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**CHERRABAH GRANITE MINE
ECOLOGICAL ASSESSMENT REPORT (MNES)**

Joyful View Unit Trust

**PO Box 5385
Brendale Q 4500**

**P 0448 899 649
F 07 3264 7131
E steve.marston@ecosm.com.au**

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Author(s):	Monica Campbell
Reviewed by:	Steve Marston
Approved by:	Steve Marston
Signed :	
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Symbols and Abbreviations

*	(Preceding a plant species name) plant species not native to Australia
±	With or without, more or less
BAMM	Biodiversity Assessment and Mapping Methodology
Biosecurity Act	(Queensland) Biosecurity Act 2014
BoM	Bureau of Meteorology
BPA	Biodiversity Planning Assessment
CI	Crown Intercept
DotE	(Commonwealth) Department of the Environment
EDL	Ecologically Dominant Layer
EEM	Ecological Equivalence Methodology
EHP	(Queensland) Department of Environment and Heritage Protection
EO Act	(Queensland) <i>Environmental Offsets Act 2014</i>
EPBC Act	(Commonwealth) <i>Environment Protection and Biodiversity Conservation Act 1999</i>
GPS	Global positioning system
ha	Hectares
km	Kilometres
ML	Mining lease
MLES	Matters of local environmental significance (EO Act)
MNES	Matters of national environmental significance (EPBC Act)
MSES	Matters of state environmental significance (EO Act)
NC Act	(Queensland) <i>Nature Conservation Act 1992</i>
NC Regulation	(Queensland) Nature Conservation (Wildlife) Regulation 2006
NRM	(Queensland) Department of Natural Resources and Mines
PFC	Projective Foliage Cover
QEOP	Queensland Environmental Offsets Policy 2014
RE	Regional Ecosystem as defined under the Queensland Vegetation Management Regulation 2000
REDD	Regional Ecosystem Description Database
SPRAT	Species Profile and Threats Database
TEC	Threatened Ecological Community

TSSC	Threatened Species Scientific Committee
VM Act	(Queensland) <i>Vegetation Management Act 1999</i>
WoNS	Weeds of National Significance

Glossary

Term	Definition
Biodiversity Status	<p>This is an EHP classification dependent on condition of remnant vegetation <i>in addition</i> to the criteria used to determine class under the Queensland <i>Vegetation Management Act 1999</i>. This classification is used for a range of planning and management applications, i.e. to determine environmentally sensitive areas. A regional ecosystem is listed as 'endangered' if:</p> <ul style="list-style-type: none"> ▪ Less than 10% of its pre-clearing extent remains unaffected by severe degradation and/or biodiversity loss; or ▪ 10-30% of its pre-clearing extent remains unaffected by severe degradation and/or biodiversity loss and the remnant vegetation is less than 10,000 ha; or ▪ It is a rare regional ecosystem subject to a threatening process. <p>A regional ecosystem is listed as 'of concern' if:</p> <ul style="list-style-type: none"> ▪ 10-30% of its pre-clearing extent remains unaffected by moderate degradation and/or biodiversity loss. <p>A regional ecosystem is listed as 'no concern at present' if:</p> <ul style="list-style-type: none"> ▪ The degradation criteria listed above for 'endangered' or 'of concern' regional ecosystems is not met.
Bioregion	<p>A geographically distinct biological region, which is a reporting unit for assessing the status of native ecosystems and their level of protection. Australia is divided into 89 bioregions. Bioregions form part of the regional ecosystem classification code system. The study area is located largely in the Northern Bowen Basin sub-region of the Brigalow Belt North Bioregion.</p>
Endangered	<p>Prescribed to a threatened ecological community, regional ecosystem or species under the Queensland <i>Vegetation Management Act 1999</i>, <i>Nature Conservation Act 1992</i> or Commonwealth <i>Environment Protection and Biodiversity Conservation Act 1999</i>.</p>
EPBC Act conservation status	<p>The <i>Environment Protection and Biodiversity Conservation Act 1999</i> lists species and communities:</p> <p>Extinct in the wild:</p> <ul style="list-style-type: none"> ▪ It is known only to survive in cultivation, in captivity or as a naturalised population well outside its past range; or ▪ It has not been recorded in its known and/or expected habitat, at appropriate seasons, anywhere in its past range, despite exhaustive surveys over a timeframe appropriate to its life cycle and form. <p>Critically Endangered:</p> <ul style="list-style-type: none"> ▪ It is facing an extremely high risk of extinction in the wild in the immediate future, as determined in accordance with the prescribed criteria.

Term	Definition
	<p>Endangered:</p> <ul style="list-style-type: none"> It is not critically endangered; and it is facing a very high risk of extinction in the wild in the near future, as determined in accordance with the prescribed criteria. <p>Vulnerable:</p> <ul style="list-style-type: none"> It is not critically endangered or endangered; and It is facing a high risk of extinction in the wild in the medium term future, as determined in accordance with the prescribed criteria. <p>Migratory:</p> <ul style="list-style-type: none"> Migratory species which are native to Australia and are included in the appendices to the Bonn Convention (Convention on the Conservation of Migratory Species of Wild Animals Appendices I and II); Migratory species included in annexes established under the Japan-Australia Migratory Bird Agreement (JAMBA) and the China-Australia Migratory Bird Agreement (CAMBA); Native, migratory species identified in a list established under, or an instrument made under, an international agreement approved by the Minister, such as the Republic of Korea-Australia Migratory Bird Agreement (ROKAMBA).
Least Concern	Prescribed to regional ecosystems listed under the Queensland <i>Vegetation Management Act 1999</i> .
MNES	<p>A matter protected under the EPBC Act, including:</p> <ul style="list-style-type: none"> World heritage properties National heritage places Wetlands of international importance Listed threatened species and ecological communities Migratory species Commonwealth marine areas The Great Barrier Reef Marine Park Nuclear actions A water resource, in relation to coal seam gas development and large coal mining development.
MSES	<p>A matter of State environmental significance listed in Schedule 2 of the Queensland Environmental Offsets Regulation 2014 including:</p> <ul style="list-style-type: none"> Regulated vegetation Connectivity areas Wetlands and watercourses High preservation areas of wild river areas Protected wildlife habitat Protected areas Highly protected zones of State marine parks Fish habitat areas Waterways providing for fish passage Marine plants Legally secured offset areas.

Term	Definition
Of Concern	Prescribed to regional ecosystems listed under the <i>Queensland Vegetation Management Act 1999</i> .
Regional ecosystem	A vegetation community within a bioregion that is consistently associated with a particular combination of geology, landform and soils.
Regulated vegetation	Vegetation regulated through the <i>Sustainable Planning Act 2009</i>
Remnant vegetation	Defined under the <i>Queensland Vegetation Management Act 1999</i> as, woody vegetation that has not been cleared or vegetation that has been cleared but where the dominant canopy has >70% of the height and >50% of the cover relative to the undisturbed height and cover of that stratum and is dominated by species characteristic of the vegetation's undisturbed canopy.
Restricted pests	Plants and animals listed under the <i>Queensland Biosecurity Act 2014</i> .
Significant species and vegetation	Refers to: <ul style="list-style-type: none"> ▪ Species listed as critically endangered, endangered or vulnerable under the <i>Commonwealth Environment Protection and Biodiversity Conservation Act 1999</i> ▪ Threatened ecological community listed as critically endangered, endangered or vulnerable under the <i>Commonwealth Environment Protection and Biodiversity Conservation Act 1999</i> ▪ Regional ecosystems with an endangered or of concern biodiversity status or <i>Vegetation Management Act 1999</i> status.
Study area	An area defined for the purposes of this ecological assessment and shown on Figure 1 and which comprises a portion of Lot 1000 on SP268215, Elbow Valley, QLD.
Threatened ecological community	A community listed under the provisions of the <i>Commonwealth Environment Protection and Biodiversity Conservation Act 1999</i> .
Vegetation management Act status	<p>This is a statutory classification under the <i>Queensland Vegetation Management Act 1999</i>. A regional ecosystem is listed as 'endangered' if:</p> <ul style="list-style-type: none"> ▪ Remnant vegetation for the regional ecosystem is less than 10 % of its pre-clearing extent across the bioregion; or 10-30 % of its pre-clearing extent remains and the remnant vegetation for the regional ecosystem is less than 10,000 ha. <p>A regional ecosystem is listed as 'of concern' if:</p> <ul style="list-style-type: none"> ▪ Remnant vegetation for the regional ecosystem is 10-30 % of its pre-clearing extent across the bioregion; or more than 30 % of its pre-clearing extent remains and the remnant vegetation extent for the regional ecosystem is less than 10,000 ha. <p>A regional ecosystem is listed 'least concern' if:</p>

Term	Definition
	<ul style="list-style-type: none"> ▪ Remnant vegetation for the regional ecosystem is over 30 % of its pre-clearing extent across the bioregion, and the remnant vegetation area for the regional ecosystem is greater than 10,000 ha.
Vulnerable	Prescribed to a threatened ecological community or species under the Commonwealth <i>Environment Protection and Biodiversity Conservation Act 1999</i> .

1 Introduction

Ecological Survey & Management has been engaged to assess the ecological values in relation to matters of national environmental significance (MNES) of a proposed granite mine on the Cherrabah property (Lot 1000 on SP268215), Elbow Gully Queensland. The proponent is seeking to establish a mine lease area (MLA) for a dimension stone operation within the north-western portion of the property. The locality of the Cherrabah property is provided as Figure 1.

This ecological assessment focusses on the extent of the proposed MLA, which will be referred to as the study area unless specified otherwise. The location of the study area is shown on Figure 2.

1.1 Project background

The project involves the establishment and operation of a granite mine within the ML. The footprint of the proposed granite mine is illustrated in Figure 3. The proposed mining activities will involve cutting and extracting blocks of rock from the exposed granite outcrop. Wire saws and drills will be the primary extraction equipment with large dimensioned blocks (up to 4 m x 2 m x 1 m) to be extracted.

Infrastructure onsite will include a small demountable office with 2 to 4 people working onsite at any point in time. The site office and associated infrastructure will be established in the north-eastern portion of the granite mine footprint (Figure 3). Site equipment and machinery will be likely to include:

- Caterpillar 988 loader
- stitch drill
- generator
- blade saw
- wire saw 50HP
- site vehicle
- forklift
- rock breaker
- 30 tonne excavator.

The product will be transported to the Port of Brisbane for sale of dimension stone into China as large blocks. Extracted dimension stone will transported offsite along an existing track that will be upgraded to an all-weather haul road (Figure 3). The proposed haul road is located within an existing unnamed road reserve and given it does not form part of the MLA will be addressed through a separate approval process.

In addition to extraction of dimension stone granite, quarry products may be produced with waste from the extracted dimension stone. Crushing and screening may also occur onsite, these activities will be regulated through an extractive industries application at the State level.

1.2 Scope of works

The following activities were required as part of this ecological assessment:

- identify, map and describe any threatened ecological communities (TECs) present that are listed under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act)
- assess the likelihood of occurrence and where possible identify significant species of flora and fauna and/or their habitats protected under the EPBC Act
- prepare an ecological assessment report for the project that describes and maps ecological values of the study area and assesses the potential for threatened species and communities to occur, particularly MNES listed under the EPBC Act.

1.3 Study area description

The study area is located on the Cherrabah property approximately 23 km south of Warwick within the New England Tableland Bioregion and Southern Downs Regional Council local government area. The Cherrabah property supports the Cherrabah Resort in the north-eastern portion, with the balance of the land area being characterised by a relatively intact native vegetation associated with granite outcrops and ranges. The proposed MLA lies approximately 4 km west-southwest of the Cherrabah Resort and close to the western boundary of the property (Figure 1). The Cherrabah property has a total area of 1,988 ha, but the proposed MLA will only encompass approximately 17.5 ha (< 1 %) of the total land area.

The MLA primarily encompasses a large, granitic outcrop and immediately associated footslopes. The granite outcrop will be the focus of the dimension stone operation and is approximately 60 m wide x 150 m long, rising in elevation approximately 30 m from north to south. The outcrop has a north to south exposure and is characterised by bare rock with islands of vegetation that have formed in depressions and crevices across the outcrop face. Intact, native woodland vegetation extends around the outcrop and onto the adjoining plains.

All of the vegetation within the proposed MLA has been mapped by the Queensland Herbarium as supporting remnant Of Concern vegetation supporting Regional Ecosystem (RE) 13.12.4 (Figure 4). There is a narrowly incised, ephemeral watercourse (stream order 1) that extends along the western boundary of the MLA that flows in a northerly direction, eventually connecting with a network of tributaries of the Condamine River. A small spring-fed dam is also located to the north-east of the MLA.

1.4 Regulatory framework

This ecological report has been prepared specifically to address MNES that occur within the study area and have the potential to be impacted by the proposed granite mine. Therefore, the key piece of legislation considered in the preparation of this report is the Commonwealth's *Environment Protection and Biodiversity Act 1999* (EPBC Act). Other matters of environmental significance (i.e. matters of state environmental significance [MSES]) will be addressed where relevant and

required to provide the Commonwealth Department of the Environment and Energy (DotEE) with sufficient information regarding the ecological values of the study area.

At the State level, an Environmental Authority (EA) under Queensland's (*Environmental Protection Act 1994*) is required for construction and operation of the proposed granite mine. Given the proposed MLA supports mapped Category B environmentally sensitive area (i.e. remnant of concern vegetation RE 13.12.4 that has an endangered biodiversity status) a site-specific environmental authority will be required to establish and operate the mine. An application for a site-specific EA was submitted to the Department of Environment and Heritage Protection (EHP) on 20 March 2017 (reference No. 442312). The proponent and project team are currently in the process of responding to a formal information request issued by EHP on 19 June 2017.

2 Methods

A desktop and field based assessment was undertaken to assess the likely ecological values of the study area.

2.1 Desktop assessment

The following desktop searches were used to provide an initial assessment of the potential ecological values of the study area:

- Commonwealth EPBC Act Protected Matters Search Tool (Appendix A) (DotEE 2016a)
- Wildlife Online database (Appendix B) (DSITI 2016)
- Regulated Vegetation Management Map and Vegetation Management Supporting Map (Version 8.0) and Essential Habitat Map (Version 4.0) (NRM 2016) (Appendix C)
- Protected Plants Flora Survey Trigger Map (Appendix D)
- Map of Referrable Wetlands (Appendix E)
- Atlas of Living Australia database (CSIRO 2016)¹

A 10 km radial search area around a central coordinate was used for the database searches.

In addition to the above, ecological surveys and assessments were undertaken by Orogen Pty Ltd in 2008 (reported in Orogen 2010) as part of an application to redevelop the Cherrabah Resort. These studies included flora and fauna surveys across the eastern portion of the Cherrabah property, but did not include the proposed MLA. Nonetheless, these previous surveys provide information regarding the ecological values of the Cherrabah property.

The results of the desktop review were used to refine the field assessment described in the following sections.

2.2 Field methods

A field survey was undertaken two ecologists over three days between 14 and 16 December 2016 identify key matters of interest from an MNES perspective. A more detailed survey was then completed across the study area by two. The survey methodologies used during this more detailed survey are described in Sections 2.2.1 – 2.2.2 below.

¹ The Atlas of Living Australia is a publically available database that is populated by a wide range of contributors including 'citizen-based' contributors. The database does not allow for every individual observation to be validated, therefore, this database has been used as secondary supporting information.

Flora methods

The field flora survey methods were developed in order to:

- validate existing Queensland Government Regional Ecosystem (RE) vegetation mapping
- target significant flora species and communities (listed under Commonwealth and State legislation) and their habitats identified from database searches
- produce a comprehensive floral inventory for the study area.

The field assessment was conducted in compliance with the *Methodology for Survey and Mapping of Regional Ecosystems and Vegetation Communities in Queensland, Version 3.2* (Neldner et al. 2012). Queensland Government mapped REs were validated in the field using the survey data collected as part of vegetation assessment sites and referencing the latest geology mapping (NRM 2011).

Assessment sites were performed throughout the study area so as to thoroughly assess Queensland Government mapped remnant vegetation. A total of eight vegetation assessment sites were completed across the study area, comprising of two detailed secondary sites, two tertiary sites and three modified quaternary sites. An additional quaternary photo monitoring points was also taken (Figure 5). The less detailed sampling (quaternary sites) was conducted to provide additional information relating to the vegetative structure and composition and to assist in mapping the extent and distribution of the REs within the study area and to assess habitat for threatened species.

Data recorded at each secondary site included:

- date and precise location (with reference to handheld GPS)
- soils, slope, aspect and landform observations
- ground-layer, mid-stratum and canopy species composition and abundance
- structural characteristics
- condition and disturbance of existing vegetation communities (including distribution of weed species)
- quantitative and qualitative species composition within a 1,000 m² quadrat, and documentation of ancillary species identified within the immediate area or during foot traverse
- basal area of vegetation (Bitterlich Stick methodology)
- photographs of the community (north, east, south, west, groundcover and soils).

Data recorded at each tertiary site included:

- date and precise location (with reference to handheld GPS)
- soils, slope, aspect and landform observations
- ground-layer, mid-stratum and canopy species composition and abundance
- structural characteristics

- basal area of vegetation (Bitterlich Stick methodology)
- condition and disturbance of existing vegetation communities (including distribution of weed species)
- photographs of the community.

Data recorded at each quaternary site included:

- precise location (with reference to handheld GPS)
- ground-cover, mid-stratum and canopy species composition and abundance
- structural characteristics of the ecologically dominant layer (EDL)
- condition
- limited photographs of the community.

A detailed flora species inventory was collected throughout the study area, including at the secondary sites and by traversing the study area to account for additional species.

Additional vegetation assessment sites were completed along the proposed haul road alignment (Figure 5). Data collected at these sites is not presented in this report, however these sites have been used to inform the field-validated vegetation mapping and assessment of ecological values within the study area where appropriate.

Fauna methods

A fauna survey was completed over a period of three days and two nights between 14 and 16 December 2016. A combination of general fauna habitat assessments and targeted fauna surveys were undertaken within the study area and surrounding habitats. Targeted surveys focussed on assessing the habitat values and presence/absence of EPBC Act listed threatened fauna species assessed as having a high likelihood of occurrence (refer Sections 2.3.2 and Appendix H), namely:

- Border Thick-tailed Gecko (*Uvidicolus sphyrurus*) – Vulnerable
- Grey-headed Flying-fox (*Pteropus poliocephalus*) - Vulnerable
- Koala (*Phascolarctos cinereus*) – Vulnerable
- Spotted-tailed Quoll (*Dasyurus maculatus maculatus*) – Endangered.

Targeted survey techniques were stratified across the study area and included where practical methodologies recommended by the following guidelines:

- Survey guidelines for Australia's threatened reptiles (SEWPaC 2011a)
- Survey guidelines for Australia's threatened mammals (SEWPaC 2011b)
- EPBC Act referral guidelines for the vulnerable koala (combined populations of Queensland, New South Wales and the Australian Capital Territory) (DotE 2014)
- SPRAT databases for relevant EPBC Act listed species, accessed on 12 December 2016.

Targeted survey techniques used during the field survey included active searching, bird surveys, call playback (including Koala), spotlighting (specifically for the Border

Thick-tailed Gecko and Grey-headed Flying Fox) and systematic Koala surveys. Given the mapping of essential habitat (Figure 4, Appendix C) and the numerous records for the Spotted-tailed Quoll within the study area locality, infra-red cameras were used to survey for the presence of this species. Targeted searches for Quoll scats were also undertaken.

Each of targeted fauna survey method is described briefly below.

- **Active searching** - Active searching was conducted to detect reptiles, frogs and small ground dwelling mammals. It involved searching suitable microhabitat such as logs, bark, deep leaf litter, surface rocks and shedding bark.
- **Bird surveys** - Birds were recorded during diurnal and nocturnal surveys from direct observation and/or by their calls throughout the survey area and surrounds.
- **Call playback** - Call playback involved broadcasting a recorded call of an owl or arboreal mammal through a megaphone in an effort to elicit a territorial response from any animals that hear the call. Animals either call in response to the recording and/or move into the location that the call was played from. The call is played and then approximately 2 to 3 minutes are spent listening for a response and looking for animals that have moved into the area without calling.
- **Spotlighting** - Spotlighting was undertaken on foot or from a slow moving vehicle along tracks where it was safe to do so. Fauna were located from eye shine or direct observation and identified. The distinctive calls of some fauna were also used to identify their presence.
- **Infrared cameras** – Three Reconyx HC900 infrared cameras were set in suitable habitat for the Spotted-tailed Quoll, two within the study area and one to the east along the proposed haul road (Figure 5). The cameras were set on a bait station of chicken. Cameras were set for a duration of 34 nights each, giving a total of 102 nights for infrared cameras.
- **Koala surveys** - Systematic Koala surveys involved searching the entire study area for Koalas. These surveys complemented with a SAT survey within the granite mine footprint, which involved searching the base of 30 trees for characteristic Koala scats.

The total survey effort undertaken within the study area is summarised in Table 1 below.

Table 1: Fauna survey effort across the study area and surrounds

Date	Timing	No. Person hours	Survey type
14 December 2016	Diurnal	5	Bird surveys, Koala surveys
	Nocturnal	7	Spotlighting, call playback
15 December 2016	Diurnal	7.5	Active searching, bird surveys, Koala surveys and Koala SAT survey
	Nocturnal	8	Spotlighting
16 December 2016	Diurnal	5	Active searching, bird surveys, Koala surveys

Significant habitat features such as potential Koala refuge habitats, stands of trees containing hollows, water points and wetland habitats were assessed and mapped in line with the Department of the DotEE threatened species profiles (i.e. SPRAT Profiles).

The quality of fauna habitat in the survey area was assessed on the basis of following criteria:

- **Low:** Many fauna habitat elements in low quality areas have been removed or altered such as mature, hollow-bearing trees, fallen timber and deep leaf litter. Remnants are often small in size, support substantial weed infestations of high or moderate threat weeds (e.g. Lantana [*Lantana camara*]) and are poorly connected to other areas of remnant vegetation.
- **Moderate:** Some habitat components are present but others are lacking. For example a remnant may have a reasonably intact understorey but lack mature canopy species and fallen timber. Some weed infestations are present but are relatively small in size or comprise species of low to moderate threat. Linkages with other remnant habitats in the landscape may be lacking or somewhat tenuous.
- **High:** Most habitat components are present (e.g. old-growth trees, fallen timber, lack of weeds and deep leaf litter), the remnant is large enough to support species that are typically associated with large intact areas of habitat (e.g. Powerful Owl and Greater Glider [*Petauroides volans*]) and it is well connected or contiguous with other areas of native vegetation.

These criteria were adapted for treeless habitat types such as grasslands or wetlands as appropriate.

The fauna survey was expanded to encompass habitat along the proposed haul road alignment (Figure 5). While not specifically addressed in this report, information collected during the fauna survey along the proposed haul road alignment has been used to inform the assessment of ecological values within the study area where appropriate.

2.3 Likelihood of occurrence assessment

Ecological community assessment

The flora assessment was conducted across the study area at a scale and intensity to sufficiently identify if any Commonwealth TECs were present or likely to have been present in the study area. TECs not recorded during the field surveys were therefore considered to have a low likelihood to occur within the study area.

Significant species assessment

Database searches identified significant species that may potentially occur within the study area and surrounds. The likelihood of such species occurring was then assessed based on the results of the field assessment.

The likelihood of species occurring within the study area was classified using the criteria presented in Table 2. The assessment was based on the species' known

ranges and habitat preferences, which were evaluated based on characteristics of the study area observed during the field assessment.

Table 2: Criteria to assess potential for significant species to occur in the study area

Likelihood to occur	Definition
Present	The species was recorded within the study area during the field assessment.
High	The species was not recorded within the study area during the field assessment, but is known to occur within the surrounding area/region, and habitat of suitable quality exists, within the study area
Moderate	The species was not recorded within the study area during the field assessment, although it is known to occur in the wider region. Habitat was identified for the species in the study area during the field assessment, however, it is marginal, fragmented and/or small in size, or degraded.
Low	The species was not recorded within the study area during the field assessment. The species is either: <ul style="list-style-type: none"> a) unlikely to occur in the wider region and due to the lack of, or due to poor quality habitat in the study area, the species is not expected to occur within the study area b) in the case of fauna, may forage periodically in the wider region and may overfly the study area, but the habitat in the study area is generally not suitable.

2.4 Limitations

The purpose of the field survey was to identify the on-ground ecological features of the study area. Ecological surveys often fail to record all species of flora and fauna present on a site for a variety of reasons such as seasonal absence or reduced activity during certain seasons. In addition, the ecology and nature of rare and/or cryptic species means that such species are often not recorded during short field visits. However, an assessment of habitat suitability is made for significant species that may occur in an area, thereby applying a precautionary approach.

Leading up to the field survey, the Elbow Valley area has experienced relatively low levels of rainfall, with only a total of 20 mm recorded between 2 and 9 December 2016 (BOM 2017). Conditions during the field survey were dry, with warm to hot daytime temperatures (i.e. 28 – 35 °C) and cool to mild evenings (i.e. 12 – 20 °C). The timing of the field survey (i.e. early summer) was optimal for the detection of key threatened fauna species that have the potential to occur within the study area (i.e. Koala, Spotted-tailed Quoll and Border Thick-tailed Gecko). Similarly, the timing of the field assessment provided optimal conditions for the detection of perennial and woody flora species. The dry conditions leading up to and during the field survey, may have influenced the detectability and identification of some orchids, annual herbaceous and grass species. The majority of key threatened flora species most likely to be present within the study area were likely to be identifiable at the time of the survey.

3 Ecological values of the study area

3.1 Desktop results

A total of five threatened ecological communities (TECs) 10 threatened flora, 25 threatened fauna and 11 migratory birds was returned from the desktop review as either having been recorded or having the potential to occur in the 10 km radial search area. Database search results are provided in Appendices A and B.

With reference to Figure 4, the entire study area has been mapped by the QLD Herbarium as supporting remnant, namely RE 13.12.4, which is briefly described as:

RE 13.12.4 - Broad-leaved White Mahogany (*Eucalyptus caliginosa*) Queensland Blue Gum (*E. tereticornis*) grassy open forest. Occurs on Mesozoic to Proterozoic igneous rocks. More gentle topographic situations, especially lower slopes. This RE has an of concern status under Queensland's *Vegetation Management Act 1999* (VM Act).

Essential habitat for the Spotted-tailed Quoll has also been mapped across the study area and there a number of essential habitat records for this species throughout the locality (Figure 4, Appendix C).

The study area does not support any watercourses (Appendix C) or referable wetlands (Appendix E). The study area is not located within any high risk areas on the Protected Plants Flora Survey Trigger Map (Appendix D). However, it is noted that there is a mapped HRA to the north-east of the study area that is associated with a record for *Callistemon pungens* (syn. *Melaleuca williamsii* subsp. *fletcheri*), listed as vulnerable under the EPBC Act, that was identified by Orogen (2010). The proposed haul road (Figure 3) aligns with an existing track that traverses the mapped HRA. The record for this threatened flora species is located approximately 2.5 km north-east of the study area.

3.2 Field survey results

Flora

Vegetation communities

Two vegetation types were recorded within and adjacent to the MLA. These communities are described below and illustrated in Figure 6. There is some disparity between the field-validated vegetation mapping and the Queensland Government mapping for the study area. More specifically, the extent of remnant of concern vegetation (i.e. RE 13.12.4) was found to be more restricted than the Queensland Herbarium mapping, with this community being limited to the lower slopes of the granite outcrop in the northern portion of the study area. The balance of the study area was found to support vegetation consistent with RE 13.12.2, which is described by the Queensland Herbarium as:

RE 13.12.2 - New England Blackbutt (*Eucalyptus andrewsii*), Youman's Stringybark (*E. youmanii*), Orange Gum (*E. prava*), Mountain Blue Gum (*E. deanei*), Rough-barked Apple (*Angophora floribunda*), Black Cypress (*Callitris*

endlicheri) shrubby woodland or open forest. Occurs on Mesozoic to Proterozoic igneous rocks. Rocky hillsides. This RE has a least concern status under Queensland's VM Act.

Each of the vegetation communities recorded within the study area are described in detail below.

RE 13.12.2 - New England Blackbutt, Youman's Stringybark woodland on igneous rocks

This community occurred across the majority of the study area and encompasses the granitic outcrop and vegetation on adjoining slopes. The granitic outcrop supported a variable cover of vascular vegetation, wherein large areas of the outcrop (i.e. exposed face) was sparsely vegetated with isolated patches of forbs and grasses, and/or thickets of Small-fruited Tea-tree (*Leptospermum microcarpum*). However, the upper slopes and surrounding areas of the granitic outcrop supported Black Cypress and eucalypt low woodland, or eucalypt woodland to open forest.

The composition and structure varied in accordance with position on the outcrop and depth and availability of soil. The canopy layer was commonly comprised of New England Blackbutt, Youman's Stringybark, Silver-top Stringybark (*Eucalyptus laevopinea*), Black Cypress and Orange Gum. Other species included Rough-barked Apple, Kurrajong (*Brachychiton populneus*) and Oleander Wattle (*Acacia neriifolia*). The median canopy height ranged from 7 m on the crest of the outcrop to 17 m on the lower slopes. The canopy cover ranged from approximately 20% on the crest of the outcrop to 50% on the lower slopes.

The composition of the shrub layer was highly variable and ranged from: thickets of Small-fruited Tea-tree and associated *Acacia granitica* (no common name), Blue Nodding Lily (*Stypandra glauca*) and Giant Trigger Plant (*Stylidium laricifolium*) on the upper slopes and exposed areas of the outcrop; Oleander Wattle, Small-fruited Tea-tree, Dogwood (*Jacksonia scoparia*) and Snowy Mint Bush (*Prostanthera nivea* var. *nivea*) on the crest of the outcrop; to, Sticky Wattle (*Acacia viscidula*) and Oleander Wattle on the flanks and lower slopes of the outcrop. Common Lantana (**Lantana camara* var. *camara*) was also occasionally recorded throughout this vegetation type, particularly on the lower slopes.

The composition of the groundcover layer was also highly variable, although the crest, upper slopes and exposed areas of the outcrop commonly supported Five-minute Grass (*Tripogon loliiformis*). Other commonly recorded species in this areas of the outcrop included Many-headed Wiregrass (*Aristida caput-medusae*), Saw Sedge (*Gahnia aspera*), *Plectranthus* spp., Weeping Meadow Grass (*Microlaena stipoides*), Brown's Lovegrass (*Eucalyptus brownii*), Wiry Panic (*Entolasia stricta*), Bushy Hedgehog Grass (*Echinopogon caespitosus* var. *caespitosus*), Wild Parsnip (*Trachymene incisa*), Dwarf Flannel Flower (*Actinotus gibsonii*), Slender Wallaby Grass (*Rytidosperma racemosum*) and Purple Lovegrass (*Aristida ramosa*).

The groundcover on the lower slopes of the granitic outcrop was commonly comprised of Veined Speargrass (*Austrostipa rudis* subsp. *rudis*), Wiry Panic, Saw

Sedge, Barbed Wire Grass (*Cymbopogon refractus*), Bushy Hedgehog Grass and Veldtgrass (*Ehrharta erecta*).

The community supported elements of RE 13.12.6, however the overall structure was most representative of RE 13.12.2. This community does not support the structural or floristic elements of any TEC listed under the EPBC Act.

RE 13.12.4 – Broad-leaved White Mahogany, Queensland Blue Gum open forest on igneous rocks

This community has been mapped by the Queensland Herbarium as occurring across the entire study area. However, the floristic and structural data collected during the field survey demonstrates that this community is more restricted to southern portion of the study area that encompasses the lower slopes of the granite outcrop. The undulated rise, which falls away from the north-eastern edge of the granite outcrop, supports a relatively intact eucalypt woodland with large, mature trees recorded throughout the patch. Granite boulders were observed throughout the patch, however broad areas of outcropping or rock pavement were absent.

The canopy layer was comprised of Queensland Blue Gum and Broad-leaved White Mahogany. The canopy height ranged from 13 to 19 m (median height 16 m) and the canopy cover ranged from 30 to 40%.

The sub-canopy was primarily comprised of juvenile Broad-leaved White Mahogany. Other species included Oleander Wattle, Hickory Wattle (*Acacia implexa*), Queensland Blue Gum and Broad-leaved Apple.

The shrub layer was primarily comprised of Oleander Wattle. Other species included Hickory Wattle, juvenile canopy species, White Mountain Banksia (*Banksia integrifolia* subsp. *monticola*), Slender Tea-tree (*Leptospermum brevipes*), Coffee Bush (*Breynia oblongifolia*) and Native Cherry (*Exocarpos cupressiformis*).

The groundcover layer was commonly comprised of Weeping Meadow Grass. Other commonly recorded species included Barbed-wire Grass, Saw Sedge, Many-headed Wire Grass, Pomax (*Pomax umbellata*), Purple Wiregrass and Bushy Hedgehog Grass. It should be noted that African Lovegrass (**Eragrostis curvula*) was frequently recorded along the edge of the track.

This community does not support the structural or floristic elements of any TEC listed under the EPBC Act.

Species diversity

A total of 205 flora species were recorded during the field surveys representing 70 families and 147 genera. The dominant family group was Poaceae (33 species) with Asteraceae (19 species), Myrtaceae (12 species), Cyperaceae (11 species) and Fabaceae (9 species) also prominent. The dominant family groups exemplify the overall composition and condition of the vegetation communities surveyed, with the ground layer being the most diverse. The species inventory included 21 (10 %) exotic species, five of which are listed as restricted matters under Queensland's *Biosecurity Act 2014*. A list of the flora species recorded during the

field surveys is presented in Appendix F. The relative abundance of each species is assigned to their occurrence in the REs identified during the field surveys.

Fauna

The eucalypt dominated woodlands within the study area were found to support a diversity of habitat features including:

- a variety of tree, shrub and groundstorey species that provide a range of forage and roosting resources
- hollow bearing trees that provide denning resources
- rocky outcrops
- deep leaf litter layer
- fallen timber and coarse woody debris.

In addition to the above, a small constructed dam extends into the north-eastern corner of the study area, providing habitat for amphibian and wetland species fauna species as well as a source of water for terrestrial fauna.

A total of 52 fauna species were recorded within the study area during the field surveys. Birds were the most diverse fauna group with 27 species being recorded, followed by reptiles (11 species recorded) amphibians (9 species) and mammals (5 species).

Three EPB Act listed threatened fauna species were recorded within the study area during the field surveys, namely:

- Border Thick-tailed Gecko - Vulnerable
- Koala - Vulnerable
- Spotted-tailed Quoll - Endangered

These species and their habitat within the study area is discussed further in Section 4.1.3 below.

A full list of fauna species recorded during the fauna surveys is provided as Appendix G.

4 Matters of national environmental significance

Threatened ecological communities

Five EPBC Act listed TECs were identified in the EPBC Act Protected Matters Search Report as potentially occurring within the 10 km radial search area, including:

- Coolibah - Black Box Woodlands of the Darling Riverine Plains and the Brigalow Belt South Bioregions - Endangered
- Natural grasslands on basalt and fine-textured alluvial plains of northern New South Wales and southern Queensland – Critically Endangered
- New England Peppermint (*Eucalyptus nova-anglica*) Grassy Woodlands – Critically Endangered
- Weeping Myall Woodlands – Endangered
- White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland – Critically Endangered.

None of the vegetation communities mapped in the study area during the field assessment are considered to represent any of the TECs currently listed under the EPBC Act. Therefore, TECs have not been considered further as part of this assessment.

Threatened flora

Database searches identified 10 threatened flora species listed under the EPBC Act as potentially occurring in the search area, as follows:

- *Callistemon pungens* (syn. *Melaleuca williamsii* subsp. *fletcheri*) – Vulnerable
- Blue-grass (*Dichanthium setosum*) –Vulnerable
- Small Snake Orchid (*Diuris pedunculata*) - Endangered
- Slaty Red Gum (*Eucalyptus glaucina*) - Vulnerable
- Narrow-leaved Peppermint (*Eucalyptus nicholii*) –Vulnerable
- Black grevillea (*Grevillea scortechinii* subsp. *scortechinii*) –Vulnerable
- Wandering Pepper-cress (*Lepidium peregrinum*) - Endangered
- Queensland Nut (*Macadamia integrifolia*) - Vulnerable
- Austral Cornflower (*Rhaponticum australe*) - Vulnerable
- Austral Toadflax (*Thesium australe*) - Vulnerable.

An assessment of the likelihood for these species to occur in the study area has been undertaken and is presented in Appendix H.

Based on vegetation validation and habitat characteristics of the study area, only Small Snake Orchid is considered to potentially occur within the study area. Moist areas associated with the lower slopes of the granite outcrop provide potential habitat for this species. Detection and identification of this species is reliant on the flowers. The current field surveys were undertaken just outside of the flowering period for this species (August – October) and therefore its presence cannot be

definitively discounted based on the current survey effort. However, it is noted that:

- the study area is outside of the known distribution for this species
- the nearest record is approximately 76 km to the south of the study area
- Orogen (2010) did not record this species in the eastern portion of the Cherrabah property.

Callistemon pungens (syn. *Melaleuca williamsii* subsp. *fletcheri*) was recorded on the Cherrabah property by Orogen (2010). This record is approximately 2.5 km to the north-east of the study area. While not in the proposed MLA, this species is located on a watercourse that is traversed by an existing track that will become the haul road. This distinctive species was not recorded in the study area during the current surveys and the MLA is not considered to support habitat suitable for this species (Appendix H).

With regard to the remaining species, the study area does not support the vegetation, soil and/or underlying geology that these species are typically associated with (Appendix H). For example, the study area does not support rainforest vegetation that is suitable for Queensland Nut or natural grassland communities on basaltic plains that are suitable for Blue-grass. Further, species such as Slaty Red Gum and Narrow-leaved Peppermint are not known to occur within Queensland. Additionally, there are no records for any of these species within 10 km of the study area and previous surveys did not detect these species in the eastern portion of the Cherrabah property (Orogen 2010).

Threatened fauna

Database searches identified 25 threatened fauna species listed under the EPBC Act as potentially occurring in the search area, as follows:

- Australasian Bittern (*Botaurus poiciloptilus*) - Endangered
- Australian Painted Snipe (*Rostratula australis*) - Endangered
- Border Thick-tailed Gecko (*Uvidicolus sphyrurus*) - Vulnerable
- Black-breasted Button-quail (*Turnix melanogaster*) - Vulnerable
- Brush-tailed Rock-wallaby (*Petrogale penicillata*) - Vulnerable
- Collared Delma (*Delma torquata*) - Vulnerable
- Corben's Long-eared Bat (*Nyctophilus corbeni*) - Vulnerable
- Curlew Sandpiper (*Calidris ferruginea*) –Critically Endangered
- Dunmall's Snake (*Furina dunmalli*) - Vulnerable
- Eastern Bristlebird (*Dasyornis brachypterus*) - Endangered
- Five-clawed Worm-skink (*Anomalopus mackayi*) – Vulnerable
- Greater Glider (*Petauroides volans*) - Vulnerable
- Grey-headed Flying-fox (*Pteropus poliocephalus*) - Vulnerable
- Hastings River Mouse (*Pseudomys oralis*) - Endangered

- Koala (*Phascolarctos cinereus*) - Vulnerable
- Large-eared Pied Bat (*Chalinolobus dwyeri*) - Vulnerable
- New Holland Mouse (*Pseudomys novaehollandiae*) - Vulnerable
- Painted Honeyeater (*Grantiella picta*) - Vulnerable
- Red Goshawk (*Erythrotriorchis radiatus*) - Vulnerable
- Regent Honeyeater (*Anthochaera phrygia*) - Critically Endangered
- Southern Black-throated Finch (*Poephila cincta cincta*) - Endangered
- Spotted-tailed Quoll (south-eastern mainland population) (*Dasyurus maculatus maculatus*) - Endangered
- Squatter Pigeon (southern) (*Geophaps scripta scripta*) - Vulnerable
- Swift Parrot (*Lathamus discolor*) - Vulnerable
- Three-toed Snake-tooth Skink (*Saiphos reticulatus*) - Vulnerable

An assessment of the likelihood for these species to occur in the study area has been undertaken and is presented in Appendix H.

The Border Thick-tail Gecko, Koala and Spotted-tailed Quoll were all recorded within the study area during the field surveys. In addition, the Grey-headed Flying-fox is considered to have a high likelihood of occurrence in the study area based on the habitat resources available. Brush-tailed Rock-wallaby is considered to have a moderate likelihood of occurrence in the study area (Appendix H). Each of these species and their habitat within the study area is discussed further below.

The study area is considered unlikely to provide suitable habitat for the remaining threatened species listed above (Appendix H). Further, for most of these species there are no nearby records, and previous studies on the Cherrabah property did not record any of these species (Orogen 2010).

Border Thick-tailed Gecko

Species overview

The Border Thick-tailed Gecko is a nocturnal species that shelters by day in well-shaded micro-sites amongst boulders, rock slabs, fallen timber (logs or debris), bark on standing trees and deep leaf litter (DotEE 2017a). This species is most commonly found in undisturbed remnant habitat on rocky outcrops and stony hills within eucalypt and cypress-pine open forest or woodland between 500-1100 m in elevation. This species is listed as vulnerable under the EPBC Act.

The Border Thick-tailed Gecko occurs in the New England Tableland, Nandewar and Brigalow Belt South Bioregions in northern New South Wales (NSW) and in South-east Queensland. The species was formerly thought to be restricted to granitic substrates, but records from more fertile and less rugged sites such as regenerating habitat on basalt and metasediment lower slopes and flats, suggest wider historic distribution in vegetation types that have been cleared. Nonetheless, the majority of records indicate the Border Thick-tailed Gecko is typically associated with steep rocky or scree slopes, especially on granite and it may prefer sites with easterly aspects and the base of rock scarps (DotEE 2017a).

Presence and habitat in the study area

Two individuals of this species (Plate 1) were recorded during spotlight surveys in woodland habitat on the upper slopes of granite outcrop (Figure 7). The habitat where the individuals were recorded was characterised by the presence of deeply incised rocky protrusions, piles and slabs with a good coverage of lichen within woodland vegetation with a deep litter layer.

Given the above, approximately 12.2 ha of Border Thick-tailed Gecko habitat has been identified in the study area (Figure 7). The exposed face of the main granite outcrop has not been included in the habitat mapping as this area is lacking the vegetative cover and a microsites that are preferred by this species. Plate 2 below illustrates the type of habitat this species was recorded within.



Plate 1. Border Thick-tailed Gecko recorded during spotlight surveys



Plate 2. Example of habitat where Border Thick-tailed Geckos were recorded

Koala

Species overview

The Koala is listed as vulnerable under the EPBC Act. It is widespread in sclerophyll forest and woodland on foothills and plains on both sides of the Great Dividing Range from about Chillagoe, Queensland to Mt Lofty Ranges in South Australia (Menkhorst and Knight 2011). The Koala inhabits a range of temperate, sub-tropical and tropical forest, woodland and semi-arid communities dominated by species from the genus *Eucalyptus* (Martin and Handrasyde 1999).

Any forest or woodland containing species that are known Koala food trees, or shrubland with emergent food trees provides potential Koala habitat. Koalas are known to occur in modified or regenerating native vegetation communities, and are not restricted to remnant vegetation (DotEE 2017b). The EPBC Act referral guidelines for the vulnerable Koala defines Koala food trees as those of the following genus: *Angophora*, *Corymbia*, *Eucalyptus*, *Lophostemon* and *Melaleuca*. The guideline also notes that 'primary' and 'secondary' food trees may be referred to in other state or Commonwealth guidelines or policies, however, all are considered to be food trees for the purposes of the EPBC Act referral guidelines for the vulnerable Koala (DotEE 2017b).

Presence and habitat in the study area

PRESENT

This species was recorded calling from woodland vegetation to the east, outside of the study area boundary, during spotlighting surveys. However, Koala scats and characteristic scratch marks were not detected during targeted searches within the study area. Nonetheless, given the highly mobile nature of this species and that Orogen (2010) also recorded Koala within the Cherrabah property, it is highly likely that Koalas move through and use habitat within the study area.

The entire study area supports Koala habitat, due to the presence remnant vegetation dominated by Koala feed trees, namely:

- RE 13.12.2 – Rough-barked Apple, Broad-leaved White Mahogany, Narrow-leaved Red Ironbark, *E. interstans*, Silver-topped Stringybark (*E. laevopinea*), Orange Gum (*E. prava*), Youman's Stringybark (*Eucalyptus youmanii*)
- RE 13.12.4 – Rough-barked Apple, Smooth-barked Apple (*A. leiocarpa*), New England Blackbutt (*Eucalyptus andrewsii*), Broad-leaved Stringybark, Narrow-leaved Red Ironbark, *E. interstans*, Yellow Box (*Eucalyptus melliodora*), Queensland Blue Gum (*Eucalyptus tereticornis* subsp. *tereticornis*)

The Koala Habitat Assessment Tool in the EPBC Act 'Draft referral guidelines for the vulnerable Koala' (DotE 2014), has been used to determine if habitat within the study area is critical to the survival of the Koala (Table 3). The results of this tool indicate that the survey area does support habitat critical to the survival of the Koala given there is:

- direct evidence of the presence of this species in the survey area
- habitat supports nine feed tree species for the Koala
- habitat in the survey area is contiguous with more than 1,000 ha of habitat in the surrounding area.

Table 3: EPBC Act critical habitat assessment for the Koala

Attributes and Scores from Koala Habitat Assessment Tool			Results of Desktop and Field Analysis	
Attribute	Score	Inland	Score	Comment
Koala occurrence	+2 (high)	Evidence of one or more Koalas within the last 5 years.	2	The Koala was heard calling during nocturnal surveys completed as part of the current ecological assessment. While no scats were found within the study area, a precautionary approach is being adopted as it is highly likely that the Koala would use woodland communities within the study area.
	+1 (medium)	Evidence of one or more Koalas within 2 km of the edge of the impact area within the last 10 years.		

	0 (low)	None of the above.		
Vegetation composition	+2 (high)	Has forest, woodland or shrubland with emerging trees with 2 or more known Koala food tree species, OR 1 food tree species that alone accounts for >50% of the vegetation in the relevant strata.	2	<p>The study area contains the following nine species of Koala food trees:</p> <ul style="list-style-type: none"> ▪ Rough-barked Apple (<i>Angophora floribunda</i>) ▪ Broad-leaved White Mahogany (<i>Eucalyptus caliginosa</i>) ▪ Narrow-leaved Red Ironbark (<i>Eucalyptus crebra</i>) ▪ <i>Eucalyptus interstans</i> ▪ Silvertop Stringybark (<i>Eucalyptus laevopinea</i>) ▪ Yellow Box (<i>Eucalyptus melliodora</i>) ▪ Orange Gum (<i>Eucalyptus prava</i>) ▪ Queensland Blue Gum (<i>Eucalyptus tereticornis</i> subsp. <i>tereticornis</i>) ▪ Youman's Stringybark (<i>Eucalyptus youmanii</i>)
	+1 (medium)	Has forest, woodland or shrubland with emerging trees with only 1 species of known Koala food tree present.		
	0 (low)	None of the above.		
Habitat connectivity	+2 (high)	Area is part of a contiguous landscape ≥ 1000 ha.	2	<p>The study area is part of a contiguous landscape of remnant woodland vegetation, greater than 1000 ha in area.</p>
	+1 (medium)	Area is part of a contiguous landscape < 1000 ha, but ≥ 500 ha.		
	0 (low)	None of the above.		
Key existing threats	+2 (high)	Little or no evidence of Koala mortality from vehicle strike or dog attack at present in areas that score 1 or 2 for koala occurrence. Areas which score 0 for koala occurrence and have no dog or vehicle threat present	1	<p>There was no evidence of mortality from dog attack in the study area, although wild dogs are likely to pose a threat throughout the region. There a number of local roads in the study area locality and therefore vehicle strike may pose a threat to the local Koala population.</p>
	+1 (medium)	Evidence of infrequent or irregular Koala mortality from vehicle strike or dog attack at present in areas that score 1 or 2 for Koala occurrence, OR Areas which score 0 for Koala occurrence and are likely to have some degree dog or vehicle threat present.		
	0 (low)	Evidence of frequent or regular Koala mortality from vehicle strike or dog attack in the study area at present, OR		

		Areas which score 0 for Koala occurrence and have a significant dog or vehicle threat present.		
Recovery value[†]	+2 (high)	Habitat is likely to be important for achieving the interim recovery objectives for the relevant context, as outlined in Table 1.	1	The study area encompasses vegetation primarily on land zones 12 and there are no riparian/refuge communities are present in the study area. Nonetheless the study area occurs within a landscape that supports large, contiguous areas of potential Koala habitat (i.e. dominated by Koala feed trees). However, given the low number of records for this species in the locality (i.e. no Wildlife Online records within 10 km of the study area, but two records in the Cherrabah property) the study area is considered unlikely to be important for achieving interim recovery objectives for this species.
	+1 (medium)	Uncertain whether the habitat is important for achieving the interim recovery objectives for the relevant context, as outlined in Table 1.		
	0 (low)	Habitat is unlikely to be important for achieving the interim recovery objectives for the relevant context, as outlined in Table 1.		
TOTAL			8	Outcome: Habitat critical to the survival of the Koala

Given the above, 16.8 ha of habitat critical to the survival of the Koala has been identified in the study area (Figure 8).

Spotted-tailed Quoll

Species overview

The Spotted-tailed Quoll occurs in South East Queensland coastally from Bundaberg to the New South Wales border and inland to Monto and Stanthorpe (DotEE 2017c). The Spotted-tailed Quoll has been recorded from a wide range of habitats, including: temperate and subtropical rainforests in mountain areas, wet sclerophyll forest, lowland forests, open and closed eucalypt woodlands, inland riparian and River Red Gum (*Eucalyptus camaldulensis*) forests, dry 'rainshadow' woodland, sub-alpine woodlands, coastal heathlands and occasional sightings from open country, grazing lands, rocky outcrops and other treeless areas (DotEE 2017c). The Spotted-tailed Quoll is predominantly nocturnal and rests during the day in dens. Habitat requirements include suitable den sites such as hollow logs, tree hollows, rock outcrops or caves (DotEE 2017c). Individuals also require an abundance of food, such as birds and small mammals, and large areas of relatively intact vegetation through which to forage (DotEE 2017c).

Presence and habitat in the study area

PRESENT

This species was recorded on the infra-red camera set at the northern end of the study area (Figure 9; Plate 3). Further, there are numerous records (44 Wildlife Online records) for the Spotted-tailed Quoll within 10 km of the study area,

including records in the Cherrabah property. Orogen (2010) recorded this species and resort staff have reported seeing Spotted-tailed Quoll around the resort complex. The Cherrabah Homestead Spotted-tailed Quoll population is recognised as an important population in the '*National Recovery Plan for the Spotted-tailed Quoll Dasyurus maculatus*' (DELWP 2016).



Plate 3. Spotted-tailed Quoll captured by infra-red camera at the base of the granite outcrop.

Based on DotEE's definition for Spotted-tailed Quoll habitat, the study area is considered to support both foraging and denning resources for this species. The study area therefore supports 17.5 ha of Spotted-tailed Quoll habitat (Figure 9).

Grey-headed Flying Fox

Species overview

The Grey-headed Flying Fox is a canopy-feeding frugivore and nectarivore, usually feeding on rainforest, open forest, closed and open woodland communities as well as Melaleuca swamps and Banksia woodlands. It will also feed on fruit crops and other introduced tree species. Its primary food source is *Eucalyptus* (and related genera) blossom (DotEE 2017d). Camps are generally in rainforest patches, stands of Melaleuca, mangroves and riparian vegetation located near water, such as lakes, rivers or the coast (DotEE 2017d).

Likelihood of occurrence in the study area

HIGH

This species was not recorded during the field surveys. However, Orogen (2010) recorded Grey-headed Flying Fox around the Cherrabah Resort redevelopment area. Given the study area supports woodland vegetation that is dominated by feed trees for this species (i.e. *Angophora* and *Eucalyptus*) it is therefore highly likely that Grey-headed Flying Fox moves through and uses foraging habitat within the study area.

No Grey-headed Flying Fox camps were recorded within the Cherrabah property during the current or previous (Orogen 2010) ecological surveys. The study area does not support habitat suitable for the establishment of a camp.

Based on the above, woodland vegetation within the study area (i.e. 16.8 ha) is considered to provide foraging habitat for the Grey-headed Flying Fox. The extent of habitat for this species correspond with habitat for the Koala illustrated in Figure 8.

Brush-tailed Rock Wallaby

Species overview

This species prefers rocky habitats, including loose boulder-piles, rocky outcrops, steep rocky slopes, cliffs, gorges and isolated rock stacks (DotEE 2017e). Rocky outcrops appear crucial to current habitat selection by rock-wallabies, however, vegetation structure and composition is also considered to be an important factor. Rock-wallabies are closely associated with dense arboreal cover, especially fig trees and the vegetation on and below cliffs appear to be important to this species as a source of food and shelter and in some cases may provide some protection from predation (DotEE 2017e).

Likelihood of occurrence in the study area

MODERATE

There is the potential for this species to use outcrop habitat within and adjacent to the study area. However, the composition of vegetation within the study area does not strictly correspond with the preferred habitat type for Brush-tailed Rock Wallaby. Nonetheless, there are some ridgelines in the areas surrounding the study area that present potential habitat for this species. Therefore it is possible that Brush-tailed Rock Wallaby move through and use the study area.

This distinctive species was not recorded during the current field surveys. There are no Wildlife Online records for this species within 10 km of the study area and Orogen (2010) did not record Brush-tailed Rock Wallaby in the eastern portion of the Cherrabah property. The nearest ALA record for this species is located approximately 21 km to the south-west of the study area.

The entire study area (17.5 ha) is considered to support suitable foraging habitat for the Brush-tailed Rock Wallaby. The extent of potential habitat for this species corresponds with habitat for the Spotted-tailed Quoll illustrated in Figure 9.

Migratory species

The following 11 migratory birds were returned from database searches as potentially occurring in the 10 km radial search area:

- Black-faced Monarch (*Monarcha melanopsis*)
- Curlew Sandpiper (also listed as threatened under the EPBC Act, see Section 3.1.3)
- Fork-tailed Swift (*Apus pacificus*)
- Latham's Snipe (*Gallinago hardwickii*)
- Oriental Cuckoo (*Cuculus optatus*)
- Osprey (*Pandion haliaetus*)
- Rufous Fantail (*Rhipidura rufifrons*)
- Satin Flycatcher (*Myiagra cyanoleuca*)
- Spectacled Monarch (*Monarcha trivirgatus*)
- White-throated Needletail (*Hirundapus caudacutus*)
- Yellow Wagtail (*Motacilla flava*).

No species listed as migratory under the EPBC Act were identified in the study area during the field surveys. Based on a review of database search results and habitat identified in the study area, an assessment of the likelihood of other EPBC Act listed migratory species occurring in the study area has been undertaken, and is provided in Appendix H. This assessment identified that five listed migratory bird species that are considered to have a moderate potential to occur within the study area. These species are:

- Black-faced Monarch (*Monarcha melanopsis*)
- Fork-tailed Swift (*Apus pacificus*)
- Rufous Fantail (*Rhipidura rufifrons*)
- Spectacled Monarch (*Monarcha trivirgatus*)
- White-throated Needletail (*Hirundapus caudacutus*).

All remnant vegetation in the study area potentially provide habitat, to some extent, for these species. The watercourse that adjoins the western boundary of the study area provides potential habitat for the Black-faced Monarch, Rufous Fantail and Spectacled Monarch. The Rufous Fantail was recorded by Orogen (2010) in the eastern portion of the Cherrabah property. There is only one Wildlife Online record for the Fork-tailed Swift and White-throated Needletail in the search area. However, there are no records for the Black-faced Monarch or Spectacles Monarch within the search area. There is no evidence to suggest that the study area supports "important habitat" (as defined in the Draft referral guidelines for 14 migratory birds listed under the EBPC Act [DotE 2015]) for these species. Further, there is no evidence that the study area supports an ecologically significant proportion of the population of these migratory species.

Habitats within the study area are considered generally unsuitable for the remaining migratory species listed above due to the lack of wetland and aquatic habitats, closed and wet sclerophyll forests and riparian communities (Appendix H).

4.2 Exotic species

Exotic flora

A total of 21 exotic flora species were recorded within and adjacent to the study area during the field survey. Four of these species namely Lantana (**Lantana camara*), Velvety Tree Pear (**Opuntia tomentosa*) Blackberry (**Rubus anglocandicans*) and Fireweed (**Senecio madagascariensis*), are recognised as 'Weeds of National Significance' (WoNS). The ranking criteria for WoNS is based on assessments of the weed's invasiveness, economic, social and environmental impacts, the potential for spread and socio-economic (such as impacts on health, fire risk, and recreational values of land) and environmental values. There is no legislated requirement for the control of WoNS – this task is primarily a state and local government responsibility.

Lantana, Velvety Tree Pear, Blackberry and Fireweed are also listed as restricted invasive plants under Queensland's *Biosecurity Act 2014*. This Act, provides a framework and powers for improved management of pest plants, under which control of pest plants by landowners is enforceable. An additional restricted invasive plant, Giant Parramatta Grass (**Sporobolus fertilis*) was also recorded within the study area. Restricted invasive plants must not be given away, sold, or released into the environment without a permit. Under the Act, landholders have a general biosecurity obligation (GBO) in relation to restricted invasive plants, meaning all reasonable and practical steps to minimise the risks associated with invasive animals under their control

Exotic fauna

Three exotic fauna species were recorded during the field survey, namely Feral Cat (*Felis catus*), Pig (*Sus scrofa*) and Rabbit (*Oryctolagus cuniculus*). All three species are listed as restricted invasive animals under the *Biosecurity Act 2014*. Restricted invasive animals must not be moved, fed, given away, sold, or released into the environment without a permit. Under the Act, landholders have a GBO in relation to restricted invasive animals.

5 Impact assessment

This section presents an assessment of the likely impacts of the project on terrestrial ecology with a focus on MNES recorded within the study area during the field surveys or considered to have a moderate to high likelihood of occurrence due to the presence of suitable habitat.

5.1 Direct impacts

Direct impacts associated with the proposed granite mine include vegetation clearing and disturbance to habitat required for the extraction of granite, establishment of a stockpile/laydown area and construction of stormwater infrastructure.

Direct impacts within the granite mine footprint will affect 4.7 ha or 27 % of the MLA. Direct impacts to MNES identified within the study area or assessed as having a moderate to high likelihood of occurrence are summarised in Table 4 below.

Table 4: Direct impacts to MNES and MSES associated with the proposed granite mine

Matter of national environmental significance	Likelihood of occurrence	Area of habitat (ha)		% of habitat in MLA to be disturbed
		MLA	Granite mine footprint	
Threatened fauna species				
Border Thick-tailed Gecko	Present	12.2	1.8	15
Koala	Present	16.8	4.0	24
Spotted-tailed Quoll	Present	17.5	4.7	27
Grey-headed Flying Fox	High	16.8	4.0	24
Brush-tailed Rock Wallaby	Moderate	17.5	4.7	27
Migratory species				
Black-faced Monarch	Moderate	17.5	4.7	27
Fork-tailed Swift				
Rufous Whistler				
Spectacled Monarch				
White-throated Needletail				

5.2 Indirect impacts

Indirect impacts associated with construction and operation of the proposed granite mine include noise and vibration, vehicle strike, erosion and the introduction or spread of invasive species.

5.3 Impact mitigation

Measures to avoid impacts

The proposed granite mine layout is dependent on the geology of the area, and is constrained by the availability of granite rock. Nonetheless, measures have been taken to reduce the footprint of the proposed granite mine to extent necessary for viable establishment and operation of the granite mine. To improve the financial viability of the proposed granite mine, use of by-products resulting from the extraction of dimension stone will be incorporated into the proposed operations. Use of these by-products essentially reduces the dependency on increasing the footprint of granite extraction to improve financial returns.

The potential also exists to retain trees within the site office and stockpile area where practical.

Measures to mitigate impacts

A number of controls on the clearing method are proposed in order to minimise impacts on vegetation communities and fauna habitat.

Pre-clearing Surveys

Prior to the commencement of clearing activities, an inspection of the area should be undertaken by an appropriately qualified and licensed ecologist/fauna spotter-catcher to identify the presence of any potential important fauna habitat features. Where habitat trees are identified, a spotter-catcher should be present during clearing activities. Prior to the commencement of clearing activities in areas which contain habitat trees, the spotter catcher will undertake pre-clearing translocation inspections of the areas proposed to be cleared.

The pre-clearing inspections will include the identification, mapping and marking of potential fauna breeding/roosting habitat trees, active roosts and nests. The spotter catcher will also identify suitable habitat outside the clearing footprint for relocation of fauna, and assess whether additional habitat features are required (such as providing artificial hollows). The spotter catcher will relocate fauna as necessary, prior to any clearing activities taking place.

Nocturnal spotlighting surveys should be undertaken over two nights prior to clearing to identify and relocate any Border-thick Tailed Geckos located in or within 100 m of the clearing area.

Clearing activities

The following measures should be adopted when undertaking vegetation clearing:

- Clearing will be undertaken sequentially. This process includes delineation of the approved clearing area with survey pegs or flagging tape. This will ensure that any areas of remnant vegetation to be cleared are restricted to the minimum area necessary for construction of the proposed granite mine to prevent unnecessary encroachment of disturbance into adjoining remnant vegetation.
- Where there is flexibility in the locating of certain infrastructure (e.g. site office, stockpile area), the proponent will prioritise avoiding remnant vegetation, where possible.
- A pre-clearing inspection (detailed above) will be undertaken prior to clearing vegetation, and a spotter catcher will be engaged when habitat trees are identified. Spotter catcher services will include the management of threatened fauna where they are discovered within the clearing footprint and the provision of advice about which direction trees should be felled, how hollows are to be handled and how felled timber should be left, retained or relocated.
- Large hollow logs should be relocated into undisturbed areas to supplement potential denning resources for the Spotted-tailed Quoll.

Weed control

Appropriate weed control and management measures should be incorporated into the management of the proposed granite mine. Potential measures include, but are not limited to the following.

- Weed audits and mapping to be undertaken throughout the study area and proposed haul road for restricted pest species listed under the Queensland *Biosecurity Act 2014* and species considered of national significance e.g., WONS. This mapping will identify any areas of severe weed infestation to allow prioritisation of weed management actions.
- Design and implementation of an appropriate treatment control program to contain and reduce the extent of restricted pest weed species on the Cherrabah property and prevent the introduction of additional species. This may involve chemical and mechanical methods, depending on the sensitivity of the receiving environment.
- Monitoring of weed infestations, using photo points and mapping where necessary.
- Clean-down of all vehicles and plant prior to entering the proposed haul road and study area and exiting the mining area as far as practical.
- Inclusion of weed hygiene in site specific inductions.
- Development of pest management strategies in consultation with relevant key parties, such as local government.

Stormwater, erosion and sediment management

A Stormwater Management Plan (SMP; Ausrocks 2017a) has been prepared for the proposed granite mine. This plan provides key management strategies to reduce potential erosion are as follows:

- minimise disturbed catchment areas
- diversion bunds/drains
- catch drain treatments.

The SMP also provides measures for the internal management and treatment of surface runoff using a combination of sediment fences, check dams and sediment basins.

A Site Based Management Plan (SBMP) has also been prepared for the proposed granite mine (Ausrocks 2017b) and includes the following measures to mitigate impacts associated with stormwater, erosion and sedimentation.

- maximise the diversion of clean stormwater around the disturbed area
- minimise topsoil exposure and protect topsoil stockpiles
- minimise the size of disturbed areas
- minimise runoff velocity to prevent scouring
- carry out staged excavations and progressively rehabilitate if practicable
- topsoil to be campaign stripped, stockpiled and re-used for rehabilitation as soon as practicable
- install contour banks on open slopes and place rock bars along drainage channels
- in extreme rainfall events temporary sediment control measures will be implemented in areas to reduce the impact on the receiving environment.

Vehicle strike

Given the size of the proposed granite mine operation, vehicle movement along the internal haul road will be relatively low. When the mine is at its maximum operating capacity, it is anticipated that there will be between 10 and 15 heavy vehicle movements along the haul road per day. Speed along the haul road will be limited to 40 km/hr and the design and alignment of the road itself, with creek crossings and bends, will moderate vehicle speed.

It is also noted that the mine will not be operating during the night, in which case the risk of vehicles striking nocturnal species such as the Spotted-tailed Quoll will be low.

Noise and vibration

The SBMP (Ausrocks 2017b) includes measures to manage and mitigate impacts associated with noise and vibration. It is noted that blasting is not required for extraction of dimension stone, rather blocks of granite will be cut from the granite dome with a Diamond Wire Saw. Noise and vibration would therefore be associated with the operation machinery such as a diamond wire saw, stitch drill, blade saw, excavator, rock breaker, front end loader and fork lift. Mitigation measures specified in the SBMP include:

- fixed operating hours:
 - Extraction of Blocks: Monday to Friday, 7:00am - 6:00pm, Saturday 7:00am - 1:00pm
 - General Mine Operations, Sales Loader Operation and Truck Haulage: Monday to Saturday, 7:00am - 6:00pm.
 - Maintenance: Monday to Saturday, 6:30am - 10:00pm, Sundays 7:00am - 4:00pm.
- site activities to be undertaken by qualified personnel
- maintain processing equipment such as saws, and drills to an acceptable standard to reduce nuisance noise emissions
- appropriate mufflers to be installed and maintained on all combustion engines
- minimise incidental noise such as reverse beepers or radios especially after operating hours.

It is noted that the proposed granite mine will not include any night works.

Site rehabilitation

A Rehabilitation Plan has been prepared for the proposed granite mine (Ausrocks 2017c). This plan outlines the rehabilitation intent for the quarry based on the intended final land use for different areas. It is intended to return the processing and stockpiling area to natural bushland, while the outcrop will remain as an open pit water storage but will be fenced. The on-site dams will also remain for firefighting purposes, but the land around it will be returned to native bushland.

Rehabilitation of the mine operation will be carried out in stages, as some areas will be operational for more than 10 years. Separate rehabilitation methodologies are proposed for the extraction areas and the processing and stockpiling areas (Ausrocks 2017c). Final slope profile for the extraction areas is currently designed with a 90° face angle, 5 m bench height and 5 m bench width. This design is based on assumed geotechnical specifications, however ongoing analysis is required of the face stability as the mine progresses (Ausrocks 2017c). At various places around the pit, overburden may be used to form a 'bridge' between the benches to allow wildlife passage, however each bench will be integrated into the surrounding topography at the edge of the pit. The base of the pit will be left as water storage with a ramp for egress (Ausrocks 2017c).

6 Significance of impacts

Offsets are required under the EPBC Act if an action is likely to give rise to a significant residual impact on MNES. The EPBC Act Environmental Offsets Policy (SEWPaC 2012) details requirements under the EPBC Act in relation to biodiversity offsets. The Significant Impact Guidelines 1.1: Matters of National Environmental Significance (DotE 2013) provides guidance to assist with determining whether an impact is considered significant.

The following sections outline the potential significant residual impacts to MNES either recorded or considered to have a moderate to high likelihood of occurrence in the study area.

6.1 Impacts to EPBC Act listed flora species

No EPBC Act listed flora species were recorded within the study area during the field surveys.

The Small Snake Orchid, listed as endangered under the EPBC Act is considered to have a moderate likelihood of occurrence within the study area. This assessment is conservative and based on:

- marginal habitat being present at the base of the granite outcrop; and
- presence/absence of this species could not be confirmed because the field surveys were not undertaken during the flowering period for this species.

However, it is noted that:

- the study area is outside of the known distribution for this species - the conservation advice for this species indicates that it was originally found scattered from Tenterfield south to the Hawkesbury River, but is now mainly found on the New England Tablelands, around Armidale, Uralla, Guyra and Ebor (TSSC 2014)
- the EPBC species listing of Small Snake Orchid is related to the New South Wales endemic populations restricted to the New England Tablelands area (TSSC 2014)
- the nearest record is approximately 76 km to the south of the study area
- Orogen (2010) did not record this species in the eastern portion of the Cherrabah property.

Notwithstanding the above, an assessment of the significance of impacts on this endangered flora species is provided in Table 5 below.

Table 5: Assessment against significant impact criteria for the endangered Small Snake Orchid

Significant impact criteria An action is likely to have a significant impact on an endangered species if there is a real chance of possibility that it will:	Assessment
<ul style="list-style-type: none"> Lead to a long-term decrease in the size of a population 	<p>For the purposes of this MNES report a conservative approach has been adopted in terms of the likelihood of occurrence for this species given the:</p> <ul style="list-style-type: none"> the study area supports some marginal habitat for this species at the base of the granite dome the field surveys were not undertaken during the flowering period for this species and presence/absence could therefore not be confirmed <p>However, the study area is outside of the known distribution for this species and the EPBC Act listing relates the New South Wales endemic populations restricted to the New England Tablelands area (TSSC 2014).</p> <p>Given the above, the removal of marginal habitat for this species that is outside of its known range is unlikely to lead to a long-term decrease of a population.</p>
<ul style="list-style-type: none"> Reduce the area of occupancy of a species 	<p>As discussed above, a conservative approach has been taken and this species is considered to have a moderate likelihood of occurrence based on the:</p> <ul style="list-style-type: none"> presence of some marginal habitat at the base of the granite dome field surveys not being undertaken during the flowering period and therefore presence/absence was not able to be confirmed. <p>Given the above, the removal of marginal habitat for this species that is outside of its known range is unlikely to lead to reduce the area of occupancy of the species.</p>
<ul style="list-style-type: none"> Fragment an existing population into two or more populations 	<p>The study area supports some marginal habitat for this species at the base of the granite outcrop. This area would be cleared as part of the proposed granite mine. However, it is unlikely that this will result in the fragmentation of a population of Small Snake Orchid given the study area is outside of the known distribution of this species and the nearest record for this species is approximately 76 km south of the study area.</p>
<ul style="list-style-type: none"> Adversely affect habitat critical to the survival of a species 	<p>The study area supports some marginal habitat for this species at the base of the granite outcrop. This habitat is unlikely to be critical to the survival of Small Snake Orchid given the study area is outside the known distribution for this species.</p>
<ul style="list-style-type: none"> Disrupt the breeding cycle of a population 	<p>The study area supports some marginal habitat for this species at the base of the granite outcrop. The removal of marginal habitat for this species that is outside of its known</p>

	range is unlikely to disrupt the breeding cycle of a population.
<ul style="list-style-type: none"> Modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline 	The study area supports some marginal habitat for this species at the base of the granite outcrop and the study area is outside the known distribution for this species. Therefore the removal of some marginal habitat that is outside the known distribution for this species is unlikely to adversely affect the availability or quality habitat for Small Snake Orchid to the extent that species is likely to decline.
<ul style="list-style-type: none"> Result in invasive species that are harmful to an endangered species becoming established in the endangered species' habitat 	Weed invasion and damage to tuber by Feral Pigs (<i>*Sus scrofa</i>) are recognised as threats to Small Snake Orchid populations (TSSC 2014). The study area only supports marginal habitat and is outside the known distribution for this species. The proposed granite mine is unlikely to result in invasive species becoming established in habitat for the Small Snake Orchid.
<ul style="list-style-type: none"> Introduce disease that may cause the species to decline, or 	There are no known pathogens or disease that may cause the Small Snake Orchid to decline. It is unlikely that the activities associated with the proposed granite mine would result in the introduction of disease that would result in decline of the species given that the study area: <ul style="list-style-type: none"> only supports a small area of marginal habitat is located outside the known distribution for this Small Snake Orchid.
<ul style="list-style-type: none"> Interfere substantially with the recovery of the species. 	There are no adopted or made recovery plans for this species. Given the EPBC Act listing relates to the New South Wales endemic populations and the study area is outside the known distribution for this species, it is unlikely that removal of a small area of marginal habitat will substantially interfere with the recovery of this species.
<p>Conclusion: The proposed granite mine is considered unlikely to cause a significant impact to the Small Snake Orchid given the:</p> <ul style="list-style-type: none"> EPBC Act listing relates to the New South Wales endemic restricted to the New England Tablelands area study area is outside of the known distribution for this species study area only supports a small area of marginal habitat for this species at the base of the granite outcrop a conservative approach has been adopted on the likelihood of occurrence of this species, given the field surveys were conducted outside of the flowering period and therefore presence/absence in the study area could not be confirmed. 	

6.2 Impacts to EPBC Act listed fauna species

Three EPBC Act listed fauna species were recorded during the field surveys, namely the Border Thick-tailed Gecko, Koala and Spotted-tailed Quoll. In addition the Grey-headed Flying Fox is considered to have a high likelihood of occurrence and the Brush-tailed Rock Wallaby is considered to have a moderate likelihood of occurrence in the study area.

The significance of impacts on EPBC Act listed fauna species that were either recorded or considered to have a moderate or high likelihood of occurrence in the study area are addressed in detail below. Based on these significance assessments, offsets are not required for impacts to EPBC Act listed threatened

fauna species, given it is not anticipated that the proposed granite mine will have a significant residual impact on these species.

Border Thick-tailed Gecko

Border Thick-tailed Gecko was recorded in the study area during the field surveys. Approximately 12.2 ha of habitat for this species has been identified in the study area/MLA (Figure 7). Approximately 1.8 ha of Border-Thick-tailed Gecko habitat occurs within the proposed granite mine footprint, representing approximately 15% of habitat mapped within the MLA. Analysis of aerial imagery indicates the Cherrabah property supports large tracts of similar habitat, namely granite outcrops and associated woodlands, to where this species has been recorded in the study area. Based on ALA records for where this species has been previously been recorded, similar habitat occurs throughout the broader landscape. Further, there is good connectivity between the habitat in the MLA and other granite outcrops within and adjacent to the Cherrabah property.

An assessment against the EPBC Act significant impact guidelines for vulnerable species is provided in Table 6 below.

Table 6: Assessment against significant impact criteria for the vulnerable Border Thick-tailed Gecko

<p>Significant impact criteria</p> <p>An action is likely to have a significant impact on a vulnerable species if there is a real chance of possibility that it will:</p>	<p>Assessment</p>
<ul style="list-style-type: none"> Lead to a long-term decrease in the size of an important population of a species 	<p>DotE (2013) defines important populations of vulnerable species as –</p> <p><i>An 'important population' is a population that is necessary for a species' long-term survival and recovery. This may include populations identified as such in recovery plans, and/or that are:</i></p> <ul style="list-style-type: none"> <i>key source populations either for breeding or dispersal</i> <i>populations that are necessary for maintaining genetic diversity, and/or</i> <i>populations that are near the limit of the species range.</i> <p>At present, there is no recovery plan in place for the Border Thick-tailed Gecko. It is considered unlikely that the study area supports an important population of Border Thick-tailed Gecko. DotEE (2017a) consider this species to be widespread but in low densities and only two individuals were recorded during the field surveys. There is only one Wildlife Online record for this species within 10 km of the study area and Orogen (2010) did not record this species in the eastern portion of the Cherrabah property.</p> <p>Nonetheless, the proposal would result in the removal of approximately 1.8 ha (or 15%) of habitat for the Border Thick-tailed Gecko within the study area/MLA. There also extensive areas of similar habitat adjoining the MLA and therefore it is unlikely that the proposal will lead to a long-</p>

	term decrease in the size of the local population of the Border Thick-tailed Gecko.
<ul style="list-style-type: none"> Reduce the area of occupancy of an important population 	As discussed above, the population of Border Thick-tailed Gecko in the study area is unlikely to be an important population. The removal of 1.8 ha for this species is unlikely to reduce the area of occupancy given the extent of habitat available elsewhere in the MLA and broader landscape.
<ul style="list-style-type: none"> Fragment an existing important population into two or more populations 	As discussed above, the population of Border Thick-tailed Gecko in the study area is unlikely to be an important population. Nonetheless, the extent and pattern of proposed habitat removal is unlikely to fragment the existing population into two or more populations. Extensive areas of habitat for this species will be retained around the proposed granite mine footprint and adjoining areas.
<ul style="list-style-type: none"> Adversely affect habitat critical to the survival of a species 	<p>There is no published literature that indicates what habitat may be considered critical to the survival of the Border Thick-tailed Gecko.</p> <p>The species was formerly thought to be restricted to granitic substrates, but records from regenerating habitat on basalt and metasediment lower slopes and flats, suggest the gecko was once more widespread. This would indicate that habitat within the study area is suitable habitat, but this species is not necessarily restricted to granite landscapes. The proposed removal of approximately 1.8 ha of habitat is unlikely to have an adverse impact on the survival of the Border Thick-tailed Gecko.</p>
<ul style="list-style-type: none"> Disrupt the breeding cycle of an important population 	The population of Border Thick-tailed Gecko in the study area is unlikely to be an important population. Nonetheless, clearing of approximately 1.8 ha of habitat is unlikely to disrupt the breeding cycle of the local population. This is because clearing will be gradual, it is a relatively small area compared with the availability of habitat in the retained portions of the MLA and broader landscape.
<ul style="list-style-type: none"> Modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline 	The proposed clearing of 1.8 ha of Border Thick-tailed Gecko habitat will not remove habitats, isolate habitats or degrade remaining habitats to the extent that the species is likely to decline. This is because area of impact is relatively small, removal of habitat will be gradual and large tracts of similar suitable habitat occurs throughout the MLA and broader landscape.
<ul style="list-style-type: none"> Result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat 	<p>There are two key threats to the Border Thick-tailed Gecko recognised by DotEE (2017a) that involve invasive species, namely:</p> <ul style="list-style-type: none"> invasive exotic grasses, particularly dense stands of Coolatai Grass (<i>Hyparrhenia hirta</i>) Predation by foxes and feral cats. <p>Coolatai Grass was not recorded within the study area or along the proposed haul road during the field surveys. However six invasive grass species were recorded (Appendix F), These species were generally associated with areas that have been subject to disturbance (i.e. along the existing track and/or around the small constructed dam). The potential therefore exists for invasive grass species to be moved into the granite mine footprint through vehicle</p>

	<p>movement. This can be managed through control invasive grass species along the proposed haul road alignment and hygiene protocols for vehicles and machinery coming on to the site.</p> <p>Feral cats are present in the study area, but the proposed granite mine is unlikely to result in an increase in the population size or the introduction of other feral predators such as foxes.</p>
<ul style="list-style-type: none"> Introduce disease that may cause the species to decline, or 	<p>There are no known pathogens or disease that may cause the Border Thick-tailed Gecko to decline. It is unlikely that the activities associated with the proposed granite mine would result in the introduction of disease.</p>
<ul style="list-style-type: none"> Interfere substantially with the recovery of the species. 	<p>The proposed granite mine will result in the clearing of 1.8 ha of habitat for the Border Thick-tailed Gecko. This represents approximately 15% of the habitat present in the MLA. The extent of clearing is considered unlikely to interfere substantially with the recovery of the Border Thick-tailed Gecko as extensive similar habitat areas occur elsewhere in the local and regional landscape.</p>
<p>Conclusion: The proposed granite mine is considered unlikely to cause a significant impact to the Border Thick-tailed Gecko given:</p> <ul style="list-style-type: none"> it is unlikely that Border Thick-tailed Gecko in the study area is an important population only a small area (1.8 ha) of habitat would be cleared the proposal would not result in fragmentation of habitats for this species large areas of similar habitat would remain in the broader landscape. 	

Koala

This species was recorded calling from woodland habitat during the field surveys. Approximately 16.8 ha of Koala habitat has been identified in the study area/MLA. Koala habitat in the study area has been assessed, using the Koala habitat assessment tool (DotE 2014), as being habitat critical to the survival of the Koala (i.e. a score of 8 was achieved). Approximately 4.0 ha of habitat critical for the Koala occurs within the granite mine footprint, this represents around 24 % of habitat within the MLA. The draft Koala referral guidelines (DotE 2014) state that the likelihood of a proposal to have a significant impact on the Koala will come down two key considerations:

- adversely affecting habitat critical to the survival of the Koala; and/or
- interfering substantially with the recovery of the Koala through the introduction or exacerbation of key threats in areas of habitat critical to the survival of the Koala.

Section 5 of the guidelines indicates that for projects involving clearance of <2 ha of habitat critical to the Koala are unlikely to have a significant impact and a Referral is not required. On the other hand projects involving >20 ha of habitat critical to the Koala with a habitat score of 8 or greater are likely to have a significant impact and a Referral is required. Between these two thresholds the level of impact is uncertain and dependent on the nature of the proposed action.

An assessment against the significant impact for the vulnerable Koala is provided in Table 7 below. A key component of the significant impact assessment for vulnerable species is whether the population that will be impacted by a proposal is

important population. The population of Koalas that uses the study area is considered unlikely to be an important population for the following reasons.

- The Koala was not identified in abundance and the only other record for this species within 10 km of the study area is from the Orogen surveys (Orogen 2010). The study area is therefore likely to support a low abundance of Koalas.
- Suitable woodland habitat is widespread throughout the study area and the broader landscape. Therefore, dispersal and breeding is likely to occur throughout the region and the study area is part of this broader regional habitat area.
- The individual Koalas that occur within the study area are considered likely to belong to a larger meta-population of Koalas that would occur within areas of suitable habitat throughout the broader region.
- The population of Koalas using the study area is not necessarily unique, large, isolated or genetically disjunct from any other Koalas occurring in the region. Therefore, the population using the survey area would not be considered necessary for maintaining genetic diversity.
- The survey area is not at or near the limit of this species' range. The Koala occurs throughout coastal and inland areas of eastern Australia and the survey area is located more or less centrally within the known distribution of this species (DotE 2014).

Table 7: Assessment against significant impact criteria for the vulnerable Koala

Significant impact criteria An action is likely to have a significant impact on a vulnerable species if there is a real chance of possibility that it will:	Assessment
<ul style="list-style-type: none"> ▪ Lead to a long-term decrease in the size of an important population of a species 	<p>The population of Koalas within the survey area is not considered to be an important population. The extent of clearing is unlikely to decrease the size of the population present given the extent of similar habitat available in the region and likely low abundance of Koalas in the local area.</p>
<ul style="list-style-type: none"> ▪ Reduce the area of occupancy of an important population 	<p>The population of Koalas using the survey area is not considered to be an important population. The proposed granite mine would not significantly impact the area of occupancy of the small population of Koalas that is present in the study area. In particular, clearing associated with the granite mine would disturb only a small portion (24 %) of the suitable Koala habitat within the study area. There are also large tracts of similar habitat adjoining the study area that extend out through the locality.</p>
<ul style="list-style-type: none"> ▪ Fragment an existing important population into two or more populations 	<p>The population of Koalas using the study area is not considered to be an important population. Nonetheless, connectivity of habitat will not be compromised as a result of the granite mine and the population will not be fragmented as habitat will be retained throughout the balance of the study area/MLA that is connected to larger tracts of similar habitat.</p>

<ul style="list-style-type: none"> Adversely affect habitat critical to the survival of a species 	<p>The Draft Referral Guidelines for the Koala (DotE 2014) indicate that for proposals that involve clearing less than 20 ha of habitat that containing Koala food trees and with a critical habitat score of 8 (or greater), adverse effects on habitat critical for the Koala are uncertain and dependent on the nature of the proposal. The following factors should therefore be considered when determining if the proposal will adversely affect habitat critical for the Koala.</p> <ul style="list-style-type: none"> The habitat score calculated for the impact area – habitat within the granite mine footprint scored an 8 using the Koala habitat assessment tool (Section 3.3.3). This is a relatively high habitat score and means that the habitat is critical for the Koala. The area of habitat being cleared – the proposal will result in the clearing of approximately 4.0 ha of habitat that is critical for the Koala. This represents 24 % of the Koala habitat identified in the study area/MLA. The study area directly connects with large areas of similar habitat within and adjacent to the Cherrabah property. Method of clearing – vegetation associated with the granite outcrop will be cleared sequentially and in line with extraction operations. There will be some potential to retain some trees in the proposed site office and stockpile area, but the majority of Koala feed trees in this area will be removed. Density of abundance of Koalas – records for the Koala within 10 km of the study area are limited to the current survey and the Orogen surveys (Orogen 2010). There are no Wildlife Online records for this species within the 10 km search area. This indicates that Koalas occur in low abundance in the locality. Level of fragmentation caused by the clearing – the proposal will result in the removal of approximately 4.0 ha of Koala habitat which represents approximately 24% of Koala habitat in the study area/MLA. The pattern of vegetation clearing will ensure that retained habitat within the MLA stays connected to larger areas of similar vegetation in the Cherrabah property and beyond. <p>Given the relatively small area of habitat clearing, the connectivity of retained habitat within the MLA to large area of similar habitat in the broader landscape and the low density of Koalas in the area, there is a low risk that the proposal will adversely affect habitat critical for the Koala.</p>
<ul style="list-style-type: none"> Disrupt the breeding cycle of an important population 	<p>The population of Koalas using the study area is not considered to be an important population. Nonetheless, impacts to approximately 4.0 ha of suitable habitat is unlikely to disrupt the breeding cycle of the local population. This is because it is a relatively small area compared the availability of habitat in the broader landscape and standard industry recognised measures will be employed during the vegetation clearing stages of the project to minimise harm and disruption to animals and breeding places in accordance with the requirements of the Queensland NC Regulation.</p>

<ul style="list-style-type: none"> ▪ Modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline 	<p>The proposed clearing of 4.0 ha of suitable Koala habitat will not remove habitats, isolate habitats or degrade remaining habitats to the extent that the species is likely to decline. This is because proposed clearing is relatively small and connectivity will be maintained and large tracts of similar suitable habitat occurs within the study area and broader landscape. The study area is directly connected to other large tracts of remnant vegetation within and adjacent to the Cherrabah property.</p>
<ul style="list-style-type: none"> ▪ Result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat 	<p>There are no invasive plant species that are specifically recognised as a threat to the Koala. Nonetheless, the introduction of invasive plants species to the proposed granite mine and MLA can be managed through control invasive grass species along the proposed haul road alignment and hygiene protocols for vehicles and machinery coming on to the site.</p> <p>Feral animals such as the Feral Cat were recorded within the study area. Other species such as Foxes and Wild Dogs are also likely to occur in the broader landscape. These predatory species already pose a risk to the Koala in the habitat areas present and the proposed granite mine is unlikely to increase this threat.</p>
<ul style="list-style-type: none"> ▪ Introduce disease that may cause the species to decline, or 	<p>Three viruses are known to affect Koalas in the wild, Chlamydia and Koala Retrovirus (KoRV-A and KoRV-B). It is known that chlamydia is a sexually transmitted disease in Koalas, however, how the Retrovirus is spread contagiously is unknown. Studies have shown that 100% of Koalas in the wild have the Retrovirus, and the majority of Queensland and New South Wales populations are infected with Chlamydia (Hanger and Loader 2009).</p> <p>Stress has been suggested to exacerbate the effects of disease on Koala populations in more populated areas. However, the proposed granite mine is unlikely to result in the introduction or increase the prevalence of these diseases in the local Koala population, due to the extensive area of habitat in the landscape. Therefore, the proposed granite mine is considered unlikely to introduce disease that may cause the species to decline.</p>
<ul style="list-style-type: none"> ▪ Interfere substantially with the recovery of the species. 	<p>The project will result in clearing of 4.01 ha of suitable Koala habitat. While this habitat is considered to be critical habitat, the extent of clearing is considered unlikely to interfere substantially with the recovery of the Koala as extensive similar habitat areas occur elsewhere in the MLA, and the local and regional landscape.</p>
<p>Conclusion: The proposed granite mine is considered unlikely to cause a significant impact to the Koala given:</p> <ul style="list-style-type: none"> ▪ it is unlikely that Koalas in the study area are an important population ▪ there is low risk that the proposal will adversely affect habitat critical for the Koala in the broader landscape ▪ study area and surrounds support a relatively low density of Koalas ▪ similar habitat will remain in the broader landscape. <p>However, given the proposal will result in the removal of approximately 4.0 ha of Koala habitat with a critical habitat score of 8, it falls within the area of uncertainty stipulated by the draft Koala referral guidelines (i.e. proposed area of clearing is >2 ha < 20 ha). Determination from DotEE as to whether the proposal requires assessment against the EPBC Act is required.</p>	

Spotted-tailed Quoll

The Spotted-tailed Quoll was recorded within the study area during the current field surveys. Further, Orogen (2010) recorded this species in the eastern portion of the property and there are 44 Wildlife Online records for the Quoll within the 10 km search area. Approximately 17.5 ha of Spotted-tailed Quoll habitat has been identified in the study area/MLA, of which approximately 4.7 ha (or 27 %) occurs within the proposed granite mine footprint. Figure 10 provides the ALA records for this species within and adjacent to the Cherrabah property. It can be seen from this figure that Quolls have been recorded in habitats that are similar and adjacent to the MLA and proposed granite mine footprint. It is noted that Cherrabah Quoll population is recognised as an important population in the national recovery plan for the species (DEWLP 2016). An assessment against the EPBC Act significant impact guidelines for endangered species is provided in Table 8 below.

Table 8: Assessment against significant impact criteria for the endangered Spotted-tailed Quoll

Significant impact criteria An action is likely to have a significant impact on an endangered species if there is a real chance of possibility that it will:	Assessment
<ul style="list-style-type: none"> Lead to a long-term decrease in the size of a population 	<p>The proposed granite mine is unlikely to lead to a long-term decrease in the size of the local Quoll population given:</p> <ul style="list-style-type: none"> a relatively small area of habitat will be disturbed (i.e. 4.7 ha) approximately 73 % of Spotted-tailed Quoll habitat within the MLA will be retained retained habitat within the MLA directly connects to larger tracts of similar habitat that are used by Quolls (Figure 10) within the Cherrabah property and beyond this species appears to have some tolerance of human activity given resort staff have recorded the species around the resort facilities the proposed granite mine will not involve any night time operations or lighting that could disrupt the nocturnal foraging behaviour of Quolls.
<ul style="list-style-type: none"> Reduce the area of occupancy of a species 	<p>The proposed clearing of approximately 4.7 ha of habitat for the Spotted-tailed Quoll will remove some of the habitat within the Cherrabah property that is available for this species. However, the extent of the proposed clearing is unlikely to significantly reduce the occupancy of this species given retained habitat within the MLA connects with larger areas of similar habitat within the Cherrabah property and beyond. As illustrated in Figure 10, Quolls have been recorded in these adjacent areas of habitat that won't be directly affected by the proposed granite mine.</p>
<ul style="list-style-type: none"> Fragment an existing population into two or more populations 	<p>The extent and pattern of proposed habitat removal is unlikely to fragment the exiting population of Spotted-tailed Quoll into two or more populations. Extensive areas of habitat for this species will be retained around the proposed granite mine footprint and adjoining</p>

	areas. As illustrated in Figure 10, Quolls have been recorded in these adjacent areas of habitat that won't be directly affected by the proposed granite mine.
<ul style="list-style-type: none"> Adversely affect habitat critical to the survival of a species 	The proposed granite mine would result in the removal of approximately 4.7 ha of habitat that provides forage and denning resources for this species. However, the proposal is unlikely to adversely affect habitat critical to the survival of the Spotted-tailed Quoll as the area of proposed clearing is relatively small and there are larger, connected areas of similar habitat within the MLA, Cherrabah property and broader landscape. As illustrated in Figure 10, Quolls have been recorded in these adjacent areas of habitat that won't be directly affected by the proposed granite mine.
<ul style="list-style-type: none"> Disrupt the breeding cycle of a population 	Clearing of approximately 4.7 ha of habitat is unlikely to disrupt the breeding cycle of the local population. This is because proposed clearing will be done sequentially and a relatively small area compared with the availability of habitat in the retained portions of the MLA and broader landscape will be removed. Standard industry recognised measures will be employed during the vegetation clearing stages of the project to minimise harm and disruption to animals and breeding places in accordance with the requirements of the Queensland NC Act.
<ul style="list-style-type: none"> Modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline 	The proposed clearing of 4.7 ha of Spotted-tailed Quoll habitat will not remove habitats, isolate habitats or degrade remaining habitats to the extent that the species is likely to decline. This is because area of impact is relatively small, removal of habitat will be gradual and large tracts of similar suitable habitat occurs throughout the MLA and broader landscape. As illustrated in Figure 10, Quolls have been recorded in these adjacent areas of habitat that won't be directly affected by the proposed granite mine.
<ul style="list-style-type: none"> Result in invasive species that are harmful to an endangered species becoming established in the endangered species' habitat 	<p>There are no invasive plant species that are specifically recognised as being harmful to the Spotted-tailed Quoll. The potential does exist for invasive grass species to be moved into the granite mine footprint through vehicle movement. This can be managed through control invasive grass species along the proposed haul road alignment and hygiene protocols for vehicles and machinery coming on to the site.</p> <p>Predation by invasive predatory fauna such as wild and domestic dogs, dingoes and foxes are a threat to Spotted-tailed Quoll. None of these species were recorded in the study area during the field surveys and there are very few records for any of these predators in the broader locality. The proposed granite mine is unlikely to result in predatory species becoming established in the locality.</p> <p>It is noted that baiting for wild dogs is currently carried out across the Cherrabah property. While the baiting program has the potential reduce the risk of predation on the Spotted-tailed Quoll, there is also a risk that Quolls are also taking bait. DotEE (2017c) provide guidance on bait techniques that are less likely to adversely impact Quolls. These recommendations will be adopted as part of granite mine's management protocols for wild dogs.</p>
<ul style="list-style-type: none"> Introduce disease that may cause the species to decline, or 	There are no known pathogens or disease that may cause the Spotted-tailed Quoll to decline. It is unlikely that the activities associated with the proposed granite mine would result in the introduction of disease.
<ul style="list-style-type: none"> Interfere substantially with the recovery of the species. 	The 'National Recovery Plan for the Spotted-tailed Quoll <i>Dasyurus maculatus</i> ' (DELWP 2016) recognises reducing habitat loss, modification and fragmentation on private land as being a high priority recovery action for this species. This recovery action is in place because widespread clearing of native vegetation is a

	<p>recognised key threat to the survival of Spotted-tailed Quoll (DELWP 2016).</p> <p>The proposed granite mine would result in the clearing of 4.7 ha of habitat for the Spotted-tailed Quoll. This represents approximately 27% of the habitat present in the MLA. The extent of clearing is considered unlikely to interfere substantially with the recovery of the Spotted-tailed Quoll as extensive similar habitat areas occur elsewhere in the local and regional landscape (Figure 10). Further, the proposed pattern of clearing will not result in the fragmentation of Quoll habitat within the Cherrabah property and connectivity to adjoining areas will be maintained (Figure 10).</p> <p>Feral animal management is another key recovery action for the Spotted-tailed Quoll (DELWP 216). As stated above, it is intended to include bait techniques that are less likely to adversely impact Quolls as part of granite mine's management protocols for wild dog management.</p>
<p>Conclusion: The proposed granite mine is considered unlikely to cause a significant impact to the Spotted-tailed Quoll given:</p> <ul style="list-style-type: none"> ▪ a relatively small area of foraging and denning habitat will be cleared ▪ similar habitat will remain in the MLA and broader landscape ▪ Quolls have been recorded within adjoining areas of habitat that won't be impacted by the proposed granite mine (Figure 10) ▪ the granite mine will not operate at night, so nocturnal foraging will not be disrupted ▪ the local population appears to have some tolerance of human activity and individuals have recorded around the resort facilities 	

Grey-headed Flying Fox

This species wasn't recorded within or adjacent to the study area during the field surveys. However, it is considered to have a high likelihood of occurrence given it was recorded in the eastern portion of the Cherrabah property by Orogen (2010) and there is forage habitat present in the study area. Approximately 16.8 ha of suitable forage habitat is present within the study area. Of this, approximately 4.0 ha of habitat occurs within the proposed granite mine footprint. This represents approximately 24 % of habitat for this species mapped within the MLA. An assessment against the EPBC Act significant impact guidelines for vulnerable species is provided in Table 9 below.

Table 9: Assessment against significant impact criteria for the vulnerable Grey-headed Flying Fox

Significant impact criteria	Assessment
<p>An action is likely to have a significant impact on a vulnerable species if there is a real chance of possibility that it will:</p>	
<ul style="list-style-type: none"> ▪ Lead to a long-term decrease in the size of an important population of a species 	<p>There is no evidence to suggest that the study area supports an important population of the Grey-headed Flying Fox. Records for this species are limited to that during the field surveys completed by Orogen in 2008 (Orogen 2010). There are no Wildlife Online records for this species within the 10 km search area.</p>

	The proposed clearing of approximately 4.0 ha of forage habitat for the Grey-headed Flying Fox is unlikely to lead to a long-term decrease in the local population of this species. Further, there are extensive areas of similar habitat that directly adjoin the proposed MLA.
<ul style="list-style-type: none"> Reduce the area of occupancy of an important population 	As discussed above, the population of Grey-headed Flying Fox in the study area is not considered to be an important population. The removal of 4.0 ha for this species is unlikely to reduce the area of occupancy given the extent of similar forage habitat available elsewhere in the MLA and wider region.
<ul style="list-style-type: none"> Fragment an existing important population into two or more populations 	As discussed above, the population of Grey-headed Flying Fox in the study area is not considered to be an important population. Nonetheless, the extent and pattern of proposed habitat removal is unlikely to fragment any existing populations of this highly mobile species into two or more populations. Extensive areas of habitat for this species will be retained around the proposed granite mine footprint. These retained areas directly connect with larger tracts of similar habitat within the Cherrabah property and beyond.
<ul style="list-style-type: none"> Adversely affect habitat critical to the survival of a species 	<p>There is no evidence to indicate that the study area supports habitat that is critical to the survival of the Grey-headed Flying Fox. Moreover, the study area is considered to support forage habitat only for this species, suitable habitat for the development a camp is not present.</p> <p>The proposed removal of approximately 4.0 ha of forage habitat is unlikely to have an adverse impact on the survival of the Grey-headed Flying Fox, particularly when large tracts of similar habitat remain in the Cherrabah property and broader landscape.</p>
<ul style="list-style-type: none"> Disrupt the breeding cycle of an important population 	Any population of Grey-headed Flying Fox that uses the study area is not considered to be an important population. Nonetheless, clearing of approximately 4.0 ha of habitat is unlikely to disrupt the breeding cycle of the local population. This is because habitat suitable for establishment of a camp is not present. The habitat being disturbed is forage habitat, a relatively small area will be disturbed, larger areas of similar forage habitat will remain available in the MLA, Cherrabah property and broader landscape.
<ul style="list-style-type: none"> Modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline 	The proposed clearing of 4.0 ha of potential forage habitat for Grey-headed Flying Fox will not remove habitats, isolate habitats or degrade remaining habitats to the extent that the species is likely to decline. This is because area of impact is relatively small, the habitat being removed is primarily forage habitat that would be used on a transitory basis, removal of habitat and larger tracts of similar forage habitat occur throughout the MLA, Cherrabah property and broader landscape.
<ul style="list-style-type: none"> Result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat 	Invasive plants are not recognised as key threat to Grey-headed Flying Fox. It is unlikely that the proposed granite mine would result in the introduction of an invasive vine or tree species that has the potential to impact upon the available forage resources within the study area.

	Similarly, predation by feral animals is not recognised as a key threatening process to Grey-headed Flying Fox survival. Feral cats are present in the study area, but the proposed granite mine is unlikely to result in an increase in the population size or the introduction of other potential feral predators such as foxes.
<ul style="list-style-type: none"> Introduce disease that may cause the species to decline, or 	There are no known pathogens or disease that may cause the Grey-headed Flying Fox to decline. It is unlikely that the activities associated with the proposed granite mine would result in the introduction of a disease that could result in the decline of Grey-headed Flying Fox.
<ul style="list-style-type: none"> Interfere substantially with the recovery of the species. 	The proposed granite mine will result in the clearing of 4.0 ha of forage habitat for the Grey-headed Flying Fox. This represents approximately 24 % of the habitat present in the MLA. The extent of clearing is considered unlikely to interfere substantially with the recovery of the Grey-headed Flying Fox as extensive similar habitat areas occur elsewhere in the local and regional landscape.
<p>Conclusion: The proposed granite mine is unlikely to cause a significant impact to the Grey-headed Flying Fox given:</p> <ul style="list-style-type: none"> the study area does not support an important population of Grey-headed Flying Fox only a relatively small area of forage habitat is proposed to be cleared large areas of similar forage habitat will remain in the broader landscape. 	

Brush-tailed Rock Wallaby

This species wasn't recorded within or adjacent to the study area during the field surveys. Nonetheless, the Brush-tailed Rock Wallaby is considered to have a moderate likelihood of occurrence based on the habitat present and the potential for this species to use the study area during broader movements through the surrounding landscape. In this regard, it is noted that:

- there are no Wildlife Online records for this species within 10 km of the study area
- the nearest ALA record for this species is approximately 21 km to the south-west of the study area
- Orogen (2010) did not record this species in the eastern portion of the property.

Approximately 17.5 ha of suitable habitat for Brush-tailed Rock Wallaby is present within the study area. Of this, approximately 4.7 ha of habitat occurs within the proposed granite mine footprint. This represents approximately 27 % of habitat for this species mapped within the MLA. An assessment against the EPBC Act significant impact guidelines for vulnerable species is provided in Table 10 below.

Table 10: Assessment against significant impact criteria for the vulnerable Brush-tailed Rock Wallaby

Significant impact criteria An action is likely to have a significant impact on a vulnerable species if there is a real chance of possibility that it will:	Assessment
<ul style="list-style-type: none"> Lead to a long-term decrease in the size of an important population of a species 	<p>At present, there are no Queensland based important populations recognised in the 'National Recovery Plan for the Brush-tailed Rock wallaby <i>Petrogale penicillata</i>' (Menkhorst and Hines 2010). Given the low number of records for this species in the search area, it is unlikely that the study area supports an important population of the Brush-tailed Rock Wallaby.</p> <p>The proposed clearing of approximately 4.7 ha of potential habitat for the Brush-tailed Rock Wallaby is unlikely to lead to a long-term decrease in the size of an important population of this species. Further, connectivity between the MLA and extensive areas of similar habitat within the Cherrabah property will be maintained.</p>
<ul style="list-style-type: none"> Reduce the area of occupancy of an important population 	<p>As discussed above, the study area is unlikely to support an important population of the Brush-tailed Rock Wallaby. The removal of 4.7 ha of potential habitat for this species is unlikely to reduce the area of occupancy given the extent of similar forage habitat available elsewhere in the MLA, the Cherrabah property and adjoining areas.</p>
<ul style="list-style-type: none"> Fragment an existing important population into two or more populations 	<p>As discussed above, the study area is unlikely to support an important population of the Brush-tailed Rock Wallaby. Nonetheless, the extent and pattern of proposed habitat removal is unlikely to fragment any existing populations of this highly mobile species into two or more populations. Extensive areas of habitat for this species will be retained around the proposed granite mine footprint. These retained areas directly connect with larger tracts of similar habitat within the Cherrabah property and beyond.</p>
<ul style="list-style-type: none"> Adversely affect habitat critical to the survival of a species 	<p>There is no evidence to indicate that the study area supports habitat that is critical to the survival of the Brush-tailed Rock wallaby.</p> <p>The proposed removal of approximately 4.7 ha of potential habitat is unlikely to have an adverse impact on the survival of the Brush-tailed Rock Wallaby, particularly when large tracts of similar habitat remain in the Cherrabah property and broader landscape.</p>
<ul style="list-style-type: none"> Disrupt the breeding cycle of an important population 	<p>It is unlikely that the proposed removal of 4.7 ha of potential habitat for Brush-tailed would disrupt the breeding cycle of an important population, given that:</p> <ul style="list-style-type: none"> this species wasn't been recorded within the Cherrabah property during the current or previously surveys there are no records for this species within the search area

	<ul style="list-style-type: none"> the nearest ALA record for this species is approximately 21 km to the south-west of the study area a relatively small area of potential habitat will be disturbed larger areas of similar habitat will remain available in the MLA, Cherrabah property and broader landscape.
<ul style="list-style-type: none"> Modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline 	<p>The proposed clearing of 4.7 ha of potential habitat for Brush-tailed Rock Wallaby will not remove habitats, isolate habitats or degrade remaining habitats to the extent that the species is likely to decline. This is because Brush-tailed Rock Wallaby hasn't been recorded within the Cherrabah property or the search area, the area of impact is relatively small and larger tracts of similar forage habitat occur throughout the MLA, Cherrabah property and broader landscape.</p>
<ul style="list-style-type: none"> Result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat 	<p>Invasive plants are not recognised as key threat to the Brush-tailed Rock Wallaby. However, predation by feral animals including feral cats and wild dogs is recognised as a key threatening process to Brush-tailed Rock Wallaby survival (Menkhorst and Hines 2010). Feral cats and wild dogs are present in the study area, but the proposed granite mine is unlikely to result in an increase in the population size or the introduction of other potential feral predators such as foxes. As discussed for the Spotted-tailed Quoll, baiting programs for the control of dogs are used across the Cherrabah property and appropriate feral animal management will form part of the proposed granite mine protocols.</p>
<ul style="list-style-type: none"> Introduce disease that may cause the species to decline, or 	<p>Little is known about disease in wild populations of Brush-tailed Rock-wallaby, although it is likely that this species is susceptible to diseases found in other macropods (DotEE 2017e). There is some evidence that wallabies are susceptible to parasites and diseases that are associated with contact with livestock (hydatidosis), cats (toxoplasmosis infection) and humans (Lumpy Jaw, through feeding of soft, processed foods) (DotEE 2017e).</p> <p>It is unlikely that the activities associated with the proposed granite mine would result in the introduction of a disease that could result in the decline of this species, should it use habitat within and adjacent to the MLA.</p>
<ul style="list-style-type: none"> Interfere substantially with the recovery of the species. 	<p>The proposed granite mine will result in the clearing of 4.7 ha of potential habitat for the Brush-tailed Rock Wallaby. This represents approximately 27 % of the habitat present in the MLA. The National Recovery Plan (Menkhorst and Hines 2010) recognises habitat destruction and fragmentation as a key threat to the survival of Brush-Tailed Rock wallaby. However, the extent of proposed clearing is considered unlikely to interfere substantially with the recovery of the Brush-tailed Rock Wallaby given:</p> <ul style="list-style-type: none"> there are no records for the species within the Cherrabah property or search area the area of impact is relatively small the pattern of clearing will not fragment any areas of potential habitat for this species extensive similar habitat areas occur elsewhere in the local and regional landscape. <p>The proposed granite mine is unlikely to result in or exacerbate other key threatening processes such as hunting, predation, competition and genetic decline that have the</p>

	potential to interfere substantially with the recovery of the Brush-tailed Rock Wallaby.
Conclusion: The proposed granite mine is unlikely to cause a significant impact to the Brush-tailed Rock wallaby given: <ul style="list-style-type: none"> ▪ this species has not been recorded within the Cherrabah property or search area ▪ it is unlikely the study area supports an important population of Brush-tailed Rock Wallaby ▪ only a relatively small area of potential habitat is proposed to be cleared ▪ large areas of similar forage habitat will remain in the broader landscape. 	

6.3 Impacts to EPBC Act listed migratory species

Five migratory species have been assessed as having a moderate likelihood of occurring within the study area, namely the Black-faced Monarch, Fork-tailed Swift, Rufous Fantail, Spectacled Monarch and White-throated Needletail. It has been assumed for the purposes of this report, that areas of remnant vegetation within the study area could provide potential habitat for migratory species. The proposed granite mine will therefore result in the clearing of approximately 4.7 ha of habitat for migratory birds (Table 4). Despite this clearing, areas of potential habitat will remain within the study area, particularly along watercourses adjacent to the study area. Large areas of habitat also occur in the broader region.

An assessment of significance for the migratory species listed above has been conducted in accordance with the EPBC Act Significant Impact Guidelines (DotE 2013) for listed migratory species (Table 11). This assessment concluded that the habitat within the study area is not considered to be "important habitat", as defined in the 'Draft referral guidelines for 14 birds listed migratory under the EPBC Act' (DotE 2015) for these species. Further, there is no evidence that the study area supports an ecologically significant proportion of the population of these migratory species. Offsets are therefore not required for impacts on migratory species, given that the proposed granite mine is not predicted to give rise to a significant, residual impact on these species.

Table 11: Assessment against significant impact criteria for migratory species

Significance Criteria	Assessment of significance
An action is likely to have a significant impact on a migratory species if there is a real chance or possibility that it will:	
Substantially modify (including by fragmenting, altering fire regimes, altering nutrient cycles or altering hydrological cycles), destroy or isolate an area of important habitat for a migratory species;	The study area does not support habitat consistent with the 'Draft referral guidelines for 14 birds listed migratory under the EPBC Act' (DotE 2015) important habitat descriptions for Black-faced Monarch and Spectacled Monarch. The draft referral guidelines indicate that while in passage, dry eucalypt forests and woodlands may be important habitat for Rufous Fantail. The study area does support eucalypt woodlands,

<p>Significance Criteria</p> <p>An action is likely to have a significant impact on a migratory species if there is a real chance or possibility that it will:</p>	<p>Assessment of significance</p>
	<p>but it is more likely that this species would use riparian vegetation associated with watercourses adjoining the study area. Important habitat for Fork-tailed Swift and White-throated Needle-tail is not currently defined in the draft referral guidelines.</p> <p>The proposed clearing of 4.7 ha of potential habitat is well below the impact thresholds specified for Black-faced Monarch, Rufus Fantail and Spectacled Monarch in the draft referral guidelines. Therefore a significant impact on habitat for these species is not expected.</p> <p>At present the Draft referral guidelines for 14 birds listed migratory under the EPBC Act (DotE 2015) does not include suggested thresholds of clearing that are likely to have a significant impact on the White-throated Needle-tail or Fork-tailed Swift. However, the proposed clearing of 4.7 ha is unlikely to significantly modify, fragment or isolate foraging habitat for these species given the pattern of clearing (i.e. a relatively small footprint with direct connectivity to larger tracts of similar vegetation that will be retained).</p>
<p>Result in an invasive species that is harmful to the migratory species becoming established in an area of important habitat for the migratory species, or</p>	<p>The Draft referral guidelines for 14 birds listed migratory under the EPBC Act (DotE 2015) recognises Black Rat (<i>Rattus rattus</i>) and invasive vines in riparian habitat such as Rubber Vine (<i>*Cryptostegia grandiflora</i>) as invasive species that are harmful to Black-faced Monarch, Rufus Fantail and Spectacled Monarch. The study area is unlikely to support important habitat for these species. Further establishment and operation of the proposed granite mine is unlikely to result in the establishment of Black Rat or Rubber Vine in riparian vegetation associated with watercourses in adjoining areas.</p> <p>The draft referral guideline does not include any known invasive species that may be harmful to White-throated Needle-tail or Fork-tailed Swift. Therefore, it is unlikely that an invasive species, that is harmful to these migratory species, will not become established in important habitat as a result of the proposed granite mine.</p>

<p>Significance Criteria</p> <p>An action is likely to have a significant impact on a migratory species if there is a real chance or possibility that it will:</p>	<p>Assessment of significance</p>
<p>Seriously disrupt the lifecycle (breeding, feeding, migration or resting behaviour) of an ecologically significant proportion of the population of the migratory species.</p>	<p>Only one (i.e. Rufous Fantail) of the five migratory species being addressed in this assessment have been recorded in the study area or Cherrabah property. There are low or no records for all species in the search area. An ecologically significant proportion of the population of a migratory species as defined in the draft referral guidelines is considered unlikely to occur in the study area. Therefore, the project will not seriously disrupt the lifecycle of an ecologically significant proportion of the population of a migratory species.</p>
<p>Conclusion:</p> <p>The proposed granite mine will not cause a significant residual impact to migratory species listed under the EPBC Act.</p>	

7 Residual impacts and offset liability

Biodiversity offsets are required under the EPBC Act if an action is likely to give rise to a significant residual impact on MNES. The EPBC Act Environmental Offsets Policy (SEWPaC 2012) details requirements under the EPBC Act in relation to biodiversity offsets. The Significant Impact Guidelines 1.1: Matters of National Environmental Significance (DotE 2013) provides guidance to assist with determining whether an impact is considered significant. For some species, there are also species-specific guidelines available to assist with determining whether an impact is considered to be significant (e.g. EPBC Act referral guidelines for the vulnerable Koala (DotE 2014)).

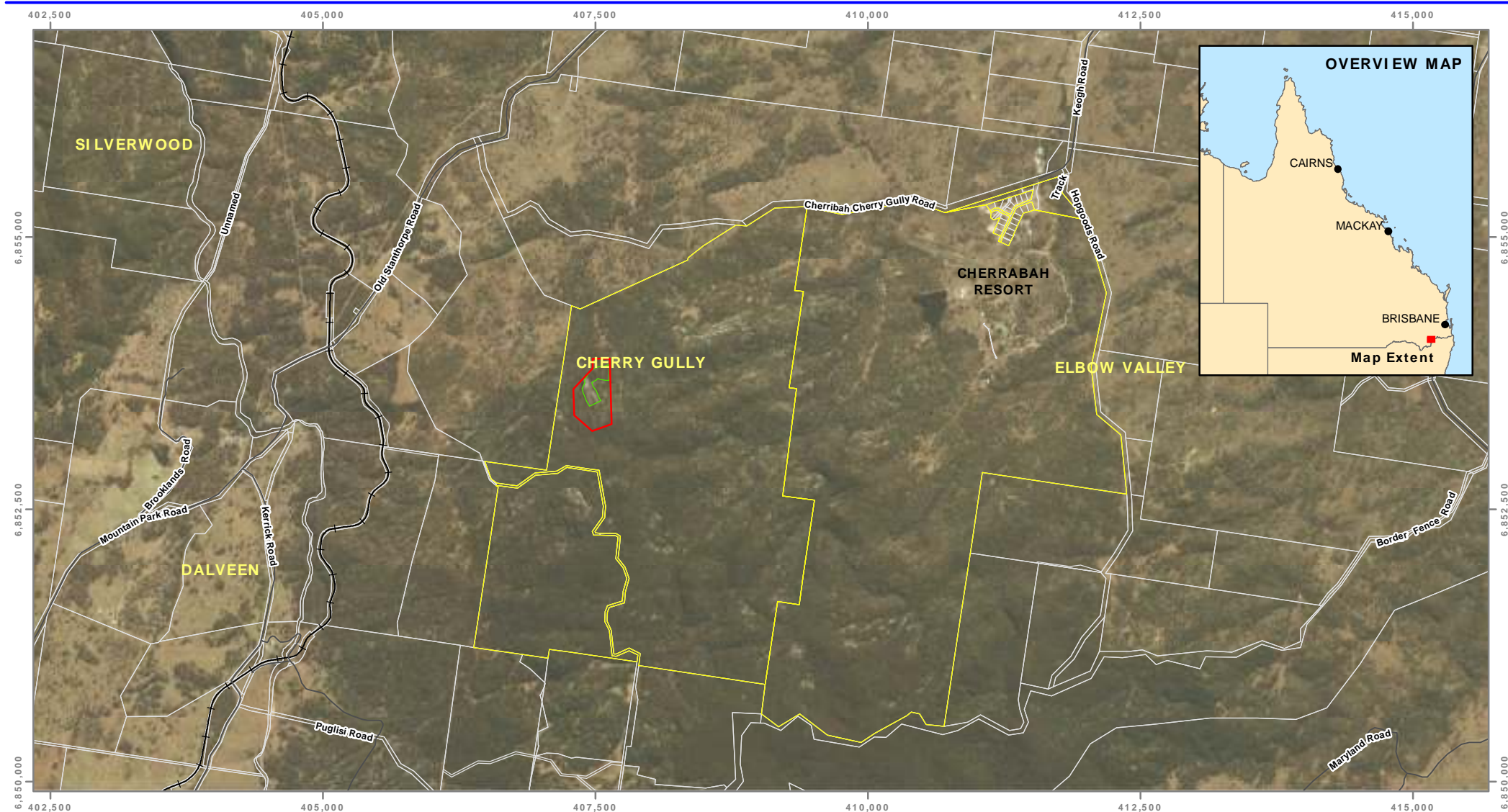
The assessments of significance provided in Section 6.1 – 6.3 describe and assess the potential impacts on MNES associated with the proposed granite mine. As detailed in Sections 6.1 and 6.2. for the Small Snake Orchid, Border Thick-tailed Gecko, Koala, Spotted-tailed Quoll and Brush-tailed Rock Wallaby, the assessments concluded that there will be no significant residual impact to these MNES. Similarly, migratory species listed under the EPBC Act, given the survey area is unlikely to support important habitat for migratory species, and does not support an ecologically significant proportion of the population of these migratory species (Section 6.3).

8 References

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Figures



Legend

- | | |
|-------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Proposed MLA | Local Road |
| Granite Mine footprint | <div style="width: 2px; height: 10px; background: black; position: absolute; left: 5px;"></div> Railway |
| Lot 1000 on SP268215 | Cadastral Boundary |

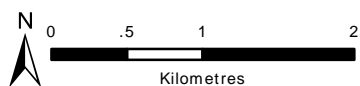





Figure 1 : Locality Plan
Cherrabah Granite Mine

Map Number: 16046_01_B
Date: 20 January 2017
Map Projection: GDA 1994 MGA Zone 56
Imagery: Digital Globe
Data: Road, DCDB, Watercourse - (c)DNRM 2017





Legend

-  Proposed MLA
-  Vegetation Management Act Watercourse
-  Cadastral Boundary

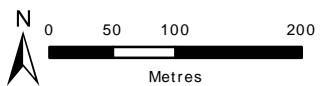
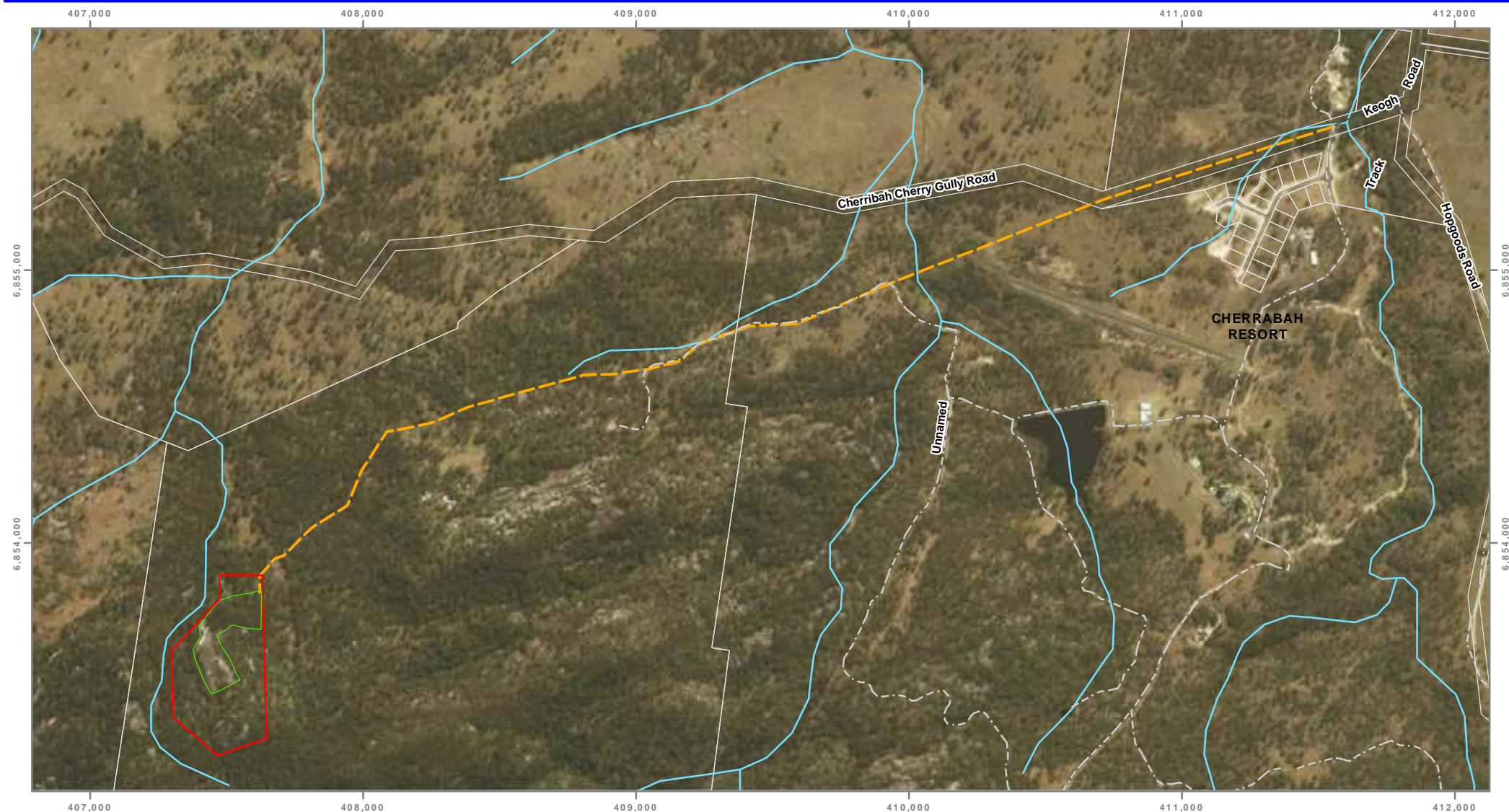


Figure 2 : Aerial photograph of study area
Cherrabah Granite Mine

Map Number: 16046_02_B
Date: 20 January 2017
Map Projection: GDA 1994 MGA Zone 56
Imagery: Digital Globe
Data: Roads, Watercourse - (c)DNRM 2017





Legend

- Proposed MLA
- Granite Mine footprint
- Proposed Haul Road
- Four Wheel Drive Track
- Local Road
- Vehicular Track
- Vegetation Management Act Watercourse
- Cadastral Boundary

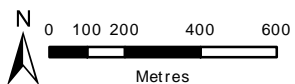
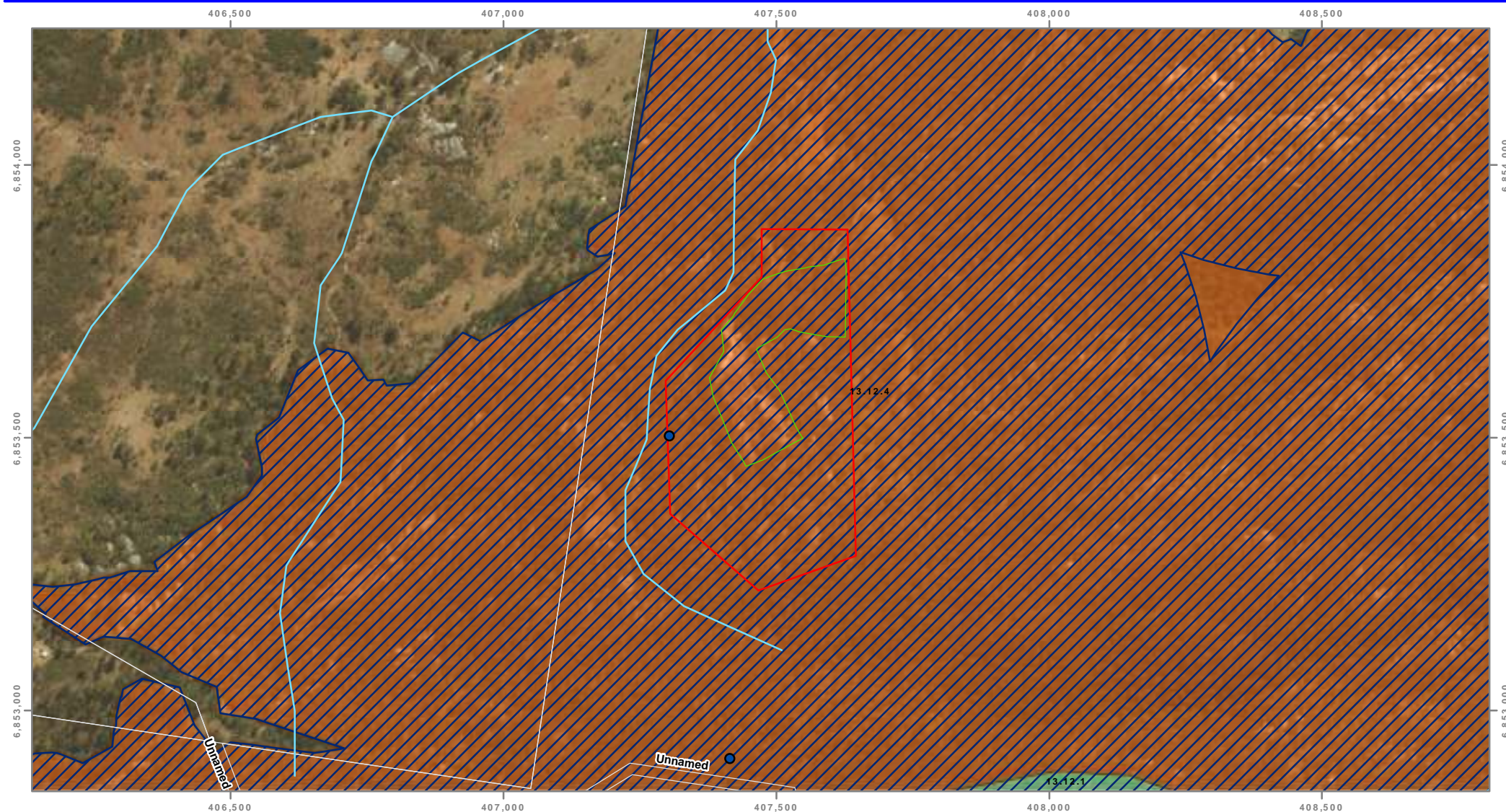


Figure 3 : Proposed MLA and granite mine
Cherrabah Granite Mine

Map Number: 16046_03_D
Date: 01 February 2017
Map Projection: GDA 1994 MGA Zone 56
Imagery: Digital Globe
Data: Roads, Watercourse - (c)DNRM 2017





Legend

- Proposed MLA
- Granite Mine footprint
- Vegetation Management Act Watercourse
- Cadastral Boundary

VMA Essential Habitat V4.37

● Essential Habitat Species Record

Vegetation Management Supporting Map - Version 8.0

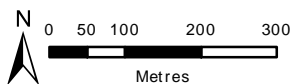
Vegetation Management Act Status

- Category A or B area containing of concern regional ecosystems
- Category A or B area that is a least concern regional ecosystems

Figure 4 : QLD Government RE Mapping

Cherrabah Granite Mine

Map Number: 16046_04_C
Date: 23 January 2017
Map Projection: GDA 1994 MGA Zone 56
Imagery: Digital Globe
Data: Roads, Watercourse - (c)DNRM 2017





Legend

- Proposed MLA
- Granite Mine footprint
- Proposed Haul Road
- Four Wheel Drive Track
- Local Road
- Vehicular Track
- Vegetation Management Act Watercourse
- Cadastral Boundary

Vegetation Assessment Sites

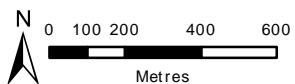
- Secondary Assessment Site
- Tertiary Assessment Site
- Quarternary Assessment Site
- Quarternary Assessment Site (Photo Point)

Fauna Survey Sites

- Camera Trap Site
- Koatla SAT Site

Figure 5 : Locations of flora and fauna survey sites
Cherrabah Granite Mine

Map Number: 16046_05_E
Date: 01 February 2017
Map Projection: GDA 1994 MGA Zone 56
Imagery: Digital Globe
Data: Roads, Watercourse - (c)DNRM 2017





Legend

- Proposed MLA
- Granite Mine footprint
- Vegetation Management Act Watercourse
- Cadastral Boundary

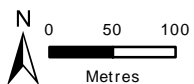
Vegetation Management Act class

- Of concern
- Least concern

Figure 6 : Field-validated RE Mapping

Cherrabah Granite Mine

Map Number: 16046_06_A
 Date: 20 January 2017
 Map Projection: GDA 1994 MGA Zone 56
 Imagery: Digital Globe
 Data: Roads, Watercourse - (c)DNRM 2017





Legend

- Proposed MLA
- Granite Mine footprint
- Vegetation Management Act Watercourse
- Cadastral Boundary

Recorded Locations

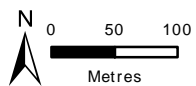
- Border Thick-tailed Gecko

Habitat

- Border Thick-tailed Gecko Habitat

Figure 7 : Border Thick-tailed Gecko habitat within the study area

Cherrabah Granite Mine



Map Number: 16046_07_B
 Date: 23 January 2017
 Map Projection: GDA 1994 MGA Zone 56
 Imagery: Digital Globe
 Data: Roads, Watercourse - (c)DNRM 2017





Legend

- Proposed MLA
- Granite Mine footprint
- Vegetation Management Act Watercourse
- Cadastral Boundary

Habitat

- Koala

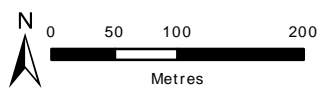
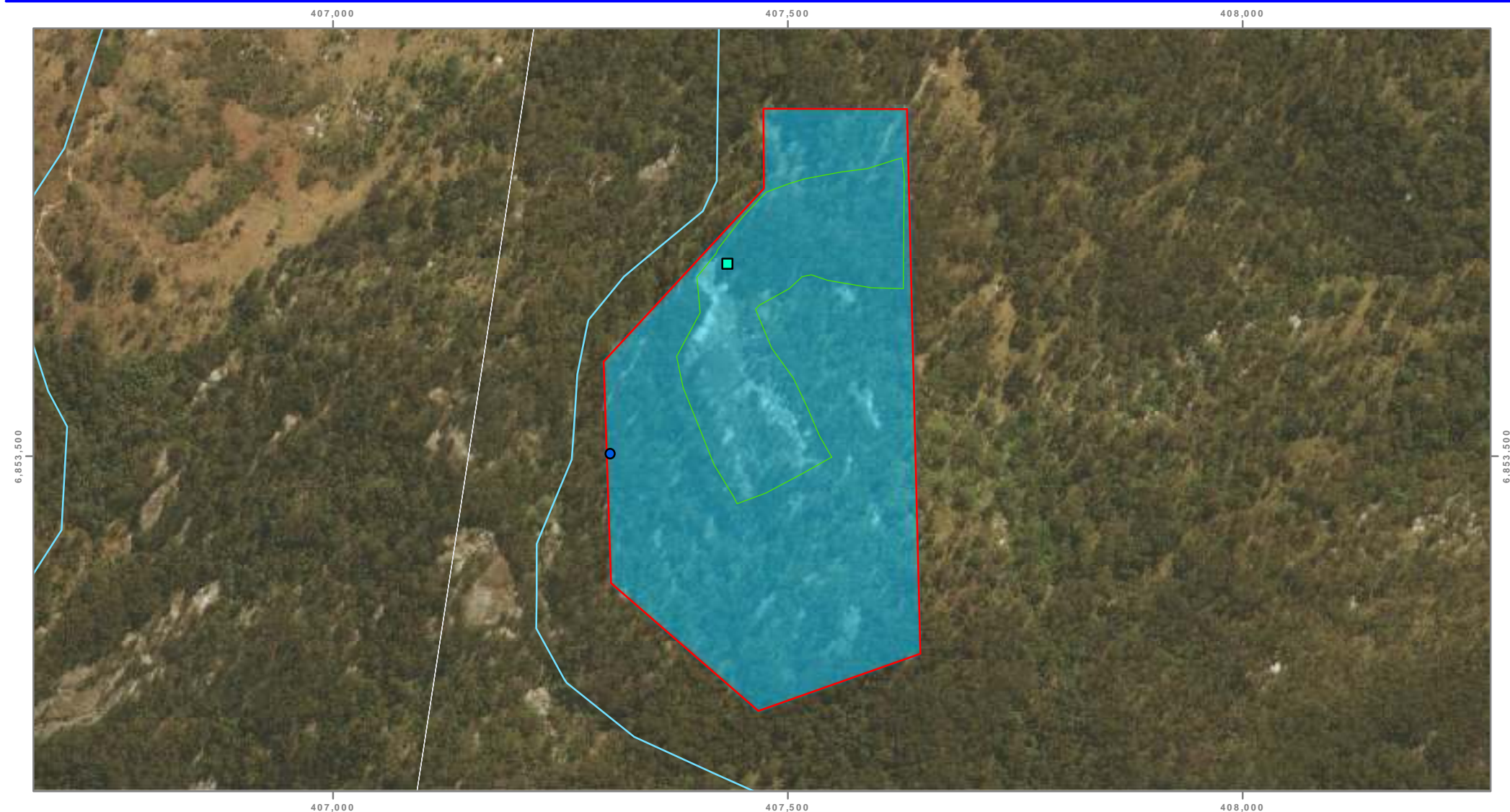


Figure 8 : Koala habitat within the study area

Cherrabah Granite Mine

Map Number: 16046_08_B
 Date: 23 January 2017
 Map Projection: GDA 1994 MGA Zone 56
 Imagery: Digital Globe
 Data: Roads, Watercourse - (c)DNRM 2017





Legend

- Proposed MLA
- Granite Mine footprint
- Vegetation Management Act Watercourse
- Cadastral Boundary

- Essential Habitat Species Record

Recorded Locations

- Spotted-tail Quoll

Habitat

- Spotted-tail Quoll

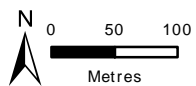
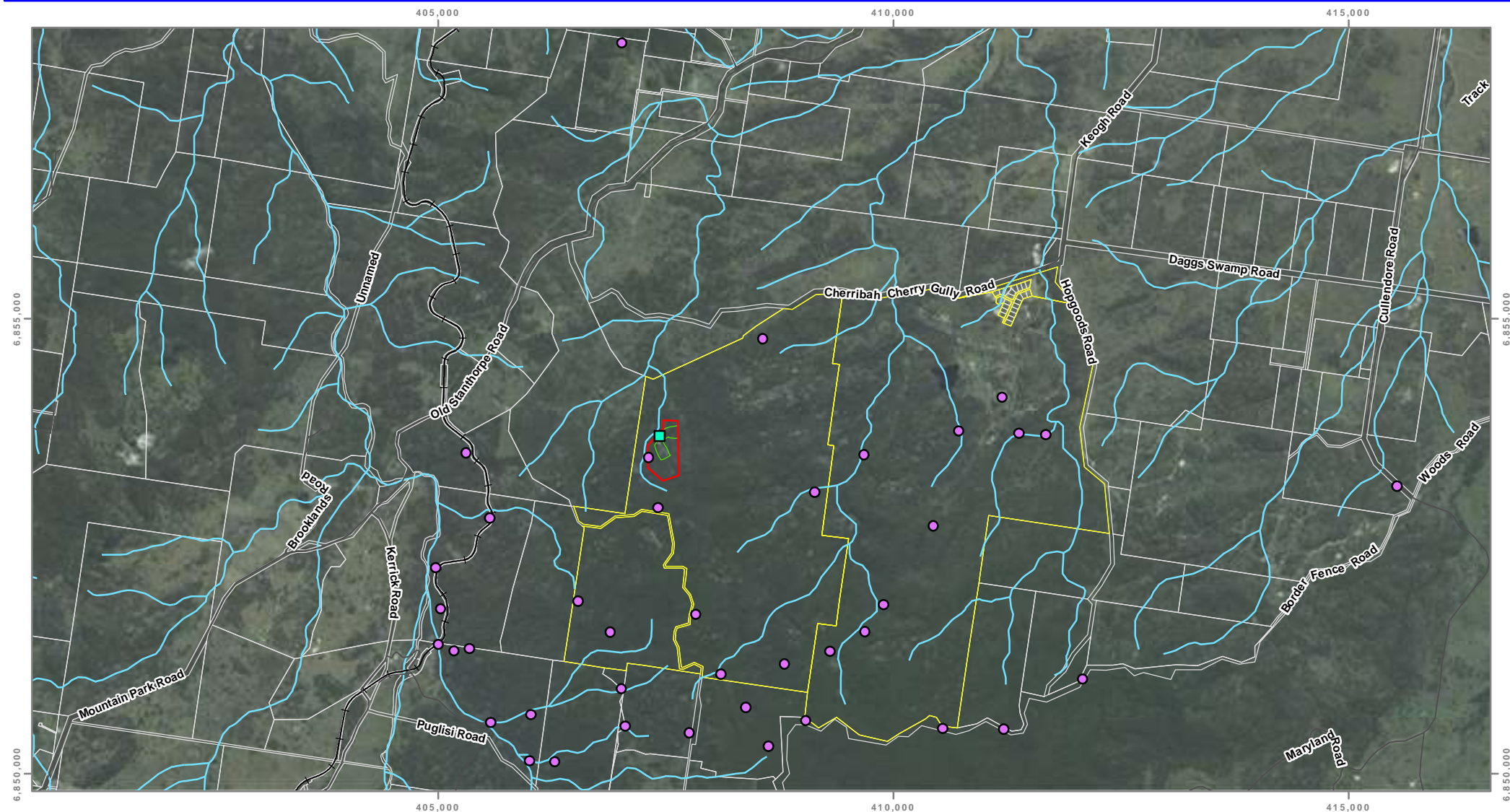


Figure 9 : Spotted-tail Quoll habitat on the study area

Cherrabah Granite Mine

Map Number: 16046_09_B
 Date: 24 January 2017
 Map Projection: GDA 1994 MGA Zone 56
 Imagery: Digital Globe
 Data: Roads, Watercourse - (c)DNRM 2017





Legend

- Proposed MLA
- Granite Mine footprint
- Lot 1000 on SP268215
- Local Road

- Railway
- Vegetation Management Act Watercourse
- Cadastral Boundary

Spotted-tail Quoll Recorded Locations

- EcoSM, (2017).
- CSIRO, (2017). Atlas of Living Australia. Global Biodiversity Information Facility, Canberra.



Figure 10 : Spotted-tail Quoll Records in the locality
Cherrabah Granite Mine

Map Number: 16046_10_D
Date: 24 August 2017
Map Projection: GDA 1994 MGA Zone 56
Imagery: Digital Globe
Data: Roads, Watercourse - (c)DNRM 2017



Appendix A

EPBC Act Protected Matters Search Report



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: 21/12/16 09:33:32

[Summary](#)

[Details](#)

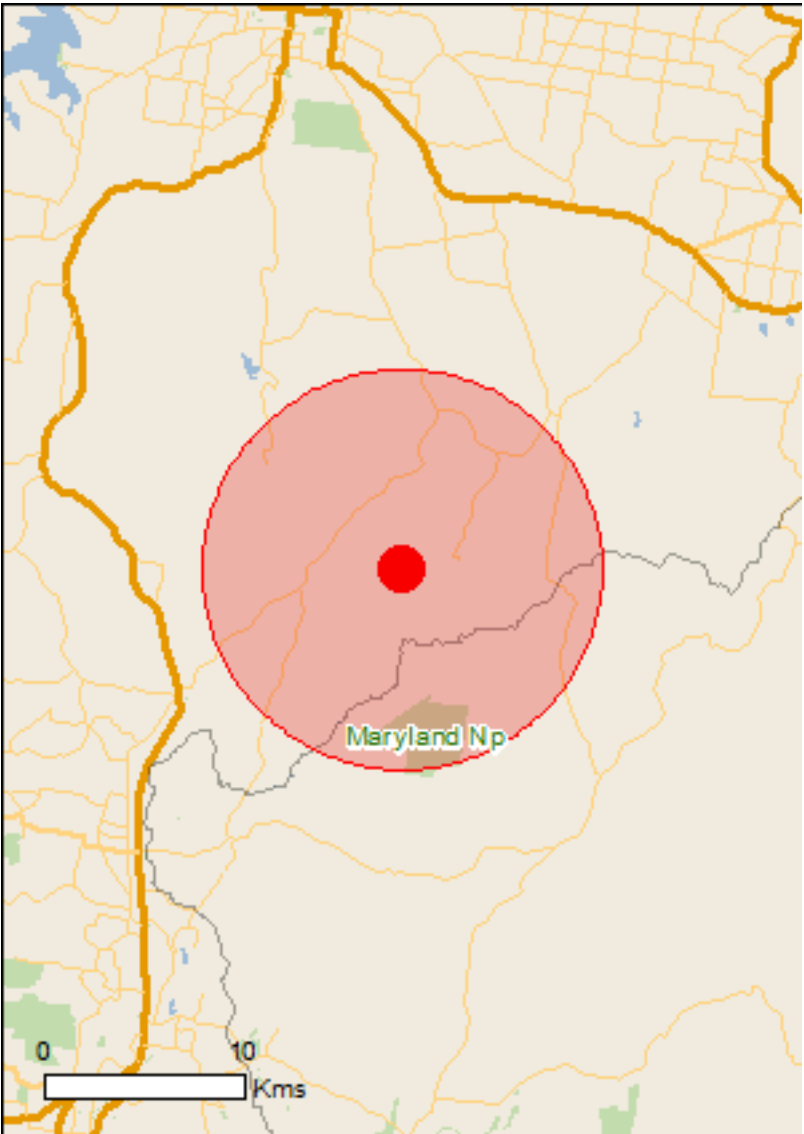
[Matters of NES](#)

[Other Matters Protected by the EPBC Act](#)

[Extra Information](#)

[Caveat](#)

[Acknowledgements](#)



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

[Coordinates](#)

Buffer: 10.0Km



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:	None
National Heritage Places:	None
Wetlands of International Importance:	4
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	5
Listed Threatened Species:	36
Listed Migratory Species:	11

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>

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:	17
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:	1
Regional Forest Agreements:	1
Invasive Species:	38
Nationally Important Wetlands:	None
Key Ecological Features (Marine)	None

Details

Matters of National Environmental Significance

Wetlands of International Importance (Ramsar)		[Resource Information]
Name	Proximity	
Banrock station wetland complex	1200 - 1300km	
Narran lake nature reserve	400 - 500km upstream	
Riverland	1200 - 1300km	
The coorong, and lakes alexandrina and albert wetland	1400 - 1500km	

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
Coolibah - Black Box Woodlands of the Darling Riverine Plains and the Brigalow Belt South Bioregions	Endangered	Community may occur within area
Natural grasslands on basalt and fine-textured alluvial plains of northern New South Wales and southern Queensland	Critically Endangered	Community likely to occur within area
New England Peppermint (Eucalyptus nova-anglica) Grassy Woodlands	Critically Endangered	Community may occur within area
Weeping Myall Woodlands	Endangered	Community may occur within area
White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland	Critically Endangered	Community likely to occur within area

Listed Threatened Species	[Resource Information]
---------------------------	--------------------------

Name	Status	Type of Presence
Birds		
Anthochaera phrygia Regent Honeyeater [82338]	Critically Endangered	Species or species habitat known to occur within area
Botaurus poiciloptilus Australasian Bittern [1001]	Endangered	Species or species habitat may occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area
Dasyornis brachypterus Eastern Bristlebird [533]	Endangered	Species or species habitat likely to occur within area
Erythrotriorchis radiatus Red Goshawk [942]	Vulnerable	Species or species habitat likely to occur within area
Geophaps scripta scripta Squatter Pigeon (southern) [64440]	Vulnerable	Species or species habitat likely to occur within area
Grantiella picta Painted Honeyeater [470]	Vulnerable	Species or species habitat likely to occur

Name	Status	Type of Presence
		within area
Lathamus discolor Swift Parrot [744]	Critically Endangered	Species or species habitat likely to occur within area
Poephila cincta cincta Southern Black-throated Finch [64447]	Endangered	Species or species habitat may occur within area
Rostratula australis Australian Painted Snipe [77037]	Endangered	Species or species habitat may occur within area
Turnix melanogaster Black-breasted Button-quail [923]	Vulnerable	Species or species habitat likely to occur within area
Fish		
Maccullochella peelii Murray Cod [66633]	Vulnerable	Species or species habitat may occur within area
Mammals		
Chalinolobus dwyeri Large-eared Pied Bat, Large Pied Bat [183]	Vulnerable	Species or species habitat likely to occur within area
Dasyurus maculatus maculatus (SE mainland population) Spot-tailed Quoll, Spotted-tail Quoll, Tiger Quoll (southeastern mainland population) [75184]	Endangered	Species or species habitat known to occur within area
Nyctophilus corbeni Corben's Long-eared Bat, South-eastern Long-eared Bat [83395]	Vulnerable	Species or species habitat may occur within area
Petauroides volans Greater Glider [254]	Vulnerable	Species or species habitat known to occur within area
Petrogale penicillata Brush-tailed Rock-wallaby [225]	Vulnerable	Species or species habitat may occur within area
Phascolarctos cinereus (combined populations of Qld, NSW and the ACT) Koala (combined populations of Queensland, New South Wales and the Australian Capital Territory) [85104]	Vulnerable	Species or species habitat known to occur within area
Pseudomys novaehollandiae New Holland Mouse, Pookila [96]	Vulnerable	Species or species habitat likely to occur within area
Pseudomys oralis Hastings River Mouse, Koontoo [98]	Endangered	Species or species habitat likely to occur within area
Pteropus poliocephalus Grey-headed Flying-fox [186]	Vulnerable	Foraging, feeding or related behaviour may occur within area
Plants		
Callistemon pungens [55581]	Vulnerable	Species or species habitat likely to occur within area
Dichanthium setosum bluegrass [14159]	Vulnerable	Species or species habitat likely to occur within area
Diuris pedunculata Small Snake Orchid, Two-leaved Golden Moths, Golden Moths, Cowslip Orchid, Snake Orchid [18325]	Endangered	Species or species habitat may occur within area

Name	Status	Type of Presence
Eucalyptus glaucina Slaty Red Gum [5670]	Vulnerable	Species or species habitat likely to occur within area
Eucalyptus nicholii Narrow-leaved Peppermint, Narrow-leaved Black Peppermint [20992]	Vulnerable	Species or species habitat may occur within area
Grevillea scortechinii subsp. scortechinii Black Grevillea [4243]	Vulnerable	Species or species habitat may occur within area
Lepidium peregrinum Wandering Pepper-cress [14035]	Endangered	Species or species habitat may occur within area
Macadamia integrifolia Macadamia Nut, Queensland Nut Tree, Smooth-shelled Macadamia, Bush Nut, Nut Oak [7326]	Vulnerable	Species or species habitat may occur within area
Rhaponticum australe Austral Cornflower, Native Thistle [22647]	Vulnerable	Species or species habitat likely to occur within area
Thesium australe Austral Toadflax, Toadflax [15202]	Vulnerable	Species or species habitat likely to occur within area

Reptiles		
Anomalopus mackayi Five-clawed Worm-skink, Long-legged Worm-skink [25934]	Vulnerable	Species or species habitat may occur within area
Delma torquata Collared Delma [1656]	Vulnerable	Species or species habitat may occur within area
Furina dunmalli Dunmall's Snake [59254]	Vulnerable	Species or species habitat may occur within area
Saiphos reticulatus Three-toed Snake-tooth Skink [88328]	Vulnerable	Species or species habitat may occur within area
Wollumbinia belli Bell's Turtle, Western Sawshelled Turtle, Namoi River Turtle, Bell's Saw-shelled Turtle [86071]	Vulnerable	Species or species habitat may 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 Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Migratory Terrestrial Species		
Cuculus optatus Oriental Cuckoo, Horsfield's Cuckoo [86651]		Species or species habitat may occur within area
Hirundapus caudacutus White-throated Needletail [682]		Species or species habitat known to occur within area
Monarcha melanopsis Black-faced Monarch [609]		Species or species habitat likely to occur within area

Name	Threatened	Type of Presence
Monarcha trivirgatus Spectacled Monarch [610]		Species or species habitat known to occur within area
Motacilla flava Yellow Wagtail [644]		Species or species habitat may occur within area
Myiagra cyanoleuca Satin Flycatcher [612]		Species or species habitat known to occur within area
Rhipidura rufifrons Rufous Fantail [592]		Species or species habitat known to occur within area

Migratory Wetlands Species		
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]		Species or species habitat may occur within area
Pandion haliaetus Osprey [952]		Species or species habitat likely to 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		
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Ardea alba Great Egret, White Egret [59541]		Species or species habitat known to occur within area
Ardea ibis Cattle Egret [59542]		Species or species habitat may occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area
Cuculus saturatus Oriental Cuckoo, Himalayan Cuckoo [710]		Species or species habitat may occur within area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]		Species or species habitat may occur within area
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat known to occur within area
Hirundapus caudacutus White-throated Needletail [682]		Species or species habitat known to occur within area

Name	Threatened	Type of Presence
Lathamus discolor Swift Parrot [744]	Critically Endangered	Species or species habitat likely to occur within area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area
Monarcha melanopsis Black-faced Monarch [609]		Species or species habitat likely to occur within area
Monarcha trivirgatus Spectacled Monarch [610]		Species or species habitat known to occur within area
Motacilla flava Yellow Wagtail [644]		Species or species habitat may occur within area
Myiagra cyanoleuca Satin Flycatcher [612]	Endangered*	Species or species habitat known to occur within area
Pandion haliaetus Osprey [952]		Species or species habitat likely 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]		Species or species habitat may occur within area

Extra Information

State and Territory Reserves	[Resource Information]
Name	State
Maryland	NSW

Regional Forest Agreements	[Resource Information]
Note that all areas with completed RFAs have been included.	
Name	State
North East NSW RFA	New South Wales

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

Name	Status	Type of Presence
		habitat likely to occur within area
Carduelis carduelis European Goldfinch [403]		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 habitat likely to occur within area
Streptopelia chinensis Spotted Turtle-Dove [780]		Species or species habitat likely to occur within area
Sturnus vulgaris Common Starling [389]		Species or species habitat likely to occur within area
Turdus merula Common Blackbird, Eurasian Blackbird [596]		Species or species habitat likely to occur within area
Mammals		
Bos taurus Domestic Cattle [16]		Species or species habitat likely to occur within area
Canis lupus familiaris Domestic Dog [82654]		Species or species habitat likely to occur within area
Capra hircus Goat [2]		Species or species habitat likely to occur within area
Felis catus Cat, House Cat, Domestic Cat [19]		Species or species habitat likely to occur within area
Feral deer Feral deer species in Australia [85733]		Species or species habitat likely to occur within area
Lepus capensis Brown Hare [127]		Species or species habitat likely to occur within area
Mus musculus House Mouse [120]		Species or species habitat likely to occur within area
Oryctolagus cuniculus Rabbit, European Rabbit [128]		Species or species habitat likely to occur within area
Rattus rattus Black Rat, Ship Rat [84]		Species or species habitat likely to occur within area
Sus scrofa Pig [6]		Species or species habitat likely to occur within area
Vulpes vulpes Red Fox, Fox [18]		Species or species

Name	Status	Type of Presence
		habitat likely to occur within area
Plants		
Anredera cordifolia		
Madeira Vine, Jalap, Lamb's-tail, Mignonette Vine, Anredera, Gulf Madeiravine, Heartleaf Madeiravine, Potato Vine [2643]		Species or species habitat likely to occur within area
Asparagus plumosus		
Climbing Asparagus-fern [48993]		Species or species habitat likely to occur within area
Genista monspessulana		
Montpellier Broom, Cape Broom, Canary Broom, Common Broom, French Broom, Soft Broom [20126]		Species or species habitat likely to occur within area
Genista sp. X Genista monspessulana		
Broom [67538]		Species or species habitat may occur within area
Lantana camara		
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
Lycium ferocissimum		
African Boxthorn, Boxthorn [19235]		Species or species habitat likely to occur within area
Nassella neesiana		
Chilean Needle grass [67699]		Species or species habitat likely to occur within area
Nassella trichotoma		
Serrated Tussock, Yass River Tussock, Yass Tussock, Nassella Tussock (NZ) [18884]		Species or species habitat likely to occur within area
Opuntia spp.		
Prickly Pears [82753]		Species or species habitat likely to occur within area
Parthenium hysterophorus		
Parthenium Weed, Bitter Weed, Carrot Grass, False Ragweed [19566]		Species or species habitat likely to occur within area
Pinus radiata		
Radiata Pine Monterey Pine, Insignis Pine, Wilding Pine [20780]		Species or species habitat may occur within area
Prosopis spp.		
Mesquite, Algaroba [68407]		Species or species habitat likely to occur within area
Protasparagus plumosus		
Climbing Asparagus-fern, Ferny Asparagus [11747]		Species or species habitat likely to occur within area
Rubus fruticosus aggregate		
Blackberry, European Blackberry [68406]		Species or species habitat likely to occur within area
Salix spp. except S.babylonica, S.x calodendron & S.x reichardtii		
Willows except Weeping Willow, Pussy Willow and Sterile Pussy Willow [68497]		Species or species habitat likely to occur within area
Senecio madagascariensis		
Fireweed, Madagascar Ragwort, Madagascar Groundsel [2624]		Species or species habitat likely to occur within area
Solanum elaeagnifolium		
Silver Nightshade, Silver-leaved Nightshade, White Horse Nettle, Silver-leaf Nightshade, Tomato Weed, White Nightshade, Bull-nettle, Prairie-berry, Satansbos, Silver-leaf Bitter-apple,		Species or species habitat likely to occur within area

Name	Status	Type of Presence
Silverleaf-nettle, Trompillo [12323]		
Ulex europaeus		
Gorse, Furze [7693]		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.

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

Where very little information is available for species or large number of maps are required in a short time-frame, maps are derived either from 0.04 or 0.02 decimal degree cells; by an automated process using polygon capture techniques (static two kilometre grid cells, alpha-hull and convex hull); or captured manually or by using topographic features (national park boundaries, islands, etc). In the early stages of the distribution mapping process (1999-early 2000s) distributions were defined by degree blocks, 100K or 250K map sheets to rapidly create distribution maps. More reliable distribution mapping methods are used to update these distributions as time permits.

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

-28.4402 152.0697

Acknowledgements

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

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

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

Please feel free to provide feedback via the [Contact Us](#) page.

Appendix B

Wildlife Online database search results



Queensland Government

Wildlife Online Extract

Search Criteria: Species List for a Specified Point

Species: All

Type: All

Status: All

Records: All

Date: All

Latitude: -28.4402

Longitude: 152.0697

Distance: 10

Email: mathew.warren@ecosm.com.au

Date submitted: Wednesday 21 Dec 2016 08:31:19

Date extracted: Wednesday 21 Dec 2016 08:40:03

The number of records retrieved = 664

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 fallax</i>	eastern sedgefrog		C		3
animals	amphibians	Hylidae	<i>Litoria dentata</i>	bleating treefrog		C		1
animals	amphibians	Hylidae	<i>Litoria peronii</i>	emerald spotted treefrog		C		1
animals	amphibians	Hylidae	<i>Litoria caerulea</i>	common green treefrog		C		1
animals	amphibians	Hylidae	<i>Litoria wilcoxii</i>	eastern stony creek frog		C		1
animals	amphibians	Hylidae	<i>Litoria verreauxii</i>	whistling treefrog		C		3
animals	amphibians	Hylidae	<i>Litoria latopalmata</i>	broad palmed rocketfrog		C		1
animals	amphibians	Limnodynastidae	<i>Limnodynastes tasmaniensis</i>	spotted grassfrog		C		1
animals	amphibians	Limnodynastidae	<i>Limnodynastes terraereginae</i>	scarlet sided pobblebonk		C		1
animals	amphibians	Limnodynastidae	<i>Limnodynastes peronii</i>	striped marshfrog		C		2
animals	amphibians	Myobatrachidae	<i>Crinia parinsignifera</i>	beeping froglet		C		4
animals	amphibians	Myobatrachidae	<i>Pseudophryne coriacea</i>	red backed broodfrog		C		1
animals	amphibians	Myobatrachidae	<i>Uperoleia rugosa</i>	chubby gungan		C		1
animals	amphibians	Myobatrachidae	<i>Crinia signifera</i>	clicking froglet		C		1
animals	amphibians	Myobatrachidae	<i>Uperoleia fusca</i>	dusky gungan		C		2
animals	birds	Acanthizidae	<i>Acanthiza reguloides</i>	buff-rumped thornbill		C		8
animals	birds	Acanthizidae	<i>Acanthiza lineata</i>	striated thornbill		C		13/2
animals	birds	Acanthizidae	<i>Acanthiza pusilla</i>	brown thornbill		C		12
animals	birds	Acanthizidae	<i>Gerygone olivacea</i>	white-throated gerygone		C		8
animals	birds	Acanthizidae	<i>Acanthiza nana</i>	yellow thornbill		C		5
animals	birds	Acanthizidae	<i>Smicrornis brevirostris</i>	weebill		C		8
animals	birds	Acanthizidae	<i>Chthonicola sagittata</i>	speckled warbler		C		10
animals	birds	Acanthizidae	<i>Acanthiza chrysorrhoa</i>	yellow-rumped thornbill		C		6
animals	birds	Acanthizidae	<i>Sericornis frontalis</i>	white-browed scrubwren		C		14
animals	birds	Accipitridae	<i>Circus approximans</i>	swamp harrier		C		2
animals	birds	Accipitridae	<i>Aviceda subcristata</i>	Pacific baza		C		1
animals	birds	Accipitridae	<i>Accipiter fasciatus</i>	brown goshawk		C		4
animals	birds	Accipitridae	<i>Aquila audax</i>	wedge-tailed eagle		C		13
animals	birds	Accipitridae	<i>Haliaeetus leucogaster</i>	white-bellied sea-eagle		C		5
animals	birds	Aegothelidae	<i>Aegotheles cristatus</i>	Australian owl-nightjar		C		1
animals	birds	Alcedinidae	<i>Ceyx azureus</i>	azure kingfisher		C		1
animals	birds	Anatidae	<i>Chenonetta jubata</i>	Australian wood duck		C		10
animals	birds	Anatidae	<i>Anas superciliosa</i>	Pacific black duck		C		12
animals	birds	Anatidae	<i>Aythya australis</i>	hardhead		C		6
animals	birds	Anatidae	<i>Anas gracilis</i>	grey teal		C		5
animals	birds	Anatidae	<i>Cygnus atratus</i>	black swan		C		11
animals	birds	Anhingidae	<i>Anhinga novaehollandiae</i>	Australasian darter		C		7
animals	birds	Apodidae	<i>Hirundapus caudacutus</i>	white-throated needletail		SL		2
animals	birds	Apodidae	<i>Apus pacificus</i>	fork-tailed swift		SL		1
animals	birds	Ardeidae	<i>Ardea ibis</i>	cattle egret		C		1
animals	birds	Ardeidae	<i>Ardea pacifica</i>	white-necked heron		C		1
animals	birds	Ardeidae	<i>Ardea intermedia</i>	intermediate egret		C		1
animals	birds	Ardeidae	<i>Egretta novaehollandiae</i>	white-faced heron		C		14
animals	birds	Ardeidae	<i>Ardea alba modesta</i>	eastern great egret		C		4
animals	birds	Artamidae	<i>Strepera graculina</i>	pieb currawong		C		27
animals	birds	Artamidae	<i>Cracticus torquatus</i>	grey butcherbird		C		24

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
animals	birds	Artamidae	<i>Artamus superciliosus</i>	white-browed woodswallow		C		1
animals	birds	Artamidae	<i>Cracticus nigrogularis</i>	pied butcherbird		C		11
animals	birds	Artamidae	<i>Strepera graculina graculina</i>	pied currawong (eastern Australia)		C		1
animals	birds	Artamidae	<i>Cracticus tibicen</i>	Australian magpie		C		35
animals	birds	Cacatuidae	<i>Calyptorhynchus lathami lathami</i>	glossy black-cockatoo (eastern)		V		5
animals	birds	Cacatuidae	<i>Calyptorhynchus funereus</i>	yellow-tailed black-cockatoo		C		4
animals	birds	Cacatuidae	<i>Eolophus roseicapillus</i>	galah		C		22
animals	birds	Cacatuidae	<i>Nymphicus hollandicus</i>	cockatiel		C		2
animals	birds	Cacatuidae	<i>Cacatua tenuirostris</i>	long-billed corella	Y	C		1
animals	birds	Cacatuidae	<i>Cacatua sanguinea</i>	little corella		C		1
animals	birds	Cacatuidae	<i>Cacatua galerita</i>	sulphur-crested cockatoo		C		9
animals	birds	Campephagidae	<i>Lalage tricolor</i>	white-winged triller		C		1
animals	birds	Campephagidae	<i>Lalage leucomela</i>	varied triller		C		2
animals	birds	Campephagidae	<i>Coracina papuensis</i>	white-bellied cuckoo-shrike		C		1
animals	birds	Campephagidae	<i>Coracina tenuirostris</i>	cicadabird		C		1
animals	birds	Campephagidae	<i>Coracina maxima</i>	ground cuckoo-shrike		C		2
animals	birds	Campephagidae	<i>Coracina novaehollandiae</i>	black-faced cuckoo-shrike		C		9
animals	birds	Charadriidae	<i>Vanellus miles</i>	masked lapwing		C		9
animals	birds	Charadriidae	<i>Elseya melanops</i>	black-fronted dotterel		C		7
animals	birds	Charadriidae	<i>Vanellus miles novaehollandiae</i>	masked lapwing (southern subspecies)		C		5
animals	birds	Charadriidae	<i>Erythronyx cinctus</i>	red-kneed dotterel		C		1
animals	birds	Cisticolidae	<i>Cisticola exilis</i>	golden-headed cisticola		C		1
animals	birds	Climacteridae	<i>Cormobates leucophaea</i>	white-throated treecreeper		C		13
animals	birds	Climacteridae	<i>Cormobates leucophaea metastasis</i>	white-throated treecreeper (southern)		C		3
animals	birds	Columbidae	<i>Ocyphaps lophotes</i>	crested pigeon		C		19
animals	birds	Columbidae	<i>Phaps chalcoptera</i>	common bronzewing		C		7
animals	birds	Columbidae	<i>Geopelia humeralis</i>	bar-shouldered dove		C		5
animals	birds	Columbidae	<i>Leucosarcia melanoleuca</i>	wonga pigeon		C		2
animals	birds	Columbidae	<i>Geopelia cuneata</i>	diamond dove		C		1
animals	birds	Columbidae	<i>Geopelia striata</i>	peaceful dove		C		10
animals	birds	Coraciidae	<i>Eurystomus orientalis</i>	dollarbird		C		4
animals	birds	Corcoracidae	<i>Corcorax melanorhamphos</i>	white-winged chough		C		12
animals	birds	Corcoracidae	<i>Struthidea cinerea</i>	apostlebird		C		13
animals	birds	Corvidae	<i>Corvus coronoides</i>	Australian raven		C		9
animals	birds	Corvidae	<i>Corvus orru</i>	Torresian crow		C		27
animals	birds	Cuculidae	<i>Cacomantis flabelliformis</i>	fan-tailed cuckoo		C		1
animals	birds	Cuculidae	<i>Centropus phasianinus</i>	pheasant coucal		C		2
animals	birds	Cuculidae	<i>Eudynamis orientalis</i>	eastern koel		C		1
animals	birds	Cuculidae	<i>Cacomantis pallidus</i>	pallid cuckoo		C		2
animals	birds	Cuculidae	<i>Cacomantis variolosus</i>	brush cuckoo		C		1
animals	birds	Estrildidae	<i>Taeniopygia guttata</i>	zebra finch		C		1
animals	birds	Estrildidae	<i>Neochmia temporalis</i>	red-browed finch		C		11
animals	birds	Estrildidae	<i>Taeniopygia bichenovii</i>	double-barred finch		C		7
animals	birds	Eurostopodidae	<i>Eurostopodus mystacalis</i>	white-throated nightjar		C		1
animals	birds	Falconidae	<i>Falco cenchroides</i>	nankeen kestrel		C		2
animals	birds	Falconidae	<i>Falco berigora</i>	brown falcon		C		2

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
animals	birds	Halcyonidae	<i>Dacelo novaeguineae</i>	laughing kookaburra		C		23
animals	birds	Halcyonidae	<i>Todiramphus sanctus</i>	sacred kingfisher		C		3
animals	birds	Hirundinidae	<i>Petrochelidon ariel</i>	fairy martin		C		3
animals	birds	Hirundinidae	<i>Cheramoeca leucosterna</i>	white-backed swallow		C		1
animals	birds	Hirundinidae	<i>Petrochelidon nigricans</i>	tree martin		C		2
animals	birds	Hirundinidae	<i>Hirundo neoxena</i>	welcome swallow		C		15
animals	birds	Jacanidae	<i>Irediparra gallinacea</i>	comb-crested jacana		C		1
animals	birds	Maluridae	<i>Malurus cyaneus</i>	superb fairy-wren		C		23
animals	birds	Maluridae	<i>Malurus lamberti</i>	variegated fairy-wren		C		1
animals	birds	Meliphagidae	<i>Nesoptilotis leucotis</i>	white-eared honeyeater		C		15
animals	birds	Meliphagidae	<i>Acanthorhynchus tenuirostris</i>	eastern spinebill		C		5
animals	birds	Meliphagidae	<i>Melithreptus brevirostris</i>	brown-headed honeyeater		C		2
animals	birds	Meliphagidae	<i>Plectorhyncha lanceolata</i>	striped honeyeater		C		5
animals	birds	Meliphagidae	<i>Acanthagenys rufogularis</i>	spiny-cheeked honeyeater		C		1
animals	birds	Meliphagidae	<i>Anthochaera carunculata</i>	red wattlebird		C		20
animals	birds	Meliphagidae	<i>Philemon citreogularis</i>	little friarbird		C		4
animals	birds	Meliphagidae	<i>Myzomela sanguinolenta</i>	scarlet honeyeater		C		1
animals	birds	Meliphagidae	<i>Manorina melanocephala</i>	noisy miner		C		31
animals	birds	Meliphagidae	<i>Ptilotula penicillata</i>	white-plumed honeyeater		C		4
animals	birds	Meliphagidae	<i>Philemon corniculatus</i>	noisy friarbird		C		22
animals	birds	Meliphagidae	<i>Melithreptus lunatus</i>	white-naped honeyeater		C		13
animals	birds	Meliphagidae	<i>Melithreptus gularis</i>	black-chinned honeyeater		C		1
animals	birds	Meliphagidae	<i>Lichmera indistincta</i>	brown honeyeater		C		1
animals	birds	Meliphagidae	<i>Anthochaera phrygia</i>	regent honeyeater		E	CE	2
animals	birds	Meliphagidae	<i>Entomyzon cyanotis</i>	blue-faced honeyeater		C		12
animals	birds	Meliphagidae	<i>Caligavis chrysops</i>	yellow-faced honeyeater		C		25
animals	birds	Monarchidae	<i>Grallina cyanoleuca</i>	magpie-lark		C		20
animals	birds	Monarchidae	<i>Myiagra rubecula</i>	leaden flycatcher		C		8
animals	birds	Motacillidae	<i>Anthus novaeseelandiae</i>	Australasian pipit		C		2
animals	birds	Nectariniidae	<i>Dicaeum hirundinaceum</i>	mistletoebird		C		7
animals	birds	Neosittidae	<i>Daphoenositta chrysoptera</i>	varied sittella		C		6
animals	birds	Oriolidae	<i>Oriolus sagittatus</i>	olive-backed oriole		C		12
animals	birds	Oriolidae	<i>Sphecotheres vieilloti</i>	Australasian figbird		C		2
animals	birds	Pachycephalidae	<i>Pachycephala pectoralis</i>	golden whistler		C		8
animals	birds	Pachycephalidae	<i>Colluricincla harmonica</i>	grey shrike-thrush		C		11
animals	birds	Pachycephalidae	<i>Pachycephala rufiventris</i>	rufous whistler		C		4
animals	birds	Pardalotidae	<i>Pardalotus punctatus</i>	spotted pardalote		C		28/1
animals	birds	Pardalotidae	<i>Pardalotus striatus</i>	striated pardalote		C		18
animals	birds	Passeridae	<i>Passer domesticus</i>	house sparrow	Y			3
animals	birds	Pelecanidae	<i>Pelecanus conspicillatus</i>	Australian pelican		C		7
animals	birds	Petroicidae	<i>Eopsaltria australis</i>	eastern yellow robin		C		8
animals	birds	Petroicidae	<i>Microeca fascinans</i>	jacky winter		C		4
animals	birds	Petroicidae	<i>Petroica rosea</i>	rose robin		C		3
animals	birds	Phalacrocoracidae	<i>Phalacrocorax varius</i>	piebald cormorant		C		2
animals	birds	Phalacrocoracidae	<i>Phalacrocorax carbo</i>	great cormorant		C		6
animals	birds	Phalacrocoracidae	<i>Microcarbo melanoleucos</i>	little pied cormorant		C		13

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animals	birds	Phalacrocoracidae	<i>Phalacrocorax sulcirostris</i>	little black cormorant		C		9
animals	birds	Phasianidae	<i>Coturnix pectoralis</i>	stubble quail		C		2
animals	birds	Phasianidae	<i>Coturnix ypsilophora</i>	brown quail		C		2
animals	birds	Podargidae	<i>Podargus strigoides</i>	tawny frogmouth		C		4
animals	birds	Podicipedidae	<i>Podiceps cristatus</i>	great crested grebe		C		5
animals	birds	Podicipedidae	<i>Tachybaptus novaehollandiae</i>	Australasian grebe		C		11
animals	birds	Pomatostomidae	<i>Pomatostomus superciliosus</i>	white-browed babbler		C		1
animals	birds	Pomatostomidae	<i>Pomatostomus temporalis</i>	grey-crowned babbler		C		15
animals	birds	Psittacidae	<i>Trichoglossus chlorolepidotus</i>	scaly-breasted lorikeet		C		6
animals	birds	Psittacidae	<i>Trichoglossus haematodus moluccanus</i>	rainbow lorikeet		C		10
animals	birds	Psittacidae	<i>Lathamus discolor</i>	swift parrot		E	CE	1
animals	birds	Psittacidae	<i>Parvipsitta pusilla</i>	little lorikeet		C		7
animals	birds	Psittacidae	<i>Platycercus elegans</i>	crimson rosella		C		7
animals	birds	Psittacidae	<i>Platycercus eximius</i>	eastern rosella		C		24
animals	birds	Psittacidae	<i>Alisterus scapularis</i>	Australian king-parrot		C		12
animals	birds	Psittacidae	<i>Platycercus adscitus</i>	pale-headed rosella		C		3
animals	birds	Psittacidae	<i>Glossopsitta concinna</i>	musk lorikeet		C		3
animals	birds	Psittacidae	<i>Psephotus haematonotus</i>	red-rumped parrot		C		8
animals	birds	Psittacidae	<i>Aprosmictus erythropterus</i>	red-winged parrot		C		3
animals	birds	Ptilonorhynchidae	<i>Ptilonorhynchus violaceus</i>	satin bowerbird		C		11
animals	birds	Rallidae	<i>Fulica atra</i>	Eurasian coot		C		7
animals	birds	Rallidae	<i>Gallinula tenebrosa</i>	dusky moorhen		C		9
animals	birds	Recurvirostridae	<i>Himantopus himantopus</i>	black-winged stilt		C		1
animals	birds	Rhipiduridae	<i>Rhipidura leucophrys</i>	willie wagtail		C		24
animals	birds	Rhipiduridae	<i>Rhipidura albiscapa</i>	grey fantail		C		12
animals	birds	Scolopacidae	<i>Gallinago hardwickii</i>	Latham's snipe		SL		1
animals	birds	Scolopacidae	<i>Calidris acuminata</i>	sharp-tailed sandpiper		SL		1
animals	birds	Strigidae	<i>Ninox boobook</i>	southern boobook		C		3
animals	birds	Strigidae	<i>Ninox strenua</i>	powerful owl		V		1/1
animals	birds	Sturnidae	<i>Sturnus vulgaris</i>	common starling	Y			1
animals	birds	Sturnidae	<i>Acridotheres tristis</i>	common myna	Y			4
animals	birds	Threskiornithidae	<i>Platalea regia</i>	royal spoonbill		C		2
animals	birds	Threskiornithidae	<i>Threskiornis spinicollis</i>	straw-necked ibis		C		7
animals	birds	Threskiornithidae	<i>Threskiornis molucca</i>	Australian white ibis		C		1
animals	birds	Threskiornithidae	<i>Platalea flavipes</i>	yellow-billed spoonbill		C		4
animals	birds	Timaliidae	<i>Zosterops lateralis</i>	silveryeye		C		9
animals	birds	Turdidae	<i>Turdus merula</i>	common blackbird	Y	P		1
animals	birds	Turnicidae	<i>Turnix varius</i>	painted button-quail		C		2
animals	birds	Tytonidae	<i>Tyto novaehollandiae novaehollandiae</i>	masked owl (southern subspecies)		C		1
animals	insects	Nymphalidae	<i>Danaus plexippus plexippus</i>	monarch				1
animals	insects	Nymphalidae	<i>Vanessa kershawi</i>	Australian painted lady				1
animals	malacostracans	Parastacidae	<i>Cherax destructor</i>	common yabbie				1
animals	mammals	Canidae	<i>Vulpes vulpes</i>	red fox	Y			1
animals	mammals	Dasyuridae	<i>Sminthopsis murina</i>	common dunnart		C		1
animals	mammals	Dasyuridae	<i>Dasyurus maculatus maculatus</i>	spotted-tailed quoll (southern subspecies)		V	E	44

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animals	mammals	Dasyuridae	<i>Antechinus flavipes flavipes</i>	yellow-footed antechinus (south-east Queensland)		C		3
animals	mammals	Felidae	<i>Felis catus</i>	cat	Y			1
animals	mammals	Leporidae	<i>Lepus europaeus</i>	European brown hare	Y			3
animals	mammals	Leporidae	<i>Oryctolagus cuniculus</i>	rabbit	Y			3
animals	mammals	Macropodidae	<i>Macropus robustus</i>	common wallaroo		C		6
animals	mammals	Macropodidae	<i>Wallabia bicolor</i>	swamp wallaby		C		10
animals	mammals	Macropodidae	<i>Macropus parryi</i>	whiptail wallaby		C		3
animals	mammals	Macropodidae	<i>Macropus rufogriseus</i>	red-necked wallaby		C		11
animals	mammals	Macropodidae	<i>Macropus giganteus</i>	eastern grey kangaroo		C		3
animals	mammals	Molossidae	<i>Mormopterus sp.</i>					1
animals	mammals	Molossidae	<i>Tadarida australis</i>	white-striped freetail bat		C		3
animals	mammals	Muridae	<i>Mus musculus</i>	house mouse	Y			2
animals	mammals	Muridae	<i>Rattus lutreolus</i>	swamp rat		C		1
animals	mammals	Peramelidae	<i>Isoodon macrourus</i>	northern brown bandicoot		C		1
animals	mammals	Petauridae	<i>Petaurus breviceps</i>	sugar glider		C		3
animals	mammals	Phalangeridae	<i>Trichosurus vulpecula</i>	common brushtail possum		C		11
animals	mammals	Pseudocheiridae	<i>Pseudocheirus peregrinus</i>	common ringtail possum		C		2
animals	mammals	Pteropodidae	<i>Pteropus scapulatus</i>	little red flying-fox		C		2
animals	mammals	Suidae	<i>Sus scrofa</i>	pig	Y			2
animals	mammals	Tachyglossidae	<i>Tachyglossus aculeatus</i>	short-beaked echidna		SL		4
animals	mammals	Vespertilionidae	<i>Nyctophilus gouldi</i>	Gould's long-eared bat		C		1
animals	mammals	Vespertilionidae	<i>Chalinolobus morio</i>	chocolate wattled bat		C		3
animals	mammals	Vespertilionidae	<i>Nyctophilus sp.</i>					1
animals	mammals	Vespertilionidae	<i>Vespadelus sp.</i>					3
animals	mammals	Vespertilionidae	<i>Vespadelus darlingtoni</i>	large forest bat		C		10
animals	mammals	Vespertilionidae	<i>Vespadelus regulus</i>	southern forest bat		C		4
animals	mammals	Vespertilionidae	<i>Chalinolobus gouldii</i>	Gould's wattled bat		C		1
animals	mammals	Vespertilionidae	<i>Vespadelus vulturnus</i>	little forest bat		C		3
animals	ray-finned fishes	Ambassidae	<i>Ambassis agassizii</i>	Agassiz's glassfish				2
animals	ray-finned fishes	Atherinidae	<i>Craterocephalus stercusmuscarum</i>	flyspecked hardyhead				4
animals	ray-finned fishes	Clupeidae	<i>Nematalosa erebi</i>	bony bream				4
animals	ray-finned fishes	Cyprinidae	<i>Carassius auratus</i>	goldfish	Y			2
animals	ray-finned fishes	Melanotaeniidae	<i>Melanotaenia fluviatilis</i>	Murray River rainbowfish				2
animals	ray-finned fishes	Plotosidae	<i>Tandanus tandanus</i>	freshwater catfish				6
animals	ray-finned fishes	Retropinnidae	<i>Retropinna semoni</i>	Australian smelt				2
animals	reptiles	Agamidae	<i>Amphibolurus muricatus</i>	jacky lizard		C		1
animals	reptiles	Agamidae	<i>Intellagama lesueurii</i>	eastern water dragon		C		2
animals	reptiles	Agamidae	<i>Pogona barbata</i>	bearded dragon		C		2
animals	reptiles	Agamidae	<i>Diporiphora nobbi</i>	nobbi		C		2
animals	reptiles	Carphodactylidae	<i>Uvidicolus sphyrurus</i>	border thick-tailed gecko		C	V	1
animals	reptiles	Chelidae	<i>Emydura macquarii macquarii</i>	Murray turtle		C		1
animals	reptiles	Chelidae	<i>Chelodina longicollis</i>	eastern snake-necked turtle		C		1
animals	reptiles	Chelidae	<i>Chelodina expansa</i>	broad-shelled river turtle		C		1
animals	reptiles	Colubridae	<i>Dendrelaphis punctulatus</i>	green tree snake		C		1
animals	reptiles	Diplodactylidae	<i>Diplodactylus vittatus</i>	wood gecko		C		1

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animals	reptiles	Diplodactylidae	<i>Oedura tryoni</i>	southern spotted velvet gecko		C		10
animals	reptiles	Elapidae	<i>Pseudechis guttatus</i>	spotted black snake		C		1
animals	reptiles	Elapidae	<i>Demansia psammophis</i>	yellow-faced whipsnake		C		1
animals	reptiles	Elapidae	<i>Pseudechis porphyriacus</i>	red-bellied black snake		C		1
animals	reptiles	Elapidae	<i>Cryptophis nigrescens</i>	eastern small-eyed snake		C		4
animals	reptiles	Gekkonidae	<i>Heteronotia binoei</i>	Bynoe's gecko		C		5
animals	reptiles	Gekkonidae	<i>Gehyra dubia</i>	dubious dtella		C		3
animals	reptiles	Pygopodidae	<i>Lialis burtonis</i>	Burton's legless lizard		C		1
animals	reptiles	Scincidae	<i>Cryptoblepharus pulcher pulcher</i>	elegant snake-eyed skink		C		1
animals	reptiles	Scincidae	<i>Lampropholis delicata</i>	dark-flecked garden sunskink		C		1
animals	reptiles	Scincidae	<i>Lampropholis amicula</i>	friendly sunskink		C		1
animals	reptiles	Scincidae	<i>Ctenotus taeniolatus</i>	copper-tailed skink		C		4
animals	reptiles	Scincidae	<i>Morethia boulengeri</i>	south-eastern morethia skink		C		2
animals	reptiles	Scincidae	<i>Lygisaurus foliorum</i>	tree-base litter-skink		C		1
animals	reptiles	Scincidae	<i>Egernia cunninghami</i>	Cunningham's skink		C		2
animals	reptiles	Scincidae	<i>Ctenotus spaldingi</i>	straight-browed ctenotus		C		4
animals	reptiles	Scincidae	<i>Liopholis modesta</i>	eastern ranges rock-skink		C		5
animals	reptiles	Scincidae	<i>Egernia striolata</i>	tree skink		C		2
animals	reptiles	Scincidae	<i>Eulamprus quoyii</i>	eastern water skink		C		1
animals	reptiles	Scincidae	<i>Carlia vivax</i>	tussock rainbow-skink		C		1
animals	reptiles	Scincidae	<i>Saiphos equalis</i>	three-toed skink		C		1
animals	reptiles	Varanidae	<i>Varanus varius</i>	lace monitor		C		1
animals	reptiles	Varanidae	<i>Varanus gouldii</i>	sand monitor		C		1
fungi	sac fungi	Ramalinaceae	<i>Ramalina celastri subsp. celastri</i>			C		1/1
fungi	sac fungi	Ramalinaceae	<i>Ramalina inflata subsp. perpusilla</i>			C		1/1
fungi	sac fungi	Usneaceae	<i>Usnea rubicunda</i>			C		1/1
plants	conifers	Cupressaceae	<i>Callitris baileyi</i>	Bailey's cypress		NT		1/1
plants	conifers	Cupressaceae	<i>Callitris endlicheri</i>	black cypress pine		C		1/1
plants	ferns	Adiantaceae	<i>Cheilanthes sieberi subsp. sieberi</i>			C		1/1
plants	ferns	Azollaceae	<i>Azolla pinnata</i>	ferny azolla		C		1/1
plants	higher dicots	Amaranthaceae	<i>Gomphrena celosioides</i>	gomphrena weed	Y			1/1
plants	higher dicots	Amaranthaceae	<i>Amaranthus hybridus</i>	redshank	Y			1/1
plants	higher dicots	Amaranthaceae	<i>Alternanthera nana</i>	hairy joyweed		C		1/1
plants	higher dicots	Anacardiaceae	<i>Schinus molle var. areira</i>	pepper tree	Y			3/3
plants	higher dicots	Apiaceae	<i>Cyclospermum leptophyllum</i>		Y			2/2
plants	higher dicots	Apiaceae	<i>Foeniculum vulgare</i>	fennel	Y			1/1
plants	higher dicots	Apiaceae	<i>Platysace linearifolia</i>			C		1/1
plants	higher dicots	Apiaceae	<i>Torilis nodosa</i>	knotted parsley	Y			1/1
plants	higher dicots	Apocynaceae	<i>Gomphocarpus physocarpus</i>	balloon cottonbush	Y			1/1
plants	higher dicots	Araliaceae	<i>Hydrocotyle acutiloba</i>			C		1/1
plants	higher dicots	Araliaceae	<i>Hydrocotyle digitata</i>			C		1/1
plants	higher dicots	Araliaceae	<i>Trachymene incisa subsp. incisa</i>			C		1/1
plants	higher dicots	Asteraceae	<i>Bidens pilosa</i>		Y			2/2
plants	higher dicots	Asteraceae	<i>Facelis retusa</i>		Y			1/1
plants	higher dicots	Asteraceae	<i>Tagetes minuta</i>	stinking roger	Y			1/1
plants	higher dicots	Asteraceae	<i>Cirsium vulgare</i>	spear thistle	Y			1/1

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plants	higher dicots	Asteraceae	<i>Soliva sessilis</i>		Y			1/1
plants	higher dicots	Asteraceae	<i>Achillea distans</i>	tanseyleaf milfoil	Y			1/1
plants	higher dicots	Asteraceae	<i>Cotula australis</i>	common cotula			C	1/1
plants	higher dicots	Asteraceae	<i>Erigeron pusillus</i>		Y			1/1
plants	higher dicots	Asteraceae	<i>Schkuhria pinnata</i>		Y			1/1
plants	higher dicots	Asteraceae	<i>Sonchus oleraceus</i>	common sowthistle	Y			1/1
plants	higher dicots	Asteraceae	<i>Calotis cuneifolia</i>	burr daisy			C	4/4
plants	higher dicots	Asteraceae	<i>Calotis lappulacea</i>	yellow burr daisy			C	1/1
plants	higher dicots	Asteraceae	<i>Hypochaeris glabra</i>	smooth catsear	Y			1/1
plants	higher dicots	Asteraceae	<i>Brachyscome dentata</i>				C	2/2
plants	higher dicots	Asteraceae	<i>Eclipta platyglossa</i>				C	1/1
plants	higher dicots	Asteraceae	<i>Euchiton sphaericus</i>				C	1/1
plants	higher dicots	Asteraceae	<i>Glossocardia bidens</i>	native cobbler's pegs			C	1/1
plants	higher dicots	Asteraceae	<i>Vittadinia muelleri</i>				C	1/1
plants	higher dicots	Asteraceae	<i>Centaurea melitensis</i>	Maltese cockspur	Y			1/1
plants	higher dicots	Asteraceae	<i>Coreopsis lanceolata</i>		Y			1/1
plants	higher dicots	Asteraceae	<i>Craspedia variabilis</i>				C	1/1
plants	higher dicots	Asteraceae	<i>Erigeron bonariensis</i>		Y			1/1
plants	higher dicots	Asteraceae	<i>Erigeron sumatrensis</i>		Y			1/1
plants	higher dicots	Asteraceae	<i>Gamochaeta calviceps</i>		Y			1/1
plants	higher dicots	Asteraceae	<i>Hypochaeris radicata</i>	catsear	Y			2/2
plants	higher dicots	Asteraceae	<i>Lagenophora gracilis</i>				C	1/1
plants	higher dicots	Asteraceae	<i>Taraxacum officinale</i>	dandelion	Y			1/1
plants	higher dicots	Asteraceae	<i>Xanthium occidentale</i>		Y			1/1
plants	higher dicots	Asteraceae	<i>Carduus pycnocephalus</i>		Y			1/1
plants	higher dicots	Asteraceae	<i>Cassinia quinquefaria</i>				C	1/1
plants	higher dicots	Asteraceae	<i>Cyanthillium cinereum</i>				C	1/1
plants	higher dicots	Asteraceae	<i>Hypochaeris albiflora</i>		Y			1/1
plants	higher dicots	Asteraceae	<i>Cymbonotus lawsonianus</i>	bear's ear			C	2/2
plants	higher dicots	Asteraceae	<i>Erigeron primulifolius</i>		Y			1/1
plants	higher dicots	Asteraceae	<i>Senecio quadridentatus</i>	cotton fireweed			C	1/1
plants	higher dicots	Asteraceae	<i>Sigesbeckia orientalis</i>	Indian weed			C	1/1
plants	higher dicots	Asteraceae	<i>Xerochrysum bracteatum</i>	golden everlasting daisy			C	1/1
plants	higher dicots	Asteraceae	<i>Ambrosia artemisiifolia</i>	annual ragweed	Y			1/1
plants	higher dicots	Asteraceae	<i>Triptilodiscus pygmaeus</i>				C	2/2
plants	higher dicots	Asteraceae	<i>Senecio madagascariensis</i>	fireweed	Y			2/2
plants	higher dicots	Asteraceae	<i>Chrysocephalum apiculatum</i>	yellow buttons			C	4/4
plants	higher dicots	Asteraceae	<i>Pseudognaphalium luteoalbum</i>	Jersey cudweed			C	1/1
plants	higher dicots	Asteraceae	<i>Apowollastonia spilanthes</i>				C	1/1
plants	higher dicots	Asteraceae	<i>Vittadinia dissecta</i> var. <i>hirta</i>				C	1/1
plants	higher dicots	Asteraceae	<i>Vittadinia cuneata</i> var. <i>cuneata</i>				C	1/1
plants	higher dicots	Asteraceae	<i>Vittadinia dissecta</i> var. <i>dissecta</i>				C	1/1
plants	higher dicots	Asteraceae	<i>Leucochrysum albicans</i> var. <i>albicans</i>				C	5/5
plants	higher dicots	Asteraceae	<i>Senecio pinnatifolius</i> var. <i>pinnatifolius</i>				C	3/3
plants	higher dicots	Basellaceae	<i>Anredera cordifolia</i>	Madeira vine	Y			1/1
plants	higher dicots	Boraginaceae	<i>Heliotropium amplexicaule</i>	blue heliotrope	Y			1/1

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plants	higher dicots	Brassicaceae	<i>Phlegmatospermum cochlearinum</i>				C	1/1
plants	higher dicots	Brassicaceae	<i>Lepidium africanum</i>	common peppergrass	Y			1/1
plants	higher dicots	Brassicaceae	<i>Lepidium bonariense</i>	Argentine peppergrass	Y			2/2
plants	higher dicots	Brassicaceae	<i>Capsella bursapastoris</i>	shepherd's purse	Y			1/1
plants	higher dicots	Brassicaceae	<i>Lepidium didymum</i>		Y			1/1
plants	higher dicots	Brassicaceae	<i>Sisymbrium irio</i>	london rocket	Y			1/1
plants	higher dicots	Brassicaceae	<i>Rapistrum rugosum</i>		Y			1/1
plants	higher dicots	Campanulaceae	<i>Lobelia purpurascens</i>	white root			C	1/1
plants	higher dicots	Campanulaceae	<i>Wahlenbergia communis</i>	tufted bluebell			C	1/1
plants	higher dicots	Campanulaceae	<i>Wahlenbergia fluminalis</i>	river bluebell			C	1/1
plants	higher dicots	Campanulaceae	<i>Wahlenbergia tumidifructa</i>				C	1/1
plants	higher dicots	Caprifoliaceae	<i>Lonicera japonica</i>	Japanese honeysuckle	Y			1/1
plants	higher dicots	Caryophyllaceae	<i>Scleranthus biflorus</i>	cushion plant			C	1/1
plants	higher dicots	Caryophyllaceae	<i>Stellaria leptoclada</i>				C	1/1
plants	higher dicots	Caryophyllaceae	<i>Stellaria angustifolia</i> subsp. <i>angustifolia</i>				C	1/1
plants	higher dicots	Caryophyllaceae	<i>Polycarpon tetraphyllum</i>		Y			1/1
plants	higher dicots	Caryophyllaceae	<i>Cerastium glomeratum</i>	mouse ear chickweed	Y			1/1
plants	higher dicots	Caryophyllaceae	<i>Petrorhagia dubia</i>		Y			1/1
plants	higher dicots	Caryophyllaceae	<i>Paronychia brasiliensis</i>	Brazilian whitlow	Y			3/3
plants	higher dicots	Casuarinaceae	<i>Allocasuarina luehmannii</i>	bull oak			C	1/1
plants	higher dicots	Casuarinaceae	<i>Casuarina cunninghamiana</i> subsp. <i>cunninghamiana</i>				C	1/1
plants	higher dicots	Casuarinaceae	<i>Allocasuarina littoralis</i>				C	1
plants	higher dicots	Celastraceae	<i>Denhamia bilocularis</i>				C	1/1
plants	higher dicots	Chenopodiaceae	<i>Dysphania carinata</i>				C	3/3
plants	higher dicots	Chenopodiaceae	<i>Einadia hastata</i>				C	1/1
plants	higher dicots	Chenopodiaceae	<i>Einadia trigonos</i> subsp. <i>stellulata</i>				C	2/2
plants	higher dicots	Clusiaceae	<i>Hypericum involutum</i>				C	1/1
plants	higher dicots	Clusiaceae	<i>Hypericum</i>				C	1/1
plants	higher dicots	Convolvulaceae	<i>Dichondra</i> sp. (Inglewood J.M.Dalby 86/93)				C	1/1
plants	higher dicots	Convolvulaceae	<i>Dichondra repens</i>	kidney weed			C	1/1
plants	higher dicots	Crassulaceae	<i>Bryophyllum delagoense</i>		Y			1/1
plants	higher dicots	Crassulaceae	<i>Crassula tetramera</i>				C	1/1
plants	higher dicots	Dilleniaceae	<i>Hibbertia vestita</i>				C	1/1
plants	higher dicots	Dilleniaceae	<i>Hibbertia linearis</i> var. <i>obtusifolia</i>				C	1/1
plants	higher dicots	Droseraceae	<i>Drosera hookeri</i>				C	1/1
plants	higher dicots	Ericaceae	<i>Melichrus urceolatus</i>	honey gorse			C	1/1
plants	higher dicots	Ericaceae	<i>Lissanthe strigosa</i> subsp. <i>subulata</i>				C	1/1
plants	higher dicots	Euphorbiaceae	<i>Euphorbia peplus</i>	petty spurge	Y			1/1
plants	higher dicots	Fabaceae	<i>Swainsona reticulata</i>				C	1/1
plants	higher dicots	Fabaceae	<i>Swainsona parviflora</i>				C	1/1
plants	higher dicots	Fabaceae	<i>Daviesia genistifolia</i>	broom bitter pea			C	1/1
plants	higher dicots	Fabaceae	<i>Hardenbergia violacea</i>				C	2/2
plants	higher dicots	Fabaceae	<i>Swainsona brachycarpa</i>				C	1/1
plants	higher dicots	Fabaceae	<i>Swainsona galegifolia</i>	smooth Darling pea			C	2/2
plants	higher dicots	Fabaceae	<i>Templetonia stenophylla</i>	leafy templetonia			C	1/1
plants	higher dicots	Fabaceae	<i>Medicago minima</i> var. <i>minima</i>		Y			1/1

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plants	higher dicots	Fabaceae	<i>Trifolium repens</i> var. <i>repens</i>	white clover	Y			1/1
plants	higher dicots	Fabaceae	<i>Glycine clandestina</i> var. <i>sericea</i>			C		2/2
plants	higher dicots	Fabaceae	<i>Zornia dyctiocarpa</i> var. <i>dyctiocarpa</i>			C		1/1
plants	higher dicots	Fabaceae	<i>Indigofera australis</i> subsp. <i>australis</i>			C		1/1
plants	higher dicots	Fabaceae	<i>Daviesia elliptica</i> x <i>D.mimosoides</i> subsp. <i>mimosoides</i>			C		1/1
plants	higher dicots	Fabaceae	<i>Glycine</i>			C		1/1
plants	higher dicots	Fabaceae	<i>Trifolium dubium</i>	yellow sucking clover	Y			1/1
plants	higher dicots	Fabaceae	<i>Desmodium varians</i>	slender tick trefoil		C		1/1
plants	higher dicots	Fabaceae	<i>Lotus subbiflorus</i>		Y			1/1
plants	higher dicots	Fabaceae	<i>Daviesia elliptica</i>			C		1/1
plants	higher dicots	Fabaceae	<i>Hovea heterophylla</i>			C		1/1
plants	higher dicots	Fabaceae	<i>Indigofera baileyi</i>			C		1/1
plants	higher dicots	Fabaceae	<i>Medicago polymorpha</i>	burr medic	Y			2/2
plants	higher dicots	Fabaceae	<i>Ornithopus pinnatus</i>	slender serradella	Y			1/1
plants	higher dicots	Fabaceae	<i>Trifolium glomeratum</i>	clustered clover	Y			1/1
plants	higher dicots	Gentianaceae	<i>Centaurium tenuiflorum</i>		Y			1/1
plants	higher dicots	Geraniaceae	<i>Geranium solanderi</i> var. <i>solanderi</i>	native geranium		C		1/1
plants	higher dicots	Geraniaceae	<i>Erodium cicutarium</i>	common crowfoot	Y			1/1
plants	higher dicots	Goodeniaceae	<i>Velleia paradoxa</i>	spur velleia		C		3/3
plants	higher dicots	Goodeniaceae	<i>Scaevola albida</i>			C		1/1
plants	higher dicots	Goodeniaceae	<i>Goodenia hederacea</i> subsp. <i>hederacea</i>			C		1/1
plants	higher dicots	Goodeniaceae	<i>Goodenia glabra</i>			C		2/2
plants	higher dicots	Haloragaceae	<i>Myriophyllum</i>			C		1/1
plants	higher dicots	Haloragaceae	<i>Myriophyllum crispatum</i>			C		1/1
plants	higher dicots	Haloragaceae	<i>Haloragis heterophylla</i>	rough raspweed		C		1/1
plants	higher dicots	Lamiaceae	<i>Prunella vulgaris</i>	self heal	Y			2/2
plants	higher dicots	Lamiaceae	<i>Mentha satureioides</i>	native pennyroyal		C		1/1
plants	higher dicots	Lamiaceae	<i>Ajuga australis</i>	Australian bugle		C		1/1
plants	higher dicots	Lamiaceae	<i>Salvia verbenaca</i>	wild sage	Y			1/1
plants	higher dicots	Lamiaceae	<i>Marrubium vulgare</i>	white horehound	Y			1/1
plants	higher dicots	Lamiaceae	<i>Scutellaria humilis</i>	dwarf skullcap		C		1/1
plants	higher dicots	Lamiaceae	<i>Prostanthera nivea</i>			C		1/1
plants	higher dicots	Lamiaceae	<i>Lamium amplexicaule</i>	deadnettle	Y			1/1
plants	higher dicots	Lentibulariaceae	<i>Utricularia dichotoma</i>	fairy aprons		C		1/1
plants	higher dicots	Lythraceae	<i>Lythrum hyssopifolia</i>	lesser loosestrife		C		1/1
plants	higher dicots	Malvaceae	<i>Malva parviflora</i>	small-flowered mallow	Y			1/1
plants	higher dicots	Malvaceae	<i>Pavonia hastata</i>	pink pavonia	Y			1/1
plants	higher dicots	Mimosaceae	<i>Acacia neriifolia</i>	pechey wattle		C		2/2
plants	higher dicots	Mimosaceae	<i>Acacia falciformis</i>	broad-leaved hickory		C		1/1
plants	higher dicots	Mimosaceae	<i>Acacia sparsiflora</i>			C		1/1
plants	higher dicots	Mimosaceae	<i>Acacia podalyriifolia</i>	Queensland silver wattle		C		1/1
plants	higher dicots	Mimosaceae	<i>Acacia deanei</i> subsp. <i>deanei</i>			C		1/1
plants	higher dicots	Mimosaceae	<i>Acacia leucoclada</i> subsp. <i>argentifolia</i>			C		1/1
plants	higher dicots	Mimosaceae	<i>Acacia viscidula</i>			C		2/2
plants	higher dicots	Mimosaceae	<i>Acacia implexa</i>	lightwood		C		2/2
plants	higher dicots	Mimosaceae	<i>Acacia melvillei</i>			C		1/1

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plants	higher dicots	Mimosaceae	<i>Acacia decora</i>	pretty wattle		C		2/2
plants	higher dicots	Moraceae	<i>Ficus rubiginosa forma rubiginosa</i>			C		1/1
plants	higher dicots	Myrsinaceae	<i>Lysimachia arvensis</i>		Y			3/3
plants	higher dicots	Myrtaceae	<i>Sannantha angusta</i>			C		1/1
plants	higher dicots	Myrtaceae	<i>Eucalyptus youmanii</i>	Youman's stringybark		C		1/1
plants	higher dicots	Myrtaceae	<i>Angophora floribunda</i>	rough-barked apple		C		1/1
plants	higher dicots	Myrtaceae	<i>Eucalyptus andrewsii</i>	New England blackbutt		C		1/1
plants	higher dicots	Myrtaceae	<i>Eucalyptus baueriana</i>			C		1/1
plants	higher dicots	Myrtaceae	<i>Eucalyptus moluccana</i>	gum-topped box		C		2/2
plants	higher dicots	Myrtaceae	<i>Melaleuca paludicola</i>			C		2/2
plants	higher dicots	Myrtaceae	<i>Eucalyptus caliginosa</i>	broad-leaved stringybark		C		1/1
plants	higher dicots	Myrtaceae	<i>Eucalyptus interstans</i>			C		3/3
plants	higher dicots	Myrtaceae	<i>Eucalyptus melliodora</i>	yellow box		C		2/2
plants	higher dicots	Myrtaceae	<i>Leptospermum brevipes</i>			C		1/1
plants	higher dicots	Myrtaceae	<i>Eucalyptus biturbinata</i>			C		5/5
plants	higher dicots	Myrtaceae	<i>Eucalyptus eugenioides</i>			C		3/3
plants	higher dicots	Myrtaceae	<i>Leptospermum brachyandrum</i>	weeping tea-tree		C		2/2
plants	higher dicots	Myrtaceae	<i>Eucalyptus crebra x E.populnea</i>			C		1/1
plants	higher dicots	Myrtaceae	<i>Melaleuca williamsii subsp. fletcheri</i>			V	V	1/1
plants	higher dicots	Myrtaceae	<i>Eucalyptus amplifolia subsp. sessiliflora</i>	cabbage gum		C		1/1
plants	higher dicots	Myrtaceae	<i>Eucalyptus tereticornis subsp. tereticornis</i>			C		4/4
plants	higher dicots	Myrtaceae	<i>Eucalyptus crebra</i>	narrow-leaved red ironbark		C		3/3
plants	higher dicots	Myrtaceae	<i>Eucalyptus albens</i>	white box		C		1/1
plants	higher dicots	Myrtaceae	<i>Eucalyptus conica</i>	fuzzy box		C		2/2
plants	higher dicots	Oleaceae	<i>Notelaea microcarpa var. microcarpa</i>			C		1/1
plants	higher dicots	Oleaceae	<i>Ligustrum sinense</i>	small-leaved privet	Y			1/1
plants	higher dicots	Oleaceae	<i>Ligustrum vulgare</i>		Y			2/2
plants	higher dicots	Oleaceae	<i>Notelaea microcarpa var. velutina</i>			C		2/2
plants	higher dicots	Onagraceae	<i>Oenothera tetraptera</i>	four-winged evening primrose	Y			1/1
plants	higher dicots	Onagraceae	<i>Epilobium billardierianum</i>			C		1/1
plants	higher dicots	Onagraceae	<i>Oenothera stricta subsp. stricta</i>		Y			2/2
plants	higher dicots	Onagraceae	<i>Ludwigia peploides subsp. montevidensis</i>			C		1/1
plants	higher dicots	Oxalidaceae	<i>Oxalis exilis</i>			C		2/2
plants	higher dicots	Passifloraceae	<i>Passiflora subpeltata</i>	white passion flower	Y			1/1
plants	higher dicots	Phyllanthaceae	<i>Phyllanthus virgatus</i>			C		1/1
plants	higher dicots	Phyllanthaceae	<i>Poranthera microphylla</i>	small poranthera		C		1/1
plants	higher dicots	Pittosporaceae	<i>Pittosporum angustifolium</i>			C		2/2
plants	higher dicots	Plantaginaceae	<i>Plantago lanceolata</i>		Y			3/3
plants	higher dicots	Plantaginaceae	<i>Nuttallanthus canadensis</i>		Y			1/1
plants	higher dicots	Plantaginaceae	<i>Gratiola pedunculata</i>			C		1/1
plants	higher dicots	Plantaginaceae	<i>Veronica arvensis</i>	wandering speedwell	Y			1/1
plants	higher dicots	Plantaginaceae	<i>Veronica plebeia</i>	trailing speedwell		C		1/1
plants	higher dicots	Plantaginaceae	<i>Plantago debilis</i>	shade plantain		C		2/2
plants	higher dicots	Polygalaceae	<i>Polygala japonica</i>			C		1/1
plants	higher dicots	Polygonaceae	<i>Persicaria decipiens</i>	slender knotweed		C		1/1
plants	higher dicots	Polygonaceae	<i>Acetosella vulgaris</i>	sheep sorrel	Y			1/1

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plants	higher dicots	Polygonaceae	<i>Persicaria lapathifolia</i>	pale knotweed		C		1/1
plants	higher dicots	Polygonaceae	<i>Polygonum plebeium</i>	small knotweed		C		1/1
plants	higher dicots	Polygonaceae	<i>Rumex brownii</i>	swamp dock		C		1/1
plants	higher dicots	Portulacaceae	<i>Portulaca oleracea</i>	pigweed	Y			2/2
plants	higher dicots	Rhamnaceae	<i>Cryptandra longistaminea</i>			C		1/1
plants	higher dicots	Rosaceae	<i>Acaena ovina</i>			C		4/4
plants	higher dicots	Rosaceae	<i>Malus pumila</i>		Y			1/1
plants	higher dicots	Rosaceae	<i>Rosa rubiginosa</i>	sweet briar	Y			1/1
plants	higher dicots	Rosaceae	<i>Pyracantha angustifolia</i>		Y			1/1
plants	higher dicots	Rosaceae	<i>Prunus persica</i> var. <i>persica</i>		Y			2/2
plants	higher dicots	Rosaceae	<i>Rubus anglocandicans</i>	blackberry	Y			4/4
plants	higher dicots	Rosaceae	<i>Prunus armeniaca</i>		Y			1/1
plants	higher dicots	Rubiaceae	<i>Asperula conferta</i>			C		2/2
plants	higher dicots	Rubiaceae	<i>Galium leptogonium</i>			C		3/3
plants	higher dicots	Rubiaceae	<i>Richardia stellaris</i>		Y			1/1
plants	higher dicots	Rubiaceae	<i>Opercularia diphylla</i>			C		1/1
plants	higher dicots	Rutaceae	<i>Zieria smithii</i>			C		1/1
plants	higher dicots	Scrophulariaceae	<i>Myoporum acuminatum</i>	coastal boobialla		C		1/1
plants	higher dicots	Scrophulariaceae	<i>Verbascum virgatum</i>	twiggy mullein	Y			1/1
plants	higher dicots	Scrophulariaceae	<i>Eremophila debilis</i>	winter apple		C		1/1
plants	higher dicots	Solanaceae	<i>Solanum chenopodioides</i>	whitetip nightshade	Y			1/1
plants	higher dicots	Solanaceae	<i>Solanum linearifolium</i>			C		2/2
plants	higher dicots	Solanaceae	<i>Solanum nodiflorum</i>		Y			1/1
plants	higher dicots	Solanaceae	<i>Solanum nemophilum</i>			C		1/1
plants	higher dicots	Solanaceae	<i>Solanum amblymerum</i>			C		3/3
plants	higher dicots	Solanaceae	<i>Solanum opacum</i>	green berry nightshade		C		2/2
plants	higher dicots	Stackhousiaceae	<i>Stackhousia monogyna</i>	creamy candles		C		1/1
plants	higher dicots	Stackhousiaceae	<i>Stackhousia muricata</i>			C		1/1
plants	higher dicots	Stylidiaceae	<i>Stylidium paniculatum</i>			C		1/1
plants	higher dicots	Thymelaeaceae	<i>Pimelea strigosa</i>			C		3/3
plants	higher dicots	Thymelaeaceae	<i>Pimelea linifolia</i> subsp. <i>linifolia</i>			C		2/2
plants	higher dicots	Urticaceae	<i>Urtica urens</i>	small nettle	Y			1/1
plants	higher dicots	Verbenaceae	<i>Verbena incompta</i>		Y			1/1
plants	higher dicots	Verbenaceae	<i>Verbena bonariensis</i>	purpletop	Y			1/1
plants	higher dicots	Verbenaceae	<i>Glandularia aristigera</i>		Y			2/2
plants	higher dicots	Verbenaceae	<i>Lantana camara</i>	lantana	Y			4/4
plants	higher dicots	Violaceae	<i>Viola betonicifolia</i> subsp. <i>betonicifolia</i>			C		1/1
plants	lower dicots	Papaveraceae	<i>Argemone mexicana</i>	prickly poppy	Y			1/1
plants	lower dicots	Ranunculaceae	<i>Clematis glycinoides</i>			C		1/1
plants	lower dicots	Ranunculaceae	<i>Ranunculus sessiliflorus</i> var. <i>sessiliflorus</i>			C		1/1
plants	lower dicots	Ranunculaceae	<i>Ranunculus meristus</i>			C		1/1
plants	monocots	Agavaceae	<i>Yucca aloifolia</i>		Y			1/1
plants	monocots	Asphodelaceae	<i>Asphodelus fistulosus</i>	asphodel	Y			1/1
plants	monocots	Asphodelaceae	<i>Bulbine bulbosa</i>	golden lily		C		1/1
plants	monocots	Commelinaceae	<i>Murdannia graminea</i>	murdannia		C		1/1
plants	monocots	Cyperaceae	<i>Cyperus gracilis</i>			C		1/1

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plants	monocots	Cyperaceae	<i>Cyperus sanguinolentus</i>			C		1/1
plants	monocots	Cyperaceae	<i>Carex gaudichaudiana</i>			C		1/1
plants	monocots	Cyperaceae	<i>Fimbristylis dichotoma</i>	common fringe-rush		C		1/1
plants	monocots	Cyperaceae	<i>Carex inversa</i>	knob sedge		C		3/3
plants	monocots	Cyperaceae	<i>Gahnia aspera</i>			C		1/1
plants	monocots	Cyperaceae	<i>Carex appressa</i>			C		1/1
plants	monocots	Cyperaceae	<i>Carex polyantha</i>			C		1/1
plants	monocots	Cyperaceae	<i>Carex breviculmis</i>			C		1/1
plants	monocots	Cyperaceae	<i>Cyperus eragrostis</i>		Y			1/1
plants	monocots	Cyperaceae	<i>Eleocharis atricha</i>	tuber spikerush		C		1/1
plants	monocots	Cyperaceae	<i>Cyperus brevifolius</i>	Mullumbimby couch	Y			1/1
plants	monocots	Cyperaceae	<i>Isolepis hookeriana</i>			C		1/1
plants	monocots	Eriocaulaceae	<i>Eriocaulon scariosum</i>			C		1/1
plants	monocots	Hemerocallidaceae	<i>Dianella longifolia</i> var. <i>stenophylla</i>			C		1/1
plants	monocots	Hypoxidaceae	<i>Hypoxis pratensis</i> var. <i>tuberculata</i>			C		1/1
plants	monocots	Iridaceae	<i>Tritonia gladiolaris</i>		Y			1/1
plants	monocots	Iridaceae	<i>Sisyrinchium</i> sp. (Peregrin P.R.Sharpe 4970)	scourweed	Y			1/1
plants	monocots	Johnsoniaceae	<i>Tricoryne elatior</i>	yellow autumn lily		C		2/2
plants	monocots	Juncaceae	<i>Juncus cognatus</i>		Y			1/1
plants	monocots	Juncaceae	<i>Juncus bufonius</i>	toad rush	Y			1/1
plants	monocots	Juncaceae	<i>Juncus remotiflorus</i>			C		1/1
plants	monocots	Juncaceae	<i>Juncus continuus</i>			C		1/1
plants	monocots	Juncaceae	<i>Juncus planifolius</i>			C		1/1
plants	monocots	Juncaginaceae	<i>Cycnogeton multifructus</i>			C		1/1
plants	monocots	Laxmanniaceae	<i>Eustrephus latifolius</i>	wombat berry		C		1/1
plants	monocots	Laxmanniaceae	<i>Lomandra filiformis</i> subsp. <i>filiformis</i>			C		1/1
plants	monocots	Laxmanniaceae	<i>Arthropodium fimbriatum</i>			C		1/1
plants	monocots	Orchidaceae	<i>Spiranthes sinensis</i>	austral ladies tresses		C		1/1
plants	monocots	Orchidaceae	<i>Diuris sulphurea</i>	tiger orchid		C		1/1
plants	monocots	Poaceae	<i>Eragrostis brownii</i>	Brown's lovegrass		C		2/2
plants	monocots	Poaceae	<i>Eragrostis curvula</i>		Y			4/4
plants	monocots	Poaceae	<i>Paspalum dilatatum</i>	paspalum	Y			1/1
plants	monocots	Poaceae	<i>Paspalum distichum</i>	water couch		C		1/1
plants	monocots	Poaceae	<i>Sacciolepis indica</i>	Indian cupscale grass		C		1/1
plants	monocots	Poaceae	<i>Setaria parviflora</i>	slender pigeon grass	Y			1/1
plants	monocots	Poaceae	<i>Austrostipa setacea</i>	corkscrew grass		C		1/1
plants	monocots	Poaceae	<i>Axonopus compressus</i>		Y			2/2
plants	monocots	Poaceae	<i>Cenchrus longisetus</i>		Y			1/1
plants	monocots	Poaceae	<i>Digitaria ramularis</i>			C		1/1
plants	monocots	Poaceae	<i>Lolium rigidum</i>	annual ryegrass	Y			1/1
plants	monocots	Poaceae	<i>Panicum simile</i>			C		1/1
plants	monocots	Poaceae	<i>Poa sieberiana</i>			C		1/1
plants	monocots	Poaceae	<i>Aristida vagans</i>			C		1/1
plants	monocots	Poaceae	<i>Eleusine indica</i>	crowsfoot grass	Y			1/1
plants	monocots	Poaceae	<i>Panicum effusum</i>			C		1/1
plants	monocots	Poaceae	<i>Setaria surgens</i>			C		1/1

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plants	monocots	Poaceae	<i>Chloris truncata</i>			C		4/4
plants	monocots	Poaceae	<i>Digitaria minima</i>			C		1/1
plants	monocots	Poaceae	<i>Sarga leiocladum</i>			C		1/1
plants	monocots	Poaceae	<i>Vulpia bromoides</i>	squirrel tail fescue	Y			1/1
plants	monocots	Poaceae	<i>Dichelachne parva</i>			C		1/1
plants	monocots	Poaceae	<i>Digitaria diffusa</i>			C		1/1
plants	monocots	Poaceae	<i>Sporobolus creber</i>			C		1/1
plants	monocots	Poaceae	<i>Anthosachne scabra</i>			C		1/1
plants	monocots	Poaceae	<i>Aristida personata</i>			C		1/1
plants	monocots	Poaceae	<i>Bothriochloa macra</i>	redleg grass		C		1/1
plants	monocots	Poaceae	<i>Eleusine tristachya</i>	goose grass	Y			2/2
plants	monocots	Poaceae	<i>Entolasia marginata</i>	bordered panic		C		1/1
plants	monocots	Poaceae	<i>Eragrostis elongata</i>			C		2/2
plants	monocots	Poaceae	<i>Imperata cylindrica</i>	blady grass		C		1/1
plants	monocots	Poaceae	<i>Paspalidium distans</i>	shotgrass		C		2/2
plants	monocots	Poaceae	<i>Urochloa panicoides</i>		Y			1/1
plants	monocots	Poaceae	<i>Axonopus fissifolius</i>		Y			1/1
plants	monocots	Poaceae	<i>Cymbopogon refractus</i>	barbed-wire grass		C		1/1
plants	monocots	Poaceae	<i>Digitaria violascens</i>	bastard summergrass	Y			1/1
plants	monocots	Poaceae	<i>Rytidosperma tenuius</i>			C		2/2
plants	monocots	Poaceae	<i>Sporobolus africanus</i>	Parramatta grass	Y			1/1
plants	monocots	Poaceae	<i>Sporobolus elongatus</i>			C		1/1
plants	monocots	Poaceae	<i>Andropogon virginicus</i>	whiskey grass	Y			1/1
plants	monocots	Poaceae	<i>Anthoxanthum odoratum</i>	sweet vernal grass	Y			1/1
plants	monocots	Poaceae	<i>Cenchrus clandestinus</i>		Y			1/1
plants	monocots	Poaceae	<i>Cenchrus purpurascens</i>			C		1/1
plants	monocots	Poaceae	<i>Dichelachne micrantha</i>	shorthair plumegrass		C		2/2
plants	monocots	Poaceae	<i>Echinochloa crus-galli</i>	barnyard grass	Y			1/1
plants	monocots	Poaceae	<i>Dactyloctenium radulans</i>	button grass		C		2/2
plants	monocots	Poaceae	<i>Echinopogon intermedius</i>	erect hedgehog grass		C		1/1
plants	monocots	Poaceae	<i>Eragrostis leptostachya</i>			C		1/1
plants	monocots	Poaceae	<i>Rytidosperma bipartitum</i>			C		1/1
plants	monocots	Poaceae	<i>Austrostipa verticillata</i>	slender bamboo grass		C		2/2
plants	monocots	Poaceae	<i>Lachnagrostis filiformis</i>			C		2/2
plants	monocots	Poaceae	<i>Rytidosperma longifolium</i>			C		1/1
plants	monocots	Poaceae	<i>Dichelachne inaequiglumis</i>			C		1/1
plants	monocots	Poaceae	<i>Poa sieberiana</i> var. <i>hirtella</i>			C		1/1
plants	monocots	Poaceae	<i>Austrostipa rudis</i> subsp. <i>rudis</i>			C		2/2
plants	monocots	Poaceae	<i>Cynodon dactylon</i> var. <i>dactylon</i>		Y			1/1
plants	monocots	Poaceae	<i>Echinopogon nutans</i> var. <i>nutans</i>			C		1/1
plants	monocots	Poaceae	<i>Poa sieberiana</i> var. <i>sieberiana</i>			C		1/1
plants	monocots	Poaceae	<i>Setaria pumila</i> subsp. <i>subtesselata</i>		Y			1/1
plants	monocots	Poaceae	<i>Microlaena stipoides</i> var. <i>stipoides</i>			C		2/2
plants	monocots	Poaceae	<i>Rytidosperma racemosum</i> var. <i>obtusatum</i>			C		1/1
plants	monocots	Poaceae	<i>Rytidosperma racemosum</i> var. <i>racemosum</i>			C		2/2
plants	monocots	Poaceae	<i>Echinopogon caespitosus</i> var. <i>caespitosus</i>	hedgehog grass		C		2/2

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
plants	monocots	Poaceae	<i>Poa annua</i>	annual poa	Y			1/1
plants	monocots	Poaceae	<i>Briza minor</i>	shivery grass	Y			1/1
plants	monocots	Poaceae	<i>Briza maxima</i>	quaking grass	Y			1/1
plants	monocots	Poaceae	<i>Chloris gayana</i>	rhodes grass	Y			1/1
plants	monocots	Poaceae	<i>Holcus lanatus</i>	yorkshire fog	Y			3/3
plants	monocots	Poaceae	<i>Lolium perenne</i>	perennial ryegrass	Y			1/1
plants	monocots	Poaceae	<i>Bromus catharticus</i>	prairie grass	Y			1/1
plants	monocots	Poaceae	<i>Dactylis glomerata</i>	cocksfoot	Y			2/2
plants	monocots	Poaceae	<i>Digitaria ciliaris</i>	summer grass	Y			1/1
plants	monocots	Poaceae	<i>Echinopogon ovatus</i>			C		1/1
plants	monocots	Potamogetonaceae	<i>Potamogeton tricarlinatus</i>	floating pondweed		C		1/1
plants	monocots	Typhaceae	<i>Typha domingensis</i>			C		2/2
plants		Streptophyceae	<i>Nitella</i>			C		1/1
protists	blue-green algae	Cyanophyceae	<i>Leibleinia epiphytica</i>			C		1
protists	blue-green algae	Cyanophyceae	<i>Phormidium retzii</i>			C		2
protists	blue-green algae	Cyanophyceae	<i>Anabaena ambigua</i>			C		1
protists	blue-green algae	Cyanophyceae	<i>Jaaginema angustissimum</i>			C		1
protists	blue-green algae	Cyanophyceae	<i>Phormidium aerugineo-caeruleum</i>			C		1
protists	diatoms	Bacillariophyceae	<i>Achnantheidium minutissimum</i>			C		1
protists	diatoms	Bacillariophyceae	<i>Cyclotella pseudostelligera</i>			C		2
protists	diatoms	Bacillariophyceae	<i>Fragilaria capucina</i> var. <i>rumpens</i>			C		1
protists	diatoms	Bacillariophyceae	<i>Tryblionella levidensis</i>			C		1
protists	diatoms	Bacillariophyceae	<i>Nitzschia subacicularis</i>			C		2
protists	diatoms	Bacillariophyceae	<i>Cyclotella meneghiniana</i>			C		1
protists	diatoms	Bacillariophyceae	<i>Nitzschia liebetruithii</i>			C		1
protists	diatoms	Bacillariophyceae	<i>Rhopalodia brebissonii</i>			C		1
protists	diatoms	Bacillariophyceae	<i>Craticula molestiformis</i>			C		1
protists	diatoms	Bacillariophyceae	<i>Tabularia fasciculata</i>			C		1
protists	diatoms	Bacillariophyceae	<i>Nitzschia palea</i>			C		4
protists	diatoms	Bacillariophyceae	<i>Nitzschia recta</i>			C		2
protists	diatoms	Bacillariophyceae	<i>Nitzschia sigma</i>			C		1
protists	diatoms	Bacillariophyceae	<i>Melosira varians</i>			C		5
protists	diatoms	Bacillariophyceae	<i>Nitzschia lacuum</i>			C		1
protists	diatoms	Bacillariophyceae	<i>Achnanthes exigua</i>			C		1
protists	diatoms	Bacillariophyceae	<i>Amphora pediculus</i>			C		1
protists	diatoms	Bacillariophyceae	<i>Navicula gregaria</i>			C		1
protists	diatoms	Bacillariophyceae	<i>Navicula viridula</i>			C		4
protists	diatoms	Bacillariophyceae	<i>Sellaphora pupula</i>			C		1
protists	diatoms	Bacillariophyceae	<i>Surirella angusta</i>			C		1
protists	diatoms	Bacillariophyceae	<i>Frustulia vulgaris</i>			C		1
protists	diatoms	Bacillariophyceae	<i>Nitzschia gracilis</i>			C		3
protists	diatoms	Bacillariophyceae	<i>Gomphonema lagenula</i>			C		2
protists	diatoms	Bacillariophyceae	<i>Gomphonema parvulum</i>			C		2
protists	diatoms	Bacillariophyceae	<i>Navicula elginensis</i>			C		2
protists	diatoms	Bacillariophyceae	<i>Navicula menisculus</i>			C		1
protists	diatoms	Bacillariophyceae	<i>Nitzschia dissipata</i>			C		2

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
protists	diatoms	Bacillariophyceae	<i>Nitzschia fonticola</i>			C		1
protists	diatoms	Bacillariophyceae	<i>Nitzschia frustulum</i>			C		1
protists	diatoms	Bacillariophyceae	<i>Nitzschia perminuta</i>			C		1
protists	diatoms	Bacillariophyceae	<i>Eolimna subminuscula</i>			C		2
protists	diatoms	Bacillariophyceae	<i>Navicula schroeterii</i>			C		2
protists	diatoms	Bacillariophyceae	<i>Nitzschia filiformis</i>			C		2
protists	diatoms	Bacillariophyceae	<i>Nitzschia intermedia</i>			C		1
protists	diatoms	Bacillariophyceae	<i>Sellaphora seminulum</i>			C		2
protists	diatoms	Bacillariophyceae	<i>Amphora coffeaeformis</i>			C		1
protists	diatoms	Bacillariophyceae	<i>Aulacoseira granulata</i>			C		2
protists	diatoms	Bacillariophyceae	<i>Cyclotella stelligera</i>			C		1
protists	diatoms	Bacillariophyceae	<i>Gomphonema acuminatum</i>			C		2
protists	diatoms	Bacillariophyceae	<i>Synedra ulna</i>			C		1
protists	diatoms	Bacillariophyceae	<i>Eolimna minima</i>			C		1
protists	diatoms	Bacillariophyceae	<i>Cymbella tumida</i>			C		1
protists	diatoms	Bacillariophyceae	<i>Epithemia sorex</i>			C		1
protists	diatoms	Bacillariophyceae	<i>Fallacia tenera</i>			C		1
protists	diatoms	Bacillariophyceae	<i>Navicula veneta</i>			C		1
protists	diatoms	Bacillariophyceae	<i>Nitzschia inconspicua</i>			C		1
protists	diatoms	Bacillariophyceae	<i>Stephanodiscus parvus</i>			C		1
protists	green algae	Chlorophyceae	<i>Oedogonium</i>			C		2
protists	red algae	Rhodophyceae	<i>Compsopogon coeruleus</i>			C		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).

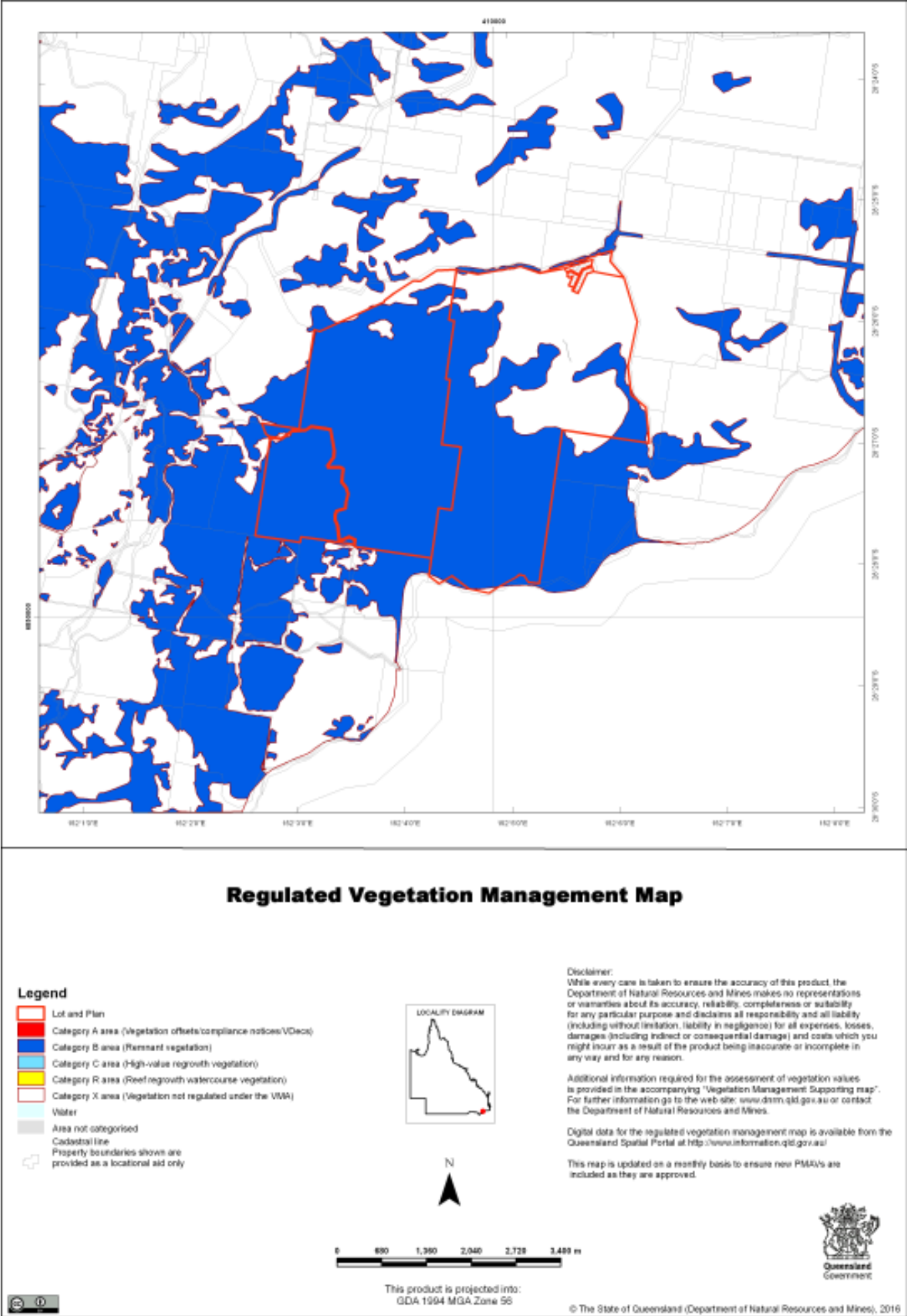
This number is output as 99999 if it equals or exceeds this value. The second number located after the / indicates the number of specimen records for the taxon.

This number is output as 999 if it equals or exceeds this value.

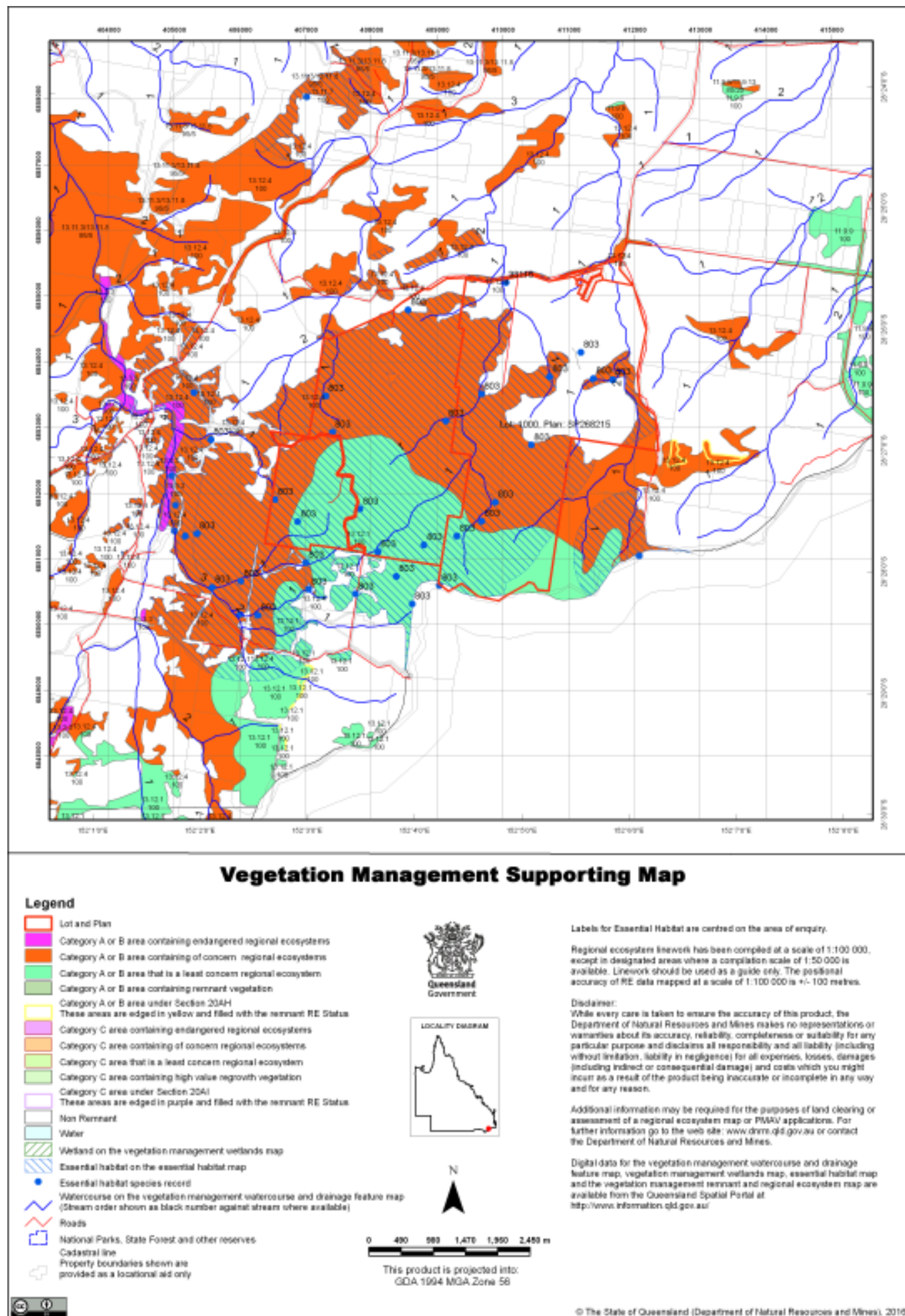
Appendix C

Regulated Vegetation Management Map

5.1 Regulated vegetation management map



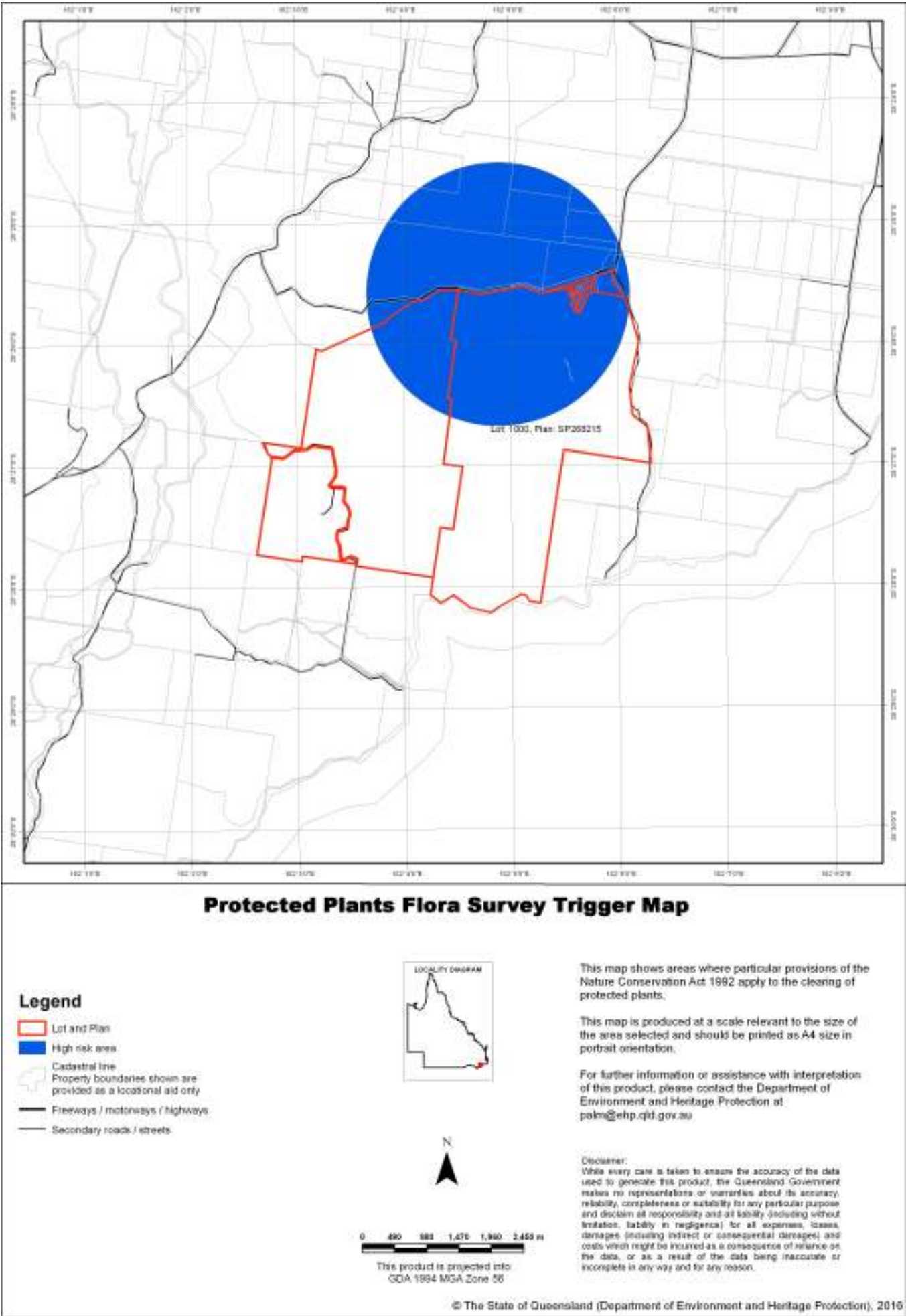
5.2 Vegetation management supporting map



Appendix D

Protected Plants Flora Survey Trigger Map

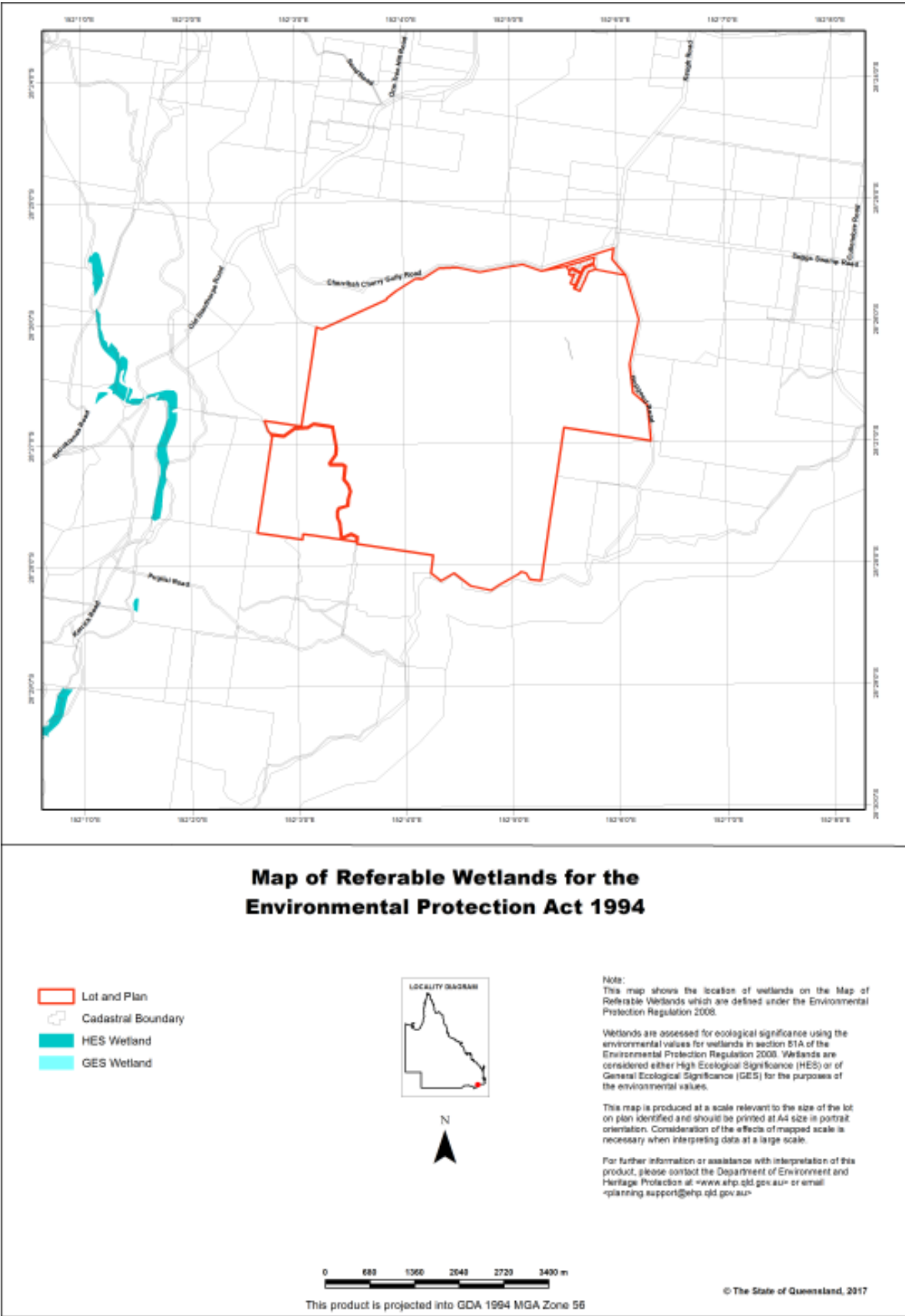
5.4 Protected plants map



Appendix E

Map of Referable Wetlands





Appendix F

Flora species recorded within the study area

Table F1: Flora species identified during the field assessment

Family	Scientific Name	Common Name	Status		13.12.2			13.12.4		
			NC Act	EPBC Act	S1	S2	Track	S3	Track	Dam
Mimosaceae	<i>Acacia granitica</i>	<i>ncn</i>	LC	NL	1	1-3				
Mimosaceae	<i>Acacia implexa</i>	Hickory Wattle	LC	NL				(4)-5		
Mimosaceae	<i>Acacia irrorata</i>	Green Wattle	LC	NL				1 (t)		
Mimosaceae	<i>Acacia leiocalyx</i> subsp. <i>leiocalyx</i>	Early Flowering Black Wattle	LC	NL				+ (t)		
Mimosaceae	<i>Acacia leuococlada</i> subsp. <i>argenteifolia</i>	Northern Silver Wattle	LC	NL				+ -2 (t)		
Mimosaceae	<i>Acacia neriifolia</i>	Oleander Wattle	LC	NL	3-4	2		4-5		
Mimosaceae	<i>Acacia venulosa</i>	Veiny Wattle	LC	NL	2					
Mimosaceae	<i>Acacia viscidula</i>	Sticky Wattle	LC	NL		4-5		1 (t)		
Rosaceae	<i>Acaena ovina</i>	Sheep Burr	LC	NL				+ (t)		
Apiaceae	<i>Actinotus gibbonsii</i>	Dwarf Flannel Flower	LC	NL	2-3					
Casuarinaceae	<i>Allocasuarina torulosa</i>	Forest Oak	LC	NL	2					
Rhamnaceae	<i>Alphitonia excelsa</i>	Red Ash	LC	NL				1 (t)		
Loranthaceae	<i>Amyema miquelii</i>	Bronze Mistletoe	LC	NL		1				
Myrsinaceae	<i>Anagallis arvensis</i>	Scarlet Pimpernel	*	-					1	
Myrtaceae	<i>Angophora floribunda</i>	Rough-barked Apple	LC	NL	1-3	1-2(e)		1		
Poaceae	<i>Aristida calycina</i> var. <i>calycina</i>	Dark Wiregrass	LC	NL	1			2		
Poaceae	<i>Aristida caput-medusae</i>	Many-headed Wire Grass	LC	NL	2-4	1		1-3		
Poaceae	<i>Aristida ramosa</i>	Purple Wiregrass	LC	NL	2-4			2-3		
Poaceae	<i>Aristida warburgii</i>	<i>ncn</i>	LC	NL		2		1 (t)		
Polypodiaceae	<i>Asplenium polyodon</i>	<i>ncn</i>	LC	NL		1				

Family	Scientific Name	Common Name	Status		13.12.2			13.12.4		
			NC Act	EPBC Act	S1	S2	Track	S3	Track	Dam
Poaceae	<i>Austrostipa rudis</i> subsp. <i>rudis</i>	Veined Spear Grass	LC	NL	2-3	4				
Poaceae	<i>Austrostipa scabra</i> var. <i>scabra</i>	Speargrass	LC	NL				+ (t)		
Poaceae	<i>Axonopus affinis</i>	Narrow-leaved Carpet Grass	*	-						1
Proteaceae	<i>Banksia integrifolia</i> subsp. <i>monticola</i>	(a) Banksia	LC	NL				2		
Cyperaceae	<i>Baumea articulata</i>	Jointed Twig-rush	LC	NL						
Euphorbiaceae	<i>Bertya rosmarinifolia</i>	<i>ncn</i>	LC	NL		1				
Asteraceae	<i>Bidens pilosa</i>	Cobbler's Pegs	*	-	1	+		1(t)		
Pittosporaceae	<i>Billardiera scandens</i> var. <i>scandens</i>	Hairy Apple Berry	LC	NL	1					
Poaceae	<i>Bothriochloa macra</i>	Red Grass	LC	NL						2 (e)
Malvaceae	<i>Brachychiton populneus</i>	Kurrajong	LC	NL	2	1(e)		1		
Asteraceae	<i>Brachyscome stuartii</i>	<i>ncn</i>	LC	NL						
Phyllanthaceae	<i>Breynia oblongifolia</i>	Coffee Bush	LC	NL	2	2		2		
Pittosporaceae	<i>Bursaria spinosa</i>	Prickly Pine	LC	NL	2	2		1		
Portulacaceae	<i>Calandrinia pickeringii</i>	<i>ncn</i>	LC	NL	1	1(t)				
Cupressaceae	<i>Callitris endlicheri</i>	Black Cypress	LC	NL	1-4	3				
Orchidaceae	<i>Calochilus gracillimus</i>	Purplish Beard Orchid	LC	NL	1(t)					
Asteraceae	<i>Calotis cuneifolia</i>	Purple Burr Daisy	LC	NL		+				
Asteraceae	<i>Calotis lappulacea</i>	Yellow Burr Daisy	LC	NL						
Asteraceae	<i>Cassinia quinquefaria</i>	<i>ncn</i>	LC	NL	2					
Vitaceae	<i>Cayratia clematidea</i>	Native Grape	LC	NL	1	1				
Apiaceae	<i>Centella asiatica</i>	Indian Pennywort	LC	NL						
Characeae	<i>Chara muelleri</i>	<i>ncn</i>	LC	NL						2

Family	Scientific Name	Common Name	Status		13.12.2			13.12.4		
			NC Act	EPBC Act	S1	S2	Track	S3	Track	Dam
Pteridaceae	<i>Cheilanthes sieberi</i> subsp. <i>sieberi</i>	Mulga Fern	LC	NL	2	1		1		
Asteraceae	<i>Chrysocephalum apiculatum</i>	Billy Buttons	LC	NL		1		2		
Ranunculaceae	<i>Clematis aristata</i>	Old Man's Beard	LC	NL		+				
Polygalaceae	<i>Comesperma retusum</i>	Mountain Milkwort	LC	NL		+				
Commelinaceae	<i>Commelina cyanea</i>	Native Wandering Jew	LC	NL	1	1				
Asteraceae	<i>Conyza</i> spp.	Fleabane(s)	*	-					1	
Poaceae	<i>Cymbopogon refractus</i>	Barbed Wire Grass	LC	NL	2	3		2-3		
Cyperaceae	<i>Cyperus difformis</i>	Dirty Dora	LC	NL						2
Cyperaceae	<i>Cyperus flaccidus</i>	<i>ncn</i>	LC	NL						2
Cyperaceae	<i>Cyperus sanguinolentus</i>	<i>ncn</i>	LC	NL						3
Cyperaceae	<i>Cyperus</i> sp. (n-r)	<i>ncn</i>	LC	NL			1 (tk)			
Fabaceae	<i>Desmodium brachypodium</i>	Large Tick-trefoil	LC	NL		1				
Fabaceae	<i>Desmodium gunnii</i>	Tick Tre-foil	LC	NL	+	2				
Fabaceae	<i>Desmodium rhytidophyllum</i>	Hairy Tre-foil	LC	NL		2				
Phormiaceae	<i>Dianella brevipedunculata</i>	Flax Lily	LC	NL		3		2		
Phormiaceae	<i>Dianella caerulea</i>	Blueberry Flax-lily	LC	NL	1					
Phormiaceae	<i>Dianella longifolia</i>	<i>ncn</i>	LC	NL				+		
Poaceae	<i>Dichelachne crinita</i>	Long-haired Plumegrass	LC	NL				2		
Poaceae	<i>Dichelachne micrantha</i>	Short-haired Plumegrass	LC	NL	2					
Convolvulaceae	<i>Dichondra repens</i>	Kidney Weed	LC	NL	1	2		2		
Poaceae	<i>Digitaria brownii</i>	Cotton Finger Panic	LC	NL						
Poaceae	<i>Digitaria ramularis</i>	<i>ncn</i>	LC	NL	2	2		1		
Orchidaceae	<i>Dipodium variegatum</i>	Hyacinth Orchid	LC	NL		+				

Family	Scientific Name	Common Name	Status		13.12.2			13.12.4		
			NC Act	EPBC Act	S1	S2	Track	S3	Track	Dam
Sapindaceae	<i>Dodonaea viscosa</i> subsp. <i>angustifolia</i>	Sticky Hop Bush	LC	NL				1 (t)		
Droseraceae	<i>Drosera peltata</i>	Sheild Sundew	LC	NL						
Droseraceae	<i>Drosera spathulata</i>	Spoon-leaved Sundew	LC	NL			1 (tk)			
Poaceae	<i>Echinochloa crus-galli</i>	Barnyard Grass	*	-						1
Poaceae	<i>Echinopogon caespitosus</i> var. <i>caespitosus</i>	Bushy Hedgehog Grass	LC	NL	2	2-3		2		
Poaceae	<i>Ehrharta erecta</i>	Veldtgrass	LC	NL		2-3				
Plantaginaceae	<i>Elatine gratioloides</i>	Waterwort	LC	NL						1
Cyperaceae	<i>Eleocharis dulcis</i>	Water Chestnut	LC	NL						4
Cyperaceae	<i>Eleocharis plana</i>	<i>ncn</i>	LC	NL						1-3
Cyperaceae	<i>Eleocharis pusilla</i>	<i>ncn</i>	LC	NL						3
Poaceae	<i>Entolasia stricta</i>	Wiry Panic	LC	NL	2-4	3-4		1		
Poaceae	<i>Eragrostis brownii</i>	Brown's Lovegrass	LC	NL	2	2(e)		2		
Poaceae	<i>Eragrostis curvula</i>	African Lovegrass	*	-			+3 (tk)		+3	
Poaceae	<i>Eragrostis leptostachya</i>	Paddock Lovegrass	LC	NL	2					
Myrtaceae	<i>Eucalyptus caliginosa</i>	Broad-leaved White Mahogany	LC	NL		2(e)		3-4		
Myrtaceae	<i>Eucalyptus crebra</i>	Narrow-leaved Red Ironbark	LC	NL		+				
Myrtaceae	<i>Eucalyptus interstans</i>	<i>ncn</i>	LC	NL	1-4	2(e)		+3 (t)		
Myrtaceae	<i>Eucalyptus laevopinea</i>	Silvertop Stringybark	LC	NL	1-4	4-5				
Myrtaceae	<i>Eucalyptus melliodora</i>	Yellow Box	LC	NL						
Myrtaceae	<i>Eucalyptus prava</i>	Orange Gum	LC	NL	1-3	3-5				

Family	Scientific Name	Common Name	Status		13.12.2			13.12.4		
			NC Act	EPBC Act	S1	S2	Track	S3	Track	Dam
Myrtaceae	<i>Eucalyptus tereticornis</i> subsp. <i>tereticornis</i>	Queensland Blue Gum	LC	NL				4-5		
Myrtaceae	<i>Eucalyptus youmanii</i>	Youman's Stringybark	LC	NL		2				
Santalaceae	<i>Exocarpos cupressiformis</i>	Native Cherry	LC	NL	2			1		
Moraceae	<i>Ficus obliqua</i>	Small-leaved Fig	LC	NL	2	+				
Cyperaceae	<i>Fimbristylis velata</i>	<i>ncn</i>	LC	NL						
Cyperaceae	<i>Gahnia aspera</i>	Rough Saw Sedge	LC	NL	1-4	3		3		
Rubiaceae	<i>Galium migrans</i>	<i>ncn</i>	LC	NL		1				
Luzuriagaceae	<i>Geitonoplesium cymosum</i>	Scrambling Lily	LC	NL	1	2				
Geraniaceae	<i>Geranium neglectum</i>	<i>ncn</i>	LC	NL		1				
Geraniaceae	<i>Geranium solanderi</i> var. <i>solanderi</i>	Austral Crane's-bill	LC	NL		1				
Verbenaceae	<i>Glandularia aristigera</i>	Mayne's Pest	*	-					+ -3	3 (e)
Asteraceae	<i>Glossocardia bidens</i>	Cobbler's Tack	LC	NL				+ (t)		
Fabaceae	<i>Glycine clandestina</i>	Twining Glycine	LC	NL	1					
Fabaceae	<i>Glycine tabacina</i>	Glycine Pea	LC	NL		2				
Fabaceae	<i>Glycine tomentella</i>	Woolly Glycine	LC	NL		1				
Asteraceae	<i>Gnaphalium coarctata</i>	(a) cudweed	*	-			1 (tk)			
Asteraceae	<i>Gnaphalium pensylvanica</i>	Cudweed	*	-			1 (tk)			
Apocynaceae	<i>Gomphocarpus physocarpus</i>	Balloon Cotton Bush	*	-			+ (tk)			
Haloragaceae	<i>Gonocarpus effusus</i>	<i>ncn</i>	LC	NL	1	2		+		
Haloragaceae	<i>Gonocarpus teucroides</i>	<i>ncn</i>	LC	NL	1					
Goodeniaceae	<i>Goodenia bellidifolia</i>	<i>ncn</i>	LC	NL				+ (t)		
Goodeniaceae	<i>Goodenia glabra</i>	<i>ncn</i>	LC	NL	1	1				
Haloragaceae	<i>Haloragis heterophylla</i>	<i>ncn</i>	LC	NL				+		
Fabaceae	<i>Hardenbergia violacea</i>	False Sarsaparilla	LC	NL	1					

Family	Scientific Name	Common Name	Status		13.12.2			13.12.4		
			NC Act	EPBC Act	S1	S2	Track	S3	Track	Dam
Boraginaceae	<i>Heliotropium amplexicaule</i>	Blue Heliotrope	*	-					+ -3	
Dilleniaceae	<i>Hibbertia obtusifolia</i>	ncn	LC	NL	1	+				
Asteraceae	<i>Hypochaeris radicata</i>	Flatweed	*	-				+(t)	+ -2	
Hypoxidaceae	<i>Hypoxis hygrometrica</i> var. <i>villosisepala</i>	ncn	LC	NL		+		+		
Lobeliaceae	<i>Isotoma anethifolia</i>	ncn	LC	NL	2					
Linderniaceae	<i>Isotoma fluviatilis</i>	Blus Star Creeper	LC	NL						2
Fabaceae	<i>Jacksonia scoparia</i>	Dogwood	LC	NL		+ -2		2		
Oleaceae	<i>Jasminum volubile</i>	Stiff Jasmine	LC	NL	2	2		1		
Juncaceae	<i>Juncus bufonius</i>	ncn	LC	NL						1
Juncaceae	<i>Juncus homocaulis</i>	ncn	LC	NL		1		1 (t)		
Juncaceae	<i>Juncus polyanthemus</i>	ncn	LC	NL				1		
Poaceae	<i>Lachnagrostis filiformis</i>	Blown Grass	LC	NL						3
Asteraceae	<i>Lagenophora gracilis</i>	ncn	LC	NL		2				
Verbenaceae	<i>Lantana camara</i>	Lantana	* (R)	-	2-3	2		2		
Anthericaceae	<i>Laxmannia gracilis</i>	Wiry Lily	LC	NL		1				
Myrtaceae	<i>Leptospermum brevipes</i>	Slender Tree-tree	LC	NL				+ -4 (t)		
Myrtaceae	<i>Leptospermum microcarpum</i>	Small-fruited Tea Tree	LC	NL	3-5	+ -3		+ -2 (t)		
Lobeliaceae	<i>Lobelia alata</i>	ncn	LC	NL	1					
Lobeliaceae	<i>Lobelia andrewsii</i>	ncn	LC	NL	2	1				
Lobeliaceae	<i>Lobelia purpurescens</i>	White Root	LC	NL	2	2			1	
Xanthorrhoeaceae	<i>Lomandra longifolia</i>	Spiny-headed Mat-rush	LC	NL	2-3					
Xanthorrhoeaceae	<i>Lomandra multiflora</i>	Many-flowered Mat-rush	LC	NL		1		1		
Myrtaceae	<i>Lophostemon confertus</i>	Brush Box	LC	NL	1-4					

Family	Scientific Name	Common Name	Status		13.12.2			13.12.4		
			NC Act	EPBC Act	S1	S2	Track	S3	Track	Dam
Onagraceae	<i>Ludwigia peploides subsp. montevidensis</i>	Water Primrose	LC	NL						3
Lamiaceae	<i>Mentha diemenica</i>	Slender Mint	LC	NL		2				
Poaceae	<i>Microlaena stipoides</i>	Weeping Grass	LC	NL	2-4			3-4		
Fabaceae	<i>Mirbelia pungens</i>	Prickly Mirbelia	LC	NL	2					
Loganiaceae	<i>Mitrasacme paludosa</i>	<i>ncn</i>	LC	NL		2				
Loganiaceae	<i>Mitrasacme sp.</i>	<i>ncn</i>	LC	NL	1					
Loranthaceae	<i>Muellerina eucalyptoides</i>	Creeping Mistletoe	LC	NL	1					
Commelinaceae	<i>Murdannia graminea</i>	Grass Lilly	LC	NL	1					
Haloragaceae	<i>Myriophyllum crispatum</i>	Water Mil-foil	*	-						3-4
Oleaceae	<i>Notelaea microcarpa subsp. velutina</i>	Native Olive	LC	NL	+-2					
Loranthaceae	<i>Notothixos cornifolius</i>	Kurrajong Mistletoe	LC	NL	2					
Nymphaeaceae	<i>Nymphoides geminata</i>	Entire Marshwort	LC	NL						3
Ophioglossaceae	<i>Ophioglossum nudicaule var. nudicaule</i>	<i>ncn</i>	LC	NL	1					
Poaceae	<i>Oplismenus aemulus</i>	Beard Grass	LC	NL	1	1				
Cactaceae	<i>Opuntia tomentosa</i>	Velvet Tree Pear	* (P)	-				+		
Oxalidaceae	<i>Oxalis chnoodes</i>	<i>ncn</i>	LC	NL		+		1		
Asteraceae	<i>Ozothamnus diosmifolius</i>	Rice Flower	LC	NL	1	1				
Poaceae	<i>Panicum obseptum</i>	<i>ncn</i>	LC	NL						2
Poaceae	<i>Panicum simile</i>	Two-coloured Panic	LC	NL	2			1		
Apocynaceae	<i>Parsonsia straminea</i>	Monkey Rope	LC	NL	2					
Poaceae	<i>Paspalum dilatatum</i>	Paspalum	*	-						3 (e)
Passifloraceae	<i>Passiflora aurantia</i>	Native Passionfruit	LC	NL		1				
Polygonaceae	<i>Persicaria decipiens</i>	Knotweed	LC	NL						3
Philydraceae	<i>Philydrum lanuginosum</i>	Woolly Waterlily	LC	NL						1

Family	Scientific Name	Common Name	Status		13.12.2			13.12.4		
			NC Act	EPBC Act	S1	S2	Track	S3	Track	Dam
Phyllanthaceae	<i>Phyllanthus similis</i>	<i>ncn</i>	LC	NL	1					
Thymelaeaceae	<i>Pimelea linifolia</i>	Slender Rice Flower	LC	NL		1				
Thymelaeaceae	<i>Pimelea neo-anglica</i>	Poison Pimelea	LC	NL	1					
Pittosporaceae	<i>Pittosporum undulatum</i>	Sweet Pittosporum	LC	NL	1	+				
Lamiaceae	<i>Plectranthus graveolens</i>	<i>ncn</i>	LC	NL	+-2					
Lamiaceae	<i>Plectranthus parviflora</i>	<i>ncn</i>	LC	NL	1	1				
Lamiaceae	<i>Plectranthus suaveolens</i>	<i>ncn</i>	LC	NL	2					
Asteraceae	<i>Podolepis neglecta</i>	<i>ncn</i>	LC	NL				1 (t)		
Rhamnaceae	<i>Pomaderris ligustrina</i> subsp. <i>latifolia</i>	<i>ncn</i>	LC	NL		1				
Rubiaceae	<i>Pomax umbellata</i>	<i>ncn</i>	LC	NL	2			2		
Phyllanthaceae	<i>Poranthera microphylla</i>	<i>ncn</i>	LC	NL	1					
Portulacaceae	<i>Portulaca bicolor</i>	<i>ncn</i>	LC	NL	2					
Potamogetonaceae	<i>Potamogeton javanicus</i>	(a) Pondweed	LC	NL						2
Potamogetonaceae	<i>Potamogeton tricarinatus</i>	Floating Pondweed	LC	NL						2
Lamiaceae	<i>Prostanthera nivea</i> var. <i>nivea</i>	Snowy Minty Bush	LC	NL				+		
Rubiaceae	<i>Psydrax odorata</i> forma <i>buxifolia</i>	Stiff-leaved Canthium	LC	NL	1					
Rubiaceae	<i>Psydrax odorata</i> forma <i>odorata</i>	Shiny-leaved Canthium	LC	NL		1				
Dennstaedtiaceae	<i>Pteridium esculentum</i>	Common Bracken	LC	NL						
Polypodiaceae	<i>Pyrrosia rupestris</i>	Rock Felt Fern	LC	NL		1				
Rubiaceae	<i>Richardia brasiliensis</i>	Mexican Clover	*	-					2	
Rosaceae	<i>Rubus anglocandicans</i>	Blackberry	* (R)	-	+					
Poaceae	<i>Rytidosperma longifolium</i>	Long-leaved Wallaby Grass	LC	NL	+	1		1		

Family	Scientific Name	Common Name	Status		13.12.2			13.12.4		
			NC Act	EPBC Act	S1	S2	Track	S3	Track	Dam
Poaceae	<i>Rytidosperma racemosum</i> var. <i>racemosum</i>	Slender Wallaby Grass	LC	NL	2	1		2		
Poaceae	<i>Sarga leiocladum</i>	Wild Sorghum	LC	NL				1 (t)		
Gentianaceae	<i>Schenkia australis</i>	Spiked Centaury	LC	NL						2 (e)
Cyperaceae	<i>Schoenoplectus triangularis</i>	Triangular Clubrush	LC	NL						3
Asteraceae	<i>Senecio madagascariensis</i>	Fireweed	* (R)	-						1 (e)
Asteraceae	<i>Sigesbeckia orientalis</i>	Indianhead	*	-			+ (tk)			
Solanaceae	<i>Solanum nemophilum</i>	<i>ncn</i>	LC	NL	2	2		1		
Solanaceae	<i>Solanum stelligerum</i>	Devil's Needles	LC	NL	1					
Typhaceae	<i>Sparganium subglobosum</i>	Floating Burr-reed	LC	NL						2
Poaceae	<i>Sporobolus elongatus</i>	Slender Rat's Tail Grass	LC	NL				1		
Poaceae	<i>Sporobolus fertilis</i>	Giant Parramatta Grass	* (R)	-					+ -2	
Menispermaceae	<i>Stephania japonica</i> var. <i>discolor</i>	Snake Vine	LC	NL		2		1		
Stylidiaceae	<i>Stylidium laricifolium</i>	Giant Trigger-plant	LC	NL	2	2				
Phormiaceae	<i>Stypandra glauca</i>	Nodding Blue Lily	LC	NL	2	1				
Poaceae	<i>Themeda triandra</i>	Kangaroo Grass	LC	NL	2	2		1		
Anthericaceae	<i>Thysanotus tuberosus</i>	Common Fringe Lily	LC	NL	1	1		+		
Apiaceae	<i>Trachymene incisa</i>	Wild Parsnip	LC	NL	3	1				
Ulmaceae	<i>Trema tomentosa</i>	Native Peach	LC	NL				+ (t)		
Anthericaceae	<i>Tricoryne elatior</i>	Yellow Rush-lily	LC	NL	1	+		1		
Poaceae	<i>Tripogon loliiformis</i>	Five-minute Grass	LC	NL	2-3	+ -2(e)				
Plantaginaceae	<i>Veronica calycina</i>	Trailing speedwell	LC	NL	1			1		
Asteraceae	<i>Vittadinia cuneata</i>	<i>ncn</i>	LC	NL	1					

Family	Scientific Name	Common Name	Status		13.12.2			13.12.4		
			NC Act	EPBC Act	S1	S2	Track	S3	Track	Dam
Asteraceae	<i>Vittadinia diffusa</i>	<i>ncn</i>	LC	NL		2				
Asteraceae	<i>Vittadinia muelleri</i>	<i>ncn</i>	LC	NL				2		
Campanulaceae	<i>Wahlenbergia communis</i>	Tufted Bluebell	LC	NL				1 (t)		
Campanulaceae	<i>Wahlenbergia planiflora</i>	(a) Bluebell	LC	NL	1					
Rutaceae	<i>Zieria smithii</i>	Sandfly Bush	LC	NL	1	1				
Totals	205				84	82	7	64	9	28

Appendix G

Fauna species recorded within the study area

Table G1: Fauna species identified during the field surveys

Common Name	Scientific Name	Status		ML	ML Dam	Road
		NC Act	EPBC Act			
Amphibians						
Broad-palmed Rocket Frog	Litoria latopalmata	LC	NL		x (h)	
Desert Tree Frog	Litoria rubella	LC	NL	x (h)		x (h)
Eastern Sedge Frog	Litoria fallax	LC	NL		x (h)	
Emerald-spotted Tree Frog	Litoria peronii	LC	NL		x (h)	
Green Tree Frog	Litoria caerulea	LC	NL	1 (sp)		
Ornate Burrowing Frog	Platyplectrum ornatum	LC	NL	1 (sp)		
Sandy Gungan	Uperoleia fusca	LC	NL		x (h)	
Spotted Marsh Frog	Limnodynastes tasmaniensis	LC	NL	x (h)		
striped Marsh Frog	Limnodynastes peronii	LC	NL	x (h)		
Birds						
Australian Hobby	Falco longipennis	LC	NL	x		
Australian King-Parrot	Alisterus scapularis	LC	NL			x
Australian Magpie	Cracticus tibicen	LC	NL			x
Australian Owlet-nightjar	Aegotheles cristatus	LC	NL	x (h)		
Australian Raven	Corvus coronoides	LC	NL	x		x
Black-faced Cuckoo-shrike	Coracina novaehollandiae	LC	NL	x		x
Brown Honeyeater	Lichmera indistincta	LC	NL	x		
Brown Thornbill	Acanthiza pusilla	LC	NL	x		
Brush Cuckoo	Cacomantis variolosus	LC	NL	x		x
Channel-billed Cuckoo	Scythrops novaehollandiae	LC	NL			x
Cicadabird	Coracina tenuirostris	LC	NL			x
Crested Pigeon	Ocyphaps lophotes	LC	NL			x
Dollarbird	Eurystomus orientalis	LC	NL			x
Eastern Koel	Eudynamys orientalis	LC	NL	x		
Eastern Rosella	Platycercus eximius	LC	NL			x
Eastern Spinebill	Acanthorhynchus tenuirostris	LC	NL	x		
Eastern Whipbird	Psophodes olivaceus	LC	NL	x		
Eastern Yellow Robin	Eopsaltria australis	LC	NL	x		
Galah	Eolophus roseicapillus	LC	NL			x
Grey Fantail	Rhipidura albiscapa	LC	NL			x
Grey Shrike-thrush	Colluricincla harmonica	LC	NL			x
Grey-crowned Babbler	Pomatostomus temporalis	LC	NL			x

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Common Name	Scientific Name	Status		ML	ML Dam	Road
		NC Act	EPBC Act			
Laughing Kookaburra	<i>Dacelo novaeguineae</i>	LC	NL	x		x
Leaden Flycatcher	<i>Myiagra rubecula</i>	LC	NL			x
Little Eagle	<i>Hieraaetus morphnoides</i>	LC	NL			x
Magpie-lark	<i>Grallina cyanoleuca</i>	LC	NL			x
Mistletoebird	<i>Dicaeum hirundinaceum</i>	LC	NL	x		
Noisy Friarbird	<i>Philemon corniculatus</i>	LC	NL	x		
Noisy Miner	<i>Manorina melanocephala</i>	LC	NL	x		x
Olive-backed Oriole	<i>Oriolus sagittatus</i>	LC	NL	x		
Pale-headed Rosella	<i>Platycercus adscitus</i>	LC	NL	x		
Pheasant Coucal	<i>Centropus phasianinus</i>	LC	NL	x		
Pied Currawong	<i>Strepera graculina</i>	LC	NL	x		x
Rainbow Bee-eater	<i>Merops ornatus</i>	LC	NL			x
Rainbow Lorikeet	<i>Trichoglossus haematodus</i>	LC	NL			x
Red-browed Finch	<i>Neochmia temporalis</i>	LC	NL	x		
Red-rumped Parrot	<i>Psephotus haematonotus</i>	LC	NL			x
Rufous Whistler	<i>Pachycephala rufiventris</i>	LC	NL			x
Southern Boobook	<i>Ninox novaeseelandiae</i>	LC	NL			x
Speckled Warbler	<i>Chthonicola sagittata</i>	LC	NL	x		
Sulphur-crested Cockatoo	<i>Cacatua galerita</i>	LC	NL	x		
Superb Fairy-wren	<i>Malurus cyaneus</i>	LC	NL			x
Tawny Frogmouth	<i>Podargus strigoides</i>	LC	NL	x (sp)		x (sp)
Variegated Fairy-wren	<i>Malurus lamberti</i>	LC	NL	x		
Wedge-tailed Eagle	<i>Aquila audax</i>	LC	NL	x		
White-eared Honeyeater	<i>Lichenostomus leucotis</i>	LC	NL			x
White-throated Gerygone	<i>Gerygone albogularis</i>	LC	NL			x
White-throated Nightjar	<i>Eurostopodus mystacalis</i>	LC	NL	x (h)		
White-throated Treecreeper	<i>Cormobates leucophaea</i>	LC	NL	x		
White-winged Chough	<i>Corcorax melanorhamphos</i>	LC	NL			x
Willie Wagtail	<i>Rhipidura leucophrys</i>	LC	NL			x
Wonga Pigeon	<i>Leucosarcia picata</i>	LC	NL	x		
Yellow-rumped Thornbill	<i>Acanthiza chrysorrhoa</i>	LC	NL			x
Yellow-tailed Black-Cockatoo	<i>Calyptorhynchus funereus</i>	LC	NL			x
Mammals		LC	NL			
Cat	<i>Felis catus</i>	* (R)	NL	x (ir)		

Common Name	Scientific Name	Status		ML	ML Dam	Road
		NC Act	EPBC Act			
Common Brushtail Possum	<i>Trichosurus vulpecula</i>	LC	NL			16 (sp)
Koala	<i>Phascolarctos cinereus</i>	V	V	x (h, sp)		x (sc)
little red flying-fox	<i>Pteropus scapulatus</i>	LC	NL			x (sp)
Pig	<i>Sus scrofa</i>	* (R)	NL	x (st)		
Rabbit	<i>Oryctolagus cuniculus</i>	* (R)	NL			x (sp)
Red-necked Wallaby	<i>Macropus rufogriseus</i>	LC	NL			x (sp)
Rufous Bettong	<i>Aepyprymnus rufescens</i>	LC	NL			x (sp)
Short-beaked Echidna	<i>Tachyglossus aculeatus</i>	SLC	NL	X (ir)		x (st)
Spotted-tailed Quoll	<i>Dasyurus maculatus</i>	E	V	X (ir)		
Squirrel Glider	<i>Petaurus norfolcensis</i>	LC	NL			x (sp)
Swamp Wallaby	<i>Wallabia bicolor</i>	LC	NL	x		
Whiptail Wallaby	<i>Macropus parryi</i>	LC	NL			x (sp)
<i>Reptiles</i>						
Black-headed Monitor	<i>Varanus tristis</i>	LC	NL			x
Burton's Legless Lizard	<i>Lialis burtonis</i>	LC	NL	x (sp)		
Bynoe's Gecko	<i>Heteronotia binoei</i>	LC	NL	4 (sp)		1 (as)
Common Blue-tongued Skink	<i>Tiliqua scincoides</i>	LC	NL			x
Copper-tailed Skink	<i>Ctenotus taeniolatus</i>	LC	NL	x		
Eastern Bearded Dragon	<i>Pogona barbata</i>	LC	NL			x
Eastern Crevice Skink	<i>Egernia mcphreei</i>	LC	NL	x		x
Eastern Small-eyed Snake	<i>Cryptophis nigrescens</i>	LC	NL			x
Eastern Striped Skink	<i>Ctenotus robustus</i>	LC	NL	x		
Eastern Water Dragon	<i>Physignathus lesueurii</i>	LC	NL			x
Boarder Thick-tailed Gecko	<i>Uvidicolus sphyrurus</i>	NT	NL	2 (sp)		
Lace Monitor	<i>Varanus varius</i>	LC	NL	x (ir)		
Nobbi Dragon	<i>Diporiphora nobbi</i>	LC	NL			x
Northern Dtella	<i>Gehyra australis</i>	LC	NL	2 (sp)		

Common Name	Scientific Name	Status		ML	ML Dam	Road
		NC Act	EPBC Act			
South-eastern Morethia Skink	<i>Morethia boulengeri</i>	LC	NL			x
Southern Spotted Velvet Gecko	<i>Oedura tryoni</i>	LC	NL	x (sp)		
Timid Slider	<i>Lerista timida</i>	LC	NL	x		
ncn	<i>Gehyra versicolor</i>	LC	NL	x (sp)		

1. EPBC Act - *Environment Protection and Biodiversity Conservation Act 1999*; NC Act - *Nature Conservation Act 1992*
2. MLA = Mining Lease Area
3. V = Vulnerable; NT = Near Threatened; SL - Special Least Concern; LC - Least Concern; NL - Not Listed; R = Restricted pest animal under the Biosecurity Act 2014; * = Exotic species
4. as = Active Search; h = Heard; ir = Infrared camera; sc = Scratches; st = scats; sp = Spotlight; x = Present

Appendix H

Likelihood of occurrence assessment

Table H1: Likelihood of significant flora and fauna to occur in the study area

Common Name (Species Name)	EPBC Act Status ¹	Record Source ²	Habitat Preferences	Likelihood to occur in the project area
Plants				
<i>Dichanthium setosum</i> (no common name)	V	PMST	<p>Distribution: This grass species is known from inland New South Wales and Queensland. In Queensland the species has been recorded in the Leichardt, Morton, North Kennedy and Port Curtis regions.</p> <p>Habitat preferences: It grows on heavy basaltic black soils and red-brown loams with clay subsoil. It is often found in moderately disturbed areas such as cleared woodland, grassy roadside remnant and highly disturbed pasture (DotE 2016a).</p> <p>Notable features: This is a perennial grass that commences growing in spring, flowers in summer and becomes dormant in late autumn (DotE 2016a).</p> <p>Dispersal mode: Wind and mammal dispersed – awned seeds assist with wind movement and attachment to mammals.</p> <p>Nearest record: This species has not been recorded within 10 km of the study area</p>	<p>Low: The underlying geology and soils within the study area are not suitable for this species. Further there are no areas of natural grassland within or adjacent to the study area.</p> <p>This species was not recorded during the study area.</p>
Small Snake Orchid (<i>Diuris pedunculata</i>)	E	PMST	<p>Distribution: The Small Snake-orchid is endemic to NSW. It was originally found scattered from Tenterfield, south to the Hawkesbury River, but is now mainly found on the New England Tablelands, around Armidale, Uralla, Guyra and Ebor (DotEE 2016a).</p> <p>Habitat preferences: This species prefers moist areas, and has been found growing in open areas of dry sclerophyll forests with grassy understories, in riparian forests (including gallery rainforests), swamp forests, in sub-alpine grasslands and herbfields (DotEE 2016a). The species is not often found in dense forests or heavily shrubby areas (DotEE 2016a). Soils are well-structured red-brown clay</p>	<p>Moderate: The potential exists for this species to occur within moister areas in woodland at the base of the granite outcrop.</p> <p>The study area is outside the known distribution for this species. There are no records for this species within 10 km of the study area and Orogen (2008) did not record this species within the eastern portion of the Cherrabah property.</p> <p>However, the potential for this to occur within the study area cannot be fully discounted as the current flora surveys</p>

Common Name (Species Name)	EPBC Act Status ¹	Record Source ²	Habitat Preferences	Likelihood to occur in the project area
			<p>loams and stony loams, though occasionally the Small Snake-orchid has been found in peaty soils in seasonally moist areas, from shale, and fine granite. The altitude range known for the species is 50–900 m (DotEE 2016a).</p> <p>Notable features: A slender, glabrous terrestrial herb, the Small Snake-orchid is a member of the 'Donkey' orchid group, with one to two bright yellow flowers with dark stripes and two drooping side petals on a flowering stem less than 10 cm tall (DotEE 2016a). The flowering period of the species is between August and October (DotEE 2016a).</p> <p>Dispersal mode: Not specified. Likely deposited locally by gravity.</p> <p>Nearest record: This species has not been recorded within 10 km of the study area.</p>	<p>occurred outside of the flowering period (August – October). Targeted surveys during the flowering period would be required to confirm the presence/absence of Small Snake Orchid in the study area.</p>
Slaty Red Gum (<i>Eucalyptus glaucina</i>)	V	PMST	<p>Distribution: The Slaty Red Gum is only found on the north coast of NSW in two separate districts (DotEE 2016b). It is found near Casino where it is locally common and further south from Taree to Broke and west of Maitland (DotEE 2016b). It is found in two Natural Resource Management Regions: the Hunter/Central Rivers and the Northern Rivers regions (DotEE 2016b).</p> <p>Habitat preferences: This species has been observed in a variety of habitats including shallow soils or stony hillsides, but not on poor sandstones; grassy woodlands on deep, moderately fertile and well-watered soil; and gentle slopes near drainage lines in alluvial and clayey soils (DotEE 2016b).</p> <p>Notable features: The bark is smooth and mottled white to slaty grey and sheds over the whole trunk in large plates or flakes (DotEE 2016b).</p> <p>Dispersal mode: Unknown but likely wind and gravity.</p>	<p>Low: This species is not known to occur within Queensland. This distinctive species was not recorded within or adjacent to the study area during the field surveys.</p>

Common Name (Species Name)	EPBC Act Status ¹	Record Source ²	Habitat Preferences	Likelihood to occur in the project area
			Nearest record: This species has not been recorded within 10 km of the study area.	
Narrow-leaved Peppermint (<i>Eucalyptus nicholii</i>)	V	PMST	<p>Distribution: The Narrow-leaved Peppermint has a wide range and occurs from the Walcha-Niangala region (east of Tamworth) to just north of Glen Innes, in NSW (TSSC 2008). The species is sparsely distributed, but most commonly occurs in the central portions of its range (TSSC 2008). However, the Narrow-leaved Peppermint is known from less than 40 localities on the northern NSW tablelands (TSSC 2008). The species occurs mainly within the Northern Rivers (NSW) Natural Resource Management (NRM) region, with a few occurrences in the Border Rivers-Gwydir and Namoi NRM regions (TSSC 2008).</p> <p>Habitat preferences: The Narrow-leaved Peppermint occurs in grassy or sclerophyll woodland, in association with other eucalypts that grow in the region, including New England Blackbutt (<i>Eucalyptus. andrewsii</i>) and many of the stringybarks, such as Broad-leaved Stringybark (<i>Eucalyptus caliginosa</i>). The species has also been found on shallow, relatively infertile soils on shale and slate geology (TSSC 2008).</p> <p>Notable features: The Narrow-leaved Peppermint flowers in Autumn (DotEE 2016c).</p> <p>Dispersal mode: Unknown but likely wind and gravity.</p> <p>Nearest record: This species has not been recorded within 10 km of the study area.</p>	<p>Low: There is not known to occur within Queensland.</p> <p>This distinctive species was not recorded within or adjacent to the study area during the field surveys.</p>
Black Grevillea (<i>Grevillea scortechinii</i> subsp. <i>scortechinii</i>)	V	PMST	<p>Distribution: This species occurs in south east Queensland and is only known from the Stanthorpe and Cottonvale areas (ABRS and CSIRO 2000).</p> <p>Habitat preferences: Grows in sclerophyll woodland or remnant roadside associations in granitic, sandy-loamy soils (ABRS and CSIRO 2000).</p>	<p>Low: There is potential habitat for this species within the study area. However, it is a distinctive species not it was not recorded within or adjacent to the study area during the field surveys.</p>

Common Name (Species Name)	EPBC Act Status ¹	Record Source ²	Habitat Preferences	Likelihood to occur in the project area
			<p>Notable features: Flower colour brown to dark purplish black with green pollen presenter (ABRS and CSIRO 2000).</p> <p>Dispersal mode: Wind and gravity after explosive release from capsule.</p> <p>Nearest record: This species has not been recorded within 10 km of the study area.</p>	
Wandering Pepper-cress (<i>Lepidium peregrinum</i>)	E	PMST	<p>Distribution: <i>Lepidium peregrinum</i> occurs from the Bunya Mountains, south-east Queensland, to near Tenterfield, in northern New South Wales (TSSC 2014). Since 2001, further populations have been discovered from Rosin's Lookout at Beechmont (Qld), D'Aguilar Range, Deer Reserve State Forest near Kilcoy (Qld), Condamine Gorge near Killarney (Qld), Picnic Point Toowoomba (Qld) and Highfields Falls near Toowoomba (Qld). Additionally, new locations have been recorded for this species from the Bunya Mountains and Mt Glorious areas (TSSC 2014).</p> <p>Habitat preferences: This species tends to occur in the tussock grassland fringe in riparian open forest (TSSC 2014).</p> <p>Dispersal mode: not known.</p> <p>Nearest record: This species has not been recorded within 10 km of the study area.</p>	Low: The study area does not support habitat suitable for this species. This species was not recorded within or adjacent to the study area during the field surveys.
Queensland Nut (<i>Macadamia integrifolia</i>)	V	PMST	<p>Distribution: This species is known from remnant rainforest in northern New South Wales and south-east Queensland (from Mt Bauple, north of Gympie to the Currumbin Valley in the Gold Coast hinterland) (DotE 2016b).</p> <p>Habitat preferences: This species occurs in complex notophyll mixed forest, extremely tall closed forest, simple notophyll mixed very tall closed forest to simple microphyll-notophyll mixed mid-high closed forest with <i>Araucaria</i> and <i>Argyrodendron</i> emergents as well as partially open areas along the edges of</p>	Low: The study area does not support habitat (i.e. tall open forest or rainforest) suitable for this species. This distinctive species was not recorded within or adjacent to the study area during the field surveys.

Common Name (Species Name)	EPBC Act Status ¹	Record Source ²	Habitat Preferences	Likelihood to occur in the project area
			<p>remnant rainforest (DotE 2016b). The species will grow on a wide range of landforms from hill crests to gullies with level to steep surfaces. Soils are typically well drained, high nutrient volcanics of varying texture (DotE 2016b).</p> <p>Notable features: The species has been recorded flowering in January, March and from June to November with fruits recorded from November to January and March to April (DotE 2016b).</p> <p>Dispersal mode: Seeds (nut) are typically eaten by mammals and dispersed by stream (DotE 2016b).</p> <p>Nearest record: This species has not been recorded within 10 km of the study area.</p>	
<p><i>Callistemon pungens</i> syn. <i>Melaleuca williamsii</i> subsp. <i>fletcheri</i> (no common name)</p>	V	Wildlife Online	<p>Distribution: <i>Melaleuca williamsii</i> subsp. <i>fletcheri</i> is endemic to an area between north-eastern New South Wales and south eastern Queensland (Udovicic and Spencer 2012).</p> <p>Habitat preferences: It grows in granite and trachyte rock crevices in forest and heath and on sandy or shallow rocky soil in higher altitude areas (Udovicic and Spencer 2012).</p> <p>Notable features: A distinctive shrub with stiff branches, silvery new growth, prickly leaves and spikes of purple flowers from October to December (Udovicic and Spencer 2012).</p> <p>Dispersal mode: Unknown but likely to be wind and/or gravity dispersed.</p> <p>Nearest record: This species has been recorded within the Cherrabah property at least 2.5km to the north-east of the study area.</p>	<p>Low: This species is distinctive and was not recorded within the study area during the field surveys.</p> <p>It is noted that there is a record for this species in the Cherrabah property, at least 2.5km to the north-east of the study area. The locality of the record was searched during the field surveys, as part of a protected plants flora survey under the NC Act for the haul road. <i>Melaleuca williamsii</i> subsp <i>fletcheri</i> was detected during the flora survey along the watercourse that is traversed by existing track that will become the haul road. There was no comparable habitat to where this species was not recorded within the study area.</p>
Austral Corn Flower (<i>Rhaponticum australe</i>)	V	PMST	<p>Distribution: The Austral Cornflower is currently confined to Queensland. The species was known to previously occur in NSW and Victoria, but is now</p>	<p>Low: The underlying geology within the study area is not suitable for this species.</p>

Common Name (Species Name)	EPBC Act Status ¹	Record Source ²	Habitat Preferences	Likelihood to occur in the project area
			<p>presumed extinct in those states (DotEE 2016d). The current distribution of the Austral Cornflower extends from Allora (north of Warwick) to Callide (north-west of Biloela), Queensland (DotEE 2016d).</p> <p>Habitat preferences: The Austral Cornflower is often found in woodland and grassland and in association with <i>Eucalyptus crebra</i> (Narrow-leaved Ironbark), <i>E. orgadophila</i> (Mountain Coolibah), <i>E. populnea</i> (Poplar Box), <i>E. tereticornis</i> (Forest Red Gum), <i>E. melanophloia</i> (Silver-leaved Ironbark), <i>Angophora subvelutina</i> (Broad-leaved Apple), <i>A. floribunda</i> (Rough-barked Apple), <i>*Cirsium vulgare</i> (Spear Thistle), <i>Dichanthium sericeum</i> (Queensland Bluegrass) and <i>Themeda triandra</i> (Kangaroo Grass) (DotEE 2016d). The species usually grows on heavy black or red-brown clay, or clay loams derived from basalt (DotEE 2016d). The Austral Cornflower is considered to be a poor competitor and prefers habitat where grass competition has been reduced by fire or other forms of disturbance. However, the species is unlikely to benefit from disturbance that allows the development of a dense cover of exotic grasses such as <i>Chloris gayana</i> (Rhodes Grass) (DotEE 2016d).</p> <p>Notable features: The Austral Cornflower flowers between spring and late summer to autumn. The dead flowering stems can remain on the plant for several months after the seeds have dispersed (DotEE 2016d).</p> <p>Dispersal mode: Wind dispersed seed.</p> <p>Nearest record: This species has not been recorded within 10 km of the study area.</p>	This species was not recorded within or adjacent to the study area during the field surveys.
Austral Toadflax (<i>Thesium australe</i>)	V	PMST	<p>Distribution: The current distribution of Austral Toadflax is sporadic but widespread, occurring between the Bunya Mountains in south-east Queensland to north-east Victoria and as far inland as</p>	Low: The study area does not support habitat suitable for this species (i.e. communities with a prevalence of Kangaroo grass).

Common Name (Species Name)	EPBC Act Status ¹	Record Source ²	Habitat Preferences	Likelihood to occur in the project area
			<p>the southern, central and northern tablelands in New South Wales and the Toowoomba region (DotE 2016c). There is an outlier in Carnarvon National Park on the Consuelo Tableland of the southern Brigalow Belt (DotE 2016c).</p> <p>Habitat preferences: Austral Toadflax is semi-parasitic on roots of a range of grass species most notably Kangaroo Grass (<i>Themeda triandra</i>). The species occurs in shrubland, grassland or woodland, often on damp sites, on a variety of soil types and altitudes (DotE 2016c).</p> <p>Notable features: Austral Toadflax is a hairless, yellowish-green perennial herb with slender, wiry stems to 40 cm high with tiny white flowers (DotE 2016c). This species flowers and fruits throughout the year on the coast and in summer at higher altitudes (DotE 2016c). In Queensland the species has been recorded flowering from October through to April (EHP 2014).</p> <p>Dispersal mode: Fruit is a small nut (2-2.5 mm). No information on dispersal mode.</p> <p>Nearest record: This species has not been recorded within 10 km of the study area.</p>	This species was not recorded within or adjacent to the study area during the field surveys.
Birds				
Regent Honeyeater (<i>Anthochaera phrygia</i>)	CE	PMST, Wildlife Online	<p>Distribution: The Regent Honeyeater is endemic to south-east Australia, where its range extends from south-east Queensland to central Victoria. In Queensland, the Regent Honeyeater has been recorded from 15 sites, primarily south of a line between Chinchilla and the Sunshine Coast. There are several records on Bribie Island and the Granite Belt between Warwick in the east, Gore in the west and Sundown NP in the south (DotE 2016d).</p> <p>General habitat preferences: Regent Honeyeaters mostly occur in dry Box-Ironbark eucalypt woodland</p>	<p>Low: The study area does not support Box-Ironbark dominated woodlands that this are preferred by this species. Further, the study area does not support moist, fertile communities associated with creek flats, broad river valleys and/or foothills.</p> <p>This species was not recorded during the field surveys.</p>

Common Name (Species Name)	EPBC Act Status ¹	Record Source ²	Habitat Preferences	Likelihood to occur in the project area
			<p>and dry sclerophyll forest associations in areas of low to moderate relief. The species tends to prefer moister, more fertile sites, for example along creek flats, or in broad river valleys and foothills. The Regent Honeyeater is believed to use lowland coastal forest as a refuge when the preferred box-ironbark habitats are affected by drought (DotE 2016d).</p> <p>Foraging habitat: Regent Honeyeaters typically are associated with plant species that reliably produce copious amounts of nectar particularly species of ironbark and box (DotE 2016d).</p> <p>Breeding habitat: Regent Honeyeaters usually nest in the canopy of forests or woodlands, and in the crowns of tall trees, mostly eucalypts. The species shows a preference for tall mature rough bark species such as ironbarks. Nests have also been recorded from amongst mistletoes (DotE 2016d).</p> <p>Notable features: The Regent Honeyeater has a black head, with a patch of warty, dirty yellowish to pinkish skin around its dark red-brown eye, and a sturdy, decurved, black bill.</p> <p>Nearest record: This species has not been recorded within 10 km of the study area.</p>	
Australasian Bittern (<i>Botaurus poiciloptilus</i>)	E	PMST, Wildlife Online, Birds Australia Atlas	<p>Distribution: The Australasian Bittern occurs from south-east Queensland to south-east South Australia, Tasmania and the south-west of Western Australia (DotE 2016e). In Queensland, the Australasian Bittern occurs in the far south-east where it has been reported north to Baralaba and west to Wyandra. At present the species is rarely recorded in Queensland and my only survive in protected areas such as the Cooloola and Fraser regions (DotE 2016e).</p> <p>General habitat preferences: The Australasian Bittern occurs in terrestrial freshwater wetlands and, rarely, estuarine habitats. The species favours</p>	<p>Low: Suitable wetland habitat is not present within or adjacent to the study area.</p> <p>This species was not recorded during the field surveys.</p>

Common Name (Species Name)	EPBC Act Status ¹	Record Source ²	Habitat Preferences	Likelihood to occur in the project area
			<p>permanent and seasonal freshwater habitats, particularly those dominated by sedges, rushes and/or reeds or cutting grass (<i>Gahnia</i>) growing over muddy or peaty substrate (DotE 2016e).</p> <p>Foraging habitat: The species favours wetlands with tall, dense vegetation, where it forages in still, shallow water up to 0.3 m deep, often at the edges of pools or waterways, or from platforms or mats of vegetation over deep water (DotE 2016e).</p> <p>Breeding habitat: Knowledge of the breeding ecology of the Australasian Bittern is relatively poor. The limited information available indicates that the species breeds in relatively deep, densely vegetated freshwater swamps and pools, building its nests in deep cover over shallow water (DotE 2016e).</p> <p>Notable features: A large, stocky, thick-necked heron-like bird with camouflage-like plumage. Due to its habitat (wetlands with dense vegetation) and plumage this species is typically heard rather than seen (DotE 2016e).</p> <p>Nearest record: This species has not been recorded within 10 km of the study area.</p>	
Curlew Sandpiper (<i>Calidris ferruginea</i>)	CE	PMST	<p>Distribution: This species occurs along the coasts but is also widespread inland. In Queensland there are scattered records in the Gulf of Carpentaria, widespread records along the coast, south of Cairns, and sparsely scattered records inland.</p> <p>General habitat preferences: Near the coast it inhabits intertidal mudflats in sheltered areas, such as estuaries, bays inlets and lagoons and non-tidal swamps, lakes, lagoons, ponds in saltworks and sewage farms. Inland they are occasionally recorded around ephemeral and permanent lakes, dams, waterholes and bore drains, usually with bare edges</p>	<p>Low: Suitable wetland habitat is not present within or adjacent to the study area.</p> <p>This species was not recorded during the field surveys.</p>

Common Name (Species Name)	EPBC Act Status ¹	Record Source ²	Habitat Preferences	Likelihood to occur in the project area
			<p>of mud or sand. The will use fresh and brackish habitats and floodwaters.</p> <p>The usually wade and forage in waters 15-30 mm deep, but up to 60 mm deep at the edge of saltmarsh, emergent vegetation and inundated saltflats. It feeds on invertebrates, including worms, molluscs, crustaceans, and insects as well as seeds.</p> <p>The species usually roosts on bare dry shingle, shell or sand beaches, sandspits and islets and sometimes in dunes.</p> <p>Notable features: This species does not breed in Australia (DotE 2016f).</p> <p>Nearest record: This species has not been recorded within 10 km of the study area.</p>	
Eastern Bristlebird (<i>Dasyornis brachypterus</i>)	E	PMST	<p>Distribution: The Eastern Bristlebird occurs in three geographically-separate regional populations in south-eastern Australia. The first, a northern population, occurs in south-eastern Queensland and north-eastern NSW, and consists of extant local populations at Conondale Range National Park, Main Range National Park, Mount Barney National Park, Lamington National Park, Border Ranges National Park, Grady's Creek and Gibraltar Range National Park (DotE 2016g). The remaining two populations occur in central NSW and south eastern NSW and Victoria.</p> <p>General habitat preferences: The Eastern Bristlebirds inhabits low dense vegetation in a broad range of habitat types including sedgeland, heathland, swampland, shrubland, sclerophyll forest and woodland, and rainforest (DotE 2016g). All habitats vary in species composition but share a similar structure of low, dense, ground or understorey vegetation that provides about 65–90% coverage (DotE 2016g).</p>	<p>Low: Vegetation within the study area = not support the low, dense understorey and groundstorey vegetation that is preferred by this species.</p> <p>This species was not recorded during the field surveys.</p>

Common Name (Species Name)	EPBC Act Status ¹	Record Source ²	Habitat Preferences	Likelihood to occur in the project area
			<p>Foraging habitat: The Eastern Bristlebirds mainly feed on seeds, small fruits and invertebrates, but it also take fungi and occasionally nectar (DotE 2016g). The species forage mostly on the ground, where they toss aside leaf litter with their bill, peck food items from the surface and probe into soil (DotE 2016g).</p> <p>Breeding habitat: There is no distinction between foraging and breeding habitats for this species. A small, globular nest is placed less than 1 m above the ground in low dense vegetation, in or near the base of sedges, grasses, ferns and shrubs (DotE 2016g).</p> <p>Notable features: The Eastern Bristlebird is a cryptic and secretive species whose presence is typically detected by call rather than sight.</p> <p>Nearest record: This species has not been recorded within 10 km of the study area.</p>	
Red Goshawk (<i>Erythrotriorchis radiatus</i>)	V	PMST	<p>Distribution: This species is sparsely dispersed across coastal and sub-coastal Australia from western Kimberly Division to north-eastern New South Wales and occasionally on continental islands.</p> <p>General habitat preferences: This species occurs in woodlands and forests, ideally with a mosaic of vegetation types and permanent water, particularly riverine forests. The species avoids both very dense and very open habitats. They are solitary and secretive birds and hunt mainly from ambush. Their prey is mostly birds, but also mammals, reptiles and insects (Marchant and Higgins 1994).</p> <p>Breeding habitat: Nests are restricted to trees taller than 20 m and within 1 km of a watercourse or wetland. It is thought to rarely breed in areas with fragmented native vegetation (Garnett et al. 2011). Home ranges of 120 km² and 200 km² for females and males, respectively have been recorded (Marchant and Higgins 1994).</p>	<p>Low: The study area does not support suitable habitat for this species. In particular, there is lack of permanent water and riverine forests.</p> <p>This species was not recorded during the field surveys.</p>

Common Name (Species Name)	EPBC Act Status ¹	Record Source ²	Habitat Preferences	Likelihood to occur in the project area
			Nearest record: This species has not been recorded within 10 km of the study area.	
Squatter Pigeon (southern) (<i>Geophaps scripta scripta</i>)	V	PMST	<p>Distribution: The southern sub-species for the Squatter Pigeon (southern subspecies) is described as occurring south of the Burdekin River-Lynd divide in the southern region of Cape York Peninsula to the Border Rivers region of northern New South Wales, and from the east coast to Hughenden, Longreach and Charleville (Higgins and Davies 1996). The known distribution of the southern sub-species overlaps with the known distribution of the northern subspecies (DotE 2016h).</p> <p>General habitat preferences: This species is known from tropical dry, open sclerophyll woodlands and sometimes savannah with <i>Eucalyptus</i>, <i>Corymbia</i>, <i>Acacia</i> or <i>Callitris</i> species in the overstorey. The groundcover layer is patchy consisting of native, perennial tussock grasses or a mix of grasses and low shrubs or forbs. However, the groundcover layer rarely exceeds 33% of the ground area. It appears to favour sandy soil dissected with low gravelly ridges and is less common on heavier soils with dense grass cover. It is nearly always found in close association i.e. within 3 km, with permanent water. While the species is unlikely to move far from woodland trees, where scattered trees still occur and the distance of cleared land between remnant trees or patches of habitat does not exceed 100 m, individuals may be found foraging in, or moving across modified or degraded environments (DotE 2016h).</p> <p>Foraging habitat: This occurs in any remnant or regrowth open-forest to sparse, open woodland or scrub dominated by <i>Eucalyptus</i>, <i>Corymbia</i>, <i>Acacia</i> or <i>Callitris</i> species, on sandy or gravelly soils. It feeds primarily on seeds of grasses, herbs and shrubs.</p>	<p>Low: The study area does not support habitat suitable for this species. Specifically, the vegetation communities present are taller and more closed than habitat the Squatter Pigeon is typically associated with.</p> <p>This species was not recorded during the field surveys.</p>

Common Name (Species Name)	EPBC Act Status ¹	Record Source ²	Habitat Preferences	Likelihood to occur in the project area
			<p>Breeding habitat: This occurs on well-draining, stony rises occurring on sandy or gravelly soils or on low 'jump-ups' and escarpments (i.e. land zones 5 and 7), within 1 km of a suitable, permanent waterbody.</p> <p>Dispersal habitat: This can be any forest or woodland occurring between patches of foraging or breeding habitat, and suitable waterbodies and may include denser patches of vegetation not suitable for foraging or breeding.</p> <p>Notable features: This species can breed throughout most of the year, however, peak breeding is generally April to October when the primary source of food, grass seed, is most abundant (DotE 2016h).</p> <p>Nearest record: This species has not been recorded within 10 km of the study area.</p>	
Painted Honeyeater (<i>Grantiella picta</i>)	V	PMST	<p>Distribution: This species is sparsely distributed from south-eastern Australia to north-western Queensland and eastern Northern Territory. Greatest concentrations, including all breeding records, come from south of 26°, on inland slopes of the Great Dividing Range between the Grampians in Victoria and Roma in Queensland. After breeding, many birds move to semi-arid regions such as north-eastern South Australia, central and western Queensland and central Northern Territory. This species is considered to have a single population.</p> <p>General habitat preferences: This species occurs in mistletoes in eucalypt forests, woodlands, riparian woodlands of black box and river red gum, box-ironbark-yellow gum woodlands, acacia-dominated woodlands, paperbarks, casuarinas, Callitris, and trees on farmland or gardens. Prefers woodlands with a higher number of mature trees, as these generally</p>	<p>Low: Suitable habitat resources, i.e. mistletoes, are not prevalent in the study area.</p> <p>This species was not recorded during the field surveys.</p>

Common Name (Species Name)	EPBC Act Status ¹	Record Source ²	Habitat Preferences	Likelihood to occur in the project area
			<p>support more mistletoes. More common in larger remnant tracts, rather than narrow remnant strips.</p> <p>Breeding preferences: Breeding season is closely aligned with fruiting of mistletoe, therefore north-south movements have been observed (TSSC 2015). It has been known to breed in narrow roadside strips if ample mistletoe fruit is present. The species appears to prefer mistletoe as a nest substrate and is likely to be attracted to habitats where mistletoe is prevalent and parasitism rates are high (TSSC 2015).</p> <p>Nearest record: This species has not been recorded within 10 km of the study area.</p>	
Swift Parrot (<i>Lathamus discolor</i>)	V	PMST, Wildlife Online	<p>Distribution: The swift parrot breeds in Tasmania during the summer and the entire population migrates north to mainland Australia for the winter (TSSC 2016a). The species has been recorded from Victoria through coastal New South Wales to coastal south eastern and central Queensland.</p> <p>General habitat preferences: Whilst on the mainland the swift parrot disperses widely to forage on flowers and psyllid lerps in <i>Eucalyptus</i> species, with the majority being found in Victoria and New South Wales.</p> <p>Foraging habitat: In Victoria, swift parrots are predominantly found in the dry forests and woodlands of the box-ironbark region on the inland slopes of the Great Dividing Range (TSSC 2016a). In New South Wales, swift parrots forage in forests and woodlands throughout the coastal and western slopes regions each year. Coastal regions tend to support larger numbers of birds when inland habitats are subjected to drought (TSSC 2016a).</p> <p>Breeding preferences: This species only breeds in Tasmania (TSSC 2016a).</p>	<p>Low: The study area and surrounds support feed trees for this species. However, the lack of records within 10km of the study area indicate that it is unlikely that the Swift Parrot uses habitat resources within and adjacent to the study area.</p> <p>This species was not recorded during the field surveys.</p>

Common Name (Species Name)	EPBC Act Status ¹	Record Source ²	Habitat Preferences	Likelihood to occur in the project area
			Nearest record: This species has been recorded within 10 km of the study area.	
Southern Black-throated Finch (<i>Poephila cincta cincta</i>)	E	PMST	<p>Distribution: The Black-throated Finch (southern) occurs at two general locations: in the Townsville region, where it is considered to be locally common at a few sites around Townsville and Charters Towers (Garnett & Crowley 2000). It has also been recorded at scattered sites in central-eastern Queensland (between Aramac and Great Basalt Wall National Park) (DotE 2016i). DotE considers birds recorded since 1998, at the following locations to be part of the southern:</p> <ul style="list-style-type: none"> Townsville and its surrounds (Giru, Serpentine Lagoon, Toonpan, and near Ross River Dam) Ingham, and sites nearby (near Mutarnee [at Ollera Creek], and near Mount Fox) scattered sites in central-eastern Queensland (Great Basalt Wall, Yarrowmere Station, Moonoomoo Station, Doongmabulla Station, Fortuna Station and Aramac) (DotE 2016i). <p>General habitat preferences: This species is known from dry, open grassy woodlands and forests and grasslands of the sub-tropics and tropics with seeding grasses and ready access to water (Higgins et al. 2006). Also thought to probably require a mosaic of different habitat in the wet season to find seed (Garnett et al. 2011). Black-throated Finch mainly inhabit dry open to very open eucalypt woodlands with dense grassy ground cover and often along watercourses or in the vicinity of water (DotE 2016i; Higgins et al. 2006). Almost all recent records of this species, south of the tropics, have been from riparian habitat (DotE 2016i). It is thought that permanent sources of water and surrounding habitat provides refuge for this species during the dry season and</p>	Low: the study area does not support habitat, for this species. This species was not recorded during the field surveys.

Common Name (Species Name)	EPBC Act Status ¹	Record Source ²	Habitat Preferences	Likelihood to occur in the project area
			<p>particularly during drought conditions (DotE 2016i). This species has been recorded in degraded habitats such as heavily grazed paddocks (DotE 2016i). This species has undergone a significant range contraction from the southern parts of its former distribution. It has not been recorded in south-east Queensland since the early 80s and is now thought to be extinct in NSW. It is noted as being mostly absent from the coastal plain but occasionally recorded from the area around Townsville and Ingham (Higgins et al. 2006).</p> <p>Foraging habitat: This subspecies is thought to require a mosaic of different habitats in which it can find seed during the wet season (DotE 2016i).</p> <p>Breeding habitat: Nests are often built in a hollow branch of a tree, or in a fork of a tree, shrub or sapling. It is not uncommon for nests to be placed in other sites, such as in tall grass, amongst mistletoe, beneath active raptor nests, or in an old nest of a Babbler (<i>Pomatostomus</i> spp.) or Diamond Firetail (<i>Stagonopleura guttata</i>) (DotE 2016i). Nest sites tend to be located in close proximity to water.</p> <p>Nearest record: This species has not been recorded within 10 km of the study area.</p>	
Australian Painted Snipe (<i>Rostratula australis</i>)	E	PMST	<p>Distribution: The Australian Painted Snipe has been recorded at wetlands in all states of Australia. It is most common in eastern Australia, where it has been recorded at scattered locations throughout much of Queensland, New South Wales, Victoria and south-eastern South Australia. This population is considered to occur as a single, contiguous breeding population (DotE 2016j).</p> <p>General habitat preferences: This secretive, cryptic, crepuscular (active at dawn, dusk and during the night) species occurs in terrestrial shallow wetlands, both ephemeral and permanent, usually</p>	<p>Low: Suitable wetland habitat for this species is unlikely to be present in the study area.</p> <p>This species was not recorded during the field surveys.</p>

Common Name (Species Name)	EPBC Act Status ¹	Record Source ²	Habitat Preferences	Likelihood to occur in the project area
			<p>freshwater but occasionally brackish. They also use inundated grasslands, salt-marsh, dams, rice crops, sewage farms and bore drains with rank emergent tussocks of grass, sedges, rushes or reeds or samphire, and often with scattered clumps of Lignum (<i>Muehlenbeckia florulenta</i>), canegrass or sometimes tea trees. It has been known to use areas lined with trees, or that have some scattered fallen or washed-up timber (DotE 2016j).</p> <p>Foraging habitat: The species feeds on vegetation, seeds, and invertebrates including crustaceans and molluscs as well as insects, worms and other invertebrates (DotE 2016j; Marchant and Higgins 1994). Foraging habitats are not well understood (DotE 2016j).</p> <p>Breeding habitat: Requirements are specific and include shallow wetlands with areas of bare wet mud and both upper and canopy cover nearby. Almost all records of nests occur on or near small islands in freshwater wetlands characterised by a combination of very shallow water, exposed mud, dense low cover and sometimes some tall dense cover. Although this species uses modified habitat, it doesn't necessarily breed in these habitats. It most likely breeds in response to wetland conditions rather than during a particular season (DotE 2016j).</p> <p>Notable features: This is a distinctive species.</p> <p>Nearest record: This species has not been recorded within 10 km of the study area.</p>	
Black-breasted Button-quail (<i>Turnix melanogaster</i>)	V	PMST	<p>Distribution: Endemic to eastern Australia, this species is restricted to coastal and near-coastal regions of south-eastern Queensland and north-eastern New South Wales (DotE 2015 d). The main populations occur within south-east Queensland, where the current known distribution extends from near Byfield in the north, south to the New South</p>	<p>Low: The study area does not support vegetation types that are preferred by this species, specifically vine thicket rainforest.</p> <p>This species was not recorded during the field surveys.</p>

Common Name (Species Name)	EPBC Act Status ¹	Record Source ²	Habitat Preferences	Likelihood to occur in the project area
			<p>Wales border and westwards to Palm Grove National Park and Barakula State Forest (DotE 2015 d) The most significant populations appear to be in the Yarraman-Nanango, Jimna-Conondale and Great Sandy regions.</p> <p>General habitat preferences: This species is most commonly associated with vine thicket rainforest with greater than 800 mm rainfall, deep leaf litter and a closed canopy but also occur in softwood scrubs in the Brigalow Belt, vine scrub regrowth and mature Hoop Pine (<i>Araucaria cunninghamii</i>) particularly with a Common Lantana (<i>*Lantana camara</i>) understorey. They also occur in dry sclerophyll forest adjacent to rainforest and <i>Acacia</i> and <i>Austromyrtus</i> scrubs on sandy coastal soils (Inskip Point) (Garnett et al. 2011).</p> <p>Foraging habitat: An extensive dense leaf-litter layer is required for foraging (DotE 2015d). As such, optimum habitat is often associated with highly fertile soils. It is believed that the highly fertile soils promote rapid leaf growth on plants, which dropped to the ground during dry periods thus maintaining the deep leaf litter layer which is crucial to the foraging requirements of the species (DotE 2015d). In Googa State Forest, south-eastern Queensland, birds are most commonly associated with remnant microphyll vine forest with no lantana in the understorey, but lantana is often used for diurnal foraging and nocturnal roosting (DotE 2015d).</p> <p>Breeding habitat: Nests consist of a scrape in the ground, lined with leaves, grass or moss (DotE 2015d). Fallen logs and a dense, heterogeneously distributed shrub layers are also considered to be important habitat characteristics for shelter and breeding. Nests are often in areas where the common understorey plants include species such as Bracken</p>	

Common Name (Species Name)	EPBC Act Status ¹	Record Source ²	Habitat Preferences	Likelihood to occur in the project area
			<p>(<i>Pteridium esculentum</i>), Rasp Fern (<i>Doodia aspera</i>) and Lantana (<i>Lantana camara</i>) and are often placed in the buttress root of a tree or sapling, the base of a fern or under a low bush or grass tussock (DotE 2015d).</p> <p>Notable features: Black-breasted Button quail are commonly seen in pairs or occasionally in small groups. Being territorial, females are occasionally seen singly (Marchant & Higgins 1993). This species is cryptic in nature and direct observation can be difficult. One of the key methods of detecting the presence of birds in an area is the presence of feeding traces (platelets) (DotE 2015d).</p> <p>Nearest record: This species has not been recorded within 10 km of the study area.</p>	
Mammals				
Large-eared Pied Bat (<i>Chalinolobus dwyeri</i>)	V	PMST	<p>Distribution: The species' current distribution is poorly known. Records exist from Shoalwater Bay, north of Rockhampton, Queensland, through to the vicinity of Ulladulla, NSW in the south. Despite the large range, it has been suggested that the species is far more restricted within the species' range than previously understood (DotE, 2015j). In Queensland, records are known from sandstone escarpments in the Carnarvon, Expedition Ranges and Blackdown Tablelands. Additional records exist in the Scenic Rim near the NSW/Queensland border (DotE, 2015j).</p> <p>General habitat preferences: This species is uncommon in dry and wet eucalypt forests from Blackdown Tableland to near Wollongong NSW (Menkhorst and Knight 2011). It is primarily a cave roosting species that inhabits sclerophyll forests and woodland throughout much of its range (Churchill 2009).</p>	<p>Low: The potential exists for this species to forage in woodland communities in the study area. However, the study area does not support high fertility sites with box-gum woodlands or riverine/rainforest corridors. The study area also does not support any suitable roosting habitat (i.e. caves). There are cliff and ridgeline habitat external to the study area that are likely to provide higher quality roosting habitat for this species.</p> <p>This species was not recorded during the field survey.</p>

Common Name (Species Name)	EPBC Act Status ¹	Record Source ²	Habitat Preferences	Likelihood to occur in the project area
			<p>Foraging habitat: Higher fertility sites, particularly box gum woodlands or river/rainforest corridors are used for foraging (DotE 2015j).</p> <p>Roosting habitat: Sandstone cliffs and fertile woodland valley habitat within close proximity of each other is important roosting habitat for this species. Records from south-east Queensland suggest that rainforest and moist eucalypt forest habitats on other geological substrates (rhyolite, trachyte and basalt) at high elevation are of similar importance to the species are also of importance (DotE 2015j)</p> <p>Breeding habitat: The structure of primary nursery roosts appears to be very specific, i.e. arch caves with dome roofs (that need to be deep enough to allow juvenile bats to learn to fly safely inside) and with indentations in the roof, presumably to allow the capture of heat (DotE 2015j). These physical characteristics are not very common in the landscape and therefore a limiting factor. No maternity roost sites are known in Queensland (TSSC, 2010).</p> <p>Nearest record: This species has not been recorded within 10 km of the study area.</p>	
Spotted-tailed Quoll (south-eastern mainland population) (<i>Dasyurus maculatus maculatus</i>)	E	PMST, Wildlife Online	<p>Distribution: The Spotted-tailed Quoll occurs in south-east Queensland coastally from Bundaberg to the New South Wales border and inland to Monto and Stanthorpe (DotEE 2016e). Occurrences from five broad geographic areas are known with four from coastal ranges and the Great Dividing Range from the NSW border to Gladstone. The fifth is centred on the eastern Darling Downs-Inglewood Sandstone provinces of the Brigalow Belt South Bioregion (DotEE 2016e). In New South Wales, the Spotted-tailed Quoll records are generally confined to within 200 km of the coast and range from the Queensland border to Kosciuszko NP (DotEE 2016e).</p>	<p>Present: This species was recorded on infra-red camera set within woodland at the base of the granite dome. Orogen (2008) recorded this species in the eastern portion of the Cherrabah property. There are also numerous records for this species within the locality.</p> <p>The extent of Spotted-tail Quoll habitat within the study area is illustrated on Figure 9.</p>

Common Name (Species Name)	EPBC Act Status ¹	Record Source ²	Habitat Preferences	Likelihood to occur in the project area
			<p>General habitat preferences: The Spotted-tailed Quoll has been recorded from a wide range of habitats, including: temperate and subtropical rainforests in mountain areas, wet sclerophyll forest, lowland forests, open and closed eucalypt woodlands, inland riparian and River Red Gum (<i>Eucalyptus camaldulensis</i>) forests, dry 'rainshadow' woodland, sub-alpine woodlands, coastal heathlands and occasional sightings from open country, grazing lands, rocky outcrops and other treeless areas (DotEE 2016e).</p> <p>Refuge habitat: The Spotted-tailed Quoll is predominantly nocturnal and rests during the day in dens. Habitat requirements include suitable den sites such as hollow logs, tree hollows, rock outcrops or caves (DotEE 2016e). Individuals also require an abundance of food, such as birds and small mammals, and large areas of relatively intact vegetation through which to forage (DotEE 2016e).</p> <p>Nearest record: This species has been recorded within 10 km of the study area.</p>	
Corben's Long-eared Bat (<i>Nyctophilus corbeni</i>)	V	PMST	<p>Distribution: In Queensland, this species is mainly recorded in the Brigalow Belt South Bioregion, extending eastwards to the Bunya Mountains National Park, as far north as the Expedition Range and Dawson River areas and west into the Mulga Lands Bioregion and west of Bollon.</p> <p>General habitat preferences: Corben's Long-eared Bat occurs in a range of inland woodland vegetation types, including box, ironbark and cypress pine woodlands as well as Buloke woodland, Brigalow woodland, Belah woodland, Smooth-barked Apple (<i>Angophora leiocarpa</i>) woodland, River Red Gum (<i>Eucalyptus camaldulensis</i>) woodland and dry sclerophyll forest. It is known from habitat dominated by various eucalypt and bloodwood species and</p>	Low: The study area does not support habitat suitable for this species.

Common Name (Species Name)	EPBC Act Status ¹	Record Source ²	Habitat Preferences	Likelihood to occur in the project area
			<p>various types of tree mallee, being most abundant in vegetation with a distinct canopy and a dense cluttered shrub layer (DotE 2016k).</p> <p>Foraging habitat: This insectivorous bat feeds in flight, by gleaning vegetation and during ground foraging. It feeds on beetles, bugs, moths, grasshoppers, crickets, ants, spiders and mosquitoes. Foraging tends to be concentrated around patches of trees and is important for managing foliage feeding insects on eucalypt trees.</p> <p>Roosting habitat: Occurs solitarily under exfoliated bark and in the crevices on trees.</p> <p>Breeding habitat: Maternity roosts are likely to occur in colonies in larger tree cavities. Breeding is thought to occur around November, although there is little information about this (DotE 2016k).</p> <p>Nearest record: This species has not been recorded within 10 km of the study area.</p>	
Greater Glider (<i>Petauroides volans</i>)	V	PMST	<p>Distribution: This species is restricted to eastern Australia, between Windsor Tableland in north Queensland and Wombat State Forest in central Victoria. It occurs from sea level up to 1,200 m above sea level. Two isolated subpopulations exist in Queensland, one in the Gregory Range west of Townsville and another in the Einasleigh Uplands (TSSC 2016b).</p> <p>General habitat preferences: The Greater Glider occurs in a range of eucalypt-dominated habitats, including low open forests on the coast to tall forests in the ranges and low woodland westwards of the Dividing Range. It does not use rainforest habitats (van Dyck et al. 2013; van Dyck and Strahan 2008a). This species favours taller, montane, moist eucalypt forests with relatively old trees and abundant hollows and a diversity of eucalypt species (TSSC 2016b).</p>	<p>Low: The study area does not support habitat (i.e. taller, montane, moist eucalypt forests with large hollow bearing trees).</p> <p>This distinctive species was not recorded during the field surveys.</p>

Common Name (Species Name)	EPBC Act Status ¹	Record Source ²	Habitat Preferences	Likelihood to occur in the project area
			<p>Foraging habitat: The Greater Glider has an almost exclusive diet of eucalypt leaves and occasionally flowers or buds (TSSC 2016b; van Dyck and Strahan 2008a). Although the species is known to feed on a range of eucalypt species, in any particular area it is likely to only forage on one or two species (van Dyck and Strahan 2008a).</p> <p>Breeding habitat: Breeding occurs between March and June and a single young is born each year (TSSC 2016b; van Dyck and Strahan 2008a). The young stays with the mother or is left in the nest and becomes independent at about 9 months (Menkhorst and Knight 2011).</p> <p>Notable features: This species appears to have low dispersal ability and typically small home ranges of 1-4 ha. In lower productivity forests, home ranges may be as large as 16 ha for males. Male home ranges generally do not overlap (TSSC 2016b). It may glide over distances of up to 100 m. It is a nocturnal species and uses tree hollows during the day to rest (van Dyck and Strahan 2008a).</p> <p>Nearest record: This species has not been recorded within 10 km of the study area.</p>	
Brush-tailed Rock-wallaby (<i>Petrogale penicillata</i>)	V	PMST	<p>Distribution: The Brush-tailed Rock-wallaby was once widespread and abundant in southeastern Australia (van Dyck and Strahan 2008b). In Queensland, populations of the Brush-tailed Rock-wallaby occur, or did occur, throughout the Great Dividing Range from the border with NSW to Nanango, 100 km northwest of Brisbane (DotEE 2016f). In the northeastern region of New South Wales, most Brush-tailed Rock-Wallabies were in one of three main populations; one consisting of more than 50 colonies in the Macleay Gorges system, one consisting of more than 20 colonies on the Cataract</p>	<p>Moderate: The potential exists for this species to move through and use habitat forage resources within the study area. The study area is unlikely to provide more permanent habitat given the low density of fig trees and vegetation with a dense canopy cover beneath cliffs. There are cliff and ridgeline habitat external to the study area that are likely to provide higher quality habitat for this species.</p>

Common Name (Species Name)	EPBC Act Status ¹	Record Source ²	Habitat Preferences	Likelihood to occur in the project area
			<p>River, and one consisting of more than 20 colonies on the Clarence River (DotEE 2016f).</p> <p>General habitat preferences: This species prefers rocky habitats, including loose boulder-piles, rocky outcrops, steep rocky slopes, cliffs, gorges and isolated rock stacks (DotEE 2016f).</p> <p>Foraging habitat: Rocky outcrops appear crucial to current habitat selection by rock-wallabies, however, vegetation structure and composition is also considered to be an important factor. Rock-wallabies are closely associated with dense arboreal cover, especially fig trees and the vegetation on and below cliffs appear to be important to this species as a source of food and shelter and in some cases may provide some protection from predation (DotEE 2016f).</p> <p>Nearest record: This species has not been recorded within 10 km of the study area.</p>	This species was not recorded during the field survey.
Koala (Combined populations of QLD, NSW and the ACT) (<i>Phascolarctos cinereus</i>)	V	PMST	<p>Distribution: This species is widespread in sclerophyll forest and woodlands on foothills and plains on both sides of the Great Dividing Range from about Chillagoe, Queensland to Mt Lofty Ranges in South Australia (Menkhorst and Knight 2011).</p> <p>General habitat preferences: Koalas use a range of habitats, including temperate, sub-tropical and tropical forest, woodland and semi-arid communities dominated by Eucalyptus species. Essentially any forest or woodland containing species that are known Koala food trees, or shrubland with emergent food trees provides potential Koala habitat. Koala are known to occur in modified or regenerating native vegetation communities (DotE 2016l).</p> <p>Foraging habitat: The South East Queensland Koala Conservation State Planning Regulatory Provisions define Koala food trees as species of the <i>Corymbia</i>,</p>	<p>Present: This species was heard calling from woodland communities during both spotlighting sessions.</p> <p>Vegetation within and adjacent to the study area and proposed haul is dominated by eucalypts including known Koala food trees such as Queensland Blue Gum <i>Eucalypts tereticornis</i>.</p>

Common Name (Species Name)	EPBC Act Status ¹	Record Source ²	Habitat Preferences	Likelihood to occur in the project area
			<p><i>Melaleuca</i>, <i>Lophostemon</i> or <i>Eucalyptus</i> genera (DERM 2010; DotE 2016l).</p> <p>Refuge habitat: Habitat that allows for the persistence of the Koala during droughts and periods of extreme heat, especially in riparian environments and other areas with reliable soil moisture and fertility. Such habitats occur on permanent aquifers, in riparian zones, on upper or mid-slopes, on fertile alluvial plains or where soil moisture/rainfall is reliable (DotE 2016l).</p> <p>Nearest record: This species has not been recorded within 10 km of the study area.</p>	
New Holland Mouse (<i>Pseudomys novaehollandiae</i>)	V	PMST	<p>Distribution: The New Holland Mouse has a fragmented distribution across Tasmania, Victoria, NSW and Queensland. The species is now largely restricted to the coast of central and northern NSW, with one inland occurrence near Parkes (DotEE 2016g).</p> <p>General habitat preferences: The New Holland Mouse is predominantly nocturnal and shelters and nests in burrows up to 5 m long (van Dyck and Strahan 2008b). The species occurs in heathland, woodland, open forests, paperbark swamps and on deeper sandy, loamy or rocky soils (van Dyck and Strahan 2008b). Important attributes of habitat are a diverse understory of leguminous shrubs and substrates capable of supporting their burrows (van Dyck and Strahan 2008b).</p> <p>Nearest record: This species has not been recorded within 10 km of the study area.</p>	Low: The underlying geology and soil types within the study area are unlikely to support the burrowing habits of this species. Further, the vegetation communities within the study area do not support a diverse understorey of leguminous shrubs.
Hastings River Mouse (<i>Pseudomys oralis</i>)	E	PMST	<p>Distribution: Populations of the Hastings River Mouse are widely distributed although isolated in areas over 500 m above sea level (DotEE 2016h). This range extends from Mount Royal National Park in New South Wales to Main Range National Park and</p>	Low: The study area does not support habitat suitable for this species.

Common Name (Species Name)	EPBC Act Status ¹	Record Source ²	Habitat Preferences	Likelihood to occur in the project area
			<p>Gambubal State Forest in Queensland (DotEE 2016h). The species has also been recorded in Lamington National Park in Queensland (DotEE 2016h). Between these extremes, populations have been discovered at Mt Boss State Forest and Hyland State Forest, Forestland State Forest and Marengo State Forest and at a number of other sites along the eastern edge of the Great Dividing Range (DotEE 2016h).</p> <p>General habitat preferences: The main factors determining the species' presence appear to be an open canopy and shrub layer between 410 and 1100m elevation. Ground cover varies from almost no cover to a dense, rank cover of grasses, herbs and sedges. Sedges, particularly <i>Carex</i>, <i>Juncus</i> and <i>Cyperus</i> spp. are common to most sites (DotEE 2016h). This habitat occurs beside creeks (permanent and ephemeral) and soakages, but is also found on ridges and grassy plains (DotEE 2016h).</p> <p>Nearest record: This species has not been recorded within 10 km of the study area.</p>	
Grey-headed Flying-fox (<i>Pteropus poliocephalus</i>)	V	PMST	<p>Distribution: This species is endemic to Australia and occurs in the coastal belt between Rockhampton in central Queensland and Melbourne in Victoria. It infrequently occurs west of the Great Dividing Range. It moves throughout its range in response to availability of foraging resources (DotE 2016m).</p> <p>General habitat preferences: This species is a canopy-feeding frugivore and nectarivore, usually feeding on rainforest, open forest, closed and open woodland communities as well as <i>Melaleuca</i> swamps and Banksia woodlands. It will also feed on fruit crops and other introduced tree species. Its primary food source is <i>Eucalyptus</i> (and related genera) blossom (DotE 2016m).</p>	<p>High: The potential exists for this species to feed on eucalypt (and related genera) species throughout the woodlands within the study area and proposed haul road.</p> <p>This species was not recorded during the field surveys. However, Orogen (2008) recorded this species in the eastern portion of the Cherrabah property.</p>

Common Name (Species Name)	EPBC Act Status ¹	Record Source ²	Habitat Preferences	Likelihood to occur in the project area
			<p>Camps: Camps are generally in rainforest patches, stands of Melaleuca, mangroves and riparian vegetation located near water, such as lakes, rivers or the coast (DotE 2016m).</p> <p>Breeding: Mating occurs in early autumn. Young are usually born in October (DotE 2016m).</p> <p>Nearest record: This species has not been recorded within 10 km of the study area.</p>	
Reptiles				
Five-clawed Worm-skink (<i>Anomalopus mackayi</i>)	V	PMST	<p>Distribution: The known distribution of the Five-clawed Worm-skink is patchy in north-eastern New South Wales and south-eastern Queensland (DotEE 2016i). In south-eastern Queensland, the species' known distribution is on the upper Condamine River Floodplain from Warwick in the south to the Jimbour region in the north and bordered by the western edge of the granite belt (DotEE 2016i). The species' known distribution in New South Wales is confined to the Namoi River and Gwydir River floodplains and the lower north-western slopes of the Great Dividing Range (DotEE 2016i). The species ranges from the Wallangra-Masterman Range area in the east, south-west to the Narrabri-Wee Waa area, west along the northern edge of the Pilliga outwash demarcation to the south-west corner of the Namoi catchment south of Walgett, and bordered by the Barwon River in the west to the Mungindi area near the Queensland border (DotEE 2016i).</p> <p>General habitat preferences: The Five-clawed Worm-skink is known to occur in both remnant and non-remnant woodlands and grasslands (DotEE 2016i). In areas modified by agriculture and other human activities, the species has been found sheltering under artificial materials lying flat on the ground, such as discarded railway sleepers, sheet</p>	<p>Low: The underlying geology in the study area (i.e. granite) is not suitable for this species.</p> <p>This species was not recorded during the field surveys.</p>

Common Name (Species Name)	EPBC Act Status ¹	Record Source ²	Habitat Preferences	Likelihood to occur in the project area
			<p>metal and hay bales (DotEE 2016i). The species shelters at the soil surface where moisture is sufficiently retained under decaying leaf litter, coarse woody debris or artificial debris (DotEE 2016i). The species also lives in cavities in rotting tree bases, logs and in tussock bases (DotEE 2016i). It is known to dig permanent tunnel-like burrows in loose, friable, humic soils in woodlands on slight basalt rises (DotEE 2016i).</p> <p>Nearest record: This species has not been recorded within 10 km of the study area.</p>	
Collared Delma (<i>Delma torquata</i>)	V	PMST	<p>Distribution: The species has been recorded within the Bunya Mountains (approximately 200 km north-west of Brisbane), Blackdown Tablelands National Park (approximately 200 km west of Rockhampton), Expedition National Park (Central Queensland), Western Creek, near Millmerran (approximately 200 km south-west of Brisbane) and the Toowoomba Range. A large concentration of records are from the western suburbs of Brisbane (DotE 2016n).</p> <p>General habitat preferences: This species is predominantly associated with open rocky terrain although it has also been found in eucalypt woodlands and brigalow with little surface rock (Wilson 2005). It is most likely to inhabit eucalypt-dominated woodland and open forests on landzones 3, 9 and 10. The presence of rocks, logs, bark and other coarse woody debris, and mats of leaf litter typically 30-100 mm thick) appear to be essential characteristics of Collared Delma microhabitat, which may be a limiting factor for recolonising recently burnt areas (DotE 2016n). This species has been found in only a hand full of small isolated populations in South-east Queensland and the Brigalow Belt bioregions (DotE 2016n).</p>	<p>Low: The study area does not occur on the land zones (i.e. 3, 9 and 10) that this species is typically associated with.</p> <p>This species was not recorded during the field surveys.</p>

Common Name (Species Name)	EPBC Act Status ¹	Record Source ²	Habitat Preferences	Likelihood to occur in the project area
			Nearest record: This species has not been recorded within 10 km of the study area.	
Dunmall's Snake (<i>Furina dunmalli</i>)	V	PMST	<p>Distribution: This snake occurs in the Brigalow Belt South and Nandewar bioregions from near the Queensland border south to Ashford in New South Wales.</p> <p>General habitat preferences: Dunmall's Snake has been found in a broad range of habitats between 200-500 m above sea level. Habitats including forests and woodlands on clay or clay loam soils dominated by Brigalow (<i>Acacia harpophylla</i>), other wattles such as <i>A. burrowii</i>, <i>A. deanii</i>, <i>A. leiocalyx</i>, native Cypress (<i>Callitris spp.</i>) or Bull Oak and various Spotted Gum (<i>Corymbia citriodora ssp. variegata</i>), Ironbark (<i>Eucalyptus crebra</i> and <i>E. melanophloia</i>), White Cypress Pine (<i>Callitris glaucophylla</i>) and Bull Oak open forest and woodland associations on sandstone derived soils. It has rarely been found on the edge of dry vine scrub and in hard ironstone country. It shelters under fallen timber and ground litter and may use cracks in alluvial clay soils. The Dunmall's Snake feeds on small skinks and geckos (DotE 2016o).</p> <p>Notable features: This is a very secretive snake with few known records. The high number of mid-body scales (21) and small yellow flecks over the temporal region and lips will generally distinguish this snake from other similar species. Active searches of suitable habitats as well as transects, spotlighting and opportunistic surveys of roads are recommended in warm, not too dry, conditions with maximum temperatures greater than 25°C. Early morning (two hours either side of dawn) and during the evening on warm nights provides optimal conditions for detection of this species. Surveys should be replicated at least once and should be conducted over three days and nights as a minimum. Good quality photos of the</p>	<p>Low: The underlying geology and soil types within the study area are not consistent with the habitat preferences of this species.</p> <p>This species was not recorded during the field surveys.</p>

Common Name (Species Name)	EPBC Act Status ¹	Record Source ²	Habitat Preferences	Likelihood to occur in the project area
			<p>whole body and head or preserved scale clip samples should be sent to the Queensland Museum for verification (DotE 2016o).</p> <p>Nearest record: This species has not been recorded within 10 km of the study area.</p>	
Three-toed Snake-tooth Skink (<i>Saiphos reticulatus</i>)	V	PMST	<p>Distribution: The Three-toed Snake-tooth Skink occurs from Crescent Head in north-east NSW to Fraser Island in south-east Queensland (DotE 2016p). Most records are from the Border Ranges in the vicinity of the NSW/Queensland border (DotE 2016p).</p> <p>General habitat preferences: In Queensland, the Three-toed Snake-tooth Skink has been recorded in rainforest, closed forest, wet sclerophyll forest, tall open Blackbutt (<i>Eucalyptus pilularis</i>) forest, tall layered open eucalypt forest and closed Brush Box (<i>Lophostemon confertus</i>) forest (DotE 2016p). It has also been recorded from extensive regrowth in heavily logged areas (DotE 2016p).</p> <p>Foraging habitat: This species feeds on worms, insects and insect larvae (DotE 2016p).</p> <p>Breeding habitat: There is no life cycle information available for this species.</p> <p>Notable features: The Three-toed Snake-tooth Skink can be easily distinguished from most other skinks by its reduced limbs, three toes per limb, robust shape and, in most instances, distinctive body markings (especially in juveniles) (DotE 2016p).</p> <p>Nearest record: This species has not been recorded within 10 km of the study area.</p>	<p>Low: Suitable habitat is not present within or adjacent to the study area.</p> <p>This species was not recorded during the field surveys.</p>
Border Thick-tailed Gecko (<i>Uvidicolus sphyrurus</i>)	V	Wildlife Online	<p>Distribution: Northern slopes and tablelands of New South Wales and adjacent boarder regions of southern Queensland (Cogger 2014).</p> <p>General habitat preferences: Little known but appears to be confined elevations between 500 m and</p>	<p>Present. This species was recorded during spotlighting surveys within woodland vegetation associated with the granite dome.</p>

Common Name (Species Name)	EPBC Act Status ¹	Record Source ²	Habitat Preferences	Likelihood to occur in the project area
			1100 m in the northern granite belt, where it is closely associated with exfoliating rocky outcrops and stony hills in dry sclerophyll open forest and woodland (Cogger 2014). Nearest record: This species was recorded in the study area during the field survey.	
Migratory				
Fork-tailed Swift (<i>Apus pacificus</i>)	Mi	PMST, Wildlife Online	Aerial species that flies over open habitat sometimes over forests and cities (Pizzey et al. 2012). Sometimes occurs above rainforests, wet sclerophyll forest or pine plantations (DotE 2016q). Nearest record: There is one Wildlife Online record for this species within 10 km of the study area.	Moderate: This species may overfly the study area as part of a larger foraging range. This species was not recorded within the study area during the field surveys.
Sharp-tailed Sandpiper (<i>Calidris acuminata</i>)	Mi	Wildlife Online	A widespread summer migrant to coastal and inland Australia (Pizzey et al. 2012). This species has been recorded from tidal mudflats, saltmarshes, mangroves, shallow Saline, brackish or fresh water inland wetlands, Floodwaters, irrigated pastures and crops (Pizzey et al. 2012). Nearest record: This species has been recorded within 10 km of the study area.	Low: The study area does not support suitable habitat for this species. This species was not recorded within the study area during the field surveys.
Oriental Cuckoo (<i>Cuculus optatus</i>)	M	PMST	Non-breeding habitat occurs in Australia and is characterised by monsoonal rainforest, vine thickets, wet sclerophyll forest or open <i>Casuarina</i> , <i>Acacia</i> or <i>Eucalyptus</i> woodlands (DotE 2015). Nearest record: This species has not been recorded within 10 km of the study area.	Low: The study area does not support suitable habitat for this species. This species was not recorded within the study area during the field surveys.
Latham's Snipe (<i>Gallinago hardwickii</i>)	Mi	PMST, Wildlife Online	Soft wet ground or shallow water with tussocks, wet paddocks, seepage below dams, irrigated areas, scrub or open woodland (Pizzey et al. 2012). Nearest record: This species has been recorded within 10 km of the study area.	Low: The study area does not support suitable wetland habitat for this species. This species was not recorded within the study area during the field surveys.

Common Name (Species Name)	EPBC Act Status ¹	Record Source ²	Habitat Preferences	Likelihood to occur in the project area
White-throated Needletail (<i>Hirundapus caudacutus</i>)	Mi	PMST, Wildlife Online	Aerial over forests, woodlands, farmlands, plains, lakes and towns (Pizzey et al. 2012). Nearest record: There is one Wildlife Online record for this species within 10 km of the study area.	Moderate: This species may overfly the study area as part of a larger foraging range. This species was not recorded within the study area during the field surveys.
Black-faced Monarch (<i>Monarcha melanopsis</i>)	Mi	PMST	Rainforest, eucalypt woodlands and forest (mainly wet sclerophyll), coastal scrubs, rainforest gullies (DotE 2016r; Pizzey et al. 2012). In Queensland this species occurs on the eastern slopes of the Great Divide. Also occasionally occurs further inland (DotE 2016r). Nearest record: This species has not been recorded within 10 km of the study area.	Moderate: This species use eucalypt woodlands within the study area. However it is considered more likely to use riparian vegetation associated with the watercourse that adjoins the study area. This species was not recorded within the study area during the field surveys.
Spectacled Monarch (<i>Monarcha trivirgatus</i>)	Mi	PMST	Rainforest, thickly wooded gullies, waterside vegetation (Pizzey et al. 2012). Nearest record: This species has not been recorded within 10 km of the study area.	Moderate: This species use eucalypt woodlands within the study area. However it is considered more likely to use riparian vegetation associated with the watercourse that adjoins the study area. This species was not recorded within the study area during the field surveys.
Yellow Wagtail (<i>Motacilla flava</i>)	Mi	PMST	Non-breeding habitat occurs in Australia and is characterised by mostly well-watered open grasslands and the fringes of wetlands. Roosts in mangrove and other dense vegetation (DotE 2015). Nearest record: This species has not been recorded within 10 km of the study area.	Low: The study area does not support suitable habitat for this species. This species was not recorded within the study area during the field surveys.
Satin Flycatcher (<i>Myiagra cyanoleuca</i>)	Mi	PMST	Heavily vegetated gullies in forests and taller woodlands and during migration coastal forests,	Low: The study area does not support suitable habitat for this species.

Common Name (Species Name)	EPBC Act Status ¹	Record Source ²	Habitat Preferences	Likelihood to occur in the project area
			woodlands, mangroves, gardens and open country (Pizzey et al. 2012). Nearest record: This species has not been recorded within 10 km of the study area.	This species was not recorded within the study area during the field surveys.
Osprey (<i>Pandion haliaetus</i>)	Mi	PMST	This species occurs in littoral and coastal habitats and terrestrial wetlands of tropical and temperate Australia and offshore islands (DotE 2016s). The Osprey has been occasionally observed further inland along major rivers (DotE 2016s). This species requires extensive areas of fresh, brackish or saline waters for foraging (DotE 2016s). Nearest record: This species has not been recorded within 10 km of the study area.	Low: The study area does not support suitable habitat for this species. This species was not recorded within the study area during the field surveys.
Rufous Fantail (<i>Rhipidura rufifrons</i>)	Mi	Wildlife Online, PMST	Rainforest, wet eucalypt forests, monsoon forests, paperbarks, sub-inland and coastal scrubs, mangroves, watercourses, parks (Pizzey et al. 2012). Nearest record: This species has not been recorded within 10 km of the study area.	Moderate: This species use eucalypt woodlands within the study area. However it is considered more likely to use riparian vegetation associated with the watercourse that adjoins the study area. This species was not recorded within the study area during the current field surveys. However, it was recorded by Orogen (2010) in the eastern portion of the Cherrabah property.

¹ – EPBC Act Status: E = Endangered, V = Vulnerable, NL = Not listed

² – ALA – Atlas of Living Australia

- PMST – Protected Matters Search Tool (refer to PMST database results contained in Appendix A)

- Wildlife Online – Wildlife Online database (refer to Wildlife Online database search results contained in Appendix B)

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