

PROTECTED FLORA SURVEY REPORT

BURRUM QUARRY

Prepared for
Barro Group Pty Ltd



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Client: Barro Group Pty Ltd

Project Title: Protected Flora Survey Report: Burrum Quarry

Project Author/s: Shelley Trevaskis

Project Summary: This report presents the results of a flora survey for protected plant species, undertaken in accordance with the Queensland *Flora Survey Guidelines – Protected Plants*, within a clearing impact area located at Beerburrum-Woodford Road to accompany an application for a clearing permit and/or activity exemption under the Queensland *Nature Conservation Act 1992*.

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Purpose of Report

Biodiversity Assessment and Management Pty Ltd has produced this report in its capacity as {consultants} for and on the request of Barro Group Pty Ltd (the "Client") for the sole purpose of documenting the results of a flora survey for protected plant species, undertaken in accordance with the Queensland *Flora Survey Guidelines – Protected Plants*, within a clearing impact area located at Burrum Quarry, Beerburrum to accompany an application for a clearing permit and/or activity exemption under the Queensland *Nature Conservation Act 1992* (the "Specified Purpose"). This information and any recommendations in this report are particular to the Specified Purpose and are based on facts, matters and circumstances particular to the subject matter of the report and the Specified Purpose at the time of production. This report is not to be used, nor is it suitable, for any purpose other than the Specified Purpose. Biodiversity Assessment and Management Pty Ltd disclaims all liability for any loss and/or damage whatsoever arising either directly or indirectly as a result of any application, use or reliance upon the report for any purpose other than the Specified Purpose.

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Signed on behalf of

Date: 29/02/2016

Biodiversity Assessment and Management Pty Ltd



Director

EXECUTIVE SUMMARY

INTRODUCTION

Biodiversity Assessment and Management Pty Ltd (BAAM) has prepared this report for Barro Group Pty Ltd to document the results of a flora survey for protected plant species, undertaken in accordance with the Queensland *Flora Survey Guidelines – Protected Plants* for areas proposed to be cleared at the Burrum Quarry site located at Beerburrum-Woodford Road, west of Beerburrum (study area).

It is understood a continuation and extension previous quarrying activities at the site is proposed, which will necessitate the clearing of all vegetation from the site.

METHODOLOGY

Following an initial desktop review of available information to determine which EVNT flora species may occur on the survey site, a field survey was conducted involving timed, random meander surveys of each habitat type within the clearing impact area in accordance with the Queensland *Flora Survey Guidelines – Protected Plants*. This timing of the survey (9 February 2016) is regarded as suitable to detect the targeted species (see **Section 3.1**).

RESULTS

A total of 79 native flora species and 13 introduced flora species were recorded during the survey. None of the species recorded are currently listed as Endangered, Vulnerable or Near Threatened under the NC Act.

Accordingly, an exempt clearing notification form is required to be submitted to DEHP at least one week before clearing commences, but not later than one year after the completion of the flora survey that was undertaken for the report (i.e. by 9 February, 2016). Following submission of the exemption form, the applicant will receive a receipt of the submission providing approval for the clearing to commence. Clearing under this exemption may be conducted within two years after the flora survey report is submitted.

PROTECTED FLORA SURVEY REPORT

BURRUM QUARRY

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Table of Terms and Abbreviations

ALA	Atlas of Living Australia
BAAM	Biodiversity Assessment and Management Pty Ltd
DA	Development Application
DEHP	Queensland Department of Environment and Heritage Protection
EVNT	Endangered, Vulnerable or Near Threatened
NC Act	Queensland <i>Nature Conservation Act 1992</i>
RE	Regional Ecosystem

1.0 INTRODUCTION

1.1 BACKGROUND AND PURPOSE

Biodiversity Assessment and Management Pty Ltd (BAAM) has prepared this report for Barro Group Pty Ltd to document the results of a flora survey for protected plant species, undertaken in accordance with the Queensland *Flora Survey Guidelines – Protected Plants* (DEHP 2014a) for areas proposed to be cleared at the Burrum Quarry site located at Beerburrum-Woodford Road, west of Beerburrum (study area) (**Figure 1-1**).

It is understood the site has previously been operated as a quarry for over 30 years, but a new development application (DA) is now required subsequent to surrendering of a pre-existing permit. Accordingly, an ecological assessment is required to inform the preparation and assessment of the DA.

As the areas proposed to be cleared are identified as occurring within a high risk area on the Queensland Department of Environment and Heritage Protection (DEHP) flora survey trigger map (**Appendix 1**), targeted searches for flora species listed as Endangered, Vulnerable or Near Threatened (EVNT) under the Queensland *Nature Conservation Act 1992* (NC Act) must be undertaken in accordance with the recently released Queensland *Flora Survey Guidelines - Protected Plants* (DEHP 2014a) before a clearing or exemption permit can be applied for under the NC Act.

1.2 REPORT CONTENT

In accordance with the Queensland *Flora Survey Guidelines - Protected Plants* (DEHP 2014a), the following information is provided in the subsequent sections of this report:

- A description of the location and map of the area to be cleared.
- A description of the survey methodology, including:
 - Survey techniques.
 - A statement to justify the suitability and qualifications of the person undertaking the flora survey.
 - Justification of the timing of the flora survey (and detail of any limitations associated with the timing of the survey).

- A description of the habitat types identified for the site and a map of the GPS data showing the on-ground surveys undertaken.
- A map showing the locations of all EVNT species or populations of species found; and
- A discussion of the potential impacts and mitigation measures.

Further information required to accompany a clearing or exemption permit application, which was not available at the time of the survey, includes:

- The date or dates the clearing is expected to occur.

1.3 STUDY AREA

The study area covers an area of approximately 24 hectares and is located within the Beerburrum State Forest (Lot 589 FTY1876) on Beerburrum Woodford Road (**Figure 1-1**).

The study area currently supports a non-operating quarry, surrounded by remnant bushland. Ephemeral drainage lines are present in the southern portion of the study area, while the western extent is heavily disturbed and supports regrowth vegetation and cleared areas.

The study area is bounded by pine plantation on virtually all boundaries, aside from a portion of the southern boundary that borders native bushland associated with a waterway.

1.4 PROPOSED WORKS

It is understood a continuation and extension previous quarrying activities at the site is proposed, which will necessitate the clearing of all vegetation from the site.



Notes: Image sourced from Google Earth (c) 2016

Coordinate System: GCS GDA 1994
 Datum: GDA 1994
 Units: Degree



1:27,676 at A4
 0 0.125 0.25 0.5 0.75 1 Kilometers

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
-  Study Area Boundary
-  Protected Areas

Figure: 1-1
 Title: Site Location
 Project: **Burrum Quarry
 Protected Plant Assessment**
 Client: **BARRO GROUP P/L**



Drawn By: MG Reviewed by: JC Date: 29/02/2016

2.0 METHODOLOGY

2.1 INITIAL DESKTOP REVIEW

An initial desktop review of available information was undertaken to determine which EVNT flora species may occur on the survey site, such that survey effort could be targeted towards confirming the presence or absence of these species. Specifically, this entailed accessing and reviewing:

- DEHP Wildlife Online Database (**Appendix 2**) and Atlas of Living Australia online database (ALA 2016), to determine whether any EVNT species listed under the NC Act have been previously recorded within the vicinity of the survey site;
- The Queensland Department of Natural Resources and Mines' mapping of regulated vegetation and associated Essential Habitat, to determine whether essential habitat and/or preferred habitats for potentially occurring EVNT flora species may occur on the survey site (**Appendix 3**); and
- Reference material on the target species (species profiles, etc.) to confirm habitat requirements and distinguishing features to assist field identification.

For each EVNT species identified as having potential to occur, the preferred habitat characteristics were identified.

2.2 FIELD SURVEY APPROACH

The survey covered the area to be cleared as well as a buffer area of 100m around the proposed clearing. This total area is hereafter referred to as the clearing impact area.

In accordance with the *Flora Survey Guidelines - Protected Plants* (DEHP 2014a), the survey involved timed, random meander surveys of each habitat type within the clearing impact area. The number of meanders conducted is specified in **Section 3.3**, based on the type and patch size of the habitats present.

For each random meander, a starting point was selected and the starting time noted. The area of interest was then traversed as a random meander, taking a GPS point every five minutes and all the while searching carefully for EVNT plant species. Whenever the survey was

interrupted, the survey time was paused until the survey started again. Each random meander was terminated once no new species had been recorded for 30 minutes of active survey or when the entire area of the habitat type had been surveyed, whichever happened sooner.

2.3 QUALIFICATIONS OF FIELD TEAM

The targeted flora survey was led by Shelley Trevaskis (Senior Ecologist at BAAM) with assistance from Adrian Caneris (Principal Ecologist at BAAM), *Curricula vitae* for whom are provided in **Appendix 4**.

Shelley Trevaskis is an experienced field botanist with extensive experience in leading projects involving flora and vegetation survey and mapping, weed management, regeneration planning, conservation planning and environmental monitoring. Shelley completed a Bachelor of Science degree, majoring in Ecology and Environmental Planning in 1996, and has since been employed as an environmental professional, including ten years as an ecological consultant.

Adrian Caneris is a Principal Wildlife Expert and a Managing Director of BAAM Pty Ltd. Adrian has expertise in assessment of terrestrial habitats, ecological monitoring, wildlife management, biodiversity planning, feral species management and community liaison and facilitation. He has been involved in research, management, consulting, tertiary teaching and community based studies of terrestrial ecology throughout South-east Queensland for over 20 years.

2.4 SURVEY TIMING

The protected plant survey was commissioned by Barro Group Pty Ltd to be undertaken in February 2016 in order to achieve critical operational timelines for project planning and the survey was conducted on 9 February 2016.

This timing is regarded as suitable to detect the targeted species (see **Section 3.1**).

3.0 RESULTS

3.1 DESKTOP RESULTS

The searches of the DEHP Wildlife Online database and Atlas of Living Australia database (**Appendix 2**) identified a total of 18 flora species listed as EVNT under the NC Act that have been recorded within 5km of the site (**Table 3.1**).

Regulated vegetation mapping (**Appendix 3**) shows the site as containing two Regional Ecosystems (REs), these being:

- RE12.5.3 (Endangered): *Eucalyptus racemosa* subsp. *racemosa* woodland on remnant Tertiary surfaces; and
- RE12.8.20 (Of Concern): Shrubby woodland with *Eucalyptus racemosa* subsp.

racemosa or *E. dura* on Cainozoic igneous rocks.

Review of EVNT habitat requirements (**Table 3.1**) in relation to these mapped habitats and those verified as occurring on site during the field survey (Section 3.1) suggest most of the previously recorded state listed EVNT species are associated with vegetation communities not present within the study area. In particular, many records are from montane environments associated with the nearby Glasshouse Mountains

Two species, these being *Eucalyptus curtisii* Plunkett Mallee (NC Act: Near Threatened) and *Leucopogon recurvisepalus* (NC Act: Vulnerable), have habitat requirements that may occur within the study area, but there are no database records for the immediate locality. Nearest records for these species are from the Mt Coochin / Beerwah area. Therefore, there is only a low potential that they may occur.

Table 3.1. EVNT flora species recorded within 5km of the study area and preferred habitat characteristics.

Species	Common name	NCA*	Habitat characteristics
<i>Allocasuarina filidens</i>	Mt Beerwah She-oak	V	Summits and exposed upper slopes, in crevices of trachyte rocks in shrubland and open Eucalypt forest (SCC, 2016).
<i>Allocasuarina rigida</i> subsp. <i>exsul</i>		V	This species occurs in rocky montane heathland only on Mt Cooroora near Pomona. (Johnson 1989; Lui Weber pers comm 2011).
<i>Allocasuarina thalassoscopica</i>	Mt Coolum She-oak	E	Restricted to Mt Coolum on the Sunshine Coast in south-eastern Qld and known from only a single site. species is restricted to the low closed heathland community that occurs on the upper slopes at an altitude of 150-200 m (DoE, 2016)
<i>Banksia conferta</i>		V	Montane heath and eucalypt forests at Mt Barney, Lamington N.P and Glasshouse Mountains (Leiper et al 2008).
<i>Eucalyptus conglomerata</i>		E	Occurs between Kin Kin and Beerwah where it typically occurs mostly in the ecotone between wet heath (wallum) and tall open forest communities. The soils are infertile, deep and sandy or peaty in texture. Drainage is poor and soils can be seasonally water-logged
<i>Eucalyptus curtisii</i>	Plunkett Mallee	NT	Two growth forms that occur in different habitats. The shorter mallee form is more likely to occur as the only eucalypt species on poorly drained lowland sites in shrubland dominated by banksia, with an understorey of heath plants, and sometimes <i>E. conglomerata</i> may also be present. The larger growth form occurs as scattered individuals on better drained soils in the more open areas of mixed eucalypt forests. Commonly associated species include <i>Corymbia citriodora</i> subsp. <i>variegata</i> , <i>C. trachyphloia</i> and <i>Callitris endlicheri</i> , less commonly associated with <i>E. fibrosa</i> , <i>E. planchoniana</i> and <i>E. acmenoides</i> . <i>E. curtisii</i> occurs on sandy podsoils with impeded drainage, shallow stony soils, clay loams and stony clays with a surface layer of loose stones (DEHP, 2015).
<i>Eucalyptus kabiana</i>	Mt Beerwah Mallee	V	Open heath dominated by <i>Leptospermum luehmannii</i> with stunted <i>Lophostemon confertus</i> on steep to very steep slopes where plants are rooted in fissured natural pavement with little accumulated soil. Substrate is volcanic rock known as trachyte. Known from a single diffuse population inhabiting the upper slopes of Mount Beerwah, in the Glasshouse Mountains (DoE, 2016).
<i>Gonocarpus effusus</i>		V	Montane areas, known from Glasshouse Mountains (Leiper et al 2008).
<i>Grevillea hodgei</i>		V	Occurs in south-eastern Qld, known only from several small populations in the Beerwah area. Grows in skeletal sandy soils around exposed rocky platforms (Flora of Australia Online [2016]).

Species	Common name	NCA*	Habitat characteristics
<i>Hernandia bivalvis</i>	Cudgerie	NT	Mainly grows in rainforest on rock pavements and outcrops with shallow soils. Most records are from either vine thicket or microphyll vine forest (DEHP, 2016).
<i>Leucopogon recurvisepalus</i>		E	Sandstone hills in closed heathland to woodland communities (LCC, 2016).
<i>Leptospermum luehmannii</i>		V	Endemic to the rocky peaks and slopes of the Glasshouse Mountains. Grows in skeletal soils on acidic volcanic rocks (SCC, 2016b).
<i>Leptospermum oreophilum</i>		V	Rocky slopes of Glasshouse Mountains and Mt Coolum (Leiper et al, 2008).
<i>Marsdenia coronata</i>		V	Commonly found in open eucalypt forest and woodland communities on hillslopes and ridge tops at altitudes of 40–780 m above sea level. Also known from rocky outcrops along clifflines. Most commonly recorded with <i>Eucalyptus carnea</i> , <i>Corymbia citriodora</i> , <i>C. henryi</i> , <i>Eucalyptus acmenoides</i> and <i>E. propinqua</i> .
<i>Maundia triglochinooides</i>		V	Swamps or shallow freshwater on heavy clay PlantNet NSW Flora Online (2016).
<i>Melaleuca groveana</i>		NT	Exposed rocky ridges, high mountain slopes and the summits of mountains, at altitudes between 340-600m above sea level. Generally occurs in heaths and eucalypt woodlands and forests with heath understoreys. Also found in tall open forest with a grassy understorey and in microphyll vine forests (ALA, 2016).
<i>Pararistolochia praevenosa</i>		NT	Grows in upland rain forest on basaltic and metamorphic rocks (CSIRO 2010).
<i>Westringia grandifolia</i>		E	Rock crevices on Glasshouse Mountains (Leiper et al, 2008).

*Status under the Queensland Nature Conservation Act 1992: E = endangered; NT = near threatened; V = vulnerable.

3.2 FIELD SURVEY RESULTS

3.2.1 Habitats

A total of two different habitat types were identified within the clearing impact area, consistent with current State mapping of remnant REs (**Section 3.1**).

Remnant vegetation on site remains reasonably intact and free of weed infestation. Weeds tended to be more prolific in cleared/highly disturbed areas, as well as along the drainage lines in the southern extent of the study area, where wetter conditions allow the proliferation of exotic species.

Non-remnant portions of the study area are located within and around the dis-used quarry pit and in the western-most portion of the site, and feature wattle dominated regrowth and exotic pine.

The entirety of the study area showed evidence of excessive fire regime and recent fire events. This was particularly evident in the understorey, where native species that recruit after fire events (such as wattles) were particularly dense in places. Furthermore, in some portions the former sub-canopy of Black she-oak *Allocasuarina littoralis* has been almost completely burnt out and has resulted in

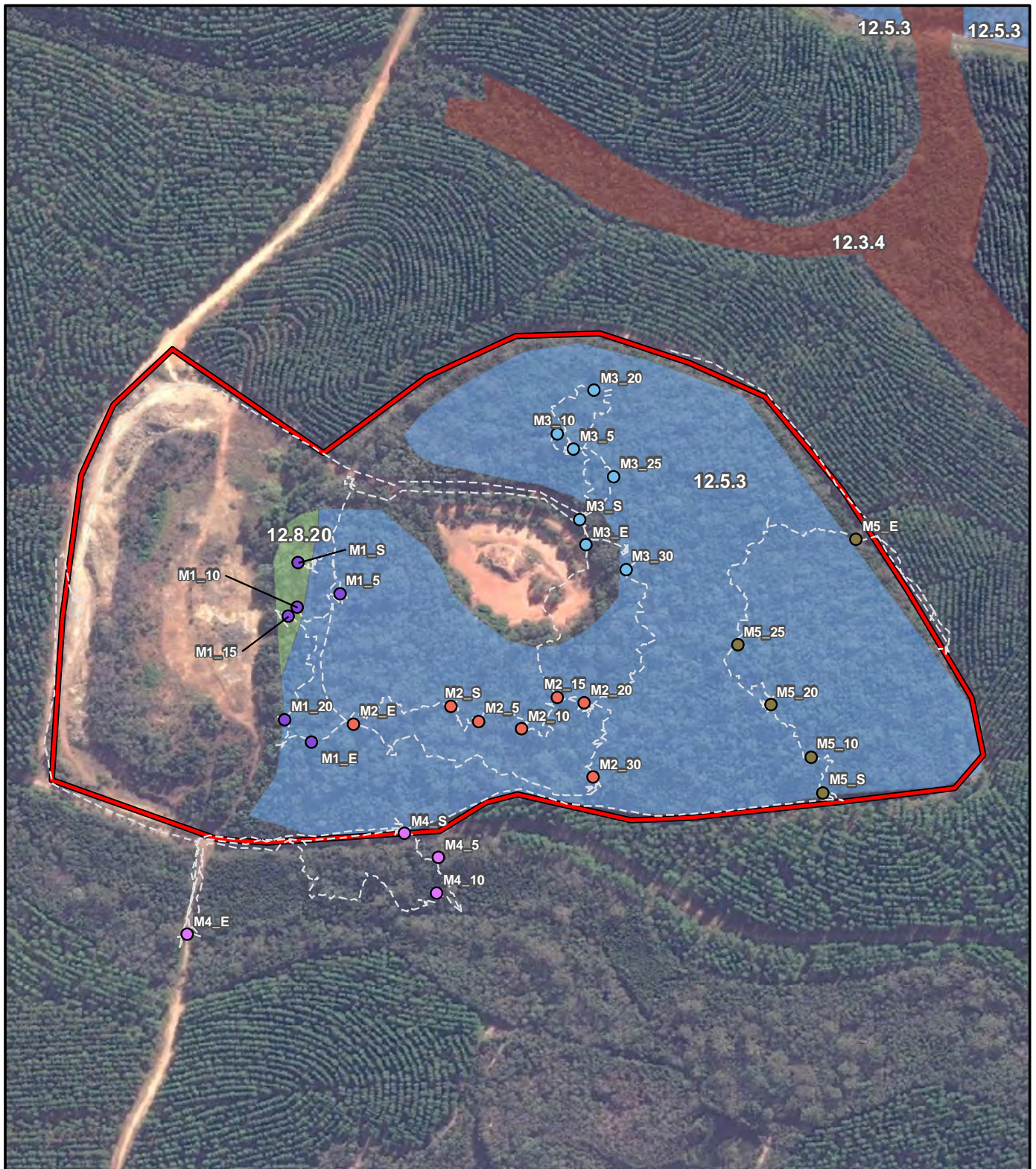
standing and fallen dead branches being present across the site (**Photo 1**).



Photo 1: Recent fire has resulted in a dense cover of regrowth wattle, as well as standing and fallen dead branches across the study area.

Based on the type and size of the habitats represented, a total of 5 timed random meander assessments were undertaken (**Table 3.2**). In accordance with the prescribed methodology, this included a meander in non-remnant, regrowth eucalypt woodland within 100 metres of the site's southern boundary.

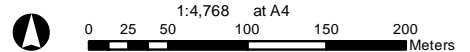
The GPS data and times from the meander searches are shown in **Figure 3-1**.



Notes: Image sourced from Google Earth (c) 2016

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Coordinate System: GCS GDA 1994
Datum: GDA 1994
Units: Degree



LEGEND

State mapped Regional Ecosystems:

- 12.3.4
- 12.5.3
- 12.8.20
- Study Area Boundary
- Watercourse
- Tracklog

Protected Plants Meander

- Meander 1
- Meander 2
- Meander 3
- Meander 4
- Meander 5

Figure: **3-1**

Title: Protected Plant Meanders

Project: **Burrum Quarry Protected Plant Assessment**

Client: **BARRO GROUP P/L**



Date: 29/02/2016 Drawn By: MG Reviewed by: JC

Table 3.2. No. of timed, random meander searches undertaken within each habitat type within the clearing impact area.

Habitat Type	No. Patches within the Clearing Impact Area			Total No. Meanders
	<10ha	10-100ha	>100ha	
RE12.5.3		3		3
RE12.8.20	1			1
Regrowth eucalypt woodland (within 100m buffer)	1			1

Vegetation immediately adjacent to all other site boundaries supports pine plantation; therefore, this vegetation was not surveyed, as there were no obvious habitats for EVNT species (**Photo 2**).



Photo 2: Pine plantation occurs adjacent to virtually all boundaries of the site, aside from a portion along the southern boundary.

3.2.2 Flora Species

A total of 79 native flora species and 13 introduced flora species were recorded during the survey. The complete flora species list is provided in **Appendix 5**.

None of the species recorded are currently listed as Endangered, Vulnerable or Near Threatened under the NC Act.

4.0 POTENTIAL IMPACTS AND MITIGATION MEASURES

No EVNT flora species were detected during the survey despite thorough searches for species that have habitat requirements potentially offered by the study area and have been recorded in the locality. Therefore, no impacts on protected plant species are expected to occur and no mitigation measures are considered necessary.

5.0 CONFIRMATION OF PERMIT APPLICATION AND SUBMISSION REQUIREMENTS

The *Flora Survey Guidelines – Protected Plants* (DEHP 2014a) stipulate that, where no EVNT species are identified within the clearing ‘impact’ area, an exempt clearing notification form is required to be submitted to DEHP. This Protected Flora Survey Report should accompany the notification form as an attachment.

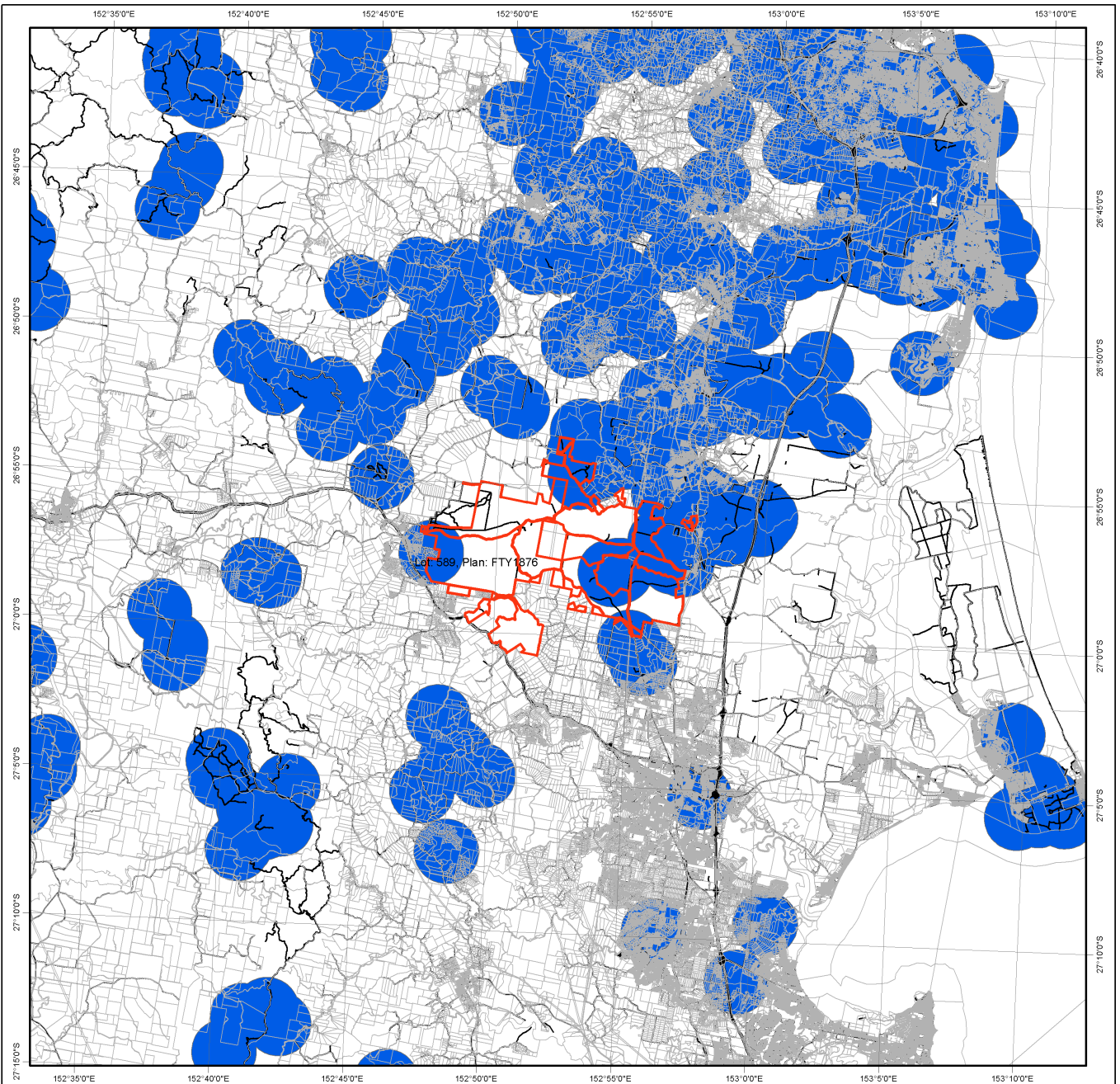
Section 261ZA requires that the exemption form and supporting report are submitted at least one week before clearing commences, but not later than one year after the completion of the flora survey that was undertaken for the report (i.e. by 9 February, 2016).

Following submission of the exemption form, the applicant will receive a receipt of the submission providing approval for the clearing to commence. Clearing under this exemption may be conducted within two years after the flora survey report is submitted (DEHP 2014b).

6.0 REFERENCES

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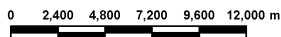
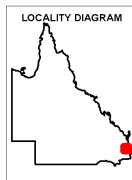
APPENDIX 1
FLORA SURVEY TRIGGER MAP FOR THE SITE



Protected Plants Flora Survey Trigger Map

Legend

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



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 2
DATABASE 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: Since 1980
Latitude: -26.9611
Longitude: 152.9381
Distance: 5
Email: jo@baamecology.com
Date submitted: Wednesday 17 Feb 2016 15:18:42
Date extracted: Wednesday 17 Feb 2016 15:20:04

The number of records retrieved = 15

Disclaimer

As the DSITIA is still in a process of collating and vetting data, it is possible the information given is not complete. The information provided should only be used for the project for which it was requested and it should be appropriately acknowledged as being derived from Wildlife Online when it is used.

The State of Queensland does not invite reliance upon, nor accept responsibility for this information. Persons should satisfy themselves through independent means as to the accuracy and completeness of this information.

No statements, representations or warranties are made about the accuracy or completeness of this information. The State of Queensland disclaims all responsibility for this information and all liability (including without limitation, liability in negligence) for all expenses, losses, damages and costs you may incur as a result of the information being inaccurate or incomplete in any way for any reason.

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
animals	amphibians	Hylidae	<i>Litoria freycineti</i>	wallum rocketfrog		V		4
animals	amphibians	Limnodynastidae	<i>Adelotus brevis</i>	tusked frog		V		8
animals	amphibians	Myobatrachidae	<i>Crinia tinnula</i>	wallum froglet		V		22
animals	birds	Cacatuidae	<i>Calyptorhynchus lathami lathami</i>	glossy black-cockatoo (eastern)		V		7
animals	birds	Strigidae	<i>Ninox strenua</i>	powerful owl		V		2
animals	mammals	Phascolarctidae	<i>Phascolarctos cinereus</i>	koala		V	V	2
plants	higher dicots	Apocynaceae	<i>Marsdenia coronata</i>	slender milkvine		V		1/1
plants	higher dicots	Casuarinaceae	<i>Allocasuarina filidens</i>	Mt. Beerwah she-oak		V		6/6
plants	higher dicots	Haloragaceae	<i>Gonocarpus effusus</i>			V		7/7
plants	higher dicots	Lamiaceae	<i>Westringia grandifolia</i>			E		2/2
plants	higher dicots	Myrtaceae	<i>Leptospermum oreophilum</i>			V		5/5
plants	higher dicots	Myrtaceae	<i>Leptospermum luehmannii</i>			V		5/3
plants	higher dicots	Proteaceae	<i>Banksia conferta</i>			V		1/1
plants	higher dicots	Sapindaceae	<i>Dodonaea rupicola</i>			V	V	5/3
plants	lower dicots	Hernandiaceae	<i>Hernandia bivalvis</i>	cudgerie		NT		1

CODES

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

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

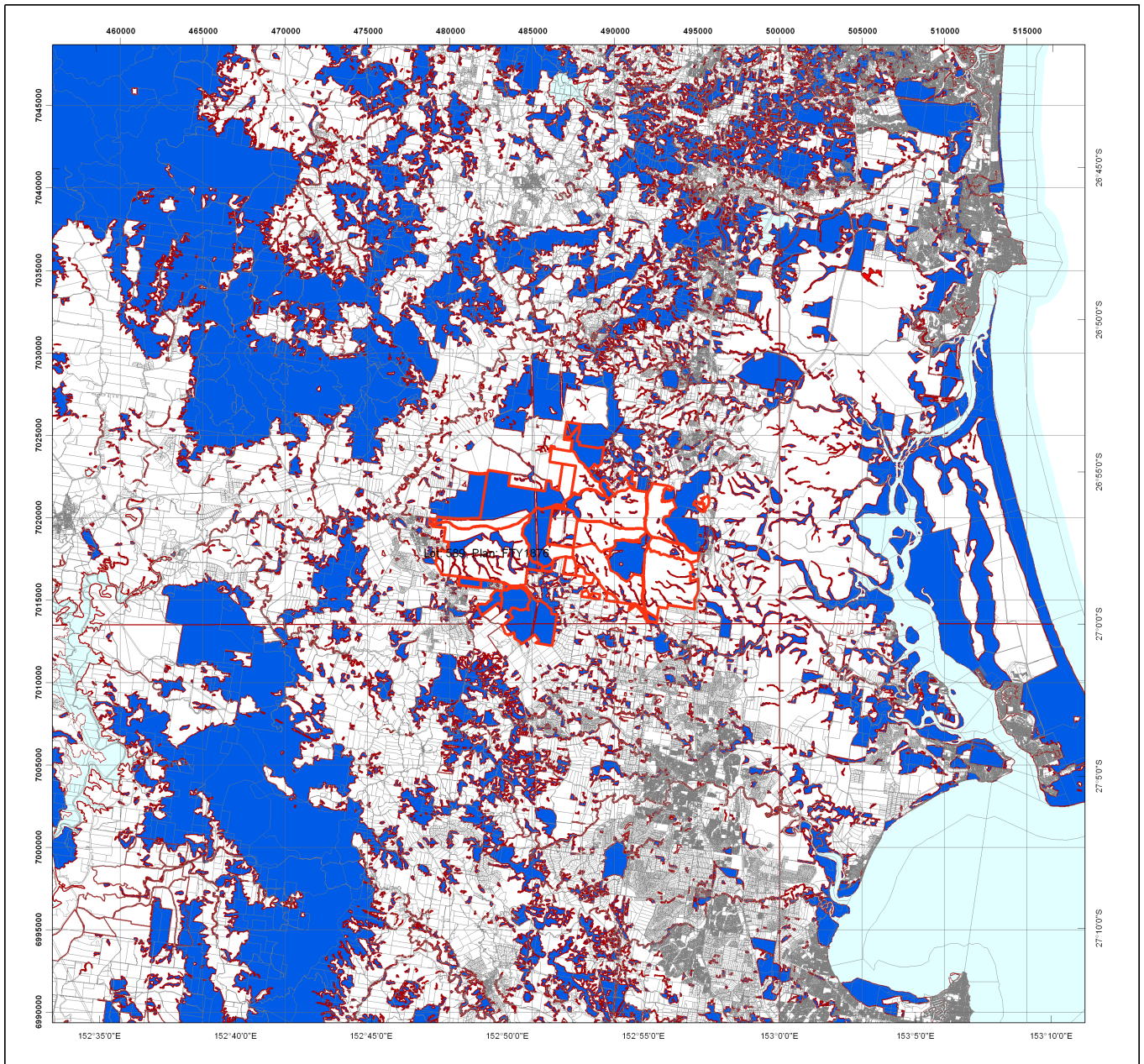
A - Indicates the Australian conservation status of each taxon under the *Environment Protection and Biodiversity Conservation Act 1999*. The values of EPBC are Conservation Dependent (CD), Critically Endangered (CE), Endangered (E), Extinct (EX), Extinct in the Wild (XW) and Vulnerable (V).

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.

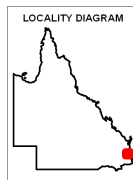
APPENDIX 3
DNRM REGULATED VEGETATION AND ESSENTIAL
HABITAT MAPPING



Regulated Vegetation Management Map

Legend

- Lot and Plan
- 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



This product is projected into:
 GDA 1994 MGA Zone 56

Disclaimer:

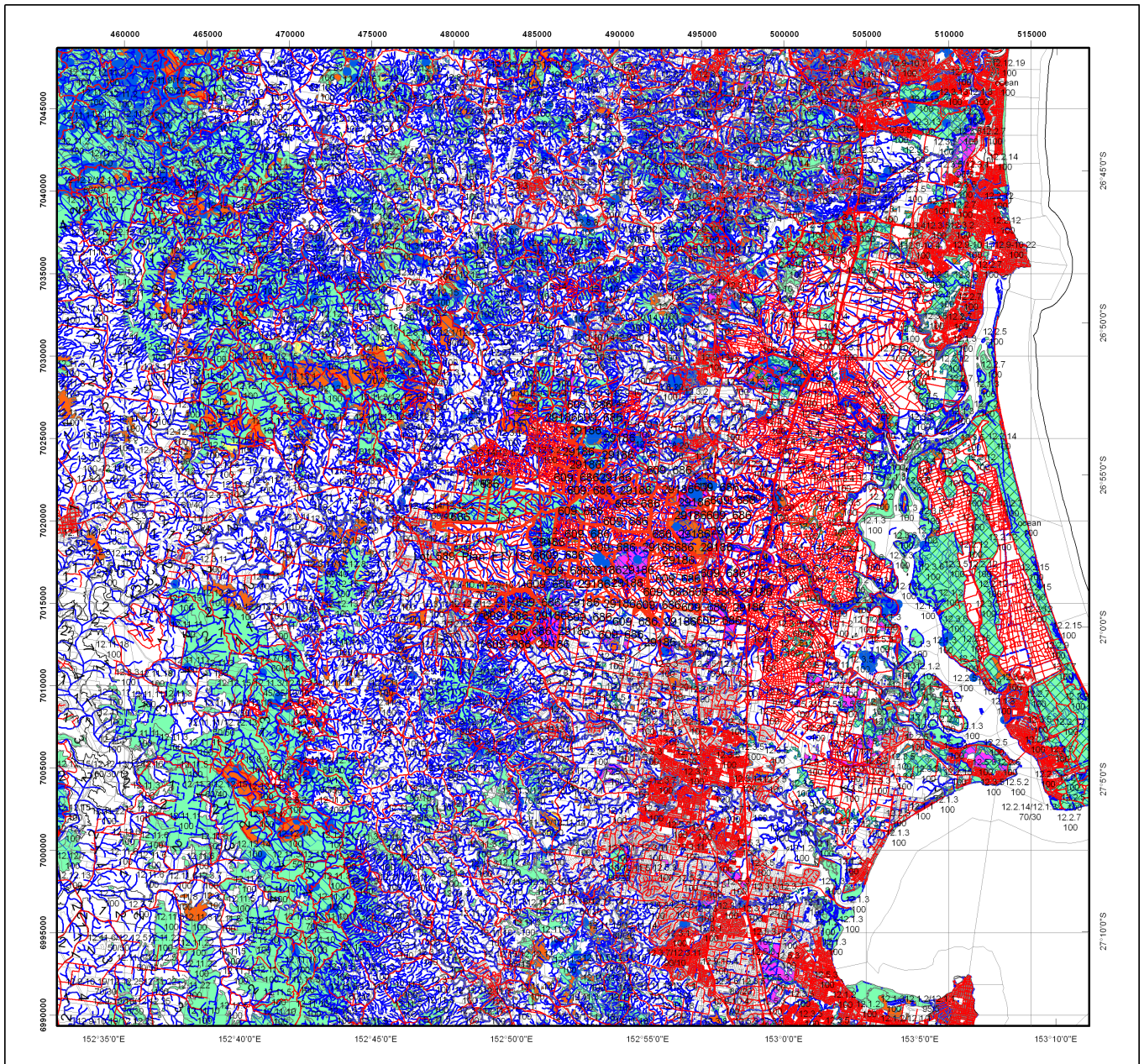
While every care is taken to ensure the accuracy of this product, the Department of Natural Resources and Mines makes no representations or warranties about its accuracy, reliability, completeness or suitability for any particular purpose and disclaims all responsibility and all liability (including without limitation, liability in negligence) for all expenses, losses, damages (including indirect or consequential damage) and costs which you might incur as a result of the product being inaccurate or incomplete in any way and for any reason.

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.

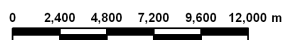




Vegetation Management Supporting Map

Legend

- Lot and Plan
- 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 20A1
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 and drainage feature 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



This product is projected into:
GDA 1994 MGA Zone 56

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 for any particular purpose and disclaims all responsibility and all liability (including without limitation, liability in negligence) for all expenses, losses, damages (including indirect or consequential damage) and costs which you might incur as a result of the product being inaccurate or incomplete in any way 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 and drainage feature 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/>



Vegetation Management Act 1999 - Extract from the essential habitat database

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:1100m Species Information

Label	Scientific Name	Common Name	NCA Status	Vegetation Community	Altitude	Soils	Position in Landscape
706	<i>Adelotus brevis</i>	Tusked Frog	V	In cavities, under debris (logs, stones) in subtropical vine forest, tall open moist forest, heaths, Melaleuca swamp and pasturelands near puddles and streams.	Sea level to 1000m.	no soil information	None
13415	<i>Leptospermum oreophilum</i>	None	V	montane heathland or shrubland; tall woodland to open forest of Eucalyptus spp.	0 to 500 m	red clay or skeletal to shallow soils derived from igneous rocks (rhyolite and trachyacte)	rock outcrops and pavement in gully, hill slope or hill summit
13466	<i>Leptospermum luehmannii</i>	None	V	open heathland; woodland of Eucalyptus spp. with heathland understorey	0 to 600 m	skeletal to shallow soil derived from igneous rocks (rhyolite or trachyte)	hill slope or summit
18166	<i>Pseudomugil mellis</i>	Honey Blue-eye	V	Among or near emergent vegetation (reeds, water-lilies) in wallum streams, swamps and dune lakes; water is stained, soft or hard and acidic (pH 4.4 - 6.8); preference shown for shallow beds of submerged sedge <i>Eleocharis ochrostachys</i> .	Sea level to 100m.	no soil information	In waterbodies.
9743	<i>Allocasuarina filidens</i>	Mt Beerwah she-oak	V	montane heathland, shrubland or open-woodland	50 to 600 m	shallow peaty or clay loam (Vertosols, Ferrosols, Dermosols)	mountain summt, cliff-face or steep hill slope usually with some rock pavement
19751	<i>Banksia conferta</i>	None	V	There are no essential habitat factors shown as this species has only been found in areas not subject to the VMA (eg State Forests and National Parks)	There are no essential habitat factors shown as this species has only been found in areas not subject to the VMA (eg State Forests and National Parks)	There are no essential habitat factors shown as this species has only been found in areas not subject to the VMA (eg State Forests and National Parks).	There are no essential habitat factors shown as this species has only been found in areas not subject to the VMA (eg State Forests and National Parks).
11779	<i>Westringia grandifolia</i>	None	E	There are no essential habitat factors shown as this species has only been found in areas not subject to the VMA (eg State Forests and National Parks)	There are no essential habitat factors shown as this species has only been found in areas not subject to the VMA (eg State Forests and National Parks)	There are no essential habitat factors shown as this species has only been found in areas not subject to the VMA (eg State Forests and National Parks).	There are no essential habitat factors shown as this species has only been found in areas not subject to the VMA (eg State Forests and National Parks).
9242	<i>Eucalyptus kabiana</i>	Mt. Beerwah mallee	V	There are no essential habitat factors shown as this species has only been found in areas not subject to the VMA (eg State Forests and National Parks)	There are no essential habitat factors shown as this species has only been found in areas not subject to the VMA (eg State Forests and National Parks)	There are no essential habitat factors shown as this species has only been found in areas not subject to the VMA (eg State Forests and National Parks)	There are no essential habitat factors shown as this species has only been found in areas not subject to the VMA (eg State Forests and National Parks)

Essential habitat in Category A and B (Remnant vegetation species record) areas:1100m Regional Ecosystems Information

Label	Regional Ecosystem (this is a mandatory essential habitat factor, unless otherwise stated)
706	8.1.5, 8.2.1, 8.2.2, 8.2.3, 8.2.4, 8.2.5, 8.2.6, 8.2.7, 8.2.8, 8.2.11, 8.2.12, 8.2.13, 8.3.1, 8.3.2, 8.3.3, 8.3.5, 8.3.6, 8.3.8, 8.3.9, 8.3.10, 8.3.11, 8.3.13, 8.5.1, 8.5.2, 8.5.3, 8.5.5, 8.5.6, 8.8.1, 8.9.1, 8.11.1, 8.11.2, 8.11.3, 8.11.4, 8.11.5, 8.11.6, 8.11.8, 8.12.1, 8.12.2, 8.12.3, 8.12.4, 8.12.5, 8.12.6, 8.12.7, 8.12.8, 8.12.9, 8.12.10, 8.12.11, 8.12.12, 8.12.14, 8.12.16, 8.12.17, 8.12.18, 8.12.19, 8.12.20, 8.12.22, 8.12.23, 8.12.25, 8.12.26, 8.12.27, 8.12.28, 8.12.29, 8.12.30, 8.12.31, 8.12.32, 11.1.4, 11.2.1, 11.2.2, 11.2.3, 11.2.5, 11.3.1, 11.3.2, 11.3.3, 11.3.4, 11.3.5, 11.3.6, 11.3.7, 11.3.8, 11.3.9, 11.3.10, 11.3.11, 11.3.12, 11.3.13, 11.3.14, 11.3.15, 11.3.16, 11.3.17, 11.3.18, 11.3.19, 11.3.20, 11.3.23, 11.3.25, 11.3.26, 11.3.27, 11.3.28, 11.3.29, 11.3.30, 11.3.32, 11.3.33, 11.3.34, 11.3.35, 11.3.36, 11.3.37, 11.3.38, 11.3.39, 11.4.1, 11.4.2, 11.4.3, 11.4.5, 11.4.6, 11.4.7, 11.4.8, 11.4.9, 11.4.10, 11.4.12, 11.4.13, 11.5.1, 11.5.2, 11.5.3, 11.5.4, 11.5.5, 11.5.7, 11.5.8, 11.5.9, 11.5.12, 11.5.13, 11.5.14, 11.5.15, 11.5.16, 11.5.17, 11.5.20, 11.5.21, 11.7.1, 11.7.2, 11.7.3, 11.7.4, 11.7.6, 11.7.7, 11.8.1, 11.8.2, 11.8.3, 11.8.4, 11.8.5, 11.8.6, 11.8.8, 11.8.9, 11.8.11, 11.8.12, 11.8.13, 11.8.14, 11.8.15, 11.9.1, 11.9.2, 11.9.3, 11.9.4, 11.9.5, 11.9.6, 11.9.7, 11.9.8, 11.9.9, 11.9.10, 11.9.13, 11.9.14, 11.10.1, 11.10.2, 11.10.4, 11.10.5, 11.10.6, 11.10.7, 11.10.8, 11.10.9, 11.10.11, 11.10.12, 11.10.13, 11.11.1, 11.11.2, 11.11.3, 11.11.4, 11.11.5, 11.11.6, 11.11.7, 11.11.8, 11.11.9, 11.11.10, 11.11.11, 11.11.12, 11.11.13, 11.11.14, 11.11.15, 11.11.16, 11.11.17, 11.11.18, 11.11.19, 11.11.20, 11.11.21, 11.12.1, 11.12.2, 11.12.3, 11.12.4, 11.12.5, 11.12.6, 11.12.7, 11.12.8, 11.12.9, 11.12.10, 11.12.11, 11.12.12, 11.12.13, 11.12.14, 11.12.16, 11.12.17, 11.12.18, 11.12.19, 11.12.20, 11.12.21, 12.1.1, 12.2.1, 12.2.2, 12.2.3, 12.2.4, 12.2.5, 12.2.6, 12.2.7, 12.2.8, 12.2.9, 12.2.10, 12.2.11, 12.2.12, 12.2.13, 12.3.1, 12.3.2, 12.3.3, 12.3.4, 12.3.5, 12.3.6, 12.3.7, 12.3.9, 12.3.10, 12.3.11, 12.3.12, 12.3.13, 12.3.14, 12.3.15, 12.5.1, 12.5.2, 12.5.3, 12.5.4, 12.5.5, 12.5.6, 12.5.7, 12.5.8, 12.5.10, 12.5.11, 12.5.12, 12.5.13, 12.7.1, 12.7.2, 12.8.1, 12.8.2, 12.8.3, 12.8.4, 12.8.5, 12.8.6, 12.8.7, 12.8.8, 12.8.9, 12.8.10, 12.8.11, 12.8.12, 12.8.13, 12.8.14, 12.8.16, 12.8.17, 12.8.18, 12.8.19, 12.8.20, 12.8.21, 12.8.22, 12.8.23, 12.8.24, 12.8.25, 12.8.26, 12.9-10.1, 12.9-10.2, 12.9-10.3, 12.9-10.4, 12.9-10.5, 12.9-10.6, 12.9-10.7, 12.9-10.8, 12.9-10.9, 12.9-10.12, 12.9-10.13, 12.9-10.14, 12.9-10.16, 12.9-10.17, 12.9-10.18, 12.9-10.19, 12.9-10.20, 12.9-10.21, 12.9-10.23, 12.9-10.24, 12.11.1, 12.11.2, 12.11.3, 12.11.4, 12.11.5, 12.11.6, 12.11.7, 12.11.8, 12.11.9, 12.11.10, 12.11.11, 12.11.12, 12.11.13, 12.11.14, 12.11.15, 12.11.16, 12.11.17, 12.11.18, 12.11.19, 12.11.20, 12.11.21, 12.11.12, 12.11.13, 12.11.14, 12.11.15, 12.11.16, 12.11.17, 12.11.18, 12.11.19, 12.11.20, 12.11.21, 12.11.22, 12.11.23, 12.11.24, 12.11.25, 12.12.6, 12.12.7, 12.12.8, 12.12.9, 12.12.11, 12.12.12, 12.12.13, 12.12.14, 12.12.15, 12.12.16, 12.12.17, 12.12.18, 12.12.20, 12.12.21, 12.12.22, 12.12.23, 12.12.24, 12.12.25, 12.12.26, 12.12.27, 12.12.28, 13.3.1, 13.3.2, 13.3.3, 13.3.4, 13.3.5, 13.3.7, 13.9.2, 13.11.1, 13.11.2, 13.11.3, 13.11.4, 13.11.5, 13.11.6, 13.11.7, 13.11.8, 13.12.1, 13.12.2, 13.12.3, 13.12.4, 13.12.5, 13.12.8, 13.12.9, 13.12.10
13415	12.5.3, 12.8.19, 12.8.20, 12.9-10.2, 12.12.9
13466	12.8.19, 12.8.20, 12.9-10.14
18166	All regional ecosystems within the stream/wetland buffer as determined by VMA code.
9743	12.8.19
19751	There are no essential habitat factors shown as this species has only been found in areas not subject to the VMA (eg State Forests and National Parks)

Label	Regional Ecosystem (this is a mandatory essential habitat factor, unless otherwise stated)
11779	There are no essential habitat factors shown as this species has only been found in areas not subject to the VMA (eg State Forests and National Parks)
9242	There are no essential habitat factors shown as this species has only been found in areas not subject to the VMA (eg State Forests and National Parks)

Essential habitat in Category A and B (Remnant vegetation) areas:1100m Species Information

Label	Scientific Name	Common Name	NCA Status	Vegetation Community	Altitude	Soils	Position in Landscape
29186	<i>Phascolarctos cinereus</i> (southeast Queensland bioregion)	Koala	V	Open eucalypt forest and woodland that has: a) multiple strata layers containing Eucalyptus, Corymbia, Angophora, Lophostemon or Melaleuca trees that—at 1.3 metres above the ground—have a diameter both greater and less than 30 centimetres; and b) at least 1 of the following species: Eucalyptus tereticornis, E. fibrosa, E. propinqua; E. umbra, E. grandis, E. microcorys, E. tindaliae, E. resinifera, E. populnea, E. robusta, E. nigra, E. racemosa, E. crebra, E. exserta, E. seeana, Lophostemon confertus, L. suaveolens, Melaleuca quinquenervia.	Sea level to 1000m.	no soil information	None
686	<i>Crinia tinnula</i>	Wallum Froglet	V	Vegetation community is a mandatory essential habitat factor for this species. Permanent to ephemeral acidic (pH 4.3 - 5.2), soft freshwater in Melaleuca (e.g. M. quinquenervia) swamps, sedge/land, wet and dry heathland (e.g. Banksia robur, Xanthorrhoea) and wallum (Banksia aemula shrubland/woodland) areas coastal lowlands on sand or sandstone, occasionally in adjacent open forest/woodland (e.g. Eucalyptus racemosa, Corymbia citriodora) with heathy understorey; known to persist in small remnants (<10ha); may be found well away from water.	Sea level to 200m.	Sandy and sandy-alluvial substrates.	None
609	<i>Litoria freycineti</i>	Wallum Rocketfrog	V	Vegetation community is a mandatory essential habitat factor for this species. Freshwater acidic swamps/lagoons (permanent or temporary still water) dominated by sedges (e.g. Baumea and Eleocharis spp.) in heathland (e.g. Banksia/Xanthorrhoea), wallum (Banksia aemula shrubland/woodland) or Melaleuca open forest (e.g. M. quinquenervia), and adjacent Eucalyptus racemosa forest, also found around acidic coastal lakes; on sand and sandstone; can be found well away from water during non-breeding season.	Sea level to 200m.	Sandy and alluvial substrates.	None

Essential habitat in Category A and B (Remnant vegetation) areas:1100m Regional Ecosystems Information

Label	Regional Ecosystem (this is a mandatory essential habitat factor, unless otherwise stated)
29186	12.3.3, 12.3.4, 12.3.6, 12.3.7, 12.3.10, 12.3.11, 12.5.2, 12.5.3, 12.8.14, 12.9-10.4, 12.9-10.7, 12.9-10.17, 12.11.5, 12.11.18, 12.12.12
686	12.2.5, 12.2.7, 12.2.9, 12.2.10, 12.2.12, 12.2.15, 12.3.4, 12.3.5, 12.3.6, 12.3.12, 12.3.14, 12.5.10. These regional ecosystems are not a mandatory essential habitat factor for this species.
609	12.2.2, 12.2.5, 12.2.7, 12.2.12, 12.2.13, 12.2.15, 12.3.4, 12.3.5, 12.3.6, 12.3.12, 12.3.13, 12.5.4, 12.5.9, 12.9-10.10, 12.9-10.22. These regional ecosystems are not a mandatory essential habitat factor for this species.

Essential habitat in Category C (High value regrowth vegetation) areas:1100m Species Information

(no results)

Essential habitat in Category C (High value regrowth vegetation) areas:1100m Regional Ecosystems Information

(no results)

APPENDIX 4
CURRICULA VITAE OF FIELD TEAM

SPECIALISATION

- Vertebrate fauna assessment and identification
- Assessment of terrestrial habitats and ecological functions
- Expert Witness - Planning and Environment Court
- Fauna Spotter Catcher protocols and procedures
- Wildlife management
- Biodiversity planning
- Ecological monitoring
- Environmental Impact Assessment for major infrastructure projects
- Feral species management
- Community liaison and facilitation



EDUCATION & PROFESSIONAL QUALIFICATIONS

Certified Environmental Practitioner (CEnvP) Ecology Specialist
Diploma of Management
Certified Public Practitioner (IAPP)

KEY EXPERIENCE

Adrian has extensive experience and expertise in ecological consultancy and specifically vertebrate fauna assessment, assessment of terrestrial habitats, ecological monitoring, wildlife management, biodiversity planning, feral species management and community liaison and facilitation. He has been involved in research, management, consulting, tertiary teaching and community based studies of terrestrial ecology, particularly vertebrate fauna for over 25 years.

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

Adrian has been involved in fauna spotter catching for over 15 years and has been a founding and active member of the APWM and chaired a steering committee developing a Code of practice for fauna spotter catchers in Qld.

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

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

PROFESSIONAL HISTORY

2002–present	BAAM PTY Ltd Principal ecologist (fauna) Specialist fauna consulting and project management
2001–2004	Australian Wildlife Management & Services Director and principal ecologist
1996–2002	Redland Shire Council Senior Wildlife Officer
1998–2001	Moreton Institute TAFE Environmental Sciences Lecturer
1992–1996	Department of Environment and Heritage Wildlife Ranger Fauna Surveys

RECENT PROJECT EXPERIENCE

- Fauna Expert services for Carmichael Coal Mine Project for McCullough Robertson lawyers on behalf of Adani Mining Pty Ltd. November 2014 – ongoing.
- Expert review Noosa on Weyba, Sunshine Coast Regional Council. Expert review of development application and identification of information required to assist council information request and subsequent review of information provided to advise council on application determination.
- New Beith Koala and Terrestrial Fauna Surveys. Lead fauna trapping & identification surveys, Koala surveys to inform EPBC referral.
- APLNG Coal Seam Gas Project. BAAM, Lead fauna habitat assessment and part of expert panel for impact assessment.
- Ecological expert advising State and RCC on land bank assessment on North Stradbroke Island and identification of lands suitable for native title compensation to Quandamooka people.

SPECIALISATION

- Environmental Planning
- Ecological Survey
- Project Management

EDUCATION & PROFESSIONAL QUALIFICATIONS

BSc Environmental Studies, Griffith University(1995)
Certified Environmental Practitioner (CEnvP)



KEY EXPERIENCE

Shelley Trevaskis is a Senior Ecologist at BAAM Pty Ltd. Her areas of expertise are ecological survey, environmental planning and project management.

Shelley has nine years' experience as an environmental consultant. She has also been employed in bush regeneration on North Stradbroke Island and carried out a role with the (former) Department of Environment and Resource Management (DERM) on North Stradbroke Island.

Shelley has experience and skills in flora and fauna identification and fieldwork technique, report writing and project management. She also maintains an up to date knowledge of relevant environmental ordinances (local, state, federal) relating to environmental management, particularly with regards to flora and fauna.

RECENT PROJECT EXPERIENCE

- Ecological Assessment to inform future development – Rainbow Beach. Prepared for Queensland Ambulance Services. Shelley managed the project and completed the full survey and report component, including a protected flora survey, groundtruthing of Regional Ecosystem and associated essential habitat mapping, and habitat assessment for significant fauna.
- Rapid biodiversity surveys and protected plant surveys for various sites in central Queensland for Holcim (Australia) Pty Ltd. Lead botanist.
- Ecological Assessment to inform future development – Old Cleveland Road East, Birkdale. Prepared for Urbis. Shelley completed the flora component, including extensive groundtruthing of Regional Ecosystem and associated essential habitat mapping.
- Ecological Assessments to inform proposed resource activities and future residential

developments – Paradise Rd, Larapinta, Lake McDonald Drive, Cooroy, and Maroochydore Rd, Forest Glen. Prepared for Groundwork Plus. Shelley completed the flora components, including protected flora surveys and extensive groundtruthing of Regional Ecosystem mapping.

- Comprehensive flora baseline surveys for Section D of the Cooroy to Curra highway realignment project.
- Sibelco Significant Frog Monitoring. Field surveys and reporting for a project that monitors the abundance, distribution and health of populations of Wallum Sedgefrog *Litoria olongburensis* and their associated aquatic and terrestrial habitats in order to measure any impacts associated with the Sibelco sand mining extension on North Stradbroke Island.
- Brisbane Airport Benchmarking Study. A seasonal, targeted terrestrial fauna survey was undertaken and a benchmarking exercise was then completed that compared the results of the survey to data collected at the airport over the past 10 years. The information provides new baseline data prior to the development of a third runway and assists in biodiversity management at the airport. Shelley project managed the job and completed fieldwork and reporting.

PROFESSIONAL HISTORY

2012- present	BAAM Pty Ltd Senior Ecologist and Project Manager
2011-2012	Department of Environment and Resource Management Customer Service Officer
2008-2010	Chenoweth Environmental Planning and Landscape Architecture Senior Ecologist
2004-2008	Lambert and Rehbein Pty Ltd Ecologist

APPENDIX 5
COMPLETE FLORA SPECIES LIST FROM THE
SURVEY

List of flora species recorded within the study area during the field survey.

Scientific name	NC Act Status	Weed
<i>Acacia complanata</i>	C	
<i>Acacia concurrens</i>	C	
<i>Acacia leiocalyx</i> subsp. <i>leiocalyx</i>	C	
<i>Ageratum houstonianum</i>		Y
<i>Allocasuarina littoralis</i>	C	
<i>Allocasuarina torulosa</i>	C	
<i>Alphitonia excelsa</i>	C	
<i>Aristida queenslandica</i>	C	
<i>Baccharis halimifolia</i>		Y
<i>Baeckea frutescens</i>	C	
<i>Banksia integrifolia</i>	C	
<i>Banksia spinulosa</i>	C	
<i>Cassutha</i> spp.	C	
<i>Centella asiatica</i>	C	
<i>Cheilanthes distans</i>	C	
<i>Corymbia intermedia</i>	C	
<i>Daviesia umbellata</i>	C	
<i>Desmodium tic-trefoil</i>	C	
<i>Dianella brevipedunculata</i>	C	
<i>Dianella caerulea</i>	C	
<i>Dodonaea triquetra</i>	C	
<i>Emilia sonchifolia</i>	C	
<i>Entolasia stricta</i>	C	
<i>Eucalyptus acmenoides</i>	C	
<i>Eucalyptus carnea</i>	C	
<i>Eucalyptus microcorys</i>	C	
<i>Eucalyptus pilularis</i>	C	
<i>Eucalyptus propinqua</i>	C	
<i>Eucalyptus racemosa</i>	C	
<i>Eucalyptus resinifera</i>	C	
<i>Eucalyptus tindaliae</i>	C	
<i>Eucalyptus trachyphloia</i>	C	
<i>Eustrephus latifolius</i>	C	
<i>Fimbristylis cinnamometorum</i>	C	
<i>Gahnia aspera</i>	C	
<i>Geodorum densiflorum</i>	C	
<i>Glochidion sumatranum</i>	C	
<i>Glycine clandestina</i>	C	
<i>Gompholobium pinnatum</i>	C	
<i>Goodenia rotundifolia</i>	C	
<i>Hardenbergia violacea</i>	C	
<i>Hibbertia stricta</i>	C	
<i>Hibbertia vestita</i>	C	
<i>Hibiscus heterophyllus</i>	C	
<i>Hybanthus stellarioides</i>	C	
<i>Hypericum gramineum</i>	C	
<i>Imperata cylindrica</i>	C	
<i>Lantana camara</i>	C	Y
<i>Laxmannia gracillis</i>	C	
<i>Lepidosperma laterale</i>	C	
<i>Lobelia purpurascens</i>	C	
<i>Lomandra longifolia</i>	C	
<i>Lomandra multiflora</i>	C	
<i>Lomatia silaifolia</i>	C	
<i>Lophostemon confertus</i>	C	
<i>Lophostemon suaveolens</i>	C	
<i>Megathyrsus maximus</i>		Y

Scientific name	NC Act Status	Weed
<i>Melaleuca quinquenervia</i>	C	
<i>Melaleuca salicina</i>	C	
<i>Melinis repens</i>		Y
<i>Monotoca scoparia</i>	C	
<i>Murdannia graminea</i>	C	
<i>Oplismenus aemulus</i>	C	
<i>Ottochloa gracillima</i>	C	
<i>Oxalis corniculata</i>		Y
<i>Parsonsia straminea</i>	C	
<i>Paspalum dilatatum</i>		Y
<i>Paspalum spp.</i>		Y
<i>Passiflora suberosa</i>		Y
<i>Passiflora subpeltata</i>		Y
<i>Persoonia stradbrokeensis</i>	C	
<i>Petrophile canescens</i>	C	
<i>Pimelea linariifolia</i>	C	
<i>Pinus elliotii</i>		Y
<i>Pteridium esculentum</i>	C	
<i>Pultenaea paleacea</i>	C	
<i>Pultenaea villosa</i>	C	
<i>Schizaea bifida</i>	C	
<i>Setaria sphacelata</i>		Y
<i>Smilax australis</i>	C	
<i>Smilax glaucophylla</i>	C	
<i>Solanum mauritianum</i>		Y
<i>Stephania japonica</i>	C	
<i>Themeda triandra</i>	C	
<i>Thysanotus tuberosus</i>	C	
<i>Trema tomentosa</i>	C	
<i>Tricoryne elatior</i>	C	
<i>Velleia spathulata</i>	C	
<i>Westringia eremicola</i>	C	
<i>Xanthorrhoea johnsonii</i>	C	
<i>Xyris complanata</i>	C	
<i>Zieria minutifolia</i> subsp. <i>minutifolia</i>	C	

Abbreviations: NC Act Status = status under the Nature Conservation Act 1992 (Queensland); C = Least Concern.
 Y = weed species.