regional) scales.

A comprehensive description of BVGs is available at:

https://publications.qld.gov.au/dataset/redd/resource/

The following table provides a description of the 1:1,000,000 BVGs present and their associated extent within the AOI.

Table 6: Broad vegetation groups (1 million) within the AOI

BVG (1 Million)	Description	Area (Ha)	% of AOI
None	None	1,332.03	2.57
10a	Dry woodlands to open woodlands dominated by Corymbia citriodora (spotted gum). (land zones 10, 7, 12, 11,[8]) (BRB, NET, [DEU])	36.41	0.07
10b	Moist open forests to woodlands dominated by Corymbia citriodora (spotted gum). (land zones 12, 11, 9, 5, 8) (SEQ, CQC, EIU, WET)	1,237.23	2.39
11b	Moist to dry open forests to woodlands dominated by Eucalyptus crebra (narrow-leaved red ironbark) or E. tereticornis (blue gum), frequently with Corymbia species or E. microneura (Gilbert River box) on red krasnozems on undulating terrain. (land zone 8) (EIU)	1,540.10	2.97
12b	Woodlands and open woodlands dominated by Eucalyptus crebra (sens. lat) (narrow-leaved red ironbark) and/or Corymbia spp. such as C. clarksoniana (grey bloodwood), C. stockeri, C. setosa (rough leaved bloodwood) or C. peltata (yellowjacket) on hilly terrain. (land zones 7, 10, 11) (GUP, EIU, DEU, CYP)	446.93	0.86
13c	Woodlands of Eucalyptus crebra (sens. lat.) (narrow-leaved red ironbark), E. drepanophylla (grey ironbark), E. fibrosa (dusky-leaved ironbark), E. shirleyi (shirley's silver-leaved ironbark) on granitic and metamorphic ranges (land zones 12, 11, 9, [5]) (BRB, EIU, SEQ, NET, CQC)	27,838.00	53.75

BVG (1 Million)	Description	Area (Ha)	% of AOI
13d	Woodlands dominated by Eucalyptus moluccana (gum-topped box) (or E. microcarpa (inland grey box)) on a range of substrates. (land zone 5, 9, 3, 11, 12) (BRB, SEQ, EIU, CQC, [NET, WET])	35.19	0.07
16a	Open forest and woodlands dominated by Eucalyptus camaldulensis (river red gum) (or E. tereticornis (blue gum)) and/or E. coolabah (coolabah) (or E. microtheca (coolabah)) fringing drainage lines. Associated species may include Melaleuca spp., Corymbia tessellaris (carbeen), Angophora spp., Casuarina cunninghamiana (riveroak). Does not include alluvial areas dominated by herb and grasslands or alluvial plains that are not flooded. (land zone 3) (MGD, BRB, GUP, CHC, MUL, DEU, EIU, NWH, SEQ, [NET, WET]) (All bioregions except CYP and CQC)	482.78	0.93
16c	Woodlands and open woodlands dominated by Eucalyptus coolabah (coolabah) or E. microtheca (coolabah) or E. largiflorens (black box) or E. tereticornis (blue gum) or E. chlorophylla on floodplains. Does not include alluvial areas dominated by herb and grasslands or alluvial plains that are not flooded. (land zone 3) (All bioregions except WET, principally GUP, BRB, MUL).	1,458.47	2.82
16d	River beds, open water or sand, or rock, frequently unvegetated. (land zone 3) (GUP, EIU, BRB, CYP, DEU, [CQC, MUL])	83.9	0.16
17b	Woodlands to open woodlands dominated by Eucalyptus melanophloia (silver-leaved ironbark) (or E. shirleyi (shirley's silver-leaved ironbark)) on sand plains and footslopes of hills and ranges. (land zones 5, 12, 3, 11, 9, 7) (BRB, DEU, EIU, SEQ, NET, GUP, NWH)	126.79	0.24
18b	Woodlands dominated Eucalyptus crebra (sens. lat.) (narrow-leaved red ironbark) frequently with Corymbia spp. or Callitris spp. on flat to undulating plains. (land zones 5, 3) (BRB, DEU, EIU, GUP, CYP)	53.81	0.1
19d	Low open woodlands dominated by Eucalyptus persistens (or E. normantonensis (Normanton box), E. tardecidens, E. provecta) with Triodia spp. dominated ground layer, mainly on hills and ranges. (land zones 7, 11, 12, 5, [4, 10]) (EIU, MGD, CHC, BRB, GUP, DEU)	5,022.86	9.7
22c	Open forests dominated by Melaleuca spp. (M. argentea (silver tea-tree), M. leucadendra (broad-leaved tea-tree), M. dealbata (swamp tea-tree) or M. fluviatilis), fringing major streams with Melaleuca saligna or M. bracteata (black tea-tree) in minor streams. (land zone 3) (CYP, GUP, EIU, BRB, CQC, DEU, NWH, WET, [SEQ])	23.19	0.04
28e	Low open forest to woodlands dominated by Lophostemon suaveolens (swamp box) (or L. confertus (brush box)) or Syncarpia glomulifera (turpentine) frequently with Allocasuarina spp. on rocky hill slopes. (land zones 12, 9, 3, 11, [10, 8]) (CQC, WET, SEQ, BRB, [CYP])	0.81	less than 0.01
29b	Open shrublands to open heaths in montane frequently rocky locations. (land zones 7, 12, 11, 5, 8, 10) (BRB, NWH, WET, CYP, EIU, SEQ, DEU, [NET, CQC])	47.99	0.09
30b	Tussock grasslands dominated by Astrebla spp. (mitchell grass) or Dichanthium spp. (bluegrass) often with Iseilema spp. on undulating downs or clay plains. (land zones 9, 3, 4, 8, [5]) (MGD, CHC, GUP, BRB, [EIU, DEU, NWH])	24.0	0.05

BVG (1 Million)	Description	Area (Ha)	% of AOI
5b	Notophyll to microphyll vine forests, frequently with Araucaria cunninghamii (hoop pine), on ranges of central coastal bioregions. (land zones 12, 11, 8) (CQC, WET)	0.98	less than 0.01
6b	Simple evergreen notophyll vine forest to simple microphyll vine fern thicket on high peaks and plateaus of northern Queensland. (land zones 12, 11) (WET, CQC) (Tracey 1982 8, 9, 10)	3.24	0.01
7a	Semi-evergreen vine thickets on wide range of substrates. (land zones 8, 9, 11, 12, 5, 4, 3, 10, [7]) (BRB, EIU, SEQ, CQC, [WET, GUP]) (Tracey 1982 11)	31.26	0.06
8a	Wet tall open forest dominated by species such as Eucalyptus grandis (flooded gum) or E. saligna, E. resinifera (red mahogany), Lophostemon confertus (brush box), Syncarpia glomulifera (turpentine), E. laevopinea (silvertop stringybark). Contains a well developed understorey of rainforest components, including ferns and palms, or the understorey may be dominated by sclerophyll shrubs. (land zones 12, 8, 10, 11, 3, 5, 9) (SEQ, WET, BRB, CQC, [NET])	3.85	0.01
9c	Open forests of Corymbia clarksoniana (grey bloodwood) (or C. intermedia (pink bloodwood) or C. novoguinensis), C. tessellaris (carbeen) ± Eucalyptus tereticornis (blue gum) predominantly on coastal ranges. Other frequent tree species include Eucalyptus drepanophylla (grey ironbark), E. pellita (large-fruited red mahogany), E. brassiana (Cape York red gum) and Lophostemon suaveolens (swamp box). (land zones 12, 11, 8, 5). (WET, CQC, CYP, BRB)	1,866.25	3.6
9d	Moist to dry open forest to woodland dominated by Eucalyptus portuensis, Corymbia intermedia (pink bloodwood), E. drepanophylla, E. resinifera or E. reducta +/- Syncarpia glomulifera (turpentine) or E. cloeziana (Gympie messmate) on ranges. Also includes mixed forests with Eucalyptus pellita or Corymbia torelliana emergents and rainforest understories (land zones 12, 11, 3, 9, 5, 8). (CQC, WET, EIU)	9,665.97	18.66
9e	Open forests, woodlands and open woodlands dominated by Corymbia clarksoniana (grey bloodwood) (or C. novoguinensis or C. intermedia (pink bloodwood) or C. polycarpa (long-fruited bloodwood)) frequently with Erythrophleum chlorostachys (red ironwood) or Eucalyptus platyphylla (poplar gum) predominantly on coastal sandplains and alluvia. (land zones 3, 5, 2) (CYP, BRB, CQC, WET, EIU)	431.61	0.83

Refer to **Map 4** for further information. **Map 5** also provides a representation of the distribution of vegetation communities as per the 1:5,000,000 BVG believed to be present prior to European settlement.

4. Technical and BioCondition Benchmark Descriptions

Technical descriptions provide a detailed description of the full range in structure and floristic composition of regional ecosystems (e.g. 11.3.1) and their component vegetation communities (e.g. 11.3.1a, 11.3.1b). See:

http://www.qld.gov.au/environment/plants-animals/plants/ecosystems/technical-descriptions/

The descriptions are compiled using site survey data from the Queensland Herbarium's CORVEG database. Distribution maps, representative images (if available) and the pre-clearing and remnant extent (hectares) of each vegetation community derived from the regional ecosystem mapping data are included. The technical descriptions should be used in conjunction with the fields from the regional ecosystem description database (REDD) for a full description of the regional ecosystem.

Technical descriptions include data on canopy height, canopy cover and native plant species composition of the predominant layer, which are attributes relevant to assessment of the remnant status of vegetation under the *Vegetation Management Act 1999*. However, as technical descriptions reflect the full range in structure and floristic composition across the climatic, natural

disturbance and geographic range of the regional ecosystem, local reference sites should be used for remnant assessment where possible (Neldner et al. 2012 (PDF)* section 3.3.1 of:

https://publications.qld.gov.au/dataset/redd/resource/

The technical descriptions are subject to review and are updated as additional data becomes available.

When conducting a BioCondition assessment, these technical descriptions should be used in conjunction with BioCondition benchmarks for the specific regional ecosystem, or component vegetation community.

http://www.qld.gov.au/environment/plants-animals/biodiversity/benchmarks/

Benchmarks are based on a combination of quantitative and qualitative information and should be used as a guide only. Benchmarks are specific to one regional ecosystem vegetation community, however, the natural variability in structure and floristic composition under a range of climatic and natural disturbance regimes has been considered throughout the geographic extent of the regional ecosystem. Local reference sites should be used for this spatial and temporal (seasonal and annual) variability.

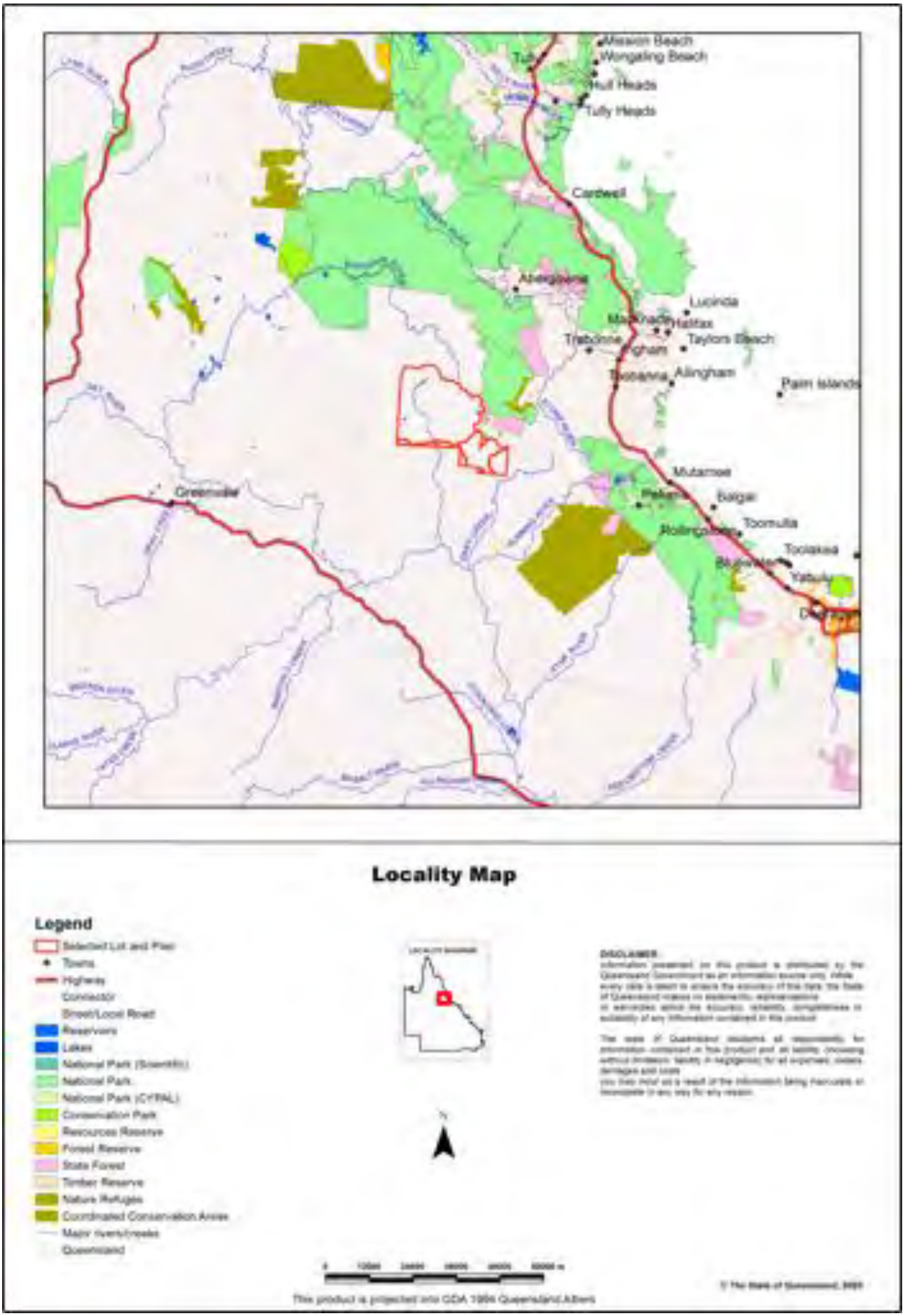
Table 7: List of remnant regional ecosystems within the AOI for which technical and biocondition benchmark descriptions are available

Regional ecosystems mapped as within the AOI	Technical Descriptions	Biocondition Benchmarks
11.12.13a	Not currently available	Not currently available
7.12.10b	Not currently available	Not currently available
7.12.16a	Not currently available	Not currently available
7.12.21a	Not currently available	Not currently available
7.12.21b	Not currently available	Not currently available
7.12.24a	Not currently available	Not currently available
7.12.29a	Not currently available	Not currently available
7.12.29b	Not currently available	Not currently available
7.12.30a	Not currently available	Not currently available
7.12.34	Not currently available	Not currently available
7.12.61a	Not currently available	Not currently available
7.12.65b	Not currently available	Not currently available
7.12.65c	Not currently available	Not currently available
7.12.65k	Not currently available	Not currently available
7.12.66b	Not currently available	Not currently available
7.12.69b	Not currently available	Not currently available
7.3.19a	Not currently available	Not currently available
7.3.26a	Not currently available	Not currently available
7.3.28d	Not currently available	Not currently available
7.3.39a	Not currently available	Not currently available
7.3.43a	Not currently available	Not currently available
7.3.49a	Not currently available	Not currently available
7.5.2a	Not currently available	Not currently available
7.5.2b	Not currently available	Not currently available
7.5.2c	Not currently available	Not currently available
7.5.2d	Not currently available	Not currently available
7.5.2f	Not currently available	Not currently available

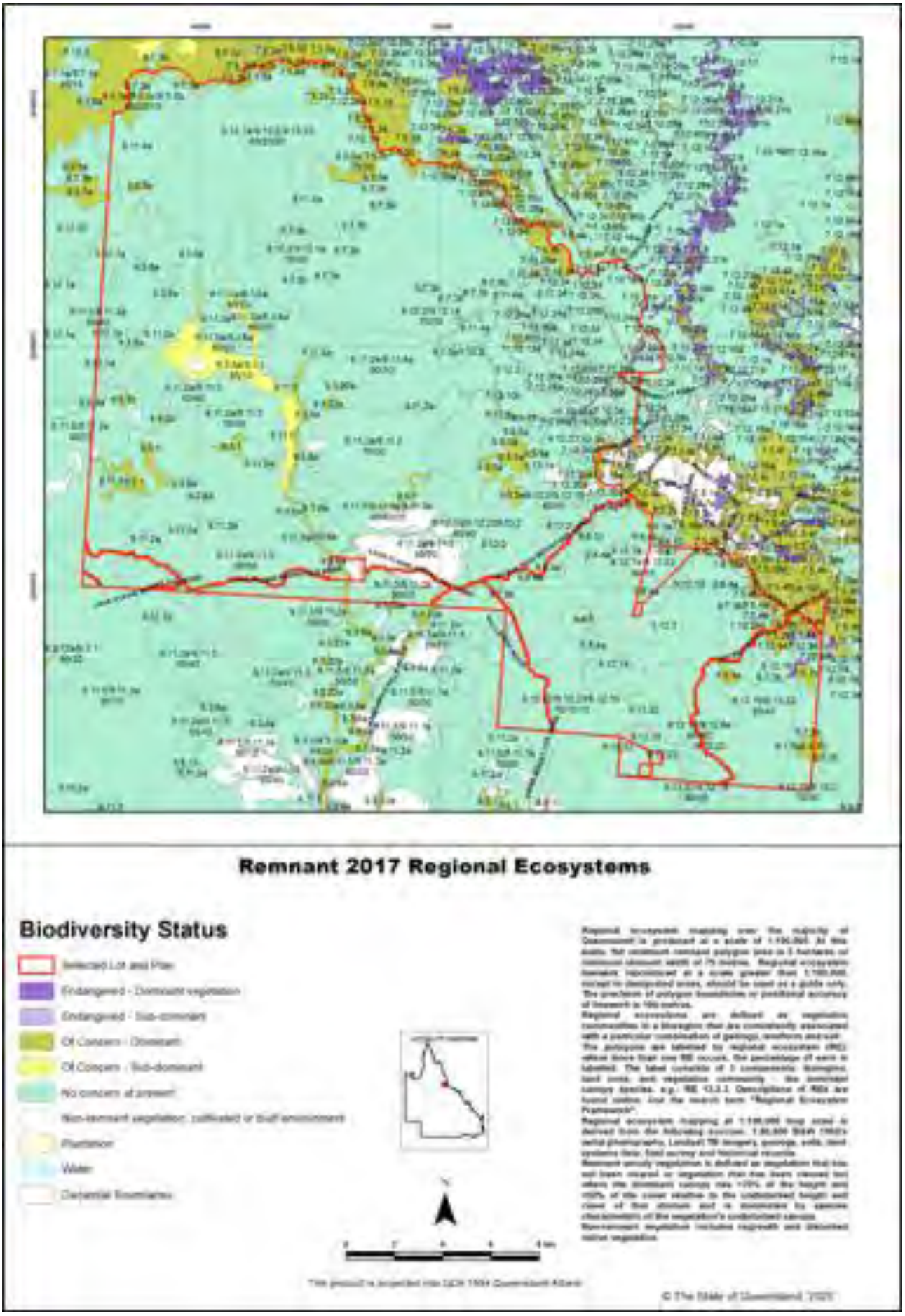
Regional ecosystems mapped as within the AOI	Technical Descriptions	Biocondition Benchmarks
7.5.3a	Not currently available	Not currently available
7.5.4a	Not currently available	Not currently available
7.5.4b	Not currently available	Not currently available
7.5.4c	Not currently available	Not currently available
7.5.4f	Not currently available	Not currently available
7.8.18a	Not currently available	Not currently available
7.8.18c	Not currently available	Not currently available
9.11.1a	Available	Not currently available
9.11.2a	Available	Not currently available
9.11.4a	Available	Not currently available
9.11.5	Available	Not currently available
9.12.19	Available	Not currently available
9.12.1a	Available	Not currently available
9.12.2	Available	Not currently available
9.12.22	Available	Not currently available
9.12.23	Available	Not currently available
9.12.8a	Not currently available	Not currently available
9.3.1	Available	Not currently available
9.3.12a	Available	Not currently available
9.3.13	Available	Not currently available
9.3.22a	Available	Not currently available
9.3.6a	Available	Not currently available
9.5.5a	Available	Not currently available
9.5.5b	Available	Not currently available
9.5.5c	Available	Not currently available
9.5.5f	Available	Not currently available
9.7.3a	Not currently available	Not currently available
9.7.3b	Not currently available	Not currently available
9.8.13	Available	Not currently available
9.8.1a	Available	Not currently available
9.8.4a	Available	Not currently available
9.8.4b	Available	Not currently available
9.8.4c	Available	Not currently available
9.8.7	Not currently available	Not currently available
non-rem	Not currently available	Not currently available
water	Not currently available	Not currently available

Maps

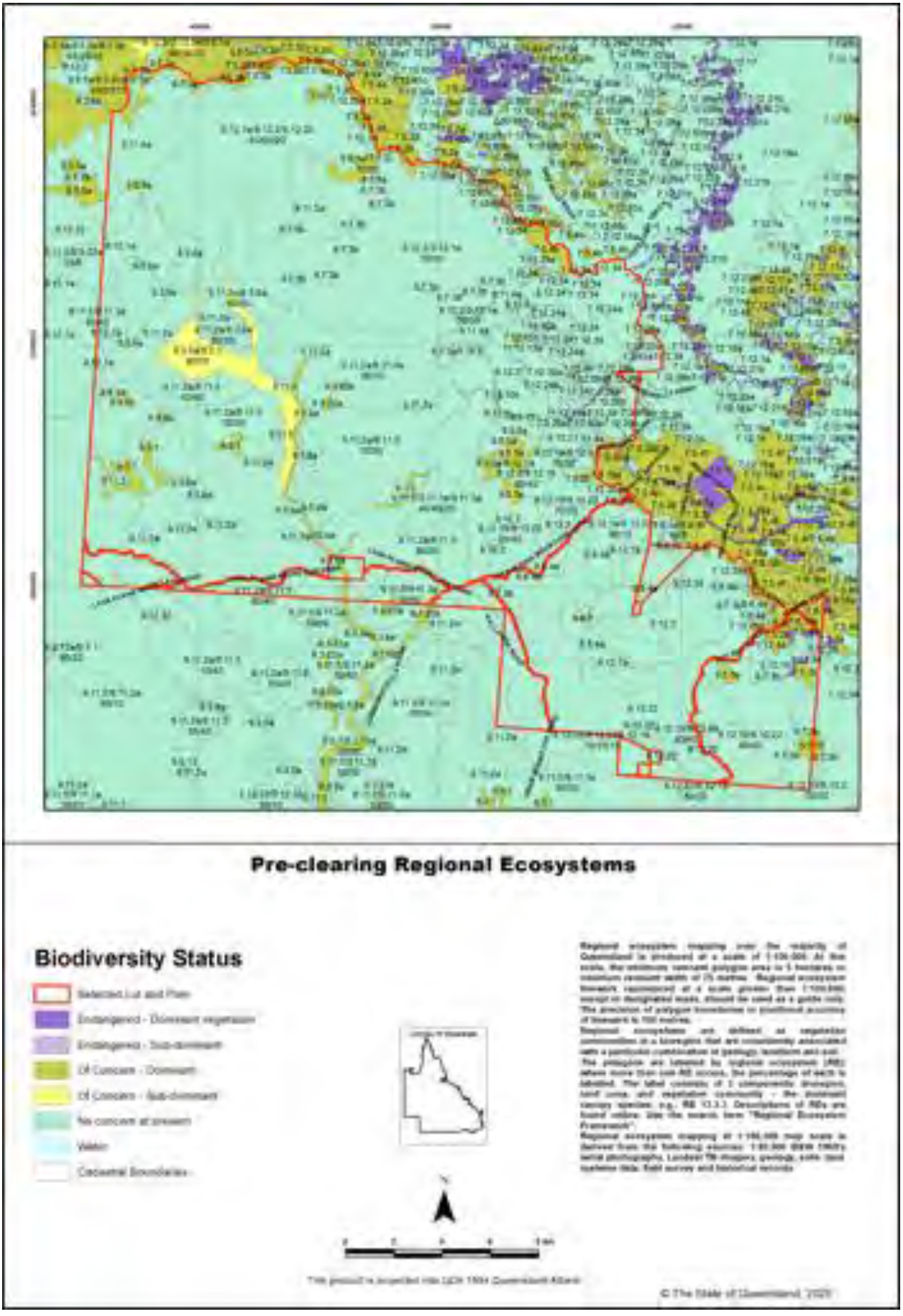
Map 1 - Location



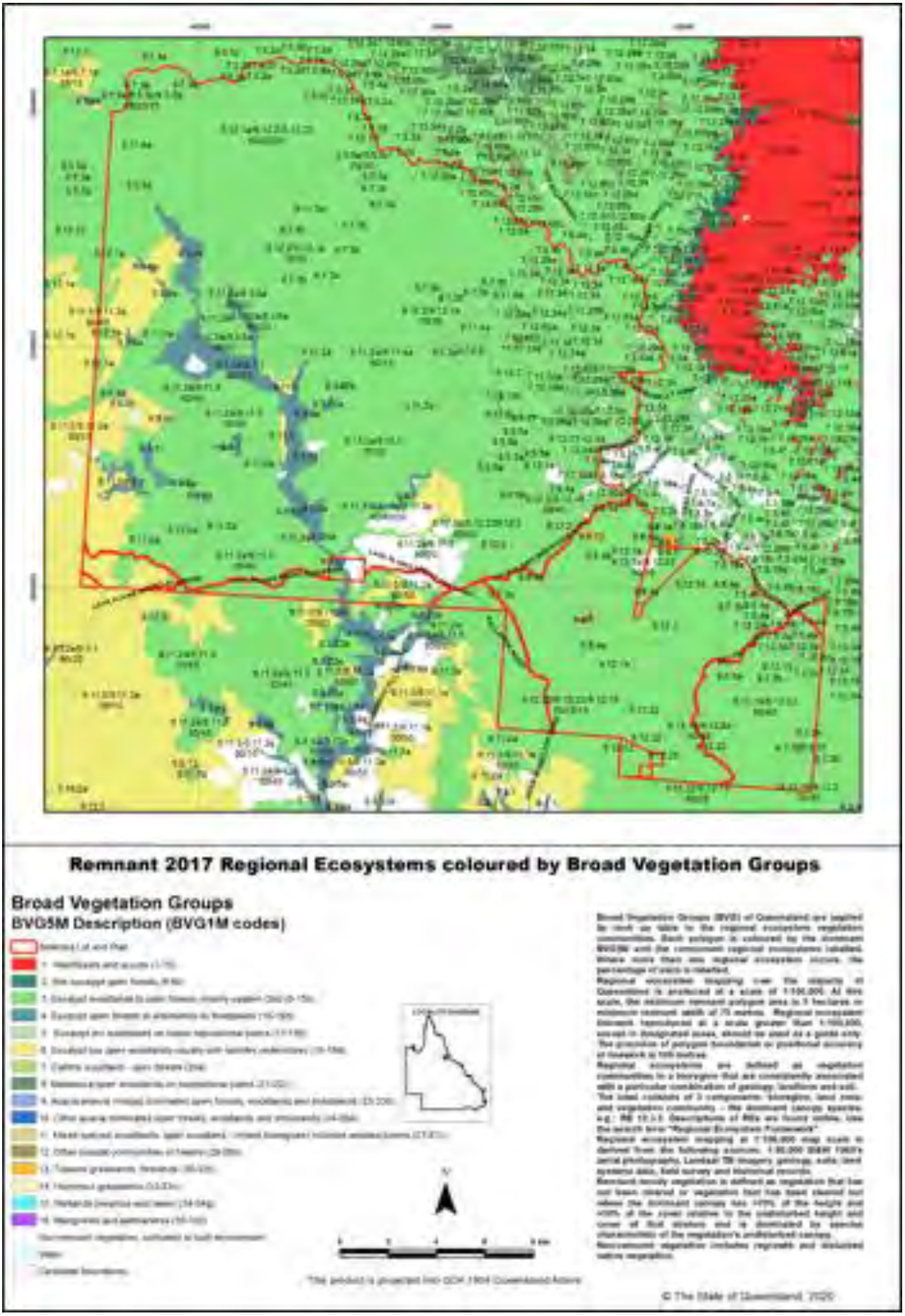
Map 2 - Remnant 2017 regional ecosystems



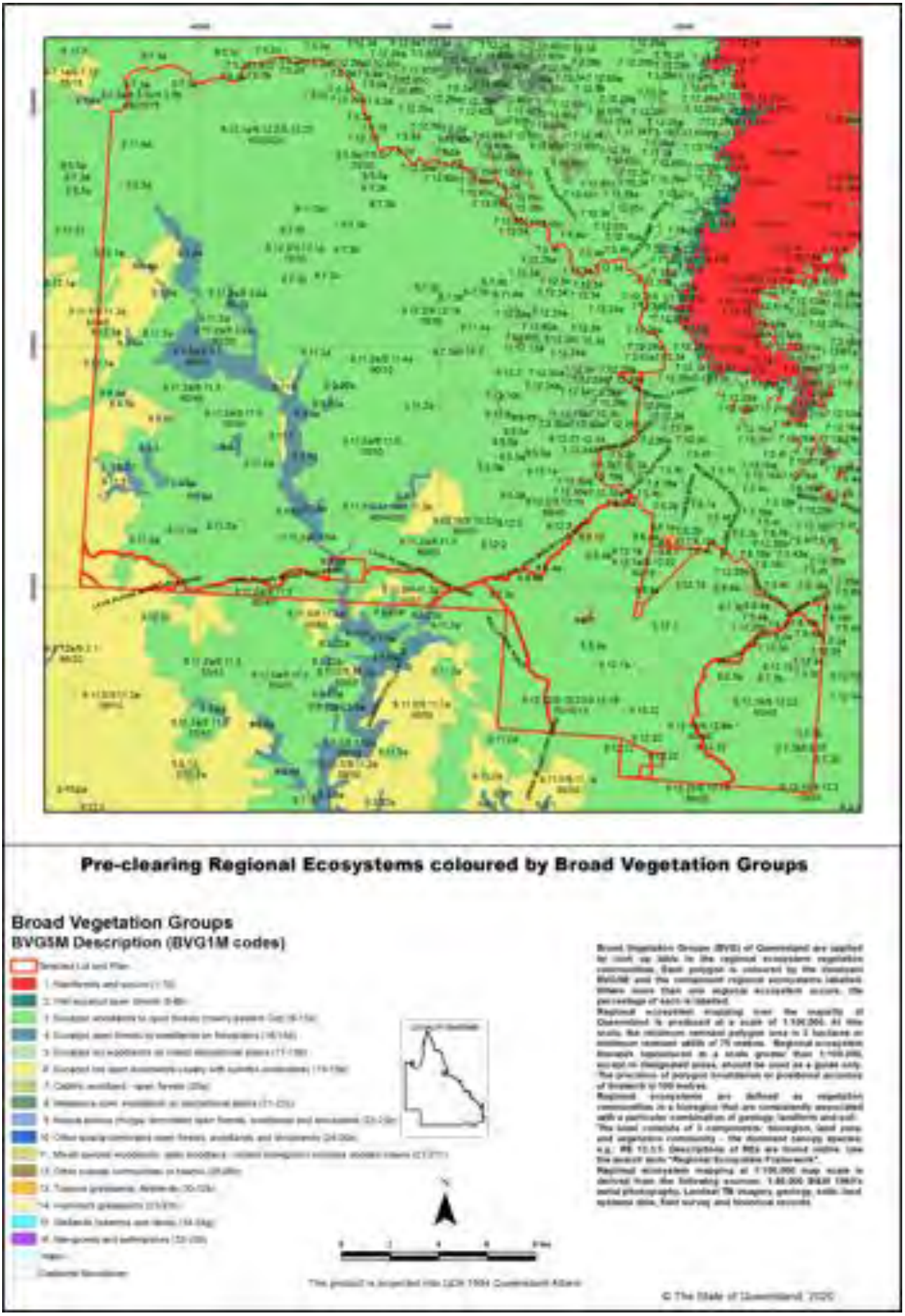
Map 3 - Pre-clearing regional ecosystems



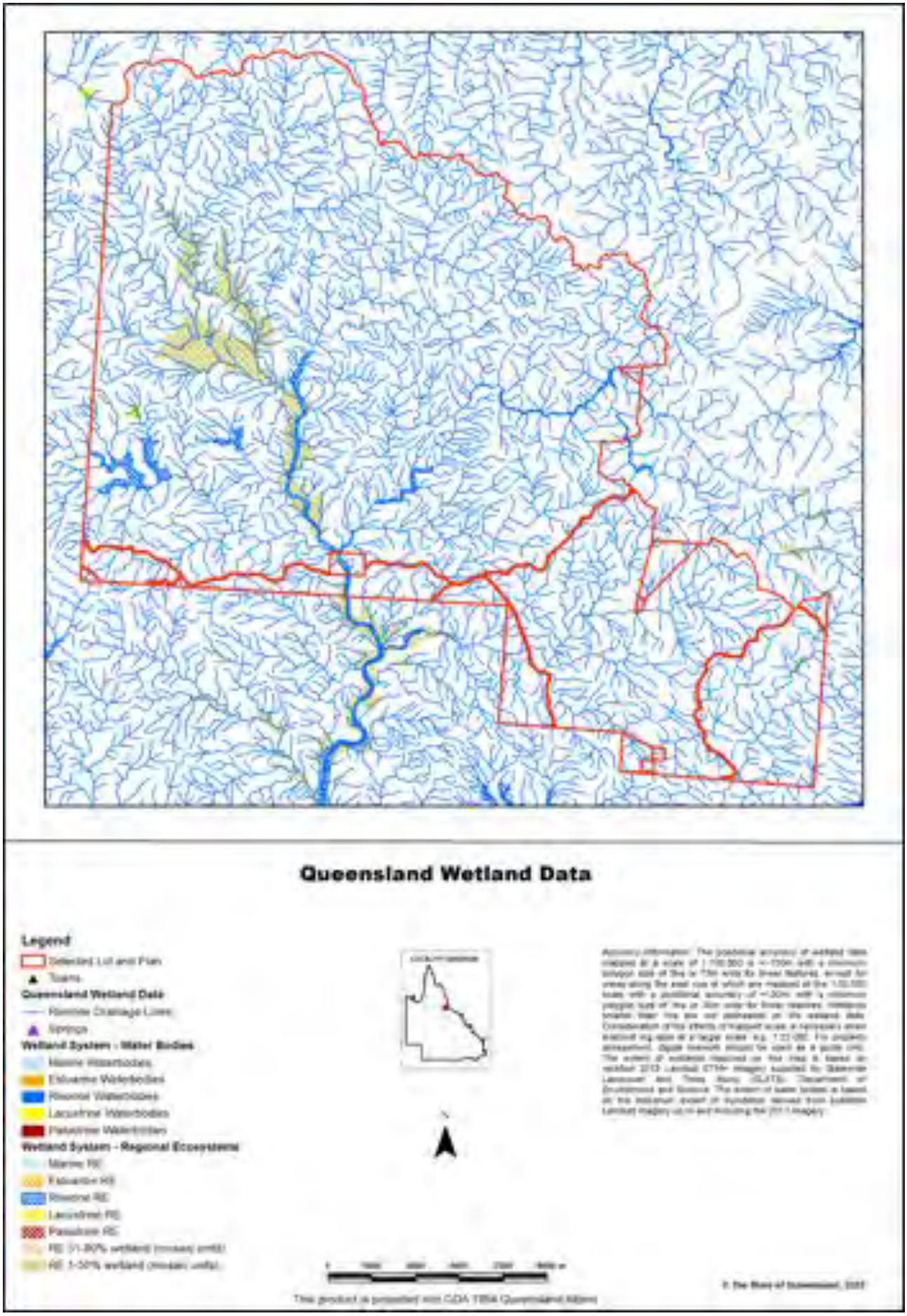
Map 4 - Remnant 2017 regional ecosystems by BVG (5M)



Map 5 - Pre-clearing regional ecosystems by BVG (5M)



Map 6 - Wetlands and waterways



Links and Other Information Sources

The Department of Environment and Science's Website -

http://www.qld.gov.au/environment/plants-animals/plants/ecosystems/

provides further information on the regional ecosystem framework, including access to links to the Regional Ecosystem Database, Broad Vegetation Group Definitions, Regional Ecosystem and Land zone descriptions.

Descriptions of the broad vegetation groups of Queensland can be downloaded from:

https://publications.qld.gov.au/dataset/redd/resource/

The methodology for mapping regional ecosystems can be downloaded from:

https://publications.qld.gov.au/dataset/redd/resource/

Technical descriptions for regional ecosystems can be obtained from:

http://www.qld.gov.au/environment/plants-animals/plants/ecosystems/technical-descriptions/

Benchmarks can be obtained from:

http://www.qld.gov.au/environment/plants-animals/biodiversity/benchmarks/

For further information associated with the remnant regional ecosystem dataset used by this report, refer to the metadata associated with the Biodiversity status of pre-clearing and Remnant Regional Ecosystems of Queensland dataset (version listed in **Appendix 1**) which is available through the Queensland Government Information System portal,

http://dds.information.qld.gov.au/dds/

The Queensland Globe is a mapping and data application. As an interactive online tool, Queensland Globe allows you to view and explore Queensland maps, imagery (including up-to-date satellite images) and other spatial data, including regional ecosystem mapping. To further view and explore regional ecosystems over an area of interest, access the Biota Globe (a component of the Queensland Globe). The Queensland Globe can be accessed via the following link:

http://www.dnrm.qld.gov.au/mapping-data/queensland-globe

References

Neldner, V.J., Niehus R.E., Wilson, B.A. McDonald, W.J.F., Ford, A.J. and Accad, A. (2017) The Vegetation of Queensland. Descriptions of Broad Vegetation Groups. Version 3.0. Queensland Herbarium, Department of Science, Information Technology, Innovation and the Arts.

(https://publications.qld.gov.au/dataset/redd/resource/78209e74-c7f2-4589-90c1-c33188359086)

Neldner, V.J., Wilson, B.A., Dillewaard, H.A., Ryan, T.S. and Butler, D.W. (2017) *Methodology for Survey and Mapping of Regional Ecosystems and Vegetation Communities in Queensland*. Version 4.0. Queensland Herbarium, Department of Science, Information Technology, Innovation and the Arts.

(https://publications.qld.gov.au/dataset/redd/resource/6dee78ab-c12c-4692-9842-b7257c2511e4)

Sattler, P.S. and Williams, R.D. (eds) (1999). *The Conservation Status of Queensland's Bioregional Ecosystems*. Environmental Protection Agency, Brisbane.

Appendices

Appendix 1 - Source Data

The dataset listed below is available for download from:

http://www.qld.gov.au/environment/plants-animals/plants/ecosystems/download/

- Regional Ecosystem Description Database

The datasets listed below are available for download from:

http://dds.information.qld.gov.au/dds/

- Biodiversity status of pre-clearing and 2017 remnant regional ecosystems of Queensland
- Pre-clearing Vegetation Communities and Regional Ecosystems of Queensland
- Queensland Wetland Data Version - Wetland lines
- Queensland Wetland Data Version - Wetland points
- Queensland Wetland Data Version - Wetland areas

Appendix 2 - Acronyms and Abbreviations

AOI	- Area of Interest
GDA94	- Geocentric Datum of Australia 1994
GIS	- Geographic Information System
RE	- Regional Ecosystem
REDD	- Regional Ecosystem Description Database
VMA	- *Vegetation Management Act 1999*

Queensland Government

Department of Environment and Science

Environmental Reports

Regional Ecosystems

Biodiversity Status

For the selected area of interest
Lot: 2 Plan: SP205224

Environmental Reports - General Information

The Environmental Reports portal provides for the assessment of selected matters of interest relevant to a user specified location, or area of interest (AOI). All area and derivative figures are relevant to the extent of matters of interest contained within the AOI unless otherwise stated. Please note, if a user selects an AOI via the "central coordinates" option, the resulting assessment area encompasses an area extending for a 2km radius from the input coordinates.

All area and area derived figures included in this report 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.

Figures in tables may be affected by rounding.

The matters of interest reported on in this document are based upon available state mapped datasets. Where the report indicates that a matter of interest is not present within the AOI (e.g. where area related calculations are equal to zero, or no values are listed), this may be due either to the fact that state mapping has not been undertaken for the AOI, that state mapping is incomplete for the AOI, or that no matters of interest have been identified within the site.

The information presented in this report should be considered as a guide only and field survey may be required to validate values on the ground.

Important Note to User

Information presented in this report is based upon the Queensland Herbarium's Regional Ecosystem framework. The Biodiversity Status has been used to depict the extent of "Endangered", "Of Concern" and "No Concern at Present" regional ecosystems in all cases, rather than the classes used for the purposes of the *Vegetation Management Act 1999* (VMA). Mapping and figures presented in this document reflect the Queensland Herbarium's Remnant and Pre-clearing Regional Ecosystem Datasets, and not the certified mapping used for the purpose of the VMA.

For matters relevant to vegetation management under the VMA, please refer to the Department of Natural Resources, Mines and Energy website

https://www.dnrme.qld.gov.au/

Please direct queries about these reports to: Queensland.Herbarium@dsiti.qld.gov.au

Disclaimer

Whilst every care is taken to ensure the accuracy of the information provided in this report, the Queensland Government makes no representations or warranties about its accuracy, reliability, completeness, or suitability, for any particular purpose and disclaims all responsibility and all liability (including without limitation, liability in negligence) for all expenses, losses, damages (including indirect or consequential damage) and costs which the user may incur as a consequence of the information being inaccurate or incomplete in any way and for any reason.

Table of Contents

Summary Information

The following table provides an overview of the AOI with respect to selected topographic and environmental themes. Refer to **Map 1** for locality information.

Table 1: Area of interest details: Lot: 2 Plan: SP205224

Size (ha)	25,607.13
Local Government(s)	Charters Towers Regional
Bioregion(s)	Einasleigh Uplands, Wet Tropics
Subregion(s)	Paluma - Seaview, Herberton - Wairuna, Broken River
Catchment(s)	Herbert, Burdekin

The table below summarizes the extent of remnant vegetation classed as "Endangered", "Of concern" and "No concern at present" regional ecosystems classified by Biodiversity Status within the area of interest (AOI).

Table 2: Summary table, biodiversity status of regional ecosystems within the AOI

Biodiversity Status	Area (Ha)	% of AOI
Endangered	863.99	3.37
Of concern	7,296.67	28.49
No concern at present	16,706.98	65.24
Total remnant vegetation	24,867.64	97.11

Refer to **Map 2** for further information.

Regional Ecosystems

1. Introduction

Regional ecosystems are vegetation communities in a bioregion that are consistently associated with particular combinations of geology, landform and soil (Sattler and Williams 1999). Descriptions of Queensland's Regional ecosystems are available online from the Regional Ecosystem Description Database (REDD). Descriptions are compiled from a broad range of information sources including vegetation, land system and geology survey and mapping and detailed vegetation site data. The regional ecosystem classification and descriptions are reviewed as new information becomes available. A number of vegetation communities may form a single regional ecosystem and are usually distinguished by differences in dominant species, frequently in the shrub or ground layers and are denoted by a letter following the regional ecosystem code (e.g. a, b, c). Vegetation communities and regional ecosystems are amalgamated into a higher level classification of broad vegetation groups (BVGs).

A published methodology for survey and mapping of regional ecosystems across Queensland (Neldner et al 2017) provides further details on regional ecosystem concepts and terminology.

This report provides information on the type, status, and extent of vegetation communities, regional ecosystems and broad vegetation groups present within a user specified area of interest. Please note, for the purpose of this report, the Biodiversity Status is used. This report has not been developed for application of the *Vegetation Management Act 1999* (VMA). Additionally, information generated in this report has been derived from the Queensland Herbarium's Regional Ecosystem Mapping, and not the regulated mapping certified for the purposes of the VMA. If your interest/matter relates to regional ecosystems and the VMA, users should refer to the Department of Natural Resources, Mines and Energy website.

https://www.dnrme.qld.gov.au/

With respect to the Queensland Biodiversity Status,

"Endangered" regional ecosystems are described as those where:

- remnant vegetation is less than 10 per cent of its pre-clearing extent across the bioregion; or 10-30% of its pre-clearing extent remains and the remnant vegetation is less than 10,000 hectares, or
- less than 10 per cent of its pre-clearing extent remains unaffected by severe degradation and/or biodiversity loss*, or
- 10-30 per cent of its pre-clearing extent remains unaffected by severe degradation and/or biodiversity loss and the remnant vegetation is less than 10,000 hectares; or
- it is a rare** regional ecosystem subject to a threatening process.***

"Of concern" regional ecosystems are described as those where:

- the degradation criteria listed above for 'Endangered' regional ecosystems are not met and,
- remnant vegetation is 10-30 per cent of its pre-clearing extent across the bioregion; or more than 20 per cent of its pre-clearing extent remains and the remnant extent is less than 10,000 hectares, or
- 10-30 percent of its pre-clearing extent remains unaffected by moderate degradation and/or biodiversity loss.****

and "No concern at present" regional ecosystems are described as those where:

- remnant vegetation is over 30 per cent of its pre-clearing extent across the bioregion, and the remnant area is greater than 10,000 hectares, and
- the degradation criteria listed above for 'Endangered' or 'Of concern' regional ecosystems are not met.

**Severe degradation and/or biodiversity loss is defined as: floristic and/or faunal diversity is greatly reduced but unlikely to recover within the next 50 years even with the removal of threatening processes; or soil surface is severely degraded, for example, by loss of A horizon, surface expression of salinity; surface compaction, loss of organic matter or sheet erosion.*

***Rare regional ecosystem: pre-clearing extent (1000 ha); or patch size (100 ha and of limited total extent across its range).*

****Threatening processes are those that are reducing or will reduce the biodiversity and ecological integrity of a regional ecosystem. For example, clearing, weed invasion, fragmentation, inappropriate fire regime or grazing pressure, or infrastructure development.*

*****Moderate degradation and/or biodiversity loss is defined as: floristic and/or faunal diversity is greatly reduced but unlikely to recover within the next 20 years even with the removal of threatening processes; or soil surface is moderately degraded.*

2. Remnant Regional Ecosystems

The following table identifies the remnant regional ecosystems and vegetation communities mapped within the AOI and provides their short descriptions, Biodiversity Status, and remnant extent within the selected AOI. Please note, where heterogeneous vegetated patches (mixed patches of remnant vegetation mapped as containing multiple regional ecosystems) occur within the AOI, they have been split and listed as individual regional ecosystems (or vegetation communities where present) for the purposes of the table below. In such instances, associated area figures have been generated based upon the estimated proportion of each regional ecosystem (or vegetation community) predicted to be present within the larger mixed patch.

Table 3: Remnant regional ecosystems, description and status within the AOI

Regional Ecosystem	Short Description	BD Status	Area (Ha)	% of AOI
7.12.11a	Simple to complex notophyll vine forest and semi-evergreen notophyll vine forest of rocky areas and talus, on moist foothills and uplands on granite and rhyolite	Of concern	3.66	0.01
7.12.16a	Simple to complex notophyll vine forest, including small areas of Araucaria bidwillii, of cloudy wet and moist uplands and highlands on granites and rhyolites	No concern at present	36.02	0.14
7.12.17	Corymbia torelliana open forest usually with a well-developed simple notophyll vine forest element on granites and rhyolites	Endangered	4.3	0.02
7.12.21b	Eucalyptus grandis open forest to woodland, or Corymbia intermedia, E. pellita, and E. grandis, open forest to woodland, (or vine forest with these species as emergents) on granite and rhyolite	Endangered	7.84	0.03
7.12.24a	Eucalyptus portuensis and Corymbia intermedia open forest to woodland (or vine forest with E. portuensis and C. intermedia emergents) on foothills and uplands on granite and rhyolite	No concern at present	495.72	1.94
7.12.29a	Corymbia intermedia and/or Lophostemon suaveolens open forest to woodland +/- areas of Allocasuarina littoralis and A. torulosa on uplands on granite and rhyolite	No concern at present	3,742.05	14.61
7.12.29b	Corymbia intermedia and/or Lophostemon suaveolens open forest to woodland +/- areas of Allocasuarina littoralis and A. torulosa on uplands on granite and rhyolite	No concern at present	2,493.83	9.74
7.12.29c	Corymbia intermedia and/or Lophostemon suaveolens open forest to woodland +/- areas of Allocasuarina littoralis and A. torulosa on uplands on granite and rhyolite	No concern at present	7.99	0.03
7.12.29e	Corymbia intermedia and/or Lophostemon suaveolens open forest to woodland +/- areas of Allocasuarina littoralis and A. torulosa on uplands on granite and rhyolite	No concern at present	4.9	0.02
7.12.30a	Corymbia citriodora +/- Eucalyptus portuensis woodland to open forest on granite and rhyolite	No concern at present	1,175.56	4.59

Regional Ecosystem	Short Description	BD Status	Area (Ha)	% of AOI
7.12.34	Eucalyptus portuensis and/or E. drepanophylla, +/- C. intermedia +/- C. citriodora, +/- E. granitica open woodland to open forest on uplands on granite	No concern at present	6,428.87	25.11
7.12.35	Eucalyptus portuensis, E. tereticornis, Corymbia intermedia woodland, on granites and rhyolites in the Kirrama-Oak Hills area	Of concern	2.7	0.01
7.12.37b	Rock pavements and seepage areas of wet lowlands, uplands and highlands of the eastern escarpment and central range (excluding Hinchinbrook Island and Bishop Peak) on granite and rhyolite, with Allocasuarina spp. shrublands and/or sedgelands	Of concern	17.39	0.07
7.12.60a	Melaleuca viridiflora +/- Corymbia clarksoniana +/- Eucalyptus platyphylla woodland to open forest on granite and rhyolite	Endangered	255.2	1.0
7.12.60b	Melaleuca viridiflora +/- Corymbia clarksoniana +/- Eucalyptus platyphylla woodland to open forest on granite and rhyolite	Endangered	415.29	1.62
7.12.61c	Eucalyptus tereticornis +/- E. granitica woodland to open forest of foothills and uplands on granite and rhyolite	Of concern	4.9	0.02
7.12.65b	Rock pavement or areas of skeletal soil, on granite and rhyolite of dry western or southern areas +/- shrublands to closed forests of Acacia spp. and/or Lophostemon suaveolens and/or Allocasuarina littoralis and/or Eucalyptus lockyeri subsp. exuta	Of concern	398.11	1.55
7.12.65c	Rock pavement or areas of skeletal soil, on granite and rhyolite of dry western or southern areas +/- shrublands to closed forests of Acacia spp. and/or Lophostemon suaveolens and/or Allocasuarina littoralis and/or Eucalyptus lockyeri subsp. exuta	Of concern	1,143.00	4.46
7.12.65e	Rock pavement or areas of skeletal soil, on granite and rhyolite of dry western or southern areas +/- shrublands to closed forests of Acacia spp. and/or Lophostemon suaveolens and/or Allocasuarina littoralis and/or Eucalyptus lockyeri subsp. exuta	Of concern	12.4	0.05
7.12.65k	Rock pavement or areas of skeletal soil, on granite and rhyolite of dry western or southern areas +/- shrublands to closed forests of Acacia spp. and/or Lophostemon suaveolens and/or Allocasuarina littoralis and/or Eucalyptus lockyeri subsp. exuta	Of concern	1.31	0.01
7.12.66b	Lophostemon confertus low shrubland or low closed forest on exposed rocky slopes on granite and rhyolite	Of concern	4.76	0.02
7.12.66c	Lophostemon confertus low shrubland or low closed forest on exposed rocky slopes on granite and rhyolite	Of concern	1.01	less than 0.01
7.12.69b	Eucalyptus drepanophylla and/or E. granitica +/- Corymbia clarksoniana +/- C. erythrophloia woodland on uplands on granite and rhyolite	Of concern	136.63	0.53
7.3.19a	Corymbia intermedia or C. tessellaris +/- Eucalyptus tereticornis open forest (or vine forest with these species as emergents) on well-drained alluvium	Of concern	31.65	0.12

Regional Ecosystem	Short Description	BD Status	Area (Ha)	% of AOI
7.3.25b	Melaleuca leucadendra +/- vine forest species open forest to closed forest on alluvium fringing streams	Of concern	0.59	less than 0.01
7.3.26a	Casuarina cunninghamiana woodland to open forest on alluvium fringing streams	Endangered	125.95	0.49
7.3.28a	Rivers and streams including riparian herbfield and shrubland on river and stream bed alluvium and rock within stream beds	Endangered	2.21	0.01
7.3.28b	Rivers and streams including riparian herbfield and shrubland on river and stream bed alluvium and rock within stream beds	Endangered	15.34	0.06
7.3.28d	Rivers and streams including riparian herbfield and shrubland on river and stream bed alluvium and rock within stream beds	Endangered	29.77	0.12
7.3.39b	Eucalyptus tereticornis +/- E. platyphylla +/- Corymbia intermedia +/- Lophostemon suaveolens open woodland to open forest, and associated sedgelands and grasslands on broad drainage depressions of uplands	Endangered	0.9	less than 0.01
7.3.39c	Eucalyptus tereticornis +/- E. platyphylla +/- Corymbia intermedia +/- Lophostemon suaveolens open woodland to open forest, and associated sedgelands and grasslands on broad drainage depressions of uplands	Endangered	6.52	0.03
7.3.49a	Notophyll vine forest on rubble terraces of streams	Of concern	6.57	0.03
7.3.8a	Melaleuca viridiflora +/- Eucalyptus spp. +/- Lophostemon suaveolens open forest to open woodland on poorly drained alluvial plains	Endangered	0.67	less than 0.01
7.5.2a	Eucalyptus portuensis +/- Corymbia intermedia, open forest to woodland of uplands on weathered soils of a remnant surface	Of concern	2,290.00	8.94
7.5.2d	Eucalyptus portuensis +/- Corymbia intermedia, open forest to woodland of uplands on weathered soils of a remnant surface	Of concern	678.31	2.65
7.5.2e	Eucalyptus portuensis +/- Corymbia intermedia, open forest to woodland of uplands on weathered soils of a remnant surface	Of concern	5.72	0.02
7.5.4a	Corymbia intermedia or Melaleuca viridiflora woodland to open forest of uplands on weathered soils of a remnant surface	Of concern	155.77	0.61
7.5.4b	Corymbia intermedia or Melaleuca viridiflora woodland to open forest of uplands on weathered soils of a remnant surface	Of concern	97.15	0.38
9.12.1a	Eucalyptus crebra and/or E. xanthoclada and/or E. drepanophylla low open woodland on igneous rocks	No concern at present	1.88	0.01
9.12.2	Eucalyptus portuensis, Corymbia citriodora subsp. citriodora, E. granitica or E. crebra, C. intermedia or C. clarksoniana mixed woodland on steep hills and ranges on igneous hills close to Wet Tropics boundary	No concern at present	2,223.03	8.68
9.12.22	Eucalyptus drepanophylla, Corymbia clarksoniana or C. intermedia and C. dallachiana woodland on steep rugged igneous ranges	No concern at present	0.63	less than 0.01

Regional Ecosystem	Short Description	BD Status	Area (Ha)	% of AOI
9.3.15	Eucalyptus tereticornis +/- Casuarina cunninghamiana +/- Melaleuca spp. fringing woodland on channels and levees	Of concern	24.29	0.09
9.5.5a	Corymbia clarksoniana, Eucalyptus portuensis, E. crebra and C. citriodora subsp. citriodora in mixed open forests on red kandosols on Tertiary surfaces	Of concern	1,497.05	5.85
9.5.5b	Corymbia clarksoniana, Eucalyptus portuensis, E. crebra and C. citriodora subsp. citriodora in mixed open forests on red kandosols on Tertiary surfaces	Of concern	154.14	0.6
9.5.5c	Corymbia clarksoniana, Eucalyptus portuensis, E. crebra and C. citriodora subsp. citriodora in mixed open forests on red kandosols on Tertiary surfaces	Of concern	448.73	1.75
9.5.5f	Corymbia clarksoniana, Eucalyptus portuensis, E. crebra and C. citriodora subsp. citriodora in mixed open forests on red kandosols on Tertiary surfaces	Of concern	180.85	0.71
9.7.3a	Eucalyptus crebra or E. portuensis +/- Corymbia clarksoniana woodland on lateritised surfaces and edges of Tertiary surfaces	No concern at present	85.34	0.33
9.7.5	Corymbia setosa and/or C. peltata low open woodland on lateritised and deeply weathered surfaces	No concern at present	11.18	0.04
non-rem	None	None	738.35	2.88
water	None	None	1.63	0.01

Refer to **Map 2** for further information. **Map 3** also provides a visual estimate of the distribution of regional ecosystems present before clearing.

Table 4 provides further information in regards to the remnant regional ecosystems present within the AOI. Specifically, the extent of remnant vegetation remaining within the bioregion, the 1:1,000,000 broad vegetation group (BVG) classification, whether the regional ecosystem is identified as a wetland, and extent of representation in Queensland's Protected Area Estate. For a description of the vegetation communities within the AOI and classified according to the 1:1,000,000 BVG, refer to **Table 6**.

Table 4: Remnant regional ecosystems within the AOI, additional information

Regional Ecosystem	Remnant Extent	BVG (1 Million)	Wetland	Representation in protected estate
7.12.11a	Pre-clearing 17000 ha; Remnant 2017 17000 ha	5c	None	High
7.12.16a	Pre-clearing 242000 ha; Remnant 2017 230000 ha	6b	None	High
7.12.17	Pre-clearing 6000 ha; Remnant 2017 6000 ha	9d	None	High
7.12.21b	Pre-clearing 16000 ha; Remnant 2017 16000 ha	8a	None	High
7.12.24a	Pre-clearing 33000 ha; Remnant 2017 32000 ha	9d	None	High
7.12.29a	Pre-clearing 88000 ha; Remnant 2017 87000 ha	9c	None	High
7.12.29b	Pre-clearing 88000 ha; Remnant 2017 87000 ha	9c	None	High

Regional Ecosystem	Remnant Extent	BVG (1 Million)	Wetland	Representation in protected estate
7.12.29c	Pre-clearing 88000 ha; Remnant 2017 87000 ha	9c	Floodplain (other than floodplain wetlands).	High
7.12.29e	Pre-clearing 88000 ha; Remnant 2017 87000 ha	28e	None	High
7.12.30a	Pre-clearing 43000 ha; Remnant 2017 43000 ha	10b	None	High
7.12.34	Pre-clearing 52000 ha; Remnant 2017 51000 ha	9d	None	High
7.12.35	Pre-clearing 10000 ha; Remnant 2017 10000 ha	9d	None	High
7.12.37b	Pre-clearing 5000 ha; Remnant 2017 5000 ha	28e	None	High
7.12.60a	Pre-clearing 1000 ha; Remnant 2017 1000 ha	21a	Floodplain (other than floodplain wetlands).	High
7.12.60b	Pre-clearing 1000 ha; Remnant 2017 1000 ha	21a	Floodplain (other than floodplain wetlands).	High
7.12.61c	Pre-clearing 26000 ha; Remnant 2017 25000 ha	13c	None	High
7.12.65b	Pre-clearing 16000 ha; Remnant 2017 16000 ha	29b	None	High
7.12.65c	Pre-clearing 16000 ha; Remnant 2017 16000 ha	9d	None	High
7.12.65e	Pre-clearing 16000 ha; Remnant 2017 16000 ha	28e	None	High
7.12.65k	Pre-clearing 16000 ha; Remnant 2017 16000 ha	29b	None	High
7.12.66b	Pre-clearing 5000 ha; Remnant 2017 5000 ha	28e	None	High
7.12.66c	Pre-clearing 5000 ha; Remnant 2017 5000 ha	28e	None	High
7.12.69b	Pre-clearing 700 ha; Remnant 2017 700 ha	13c	None	High
7.3.19a	Pre-clearing 6000 ha; Remnant 2017 4000 ha	9e	None	High
7.3.25b	Pre-clearing 8000 ha; Remnant 2017 5000 ha	22c	Riverine wetland or fringing riverine wetland.	High
7.3.26a	Pre-clearing 5000 ha; Remnant 2017 4000 ha	16a	Riverine wetland or fringing riverine wetland.	High
7.3.28a	Pre-clearing 8000 ha; Remnant 2017 7000 ha	16d	Riverine wetland or fringing riverine wetland.	High
7.3.28b	Pre-clearing 8000 ha; Remnant 2017 7000 ha	16d	Riverine wetland or fringing riverine wetland.	High
7.3.28d	Pre-clearing 8000 ha; Remnant 2017 7000 ha	16d	Riverine wetland or fringing riverine wetland.	High
7.3.39b	Pre-clearing 2000 ha; Remnant 2017 1000 ha	34f	Palustrine wetland (e.g. vegetated swamp).	Medium
7.3.39c	Pre-clearing 2000 ha; Remnant 2017 1000 ha	34f	Palustrine wetland (e.g. vegetated swamp).	Medium

Regional Ecosystem	Remnant Extent	BVG (1 Million)	Wetland	Representation in protected estate
7.3.49a	Pre-clearing 800 ha; Remnant 2017 800 ha	22c	Riverine wetland or fringing riverine wetland.	High
7.3.8a	Pre-clearing 39000 ha; Remnant 2017 15000 ha	21a	Floodplain (other than floodplain wetlands).	Medium
7.5.2a	Pre-clearing 6000 ha; Remnant 2017 6000 ha	9d	None	Low
7.5.2d	Pre-clearing 6000 ha; Remnant 2017 6000 ha	9d	None	Low
7.5.2e	Pre-clearing 6000 ha; Remnant 2017 6000 ha	21a	None	Low
7.5.4a	Pre-clearing 6000 ha; Remnant 2017 5000 ha	9e	None	Low
7.5.4b	Pre-clearing 6000 ha; Remnant 2017 5000 ha	9e	None	Low
9.12.1a	Pre-clearing 866000 ha; Remnant 2017 821000 ha	13c	None	Low
9.12.2	Pre-clearing 117000 ha; Remnant 2017 115000 ha	9d	None	High
9.12.22	Pre-clearing 64000 ha; Remnant 2017 64000 ha	13c	None	Medium
9.3.15	Pre-clearing 21000 ha; Remnant 2017 20000 ha	16a	Riverine wetland or fringing riverine wetland.	High
9.5.5a	Pre-clearing 208000 ha; Remnant 2017 199000 ha	10b	None	High
9.5.5b	Pre-clearing 208000 ha; Remnant 2017 199000 ha	18b	None	High
9.5.5c	Pre-clearing 208000 ha; Remnant 2017 199000 ha	13d	None	High
9.5.5f	Pre-clearing 208000 ha; Remnant 2017 199000 ha	9e	None	High
9.7.3a	Pre-clearing 42000 ha; Remnant 2017 42000 ha	12b	None	High
9.7.5	Pre-clearing 13000 ha; Remnant 2017 13000 ha	12b	None	Medium
non-rem	None	None	None	None
water	None	None	None	None

Representation in Protected Area Estate: High greater than 10% of pre-clearing extent is represented; Medium 4 - 10% is represented; Low less than 4% is represented, No representation.

The distribution of mapped wetland systems within the area of interest is displayed in **Map 6**.

The following table lists known special values associated with a regional ecosystem type.

Table 5: Remnant regional ecosystems within the AOI, special values

Regional Ecosystem	Special Values
7.12.11a	Potential habitat for NCA listed species: Arenga australasica, Arytera dictyoneura, Phlegmariurus phlegmarioides

Regional Ecosystem	Special Values
7.12.16a	Habitat of threatened plant species including: Albizia sp. (Windsor Tableland B.Gray 2181), Argophyllum cryptophlebum, Ctenopteris walleri, Eidothea zoexylocarya, Elaeocarpus thelmae, Endiandra jonesii, Endiandra phaeocarpa, Helicia grayi, Helicia lewisensis, Phlegmariurus spp., Diteilis simmondsii, Litsea granitica, Phaleria biflora, Stenocarpus davallioides, , Symplocos graniticola and Xylosma sp. (Mt Lewis G.Sankowsky+ 1108). Habitat for near threatened plant species Aceratium ferrugineum, Aglaia brassii, Austrobuxus megacarpus, Bubbia queenslandiana subsp. queenslandiana, Glochidion pungens, Goodyera viridiflora, Diospyros granitica, Polyalthia submontana subsp. submontana, Helicia recurva, Medicosma glandulosa, Prumnopitys ladei, Pteridoblechnum acuminatum, Sarcopteryx montana, Symplocos ampulliformis and Wendlandia connata. Habitat of many endemic species of fauna and flora. Other species of local significance include Diospyros hemicycloides, Elaeocarpus johnsonii, Solanum dimorphispinum and Steganthera cooperorum.
7.12.17	None
7.12.21b	Habitat for arboreal mammals. Habitat for plant species of limited distribution including Bertya polystigma, Pityrodia salviifolia, Pomaderris argyrophylla, Dodonaea uncinata, Phebalium longifolium and Persoonia tropica.
7.12.24a	Potential habitat for NCA listed species: Arytera dictyoneura, Corymbia leptoloma, Marsdenia rara, Plectranthus gratus
7.12.29a	Potential habitat for NCA listed species: Corybas cerasinus, Corymbia leptoloma, Dodonaea uncinata
7.12.29b	Potential habitat for NCA listed species: Corybas cerasinus, Corymbia leptoloma, Dodonaea uncinata
7.12.29c	Potential habitat for NCA listed species: Corybas cerasinus, Corymbia leptoloma, Dodonaea uncinata
7.12.29e	Potential habitat for NCA listed species: Corybas cerasinus, Corymbia leptoloma, Dodonaea uncinata
7.12.30a	Potential habitat for NCA listed species: Acacia longipedunculata, Acacia purpureopetala, Acacia tingoorensis, Corymbia rhodops, Diuris oporina, Dodonaea uncinata, Grevillea glossadenia, Homoranthus porteri, Melaleuca sylvana, Micromyrtus delicata, Plectr 7.12.30d: Habitat for several locally restricted and disjunct species. Threatened plant species include Micromyrtus delicata, Melaleuca sylvana, Diuris oporina, Homoranthus porteri, Grevillea glossadenia, Acacia purpureopetala, Corymbia rhodops and Prostanthera clotteniana. Other species of local significance are Eucalyptus lockyeri.
7.12.34	Potential habitat for NCA listed species: Acacia longipedunculata, Calochlaena villosa, Croton densivestitus, Grevillea glossadenia, Homoranthus porteri, Plectranthus amoenus, Solanum angustum, Zieria obovata
7.12.35	None
7.12.37b	Potential habitat for NCA listed species: Austrobuxus megacarpus, Plectranthus gratus, Polyalthia submontana subsp. submontana, Prostanthera albohirta, Prostanthera clotteniana, Tylophora rupicola
7.12.60a	None
7.12.60b	None

Regional Ecosystem	Special Values
7.12.61c	Potential habitat for NCA listed species: Arthraxon hispidus, Cucumis costatus, Dendrobium bigibbum, Dendrobium johannis, Dodonaea uncinata, Plectranthus gratus
7.12.65b	Potential habitat for NCA listed species: Acacia purpureopetala, Buckinghamia ferruginiflora, Corymbia leptoloma, Corymbia rhodops, Diuris oporina, Dodonaea uncinata, Grevillea glossadenia, Homoranthus porteri, Melaleuca sylvana, Melaleuca uxorum, Micromy 7.12.65k: Habitat for several locally restricted and disjunct species. Threatened species include Micromyrtus delicata, Melaleuca sylvana, Melaleuca uxorum, Diuris oporina, Homoranthus porteri, Grevillea glossadenia, Acacia purpureopetala, Corymbia rhodops and Prostanthera clotteniana. Other species of local significance are Eucalyptus lockyeri.
7.12.65c	Potential habitat for NCA listed species: Acacia purpureopetala, Buckinghamia ferruginiflora, Corymbia leptoloma, Corymbia rhodops, Diuris oporina, Dodonaea uncinata, Grevillea glossadenia, Homoranthus porteri, Melaleuca sylvana, Melaleuca uxorum, Micromy 7.12.65k: Habitat for several locally restricted and disjunct species. Threatened species include Micromyrtus delicata, Melaleuca sylvana, Melaleuca uxorum, Diuris oporina, Homoranthus porteri, Grevillea glossadenia, Acacia purpureopetala, Corymbia rhodops and Prostanthera clotteniana. Other species of local significance are Eucalyptus lockyeri.
7.12.65e	Potential habitat for NCA listed species: Acacia purpureopetala, Buckinghamia ferruginiflora, Corymbia leptoloma, Corymbia rhodops, Diuris oporina, Dodonaea uncinata, Grevillea glossadenia, Homoranthus porteri, Melaleuca sylvana, Melaleuca uxorum, Micromy 7.12.65k: Habitat for several locally restricted and disjunct species. Threatened species include Micromyrtus delicata, Melaleuca sylvana, Melaleuca uxorum, Diuris oporina, Homoranthus porteri, Grevillea glossadenia, Acacia purpureopetala, Corymbia rhodops and Prostanthera clotteniana. Other species of local significance are Eucalyptus lockyeri.
7.12.65k	Potential habitat for NCA listed species: Acacia purpureopetala, Buckinghamia ferruginiflora, Corymbia leptoloma, Corymbia rhodops, Diuris oporina, Dodonaea uncinata, Grevillea glossadenia, Homoranthus porteri, Melaleuca sylvana, Melaleuca uxorum, Micromy 7.12.65k: Habitat for several locally restricted and disjunct species. Threatened species include Micromyrtus delicata, Melaleuca sylvana, Melaleuca uxorum, Diuris oporina, Homoranthus porteri, Grevillea glossadenia, Acacia purpureopetala, Corymbia rhodops and Prostanthera clotteniana. Other species of local significance are Eucalyptus lockyeri.
7.12.66b	None
7.12.66c	None
7.12.69b	Potential habitat for NCA listed species: Dendrobium bigibbum
7.3.19a	Potential habitat for NCA listed species: Peristylus banfieldii
7.3.25b	Important wildlife corridors in cleared landscapes.
7.3.26a	Important wildlife corridors in cleared landscapes.
7.3.28a	An important component of stream ecology and structure influencing substrate types, depth gradients, flow characteristics and flooding characteristics.
7.3.28b	An important component of stream ecology and structure influencing substrate types, depth gradients, flow characteristics and flooding characteristics.

Regional Ecosystem	Special Values
7.3.28d	An important component of stream ecology and structure influencing substrate types, depth gradients, flow characteristics and flooding characteristics.
7.3.39b	Potential habitat for NCA listed species: Oenanthe javanica
7.3.39c	Potential habitat for NCA listed species: Oenanthe javanica
7.3.49a	Potential habitat for NCA listed species: Buckinghamia ferruginiflora, Gymnostoma australianum, Hollandaea riparia, Sphaerantia chartacea
7.3.8a	Threatened plant species include: Calochilus psednus, Corunastylis tecta, Myrmecodia beccarii, Hypochrysops apollo apollo, Eulophia bicallosa and Pachystoma pubescens. There are many poorly known ground layer species, particularly in southern, drier areas. The vast majority of species occur in the very diverse ground layer, which may in places exceed 90 species in a 50x10 m plot.
7.5.2a	None
7.5.2d	None
7.5.2e	None
7.5.4a	None
7.5.4b	None
9.12.1a	Potential habitat for NCA listed species: Eucalyptus paedoglauca, Solanum angustum
9.12.2	Old growth of this ecosystem is significant for a number of species including arboreal mammals. Habitat for vulnerable flora species including Corymbia rhodops
9.12.22	Potential habitat for NCA listed species: Oldenlandia polyclada
9.3.15	Significant habitat as drought refuge, wildlife corridors and for arboreal animals.
9.5.5a	Old growth stands of this regional ecosystem are particularly significant for arboreal mammals. Further survey required to verify faunal values.
9.5.5b	Old growth stands of this regional ecosystem are particularly significant for arboreal mammals. Further survey required to verify faunal values.
9.5.5c	Old growth stands of this regional ecosystem are particularly significant for arboreal mammals. Further survey required to verify faunal values.
9.5.5f	Old growth stands of this regional ecosystem are particularly significant for arboreal mammals. Further survey required to verify faunal values.
9.7.3a	None
9.7.5	None
non-rem	None
water	None

3. Remnant Regional Ecosystems by Broad Vegetation Group

BVGs are a higher-level grouping of vegetation communities. Queensland encompasses a wide variety of landscapes across temperate, wet and dry tropics and semi-arid climatic zones. BVGs provide an overview of vegetation communities across the state or a bioregion and allow comparison with other states. There are three levels of BVGs which reflect the approximate

scale at which they are designed to be used: the 1:5,000,000 (national), 1:2,000,000 (state) and 1:1,000,000 (regional) scales.

A comprehensive description of BVGs is available at:

https://publications.qld.gov.au/dataset/redd/resource/

The following table provides a description of the 1:1,000,000 BVGs present and their associated extent within the AOI.

Table 6: Broad vegetation groups (1 million) within the AOI

BVG (1 Million)	Description	Area (Ha)	% of AOI
None	None	739.99	2.89
10b	Moist open forests to woodlands dominated by Corymbia citriodora (spotted gum). (land zones 12, 11, 9, 5, 8) (SEQ, CQC, EIU, WET)	2,672.61	10.44
12b	Woodlands and open woodlands dominated by Eucalyptus crebra (sens. lat) (narrow-leaved red ironbark) and/or Corymbia spp. such as C. clarksoniana (grey bloodwood), C. stockeri, C. setosa (rough leaved bloodwood) or C. peltata (yellowjacket) on hilly terrain. (land zones 7, 10, 11) (GUP, EIU, DEU, CYP)	96.51	0.38
13c	Woodlands of Eucalyptus crebra (sens. lat.) (narrow-leaved red ironbark), E. drepanophylla (grey ironbark), E. fibrosa (dusky-leaved ironbark), E. shirleyi (shirley's silver-leaved ironbark) on granitic and metamorphic ranges (land zones 12, 11, 9, [5]) (BRB, EIU, SEQ, NET, CQC)	144.04	0.56
13d	Woodlands dominated by Eucalyptus moluccana (gum-topped box) (or E. microcarpa (inland grey box)) on a range of substrates. (land zone 5, 9, 3, 11, 12) (BRB, SEQ, EIU, CQC, [NET, WET])	448.73	1.75
16a	Open forest and woodlands dominated by Eucalyptus camaldulensis (river red gum) (or E. tereticornis (blue gum)) and/or E. coolabah (coolabah) (or E. microtheca (coolabah)) fringing drainage lines. Associated species may include Melaleuca spp., Corymbia tessellaris (carbeen), Angophora spp., Casuarina cunninghamiana (riveroak). Does not include alluvial areas dominated by herb and grasslands or alluvial plains that are not flooded. (land zone 3) (MGD, BRB, GUP, CHC, MUL, DEU, EIU, NWH, SEQ, [NET, WET]) (All bioregions except CYP and CQC)	150.24	0.59
16d	River beds, open water or sand, or rock, frequently unvegetated. (land zone 3) (GUP, EIU, BRB, CYP, DEU, [CQC, MUL])	47.32	0.18
18b	Woodlands dominated Eucalyptus crebra (sens. lat.) (narrow-leaved red ironbark) frequently with Corymbia spp. or Callitris spp. on flat to undulating plains. (land zones 5, 3) (BRB, DEU, EIU, GUP, CYP)	154.14	0.6
21a	Low woodlands and low open woodlands dominated by Melaleuca viridiflora (coarse-leaved paperbark) on depositional plains. (land zones 3, 5, 11, [10]) (GUP, CYP, BRB, CQC, EIU, WET, SEQ)	676.89	2.64
22c	Open forests dominated by Melaleuca spp. (M. argentea (silver tea-tree), M. leucadendra (broad-leaved tea-tree), M. dealbata (swamp tea-tree) or M. fluviatilis), fringing major streams with Melaleuca saligna or M. bracteata (black tea-tree) in minor streams. (land zone 3) (CYP, GUP, EIU, BRB, CQC, DEU, NWH, WET, [SEQ])	7.16	0.03

BVG (1 Million)	Description	Area (Ha)	% of AOI
28e	Low open forest to woodlands dominated by Lophostemon suaveolens (swamp box) (or L. confertus (brush box)) or Syncarpia glomulifera (turpentine) frequently with Allocasuarina spp. on rocky hill slopes. (land zones 12, 9, 3, 11, [10, 8]) (CQC, WET, SEQ, BRB, [CYP])	40.46	0.16
29b	Open shrublands to open heaths in montane frequently rocky locations. (land zones 7, 12, 11, 5, 8, 10) (BRB, NWH, WET, CYP, EIU, SEQ, DEU, [NET, CQC])	399.42	1.56
34f	Palustrine wetlands. Sedgelands/grasslands on seeps and soaks on wet peaks, coastal dunes and other non-floodplain features. (land zones 3, 9, 12, [11]) (BRB, MUL, DEU, WET, NET)	7.41	0.03
5c	Simple to complex notophyll vine forests, often with Agathis spp. on ranges and uplands of the Wet Tropics bioregion. (land zones 12, 11, 8, [3]) (WET) (Tracey 1982 6)	3.66	0.01
6b	Simple evergreen notophyll vine forest to simple microphyll vine fern thicket on high peaks and plateaus of northern Queensland. (land zones 12, 11) (WET, CQC) (Tracey 1982 8, 9, 10)	36.02	0.14
8a	Wet tall open forest dominated by species such as Eucalyptus grandis (flooded gum) or E. saligna, E. resinifera (red mahogany), Lophostemon confertus (brush box), Syncarpia glomulifera (turpentine), E. laevopinea (silvertop stringybark). Contains a well developed understorey of rainforest components, including ferns and palms, or the understorey may be dominated by sclerophyll shrubs. (land zones 12, 8, 10, 11, 3, 5, 9) (SEQ, WET, BRB, CQC, [NET])	7.84	0.03
9c	Open forests of Corymbia clarksoniana (grey bloodwood) (or C. intermedia (pink bloodwood) or C. novoguinensis), C. tessellaris (carbeen) ± Eucalyptus tereticornis (blue gum) predominantly on coastal ranges. Other frequent tree species include Eucalyptus drepanophylla (grey ironbark), E. pellita (large-fruited red mahogany), E. brassiana (Cape York red gum) and Lophostemon suaveolens (swamp box). (land zones 12, 11, 8, 5). (WET, CQC, CYP, BRB)	6,243.87	24.38
9d	Moist to dry open forest to woodland dominated by Eucalyptus portuensis, Corymbia intermedia (pink bloodwood), E. drepanophylla, E. resinifera or E. reducta +/- Syncarpia glomulifera (turpentine) or E. cloeziana (Gympie messmate) on ranges. Also includes mixed forests with Eucalyptus pellita or Corymbia torelliana emergents and rainforest understories (land zones 12, 11, 3, 9, 5, 8). (CQC, WET, EIU)	13,265.91	51.81
9e	Open forests, woodlands and open woodlands dominated by Corymbia clarksoniana (grey bloodwood) (or C. novoguinensis or C. intermedia (pink bloodwood) or C. polycarpa (long-fruited bloodwood)) frequently with Erythrophleum chlorostachys (red ironwood) or Eucalyptus platyphylla (poplar gum) predominantly on coastal sandplains and alluvia. (land zones 3, 5, 2) (CYP, BRB, CQC, WET, EIU)	465.42	1.82

Refer to **Map 4** for further information. **Map 5** also provides a representation of the distribution of vegetation communities as per the 1:5,000,000 BVG believed to be present prior to European settlement.

4. Technical and BioCondition Benchmark Descriptions

Technical descriptions provide a detailed description of the full range in structure and floristic composition of regional ecosystems (e.g. 11.3.1) and their component vegetation communities (e.g. 11.3.1a, 11.3.1b). See:

http://www.qld.gov.au/environment/plants-animals/plants/ecosystems/technical-descriptions/

The descriptions are compiled using site survey data from the Queensland Herbarium's CORVEG database. Distribution maps, representative images (if available) and the pre-clearing and remnant extent (hectares) of each vegetation community derived from the regional ecosystem mapping data are included. The technical descriptions should be used in conjunction with the fields from the regional ecosystem description database (REDD) for a full description of the regional ecosystem.

Technical descriptions include data on canopy height, canopy cover and native plant species composition of the predominant layer, which are attributes relevant to assessment of the remnant status of vegetation under the *Vegetation Management Act 1999*. However, as technical descriptions reflect the full range in structure and floristic composition across the climatic, natural disturbance and geographic range of the regional ecosystem, local reference sites should be used for remnant assessment where possible (Neldner et al. 2012 (PDF)* section 3.3.1 of:

https://publications.qld.gov.au/dataset/redd/resource/

The technical descriptions are subject to review and are updated as additional data becomes available.

When conducting a BioCondition assessment, these technical descriptions should be used in conjunction with BioCondition benchmarks for the specific regional ecosystem, or component vegetation community.

http://www.qld.gov.au/environment/plants-animals/biodiversity/benchmarks/

Benchmarks are based on a combination of quantitative and qualitative information and should be used as a guide only. Benchmarks are specific to one regional ecosystem vegetation community, however, the natural variability in structure and floristic composition under a range of climatic and natural disturbance regimes has been considered throughout the geographic extent of the regional ecosystem. Local reference sites should be used for this spatial and temporal (seasonal and annual) variability.

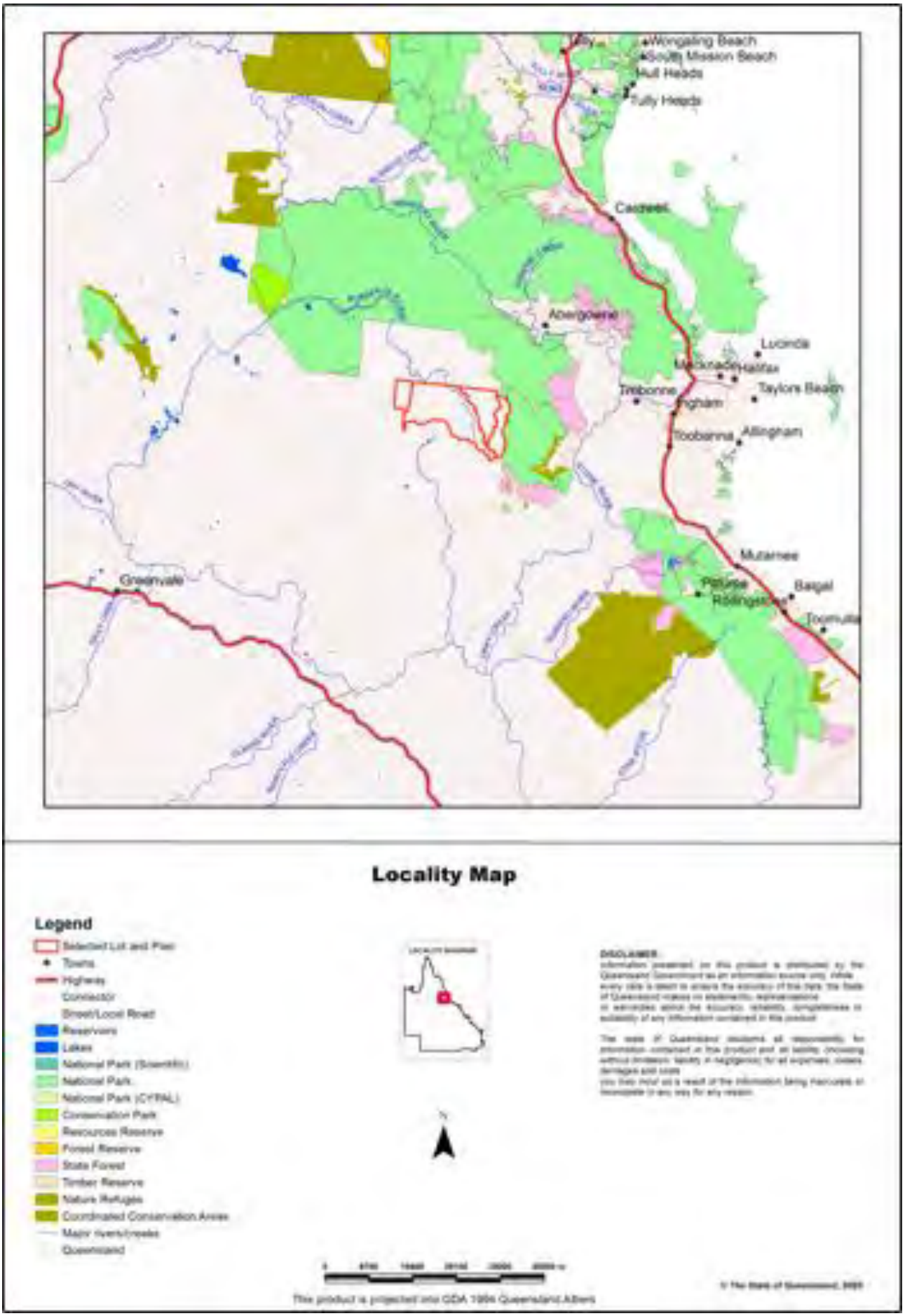
Table 7: List of remnant regional ecosystems within the AOI for which technical and biocondition benchmark descriptions are available

Regional ecosystems mapped as within the AOI	Technical Descriptions	Biocondition Benchmarks
7.12.11a	Not currently available	Not currently available
7.12.16a	Not currently available	Not currently available
7.12.17	Not currently available	Not currently available
7.12.21b	Not currently available	Not currently available
7.12.24a	Not currently available	Not currently available
7.12.29a	Not currently available	Not currently available
7.12.29b	Not currently available	Not currently available
7.12.29c	Not currently available	Not currently available
7.12.29e	Not currently available	Not currently available
7.12.30a	Not currently available	Not currently available
7.12.34	Not currently available	Not currently available
7.12.35	Not currently available	Not currently available
7.12.37b	Not currently available	Not currently available
7.12.60a	Not currently available	Not currently available
7.12.60b	Not currently available	Not currently available
7.12.61c	Not currently available	Not currently available
7.12.65b	Not currently available	Not currently available
7.12.65c	Not currently available	Not currently available
7.12.65e	Not currently available	Not currently available
7.12.65k	Not currently available	Not currently available
7.12.66b	Not currently available	Not currently available

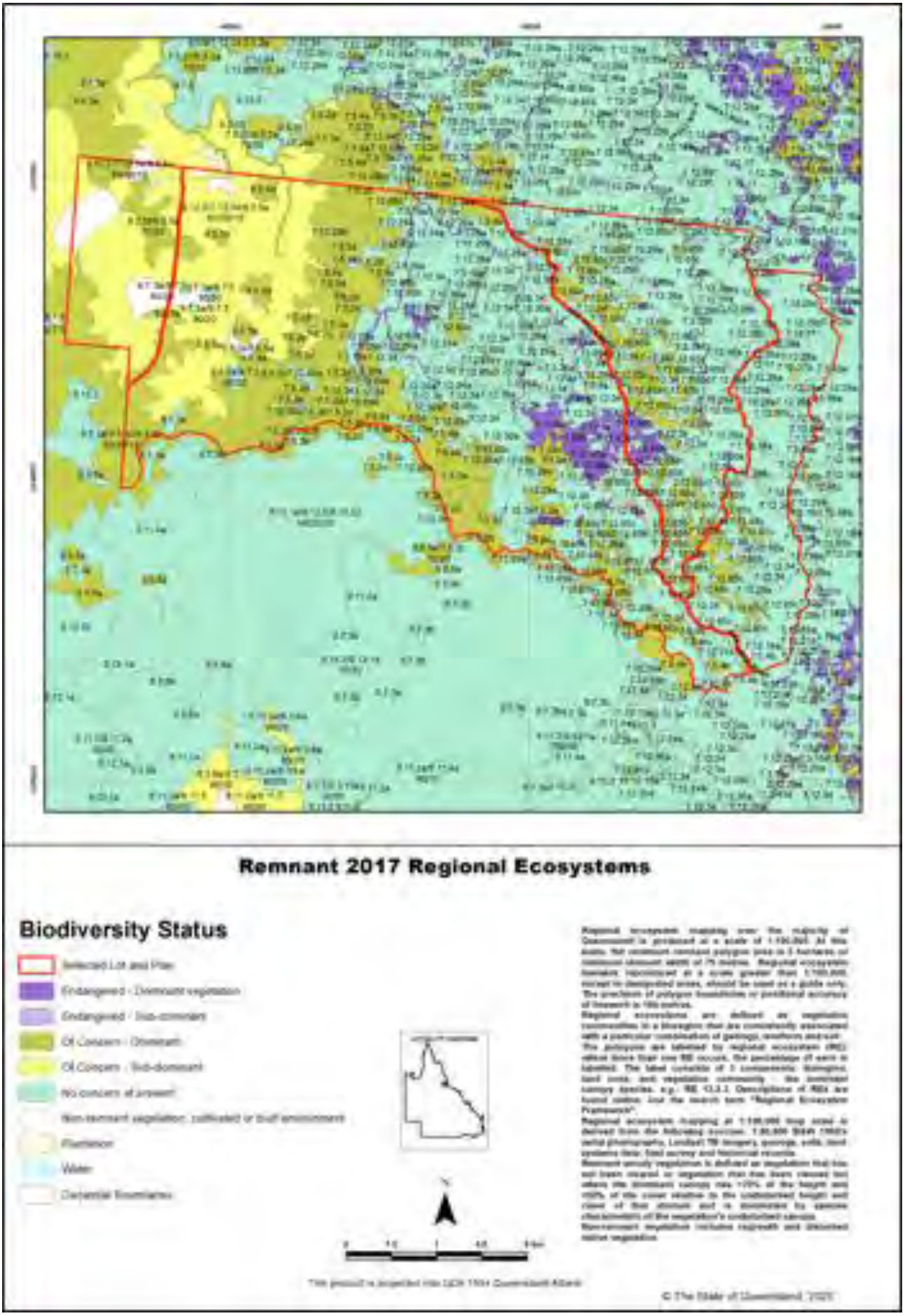
Regional ecosystems mapped as within the AOI	Technical Descriptions	Biocondition Benchmarks
7.12.66c	Not currently available	Not currently available
7.12.69b	Not currently available	Not currently available
7.3.19a	Not currently available	Not currently available
7.3.25b	Not currently available	Not currently available
7.3.26a	Not currently available	Not currently available
7.3.28a	Not currently available	Not currently available
7.3.28b	Not currently available	Not currently available
7.3.28d	Not currently available	Not currently available
7.3.39b	Not currently available	Not currently available
7.3.39c	Not currently available	Not currently available
7.3.49a	Not currently available	Not currently available
7.3.8a	Not currently available	Not currently available
7.5.2a	Not currently available	Not currently available
7.5.2d	Not currently available	Not currently available
7.5.2e	Not currently available	Not currently available
7.5.4a	Not currently available	Not currently available
7.5.4b	Not currently available	Not currently available
9.12.1a	Available	Not currently available
9.12.2	Available	Not currently available
9.12.22	Available	Not currently available
9.3.15	Available	Not currently available
9.5.5a	Available	Not currently available
9.5.5b	Available	Not currently available
9.5.5c	Available	Not currently available
9.5.5f	Available	Not currently available
9.7.3a	Not currently available	Not currently available
9.7.5	Available	Not currently available
non-rem	Not currently available	Not currently available
water	Not currently available	Not currently available

Maps

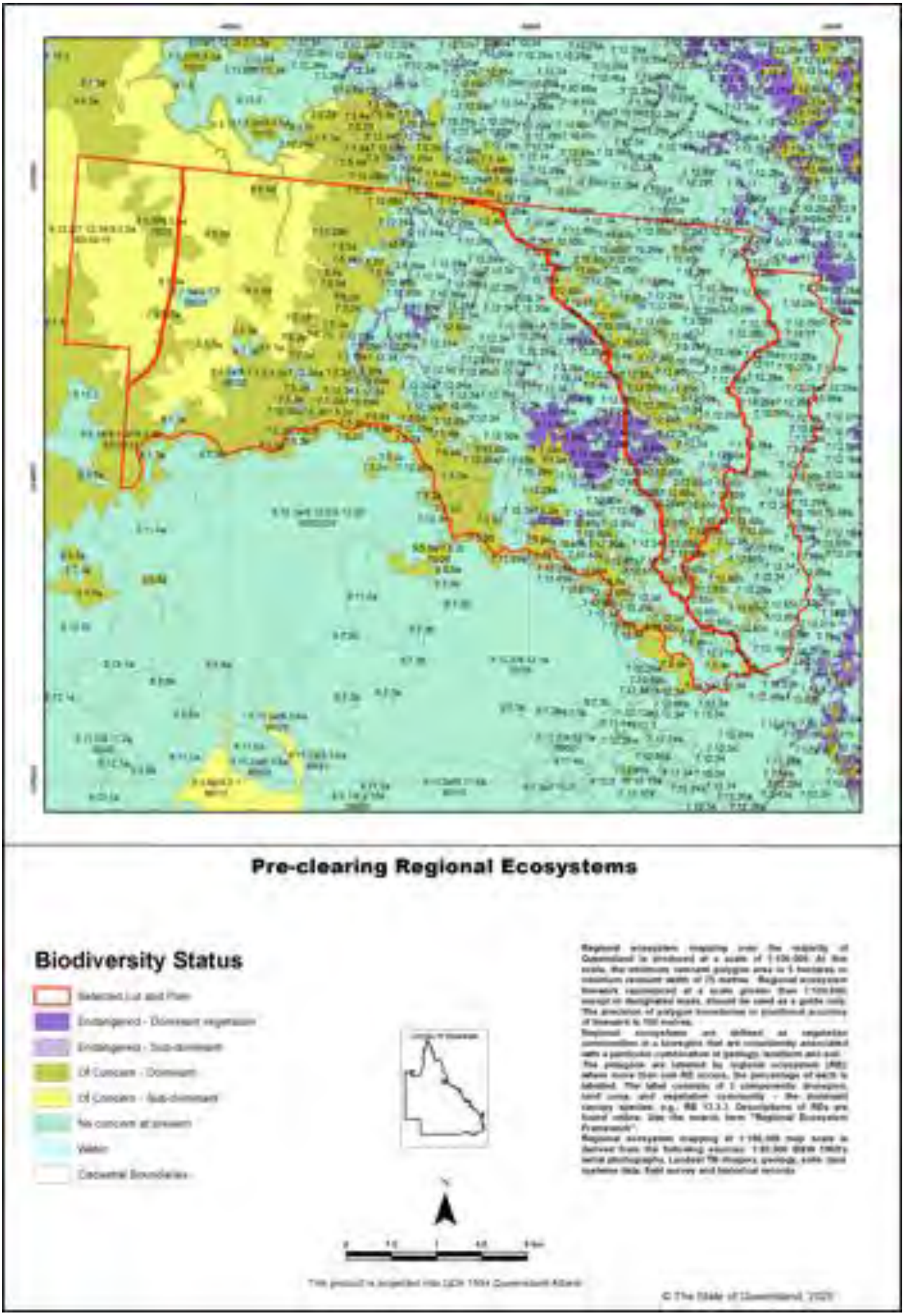
Map 1 - Location



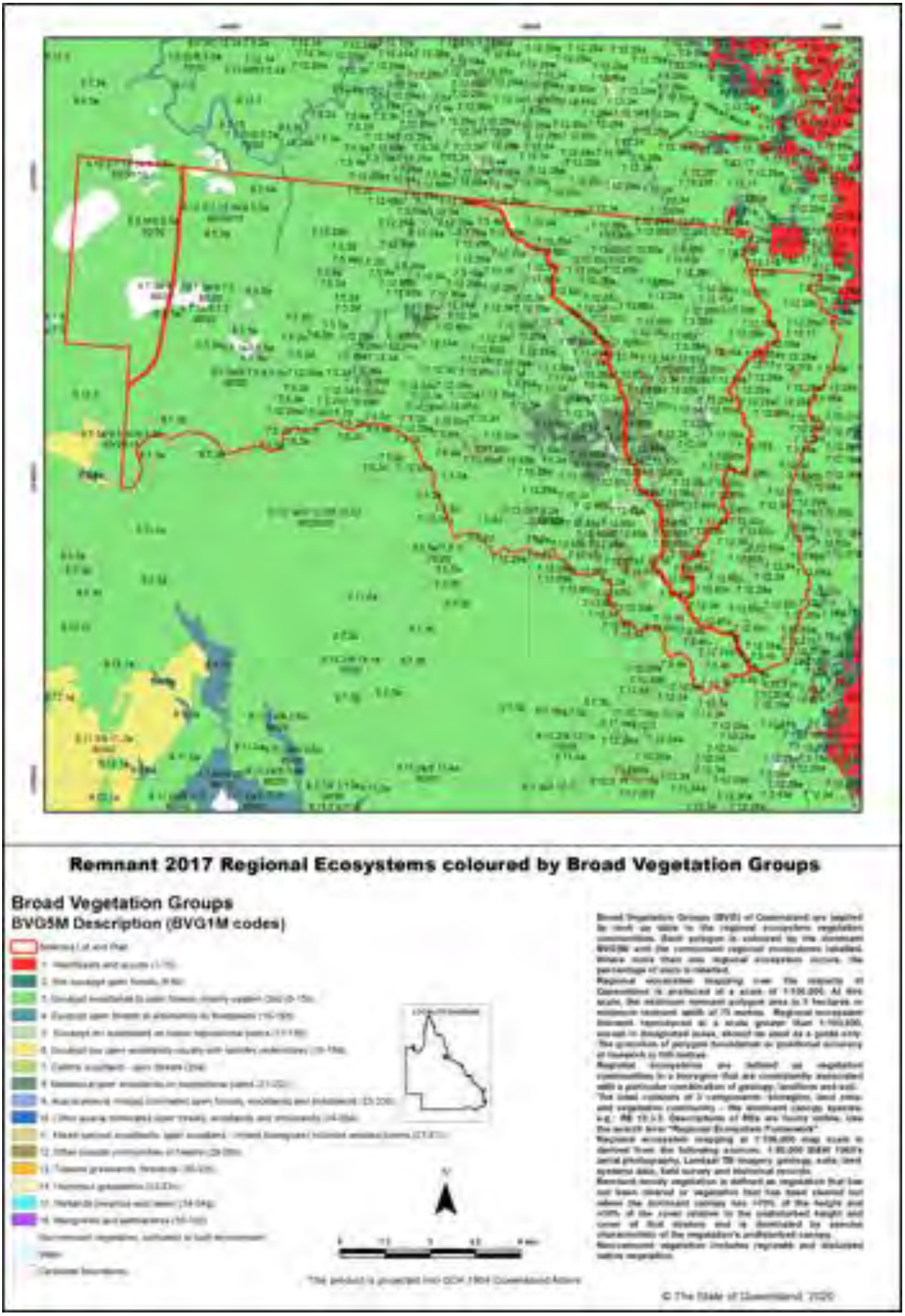
Map 2 - Remnant 2017 regional ecosystems



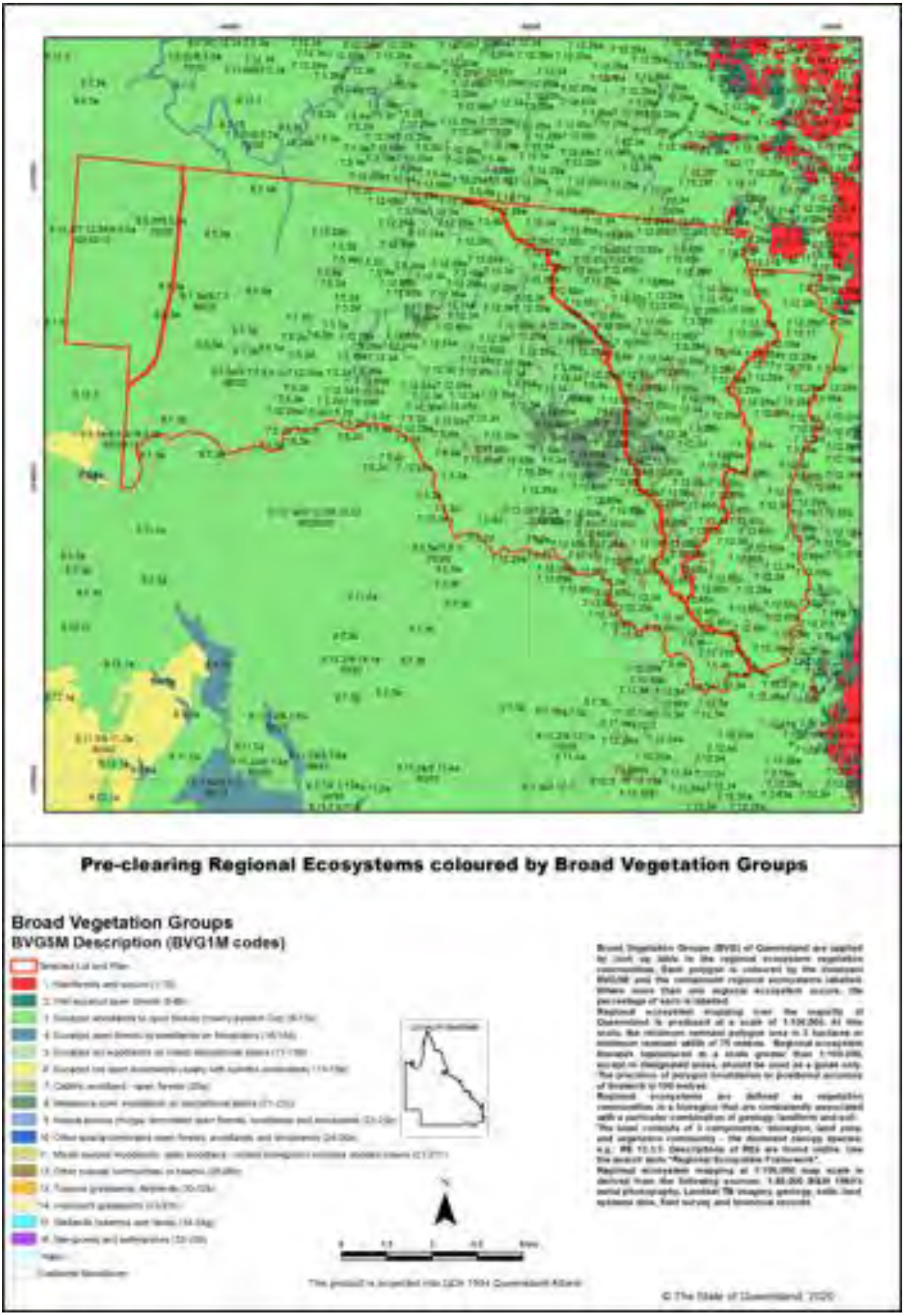
Map 3 - Pre-clearing regional ecosystems



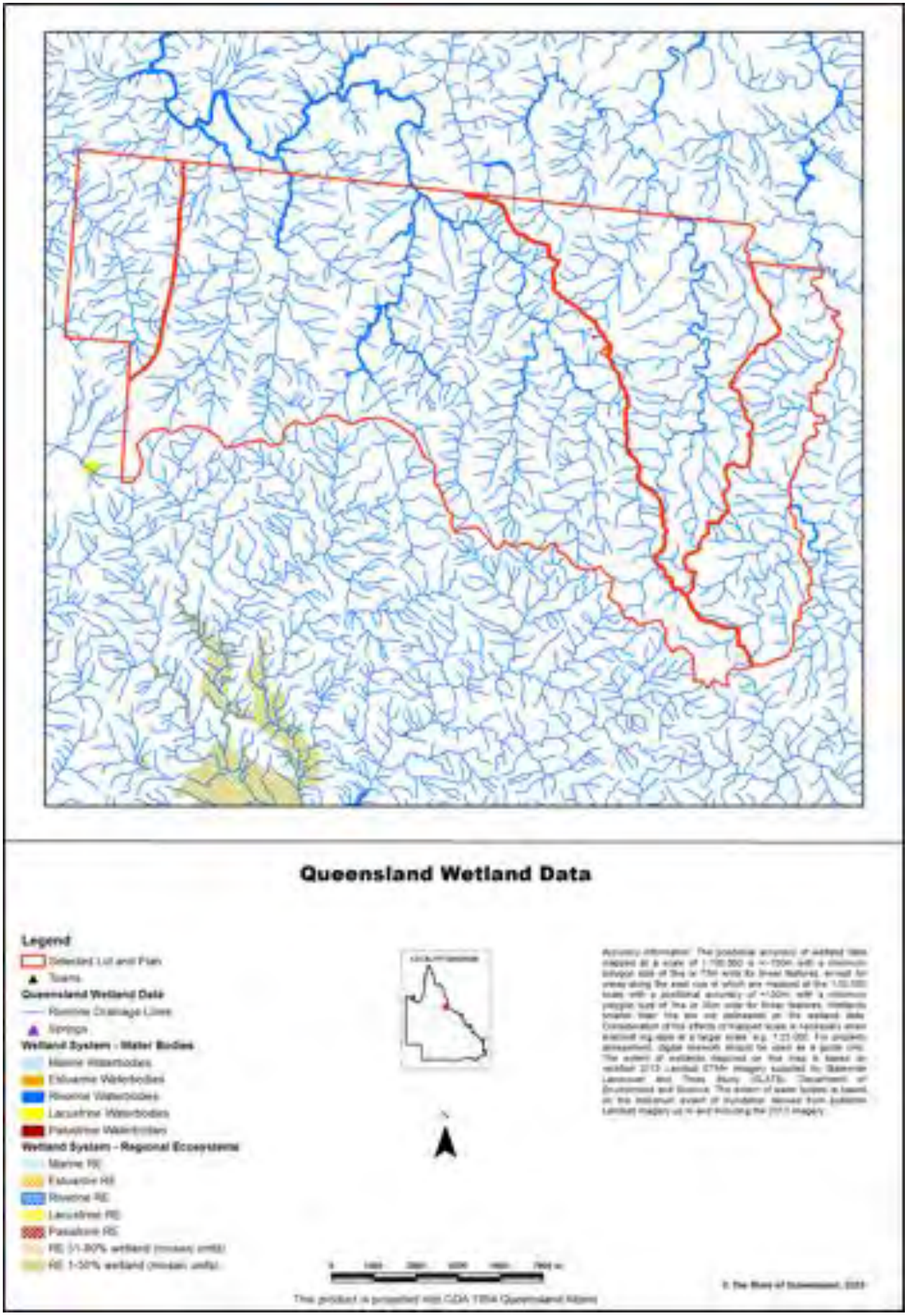
Map 4 - Remnant 2017 regional ecosystems by BVG (5M)



Map 5 - Pre-clearing regional ecosystems by BVG (5M)



Map 6 - Wetlands and waterways



Links and Other Information Sources

The Department of Environment and Science's Website -

http://www.qld.gov.au/environment/plants-animals/plants/ecosystems/

provides further information on the regional ecosystem framework, including access to links to the Regional Ecosystem Database, Broad Vegetation Group Definitions, Regional Ecosystem and Land zone descriptions.

Descriptions of the broad vegetation groups of Queensland can be downloaded from:

https://publications.qld.gov.au/dataset/redd/resource/

The methodology for mapping regional ecosystems can be downloaded from:

https://publications.qld.gov.au/dataset/redd/resource/

Technical descriptions for regional ecosystems can be obtained from:

http://www.qld.gov.au/environment/plants-animals/plants/ecosystems/technical-descriptions/

Benchmarks can be obtained from:

http://www.qld.gov.au/environment/plants-animals/biodiversity/benchmarks/

For further information associated with the remnant regional ecosystem dataset used by this report, refer to the metadata associated with the Biodiversity status of pre-clearing and Remnant Regional Ecosystems of Queensland dataset (version listed in **Appendix 1**) which is available through the Queensland Government Information System portal,

http://dds.information.qld.gov.au/dds/

The Queensland Globe is a mapping and data application. As an interactive online tool, Queensland Globe allows you to view and explore Queensland maps, imagery (including up-to-date satellite images) and other spatial data, including regional ecosystem mapping. To further view and explore regional ecosystems over an area of interest, access the Biota Globe (a component of the Queensland Globe). The Queensland Globe can be accessed via the following link:

http://www.dnrm.qld.gov.au/mapping-data/queensland-globe

References

Neldner, V.J., Niehus R.E., Wilson, B.A. McDonald, W.J.F., Ford, A.J. and Accad, A. (2017) The Vegetation of Queensland. Descriptions of Broad Vegetation Groups. Version 3.0. Queensland Herbarium, Department of Science, Information Technology, Innovation and the Arts.

(https://publications.qld.gov.au/dataset/redd/resource/78209e74-c7f2-4589-90c1-c33188359086)

Neldner, V.J., Wilson, B.A., Dillewaard, H.A., Ryan, T.S. and Butler, D.W. (2017) *Methodology for Survey and Mapping of Regional Ecosystems and Vegetation Communities in Queensland*. Version 4.0. Queensland Herbarium, Department of Science, Information Technology, Innovation and the Arts.

(https://publications.qld.gov.au/dataset/redd/resource/6dee78ab-c12c-4692-9842-b7257c2511e4)

Sattler, P.S. and Williams, R.D. (eds) (1999). *The Conservation Status of Queensland's Bioregional Ecosystems*. Environmental Protection Agency, Brisbane.

Appendices

Appendix 1 - Source Data

The dataset listed below is available for download from:

http://www.qld.gov.au/environment/plants-animals/plants/ecosystems/download/

- Regional Ecosystem Description Database

The datasets listed below are available for download from:

http://dds.information.qld.gov.au/dds/

- Biodiversity status of pre-clearing and 2017 remnant regional ecosystems of Queensland
- Pre-clearing Vegetation Communities and Regional Ecosystems of Queensland
- Queensland Wetland Data Version - Wetland lines
- Queensland Wetland Data Version - Wetland points
- Queensland Wetland Data Version - Wetland areas

Appendix 2 - Acronyms and Abbreviations

AOI	- Area of Interest
GDA94	- Geocentric Datum of Australia 1994
GIS	- Geographic Information System
RE	- Regional Ecosystem
REDD	- Regional Ecosystem Description Database
VMA	- *Vegetation Management Act 1999*

Queensland Government

Department of Environment and Science

Environmental Reports

Regional Ecosystems

Biodiversity Status

For the selected area of interest
Lot: 3 Plan: WG274

Environmental Reports - General Information

The Environmental Reports portal provides for the assessment of selected matters of interest relevant to a user specified location, or area of interest (AOI). All area and derivative figures are relevant to the extent of matters of interest contained within the AOI unless otherwise stated. Please note, if a user selects an AOI via the "central coordinates" option, the resulting assessment area encompasses an area extending for a 2km radius from the input coordinates.

All area and area derived figures included in this report 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.

Figures in tables may be affected by rounding.

The matters of interest reported on in this document are based upon available state mapped datasets. Where the report indicates that a matter of interest is not present within the AOI (e.g. where area related calculations are equal to zero, or no values are listed), this may be due either to the fact that state mapping has not been undertaken for the AOI, that state mapping is incomplete for the AOI, or that no matters of interest have been identified within the site.

The information presented in this report should be considered as a guide only and field survey may be required to validate values on the ground.

Important Note to User

Information presented in this report is based upon the Queensland Herbarium's Regional Ecosystem framework. The Biodiversity Status has been used to depict the extent of "Endangered", "Of Concern" and "No Concern at Present" regional ecosystems in all cases, rather than the classes used for the purposes of the *Vegetation Management Act 1999* (VMA). Mapping and figures presented in this document reflect the Queensland Herbarium's Remnant and Pre-clearing Regional Ecosystem Datasets, and not the certified mapping used for the purpose of the VMA.

For matters relevant to vegetation management under the VMA, please refer to the Department of Natural Resources, Mines and Energy website

https://www.dnrme.qld.gov.au/

Please direct queries about these reports to: Queensland.Herbarium@dsiti.qld.gov.au

Disclaimer

Whilst every care is taken to ensure the accuracy of the information provided in this report, the Queensland Government makes no representations or warranties about its accuracy, reliability, completeness, or suitability, for any particular purpose and disclaims all responsibility and all liability (including without limitation, liability in negligence) for all expenses, losses, damages (including indirect or consequential damage) and costs which the user may incur as a consequence of the information being inaccurate or incomplete in any way and for any reason.

Table of Contents

Summary Information

The following table provides an overview of the AOI with respect to selected topographic and environmental themes. Refer to **Map 1** for locality information.

Table 1: Area of interest details: Lot: 3 Plan: WG274

Size (ha)	2,371.05
Local Government(s)	Hinchinbrook Shire
Bioregion(s)	Wet Tropics
Subregion(s)	Paluma - Seaview
Catchment(s)	Herbert, Burdekin

The table below summarizes the extent of remnant vegetation classed as "Endangered", "Of concern" and "No concern at present" regional ecosystems classified by Biodiversity Status within the area of interest (AOI).

Table 2: Summary table, biodiversity status of regional ecosystems within the AOI

Biodiversity Status	Area (Ha)	% of AOI
Endangered	24.92	1.05
Of concern	692.7	29.22
No concern at present	1,540.05	64.95
Total remnant vegetation	2,257.67	95.22

Refer to **Map 2** for further information.

Regional Ecosystems

1. Introduction

Regional ecosystems are vegetation communities in a bioregion that are consistently associated with particular combinations of geology, landform and soil (Sattler and Williams 1999). Descriptions of Queensland's Regional ecosystems are available online from the Regional Ecosystem Description Database (REDD). Descriptions are compiled from a broad range of information sources including vegetation, land system and geology survey and mapping and detailed vegetation site data. The regional ecosystem classification and descriptions are reviewed as new information becomes available. A number of vegetation communities may form a single regional ecosystem and are usually distinguished by differences in dominant species, frequently in the shrub or ground layers and are denoted by a letter following the regional ecosystem code (e.g. a, b, c). Vegetation communities and regional ecosystems are amalgamated into a higher level classification of broad vegetation groups (BVGs).

A published methodology for survey and mapping of regional ecosystems across Queensland (Neldner et al 2017) provides further details on regional ecosystem concepts and terminology.

This report provides information on the type, status, and extent of vegetation communities, regional ecosystems and broad vegetation groups present within a user specified area of interest. Please note, for the purpose of this report, the Biodiversity Status is used. This report has not been developed for application of the *Vegetation Management Act 1999* (VMA). Additionally, information generated in this report has been derived from the Queensland Herbarium's Regional Ecosystem Mapping, and not the regulated mapping certified for the purposes of the VMA. If your interest/matter relates to regional ecosystems and the VMA, users should refer to the Department of Natural Resources, Mines and Energy website.

https://www.dnrme.qld.gov.au/

With respect to the Queensland Biodiversity Status,

"Endangered" regional ecosystems are described as those where:

- remnant vegetation is less than 10 per cent of its pre-clearing extent across the bioregion; or 10-30% of its pre-clearing extent remains and the remnant vegetation is less than 10,000 hectares, or
- less than 10 per cent of its pre-clearing extent remains unaffected by severe degradation and/or biodiversity loss*, or
- 10-30 per cent of its pre-clearing extent remains unaffected by severe degradation and/or biodiversity loss and the remnant vegetation is less than 10,000 hectares; or
- it is a rare** regional ecosystem subject to a threatening process.***

"Of concern" regional ecosystems are described as those where:

- the degradation criteria listed above for 'Endangered' regional ecosystems are not met and,
- remnant vegetation is 10-30 per cent of its pre-clearing extent across the bioregion; or more than 20 per cent of its pre-clearing extent remains and the remnant extent is less than 10,000 hectares, or
- 10-30 percent of its pre-clearing extent remains unaffected by moderate degradation and/or biodiversity loss.****

and "No concern at present" regional ecosystems are described as those where:

- remnant vegetation is over 30 per cent of its pre-clearing extent across the bioregion, and the remnant area is greater than 10,000 hectares, and
- the degradation criteria listed above for 'Endangered' or 'Of concern' regional ecosystems are not met.

**Severe degradation and/or biodiversity loss is defined as: floristic and/or faunal diversity is greatly reduced but unlikely to recover within the next 50 years even with the removal of threatening processes; or soil surface is severely degraded, for example, by loss of A horizon, surface expression of salinity; surface compaction, loss of organic matter or sheet erosion.*

***Rare regional ecosystem: pre-clearing extent (1000 ha); or patch size (100 ha and of limited total extent across its range).*

****Threatening processes are those that are reducing or will reduce the biodiversity and ecological integrity of a regional ecosystem. For example, clearing, weed invasion, fragmentation, inappropriate fire regime or grazing pressure, or infrastructure development.*

*****Moderate degradation and/or biodiversity loss is defined as: floristic and/or faunal diversity is greatly reduced but unlikely to recover within the next 20 years even with the removal of threatening processes; or soil surface is moderately degraded.*

2. Remnant Regional Ecosystems

The following table identifies the remnant regional ecosystems and vegetation communities mapped within the AOI and provides their short descriptions, Biodiversity Status, and remnant extent within the selected AOI. Please note, where heterogeneous vegetated patches (mixed patches of remnant vegetation mapped as containing multiple regional ecosystems) occur within the AOI, they have been split and listed as individual regional ecosystems (or vegetation communities where present) for the purposes of the table below. In such instances, associated area figures have been generated based upon the estimated proportion of each regional ecosystem (or vegetation community) predicted to be present within the larger mixed patch.

Table 3: Remnant regional ecosystems, description and status within the AOI

Regional Ecosystem	Short Description	BD Status	Area (Ha)	% of AOI
11.12.13a	Eucalyptus crebra, Corymbia spp., E. acmenoides woodland on igneous rocks. Coastal hills	No concern at present	76.26	3.22
7.12.16a	Simple to complex notophyll vine forest, including small areas of Araucaria bidwillii, of cloudy wet and moist uplands and highlands on granites and rhyolites	No concern at present	11.58	0.49
7.12.21b	Eucalyptus grandis open forest to woodland, or Corymbia intermedia, E. pellita, and E. grandis, open forest to woodland, (or vine forest with these species as emergents) on granite and rhyolite	Endangered	1.97	0.08
7.12.29a	Corymbia intermedia and/or Lophostemon suaveolens open forest to woodland +/- areas of Allocasuarina littoralis and A. torulosa on uplands on granite and rhyolite	No concern at present	4.5	0.19
7.12.29b	Corymbia intermedia and/or Lophostemon suaveolens open forest to woodland +/- areas of Allocasuarina littoralis and A. torulosa on uplands on granite and rhyolite	No concern at present	926.61	39.08
7.12.30a	Corymbia citriodora +/- Eucalyptus portuensis woodland to open forest on granite and rhyolite	No concern at present	500.47	21.11
7.12.34	Eucalyptus portuensis and/or E. drepanophylla, +/- C. intermedia +/- C. citriodora, +/- E. granitica open woodland to open forest on uplands on granite	No concern at present	20.64	0.87
7.12.61b	Eucalyptus tereticornis +/- E. granitica woodland to open forest of foothills and uplands on granite and rhyolite	Of concern	138.44	5.84
7.12.65b	Rock pavement or areas of skeletal soil, on granite and rhyolite of dry western or southern areas +/- shrublands to closed forests of Acacia spp. and/or Lophostemon suaveolens and/or Allocasuarina littoralis and/or Eucalyptus lockyeri subsp. exuta	Of concern	3.69	0.16
7.12.66b	Lophostemon confertus low shrubland or low closed forest on exposed rocky slopes on granite and rhyolite	Of concern	11.7	0.49
7.12.66d	Lophostemon confertus low shrubland or low closed forest on exposed rocky slopes on granite and rhyolite	Of concern	1.38	0.06

Regional Ecosystem	Short Description	BD Status	Area (Ha)	% of AOI
7.3.39a	Eucalyptus tereticornis +/- E. platyphylla +/- Corymbia intermedia +/- Lophostemon suaveolens open woodland to open forest, and associated sedgelands and grasslands on broad drainage depressions of uplands	Endangered	14.45	0.61
7.3.39c	Eucalyptus tereticornis +/- E. platyphylla +/- Corymbia intermedia +/- Lophostemon suaveolens open woodland to open forest, and associated sedgelands and grasslands on broad drainage depressions of uplands	Endangered	0.63	0.03
7.5.1a	Eucalyptus tereticornis, Corymbia intermedia and E. reducta woodland to open forest of uplands on weathered soils of a remnant surface	Endangered	5.64	0.24
7.5.3a	Eucalyptus portuensis, Corymbia citriodora, and E. drepanophylla woodland to open forest of uplands on weathered soils of a remnant surface	Endangered	2.23	0.09
7.5.4a	Corymbia intermedia or Melaleuca viridiflora woodland to open forest of uplands on weathered soils of a remnant surface	Of concern	47.02	1.98
7.5.4b	Corymbia intermedia or Melaleuca viridiflora woodland to open forest of uplands on weathered soils of a remnant surface	Of concern	320.09	13.5
7.5.4c	Corymbia intermedia or Melaleuca viridiflora woodland to open forest of uplands on weathered soils of a remnant surface	Of concern	0.23	0.01
7.5.4f	Corymbia intermedia or Melaleuca viridiflora woodland to open forest of uplands on weathered soils of a remnant surface	Of concern	71.84	3.03
7.8.18a	Corymbia intermedia and/or Lophostemon suaveolens +/- Allocasuarina torulosa open forest to woodland on basalt	Of concern	69.32	2.92
7.8.18c	Corymbia intermedia and/or Lophostemon suaveolens +/- Allocasuarina torulosa open forest to woodland on basalt	Of concern	29.01	1.22
non-rem	None	None	113.31	4.78

Refer to **Map 2** for further information. **Map 3** also provides a visual estimate of the distribution of regional ecosystems present before clearing.

Table 4 provides further information in regards to the remnant regional ecosystems present within the AOI. Specifically, the extent of remnant vegetation remaining within the bioregion, the 1:1,000,000 broad vegetation group (BVG) classification, whether the regional ecosystem is identified as a wetland, and extent of representation in Queensland's Protected Area Estate. For a description of the vegetation communities within the AOI and classified according to the 1:1,000,000 BVG, refer to **Table 6**.

Table 4: Remnant regional ecosystems within the AOI, additional information

Regional Ecosystem	Remnant Extent	BVG (1 Million)	Wetland	Representation in protected estate
11.12.13a	Pre-clearing 43000 ha; Remnant 2017 40000 ha	10a	None	High
7.12.16a	Pre-clearing 242000 ha; Remnant 2017 230000 ha	6b	None	High

Regional Ecosystem	Remnant Extent	BVG (1 Million)	Wetland	Representation in protected estate
7.12.21b	Pre-clearing 16000 ha; Remnant 2017 16000 ha	8a	None	High
7.12.29a	Pre-clearing 88000 ha; Remnant 2017 87000 ha	9c	None	High
7.12.29b	Pre-clearing 88000 ha; Remnant 2017 87000 ha	9c	None	High
7.12.30a	Pre-clearing 43000 ha; Remnant 2017 43000 ha	10b	None	High
7.12.34	Pre-clearing 52000 ha; Remnant 2017 51000 ha	9d	None	High
7.12.61b	Pre-clearing 26000 ha; Remnant 2017 25000 ha	9c	None	High
7.12.65b	Pre-clearing 16000 ha; Remnant 2017 16000 ha	29b	None	High
7.12.66b	Pre-clearing 5000 ha; Remnant 2017 5000 ha	28e	None	High
7.12.66d	Pre-clearing 5000 ha; Remnant 2017 5000 ha	28e	None	High
7.3.39a	Pre-clearing 2000 ha; Remnant 2017 1000 ha	9e	Floodplain (other than floodplain wetlands).	Medium
7.3.39c	Pre-clearing 2000 ha; Remnant 2017 1000 ha	34f	Palustrine wetland (e.g. vegetated swamp).	Medium
7.5.1a	Pre-clearing 800 ha; Remnant 2017 600 ha	9c	None	No representation
7.5.3a	Pre-clearing 300 ha; Remnant 2017 300 ha	10b	None	No representation
7.5.4a	Pre-clearing 6000 ha; Remnant 2017 5000 ha	9e	None	Low
7.5.4b	Pre-clearing 6000 ha; Remnant 2017 5000 ha	9e	None	Low
7.5.4c	Pre-clearing 6000 ha; Remnant 2017 5000 ha	9e	None	Low
7.5.4f	Pre-clearing 6000 ha; Remnant 2017 5000 ha	9e	None	Low
7.8.18a	Pre-clearing 2000 ha; Remnant 2017 1000 ha	9c	None	High
7.8.18c	Pre-clearing 2000 ha; Remnant 2017 1000 ha	9c	None	High
non-rem	None	None	None	None

Representation in Protected Area Estate: High greater than 10% of pre-clearing extent is represented; Medium 4 - 10% is represented; Low less than 4% is represented, No representation.

The distribution of mapped wetland systems within the area of interest is displayed in **Map 6**.

The following table lists known special values associated with a regional ecosystem type.

Table 5: Remnant regional ecosystems within the AOI, special values

Regional Ecosystem	Special Values
11.12.13a	Potential habitat for NCA listed species: Aristida granitica, Bertya sharpeana, Sannantha papillosa
7.12.16a	Habitat of threatened plant species including: Albizia sp. (Windsor Tableland B.Gray 2181), Argophyllum cryptophlebum, Ctenopteris walleri, Eidothea zoexylocarya, Elaeocarpus thelmae, Endiandra jonesii, Endiandra phaeocarpa, Helicia grayi, Helicia lewisensis, Phlegmariurus spp., Diteilis simmondsii, Litsea granitica, Phaleria biflora, Stenocarpus davallioides, , Symplocos graniticola and Xylosma sp. (Mt Lewis G.Sankowsky+ 1108). Habitat for near threatened plant species Aceratium ferrugineum, Aglaia brassii, Austrobuxus megacarpus, Bubbia queenslandiana subsp. queenslandiana, Glochidion pungens, Goodyera viridiflora, Diospyros granitica, Polyalthia submontana subsp. submontana, Helicia recurva, Medicosma glandulosa, Prumnopitys ladei, Pteridoblechnum acuminatum, Sarcopteryx montana, Symplocos ampulliformis and Wendlandia connata. Habitat of many endemic species of fauna and flora. Other species of local significance include Diospyros hemicycloides, Elaeocarpus johnsonii, Solanum dimorphispinum and Steganthera cooperorum.
7.12.21b	Habitat for arboreal mammals. Habitat for plant species of limited distribution including Bertya polystigma, Pityrodia salviifolia, Pomaderris argyrophylla, Dodonaea uncinata, Phebalium longifolium and Persoonia tropica.
7.12.29a	Potential habitat for NCA listed species: Corybas cerasinus, Corymbia leptoloma, Dodonaea uncinata
7.12.29b	Potential habitat for NCA listed species: Corybas cerasinus, Corymbia leptoloma, Dodonaea uncinata
7.12.30a	Potential habitat for NCA listed species: Acacia longipedunculata, Acacia purpureopetala, Acacia tingoorensis, Corymbia rhodops, Diuris oporina, Dodonaea uncinata, Grevillea glossadenia, Homoranthus porteri, Melaleuca sylvana, Micromyrtus delicata, Plectr 7.12.30d: Habitat for several locally restricted and disjunct species. Threatened plant species include Micromyrtus delicata, Melaleuca sylvana, Diuris oporina, Homoranthus porteri, Grevillea glossadenia, Acacia purpureopetala, Corymbia rhodops and Prostanthera clotteniana. Other species of local significance are Eucalyptus lockyeri.
7.12.34	Potential habitat for NCA listed species: Acacia longipedunculata, Calochlaena villosa, Croton densivestitus, Grevillea glossadenia, Homoranthus porteri, Plectranthus amoenus, Solanum angustum, Zieria obovata
7.12.61b	Potential habitat for NCA listed species: Arthraxon hispidus, Cucumis costatus, Dendrobium bigibbum, Dendrobium johannis, Dodonaea uncinata, Plectranthus gratus
7.12.65b	Potential habitat for NCA listed species: Acacia purpureopetala, Buckinghamia ferruginiflora, Corymbia leptoloma, Corymbia rhodops, Diuris oporina, Dodonaea uncinata, Grevillea glossadenia, Homoranthus porteri, Melaleuca sylvana, Melaleuca uxorum, Micromy 7.12.65k: Habitat for several locally restricted and disjunct species. Threatened species include Micromyrtus delicata, Melaleuca sylvana, Melaleuca uxorum, Diuris oporina, Homoranthus porteri, Grevillea glossadenia, Acacia purpureopetala, Corymbia rhodops and Prostanthera clotteniana. Other species of local significance are Eucalyptus lockyeri.
7.12.66b	None
7.12.66d	None

Regional Ecosystem	Special Values
7.3.39a	Potential habitat for NCA listed species: Oenanthe javanica
7.3.39c	Potential habitat for NCA listed species: Oenanthe javanica
7.5.1a	None
7.5.3a	None
7.5.4a	None
7.5.4b	None
7.5.4c	None
7.5.4f	None
7.8.18a	None
7.8.18c	None
non-rem	None

3. Remnant Regional Ecosystems by Broad Vegetation Group

BVGs are a higher-level grouping of vegetation communities. Queensland encompasses a wide variety of landscapes across temperate, wet and dry tropics and semi-arid climatic zones. BVGs provide an overview of vegetation communities across the state or a bioregion and allow comparison with other states. There are three levels of BVGs which reflect the approximate scale at which they are designed to be used: the 1:5,000,000 (national), 1:2,000,000 (state) and 1:1,000,000 (regional) scales.

A comprehensive description of BVGs is available at:

https://publications.qld.gov.au/dataset/redd/resource/

The following table provides a description of the 1:1,000,000 BVGs present and their associated extent within the AOI.

Table 6: Broad vegetation groups (1 million) within the AOI

BVG (1 Million)	Description	Area (Ha)	% of AOI
None	None	113.31	4.78
10a	Dry woodlands to open woodlands dominated by Corymbia citriodora (spotted gum). (land zones 10, 7, 12, 11,[8]) (BRB, NET, [DEU])	76.26	3.22
10b	Moist open forests to woodlands dominated by Corymbia citriodora (spotted gum). (land zones 12, 11, 9, 5, 8) (SEQ, CQC, EIU, WET)	502.7	21.2
28e	Low open forest to woodlands dominated by Lophostemon suaveolens (swamp box) (or L. confertus (brush box)) or Syncarpia glomulifera (turpentine) frequently with Allocasuarina spp. on rocky hill slopes. (land zones 12, 9, 3, 11, [10, 8]) (CQC, WET, SEQ, BRB, [CYP])	13.07	0.55
29b	Open shrublands to open heaths in montane frequently rocky locations. (land zones 7, 12, 11, 5, 8, 10) (BRB, NWH, WET, CYP, EIU, SEQ, DEU, [NET, CQC])	3.69	0.16
34f	Palustrine wetlands. Sedgelands/grasslands on seeps and soaks on wet peaks, coastal dunes and other non-floodplain features. (land zones 3, 9, 12, [11]) (BRB, MUL, DEU, WET, NET)	0.63	0.03
6b	Simple evergreen notophyll vine forest to simple microphyll vine fern thicket on high peaks and plateaus of northern Queensland. (land zones 12, 11) (WET, CQC) (Tracey 1982 8, 9, 10)	11.58	0.49

BVG (1 Million)	Description	Area (Ha)	% of AOI
8a	Wet tall open forest dominated by species such as Eucalyptus grandis (flooded gum) or E. saligna, E. resinifera (red mahogany), Lophostemon confertus (brush box), Syncarpia glomulifera (turpentine), E. laevopinea (silvertop stringybark). Contains a well developed understorey of rainforest components, including ferns and palms, or the understorey may be dominated by sclerophyll shrubs. (land zones 12, 8, 10, 11, 3, 5, 9) (SEQ, WET, BRB, CQC, [NET])	1.97	0.08
9c	Open forests of Corymbia clarksoniana (grey bloodwood) (or C. intermedia (pink bloodwood) or C. novoguinensis), C. tessellaris (carbeen) ± Eucalyptus tereticornis (blue gum) predominantly on coastal ranges. Other frequent tree species include Eucalyptus drepanophylla (grey ironbark), E. pellita (large-fruited red mahogany), E. brassiana (Cape York red gum) and Lophostemon suaveolens (swamp box). (land zones 12, 11, 8, 5). (WET, CQC, CYP, BRB)	1,173.52	49.49
9d	Moist to dry open forest to woodland dominated by Eucalyptus portuensis, Corymbia intermedia (pink bloodwood), E. drepanophylla, E. resinifera or E. reducta +/- Syncarpia glomulifera (turpentine) or E. cloeziana (Gympie messmate) on ranges. Also includes mixed forests with Eucalyptus pellita or Corymbia torelliana emergents and rainforest understories (land zones 12, 11, 3, 9, 5, 8). (CQC, WET, EIU)	20.64	0.87
9e	Open forests, woodlands and open woodlands dominated by Corymbia clarksoniana (grey bloodwood) (or C. novoguinensis or C. intermedia (pink bloodwood) or C. polycarpa (long-fruited bloodwood)) frequently with Erythrophleum chlorostachys (red ironwood) or Eucalyptus platyphylla (poplar gum) predominantly on coastal sandplains and alluvia. (land zones 3, 5, 2) (CYP, BRB, CQC, WET, EIU)	453.62	19.13

Refer to **Map 4** for further information. **Map 5** also provides a representation of the distribution of vegetation communities as per the 1:5,000,000 BVG believed to be present prior to European settlement.

4. Technical and BioCondition Benchmark Descriptions

Technical descriptions provide a detailed description of the full range in structure and floristic composition of regional ecosystems (e.g. 11.3.1) and their component vegetation communities (e.g. 11.3.1a, 11.3.1b). See:

http://www.qld.gov.au/environment/plants-animals/plants/ecosystems/technical-descriptions/

The descriptions are compiled using site survey data from the Queensland Herbarium's CORVEG database. Distribution maps, representative images (if available) and the pre-clearing and remnant extent (hectares) of each vegetation community derived from the regional ecosystem mapping data are included. The technical descriptions should be used in conjunction with the fields from the regional ecosystem description database (REDD) for a full description of the regional ecosystem.

Technical descriptions include data on canopy height, canopy cover and native plant species composition of the predominant layer, which are attributes relevant to assessment of the remnant status of vegetation under the *Vegetation Management Act 1999*. However, as technical descriptions reflect the full range in structure and floristic composition across the climatic, natural disturbance and geographic range of the regional ecosystem, local reference sites should be used for remnant assessment where possible (Neldner et al. 2012 (PDF)* section 3.3.1 of:

https://publications.qld.gov.au/dataset/redd/resource/

The technical descriptions are subject to review and are updated as additional data becomes available.

When conducting a BioCondition assessment, these technical descriptions should be used in conjunction with BioCondition benchmarks for the specific regional ecosystem, or component vegetation community.

http://www.qld.gov.au/environment/plants-animals/biodiversity/benchmarks/

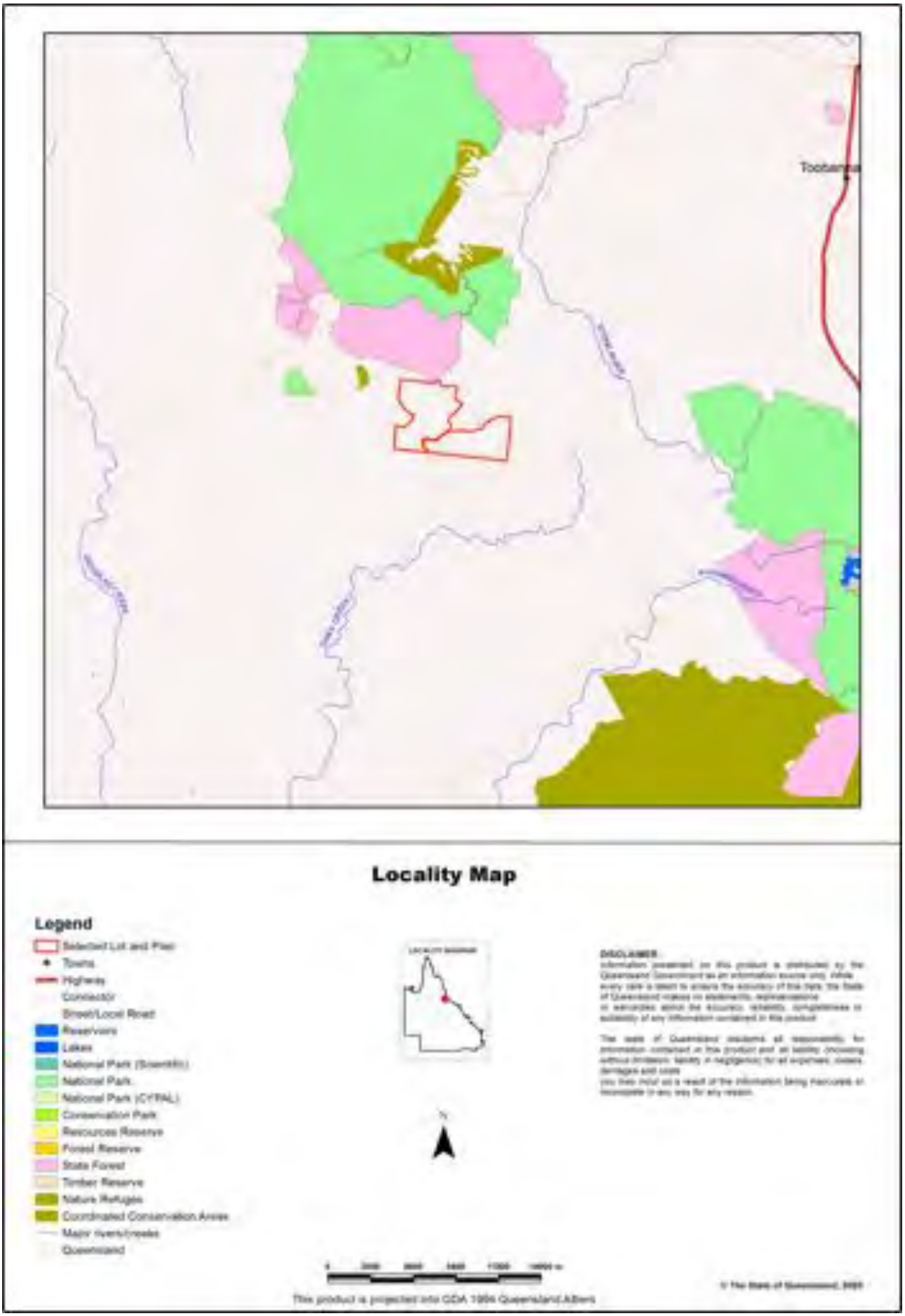
Benchmarks are based on a combination of quantitative and qualitative information and should be used as a guide only. Benchmarks are specific to one regional ecosystem vegetation community, however, the natural variability in structure and floristic composition under a range of climatic and natural disturbance regimes has been considered throughout the geographic extent of the regional ecosystem. Local reference sites should be used for this spatial and temporal (seasonal and annual) variability.

Table 7: List of remnant regional ecosystems within the AOI for which technical and biocondition benchmark descriptions are available

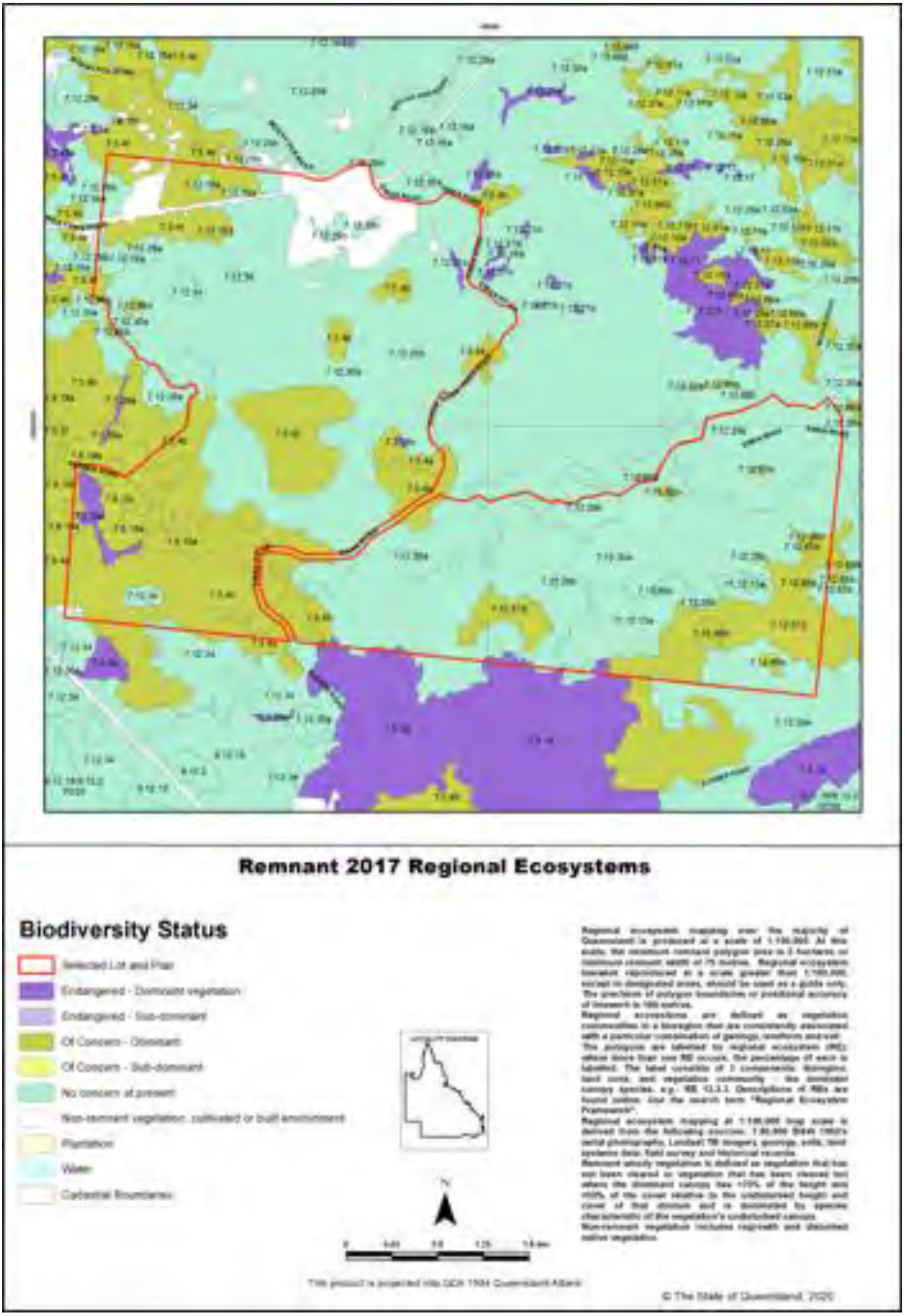
Regional ecosystems mapped as within the AOI	Technical Descriptions	Biocondition Benchmarks
11.12.13a	Not currently available	Not currently available
7.12.16a	Not currently available	Not currently available
7.12.21b	Not currently available	Not currently available
7.12.29a	Not currently available	Not currently available
7.12.29b	Not currently available	Not currently available
7.12.30a	Not currently available	Not currently available
7.12.34	Not currently available	Not currently available
7.12.61b	Not currently available	Not currently available
7.12.65b	Not currently available	Not currently available
7.12.66b	Not currently available	Not currently available
7.12.66d	Not currently available	Not currently available
7.3.39a	Not currently available	Not currently available
7.3.39c	Not currently available	Not currently available
7.5.1a	Not currently available	Not currently available
7.5.3a	Not currently available	Not currently available
7.5.4a	Not currently available	Not currently available
7.5.4b	Not currently available	Not currently available
7.5.4c	Not currently available	Not currently available
7.5.4f	Not currently available	Not currently available
7.8.18a	Not currently available	Not currently available
7.8.18c	Not currently available	Not currently available
non-rem	Not currently available	Not currently available

Maps

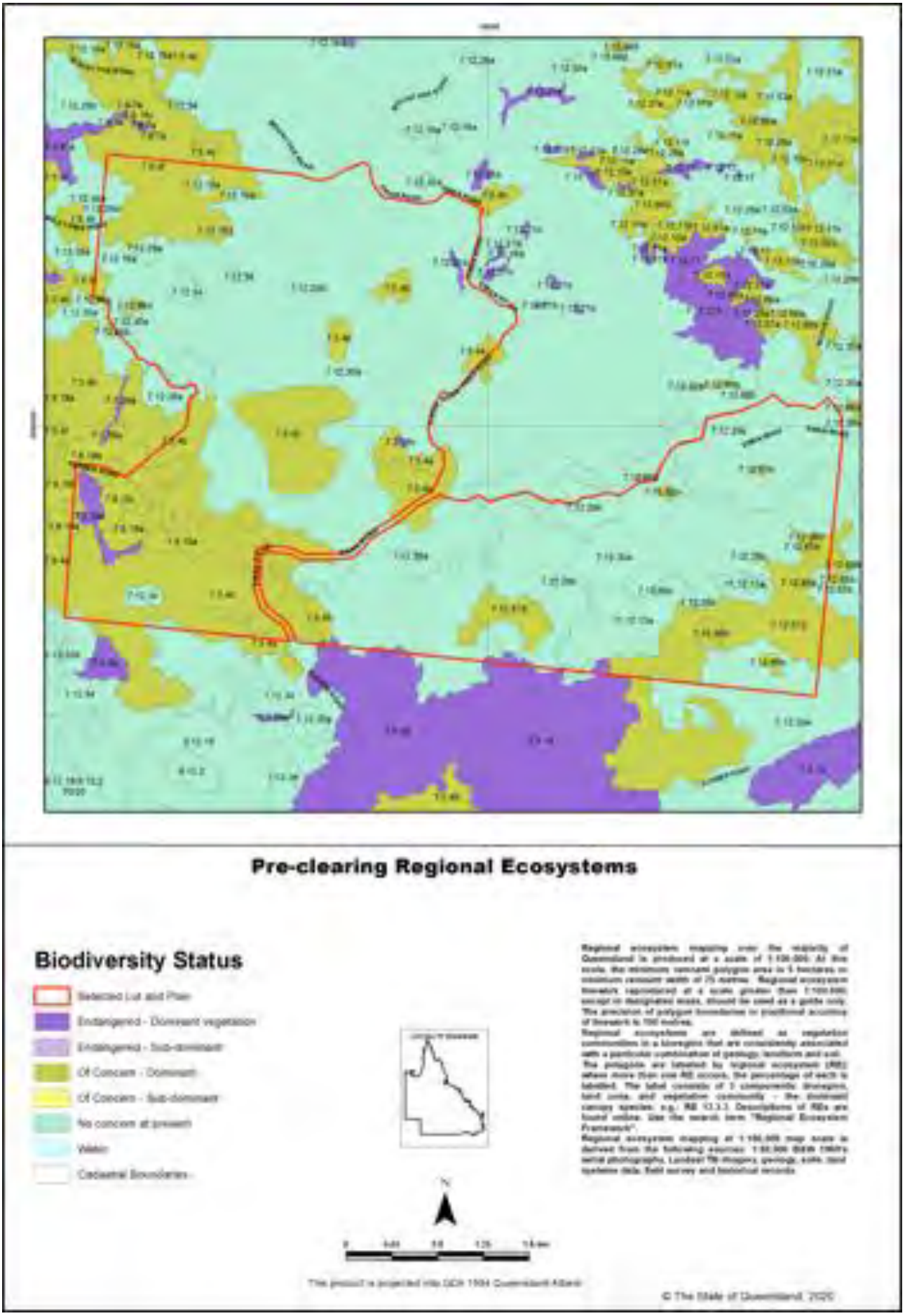
Map 1 - Location



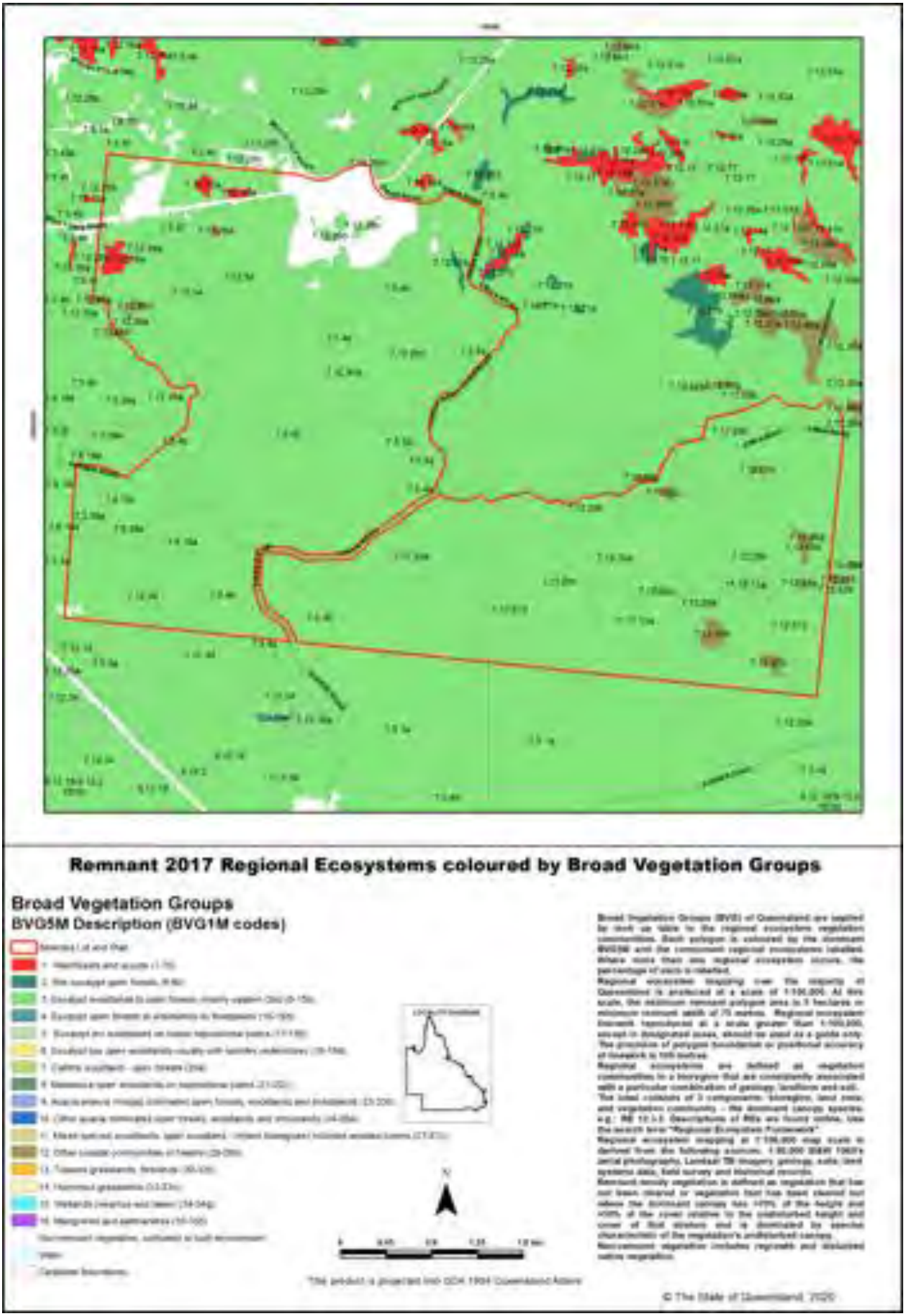
Map 2 - Remnant 2017 regional ecosystems



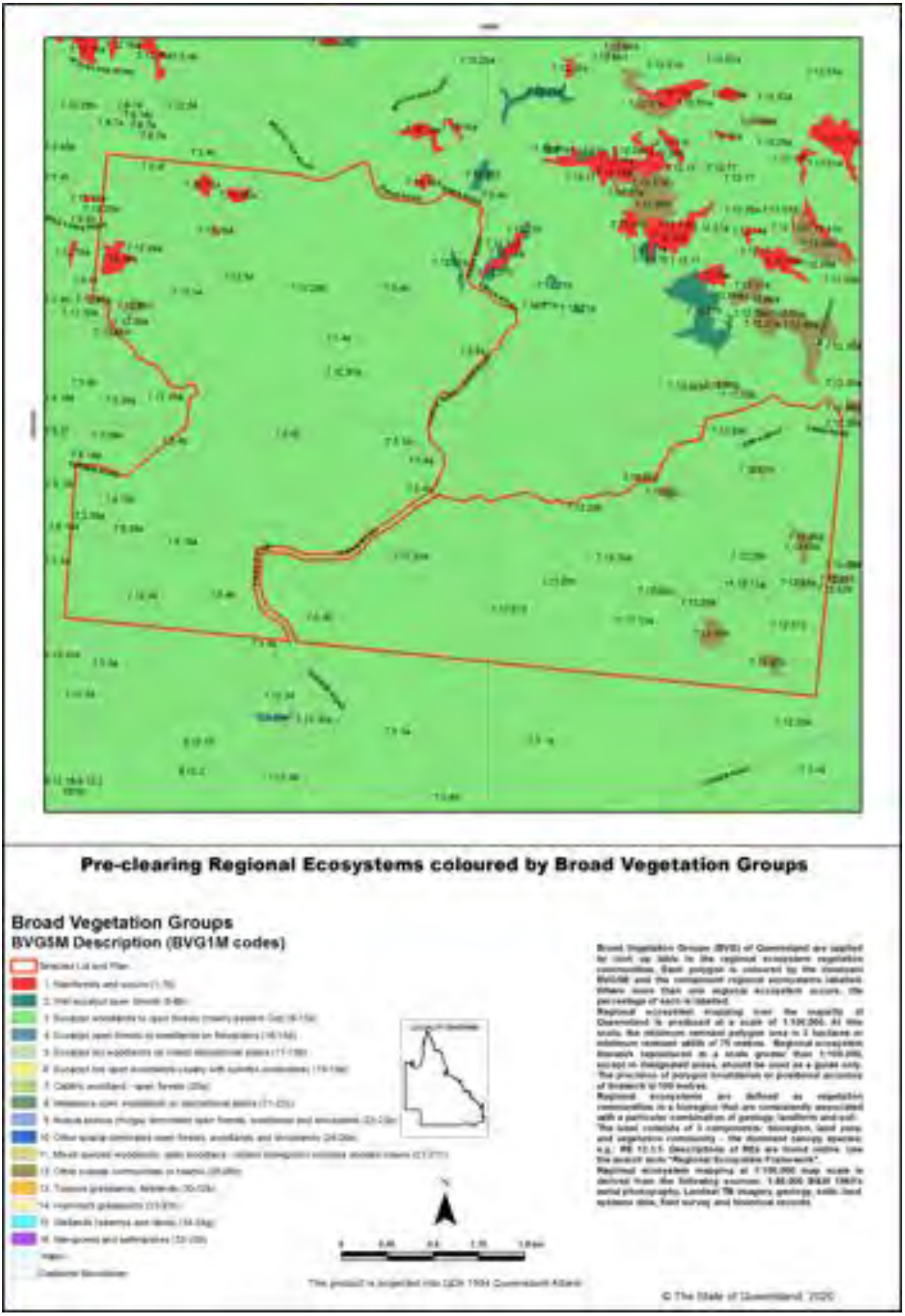
Map 3 - Pre-clearing regional ecosystems



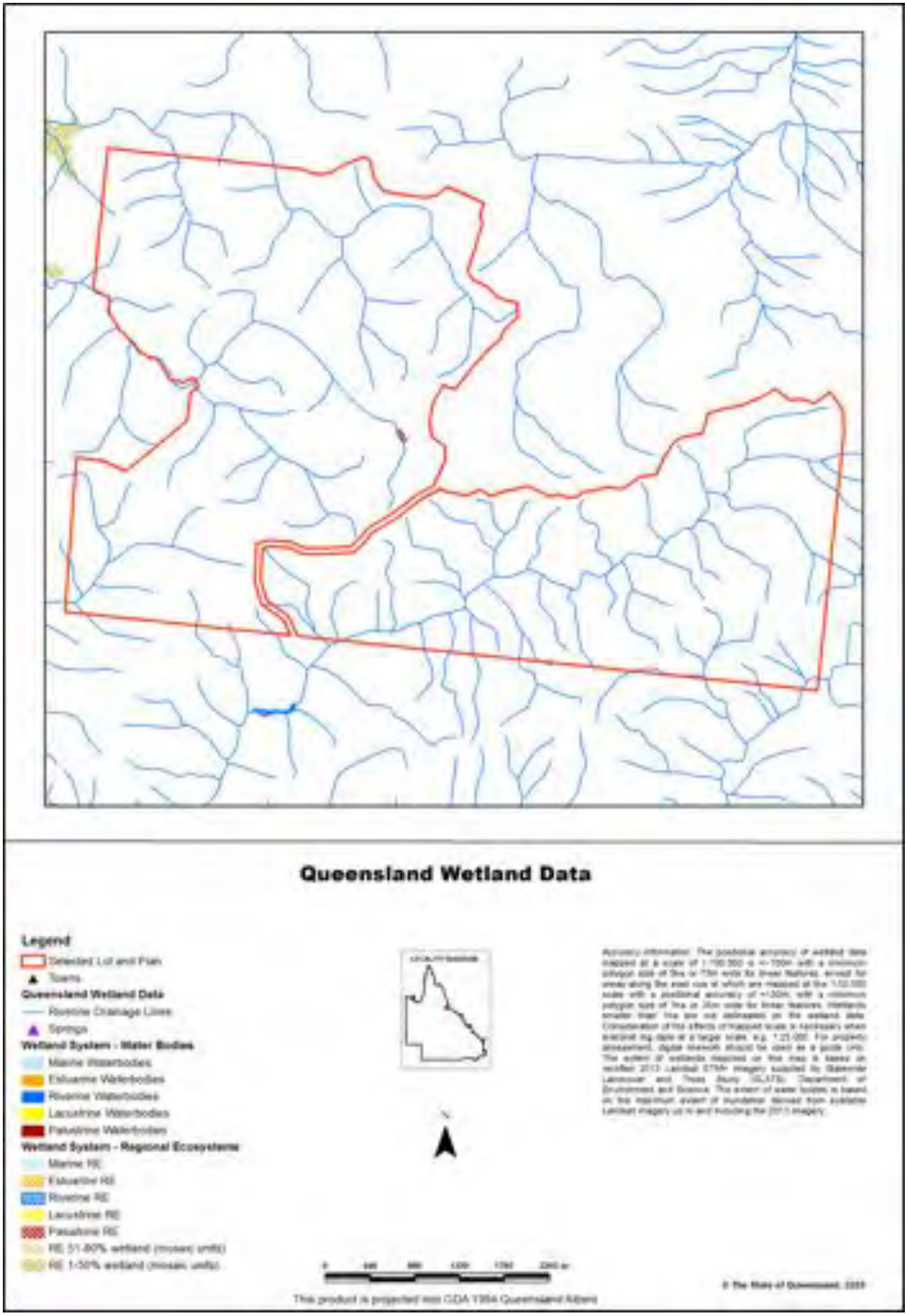
Map 4 - Remnant 2017 regional ecosystems by BVG (5M)



Map 5 - Pre-clearing regional ecosystems by BVG (5M)



Map 6 - Wetlands and waterways



Links and Other Information Sources

The Department of Environment and Science's Website -

http://www.qld.gov.au/environment/plants-animals/plants/ecosystems/

provides further information on the regional ecosystem framework, including access to links to the Regional Ecosystem Database, Broad Vegetation Group Definitions, Regional Ecosystem and Land zone descriptions.

Descriptions of the broad vegetation groups of Queensland can be downloaded from:

https://publications.qld.gov.au/dataset/redd/resource/

The methodology for mapping regional ecosystems can be downloaded from:

https://publications.qld.gov.au/dataset/redd/resource/

Technical descriptions for regional ecosystems can be obtained from:

http://www.qld.gov.au/environment/plants-animals/plants/ecosystems/technical-descriptions/

Benchmarks can be obtained from:

http://www.qld.gov.au/environment/plants-animals/biodiversity/benchmarks/

For further information associated with the remnant regional ecosystem dataset used by this report, refer to the metadata associated with the Biodiversity status of pre-clearing and Remnant Regional Ecosystems of Queensland dataset (version listed in **Appendix 1**) which is available through the Queensland Government Information System portal,

http://dds.information.qld.gov.au/dds/

The Queensland Globe is a mapping and data application. As an interactive online tool, Queensland Globe allows you to view and explore Queensland maps, imagery (including up-to-date satellite images) and other spatial data, including regional ecosystem mapping. To further view and explore regional ecosystems over an area of interest, access the Biota Globe (a component of the Queensland Globe). The Queensland Globe can be accessed via the following link:

http://www.dnrm.qld.gov.au/mapping-data/queensland-globe

References

Neldner, V.J., Niehus R.E., Wilson, B.A. McDonald, W.J.F., Ford, A.J. and Accad, A. (2017) The Vegetation of Queensland. Descriptions of Broad Vegetation Groups. Version 3.0. Queensland Herbarium, Department of Science, Information Technology, Innovation and the Arts.

(https://publications.qld.gov.au/dataset/redd/resource/78209e74-c7f2-4589-90c1-c33188359086)

Neldner, V.J., Wilson, B.A., Dillewaard, H.A., Ryan, T.S. and Butler, D.W. (2017) *Methodology for Survey and Mapping of Regional Ecosystems and Vegetation Communities in Queensland*. Version 4.0. Queensland Herbarium, Department of Science, Information Technology, Innovation and the Arts.

(https://publications.qld.gov.au/dataset/redd/resource/6dee78ab-c12c-4692-9842-b7257c2511e4)

Sattler, P.S. and Williams, R.D. (eds) (1999). *The Conservation Status of Queensland's Bioregional Ecosystems*. Environmental Protection Agency, Brisbane.

Appendices

Appendix 1 - Source Data

The dataset listed below is available for download from:

http://www.qld.gov.au/environment/plants-animals/plants/ecosystems/download/

- Regional Ecosystem Description Database

The datasets listed below are available for download from:

http://dds.information.qld.gov.au/dds/

- Biodiversity status of pre-clearing and 2017 remnant regional ecosystems of Queensland
- Pre-clearing Vegetation Communities and Regional Ecosystems of Queensland
- Queensland Wetland Data Version - Wetland lines
- Queensland Wetland Data Version - Wetland points
- Queensland Wetland Data Version - Wetland areas

Appendix 2 - Acronyms and Abbreviations

AOI	- Area of Interest
GDA94	- Geocentric Datum of Australia 1994
GIS	- Geographic Information System
RE	- Regional Ecosystem
REDD	- Regional Ecosystem Description Database
VMA	- *Vegetation Management Act 1999*

Queensland Government

Department of Environment and Science

Environmental Reports

Regional Ecosystems

Biodiversity Status

For the selected area of interest
Lot: 8 Plan: SP104503

Environmental Reports - General Information

The Environmental Reports portal provides for the assessment of selected matters of interest relevant to a user specified location, or area of interest (AOI). All area and derivative figures are relevant to the extent of matters of interest contained within the AOI unless otherwise stated. Please note, if a user selects an AOI via the "central coordinates" option, the resulting assessment area encompasses an area extending for a 2km radius from the input coordinates.

All area and area derived figures included in this report 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.

Figures in tables may be affected by rounding.

The matters of interest reported on in this document are based upon available state mapped datasets. Where the report indicates that a matter of interest is not present within the AOI (e.g. where area related calculations are equal to zero, or no values are listed), this may be due either to the fact that state mapping has not been undertaken for the AOI, that state mapping is incomplete for the AOI, or that no matters of interest have been identified within the site.

The information presented in this report should be considered as a guide only and field survey may be required to validate values on the ground.

Important Note to User

Information presented in this report is based upon the Queensland Herbarium's Regional Ecosystem framework. The Biodiversity Status has been used to depict the extent of "Endangered", "Of Concern" and "No Concern at Present" regional ecosystems in all cases, rather than the classes used for the purposes of the *Vegetation Management Act 1999* (VMA). Mapping and figures presented in this document reflect the Queensland Herbarium's Remnant and Pre-clearing Regional Ecosystem Datasets, and not the certified mapping used for the purpose of the VMA.

For matters relevant to vegetation management under the VMA, please refer to the Department of Natural Resources, Mines and Energy website

https://www.dnrme.qld.gov.au/

Please direct queries about these reports to: Queensland.Herbarium@dsiti.qld.gov.au

Disclaimer

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Summary Information

The following table provides an overview of the AOI with respect to selected topographic and environmental themes. Refer to **Map 1** for locality information.

Table 1: Area of interest details: Lot: 8 Plan: SP104503

Size (ha)	21,345.35
Local Government(s)	Charters Towers Regional
Bioregion(s)	Einasleigh Uplands, Wet Tropics
Subregion(s)	Broken River, Paluma - Seaview
Catchment(s)	Herbert, Burdekin

The table below summarizes the extent of remnant vegetation classed as "Endangered", "Of concern" and "No concern at present" regional ecosystems classified by Biodiversity Status within the area of interest (AOI).

Table 2: Summary table, biodiversity status of regional ecosystems within the AOI

Biodiversity Status	Area (Ha)	% of AOI
Endangered	1,946.31	9.12
Of concern	3,356.07	15.72
No concern at present	15,780.42	73.93
Total remnant vegetation	21,082.80	98.77

Refer to **Map 2** for further information.

Regional Ecosystems

1. Introduction

Regional ecosystems are vegetation communities in a bioregion that are consistently associated with particular combinations of geology, landform and soil (Sattler and Williams 1999). Descriptions of Queensland's Regional ecosystems are available online from the Regional Ecosystem Description Database (REDD). Descriptions are compiled from a broad range of information sources including vegetation, land system and geology survey and mapping and detailed vegetation site data. The regional ecosystem classification and descriptions are reviewed as new information becomes available. A number of vegetation communities may form a single regional ecosystem and are usually distinguished by differences in dominant species, frequently in the shrub or ground layers and are denoted by a letter following the regional ecosystem code (e.g. a, b, c). Vegetation communities and regional ecosystems are amalgamated into a higher level classification of broad vegetation groups (BVGs).

A published methodology for survey and mapping of regional ecosystems across Queensland (Neldner et al 2017) provides further details on regional ecosystem concepts and terminology.

This report provides information on the type, status, and extent of vegetation communities, regional ecosystems and broad vegetation groups present within a user specified area of interest. Please note, for the purpose of this report, the Biodiversity Status is used. This report has not been developed for application of the *Vegetation Management Act 1999* (VMA). Additionally, information generated in this report has been derived from the Queensland Herbarium's Regional Ecosystem Mapping, and not the regulated mapping certified for the purposes of the VMA. If your interest/matter relates to regional ecosystems and the VMA, users should refer to the Department of Natural Resources, Mines and Energy website.

https://www.dnrme.qld.gov.au/

With respect to the Queensland Biodiversity Status,

"Endangered" regional ecosystems are described as those where:

- remnant vegetation is less than 10 per cent of its pre-clearing extent across the bioregion; or 10-30% of its pre-clearing extent remains and the remnant vegetation is less than 10,000 hectares, or
- less than 10 per cent of its pre-clearing extent remains unaffected by severe degradation and/or biodiversity loss*, or
- 10-30 per cent of its pre-clearing extent remains unaffected by severe degradation and/or biodiversity loss and the remnant vegetation is less than 10,000 hectares; or
- it is a rare** regional ecosystem subject to a threatening process.***

"Of concern" regional ecosystems are described as those where:

- the degradation criteria listed above for 'Endangered' regional ecosystems are not met and,
- remnant vegetation is 10-30 per cent of its pre-clearing extent across the bioregion; or more than 20 per cent of its pre-clearing extent remains and the remnant extent is less than 10,000 hectares, or
- 10-30 percent of its pre-clearing extent remains unaffected by moderate degradation and/or biodiversity loss.****

and "No concern at present" regional ecosystems are described as those where:

- remnant vegetation is over 30 per cent of its pre-clearing extent across the bioregion, and the remnant area is greater than 10,000 hectares, and
- the degradation criteria listed above for 'Endangered' or 'Of concern' regional ecosystems are not met.

**Severe degradation and/or biodiversity loss is defined as: floristic and/or faunal diversity is greatly reduced but unlikely to recover within the next 50 years even with the removal of threatening processes; or soil surface is severely degraded, for example, by loss of A horizon, surface expression of salinity; surface compaction, loss of organic matter or sheet erosion.*

***Rare regional ecosystem: pre-clearing extent (1000 ha); or patch size (100 ha and of limited total extent across its range).*

****Threatening processes are those that are reducing or will reduce the biodiversity and ecological integrity of a regional ecosystem. For example, clearing, weed invasion, fragmentation, inappropriate fire regime or grazing pressure, or infrastructure development.*

*****Moderate degradation and/or biodiversity loss is defined as: floristic and/or faunal diversity is greatly reduced but unlikely to recover within the next 20 years even with the removal of threatening processes; or soil surface is moderately degraded.*

2. Remnant Regional Ecosystems

The following table identifies the remnant regional ecosystems and vegetation communities mapped within the AOI and provides their short descriptions, Biodiversity Status, and remnant extent within the selected AOI. Please note, where heterogeneous vegetated patches (mixed patches of remnant vegetation mapped as containing multiple regional ecosystems) occur within the AOI, they have been split and listed as individual regional ecosystems (or vegetation communities where present) for the purposes of the table below. In such instances, associated area figures have been generated based upon the estimated proportion of each regional ecosystem (or vegetation community) predicted to be present within the larger mixed patch.

Table 3: Remnant regional ecosystems, description and status within the AOI

Regional Ecosystem	Short Description	BD Status	Area (Ha)	% of AOI
11.12.13a	Eucalyptus crebra, Corymbia spp., E. acmenoides woodland on igneous rocks. Coastal hills	No concern at present	10.1	0.05
7.11.14a	Eucalyptus grandis open forest to woodland, or Corymbia intermedia, E. pellita, and E. grandis open forest to woodland (or vine forest with these species as emergents) on metamorphics	Endangered	3.84	0.02
7.11.16a	Eucalyptus portuensis and Corymbia intermedia open forest to woodland on metamorphics of foothills and uplands	Endangered	120.63	0.57
7.11.31c	Eucalyptus resinifera +/- Eucalyptus portuensis +/- Syncarpia glomulifera open forest to woodland (or vine forest with these species as emergents) on metamorphics	Of concern	8.51	0.04
7.11.35a	Eucalyptus portuensis +/- Corymbia citriodora woodland to open forest on metamorphics	Of concern	4.72	0.02
7.11.35c	Eucalyptus portuensis +/- Corymbia citriodora woodland to open forest on metamorphics	Of concern	132.96	0.62
7.11.44	Eucalyptus tereticornis open forest to woodland on coastal metamorphic foothills	Of concern	1.92	0.01
7.12.22a	Eucalyptus resinifera +/- E. portuensis +/- Syncarpia glomulifera tall open forest to tall woodland (or vine forest with these species as emergents) of granite and rhyolite uplands and highlands	Endangered	251.08	1.18
7.12.22c	Eucalyptus resinifera +/- E. portuensis +/- Syncarpia glomulifera tall open forest to tall woodland (or vine forest with these species as emergents) of granite and rhyolite uplands and highlands	Endangered	191.73	0.9
7.12.24a	Eucalyptus portuensis and Corymbia intermedia open forest to woodland (or vine forest with E. portuensis and C. intermedia emergents) on foothills and uplands on granite and rhyolite	No concern at present	28.8	0.13
7.12.29a	Corymbia intermedia and/or Lophostemon suaveolens open forest to woodland +/- areas of Allocasuarina littoralis and A. torulosa on uplands on granite and rhyolite	No concern at present	1,094.69	5.13
7.12.29b	Corymbia intermedia and/or Lophostemon suaveolens open forest to woodland +/- areas of Allocasuarina littoralis and A. torulosa on uplands on granite and rhyolite	No concern at present	685.07	3.21

Regional Ecosystem	Short Description	BD Status	Area (Ha)	% of AOI
7.12.29c	Corymbia intermedia and/or Lophostemon suaveolens open forest to woodland +/- areas of Allocasuarina littoralis and A. torulosa on uplands on granite and rhyolite	No concern at present	1.63	0.01
7.12.30a	Corymbia citriodora +/- Eucalyptus portuensis woodland to open forest on granite and rhyolite	No concern at present	1,059.83	4.97
7.12.34	Eucalyptus portuensis and/or E. drepanophylla, +/- C. intermedia +/- C. citriodora, +/- E. granitica open woodland to open forest on uplands on granite	No concern at present	386.48	1.81
7.12.47a	Notophyll-microphyll semi-evergreen vine forest with Argyrodendron polyandrum emergents, on rhyolite	Endangered	24.69	0.12
7.12.51a	Eucalyptus resinifera, Syncarpia glomulifera, E. portuensis, Corymbia abergiana, +/- C. leptoloma woodland, of rocky hills on granite and rhyolite in the Paluma-Seaview (south-west) subregion	Of concern	575.92	2.7
7.12.51b	Eucalyptus resinifera, Syncarpia glomulifera, E. portuensis, Corymbia abergiana, +/- C. leptoloma woodland, of rocky hills on granite and rhyolite in the Paluma-Seaview (south-west) subregion	Of concern	151.56	0.71
7.12.57a	Shrubland and low woodland mosaic with Syncarpia glomulifera, Corymbia abergiana, Eucalyptus portuensis, Allocasuarina littoralis and Xanthorrhoea johnsonii on uplands and highlands on granite	Of concern	146.08	0.68
7.12.61a	Eucalyptus tereticornis +/- E. granitica woodland to open forest of foothills and uplands on granite and rhyolite	Of concern	19.26	0.09
7.12.61b	Eucalyptus tereticornis +/- E. granitica woodland to open forest of foothills and uplands on granite and rhyolite	Of concern	453.78	2.13
7.12.63	Eucalyptus moluccana woodland on granite and rhyolite	Endangered	0.23	less than 0.01
7.12.65a	Rock pavement or areas of skeletal soil, on granite and rhyolite of dry western or southern areas +/- shrublands to closed forests of Acacia spp. and/or Lophostemon suaveolens and/or Allocasuarina littoralis and/or Eucalyptus lockyeri subsp. exuta	Of concern	0.47	less than 0.01
7.12.65b	Rock pavement or areas of skeletal soil, on granite and rhyolite of dry western or southern areas +/- shrublands to closed forests of Acacia spp. and/or Lophostemon suaveolens and/or Allocasuarina littoralis and/or Eucalyptus lockyeri subsp. exuta	Of concern	33.19	0.16
7.12.65k	Rock pavement or areas of skeletal soil, on granite and rhyolite of dry western or southern areas +/- shrublands to closed forests of Acacia spp. and/or Lophostemon suaveolens and/or Allocasuarina littoralis and/or Eucalyptus lockyeri subsp. exuta	Of concern	31.24	0.15
7.12.66b	Lophostemon confertus low shrubland or low closed forest on exposed rocky slopes on granite and rhyolite	Of concern	4.77	0.02
7.3.19a	Corymbia intermedia or C. tessellaris +/- Eucalyptus tereticornis open forest (or vine forest with these species as emergents) on well-drained alluvium	Of concern	52.42	0.25

Regional Ecosystem	Short Description	BD Status	Area (Ha)	% of AOI
7.3.26a	Casuarina cunninghamiana woodland to open forest on alluvium fringing streams	Endangered	314.49	1.47
7.3.28a	Rivers and streams including riparian herbfield and shrubland on river and stream bed alluvium and rock within stream beds	Endangered	1.51	0.01
7.3.28b	Rivers and streams including riparian herbfield and shrubland on river and stream bed alluvium and rock within stream beds	Endangered	1.11	0.01
7.3.39a	Eucalyptus tereticornis +/- E. platyphylla +/- Corymbia intermedia +/- Lophostemon suaveolens open woodland to open forest, and associated sedgelands and grasslands on broad drainage depressions of uplands	Endangered	175.24	0.82
7.3.39c	Eucalyptus tereticornis +/- E. platyphylla +/- Corymbia intermedia +/- Lophostemon suaveolens open woodland to open forest, and associated sedgelands and grasslands on broad drainage depressions of uplands	Endangered	0.47	less than 0.01
7.3.43a	Eucalyptus tereticornis open forest to woodland on uplands on well-drained alluvium	Endangered	115.32	0.54
7.5.1a	Eucalyptus tereticornis, Corymbia intermedia and E. reducta woodland to open forest of uplands on weathered soils of a remnant surface	Endangered	505.56	2.37
7.5.2c	Eucalyptus portuensis +/- Corymbia intermedia, open forest to woodland of uplands on weathered soils of a remnant surface	Of concern	184.59	0.86
7.5.3a	Eucalyptus portuensis, Corymbia citriodora, and E. drepanophylla woodland to open forest of uplands on weathered soils of a remnant surface	Endangered	240.39	1.13
7.5.4a	Corymbia intermedia or Melaleuca viridiflora woodland to open forest of uplands on weathered soils of a remnant surface	Of concern	14.72	0.07
7.5.4b	Corymbia intermedia or Melaleuca viridiflora woodland to open forest of uplands on weathered soils of a remnant surface	Of concern	186.7	0.87
9.12.19	Eucalyptus crebra or E. granitica +/- Corymbia citriodora subsp. citriodora +/- E. portuensis mixed woodland on igneous hills	No concern at present	5,912.53	27.7
9.12.1d	Eucalyptus crebra and/or E. xanthoclada and/or E. drepanophylla low open woodland on igneous rocks	No concern at present	418.44	1.96
9.12.2	Eucalyptus portuensis, Corymbia citriodora subsp. citriodora, E. granitica or E. crebra, C. intermedia or C. clarksoniana mixed woodland on steep hills and ranges on igneous hills close to Wet Tropics boundary	No concern at present	4,316.13	20.22
9.12.26	Eucalyptus moluccana +/- E. crebra and/or E. granitica woodland on igneous rocks	Of concern	1,037.02	4.86
9.12.34	Semi-evergreen vine thicket with Araucaria cunninghamii on steep hills on igneous rocks	No concern at present	115.33	0.54
9.12.35	Corymbia leichhardtii, C. lamprophylla, Pleiogynium timorense +/- Araucaria cunninghamii open woodland on igneous hills	No concern at present	1,645.62	7.71

Regional Ecosystem	Short Description	BD Status	Area (Ha)	% of AOI
9.12.4a	Eucalyptus shirleyi and/or E. melanophloia and/or Corymbia peltata and/or Callitris intratropica low open woodland on igneous rocks	No concern at present	0.14	less than 0.01
9.3.1	Eucalyptus camaldulensis and/or E. tereticornis +/- Melaleuca spp. +/- Casuarina cunninghamiana fringing woodland on channels and levees	Of concern	14.12	0.07
9.3.12a	River beds and associated waterholes on major rivers and channels	Of concern	52.75	0.25
9.5.5a	Corymbia clarksoniana, Eucalyptus portuensis, E. crebra and C. citriodora subsp. citriodora in mixed open forests on red kandosols on Tertiary surfaces	Of concern	82.45	0.39
9.5.5f	Corymbia clarksoniana, Eucalyptus portuensis, E. crebra and C. citriodora subsp. citriodora in mixed open forests on red kandosols on Tertiary surfaces	Of concern	166.89	0.78
9.7.3b	Eucalyptus crebra or E. portuensis +/- Corymbia clarksoniana woodland on lateritised surfaces and edges of Tertiary surfaces	No concern at present	105.64	0.49
non-rem	None	None	262.52	1.23

Refer to **Map 2** for further information. **Map 3** also provides a visual estimate of the distribution of regional ecosystems present before clearing.

Table 4 provides further information in regards to the remnant regional ecosystems present within the AOI. Specifically, the extent of remnant vegetation remaining within the bioregion, the 1:1,000,000 broad vegetation group (BVG) classification, whether the regional ecosystem is identified as a wetland, and extent of representation in Queensland's Protected Area Estate. For a description of the vegetation communities within the AOI and classified according to the 1:1,000,000 BVG, refer to **Table 6**.

Table 4: Remnant regional ecosystems within the AOI, additional information

Regional Ecosystem	Remnant Extent	BVG (1 Million)	Wetland	Representation in protected estate
11.12.13a	Pre-clearing 43000 ha; Remnant 2017 40000 ha	10a	None	High
7.11.14a	Pre-clearing 1000 ha; Remnant 2017 1000 ha	8a	None	High
7.11.16a	Pre-clearing 2000 ha; Remnant 2017 1000 ha	9d	None	High
7.11.31c	Pre-clearing 3000 ha; Remnant 2017 3000 ha	8a	None	High
7.11.35a	Pre-clearing 19000 ha; Remnant 2017 17000 ha	9d	None	High
7.11.35c	Pre-clearing 19000 ha; Remnant 2017 17000 ha	10b	None	High
7.11.44	Pre-clearing 10000 ha; Remnant 2017 9000 ha	9c	None	High
7.12.22a	Pre-clearing 40000 ha; Remnant 2017 39000 ha	8a	None	High
7.12.22c	Pre-clearing 40000 ha; Remnant 2017 39000 ha	8a	None	High

Regional Ecosystem	Remnant Extent	BVG (1 Million)	Wetland	Representation in protected estate
7.12.24a	Pre-clearing 33000 ha; Remnant 2017 32000 ha	9d	None	High
7.12.29a	Pre-clearing 88000 ha; Remnant 2017 87000 ha	9c	None	High
7.12.29b	Pre-clearing 88000 ha; Remnant 2017 87000 ha	9c	None	High
7.12.29c	Pre-clearing 88000 ha; Remnant 2017 87000 ha	9c	Floodplain (other than floodplain wetlands).	High
7.12.30a	Pre-clearing 43000 ha; Remnant 2017 43000 ha	10b	None	High
7.12.34	Pre-clearing 52000 ha; Remnant 2017 51000 ha	9d	None	High
7.12.47a	Pre-clearing 100 ha; Remnant 2017 100 ha	7a	None	High
7.12.51a	Pre-clearing 3000 ha; Remnant 2017 3000 ha	9d	None	Low
7.12.51b	Pre-clearing 3000 ha; Remnant 2017 3000 ha	8a	None	Low
7.12.57a	Pre-clearing 4000 ha; Remnant 2017 4000 ha	9d	None	Medium
7.12.61a	Pre-clearing 26000 ha; Remnant 2017 25000 ha	9c	None	High
7.12.61b	Pre-clearing 26000 ha; Remnant 2017 25000 ha	9c	None	High
7.12.63	Pre-clearing 200 ha; Remnant 2017 200 ha	13d	None	Medium
7.12.65a	Pre-clearing 16000 ha; Remnant 2017 16000 ha	29b	None	High
7.12.65b	Pre-clearing 16000 ha; Remnant 2017 16000 ha	29b	None	High
7.12.65k	Pre-clearing 16000 ha; Remnant 2017 16000 ha	29b	None	High
7.12.66b	Pre-clearing 5000 ha; Remnant 2017 5000 ha	28e	None	High
7.3.19a	Pre-clearing 6000 ha; Remnant 2017 4000 ha	9e	None	High
7.3.26a	Pre-clearing 5000 ha; Remnant 2017 4000 ha	16a	Riverine wetland or fringing riverine wetland.	High
7.3.28a	Pre-clearing 8000 ha; Remnant 2017 7000 ha	16d	Riverine wetland or fringing riverine wetland.	High
7.3.28b	Pre-clearing 8000 ha; Remnant 2017 7000 ha	16d	Riverine wetland or fringing riverine wetland.	High
7.3.39a	Pre-clearing 2000 ha; Remnant 2017 1000 ha	9e	Floodplain (other than floodplain wetlands).	Medium
7.3.39c	Pre-clearing 2000 ha; Remnant 2017 1000 ha	34f	Palustrine wetland (e.g. vegetated swamp).	Medium
7.3.43a	Pre-clearing 3000 ha; Remnant 2017 2000 ha	9e	Contains palustrine wetland (e.g. in swales).	High

Regional Ecosystem	Remnant Extent	BVG (1 Million)	Wetland	Representation in protected estate
7.5.1a	Pre-clearing 800 ha; Remnant 2017 600 ha	9c	None	No representation
7.5.2c	Pre-clearing 6000 ha; Remnant 2017 6000 ha	9d	None	Low
7.5.3a	Pre-clearing 300 ha; Remnant 2017 300 ha	10b	None	No representation
7.5.4a	Pre-clearing 6000 ha; Remnant 2017 5000 ha	9e	None	Low
7.5.4b	Pre-clearing 6000 ha; Remnant 2017 5000 ha	9e	None	Low
9.12.19	Pre-clearing 41000 ha; Remnant 2017 41000 ha	13c	None	No representation
9.12.1d	Pre-clearing 866000 ha; Remnant 2017 821000 ha	13c	None	Low
9.12.2	Pre-clearing 117000 ha; Remnant 2017 115000 ha	9d	None	High
9.12.26	Pre-clearing 3000 ha; Remnant 2017 3000 ha	13d	None	No representation
9.12.34	Pre-clearing 12000 ha; Remnant 2017 12000 ha	7a	None	Low
9.12.35	Pre-clearing 29000 ha; Remnant 2017 29000 ha	13a	None	No representation
9.12.4a	Pre-clearing 269000 ha; Remnant 2017 266000 ha	17b	None	Low
9.3.1	Pre-clearing 92000 ha; Remnant 2017 90000 ha	16a	Riverine wetland or fringing riverine wetland.	Low
9.3.12a	Pre-clearing 59000 ha; Remnant 2017 58000 ha	16d	Riverine wetland or fringing riverine wetland.	Low
9.5.5a	Pre-clearing 208000 ha; Remnant 2017 199000 ha	10b	None	High
9.5.5f	Pre-clearing 208000 ha; Remnant 2017 199000 ha	9e	None	High
9.7.3b	Pre-clearing 42000 ha; Remnant 2017 42000 ha	12b	None	High
non-rem	None	None	None	None

Representation in Protected Area Estate: High greater than 10% of pre-clearing extent is represented; Medium 4 - 10% is represented; Low less than 4% is represented, No representation.

The distribution of mapped wetland systems within the area of interest is displayed in **Map 6**.

The following table lists known special values associated with a regional ecosystem type.

Table 5: Remnant regional ecosystems within the AOI, special values

Regional Ecosystem	Special Values
11.12.13a	Potential habitat for NCA listed species: Aristida granitica, Bertya sharpeana, Sannantha papillosa
7.11.14a	None
7.11.16a	None

Regional Ecosystem	Special Values
7.11.31c	Potential habitat for NCA listed species: Parsonsia wildensis
7.11.35a	Potential habitat for NCA listed species: Zieria obovata
7.11.35c	Potential habitat for NCA listed species: Zieria obovata
7.11.44	Potential habitat for NCA listed species: Randia audasii
7.12.22a	Important arboreal mammal habitat for species including the yellow-bellied glider (Petaurus australis). Habitat for the tropical bettong (Bettongia tropica). Habitat for plant species with restricted distribution including Bertya polystigma, Pityrodia salviifolia, Pomaderris argyrophylla, Dodonaea uncinata, Phebalium longifolium, and Persoonia tropica.
7.12.22c	Important arboreal mammal habitat for species including the yellow-bellied glider (Petaurus australis). Habitat for the tropical bettong (Bettongia tropica). Habitat for plant species with restricted distribution including Bertya polystigma, Pityrodia salviifolia, Pomaderris argyrophylla, Dodonaea uncinata, Phebalium longifolium, and Persoonia tropica.
7.12.24a	Potential habitat for NCA listed species: Arytera dictyoneura, Corymbia leptoloma, Marsdenia rara, Plectranthus gratus
7.12.29a	Potential habitat for NCA listed species: Corybas cerasinus, Corymbia leptoloma, Dodonaea uncinata
7.12.29b	Potential habitat for NCA listed species: Corybas cerasinus, Corymbia leptoloma, Dodonaea uncinata
7.12.29c	Potential habitat for NCA listed species: Corybas cerasinus, Corymbia leptoloma, Dodonaea uncinata
7.12.30a	Potential habitat for NCA listed species: Acacia longipedunculata, Acacia purpureopetala, Acacia tingoorensis, Corymbia rhodops, Diuris oporina, Dodonaea uncinata, Grevillea glossadenia, Homoranthus porteri, Melaleuca sylvana, Micromyrtus delicata, Plectr 7.12.30d: Habitat for several locally restricted and disjunct species. Threatened plant species include Micromyrtus delicata, Melaleuca sylvana, Diuris oporina, Homoranthus porteri, Grevillea glossadenia, Acacia purpureopetala, Corymbia rhodops and Prostanthera clotteniana. Other species of local significance are Eucalyptus lockyeri.
7.12.34	Potential habitat for NCA listed species: Acacia longipedunculata, Calochlaena villosa, Croton densivestitus, Grevillea glossadenia, Homoranthus porteri, Plectranthus amoenus, Solanum angustum, Zieria obovata
7.12.47a	Habitat for the only known locations of Cupaniopsis wadsworthii and Pleioluma queenslandica in the bioregion.
7.12.51a	Potential habitat for NCA listed species: Corymbia leptoloma, Dodonaea uncinata, Marsdenia brevifolia
7.12.51b	Potential habitat for NCA listed species: Corymbia leptoloma, Dodonaea uncinata, Marsdenia brevifolia

Regional Ecosystem	Special Values
7.12.57a	Threatened species include Diuris oporina (NT), Homoranthus porteri (V), Melaleuca uxorum (E) and Prostanthera clotteniana (E). Other species of local significance are Eucalyptus lockyeri. 7.12.57a: Threatened species include Corymbia leptoloma (V), Homoranthus porteri (V), Marsdenia brevifolia (V), Acacia longipedunculata (NT), Dodonaea uncinata and Diuris oporina (NT). Other species of local significance are Eucalyptus lockyeri. 7.12.57c: Habitat for several locally restricted and disjunct species. Threatened species include Micromyrtus delicata (E), Melaleuca sylvana (E), Melaleuca uxorum (E), Diuris oporina (NT), Homoranthus porteri (V), Grevillea glossadenia (V), Acacia purpureopetala (V), Corymbia rhodops (V) and Prostanthera clotteniana (E). Other species of local significance are Eucalyptus lockyeri.
7.12.61a	Potential habitat for NCA listed species: Arthraxon hispidus, Cucumis costatus, Dendrobium bigibbum, Dendrobium johannis, Dodonaea uncinata, Plectranthus gratus
7.12.61b	Potential habitat for NCA listed species: Arthraxon hispidus, Cucumis costatus, Dendrobium bigibbum, Dendrobium johannis, Dodonaea uncinata, Plectranthus gratus
7.12.63	None
7.12.65a	Potential habitat for NCA listed species: Acacia purpureopetala, Buckinghamia ferruginiflora, Corymbia leptoloma, Corymbia rhodops, Diuris oporina, Dodonaea uncinata, Grevillea glossadenia, Homoranthus porteri, Melaleuca sylvana, Melaleuca uxorum, Micromy 7.12.65k: Habitat for several locally restricted and disjunct species. Threatened species include Micromyrtus delicata, Melaleuca sylvana, Melaleuca uxorum, Diuris oporina, Homoranthus porteri, Grevillea glossadenia, Acacia purpureopetala, Corymbia rhodops and Prostanthera clotteniana. Other species of local significance are Eucalyptus lockyeri.
7.12.65b	Potential habitat for NCA listed species: Acacia purpureopetala, Buckinghamia ferruginiflora, Corymbia leptoloma, Corymbia rhodops, Diuris oporina, Dodonaea uncinata, Grevillea glossadenia, Homoranthus porteri, Melaleuca sylvana, Melaleuca uxorum, Micromy 7.12.65k: Habitat for several locally restricted and disjunct species. Threatened species include Micromyrtus delicata, Melaleuca sylvana, Melaleuca uxorum, Diuris oporina, Homoranthus porteri, Grevillea glossadenia, Acacia purpureopetala, Corymbia rhodops and Prostanthera clotteniana. Other species of local significance are Eucalyptus lockyeri.
7.12.65k	Potential habitat for NCA listed species: Acacia purpureopetala, Buckinghamia ferruginiflora, Corymbia leptoloma, Corymbia rhodops, Diuris oporina, Dodonaea uncinata, Grevillea glossadenia, Homoranthus porteri, Melaleuca sylvana, Melaleuca uxorum, Micromy 7.12.65k: Habitat for several locally restricted and disjunct species. Threatened species include Micromyrtus delicata, Melaleuca sylvana, Melaleuca uxorum, Diuris oporina, Homoranthus porteri, Grevillea glossadenia, Acacia purpureopetala, Corymbia rhodops and Prostanthera clotteniana. Other species of local significance are Eucalyptus lockyeri.
7.12.66b	None
7.3.19a	Potential habitat for NCA listed species: Peristylus banfieldii
7.3.26a	Important wildlife corridors in cleared landscapes.
7.3.28a	An important component of stream ecology and structure influencing substrate types, depth gradients, flow characteristics and flooding characteristics.

Regional Ecosystem	Special Values
7.3.28b	An important component of stream ecology and structure influencing substrate types, depth gradients, flow characteristics and flooding characteristics.
7.3.39a	Potential habitat for NCA listed species: Oenanthe javanica
7.3.39c	Potential habitat for NCA listed species: Oenanthe javanica
7.3.43a	None
7.5.1a	None
7.5.2c	None
7.5.3a	None
7.5.4a	None
7.5.4b	None
9.12.19	Old growth of this regional ecosystem is significant for a number of species including arboreal mammals.
9.12.1d	Potential habitat for NCA listed species: Eucalyptus paedoglauca, Solanum angustum
9.12.2	Old growth of this ecosystem is significant for a number of species including arboreal mammals. Habitat for vulnerable flora species including Corymbia rhodops
9.12.26	None
9.12.34	Potential habitat for NCA listed species: Bulbophyllum globuliforme, Dubouzetia saxatilis, Oldenlandia polyclada
9.12.35	Potential habitat for NCA listed species: Corchorus subargenteus, Marsdenia brevifolia
9.12.4a	Habitat for the near threatened species Acacia jackesiana.
9.3.1	Significant habitat as drought refuge, wildlife corridors and for arboreal animals.
9.3.12a	Significant habitat as drought refuge, wildlife corridors and for arboreal animals.
9.5.5a	Old growth stands of this regional ecosystem are particularly significant for arboreal mammals. Further survey required to verify faunal values.
9.5.5f	Old growth stands of this regional ecosystem are particularly significant for arboreal mammals. Further survey required to verify faunal values.
9.7.3b	None
non-rem	None

3. Remnant Regional Ecosystems by Broad Vegetation Group

BVGs are a higher-level grouping of vegetation communities. Queensland encompasses a wide variety of landscapes across temperate, wet and dry tropics and semi-arid climatic zones. BVGs provide an overview of vegetation communities across the state or a bioregion and allow comparison with other states. There are three levels of BVGs which reflect the approximate scale at which they are designed to be used: the 1:5,000,000 (national), 1:2,000,000 (state) and 1:1,000,000 (regional) scales.

A comprehensive description of BVGs is available at:

https://publications.qld.gov.au/dataset/redd/resource/

The following table provides a description of the 1:1,000,000 BVGs present and their associated extent within the AOI.

Table 6: Broad vegetation groups (1 million) within the AOI

BVG (1 Million)	Description	Area (Ha)	% of AOI
None	None	262.52	1.23
10a	Dry woodlands to open woodlands dominated by Corymbia citriodora (spotted gum). (land zones 10, 7, 12, 11,[8]) (BRB, NET, [DEU])	10.1	0.05
10b	Moist open forests to woodlands dominated by Corymbia citriodora (spotted gum). (land zones 12, 11, 9, 5, 8) (SEQ, CQC, EIU, WET)	1,515.63	7.1
12b	Woodlands and open woodlands dominated by Eucalyptus crebra (sens. lat) (narrow-leaved red ironbark) and/or Corymbia spp. such as C. clarksoniana (grey bloodwood), C. stockeri, C. setosa (rough leaved bloodwood) or C. peltata (yellowjacket) on hilly terrain. (land zones 7, 10, 11) (GUP, EIU, DEU, CYP)	105.64	0.49
13a	Woodlands and open woodlands dominated by ironbarks such Eucalyptus cullenii (Cullen's ironbark), E. staigeriana (lemon-scented ironbark) or E. melanophloia (silver-leaved ironbark) and bloodwoods such as Corymbia stockeri subsp. peninsularis, C. clarksoniana (grey bloodwood) or C. leichhardtii (rustyjacket). (land zones 11, 12, 7, 5) (EIU, CYP, GUP)	1,645.62	7.71
13c	Woodlands of Eucalyptus crebra (sens. lat.) (narrow-leaved red ironbark), E. drepanophylla (grey ironbark), E. fibrosa (dusky-leaved ironbark), E. shirleyi (shirley's silver-leaved ironbark) on granitic and metamorphic ranges (land zones 12, 11, 9, [5]) (BRB, EIU, SEQ, NET, CQC)	6,330.97	29.66
13d	Woodlands dominated by Eucalyptus moluccana (gum-topped box) (or E. microcarpa (inland grey box)) on a range of substrates. (land zone 5, 9, 3, 11, 12) (BRB, SEQ, EIU, CQC, [NET, WET])	1,037.25	4.86
16a	Open forest and woodlands dominated by Eucalyptus camaldulensis (river red gum) (or E. tereticornis (blue gum)) and/or E. coolabah (coolabah) (or E. microtheca (coolabah)) fringing drainage lines. Associated species may include Melaleuca spp., Corymbia tessellaris (carbeen), Angophora spp., Casuarina cunninghamiana (riveroak). Does not include alluvial areas dominated by herb and grasslands or alluvial plains that are not flooded. (land zone 3) (MGD, BRB, GUP, CHC, MUL, DEU, EIU, NWH, SEQ, [NET, WET]) (All bioregions except CYP and CQC)	328.61	1.54
16d	River beds, open water or sand, or rock, frequently unvegetated. (land zone 3) (GUP, EIU, BRB, CYP, DEU, [CQC, MUL])	55.37	0.26
17b	Woodlands to open woodlands dominated by Eucalyptus melanophloia (silver-leaved ironbark) (or E. shirleyi (shirley's silver-leaved ironbark)) on sand plains and footslopes of hills and ranges. (land zones 5, 12, 3, 11, 9, 7) (BRB, DEU, EIU, SEQ, NET, GUP, NWH)	0.14	less than 0.01
28e	Low open forest to woodlands dominated by Lophostemon suaveolens (swamp box) (or L. confertus (brush box)) or Syncarpia glomulifera (turpentine) frequently with Allocasuarina spp. on rocky hill slopes. (land zones 12, 9, 3, 11, [10, 8]) (CQC, WET, SEQ, BRB, [CYP])	4.77	0.02
29b	Open shrublands to open heaths in montane frequently rocky locations. (land zones 7, 12, 11, 5, 8, 10) (BRB, NWH, WET, CYP, EIU, SEQ, DEU, [NET, CQC])	64.91	0.3

BVG (1 Million)	Description	Area (Ha)	% of AOI
34f	Palustrine wetlands. Sedgelands/grasslands on seeps and soaks on wet peaks, coastal dunes and other non-floodplain features. (land zones 3, 9, 12, [11]) (BRB, MUL, DEU, WET, NET)	0.47	less than 0.01
7a	Semi-evergreen vine thickets on wide range of substrates. (land zones 8, 9, 11, 12, 5, 4, 3, 10, [7]) (BRB, EIU, SEQ, CQC, [WET, GUP]) (Tracey 1982 11)	140.02	0.66
8a	Wet tall open forest dominated by species such as Eucalyptus grandis (flooded gum) or E. saligna, E. resinifera (red mahogany), Lophostemon confertus (brush box), Syncarpia glomulifera (turpentine), E. laevopinea (silvertop stringybark). Contains a well developed understorey of rainforest components, including ferns and palms, or the understorey may be dominated by sclerophyll shrubs. (land zones 12, 8, 10, 11, 3, 5, 9) (SEQ, WET, BRB, CQC, [NET])	606.73	2.84
9c	Open forests of Corymbia clarksoniana (grey bloodwood) (or C. intermedia (pink bloodwood) or C. novoguinensis), C. tessellaris (carbeen) ± Eucalyptus tereticornis (blue gum) predominantly on coastal ranges. Other frequent tree species include Eucalyptus drepanophylla (grey ironbark), E. pellita (large-fruited red mahogany), E. brassiana (Cape York red gum) and Lophostemon suaveolens (swamp box). (land zones 12, 11, 8, 5). (WET, CQC, CYP, BRB)	2,761.91	12.94
9d	Moist to dry open forest to woodland dominated by Eucalyptus portuensis, Corymbia intermedia (pink bloodwood), E. drepanophylla, E. resinifera or E. reducta +/- Syncarpia glomulifera (turpentine) or E. cloeziana (Gympie messmate) on ranges. Also includes mixed forests with Eucalyptus pellita or Corymbia torelliana emergents and rainforest understories (land zones 12, 11, 3, 9, 5, 8). (CQC, WET, EIU)	5,763.36	27.0
9e	Open forests, woodlands and open woodlands dominated by Corymbia clarksoniana (grey bloodwood) (or C. novoguinensis or C. intermedia (pink bloodwood) or C. polycarpa (long-fruited bloodwood)) frequently with Erythrophleum chlorostachys (red ironwood) or Eucalyptus platyphylla (poplar gum) predominantly on coastal sandplains and alluvia. (land zones 3, 5, 2) (CYP, BRB, CQC, WET, EIU)	711.3	3.33

Refer to **Map 4** for further information. **Map 5** also provides a representation of the distribution of vegetation communities as per the 1:5,000,000 BVG believed to be present prior to European settlement.

4. Technical and BioCondition Benchmark Descriptions

Technical descriptions provide a detailed description of the full range in structure and floristic composition of regional ecosystems (e.g. 11.3.1) and their component vegetation communities (e.g. 11.3.1a, 11.3.1b). See:

http://www.qld.gov.au/environment/plants-animals/plants/ecosystems/technical-descriptions/

The descriptions are compiled using site survey data from the Queensland Herbarium's CORVEG database. Distribution maps, representative images (if available) and the pre-clearing and remnant extent (hectares) of each vegetation community derived from the regional ecosystem mapping data are included. The technical descriptions should be used in conjunction with the fields from the regional ecosystem description database (REDD) for a full description of the regional ecosystem.

Technical descriptions include data on canopy height, canopy cover and native plant species composition of the predominant layer, which are attributes relevant to assessment of the remnant status of vegetation under the *Vegetation Management Act 1999*. However, as technical descriptions reflect the full range in structure and floristic composition across the climatic, natural disturbance and geographic range of the regional ecosystem, local reference sites should be used for remnant assessment where possible (Neldner et al. 2012 (PDF)* section 3.3.1 of:

https://publications.qld.gov.au/dataset/redd/resource/

The technical descriptions are subject to review and are updated as additional data becomes available.

When conducting a BioCondition assessment, these technical descriptions should be used in conjunction with BioCondition benchmarks for the specific regional ecosystem, or component vegetation community.

http://www.qld.gov.au/environment/plants-animals/biodiversity/benchmarks/

Benchmarks are based on a combination of quantitative and qualitative information and should be used as a guide only. Benchmarks are specific to one regional ecosystem vegetation community, however, the natural variability in structure and floristic composition under a range of climatic and natural disturbance regimes has been considered throughout the geographic extent of the regional ecosystem. Local reference sites should be used for this spatial and temporal (seasonal and annual) variability.

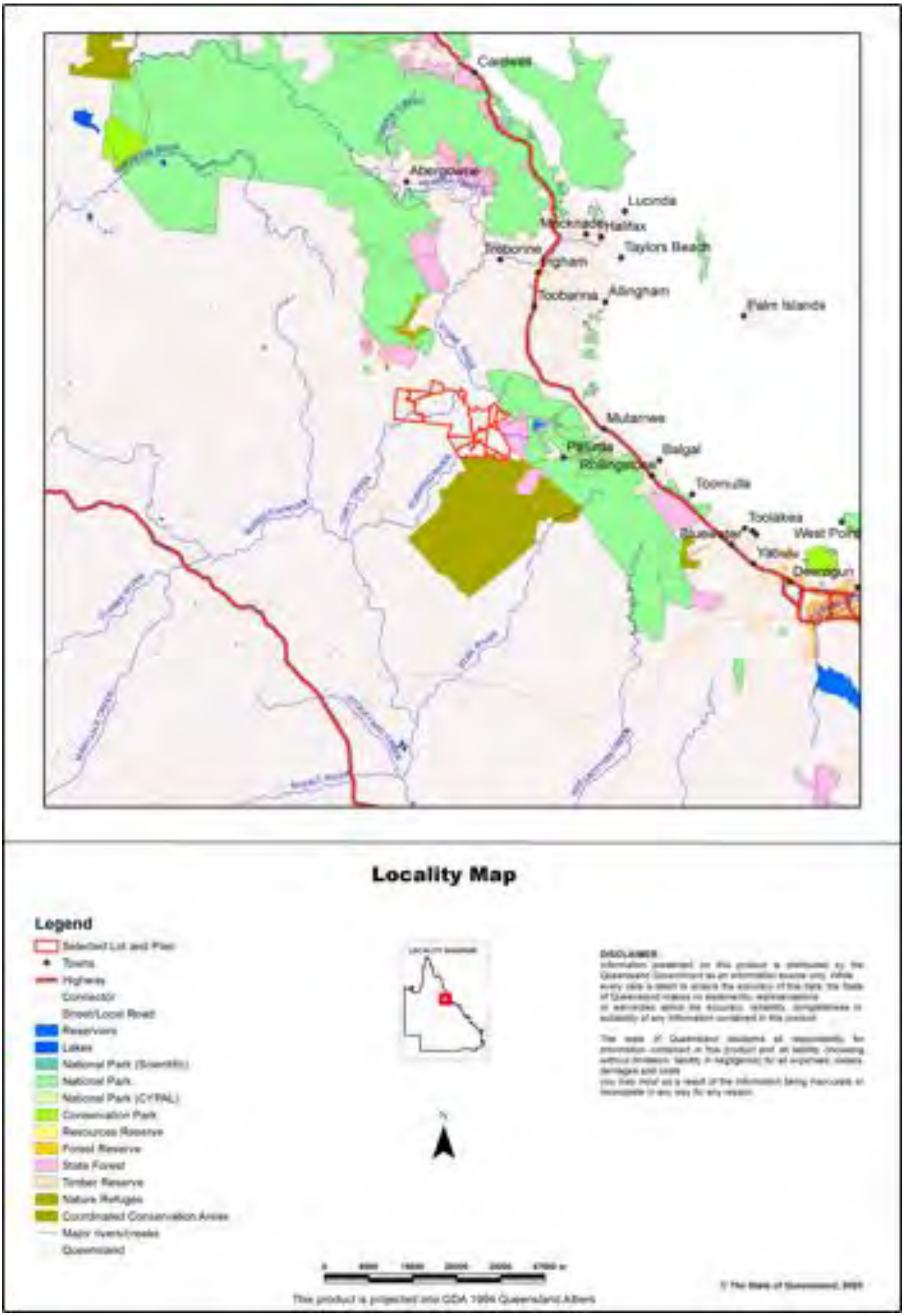
Table 7: List of remnant regional ecosystems within the AOI for which technical and biocondition benchmark descriptions are available

Regional ecosystems mapped as within the AOI	Technical Descriptions	Biocondition Benchmarks
11.12.13a	Not currently available	Not currently available
7.11.14a	Not currently available	Not currently available
7.11.16a	Not currently available	Not currently available
7.11.31c	Not currently available	Not currently available
7.11.35a	Not currently available	Not currently available
7.11.35c	Not currently available	Not currently available
7.11.44	Not currently available	Not currently available
7.12.22a	Not currently available	Not currently available
7.12.22c	Not currently available	Not currently available
7.12.24a	Not currently available	Not currently available
7.12.29a	Not currently available	Not currently available
7.12.29b	Not currently available	Not currently available
7.12.29c	Not currently available	Not currently available
7.12.30a	Not currently available	Not currently available
7.12.34	Not currently available	Not currently available
7.12.47a	Not currently available	Not currently available
7.12.51a	Not currently available	Not currently available
7.12.51b	Not currently available	Not currently available
7.12.57a	Not currently available	Not currently available
7.12.61a	Not currently available	Not currently available
7.12.61b	Not currently available	Not currently available
7.12.63	Not currently available	Not currently available
7.12.65a	Not currently available	Not currently available
7.12.65b	Not currently available	Not currently available
7.12.65k	Not currently available	Not currently available
7.12.66b	Not currently available	Not currently available
7.3.19a	Not currently available	Not currently available
7.3.26a	Not currently available	Not currently available
7.3.28a	Not currently available	Not currently available
7.3.28b	Not currently available	Not currently available

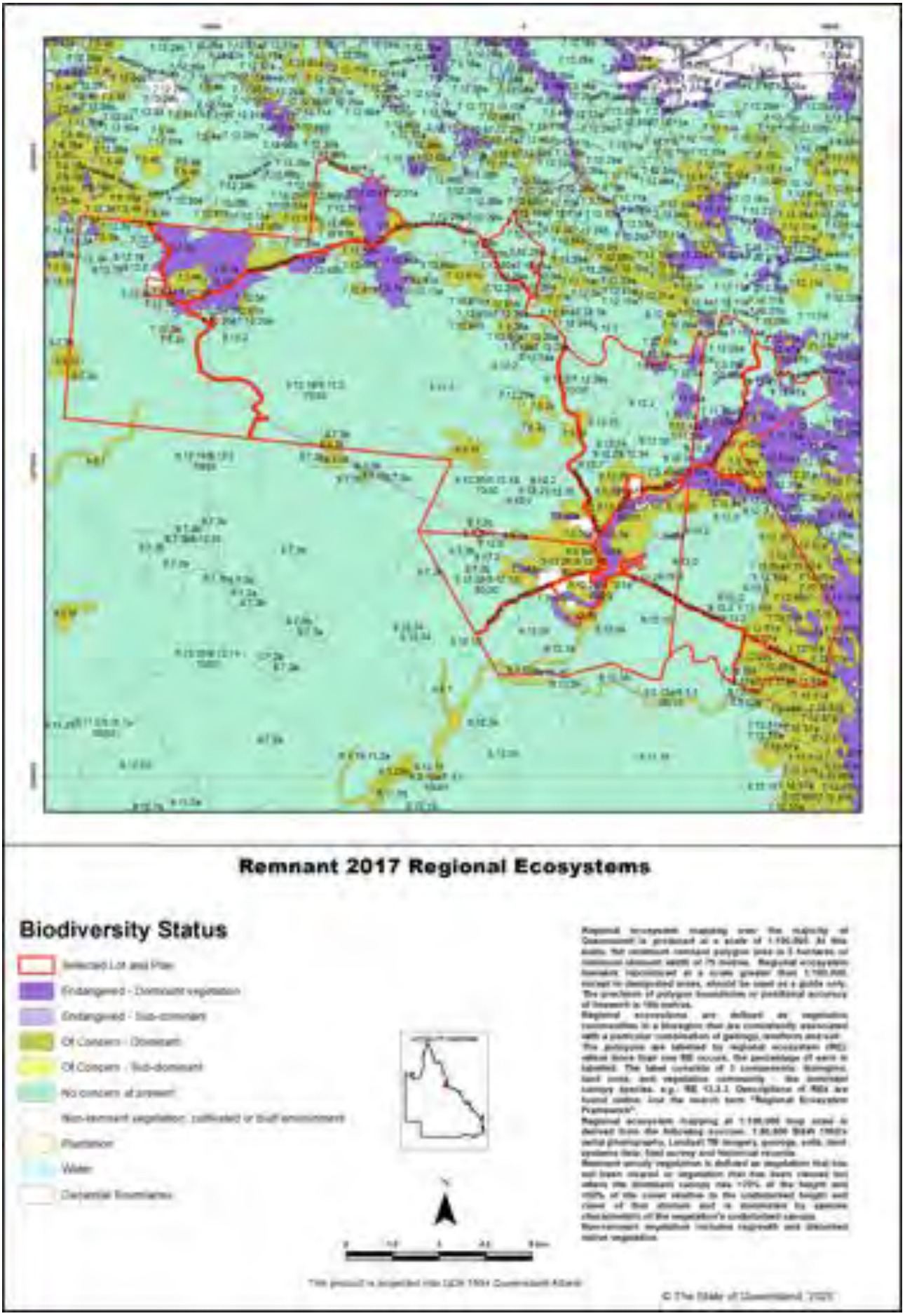
Regional ecosystems mapped as within the AOI	Technical Descriptions	Biocondition Benchmarks
7.3.39a	Not currently available	Not currently available
7.3.39c	Not currently available	Not currently available
7.3.43a	Not currently available	Not currently available
7.5.1a	Not currently available	Not currently available
7.5.2c	Not currently available	Not currently available
7.5.3a	Not currently available	Not currently available
7.5.4a	Not currently available	Not currently available
7.5.4b	Not currently available	Not currently available
9.12.19	Available	Not currently available
9.12.1d	Available	Not currently available
9.12.2	Available	Not currently available
9.12.26	Not currently available	Not currently available
9.12.34	Not currently available	Not currently available
9.12.35	Not currently available	Not currently available
9.12.4a	Available	Not currently available
9.3.1	Available	Not currently available
9.3.12a	Available	Not currently available
9.5.5a	Available	Not currently available
9.5.5f	Available	Not currently available
9.7.3b	Not currently available	Not currently available
non-rem	Not currently available	Not currently available

Maps

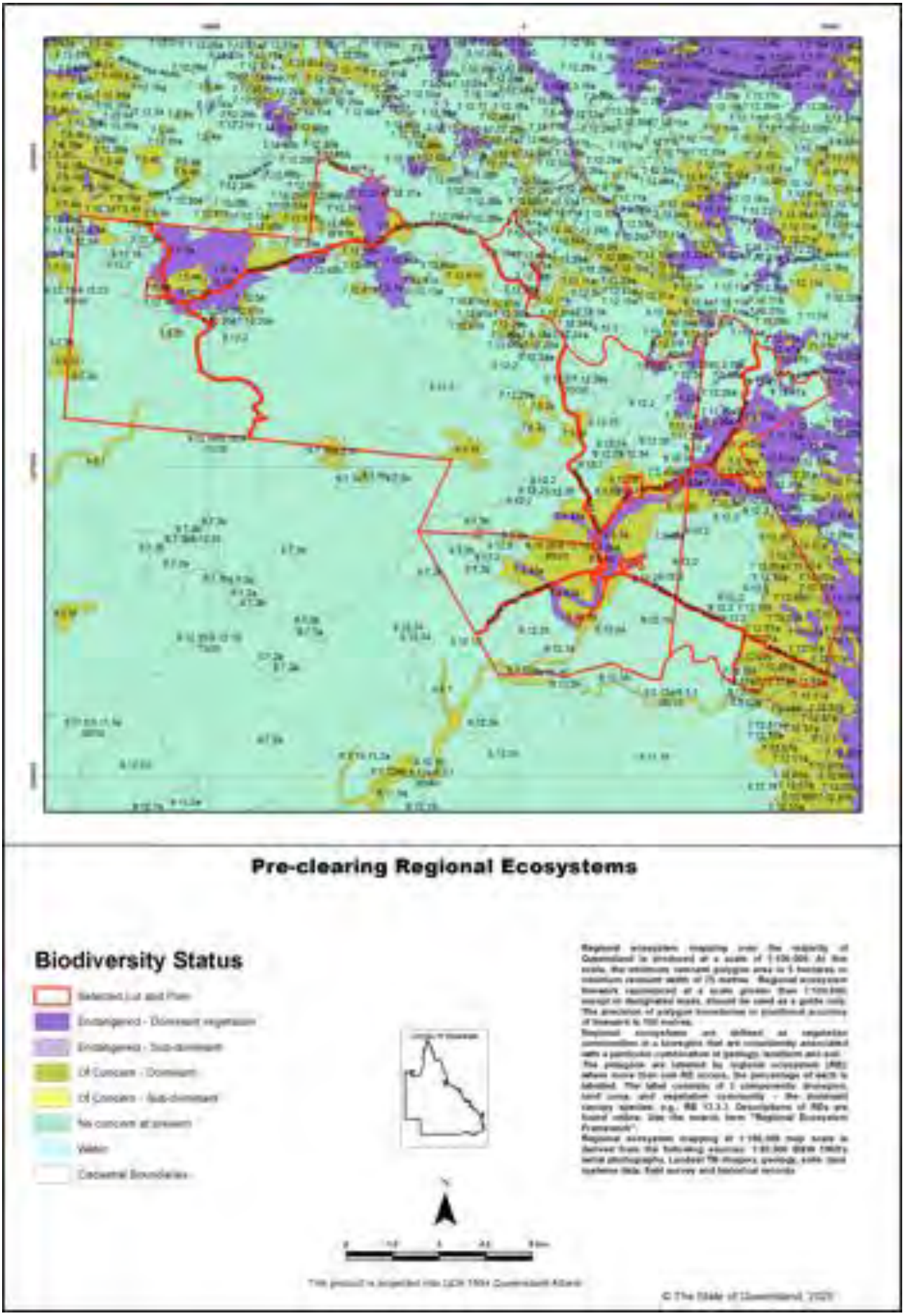
Map 1 - Location



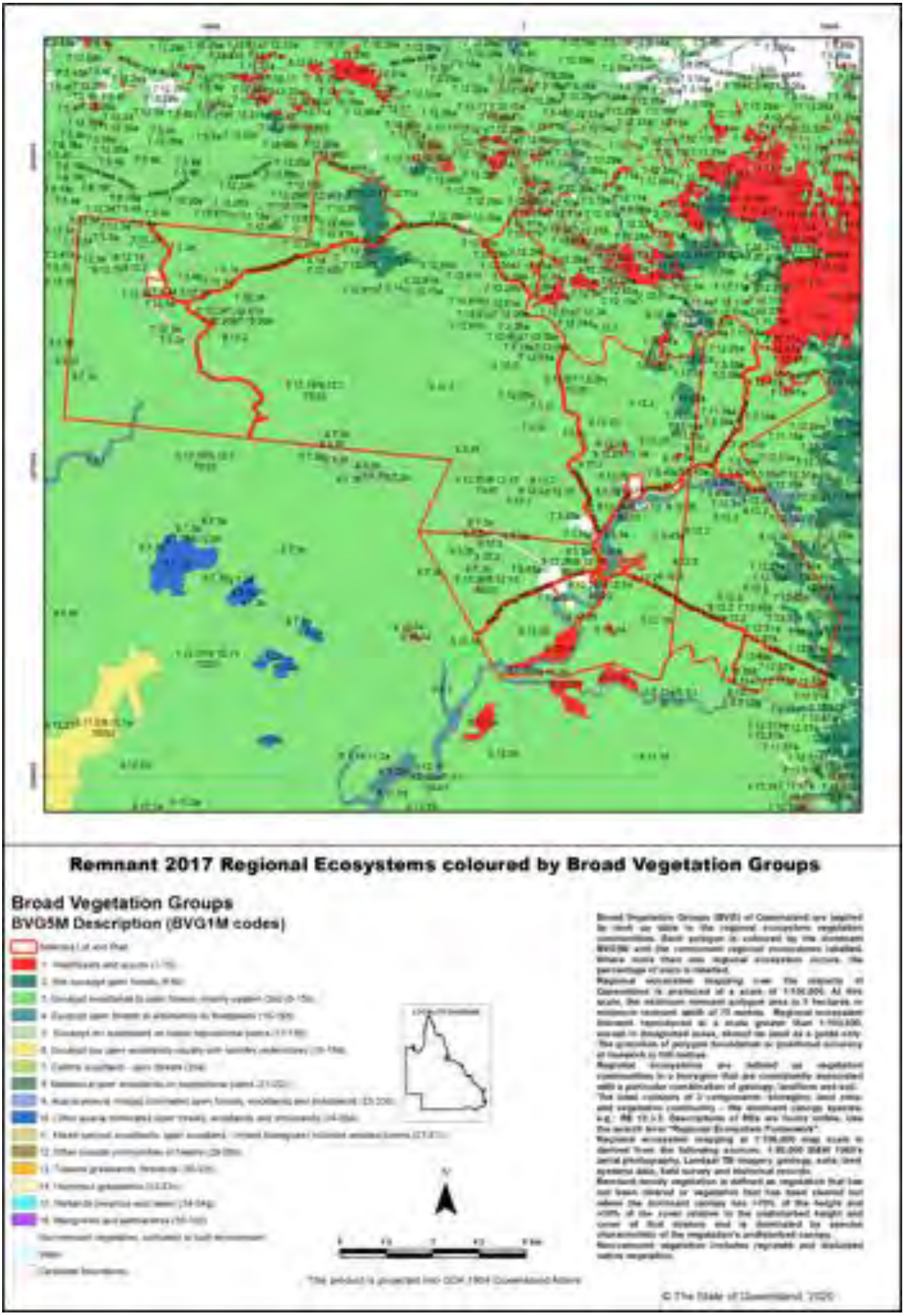
Map 2 - Remnant 2017 regional ecosystems



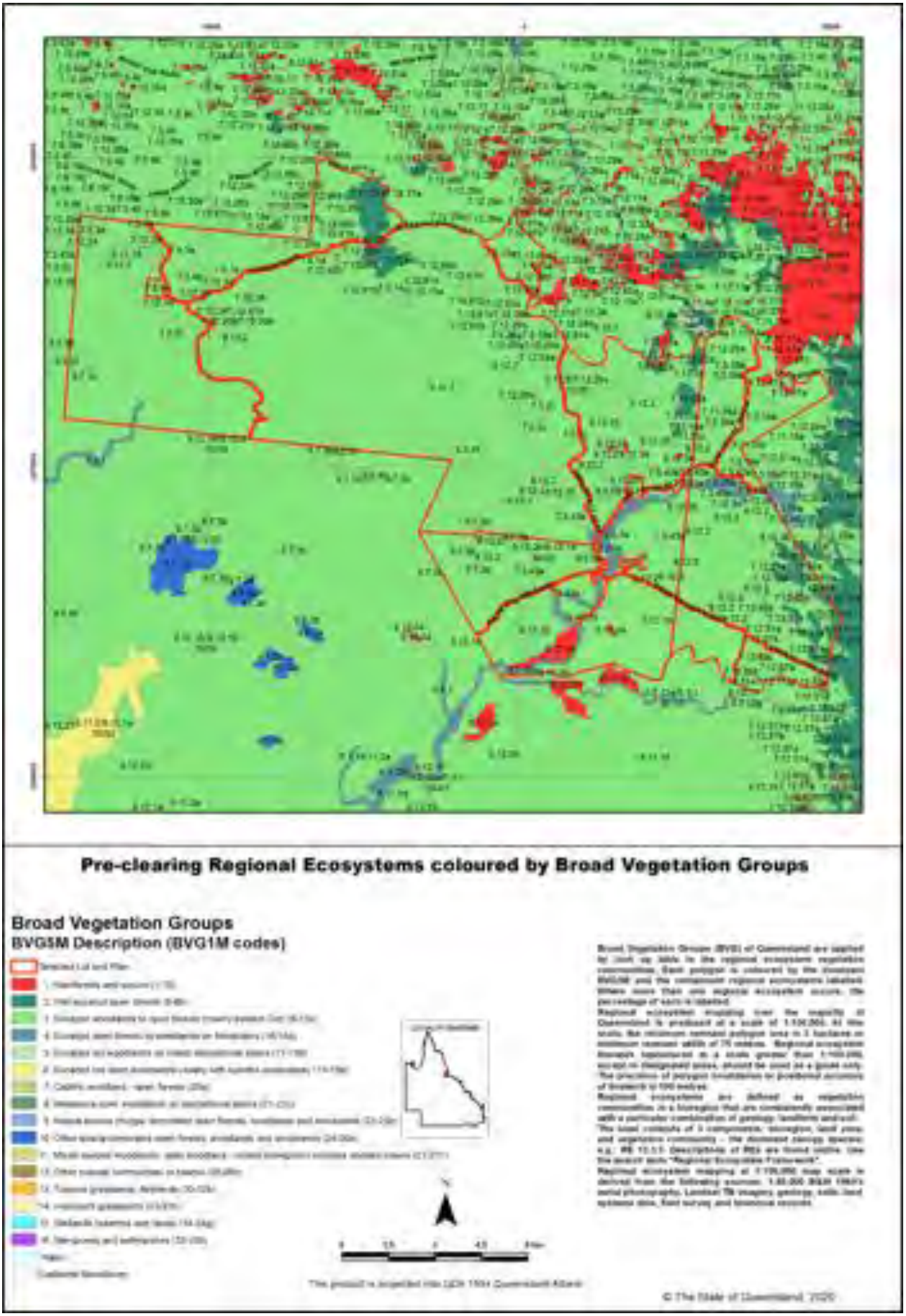
Map 3 - Pre-clearing regional ecosystems



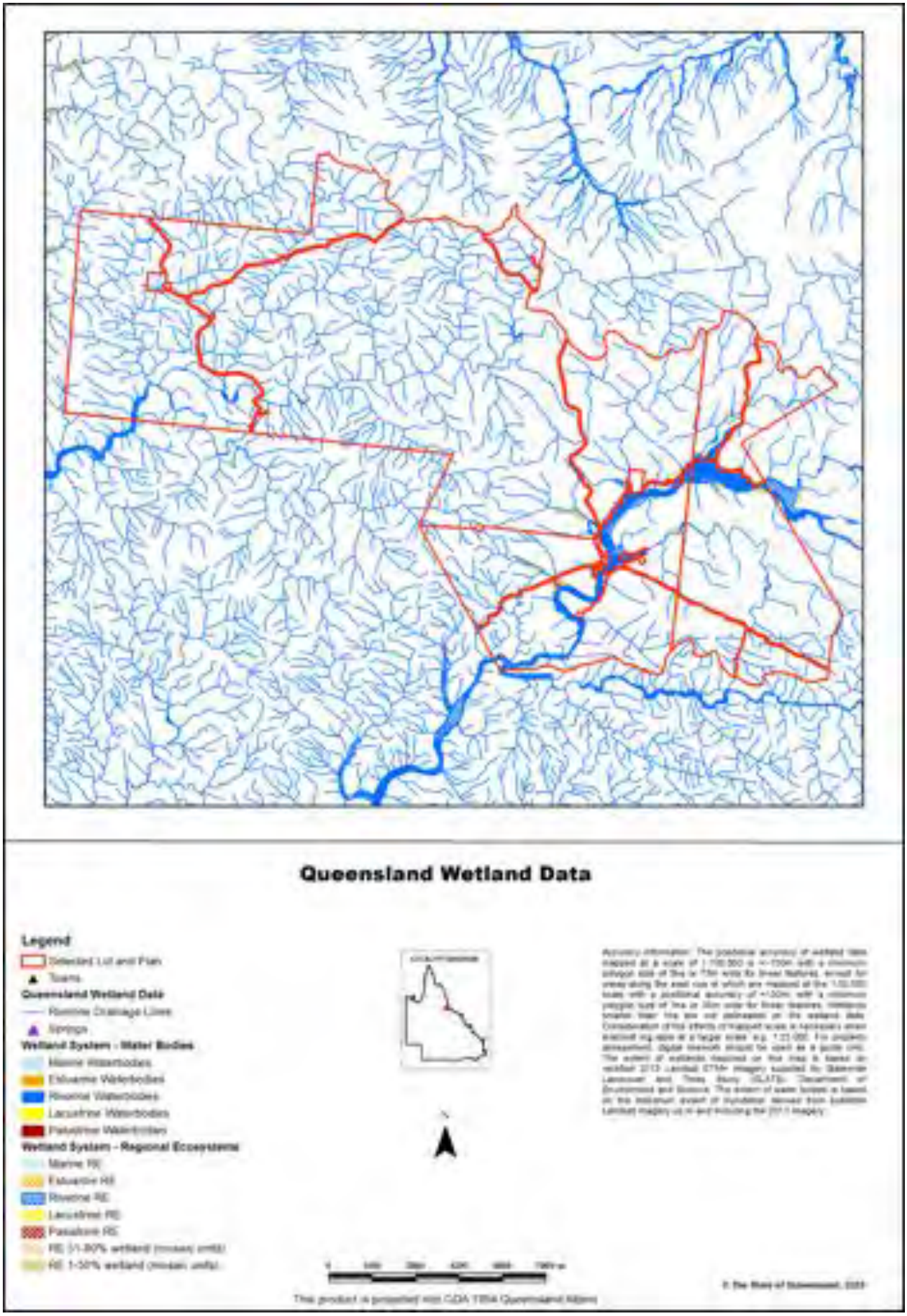
Map 4 - Remnant 2017 regional ecosystems by BVG (5M)



Map 5 - Pre-clearing regional ecosystems by BVG (5M)



Map 6 - Wetlands and waterways



Links and Other Information Sources

The Department of Environment and Science's Website -

http://www.qld.gov.au/environment/plants-animals/plants/ecosystems/

provides further information on the regional ecosystem framework, including access to links to the Regional Ecosystem Database, Broad Vegetation Group Definitions, Regional Ecosystem and Land zone descriptions.

Descriptions of the broad vegetation groups of Queensland can be downloaded from:

https://publications.qld.gov.au/dataset/redd/resource/

The methodology for mapping regional ecosystems can be downloaded from:

https://publications.qld.gov.au/dataset/redd/resource/

Technical descriptions for regional ecosystems can be obtained from:

http://www.qld.gov.au/environment/plants-animals/plants/ecosystems/technical-descriptions/

Benchmarks can be obtained from:

http://www.qld.gov.au/environment/plants-animals/biodiversity/benchmarks/

For further information associated with the remnant regional ecosystem dataset used by this report, refer to the metadata associated with the Biodiversity status of pre-clearing and Remnant Regional Ecosystems of Queensland dataset (version listed in **Appendix 1**) which is available through the Queensland Government Information System portal,

http://dds.information.qld.gov.au/dds/

The Queensland Globe is a mapping and data application. As an interactive online tool, Queensland Globe allows you to view and explore Queensland maps, imagery (including up-to-date satellite images) and other spatial data, including regional ecosystem mapping. To further view and explore regional ecosystems over an area of interest, access the Biota Globe (a component of the Queensland Globe). The Queensland Globe can be accessed via the following link:

http://www.dnrm.qld.gov.au/mapping-data/queensland-globe

References

Neldner, V.J., Niehus R.E., Wilson, B.A. McDonald, W.J.F., Ford, A.J. and Accad, A. (2017) The Vegetation of Queensland. Descriptions of Broad Vegetation Groups. Version 3.0. Queensland Herbarium, Department of Science, Information Technology, Innovation and the Arts.

(https://publications.qld.gov.au/dataset/redd/resource/78209e74-c7f2-4589-90c1-c33188359086)

Neldner, V.J., Wilson, B.A., Dillewaard, H.A., Ryan, T.S. and Butler, D.W. (2017) *Methodology for Survey and Mapping of Regional Ecosystems and Vegetation Communities in Queensland*. Version 4.0. Queensland Herbarium, Department of Science, Information Technology, Innovation and the Arts.

(https://publications.qld.gov.au/dataset/redd/resource/6dee78ab-c12c-4692-9842-b7257c2511e4)

Sattler, P.S. and Williams, R.D. (eds) (1999). *The Conservation Status of Queensland's Bioregional Ecosystems*. Environmental Protection Agency, Brisbane.

Appendices

Appendix 1 - Source Data

The dataset listed below is available for download from:

http://www.qld.gov.au/environment/plants-animals/plants/ecosystems/download/

- Regional Ecosystem Description Database

The datasets listed below are available for download from:

http://dds.information.qld.gov.au/dds/

- Biodiversity status of pre-clearing and 2017 remnant regional ecosystems of Queensland
- Pre-clearing Vegetation Communities and Regional Ecosystems of Queensland
- Queensland Wetland Data Version - Wetland lines
- Queensland Wetland Data Version - Wetland points
- Queensland Wetland Data Version - Wetland areas

Appendix 2 - Acronyms and Abbreviations

AOI	- Area of Interest
GDA94	- Geocentric Datum of Australia 1994
GIS	- Geographic Information System
RE	- Regional Ecosystem
REDD	- Regional Ecosystem Description Database
VMA	- *Vegetation Management Act 1999*

Appendix C Likelihood of occurrence assessment

Scientific Name	Common Name	NC Act Status*	EPBC Act Status*	Habitat Description+	Likelihood	Justification
Birds						
Calidris ferruginea	Curlew sandpiper	E	CE, Mi	Coastal species that forages and roosts in intertidal mudflats, sheltered coastal areas including estuaries, bays, inlets, lagoons and non-tidal swamps, lakes and lagoons close to the coast, ponds in saltworks and sewage farms.	Unlikely	Suitable habitat (coastal environments) is unlikely to be present, with no known records within 20km of the survey area (ALA).
Calyptorhynchus lathami erebus	Glossy black-cockatoo	V	-	Prefers woodland areas dominated by she-oak *Allocasuarina*, or open sclerophyll forests and woodlands with a stratum of *Allocasuarina* beneath *Eucalyptus*, *Corymbia* or *Angophora*. Have also been observed in mixed *Allocasuarina*, *Casuarina*, *Callitris* and *Acacia harpophylla* woodland assemblages (Glossy Black Conservancy 2010). Feeds almost exclusively on the seeds of nine species of *Allocasuarina* and *Casuarina* species throughout their range.	Potential	Suitable *Allocasuarina* spp. and woodlands occur within the survey area and the species has been observed close to the survey area. No ALA records within 20 km.
Cyclopsitta diophthalma macleayana	Macleay's fig parrot	V	-	Associated with the presence of fig trees in lowland and upland forest types, riparian corridors, farmland and urban environments.	Unlikely	Marginal habitat exists within the survey area, however only one very old record at Wallaman Falls > 15 km to the north (ALA).
Casuarius casuarius johnsonii	Southern cassowary	E	E	Generally, requires dense tropical rainforest (such as complex/non-complex notophyll/mesophyll vine forest) and associated mangrove *Melaleuca*, eucalypt woodland, swamp and swamp forest, that provides a year-round supply of fleshy fruit. There are 91 regional ecosystems identified as important vegetation types associated with essential habitat for the species. The distribution of the species is constrained by the availability of habitat which can provide a year-	Potential	A small area of suitable rainforest habitat is present within the survey area. Numerous records of the species within 10 km to the east of the survey area (ALA).

Scientific Name	Common Name	NC Act Status*	EPBC Act Status*	Habitat Description+	Likelihood	Justification
				round supply of fleshy fruits and access to permanent freshwater for drinking and bathing.		
Erythrotriorchis radiatus	Red goshawk	E	V	Prefers a mix of vegetation types with its habitat including tall open forest, woodland, lightly treed savannah and the edge of rainforest. In partly cleared parts of eastern Queensland, it is associated with gorge and escarpment country.	Known	Suitable habitat is present within the survey area, with a sighting in the north of the survey area and known records within 30 km (ALA).
Falco hypoleucos	Grey falcon	V	V	Prefers timbered lowland plains, particularly acacia shrublands crossed by tree-lined water courses, and has also been observed hunting in treeless areas and frequents tussock grassland and open woodland, especially in winter.	Unlikely	The species occurs in arid to semi-arid Australia (areas where annual rainfall is less than 500 mm. The survey area is therefore not suitable for the species and no species records in 20 km (ALA).
Geophaps scripta scripta	Squatter pigeon (southern subspecies)	V	V	Open-forests to sparse, open-woodlands and scrub that are mostly dominated in the overstorey by *Eucalyptus*, *Corymbia*, *Acacia* or *Callitris* species; remnant, regrowth or partly modified vegetation communities within 3km of water.	Unlikely	*Geophaps scripta peninsulae* (northern subspecies) was observed on several occasions throughout the survey area. The subspecies are unlikely to overlap in the survey area and therefore *G. scripta scripta* is unlikely to occur.
Hirundapus caudacutus	White-throated needletail	V	V, Ma, Mi	In Australia, almost exclusively aerial (1-1000 m above ground) yet occurs over a variety of habitats with a preference for wooded areas.	Potential	Suitable habitat is present within the survey area and there are six species records within 20 km to the north and west of the survey area (ALA).
Numenius madagascariensis	Eastern curlew	E	CE	Sheltered coasts, especially estuaries, bays, harbours, inlets and coastal lagoons, with large intertidal mudflats or sandflats, often with beds of seagrass. Occasionally, the species occurs on ocean beaches (often near estuaries), and coral reefs, rock platforms, or rocky islets. The birds are often recorded among saltmarsh and on mudflats fringed by mangroves, and sometimes use the mangroves. The birds are also found in saltworks and sewage farms.	Unlikely	No suitable habitat (coastal environments) within the survey area, and no records of species presence within 20 km of the survey area (ALA).

Scientific Name	Common Name	NC Act Status*	EPBC Act Status*	Habitat Description+	Likelihood	Justification
Poephila cincta cincta	Southern black-throated finch	E	E	Inhabits grassy open woodlands and forests, typically characterised by *Eucalyptus*, *Acacia* and *Melaleuca*. It is usually found within a few kilometres of water. It sometimes forages in modified habitats such as grassy roadsides, rail corridors, and beneath powerlines where these occur near more-or-less intact woodlands. Rarely found in highly modified peri-urban environments. Absent from urban areas. Known from open forest and ridges, and grassy hillsides.	Unlikely	Historical records exist from within the survey area, however, the species has undergone a significant range retraction in recent years and the survey area is unlikely to be within the species' current distribution (known populations are limited to around Townsville and Clermont, Qld).
Rostratula australis	Australian painted snipe	E	E	Species is dependent on wetlands including shallow terrestrial freshwater (occasionally brackish) wetlands, temporary and permanent lakes, swamps and claypans. Preferred wetland habitat is characterised by emergent vegetation (including tussocks, grasses, sedges, rushes, reeds, canegrass and/or paperbarks) where nesting will occur. Artificial habitats that are occasionally used include reservoirs, farm dams, sewage ponds, inundated grasslands, and leaking irrigation channels.	Unlikely	Suitable habitat (wetlands) is not present within the survey area, with no species records within 20 km (ALA).
Turnix olivii	Buff-breasted button-quail	E	E	Most frequently reported from stony and / or grassy woodlands and forests, often with Broad-leaved Paperbark *Melaleuca viridiflora* and / or Small Leafed Paperbark *M. minutifolia* in the midstorey. Sparsely-wooded, well-drained, slightly sloping bases of hills that support this vegetation appear critical during the breeding season. Also reported from grassy clearings within and adjacent to rainforest patches.	Unlikely	No records within 20 km of the survey area (ALA). Species' known distribution is > 100 km north of the survey area.

Scientific Name	Common Name	NC Act Status*	EPBC Act Status*	Habitat Description+	Likelihood	Justification
Tyto novaehollandiae kimberli	Masked owl (northern)	V	V	Mostly in coastal and upland areas. Sclerophyll forest and woodland, often near ecotones with open areas, such as grassland, heath or cane fields, and typically grassy or with a mosaic of sparse and dense ground-cover.	Known	Species was observed in the survey area during field surveys. Multiple known records from within 20 km of the survey area.
Mammals						
Bettongia tropica	Northern bettong	E	E	The preferred habitat is tall and medium open eucalypt forest with grassy understorey. These habitats occur as a narrow-fragmented strip along the western edge of wet tropical rainforests. Habitat consists of a cline (gradual change) of eucalypt forest types from very tall and wet *Eucalyptus grandis* dominated forests through tall *E. resinifera-Syncarpia glomulifera* dominated forests to medium height and drier *E. citriodora* or *E. platyphylla* dominated forests. Northern Bettongs prefer ridges rather than gullies.	Unlikely	Species is currently only known from two locations in far north Queensland, Lamb Range and Mount Spurgeon.
Dasyurus hallucatus	Northern quoll	-	E	Habitat features include high relief areas that have shallower soils, boulders and rocky areas for denning, low fire impact and close to permanent water. The species occupies a diversity of habitats across its range including Eucalypt forest and woodlands, rainforests, sandy lowlands and beaches, shrubland, grasslands and desert. Habitat generally encompasses some form of rocky area for denning purposes with surrounding vegetated habitats used for foraging and dispersal. Rocky habitats are usually of high relief, often rugged and dissected but can also include fields or caves in low lying areas. Eucalypt forest or woodland habitats usually have a high structural diversity containing	Unlikely	No ALA records within 20 km of the survey area. Although suitable habitat occurs within the survey area (rocky areas) the species is considered unlikely due to historical strychnine baiting and the current high density of feral predators (cats) in the survey area. Despite 1,047 targeted trap nights, the species was not detected despite surveys during the optimal season (July 2020).

Scientific Name	Common Name	NC Act Status*	EPBC Act Status*	Habitat Description+	Likelihood	Justification
				large diameter trees, termite mounds or hollow logs for denning purposes. Dens are made in rock crevices, tree holes or occasionally termite mounds.		
Dasyurus maculatus gracilis	Spotted-tailed quoll (North Queensland)	E	E	The subspecies is mostly confined to the relatively cool, wet and climatically equable upland closed-forests (mostly above 900 m altitude) that occur in the upper catchments of rivers draining east and west of the Eastern Escarpment in the Wet Tropics bioregion of north-eastern Queensland. The species also occurs in lower altitude notophyll, mesophyll and wet sclerophyll forests in lesser numbers. Vegetation types typical of this habitat are simple and complex notophyll vine forest, simple microphyll vine-fern forest and simple microphyll vine-fern thicket.	Unlikely	No suitable habitat (wet forests above 900 m altitude) are present in the survey area. Species limited to the eastern escarpments of the Wet Tropics bioregion, therefore, outside the survey area.
Hipposideros diadema reginae	Diadem leaf-nosed bat	NT	-	Roosts in caves and old mines in lowland rainforest, Melaleuca forests, eucalypt woodland, deciduous vine thickets, and open woodland. Foraging typically occurs along vegetation edges or gaps adjacent to open spaces, within 2.5 km of the roost.	Known	Ultrasonic calls were recorded in the 2019 surveys (see Appendix G for full results analysis).
Hipposideros semoni	Semon's leaf-nosed bat	E	V	Captured in rainforest in both wet and seasonally wet environments. Also recorded in tall eucalypt forest and open woodland.	Unlikely	Some suitable habitat (rainforests and tall eucalypt forest) occurs within the survey area, however, no known records within 20 km of the survey area (ALA).
Macroderma gigas	Ghost bat	E	V	Many habitats - from hot and dry mulga country to wet tropical forests. Generally, species forage within 1-2 km of their daytime roost site.	Unlikely	Some suitable habitat (wet tropical forests) occur within the survey area, however, there are no known records within 20 km of the survey area (ALA).
Mesembriomys gouldii rattoides	Black-footed tree-rat	-	V	In north Queensland, this species mostly occurs in eucalypt forests and woodlands, especially where hollows are relatively plentiful.	Unlikely	No ALA records within 20 km of the survey area. Suitable eucalypt forest and woodland habitat exists within the survey area, however the species was not detected despite 1,047 targeted trap nights.

Scientific Name	Common Name	NC Act Status*	EPBC Act Status*	Habitat Description+	Likelihood	Justification
Petauroides volans	Greater glider	V	V	Largely restricted to eucalypt forest and woodlands, with a preference for old growth with abundant large tree hollows (den habitat).	Known	Species was observed on numerous occasions during field surveys within eucalyptus forests and woodlands within the survey area. Multiple known records from within the survey area (ALA).
Petaurus gracilis	Mahogany glider	E	E	Mixed open forest or woodland below 120 m elevation. These forests are a mix of different tree species, providing complex structure and diversity. Greater than 20 tree and shrub species, including eucalypts, bloodwoods, melaleucas, acacia, *Albizia procera* and *Xanthorrhoea* form essential habitat. Fire maintains the complexity and reduces density.	Unlikely	The species is restricted to open forest or woodlands below 120 m elevation. The survey area is therefore outside the species range.
Petrogale sharmani	Sharman's rock-wallaby	V	V	Boulder piles, rocky slopes and gullies, rocky outcrops, cliffs, and gorges in tropical woodland or open forest with a grassy understorey.	Known	Species was observed on numerous occasions within the survey area during field surveys around boulder piles, rocky slopes and gullies and rocky outcrops. Previous records are known from within 2 km of the survey area (ALA).
Phascolarctos cinereus	Koala	V	V	Occurs in a range of temperate, tropical and sub-tropical forests as well as woodland and semi-arid communities dominated by *Eucalyptus* species.	Known	Species was observed on numerous occasions in eucalypt woodlands within the survey area during field surveys. Multiple known records from within the survey area (ALA).
Pteropus conspicillatus	Spectacled flying fox	E	E	Associated with, but not restricted to, tropical rainforests. Also uses eucalypt forests, melaleuca swamps, littoral and coastal mixed forests and mangroves, farmlands, and urban and suburban gardens. Colonies tend to be within or near rainforest. One study showed that the Spectacled Flying fox roosts within 6.5 km of rainforest, although a roost 16 km from rainforest has also been observed. The Mabi Forest (Complex	Known	Species was observed during field surveys foraging in Burdekin plum (*Pleiogynium timorense*) and fig (*Ficus* spp.) trees within the survey area.

Scientific Name	Common Name	NC Act Status*	EPBC Act Status*	Habitat Description+	Likelihood	Justification
				Notophyll Vine Forest 5b) is considered a key habitat for the Spectacled Flying fox.		
Pteropus poliocephalus	Grey-headed flying fox	-	V	Typically camps in closed forests > 8 m high, > 1 ha in area, and dominated by rainforest, Broad-leaved Paperbark *Melaleuca quinquenervia*, mangrove, or *Casuarina* spp. Colonies also use highly modified vegetation in urban and suburban areas. Camps are generally within 50 km of the coast or < 65m elevation, near water, and on level ground or gentle slopes. This species feeds in a variety of forest and woodland communities, and urban and production landscapes. A diverse range of vegetation communities is required to access year-round food supplies.	Potential	Suitable rainforest and paperbark habitat is present within the survey area, however no records within 20 km and possible distribution at least 15 km to the north and south (ALA).
Rhinolophus robertsi	Greater large-eared horseshoe bat	E	V	The Greater Large-eared Horseshoe Bat is found in lowland rainforest, along gallery forest-lined creeks within open eucalypt forest, *Melaleuca* forest with rainforest understorey, open savannah woodland and tall riparian woodland of *Melaleuca*, Forest Red Gum (*E. tereticornis*) and Moreton Bay Ash (*E. tessellaris*). They forage mainly in open forest and wattle-dominated ridges in rainforest.	Known	Species was recorded on an ultrasonic recorder during the field survey (see Appendix G for full results analysis).
Saccolaimus saccolaimus nudicluniatus	Bare-rumped sheath-tailed bat	E	V	Confined to coastal strip within 40 km of the ocean. Occurs mostly in lowland areas, typically in a range of woodland, forest and open environments. Habitat adjacent to roosts include: Poplar Gum (*Eucalyptus platyphylla*), Carbeen (*Corymbia. tessellaris*) and Ghost Gum (*E. papuana*) woodlands at Ayr; Darwin Stringybark woodland (*E. tetrodonta*) with Clarkson's Bloodwood (*Corymbia clarksoniana*) and Carbeen, and gallery forest and rainforest at	Known	Species was recorded on an ultrasonic recorder during the field survey (see Appendix G for full results analysis).

Scientific Name	Common Name	NC Act Status*	EPBC Act Status*	Habitat Description+	Likelihood	Justification
				Iron Range; and at riverine vine forest with adjacent open forest/woodland at Coen. The Bare-rumped Sheathtail Bat has been suggested to forage over habitat edges such as the edges of rainforest and forest clearings.		
Reptiles						
Delma mitella	Atherton delma	NT	V	The Atherton Delma is known only from tall open forests and rainforest interfaces. Grass cover in known locations is Kangaroo Grass *Themeda triandra*, Blady Grass *Imperata cylindrica*, and *Mnesithea rottboellioides*.	Potential	Some suitable habitat (tall open forests and rainforest interfaces) is present in the survey area. The species is known only from Herberton, Ravenshoe and Paluma districts. Given some suitable habitat occurs and Paluma being in proximity to the survey area, the species has potential to occur.
Egernia rugosa	Yakka skink	V	V	Found in a variety of vegetation types, commonly in cavities under and between partly buried rocks, logs or tree stumps, root cavities and abandoned animal burrows. The species often takes refuge in large hollow logs and has been known to excavate deep burrow systems, sometimes under dense ground vegetation.	Unlikely	Known records of the species is northern Queensland are scattered. The survey area is outside the clusters of known species records, with the closest known cluster being north near Cairns.
Frogs						
Litoria dayi	Australian lacelid	E	V	Rainforest specialist associated with rainforests and rainforest margins with fast-flowing rocky streams or slower watercourses where ample vegetation exists along the margins. At low elevations, the Lace-eyed Tree Frog favours rock soaks, narrow ephemeral streams and rock outcrops in larger watercourses. It may also be found on rocks, boulders and vegetation in or adjacent to rainforest streams. Once present at elevations 0m to 1200m,	Unlikely	Suitable rainforest habitat with fast flowing or large streams is not present in the survey area and the small patch of rainforest is above the elevation at which Australian lacelid occurs. The species is thought to have disappeared from elevations above 500 m as a result of chytrid fungus (*Batrachochytrium dendrobatidis*). Species records occur within 20 km to the north of the survey area, however these are associated with Wallaman Falls, where suitable habitat is present (ALA).

Scientific Name	Common Name	NC Act Status*	EPBC Act Status*	Habitat Description+	Likelihood	Justification
				the species is now thought to be restricted to elevations below 500 m.		
Litoria nannotis	Waterfall frog	E	E	Rainforests and sclerophyll forests. Occurs throughout the Wet Tropics Bioregion, North Queensland, from Paluma to Cooktown, but only has stable populations at lowland sites (180-400 m). It is restricted to rocky stream habitats in rainforest or wet sclerophyll forest where there is fast flowing water, waterfalls and cascades. Male and female Waterfall Frogs use the stream as primary habitat throughout the year. Adults and juveniles sometimes form small aggregations (4-6 individuals) amongst large boulders behind waterfalls. Tadpoles of the Waterfall Frog are predominantly found in fast flowing sections of streams, in riffles or torrents, adhering to rocks.	Unlikely	Suitable habitat of rainforest or wet sclerophyll forest with fast flowing water, waterfalls and cascades is not present in the survey area. The survey area is above the elevation at which this species occurs. There are no records within 20 km (ALA).
Litoria rheocola	Common mistfrog	E	E	Rainforest specialist, endemic to the Wet Tropics Bioregion. Restricted to fast flowing rocky creeks and streams in rainforest as well as wet sclerophyll forest. Often found in the slower more open sections of streams, away from waterfalls. Individuals can be found on rocks, logs and vegetation in or adjacent to streams. This species is known from the Wet Tropics, from Big Tableland south to Herbert River. Once widespread from sea level to 1200 m, it is now only common below 600 m.	Unlikely	Suitable rainforest habitat is not present in the survey area. Some suitable rocky creeks in wet sclerophyll forest is present, however, it is above the elevation this species is known from. The species is currently only known from Big Tableland to Herbert River (approx. 80 km north of the survey area), at elevations below 600 m. No records within 20 km (ALA).
Litoria serrata	Tapping green eyed frog	V	-	Known to inhabit rainforests and adjacent wet sclerophyll forest, as well as gallery forest and paperbark woodland. Usually found near creeks or	Unlikely	Suitable habitat is marginally present in the survey area, with species records > 15 km to the north associated with Wallaman Falls (ALA).

Scientific Name	Common Name	NC Act Status*	EPBC Act Status*	Habitat Description+	Likelihood	Justification
				seepages, often in association with mosses or lichens.		
Pseudophryne covacevichae	Magnificent brood frog	V	V	Appears to be restricted to specific habitats with all records being from the rhyolites of the Glen Gordon Volcanics. Found in open eucalypt forests with an understorey comprised of *Themeda triandra*, *Xanthorrhoea* sp., *Gahnia* sp., *Lophostemon suaveolens*, *Allocasuarina littoralis* and *A. torulosa*.	Unlikely	The survey area is outside known species' distribution, and there are no records within 20 km of the survey area (ALA).
Insects						
Hypochrysops apollo apollo	Apollo jewel (Wet Tropics subspecies)	V	-	The caterpillar lives in hollows in the bulbs of various species of Ant plant (e.g. *Myrmecodia beccarii*), which are epiphytes on various coastal trees such as *Melaleuca viridiflora*. Thought to range from Cairns to Townsville.	Unlikely	Suitable habitat is marginally available within the survey area, however no records within 20 km (ALA). Further, no ant plants (*Myrmecodia* spp.: host of caterpillars) were observed in the survey area.
Fish						
Stiphodon semoni	Opal cling goby	-	CE	Confined to a limited number of rainforest streams in far north-east Queensland, with an estimated population of 10-30 mature individuals. The species occurs in fast-flowing coastal streams.	Unlikely	The survey area is not associated with the known river reaches for the population, with no records within 20 km (ALA).
Sharks						
Pristis pristis	Freshwater sawfish	-	V, Mi	The preferred habitat of this species is mud bottoms of river embayments and estuaries, but they are also found well upstream. Not found near riparian vegetation, usually found in turbid channels of large rivers over soft mud bottoms more than 1 m deep, but they will move into shallow waters when travelling upstream or while hunting prey.	Unlikely	Suitable habitat (estuaries) is not present in the survey area, with no records within 20 km (ALA).
Migratory Marine Birds						

Scientific Name	Common Name	NC Act Status*	EPBC Act Status*	Habitat Description+	Likelihood	Justification
Apus pacificus	Fork-tailed swift	SLC	Ma, Mi	The Fork-tailed Swift is almost exclusively aerial, flying from less than 1 m to at least 300 m above ground and probably much higher. They are more widespread west of the Great Divide and are commonly found west of the line joining Chinchilla and Hughenden.	Potential	Given, the species is almost exclusively aerial, no defined habitat is provided. However, the species is widespread across the eastern coast when in Australia and consequently the species has potential to occur above the survey area during September to April.
Migratory Marine Species						
Crocodylus porosus	Salt-water crocodile	-	Ma, Mi	It can be found in in a variety of habitats which include coastal waters, estuaries, freshwater sections of lakes, inland swamps and marshes. The species can be found up to 150 km inland from the coast and prefers to nest in freshwater swamps without tidal movement and with floating rafts of vegetation to construct nests. They can occupy fresh and salt water and are occasionally observed in the open sea.	Unlikely	Suitable habitat is not present in the survey area, with no records within 20 km (ALA).
Migratory Terrestrial Species						
Cuculus optatus	Oriental cuckoo	SLC	Mi	Monsoon forest, rainforest edges, leafy trees in paddocks, river flats, riverside trees, roadsides, mangroves, islands.	Potential	Some suitable habitat is present within the survey area (rainforest edges, roadsides), with multiple species records within 20 km of the survey area including associated with Girringun Forest Reserve (ALA).
Hirundo rustica	Barn swallow	SLC	Ma, Mi	Open country in coastal lowlands, often near water, towns and cities. Also freshwater wetlands, paperbark Melaleuca woodland, mesophyll shrub thickets and tussock grassland.	Potential	Suitable habitat in the form of *Melaleuca* spp. occurs within the survey area, and the survey area is within species known distribution (ALA).
Monarcha melanopsis	Black-faced monarch	SLC	Ma, Mi	Mainly occurs in rainforest ecosystems, including semi-deciduous vine-thickets, complex notophyll vine-forest, tropical (mesophyll) rainforest, subtropical (notophyll) rainforest, mesophyll	Potential	Suitable habitat limited to the small areas of rainforest within the survey area. Species records adjacent to the survey area (ALA).

Scientific Name	Common Name	NC Act Status*	EPBC Act Status*	Habitat Description+	Likelihood	Justification
				(broadleaf) thicket/shrubland, warm temperate rainforest, dry (monsoon) rainforest and (occasionally) cool temperate rainforest. Also known from gullies in mountain areas or coastal foothills, softwood scrub dominated by Brigalow (*Acacia harpophylla*), coastal scrub dominated by Coast Banksia (*Banksia integrifolia*) and Southern Mahogany (*Eucalyptus botryoides*), occasionally among mangroves, sometimes in suburban parks and gardens and selectively logged and 20—30 years old regrowth rainforest. Breeds in rainforest habitat. Feeds mostly in rainforest but also in open eucalypt forest.		
Monarcha trivirgatus (syn. *Symposiachrus trivirgatus*)	Spectacled monarch	SLC	Ma, Mi	This species prefers areas with thick understorey such as wet gullies, rainforests and mangroves.	Potential	Suitable habitat limited to the small areas of rainforest within the survey area. Species records adjacent to the survey area (ALA).
Motacilla cinerea	Grey wagtail	SLC	Ma, Mi	Near running water in disused quarries, sandy and rocky streams in escarpments and rainforests, sewage ponds, ploughed fields, airfields.	Unlikely	Marginal habitat (streams in rainforest) occurs in the survey area. However, there are no records within 20 km of the survey area (ALA).
Motacilla flava	Yellow wagtail	SLC	Ma, Mi	Short grass and bare ground, swamp margins, sewage ponds, saltmarshes, playing fields, airfields, ploughed land, town lawns.	Unlikely	Suitable habitat is not present in the survey area, with expert distribution occurring nearer the coast and south of the survey area (ALA).
Myiagra cyanoleuca	Satin flycatcher	SLC	Ma, Mi	Satin Flycatchers mainly inhabit eucalypt forests, often near wetlands or watercourses. Often occurs in gullies. Also occurs in eucalypt woodlands with open understorey and grass ground cover and are generally absent from rainforest. Mainly recorded in eucalypt forests, especially wet sclerophyll forest, often dominated by eucalypts such as Brown Barrel, *Eucalyptus fastigiata*, Mountain Gum, *E.*	Likely	Suitable habitat (eucalypt forest and riparian forests) exists within the survey area and the species was observed within 4 km. Previous records adjacent to the survey area. Survey area is within the known distribution for the species (ALA).

Scientific Name	Common Name	NC Act Status*	EPBC Act Status*	Habitat Description+	Likelihood	Justification
				dalrympleana, Mountain Grey Gum, Narrow-leaved Peppermint, Messmate or Manna Gum, or occasionally Mountain Ash, *E. regnans*. They sometimes also occur in dry sclerophyll forests and woodlands, usually dominated by eucalypts such as Blakely's Red Gum, *E. blakelyi*, Mugga Ironbark, *E. sideroxylon*, Yellow Box, White Box, *E. albens*, Manna Gum or stringybarks, including Red Stringybark, *E. macrorrhyncha* and Broad-leaved Stringybark, usually with open understorey.		
Rhipidura rufifrons	Rufous fantail	SLC	Ma, Mi	In east and south-east Australia, it usually inhabits wet sclerophyll forests usually with a dense shrubby understorey often including ferns. It can also be found in subtropical and temperate rainforests, and occasionally in drier sclerophyll forests during migration. In the north, it occurs in tropical rainforest and monsoon rainforests, including semi-evergreen mesophyll vine forests, semi-deciduous vine thickets or thickets of Paperbarks (*Melaleuca* spp.) (Higgins et al. 2006). They occasionally occur in secondary regrowth, following logging or disturbance in forests or rainforests.	Likely	Not observed during field survey, however previous records exist adjacent to the survey area (ALA). Suitable habitat occurs within the survey area (rainforest, vine forests, paperbarks).
Migratory Wetlands Species						
Actitis hypoleucos	Common sandpiper	SLC	Ma, Mi	It can use a wide range of wetland habitats, of varying levels of salinity. Forages in shallow water and on bare soft mud at the edges of wetlands.	Unlikely	Suitable habitat (muddy wetlands) is not present in the survey area, with no records within 20 km (ALA).
Calidris acuminata	Sharp-tailed sandpiper	SLC	Ma, Mi	Prefers muddy edges of shallow fresh or brackish wetlands, with inundated or emergent sedges, grass, saltmarsh or other low vegetation. This includes lagoons, swamps, lakes and pools near the coast, and dams, waterholes, soaks, bore drains and	Unlikely	Suitable habitat (coastal environments) is not present in the survey area, with no records within 20 km (ALA).

Scientific Name	Common Name	NC Act Status*	EPBC Act Status*	Habitat Description+	Likelihood	Justification
				bore swamps, saltpans and hypersaline salt lakes inland. They also occur in saltworks and sewage farms. They use flooded paddocks, sedgelands and other ephemeral wetlands, but leave when they dry. They use intertidal mudflats in sheltered bays, inlets, estuaries or seashores, and also swamps and creeks lined with mangroves. Sometimes occur on rocky shores and rarely on exposed reefs.		
Calidris melanotos	Pectoral sandpiper	SLC	Ma, Mi	Prefers shallow fresh to saline wetlands. Found at coastal lagoons, estuaries, bays, swamps, lakes, inundated grasslands, saltmarshes, river pools, creeks, floodplains and artificial wetlands. Usually found in coastal or near coastal habitat but occasionally found further inland. Also recorded in swamp overgrown with lignum.	Unlikely	Suitable habitat (coastal environments) is not present in the survey area, with no records within 20 km (ALA).
Gallinago hardwickii	Latham's snipe	SLC	Ma, Mi	Occurs in permanent and ephemeral wetlands up to 2000 m above sea-level. They usually inhabit open, freshwater wetlands with low, dense vegetation (e.g. swamps, flooded grasslands or heathlands, around bogs and other water bodies). However, they can also occur in habitats with saline or brackish water, in modified or artificial habitats, and in habitats located close to humans or human activity. Various other freshwater habitats can be used including bogs, waterholes, billabongs, lagoons, lakes, creek or river margins, river pools and floodplains.	Likely	Observed approximately 4 km outside the survey area during field surveys. Suitable habitat (waterbodies) exists within the survey area.
Numenius madagascariensis	Eastern curlew	SLC	CE, Ma, Mi	Sheltered coasts, especially estuaries, bays, harbours, inlets and coastal lagoons, with large intertidal mudflats or sandflats, often with beds of seagrass. Occasionally, the species occurs on ocean	Unlikely	Suitable habitat (coastal environments) is not present in the survey area, with no records within 20 km (ALA).

Scientific Name	Common Name	NC Act Status*	EPBC Act Status*	Habitat Description+	Likelihood	Justification
				beaches (often near estuaries), and coral reefs, rock platforms, or rocky islets. The birds are often recorded among saltmarsh and on mudflats fringed by mangroves, and sometimes use the mangroves. The birds are also found in saltworks and sewage farms.		
Pandion haliaetus	Osprey	SLC	Ma, Mi	Littoral and coastal habitats and terrestrial wetlands of tropical and temperate Australia and offshore islands. Require extensive areas of open fresh, brackish or saline water for foraging. Frequent a variety of wetland habitats including inshore waters, reefs, bays, coastal cliffs, beaches, estuaries, mangrove swamps, broad rivers, reservoirs and large lakes and waterholes.	Unlikely	Suitable habitat (extensive areas of open water) is not present in the survey area, with no records within 20 km (ALA).
Tringa nebularia	Common greenshank	SLC	Ma, Mi	Occurs in all types of wetlands. Typical habitat for this species a wide variety of inland wetlands and sheltered coastal habitats of varying salinity. Sheltered coastal habitats, typically with large mudflats and saltmarsh, mangroves or seagrass and uses both permanent and ephemeral terrestrial wetlands, including swamps, lakes, dams, rivers, creeks, billabongs, waterholes and inundated floodplains, claypans and saltflats.	Unlikely	Suitable habitat (wetlands) is not present in the survey area, with a single record around 20 km to the west of the survey area (ALA).
Plants						
Acacia longipedunculata	-	NT	-	Grows in open forests on shallow, sandy and rocky soils. Restricted north-eastern Queensland distribution, with records near Herberton and in the Paluma Range	Potential	Suitable habitat is present in the survey area, with three records within 10-20 km of survey area (ALA).

Scientific Name	Common Name	NC Act Status*	EPBC Act Status*	Habitat Description+	Likelihood	Justification
Acacia tingoorensis	Tingoorensis wattle	V	-	Present at altitude between 400-500 m in eucalypt woodlands or forest. Forms dense stands within road reserves. Recorded to grow on a variety of soils which include deep red loams, shallow loamy/sandy soils and gravelly soils. Fragmented populations exist near Kingaroy in the Burnett District as well as in South-East Queensland	Likely	Suitable habitat is present in the survey area, with nine records within the survey area on Mount Fox Road (ALA).
Aristida granitica	-	E	E	Occurs on in sandy soil derived from granite sand in eucalypt woodland. Currently only recorded currently on the foothills of Mt Pring, located 10 km west of Bowen, where it is common.	Potential	Suitable sandy granite-derived soils abundant in survey area, with records > 20 km to the south of the survey area (ALA).
Bulbophyllum globuliforme	Miniature moss-orchid	NT	V	Grows only on hoop pine (*Araucaria cunninghamii*), colonising the upper branches of mature trees in upland rainforest. Occurs in north-east NSW and south east Queensland. Specimens have also been collected near Hidden Valley, south of Ingham in north Queensland.	Potential	Suitable habitat (hoop pine) is unlikely in the survey area, with records > 15 km to the south (ALA).
Corchorus subargenteus	-	V	-	Specimens obtained near Ewan and Paluma, North Kennedy pastoral district, north Queensland. Considered to prefer *Corymbia leichhardtii / Eucalyptus granitica* woodland on granite-derived soils.	Potential	Suitable habitat (*Corymbia leichhardtii / Eucalyptus granitica* woodland on granite-derived soils) present in survey area, with a record > 20 km to the south (ALA).
Corybas cerasinus	Red helmet orchid	NT	-	Grows in moist to wet forest on exposed ridges as well as drier forests. Soils are usually well -drained sand and gravelly loams. Records exist in northern Queensland from Cooktown to the Herbert River (near Ingham), as well as Dunk Island.	Potential	Suitable soils and habitats present within the survey area, with one old species record adjacent to the survey area and two > 15 km to the north (ALA).
Corymbia leptoloma	Yellowjacket	V	V	The species grows in wet sclerophyll forest in association with turpentine (*Syncarpia glomulifera*), red mahogany (*Eucalyptus resinifera*) and pink	Potential	Suitable soils abundant in survey area, with two species records within 15 km of the survey area (ALA).

Scientific Name	Common Name	NC Act Status*	EPBC Act Status*	Habitat Description+	Likelihood	Justification
				bloodwood (*Corymbia intermedia*) in gullies or on hill slopes. It occurs in coarse sandy soils derived from granite. *Corymbia leptoloma* is known only from a small area north-west of Townsville, Queensland. The best-known population occurs along the Paluma–Hidden Valley road.		
Cycas platyphylla	-	-	V	*Cycas platyphylla* occurs in sparse *Eucalyptus sideroxylon* woodland with a grassy understorey, often on rocky slopes in shallow red stony loams. The main population is from the Petford district, west of the Atherton Tableland, Queensland. There are three smaller quite disjunct populations recorded from Taravale, Wandovale, and at White Mountains, north of Torrens Creek.	Potential	Suitable habitat is present in the survey area, however no species records within 20 km, and the closest records are north west of Townsville (ALA).
Dichanthium setosum	Bluegrass	-	V	Species usually occurs in grasslands with heavy basaltic black soils and stony red-brown hardsetting loam with clay subsoil. In Queensland it is known to occurs in Leichhardt, Moreton, North Kennedy and Port Curtis	Potential	Suitable black clays are present in the survey area, however no species records within 20 km, and the closest records are further north west of Charters Towers (ALA).
Dodonaea uncinata	-	NT	-	Occurs in open forests on sandstone soils. Records for species exist in Hidden Valley/Mt Spec, a small area to the north west of Townsville	Unlikely	Suitable habitat is marginal within the survey area, with species records > 15 km to the south of the survey area (ALA).
Drosera adelae	Sundew	NT	-	Endemic to north-east Queensland from Tully southwards to Hinchinbrook Island. Occurs at altitudes 50-800 m on creek beds and moss-covered rocks along creek lines within rainforest, open forest, mesophyll vine forest and eucalypt forests.	Potential	Suitable rocky creeks present in survey area, however species record is > 15 km to the north associated with Wallaman Falls (ALA).
Glossocardia orthochaeta	-	E	-	Occurs on steep rocky granite country with boulder stacks and open granite pavements. Found on granitic lithosols on the edge of tall open woodlands	Potential	Suitable habitat (rock pavement habitats) are abundant in survey area, with one record adjacent to the survey area (ALA).

Scientific Name	Common Name	NC Act Status*	EPBC Act Status*	Habitat Description+	Likelihood	Justification
				of *Araucaria cunninghamii* with a dense shrub layer of *Labichea nitida* and *Acacia leptostachya*, with a sparse grassy ground cover *Digitaria* sp. and *Eriachne pallescens*. Known to occur in the North Kennedy District, west to south west of Ingham, north Queensland.		
Habenaria rumphii	-	NT	-	Grows in open forest and woodlands among grasses. Prefers low lying areas which are characterised by seasonally inundated soils.	Unlikely	Suitable low-lying habitat is unlikely to be present in the survey area. No species records within 20 km of the survey area, with the closest records associated with lowland coastal areas (ALA).
Homoranthus porteri	-	V	V	This species occurs on sandstone pavement, rocky outcrops, hillsides and scree slopes in open eucalypt woodland. Species recorded from Mt Mulligan, west of Mareeba, southwards to near Ravenshoe and 80 km north-west of Townsville in Queensland.	Potential	Suitable rock pavement habitats abundant in survey area; species records 20 km to the south (ALA).
Lindsaea pulchella var. *blanda*	-	-	V	This is a poorly known taxon in Australia with exceptionally few records of uncertain locality but thought to possible occur in the Rockingham Bay Range (Wet Tropics), Queensland. Described as epiphytic, occurring among mosses, on trees and tree ferns at likely altitudes of 1500 -2570 m.	Unlikely	No 1500 – 2570 m high elevation habitats present in the survey area, and no species records within 20 km (ALA).
Marsdenia brevifolia	-	V	V	Occurring in north and central Queensland, near Townsville, Springsure and north of Rockhampton. Plants have also been recorded at Springsure in woodlands dominated by *Corymbia erythrophloia* and *Eucalyptus crebra*, with dense *Themeda triandra* understorey on basalt. Around Townsville *M. brevifolia* has been recorded to grow on granite soils in woodlands dominated by Granite Ironbark (*E. granitica*), Rustyjacket (*C. leichhardtii*) and White Mahogany (*E. acmenoides*). It is also found on	Potential	Suitable habitat abundant in survey area, with records > 15 km to the south of the survey area (ALA).

Scientific Name	Common Name	NC Act Status*	EPBC Act Status*	Habitat Description+	Likelihood	Justification
				Magnetic Island where species occurs in open forest on dark acid agglomerate soils dominated by Narrow-leafed Ironbark (*E. drepanophylla*) communities.		
Myrmecodia beccarii	Beccarri's ant plant	V	V	Occurs in open woodland dominated by *Melaleuca viridiflora* or mangroves. Recorded in coastal woodlands between Cooktown and Ingham in Queensland.	Unlikely	Suitable habitat is marginal within the survey area, however no species records within 20 km, and closest records are coastal from Townsville through to the Cape (ALA).
Oenanthe javanica	Water celery	NT	-	Naturally occurs in Queensland as well as South East Asia, generally occurring at elevations greater than 600 m. Favours ponds, marshlands, lakeshores, muddy stream banks and shallow water.	Unlikely	Suitable habitat is not present within the survey area (static or slow-flowing stream/lake), with species records > 20 km to the east of the survey area (ALA).
Phaius australis	Lesser swamp-orchid	E	E	This species is associated with coastal wet heath/sedge wetlands, swampy grassland or swampy forest and often where Broad-leaved Paperbark (*Melaleuca quinquenervia*) or Swamp Mahogany (*Eucalyptus robusta*) are found. Less commonly, the species has been found in drier forest near the coast. Distribution encompasses both north-east/ eastern Queensland and northern New South Wales, however, there is a large discontinuity in species range.	Unlikely	Suitable coastal swamp habitat is not present within the survey area, with no species records within 20 km, and the closest records exist from Cardwell up through Atherton tablelands to Cairns (ALA).
Phaius pictus	-	-	V	Restricted to rainforests from 0–600 m altitude, usually occurs in sheltered humid sites close to streams and seepage among forest litter on boulders. Recorded in north-east Queensland, sporadically from the McIlwraith Range, Bloomfield River to Kirrama Range.	Potential	Suitable habitat is marginal within the survey area, with no species records within 20 km, and closest records north-west of Tully up to north of Cairns (ALA).

Scientific Name	Common Name	NC Act Status*	EPBC Act Status*	Habitat Description+	Likelihood	Justification
Phalaenopsis amabilis subsp. *rosenstromii*	Native moth orchid	E	E	The species is known to grow in trees, rarely on rocks, in humid airy situations on sheltered slopes and in gullies, in deep gorges and close to streams in rainforests, at altitudes from 200–500 m. Occurs in north-east Queensland, sporadically from the Iron Range in the north and as far south as the Paluma Ranges. This species has been recorded in Daintree National Park, Iron Range National Park and Mt Spec National Park.	Potential	Suitable habitat is marginal within the survey area in suitable sheltered environments associated with vine forests and thickets on major creeks. No records within survey area, and closest records from Townsville through north to Cairns, within proximity to coast (ALA).
Rhomboda polygonoides (syn. *Zeuxine polygonoides*)	Velvet jewel orchid	-	V	Occurs at altitudes of 450-60 m on rainforest floor, notably in notophyll vine forest, growing on tops of granite boulders, on flat rocks and among the rotting wood of fallen trees. Total population size and extent remain unknown. All known records exist within the Wet Tropic region.	Potential	Suitable habitat may occur in vine forests on granite. No species records within 20 km (ALA).
Tephrosia leveillei	-	-	V	Recorded growing on alluvial plains in *Eucalyptus cullenii* woodland with *Corymbia erythrophloia, Erythrophleum chlorostachys* and *Grevillea glauca*, and in tall open forest of *Eucalyptus* and *Corymbia* species over dense *Heteropogon contortus* on red sand. Current known distribution between Chillagoe and Forty Mile Scrub as well as further south, near Ravenswood.	Unlikely	Suitable alluvial plains with red sandy soils is not available within the survey area, and no species records within 20km (ALA). The closest records are near Georgetown and west of Cairns.
Threatened Ecological Communities						
Broad leaf tea-tree (*Melaleuca viridiflora*) woodlands in high rainfall coastal north Queensland		-	E	Broad leaf tea-tree *(Melaleuca viridiflora)* dominated woodland restricted to the Wet Tropics and Central Mackay Coast bioregions in Queensland. The structure includes a canopy of broad leaf tea-tree and a diverse ground layer of grasses, sedges and forbs. Corresponds with RE	Unlikely	The survey area is at the very western extent of this TEC. An area of vegetation was ground-truthed as RE7.3.8x, however the broad leaf tea-tree was not considered dominant.

Scientific Name	Common Name	NC Act Status*	EPBC Act Status*	Habitat Description+	Likelihood	Justification
				7.3.8a, RE7.3.8b, RE7.3.8d, and RE7.5.4g in correct condition.		

* CE – Critically Endangered, E – Endangered, V – Vulnerable, NT – Near Threatened, Mi – Migratory, Ma – Marine

+ Habitat descriptions have been sourced from DoEE Species Profiles and Threats Database and DES WetlandInfo Database.

Note: marine species have been omitted from the likelihood table.

Appendix D Regional ecosystems in the survey area

RE	Description	Structural Category	VM Act status	Area in survey area (ha)
7.12.16a	Simple notophyll vine forest on wet and moist uplands, granite and rhyolite. Uplands of the cloudy wet to moist rainfall zones. Granite and rhyolite.	Dense	Least Concern	1.3
7.12.24a	*Eucalyptus portuensis, Corymbia intermedia, E. drepanophylla, E. platyphylla, E. tereticornis, C. tessellaris, Lophostemon suaveolens, Syncarpia glomulifera* open forest to woodland. Foothills, of the wet and moist rainfall zones.	Mid-dense	Least Concern	381.2
7.12.29	*Corymbia intermedia* and/or Lophostemon suaveolens open forest to woodland +/- areas of *Allocasuarina littoralis* and *A. torulosa* on uplands on granite and rhyolite	Mid-dense	Least Concern	674.8
7.12.29a	*Corymbia intermedia, Eucalyptus tereticornis, E. drepanophylla* open forest to low open forest and woodland with *Allocasuarina torulosa*, *A. littoralis, Lophostemon suaveolens, Acacia cincinnata, A. flavescens, Banksia aquilonia* and *Xanthorrhoea johnsonii*. Uplands, on granite and rhyolite.	Mid-dense	Least Concern	205.8
7.12.29b	*Corymbia intermedia, Allocasuarina torulosa, Lophostemon suaveolens* open forest and woodland. Uplands, of the moist rainfall zone, on granite and rhyolite.	Mid-dense	Least Concern	1351.1
7.12.29c	*Lophostemon suaveolens* woodland and open forest. Uplands, of the moist rainfall zone, on granite and rhyolite. Floodplain (other than floodplain wetlands).	Mid-dense	Least Concern	0.4
7.12.2e	Notophyll to mesophyll vine forest with *Archontophoenix alexandrae* (feather palm). Swamps on granite. Palustrine wetland (e.g. vegetated swamp).	Dense	Of Concern	1.3
7.12.30a	*Corymbia citriodora, Eucalyptus portuensis, C. intermedia, Syncarpia glomulifera* woodland to low woodland to open forest with *Callitris intratropica, Acacia calyculata* and *Xanthorrhoea johnsonii*. Uplands and highlands, of the moist and dry rainfall zones.	Sparse	Least Concern	1144.0
7.12.34	*Eucalyptus portuensis* (white mahogany) and/or *E. drepanophylla* (ironbark), +/- *C. intermedia* (pink bloodwood) +/- *C. citriodora* (lemon-scented gum), +/- *E. granitica* (granite ironbark) open woodland to open forest. Uplands on granite, of the dry rainfall zone.	Sparse	Least Concern	1915.9
7.12.35	*Eucalyptus portuensis* (white mahogany), *E. tereticornis* (forest red gum), *Corymbia intermedia* (pink bloodwood) woodland. Extensive dissected granites and rhyolites in the Kirrama - Oak Hills area.	*Sparse*	Of Concern	98.3
7.12.60a	*Melaleuca viridiflora* woodland. Granite and rhyolite. Floodplain (other than floodplain wetlands).	*Sparse*	Of Concern	8.3
7.12.60b	*Corymbia clarksoniana*, and/or *C. intermedia*, +/- *Lophostemon suaveolens* open woodland to low open woodland with a prominent secondary tree layer of *Melaleuca viridiflora*, and often with *Xanthorrhoea johnsonii* in the ground stratum. Granite and rhyolite. Floodplain (other than floodplain wetlands).	*Sparse*	Of Concern	32.9

RE	Description	Structural Category	VM Act status	Area in survey area (ha)
7.12.61a	*Eucalyptus tereticornis* open forest to tall open forest and woodland. Includes communities ranging from those dominated by *E. tereticornis* to mixtures of that species with *Corymbia intermedia, E. drepanophylla, Lophostemon suaveolens* and *Allocasuarina torulosa*. Foothills and uplands on granite and rhyolite, of the moist and dry rainfall zones.	*Sparse*	Least Concern	4.2
7.12.65b	Rock pavement communities of the dry rainfall zone with *Acacia leptostachya, Eucalyptus lockyeri* subsp. *exuta*, *Lophostemon confertus*, *L. suaveolens, Persoonia falcata, Ficus rubiginosa* and *Allocasuarina inophloia*. Far northern areas including Adeline Creek.	Other	Least Concern	156.4
7.12.65c	Low woodland and shrubland complex with *Lophostemon suaveolens, Corymbia citriodora, Eucalyptus lockyeri* subsp. *exuta, E. granitica, E. drepanophylla* and *E. portuensis*. Shrubs often occur in clumps or groves either as an understorey or scattered shrubland communities within the type and include *Lophostemon suaveolens, L. confertus, Acacia leptostachya, Allocasuarina inophloia* and *Melaleuca viridiflora*. Dry rainfall zone areas of abundant surface rock and shallow or skeletal soils.	Other	Least Concern	271.9
7.12.65k	Granite and rhyolite rock outcrop, of dry western areas, associated with shrublands to closed forests of *Acacia* spp. and/or *Lophostemon* spp. and/or *Allocasuarina* spp. In the Mount Emerald area, shrubs may include *Acacia umbellata, Melaleuca borealis, Homoranthus porteri, Leptospermum neglectum, Melaleuca recurva, Melaleuca uxorum, Grevillea glossadenia, Corymbia abergiana, Eucalyptus lockyeri, Sannantha angusta, Pseudanthus ligulatus* subsp*. ligulatus, Acacia aulacocarpa, Leptospermum amboinense, Xanthorrhoea johnsonii* and *Jacksonia thesioides*. Ground-cover species may include *Borya septentrionalis, Lepidosperma laterale, Eriachne* spp., *Cleistochloa subjuncea, Boronia occidentalis, Cheilanthes spp., Coronidium newcastlianum, Schizachyrium spp., Tripogon loliiformis, Gonocarpus acanthocarpus* and *Eragrostis* spp. Dry western areas. Granite and rhyolite.	Other	Least Concern	1.1
7.12.66b	*Lophostemon confertus* shrubland. Exposed rocky slopes on granite and rhyolite.	Mid-dense	Of Concern	0.8
7.12.69b	*Eucalyptus drepanophylla, Corymbia clarksoniana* low woodland, with mixed Acacia spp. Uplands, of the dry rainfall zone.	Sparse	Of Concern	35.0
7.3.19a	*Corymbia intermedia, Eucalyptus tereticornis, E. drepanophylla, Allocasuarina torulosa, A. littoralis, Lophostemon suaveolens* woodland with *Acacia cincinnata, A. flavescens, Banksia aquilonia* and *Xanthorrhoea johnsonii*. Well-drained alluvium.	Mid-dense	Of Concern	6.0
7.3.26a	*Casuarina cunninghamiana, Eucalyptus tereticornis, Lophostemon suaveolens, Melaleuca leucadendra, M. fluviatilis, Buckinghamia celsissima, Mallotus philippensis* woodland and forest with an understorey of *Melaleuca viminalis* and *Bursaria tenuifolia*. Fringing forests of larger streams. Riverine wetland or fringing riverine wetland.	Mid-dense	Of Concern	27.8
7.3.28d	Unvegetated rock. Creek beds and banks. Riverine wetland or fringing riverine wetland.	Other	Of Concern	2.3
7.3.39a	*Eucalyptus tereticornis* open woodland. Small groves of *E. platyphylla* occur as a lower layer in some areas. Seasonal swamp of broad drainage lines in uplands. Moist rainfall zone. Floodplain (other than floodplain wetlands).	*Very sparse*	Of Concern	2.0

RE	Description	Structural Category	VM Act status	Area in survey area (ha)
7.3.39c	Ephemeral freshwater swamp. Drainage depressions in upland situations. Palustrine wetland (e.g. vegetated swamp).	*Very sparse*	Of Concern	0.2
7.3.43a	*Eucalyptus tereticornis* open forest, tall open forest and woodland including communities ranging from those dominated by *E. tereticornis* to mixtures of that species with *Corymbia intermedia, E. drepanophylla, Lophostemon suaveolens* and *Allocasuarina torulosa*. Uplands on alluvium. Contains palustrine wetland (e.g. in swales).	*Mid-dense*	Of Concern	28.2
7.3.49a	*Tristaniopsis exiliflora* and *Xanthostemon chrysanthus* layered open forest, and closed forest. Common associated species include *Grevillea baileyana, G. hilliana*, and *Blepharocarya involucrigera*. Rubble terraces of streams. Riverine wetland or fringing riverine wetland.	Sparse	Of concern	0.4
7.3.8x	*Melaleuca viridiflora* (broad leaf tea tree) +/- *Eucalyptus* spp. +/- *Lophostemon suaveolens* (swamp mahogany) open forest to open woodland. Humic gleyed texture contrast soils with impeded drainage, on alluvial plains.	*Mid-dense*	Least Concern	1.8
7.5.2	*Eucalyptus portuensis* +/- *Corymbia intermedia*, open forest to woodland of uplands on weathered soils of a remnant surface	*Mid-dense*	Of Concern	137.7
7.5.2a	*Eucalyptus portuensis, Corymbia intermedia, E. tereticornis, Lophostemon suaveolens, Syncarpia glomulifera* open forest and woodland. Laterite.	Mid-dense	Of Concern	1009.2
7.5.2b	*Eucalyptus portuensis, Corymbia intermedia, E. tereticornis, Lophostemon suaveolens, Syncarpia glomulifera* open forest and woodland. Deep weathered soils of basalt origin.	Mid-dense	Of Concern	53.0
7.5.2c	*Eucalyptus portuensis* +/- *Corymbia intermedia* +/- *Corymbia clarksoniana* +/- *Eucalyptus tereticornis* +/- *Lophostemon suaveolens* tall open forest to woodland with a mid-layer of *Acacia flavescens, Allocasuarina torulosa*, and a grassy ground layer. Weathered soils of a remnant surface.	Mid-dense	Of Concern	98.2
7.5.2d	*Eucalyptus portuensis, Corymbia intermedia, E. drepanophylla* woodland to low woodland with *Acacia flavescens* and *Allocasuarina littoralis*. Includes small areas of *Themeda triandra* grassland. Laterite and weathered soils of a remnant surface.	Mid-dense	Of Concern	20.6
7.5.2e	*Corymbia intermedia, Eucalyptus platyphylla, Lophostemon suaveolens, E. drepanophylla* woodland to low woodland with *Melaleuca viridiflora*. Laterite.	Mid-dense	Of Concern	5.7
7.5.3	*Eucalyptus portuensis, Corymbia citriodora*, and *E. drepanophylla* woodland to open forest of uplands on weathered soils of a remnant surface	Sparse	Of Concern	10.3
7.5.3a	*Corymbia citriodora, Eucalyptus portuensis, E. drepanophylla, C. intermedia* woodland to low woodland with *Acacia calyculata* and *Xanthorrhoea johnsonii*. Laterite.	Sparse	Of Concern	42.5

RE	Description	Structural Category	VM Act status	Area in survey area (ha)
7.5.4a	*Corymbia intermedia* +/- *Eucalyptus tereticornis* woodland and open forest with *Allocasuarina torulosa, A. littoralis, Lophostemon suaveolens*, *Acacia flavescens, Banksia aquilonia* and *Xanthorrhoea johnsonii*. Weathered soils and laterite of a remnant surface.	Mid-dense	Of Concern	87.4
7.5.4b	*Corymbia intermedia, Allocasuarina torulosa, Lophostemon suaveolens* woodland and open forest. Laterite.	Mid-dense	Of Concern	65.6
7.5.4c	*Corymbia intermedia* +/- *Eucalyptus tereticornis* +/- *Lophostemon suaveolens* open forest to low open forest with *Allocasuarina torulosa*, *A. littoralis, Acacia flavescens* and *Banksia aquilonia*. Deep weathered soils of basalt origin.	Mid-dense	Of Concern	35.2
7.5.4f	*Corymbia intermedia, Allocasuarina torulosa, Lophostemon suaveolens* open forest and woodland. Deep weathered soils of basalt origin.	Mid-dense	Of Concern	209.4
7.8.10	*Eucalyptus tereticornis* (blue gum), *E. drepanophylla* (or *E. granitica*) (ironbarks), *E. portuensis* (white mahogany), *Corymbia intermedia* (pink bloodwood) woodland to open forest, or *E. moluccana* (gum-topped box) woodland to open forest. Uplands and highlands on basaltic euchrozem-krasnozem, of the dry rainfall zone.	*Sparse*	Of Concern	9.8
7.8.18a	*Corymbia intermedia, Eucalyptus tereticornis, E. granitica* open forest to woodland with *Allocasuarina torulosa, A. littoralis*, *Lophostemon suaveolens, Acacia cincinnata, A. flavescens, Banksia aquilonia* and *Xanthorrhoea johnsonii*. Basalt.	Mid-dense	Of Concern	56.3
7.8.18c	*Corymbia intermedia, Allocasuarina torulosa, Lophostemon suaveolens* open forest to woodland. Basalt.	Mid-dense	Of Concern	77.7
9.11.1a	Low woodland to low open woodland of *Eucalyptus melanophloia* (silver-leaved ironbark) +/- *E. persistens* (box) +/- *E. crebra* (narrow-leaved ironbark) +/- *Corymbia dallachiana* (Dallachy's gum) +/- *C. peltata* (rustyjacket) +/- *E. brownii* (Reid River box) +/- *Acacia julifera* (catkin wattle). *E. shirleyi* (silver-leaved ironbark) may sometimes be dominant. The shrub layer is usually absent but scattered juvenile canopy species, *Petalostigma* spp., *Denhamia cunninghamii* and *Hakea* spp. may occur. The ground layer is dense grassy and includes *Themeda triandra* (kangaroo grass), *Cymbopogon bombycinus* (lemon-scented grass) and *Heteropogon contortus* (black speargrass). Occurs on skeletal soils of slopes and crests of undulating rises and low hills of folded metasediments and other metamorphic rocks.	Sparse	Least Concern	25.9
9.11.2	*Eucalyptus crebra* (or several other ironbark species) +/- Corymbia spp. woodland on shallow texture contrast soils on low metamorphic hills and lowlands	Sparse	Least Concern	129.3
9.11.2a	Woodland to open woodland of *Eucalyptus crebra* (narrow-leaved ironbark) +/- *Corymbia dallachiana* (Dallachy's gum) +/- *C. erythrophloia* (red bloodwood) +/- *C. clarksoniana* (Clarkson's bloodwood) +/- *Eucalyptus* spp. +/- *Corymbia* spp. An open to mid-dense sub-canopy layer can occur and include canopy species, *Bursaria incana* (prickly pine), *Hakea* spp., and *Acacia* spp. The shrub layer is sparse to open and can include canopy species, *Denhamia cunninghamii* (yellowberry bush), *Grewia retusifolia, Erythroxylum australe* (cocaine tree), *Carissa* spp., *Hakea* spp. and *Acacia* spp. The ground layer is grassy and dominated by *Heteropogon contortus* (black speargrass), *Themeda triandra* (kangaroo grass) and *H. triticeus* (giant speargrass). Occurs on metamorphic hills and rises.	Sparse	Least Concern	1724.2

RE	Description	Structural Category	VM Act status	Area in survey area (ha)
9.11.4a	Open forest to open woodland of *Eucalyptus granitica, Corymbia clarksoniana* (Clarkson's bloodwood) and/or *C. intermedia* (pink bloodwood), *C. citriodora* subsp. *citriodora* (lemon-scented gum) +/- *E. portuensis* (white mahogany) +/- *C. dallachiana* (Dallachy's gum) +/- *E. tereticornis* (bluegum). Other ironbark species may also occur, namely *E. crebra, E. drepanophylla* (grey ironbark) in the south and *E. cullenii* (Cullen's ironbark) in the north. An open sub-canopy can occur and include canopy species, *Erythrophleum chlorostachys* (Cooktown ironwood) and *Grevillea glauca* (bushman's clothes peg). The mid-dense shrub layer includes *Acacia flavescens* (yellow wattle), *Grevillea glauca, Petalostigma* spp., *Bursaria incana* (prickly pine) and *Denhamia cunninghamii* (yellowberry bush). *Xanthorrhoea johnsonii* (grass-tree) may also occur in a lower shrub layer. The mid-dense ground layer is grassy and dominated by *Heteropogon contortus* (black speargrass) and *Themeda triandra* (kangaroo grass). Occurs on metamorphic hills.	Mid-dense	Least Concern	1148.9
9.11.5	*Eucalyptus persistens* +/- *E. crebra* woodland on low metamorphic hills	Sparse	Least Concern	110.9
9.11.9	Semi-deciduous vine thicket on metamorphic soils (not limestone)	Dense	Of Concern	5.4
9.12.19	*Eucalyptus crebra* or *E. granitica* +/- *Corymbia citriodora* subsp. *citriodora* +/- *E. portuensis* mixed woodland on igneous hills	Sparse	Least Concern	2852.5
9.12.1a	Woodland to low open woodland of *Eucalyptus crebra* (narrow-leaved ironbark) +/- *Corymbia dallachiana* (Dallachy's gum) +/- *C. erythrophloia* (red bloodwood) +/- *C. clarksoniana* (Clarkson's bloodwood) +/- *Corymbia* spp. *E. exilipes* (fine-leaved ironbark) or *E. granitica* (granite ironbark) can sometimes occur as a dominant. An open sub-canopy can occur with canopy species as well as *Geijera salicifolia* (wilga), *Petalostigma pubescens* (quinine), *Denhamia cunninghamii* (yellowberry bush), *Bursaria incana* (prickly pine) and *Acacia* spp. An open shrub layer usually includes canopy and sub-canopy species and *Carissa lanceolata* (currantbush). The sparse to dense ground layer is dominated by *Heteropogon contortus* (black speargrass) and *Themeda triandra* (kangaroo grass). Occurs on a variety of landforms from undulating plains to steep hills.	Very sparse	Least Concern	5494.8
9.12.1e	Grassland with isolated emergent trees *of Eucalyptus crebra* (sens. lat.) (narrow-leaved ironbark) +/- clumps of shrubs of *Acacia decora* and/or *A. leptostachya* (slender wattle) and/or *Jacksonia thesioides* and/or *Allocasuarina inophloia* (stringybark sheoak). Occurs on granite hills.	Very sparse	Least Concern	14.9
9.12.2	*Eucalyptus portuensis, Corymbia citriodora* subsp. *citriodora, E. granitica* or *E. crebra, C. intermedia* or *C. clarksoniana* mixed woodland on steep hills and ranges on igneous hills close to Wet Tropics boundary	Sparse	Least Concern	4694.4
9.12.21	*Eucalyptus crebra* or *E. drepanophylla* and *Corymbia* spp. open woodland on flat to undulating country on igneous rocks	Very sparse	Of Concern	4.1
9.12.22	*Eucalyptus drepanophylla, Corymbia clarksoniana* or *C. intermedia* and *C. dallachiana* woodland on steep rugged igneous ranges	Sparse	Least Concern	2349.9

RE	Description	Structural Category	VM Act status	Area in survey area (ha)
9.12.4c	Low woodland to low open woodland of and *Eucalyptus shirleyi* (silver-leaved ironbark) and/or *E. melanophloia* (silver-leaved ironbark) and *Callitris intratropica* (cypress pine) +/- *Corymbia peltata* (rustyjacket) +/- *C. leichhardtii* (yellowjacket) +/- *Acacia* spp. A sparse sub-canopy layer can include canopy species, *Dolichandrone alternifolia* (lemonwood), *Alphitonia pomaderroides* and *Petalostigma pubescens* (quinine). The shrub layer contains juvenile canopy species +/- *Xanthorrhoea johnsonii* (grass-tree). Dominants in the grassy ground can include *Schizachyrium fragile* (firegrass), *Themeda triandra* (kangaroo grass) or *Heteropogon* spp. Occurs predominantly on sandy shallow soils derived from granite or rhyolite on rolling low hills to hills.	Very sparse	Least Concern	1.4
9.12.8	Semi-evergreen vine thicket on rocky outcrops and shallow soils of igneous rocks	Dense	Least Concern	1.2
9.12.8a	Semi-evergreen vine thicket (5-10m) commonly containing *Gossia bidwillii* (Python tree), *Gyrocarpus americanus* (helicopter tree), *Drypetes deplanchei* (yellow tulipwood), *Canarium australianum* (scrub turpentine), *Ficus* spp. (figs), *Brachychiton* spp., *Alectryon connatus, Pleiogynium timorense* (Burdekin plum), *Strychnos lucida* (strychnine bush), *Cupaniopsis anacardioides, Callitris intratropica* (cypress pine), *Cochlospermum gillivraei* (kapok) and *Acacia* spp. An emergent layer (10-14 m) is sometimes present and can include *G. americanus, Brachychiton* spp., *Eucalyptus crebra* (narrow-leaved ironbark) and *Callitris intratropica*. An open to dense shrub layer commonly includes *Sersalisia sericea, Carissa ovata* (currant bush), *Capparis* spp. (native orange), *Erythroxylum australe* (cocaine tree) and *Larsenaikia ochreata* (native Gardenia). The ground layer is often bare with a wide range of scattered grasses and forbs. Occurs on granitic or rhyolite outcrops and associated slopes and outwash.	Dense	Least Concern	22.1
9.12.x	Unvegetated rock. Creek beds and banks. Riverine wetland or fringing riverine wetland. There is no RE for this environment in bioregion 9. Here it is analogous to RE 7.3.28d, however it is not alluvial.	Sparse	-	8.7
9.3.1	*Eucalyptus camaldulensis* and/or *E. tereticornis* +/- *Melaleuca* spp. +/- *Casuarina cunninghamiana* fringing woodland on channels and levees	Sparse	Least Concern	170.8
9.3.13	*Melaleuca* spp., *Eucalyptus camaldulensis* and *Casuarina cunninghamiana* fringing open forest on streams and channels	Mid-dense	Least Concern	16.5
9.5.5	*Corymbia clarksoniana, Eucalyptus portuensis, E. crebra* and *C. citriodora* subsp. *citriodora* in mixed open forests on red kandosols on Tertiary surfaces	Mid-dense	Least Concern	133.4
9.5.5a	Mixed woodland to open forest of *Eucalyptus crebra* (narrow-leaved ironbark), *Corymbia clarksoniana* (Clarkson's bloodwood) and *C. citriodora subsp. citriodora* (lemon-scented gum) +/- *E. portuensis* (white mahogany) with a generally open sub-canopy of canopy species +/- *Callitris intratropica* (cypress pine) and *Acacia* spp. The open shrub layer often contains juvenile canopy species, *Petalostigma pubescens* (quinine), *Acacia flavescens* (powder puff wattle) and other *Acacia* spp. *Themeda triandra* (kangaroo grass) is the dominant species in a dense grassy ground layer. Occurs on Tertiary plateaus and remnants.	Mid-dense	Least Concern	213.9

RE	Description	Structural Category	VM Act status	Area in survey area (ha)
9.5.5f	Woodland to open forest of *Corymbia intermedia* (pink bloodwood) +/- *Eucalyptus portuensis* (white mahogany) +/- *E. tereticornis* (bluegum) +/- *Lophostemon suaveolens* (swamp mahogany). A sub-canopy layer and shrub layer often occurs and contain canopy species as well as *Acacia flavescens* (powder puff wattle), *Grevillea glauca* (bushman's clothes peg) and *Melaleuca viridiflora* (broad-leaved paperbark). The moderate to dense grassy cover is usually dominated by *Themeda triandra* (kangaroo grass) or *Mnesithea rottboellioides* (northern canegrass). Occurs on Tertiary sandplains.	Mid-dense	Least Concern	52.7
9.7.3b	Woodland of *Eucalyptus portuensis* (white mahogany) +/- *Corymbia trachyphloia* (brown bloodwood) +/- *C. citriodora* subsp. *citriodora* (lemon-scented gum) +/- *C. clarksoniana* (Clarkson's bloodwood) +/- *C. intermedia* (pink bloodwood) +/- *E. crebra* (narrow-leaved ironbark) +/- *E. howittiana* (Howit's box). A sparse sub-canopy can contain canopy species +/- *Grevillea glauca* (bushman's clothes peg). A sparse to mid-dense shrub layer is often present and includes canopy species, *Acacia* spp. (wattle), *Grevillea* spp. +/- *Pultenaea* spp. There is a mid-dense grassy cover of *Themeda triandra* (kangaroo grass). Occurs on lateritised weathering profiles overlying land zone 11 or 12 geologies and on lateritised edges of granite breakaways and Tertiary plateaus in subregion 6.	Sparse	Least Concern	187.4
9.8.13	*Iseilema* spp. and/or *Dichanthium* spp. tussock grassland on basalt plains	Grassland	Least Concern	18.7
9.8.4a	Woodland to open woodland of *Eucalyptus crebra* (narrow-leaved ironbark) or *E. granitica* (granite ironbark) +/- *Corymbia intermedia* (pink bloodwood) +/- *C. dallachiana* (Dallachy's gum) +/- *C. tessellaris* (Moreton Bay ash). Scattered canopy species and *Lophostemon suaveolens* (swamp mahogany) can sometimes occur in the sub-canopy. The shrub layer is absent to sparse. The ground layer is dense and grassy and is dominated by *Themeda triandra* (kangaroo grass) and *Heteropogon contortus* (black speargrass). Occurs on basalt plains and rocky basalt plains and hills with varying depths of soil.	Very sparse	Least Concern	1221.2
9.8.4b	Open woodland to woodland of *Eucalyptus tereticornis* (bluegum) +/- *E. crebra* (narrow-leaved ironbark) +/- *Corymbia dallachiana* (Dallachy's gum) +/- *C. clarksoniana* (Clarkson's bloodwood) +/- *E. leptophleba* (Molloy red box) +/- *C. tessellaris* (Moreton Bay ash). The mid-layer is absent to occasionally scattered plants. The ground layer is densely grassy and includes *Heteropogon contortus* (black speargrass) and/or *Dichanthium* spp. Occurs on basalt plains and rocky basalt plains and hills with varying depths of soil.	Very sparse	Least Concern	12.1
9.8.4c	Open woodland to woodland of *Eucalyptus moluccana* (gum-topped box) +/- *E. crebra* (sens. lat.) (narrow-leaved ironbark) +/- *E. platyphylla* (poplar gum). A very open sub-canopy containing canopy species often occurs. There is no shrub layer though there can be scattered canopy species and *Denhamia cunninghamii* (yellowberry bush). The grassy ground layer is dominated by *Heteropogon contortus* (black speargrass). Occurs on basalt plains and rocky basalt plains and hills with varying depths of soil.	Very sparse	Least Concern	2.9
9.8.7	Semi-evergreen vine thicket on cones, craters and rocky basalt flows with little soil development	Dense	Least Concern	6.3

RE	Description	Structural Category	VM Act status	Area in survey area (ha)
9.8.7x	Semi-evergreen vine thicket with many codominant species, many vines and without clearly defined layers. Includes *Gyrocarpus americanus* (helicopter tree), *Brachychiton australis* (bottle tree), *Pleiogynium timorense* (Burdekin plum), *Bridelia leichhardtii, Psydrax odorata, Cupaniopsis anacardioides, Diospyros humilis* and *Homalium brachybotrys*. Can occur as a closed forest with *Alstonia scholaris* (milky pine), *Terminalia sericocarpa* (damsonwood), *Nauclea orientalis* (Leichhardt tree), *Ficus racemosa* (cluster fig) and *F. virens* (strangler fig) on creeks and around springs or as an open woodland of *Corymbia tessellaris* (Moreton Bay ash) and/or *Eucalyptus tereticornis* (bluegum) with an open mid layer of vine thicket species. Occurs on lava flows, cones and craters and rocky substrates with no soil development on Quaternary and Tertiary basalts. NB the variant in the survey area is not strictly analogous to either of the two communities listed under this RE, in that it contains a tall (to 26 m) emergent layer of *Argyrodendron trifoliolatum*. It occurs on a rocky lava slope above Four-Mile Creek.	Dense	Least Concern	1.1
Non-remnant	Non-remnant	NA	NA	140.6

Appendix E Flora species list

Species	Family	VM Act status	EPBC Act status	7.12.16a	7.12.24	7.12.24a	7.12.29a	7.12.29b	7.12.2e	7.12.30	7.12.30a	7.12.34	7.12.35	7.12.60b	7.12.61a	7.12.65b	7.12.65c	7.3.26a	7.3.28d	7.3.8x	7.5.2a	7.5.3	7.5.4b	7.8.18c	7.8.7a	9.11.2	9.11.2a/9.11.4a	9.11.4a	9.12.19	9.12.19	9.12.1a (9.12.2)	9.12.2	9.12.21	9.12.4c	9.3.1	9.5.5a	9.8.4a	9.8.4c	9.8.7	9.8.7x
Abutilon auritum	Malvaceae	LC	-																																				y
Acacia aulacocarpa	Mimosaceae	LC	-																	y															y					
Acacia auriculiformis	Mimosaceae	LC	-																	y																				
Acacia calyculata	Mimosaceae	LC	-							y			y			y	y												y	y		y		y		y		y		
Acacia celsa	Mimosaceae	LC	-	y					y																				y											
Acacia cincinnata	Mimosaceae	LC	-												y																									
Acacia decora	Mimosaceae	LC	-																								y													
Acacia excelsa	Mimosaceae	LC	-																								y	y												
Acacia flavescens	Mimosaceae	LC	-		y	y	y			y		y	y			y	y		y	y	y	y	y	y						y		y			y		y		y
Acacia gonoclada	Mimosaceae	LC	-														y																							
Acacia granitica	Mimosaceae	LC	-																													y							
Acacia hemignosta	Mimosaceae	LC	-																											y									
Acacia implexa	Mimosaceae	LC	-																																		y		
Acacia juncifolia	Mimosaceae	LC	-																																				
Acacia leptostachya	Mimosaceae	LC	-													y	y													y			y				y		
Acacia longispicata	Mimosaceae	LC	-																								y												
Acacia polystachya	Mimosaceae	LC	-					y							y																								
Acacia simsii	Mimosaceae	LC	-																													y							
Acacia sp.	Mimosaceae	-	-																								y										y		
Acacia umbellata	Mimosaceae	LC	-																											y									
Acacia whitei	Mimosaceae	LC	-																									y											
Acrotriche aggregata	Ericaceae	LC	-																			y																	
*Ageratum conyzoides**	Asteraceae	-	-												y																					y				

Species	Family	VM Act status	EPBC Act status	7.12.16a	7.12.24	7.12.24a	7.12.29a	7.12.29b	7.12.2e	7.12.30	7.12.30a	7.12.34	7.12.35	7.12.60b	7.12.61a	7.12.65b	7.12.65c	7.3.26a	7.3.28d	7.3.8x	7.5.2a	7.5.3	7.5.4b	7.8.18c	7.8.7a	9.11.2	9.11.2a/9.11.4a	9.11.4a	9.12.19	9.12.19	9.12.1a (9.12.2)	9.12.2	9.12.21	9.12.4c	9.3.1	9.5.5a	9.8.4a	9.8.4c	9.8.7	9.8.7x
Alectryon connatus	Sapindaceae	LC	-																																				y
Alectryon tomentosus	Sapindaceae	LC	-																																				y
Allocasuarina littoralis	Casuarinaceae	LC	-		y		y	y				y	y	y			y		y	y	y										y								
Allocasuarina torulosa	Casuarinaceae	LC	-		y		y	y		y			y								y	y	y	y																
Alphitonia excelsa	Rhamnaceae	LC	-		y		y	y	y			y					y			y	y		y							y									y	y
Alphitonia pomaderroides	Rhamnaceae	LC	-							y			y											y								y		y			y			
Alpinia caerulea	Zingiberaceae	LC	-	y																																				
Alstonia muelleriana	Apocynaceae	LC	-	y	y		y	y	y			y					y				y																			
Alternanthera nodiflora	Amaranthaceae	LC	-														y																							
Alyxia ruscifolia	Apocynaceae	LC	-																																				y	y
Alyxia spicata	Apocynaceae	LC	-															y														y								
Ancistrachne uncinulata	Poaceae	LC	-																																					y
Apowollastonia sp.	Asteraceae	-	-																						y															
Archidendron vaillantii	Mimosaceae	LC	-						y																															
Archontophoenix alexandrae	Arecaceae	LC	-	y					y																															
*Argemone ochroleuca**	Papaveraceae	-	-																																y					
Argyrodendron trifoliolatum	Sterculiaceae	LC	-																																					y

Species	Family	VM Act status	EPBC Act status	7.12.16a	7.12.24	7.12.24a	7.12.29a	7.12.29b	7.12.2e	7.12.30	7.12.30a	7.12.34	7.12.35	7.12.60b	7.12.61a	7.12.65b	7.12.65c	7.3.26a	7.3.28d	7.3.8x	7.5.2a	7.5.3	7.5.4b	7.8.18c	7.8.7a	9.11.2	9.11.2a/9.11.4a	9.11.4a	9.12.19	9.12.19	9.12.1a (9.12.2)	9.12.2	9.12.21	9.12.4c	9.3.1	9.5.5a	9.8.4a	9.8.4c	9.8.7	9.8.7x
Aristida hygrometrica	Poaceae	LC	-											y																									
Aristida queenslandica var. *queenslandica*	Poaceae	LC	-							y		y	y	y		y									y		y	y	y		y						y		
Aristida sp.	Poaceae	-	-																											y							y	y
Arundinella nepalensis	Poaceae	LC	-									y																				y							
Arundinella setosa	Poaceae	LC	-										y			y				y											y		y						
Arytera divaricata	Sapindaceae	LC	-						y																														
Arytera pauciflora	Sapindaceae	LC	-								y																												
*Asclepias curassavica**	Asclepiadaceae	-	-																															y					
Asplenium nidus	Aspleniaceae	LC	-	y																																			
Asteraceae sp.	Asteraceae	-	-													y										y													
Austrosteenisia blackii	Fabaceae	LC	-																																				y
Banksia aquilonia	Proteaceae	LC	-				y					y								y											y							
*Bidens pilosa**	Asteraceae	-	-																			y																
Blechnum cartilagineum	Blechnaceae	LC	-						y																														
Blechnum parrisiae	Blechnaceae	-	-																	y																			
Bossiaea armitii	Fabaceae	LC	-																									y											
Bothriochloa bladhii	Poaceae	LC	-																												y								
Brachychiton australis	Sterculiaceae	LC	-																												y								
Breynia cernua	Euphorbiaceae	LC	-																												y								

Species	Family	VM Act status	EPBC Act status	7.12.16a	7.12.24	7.12.24a	7.12.29a	7.12.29b	7.12.2e	7.12.30	7.12.30a	7.12.34	7.12.35	7.12.60b	7.12.61a	7.12.65b	7.12.65c	7.3.26a	7.3.28d	7.3.8x	7.5.2a	7.5.3	7.5.4b	7.8.18c	7.8.7a	9.11.2	9.11.2a/9.11.4a	9.11.4a	9.12.19	9.12.19	9.12.1a (9.12.2)	9.12.2	9.12.21	9.12.4c	9.3.1	9.5.5a	9.8.4a	9.8.4c	9.8.7	9.8.7x
Breynia oblongifolia	Euphorbiaceae	LC	-			y	y			y		y							y				y	y			y	y	y	y		y		y					
Bridelia leichhardtii	Euphorbiaceae	LC	-																																				y
Brunoniella australis	Acanthaceae	LC	-					y					y																											
Buckinghamia celsissima	Proteaceae	LC	-	y																																			
Bursaria incana	Rutaceae	LC	-							y		y					y		y													y							
Bursaria tenuifolia	Rutaceae	LC	-																	y																			
Cajanus reticulatus	Fabaceae	LC	-																																				
Caladenia carnea	Orchidaceae	LC	-																																				
Calamus australis	Arecaceae	LC	-	y					y																														
Calamus moti	Arecaceae	LC	-	y																																			
Callicoma pedunculata	Lamiaceae	LC	-				y																																
Camptacra barbata	Asteraceae	LC	-							y		y																y			y								
Capparis canescens	Capparaceae	LC	-																							y													
Cardwellia sublimis	Proteaceae	LC	-	y																																			
Carex appressa	Cyperaceae	LC	-																	y																			
Carnarvonia araliifolia	Proteaceae	LC	-	y																																			
Cassytha filiformis	Lauraceae	LC	-																									y											
Casuarina cunninghamiana	Casuarinaceae	LC	-												y					y															y					
Cayratia clematidea	Vitaceae	LC	-																																				y
Cayratia saponaria	Vitaceae	LC	-																																				
*Centratherum punctatum**	Asteraceae	LC	-																	y															y					

Species	Family	VM Act status	EPBC Act status	7.12.16a	7.12.24	7.12.24a	7.12.29a	7.12.29b	7.12.2e	7.12.30	7.12.30a	7.12.34	7.12.35	7.12.60b	7.12.61a	7.12.65b	7.12.65c	7.3.26a	7.3.28d	7.3.8x	7.5.2a	7.5.3	7.5.4b	7.8.18c	7.8.7a	9.11.2	9.11.2a/9.11.4a	9.11.4a	9.12.19	9.12.19	9.12.1a (9.12.2)	9.12.2	9.12.21	9.12.4c	9.3.1	9.5.5a	9.8.4a	9.8.4c	9.8.7	9.8.7x
*Chamaecrista rotundifolia**	Caesalpiniaceae	LC	-							y																					y								
Cheilanthes brownii	Pteridaceae	LC	-														y																						
Cheilanthes nudiuscula	Pteridaceae	LC	-													y																							
Cheilanthes sieberi	Pteridaceae	LC	-													y	y																						
Cheilanthes sp.	Pteridaceae	-	-														y																						
Chionachne ramiflorus	Poaceae	LC	-																	y																			
Chrysocephalum apiculatum	Asteraceae	LC	-							y			y														y	y			y		y						
Chrysopogon filipes	Poaceae	LC	-																															y					
Cissus antarctica	Vitaceae	LC	-				y	y																															
Cissus hypoglauca	Vitaceae	LC	-				y		y																														
Cissus oblonga	Vitaceae	LC	-																															y					y
*Citrus limon**	Rutaceae	-	-																															y					
Clerodendrum floribundum	Lamiaceae	LC	-							y						y	y			y												y						
Coelospermum reticulatum	Rubiaceae	LC	-							y			y										y	y							y						y		
Coleus mirus	Lamiaceae	LC	-													y																							
Coleus sp. 2	Lamiaceae	-	-																																				y
Commersonia bartramia	Byttneriaceae	LC	-																					y															
Commersonia reticulata	Byttneriaceae	V																													y							
Cordyline rubra	Laxmanniaceae	LC	-	y					y																														

Species	Family	VM Act status	EPBC Act status	7.12.16a	7.12.24	7.12.24a	7.12.29a	7.12.29b	7.12.2e	7.12.30	7.12.30a	7.12.34	7.12.35	7.12.60b	7.12.61a	7.12.65b	7.12.65c	7.3.26a	7.3.28d	7.3.8x	7.5.2a	7.5.3	7.5.4b	7.8.18c	7.8.7a	9.11.2	9.11.2a/9.11.4a	9.11.4a	9.12.19	9.12.19	9.12.1a (9.12.2)	9.12.2	9.12.21	9.12.4c	9.3.1	9.5.5a	9.8.4a	9.8.4c	9.8.7	9.8.7x
Coronidium rupicola	Asteraceae	LC	-							y		y																											
Corymbia citriodora var. *citriodora*	Myrtaceae	LC	-							y		y										y					y				y		y		y		y		
Corymbia clarksoniana	Myrtaceae	LC	-																												y								
Corymbia dallachiana	Myrtaceae	LC	-																						y	y												y	
Corymbia erythrophloia	Myrtaceae	LC	-																						y	y											y	y	
Corymbia intermedia	Myrtaceae	LC	-		y	y	y	y		y		y	y	y		y	y		y		y	y	y	y							y	y			y				
Corymbia lamprophylla	Myrtaceae	LC	-																																				
Corymbia leichhardtii	Myrtaceae	LC	-									y					y											y	y		y		y						
Corymbia peltata	Myrtaceae	LC	-													y																							
Corymbia tessellaris	Myrtaceae	LC	-																	y				y		y				y									y
*Crassocephalum crepidioides**	Asteraceae	-	-																	y																		
Crotalaria brevis	Fabaceae	LC	-														y																					
Crotalaria medicaginea	Fabaceae	LC	-																						y													
Cryptocarya laevigata	Lauraceae	LC	-	y																																		
Cryptocarya mackinnoniana	Lauraceae	LC	-						y																													
Cryptocarya vulgaris	Lauraceae	LC	-	y					y																													
Cucumis althaeoides	Cucurbitaceae	LC	-																																			

Species	Family	VM Act status	EPBC Act status	7.12.16a	7.12.24	7.12.24a	7.12.29a	7.12.29b	7.12.2e	7.12.30	7.12.30a	7.12.34	7.12.35	7.12.60b	7.12.61a	7.12.65b	7.12.65c	7.3.26a	7.3.28d	7.3.8x	7.5.2a	7.5.3	7.5.4b	7.8.18c	7.8.7a	9.11.2	9.11.2a/9.11.4a	9.11.4a	9.12.19	9.12.19	9.12.1a (9.12.2)	9.12.2	9.12.21	9.12.4c	9.3.1	9.5.5a	9.8.4a	9.8.4c	9.8.7	9.8.7x
Cupaniopsis anacardioides	Sapindaceae	LC	-																																			y	
Cupaniopsis foveolata	Sapindaceae	LC	-	y																																			
Cyanthillium cinereum	Asteraceae	LC	-		y							y		y			y											y			y								
Cyathea woollsiana	Cyatheaceae	LC	-																	y																			
Cymbidium canaliculatum	Orchidaceae	LC	-																							y													
Cymbidium madidum	Orchidaceae	LC	-										y																										
Cynodon dactylon	Poaceae	LC	-																																				
Cyperaceae sp. 1	Cyperaceae	-	-																																				
Cyperaceae sp. 2	Cyperaceae	-	-																																				
Cyperaceae sp. 3	Cyperaceae	-	-																	y																			
Cyperus cuspidatus	Cyperaceae	LC	-													y																							
Cyperus exaltatus	Cyperaceae	LC	-																	y															y				
Cyperus gracilis	Cyperaceae	LC	-										y																		y								
Cyperus sp. 1	Cyperaceae	LC	-											y		y																y			y				
Delarbrea michieana	Myodocarpaceae	LC	-	y					y																														
Dendrocnide moroides	Urticaceae	LC	-						y																														
Denhamia oleaster	Celastraceae	LC	-			y		y		y		y				y	y							y		y		y	y		y		y				y		
Derris sp.	Fabaceae	LC	-						y																														
Desmodium rhytidophyllum	Fabaceae	LC	-							y			y													y					y								

Species	Family	VM Act status	EPBC Act status	7.12.16a	7.12.24	7.12.24a	7.12.29a	7.12.29b	7.12.2e	7.12.30	7.12.30a	7.12.34	7.12.35	7.12.60b	7.12.61a	7.12.65b	7.12.65c	7.3.26a	7.3.28d	7.3.8x	7.5.2a	7.5.3	7.5.4b	7.8.18c	7.8.7a	9.11.2	9.11.2a/9.11.4a	9.11.4a	9.12.19	9.12.19	9.12.1a (9.12.2)	9.12.2	9.12.21	9.12.4c	9.3.1	9.5.5a	9.8.4a	9.8.4c	9.8.7	9.8.7x
Dianella caerulea	Hemerocallidaceae	LC	-		y		y	y				y	y				y		y					y		y				y	y				y		y		
Dianella longifolia	Hemerocallidaceae	LC	-							y			y								y		y				y				y			y					
Dianella nervosa	Hemerocallidaceae	LC	-																														y						
Digitaria nematostachya	Poaceae	LC	-									y				y											y		y					y					
Diploglottis diphyllostegia	Sapindaceae	LC	-	y					y																														
Dodonaea lanceolata subsp. *subsessilifolia*	Sapindaceae	LC	-							y																	y										y		
Dodonaea sp.	Sapindaceae	-	-														y																				y		
Dodonaea viscosa	Sapindaceae	LC	-													y												y											
Drosera lunata	Droseraceae	LC	-													y																							
Drosera serpens	Droseraceae	LC	-																												y								
Drosera spatulata	Droseraceae	LC	-																	y																			
Drynaria rigidula	Polypodiaceae	LC	-													y															y								
Drypetes deplanchei	Putranjivaceae	LC	-																																				y
Drypetes sp.	Putranjivaceae	-	-																																				y
Elaeagnus triflora	Elaeagnaceae	LC	-						y																														
Elaeocarpus eumundi	Elaeocarpaceae	LC	-	y																																			
Elaeocarpus grandis	Elaeocarpaceae	LC	-	y					y																														
Elaeodendron melanocarpum	Celastraceae	LC	-																																				y

Species	Family	VM Act status	EPBC Act status	7.12.16a	7.12.24	7.12.24a	7.12.29a	7.12.29b	7.12.2e	7.12.30	7.12.30a	7.12.34	7.12.35	7.12.60b	7.12.61a	7.12.65b	7.12.65c	7.3.26a	7.3.28d	7.3.8x	7.5.2a	7.5.3	7.5.4b	7.8.18c	7.8.7a	9.11.2	9.11.2a/9.11.4a	9.11.4a	9.12.19	9.12.19	9.12.1a (9.12.2)	9.12.2	9.12.21	9.12.4c	9.3.1	9.5.5a	9.8.4a	9.8.4c	9.8.7	9.8.7x
Emilia sonchifolia	Asteraceae	LC	-		y								y										y								y	y		y					
Enneapogon polyphyllus	Poaceae	LC	-																							y													
Enneapogon sp.	Poaceae	-	-													y															y								
Entolasia stricta	Poaceae	LC	-		y		y	y		y		y	y				y				y		y	y				y		y	y				y		y		
*Eragrostis cilianensis**	Poaceae	-	-																												y								
Eragrostis elongata	Poaceae	LC	-																												y								
Eragrostis pubescens	Poaceae	LC	-		y								y										y		y														
Eragrostis schultzii	Poaceae	LC	-																																				
Eremochloa bimaculata	Poaceae	LC	-							y																y					y ?								
Eremophila mitchellii	Scrophulariaceae	LC	-																																	y			
Eriachne pallescens	Poaceae	LC	-											y																									
*Erigeron bonariensis**	Asteraceae	-	-				y																																
*Erigeron canadensis**	Asteraceae	-	-													y																							
Eriocaulon nanum	Eriocaulaceae	LC	-																												y								
Eucalyptus crebra	Myrtaceae	LC	-			y				y		y	y				y							y		y	y	y		y	y	y	y						y
Eucalyptus drepanophylla	Myrtaceae	LC	-																																				
Eucalyptus granitica	Myrtaceae	LC	-													y	y																						
Eucalyptus lockyeri	Myrtaceae	LC	-													y	y												y										
Eucalyptus moluccana	Myrtaceae	LC	-																																		y		

Species	Family	VM Act status	EPBC Act status	7.12.16a	7.12.24	7.12.24a	7.12.29a	7.12.29b	7.12.2e	7.12.30	7.12.30a	7.12.34	7.12.35	7.12.60b	7.12.61a	7.12.65b	7.12.65c	7.3.26a	7.3.28d	7.3.8x	7.5.2a	7.5.3	7.5.4b	7.8.18c	7.8.7a	9.11.2	9.11.2a/9.11.4a	9.11.4a	9.12.19	9.12.19	9.12.1a (9.12.2)	9.12.2	9.12.21	9.12.4c	9.3.1	9.5.5a	9.8.4a	9.8.4c	9.8.7	9.8.7x
Eucalyptus platyphylla	Myrtaceae	LC	-																						y							y							
Eucalyptus portuensis	Myrtaceae	LC	-		y	y		y		y		y	y			y	y		y			y									y				y		y	
Eucalyptus tereticornis	Myrtaceae	LC	-		y		y					y	y	y	y				y		y		y								y			y				
Eucalyptus sp. *shirleyi/melanophloia*	Myrtaceae	LC	-																									y	y				y					
Eupomatia laurina	Eupomatiaceae	LC	-	y					y																														
Euroschinus falcata	Anacardiaceae	LC	-							y							y																						
Eustrephus latifolius	Laxmanniaceae	LC	-				y	y				y				y	y													y							y		
Exocarpos latifolius	Santalaceae	LC	-																																				y
Ficinia nodosa	Cyperaceae	LC	-																	y																			
Ficus congesta	Moraceae	LC	-						y											y																			
Ficus copiosa	Moraceae	LC	-						y																														
Ficus coronata	Moraceae	LC	-					y	y						y								y																
Ficus drupacea	Moraceae	LC	-	y																																			
Ficus fraseri	Moraceae	LC	-						y																														
Ficus fraseri	Moraceae	LC	-	y																																			
Ficus obliqua	Moraceae	LC	-																										y										
Ficus opposita	Moraceae	LC	-																					y															
Ficus rubiginosa	Moraceae	LC	-									y	y																		y	y							
Ficus virens	Moraceae	LC	-																																				y
Fimbristylis nutans	Cyperaceae	LC	-																	y															y				

Species	Family	VM Act status	EPBC Act status	7.12.16a	7.12.24	7.12.24a	7.12.29a	7.12.29b	7.12.2e	7.12.30	7.12.30a	7.12.34	7.12.35	7.12.60b	7.12.61a	7.12.65b	7.12.65c	7.3.26a	7.3.28d	7.3.8x	7.5.2a	7.5.3	7.5.4b	7.8.18c	7.8.7a	9.11.2	9.11.2a/9.11.4a	9.11.4a	9.12.19	9.12.19	9.12.1a (9.12.2)	9.12.2	9.12.21	9.12.4c	9.3.1	9.5.5a	9.8.4a	9.8.4c	9.8.7	9.8.7x
Flagellaria indica	Flagellariaceae	LC	-	y					y																														
Flemingia parviflora	Fabaceae	LC	-		y			y		y		y	y						y		y			y							y								
Flindersia bennettiana	Rutaceae	LC	-	y					y																														
Flindersia bourjotiana	Rutaceae	LC	-	y					y																														
Flindersia pimenteliana	Rutaceae	LC	-	y																																			
Flueggea leucopyrus	Phyllanthaceae	LC	-					y																		y													
Flueggea virosa	Phyllanthaceae	LC	-									y																											
Freycinetia excelsa	Pandanaceae	LC	-	y					y																														
Gahnia aspera	Cyperaceae	LC	-		y		y	y	y	y		y			y	y			y	y	y		y	y													y		
Gastrolobium grandiflorum	Fabaceae	LC	-																										y		y								
Geitonoplesium cymosum	Hemerocallidaceae	LC	-		y			y																y															
Gleichenia dicarpa	Gleicheniaceae	LC	-												y																								
Glochidion ferdinandi	Euphorbiaceae	LC	-						y						y																								
Glycine tomentella	Fabaceae	LC	-																																y				
Gmelina fasciculiflora	Lamiaceae	LC	-	y																																			
Goodenia sp.	Goodeniaceae	-	-											y																									
Gossia bidwillii	Myrtaceae	LC	-																																				y
Grevillea glauca	Proteaceae	LC	-																									y											
Grevillea parallela	Proteaceae	LC	-														y									y													
Grevillea sp.	Proteaceae	-	-														y																						

Species	Family	VM Act status	EPBC Act status	7.12.16a	7.12.24	7.12.24a	7.12.29a	7.12.29b	7.12.2e	7.12.30	7.12.30a	7.12.34	7.12.35	7.12.60b	7.12.61a	7.12.65b	7.12.65c	7.3.26a	7.3.28d	7.3.8x	7.5.2a	7.5.3	7.5.4b	7.8.18c	7.8.7a	9.11.2	9.11.2a/9.11.4a	9.11.4a	9.12.19	9.12.19	9.12.1a (9.12.2)	9.12.2	9.12.21	9.12.4c	9.3.1	9.5.5a	9.8.4a	9.8.4c	9.8.7	9.8.7x
Grevillea striata	Proteaceae	LC	-																							y													
Grewia latifolia	Sparrmanniaceae	LC	-																							y													
Grewia retusifolia	Sparrmanniaceae	LC	-																						y		y		y		y	y							
Guioa acutifolia	Sapindaceae	LC	-				y								y																								
Hakea lorea	Proteaceae	LC	-																							y													
Hakea sp.	Proteaceae	LC	-																		y					y													
Hardenbergia violacea	Fabaceae	LC	-							y											y			y							y								
Heteropogon contortus	Poaceae	LC	-			y				y		y	y	y		y							y	y		y	y				y	y	y	y	y		y		
Heteropogon triticeus	Poaceae	LC	-			y		y		y		y	y				y		y				y	y		y	y		y			y	y	y					
Hibbertia sp.	Dilleniaceae	LC	-														y																						
Hibiscus diversifolius	Malvaceae	LC	-																									y											
Hibiscus meraukensis	Malvaceae	LC	-														y														y		y						
Hybanthus monopetalus	Violaceae	LC	-										y																										
Hydrocotyle sp.	Araliaceae	-	-																	y																			
Imperata cylindrica	Poaceae	LC	-		y	y	y	y		y		y	y		y	y					y			y							y								
Indigofera sp. 1	Fabaceae	LC	-																								y				y				y				
Indigofera sp. 2	Fabaceae	LC	-																														y						
Ischaemum australe	Poaceae	LC	-																	y																			
Jagera pseudorhus	Sapindaceae	LC	-	y												y																						y	y
Jasminum simplicifolium	Oleaceae	LC	-																								y				y				y				

Species	Family	VM Act status	EPBC Act status	7.12.16a	7.12.24	7.12.24a	7.12.29a	7.12.29b	7.12.2e	7.12.30	7.12.30a	7.12.34	7.12.35	7.12.60b	7.12.61a	7.12.65b	7.12.65c	7.3.26a	7.3.28d	7.3.8x	7.5.2a	7.5.3	7.5.4b	7.8.18c	7.8.7a	9.11.2	9.11.2a/9.11.4a	9.11.4a	9.12.19	9.12.19	9.12.1a (9.12.2)	9.12.2	9.12.21	9.12.4c	9.3.1	9.5.5a	9.8.4a	9.8.4c	9.8.7	9.8.7x
Lagenophora gracilis	Asteraceae	LC	-									y					y																						
Lamiaceae sp. 1	Lamiaceae	-	-																	y																			
Lamiaceae sp. 2	Lamiaceae	-	-														y																						
*Lantana camara**	Verbenaceae	-	-			y	y			y		y	y			y			y	y			y			y								y				y	y
Larsenaikia ochreata	Rubiaceae	LC	-																									y			y							y
Lepiderema sericolignis	Sapindaceae	LC	-				y																																
Lepidosperma laterale	Cyperaceae	LC	-				y										y																						
Leptochloa digitata	Poaceae	LC	-							y																		y											
Litsea breviumbellata	Lauraceae	LC	-					y																															
Litsea leefeana	Lauraceae	LC	-						y																														
Litsea sp.	Lauraceae	-	-																	y																			
Lobelia leucotos	Campanulaceae	LC	-																											y									
Lomandra confertiflora	Laxmanniaceae	LC	-							y		y	y																						y				
Lomandra hystrix	Laxmanniaceae	LC	-																															y					
Lomandra longifolia	Laxmanniaceae	LC	-		y	y	y	y		y		y	y		y	y			y	y	y		y	y					y		y	y		y	y			
Lomandra multiflora	Laxmanniaceae	LC	-																																		y		
Lomandra sp.	Laxmanniaceae	LC	-									y																y			y								
Lomatia fraxinifolia	Proteaceae	LC	-	y					y																														
Lophostemon confertus	Myrtaceae	LC	-										y			y	y																						
Lophostemon grandiflorus	Myrtaceae	LC	-																							y								y					

Species	Family	VM Act status	EPBC Act status	7.12.16a	7.12.24	7.12.24a	7.12.29a	7.12.29b	7.12.2e	7.12.30	7.12.30a	7.12.34	7.12.35	7.12.60b	7.12.61a	7.12.65b	7.12.65c	7.3.26a	7.3.28d	7.3.8x	7.5.2a	7.5.3	7.5.4b	7.8.18c	7.8.7a	9.11.2	9.11.2a/9.11.4a	9.11.4a	9.12.19	9.12.19	9.12.1a (9.12.2)	9.12.2	9.12.21	9.12.4c	9.3.1	9.5.5a	9.8.4a	9.8.4c	9.8.7	9.8.7x
Lophostemon suaveolens	Myrtaceae	LC	-		y	y				y		y	y		y	y			y	y	y		y	y				y			y								
Lotus australis	Fabaceae	LC	-																							y											y		
Lygodium reticulatum	Lygodiaceae	LC	-						y																															
Lysiphyllum hookeri	Caesalpiniaceae	LC	-																																					y
Macaranga tanarius	Euphorbiaceae	LC	-																																					y
*Macroptilium atropurpureum**	Fabaceae	-	-																												y								
Mallotus nesophilus	Euphorbiaceae	LC	-						y																															
Mallotus philippinensis	Euphorbiaceae	LC	-																																					y
Maytenus cunninghamii	Celastraceae	LC	-									y														y														
*Megathyrsus maximus**	Poaceae	-	-																																y				y	
Melaleuca bracteata	Myrtaceae	LC	-																																					
Melaleuca fluviatilis	Myrtaceae	LC	-																																y					
Melaleuca leucadendra	Myrtaceae	LC	-																																y					
Melaleuca linariifolia	Myrtaceae	LC	-																																					
Melaleuca quinquenervia	Myrtaceae	LC	-																	y																				
Melaleuca viminalis	Myrtaceae	LC	-												y					y																y					
Melaleuca viridiflora	Myrtaceae	LC	-									y		y						y											y	y								
Melastoma affine	Melastomataceae	LC	-					y	y			y				y				y	y																			

Species	Family	VM Act status	EPBC Act status	7.12.16a	7.12.24	7.12.24a	7.12.29a	7.12.29b	7.12.2e	7.12.30	7.12.30a	7.12.34	7.12.35	7.12.60b	7.12.61a	7.12.65b	7.12.65c	7.3.26a	7.3.28d	7.3.8x	7.5.2a	7.5.3	7.5.4b	7.8.18c	7.8.7a	9.11.2	9.11.2a/9.11.4a	9.11.4a	9.12.19	9.12.19	9.12.1a (9.12.2)	9.12.2	9.12.21	9.12.4c	9.3.1	9.5.5a	9.8.4a	9.8.4c	9.8.7	9.8.7x
Melastoma malabathricum	Melastomataceae	LC	-				y																																
Melichrus adpressus	Ericaceae	LC	-							y		y																				y							
Melicope elleryana	Rutaceae	LC	-						y																														
Melicope vitiflora	Rutaceae	LC	-				y																																
*Melinis repens**	Poaceae	-	-									y	y			y																y		y	y				
Mentha satureioides	Lamiaceae	LC	-																															y					
*Mesosphaerum suaveolens**	Lamiaceae	-	-		y	y	y	y		y		y	y			y								y										y					
*Mimosa pudica**	Mimosaceae	-	-																															y					
Musgravea heterophylla	Proteaceae	LC	-	y																																			
Myoporum montanum	Scrophulariaceae	LC																																					y
Myristica insipida	Myristicaceae	LC	-						y																														
Myrsine sp.	Myrsinaceae	-	-																																				y
Myrsine variabile	Myrsinaceae	LC	-						y																														
Neolitsea dealbata	Lauraceae	LC	-	y			y		y																														
Notelaea linearis	Oleaceae	LC	-															y											y										
*Oenothera stricta**	Onagraceae	-	-																												y								
Oplismenus aemulus	Poaceae	LC	-				y	y	y																														
Orchidaceae sp.	Orchidaceae	LC	-					y																															
Panicum mitchellii	Poaceae	LC	-		y			y		y		y					y		y	y				y							y				y		y		
Parsonsia lanceolata	Apocynaceae	LC	-													y	y																						
Parsonsia straminea	Apocynaceae	LC	-									y																												

Species	Family	VM Act status	EPBC Act status	7.12.16a	7.12.24	7.12.24a	7.12.29a	7.12.29b	7.12.2e	7.12.30	7.12.30a	7.12.34	7.12.35	7.12.60b	7.12.61a	7.12.65b	7.12.65c	7.3.26a	7.3.28d	7.3.8x	7.5.2a	7.5.3	7.5.4b	7.8.18c	7.8.7a	9.11.2	9.11.2a/9.11.4a	9.11.4a	9.12.19	9.12.19	9.12.1a (9.12.2)	9.12.2	9.12.21	9.12.4c	9.3.1	9.5.5a	9.8.4a	9.8.4c	9.8.7	9.8.7x
Passiflora suberosa	Passifloraceae	LC	-																				y							y				y			y		
Pavetta australiensis	Rubiaceae	LC	-																															y					
Perrottetia arborescens	Dipentodontaceae	LC	-																																				y
Persoonia falcata	Proteaceae	LC	-		y					y		y	y			y	y		y		y		y						y			y		y			y		
Petalostigma pubescens	Picrodendraceae	LC	-													y										y	y			y		y		y					
Philydrum lanuginosum	Philydraceae	LC	-																	y																			
Phyllanthus maderaspatensis	Phyllanthaceae	LC	-																													y							
Phyllanthus sp.	Phyllanthaceae	LC	-																					y															
Phyllanthus virgatus	Euphorbiaceae	LC	-													y																							
*Phytolacca octandra**	Phytolaccaceae	-	-																																y				
Pimelea linifolia	Thymelaeaceae	LC	-														y			y	y																		
Piper caninum	Piperaceae	LC	-	y																																			
Pipturus argenteus	Urticaceae	LC	-										y																										y
Pleiogynium timorense	Anacardiaceae	LC	-																													y					y	y
Podocarpus grayae	Podocarpaceae	LC	-	y																																			
Pollia macrophylla	Commelinaceae	LC	-						y																														
Polyscias australianum	Araliaceae	LC	-	y					y																														
Polyscias elegans	Araliaceae	LC	-						y											y																			y
Poranthera microphylla	Euphorbiaceae	LC	-														y															y							

Species	Family	VM Act status	EPBC Act status	7.12.16a	7.12.24	7.12.24a	7.12.29a	7.12.29b	7.12.2e	7.12.30	7.12.30a	7.12.34	7.12.35	7.12.60b	7.12.61a	7.12.65b	7.12.65c	7.3.26a	7.3.28d	7.3.8x	7.5.2a	7.5.3	7.5.4b	7.8.18c	7.8.7a	9.11.2	9.11.2a/9.11.4a	9.11.4a	9.12.19	9.12.19	9.12.1a (9.12.2)	9.12.2	9.12.21	9.12.4c	9.3.1	9.5.5a	9.8.4a	9.8.4c	9.8.7	9.8.7x
Pothos longipes	Araceae	LC	-						y																														
Pouteria chartacea	Sapotaceae	LC	-																		y																		
*Praxelis clematidea**	Asteraceae	-	-		y			y		y		y	y		y	y			y	y	y		y	y			y			y	y		y	y					
Psychotria loniceroides	Rubiaceae	LC	-																															y					
Psydrax oleifolium	Rubiaceae	LC	-																																				y
Pteridium esculentum	Dennstaedtiaceae	LC	-		y		y	y													y			y															
Pterocaulon redolens	Asteraceae	LC	-																												y								
Pterocaulon sphacelatum	Asteraceae	LC	-																							y		y											
Ptilotus capensis	Amaranthaceae	LC	-																							y													
Pultenaea petiolaris	Fabaceae	LC	-																y			y																	
Rhodamnia costata	Myrtaceae	LC	-							y																													
Rhodomyrtus sericea	Myrtaceae	LC	-						y																														
Rhynchospora brownii	Cyperaceae	LC	-																	y																			
Rhynchospora corymbosa	Cyperaceae	LC	-																	y																			
Ripogonum album	Smilacaceae	LC	-						y																														
Rubiaceae sp.	Rubiaceae	LC	-																								y												
Rubus moluccanus	Rosaceae	LC	-					y	y																														
Rubus sp.	Rosaceae	LC	-					y																															
Sagina apetala	Caryophyllaceae	LC	-													y																							

Species	Family	VM Act status	EPBC Act status	7.12.16a	7.12.24	7.12.24a	7.12.29a	7.12.29b	7.12.2e	7.12.30	7.12.30a	7.12.34	7.12.35	7.12.60b	7.12.61a	7.12.65b	7.12.65c	7.3.26a	7.3.28d	7.3.8x	7.5.2a	7.5.3	7.5.4b	7.8.18c	7.8.7a	9.11.2	9.11.2a/9.11.4a	9.11.4a	9.12.19	9.12.19	9.12.1a (9.12.2)	9.12.2	9.12.21	9.12.4c	9.3.1	9.5.5a	9.8.4a	9.8.4c	9.8.7	9.8.7x
Samadera baileyana	Simaroubaceae	LC	-						y																														
Schefflera actinophylla	Araliaceae	LC	-			y											y																						
Schenkia australis	Gentianaceae	LC	-																											y									
Schizachyrium fragile	Poaceae	LC	-													y										y		y											
Schizachyrium pseudeulalia	Poaceae	LC	-																							y					y								
Schoenoplectiella mucronata	Cyperaceae	LC	-																	y																			
Scleria levis	Cyperaceae	LC	-														y																						
Scleria sphacelata	Cyperaceae	LC	-	y					y							y																							
Scolopia braunii	Salicaceae	LC	-						y																														
Senna artemisioides	Caesalpiniaceae	LC	-																									y										
*Senna obtusifolia**	Caesalpiniaceae	-	-																							y					y			y				
Setaria surgens	Poaceae	LC	-																																			
Sida hackettiana	Malvaceae	LC	-																												y							
*Sida rhombifolia**	Malvaceae	LC	-																															y				
Sida sp.	Malvaceae	LC	-																															y				
Smilax australis	Smilacaceae	LC	-	y				y	y	y																												
*Solanum chrysotrichum**	Solanaceae	-	-																															y				
*Solanum nigrum**	Solanaceae	-	-																															y				
Solanum sp.	Solanaceae	LC	-																y																			
Spermacoce brachystema	Rubiaceae	LC	-									y																y			y			y				

Species	Family	VM Act status	EPBC Act status	7.12.16a	7.12.24	7.12.24a	7.12.29a	7.12.29b	7.12.2e	7.12.30	7.12.30a	7.12.34	7.12.35	7.12.60b	7.12.61a	7.12.65b	7.12.65c	7.3.26a	7.3.28d	7.3.8x	7.5.2a	7.5.3	7.5.4b	7.8.18c	7.8.7a	9.11.2	9.11.2a/9.11.4a	9.11.4a	9.12.19	9.12.19	9.12.1a (9.12.2)	9.12.2	9.12.21	9.12.4c	9.3.1	9.5.5a	9.8.4a	9.8.4c	9.8.7	9.8.7x
Sphaeromorphaea subintegra	Asteraceae	LC	-																												y								
*Sphagneticola trilobata**	Asteraceae	LC	-					y																															
*Sporobolus jacquemontii**	Poaceae	-	-																															y					
*Stachytarpheta jamaicensis**	Verbenaceae	-	-																															y					
Stenocarpus salignus	Proteaceae	LC	-	y																																			
Stephania japonica	Menispermaceae	LC	-																															y					
Sticherus flabellata	Gleicheniaceae	LC	-																	y																			
Streblus brunonianus	Moraceae	LC	-	y																																			
*Stylosanthes hamata**	Fabaceae	-	-																						y					y	y								
*Stylosanthes humilis**	Fabaceae	-	-																							y													
Symplocos sp.	Symplocaceae	LC	-						y						y																								
Syzygium australe	Myrtaceae	LC	-						y						y																								
Syzygium luehmannii	Myrtaceae	LC	-	y																																			
Tephrosia astragaloides	Fabaceae	LC	-																																				
Tephrosia sp.	Fabaceae	LC	-																								y												
Tetrastigma nitens	Vitaceae	LC	-																																				y
*Themeda quadrivalvis**	Poaceae	-	-																																	y			

Species	Family	VM Act status	EPBC Act status	7.12.16a	7.12.24	7.12.24a	7.12.29a	7.12.29b	7.12.2e	7.12.30	7.12.30a	7.12.34	7.12.35	7.12.60b	7.12.61a	7.12.65b	7.12.65c	7.3.26a	7.3.28d	7.3.8x	7.5.2a	7.5.3	7.5.4b	7.8.18c	7.8.7a	9.11.2	9.11.2a/9.11.4a	9.11.4a	9.12.19	9.12.19	9.12.1a (9.12.2)	9.12.2	9.12.21	9.12.4c	9.3.1	9.5.5a	9.8.4a	9.8.4c	9.8.7	9.8.7x
Themeda triandra	Poaceae	LC	-		y	y		y		y		y	y	y		y	y		y		y	y		y				y			y	y	y	y		y		y	
Timonius timon	Rubiaceae	LC	-																																				y
Trema tomentosa	Ulmaceae	LC	-					y					y										y																	
Tricoryne anceps	Johnsoniaceae	LC	-									y				y																y								
Tripogon loliiformis	Poaceae	LC	-													y																								
Tristaniopsis exiliflora	Myrtaceae	LC	-																																				y
Vachellia bidwillii	Mimosaceae	LC	-																							y	y													
Verbena sp.	Verbenaceae	LC	-										y																											
Vittadinia diffusa	Asteraceae	LC	-																					y							y	y								
Vittadinia pustulata	Asteraceae	LC	-																																					
Wahlenbergia gracilis	Campanulaceae	LC	-									y																y				y	y		y					
Xanthorrhoea johnsonii	Xanthorrhoeaceae	LC	-					y		y		y					y			y								y	y										
Xerochrysum bracteatum	Asteraceae	LC	-																																					
Zieria minutiflora subsp. *trichocarpa*	Rutaceae	LC	-																		y																			

Appendix F Fauna species list

Scientific name	Common name	EPBC Status	NC Act status
Birds			
Acanthiza reguloides	buff-rumped thornbill	-	LC
Accipiter cirrocephalus	collared sparrowhawk	-	LC
Accipiter fasciatus	brown goshawk	-	LC
Accipiter novaehollandiae	grey goshawk	-	LC
Acridotheres tristis	common myna	-	LC
Aegotheles cristatus	Australian owlet nightjar	-	LC
Alectura lathami	Australian brush-turkey	-	LC
Alisterus scapularis	Australian king-parrot	-	LC
Anas castanea	chestnut teal	-	LC
Anas gracilis	grey teal	-	LC
Anas superciliosa	Pacific black duck	-	LC
Anhinga novaehollandiae	Australasian Darter	-	LC
Anthus novaeseelandiae	Australasian pipit	-	LC
Aprosmictus erythropterus	red-winged parrot	-	LC
Aquila audax	wedge-tailed eagle	-	LC
Ardea alba modesta	eastern great egret	-	LC
Ardea pacifica	white-necked heron	-	LC
Ardeotis australis	Australian bustard	-	LC
Artamus leucorynchus	white-breasted woodswallow	-	LC
Aviceda subcristata	pacific baza	-	LC
Aythya australis	hardhead	-	LC
Burhinus grallarius	eastern stone curlew	-	LC
Cacatua galerita	sulphur-crested cockatoo	-	LC
Cacomantis flabelliformis	fan-tailed cuckoo	-	LC
Cacomantis pallidus	pallid cuckoo	-	LC
Caligavis chrysops	yellow-faced honeyeater	-	LC
Calyptorhynchus banksii	red-tailed black-cockatoo	-	LC
Caprimulgus macrurus	large-tailed nightjar	-	LC
Caprimulgus macrurus	large-tailed nightjar	-	LC
Centropus phasianinus	pheasant coucal	-	LC
Chalcites lucidus	shining bronze-cuckoo	-	LC
Chalcites minutillus	little bronze-cuckoo	-	LC
Chenonetta jubata	Australian wood duck	-	LC

Chlamydera nuchalis	great bowerbird	-	LC
Cincloramphus mathewsi	rufous songlark	-	LC
Cincloramphus timoriensis	tawny grassbird	-	LC
Climacteris picumnus	brown treecreeper	-	LC
Colluricincla harmonica	grey shrike-thrush	-	LC
Coracina novaehollandiae	black-faced cuckoo-shrike	-	LC
Coracina papuensis	white-bellied cuckoo-strike	-	LC
Cormobates leucophaea	white-throated treecreeper	-	LC
Corvus coronoides	Australian Raven	-	LC
Corvus orru	Torresian crow	-	LC
Cracticus nigrogularis	pied butcherbird	-	LC
Cracticus tibicen	Australian magpie	-	LC
Cracticus torquatus	grey butcherbird	-	LC
Dacelo leachii	blue-winged kookaburra	-	LC
Dacelo novaeguineae	laughing kookaburra	-	LC
Daphoenositta chrysoptera	varied sittella	-	LC
Dicaeum hirundinaceum	mistletoebird	-	LC
Dicrurus bracteatus	spangled drongo	-	LC
Dromaius novaehollandiae	emu	-	LC
Egretta novaehollandiae	white-faced heron	-	LC
Elanus axillaris	black-shouldered kite	-	LC
Elseyornis melanops	black-fronted dotterel	-	LC
Entomyzon cyanotis	blue-faced honeyeater	-	LC
Eolophus roseicapillus	galah	-	LC
Eopsaltria australis	eastern yellow robin	-	LC
Erythrotriorchis radiatus	red goshawk	V	E
Eurostopodus argus	spotted nightjar	-	LC
Falco berigora	brown falcon	-	LC
Falco cenchroides	nankeen kestrel	-	LC
Gallinago hardwickii	Latham's snipe	Mi	SLC
Geopelia cuneata	diamond dove	-	LC
Geopelia humeralis	bar-shouldered dove	-	LC
Geopelia placida	peaceful dove	-	LC
Geophaps scripta peninsulae	squatter pigeon (northern subspecies)	-	LC
Gerygone mouki	brown gerygone	-	LC
Gerygone olivacea	white-throated gerygone	-	LC
Glossopsitta pusilla	little lorikeet	-	LC

Grallina cyanoleuca	magpie-lark	-	LC
Grus rubicunda	brolga	-	LC
Haliastur sphenurus	whistling kite	-	LC
Hamirostra melanosternon	black-breasted buzzard	-	LC
Icterus nigrogularis	Yellow oriole	-	LC
Irediparra gallinacea	comb-crested jacana	-	LC
Lalage tricolor	white-winged triller	-	LC
Lichenostomus chrysops	yellow-faced honeyeater	-	LC
Lichmera indistincta	brown honeyeater	-	LC
Lonchura castaneothorax	chestnut-breasted mannikin	-	LC
Macropygia phasianella	brown cuckoo-dove	-	LC
Malurus melanocephalus	red-backed fairy-wren	-	LC
Manorina flavigula	yellow-throated miner	-	LC
Manorina melanocephala	noisy miner	-	LC
Meliphaga lewinii	Lewin's honeyeater	-	LC
Melithreptus albogularis	white-throated honeyeater	-	LC
Merops ornatus	rainbow bee-eater	-	LC
Microcarbo melanoleucos	little pied cormorant	-	LC
Microeca fascinans	jacky winter	-	LC
Microeca flavigaster	lemon-bellied flycatcher	-	LC
Milvus migrans	black kite	-	LC
Myiagra cyanoleuca	satin flycatcher	Mi, Ma	-
Myiagra rubecula	leaden flycatcher	-	LC
Myzomela sanguinolenta	scarlet honeyeater	-	LC
Neochmia temporalis	red-browed finch	-	LC
Nettapus pulchellus	green pygmy-goose	-	LC
Ninox connivens	barking owl	-	LC
Ocyphaps lophotes	crested pigeon	-	LC
Oriolus sagittatus	olive-backed oriole	-	LC
Pachycephala pectoralis	golden whistler	-	LC
Pachycephala rufiventris	rufous whistler	-	LC
Pardalotus striatus	striated pardalote	-	LC
Pardalotus punctatus	spotted pardalote	-	LC
Pelecanus conspicillatus	Australian pelican	-	LC
Petrochelidon nigricans	tree martin	-	LC
Phaps chalcoptera	common bronzewing	-	LC
Philemon buceroides	helmeted friarbird	-	LC

Philemon citreogularis	little friarbird	-	LC
Philemon corniculatus	noisy friarbird	-	LC
Phylidonyris niger	white-cheeked honeyeater	-	LC
Platycercus adscitus	pale-headed rosella	-	LC
Pomatostomus temporalis	grey-crowned babbler	-	LC
Podargus strigoides	tawny frogmouth	-	LC
Psophodes olivaceus	eastern whipbird	-	LC
Ptilotula fusca	fuscous honeyeater	-	LC
Rhipidura albiscapa	grey fantail	-	LC
Rhipidura leucophrys	willie wagtail	-	LC
Sericornis frontalis	white-browed scrubwren	-	LC
Strepera graculina	pied currawong	-	LC
Struthidea cinerea	apostlebird	-	LC
Synoicous ypsilophora	brown quail	-	LC
Tachybaptus novaehollandiae	Australasian grebe	-	LC
Threskiornis spinicollis	straw-necked ibis	-	LC
Todiramphus macleayii	forest kingfisher	-	LC
Todiramphus pyrrhopygius	red-backed kingfisher	-	LC
Trichoglossus chlorolepidotus	scaly-breasted lorikeet	-	LC
Trichoglossus haematodus	rainbow lorikeet	-	LC
Turnix varius	painted button-quail		
Tyto novaehollandiae kimberli	masked owl	V	V
Vanellus miles	masked lapwing	-	LC
Zosterops lateralis	silvereye	-	LC
Arboreal mammals			
Petauroides volans	greater glider	V	V
Petaurus breviceps	sugar glider	-	LC
Petaurus norfolcensis	squirrel glider	-	LC
Phascolarctos cinereus	koala	V	V
Pseudocheirus peregrinus	common ring-tailed possum	-	LC
Trichosurus vulpecula	common brush-tailed possum	-	LC
Bats (micro and mega)			
Austronomus australis	white-striped free-tailed bat	-	LC
Chaerephon jobensis	northern freetail bat	-	LC
Chalinolobus gouldii	Gould's wattled bat	-	LC
Chalinolobus nigrogriseus	hoary wattled bat	-	LC
Hipposideros diadema	diadem leaf-nosed bat	-	NT

Miniopterus australis	little bent-winged bat	-	LC
Miniopterus oceanensis	eastern bent-winged bat	-	LC
Miniopterus orianae	large bent-winged bat	-	LC
Myotis macropus	southern myotis	-	LC
Nyctophilus bifax	eastern long-eared bat	-	LC
Nyctophilus sp.	vesper bat	-	LC
Ozimops lumsdenae	northern free-tailed bat	-	LC
Ozimops ridei	eastern freetail	-	LC
Phoniscus papuensis	golden-tipped bat	-	LC
Pteropus conspicillatus	spectacled flying fox	E	V
Pteropus scapulatus	little red flying fox	-	LC
Rhinolophus megaphyllus	smaller horseshoe bat	-	LC
Rhinolophus robertsi	greater large-eared horseshoe bat	V	E
Saccolaimus flaviventris	yellow-bellied sheathtail bat	-	LC
Saccolaimus saccolaimus	bare-rumped sheathtail bat	V	E
Scoteanax rueppellii	greater broad-nosed bat	-	LC
Scotorepens orion	eastern broad-nosed bat	-	LC
Scotorepens greyii	Little broad-nosed bat	-	LC
Scotorepens sanborni	northern broad-nosed bat	-	LC
Vespadelus troughtoni	eastern cave bat	-	LC
Terrestrial mammals			
Aepyprymnus rufescens	rufous bettong	-	LC
Antechinus flavipes	yellow-footed antechinus	-	LC
Canis lupus dingo	dingo	-	LC
Hydromys chrysogaster	water rat	-	LC
Isoodon macrourus	northern brown bandicoot	-	LC
Macropus agilis	agile wallaby	-	LC
Macropus giganteus	eastern grey kangaroo	-	LC
Macropus parryi	whiptail wallaby	-	LC
Macropus robustus	common wallaroo	-	LC
Perameles nasuta	long-nosed bandicoot	-	LC
Petrogale sharmani	Sharman's rock-wallaby	V	V
Sminthopsis murina	common dunnart	-	LC
Tachyglossus aculeatus	short-beaked echidna	-	SLC
Thylogale stigmatica	red-legged pademelon	-	LC
Wallabia bicolor	Swamp wallaby	-	LC
Reptiles			

Carlia rostralis	black-throated rainbow skink	-	LC
Concinnia sp.	bar-sided skink	-	LC
Ctenotus robustus	eastern striped skink	-	LC
Demansia psammophis	yellow-faced whipsnake	-	LC
Diporiphora australis	Tommy roundhead	-	LC
Diporiphora bilineata	double-lined dragon	-	LC
Eulamprus sokosoma	stout barsided skink	-	LC
Intellagama lesueurii	water dragon	-	LC
Pseudonaja textilis	eastern brown snake	-	LC
Varanus scalaris	spotted tree monitor	-	LC
Varanus varius	lace monitor	-	LC
Wollumbinia latisternum	saw-shelled turtle	-	LC
Amphibians			
Limnodynastes peronii	striped marsh frog	-	LC
Litoria fallax	eastern sedge frog	-	LC
Litoria inermis	bumpy rocket frog	-	LC
Litoria rubella	desert tree frog	-	LC
Litoria wilcoxii	eastern stony creek frog	-	LC
Introduced fauna			
Bos taurus	cattle	-	-
Canis lupus familiaris	dog	-	-
Cervus elaphus	red deer	-	-
Equus caballus	horse	-	-
Felis catus	cat	-	-
Rattus rattus	black rat	-	-
Rhinella marina	cane toad	-	-
Sus scrofa	pig	-	-

* CE – Critically Endangered, E – Endangered, V – Vulnerable, NT – Near Threatened, Mi – Migratory, Ma – Marine, LC – Least Concern

Appendix G Bat call analysis results

Microbat Call Identification Report

Prepared for ("Client"):	Eco Logical Australia
Survey location/project name:	Mount Fox, NE Qld
Survey dates:	2-19 September 2019
Client project reference:	
Job no.:	ELA-1915
Report date:	9 January 2020

Methods

Data received and survey summary

Balance! Environmental received 27736 ultrasonic acoustic data files and associated log files recorded on three Anabat Swift bat-detectors deployed in the Mount Fox area, south-west of Ingham, over 17 consecutive nights (3rd – 18th September 2019). Deployment details, derived from the detector log files and cross-checked against information provided by the client, are presented in **Table 1**. Detector locations are shown in **Figure 1**.

Call identification

Call analysis and identification was performed in *Anabat Insight*, with all files scanned, classified according to (mainly frequency-based) zero-crossing parameters, and assigned a tentative species-label using the Decision Tree analysis process. The Decision Tree analysis also applied a "noise" filter to exclude any files that contained only non-bat background noise. During the manual call review process (see below), additional noise files that were missed by the filter and poor-quality bat calls that were of no use for identification (too short/fragmented/weak) were excluded from the analysis.

All Decision-Tree-classified calls were reviewed manually in spectrogram view and species identities confirmed or adjusted following comparison of the spectrograms and derived call metrics with those from regionally relevant reference calls and/or with published call descriptions (*e.g.* Pennay *et al*. 2004). Identification was also guided by considering probability of species' occurrence based on published distribution information (*e.g.* Churchill 2008; van Dyck *et al.* 2013) and on-line database records (e.g. http://www.ala.org.au).

Where calls could not be reliably allocated to a single species due to overlapping characteristics ("unresolved calls"), they were assigned to a multi-species group.

Reporting standard

The format and content of this report follows Australasian Bat Society standards for the interpretation and reporting of bat call data (Reardon 2003), available on-line at http://www.ausbats.org.au/.

Species nomenclature follows Jackson & Groves (2015).

Table 1 Bat-detector deployment summary for the Mount Fox survey, 2-19 September 2019.

Detector ID	Site*	Location		Deployment dates		Detector-nights		Output	
		Latitude	Longitude	Set	Collected	Total	With calls	Total files recorded	No. calls identified
SN497996	AB01	-18.758647	145.730813	2/9	6/9	4	3	744	342
SN497996	AB02	-18.769291	145.761180	6/9	15/9	9	9	7231	3814
SN497996	AB03	-18.869575	145.788353	15/9	18/9	4	4	1778	642
SN513971	AB04	-18.745763	145.769413	3/9	6/9	3	3	1055	670
SN513971	AB05	-18.738551	145.779424	6/9	12/9	6	5	1390	35
SN513971	AB06	-18.796340	145.765140	13/9	19/9	6	1	784	798
SN514008	AB07	-18.808037	145.715070	2/9	5/9	3	3	5818	3300
SN514008	AB08	-18.850470	145.748255	5/9	12/9	7	6	4401	724
SN514008	AB09	-18.754652	145.765410	12/9	17/9	5	5	2677	1039
SN514008	AB10	-18.787265	145.782140	17/9	19/9	2	2	1858	349

***** Site number applied by Balance! Environmental to simplify presentation of results for this analysis.

Figure 1 Bat detection sites in the Mt Fox study area; sampled 2-19 September 2019

Results & Discussion

The first-pass noise-filtration excluded 10921 files from the original dataset; and manual noise filtering and removal of useless calls excluded another 5449 files from further analysis. From the remaining 11366 files, a total of 11713 bat calls were identified. **Appendix 1** provides a breakdown of the numbers of calls recorded per species at each site.

At least 17 and up to 21 species were recorded during the September 2019 Mount Fox surveys (see **table 2**). Some 65% (7561) of the identifiable calls were positively attributed to one of 16 species (see upper portion of **Appendix 2**), two of which are listed threatened species under the national *Environment Protection and Biodiversity Conservation Act 1999* (*EPBC Act*). The remaining 4152 'unresolved' calls had characteristics that were potentially attributable to two or more species and were assigned to one of six multi-species groups (see lower portion of **Appendix 2**). Where 'unresolved' calls were identified, all group members are listed as "possible" in **Table 1** unless other calls were more reliably identified to one or more group members for the relevant site.

Two of the 'unresolved' groups potentially represented additional taxa that were not otherwise recognised. These calls were allocated to the following groups:

- ***Myotis macropus* / *Nyctophilus* species**
  - Both species produce steep, almost-linear FM calls that are difficult to differentiate.
  - Many calls of this type were positively attributed to *M. macropus*. based on their relatively narrow band-width and somewhat erratic nature of the pulse structure within a sequence.
  - Weaker and/or less well-defined calls, or those with more uniform pulse structure and broader band-width, were assigned to the undifferentiated group
  - Up to three *Nyctophilus* species potentially occur in the study area, including: *N. bifax; N. geoffroyi;* and *N. gouldi*..
- ***Scotorepens orion* / *Scoteanax rueppellii***
  - These species' calls have curvilinear FM-qCF pulses with characteristic frequencies (Fc) of 33-37 kHz that can sometimes be confused with the calls of *Chalinolobus gouldii* (note additional 'unresolved group including this species in **Appendix 1**)
  - It is very likely that *S.* rueppellii is present in the study area, so this species is most likely responsible for the calls allocated to the group.
  - The occurrence of *S. orion* is less certain, but an isolated population of that species occurs on the nearby Atherton Tableland (Churchill 2008) and the two species often co-exist in south-eastern Australia, so *S. orion* could also be present in the Mount Fox area

The other 'unresolved' groups all represented species that were also positively identified for most sites.

Table 2 Bat species recorded during the Mount Fox survey, 2-19 September 2019

♦ = 'definite' - at least one call was attributed unequivocally to the species

□ = 'possible' - calls similar to those of the species were recorded, but were not reliably identified

Bold font denotes *EPBC Act* threatened species.

Site:	AB01	AB02	AB03	AB04	AB05	AB06	AB07	AB08	AB09	AB10
Hipposideros diadema		♦								
Rhinolophus megaphyllus		♦	♦	♦	♦		♦	♦	♦	♦
Rhinolophus robertsi		♦	♦						♦	♦
Chalinolobus gouldii	♦	♦	♦	♦		□	♦	♦	♦	□
Chalinolobus nigrogriseus	□	♦	□	□	□	♦	♦	□	□	♦
Scoteanax rueppellii		□	□				□	□	□	□
Scotorepens orion		□	□				□	□	□	□
Scotorepens sanborni	♦	♦	♦	□	□	♦	♦	♦	□	□
Myotis macropus		♦	♦	♦	□	♦	♦	□		♦
Nyctophilus sp.		□		□	□		□	□		□
Vespadelus troughtoni								♦		
Miniopterus australis	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦
Miniopterus oceanensis	♦	♦	♦	♦		♦	♦	♦	♦	♦
Austronomus australis		♦	♦				♦	♦	♦	♦
Chaerephon jobensis		♦	♦	♦			♦	♦	♦	♦
Ozimops lumsdenae		♦	♦			♦	♦	♦	♦	♦
Ozimops ridei	♦	♦	♦			♦	♦	♦	♦	♦
Saccolaimus flaviventris		♦	♦				♦	♦		
Saccolaimus saccolaimus			♦							

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Glossary

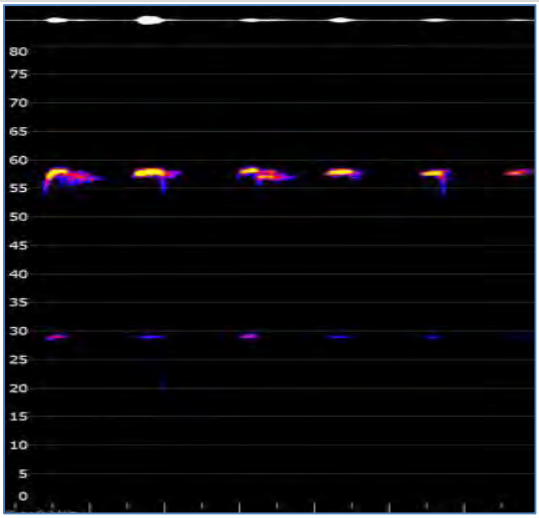
Technical terms used in this report are described in the following table.

Approach phase	The part of a bat *call* emitted as the bat starts to home in on a detected prey item; a transitional series of *pulses* between the *search phase* and *feeding buzz*, that become progressively steeper and shorter in duration.
Call	Refers to a single bat call, made up of a series of individual sound *pulses* in one or more *phases* (*search, approach, feeding buzz*).
CF (=Constant Frequency)	A type of *pulse* in which the dominant component consists of a more-or-less 'pure tone' of sound at a Constant Frequency; with *shape* appearing flat on the sonogram. Often also contains a brief *FM* component at the beginning and/or end of the CF component (*viz.* FM-CF-FM).
Characteristic frequency (Fc)	The frequency of the flattest part of a *pulse*; usually the lowest frequency reached in the *qCF* component of a pulse. This is often the primary diagnostic feature for species identification.
Duration	The time period from the beginning of a *pulse* to the end of the pulse.
Feeding buzz	The terminal part of a *call*, following the *approach phase*, emitted as the bat catches a prey item; a distinctive, rapid series of very steep, very short-duration pulses.
FM (=Frequency Modulated)	A type of *pulse* in which there is substantial change in frequency from beginning to end; *shape* ranges from almost vertical and linear through varying degrees of curvature.
FC range	Refers to the range of frequencies occupied by the *characteristic frequency* section of *pulses* within a call or set of calls.
Frequency sweep or "band-width"	The range of frequencies through which a *pulse* sweeps from beginning to end; Maximum frequency (Fmax) – minimum frequency (Fmin).
Knee	The transitional part of a *pulse* between the initial (usually steeper) frequency sweep and the *characteristic frequency* section (usually flatter); time to knee (Tk) and frequency of knee (Fk) can be diagnostic for some species.
Pulse	An individual pulse of sound within a bat *call*; the *shape*, *duration* and *characteristic frequency* of a pulse are the key diagnostic features used to differentiate species.
Pulse body	The part of the *pulse* between the *knee* and *tail* and containing the *characteristic frequency* section.
Pulse shape	The general appearance of a *pulse* on the sonogram, described using relative terms related to features such as slope and degree of curvature. See also *CF, qCF* and *FM*.
qCF (=quasi Constant Frequency)	A type of *pulse* in which there is very little change in frequency from beginning to end; *shape* appears to be almost flat. Some pulses also contain an *FM* component at the beginning and/or end of the qCF component (*viz.* FM-qCF).
Search phase	The part of a bat *call* generally required for reliable species diagnosis. A consistent series of *pulses* emitted by a bat that is searching for prey or and/or navigating through its habitat. Search phase pulses generally have longer duration, flatter slope and more consistent shape than *approach phase* and *feeding buzz* pulses.
Sequence	Literally, a sequence of *pulses* that may be from one or more bats; but generally refers to a *call* or part (e.g. *phase*) of a call.
Tail	The final component of a *pulse*, following the *characteristic frequency* section; may consist of a short or long sweep of frequencies either upward or downward from the Fc; or may be absent.

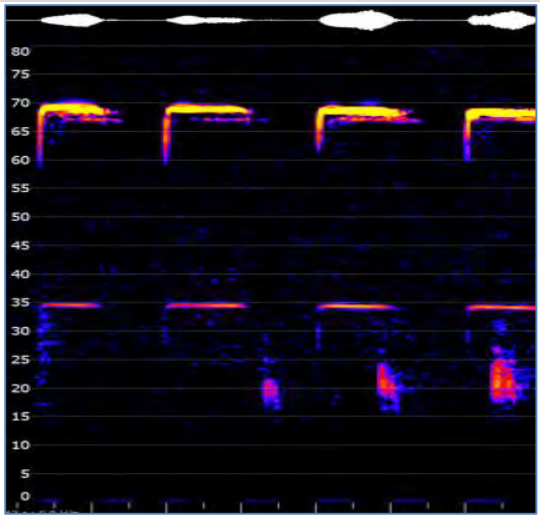
Appendix 1 Bats recorded during the Mount Fox survey, 2-19 September 2019
Number of calls allocated per species or unresolved group per site.

Site:	AB01	AB02	AB03	AB04	AB05	AB06	AB07	AB08	AB09	AB10	Species total
Positively identified calls											
Hipposideros diadema		2									2
Rhinolophus megaphyllus		54	8	121	8		2	9	39	1	242
Rhinolophus robertsi		8	41						3	4	56
Chalinolobus gouldii	3	31	6	5			46	48	109		248
Chalinolobus nigrogriseus		2				16	16			1	35
Scotorepens sanborni	5	2	4			5	1	43			60
Myotis macropus		1	2	1		2	559			2	567
Vespadelus troughtoni								1			1
Miniopterus australis	61	1021	58	392	24	40	257	321	166	23	2363
Miniopterus oceanensis	20	1197	140	54		582	200	86	481	183	2943
Austronomus australis		10	2				8	4	9	5	38
Chaerephon jobensis		66	22	1			33	94	4	18	238
Ozimops lumsdenae		30	128			1	63	31	1	22	276
Ozimops ridei	7	216	29			15	143	3	13	27	453
Saccolaimus flaviventris		4	22				2	3			31
Saccolaimus saccolaimus			8								8
Unresolved calls											
C. gouldii / O. ridei	6	5	5			1	87	11	30		145
C. nigrogriseus / S. sanborni	240	1145	129	94	1	136	1825	66	78	59	3773
M. oceanensis / S. sanborni		1						1	2		4
M. macropus / Nyctophilus sp.		5		2	2		52	1		1	63
Scotorepens orion / Scoteanax rueppellii		14	32				6	2	78	2	134
S. orion / S. rueppellii / C. gouldii			6						26	1	33
Site total	342	3814	642	670	35	798	3300	724	1039	349	11713

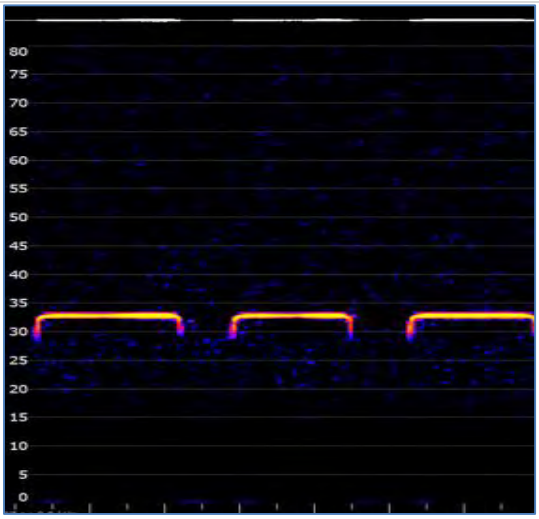
Appendix 2 Representative call sequences from the Mount Fox survey, 2-19 September 2019.
x-axis (time) = 0.025 sec per tick; *y*-axis = frequency (kHz)



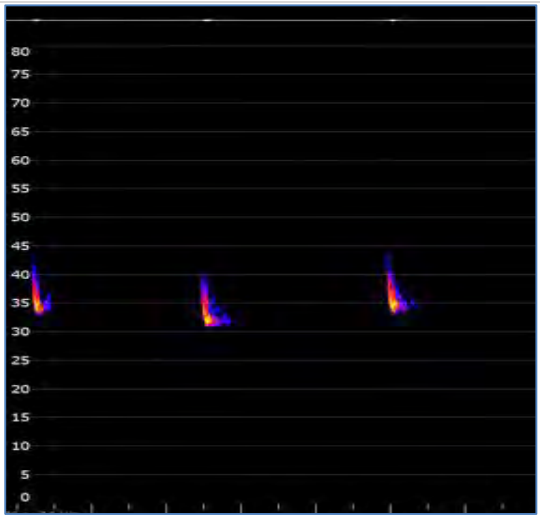
Hipposideros diadema



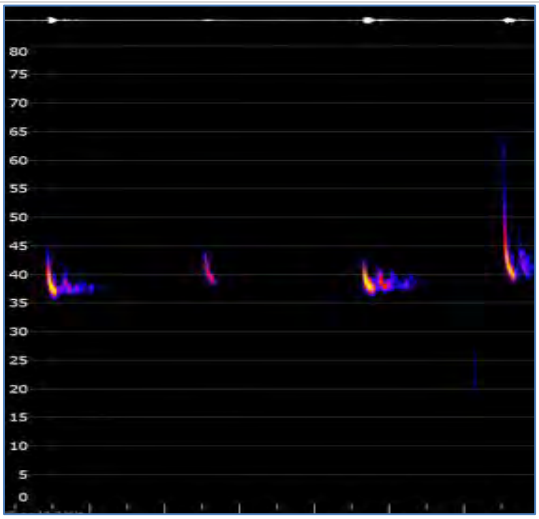
Rhinolophus megaphyllus



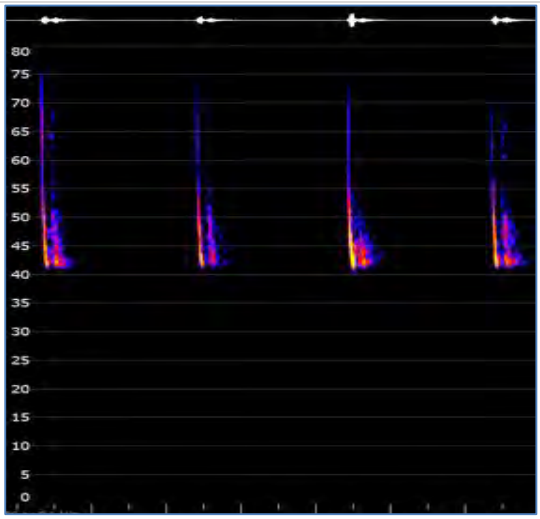
Rhinolophus robertsi



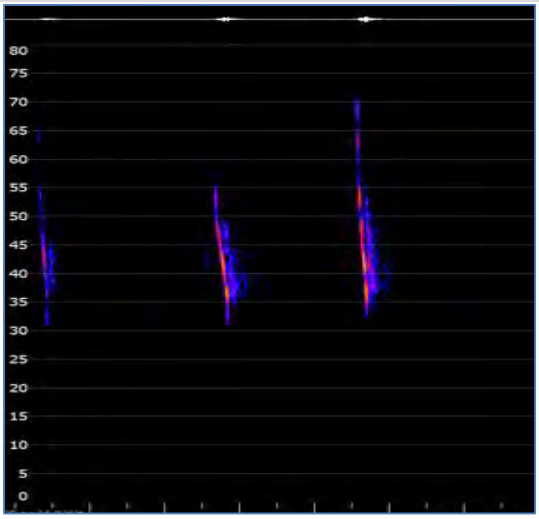
Chalinolobus gouldii



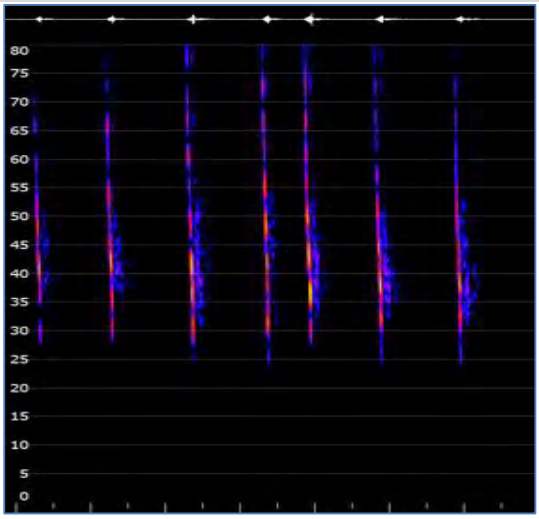
Chalinolobus nigrogriseus



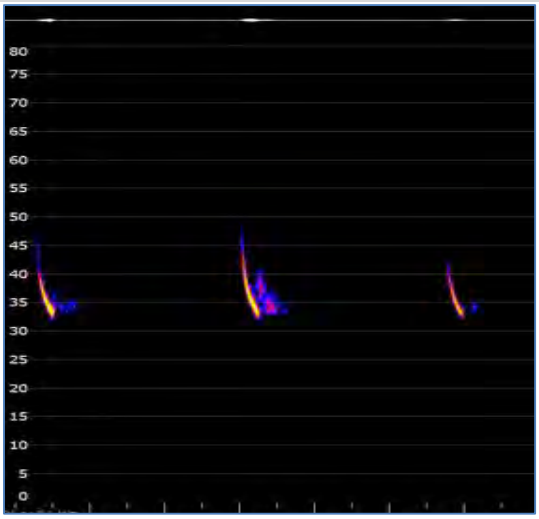
Scotorepens sanborni



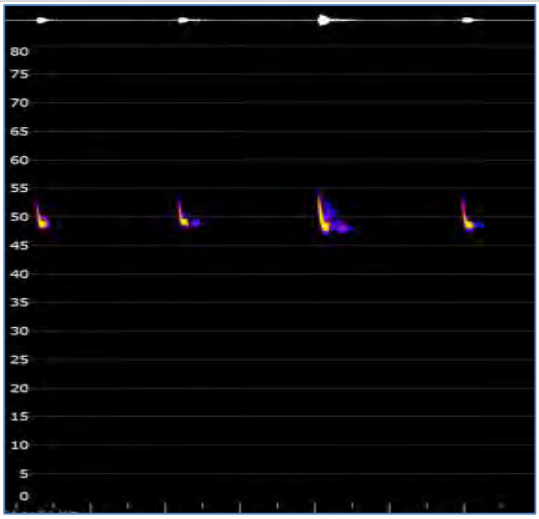
Myotis macropus



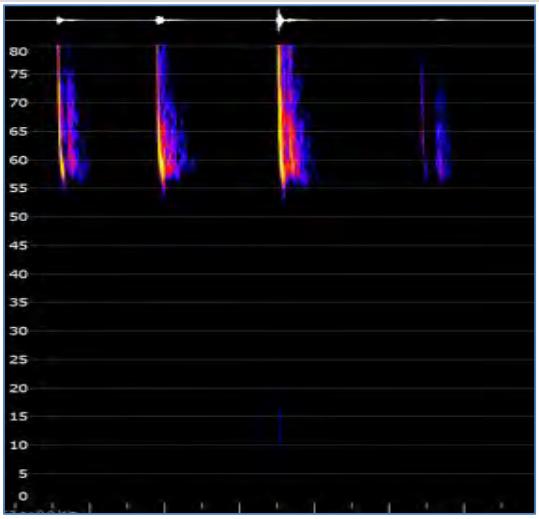
M. macropus / Nyctophilus sp.



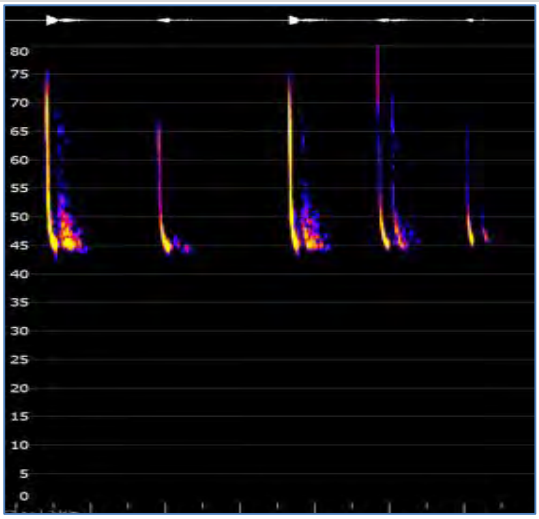
Scotorepens orion / Scoteanax rueppellii



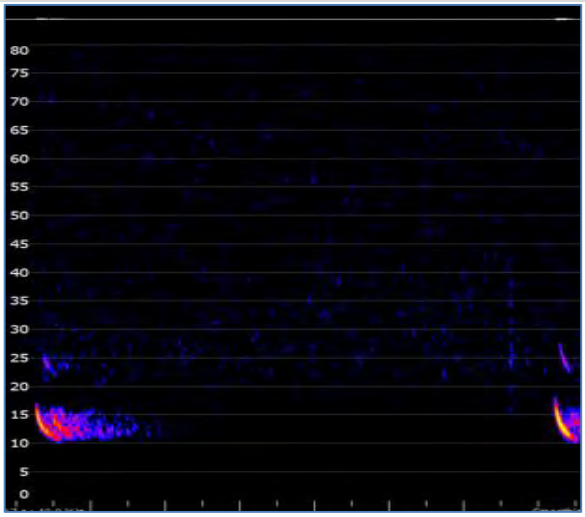
Vespadelus troughtoni



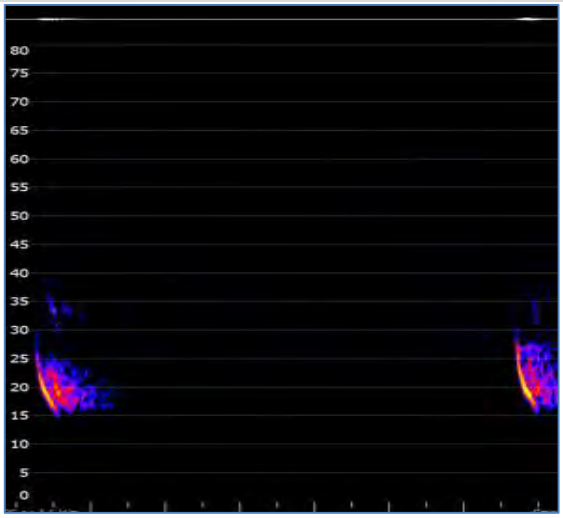
Miniopterus australis



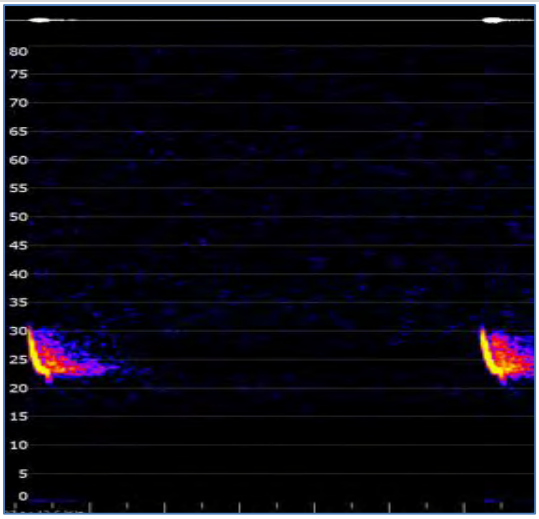
Miniopterus oceanensis



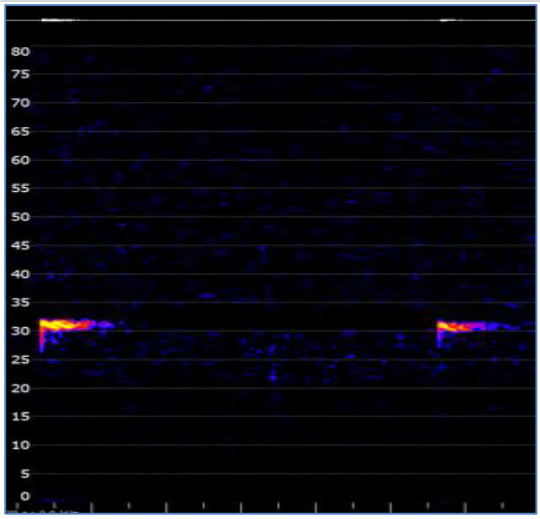
Austronomus australis



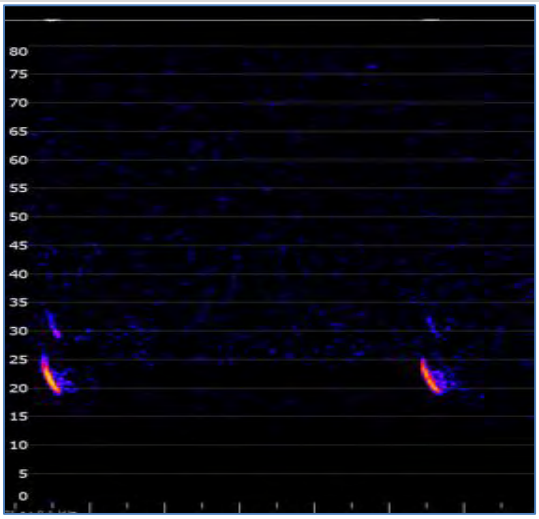
Chaerephon jobensis



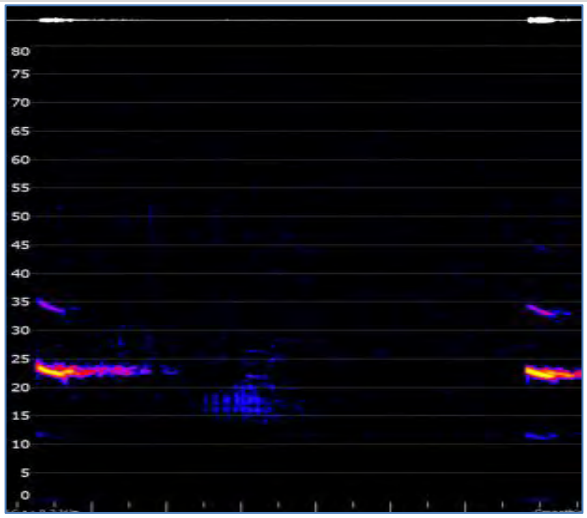
Ozimops lumsdenae



Ozimops ridei



Saccolaimus flaviventris



Saccolaimus saccolaimus

Microbat Call Identification Report

Prepared for ("Client"):	Eco Logical Australia
Cape Bedford	Mount Fox, NE Qld
Survey dates:	7th – 28th July 2020
Client project reference:	
Job no.:	ELA-2004
Report date:	21 August 2020

Methods

Data received

Balance! Environmental received nine SD cards containing 7439 WAV files recorded on five Anabat Swift detectors (Titley Scientific, Brisbane). Metadata extracted from the acoustic files indicates that 15 sites were sampled over a 21-night period (7th – 28th July 2020) with sampling duration per site ranging from one night to 11 consecutive nights. **Table 1** summarises detector deployment locations as indicated by the GPS metadata recorded by each unit. Site locations are also shown on **Figure 1**.

Call identification

Call analyses were performed in *Anabat Insight* (Titley Scientific, Brisbane). All WAV files were passed through a Decision Tree analysis to filter out files with only non-bat noise and group detected bat-calls based on a combination of call metrics derived from zero-crossing analysis, such as characteristic frequency (Fc), time between calls (TBC), slope (S1 and Sc) and pulse curvature.

The preliminary call identities applied by the Decision Tree process were then confirmed or adjusted manually by comparing the call spectrograms and derived metrics with those of reference calls from northern Queensland and/or with published call descriptions (e.g. Reinhold *et al.* 2001; Milne 2002). Consideration was also given to the probability of species' occurrence based on published distribution information (e.g. Churchill 2008; van Dyck et al. 2013) and on-line database records (e.g. **http://www.ala.org.au**).

Reporting standard

The format and content of this report follows Australasian Bat Society standards for the interpretation and reporting of bat call data (Reardon 2003), available on-line at http://www.ausbats.org.au/.

Species nomenclature follows Jackson & Groves (2015).

Table 1 Site locations (derived from WAV file metadata) and detector data output for the Eco Logical Australia Mount Fox surveys, 7-28 July 2020.

Site-code	Latitude	Longitude	Dates surveyed	Detector serial number	SD card label	No. WAV files	No. files with noise only	No. files with calls	Total no. calls identified	Total detector-nights	Mean no. calls per d-n
AB01	-18.7874	145.7692	25-27 July	SN497991	Saddlebag Gate	670	422	248	253	3	84.33
AB02	-18.77041	145.72146	7-13 July	SN497996	not labelled	1200	0	1200	1210	7	172.86
AB03	-18.82688	145.74041	14-24 July	SN497996	not labelled	370	10	360	363	11	33.00
AB04	-18.67064	145.67799	8 July	SN536907	chomped	154	153	1	1	6	0.17
AB05	-18.88574	145.77413	22-25 July	SN536907	COFF02 - Swift SM3-1 Creek	612	147	465	471	4	117.75
AB06	-18.73032	145.7503	26-27 July	SN536907	COFF02 - Swift SM3-1 Creek	710	1	709	718	2	359.00
AB07	-18.77573	145.71336	7-11 July	SN567914	Golden-Tipped Locn	122	19	103	103	5	20.60
AB08	-18.7318	145.76351	12-22 July	SN567914	Golden-Tipped Locn	1587	39	1548	1553	11	141.18
AB09	-18.77897	145.78919	24-25 July	SN567914	Steele's WalkIn	406	130	276	277	2	138.50
AB10	-18.75429	145.7338	26-27 July	SN567914	Steele's WalkIn	186	57	129	127	2	63.50
AB11	-18.72421	145.74724	28 July	SN567914	Steele's WalkIn	21	16	5	5	1	5.00
AB12	-18.66476	145.65748	8-11 July	SN567955	Steele's Stick Gate	64	63	1	0	4	0.00
AB13	-18.74296	145.77194	12-23 July	SN567955	Steele's Stick Gate	987	32	955	956	11	86.91
AB14	-18.77041	145.78404	24-25 July	SN567955	Steele's Stick Gate	57	0	57	57	2	28.50
AB15	-18.71337	145.751	26-28 July	SN567955	Steele's Stick Gate	293	0	293	294	3	98.00
					Totals	7439	1089	6350	6388	74	86.32

Figure 1 Bat detector deployment locations for the Mount Fox July 2020 survey. Refer Table 1 for site details.

Results & Discussion

Noise filtration excluded 1059 WAV files from further analysis, with the remaining 6350 files containing 6388 identifiable bat calls (see **Table 1**). Bat detection rates varied substantially between sites, ranging from zero detections at AB12 to 359 calls per detector-night at AB06. Site AB04 detected only one bat call before the microphone was damaged. Sites with longer detector deployments generally recorded more species, although only 1-2 additional species were added beyond the first four detector-nights (**Figure 2**).

Most of the calls (5397 = 84%) were positively identified and attributed to one of 17 distinct taxa, including 15 individual species and two undifferentiated congeneric species pairs. The other 991 calls had characteristics intermediate between two or more unrelated species and were allocated to one of three unresolved multi-species groups, all of which represent species that were otherwise positively identified from more definitive calls. **Table 2** provides a summary of the species detected at each site. Where "unresolved" calls were detected, all relevant group members are listed as "possible" unless they were also positively identified from other calls. A full breakdown of the number of calls allocated per species or unresolved group per site appears at **Appendix 2**.

Sample spectrograms of all identified call types are provided at **Appendix 1**.

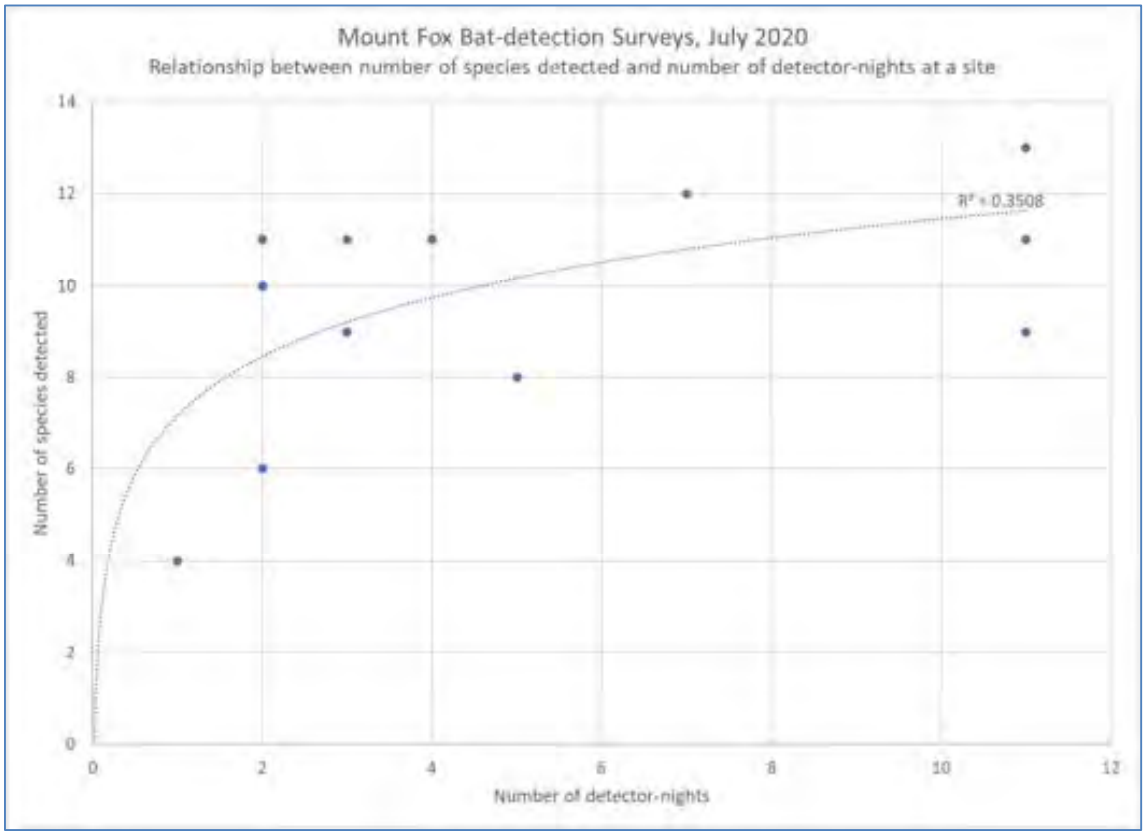


Figure 2 Relationship between the number of species detected and number of nights a detector was deployed at a site. Two failed sites (AB04 and AB12) excluded from the data.

Threatened species

Two threatened species were reliably identified, including:

- *Saccolaimus saccolaimus* – Bare-rumped Sheath-tailed Bat
    - Endangered under the Queensland *Nature Conservation Act 1992* (NCA)
    - Vulnerable under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC)
    - Seven (7) calls detected between 6:30 PM and 8:00 PM on the night of 25th July
- *Rhinolophus robertsi* – Large-eared Horseshoe Bat ("large form")
    - Endangered under both NCA and EPBC
    - Identified from a single call detected at "AB09" at 4:27 AM on 25th July

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Table 2 Bats recorded during the Mount Fox surveys, 7th – 28th July 2020.

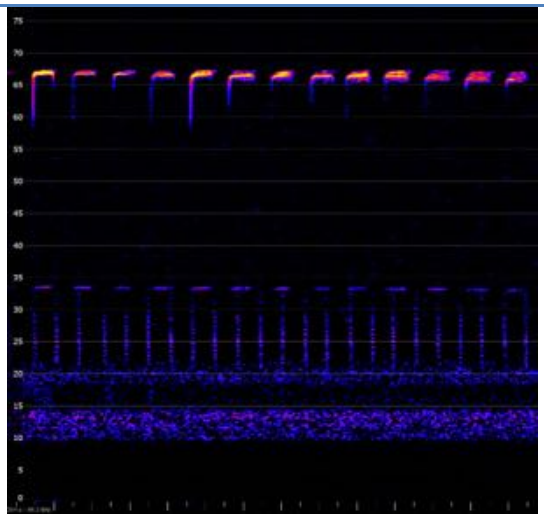
♦ = 'definite' - at least one call was attributed unequivocally to the species at the site

□ = 'possible' - calls like those of the species were recorded, but were not reliably identified

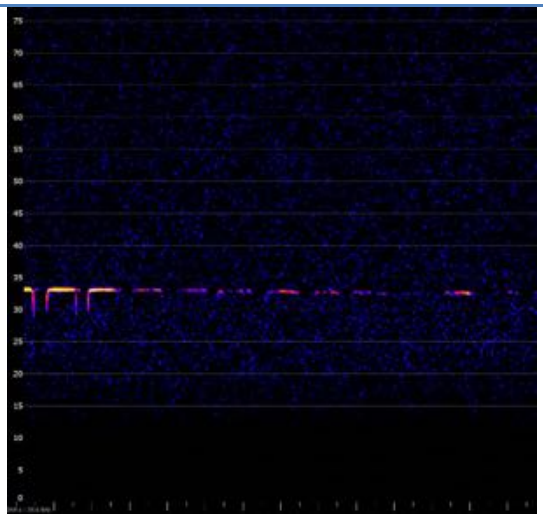
Threatened species shown in bold font.

Site-code	AB01	AB02	AB03	AB04	AB05	AB06	AB07	AB08	AB09	AB10	AB11	AB12	AB13	AB14	AB15
Rhinolophus megaphyllus	♦		♦			♦		♦	♦	♦	♦		♦	♦	
Rhinolophus robertsi									♦						
Chalinolobus gouldii	♦	♦	♦		♦		♦		♦						♦
Chalinolobus nigrogriseus	♦	♦	♦		♦	♦	♦	♦		♦	♦				♦
Myotis macropus		♦			♦			□						□	□
Nyctophilus bifax / N geoffroyi	♦	♦			♦			♦	♦	♦			♦	♦	□
Scoteanax rueppellii	♦	♦			♦	♦		♦		♦			♦		
Scotorepens greyii	♦	♦	♦		♦	♦	♦	♦		♦				♦	
Scotorepens sanborni	♦	♦	♦		♦		♦	♦		♦					
Vespadelus pumilus / V. troughtoni						♦			♦				♦		
Miniopterus australis	♦	♦	♦		♦	♦	♦	♦	♦	♦	♦		♦	♦	♦
Miniopterus orianae	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦			♦	♦	♦
Austronomus australis			♦			♦	♦	♦			♦		♦		♦
Chaerephon jobensis	♦	♦	♦		♦	♦		♦	♦	♦			♦		♦
Ozimops lumsdenae		♦	♦					♦	♦						
Ozimops ridei	♦	♦	♦		♦	♦	♦	♦	♦	♦			♦		♦
Saccolaimus saccolaimus									♦						

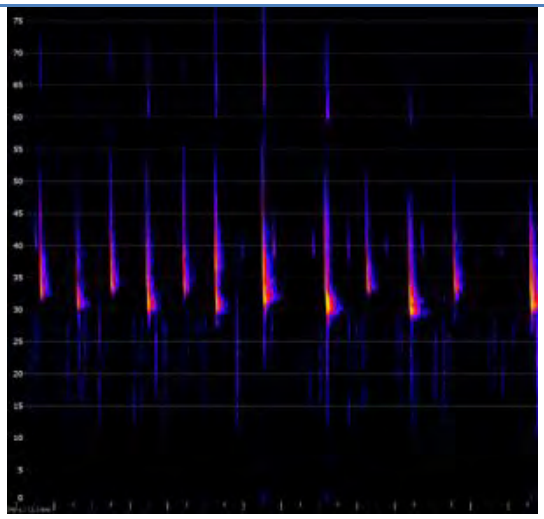
Appendix 1 Representative call sequences from the Mount Fox survey, 7-28 July 2020.
true-time display; *x*-axis 50 milliseconds per tick-mark



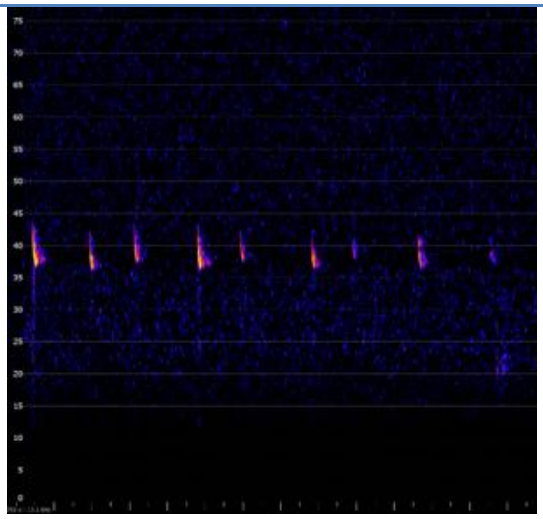
Rhinolophus megaphyllus



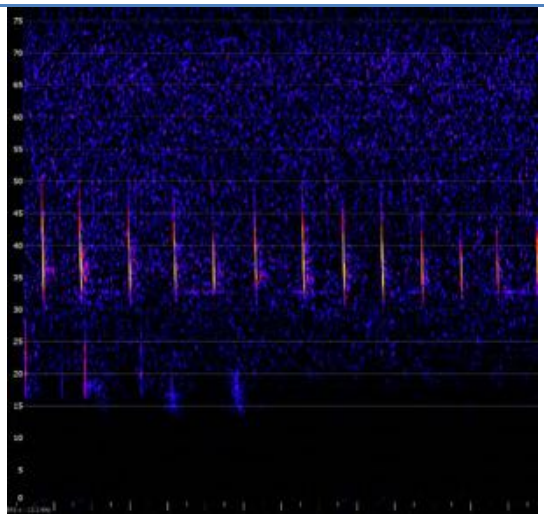
Rhinolophus robertsi



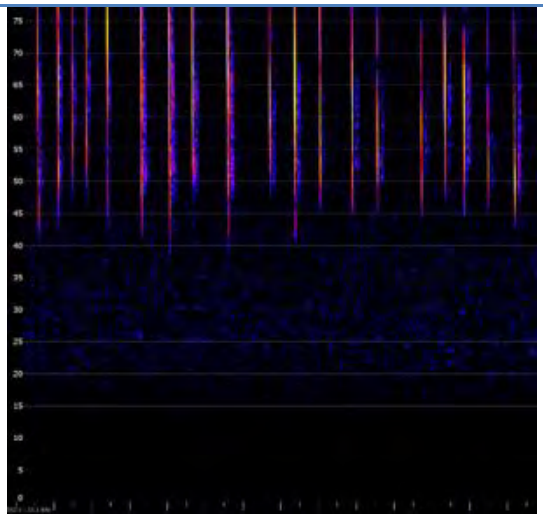
Chalinolobus gouldii



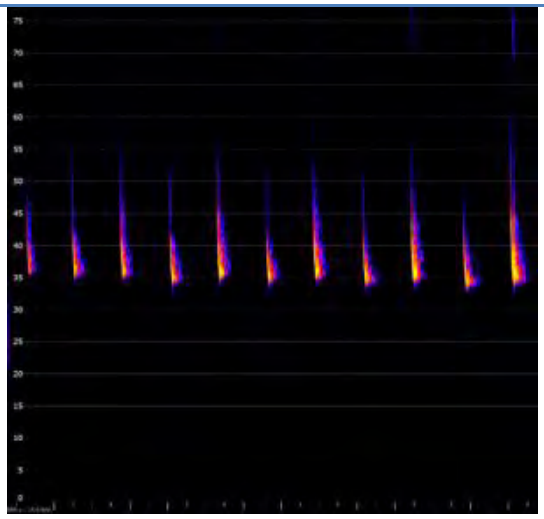
Chalinolobus nigrogriseus



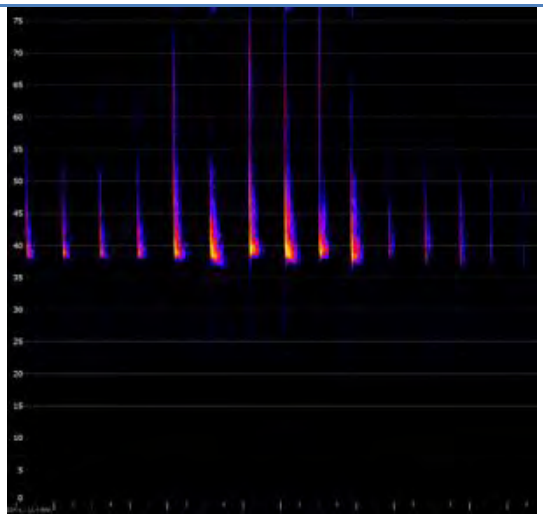
Myotis macropus



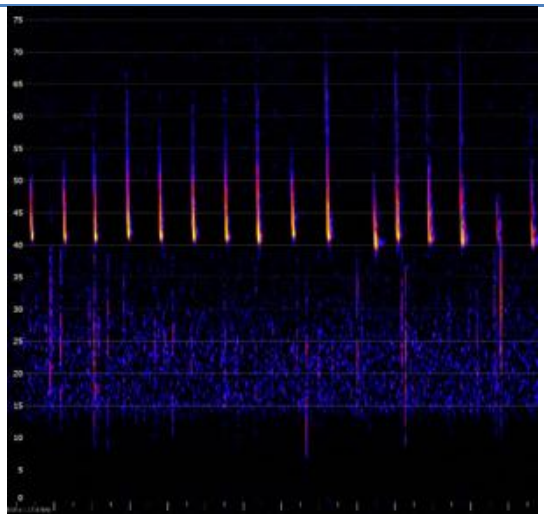
Nyctophilus bifax / N geoffroyi



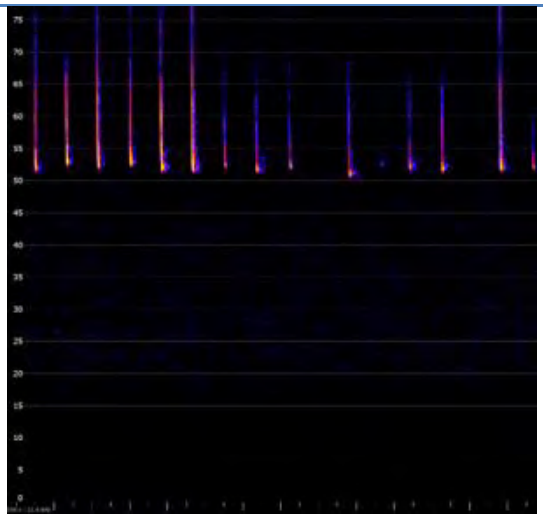
Scoteanax rueppellii



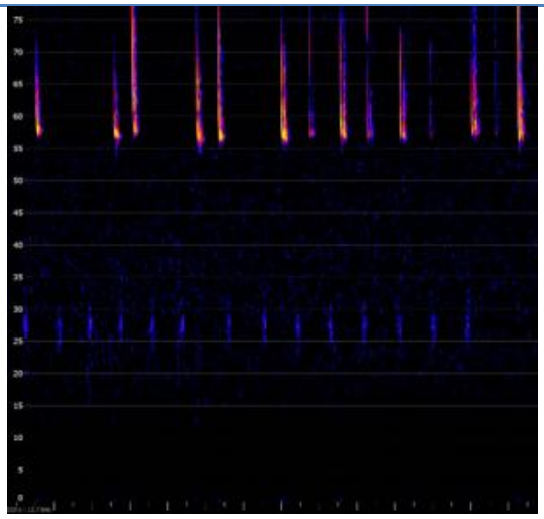
Scotorepens greyii



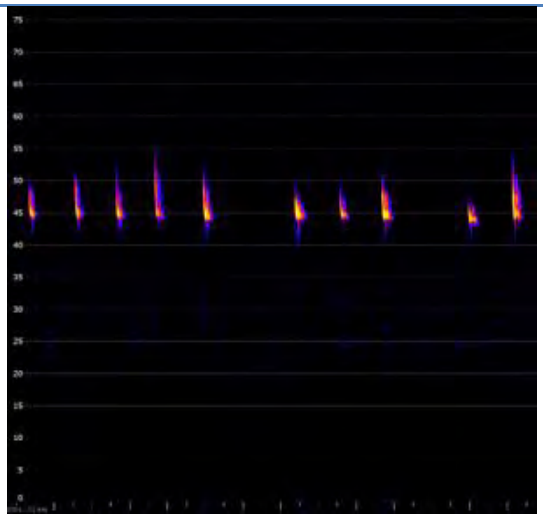
Scotorepens sanborni



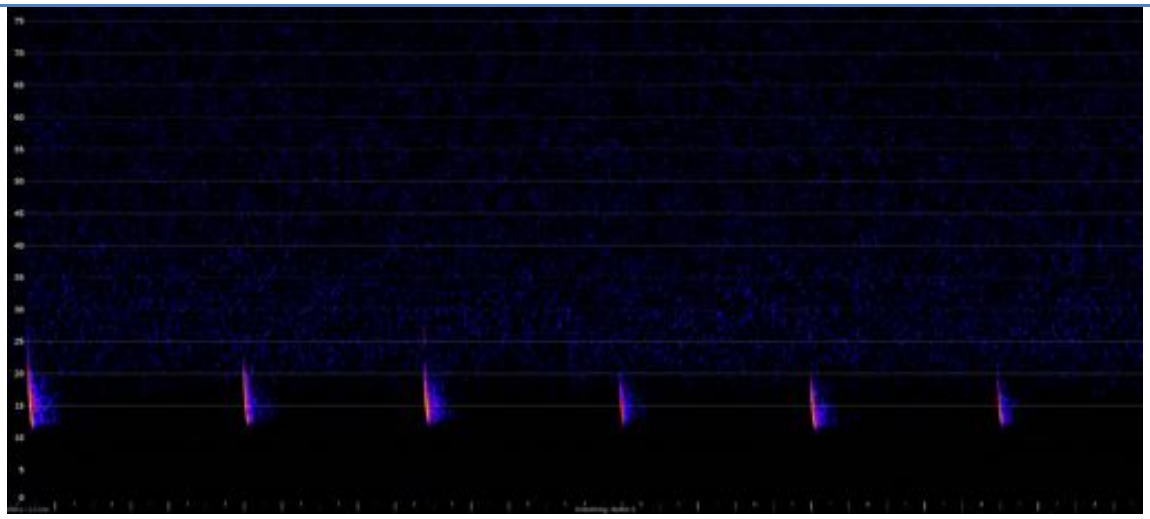
Vespadelus pumilus / V. troughtoni



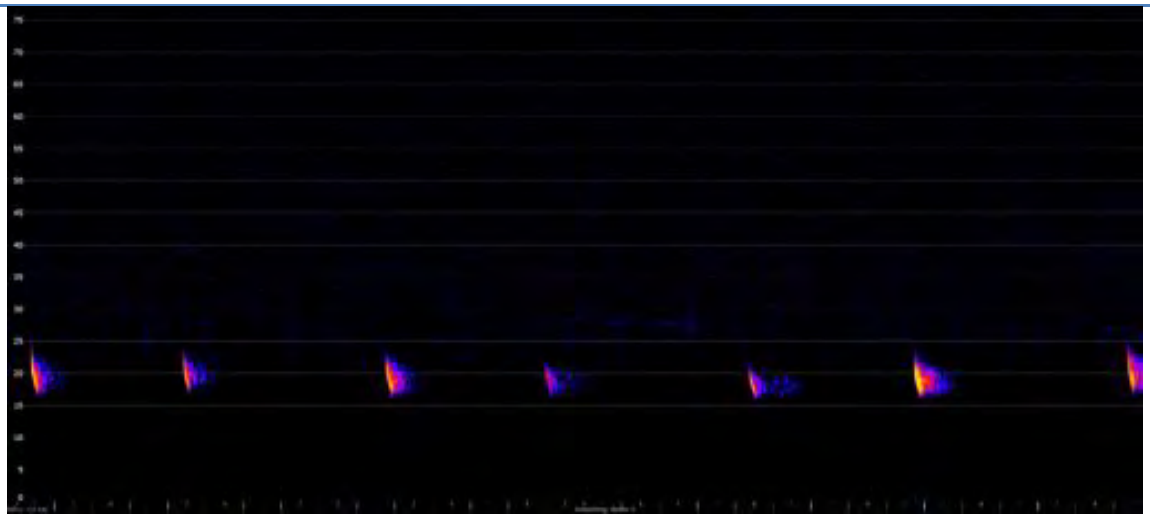
Miniopterus australis



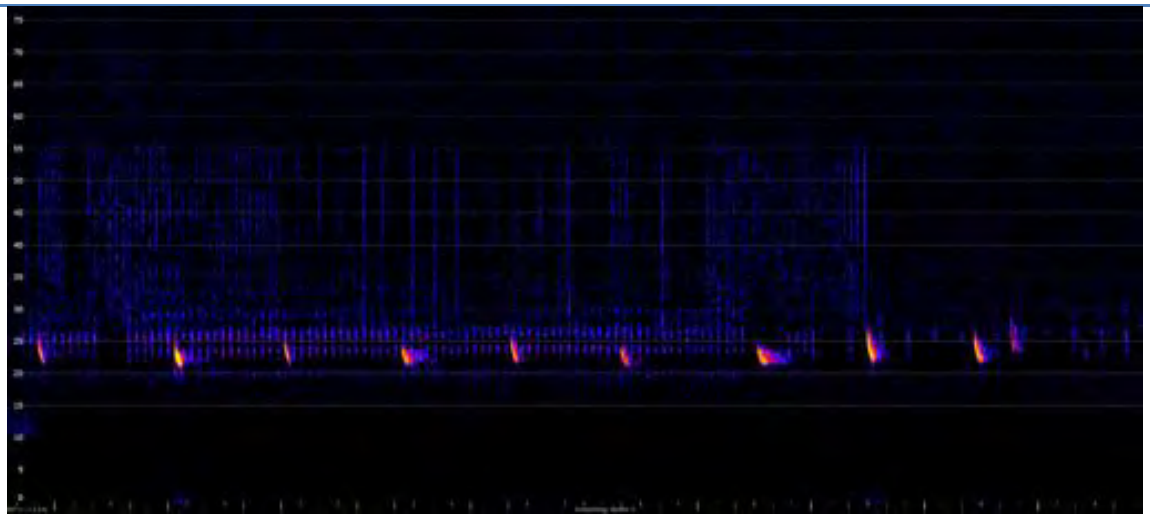
Miniopterus orianae



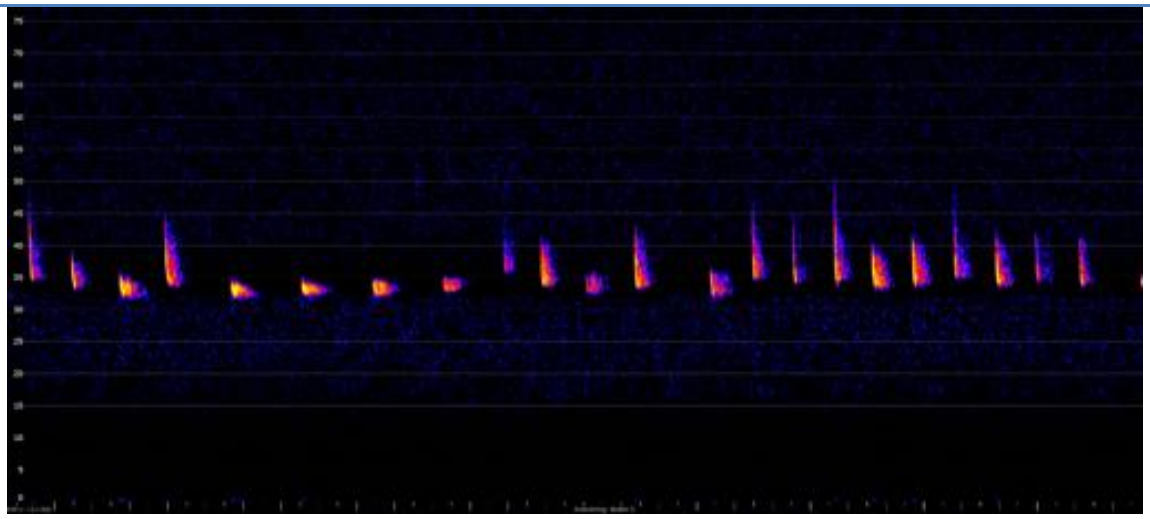
Austronomus australis



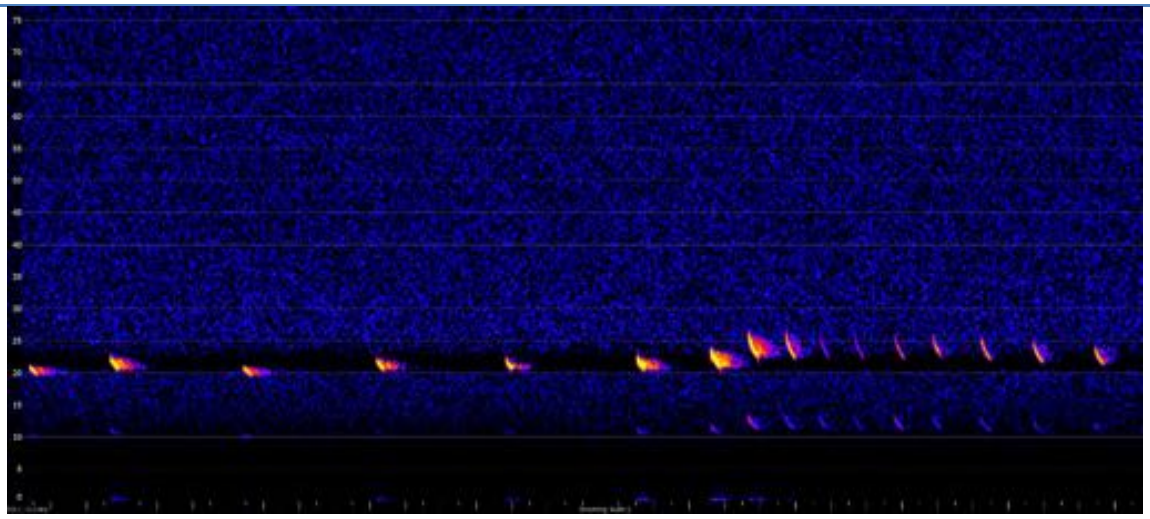
Chaerephon jobensis



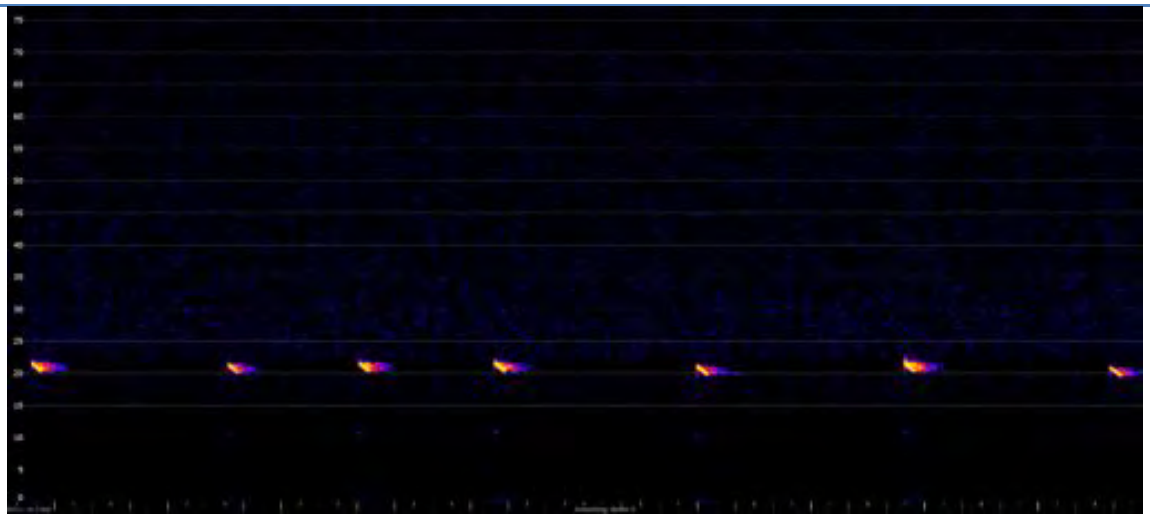
Ozimops lumsdenae



Ozimops ridei



Saccolaimus saccolaimus



Saccolaimus saccolaimus

Appendix 2 Number of bat calls detected per species per site: Mount Fox surveys, 7th – 28th July 2020

Site-code	AB01	AB02	AB03	AB04	AB05	AB06	AB07	AB08	AB09	AB10	AB11	AB12	AB13	AB14	AB15	Species total
Positively identified calls																
Rhinolophus megaphyllus	1		1			10		37	110	1	1		47	3		211
Rhinolophus robertsi									1							1
Chalinolobus gouldii	4	56	7		19		11		5						1	103
Chalinolobus nigrogriseus	3	5	15		10	88	10	1		1	1				11	145
Myotis macropus		11			5											16
Nyctophilus bifax / N geoffroyi	2	3			2			3	1	1			1	1		14
Scoteanax rueppellii	17	5			1	3		9		2			2			39
Scotorepens greyii	13	22	14		20	4	5	3		4				2		87
Scotorepens sanborni	35	20	3		9		2	2		6						77
Vespadelus pumilus / V. troughtoni						3			1				15			19
Miniopterus australis	34	107	128		191	549	22	1437	117	17	2		858	49	256	3767
Miniopterus orianae	5	75	145	1	122	5	6	27	6	9			3	1	6	411
Austronomus australis			5			1	1	5			1		4		1	18
Chaerephon jobensis	1	1	22		2	2		3	3	6			6		2	48
Ozimops lumsdenae		14	1					1	4							20
Ozimops ridei	56	130	8		4	41	19	21	22	77			20		16	414
Saccolaimus saccolaimus									7							7
Unresolved calls																
C. gouldii / O. ridei		9					6									15
C. nigrogriseus / S. greyii	82	752	14		86	12	21	2		3						972
M. macropus / Nyctophilus sp.								2						1	1	4
Site total	253	1210	363	1	471	718	103	1553	277	127	5	0	956	57	294	6388

Appendix H Scat analysis results

No	Site	Code	Date	Sample	Species	Content species	Content species
1	Upper Burdek	wp4	04-Sep-19	Scat	Petrogale sharmani(probable)		
2	Upper Burdek	wp4	04-Sep-19	Hair	Petrogale sharmani		
3	Upper Burdek	wp10		Scat	Petrogale or Thylogale sp.		
4	Upper Burdek	wp10	07-Sep-19	Scat	Petrogale sp.		
5	Michael Ck fal	wp12	07-Sep-19	Scat	Petrogale sp.		
6	Michael Ck fal	wp12	07-Sep-19	Scat	Pseudocheirus peregrinus(probable)		
7	Upper Burdek	wp5	03-Sep-19	Scat	Petrogale sp.(probable)		
8	Upper Burdek	wp1	04-Sep-19	Scat	Dog	Macropus parryi	Isoodon macrourus
9	Upper Burdek	wp9	06-Sep-19	Scat	Dog	Isoodon macrourus	

No.	Site	Position	Date	Description	Species	Species
1	Upper Burdekin	AK3	09-Jul-20		Macropus sp. M.parryi possible	Cane toad(probable)
2	Upper Burdekin	AK11	12-Jul-20	Rock pavement granite small outcrop	Petrogale sp.	
3	Upper Burdekin	AK10	12-Jul-20	Granite flat rocks	Macropod sp.	
4	Upper Burdekin	AK6	09-Jul-20	Rock pavement granite	Petrogale sp. possible	
5	Upper Burdekin	AK12	12-Jul-20	Grassy rock pavement	Trichosurus vulpecula	
6	Upper Burdekin	AK2	09-Jul-12		Trichosurus vulpecula	
7	Upper Burdekin	JL2	10-Jul-20	Granite	Macropod sp.	
8	Upper Burdekin	JL3	10-Jul-20	Granite	Petrogale sp.	
9	Upper Burdekin	AK5	09-Jul-20	Rainforest/basalt woodland edge	Macropus dorsalis/parryi	
10	Upper Burdekin	AK1	08-Jul-20	Under C.leichardti stringybark L212	Phascolarctos cinereus	
11	Upper Burdekin	JL1	10-Jul-20	Granite boulders	Petrogale sp. probable