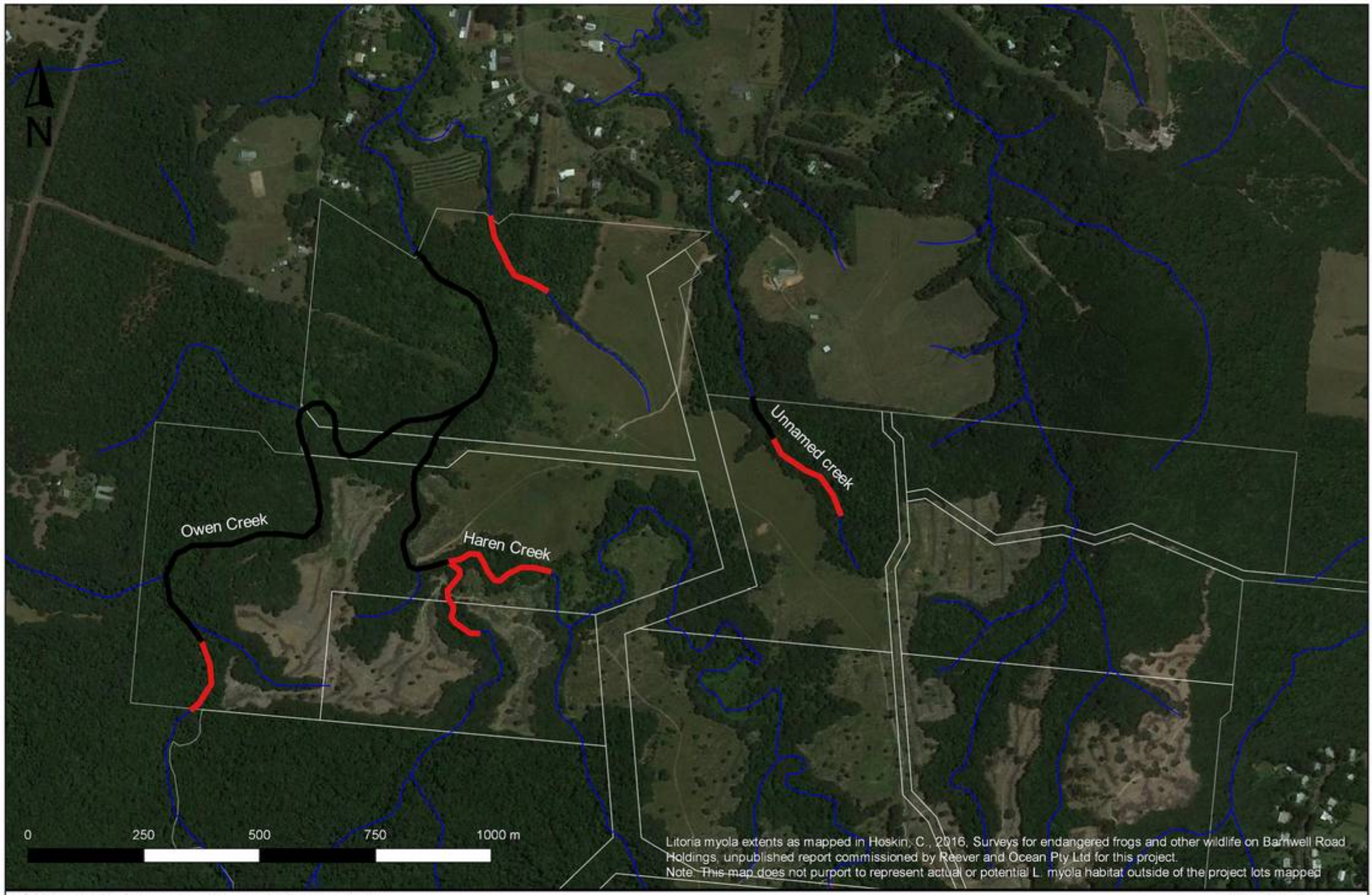
# ATTACHMENT F:
# KURANDA TREE FROM EXTENTS

## - Astrebla Ecological Services




## *Litoria myola* surveyed & predicted extent

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Mareeba Shire DCDB © State of Queensland (Department of Natural Resources and Mines) [2015]
Waterways layer © State of Queensland (Department of Natural Resources and Mines) [2015]
GIS operator Simon Danielsen, Astrebla Ecological Services, 02/05/16.

**Legend**

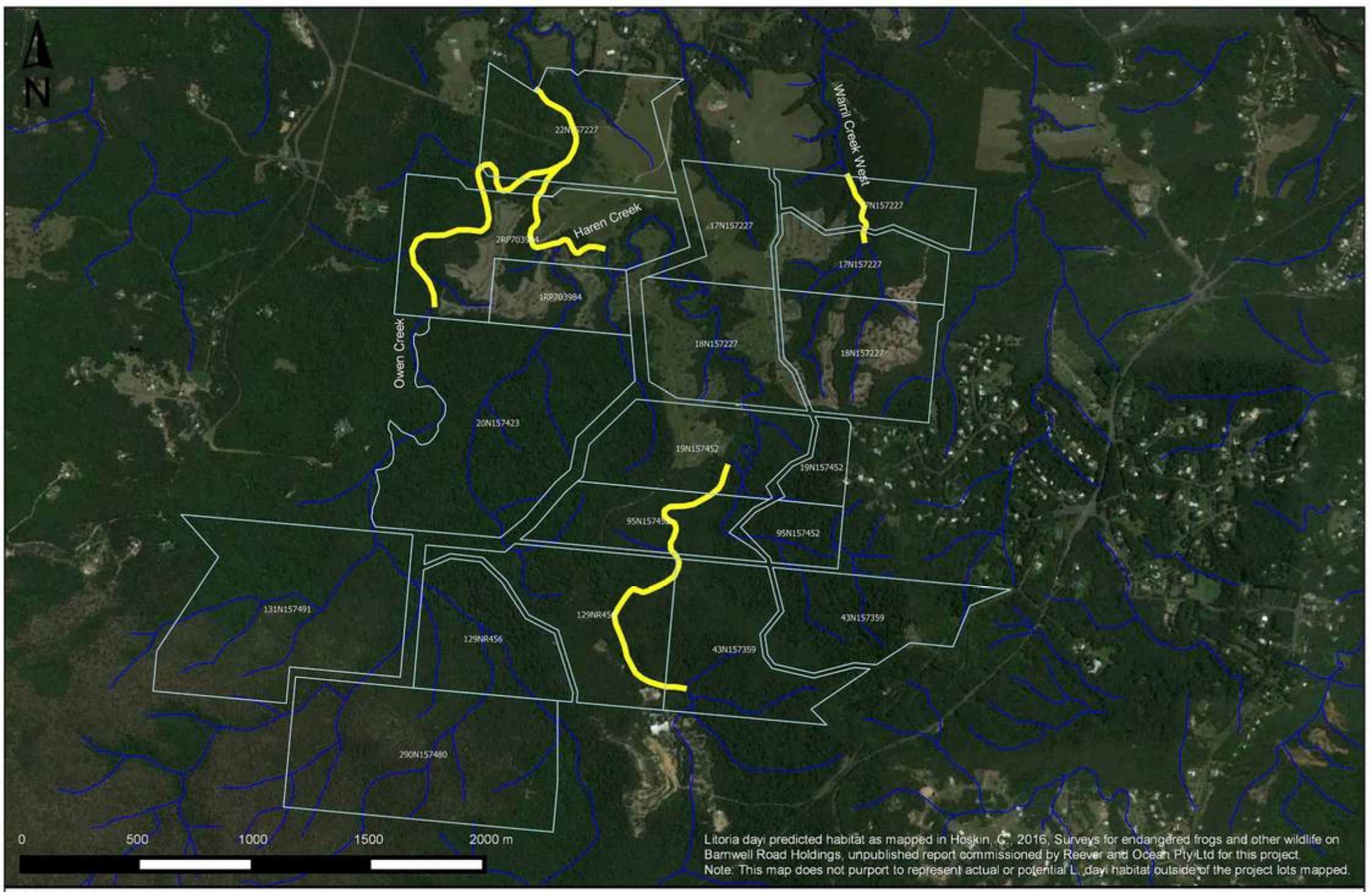
KUR-World lots — Litoria myola surveyed extent — Litoria myola predicted extent

**Attachment F**

**Prepared by ASTREBLA ECOLOGICAL SERVICES**

# ATTACHMENT G:
# AUSTRALIA LACELID EXTENTS

## - Astrebla Ecological Services




Litoria dayi predicted habitat as mapped in Hoskin, C., 2016, Surveys for endangered frogs and other wildlife on Barnwell Road Holdings, unpublished report commissioned by Reever and Ocean Pty Ltd for this project.
Note: This map does not purport to represent actual or potential L. dayi habitat outside of the project lots mapped.

## *Litoria dayi* surveyed & predicted extent


GIS operator Simon Danielsen, Astrebla Ecological Services, 27/04/16.

**Legend**

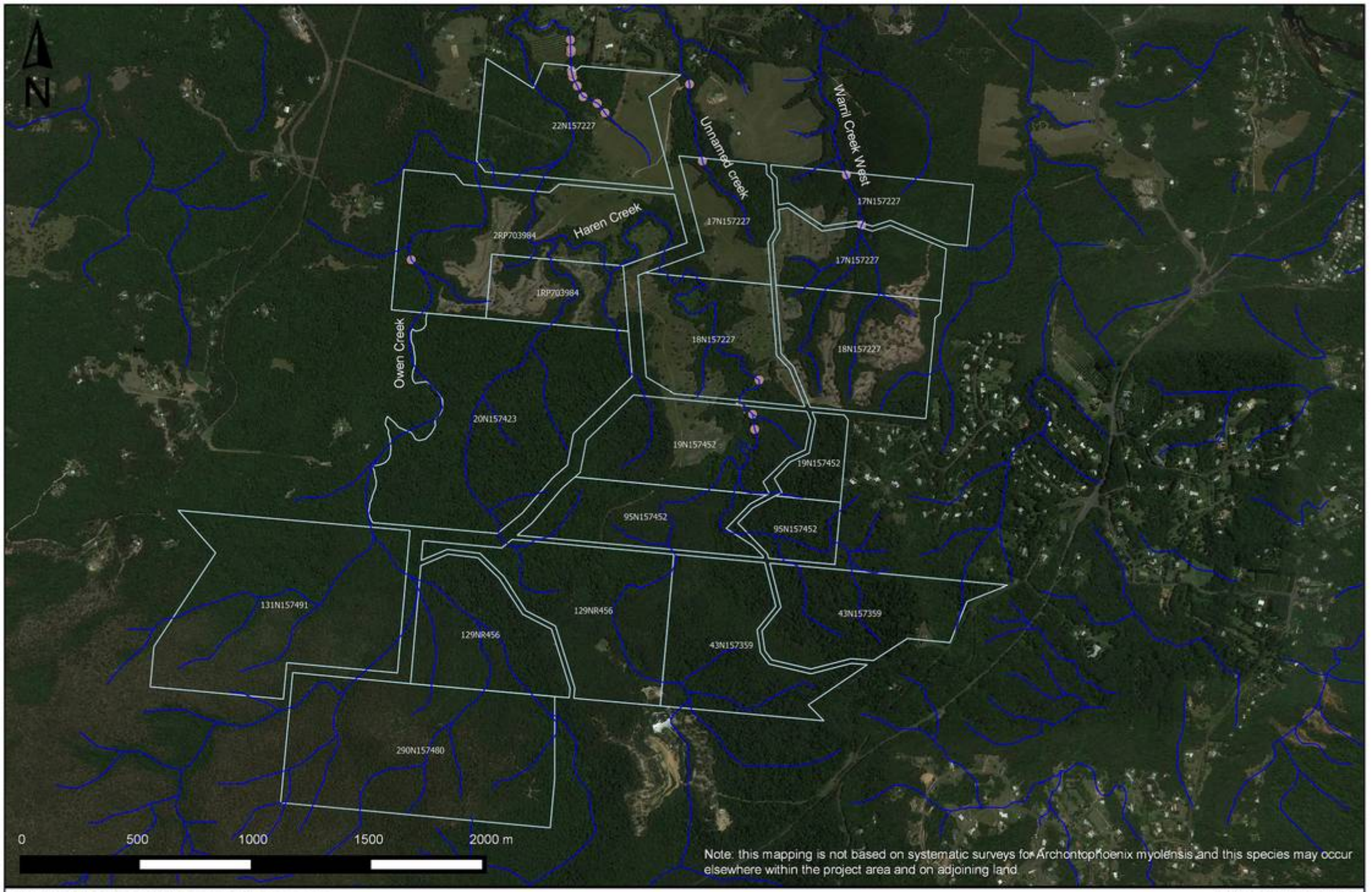
- KUR-World lots
- Litoria dayi predicted extent

**Attachment G**

**Prepared by ASTREBLA ECOLOGICAL SERVICES**

# ATTACHMENT H:
# MAYOLA PALM RECORDS

## - Astrebla Ecological Services




## *Archontophoenix myolensis* records

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Waterways layer © State of Queensland (Department of Natural Resources and Mines) [2015]
GIS operator Simon Danielsen, Astrebla Ecological Services, 17/04/16.

**Legend**

Myola Project Lots

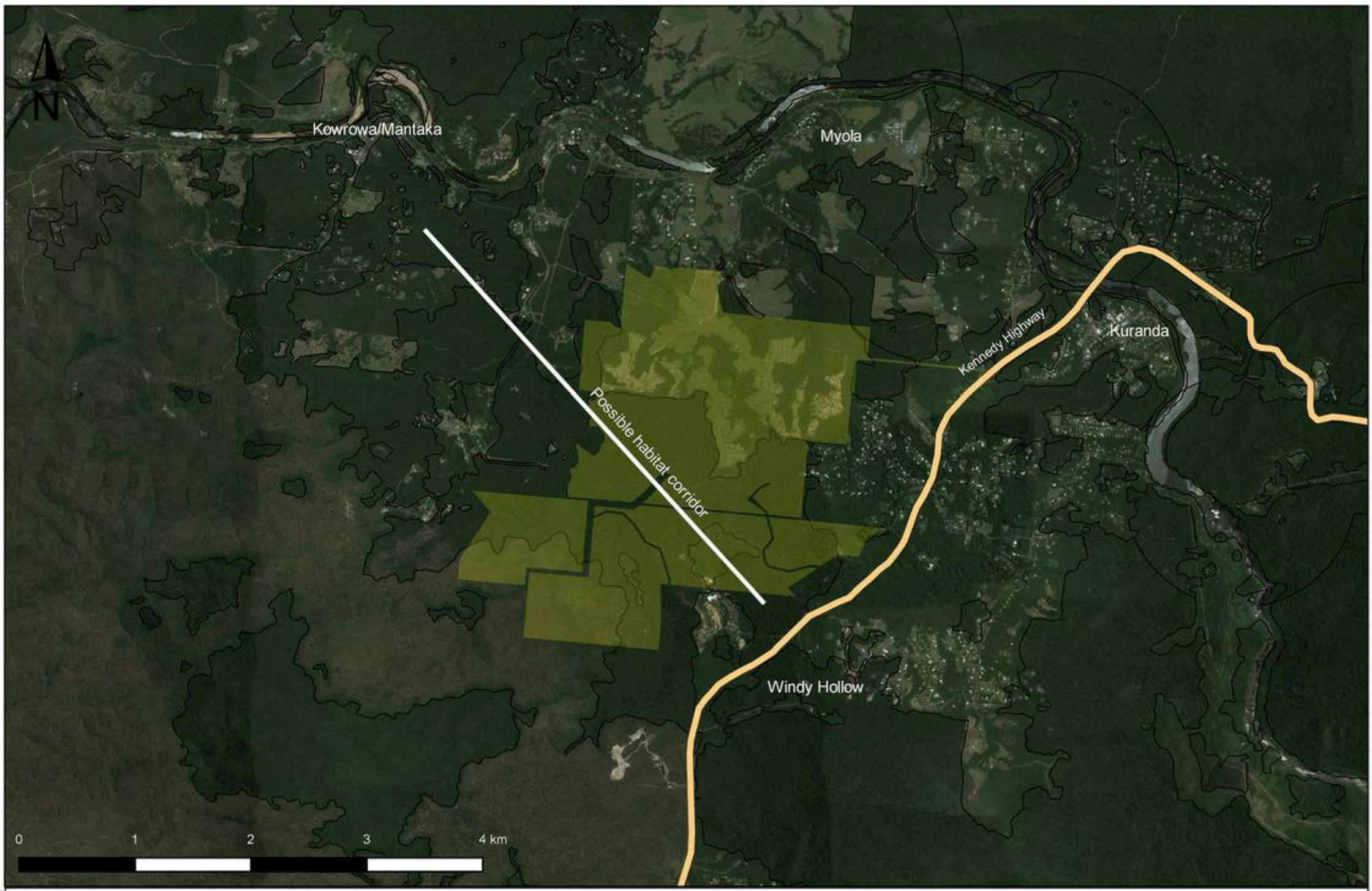
Archontophoenix myolensis records

**Attachment H**

**Prepared by ASTREBLA ECOLOGICAL SERVICES**

# ATTACHMENT I:
# CASSOWARY ESSENTIAL HABITAT

## - Astrebla Ecological Services




**Project area and mapped essential habitat for the southern cassowary**

**Attachment I**

Imagery:© Google. Taken 23/10/2015. This image reproduced at 1:40,000 when printed at A4.
Mareeba Shire DCDB & Essential habitat layer © State of Queensland (Department of Natural Resources and Mines) [2015]
GIS operator Simon Danielsen, Astrebla Ecological Services, 17/04/16.

**Legend**

Project Area | Essential habitat

**Prepared by ASTREBLA ECOLOGICAL SERVICES**

# ATTACHMENT J:
# FLORA SURVEY REPORT

## - Astrebla Ecological Services

# Flora Survey Report

*Barnwell Road, Myola*

*Prepared by Astrebla Ecological Services*
*November 2015*

A flora survey report for clearing in an area mapped as a high risk area on a flora trigger map, as required under section 256 of the *Nature Conservation (Wildlife Management) Regulation 2006* . This report demonstrates that section 261ZA 1(a) of that regulation is met, and therefore clearing is authorised under the regulation.

*This Flora Survey Report ('the Report') has been prepared by Astrebla Ecological Services ('AES') on behalf of and for Reever and Ocean Pty Ltd ('the client'). The Report may only be used and relied on by the client for the purpose of meeting the requirements of Chapter 4 of the* Nature Conservation (Wildlife Management) Regulation 2006 *('the Purpose') and may not be used by, or relied on by any person other than the client and the State of Queensland for the purpose of assessment under Chapter 4 of the above mentioned regulation.*

*The services undertaken by AES in connection with preparing the Report were limited to those specifically detailed in the Report. The Report is based on conditions encountered and information reviewed, including assumptions made by AES, at the time of preparing the Report. Assumptions made by AES are those stated throughout the Report.*

*To the maximum extent permitted by law AES expressly disclaims responsibility for or liability arising from:*

- *any error in, or omission in connection with assumptions, or*
- *reliance on the Report by a third party, or use of this Report other than for the Purpose.*

# Contents



# Figures

## Tables



## Appendices

# 1 Introduction

## 1.1 Overview

Reever and Ocean Pty Ltd (the landowner) own a parcel of adjoining freehold lots in the Myola area, two kilometres west of Kuranda town centre. This land holding, at the southern of Barnwell Road terminus (street number 112), was previously a cattle farm. The majority of these lots are now vegetated by remnant vegetation that is predominately mapped as least concern regional ecosystems (see Appendix A).

However, a number of lots in the north of the project area are primarily mapped as non-remnant vegetation, and the landowners wish to clear some of this non-remnant vegetation so as to reinstate the property to its original condition as an operating farm.

The lots (referred to hereafter as 'the subject lots') which were surveyed for this Flora Report, all located in Mareeba Shire in a rural zone, are mapped in Figure 1 (the lots with white boundaries) and are:

- Lot 17 N157227
- Lot 18 N157227
- Lot 19 N157452

Most of the non-remnant vegetation in these lots is mapped as a high risk area on a flora trigger map. Therefore, under section 256 of the *Nature Conservation (Wildlife Management) Regulation 2006* (the NCWMR) a flora survey and flora survey report is required prior to clearing.

Note – parts of these lots have already been cleared in breach of s.256 and this breach has been self-reported to the Department of Environment and Heritage Protection (EHP) by the landowners (letter to Wildlife Officer Kerry Walsh dated 7 September 2015, see Appendix C).

**This report is concerned only with areas not impacted under that previous clearing.**

A flora survey undertaken in accordance with the requirements of the *Flora Survey Guidelines – Protected Plants* (as required under s.257 of the NCWMR) was undertaken in the areas of non-remnant vegetation proposed to be cleared. No protected plants were detected.

**Therefore, this intended clearing will meet the activity exemption outlined in s.261ZA of the NCWMR, as no protected plant occurs in the clearing area or within 100 m.**

## 1.2 Project location and description

The subject lots listed in Section 1.1 and mapped in Figure 1 are located at the southern end of Barnwell Road in Myola, within Mareeba Shire, in the rural zone. They form part of the old Barnwell family farm, which was formerly used for cattle grazing. The street address is 112 Barnwell Rd, Kuranda.

The entire northern third of the project area is located on gently undulating to undulating rises dissected by gullies. It had been cleared by the previous owners – historical aerial photo research indicates most of the northern third of the project area was already cleared in 1942, and had been kept in that state until the mid-1990s.

These cleared areas were either open signal grass (*Urochloa mutica*) pasture, under lantana (*Lantana camara*) and raspberry (*Rubus alceifolius*), or wattle-dominated regrowth (dominated by a mixture of *Acacia celsa* and/or *A. cincinnata*).

The eastern sections of lots 17 and 18 are located in the Warril Creek catchment. The remainder of those lots, and lot 19, are located in the Haren Creek catchment (which forms part of Owen Creek catchment).

### 1.2.1 Geology

The entire project area is located on Barron River metamorphics (slate, phyllite, quartzite, chert, greywacke) (Bureau of Mineral Resources, Geology and Geophysics, 1962). Some local areas of sandstone have been noted.

## 1.3 Proposed land use and clearing area

The landowner proposes to restore this land, zoned rural, to its previous status as a farm, by clearing the non-remnant vegetation located outside of areas mapped as reef-regrowth watercourse vegetation (category R under the *Vegetation Management Act 1999*). In addition, a 60 m buffer from all creek lines (as detected on the ground, not as mapped in any publicly available mapping) has been imposed to protect habitat potentially utilised by the Kuranda treefrog (*Litoria myola*).

Therefore, only vegetation mapped as non-remnant will be directly impacted. The land proposed to be used for this purpose is mapped in Figure 1 and comprises all coloured areas – that is, areas mapped in Figure 1 as 'currently clear/open areas' and 'proposed new clearing areas'. Areas mapped in black are the areas proposed to be cleared which are the subject of this report (numbered one to five).

## 1.4 Survey methodology

This survey was conducted in two phases – an initial desktop survey was conducted to identify possible protected plants (listed by either the Commonwealth or Queensland governments) that are known or predicted to occur in the area within a ten kilometre radius, followed by random meander surveys on site in accordance with the *Flora Survey Guidelines – Protected Plants* (Department of Environment and Heritage Protection, 2014).

Surveys were conducted in two periods, between 29 August to 4 September 2015, and 9 November to 18 November 2015.

### 1.4.1 Desktop survey

The desktop survey involved two searches of the Wildlife Online database using differing radii, and a search of the Commonwealth government's online Protected Matters Search Tool (PMST). The results are provided in Appendix D. It should be noted that the PMST is predictive and as such a number of records nominated were discounted after further research into habitat requirements and records of known locations (and particularly the altitudes at which they occur). Protected species nominated in these searches that it was considered *may possibly be present* in the Myola area in mesophyll/notophyll vine forest, and that were targeted during the field survey, are:

- *Alpinia hylandii*: a petiolate ginger (Zingiberaceae) (Cooke, 1987) previously recorded at two locations within five kilometres of the Barnwell Rd site in mesophyll vine forest (Australia's Virtual Herbarium, 2015). This species was previously located by the author of this report on nearby land, lot 20 N157423 (in a patch of 0.7 ha at 55 350456 E 8139318 S).
- *Archontophoenix myolensis* (Myola palm): an *Archontophoenix* (Arecaceae) that is very similar to the common *A. alexandrae* – the main morphological point of difference is in the mature fruit, with generally difficult to assess vegetative differences. It is restricted to riverine rainforest in the Warril Ck catchment, and adjacent riparian areas of the Barron River downstream of Warril Ck (Dowe and Hodel, 1994). The Barnwell Road property encompasses part of the Warril Ck catchment. Suspected Myola palms have been located adjacent to lot 17 by this report author, and one suspected individual has been recorded on lot 22. However, identification to species is very difficult with this species before reproductive age is reached (as was the case with all individuals found here).
- *Canarium acutifolium* var. *acutifolium*: a tree to 40 m tall in the Burseraceae, mainly distinguished from other *Canarium* spp. by the number of stamens. It has been collected from mesophyll vine forest beside watercourses at up to 200 m elevation (Threatened Species Scientific Committee, 2008ka). The record closest to Myola (and the only record in the Cairns/Kuranda area) came from a 1961 collection at Redlynch (Australia's Virtual Herbarium, 2015).
- *Polyphlebium (Crepidomanes) endlicherianum* (middle filmy ferm) and *P. majoriae*: these filmy ferns (Hymenophyllaceae) are restricted to damp locations, where they grow on rocks, logs or tree trunks (Bostock and Spokes, 1998; Department of the Environment, 2015). Both species have been infrequently collected in the Cairns/Kuranda area, with one record for each species between five and ten kilometres from Barnwell Rd (Australia's Virtual Herbarium, 2015).
- *Randia audasii*: an understorey tree (Rubiaceae) endemic to North Queensland growing in well-developed rainforest (Hyland *et al*, 2010). Four collections of this species have been made in the Kuranda and Speewah area within five kilometres of the Barnwell Road site (Australia's Virtual Herbarium, 2015).
- *Senegalia albizioides* (climbing wattle): a scrambling plant with bipinnate leaves endemic to North Queensland (Hyland *et al*, 2010), and previously recorded from Smithfield growing in disturbed notophyll vine forest and regrowth with lantana on metamorphic soils (Australia's Virtual Herbarium, 2015).

### 1.4.2 Site survey

As recommended in the *Flora Survey Guidelines – Protected Plants* (Department of Environment and Heritage Protection, 2014), a random meander method was used to search for protected plants on this site. The survey was conducted over two survey events between 29 August and 4 September, and 9 to 18 November, 2015. The surveys were conducted in areas that are proposed to be cleared that are 'in the wild', and the impact area (encompassing a 100 m buffer of 'in the wild' vegetation as defined in the guidelines). The objective of the surveys was to determine the presence of protected plants in the areas proposed to be cleared and in the impact areas.

The total area proposed to be cleared is 20.13 ha. According to the *Flora Survey Guidelines – Protected Plants* (Department of Environment and Heritage Protection, 2014), areas of less than 10 ha should be surveyed at a density of at least one transect. Those between 10 and 100 ha should be surveyed at a minimum density of two to five transects. All except one area proposed for clearing are less than 10 ha, and that area exceeds the 10 ha threshold by only 0.35 ha.

Therefore, a total of six transects were surveyed, as described below (and mapped in Figure 5). Each discrete area has at least one transect surveyed, and area 1, the largest, has two:

- Area 1 (10.35 ha):
    - Transect 1: 152 species recorded.
    - Transect 2: 102 species recorded.
- Area 2 (3.9 ha):
    - Transect 3: 126 species recorded.
- Area 3 (1.99 ha):
    - Transect 4: 135 species recorded.
- Area 4 (0.16 ha):
    - Transect 5: 99 species recorded.
- Area 5 (3.73 ha):
    - Transect 6: 154 species recorded.

Each transect was conducted recording plant species until no new plant species had been recorded for 30 minutes, or until all areas in the wattle-dominated regrowth and its 100 m buffer in that location had been searched.

Note – some transects are not continuous – due to the large areas and time involved in these surveys, it was sometimes necessary to interrupt the field survey, and the GPS tracks will reflect these interruptions.

The survey results for each transect are provided in Table 1. Transects are mapped in Figure 2, Figure 3 and Figure 4. All of the targeted threatened species listed in Section 1.4.1 above are apparent and identifiable at the time of year this survey was conducted (September and November). None were recorded as being present anywhere on the subject lots (lots 17 and 18 N157227 and lot 19 N157452).

## 1.5 Clearing dates

Clearing dates will be weather dependant and will be between 28 December 2015 and 28 December 2016. It is expected that clearing will occur sooner rather than later. However, in case of unforeseen delays, the dates on the application form have been entered as 28 December 2015 to 28 December, 2017.

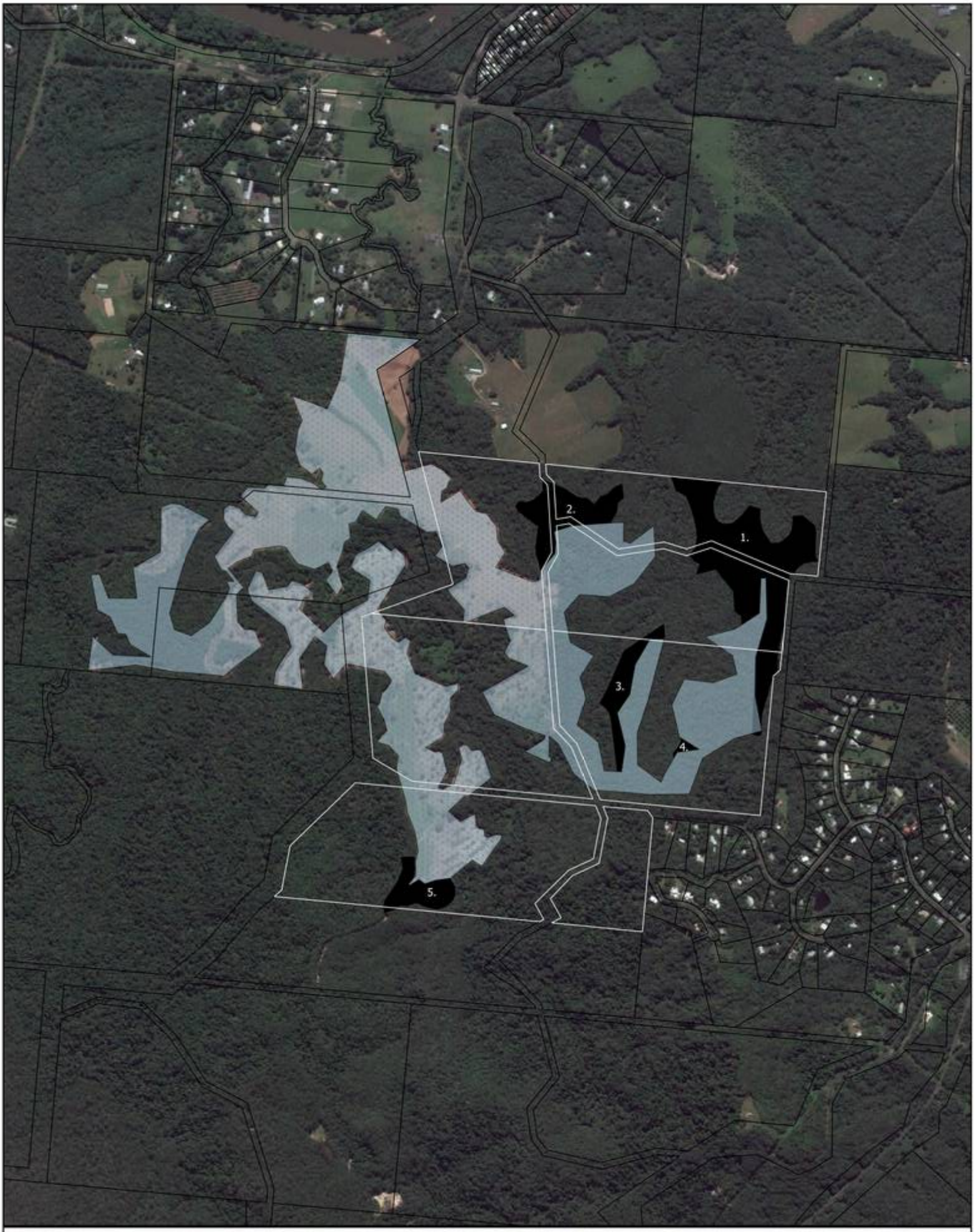



**Figure 1 Subject lots, proposed clearing and existing clearing**

250 0 250 500 750 1000 m

**Legend**

Currently clear/open areas

Proposed new clearing areas

N

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GIS operator Simon Danielsen, Astrebla Ecological Services, 13/12/15.

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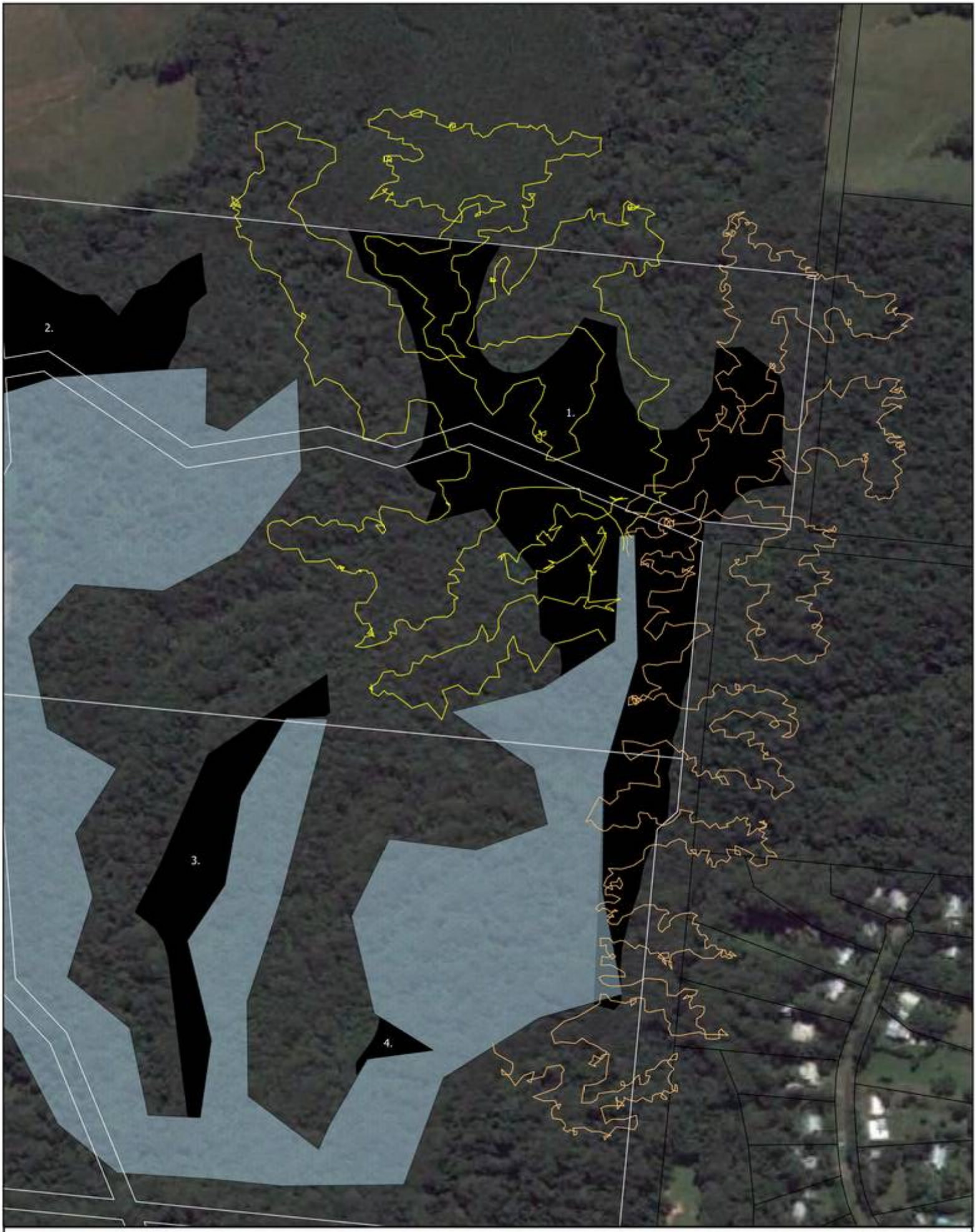


**Figure 2 Area one transects**

100 0 100 200 300 400 m

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GIS operator Simon Danielsen, Astrebla Ecological Services, 13/12/15.

**Legend**

- Transect 1
- Transect 2
- Currently clear/open areas
- Proposed new clearing areas

N

**Prepared by ASTREBLA ECOLOGICAL SERVICES**

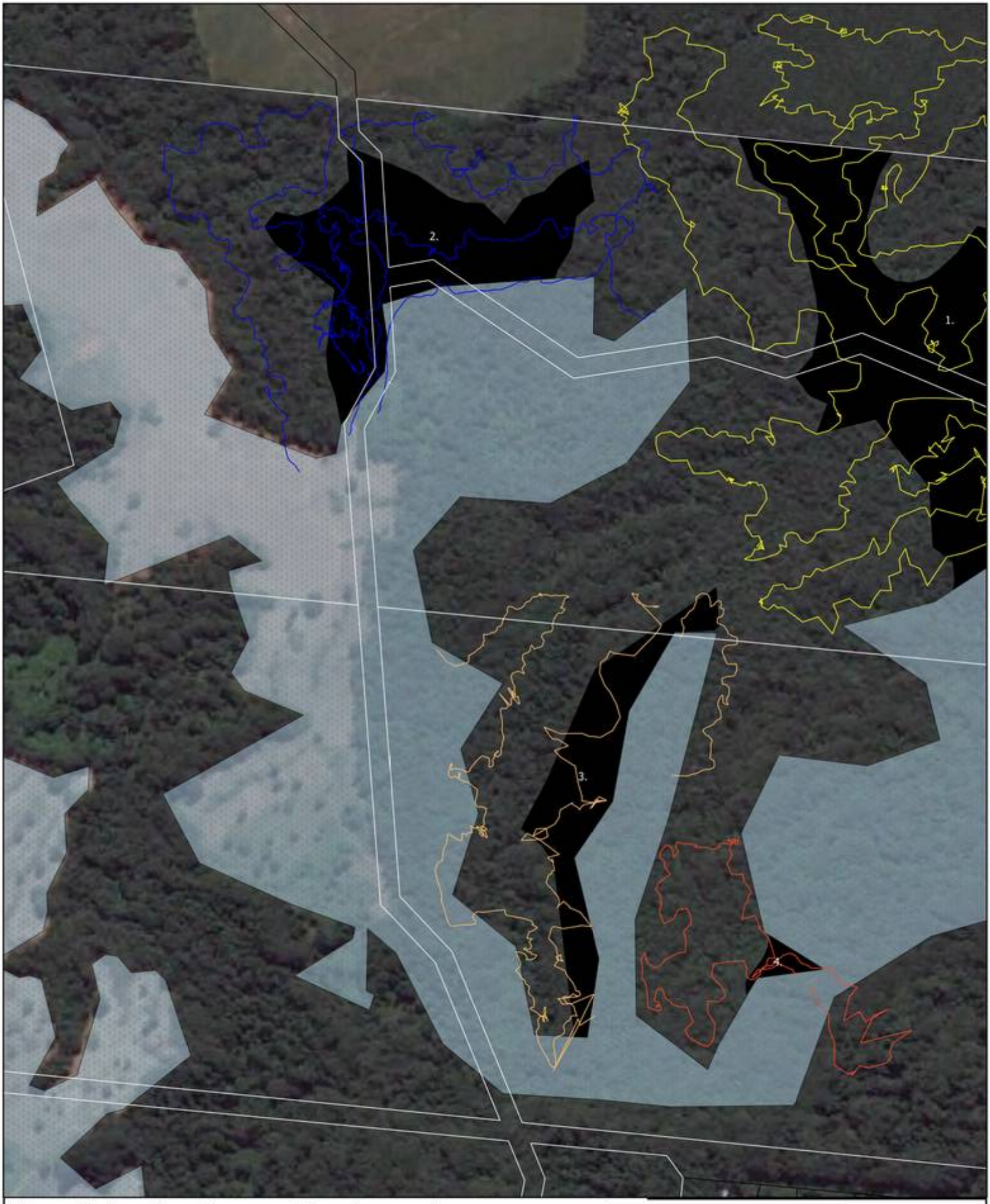


**Figure 3 Area two, three and four transects**

100 0 100 200 300 400 m

**Legend**

- Transect 2
- Transect 3
- Transect 4
- Transect 5
- Currently clear/open areas
- Proposed new clearing areas

N

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GIS operator Simon Danielsen, Astrebla Ecological Services, 13/12/15.

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**Figure 4 Area five transect (transect six)**

25 0 25 50 75 100 m

**Legend**

- DCDB_Myola area
- Transect 6
- Currently clear/open areas
- Proposed new clearing areas

N

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GIS operator Simon Danielsen, Astrebla Ecological Services, 13/12/15.

**Prepared by ASTREBLA ECOLOGICAL SERVICES**

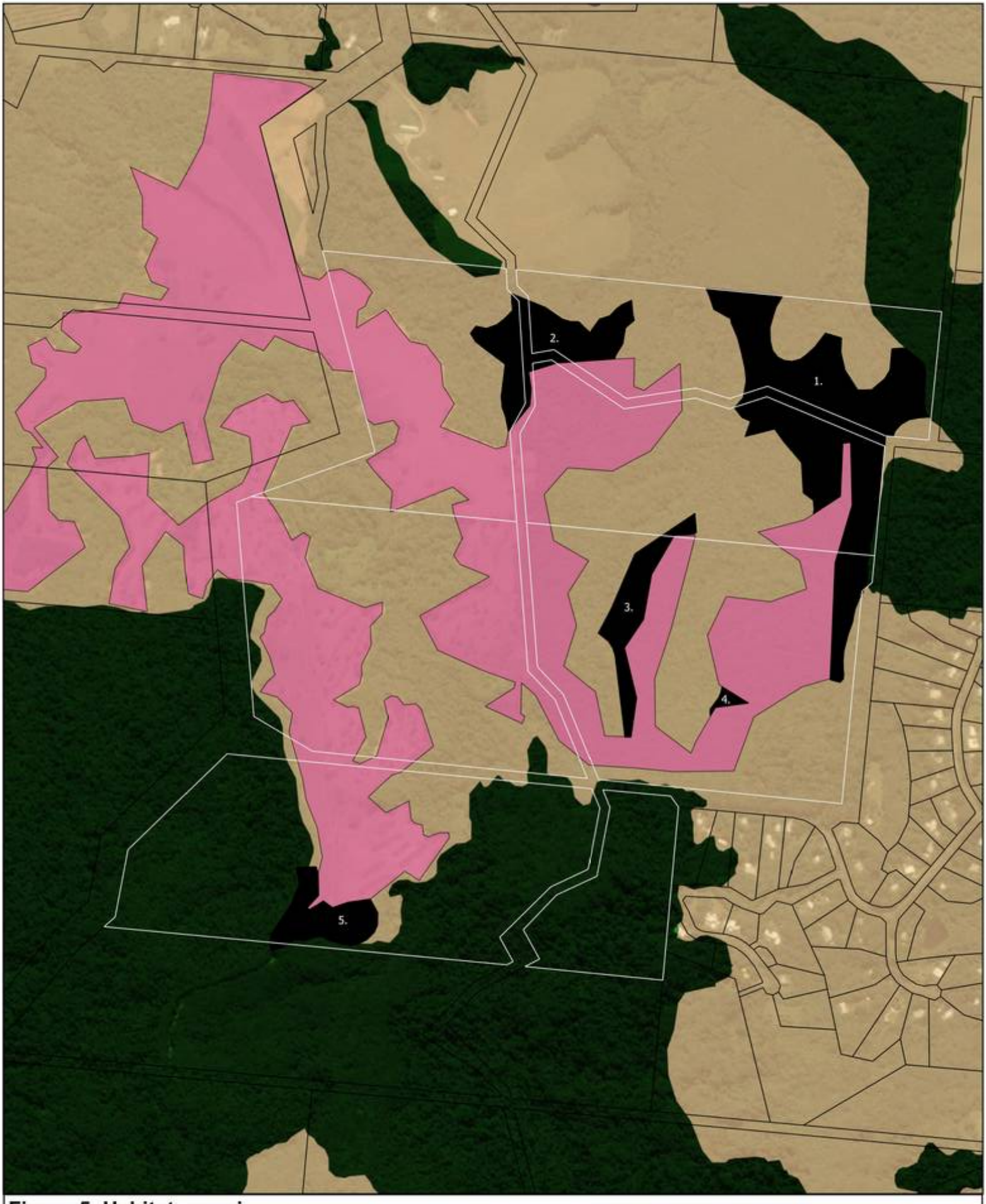


**Figure 5 Habitat mapping**

100 0 100 200 300 400 m

**NOTE: All areas mapped as 'proposed new clearing areas' are included in 'wattle regrowth habitat'.**

**Legend**

- Proposed new clearing areas
- Open habitat
- Wattle regrowth habitat
- Remnant vegetation habitat

N

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GIS operator Simon Danielsen, Astrebla Ecological Services, 13/12/15.

**Prepared by ASTREBLA ECOLOGICAL SERVICES**

# 2 Survey results

## 2.1 Random meander results

The results of the six random meander surveys of the clearing impact areas are presented in Table 1. Random meanders are mapped in Figure 2. No species of conservation significance were detected in the clearing impact areas. A total of 232 species from 174 genera, in 83 families, were recorded. The most diverse families were:

- Elaeocarpaceae: 3 genera, 8 species
- Lauraceae: 6 genera, 14 species
- Myrtaceae: 10 genera, 15 species
- Rubiaceae: 8 genera, 8 species
- Rutaceae: 7 genera, 12 species
- Sapindaceae: 12 genera, 16 species.

The most diverse genera were:

- *Elaeocarpus* (Elaeocarpaceae): 5 species
- *Cryptocarya* (Lauraceae): 6 species
- *Ficus* (Moraceae): 5 species
- *Syzygium* (Myrtaceae): 5 species.

Table 1 Survey results

| Family | Species | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|---|
| Adiantaceae | *Adiantum hispidulum* Sw. | Y | | Y | Y | Y | Y |
| | *Taenitis pinnata* (J.Sm.) Holttum | Y | Y | Y | Y | Y | Y |
| Anacardiaceae | *Blepharocarya involucrigera* F.Muell. | Y | | | | | Y |
| Annonaceae | *Melodorum uhrii* F.Muell. | Y | Y | Y | Y | Y | Y |
| | *Xylopia maccreae* (F. Muell.) L.S.Sm. | Y | | | | | Y |
| Apiaceae | *Mackinlaya macrosciadea* (F.Muell.) F.Muell. | Y | Y | Y | Y | | Y |
| Apocynaceae | *Alstonia muelleriana* Domin | Y | Y | | Y | Y | Y |
| | *Alstonia scholaris* (L.) R.Br. | | | | Y | Y | |
| | *Alyxia ruscifolia* R.Br. | Y | | | | | Y |
| | *Hoya macgillivrayi* F.M.Bailey | Y | | Y | | | |
| | *Melodinus acutiflorus* F.Muell. | Y | | Y | | | Y |
| | *Melodinus australis* (F.Muell.) Pierre | Y | Y | Y | Y | Y | Y |
| | *Parsonsia latifolia* (Benth.) S.T.Blake | | Y | Y | | | Y |
| Araceae | *Epipremnum pinnatum* (L.) Engl. | Y | | | Y | | Y |
| | *Pothos longipes* Schott | Y | | | | | Y |
| | *Rhaphidophora australasica* F.M. Bailey | Y | | | | | Y |
| Araliaceae | *Delarbrea michieana* (F. Muell.) F. Muell. | Y | | | | | |
| | *Polyscias australiana* (F.Muell.) Philipson | Y | Y | Y | Y | Y | Y |
| | *Polyscias elegans* (C.Moore & F.Muell.) Harms | Y | Y | Y | Y | Y | Y |
| | *Polyscias purpurea* C.T.White | Y | | | Y | | |
| | *Schefflera actinophylla* (Endl.) Harms | Y | | | Y | Y | |
| Araucariaceae | *Agathis robusta* (C.Moore ex F.Muell.) F.M.Bailey | | | Y | | | Y |

| Family | Species | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|---|
| Arecaceae | *Archontophoenix alexandrae* (F.Muell.) H.Wendl. & Drude | Y | | Y | | | Y |
| | *Calamus australis* Mart. | Y | Y | Y | Y | Y | Y |
| | *Calamus caryotoides* A.Cunn. ex Mart. | Y | | | | | Y |
| | *Calamus moti* F.M.Bailey | Y | Y | | Y | Y | Y |
| | *Linospadix minor* (W.Hill) F.Muell. | Y | Y | | Y | Y | Y |
| | *Syagrus romanzoffiana* (Cham.) Glassman* | | | Y | | | |
| Aristolochiaceae | *Pararistolochia deltantha* (F.Muell.) Michael J.Parsons | | | Y | Y | | |
| Aspleniaceae | *Asplenium australasicum* (J.Sm.) Hook. | Y | Y | | Y | Y | Y |
| Asteraceae | *Ageratum houstonianum* Mill.* | | | Y | | | |
| | *Coronidium rupicola* (DC.) Paul G.Wilson | | | Y | | | |
| Balanophoraceae | *Balanophora fungosa* J.R.Forst. & G.Forst. | Y | | | | | Y |
| Bignoniaceae | *Deplanchea tetraphylla* (R.Br.) F.Muell. | | | Y | | | Y |
| | *Neosepicaea jucunda* (F.Muell.) Steenis | Y | | | | | Y |
| | *Pandorea pandorana* (Andrews) Steenis | | | | | Y | |
| Blechnaceae | *Blechnum cartilagineum* Sw. | Y | | Y | Y | Y | Y |
| Carpodetaceae | *Abrophyllum ornans* (F.Muell.) Hook.f. ex Benth. | Y | | Y | Y | | Y |
| Clusiaceae | *Calophyllum sil* Lauterb. | Y | Y | Y | Y | Y | Y |
| | *Garcinia warrenii* F.Muell. | Y | Y | | | Y | Y |
| Connaraceae | *Connarus conchocarpus* F.Muell. subsp. *conchocarpus* | Y | Y | | | | Y |
| Cunoniaceae | *Davidsonia pruriens* F.Muell. | Y | Y | | Y | Y | Y |
| Cyatheaceae | *Cyathea rebeccae* (F.Muell.) Domin | Y | | Y | Y | Y | Y |
| | *Cyathea cooperi* (Hook. ex F.Muell.) Domin | Y | | Y | Y | | Y |
| Cyperaceae | *Gahnia aspera* (R.Br.) Spreng. | Y | Y | Y | Y | Y | |
| | *Scleria polycarpa* Boeckeler | | | Y | | Y | |
| Dennstaedtiaceae | *Pteridium esculentum* (G.Forst.) Cockayne | | Y | Y | | Y | |
| Dichapetalaceae | *Dichapetalum papuanum* (Becc.) Boerl. | Y | | | Y | | Y |
| Dilleniaceae | *Dillenia alata* (R.Br. ex DC.) Martelli | Y | | | | | |
| | *Hibbertia scandens* (Willd.) Gilg | Y | Y | Y | Y | Y | Y |
| | *Tetracera daemeliana* F.Muell. | Y | | Y | Y | Y | Y |
| | *Tetracera nordtiana* F.Muell. | Y | Y | Y | Y | Y | Y |
| Dioscoreaceae | *Dioscorea transversa* R. Br. | | | | | | Y |
| Ebenaceae | *Diospyros cupulosa* (F.Muell.) F.Muell. | Y | | | | | Y |
| | *Diospyros hebecarpa* A.Cunn. ex Benth. | | | | | | Y |
| Elaeocarpaceae | *Aceratium megalospermum* (F.Muell.) Balgooy | Y | | | | | Y |
| | *Elaeocarpus bancroftii* F.Muell. & F.M.Bailey | Y | Y | | Y | Y | |
| | *Elaeocarpus eumundi* F.M.Bailey | | | | Y | | |
| | *Elaeocarpus foveolatus* F.Muell. | Y | | Y | Y | | |
| | *Elaeocarpus grahamii* F.Muell. | Y | | | | | Y |
| | *Elaeocarpus grandis* F.Muell. | Y | Y | Y | Y | Y | Y |
| | *Sloanea australis* (Benth.) F.Muell. subsp. *australis* | | | | Y | | Y |
| | *Sloanea langii* F.Muell. | Y | Y | Y | Y | Y | Y |
| Euphorbiaceae | *Homalanthus novoguineensis* (Warb.) K.Schum. | Y | | | | | Y |
| | *Macaranga involucrata* var. *mallotoides* (F.Muell.) L.M.Perry | Y | Y | Y | Y | Y | Y |
| | *Macaranga subdentata* Benth. | Y | Y | | | | Y |
| | *Mallotus polyadenos* F.Muell. | Y | | | | | |
| | *Omphalea queenslandiae* F.M.Bailey | Y | | Y | | | Y |
| | *Rockinghamia angustifolia* (Benth.) Airy Shaw | Y | | | | | Y |

| Family | Species | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|---|
| Fabaceae | *Austrosteenisia blackii* (F.Muell.) R.Geesink var. *blackii* | Y | | | Y | | Y |
| | *Austrosteenisia stipularis* (C.T. White) Jessup | | Y | | | | Y |
| Flacourtiaceae | *Scolopia braunii* (Klotzsch) Sleumer | Y | | Y | Y | | Y |
| Flagellariaceae | *Flagellaria indica* L. | Y | Y | Y | Y | | Y |
| Gleicheniaceae | *Dicranopteris linearis* (Burm.f.) Underw. | Y | | Y | Y | | Y |
| Hemerocallidaceae | *Dianella caerulea* Sims | Y | Y | Y | Y | Y | Y |
| Hypoxidaceae | *Molineria capitulata* (Lour.) Herb. | Y | | Y | | | |
| Icacinaceae | *Apodytes brachystylis* F.Muell. | | Y | | | | Y |
| Lamiaceae | *Clerodendrum floribundum* R.Br. | Y | | | Y | Y | |
| Lauraceae | *Beilschmiedia bancroftii* (F.M.Bailey) C.T.White | Y | Y | Y | Y | | |
| | *Cinnamomum laubatii* F. Muell. | | Y | Y | Y | Y | Y |
| | *Cryptocarya clarksoniana* B.Hyland | | | | | Y | |
| | *Cryptocarya grandis* B.Hyland | | Y | Y | Y | | |
| | *Cryptocarya laevigata* Blume | Y | | | | | |
| | *Cryptocarya mackinnoniana* F.Muell. | Y | Y | Y | Y | Y | Y |
| | *Cryptocarya murrayi* F. Muell. | Y | Y | | | | |
| | *Cryptocarya vulgaris* B.Hyland | Y | Y | Y | | | |
| | *Endiandra acuminata* C.T.White & W.D.Francis | Y | Y | Y | | Y | Y |
| | *Endiandra hypotephra* F.Muell. | Y | | | Y | | Y |
| | *Litsea bindoniana* (F.Muell.) F.Muell. | Y | Y | Y | Y | Y | |
| | *Litsea leefeana* (F.Muell.) Merr. | Y | Y | Y | Y | Y | Y |
| | *Neolitsea brassii* C.K.Allen | | Y | | | | Y |
| | *Neolitsea dealbata* (R.Br.) Merr. | Y | Y | Y | Y | Y | Y |
| Laxmanniaceae | *Cordyline cannifolia* R.Br. | Y | Y | Y | Y | Y | Y |
| | *Eustrephus latifolius* R.Br. ex Ker Gawl. | | | Y | Y | | |
| | *Lomandra longifolia* Labill. | | Y | | | | Y |
| Leptaulaceae | *Citronella moorei* (F.Muell. ex Benth.) R.A.Howard | Y | | Y | | | |
| Loranthaceae | *Amyema queenslandica* (Blakely) Danser | Y | | Y | Y | | Y |
| Lygodiaceae | *Lygodium reticulatum* Schkuhr | Y | Y | Y | Y | Y | Y |
| Maesaceae | *Maesa dependens* F.Muell. | Y | Y | Y | | | |
| Melastomataceae | *Melastoma cyanoides* Sm. | | | | Y | | |
| | *Melastoma malabathricum* L. subsp. *malabathricum* | Y | | Y | Y | Y | Y |
| Meliaceae | *Dysoxylum oppositifolium* F.Muell. | | | | | | Y |
| Menispermaceae | *Hypserpa decumbens* (Benth.) Diels | Y | Y | Y | Y | Y | |
| | *Hypserpa laurina* (F.Muell.) Diels | Y | Y | Y | Y | Y | Y |
| | *Stephania japonica* (Thunb.) Miers | Y | | | | Y | Y |
| | *Tinospora smilacina* Benth. | | | Y | Y | | |
| Mimosaceae | *Acacia celsa* Tindale | Y | Y | Y | Y | Y | Y |
| | *Acacia cincinnata* F.Muell. | Y | Y | | Y | Y | Y |
| | *Acacia mangium* Willd. | | | Y | Y | | Y |
| | *Acacia melanoxylon* R.Br. | Y | | | Y | | |
| Monimiaceae | *Austromatthaea elegans* L.S. Sm. | Y | Y | | | | |
| | *Levieria acuminata* (F.Muell.) Perkins | | | | Y | | Y |
| | *Palmeria scandens* F.Muell. | Y | Y | Y | Y | Y | |
| | *Steganthera laxiflora* (Benth.) Whiffin & Foreman subsp. *laxiflora* | Y | Y | | Y | Y | Y |
| | *Tetrasynandra longipes* Perkins | | | | | | Y |
| Moraceae | *Ficus congesta* Roxb. var. *congesta* | | | Y | Y | Y | |
| | *Ficus destruens* F. Muell. ex C.T. White | Y | Y | | Y | | Y |

| Family | Species | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|---|
| | *Ficus fraseri* Miq. | | | | Y | Y | |
| | *Ficus hispida* L.f. *var. hispida* | | | Y | | | |
| | *Ficus opposita* Miq. | | | Y | | | |
| | *Trophis scandens* (Lour.) Hook. & Arn. subsp. *scandens* | | | | | Y | Y |
| Myristicaceae | *Myristica insipida* R.Br. | | Y | | Y | | Y |
| Myrsinaceae | *Ardisia brevipedata* F.Muell. | Y | Y | Y | Y | Y | |
| | *Ardisia crenata* Sims | | Y | Y | | | |
| | *Embelia caulialata* S.T.Reynolds | Y | | Y | Y | | |
| | *Myrsine subsessilis* F.Muell. | Y | Y | Y | | Y | Y |
| Myrtaceae | *Archirhodomyrtus beckleri* (F.Muell.) A.J.Scott | Y | Y | | Y | Y | Y |
| | *Corymbia torelliana* (F.Muell.) K.D.Hill & L.A.S.Johnson | | | | Y | | Y |
| | *Decaspermum humile* (G.Don) A.J.Scott | Y | Y | | Y | Y | |
| | *Eucalyptus tereticornis* Sm. | | | | | | Y |
| | *Melaleuca leucadendra* (L.) L. | | | | | | Y |
| | *Psidium guajava* L.* | | | Y | | | |
| | *Rhodamnia sessiliflora* Benth. | Y | Y | Y | Y | Y | Y |
| | *Rhodamnia spongiosa* (F.M.Bailey) Domin | | | Y | | | |
| | *Rhodomyrtus macrocarpa* Benth. | Y | | | Y | | |
| | *Syzygium fibrosum* (F.M. Bailey) T.G. Hartley & L.M. Perry | | | | Y | | |
| | *Syzygium kuranda* (F.M.Bailey) B.Hyland | Y | Y | Y | Y | Y | Y |
| | *Syzygium luehmannii* (F.Muell.) L.A.S.Johnson | Y | Y | | Y | Y | Y |
| | *Syzygium suborbiculare* (Benth.) T.G.Hartley & L.M.Perry | | | | | | Y |
| | *Syzygium wilsonii* (F.Muell.) B. Hyland | Y | | | | | Y |
| | *Tristania exiliflora* F. Muell. | | | | | | Y |
| Oleaceae | *Jasminum didymum* G.Forst. *subsp. didymum* | | | Y | | | Y |
| Orchidaceae | *Cymbidium madidum* Lindl. | Y | Y | Y | | Y | Y |
| Pandanaceae | *Benstonea monticola* (F.Muell.) Callm. & Buerki | Y | Y | Y | Y | Y | Y |
| | *Freycinetia excelsa* F.Muell. | Y | | | | | Y |
| | *Freycinetia scandens* Gaudich. | Y | | | | | Y |
| Passifloraceae | *Passiflora edulis* Sims* | | | | Y | | |
| | *Passiflora kuranda* Krosnick & A.J. Ford | Y | Y | | Y | Y | Y |
| Phyllanthaceae | *Breynia cernua* (Poir.) Muell.Arg. | Y | | Y | Y | | |
| | *Glochidion harveyanum* Domin | | | Y | | | Y |
| | *Glochidion sumatranum* Miq. | | | | Y | | |
| Pinaceae | *Pinus caribaea* L. | | Y | | | | |
| Piperaceae | *Piper caninum* Blume | Y | Y | Y | Y | Y | Y |
| | *Piper hederaceum* (Miq.) A. Cunn. ex C.DC. | | Y | Y | | | Y |
| Pittosporaceae | *Bursaria incana* Lindl. | | | | | Y | |
| | *Bursaria spinosa* Cav. subsp. *spinosa* | | | | Y | Y | Y |
| | *Pittosporum rubiginosum* A. Cunn. | Y | | Y | Y | Y | |
| Poaceae | *Imperata cylindrica* (L.) Raeusch. | | Y | Y | Y | Y | |
| | *Megathyrsus maximus* (Jacq.) B.K. Simon & S.W.L.Jacobs | | | Y | Y | | Y |
| | *Melinis repens* (Willd.) Zizka* | | | | Y | | |
| | *Oplismenus undulatus* (Ard.) Roem. & Schult. | Y | | | | | |
| | *Urochloa decumbens* (Stapf) R.D. Webster* | | | Y | Y | Y | |
| Podocarpaceae | *Podocarpus grayae* de Laub. | Y | Y | Y | Y | Y | Y |

| Family | Species | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|---|
| Polygalaceae | *Xanthophyllum fragrans* C.T. White | Y | Y | | Y | | |
| | *Xanthophyllum octandrum* (F.Muell.) Domin | Y | | | Y | Y | |
| Polypodiaceae | *Drynaria rigidula* (Sw.) Bedd. | Y | Y | Y | Y | Y | |
| | *Platycerium bifurcatum* (Cav.) C. Chr. | Y | | Y | Y | Y | Y |
| Proteaceae | *Cardwellia sublimis* F. Muell. | Y | Y | Y | Y | Y | |
| | *Carnarvonia araliifolia* F.Muell. var. *araliifolia* | Y | Y | Y | Y | Y | Y |
| | *Darlingia darlingiana* (F.Muell.) L.A.S. Johnson | Y | Y | Y | Y | Y | Y |
| | *Grevillea hilliana* F. Muell. | | | | | | Y |
| | *Musgravea heterophylla* L.S. Sm. | Y | Y | Y | Y | | Y |
| | *Opisthiolepis heterophylla* L.S. Sm. | | Y | Y | | | |
| | *Placospermum coriaceum* C.T.White & W.D. Francis | Y | Y | Y | Y | Y | Y |
| Psilotaceae | *Psilotum nudum* (L.) P. Beauv. | Y | Y | Y | | Y | |
| Rhamnaceae | *Alphitonia petriei* Braid & C.T. White | Y | Y | Y | Y | Y | Y |
| | *Alphitonia whitei* Braid | Y | Y | Y | Y | Y | Y |
| Rhizophoraceae | *Carallia brachiata* (Lour.) Merr. | Y | | | | | Y |
| Ripogonaceae | *Ripogonum album* R.Br. | Y | Y | Y | Y | Y | Y |
| Rosaceae | *Rubus alceifolius* Poir.* | Y | Y | Y | Y | Y | Y |
| Rubiaceae | *Aidia racemosa* (Cav.) Tirveng. | | | | | Y | Y |
| | *Atractocarpus fitzalanii* (F.Muell.) Puttock | | | | Y | | Y |
| | *Coelospermum paniculatum* F.Muell. | | Y | | | | Y |
| | *Coffea liberica* W.Bull. ex Hiern* | | | Y | Y | | |
| | *Cyclophyllum coprosmoides* (F.Muell.) S.T.Reynolds & R.J.F.Hend. | Y | | Y | | | Y |
| | *Gardenia ovularis* F.M.Bailey | Y | Y | Y | Y | Y | Y |
| | *Psydrax attenuata* (Benth.) S.T. Reynolds & R.J.F. Hend. | | | | Y | | Y |
| | *Spermacoce latifolia* Aubl.* | | | Y | | | |
| Rutaceae | *Acronychia acronychioides* (F.Muell.) T.G.Hartley | Y | Y | | Y | Y | |
| | *Acronychia laevis* J.R.Forst. & G.Forst. | Y | | | | | Y |
| | *Brombya platynema* F.Muell. | Y | Y | | Y | | Y |
| | *Flindersia bourjotiana* F.Muell. | Y | Y | | | Y | |
| | *Flindersia ifflaiana* F.Muell. | Y | Y | | Y | Y | Y |
| | *Flindersia pimenteliana* F.Muell. | | Y | | Y | | |
| | *Medicosma fareana* (F.Muell.) T.G. Hartley | | Y | | | | Y |
| | *Melicope bonwickii* (F. Muell.) T.G. Hartley | | Y | | Y | | Y |
| | *Melicope elleryana* (F.Muell.) T.G. Hartley | | Y | Y | Y | Y | Y |
| | *Melicope xanthoxyloides* (F.Muell.) T.G. Hartley | Y | Y | Y | Y | Y | |
| | *Pitaviaster haplophyllus* (F.Muell.) T.G. Hartley | | | Y | | | |
| | *Tarenna dallachiana* (F. Muell. ex Benth.) S. Moore | Y | | Y | | | |
| Sapindaceae | *Castanospora alphandii* (F.Muell.) F.Muell. | | | Y | | | |
| | *Elattostachys microcarpa* S.T.Reynolds | Y | | | | | Y |
| | *Ganophyllum falcatum* Blume | | | Y | | | |
| | *Guioa acutifolia* Radlk. | Y | Y | Y | Y | Y | Y |
| | *Guioa lasioneura* Radlk. | | Y | | | | Y |
| | *Harpullia rhyticarpa* C.T.White & W.D.Francis | Y | | Y | | | Y |
| | *Jagera pseudorhus* (A.Rich.) Radlk. var. *pseudorhus* | | | Y | | | |
| | *Mischocarpus exangulatus* (F. Muell.) Radlk. | Y | | Y | Y | | |
| | *Mischocarpus grandissimus* (F. Muell.) Radlk. | | Y | | | | Y |
| | *Mischocarpus lachnocarpus* (F.Muell.) Radlk. | Y | Y | Y | Y | Y | Y |

| Family | Species | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|---|
| | *Rhysotoechia robertsonii* (F. Muell.) Radlk. | Y | Y | Y | Y | Y | |
| | *Sarcopteryx reticulata* S.T.Reynolds | Y | Y | Y | Y | Y | Y |
| | *Sarcotoechia serrata* S.T.Reynolds | Y | Y | Y | Y | Y | Y |
| | *Synima cordierorum* (F.Muell.) Radlk. | Y | Y | | Y | Y | Y |
| | *Toechima daemelianum* (F.Muell.) Radlk. | Y | | | | | Y |
| | *Toechima erythrocarpum* (F.Muell.) Radlk. | Y | Y | Y | Y | | Y |
| Sapotaceae | *Planchonella chartacea* (F.Muell. ex Benth.) H.J.Lam | Y | Y | Y | Y | Y | Y |
| | *Planchonella pohlmaniana* (F.Muell.) Pierre ex Dubard | | Y | | Y | | Y |
| Schizaeaceae | *Lygodium reticulatum* Schkuhr | | | Y | Y | Y | |
| Smilaceae | *Smilax australis* R.Br. | | | Y | | Y | |
| Sparrmanniaceae | *Trichospermum pleiostigma* (F.Muell.) Kosterm. | | Y | | Y | | |
| Sterculiaceae | *Brachychiton acerifolius* Macarthur | Y | Y | | | | Y |
| | *Franciscodendron laurifolium* (F.Muell.) B.Hyland & Steenis | Y | Y | | | | Y |
| Symplocaceae | *Symplocos puberula* Jessup | Y | Y | Y | Y | | Y |
| Thymelaeaceae | *Lethedon setosa* (C.T.White) Kosterm. | Y | Y | Y | | Y | Y |
| Urticaceae | *Dendrocnide moroides* (Wedd.) Chew. | | | | | | Y |
| Verbenaceae | *Stachytarpheta jamaicensis* (L.) Vahl* | | | Y | Y | | Y |
| | *Duranta erecta* L.* | Y | Y | Y | Y | Y | Y |
| | *Lantana camara* L.* | Y | Y | Y | Y | Y | Y |
| Vitaceae | *Cissus hypoglauca* A.Gray | Y | | Y | Y | | Y |
| | *Cissus penninervis* (F.Muell.) Planch. | Y | Y | Y | Y | Y | Y |
| Vittariaceae | *Vittaria elongata* Sw. | | | | Y | | Y |
| Winteraceae | *Bubbia semecarpoides* (F. Muell.) B.L. Burtt. | Y | | | | | Y |
| Zingiberaceae | *Alpinia caerulea* (R.Br.) Benth. | Y | | | | | Y |

## 2.2 Habitats

Three general habitat types were noted in the clearing impact areas. These have been mapped in Figure 5.

### 2.2.1 Cleared areas

These areas are not 'in the wild' and were not surveyed. They include areas that have been clear for many years, and are largely dominated by lantana or signal grass, and areas that have recently been cleared by the proponent.

### 2.2.2 Wattle-dominated non-remnant regrowth

These are the areas proposed to be cleared by the proponent – **all areas proposed to be cleared are located in this habitat type**. They are generally characterised by advanced regrowth approximately 20 years old – from historical aerial photography these areas appear to have commenced re-establishing in the mid-1990s. They are dominated by *Acacia celsa* and *A. cincinnata,* with the following species also well-represented in all areas of this habitat type:

- *Polyscias australiana* (Araliaceae)
- *Sloanea langii* (Elaeocarpaceae)
- *Macaranga involucrata* var. *mallotoides* (Euphorbiaceae)
- *Cryptocarya mackinnoniana* and *Litsea leefeana* (Lauraceae)
- *Hypserpa laurina* (Menispermiaceae)

- *Rhodamnia sessiliflora* and *Syzygium kuranda* (Myrtaceae)
- *Benstonea monticola* (formerly *Pandanus monticola*) (Pandanaceae)
- *Carnarvonia araliifolia* var. *araliifolia, Darlingia darlingiana* and *Placospermum coriaceum* (Proteaceae)
- *Alphitonia petriei* and *whitei* (Rhamnaceae)
- *Gardenia ovularis* (Rubiaceae)
- *Guioa acutifolia, Mischocarpus lachnocarpus, Sarcopteryx reticulata* and *Sarcotoechia serrata* (Sapindaceae)
- *Planchonella chartacea* (Sapotaceae).

Vines commonly encountered were:

- C*alamus australis* (Arecaceae)
- *Tetracera nordtiana* (Dilleniaceae)
- *Piper caninum* (Piperaceae)
- *Cissus penninervis* (Vitaceae).

In general, these areas were characterised by a lower species diversity and tree density – they are relatively easily traversed and species abundance is lower than in remnant mesophyll/notophyll vine forest (which is the 'climax' representation toward which this habitat type is heading).

In places along creeks, primarily beside transects two and five (but also present beside all other transects), dense 'thickets' of lantana and raspberry have taken over, to the exclusion of most other species. These thickets were generally present on alluvial flats and in the creek beds of those creeks that may have more ephemeral flows. In places the lantana and raspberry was three metres high. This vegetation can be difficult to map out and is incorporated into the areas mapped as wattle regrowth or (in some cases) as remnant mesophyll-notophyll vine forest.

### 2.2.3 Remnant mesophyll/notophyll vine forest

These areas are mapped as remnant on regional ecosystem mapping, and *generally* have not been cleared (at least, no clearing is evident in aerial photos going back to 1942).

They include the following regional ecosystems:

- 7.11.1a: Mesophyll vine forest. Lowlands and foothills on metamorphics. Very wet and wet rainfall zones. This community is located adjacent to area 1.
- 7.11.7a: Complex notophyll vine forest (with emergent *Agathis robusta*). Foothills and uplands. Moist rainfall zone. This community is located adjacent to area 5.

# 3 Qualifications of survey team

The survey was led by Simon Danielsen (CV is included as Appendix E). Simon is considered to be a 'suitably qualified person' for this survey because:

- He has a Bachelor of Science (Australian Environment Studies) (awarded 2000).
- He has five years experience working in Wet Tropics rainforests, including three years as a ranger with Skyrail in Barron Gorge National Park, and two years leading regular walking trips in Wooroonooran National Park.
- He has ten years experience in conducting flora surveys in Queensland, including in the Wet Tropics, Cape York Peninsula, Brigalow Belt, Central Queensland, Einasleigh Uplands and South East Queensland bioregions (for details see Appendix E).
- He has recently logged over 300 botanical determinations as a volunteer botanist at the Bangkok Forestry Herbarium in Thailand, including many of the families present at this survey site.

Simon was assisted by Mr Tore Linde, a Skyrail Ranger with 18 years experience in the identification of rainforest species in the Kuranda area. Mr Linde has conducted weekly phenology surveys from the Skyrail cableway and worked in the rainforest on a daily basis for most of his 18 year tenure at Skyrail. He has extensive knowledge of the rainforest species in Barron Gorge National Park, and the Kuranda/Smithfield area in general. Tore's CV is also included in Appendix E.

# 4 Potential impacts and mitigative measures

## 4.1 Potential impacts and mitigation measures

The potential impacts expected from this clearing are outlined below.

### 4.1.1 Impacts to threatened species

No threatened flora species were detected in the clearing impact areas (that is, within the clearing areas or a 100 m buffer). Fauna species that may utilise these areas include the Kuranda tree frog and the Australian lacelid (*Litoria dayi*) (Hoskin, 2007). Vegetation buffers of 60 m from all creeks on the property have been adopted to ensure habitat for both species is retained. This will also assist to protect water quality in these creeks, which are ephemeral and have either no or very low flow in most dry seasons.

### 4.1.2 Impacts from soil erosion and sedimentation

Exposure of soil in this area can result in soil erosion and associated sedimentation of waterways. This is particularly an issue on slopes and where sub-surface sections of the soil profile are exposed, especially during the wet season.

As outlined above, native vegetation buffers of 60 m will be retained adjacent to all waterways. This will assist to filter any overland flows from clearing areas. In addition, a sediment and erosion management plan prepared by a suitably qualified engineer will be implemented immediately after areas are cleared, to ensure that best practice sediment and erosion management standards are adopted.

### 4.1.3 Impacts to remnant vegetation and buffer areas

If clearing areas are not well-defined, clearing of regrowth may impact on adjacent areas of remnant vegetation and waterway corridors. The outer edge of all remnant vegetation areas have been identified on the ground using a mapping program on a GPS equipped 'tablet'. The boundary between areas proposed for clearing and those to be retained will be clearly marked with flagging tape and the bulldozer driver will be walked over the boundary so he will be familiar with it.

## 4.2 Summary

In summary, mitigation measures adopted for this clearing will be:

- Impacts to threatened species:
    - No threatened flora species are located within the clearing impact areas.
    - Vegetation buffers of 60 m will be retained adjacent to all waterways, meaning all waterways will have 120 m corridors after clearing is finished.
- Impacts from soil erosion and sedimentation:
    - All waterways will be buffered by a 120 m corridor of retained vegetation (60 m each side of the waterway).
    - A sediment and erosion management plan to be prepared by a suitably qualified engineer will be prepared and will be implemented as soon as possible on the completion of clearing in an area.
- Impacts to remnant vegetation and buffer areas:

- The outer edge of remnant vegetation areas adjacent to the proposed clearing areas have been identified using a GPS-equipped mapping program, and no clearing will occur in remnant areas.
- The boundary between areas to be cleared and those to be retained will be clearly marked with flagging tape, and the bulldozer driver will be walked over the boundary to ensure he is familiar with it.

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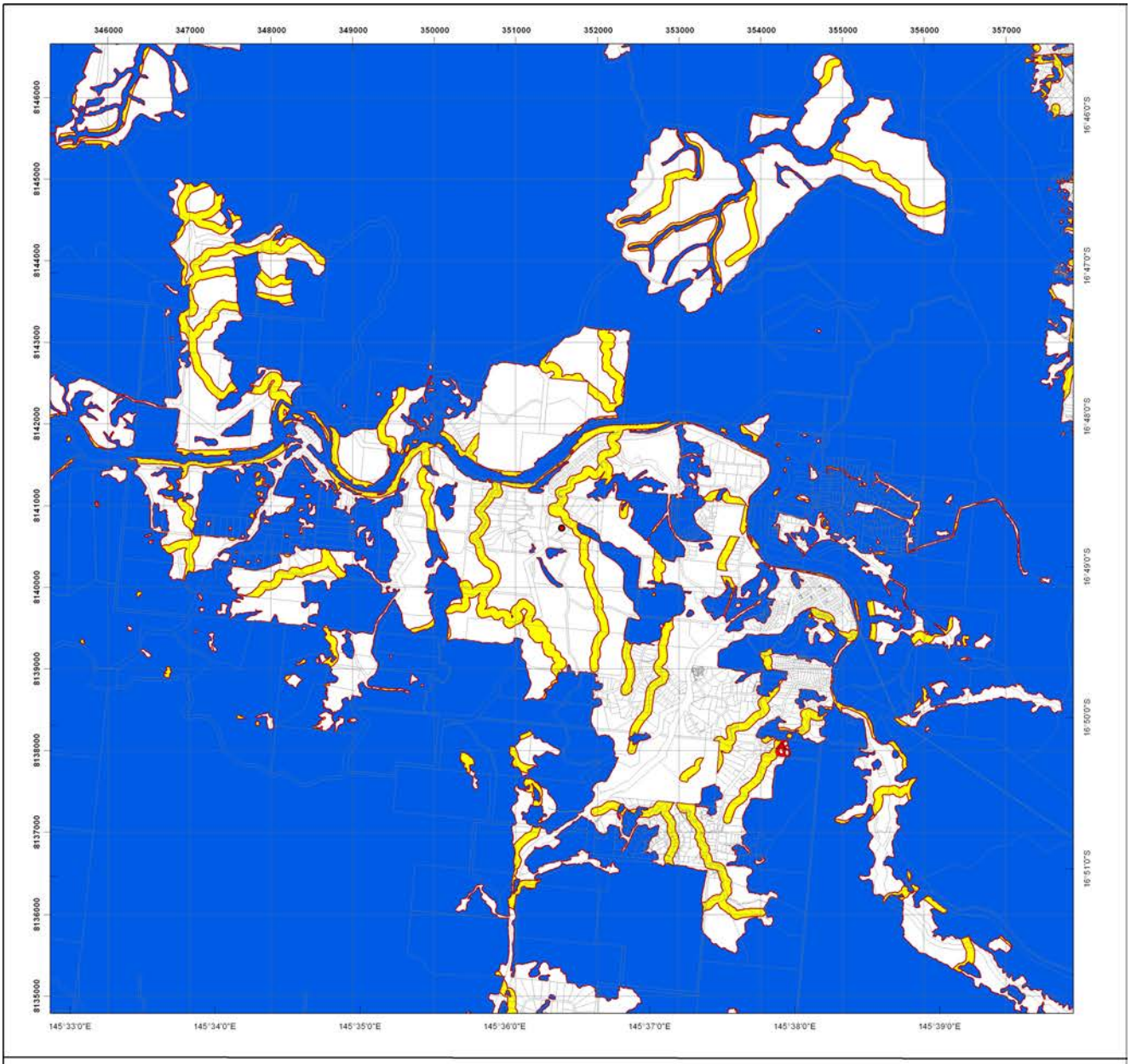
# Appendices

# Appendix A NRM vegetation mapping




# Regulated Vegetation Management Map

## Legend

- Coordinates
- Category A area (Vegetation offsets/compliance notices/VDecs)
- Category B area (Remnant vegetation)
- Category C area (High-value regrowth vegetation)
- Category R area (Reef regrowth watercourse vegetation)
- Category X area (Vegetation not regulated under the VMA)
- Water
- Area not categorised
- Cadastral line
  Property boundaries shown are provided as a locational aid only



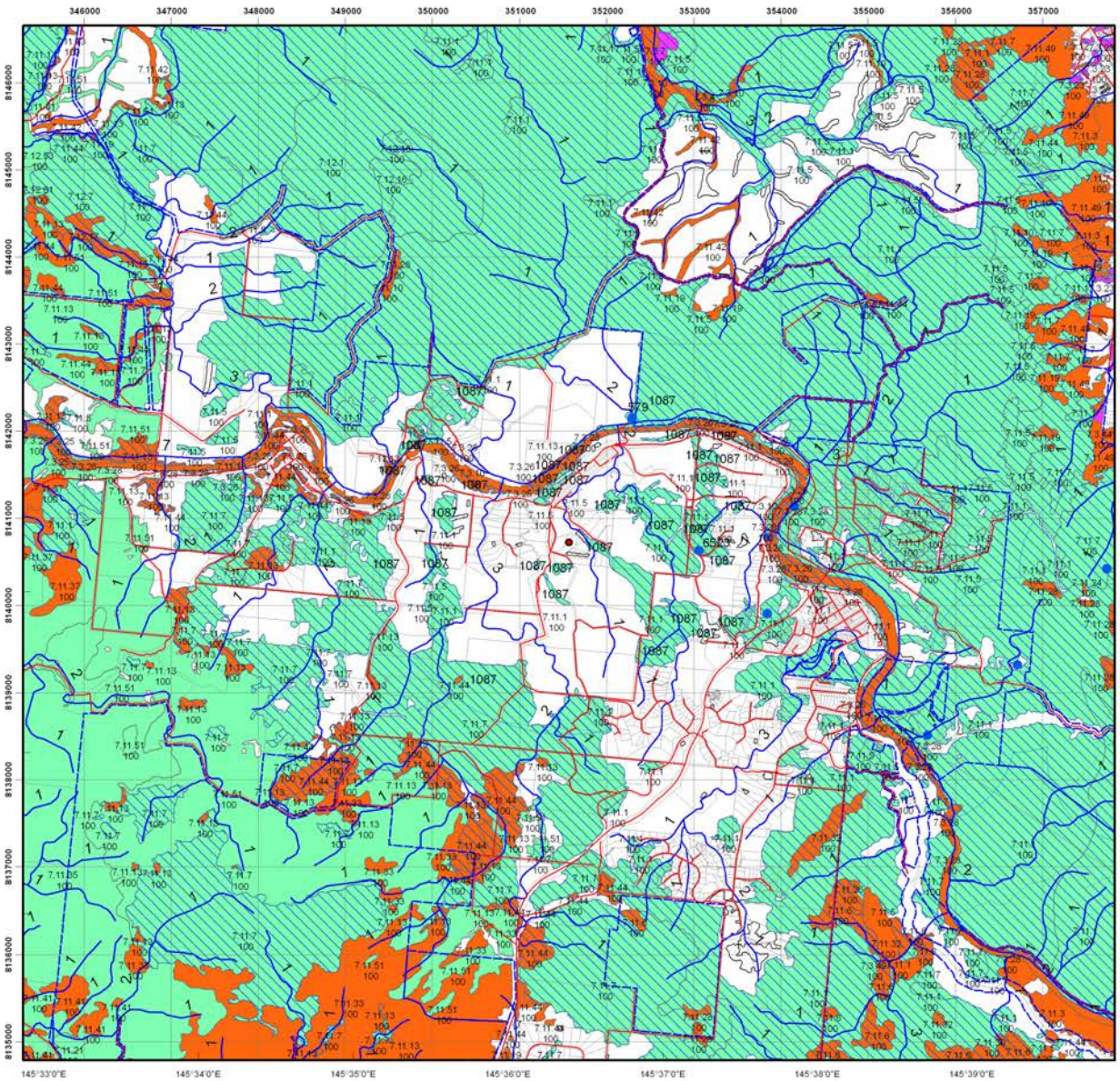

Additional information required for the assessment of vegetation values is provided in the accompanying "Vegetation Management Supporting map". For further information go to the web site: www.dnrm.qld.gov.au or contact the Department of Natural Resources and Mines.

Digital data for the regulated vegetation management map is available from the Queensland Spatial Portal at http://www.information.qld.gov.au/

This map is updated on a monthly basis to ensure new PMAVs are included as they are approved.



This product is projected into:
GDA 1994 MGA Zone 55




# Vegetation Management Supporting Map

## Legend

- Coordinates
- Category A or B area containing endangered regional ecosystems
- Category A or B area containing of concern regional ecosystems
- Category A or B area that is a least concern regional ecosystem
- Category A or B area containing remnant vegetation
- Category A or B area under Section 20AH
  These areas are edged in yellow and filled with the remnant RE Status
- Category C area containing endangered regional ecosystems
- Category C area containing of concern regional ecosystems
- Category C area that is a least concern regional ecosystem
- Category C area containing high value regrowth vegetation
- Category C area under Section 20AI
  These areas are edged in purple and filled with the remnant RE Status
- Non Remnant
- Water
- Wetland on the vegetation management wetlands map
- Essential habitat on the essential habitat map
- Essential habitat species record
- Watercourse on the vegetation management watercourse map
  (Stream order shown as black number against stream where available)
- Roads
- National Parks, State Forest and other reserves
- Cadastral line
  Property boundaries shown are provided as a locational aid only

Queensland Government

LOCALITY DIAGRAM

N

0 490 980 1,470 1,960 2,450 m

This product is projected into:
GDA 1994 MGA Zone 55

Labels for Essential Habitat are centred on the area of enquiry.

Regional ecosystem linework has been compiled at a scale of 1:100 000, except in designated areas where a compilation scale of 1:50 000 is available. Linework should be used as a guide only. The positional accuracy of RE data mapped at a scale of 1:100 000 is +/- 100 metres.

Disclaimer:
While every care is taken to ensure the accuracy of this product, the Department of Natural Resources and Mines makes no representations or warranties about its accuracy, reliability, completeness or suitability or 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 you might incurr as a result of the product being inaccurate or incomplete in anyway and for any reason.

Additional information may be required for the purposes of land clearing or assessment of a regional ecosystem map or PMAV applications. For further information go to the web site: www.dnrm.qld.gov.au or contact the Department of Natural Resources and Mines.

Digital data for the vegetation management watercourse map, vegetation management wetlands map, essential habitat map and the vegetation management remnant and regional ecosystem map are available from the Queensland Spatial Portal at http://www.information.qld.gov.au/

29/06/2015 10:45:35
Longitude: 145.607 Latitude: -16.812

# Vegetation Management Act 1999 - Extract from the essential habitat database - version 4.0

Essential habitat is required for assessment under the:

- State Development Assessment Provisions - Module 8: Native vegetation clearing which sets out the matters of interest to the state for development assessment under the *Sustainable Planning Act 2009*; and
- Self-assessable vegetation clearing codes made under the *Vegetation Management Act 1999*

Essential habitat for one or more of the following species is found on and within 1.1 km of the identified subject lot/s or on and within 2.2 km of an identified coordinate on the accompanying essential habitat map.

This report identifies essential habitat in Category A, B and Category C areas.

The numeric labels on the essential habitat map can be cross referenced with the database below to determine which essential habitat factors might exist for a particular species.

Essential habitat is compiled from a combination of species habitat models and buffered species records.

The Department of Natural Resources and Mines website (http://www.dnrm.qld.gov.au) has more information on how the layer is applied under the State Development Assessment Provisions - Module 8: Native vegetation clearing and the *Vegetation Management Act 1999*.

Regional ecosystem is a mandatory essential habitat factor, unless otherwise stated.

Essential habitat, for protected wildlife, means a category A area, a category B area or category C area shown on the regulated vegetation management map-

1) (a) that has at least 3 essential habitat factors for the protected wildlife that must include any essential habitat factors that are stated as mandatory for the protected wildlife in the essential habitat database; or

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

Essential habitat identifies endangered or vulnerable native wildlife prescribed under the *Nature Conservation Act 1994*.

**Essential habitat in Category A and B (Remnant vegetation species record) areas:2200m Species Information**

| Label | Scientific Name | Common Name | NCA Status | Vegetation Community | Altitude | Soils | Position in Landscape |
|---|---|---|---|---|---|---|---|
| 6523 | Archontophoenix myolensis | None | E | rainforest (simple to complex mesophyll to notophyll vine forest) | 300 to 400 m | (Rudosols, Tenosols, Sodosols, Chromosols) | gullies, creek banks and lower slopes |
| 579 | Litoria dayi | Australian Lace-lid | E | Associated with fast flowing rocky streams and soaks in rocky areas in rainforest/monsoon vine forest, including margins. | Sea level to 1400m. | no soil information | Near/in streams. |

**Essential habitat in Category A and B (Remnant vegetation species record) areas:2200m Regional Ecosystems Information**

| Label | Regional Ecosystem (this is a mandatory essential habitat factor, unless otherwise stated) |
|---|---|
| 6523 | 7.11.1 |
| 579 | 7.1.1, 7.1.4, 7.2.1, 7.2.2, 7.2.3, 7.2.5, 7.2.6, 7.3.3, 7.3.4, 7.3.5, 7.3.10, 7.3.17, 7.3.20, 7.3.23, 7.3.25, 7.3.35, 7.3.36, 7.3.37, 7.3.38, 7.3.49, 7.3.50, 7.5.2, 7.8.1, 7.8.2, 7.8.3, 7.8.4, 7.8.11, 7.8.12, 7.8.13, 7.8.14, 7.8.16, 7.11.1, 7.11.2, 7.11.3, 7.11.7, 7.11.8, 7.11.12, 7.11.23, 7.11.24, 7.11.25, 7.11.27, 7.11.28, 7.11.29, 7.11.30, 7.11.32, 7.11.38, 7.11.40, 7.12.1, 7.12.2, 7.12.6, 7.12.7, 7.12.10, 7.12.11, 7.12.12, 7.12.13, 7.12.16, 7.12.19, 7.12.20, 7.12.26, 7.12.38, 7.12.39, 7.12.40, 7.12.42, 7.12.43, 7.12.44, 7.12.45, 7.12.46, 7.12.47, 7.12.48, 7.12.49, 7.12.50, 7.12.66, 7.12.68 |

**Essential habitat in Category A and B (Remnant vegetation) areas:2200m Species Information**

| Label | Scientific Name | Common Name | NCA Status | Vegetation Community | Altitude | Soils | Position in Landscape |
|---|---|---|---|---|---|---|---|
| 1087 | Casuarius casuarius johnsonii (southern population) | Southern Cassowary (southern population) | E | Dense lowland and highland tropical rainforest, closed gallery forest, eucalypt forest with vine forest elements, swamp forest and adjacent melaleuca swamps, littoral scrub, eucalypt woodland and mangroves; often using a habitat mosaic; will cross open eucalypt, canefields and dry ridges between rainforest patches. | Sea level to 1500m. | no soil information | None |

**Essential habitat in Category A and B (Remnant vegetation) areas:2200m Regional Ecosystems Information**

| Label | Regional Ecosystem (this is a mandatory essential habitat factor, unless otherwise stated) |
|---|---|
| 1087 | 7.1.3, 7.2.1, 7.2.3, 7.2.4, 7.2.5, 7.2.6, 7.2.11, 7.3.1, 7.3.3, 7.3.4, 7.3.5, 7.3.6, 7.3.7, 7.3.8, 7.3.10, 7.3.12, 7.3.17, 7.3.23, 7.3.25, 7.3.36, 7.3.37, 7.3.38, 7.8.1, 7.8.2, 7.8.3, 7.8.4, 7.8.7, 7.8.8, 7.8.14, 7.11.1, 7.11.2, 7.11.5, 7.11.6, 7.11.7, 7.11.10, 7.11.12, 7.11.13, 7.11.14, 7.11.18, 7.11.23, 7.11.24, 7.11.25, 7.11.28, 7.11.29, 7.11.30, 7.11.34, 7.12.1, 7.12.2, 7.12.4, 7.12.5, 7.12.7, 7.12.9, 7.12.13, 7.12.16, 7.12.17, 7.12.19, 7.12.20, 7.12.39, 7.12.40, 7.12.44, 7.12.47, 7.12.50, 7.12.68. Also includes secondary habitat within identified priority corridors, and secondary habitat surrounded by primary habitat. Secondary regional ecosystems are 7.1.1, 7.1.2, 7.1.4, 7.1.5, 7.2.2, 7.2.7, 7.2.8, 7.2.9, 7.2.10, 7.3.2, 7.3.9, 7.3.13, 7.3.14, 7.3.16, 7.3.19, 7.3.20, 7.3.21, 7.3.26, 7.3.28, 7.3.29, 7.3.30, 7.3.31, 7.3.34, 7.3.35, 7.3.39, 7.3.40, 7.3.43, 7.3.45, 7.3.46, 7.3.47, 7.3.49, 7.8.11, 7.8.12, 7.8.13, 7.8.15, 7.8.16, 7.11.16, 7.11.19, 7.11.21, 7.11.26, 7.11.27, 7.11.31, 7.11.32, 7.11.36, 7.11.39, 7.11.40, 7.11.42, 7.11.43, 7.11.44, 7.11.46, 7.11.49, 7.12.10, 7.12.11, 7.12.12, 7.12.21, 7.12.22, 7.12.32, 7.12.24, 7.12.25, 7.12.26, 7.12.27, 7.12.28, 7.12.29, 7.12.30, 7.12.34, 7.12.35, 7.12.37, 7.12.41, 7.12.45, 7.12.48, 7.12.49, 7.12.53, 7.12.59, 7.12.60, 7.12.61, 7.12.62, 7.12.67 |

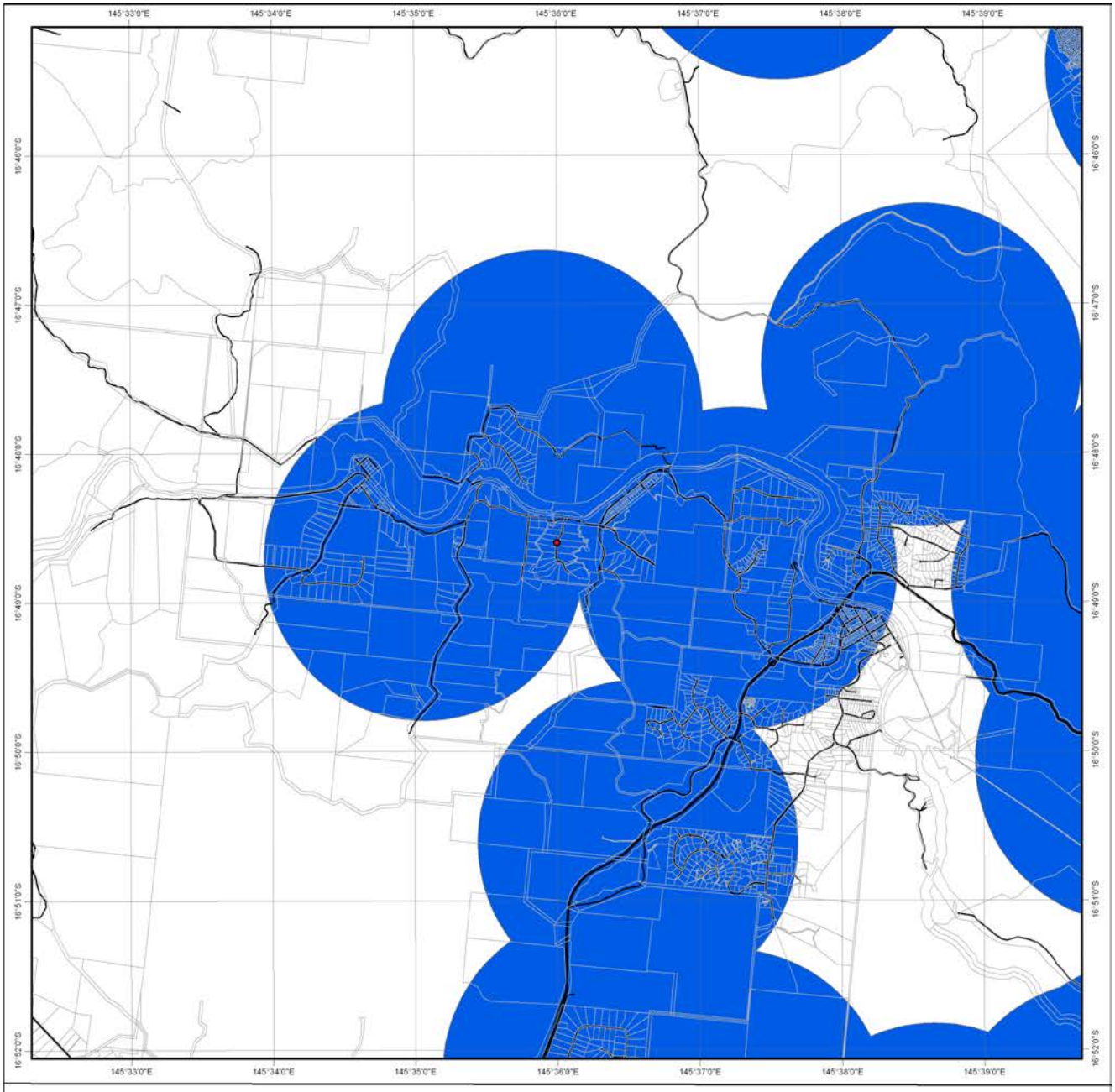
**Essential habitat in Category C (High value regrowth vegetation) areas:2200m Species Information**

(no results)

**Essential habitat in Category C (High value regrowth vegetation) areas:2200m Regional Ecosystems Information**

(no results)

# Appendix B Flora trigger map




# Protected Plants Flora Survey Trigger Map

## Legend

- Coordinates
- High risk area
- Cadastral line
  Property boundaries shown are provided as a locational aid only
- Freeways / motorways / highways
- Secondary roads / streets


N

0 490 980 1,470 1,960 2,450 m

This product is projected into:
GDA 1994 Queensland Albers

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

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

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

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

# Appendix C Letter to EHP advising prior clearing

7 September, 2015

Kerry Walsh
Wildlife Officer
Dept. Environment and Heritage Protection
Queensland government

Dear Mr Walsh

I am writing on behalf of my client (the landowner) to advise you of clearing of native vegetation that he has conducted on the following lots in the Myola area (Mareeba Shire):
Lots 1 and 2 RP703984
Lots 17 and 18 N157227
Lot 19 N157452

The clearing has occurred in mapped non-remnant vegetation under the *Vegetation Management Act 1999* and was commissioned after liaison with the Townsville unit of the Vegetation Management section in the Department of Natural Resources and Mines.

However, it is located in an area mapped as 'high risk' on a Flora Trigger map, and a flora survey was not conducted prior to clearing commencing.

I have been instructed to formally inform you of this clearing and request instruction from you in relation to your department's requirements. All clearing on the properties has been halted until we obtain your advice.

I can be contacted on 0423 706 440 or you can email me at simond1313@gmail.com.

Regards

Simon Danielsen
Principal Ecologist
Astrebla Ecological Services

Astrebla Ecological Services
80 Dumaresq St
Hamilton, 2303
NSW

# Appendix D Desktop search results

Queensland Government

# Wildlife Online Extract

Search Criteria: Species List for a Specified Point
Species: All
Type: All
Status: Rare and threatened species
Records: All
Date: All
Latitude: -16.8238
Longitude: 145.6032
Distance: 5
Email: simond1313@gmail.com
Date submitted: Wednesday 26 Aug 2015 21:47:43
Date extracted: Wednesday 26 Aug 2015 21:50:10

The number of records retrieved = 17

Queensland Government

# Wildlife Online Extract

Search Criteria: Species List for a Specified Point
Species: All
Type: All
Status: Rare and threatened species
Records: All
Date: All
Latitude: -16.8238
Longitude: 145.6032
Distance: 10
Email: simond1313@gmail.com
Date submitted: Wednesday 26 Aug 2015 22:00:05
Date extracted: Wednesday 26 Aug 2015 22:10:04

The number of records retrieved = 29

| Kingdom | Class | Family | Scientific Name | Common Name | I | Q | A | Records |
|---|---|---|---|---|---|---|---|---|
| animals | amphibians | Hylidae | *Litoria nyakalensis* | mountain mistfrog | | E | CE | 1/1 |
| animals | amphibians | Hylidae | *Litoria rheocola* | common mistfrog | | E | E | 22/17 |
| animals | amphibians | Hylidae | *Litoria nannotis* | waterfall frog | | E | E | 6 |
| animals | amphibians | Hylidae | *Litoria serrata* | tapping green eyed frog | | NT | | 100/19 |
| animals | amphibians | Hylidae | *Litoria myola* | Kuranda treefrog | | NT | E | 32 |
| animals | amphibians | Hylidae | *Litoria dayi* | Australian lacelid | | E | E | 14/6 |
| animals | amphibians | Myobatrachidae | *Taudactylus acutirostris* | sharp snouted dayfrog | | E | EX | 1 |
| animals | birds | Accipitridae | *Erythrotriorchis radiatus* | red goshawk | | E | V | 5/1 |
| animals | birds | Burhinidae | *Esacus magnirostris* | beach stone-curlew | | V | | 9 |
| animals | birds | Casuariidae | *Casuarius casuarius johnsonii (southern population)* | southern cassowary (southern population) | | E | E | 51 |
| animals | birds | Estrildidae | *Erythrura trichroa* | blue-faced parrot-finch | | NT | | 1 |
| animals | birds | Falconidae | *Falco hypoleucos* | grey falcon | | NT | | 1 |
| animals | birds | Psittacidae | *Cyclopsitta diophthalma macleayana* | Macleay's fig-parrot | | V | | 309 |
| animals | birds | Scolopacidae | *Numenius madagascariensis* | eastern curlew | | NT | CE | 2 |
| animals | birds | Turnicidae | *Turnix olivii* | buff-breasted button-quail | | V | E | 1 |
| animals | insects | Lycaenidae | *Hypochrysops apollo apollo* | Apollo jewel (Wet Tropics subspecies) | | V | | 4 |
| animals | mammals | Hipposideridae | *Hipposideros diadema reginae* | diadem leaf-nosed bat | | NT | | 2/1 |
| animals | mammals | Megadermatidae | *Macroderma gigas* | ghost bat | | V | | 1 |
| animals | mammals | Vespertilionidae | *Murina florium* | tube-nosed insectivorous bat | | V | | 1 |
| animals | reptiles | Crocodylidae | *Crocodylus porosus* | estuarine crocodile | | V | | 12 |
| plants | ferns | Athyriaceae | *Diplazium pallidum* | | | E | E | 2/2 |
| plants | ferns | Hymenophyllaceae | *Crepidomanes majoriae* | | | V | | 2/2 |
| plants | higher dicots | Burseraceae | *Canarium acutifolium var. acutifolium* | | | V | V | 1/1 |
| plants | higher dicots | Euphorbiaceae | *Wetria australiensis* | | | V | | 3/3 |
| plants | higher dicots | Mimosaceae | *Senegalia albizioides* | | | NT | | 1/1 |
| plants | higher dicots | Rubiaceae | *Randia audasii* | | | NT | | 4/4 |
| plants | monocots | Arecaceae | *Archontophoenix myolensis* | | | E | E | 2/2 |
| plants | monocots | Orchidaceae | *Rhomboda polygonoides* | | | V | V | 1/1 |
| plants | monocots | Zingiberaceae | *Alpinia hylandii* | | | NT | | 4/4 |

CODES

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

Q - Indicates the Queensland conservation status of each taxon under the *Nature Conservation Act 1992.* The codes are Extinct in the Wild (PE), Endangered (E), Vulnerable (V), Near Threatened (NT), Least Concern (C) or Not Protected ( ).

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

Records – The first number indicates the total number of records of the taxon for the record option selected (i.e. All, Confirmed or Specimens).
This number is output as 99999 if it equals or exceeds this value. The second number located after the / indicates the number of specimen records for the taxon.
This number is output as 999 if it equals or exceeds this value.

| Kingdom | Class | Family | Scientific Name | Common Name | I | Q | A | Records |
|---|---|---|---|---|---|---|---|---|
| animals | amphibians | Hylidae | *Litoria rheocola* | common mistfrog | | E | E | 15/15 |
| animals | amphibians | Hylidae | *Litoria nannotis* | waterfall frog | | E | E | 2 |
| animals | amphibians | Hylidae | *Litoria serrata* | tapping green eyed frog | | NT | | 66/13 |
| animals | amphibians | Hylidae | *Litoria myola* | Kuranda treefrog | | NT | E | 32 |
| animals | amphibians | Hylidae | *Litoria dayi* | Australian lacelid | | E | E | 9/3 |
| animals | amphibians | Myobatrachidae | *Taudactylus acutirostris* | sharp snouted dayfrog | | E | EX | 1 |
| animals | birds | Accipitridae | *Erythrotriorchis radiatus* | red goshawk | | E | V | 4 |
| animals | birds | Casuariidae | *Casuarius casuarius johnsonii (southern population)* | southern cassowary (southern population) | | E | E | 32 |
| animals | birds | Falconidae | *Falco hypoleucos* | grey falcon | | NT | | 1 |
| animals | birds | Psittacidae | *Cyclopsitta diophthalma macleayana* | Macleay's fig-parrot | | V | | 62 |
| animals | birds | Turnicidae | *Turnix olivii* | buff-breasted button-quail | | V | E | 1 |
| animals | insects | Lycaenidae | *Hypochrysops apollo apollo* | Apollo jewel (Wet Tropics subspecies) | | V | | 4 |
| animals | mammals | Hipposideridae | *Hipposideros diadema reginae* | diadem leaf-nosed bat | | NT | | 1/1 |
| animals | mammals | Megadermatidae | *Macroderma gigas* | ghost bat | | V | | 1 |
| plants | higher dicots | Rubiaceae | *Randia audasii* | | | NT | | 2/2 |
| plants | monocots | Arecaceae | *Archontophoenix myolensis* | | | E | E | 2/2 |
| plants | monocots | Zingiberaceae | *Alpinia hylandii* | | | NT | | 2/2 |

CODES

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

Q - Indicates the Queensland conservation status of each taxon under the *Nature Conservation Act 1992.* The codes are Extinct in the Wild (PE), Endangered (E), Vulnerable (V), Near Threatened (NT), Least Concern (C) or Not Protected ( ).

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

Records – The first number indicates the total number of records of the taxon for the record option selected (i.e. All, Confirmed or Specimens).
This number is output as 99999 if it equals or exceeds this value. The second number located after the / indicates the number of specimen records for the taxon.
This number is output as 999 if it equals or exceeds this value.

Australian Government

Department of the Environment

# EPBC Act Protected Matters Report

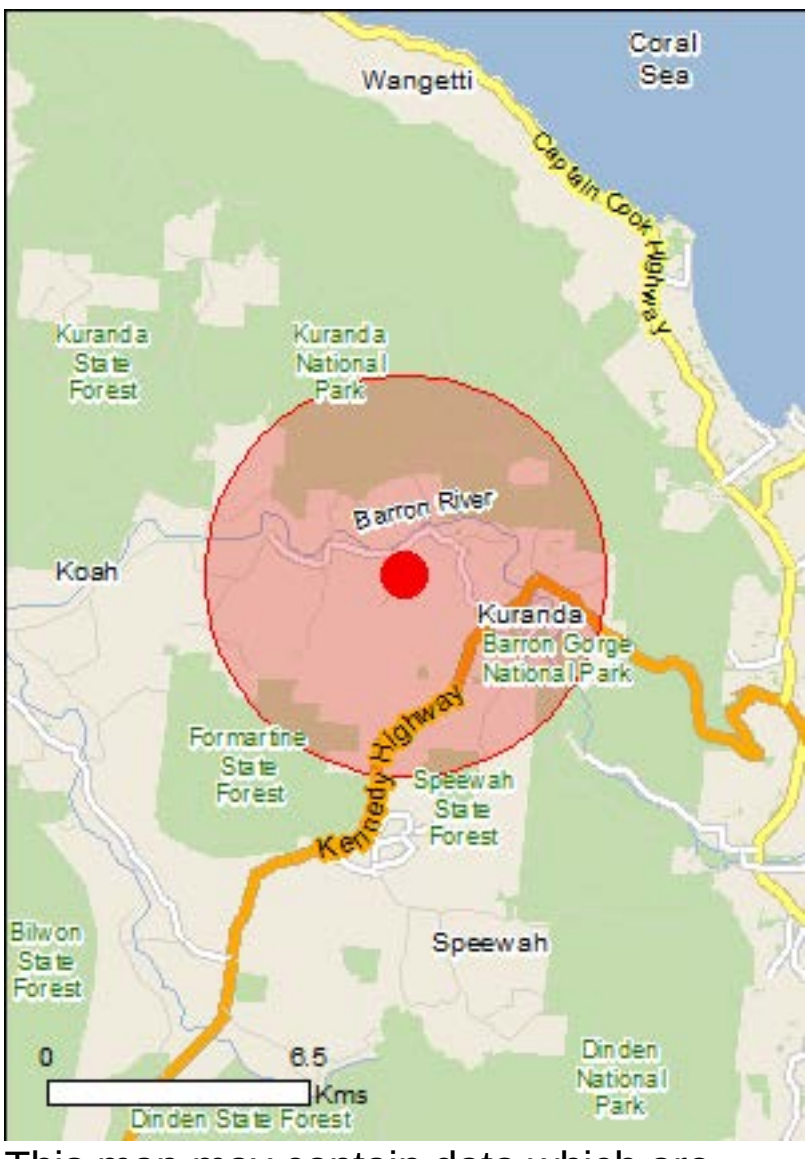
This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected.

Information on the coverage of this report and qualifications on data supporting this report are contained in the caveat at the end of the report.

Information is available about Environment Assessments and the EPBC Act including significance guidelines, forms and application process details.

Report created: 29/06/15 11:28:18

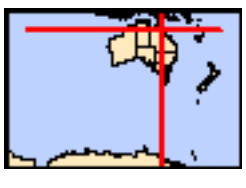





This map may contain data which are ©Commonwealth of Australia (Geoscience Australia), ©PSMA 2010

Coordinates

Buffer: 5.0Km



# Summary

## Matters of National Environmental Significance

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

| | |
|---|---|
| World Heritage Properties: | 1 |
| National Heritage Places: | 2 |
| Wetlands of International Importance: | None |
| Great Barrier Reef Marine Park: | None |
| Commonwealth Marine Area: | None |
| Listed Threatened Ecological Communities: | 1 |
| Listed Threatened Species: | 31 |
| Listed Migratory Species: | 15 |

## Other Matters Protected by the EPBC Act

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

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

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

| | |
|---|---|
| Commonwealth Land: | None |
| Commonwealth Heritage Places: | None |
| Listed Marine Species: | 16 |
| Whales and Other Cetaceans: | None |
| Critical Habitats: | None |
| Commonwealth Reserves Terrestrial: | None |
| Commonwealth Reserves Marine: | None |

## Extra Information

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

| | |
|---|---|
| State and Territory Reserves: | 4 |
| Regional Forest Agreements: | None |
| Invasive Species: | 30 |
| Nationally Important Wetlands: | None |
| Key Ecological Features (Marine) | None |

# Details

## Matters of National Environmental Significance

| World Heritage Properties | | [ Resource Information ] |
|---|---|---|
| Name | State | Status |
| Wet Tropics of Queensland | QLD | Declared property |

| National Heritage Properties | | [ Resource Information ] |
|---|---|---|
| Name | State | Status |
| Natural | | |
| Wet Tropics of Queensland | QLD | Listed place |
| Indigenous | | |
| Wet Tropics World Heritage Area (Indigenous Values) | QLD | Within listed place |

| Listed Threatened Ecological Communities | | [ Resource Information ] |
|---|---|---|

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

| Name | Status | Type of Presence |
|---|---|---|
| Broad leaf tea-tree (Melaleuca viridiflora) woodlands in high rainfall coastal north Queensland | Endangered | Community may occur within area |

| Listed Threatened Species | | [ Resource Information ] |
|---|---|---|
| Name | Status | Type of Presence |
| Birds | | |
| Casuarius casuarius johnsonii | | |
| Southern Cassowary (Australian), Southern Cassowary [25986] | Endangered | Species or species habitat known to occur within area |
| Erythrotriorchis radiatus | | |
| Red Goshawk [942] | Vulnerable | Species or species habitat known to occur within area |
| Rostratula australis | | |
| Australian Painted Snipe [77037] | Endangered | Species or species habitat may occur within area |
| Tyto novaehollandiae kimberli | | |
| Masked Owl (northern) [26048] | Vulnerable | Species or species habitat likely to occur within area |
| Fish | | |
| Melanotaenia eachamensis | | |
| Lake Eacham Rainbowfish [26185] | Endangered | Species or species habitat may occur within area |
| Frogs | | |
| Litoria dayi | | |
| Australian Lace-lid, Lace-eyed Tree Frog [86707] | Endangered | Species or species habitat likely to occur within area |
| Litoria myola | | |
| Kuranda Tree Frog [82063] | Endangered | Species or species habitat known to occur within area |
| Litoria nannotis | | |
| Waterfall Frog, Torrent Tree Frog [1817] | Endangered | Species or species habitat likely to occur within area |

| Name | Status | Type of Presence |
|---|---|---|
| Litoria nyakalensis<br>Mountain Mistfrog [1820] | Critically Endangered | Species or species habitat likely to occur within area |
| Litoria rheocola<br>Common Mistfrog [1802] | Endangered | Species or species habitat known to occur within area |
| **Mammals** | | |
| Dasyurus hallucatus<br>Northern Quoll [331] | Endangered | Species or species habitat likely to occur within area |
| Dasyurus maculatus  gracilis<br>Spotted-tailed Quoll or Yarri (North Queensland subspecies) [64475] | Endangered | Species or species habitat likely to occur within area |
| Hipposideros semoni<br>Semon's Leaf-nosed Bat, Greater Wart-nosed Horseshoe-bat [180] | Endangered | Species or species habitat may occur within area |
| Phascolarctos cinereus (combined populations of Qld, NSW and the ACT)<br>Koala (combined populations of Queensland, New South Wales and the Australian Capital Territory) [85104] | Vulnerable | Species or species habitat may occur within area |
| Pteropus conspicillatus<br>Spectacled Flying-fox [185] | Vulnerable | Species or species habitat known to occur within area |
| Rhinolophus philippinensis (large form)<br>Greater Large-eared Horseshoe Bat [66890] | Endangered | Species or species habitat known to occur within area |
| Saccolaimus saccolaimus  nudicluniatus<br>Bare-rumped Sheathtail Bat [66889] | Critically Endangered | Species or species habitat likely to occur within area |
| Xeromys myoides<br>Water Mouse, False Water Rat, Yirrkoo [66] | Vulnerable | Species or species habitat may occur within area |
| **Plants** | | |
| Archontophoenix myolensis<br>Myola Palm, Myola Archontophoenix [64500] | Endangered | Species or species habitat known to occur within area |
| Cajanus mareebensis<br>[8635] | Endangered | Species or species habitat may occur within area |
| Canarium acutifolium<br>[23956] | Vulnerable | Species or species habitat likely to occur within area |
| Crepidomanes endlicherianum<br>Middle Filmy Fern [65889] | Endangered | Species or species habitat likely to occur within area |
| Dendrobium bigibbum<br>Cooktown Orchid [10306] | Vulnerable | Species or species habitat may occur within area |
| Diplazium cordifolium<br>[15585] | Vulnerable | Species or species habitat likely to occur within area |
| Diplazium pallidum<br>[12764] | Endangered | Species or species habitat likely to occur within area |
| Phalaenopsis rosenstromii<br>Native Moth Orchid [15984] | Endangered | Species or species habitat likely to occur |

| Name | Status | Type of Presence |
|---|---|---|
| | | within area |
| Phlegmariurus filiformis<br>Rat's Tail Tassel-fern [86551] | Endangered | Species or species habitat likely to occur within area |
| Polyscias bellendenkerensis<br>[7237] | Vulnerable | Species or species habitat likely to occur within area |
| Sauropus macranthus<br>[13189] | Vulnerable | Species or species habitat likely to occur within area |
| Streblus pendulinus<br>Siah's Backbone, Sia's Backbone, Isaac Wood [21618] | Endangered | Species or species habitat likely to occur within area |
| Zeuxine polygonoides<br>Velvet Jewel Orchid [46794] | Vulnerable | Species or species habitat likely to occur within area |

## Listed Migratory Species [ Resource Information ]

* Species is listed under a different scientific name on the EPBC Act - Threatened Species list.

| Name | Threatened | Type of Presence |
|---|---|---|
| **Migratory Marine Birds** | | |
| Apus pacificus<br>Fork-tailed Swift [678] | | Species or species habitat likely to occur within area |
| **Migratory Marine Species** | | |
| Crocodylus porosus<br>Salt-water Crocodile, Estuarine Crocodile [1774] | | Species or species habitat likely to occur within area |
| **Migratory Terrestrial Species** | | |
| Haliaeetus leucogaster<br>White-bellied Sea-Eagle [943] | | Species or species habitat known to occur within area |
| Hirundapus caudacutus<br>White-throated Needletail [682] | | Species or species habitat known to occur within area |
| Hirundo rustica<br>Barn Swallow [662] | | Species or species habitat may occur within area |
| Merops ornatus<br>Rainbow Bee-eater [670] | | Species or species habitat may occur within area |
| Monarcha melanopsis<br>Black-faced Monarch [609] | | Species or species habitat known to occur within area |
| Monarcha trivirgatus<br>Spectacled Monarch [610] | | Species or species habitat known to occur within area |
| Myiagra cyanoleuca<br>Satin Flycatcher [612] | | Species or species habitat known to occur within area |
| Rhipidura rufifrons<br>Rufous Fantail [592] | | Species or species habitat known to occur within area |
| **Migratory Wetlands Species** | | |
| Ardea alba<br>Great Egret, White Egret [59541] | | Species or species habitat likely to occur |

| Name | Threatened | Type of Presence within area |
|---|---|---|
| Ardea ibis<br>Cattle Egret [59542] | | Species or species habitat may occur within area |
| Gallinago hardwickii<br>Latham's Snipe, Japanese Snipe [863] | | Species or species habitat may occur within area |
| Pandion cristatus<br>Eastern Osprey [82411] | | Species or species habitat known to occur within area |
| Rostratula benghalensis (sensu lato)<br>Painted Snipe [889] | Endangered* | Species or species habitat may occur within area |

## Other Matters Protected by the EPBC Act

| Listed Marine Species | | [ Resource Information ] |
|---|---|---|
| * Species is listed under a different scientific name on the EPBC Act - Threatened Species list. | | |
| Name | Threatened | Type of Presence |
| Birds | | |
| Anseranas semipalmata<br>Magpie Goose [978] | | Species or species habitat may occur within area |
| Apus pacificus<br>Fork-tailed Swift [678] | | Species or species habitat likely to occur within area |
| Ardea alba<br>Great Egret, White Egret [59541] | | Species or species habitat likely to occur within area |
| Ardea ibis<br>Cattle Egret [59542] | | Species or species habitat may occur within area |
| Gallinago hardwickii<br>Latham's Snipe, Japanese Snipe [863] | | Species or species habitat may occur within area |
| Haliaeetus leucogaster<br>White-bellied Sea-Eagle [943] | | Species or species habitat known to occur within area |
| Hirundapus caudacutus<br>White-throated Needletail [682] | | Species or species habitat known to occur within area |
| Hirundo rustica<br>Barn Swallow [662] | | Species or species habitat may occur within area |
| Merops ornatus<br>Rainbow Bee-eater [670] | | Species or species habitat may occur within area |
| Monarcha melanopsis<br>Black-faced Monarch [609] | | Species or species habitat known to occur within area |

| Name | Threatened | Type of Presence |
|---|---|---|
| Monarcha trivirgatus | | |
| Spectacled Monarch [610] | | Species or species habitat known to occur within area |
| Myiagra cyanoleuca | | |
| Satin Flycatcher [612] | | Species or species habitat known to occur within area |
| Pandion haliaetus | | |
| Osprey [952] | | Species or species habitat known to occur within area |
| Rhipidura rufifrons | | |
| Rufous Fantail [592] | | Species or species habitat known to occur within area |
| Rostratula benghalensis (sensu lato) | | |
| Painted Snipe [889] | Endangered* | Species or species habitat may occur within area |
| Reptiles | | |
| Crocodylus porosus | | |
| Salt-water Crocodile, Estuarine Crocodile [1774] | | Species or species habitat likely to occur within area |

## Extra Information

| State and Territory Reserves | [ Resource Information ] |
|---|---|
| Name | State |
| Barron Gorge | QLD |
| Jumrum Creek | QLD |
| Kuranda | QLD |
| Myola Palm | QLD |

| Invasive Species | [ Resource Information ] |
|---|---|

Weeds reported here are the 20 species of national significance (WoNS), along with other introduced plants that are considered by the States and Territories to pose a particularly significant threat to biodiversity. The following feral animals are reported: Goat, Red Fox, Cat, Rabbit, Pig, Water Buffalo and Cane Toad. Maps from Landscape Health Project, National Land and Water Resouces Audit, 2001.

| Name | Status | Type of Presence |
|---|---|---|
| Birds | | |
| Acridotheres tristis | | |
| Common Myna, Indian Myna [387] | | Species or species habitat likely to occur within area |
| Anas platyrhynchos | | |
| Mallard [974] | | Species or species habitat likely to occur within area |
| Columba livia | | |
| Rock Pigeon, Rock Dove, Domestic Pigeon [803] | | Species or species habitat likely to occur within area |
| Lonchura punctulata | | |
| Nutmeg Mannikin [399] | | Species or species habitat likely to occur within area |
| Passer domesticus | | |
| House Sparrow [405] | | Species or species |

| Name | Status | Type of Presence |
|---|---|---|
| | | habitat likely to occur within area |
| Streptopelia chinensis<br>Spotted Turtle-Dove [780] | | Species or species habitat likely to occur within area |
| Sturnus vulgaris<br>Common Starling [389] | | Species or species habitat likely to occur within area |
| **Frogs** | | |
| Rhinella marina<br>Cane Toad [83218] | | Species or species habitat likely to occur within area |
| **Mammals** | | |
| Bos taurus<br>Domestic Cattle [16] | | Species or species habitat likely to occur within area |
| Equus caballus<br>Horse [5] | | Species or species habitat likely to occur within area |
| Felis catus<br>Cat, House Cat, Domestic Cat [19] | | Species or species habitat likely to occur within area |
| Feral deer<br>Feral deer species in Australia [85733] | | Species or species habitat likely to occur within area |
| Mus musculus<br>House Mouse [120] | | Species or species habitat likely to occur within area |
| Rattus norvegicus<br>Brown Rat, Norway Rat [83] | | Species or species habitat likely to occur within area |
| Rattus rattus<br>Black Rat, Ship Rat [84] | | Species or species habitat likely to occur within area |
| Sus scrofa<br>Pig [6] | | Species or species habitat likely to occur within area |
| **Plants** | | |
| Andropogon gayanus<br>Gamba Grass [66895] | | Species or species habitat likely to occur within area |
| Annona glabra<br>Pond Apple, Pond-apple Tree, Alligator Apple, Bullock's Heart, Cherimoya, Monkey Apple, Bobwood, Corkwood [6311] | | Species or species habitat likely to occur within area |
| Cabomba caroliniana<br>Cabomba, Fanwort, Carolina Watershield, Fish Grass, Washington Grass, Watershield, Carolina Fanwort, Common Cabomba [5171] | | Species or species habitat likely to occur within area |
| Cenchrus ciliaris<br>Buffel-grass, Black Buffel-grass [20213] | | Species or species habitat may occur within area |
| Cryptostegia grandiflora<br>Rubber Vine, Rubbervine, India Rubber Vine, India Rubbervine, Palay Rubbervine, Purple Allamanda [18913] | | Species or species habitat likely to occur within area |
| Dolichandra unguis-cati<br>Cat's Claw Vine, Yellow Trumpet Vine, Cat's Claw Creeper, Funnel Creeper [85119] | | Species or species habitat likely to occur within area |

| Name | Status | Type of Presence |
| --- | --- | --- |
| Hymenachne amplexicaulis<br>Hymenachne, Olive Hymenachne, Water Stargrass, West Indian Grass, West Indian Marsh Grass [31754] | | Species or species habitat likely to occur within area |
| Jatropha gossypifolia<br>Cotton-leaved Physic-Nut, Bellyache Bush, Cotton-leaf Physic Nut, Cotton-leaf Jatropha, Black Physic Nut [7507] | | Species or species habitat likely to occur within area |
| Lantana camara<br>Lantana, Common Lantana, Kamara Lantana, Large-leaf Lantana, Pink Flowered Lantana, Red Flowered Lantana, Red-Flowered Sage, White Sage, Wild Sage [10892] | | Species or species habitat likely to occur within area |
| Sagittaria platyphylla<br>Delta Arrowhead, Arrowhead, Slender Arrowhead [68483] | | Species or species habitat likely to occur within area |
| Salvinia molesta<br>Salvinia, Giant Salvinia, Aquarium Watermoss, Kariba Weed [13665] | | Species or species habitat likely to occur within area |
| Reptiles | | |
| Hemidactylus frenatus<br>Asian House Gecko [1708] | | Species or species habitat likely to occur within area |
| Lepidodactylus lugubris<br>Mourning Gecko [1712] | | Species or species habitat likely to occur within area |
| Ramphotyphlops braminus<br>Flowerpot Blind Snake, Brahminy Blind Snake, Cacing Besi [1258] | | Species or species habitat likely to occur within area |

# Caveat

The information presented in this report has been provided by a range of data sources as acknowledged at the end of the report.

This report is designed to assist in identifying the locations of places which may be relevant in determining obligations under the Environment Protection and Biodiversity Conservation Act 1999. It holds mapped locations of World and National Heritage properties, Wetlands of International and National Importance, Commonwealth and State/Territory reserves, listed threatened, migratory and marine species and listed threatened ecological communities. Mapping of Commonwealth land is not complete at this stage. Maps have been collated from a range of sources at various resolutions.

Not all species listed under the EPBC Act have been mapped (see below) and therefore a report is a general guide only. Where available data supports mapping, the type of presence that can be determined from the data is indicated in general terms. People using this information in making a referral may need to consider the qualifications below and may need to seek and consider other information sources.

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

For species where the distributions are well known, maps are digitised from sources such as recovery plans and detailed habitat studies. Where appropriate, core breeding, foraging and roosting areas are indicated under 'type of presence'. For species whose distributions are less well known, point locations are collated from government wildlife authorities, museums, and non-government organisations; bioclimatic distribution models are generated and these validated by experts. In some cases, the distribution maps are based solely on expert knowledge.

Only selected species covered by the following provisions of the EPBC Act have been mapped:

- migratory and
- marine

The following species and ecological communities have not been mapped and do not appear in reports produced from this database:

- threatened species listed as extinct or considered as vagrants
- some species and ecological communities that have only recently been listed
- some terrestrial species that overfly the Commonwealth marine area
- migratory species that are very widespread, vagrant, or only occur in small numbers

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

- non-threatened seabirds which have only been mapped for recorded breeding sites
- seals which have only been mapped for breeding sites near the Australian continent

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

# Coordinates

-16.812 145.607

# Acknowledgements

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

-Department of Environment, Climate Change and Water, New South Wales
-Department of Sustainability and Environment, Victoria
-Department of Primary Industries, Parks, Water and Environment, Tasmania
-Department of Environment and Natural Resources, South Australia
-Parks and Wildlife Service NT, NT Dept of Natural Resources, Environment and the Arts
-Environmental and Resource Management, Queensland
-Department of Environment and Conservation, Western Australia
-Department of the Environment, Climate Change, Energy and Water
-Birds Australia
-Australian Bird and Bat Banding Scheme
-Australian National Wildlife Collection
-Natural history museums of Australia
-Museum Victoria
-Australian Museum
-SA Museum
-Queensland Museum
-Online Zoological Collections of Australian Museums
-Queensland Herbarium
-National Herbarium of NSW
-Royal Botanic Gardens and National Herbarium of Victoria
-Tasmanian Herbarium
-State Herbarium of South Australia
-Northern Territory Herbarium
-Western Australian Herbarium
-Australian National Herbarium, Atherton and Canberra
-University of New England
-Ocean Biogeographic Information System
-Australian Government, Department of Defence
-State Forests of NSW
-Geoscience Australia
-CSIRO
-Other groups and individuals

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

Please feel free to provide feedback via the Contact Us page.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# Appendix E CVs of team

# Simon Danielsen

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ABN: 81 102 990 803

Simon Danielsen is an ecologist with 15 year's experience in ecological consultancy, vegetation management policy and decision making, botanical identification, and ecotourism.

He has been involved at a senior level in field investigations and reporting, and the impact assessment and approval process, for many of the largest proposed infrastructure projects in Queensland in the last 10 years, including the Carmichael River mine and rail project, the Abbott Point development, Hancock's proposed rail link from Alpha to Abbot Point, the Chinalco bauxite proposal (Aurukun), and the development of new gas fields in the Roma area.

Simon's particular strengths are in botanical survey and threatened species searches, regional ecosystem determination/mapping, and providing advice to clients in relation to vegetation management policy and legislation at both Queensland and Commonwealth levels. He has extensive experience in the Brigalow Belt and South East Queensland bioregions, and the North Kennedy district.

Simon is currently the Principal Ecologist/Botanist of Astrebla Ecological Services, a consulting company he started in April 2015. Astrebla Ecological Services offers

- vegetation community surveys and mapping,
- threatened species surveys,
- weed surveys and mapping,
- provision of advice in relation to the vegetation aspects of urban and rural residential development and the development of infrastructure projects, and
- document review, and overflow ecology services, to other consultancies.

## Tertiary Education

### Griffith University

***1999*** Bachelor of Science (Australian Environmental Studies)

- Majors in Ecology, Social Policy and Development, and Australian Indigenous Studies,

Simon Danielsen

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## Experience

### Astrebla Ecological Services | Darra, Queensland

Principal Ecologist/Botanist ***April 2015 – current***

Astrebla is currently engaged in a number of projects, including the provision of botanical survey and advice in relation to the Environmental Impact Study for a major proposed aquaculture project in the north west of the Northern Territory.

Astrebla can provide specialist botanical services for the New South Wales, Queensland, Northern Territory and South East Asian regions. See attachment for Simon's project experience with Astrebla.

### Bangkok Forestry Herbarium | 61 Prahonyothin Rd, Chatuchak, Bangkok, 10900 Thailand

Volunteer ***March 2014 – January 2015***

Working as a volunteer at the Bangkok Forest Herbarium (BKF) while on leave from GHD, Simon undertook identification of a backlog of mounted specimens, some over 60 years old. During his time at BKF he completed over 300 official botanical determinations, most to species level, using resources including Flora of Thailand, Flora Malesiana and Flora of China. He also received training in herbarium procedure and plant ID from taxonomist Bob Harwood (formerly DNA, now volunteer at BKF).

### GHD Pty Ltd | GPO Box 668 Brisbane 4001

Principal Ecologist ***August 2011 – April 2015***

Senior Ecologist ***March 2006 – August 2011***

Simon's duties at GHD include:

- Prepare/manage job proposals,
- Management of ecological/botanical work, including coordination and liaison with government agencies (Commonwealth and State) and clients, reporting, client relationship management, and overall job delivery,
- Leading teams of ecologists in the field (often in remote areas),
- Preparation of reports and correspondence, including review and quality control of reports written by others,
- Provide expert witness services for legal counsel and clients,
- Mentor and train junior staff.

See attachment for Simon's project experience with GHD.

Simon Danielsen

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Dept. of Natural Resources and Mines (Qld)| 187-209 Stanley St, Townsville 4810
Vegetation Management Officer ***March 2005 – March 2006***

Simon's duties at DNRM involved:

- Assessment of planning applications to clear native vegetation under the *Integrated Planning Act 1997* ,(now superseded by the *Sustainable Planning Act 2009*),
- Provision of verbal and official written advice to the public in relation to the *Vegetation Management Act 1999* and the *Integrated Planning Act 1997*,
- Responding to information requests from government Ministers and Members of Parliament.

He also acted in roles as the Senior Vegetation Management Officer and the Northern Manager, Vegetation Management and Use.

Skyrail Rainforest Canopy| Captain Cook Highway, Caravonica (Cairns), 4878
Environment Manager ***October 2003 – March 2005***
Environment Supervisor ***August 2002 – October 2003***

Simon's duties involved vegetation identification and management, overseeing Skyrail's environmental commitments, reporting to/liaising with government agencies, managing a Ranger team, overseeing the delivery of eco-tour services, representing Skyrail on environmental and indigenous issues, and maintaining Skyrail's international environmental accreditations.

For more details on Simon's career background, and for peer endorsements of his skills, please peruse his Linked In page at http://au.linkedin.com/pub/simon-danielsen/8/3a4/878

Attachments Attachment A – Simon Danielsen - GHD Major Project Experience

# Simon Danielsen - Major Project Experience

## Astrebla Ecological Services

For all projects Simon was the primary botanical ecologist unless otherwise stated.

### Project Sea Dragon Prawn Farm (proposed)

Project Sea Dragon is a proposal for a 10, 000 ha prawn farm to be located on Legune Station in the Northern Territory, near the Western Australian border. If approved, it will be the largest prawn farm yet built in Australia. An EIA for this project is currently being prepared. Astrebla undertook the flora surveys, vegetation mapping and flora impact assessment for this project, which involved the survey of almost 100, 000 ha of native vegetation.

### Hanging Swamp Monitoring Surveys, Newnes Plateau, Lithgow

Simon has provided botanical services for RPS in monitoring surveys within hanging and shrub swamps on the Newnes Plateau, near Lithgow.

## GHD

For all projects Simon was the primary botanical ecologist unless otherwise stated.

### Mining and Gas

- Carmichael River Mine and associated rail link project ecological investigations (Desert Uplands bioregion, approximately 200 km south west of Charters Towers) , including a detailed study into potential impacts on the Great Artesian Basin mound spring complex at Doongmabulla Springs. Seven threatened species and two previously undiscovered species were detected, including one major range extension of a vulnerable palm species (*Livistona lanuginosa*). Revised regional ecosystem (RE) mapping at a 1:25, 000 scale was provided for the entire 50, 000 ha project area.
- Teresa Coal Mine ecological investigations, near Emerald in the Brigalow Belt. This work included revised RE mapping and investigations and mapping of three EPBC listed Threatened Ecological Communities and one threatened plant species. One new *genus* record for Australia was recorded, a genus yet to be formally described.
- Team leader for field ecological investigations and reporting into the 300, 000 ha Origin Energy Spring Gully gas field, north of Roma. Included revised RE mapping at a 1:25, 000 scale for the entire area.
- Multiple separate jobs mapping vegetation and undertaking plant surveys for Origin Energy on gas fields and along proposed gas pipeline feeder routes in the Wandoan area.
- As an assistant botanical ecologist, conducted flora surveys in tall open woodland north of Aurukun in Cape York Peninsula as part of the EIS for Chinalco (Chalco). Simon was directly responsible for providing revised RE mapping for the project area.
- As an assistant botanist/ecologist, undertook ecological investigations into the InterOil gas fields located in the remote Gulf Province in Papua New Guinea.

- Ecological investigations into a major watercourse diversion of Coral Creek near Collinsville for Sonoma Coal. This project involved mapping and impact assessment of the vulnerable black ironbox (*Eucalyptus raveretiana*), a common riparian species in Coral Creek.

## Linear Infrastructure

- Job manager and senior ecologist for an EIS for Powerlink for a major 200 km long, proposed greenfield 275 kV transmission line corridor, commencing near Emerald and terminating at the proposed Alpha mine, north of Alpha. This job involved extensive helicopter surveys in order to remap REs and scout terrain.
- Ecological investigations for an EIS for Hancock Prospecting into the route for a 500 km railway to connect the proposed Alpha Coal Mine to Abbott Point, near Bowen. Revised RE mapping at 1:25, 000 scale was provided.
- Ecological investigations for the proposed BHP/BMA rail link from North Goonyella (Moranbah) to Abbot Point (approx. 300 km). Revised RE mapping at 1:25, 000 scale was provided.
- Providing detailed flora surveys, vegetation community mapping and vegetation management advice for the Coal Connect alliance in relation to the 70 km long 'Northern Missing Link' between Newlands Mine and Moranbah.
- Ground truthed RE mapping and prepared the flora section of the EIS for the 160 km Alinta (now Jemena) gas pipeline near Biloela.
- Conducted a weed survey over 160 km of the Jemena Oombabeer to Callide Range gas pipeline easement near Biloela and produced mapping of weed infestations.
- Conducted a weed survey and provided weed mapping for the Yabulu to Ross River Dam Ergon high voltage powerline.
- As a senior ecological team member, undertook numerous field surveys in support of five separate EIS investigations into proposed 275 kV powerlines in the Wandoan-Roma area for Powerlink. This work included a detailed ecological investigation and impact assessment into Woodduck State Forest.
- Ground-truthed REs for the Western Corridor Wastewater Pipeline Project in South East Queensland, and engaged in liaison with NRW in regards to obtaining vegetation clearing permits.

## Other Public Infrastructure Development

- As the Senior Botanist, undertook ecological investigations for the Curtis Island Environmental Precinct Ecological and Heritage Study for the Department of Infrastructure and Planning (as part of the Gladstone Port development offset provision).
- Advised the Department of Infrastructure and Planning on offset requirements for clearing of the vulnerable species black ironbox (*Eucalyptus raveretiana*) associated with the proposed Fitzroy Barrages, near Rockhampton.
- Undertook field work and prepared the flora impact report for installation of a non-directional radio beacon by Air Services Australia on Lord Howe Island, a World Heritage-listed site.
- Senior field botanist for the Western Basin EIS for Gladstone Port Authority.

- Undertook aerial and ground surveys as the Senior Botanist in a multi-disciplinary team to identify and assess multiple armour rock quarry sites for the Port of Townsville development.
- Flora survey for the Port of Townsville Environmental Impact Statement (EIS).
- Undertook rare and threatened flora surveys at a number of sites near Agnes Water for a desalination plant for United Utilities. This work involved mapping and research into the vulnerable grass species *Germania capitata*.
- Provided a Review of Environmental Factors including a flora and fauna field assessment for Rockhampton Regional Council in relation to a proposed new regional landfill site at Mulara.
- Led the field flora and fauna survey and reporting for the proposed 'Hope Valley' township, located at Hope Vale near Cooktown, including liaison with the Environmental Protection Agency and Department of Natural Resources in relation to the development approval process.

## Private Infrastructure Development

- Prepared the flora section of the EIS for the Dyno Nobel Asia Pacific ammonium nitrate plant at Moranbah, and obtained vegetation clearing approvals from NRM.
- Successfully revised regional ecosystem mapping for properties in the Gladstone region including for Pitman Properties, Tirrawarra Constructions, and numerous private landowners, and managed concurrence agency referrals for vegetation to Queensland's Department of Natural Resources.
- Flora and fauna investigation into a 600 ha site at Yeppoon for the McCamley Woods Yeppoon Development group.
- Preparation of flora impact reports for numerous urban and rural developments across Queensland, such as infrastructure upgrades (Energex, Main Roads, Gold Coast Water), tourism developments (Cherabah Homestead Resort, Castaway Bay), industrial estates (Swanbank/New Chum), power stations (Kogan Creek) and housing developments (Devine, Insight Group, Rogers Parade Apartments, Queensland Property and Investment).
- Prepared numerous Property Vegetation Management Plans (PVMPs) and Property Maps of Assessable Vegetation (PMAV) for private developers and individuals across Queensland, primarily in the South East Queensland and Cook bioregions. Some of these required extensive negotiations with the Queensland Dept. of Natural Resources.
- Prepared and negotiated three successful applications under the *Environmental Protection and Biodiversity Conservation Act 1999* (Cth) (the EPBC Act) in relation to matters of national environmental significance (MNES) in north Queensland. Each involved multiple MNES and had attracted (in some cases significant) community attention. In one case, the application had been previously refused before my involvement.

## Expert Witness Reports

- Prepared an expert witness report for Sonoma Coal in support of a waterway diversion proposal for Coral Creek near Collinsville in Central Queensland.
- Provided an expert witness report for an appeal in the Planning and Environment Court at the behest of private developers in relation to a coastal development proposal at Machan's Beach, Cairns, north Queensland.

# RÉSUMÉ


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## EDUCATION

| | |
|---|---|
| 1987 - 1990 | University of Bergen, Norway<br>**Master of Science in Biology**<br>Majored in Microbiology with an emphasis on algae, particularly cyanobacteria. Supporting subjects in Marine Biology and Applied Mathematics. |

## OTHER QUALIFICATIONS

### Local Botanical Experience

| | |
|---|---|
| 1998 – present | Botanical audits of Skyrail tower sites (25) in Kuranda National Park, Barron Gorge National Park, freehold and Unallocated State Land. Audits conducted every year 1998 – 2005, every 5 years 2005-present. |
| 1998 – present | Training staff for identification of plants and seeds as part of Nursery work (Skyrail managed nursery) and tower access walks. |
| 1998 – present | Identification of trees and other vegetation for as part of assessment for reporting proposed pruning and removal to Department of Parks and Wildlife. |
| 1998 – present | Completed monthly identification of individual trees (approximately 3000 individuals from 300 species over 6 kilometres of transect) and recorded their growth and reproductive behaviours in response to rainfall, using digital imaging software and direct field observations as required for the phenology research paper. |
| 2000 – present | Monthly Nature Diaries (articles regarding rainforest plants for distribution on Skyrail website and to every Skyrail Rainforest Foundation member on a quarterly basis (1200 members registered). Also assist marketing with interpretative collateral |

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| 2015 | Botanical surveys for proposed new walkway as part of Skyrail's Permit to Occupy for the purpose of investigation as required to comply with Nature Conservation (Wildlife) Regulation 2006 |
| 2014 | Assisted with identification of rainforest species for planning and establishment of new tourism venture for a new company |
| 2013 | Conducted botanical survey for feasibility investigation for a tourism proposal for Skyrail in accordance with state legislation. |
| 2012 | Tested new identification key for rainforest plants developed by James Cook University (JCU) and the Australian Tropical Herbarium prior to public release. |
| 2012 | Co-Authored scientific article as part of joint research paper between Skyrail, JCU and University of New England investigating effects of climate variables on rainforest canopy species (phenology). |
| 2011 | Collected vouchers (pressed specimens and fruits) as part of validation process for identification accuracy (Phenology component of Global Warming Project). Permit for collection from National Parks in own name. |

## PREVIOUS EMPLOYMENT HISTORY

2011 (6 months)
2010 (3 months)

James Cook University
Position: **Casual Researcher on Global Warming Project**
Collection and analysis of flowering and fruiting data along canopy of Skyrail Rainforest Cableway transect

2000 – 2002

Skyrail Rainforest Cableway, Cairns QLD
Position: **Acting Environmental Supervisor**

1997 - 2000
2002 - present

Skyrail Rainforest Cableway, Cairns QLD
Position: **Ranger** with the following duties:

- Horticulture (particularly Nursery Work)
- Revegetation
- Interpretation
- Environmental Induction of New Staff
- Phenology Survey of Cableway transect (weekly)
- Botanical Audits of tower sites (annually)
- Maintenance of Clivus Multrum Toilets
- Landscaping/Trimming of Rainforest Canopy
- Erosion Control
- Rodent Control
- Rainforest Track Maintenance
- Report writing and assistance with ISO 14001 and Green Globe 21
-General Maintenance of Stations
- - Evacuation readiness at heights

1994 - 1996

Hammerfest Senior High School, Norway
Position: **Teacher in Science, Biology and Mathematics.**

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| 1990 -1991 | Department of Environmental Protection, Norway<br>Position: **Office Clerk Assistant.** |
| 1989 | University of Bergen, Norway<br>Position: **Assistant Teacher.** (Cell Biology, Genetics & Ecology) |
| 1988 | University of Bergen, Norway<br>Position: **Assistant Teacher.** (Botany) |
| 1988 | University of Bergen, Norway<br>Position: **Assistant Teacher.** General Microbiology |

**REFEREES**

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